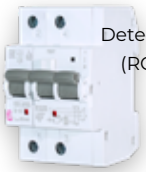
Residual current circuit breaker with integral overcurrent protection with LED status signalisation

Page 109



Arc Fault Detection Device (RCBO version)

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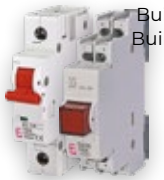
EVE



Build-in switch, Build-in devices

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Control equipment

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Bistable switches RBS

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Miniature and auxiliary contactors CE, CEC

Page 300

Motor contactors CES & CEM

Page 348

Motor protective circuit breakers MSP, MPE & MS

Page 375

ETIBREAK

Low breaking capacity MCCBs, Low voltage MCCBs and low voltage switch disconnectors

Page 422

Low voltage moulded case circuit breakers with residual current protection

Page 467

Accessories

Page 472

Load Break Change Over Switch LBS..CO

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Motorised Change Over Load Break Switch MLBS.. CO

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Fuse Load Break Switch FLBS

Page 630

Rotary Cam Switches

Page 637

LED lighting protection

Page 694

Surge arrester ETITEC group WENT, ML, C, CM, D

Page 701

ETITRAFO

Single phase safety and insulating transformers

Page 728

Fuse - disconnection units

Page 745

C

Low voltage cylindrical fuse-links CH

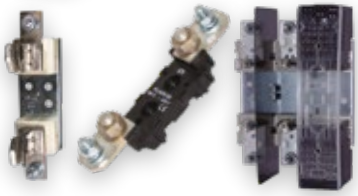
Page 784

Fuse disconnectors for cylindrical fuse-links EFD

Page 805

Fuse disconnectors for cylindrical fuse-links PCF

Page 800



Fuse bases

Page 864

Low voltage fuse-rails

Page 896

Strip type fuse-switch-disconnectors

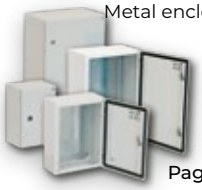
Page 886

Disconnectors with fuses

Page 908

Double insulation enclosures IP66, IK10

Page 991

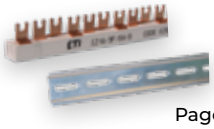


Metal enclosures

Page 1003

Free-standing cable distribution cabinets

Page 1015



Section rails fork, pin and SKN type, DIN rails

Page 1016

DIN rail distribution blocks, Accessories

Page 1036

ULTRA QUICK

Fuses for semiconductor devices protection

Ultra Quick Catalogue

GREEN PROTECT

Protection of Photovoltaic Systems and other renewable energy sources

Green Protect Catalogue

"I take my responsibilities very seriously, always investing myself fully. My work is not just a job, it's my life."

MSc. Tomaž Berginc,
General director and CEO

Ensuring your safety for more than 70 years

Since 1950, respect for fundamental human rights, fair business practices, responsible environmental management and safety for users of our products have played a fundamental part of our business strategy.

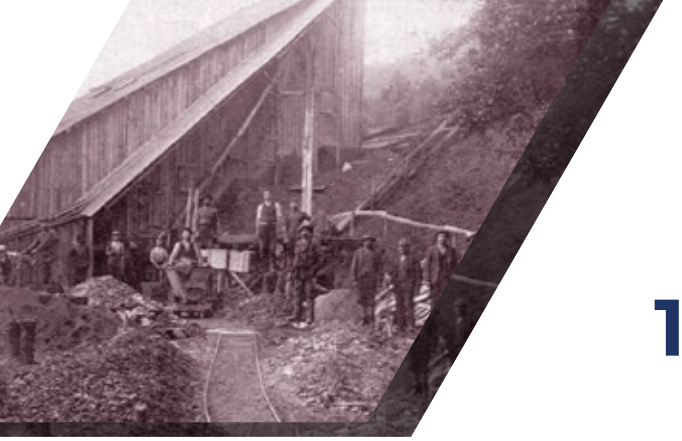
Today, ETI is a world's leading provider of products and services in the field of electrical installations, and an important manufacturer of technical ceramic products, tools and equipment, as well as plastic products.

A substantial element in the company's growth strategy are its subsidiaries in Slovenia and abroad, and close cooperation with selected strategic partners. ETI employs more than 1900 people, and its products are sold in more than 75 countries all over the world. The company is investing a lot into research, development and innovative activities. We are pioneers in the field of protection of battery storage and photovoltaic systems and co-creators of international standards in the field of fuses and switchgear. The quality of products and services is constantly aimed at achieving customers' satisfaction and corresponding business excellence. All our products are internationally certified and have been awarded many quality symbols.

A wide range of manufactured products allows us to implement projects in various fields, such as energy, industry, residential and commercial buildings, renewable energy systems, power electronics, semiconductor equipment, etc.

We are confident that the criteria for our success are full compliance with all the requests and needs of the electrical engineering market, providing complex solutions and implementing the assigned tasks, technical support, high qualifications of the company's employees, as well as flexibility, reliability and stability in working with our partners.

At ETI we always think of safety – so you don't have to.



1950 **Establishment of the company**

1954 **Bergmann pipe**
ETI's first electro-porcelain product

1960 **Fuse**
ETI was one of the first producers of safety fuses

1977 **Miniature Circuit Breaker**
ETI manufactures the first Miniature Circuit Breaker

1980 **Automation**
ETI develops its first assembly line

1997 **First subsidiary**
Establishment of the first subsidiary

2006 **System integrator**
ETI becomes a system integrator

2008 **Photovoltaics**
ETI is one of the pioneers in protection of photovoltaic systems

2012 **ETI becomes a panel builder with its own solutions**

2014 **Lean principles of production**
Extensive reorganisation of production for improved efficiency and value added

Six sigma principles
Introduction of Six sigma principles in all business functions

2018 **Extensive switchgear production automation**

2020 **Opening of a new automated RCD production line**

Our role in product quality and safety

Operational reliability is one of the most important criteria when choosing an electrical equipment manufacturer. Thanks to the experience that we have accumulated over the years, as well as the high level of qualifications of our specialists, we offer complex solutions, from the development and implementation of new types of products into production, to accompanying the delivery and supporting the client at all stages of the transaction.

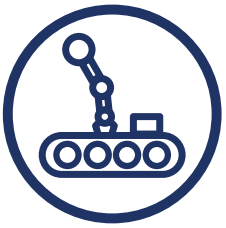
ETI provides automated 100% control of all key parameters of each product during production, the measurements are recorded in the form of a QR code printed on the component and the product.

The high quality of ETI products is confirmed by numerous certificates of European and international standards.

Why choose ETI?

RANGE & VALUE

electrical protection and control, constant product innovation and production optimisation



PRODUCTION FLEXIBILITY

small enough to react quickly, large enough to offer significant capacities

EXPERTISE

integrated service: product, technical consulting and support

CUSTOMER ORIENTATION

solving your problem is our mission

INNOVATIVE BUSINESS CULTURE

everyone at ETI contributes to constant development and innovation

RESPONSIBILITY & PARTNERSHIP

we always keep our promises

SAFETY

is in our genes

RESIDENTAL AND COMMERCIAL ELECTRICAL INSTALLATIONS

- Miniature circuit breakers and residual current devices ASTI
- Modular and control devices EVE
- Surge arresters ETITEC
- Distribution boards DIDO
- Modular contactors RA, RD, R
- Low voltage fuses D, D0, C
- Low voltage NH knife-blade fuses

INDUSTRIAL ELECTRICAL INSTALLATIONS

- Low voltage NH knife-blade fuses
- Moulded case circuit breakers and switch disconnectors ETIBREAK
- Low voltage contactors ETICON
- Switch disconnectors ETISWITCH
- ATS controller ETICONTROL
- Three Phase Network Analyzer ETIMETER
- Line-up terminals ETICONNECT
- Reactive Power Compensation Components CP
- Single phase safety and insulating transformers ETITRAFO
- Distribution boards, metal enclosures and free-standing cable distribution cabinets ETIBOX
- Actuators and indicators ETISIG
- Industrial plug-in equipment ETICEE

ELECTRICAL POWER DISTRIBUTION

- Low voltage NH knife-blade fuses
- Moulded case circuit breakers and switch disconnectors ETIBREAK
- Free-standing cable distribution cabinets ETIBOX
- Air circuit breakers ETIPOWER
- High voltage fuses VV

SEMICONDUCTORS PROTECTION

- Ultra Quick fuse-links D-UQ, D0-UQ, CH-UQ
- Ultra Quick fuse-links BS-UQ
- Ultra Quich fuse-links NH
- NH gS fuses for protection of frequency converters and soft starters
- Fuse bases

SPECIAL PURPOSE FUSES

- Multimeter and metering fuses
- DC fuses, fuse bases and disconnectors
- Mining fuses
- Non standard higher voltage gG fuses and disconnectors
- Safe Work Fuses
- Power Capacitor Fuses
- Fuses for TVSS products protection
- Fuses for railway applications
- Battery Protection Fuses
- Fuel Cell Protection Fuses
- Minifuses

PROTECTION OF PHOTOVOLTAIC SYSTEMS

- Cylindrical fuse-links
- Photovoltaic fuseholders for cylindrical fuse-links
- NH fuse-links and fuse bases
- NH photovoltaic fuseholders
- Lightning and Surge Arresters
- Switch disconnectors
- Distribution boards
- Ready made DC-junction boxes

ETIGROUP

Production sites in Slovenia, Poland, Germany and BiH.

Warehouses in Slovenia, Germany, Romania, Poland, BiH, Ukraine, ...

ETI branches in **12** European countries and partners in 75 countries of the world.

75 years of consistent growth

10% of revenues from new products

38 product patents

Over **1650** employees in Europe

8% of revenues invested in R&D and technology

Regular deliveries to **75** countries of the world

PARENT COMPANY
ETI d.o.o.
Obrezija 5, 1411 Izlake
Slovenia
+386 3 56 57 570
E-mail: eti@eti.si
www.etigroup.eu
www.eti.si

SUBSIDIARIES

ETI Proplast d.o.o.
Obrezija 5,
1411 Izlake, Slovenia
+386 3 56 57 590
etiproplast@eti.si
www.etiproplast.si

ETI Deutschland GmbH
Schönbornstraße 4
63741 Aschaffenburg
Germany
+49 6021 90159-0
contact@de.etigroup.eu
www.eti-de.de

ETI POLAM Sp.z.o.o.
Ul. Jana Pawła II 18,
06100 Pułtusk, Poland
+48 23 691 93 00
etipolam@etipolam.com.pl
www.etipolam.com.pl

ETI SARAJEVO d.o.o.
Hifzi Bjelevca 13,
71 000 Sarajevo, BIH
+387 33 77 52 50
etisa@bih.net.ba
www.eti.ba

ETI HU Elektrotechnikai
Rokolya utca 25,
1131 Budapest,
Hungary
+36 1 238 0784
eti@eti-hu.hu
www.eti-hu.hu

ETI UKRAINE
Akademika Tupoleva 19,
04128 Kiev, Ukraine
+380 44 494 21 80
office@eti.ua
www.eti.ua

ETIBALTUS, UAB
Tilžes g. 41a, 47187
Kaunas, Lithuania
+370 37 261 582
info@etibaltus.lt
www.etibaltus.lt

ETI ROMANIA S.R.L.
Depozit Fortuna,
Intrarea Binelui 1A,
042159 Bucurest, Romania
+4 021 317 17 43
eti.electrice@etigroup.ro
www.etigroup.ro

ETI Elektroelement s.r.o.
P3 Logistics Parks,
Budova F, Paceřická
2773/1 19300 Praha - Horní
Počernice, Czech Republic
+420 226 203 490
info@etielektroelement.cz
www.etielektroelement.cz

ETI B
Zvečanska 56/17,
11000 Beograd, Serbia
+381 11 3691 092
miodrag.stojkovic@etib.rs
www.etib.rs

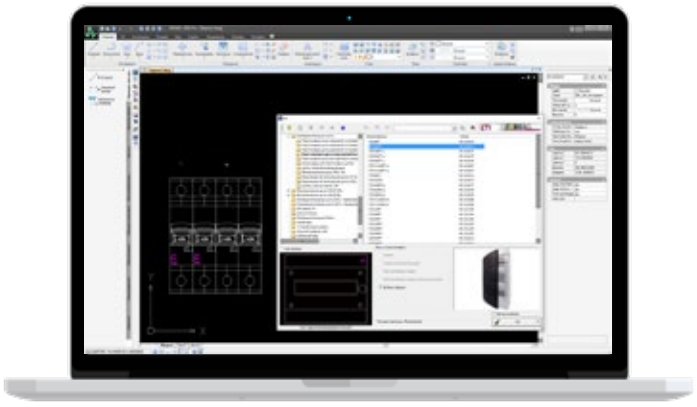
ETI Elektroelement d.o.o.
Trpanjska 7,
10000 Zagreb, Croatia
+385 1 88 96 814
kristijan.vlasic@etigroup.hr
www.eti.hr

ASSOCIATED COMPANIES

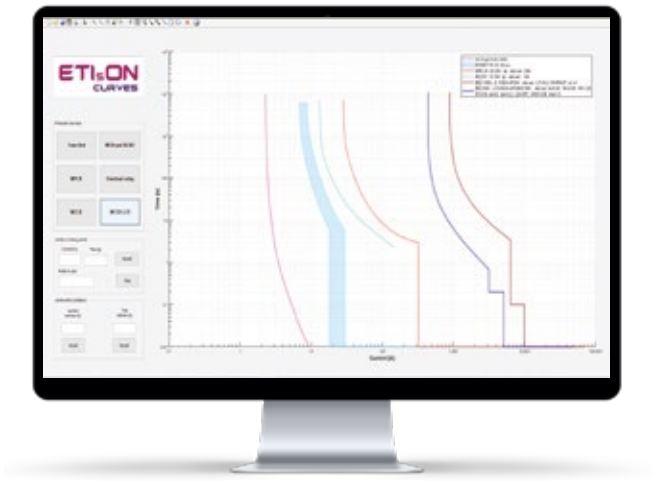
ITALWEBER S.p.A.
Via Risorgimento 84,
20017 Rho, Milano, Italy
+39 02 939 771
info@italweber.it
www.italweber.it

Support

Our main goal is customer's safety. It is a prerequisite for their satisfaction and satisfied customers are our guiding principle. We are doing our best to ensure they know how to install and use our products. We offer advice and technical support through the entire duration of the project and beyond. Our objective is to meet all customer needs, expectations and wishes. This is accomplished by a technically well-grounded team, who is always open to and successful in overcoming new challenges.



On our website you will find various software tools for electrical designers, which make their work easier and at the same time enable them to make better informed and technically advanced choices for their customers.



ETIsON is a software application which is useful tool for drawing and analysing I/t curves of protection devices, analysing selectivity between protective devices, simulating load or short circuit response of protection devices, etc.

ETI CAD - Plug-in library for various CAD programs. ETI also offers over 5600 products for designers in the EPLAN database. Configurators: CP Configurator is a program for selecting a complete set of reactive power compensation devices.

Solid GSX is an application for the layout of GSX panels.

ETI ACB is a simple step-by-step configuration of ETIPOWER circuit breakers (ACB).

ATS Configurator is an application for selection and configuration of automatic transfer switchboards based on the ATS controller.

For the convenience of choosing fuses there is an online application FuseFinder, and an online configurator ETI SPD has been created for the selection of surge arresters.

ASTI

Miniature circuit breakers and residual current devices

Miniature circuit breakers 12

Residual current circuit breakers 64

Residual current circuit breakers with integral overcurrent protection 93

/etigroup

SWITCH TO A SAFE FUTURE

ASTI Miniature Circuit Breakers ETIMAT - MCBs

Miniature circuit breakers ETIMAT 6

- "ON/OFF" mark on the switch button

- Sealing possibility in ON or OFF position

- Option of mounting auxiliary devices (auxiliary switch, shunt trip)

- Trip-free mechanism ensures that MCB trips even if the toggle is held in ON position
- Separate indication of contacts' real state (independent of the toggle position) ensures additional user safety
- green flag: contacts open, red flag: contacts closed

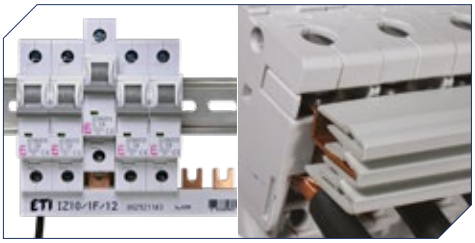
- Every product is marked with EAN Code

- New method of mounting on the DIN rail and simple replacement

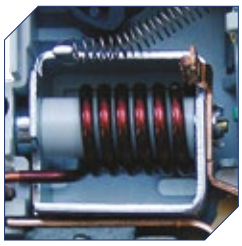
- Better protection of terminals against touching the parts under voltage

- All the MCBs also offer enough space for marking labels.

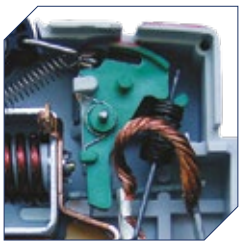
- Double connection possibility - all MCBs can be simultaneously connected to busbar and conductor, both from above and below



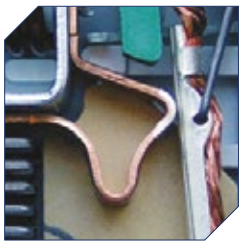
- Electromagnetic release (protection against short-circuit currents)



- To ensure a high switching capacity, the "quick switching" function is implemented in the mechanism

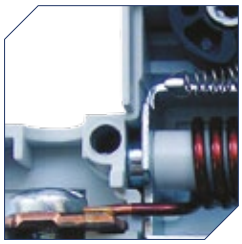


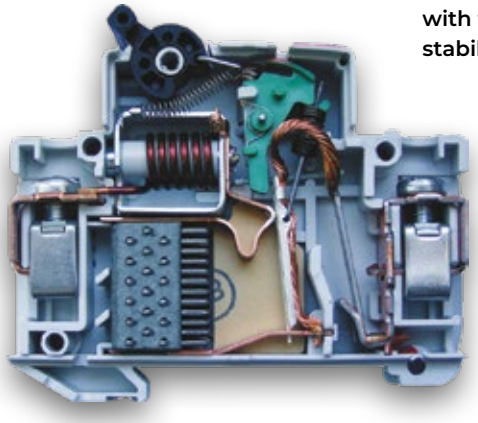
- Silver plated power contacts (low transient resistance, increased electrical capacity)



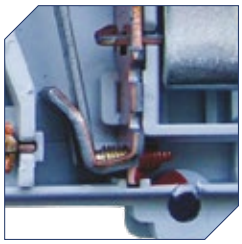
- Combined reset mechanism (off time ~ 2.5ms)

- Reduced number of welding points, all current-conducting parts are made of copper (low transient resistance)

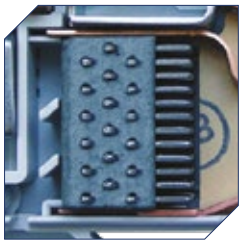




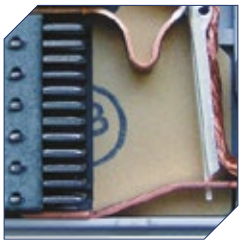
- The setting of the thermal release is controlled by fixing the adjusting screw with the help of paint (maintaining the stability of the parameters)



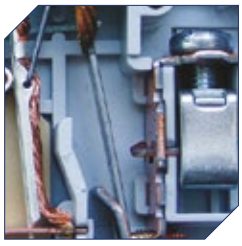
- Arc chamber consists of 12 plates (quick and reliable arc extinguishing)



- Ceramic insulation plate (reliable protection against thermal loads)



- Thermal release (bimetallic plate - overload protection)



Miniature circuit breaker ETIMAT 6

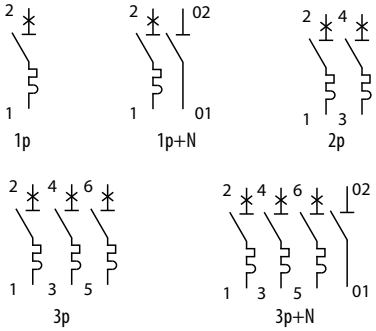
Rated short-circuit capacity	Rated current	Tripping characteristic
6 kA	**0,5 - 63 A**	**B, C, D**

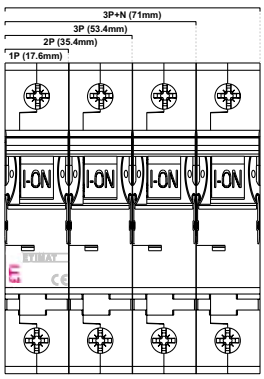
Technical data

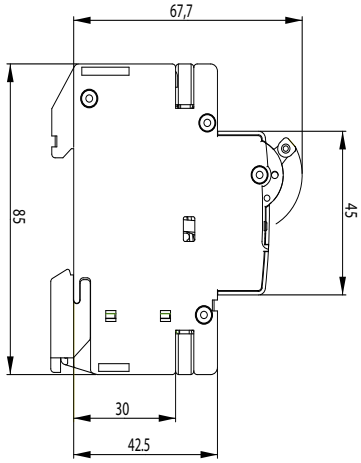
Rated voltage	230/400 V AC, max. 60 V DC / pole
Rated current	B:1-63A, C:0.5-63A, D:0.5-63A
Rated frequency	50/60 Hz
Rated short-circuit capacity	6 kA
Back-up fuse	100A gG
Energy limiting class	3; B, C
Tripping characteristic	B, C, D
Terminals	1 – 25 mm², max. 3 Nm
Terminal screw	M5 (Pozidrive PZ2)
Build-in width	17,6 mm/pol
Mounting on the rail	EN 60715 (EN 50022)
Busbar Thickness	0,8-2mm
Mounting position	any
Sealing possibility	ON / OFF
Electrical endurance (ops)	8.000
Mechanical endurance (ops)	20.000
Overvoltage category	III
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)
Standards	IEC 60898, EN 60898, IEC 60947-2

Tripping characteristics

Characteristic	Test current	Tripping time	Result
B, C, D	1,13 I_n	t ≥ 3600 s	No tripping
B, C, D	1,45 I_n	t < 3600 s	Tripping
B, C, D	2,55 I_n	1s < t < 60 s	Tripping
B	3,00 I_n	t ≤ 0,1 s	No tripping
C	5,00 I_n	t ≤ 0,1 s	No tripping
D	10,00 I_n	t ≤ 0,1 s	No tripping
B	5,00 I_n	t < 0,1 s	Tripping
C	10,00 I_n	t < 0,1 s	Tripping
D	20,00 I_n	t < 0,1 s	Tripping







1-pole

I_n [A]	U_n [V]	Type B	Code No.	Type C	Code No.	Type D	Code No.	g	
0,5	230/400	/	/	ETIMAT 6 1p C 0,5	002141501	ETIMAT 6 1p D 0,5	002161501	115	12/108
1		ETIMAT 6 1p B 1	002111509	ETIMAT 6 1p C 1	002141504	ETIMAT 6 1p D 1	002161504	115	12/108
1,6		/	/	ETIMAT 6 1p C 1,6	002141507	ETIMAT 6 1p D 1,6	002161507	115	12/108
2		ETIMAT 6 1p B 2	002111510	ETIMAT 6 1p C 2	002141508	ETIMAT 6 1p D 2	002161508	115	12/108
3		/	/	ETIMAT 6 1p C 3	002141509	/	/	115	12/108
4		ETIMAT 6 1p B 4	002111511	ETIMAT 6 1p C 4	002141510	ETIMAT 6 1p D 4	002161510	115	12/108
6		ETIMAT 6 1p B 6	002111512	ETIMAT 6 1p C 6	002141512	ETIMAT 6 1p D 6	002161512	112	12/108
10		ETIMAT 6 1p B 10	002111514	ETIMAT 6 1p C 10	002141514	ETIMAT 6 1p D 10	002161514	112	12/108
13		ETIMAT 6 1p B 13	002111515	ETIMAT 6 1p C 13	002141515	ETIMAT 6 1p D 13	002161515	112	12/108
16		ETIMAT 6 1p B 16	002111516	ETIMAT 6 1p C 16	002141516	ETIMAT 6 1p D 16	002161516	112	12/108
20		ETIMAT 6 1p B 20	002111517	ETIMAT 6 1p C 20	002141517	ETIMAT 6 1p D 20	002161517	112	12/108
25		ETIMAT 6 1p B 25	002111518	ETIMAT 6 1p C 25	002141518	ETIMAT 6 1p D 25	002161518	112	12/108
32		ETIMAT 6 1p B 32	002111519	ETIMAT 6 1p C 32	002141519	ETIMAT 6 1p D 32	002161519	112	12/108
40		ETIMAT 6 1p B 40	002111520	ETIMAT 6 1p C 40	002141520	ETIMAT 6 1p D 40	002161520	112	12/108
50		ETIMAT 6 1p B 50	002111521	ETIMAT 6 1p C 50	002141521	ETIMAT 6 1p D 50	002161521	123	12/108
63		ETIMAT 6 1p B 63	002111522	ETIMAT 6 1p C 63	002141522	ETIMAT 6 1p D 63	002161522	123	12/108

1-pole + N

I_n [A]	U_n [V]	Type B	Code No.	Type C	Code No.	Type D	Code No.	g	
0,5	230	/	/	ETIMAT 6 1p+N C 0,5	002142501	ETIMAT 6 1p+N D 0,5	002162501	232	6/54
1		ETIMAT 6 1p+N B 1	002112509	ETIMAT 6 1p+N C 1	002142504	ETIMAT 6 1p+N D 1	002162504	232	6/54
1,6		/	/	ETIMAT 6 1p+N C 1,6	002142507	ETIMAT 6 1p+N D 1,6	002162507	232	6/54
2		ETIMAT 6 1p+N B 2	002112510	ETIMAT 6 1p+N C 2	002142508	ETIMAT 6 1p+N D 2	002162508	232	6/54
3		/	/	ETIMAT 6 1p+N C 3	002142509	/	/	232	6/54
4		ETIMAT 6 1p+N B 4	002112511	ETIMAT 6 1p+N C 4	002142510	ETIMAT 6 1p+N D 4	002162510	232	6/54
6		ETIMAT 6 1p+N B 6	002112512	ETIMAT 6 1p+N C 6	002142512	ETIMAT 6 1p+N D 6	002162512	227	6/54
10		ETIMAT 6 1p+N B 10	002112514	ETIMAT 6 1p+N C 10	002142514	ETIMAT 6 1p+N D 10	002162514	227	6/54
13		ETIMAT 6 1p+N B 13	002112515	ETIMAT 6 1p+N C 13	002142515	ETIMAT 6 1p+N D 13	002162515	227	6/54
16		ETIMAT 6 1p+N B 16	002112516	ETIMAT 6 1p+N C 16	002142516	ETIMAT 6 1p+N D 16	002162516	227	6/54
20		ETIMAT 6 1p+N B 20	002112517	ETIMAT 6 1p+N C 20	002142517	ETIMAT 6 1p+N D 20	002162517	227	6/54
25		ETIMAT 6 1p+N B 25	002112518	ETIMAT 6 1p+N C 25	002142518	ETIMAT 6 1p+N D 25	002162518	227	6/54
32		ETIMAT 6 1p+N B 32	002112519	ETIMAT 6 1p+N C 32	002142519	ETIMAT 6 1p+N D 32	002162519	227	6/54
40		ETIMAT 6 1p+N B 40	002112520	ETIMAT 6 1p+N C 40	002142520	ETIMAT 6 1p+N D 40	002162520	227	6/54
50		ETIMAT 6 1p+N B 50	002112521	ETIMAT 6 1p+N C 50	002142521	ETIMAT 6 1p+N D 50	002162521	245	6/54
63		ETIMAT 6 1p+N B 63	002112522	ETIMAT 6 1p+N C 63	002142522	ETIMAT 6 1p+N D 63	002162522	245	6/54

2-pole

I_n [A]	U_n [V]	Type B	Code No.	Type C	Code No.	Type D	Code No.	g	
0,5	400	/	/	ETIMAT 6 2p C 0,5	002143501	ETIMAT 6 2p D 0,5	002163501	232	6/54
1		ETIMAT 6 2p B 1	002113509	ETIMAT 6 2p C 1	002143504	ETIMAT 6 2p D 1	002163504	232	6/54
1,6		/	/	ETIMAT 6 2p C 1,6	002143507	ETIMAT 6 2p D 1,6	002163507	232	6/54
2		ETIMAT 6 2p B 2	002113510	ETIMAT 6 2p C 2	002143508	ETIMAT 6 2p D 2	002163508	232	6/54
3		/	/	ETIMAT 6 2p C 3	002143509	/	/	232	6/54
4		ETIMAT 6 2p B 4	002113511	ETIMAT 6 2p C 4	002143510	ETIMAT 6 2p D 4	002163510	232	6/54
6		ETIMAT 6 2p B 6	002113512	ETIMAT 6 2p C 6	002143512	ETIMAT 6 2p D 6	002163512	227	6/54
10		ETIMAT 6 2p B 10	002113514	ETIMAT 6 2p C 10	002143514	ETIMAT 6 2p D 10	002163514	227	6/54
13		ETIMAT 6 2p B 13	002113515	ETIMAT 6 2p C 13	002143515	ETIMAT 6 2p D 13	002163515	227	6/54
16		ETIMAT 6 2p B 16	002113516	ETIMAT 6 2p C 16	002143516	ETIMAT 6 2p D 16	002163516	227	6/54
20		ETIMAT 6 2p B 20	002113517	ETIMAT 6 2p C 20	002143517	ETIMAT 6 2p D 20	002163517	227	6/54
25		ETIMAT 6 2p B 25	002113518	ETIMAT 6 2p C 25	002143518	ETIMAT 6 2p D 25	002163518	227	6/54
32		ETIMAT 6 2p B 32	002113519	ETIMAT 6 2p C 32	002143519	ETIMAT 6 2p D 32	002163519	227	6/54
40		ETIMAT 6 2p B 40	002113520	ETIMAT 6 2p C 40	002143520	ETIMAT 6 2p D 40	002163520	227	6/54
50		ETIMAT 6 2p B 50	002113521	ETIMAT 6 2p C 50	002143521	ETIMAT 6 2p D 50	002163521	245	6/54
63		ETIMAT 6 2p B 63	002113522	ETIMAT 6 2p C 63	002143522	ETIMAT 6 2p D 63	002163522	245	6/54

3-pole

I_n [A]	U_n [V]	Type B	Code No.	Type C	Code No.	Type D	Code No.	g	
0,5	400	/	/	ETIMAT 6 3p C 0,5	002145501	ETIMAT 6 3p D 0,5	002164501	354	4/36
1		ETIMAT 6 3p B 1	002115509	ETIMAT 6 3p C 1	002145504	ETIMAT 6 3p D 1	002164504	354	4/36
1,6		/	/	ETIMAT 6 3p C 1,6	002145507	ETIMAT 6 3p D 1,6	002164507	354	4/36
2		ETIMAT 6 3p B 2	002115510	ETIMAT 6 3p C 2	002145508	ETIMAT 6 3p D 2	002164508	354	4/36
3		/	/	ETIMAT 6 3p C 3	002145509	/	/	354	4/36
4		ETIMAT 6 3p B 4	002115511	ETIMAT 6 3p C 4	002145510	ETIMAT 6 3p D 4	002164510	354	4/36
6		ETIMAT 6 3p B 6	002115512	ETIMAT 6 3p C 6	002145512	ETIMAT 6 3p D 6	002164512	345	4/36
10		ETIMAT 6 3p B 10	002115514	ETIMAT 6 3p C 10	002145514	ETIMAT 6 3p D 10	002164514	345	4/36
13		ETIMAT 6 3p B 13	002115515	ETIMAT 6 3p C 13	002145515	ETIMAT 6 3p D 13	002164515	345	4/36
16		ETIMAT 6 3p B 16	002115516	ETIMAT 6 3p C 16	002145516	ETIMAT 6 3p D 16	002164516	345	4/36
20		ETIMAT 6 3p B 20	002115517	ETIMAT 6 3p C 20	002145517	ETIMAT 6 3p D 20	002164517	345	4/36
25		ETIMAT 6 3p B 25	002115518	ETIMAT 6 3p C 25	002145518	ETIMAT 6 3p D 25	002164518	345	4/36
32		ETIMAT 6 3p B 32	002115519	ETIMAT 6 3p C 32	002145519	ETIMAT 6 3p D 32	002164519	345	4/36
40		ETIMAT 6 3p B 40	002115520	ETIMAT 6 3p C 40	002145520	ETIMAT 6 3p D 40	002164520	345	4/36
50		ETIMAT 6 3p B 50	002115521	ETIMAT 6 3p C 50	002145521	ETIMAT 6 3p D 50	002164521	372	4/36
63		ETIMAT 6 3p B 63	002115522	ETIMAT 6 3p C 63	002145522	ETIMAT 6 3p D 63	002164522	372	4/36

3-pole + N

I_n [A]	U_n [V]	Type B	Code No.	Type C	Code No.	Type D	Code No.	g	
0,5	400	/	/	ETIMAT 6 3p+N C 0,5	002146501	ETIMAT 6 3p+N D 0,5	002165501	469	3/27
1		ETIMAT 6 3p+N B 1	002116509	ETIMAT 6 3p+N C 1	002146504	ETIMAT 6 3p+N D 1	002165504	469	3/27
1,6		/	/	ETIMAT 6 3p+N C 1,6	002146507	ETIMAT 6 3p+N D 1,6	002165507	469	3/27
2		ETIMAT 6 3p+N B 2	002116510	ETIMAT 6 3p+N C 2	002146508	ETIMAT 6 3p+N D 2	002165508	469	3/27
3		/	/	ETIMAT 6 3p+N C 3	002146509	/	/	469	3/27
4		ETIMAT 6 3p+N B 4	002116511	ETIMAT 6 3p+N C 4	002146510	ETIMAT 6 3p+N D 4	002165510	469	3/27
6		ETIMAT 6 3p+N B 6	002116512	ETIMAT 6 3p+N C 6	002146512	ETIMAT 6 3p+N D 6	002165512	459	3/27
10		ETIMAT 6 3p+N B 10	002116514	ETIMAT 6 3p+N C 10	002146514	ETIMAT 6 3p+N D 10	002165514	459	3/27
13		ETIMAT 6 3p+N B 13	002116515	ETIMAT 6 3p+N C 13	002146515	ETIMAT 6 3p+N D 13	002165515	459	3/27
16		ETIMAT 6 3p+N B 16	002116516	ETIMAT 6 3p+N C 16	002146516	ETIMAT 6 3p+N D 16	002165516	459	3/27
20		ETIMAT 6 3p+N B 20	002116517	ETIMAT 6 3p+N C 20	002146517	ETIMAT 6 3p+N D 20	002165517	459	3/27
25		ETIMAT 6 3p+N B 25	002116518	ETIMAT 6 3p+N C 25	002146518	ETIMAT 6 3p+N D 25	002165518	459	3/27
32		ETIMAT 6 3p+N B 32	002116519	ETIMAT 6 3p+N C 32	002146519	ETIMAT 6 3p+N D 32	002165519	459	3/27
40		ETIMAT 6 3p+N B 40	002116520	ETIMAT 6 3p+N C 40	002146520	ETIMAT 6 3p+N D 40	002165520	459	3/27
50		ETIMAT 6 3p+N B 50	002116521	ETIMAT 6 3p+N C 50	002146521	ETIMAT 6 3p+N D 50	002165521	493	3/27
63		ETIMAT 6 3p+N B 63	002116522	ETIMAT 6 3p+N C 63	002146522	ETIMAT 6 3p+N D 63	002165522	493	3/27

The circuit breakers type ETIMAT 6 / 3-pole + N are suitable for use as 4-pole circuit breakers

Miniature circuit breaker ETIMAT 10 0,5-63A

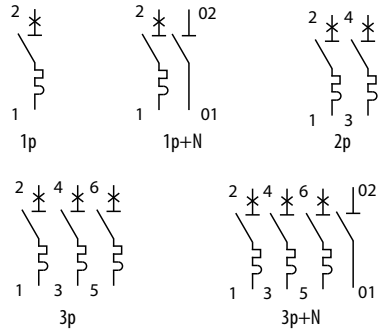
Rated short-circuit capacity	Rated current	Tripping characteristic
10 kA	**0,5 - 63 A**	**B, C, D**

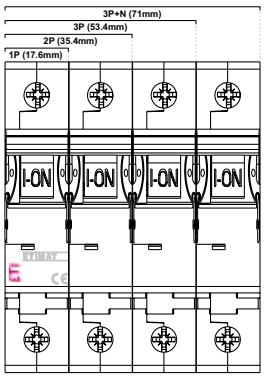
Technical data

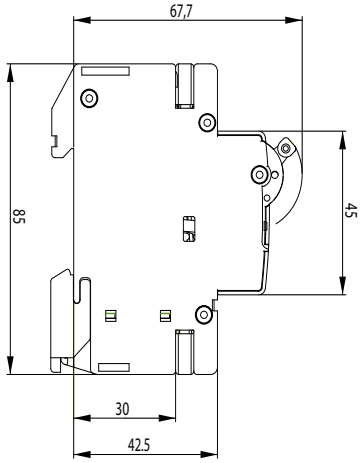
Rated voltage	230/400 V AC, max. 60 V DC / pole
Rated insulation voltage Ui	500V - under normal conditions
Rated frequency	50/60 Hz
Rated short-circuit capacity	(0,5 – 40 A) 10 kA (IEC 60898), 15 kA (IEC 60947-2); (50 – 63 A) 6 kA
Back-up fuse	100A gG
Energy limiting class	3; B, C
Tripping characteristic	B, C, D
Mechanical life in operating cycles	20.000
Electrical life in operating cycles	10.000
Terminals	1 – 25 mm^2, max. 3 Nm
Terminal screw	M5 (Pozidrive PZ2)
Build-in width	17,6 mm/pol
Mounting on the rail	EN 60715 (EN 50022)
Busbar Thickness	0,8-2mm
Mounting position	any
Sealing possibility	ON / OFF
Electrical endurance (ops)	8.000
Mechanical endurance (ops)	20.000
Overvoltage category	III
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)
Standards	IEC 60898, EN 60898, IEC 60947-2
Operating temperature	-25°C ... +50°C
Degree of protection	IP20

Tripping characteristics

Characteristic	Test current	Tripping time	Result
B, C, D	1,13 I_n	t ≥ 3600 s	No tripping
B, C, D	1,45 I_n	t < 3600 s	Tripping
B, C, D	2,55 I_n	1s < t < 60 s	Tripping
B	3,00 I_n	t ≤ 0,1 s	No tripping
C	5,00 I_n	t ≤ 0,1 s	No tripping
D	10,00 I_n	t ≤ 0,1 s	No tripping
B	5,00 I_n	t < 0,1 s	Tripping
C	10,00 I_n	t < 0,1 s	Tripping
D	20,00 I_n	t < 0,1 s	Tripping







1-pole

I_n [A]	U_n [V]	Type B	Code No.	Type C	Code No.	Type D	Code No.	g	
0,5	230/400	/	/	ETIMAT 10 1p C 0,5	2131701	ETIMAT 10 1p D 0,5	2151701	115	12/108
1		/	/	ETIMAT 10 1p C 1	2131704	ETIMAT 10 1p D 1	2151704	115	12/108
1,6		/	/	ETIMAT 10 1p C 1,6	2131707	ETIMAT 10 1p D 1,6	2151707	115	12/108
2		/	/	ETIMAT 10 1p C 2	2131708	ETIMAT 10 1p D 2	2151708	115	12/108
4		/	/	ETIMAT 10 1p C 4	2131710	ETIMAT 10 1p D 4	2151710	115	12/108
6		ETIMAT 10 1p B 6	2121712	ETIMAT 10 1p C 6	2131712	ETIMAT 10 1p D 6	2151712	112	12/108
10		ETIMAT 10 1p B 10	2121714	ETIMAT 10 1p C 10	2131714	ETIMAT 10 1p D 10	2151714	112	12/108
13		ETIMAT 10 1p B 13	2121715	ETIMAT 10 1p C 13	2131715	ETIMAT 10 1p D 13	2151715	112	12/108
16		ETIMAT 10 1p B 16	2121716	ETIMAT 10 1p C 16	2131716	ETIMAT 10 1p D 16	2151716	112	12/108
20		ETIMAT 10 1p B 20	2121717	ETIMAT 10 1p C 20	2131717	ETIMAT 10 1p D 20	2151717	112	12/108
25		ETIMAT 10 1p B 25	2121718	ETIMAT 10 1p C 25	2131718	ETIMAT 10 1p D 25	2151718	112	12/108
32		ETIMAT 10 1p B 32	2121719	ETIMAT 10 1p C 32	2131719	ETIMAT 10 1p D 32	2151719	112	12/108
40		ETIMAT 10 1p B 40	2121720	ETIMAT 10 1p C 40	2131720	ETIMAT 10 1p D 40	2151720	112	12/108
50		ETIMAT 10 1p B 50	2121721	ETIMAT 10 1p C 50	2131721	ETIMAT 10 1p D 50	2151721	123	12/108
63		ETIMAT 10 1p B 63	2121722	ETIMAT 10 1p C 63	2131722	ETIMAT 10 1p D 63	2151722	123	12/108

УВАГА: Автоматичні вимикачі з характеристикою D мають норму упаковки - 1/108 шт.
Важливо! Автоматичні вимикачі з номінальним струмом 50-63А мають вимикальну здатність 6kA.

1-pole + N

I_n [A]	U_n [V]	Type B	Code No.	Type C	Code No.	Type D	Code No.	g	
0,5	230	/	/	ETIMAT 10 1p+N C 0,5	2132701	ETIMAT 10 1p+N D 0,5	2152701	232	6/54
1		/	/	ETIMAT 10 1p+N C 1	2132704	ETIMAT 10 1p+N D 1	2152704	232	6/54
1,6		/	/	ETIMAT 10 1p+N C 1,6	2132707	ETIMAT 10 1p+N D 1,6	2152707	232	6/54
2		/	/	ETIMAT 10 1p+N C 2	2132708	ETIMAT 10 1p+N D 2	2152708	232	6/54
4		/	/	ETIMAT 10 1p+N C 4	2132710	ETIMAT 10 1p+N D 4	2152710	232	6/54
6		ETIMAT 10 1p+N B 6	2122712	ETIMAT 10 1p+N C 6	2132712	ETIMAT 10 1p+N D 6	2152712	227	6/54
10		ETIMAT 10 1p+N B 10	2122714	ETIMAT 10 1p+N C 10	2132714	ETIMAT 10 1p+N D 10	2152714	227	6/54
13		ETIMAT 10 1p+N B 13	2122715	ETIMAT 10 1p+N C 13	2132715	ETIMAT 10 1p+N D 13	2152715	227	6/54
16		ETIMAT 10 1p+N B 16	2122716	ETIMAT 10 1p+N C 16	2132716	ETIMAT 10 1p+N D 16	2152716	227	6/54
20		ETIMAT 10 1p+N B 20	2122717	ETIMAT 10 1p+N C 20	2132717	ETIMAT 10 1p+N D 20	2152717	227	6/54
25		ETIMAT 10 1p+N B 25	2122718	ETIMAT 10 1p+N C 25	2132718	ETIMAT 10 1p+N D 25	2152718	227	6/54
32		ETIMAT 10 1p+N B 32	2122719	ETIMAT 10 1p+N C 32	2132719	ETIMAT 10 1p+N D 32	2152719	227	6/54
40		ETIMAT 10 1p+N B 40	2122720	ETIMAT 10 1p+N C 40	2132720	ETIMAT 10 1p+N D 40	2152720	227	6/54
50		ETIMAT 10 1p+N B 50	2122721	ETIMAT 10 1p+N C 50	2132721	ETIMAT 10 1p+N D 50	2152721	245	6/54
63		ETIMAT 10 1p+N B 63	2122722	ETIMAT 10 1p+N C 63	2132722	ETIMAT 10 1p+N D 63	2152722	245	6/54

УВАГА: Автоматичні вимикачі з характеристикою D мають норму упаковки - 1/54 шт.
Важливо! Автоматичні вимикачі з номінальним струмом 50-63А мають вимикальну здатність 6kA.

2-pole

I_n [A]	U_n [V]	Type B	Code No.	Type C	Code No.	Type D	Code No.	g	
0,5	400	/	/	ETIMAT 10 2p C 0,5	2133701	ETIMAT 10 2p D 0,5	2153701	232	6/54
1		/	/	ETIMAT 10 2p C 1	2133704	ETIMAT 10 2p D 1	2153704	232	6/54
1,6		/	/	ETIMAT 10 2p C 1,6	2133707	ETIMAT 10 2p D 1,6	2153707	232	6/54
2		/	/	ETIMAT 10 2p C 2	2133708	ETIMAT 10 2p D 2	2153708	232	6/54
4		/	/	ETIMAT 10 2p C 4	2133710	ETIMAT 10 2p D 4	2153710	232	6/54
6		ETIMAT 10 2p B 6	2123712	ETIMAT 10 2p C 6	2133712	ETIMAT 10 2p D 6	2153712	227	6/54
10		ETIMAT 10 2p B 10	2123714	ETIMAT 10 2p C 10	2133714	ETIMAT 10 2p D 10	2153714	227	6/54
13		ETIMAT 10 2p B 13	2123715	ETIMAT 10 2p C 13	2133715	ETIMAT 10 2p D 13	2153715	227	6/54
16		ETIMAT 10 2p B 16	2123716	ETIMAT 10 2p C 16	2133716	ETIMAT 10 2p D 16	2153716	227	6/54
20		ETIMAT 10 2p B 20	2123717	ETIMAT 10 2p C 20	2133717	ETIMAT 10 2p D 20	2153717	227	6/54
25		ETIMAT 10 2p B 25	2123718	ETIMAT 10 2p C 25	2133718	ETIMAT 10 2p D 25	2153718	227	6/54
32		ETIMAT 10 2p B 32	2123719	ETIMAT 10 2p C 32	2133719	ETIMAT 10 2p D 32	2153719	227	6/54
40		ETIMAT 10 2p B 40	2123720	ETIMAT 10 2p C 40	2133720	ETIMAT 10 2p D 40	2153720	227	6/54
50		ETIMAT 10 2p B 50	2123721	ETIMAT 10 2p C 50	2133721	ETIMAT 10 2p D 50	2153721	245	6/54
63		ETIMAT 10 2p B 63	2123722	ETIMAT 10 2p C 63	2133722	ETIMAT 10 2p D 63	2153722	245	6/54

УВАГА: Автоматичні вимикачі з характеристикою D мають норму упаковки - 1/54 шт.
Важливо! Автоматичні вимикачі з номінальним струмом 50-63А мають вимикальну здатність 6kA.

3-pole

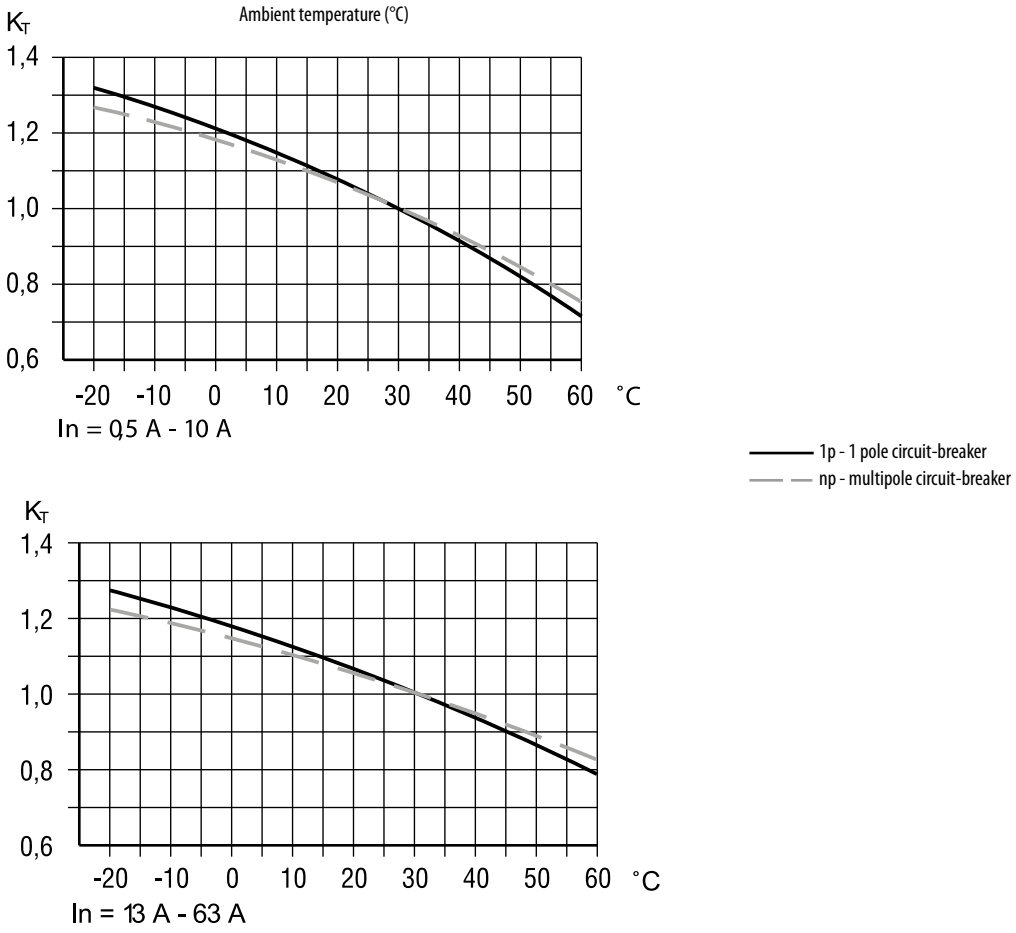
I_n [A]	U_n [V]	Type B	Code No.	Type C	Code No.	Type D	Code No.	g	
0,5		/	/	ETIMAT 10 3p C 0,5	2135701	ETIMAT 10 3p D 0,5	2155701	354	4/36
1		/	/	ETIMAT 10 3p C 1	2135704	ETIMAT 10 3p D 1	2155704	354	4/36
1,6		/	/	ETIMAT 10 3p C 1,6	2135707	ETIMAT 10 3p D 1,6	2155707	354	4/36
2		/	/	ETIMAT 10 3p C 2	2135708	ETIMAT 10 3p D 2	2155708	354	4/36
4		/	/	ETIMAT 10 3p C 4	2135710	ETIMAT 10 3p D 4	2155710	354	4/36
6		ETIMAT 10 3p B 6	2125712	ETIMAT 10 3p C 6	2135712	ETIMAT 10 3p D 6	2155712	345	4/36
10		ETIMAT 10 3p B 10	2125714	ETIMAT 10 3p C 10	2135714	ETIMAT 10 3p D 10	2155714	345	4/36
13	400	ETIMAT 10 3p B 13	2125715	ETIMAT 10 3p C 13	2135715	ETIMAT 10 3p D 13	2155715	345	4/36
16		ETIMAT 10 3p B 16	2125716	ETIMAT 10 3p C 16	2135716	ETIMAT 10 3p D 16	2155716	345	4/36
20		ETIMAT 10 3p B 20	2125717	ETIMAT 10 3p C 20	2135717	ETIMAT 10 3p D 20	2155717	345	4/36
25		ETIMAT 10 3p B 25	2125718	ETIMAT 10 3p C 25	2135718	ETIMAT 10 3p D 25	2155718	345	4/36
32		ETIMAT 10 3p B 32	2125719	ETIMAT 10 3p C 32	2135719	ETIMAT 10 3p D 32	2155719	345	4/36
40		ETIMAT 10 3p B 40	2125720	ETIMAT 10 3p C 40	2135720	ETIMAT 10 3p D 40	2155720	345	4/36
50		ETIMAT 10 3p B 50	2125721	ETIMAT 10 3p C 50	2135721	ETIMAT 10 3p D 50	2155721	372	4/36
63		ETIMAT 10 3p B 63	2125722	ETIMAT 10 3p C 63	2135722	ETIMAT 10 3p D 63	2155722	372	4/36

3-pole + N

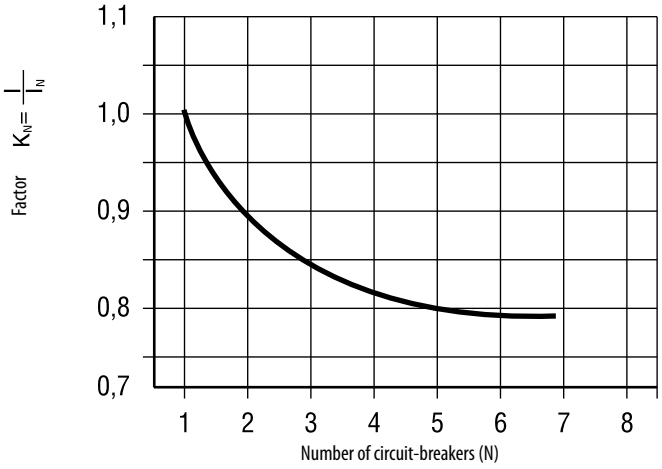
I_n [A]	U_n [V]	Type B	Code No.	Type C	Code No.	Type D	Code No.	g	
0,5		/	/	ETIMAT 10 3p+N C 0,5	2136701	ETIMAT 10 3p+N D 0,5	2156701	469	3/27
1		/	/	ETIMAT 10 3p+N C 1	2136704	ETIMAT 10 3p+N D 1	2156704	469	3/27
1,6		/	/	ETIMAT 10 3p+N C 1,6	2136707	ETIMAT 10 3p+N D 1,6	2156707	469	3/27
2		/	/	ETIMAT 10 3p+N C 2	2136708	ETIMAT 10 3p+N D 2	2156708	469	3/27
4		/	/	ETIMAT 10 3p+N C 4	2136710	ETIMAT 10 3p+N D 4	2156710	469	3/27
6		ETIMAT 10 3p+N B 6	2126712	ETIMAT 10 3p+N C 6	2136712	ETIMAT 10 3p+N D 6	2156712	459	3/27
10		ETIMAT 10 3p+N B 10	2126714	ETIMAT 10 3p+N C 10	2136714	ETIMAT 10 3p+N D 10	2156714	459	3/27
13	400	ETIMAT 10 3p+N B 13	2126715	ETIMAT 10 3p+N C 13	2136715	ETIMAT 10 3p+N D 13	2156715	459	3/27
16		ETIMAT 10 3p+N B 16	2126716	ETIMAT 10 3p+N C 16	2136716	ETIMAT 10 3p+N D 16	2156716	459	3/27
20		ETIMAT 10 3p+N B 20	2126717	ETIMAT 10 3p+N C 20	2136717	ETIMAT 10 3p+N D 20	2156717	459	3/27
25		ETIMAT 10 3p+N B 25	2126718	ETIMAT 10 3p+N C 25	2136718	ETIMAT 10 3p+N D 25	2156718	459	3/27
32		ETIMAT 10 3p+N B 32	2126719	ETIMAT 10 3p+N C 32	2136719	ETIMAT 10 3p+N D 32	2156719	459	3/27
40		ETIMAT 10 3p+N B 40	2126720	ETIMAT 10 3p+N C 40	2136720	ETIMAT 10 3p+N D 40	2156720	459	3/27
50		ETIMAT 10 3p+N B 50	2126721	ETIMAT 10 3p+N C 50	2136721	ETIMAT 10 3p+N D 50	2156721	493	3/27
63		ETIMAT 10 3p+N B 63	2126722	ETIMAT 10 3p+N C 63	2136722	ETIMAT 10 3p+N D 63	2156722	493	3/27

The circuit breakers type ETIMAT 10 / 3-pole + N are suitable for use as 4-pole circuit breakers

Effect of the ambient temperature (°C) K_T on the tripping characteristics of ETIMAT 10



Load carrying capacity with side-by-side miniature circuit-breakers ETIMAT 10, K_N

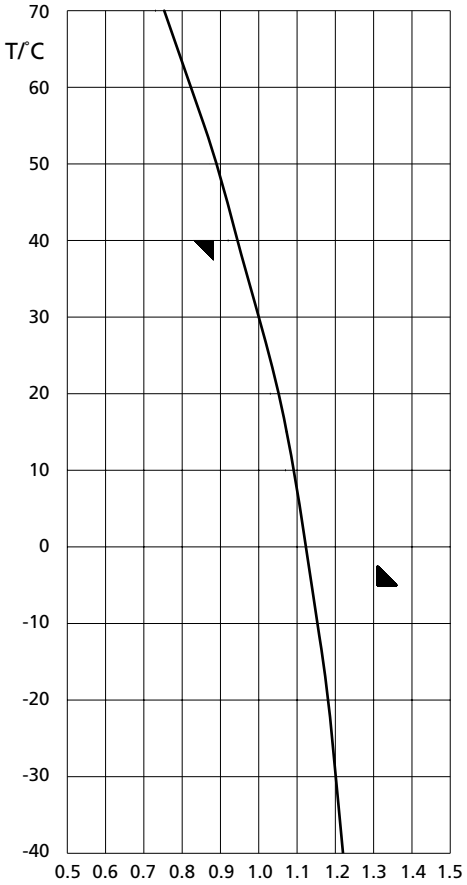


Influence of continuous load on the thermal trip behaviour of ETIMAT 10, KD

K_d -Factor taking into account the continuous load
For continuous load K_d=0,9

The greatest possible load on the circuit breaker ETIMAT 10
$$I = I_N \times K_N \times K_T \times K_d$$

Effect of the ambient temperature on the tripping characteristic of ETIMAT 6



I_n	Ambient temperature T/°C											
[A]	-40	-30	-20	-10	0	10	20	30	40	50	60	70
0,5	0,61	0,6	0,59	0,57	0,56	0,54	0,52	0,5	0,47	0,44	0,41	0,38
1	1,22	1,2	1,18	1,15	1,12	1,09	1,05	1	0,94	0,88	0,82	0,75
1,6	1,95	1,92	1,89	1,84	1,79	1,74	1,68	1,6	1,51	1,42	1,32	1,2
2	2,44	2,4	2,36	2,30	2,24	2,18	2,1	2	1,88	1,77	1,65	1,5
4	4,88	4,8	4,72	4,61	4,49	4,36	4,20	4	3,77	3,55	3,29	3
6	7,32	7,2	7,09	6,91	6,73	6,54	6,31	6	5,66	5,33	4,94	4,5
10	12,2	12	11,8	11,5	11,2	10,9	10,5	10	9,44	8,89	8,23	7,5
13	15,9	15,6	15,4	14,9	14,5	14,1	13,6	13	12,2	11,5	10,7	9,75
16	19,5	19,2	18,9	18,4	17,9	17,4	16,8	16	15,1	14,2	13,2	12
20	24,4	24	23,6	23	22,4	21,8	21	20	18,8	17,7	16,5	15
25	30,5	30	29,5	28,8	28	27,2	26,3	25	23,6	22,2	20,6	18,8
32	39	38,4	37,8	36,9	35,9	34,9	33,6	32	30,2	28,4	26,3	24
40	48,8	48	47,8	46,1	44,9	43,6	42	40	37,7	35,5	32,9	30
50	61	60	59,1	57,6	56,1	54,5	52,6	50	47,2	44,4	41,2	37,5
63	76,9	75,6	74,4	72,6	70,7	68,7	66,2	63	59,4	56	51,9	47,3

Correction factor is valid for current with times over 30 s

I(x°C) - test current at x ambient temperature

I(30°C) - test current at 30°C ambient temperature

$$k = \frac{I(x°C)}{I(30°C)}$$

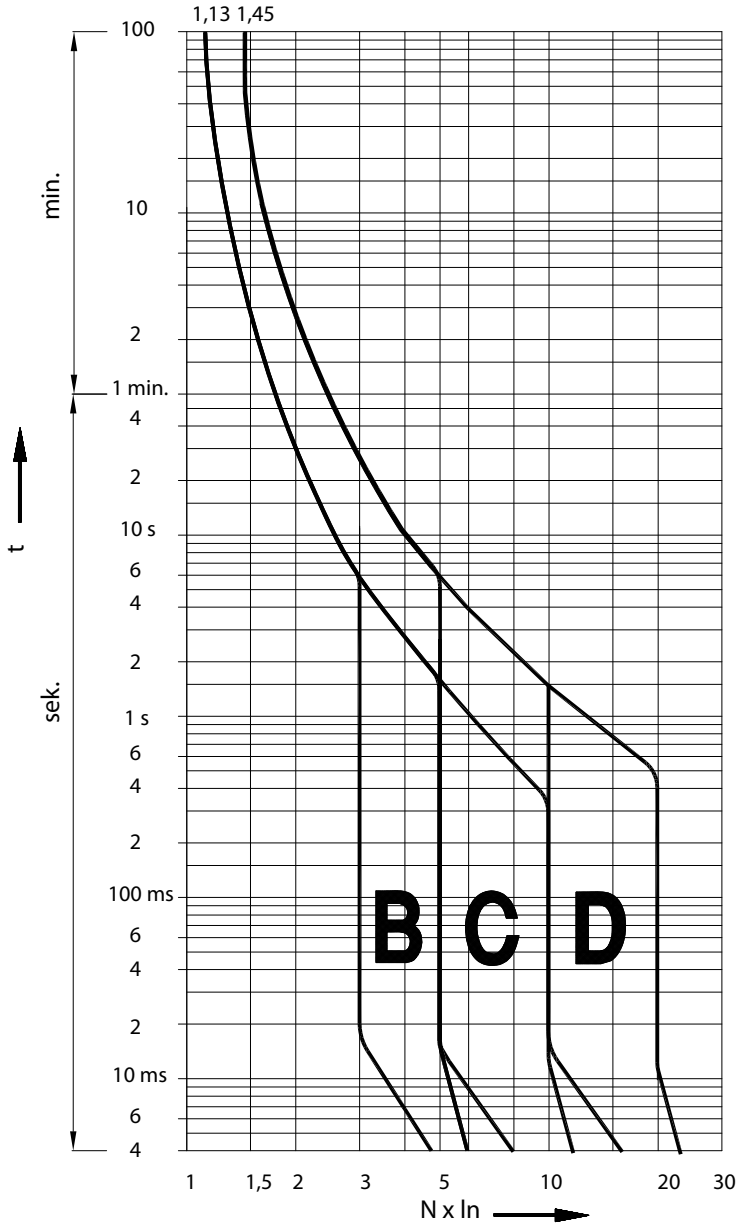
Resistance and power dissipation

characteristic	I_n [A]	R/pole [mΩ]	P/pole [w]
C, D	0,5	4500	1,12
	1	1800	1,80
	1,6	450	1,15
	2	280	1,08
	4	110	1,70
B, C, D	6	29	1,08
	10	13	1,30
	13	11,6	2,00
	16	9,0	2,30
	20	5,3	2,00
	25	4,1	2,50
	32	2,6	2,70
	40	1,96	3,20
	50	1,5	4,00
	63	1,15	4,80

Selectivity

ETIMAT	gG NV										
	20	25	32	35	40	50	63	80	100	125	160
B 6	0,5	0,78	1,2	1,4	1,7	2,4	4,6	6,0	6,0	6,0	6,0
B 10/13	0,45	0,65	1,1	1,3	1,6	2,2	4,0	6,0	6,0	6,0	6,0
B 16		0,55	1,0	1,2	1,5	2,0	3,6	5,5	6,0	6,0	6,0
B 20			0,85	1,2	1,5	1,8	3,1	4,6	6,0	6,0	6,0
B 25				1,1	1,4	1,7	2,9	4,0	6,0	6,0	6,0
B 32					1,3	1,6	2,5	3,4	5,5	6,0	6,0
B 40						1,5	2,2	3,1	4,9	6,0	6,0
B 50							2,1	2,9	4,0	6,0	6,0
B 63								2,5	3,3	5,1	6,0
ETIMAT	**gG NV**										
	20	**25**	**32**	**35**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
C,D 6	0,52	0,82	1,3	1,5	2,0	2,7	5,1	6,0	6,0	6,0	6,0
C,D 10/13	0,47	0,70	1,1	1,4	1,8	2,3	4,0	6,0	6,0	6,0	6,0
C,D 16		0,61	0,92	1,2	1,5	1,9	3,2	5,0	6,0	6,0	6,0
C,D 20			0,90	1,1	1,4	1,7	2,9	4,2	6,0	6,0	6,0
C,D 25				1,0	1,3	1,6	2,7	3,9	6,0	6,0	6,0
C,D 32					1,2	1,5	2,3	3,4	5,2	6,0	6,0
C,D 40						1,4	2,1	3,0	4,6	6,0	6,0
C,D 50							2,0	2,7	3,8	6,0	6,0
C,D 63								2,3	3,2	5,5	6,0

Time current characteristics I/t at 50 and 60Hz, ETIMAT



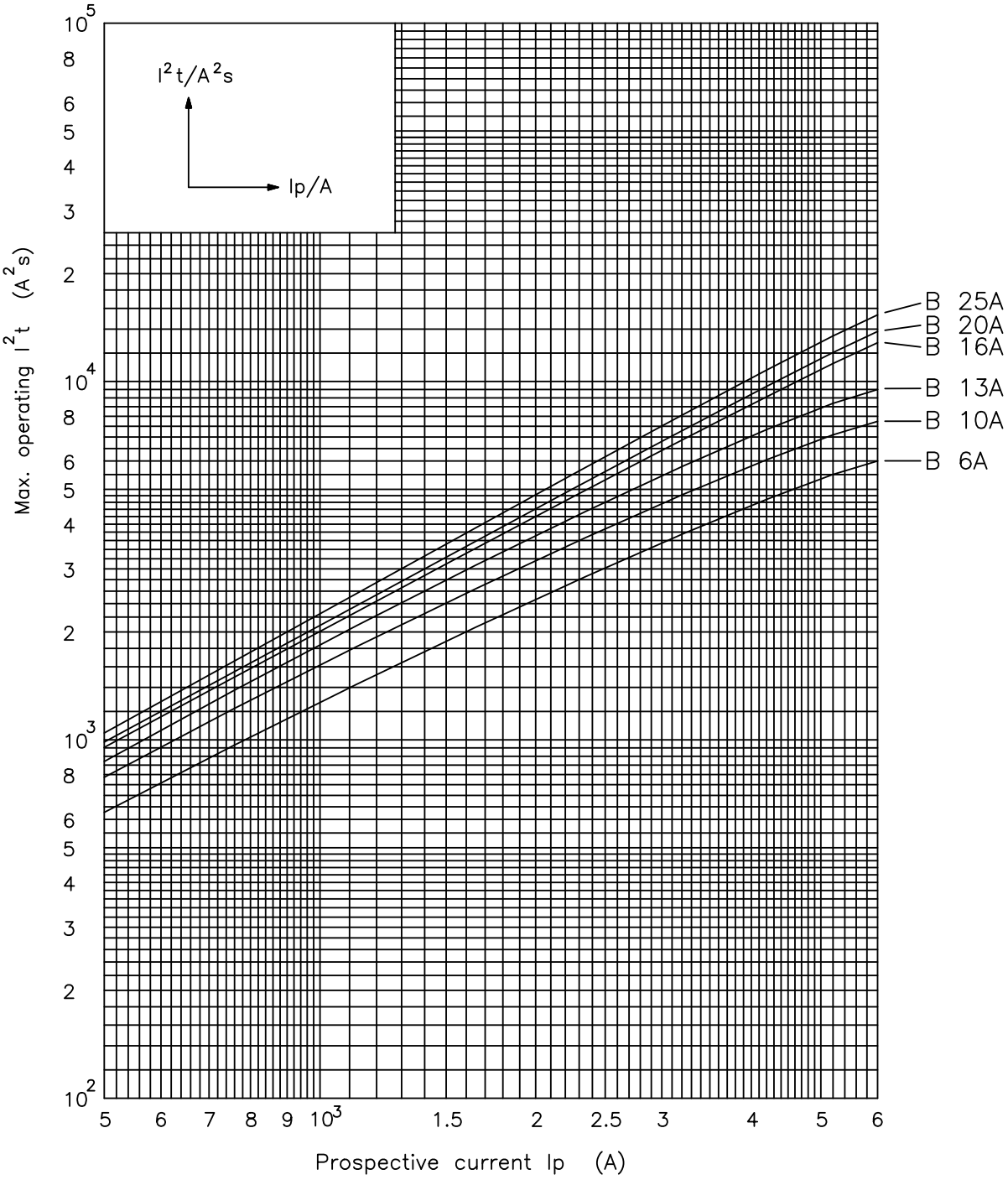
Conductor cross-section [mm²]	Number of single conductors, rigid, single-wire CU conductor				
	1	2	3	4	5
1,5	✓	✓	✓	✓	×
2,5	✓	✓	✓	×	×
4	✓	✓	✓	×	×
6	✓	✓	×	×	×
10	✓	✓	×	×	×
16	✓	×	×	×	×
25	✓	×	×	×	×

Remark: When you use more than 2 cables you have to be careful how those cables are inserted to ensure proper pressure on each cable

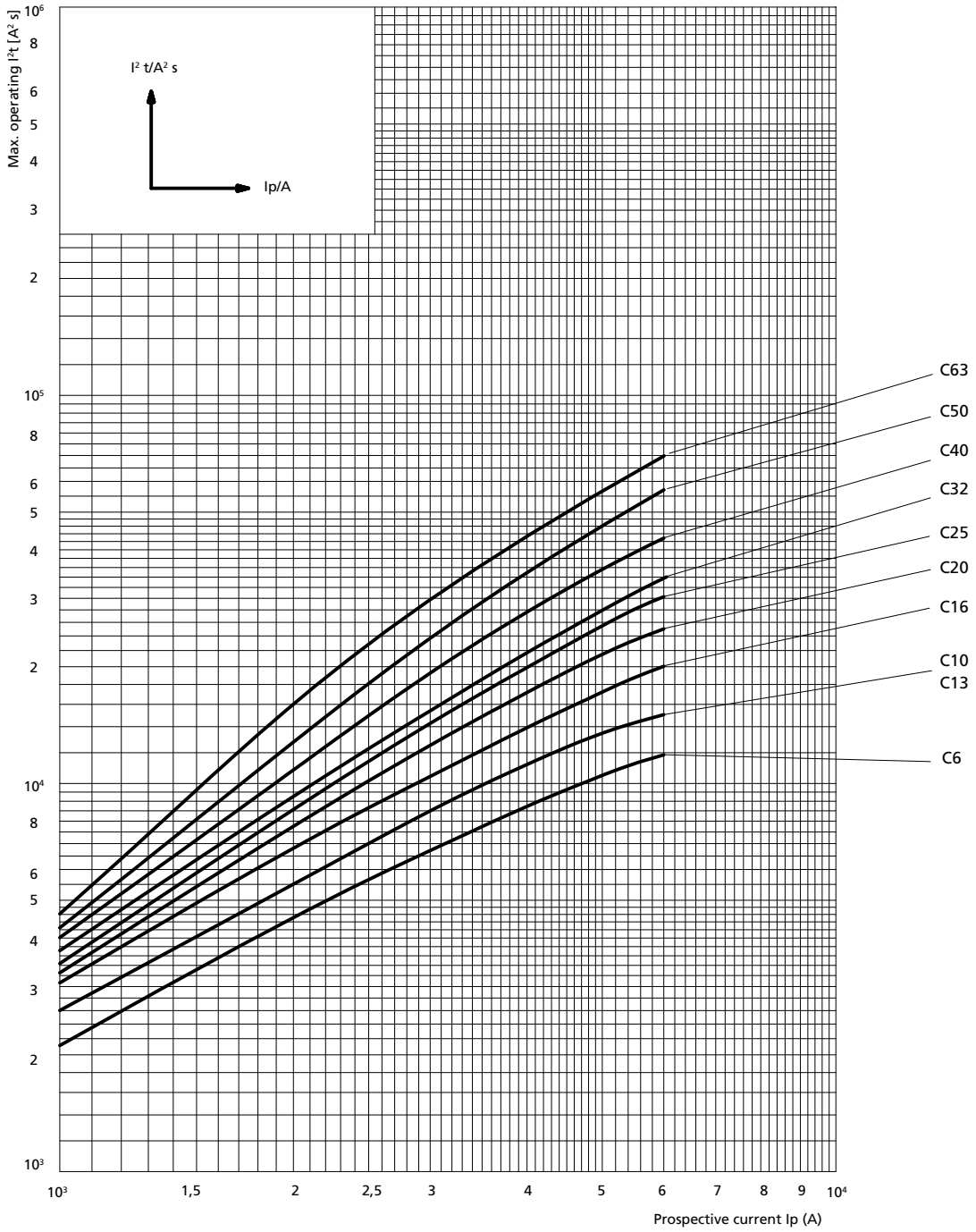
Conductor cross-section [mm²]	Number of single conductors, flexible Cu conductors with cable ferrule					
	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	×	×	×
10	✓	✓	×	×	×	×
16	✓	×	×	×	×	×
25	✓	×	×	×	×	×

Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

Melting energy characteristics I²t ETIMAT



Melting energy characteristics I²t ETIMAT



Miniature circuit breaker ETIMAT 1N

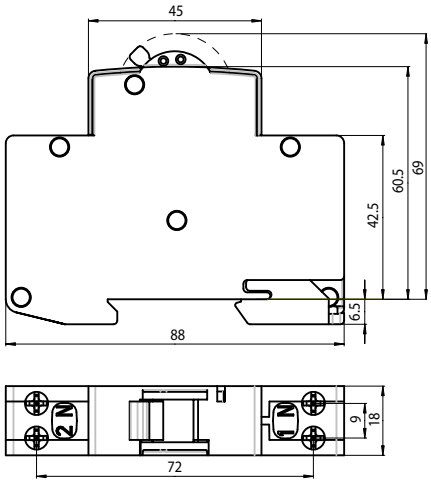
Rated short-circuit capacity	Rated current	Tripping characteristic
6 kA	**6 - 32 A**	**B, C**

Description
Miniature circuit breaker ETIMAT 1N is a device with protected line pole and switched neutral pole.

Advantages:
- 1-pole+N in single housing
- Sealing possibility
- Indication of contacts' state
- New method of mounting on the DIN rail and simple replacement

Technical data

Rated voltage U_n	230 V AC
Rated current I_n	6-32 A
Min. operating voltage	12V AC/DC
Max operating voltage	240V AC
Rated frequency f_n	50/60Hz
Rated short-circuit capacity	6.000 A
Back-up fuse	100 A gG
Tripping characteristics	B, C
Overvoltage category	III
Energy limiting class	3
Terminals	1-10mm^2, max. 1,5Nm
Terminal screw	M4 (Pozidrive PZ2)
Ambient temperature	-40°C ... +70°C
Storage temperature	-60°C ... +70°C
Build-in width	18mm
Mounting position	any
Supply possibility	top or bottom
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)
Standard	IEC 60898, EN 60898



ETIMAT 1N

I_n [A]	Type B	Code No.	Type C	Code No.	g	
6	ETIMAT 1N B 6A	002191101	ETIMAT 1N C 6A	002191121	118	12/108
10	ETIMAT 1N B 10A	002191102	ETIMAT 1N C 10A	002191122	118	12/108
13	ETIMAT 1N B 13A	002191103	ETIMAT 1N C 13A	002191123	118	12/108
16	ETIMAT 1N B 16A	002191104	ETIMAT 1N C 16A	002191124	118	12/108
20	ETIMAT 1N B 20A	002191105	ETIMAT 1N C 20A	002191125	118	12/108
25	ETIMAT 1N B 25A	002191106	ETIMAT 1N C 25A	002191126	118	12/108
32	ETIMAT 1N B 32A	002191107	ETIMAT 1N C 32A	002191127	118	12/108

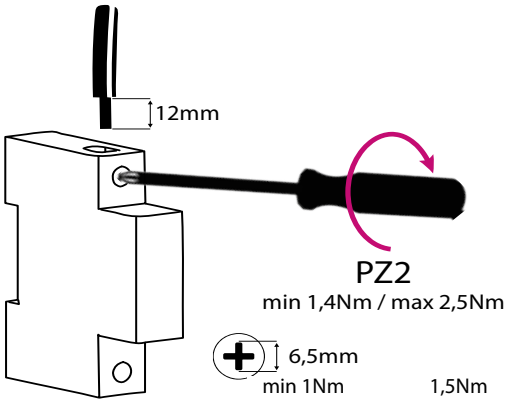
ASTI / Miniature Circuit Breakers

Conductor cross-section	Number of single conductors, rigid, single-wire CU conductor					
[mm²]	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	×
4	✓	✓	✓	×	×	×
6	✓	✓	×	×	×	×
10	✓	×	×	×	×	×

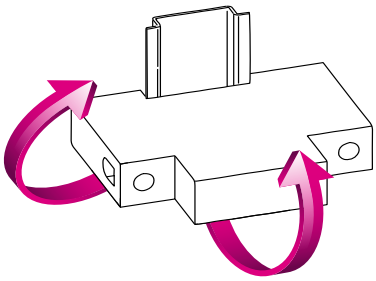
Remark: When you use more than 2 cables you have to be careful how those cables are inserted to ensure proper pressure on each cable

Conductor cross-section	Number of single conductors, flexible Cu conductors with cable ferrule					
[mm²]	1	2	3	4	5	6
1,5	✓	✓	✓	×	×	×
2,5	✓	✓	×	×	×	×
4	✓	✓	×	×	×	×
6	✓	×	×	×	×	×
10	✓	×	×	×	×	×

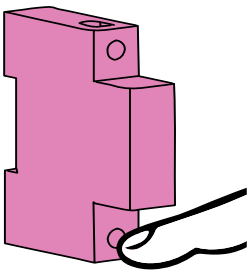
Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed



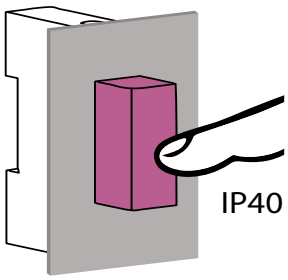
Any mounting position



0 ... 360°



IP20



Accessories for ETIMAT 6

PS ETIMAT is an auxiliary switch used for remote signalling of the MCB to which it is fixed. PS ETIMAT may also be fixed later of the state. Clamps are safe to touch. External dimensions comply with MCB, built-in width is 0,5 module (9 mm). During fitting, the MCB must be switched off.

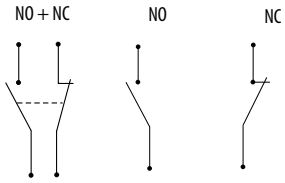
Technical data

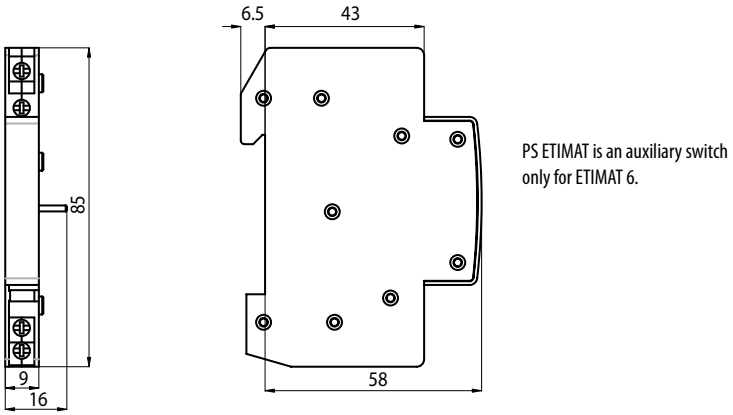
Rated current	6A (230 V AC), 1A (110 V DC), 0,5A (220V DC)
Terminal	1-4mm^2, max 0,5Nm
Terminal screw	M3 (PH1)
Contact	1 xb-contact (NC) 1 xa-contact (NO)
Conditional short-circuit current	1 kA with fuse-link 20 A
Mounting position	any
Standard	EN-62019

PS ETIMAT 10

Auxiliary switch PS ETIMAT

Type	Code No.	contacts	g	
PS ETIMAT 10 - MD	002159031	NO + NC	35	1/12
PS ETIMAT 10 - M	002159032	1 x NC	30	1/12
PS ETIMAT 10 - D	002159033	1 x NO	30	1/12



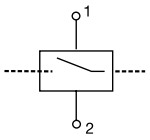


PS ETIMAT is an auxiliary switch only for ETIMAT 6.

DA ETIMAT shunt trip release is fixed to the right side of the miniature circuit breaker ETIMAT for remote release of the MCB. Dimensions correspond to those of MCB ETIMAT.

Technical data

Nominal voltage	24V AC/DC, 48V AC/DC, 230V AC/DC
Rated frequency	50/60Hz
Max. inrush current	3,6 A
Terminals	1-25mm², max 3Nm
Terminal Screw	M5 (Pozidrive PZ2)
Build-in width	18mm
Mounting position	any
Mounting on the rail	EN 60715 (EN 50022)

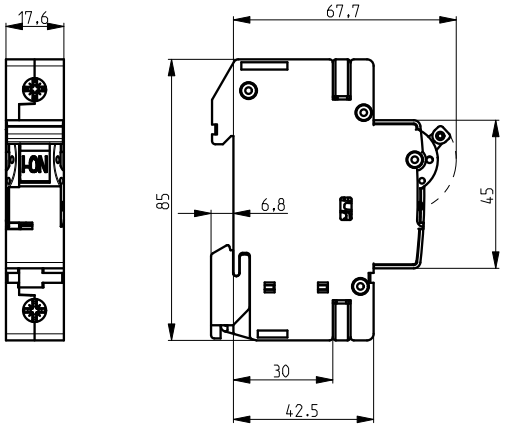


DA ETIMAT is a shunt trip release only for ETIMAT 6.

DA ETIMAT 10

Shunt trip release DA ETIMAT

Type	Code No.	g	
DA ETIMAT 10 230 V AC/DC	002159301	110	1/54
DA ETIMAT 10 48 V AC/DC	002159311	110	1/54
DA ETIMAT 10 24V AC/DC	002159312	110	1/54



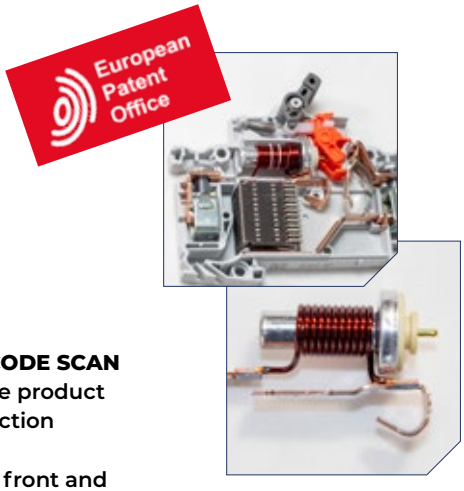
Sealing piece ETIMAT

Code No.	g	
002159041	2	12

Miniature circuit breakers ETIMAT P - NEW GENERATION

EXACT TRACEABILITY AND HIGHEST QUALITY CONTROL
Fully automated assembly line with 17 different tests and measurements during asssembly process to ensure best functionality of each finished product. All important components are marked with a DMC code, containing individual test results and thus ensuring exact traceability and highest quality control of every MCB.

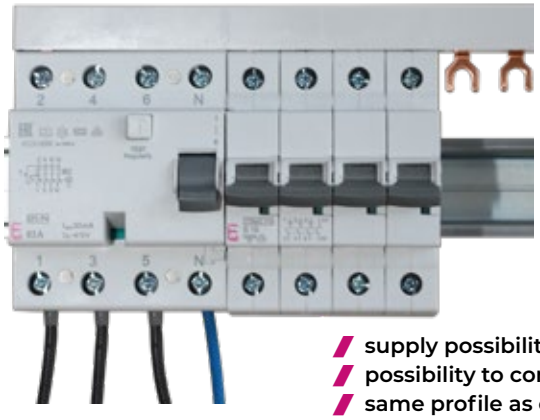
PATENTED CONSTRUCTION
The unique technology of combined thermomagnetic tripping unit with integrated thermal release prevents both manual tampering of the overload settings and material deterioration, ensuring precise and reliable overload tripping through the entire lifecycle of the MCB.

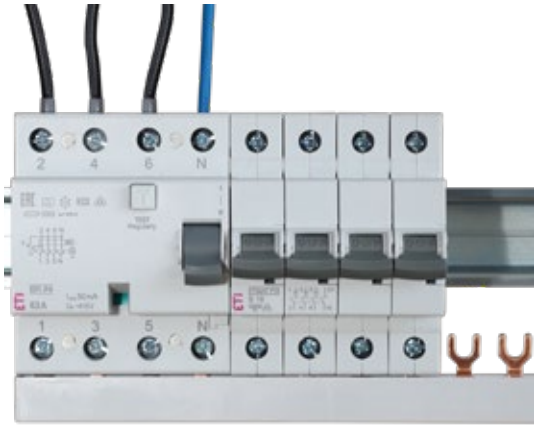


ALL DATA AVAILABLE WITH A SINGLE QR CODE SCAN
Every product has a QR code with a link to the product webpage with all relevant information, instruction manuals and other technical materials.
All important technical data is printed on the front and side of the MCB.
Every product is marked with EAN code.

SUPERIOR TECHNICAL FEATURES
reduced power dissipation
high electrical endurance: 20.000 operation cycles
operation in DC circuits with voltage up to 60V DC/pole
construction solutions protected by two international patents

SPECIAL RESET VERSION
In the reset version, the toggle position clearly indicates the reason for tripping, preventing user mistakes and always making it clear whether the system turning off was intentional (manual) or the result of a fault in the electrical circuit.





- supply possibility from top or bottom
- possibility to connect wires to terminals up to 25 mm²
- same profile as our other modular devices resulting in a coordinated and streamlined look to the installation

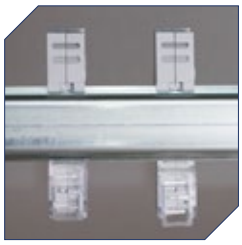
ASTI / Miniature Circuit Breakers

- The possibility of mounting up to 3 auxiliary / signal switches

- 4-module devices are equipped with sturdy pins, thus ensuring a rigid / smooth movement of the toggles. All the MCBs also offer enough space for marking labels.

- Double connection possibility - all MCBs can be simultaneously connected to busbar and conductor, both from above and below

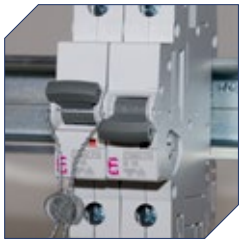
- NO WOBBLE™ technology new snapping unit enables easy, firm and secure DIN-rail mounting and replacement



- Trip-free mechanism ensures that MCB trips even if the toggle is held in ON position
- Separate indication of contacts' real state (independent of the toggle position) ensures additional user safety
- Green flag: contacts open, red flag: contacts closed

- The possibility of mounting a terminal cover
- The possibility of locking the handle in the "ON/OFF" position

- Better protection of terminals against touching the parts under voltage
- "ON/OFF" mark on the switch button
- The possibility of sealing in "ON" or "OFF" position



Miniature circuit breaker ETIMAT P6

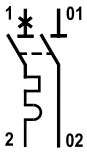
Rated short-circuit capacity	Rated current	Tripping characteristic
6 kA	**0,5 - 63 A**	**B, C, D**

Technical data

Rated voltage	240/415V AC; max 60V DC/pol
Min. operating voltage	12V AC/DC
Max operating voltage	250/440V AC
Rated current	0,5-63A
Rated frequency	50/60Hz
Rated insulation voltage	500V
Rated impulse withstand voltage	6kV (acc. to 60947-2)
Shock resistance	30g, min 2 shocks, t=13ms
Rated short-circuit capacity	6 kA
Energy limiting class	3; B,C
Tripping characteristic	B, C, D
Back-up fuse	100A gG
Index of protection	IP 20 (IP 40)
Terminals	1-25mm², min 1,4Nm / max 2,5Nm
Terminal screw	M5 (Pozidrive PZ2)
Mechanical endurance	20.000 op. cycles
Electrical endurance	20.000 op. cycles
Ambient temperature	max -40°C ... +70°C
Storage temperature	max -60°C ... +70°C
Supply possibility	top or bottom
Build-in width	18mm/pol
Insulating class	B
Overvoltage category	III
Pollution degree	2
Mounting on the rail	EN 60715
Mounting position	any
Sealing possibility	✓
Terminal cover	✓
Contact position indicator	✓
Locking device	✓
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)
Standards	IEC/EN 60898-1, IEC 60947-2

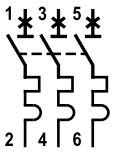
1p

1p+n

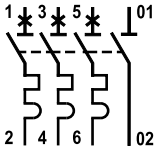


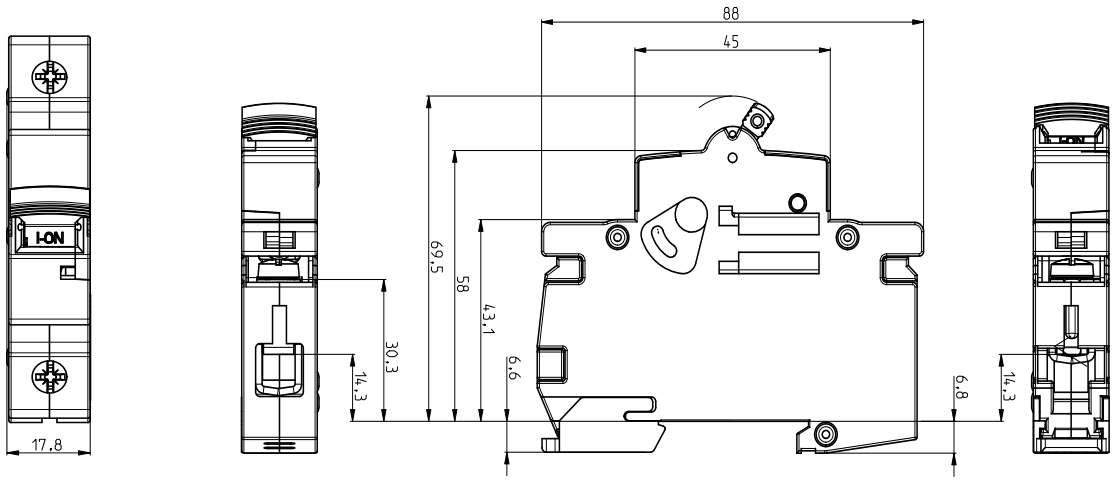
2p

3p



3p+n





Tripping characteristics

Characteristic	Test current	Tripping time	Result
B, C, D	1,13 I_n	t ≥ 3600 s	No tripping
B, C, D	1,45 I_n	t < 3600 s	Tripping
B, C, D	2,55 I_n	1s < t < 60 s	Tripping
B	3,00 I_n	t ≤ 0,1 s	No tripping
C	5,00 I_n	t ≤ 0,1 s	No tripping
D	10,00 I_n	t ≤ 0,1 s	No tripping
B	5,00 I_n	t < 0,1 s	Tripping
C	10,00 I_n	t < 0,1 s	Tripping
D	20,00 I_n	t < 0,1 s	Tripping

LEARN MORE

1-pole

I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	Type D	Code No. D	
0,5	240/415	/	/	ETIMAT P6 1p C 0,5	001900021	ETIMAT P6 1p D 0,5	001900041	12/108
1		ETIMAT P6 1p B 1	001900002	ETIMAT P6 1p C 1	001900022	ETIMAT P6 1p D 1	001900042	12/108
1,6		ETIMAT P6 1p B 1,6	001900003	ETIMAT P6 1p C 1,6	001900023	ETIMAT P6 1p D 1,6	001900043	12/108
2		ETIMAT P6 1p B 2	001900004	ETIMAT P6 1p C 2	001900024	ETIMAT P6 1p D 2	001900044	12/108
3		ETIMAT P6 1p B 3	001900005	ETIMAT P6 1p C 3	001900025	ETIMAT P6 1p D 3	001900045	12/108
4		ETIMAT P6 1p B 4	001900006	ETIMAT P6 1p C 4	001900026	ETIMAT P6 1p D 4	001900046	12/108
6		ETIMAT P6 1p B 6	001900007	ETIMAT P6 1p C 6	001900027	ETIMAT P6 1p D 6	001900047	12/108
10		ETIMAT P6 1p B 10	001900008	ETIMAT P6 1p C 10	001900028	ETIMAT P6 1p D 10	001900048	12/108
13		ETIMAT P6 1p B 13	001900009	ETIMAT P6 1p C 13	001900029	ETIMAT P6 1p D 13	001900049	12/108
16		ETIMAT P6 1p B 16	001900010	ETIMAT P6 1p C 16	001900030	ETIMAT P6 1p D 16	001900050	12/108
20		ETIMAT P6 1p B 20	001900011	ETIMAT P6 1p C 20	001900031	ETIMAT P6 1p D 20	001900051	12/108
25		ETIMAT P6 1p B 25	001900012	ETIMAT P6 1p C 25	001900032	ETIMAT P6 1p D 25	001900052	12/108
32		ETIMAT P6 1p B 32	001900013	ETIMAT P6 1p C 32	001900033	ETIMAT P6 1p D 32	001900053	12/108
40		ETIMAT P6 1p B 40	001900014	ETIMAT P6 1p C 40	001900034	ETIMAT P6 1p D 40	001900054	12/108
50		ETIMAT P6 1p B 50	001900015	ETIMAT P6 1p C 50	001900035	ETIMAT P6 1p D 50	001900055	12/108
63		ETIMAT P6 1p B 63	001900016	ETIMAT P6 1p C 63	001900036	/	/	12/108

1-pole + N

I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	Type D	Code No. D	
0,5	240	/	/	ETIMAT P6 1p+N C 0,5	001900121	ETIMAT P6 1p+N D 0,5	001900141	6/54
1		ETIMAT P6 1p+N B 1	001900102	ETIMAT P6 1p+N C 1	001900122	ETIMAT P6 1p+N D 1	001900142	6/54
1,6		ETIMAT P6 1p+N B 1,6	001900103	ETIMAT P6 1p+N C 1,6	001900123	ETIMAT P6 1p+N D 1,6	001900143	6/54
2		ETIMAT P6 1p+N B 2	001900104	ETIMAT P6 1p+N C 2	001900124	ETIMAT P6 1p+N D 2	001900144	6/54
3		ETIMAT P6 1p+N B 3	001900105	ETIMAT P6 1p+N C 3	001900125	ETIMAT P6 1p+N D 3	001900145	6/54
4		ETIMAT P6 1p+N B 4	001900106	ETIMAT P6 1p+N C 4	001900126	ETIMAT P6 1p+N D 4	001900146	6/54
6		ETIMAT P6 1p+N B 6	001900107	ETIMAT P6 1p+N C 6	001900127	ETIMAT P6 1p+N D 6	001900147	6/54
10		ETIMAT P6 1p+N B 10	001900108	ETIMAT P6 1p+N C 10	001900128	ETIMAT P6 1p+N D 10	001900148	6/54
13		ETIMAT P6 1p+N B 13	001900109	ETIMAT P6 1p+N C 13	001900129	ETIMAT P6 1p+N D 13	001900149	6/54
16		ETIMAT P6 1p+N B 16	001900110	ETIMAT P6 1p+N C 16	001900130	ETIMAT P6 1p+N D 16	001900150	6/54
20		ETIMAT P6 1p+N B 20	001900111	ETIMAT P6 1p+N C 20	001900131	ETIMAT P6 1p+N D 20	001900151	6/54
25		ETIMAT P6 1p+N B 25	001900112	ETIMAT P6 1p+N C 25	001900132	ETIMAT P6 1p+N D 25	001900152	6/54
32		ETIMAT P6 1p+N B 32	001900113	ETIMAT P6 1p+N C 32	001900133	ETIMAT P6 1p+N D 32	001900153	6/54
40		ETIMAT P6 1p+N B 40	001900114	ETIMAT P6 1p+N C 40	001900134	ETIMAT P6 1p+N D 40	001900154	6/54
50		ETIMAT P6 1p+N B 50	001900115	ETIMAT P6 1p+N C 50	001900135	ETIMAT P6 1p+N D 50	001900155	6/54
63		ETIMAT P6 1p+N B 63	001900116	ETIMAT P6 1p+N C 63	001900136	/	/	6/54

2-pole

I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	Type D	Code No. D	
0,5	415	/	/	ETIMAT P6 2p C 0,5	001900221	ETIMAT P6 2p D 0,5	001900241	6/54
1		ETIMAT P6 2p B 1	001900202	ETIMAT P6 2p C 1	001900222	ETIMAT P6 2p D 1	001900242	6/54
1,6		ETIMAT P6 2p B 1,6	001900203	ETIMAT P6 2p C 1,6	001900223	ETIMAT P6 2p D 1,6	001900243	6/54
2		ETIMAT P6 2p B 2	001900204	ETIMAT P6 2p C 2	001900224	ETIMAT P6 2p D 2	001900244	6/54
3		ETIMAT P6 2p B 3	001900205	ETIMAT P6 2p C 3	001900225	ETIMAT P6 2p D 3	001900245	6/54
4		ETIMAT P6 2p B 4	001900206	ETIMAT P6 2p C 4	001900226	ETIMAT P6 2p D 4	001900246	6/54
6		ETIMAT P6 2p B 6	001900207	ETIMAT P6 2p C 6	001900227	ETIMAT P6 2p D 6	001900247	6/54
10		ETIMAT P6 2p B 10	001900208	ETIMAT P6 2p C 10	001900228	ETIMAT P6 2p D 10	001900248	6/54
13		ETIMAT P6 2p B 13	001900209	ETIMAT P6 2p C 13	001900229	ETIMAT P6 2p D 13	001900249	6/54
16		ETIMAT P6 2p B 16	001900210	ETIMAT P6 2p C 16	001900230	ETIMAT P6 2p D 16	001900250	6/54
20		ETIMAT P6 2p B 20	001900211	ETIMAT P6 2p C 20	001900231	ETIMAT P6 2p D 20	001900251	6/54
25		ETIMAT P6 2p B 25	001900212	ETIMAT P6 2p C 25	001900232	ETIMAT P6 2p D 25	001900252	6/54
32		ETIMAT P6 2p B 32	001900213	ETIMAT P6 2p C 32	001900233	ETIMAT P6 2p D 32	001900253	6/54
40		ETIMAT P6 2p B 40	001900214	ETIMAT P6 2p C 40	001900234	ETIMAT P6 2p D 40	001900254	6/54
50		ETIMAT P6 2p B 50	001900215	ETIMAT P6 2p C 50	001900235	ETIMAT P6 2p D 50	001900255	6/54
63		ETIMAT P6 2p B 63	001900216	ETIMAT P6 2p C 63	001900236	/	/	6/54

3-pole

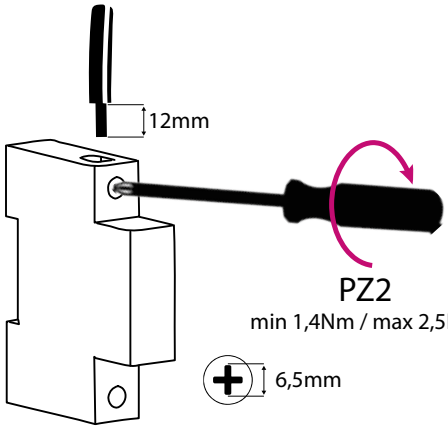
I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	Type D	Code No. D	
0,5	415	/	/	ETIMAT P6 3p C 0,5	001900321	ETIMAT P6 3p D 0,5	001900341	4/36
1		ETIMAT P6 3p B 1	001900302	ETIMAT P6 3p C 1	001900322	ETIMAT P6 3p D 1	001900342	4/36
1,6		ETIMAT P6 3p B 1,6	001900303	ETIMAT P6 3p C 1,6	001900323	ETIMAT P6 3p D 1,6	001900343	4/36
2		ETIMAT P6 3p B 2	001900304	ETIMAT P6 3p C 2	001900324	ETIMAT P6 3p D 2	001900344	4/36
3		ETIMAT P6 3p B 3	001900305	ETIMAT P6 3p C 3	001900325	ETIMAT P6 3p D 3	001900345	4/36
4		ETIMAT P6 3p B 4	001900306	ETIMAT P6 3p C 4	001900326	ETIMAT P6 3p D 4	001900346	4/36
6		ETIMAT P6 3p B 6	001900307	ETIMAT P6 3p C 6	001900327	ETIMAT P6 3p D 6	001900347	4/36
10		ETIMAT P6 3p B 10	001900308	ETIMAT P6 3p C 10	001900328	ETIMAT P6 3p D 10	001900348	4/36
13		ETIMAT P6 3p B 13	001900309	ETIMAT P6 3p C 13	001900329	ETIMAT P6 3p D 13	001900349	4/36
16		ETIMAT P6 3p B 16	001900310	ETIMAT P6 3p C 16	001900330	ETIMAT P6 3p D 16	001900350	4/36
20		ETIMAT P6 3p B 20	001900311	ETIMAT P6 3p C 20	001900331	ETIMAT P6 3p D 20	001900351	4/36
25		ETIMAT P6 3p B 25	001900312	ETIMAT P6 3p C 25	001900332	ETIMAT P6 3p D 25	001900352	4/36
32		ETIMAT P6 3p B 32	001900313	ETIMAT P6 3p C 32	001900333	ETIMAT P6 3p D 32	001900353	4/36
40		ETIMAT P6 3p B 40	001900314	ETIMAT P6 3p C 40	001900334	ETIMAT P6 3p D 40	001900354	4/36
50		ETIMAT P6 3p B 50	001900315	ETIMAT P6 3p C 50	001900335	ETIMAT P6 3p D 50	001900355	4/36
63		ETIMAT P6 3p B 63	001900316	ETIMAT P6 3p C 63	001900336	/	/	4/36

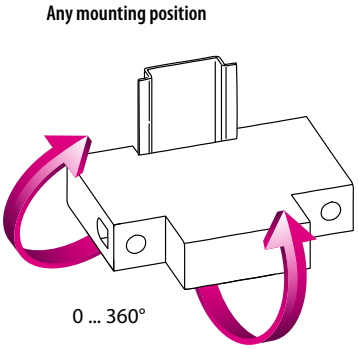
3-pole + N

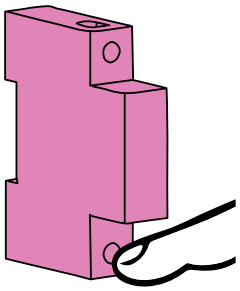
I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	Type D	Code No. D	
0,5	415	/	/	ETIMAT P6 3p+N C 0,5	001900421	ETIMAT P6 3p+N D 0,5	001900441	3/27
1		ETIMAT P6 3p+N B 1	001900402	ETIMAT P6 3p+N C 1	001900422	ETIMAT P6 3p+N D 1	001900442	3/27
1,6		ETIMAT P6 3p+N B 1,6	001900403	ETIMAT P6 3p+N C 1,6	001900423	ETIMAT P6 3p+N D 1,6	001900443	3/27
2		ETIMAT P6 3p+N B 2	001900404	ETIMAT P6 3p+N C 2	001900424	ETIMAT P6 3p+N D 2	001900444	3/27
3		ETIMAT P6 3p+N B 3	001900405	ETIMAT P6 3p+N C 3	001900425	ETIMAT P6 3p+N D 3	001900445	3/27
4		ETIMAT P6 3p+N B 4	001900406	ETIMAT P6 3p+N C 4	001900426	ETIMAT P6 3p+N D 4	001900446	3/27
6		ETIMAT P6 3p+N B 6	001900407	ETIMAT P6 3p+N C 6	001900427	ETIMAT P6 3p+N D 6	001900447	3/27
10		ETIMAT P6 3p+N B 10	001900408	ETIMAT P6 3p+N C 10	001900428	ETIMAT P6 3p+N D 10	001900448	3/27
13		ETIMAT P6 3p+N B 13	001900409	ETIMAT P6 3p+N C 13	001900429	ETIMAT P6 3p+N D 13	001900449	3/27
16		ETIMAT P6 3p+N B 16	001900410	ETIMAT P6 3p+N C 16	001900430	ETIMAT P6 3p+N D 16	001900450	3/27
20		ETIMAT P6 3p+N B 20	001900411	ETIMAT P6 3p+N C 20	001900431	ETIMAT P6 3p+N D 20	001900451	3/27
25		ETIMAT P6 3p+N B 25	001900412	ETIMAT P6 3p+N C 25	001900432	ETIMAT P6 3p+N D 25	001900452	3/27
32		ETIMAT P6 3p+N B 32	001900413	ETIMAT P6 3p+N C 32	001900433	ETIMAT P6 3p+N D 32	001900453	3/27
40		ETIMAT P6 3p+N B 40	001900414	ETIMAT P6 3p+N C 40	001900434	ETIMAT P6 3p+N D 40	001900454	3/27
50		ETIMAT P6 3p+N B 50	001900415	ETIMAT P6 3p+N C 50	001900435	ETIMAT P6 3p+N D 50	001900455	3/27
63		ETIMAT P6 3p+N B 63	001900416	ETIMAT P6 3p+N C 63	001900436	/	/	3/27

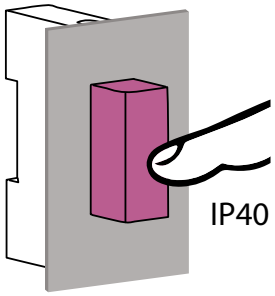
Circuit breakers type ETIMAT P6 / 3-pole + N are suitable for use as 4-pole circuit breakers

ASTI / Miniature Circuit Breakers

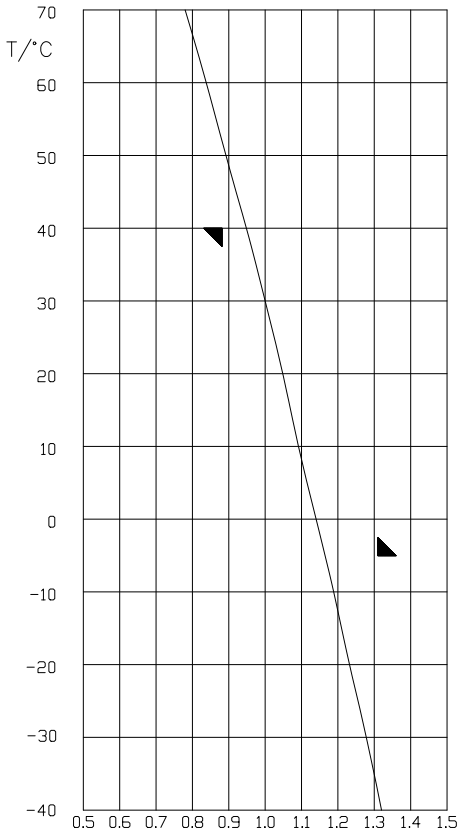





IP20



Effect of the ambient temperature on the tripping characteristic



I_n	Ambient temperature T/°C											
[A]	-40	-30	-20	-10	0	10	20	30	40	50	60	70
0,5	0,66	0,64	0,62	0,60	0,57	0,55	0,53	0,5	0,48	0,45	0,42	0,39
1	1,32	1,28	1,23	1,19	1,14	1,09	1,05	1	0,95	0,89	0,84	0,78
1,6	2,11	2,05	1,97	1,90	1,82	1,74	1,68	1,6	1,52	1,42	1,34	1,25
2	2,64	2,56	2,46	2,38	2,28	2,18	2,10	2	1,90	1,78	1,68	1,56
4	5,28	5,12	4,92	4,76	4,56	4,36	4,20	4	3,80	3,56	3,36	3,12
6	7,92	7,68	7,38	7,14	6,84	6,54	6,30	6	5,70	5,34	5,04	4,68
10	13,2	12,8	12,3	11,9	11,4	10,9	10,5	10	9,50	8,90	8,40	7,80
13	17,2	16,6	16,0	15,5	14,8	14,2	13,7	13	12,4	11,6	10,9	10,1
16	21,1	20,5	19,7	19,0	18,2	17,4	16,8	16	15,2	14,2	13,4	12,5
20	26,4	25,6	24,6	23,8	22,8	21,8	21,0	20	19,0	17,8	16,8	15,6
25	33,0	32,0	30,8	29,8	28,5	27,3	26,3	25	23,8	22,3	21,0	19,5
32	42,2	41,0	39,4	38,1	36,5	34,9	33,6	32	30,4	28,5	26,9	25,0
40	52,8	51,2	49,2	47,6	45,6	43,6	42,0	40	38,0	35,6	33,6	31,2
50	66,0	64,0	61,5	59,5	57,0	54,5	52,6	50	47,5	44,5	42,0	39,0
63	83,2	80,6	77,5	75,0	71,8	68,7	66,2	63	59,9	56,1	52,9	49,1

Correction factor is valid for current with times over 30 s
I(x°C) - test current at x ambient temperature
I(30°C) - test current at 30°C ambient temperature

$$k = \frac{I(x°C)}{I(30°C)}$$

Resistance and power dissipation

characteristic	I_n [A]	R/pole [mΩ]	P/pole [w]
B, C	0,5	3587	1,16
	1	935	1,21
	1,6	382	1,26
	2	264	1,37
	3	/	/
	4	69,6	1,38
	6	40,3	1,96
	10	16,9	2,00
	13	11,4	2,08
	16	8,17	2,26
	20	6,73	2,53
	25	5,03	2,96
	32	3,92	3,44
	40	/	/
	50	2,22	3,57
	63	1,71	4,59
D	0,5	/	/
	1	1183	1,55
	1,6	/	/
	2	303	1,58
	3	135	1,52
	4	81,8	1,66
	6	40,0	1,78
	10	17,3	1,57
	13	11,3	2,04
	16	8,59	2,31
	20	7,17	2,73
	25	4,77	2,91
	32	3,92	3,44
	40	/	/
	50	/	/
	63	/	/

Selectivity

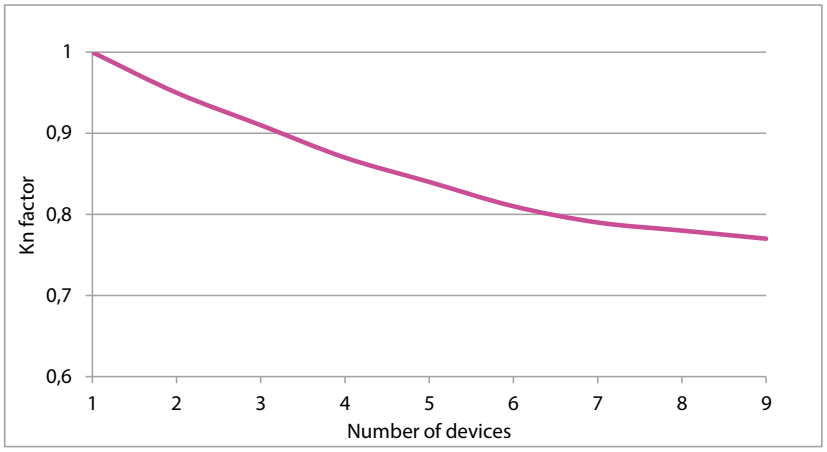
ETIMAT	gG NV										
	20	25	32	35	40	50	63	80	100	125	160
B 6	0,5	0,78	1,2	1,4	1,7	2,4	4,6	6,0	6,0	6,0	6,0
B 10/13	0,45	0,65	1,1	1,3	1,6	2,2	4,0	6,0	6,0	6,0	6,0
B 16		0,55	1,0	1,2	1,5	2,0	3,6	5,5	6,0	6,0	6,0
B 20			0,85	1,2	1,5	1,8	3,1	4,6	6,0	6,0	6,0
B 25				1,1	1,4	1,7	2,9	4,0	6,0	6,0	6,0
B 32					1,3	1,6	2,5	3,4	5,5	6,0	6,0
B 40						1,5	2,2	3,1	4,9	6,0	6,0
B 50							2,1	2,9	4,0	6,0	6,0
B 63								2,5	3,3	5,1	6,0
ETIMAT	**gG NV**										
	20	**25**	**32**	**35**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
C,D 6	0,52	0,82	1,3	1,5	2,0	2,7	5,1	6,0	6,0	6,0	6,0
C,D 10/13	0,47	0,70	1,1	1,4	1,8	2,3	4,0	6,0	6,0	6,0	6,0
C,D 16		0,61	0,92	1,2	1,5	1,9	3,2	5,0	6,0	6,0	6,0
C,D 20			0,90	1,1	1,4	1,7	2,9	4,2	6,0	6,0	6,0
C,D 25				1,0	1,3	1,6	2,7	3,9	6,0	6,0	6,0
C,D 32					1,2	1,5	2,3	3,4	5,2	6,0	6,0
C,D 40						1,4	2,1	3,0	4,6	6,0	6,0
C,D 50							2,0	2,7	3,8	6,0	6,0
C,D 63								2,3	3,2	5,5	6,0

R: measured at 0.1*In
P: measured at In

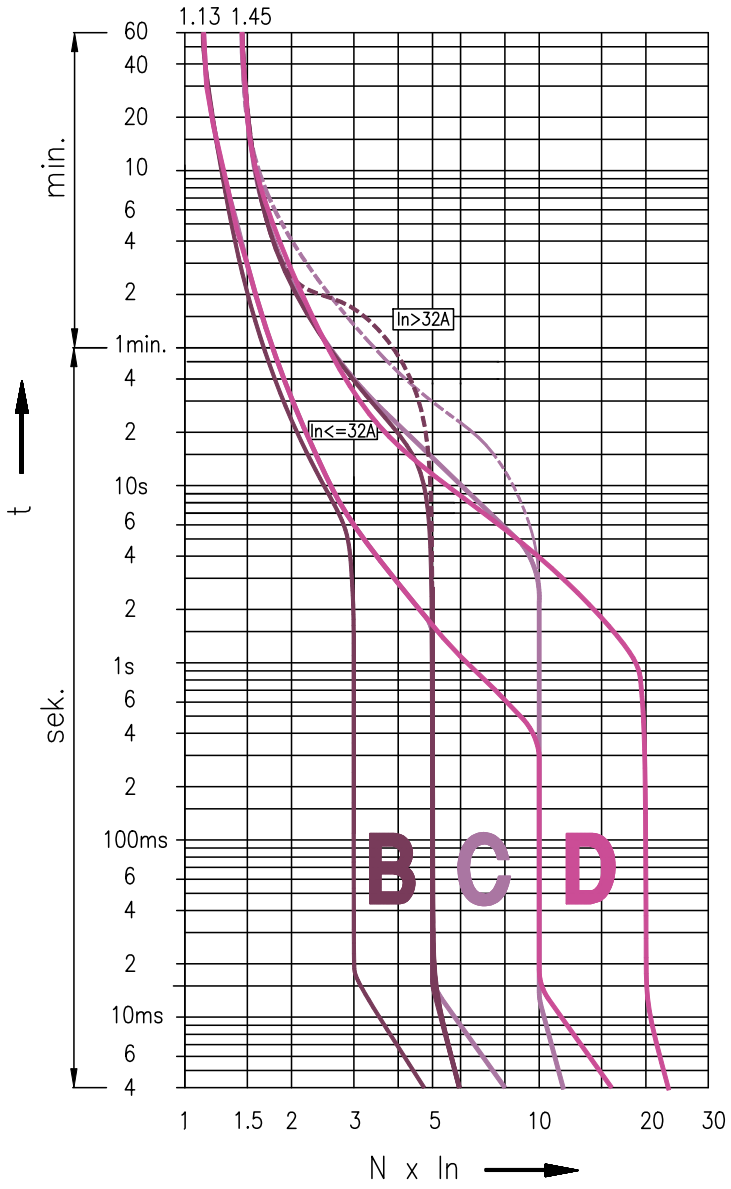
Effect of number of poles on the tripping characteristic ETIMAT P6

Correction factor K_n

Number of devices	Kn
1	1
2	0,95
3	0,91
4	0,87
5	0,84
6	0,81
7	0,79
8	0,78
9	0,77
>9	0,77



Time current characteristics I/t at 50 and 60Hz, ETIMAT P6



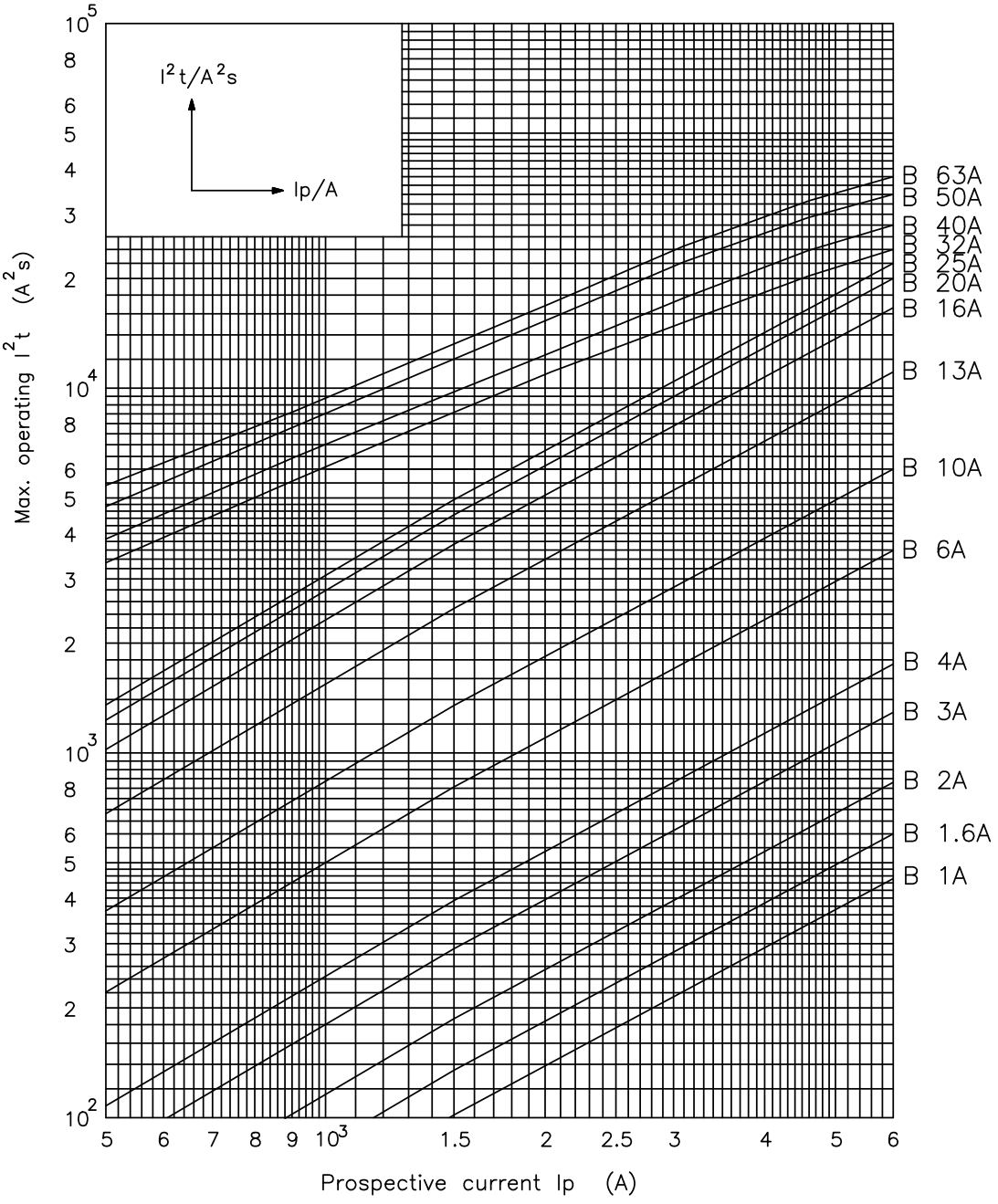
Conductor cross-section	Number of single conductors, rigid, single-wire CU conductor				
[mm²]	1	2	3	4	5
1,5	✓	✓	✓	✓	×
2,5	✓	✓	✓	×	×
4	✓	✓	✓	×	×
6	✓	✓	×	×	×
10	✓	✓	×	×	×
16	✓	×	×	×	×
25	✓	×	×	×	×

Remark: When you use more than 2 cables you have to be careful how those cables are inserted to ensure proper pressure on each cable

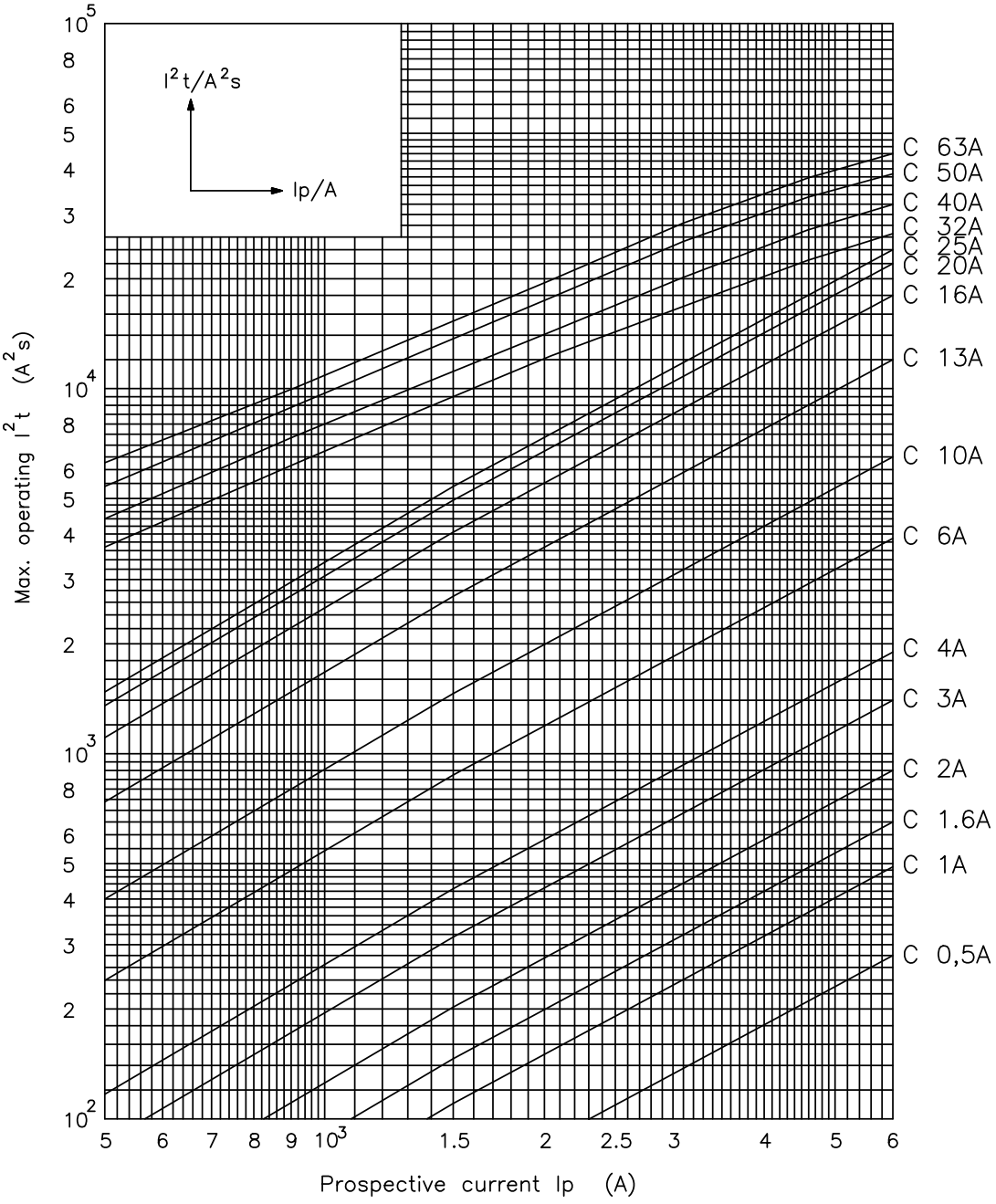
Conductor cross-section	Number of single conductors, flexible Cu conductors with cable ferrule					
[mm²]	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	×	×	×
10	✓	✓	×	×	×	×
16	✓	×	×	×	×	×
25	✓	×	×	×	×	×

Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

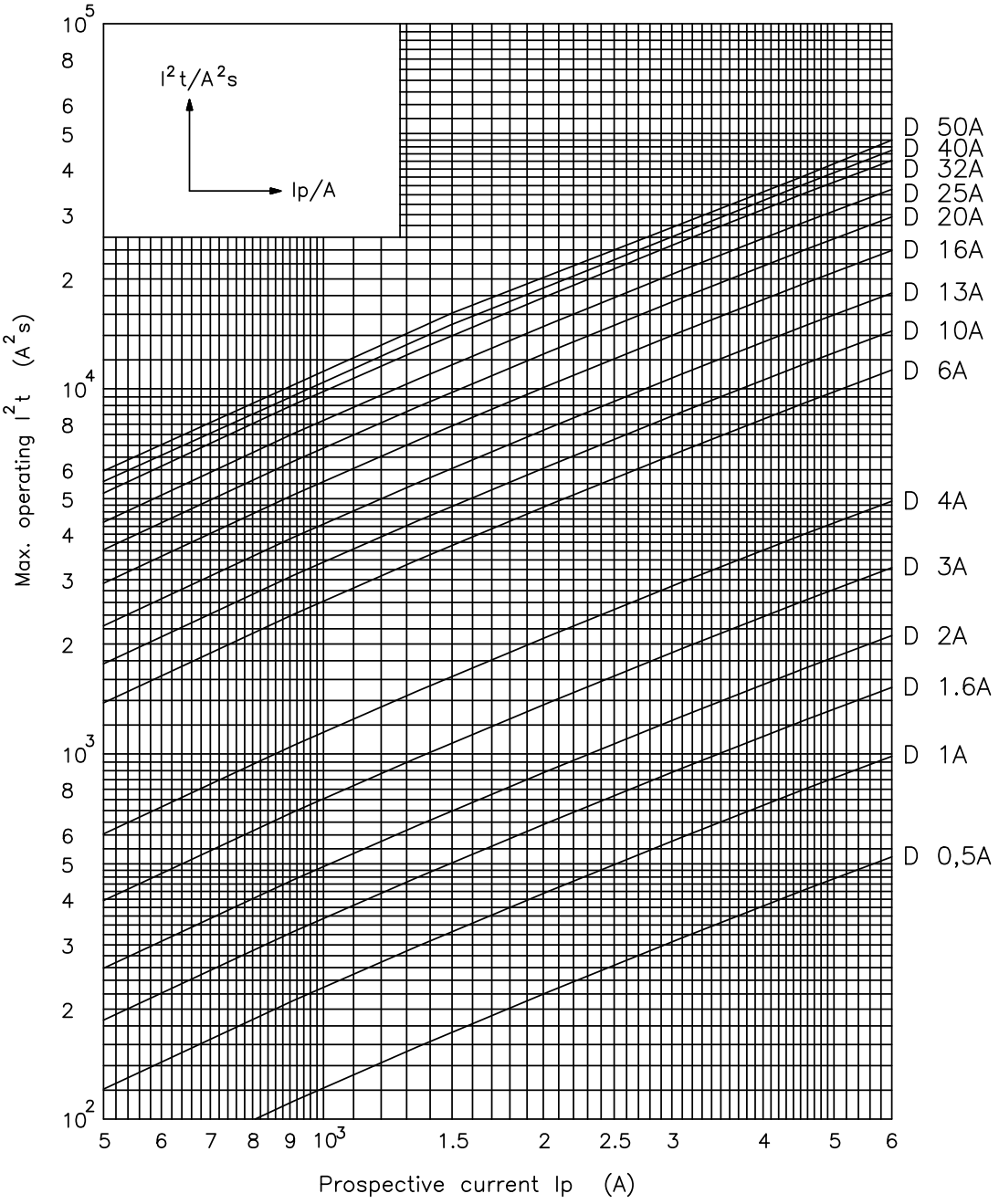
Melting energy characteristics I²t ETIMAT P6



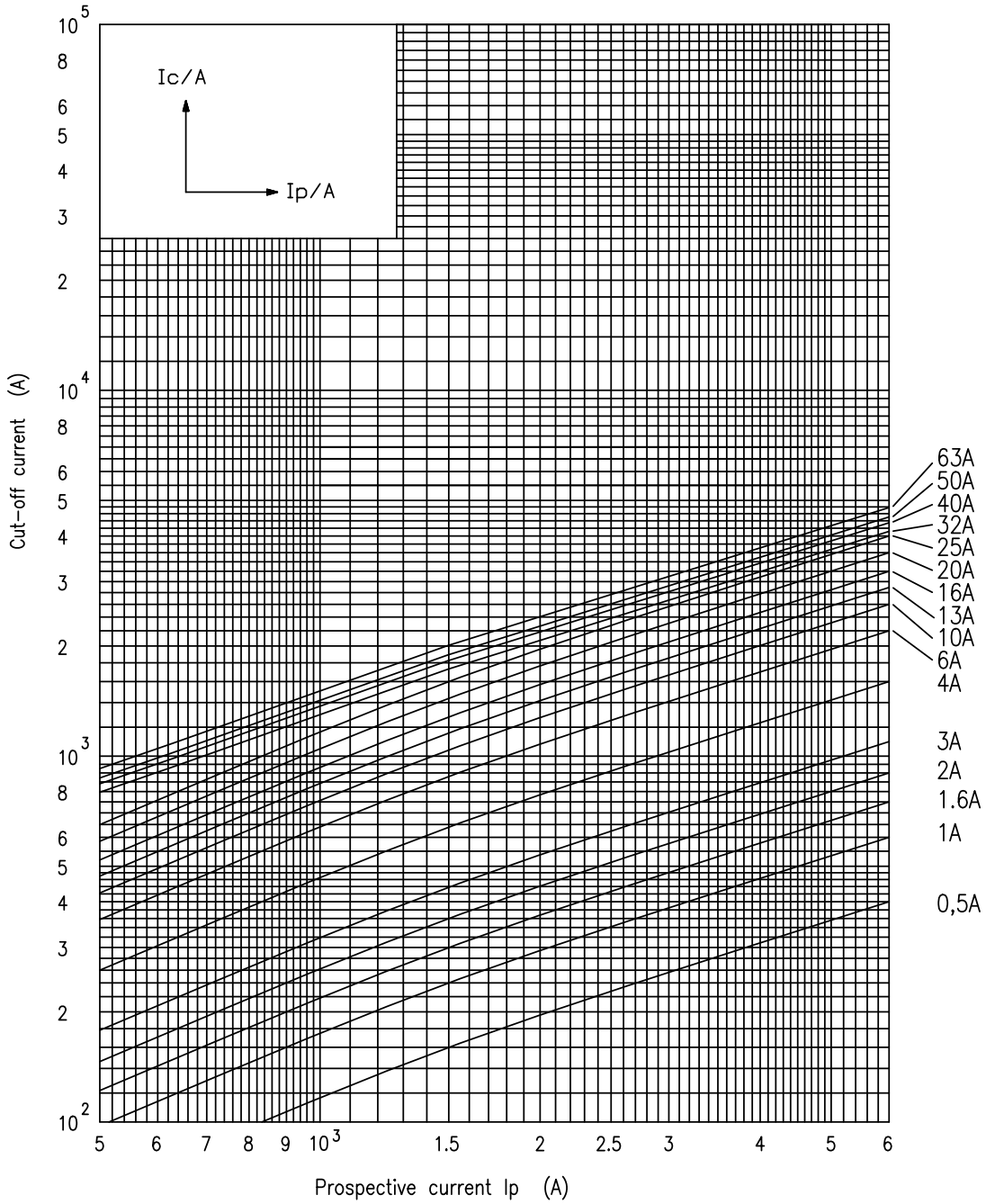
Melting energy characteristics I²t ETIMAT P6



Melting energy characteristics I²t ETIMAT P6



Cut-off characteristics I²t ETIMAT P6



Miniature circuit breaker ETIMAT P10

Rated short-circuit capacity	Rated current	Tripping characteristic
10 kA	**0,5 - 63 A**	**B, C, D, K, Z**

Technical data for ETIMAT P10 and ETIMAT P10 Reset

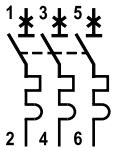
Rated voltage	240/415V AC; max 60V DC/pol
Min. operating voltage	12V AC/DC
Max operating voltage	250/440V AC
Rated current	B:1-63A, C:0.5-63A,D:0.5-63A, K&Z:0.5-32A
Rated frequency	50/60Hz
Rated insulation voltage	500V
Rated impulse withstand voltage	6kV (acc. to 60947-2)
Shock resistance	30g, min 2 shocks, t=13ms
Rated short-circuit capacity	10 kA
Energy limiting class	3; B,C
Tripping characteristic	B, C, D, K, Z
Back-up fuse	100A gG
Index of protection	IP 20 (IP 40)
Terminals	1-25mm², min 1,4Nm / max 2,5Nm
Terminal screw	M5 (Pozidrive PZ2)
Mechanical endurance	20.000 op. cycles
Electrical endurance	20.000 op. cycles
Ambient temperature	max -40°C ... +70°C
Storage temperature	max -60°C ... +70°C
Supply possibility	top or bottom
Build-in width	18mm/pol
Insulating class	B
Overvoltage category	III
Pollution degree	2
Mounting on the rail	EN 60715
Mounting position	any
Sealing possibility	✓
Terminal cover	✓
Contact position indicator	✓
Locking device	✓
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)
Standards	IEC/EN 60898-1, IEC 60947-2

1p

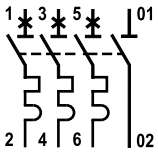
1p+n

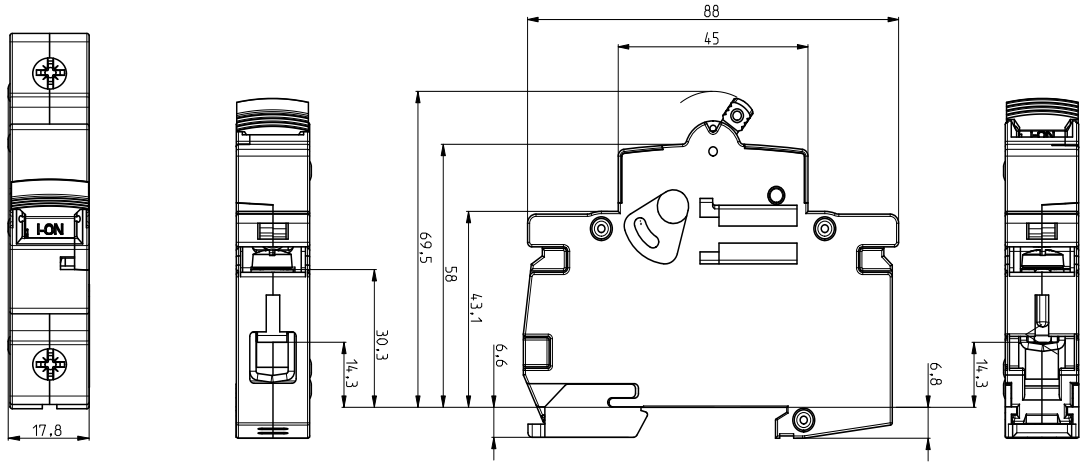
2p

3p



3p+n





Tripping characteristics

Characteristic	Test current	Tripping time	Result
B, C, D	1,13 I_n	t ≥ 3600 s	No tripping
B, C, D	1,45 I_n	t < 3600 s	Tripping
B, C, D	2,55 I_n	1s < t < 60 s	Tripping
B	3,00 I_n	t ≤ 0,1 s	No tripping
C	5,00 I_n	t ≤ 0,1 s	No tripping
D	10,00 I_n	t ≤ 0,1 s	No tripping
B	5,00 I_n	t < 0,1 s	Tripping
C	10,00 I_n	t < 0,1 s	Tripping
D	20,00 I_n	t < 0,1 s	Tripping
K, Z	1,05 I_n	t > 7200 s	No Tripping
K, Z	1,20 I_n	t < 7200 s	Tripping
K	8,00 I_n	t ≤ 0,2 s	No Tripping
K	12,00 I_n	t < 0,2 s	Tripping
Z	2,00 I_n	t ≤ 0,2s	No Tripping
Z	3,00 I_n	t < 0,2s	Tripping

WATCH THE VIDEO

1-pole, characteristic B, C

I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	g	
0,5	240/415	/	/	ETIMAT P10 1p C0,5	001901021	92	12/108
1		ETIMAT P10 1p B1	001901002	ETIMAT P10 1p C1	001901022	92	12/108
1,6		ETIMAT P10 1p B1,6	001901003	ETIMAT P10 1p C1,6	001901023	92	12/108
2		ETIMAT P10 1p B2	001901004	ETIMAT P10 1p C2	001901024	92	12/108
3		ETIMAT P10 1p B3	001901005	ETIMAT P10 1p C3	001901025	92	12/108
4		ETIMAT P10 1p B4	001901006	ETIMAT P10 1p C4	001901026	92	12/108
6		ETIMAT P10 1p B6	001901007	ETIMAT P10 1p C6	001901027	92	12/108
10		ETIMAT P10 1p B10	001901008	ETIMAT P10 1p C10	001901028	92	12/108
13		ETIMAT P10 1p B13	001901009	ETIMAT P10 1p C13	001901029	92	12/108
16		ETIMAT P10 1p B16	001901010	ETIMAT P10 1p C16	001901030	92	12/108
20		ETIMAT P10 1p B20	001901011	ETIMAT P10 1p C20	001901031	102	12/108
25		ETIMAT P10 1p B25	001901012	ETIMAT P10 1p C25	001901032	105	12/108
32		ETIMAT P10 1p B32	001901013	ETIMAT P10 1p C32	001901033	105	12/108
40		ETIMAT P10 1p B40	001901014	ETIMAT P10 1p C40	001901034	105	12/108
50		ETIMAT P10 1p B50	001901015	ETIMAT P10 1p C50	001901035	111	12/108
63		ETIMAT P10 1p B63	001901016	ETIMAT P10 1p C63	001901036	115	12/108

1-pole, characteristic D, K, Z

I_n [A]	U_n [V]	Type D	Code No. D	Type K	Code No. K	Type Z	Code No. Z	g	
0,5	240/415	ETIMAT P10 1p D0,5	001901041	ETIMAT P10 1p K0,5	001901061	ETIMAT P10 1p Z0,5	001901081	102	12/108
1		ETIMAT P10 1p D1	001901042	ETIMAT P10 1p K1	001901062	ETIMAT P10 1p Z1	001901082	102	12/108
1,6		ETIMAT P10 1p D1,6	001901043	ETIMAT P10 1p K1,6	001901063	ETIMAT P10 1p Z1,6	001901083	102	12/108
2		ETIMAT P10 1p D2	001901044	ETIMAT P10 1p K2	001901064	ETIMAT P10 1p Z2	001901084	102	12/108
3		ETIMAT P10 1p D3	001901045	ETIMAT P10 1p K3	001901065	ETIMAT P10 1p Z3	001901085	102	12/108
4		ETIMAT P10 1p D4	001901046	ETIMAT P10 1p K4	001901066	ETIMAT P10 1p Z4	001901086	102	12/108
6		ETIMAT P10 1p D6	001901047	ETIMAT P10 1p K6	001901067	ETIMAT P10 1p Z6	001901087	102	12/108
10		ETIMAT P10 1p D10	001901048	ETIMAT P10 1p K10	001901068	ETIMAT P10 1p Z10	001901088	102	12/108
13		ETIMAT P10 1p D13	001901049	ETIMAT P10 1p K13	001901069	ETIMAT P10 1p Z13	001901089	102	12/108
16		ETIMAT P10 1p D16	001901050	ETIMAT P10 1p K16	001901070	ETIMAT P10 1p Z16	001901090	102	12/108
20		ETIMAT P10 1p D20	001901051	ETIMAT P10 1p K20	001901071	ETIMAT P10 1p Z20	001901091	102	12/108
25		ETIMAT P10 1p D25	001901052	ETIMAT P10 1p K25	001901072	ETIMAT P10 1p Z25	001901092	105	12/108
32		ETIMAT P10 1p D32	001901053	ETIMAT P10 1p K32	001901073	ETIMAT P10 1p Z32	001901093	105	12/108
40		ETIMAT P10 1p D40	001901054	/	/	/	/	105	12/108
50		ETIMAT P10 1p D50	001901055	/	/	/	/	111	12/108

1-pole + N, characteristic B, C

I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	g	
0,5	240	/	/	ETIMAT P10 1p+N C0,5	001901121	184	6/54
1		ETIMAT P10 1p+N B1	001901102	ETIMAT P10 1p+N C1	001901122	184	6/54
1,6		ETIMAT P10 1p+N B1,6	001901103	ETIMAT P10 1p+N C1,6	001901123	184	6/54
2		ETIMAT P10 1p+N B2	001901104	ETIMAT P10 1p+N C2	001901124	184	6/54
3		ETIMAT P10 1p+N B3	001901105	ETIMAT P10 1p+N C3	001901125	184	6/54
4		ETIMAT P10 1p+N B4	001901106	ETIMAT P10 1p+N C4	001901126	184	6/54
6		ETIMAT P10 1p+N B6	001901107	ETIMAT P10 1p+N C6	001901127	184	6/54
10		ETIMAT P10 1p+N B10	001901108	ETIMAT P10 1p+N C10	001901128	184	6/54
13		ETIMAT P10 1p+N B13	001901109	ETIMAT P10 1p+N C13	001901129	184	6/54
16		ETIMAT P10 1p+N B16	001901110	ETIMAT P10 1p+N C16	001901130	184	6/54
20		ETIMAT P10 1p+N B20	001901111	ETIMAT P10 1p+N C20	001901131	205	6/54
25		ETIMAT P10 1p+N B25	001901112	ETIMAT P10 1p+N C25	001901132	210	6/54
32		ETIMAT P10 1p+N B32	001901113	ETIMAT P10 1p+N C32	001901133	210	6/54
40		ETIMAT P10 1p+N B40	001901114	ETIMAT P10 1p+N C40	001901134	210	6/54
50		ETIMAT P10 1p+N B50	001901115	ETIMAT P10 1p+N C50	001901135	223	6/54
63		ETIMAT P10 1p+N B63	001901116	ETIMAT P10 1p+N C63	001901136	230	6/54

1-pole + N, characteristic D, K, Z

I_n [A]	U_n [V]	Type D	Code No. D	Type K	Code No. K	Type Z	Code No. Z	g	
0,5	240	ETIMAT P10 1p+N D0,5	001901141	ETIMAT P10 1p+N K0,5	001901161	ETIMAT P10 1p+N Z0,5	001901181	205	6/54
1		ETIMAT P10 1p+N D1	001901142	ETIMAT P10 1p+N K1	001901162	ETIMAT P10 1p+N Z1	001901182	205	6/54
1,6		ETIMAT P10 1p+N D1,6	001901143	ETIMAT P10 1p+N K1,6	001901163	ETIMAT P10 1p+N Z1,6	001901183	205	6/54
2		ETIMAT P10 1p+N D2	001901144	ETIMAT P10 1p+N K2	001901164	ETIMAT P10 1p+N Z2	001901184	205	6/54
3		ETIMAT P10 1p+N D3	001901145	ETIMAT P10 1p+N K3	001901165	ETIMAT P10 1p+N Z3	001901185	205	6/54
4		ETIMAT P10 1p+N D4	001901146	ETIMAT P10 1p+N K4	001901166	ETIMAT P10 1p+N Z4	001901186	205	6/54
6		ETIMAT P10 1p+N D6	001901147	ETIMAT P10 1p+N K6	001901167	ETIMAT P10 1p+N Z6	001901187	205	6/54
10		ETIMAT P10 1p+N D10	001901148	ETIMAT P10 1p+N K10	001901168	ETIMAT P10 1p+N Z10	001901188	205	6/54
13		ETIMAT P10 1p+N D13	001901149	ETIMAT P10 1p+N K13	001901169	ETIMAT P10 1p+N Z13	001901189	205	6/54
16		ETIMAT P10 1p+N D16	001901150	ETIMAT P10 1p+N K16	001901170	ETIMAT P10 1p+N Z16	001901190	205	6/54
20		ETIMAT P10 1p+N D20	001901151	ETIMAT P10 1p+N K20	001901171	ETIMAT P10 1p+N Z20	001901191	205	6/54
25		ETIMAT P10 1p+N D25	001901152	ETIMAT P10 1p+N K25	001901172	ETIMAT P10 1p+N Z25	001901192	210	6/54
32		ETIMAT P10 1p+N D32	001901153	ETIMAT P10 1p+N K32	001901173	ETIMAT P10 1p+N Z32	001901193	210	6/54
40		ETIMAT P10 1p+N D40	001901154	/	/	/	/	210	6/54
50		ETIMAT P10 1p+N D50	001901155	/	/	/	/	223	6/54

2-pole, characteristic B, C

I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	g	
0,5	415	/	/	ETIMAT P10 2p C0,5	001901221	184	6/54
1		ETIMAT P10 2p B1	001901202	ETIMAT P10 2p C1	001901222	184	6/54
1,6		ETIMAT P10 2p B1,6	001901203	ETIMAT P10 2p C1,6	001901223	184	6/54
2		ETIMAT P10 2p B2	001901204	ETIMAT P10 2p C2	001901224	184	6/54
3		ETIMAT P10 2p B3	001901205	ETIMAT P10 2p C3	001901225	184	6/54
4		ETIMAT P10 2p B4	001901206	ETIMAT P10 2p C4	001901226	184	6/54
6		ETIMAT P10 2p B6	001901207	ETIMAT P10 2p C6	001901227	184	6/54
10		ETIMAT P10 2p B10	001901208	ETIMAT P10 2p C10	001901228	184	6/54
13		ETIMAT P10 2p B13	001901209	ETIMAT P10 2p C13	001901229	184	6/54
16		ETIMAT P10 2p B16	001901210	ETIMAT P10 2p C16	001901230	184	6/54
20		ETIMAT P10 2p B20	001901211	ETIMAT P10 2p C20	001901231	205	6/54
25		ETIMAT P10 2p B25	001901212	ETIMAT P10 2p C25	001901232	210	6/54
32		ETIMAT P10 2p B32	001901213	ETIMAT P10 2p C32	001901233	210	6/54
40		ETIMAT P10 2p B40	001901214	ETIMAT P10 2p C40	001901234	210	6/54
50		ETIMAT P10 2p B50	001901215	ETIMAT P10 2p C50	001901235	223	6/54
63		ETIMAT P10 2p B63	001901216	ETIMAT P10 2p C63	001901236	230	6/54

2-pole, characteristic D, K, Z

I_n [A]	U_n [V]	Type D	Code No. D	Type K	Code No. K	Type Z	Code No. Z	g	
0,5	415	ETIMAT P10 2p D0,5	001901241	ETIMAT P10 2p K0,5	001901261	ETIMAT P10 2p Z0,5	001901281	205	6/54
1		ETIMAT P10 2p D1	001901242	ETIMAT P10 2p K1	001901262	ETIMAT P10 2p Z1	001901282	205	6/54
1,6		ETIMAT P10 2p D1,6	001901243	ETIMAT P10 2p K1,6	001901263	ETIMAT P10 2p Z1,6	001901283	205	6/54
2		ETIMAT P10 2p D2	001901244	ETIMAT P10 2p K2	001901264	ETIMAT P10 2p Z2	001901284	205	6/54
3		ETIMAT P10 2p D3	001901245	ETIMAT P10 2p K3	001901265	ETIMAT P10 2p Z3	001901285	205	6/54
4		ETIMAT P10 2p D4	001901246	ETIMAT P10 2p K4	001901266	ETIMAT P10 2p Z4	001901286	205	6/54
6		ETIMAT P10 2p D6	001901247	ETIMAT P10 2p K6	001901267	ETIMAT P10 2p Z6	001901287	205	6/54
10		ETIMAT P10 2p D10	001901248	ETIMAT P10 2p K10	001901268	ETIMAT P10 2p Z10	001901288	205	6/54
13		ETIMAT P10 2p D13	001901249	ETIMAT P10 2p K13	001901269	ETIMAT P10 2p Z13	001901289	205	6/54
16		ETIMAT P10 2p D16	001901250	ETIMAT P10 2p K16	001901270	ETIMAT P10 2p Z16	001901290	205	6/54
20		ETIMAT P10 2p D20	001901251	ETIMAT P10 2p K20	001901271	ETIMAT P10 2p Z20	001901291	205	6/54
25		ETIMAT P10 2p D25	001901252	ETIMAT P10 2p K25	001901272	ETIMAT P10 2p Z25	001901292	210	6/54
32		ETIMAT P10 2p D32	001901253	ETIMAT P10 2p K32	001901273	ETIMAT P10 2p Z32	001901293	210	6/54
40		ETIMAT P10 2p D40	001901254	/	/	/	/	210	6/54
50		ETIMAT P10 2p D50	001901255	/	/	/	/	223	6/54

3-pole, characteristic B, C

I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	g	
0,5	415	/	/	ETIMAT P10 3p C0,5	001901321	277	4/36
1		ETIMAT P10 3p B1	001901302	ETIMAT P10 3p C1	001901322	277	4/36
1,6		ETIMAT P10 3p B1,6	001901303	ETIMAT P10 3p C1,6	001901323	277	4/36
2		ETIMAT P10 3p B2	001901304	ETIMAT P10 3p C2	001901324	277	4/36
3		ETIMAT P10 3p B3	001901305	ETIMAT P10 3p C3	001901325	277	4/36
4		ETIMAT P10 3p B4	001901306	ETIMAT P10 3p C4	001901326	277	4/36
6		ETIMAT P10 3p B6	001901307	ETIMAT P10 3p C6	001901327	277	4/36
10		ETIMAT P10 3p B10	001901308	ETIMAT P10 3p C10	001901328	277	4/36
13		ETIMAT P10 3p B13	001901309	ETIMAT P10 3p C13	001901329	277	4/36
16		ETIMAT P10 3p B16	001901310	ETIMAT P10 3p C16	001901330	277	4/36
20		ETIMAT P10 3p B20	001901311	ETIMAT P10 3p C20	001901331	308	4/36
25		ETIMAT P10 3p B25	001901312	ETIMAT P10 3p C25	001901332	316	4/36
32		ETIMAT P10 3p B32	001901313	ETIMAT P10 3p C32	001901333	316	4/36
40		ETIMAT P10 3p B40	001901314	ETIMAT P10 3p C40	001901334	316	4/36
50		ETIMAT P10 3p B50	001901315	ETIMAT P10 3p C50	001901335	335	4/36
63		ETIMAT P10 3p B63	001901316	ETIMAT P10 3p C63	001901336	345	4/36

3-pole, characteristic D, K, Z

I_n [A]	U_n [V]	Type D	Code No. D	Type K	Code No. K	Type Z	Code No. Z	g	
0,5	415	ETIMAT P10 3p D0,5	001901341	ETIMAT P10 3p K0,5	001901361	ETIMAT P10 3p Z0,5	001901381	308	4/36
1		ETIMAT P10 3p D1	001901342	ETIMAT P10 3p K1	001901362	ETIMAT P10 3p Z1	001901382	308	4/36
1,6		ETIMAT P10 3p D1,6	001901343	ETIMAT P10 3p K1,6	001901363	ETIMAT P10 3p Z1,6	001901383	308	4/36
2		ETIMAT P10 3p D2	001901344	ETIMAT P10 3p K2	001901364	ETIMAT P10 3p Z2	001901384	308	4/36
3		ETIMAT P10 3p D3	001901345	ETIMAT P10 3p K3	001901365	ETIMAT P10 3p Z3	001901385	308	4/36
4		ETIMAT P10 3p D4	001901346	ETIMAT P10 3p K4	001901366	ETIMAT P10 3p Z4	001901386	308	4/36
6		ETIMAT P10 3p D6	001901347	ETIMAT P10 3p K6	001901367	ETIMAT P10 3p Z6	001901387	308	4/36
10		ETIMAT P10 3p D10	001901348	ETIMAT P10 3p K10	001901368	ETIMAT P10 3p Z10	001901388	308	4/36
13		ETIMAT P10 3p D13	001901349	ETIMAT P10 3p K13	001901369	ETIMAT P10 3p Z13	001901389	308	4/36
16		ETIMAT P10 3p D16	001901350	ETIMAT P10 3p K16	001901370	ETIMAT P10 3p Z16	001901390	308	4/36
20		ETIMAT P10 3p D20	001901351	ETIMAT P10 3p K20	001901371	ETIMAT P10 3p Z20	001901391	308	4/36
25		ETIMAT P10 3p D25	001901352	ETIMAT P10 3p K25	001901372	ETIMAT P10 3p Z25	001901392	316	4/36
32		ETIMAT P10 3p D32	001901353	ETIMAT P10 3p K32	001901373	ETIMAT P10 3p Z32	001901393	316	4/36
40		ETIMAT P10 3p D40	001901354	/	/	/	/	316	4/36
50		ETIMAT P10 3p D50	001901355	/	/	/	/	335	4/36

3-pole + N, characteristic B, C

I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	g	
0,5	415	-	-	ETIMAT P10 3p+N C0,5	001901421	370	3/27
1		ETIMAT P10 3p+N B1	001901402	ETIMAT P10 3p+N C1	001901422	370	3/27
1,6		ETIMAT P10 3p+N B1,6	001901403	ETIMAT P10 3p+N C1,6	001901423	370	3/27
2		ETIMAT P10 3p+N B2	001901404	ETIMAT P10 3p+N C2	001901424	370	3/27
3		ETIMAT P10 3p+N B3	001901405	ETIMAT P10 3p+N C3	001901425	370	3/27
4		ETIMAT P10 3p+N B4	001901406	ETIMAT P10 3p+N C4	001901426	370	3/27
6		ETIMAT P10 3p+N B6	001901407	ETIMAT P10 3p+N C6	001901427	370	3/27
10		ETIMAT P10 3p+N B10	001901408	ETIMAT P10 3p+N C10	001901428	370	3/27
13		ETIMAT P10 3p+N B13	001901409	ETIMAT P10 3p+N C13	001901429	370	3/27
16		ETIMAT P10 3p+N B16	001901410	ETIMAT P10 3p+N C16	001901430	370	3/27
20		ETIMAT P10 3p+N B20	001901411	ETIMAT P10 3p+N C20	001901431	412	3/27
25		ETIMAT P10 3p+N B25	001901412	ETIMAT P10 3p+N C25	001901432	422	3/27
32		ETIMAT P10 3p+N B32	001901413	ETIMAT P10 3p+N C32	001901433	422	3/27
40		ETIMAT P10 3p+N B40	001901414	ETIMAT P10 3p+N C40	001901434	422	3/27
50		ETIMAT P10 3p+N B50	001901415	ETIMAT P10 3p+N C50	001901435	448	3/27
63		ETIMAT P10 3p+N B63	001901416	ETIMAT P10 3p+N C63	001901436	460	3/27

3-pole + N, characteristic D, K, Z

I_n [A]	U_n [V]	Type D	Code No. D	Type K	Code No. K	Type Z	Code No. Z	g	
0,5	415	ETIMAT P10 3p+N D0,5	001901441	ETIMAT P10 3p+N K0,5	001901461	ETIMAT P10 3p+N Z0,5	001901481	412	3/27
1		ETIMAT P10 3p+N D1	001901442	ETIMAT P10 3p+N K1	001901462	ETIMAT P10 3p+N Z1	001901482	412	3/27
1,6		ETIMAT P10 3p+N D1,6	001901443	ETIMAT P10 3p+N K1,6	001901463	ETIMAT P10 3p+N Z1,6	001901483	412	3/27
2		ETIMAT P10 3p+N D2	001901444	ETIMAT P10 3p+N K2	001901464	ETIMAT P10 3p+N Z2	001901484	412	3/27
3		ETIMAT P10 3p+N D3	001901445	ETIMAT P10 3p+N K3	001901465	ETIMAT P10 3p+N Z3	001901485	412	3/27
4		ETIMAT P10 3p+N D4	001901446	ETIMAT P10 3p+N K4	001901466	ETIMAT P10 3p+N Z4	001901486	412	3/27
6		ETIMAT P10 3p+N D6	001901447	ETIMAT P10 3p+N K6	001901467	ETIMAT P10 3p+N Z6	001901487	412	3/27
10		ETIMAT P10 3p+N D10	001901448	ETIMAT P10 3p+N K10	001901468	ETIMAT P10 3p+N Z10	001901488	412	3/27
13		ETIMAT P10 3p+N D13	001901449	ETIMAT P10 3p+N K13	001901469	ETIMAT P10 3p+N Z13	001901489	412	3/27
16		ETIMAT P10 3p+N D16	001901450	ETIMAT P10 3p+N K16	001901470	ETIMAT P10 3p+N Z16	001901490	412	3/27
20		ETIMAT P10 3p+N D20	001901451	ETIMAT P10 3p+N K20	001901471	ETIMAT P10 3p+N Z20	001901491	412	3/27
25		ETIMAT P10 3p+N D25	001901452	ETIMAT P10 3p+N K25	001901472	ETIMAT P10 3p+N Z25	001901492	422	3/27
32		ETIMAT P10 3p+N D32	001901453	ETIMAT P10 3p+N K32	001901473	ETIMAT P10 3p+N Z32	001901493	422	3/27
40		ETIMAT P10 3p+N D40	001901454	/	/	/	/	422	3/27
50		ETIMAT P10 3p+N D50	001901455	/	/	/	/	448	3/27

Circuit breakers type ETIMAT P10 / 3-pole + N are suitable for use as 4-pole circuit breakers

Miniature circuit breaker ETIMAT P10 Reset

Rated short-circuit capacity	Rated current	Tripping characteristic
10 kA	**0,5 - 63 A**	**B, C**

Special reset version

In the reset version, the toggle position clearly indicates the reason for tripping, preventing user mistakes and always making it clear whether the system turning off was intentional (manual) or the result of a fault in the electrical circuit.
In case of overcurrent , the button moves to the “trip” (middle) position. In case of manual turn off, the button moves to the “off” (lowest) position.

1-pole

I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	g	
0,5	240/415	/	/	ETIMAT P10/R 1p C0,5	001902021	92	12/108
1		ETIMAT P10/R 1p B1	001902002	ETIMAT P10/R 1p C1	001902022	92	12/108
1,6		ETIMAT P10/R 1p B1,6	001902003	ETIMAT P10/R 1p C1,6	001902023	92	12/108
2		ETIMAT P10/R 1p B2	001902004	ETIMAT P10/R 1p C2	001902024	92	12/108
3		ETIMAT P10/R 1p B3	001902005	ETIMAT P10/R 1p C3	001902025	92	12/108
4		ETIMAT P10/R 1p B4	001902006	ETIMAT P10/R 1p C4	001902026	92	12/108
6		ETIMAT P10/R 1p B6	001902007	ETIMAT P10/R 1p C6	001902027	92	12/108
10		ETIMAT P10/R 1p B10	001902008	ETIMAT P10/R 1p C10	001902028	92	12/108
13		ETIMAT P10/R 1p B13	001902009	ETIMAT P10/R 1p C13	001902029	92	12/108
16		ETIMAT P10/R 1p B16	001902010	ETIMAT P10/R 1p C16	001902030	92	12/108
20		ETIMAT P10/R 1p B20	001902011	ETIMAT P10/R 1p C20	001902031	102	12/108
25		ETIMAT P10/R 1p B25	001902012	ETIMAT P10/R 1p C25	001902032	105	12/108
32		ETIMAT P10/R 1p B32	001902013	ETIMAT P10/R 1p C32	001902033	105	12/108
40		ETIMAT P10/R 1p B40	001902014	ETIMAT P10/R 1p C40	001902034	105	12/108
50		ETIMAT P10/R 1p B50	001902015	ETIMAT P10/R 1p C50	001902035	111	12/108
63		ETIMAT P10/R 1p B63	001902016	ETIMAT P10/R 1p C63	001902036	115	12/108

1-pole + N

I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	g	
0,5	240	/	/	ETIMAT P10/R 1p+N C0,5	001902121	184	6/54
1		ETIMAT P10/R 1p+N B1	001902102	ETIMAT P10/R 1p+N C1	001902122	184	6/54
1,6		ETIMAT P10/R 1p+N B1,6	001902103	ETIMAT P10/R 1p+N C1,6	001902123	184	6/54
2		ETIMAT P10/R 1p+N B2	001902104	ETIMAT P10/R 1p+N C2	001902124	184	6/54
3		ETIMAT P10/R 1p+N B3	001902105	ETIMAT P10/R 1p+N C3	001902125	184	6/54
4		ETIMAT P10/R 1p+N B4	001902106	ETIMAT P10/R 1p+N C4	001902126	184	6/54
6		ETIMAT P10/R 1p+N B6	001902107	ETIMAT P10/R 1p+N C6	001902127	184	6/54
10		ETIMAT P10/R 1p+N B10	001902108	ETIMAT P10/R 1p+N C10	001902128	184	6/54
13		ETIMAT P10/R 1p+N B13	001902109	ETIMAT P10/R 1p+N C13	001902129	184	6/54
16		ETIMAT P10/R 1p+N B16	001902110	ETIMAT P10/R 1p+N C16	001902130	184	6/54
20		ETIMAT P10/R 1p+N B20	001902111	ETIMAT P10/R 1p+N C20	001902131	205	6/54
25		ETIMAT P10/R 1p+N B25	001902112	ETIMAT P10/R 1p+N C25	001902132	210	6/54
32		ETIMAT P10/R 1p+N B32	001902113	ETIMAT P10/R 1p+N C32	001902133	210	6/54
40		ETIMAT P10/R 1p+N B40	001902114	ETIMAT P10/R 1p+N C40	001902134	210	6/54
50		ETIMAT P10/R 1p+N B50	001902115	ETIMAT P10/R 1p+N C50	001902135	223	6/54
63		ETIMAT P10/R 1p+N B63	001902116	ETIMAT P10/R 1p+N C63	001902136	230	6/54

2-pole

I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	g	
0,5	415	/	/	ETIMAT P10/R 2p C0,5	001902221	184	6/54
1		ETIMAT P10/R 2p B1	001902202	ETIMAT P10/R 2p C1	001902222	184	6/54
1,6		ETIMAT P10/R 2p B1,6	001902203	ETIMAT P10/R 2p C1,6	001902223	184	6/54
2		ETIMAT P10/R 2p B2	001902204	ETIMAT P10/R 2p C2	001902224	184	6/54
3		ETIMAT P10/R 2p B3	001902205	ETIMAT P10/R 2p C3	001902225	184	6/54
4		ETIMAT P10/R 2p B4	001902206	ETIMAT P10/R 2p C4	001902226	184	6/54
6		ETIMAT P10/R 2p B6	001902207	ETIMAT P10/R 2p C6	001902227	184	6/54
10		ETIMAT P10/R 2p B10	001902208	ETIMAT P10/R 2p C10	001902228	184	6/54
13		ETIMAT P10/R 2p B13	001902209	ETIMAT P10/R 2p C13	001902229	184	6/54
16		ETIMAT P10/R 2p B16	001902210	ETIMAT P10/R 2p C16	001902230	184	6/54
20		ETIMAT P10/R 2p B20	001902211	ETIMAT P10/R 2p C20	001902231	205	6/54
25		ETIMAT P10/R 2p B25	001902212	ETIMAT P10/R 2p C25	001902232	210	6/54
32		ETIMAT P10/R 2p B32	001902213	ETIMAT P10/R 2p C32	001902233	210	6/54
40		ETIMAT P10/R 2p B40	001902214	ETIMAT P10/R 2p C40	001902234	210	6/54
50		ETIMAT P10/R 2p B50	001902215	ETIMAT P10/R 2p C50	001902235	223	6/54
63		ETIMAT P10/R 2p B63	001902216	ETIMAT P10/R 2p C63	001902236	230	6/54

3-pole

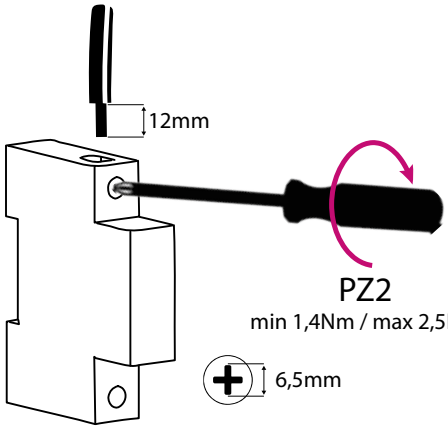
I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	g	
0,5	415	/	/	ETIMAT P10/R 3p C0,5	001902321	277	4/36
1		ETIMAT P10/R 3p B1	001902302	ETIMAT P10/R 3p C1	001902322	277	4/36
1,6		ETIMAT P10/R 3p B1,6	001902303	ETIMAT P10/R 3p C1,6	001902323	277	4/36
2		ETIMAT P10/R 3p B2	001902304	ETIMAT P10/R 3p C2	001902324	277	4/36
3		ETIMAT P10/R 3p B3	001902305	ETIMAT P10/R 3p C3	001902325	277	4/36
4		ETIMAT P10/R 3p B4	001902306	ETIMAT P10/R 3p C4	001902326	277	4/36
6		ETIMAT P10/R 3p B6	001902307	ETIMAT P10/R 3p C6	001902327	277	4/36
10		ETIMAT P10/R 3p B10	001902308	ETIMAT P10/R 3p C10	001902328	277	4/36
13		ETIMAT P10/R 3p B13	001902309	ETIMAT P10/R 3p C13	001902329	277	4/36
16		ETIMAT P10/R 3p B16	001902310	ETIMAT P10/R 3p C16	001902330	277	4/36
20		ETIMAT P10/R 3p B20	001902311	ETIMAT P10/R 3p C20	001902331	308	4/36
25		ETIMAT P10/R 3p B25	001902312	ETIMAT P10/R 3p C25	001902332	316	4/36
32		ETIMAT P10/R 3p B32	001902313	ETIMAT P10/R 3p C32	001902333	316	4/36
40		ETIMAT P10/R 3p B40	001902314	ETIMAT P10/R 3p C40	001902334	316	4/36
50		ETIMAT P10/R 3p B50	001902315	ETIMAT P10/R 3p C50	001902335	335	4/36
63		ETIMAT P10/R 3p B63	001902316	ETIMAT P10/R 3p C63	001902336	345	4/36

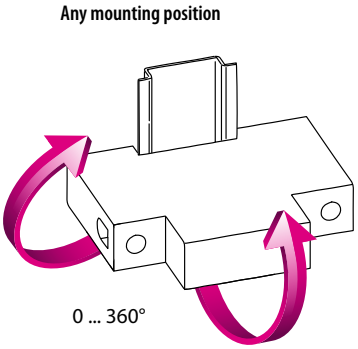
3-pole + N

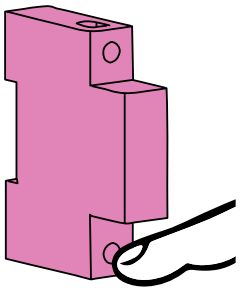
I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	g	
0,5	415	/	/	ETIMAT P10/R 3p+N C0,5	001902421	370	3/27
1		ETIMAT P10/R 3p+N B1	001902402	ETIMAT P10/R 3p+N C1	001902422	370	3/27
1,6		ETIMAT P10/R 3p+N B1,6	001902403	ETIMAT P10/R 3p+N C1,6	001902423	370	3/27
2		ETIMAT P10/R 3p+N B2	001902404	ETIMAT P10/R 3p+N C2	001902424	370	3/27
3		ETIMAT P10/R 3p+N B3	001902405	ETIMAT P10/R 3p+N C3	001902425	370	3/27
4		ETIMAT P10/R 3p+N B4	001902406	ETIMAT P10/R 3p+N C4	001902426	370	3/27
6		ETIMAT P10/R 3p+N B6	001902407	ETIMAT P10/R 3p+N C6	001902427	370	3/27
10		ETIMAT P10/R 3p+N B10	001902408	ETIMAT P10/R 3p+N C10	001902428	370	3/27
13		ETIMAT P10/R 3p+N B13	001902409	ETIMAT P10/R 3p+N C13	001902429	370	3/27
16		ETIMAT P10/R 3p+N B16	001902410	ETIMAT P10/R 3p+N C16	001902430	370	3/27
20		ETIMAT P10/R 3p+N B20	001902411	ETIMAT P10/R 3p+N C20	001902431	412	3/27
25		ETIMAT P10/R 3p+N B25	001902412	ETIMAT P10/R 3p+N C25	001902432	422	3/27
32		ETIMAT P10/R 3p+N B32	001902413	ETIMAT P10/R 3p+N C32	001902433	422	3/27
40		ETIMAT P10/R 3p+N B40	001902414	ETIMAT P10/R 3p+N C40	001902434	422	3/27
50		ETIMAT P10/R 3p+N B50	001902415	ETIMAT P10/R 3p+N C50	001902435	448	3/27
63		ETIMAT P10/R 3p+N B63	001902416	ETIMAT P10/R 3p+N C63	001902436	460	3/27

Circuit breakers type ETIMAT P10 / 3-pole + N are suitable for use as 4-pole circuit breakers

ASTI / Miniature Circuit Breakers



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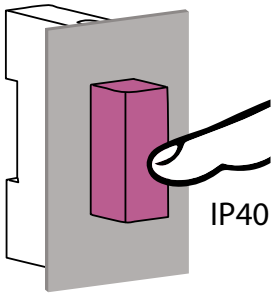
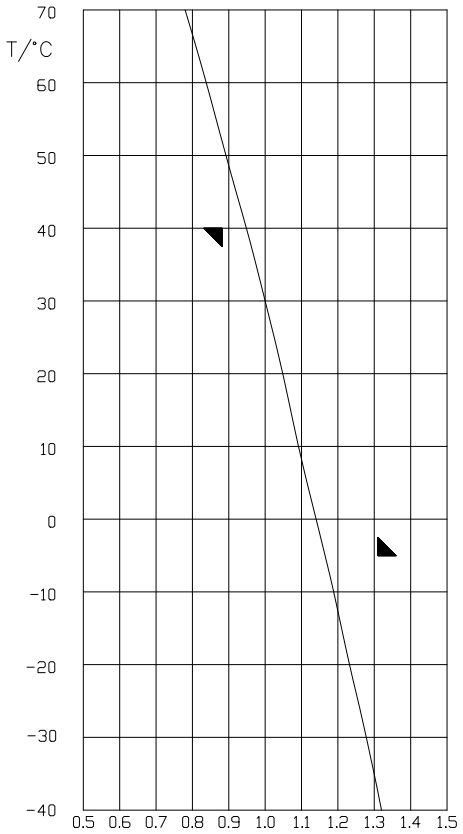


Effect of the ambient temperature on the tripping characteristic



I_n	Ambient temperature T/°C											
[A]	-40	-30	-20	-10	0	10	20	30	40	50	60	70
0,5	0,66	0,64	0,62	0,60	0,57	0,55	0,53	0,5	0,48	0,45	0,42	0,39
1	1,32	1,28	1,23	1,19	1,14	1,09	1,05	1	0,95	0,89	0,84	0,78
1,6	2,11	2,05	1,97	1,90	1,82	1,74	1,68	1,6	1,52	1,42	1,34	1,25
2	2,64	2,56	2,46	2,38	2,28	2,18	2,10	2	1,90	1,78	1,68	1,56
4	5,28	5,12	4,92	4,76	4,56	4,36	4,20	4	3,80	3,56	3,36	3,12
6	7,92	7,68	7,38	7,14	6,84	6,54	6,30	6	5,70	5,34	5,04	4,68
10	13,2	12,8	12,3	11,9	11,4	10,9	10,5	10	9,50	8,90	8,40	7,80
13	17,2	16,6	16,0	15,5	14,8	14,2	13,7	13	12,4	11,6	10,9	10,1
16	21,1	20,5	19,7	19,0	18,2	17,4	16,8	16	15,2	14,2	13,4	12,5
20	26,4	25,6	24,6	23,8	22,8	21,8	21,0	20	19,0	17,8	16,8	15,6
25	33,0	32,0	30,8	29,8	28,5	27,3	26,3	25	23,8	22,3	21,0	19,5
32	42,2	41,0	39,4	38,1	36,5	34,9	33,6	32	30,4	28,5	26,9	25,0
40	52,8	51,2	49,2	47,6	45,6	43,6	42,0	40	38,0	35,6	33,6	31,2
50	66,0	64,0	61,5	59,5	57,0	54,5	52,6	50	47,5	44,5	42,0	39,0
63	83,2	80,6	77,5	75,0	71,8	68,7	66,2	63	59,9	56,1	52,9	49,1

Correction factor is valid for current with times over 30 s
I(x°C) - test current at x ambient temperature
I(30°C) - test current at 30°C ambient temperature

$$k = \frac{I(x°C)}{I(30°C)}$$

Resistance and power dissipation

characteristic	I_n [A]	R/pole [mΩ]	P/pole [w]
B, C	0,5	3587	1,16
	1	935	1,21
	1,6	382	1,26
	2	264	1,37
	3	/	/
	4	69,6	1,38
	6	40,3	1,96
	10	16,9	2,00
	13	11,4	2,08
	16	8,17	2,26
	20	6,73	2,53
	25	5,03	2,96
	32	3,92	3,44
	40	/	/
	50	2,22	3,57
	63	1,71	4,59
D	0,5	/	/
	1	1183	1,55
	1,6	/	/
	2	303	1,58
	3	135	1,52
	4	81,8	1,66
	6	40,0	1,78
	10	17,3	1,57
	13	11,3	2,04
	16	8,59	2,31
	20	7,17	2,73
	25	4,77	2,91
	32	3,92	3,44
	40	/	/
	50	/	/
	63	/	/

Selectivity

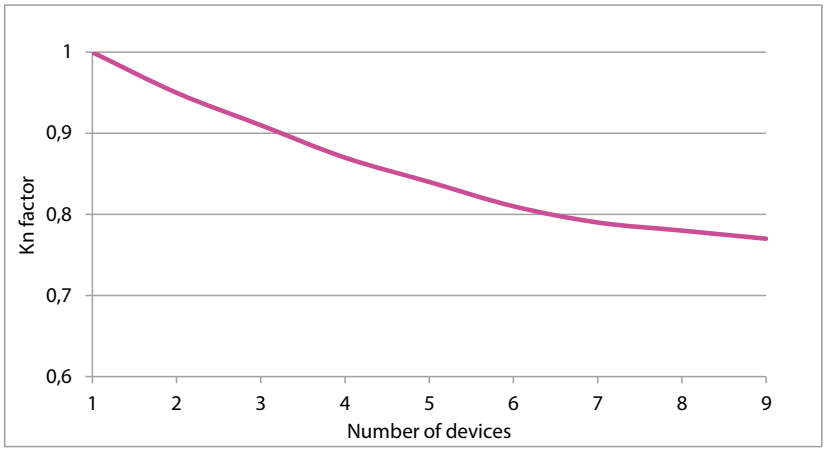
ETIMAT	gG NV										
	20	25	32	35	40	50	63	80	100	125	160
B 6	0,5	0,78	1,2	1,4	1,7	2,4	4,6	7,0	10	10	10
B 10/13	0,45	0,65	1,1	1,3	1,6	2,2	4,0	6,5	10	10	10
B 16		0,55	1,0	1,2	1,5	2,0	3,6	5,5	9,5	10	10
B 20			0,85	1,2	1,5	1,8	3,1	4,6	9,0	10	10
B 25				1,1	1,4	1,7	2,9	4,0	8,0	10	10
B 32					1,3	1,6	2,5	3,4	5,5	9,0	10
B 40						1,5	2,2	3,1	4,9	8,0	10
B 50							2,1	2,9	4,0	6,2	10
B 63								2,5	3,3	5,1	8,0
ETIMAT	**gG NV**										
	20	**25**	**32**	**35**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
C,D,K,Z 6	0,52	0,82	1,3	1,5	2,0	2,7	5,1	9,0	10	10	10
C,D,K,Z 10/13	0,47	0,70	1,1	1,4	1,8	2,3	4,0	7,0	10	10	10
C,D,K,Z 16		0,61	0,92	1,2	1,5	1,9	3,2	5,0	9,0	10	10
C,D,K,Z 20			0,90	1,1	1,4	1,7	2,9	4,2	8,0	10	10
C,D,K,Z 25				1,0	1,3	1,6	2,7	3,9	6,0	10	10
C,D,K,Z 32					1,2	1,5	2,3	3,4	5,2	9,0	10
C,D 40						1,4	2,1	3,0	4,6	8,0	10
C,D 50							2,0	2,7	3,8	7,0	10
C 63								2,3	3,2	5,5	9,0

R: measured at 0.1*In
P: measured at In

Effect of number of poles on the tripping characteristic ETIMAT P10 and P10 Reset

Correction factor K_n

Number of devices	Kn
1	1
2	0,95
3	0,91
4	0,87
5	0,84
6	0,81
7	0,79
8	0,78
9	0,77
>9	0,77



ASTI / Miniature Circuit Breakers

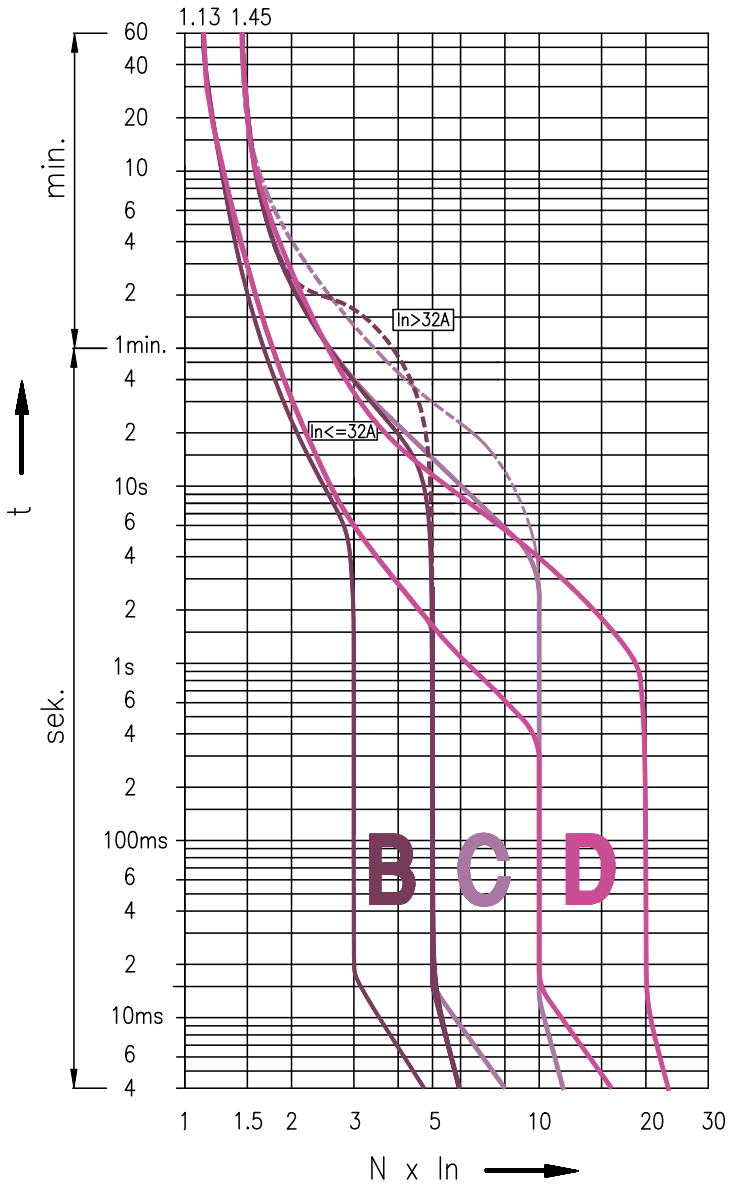
Conductor cross-section	Number of single conductors, rigid, single-wire CU conductor				
[mm²]	1	2	3	4	5
1,5	✓	✓	✓	✓	×
2,5	✓	✓	✓	×	×
4	✓	✓	✓	×	×
6	✓	✓	×	×	×
10	✓	✓	×	×	×
16	✓	×	×	×	×
25	✓	×	×	×	×

Remark: When you use more than 2 cables you have to be careful how those cables are inserted to ensure proper pressure on each cable

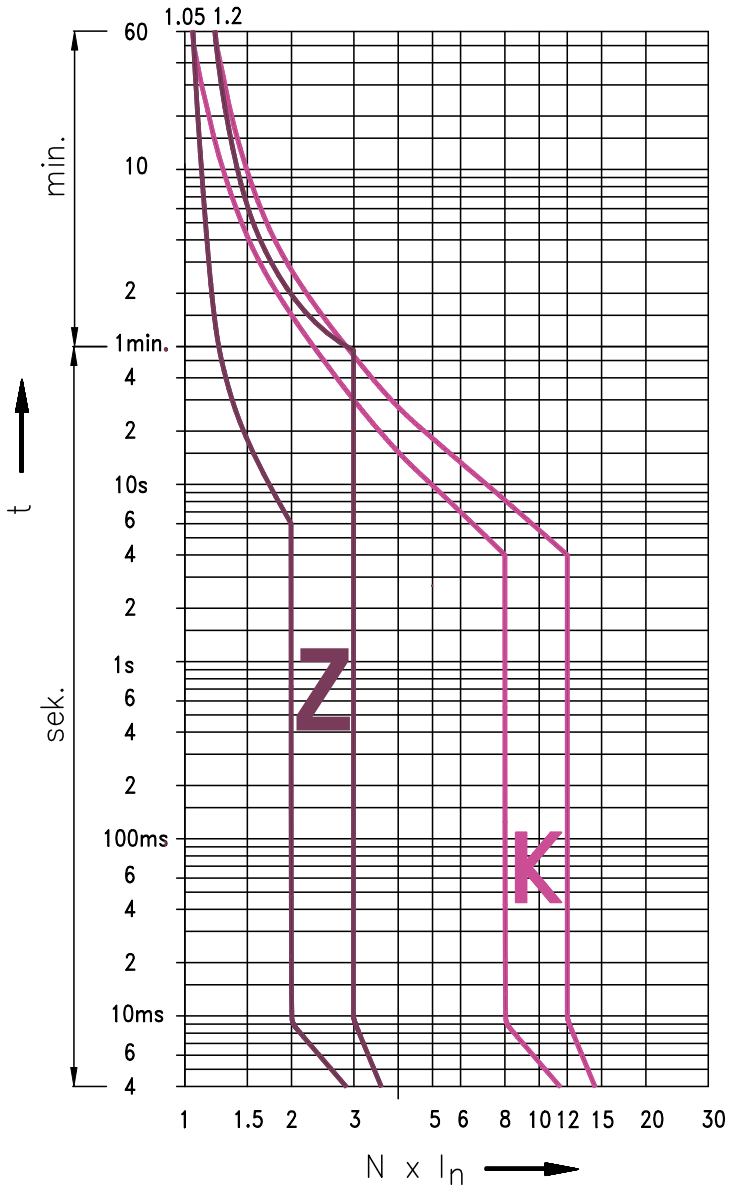
Conductor cross-section	Number of single conductors, flexible Cu conductors with cable ferrule					
[mm²]	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	×	×	×
10	✓	✓	×	×	×	×
16	✓	×	×	×	×	×
25	✓	×	×	×	×	×

Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

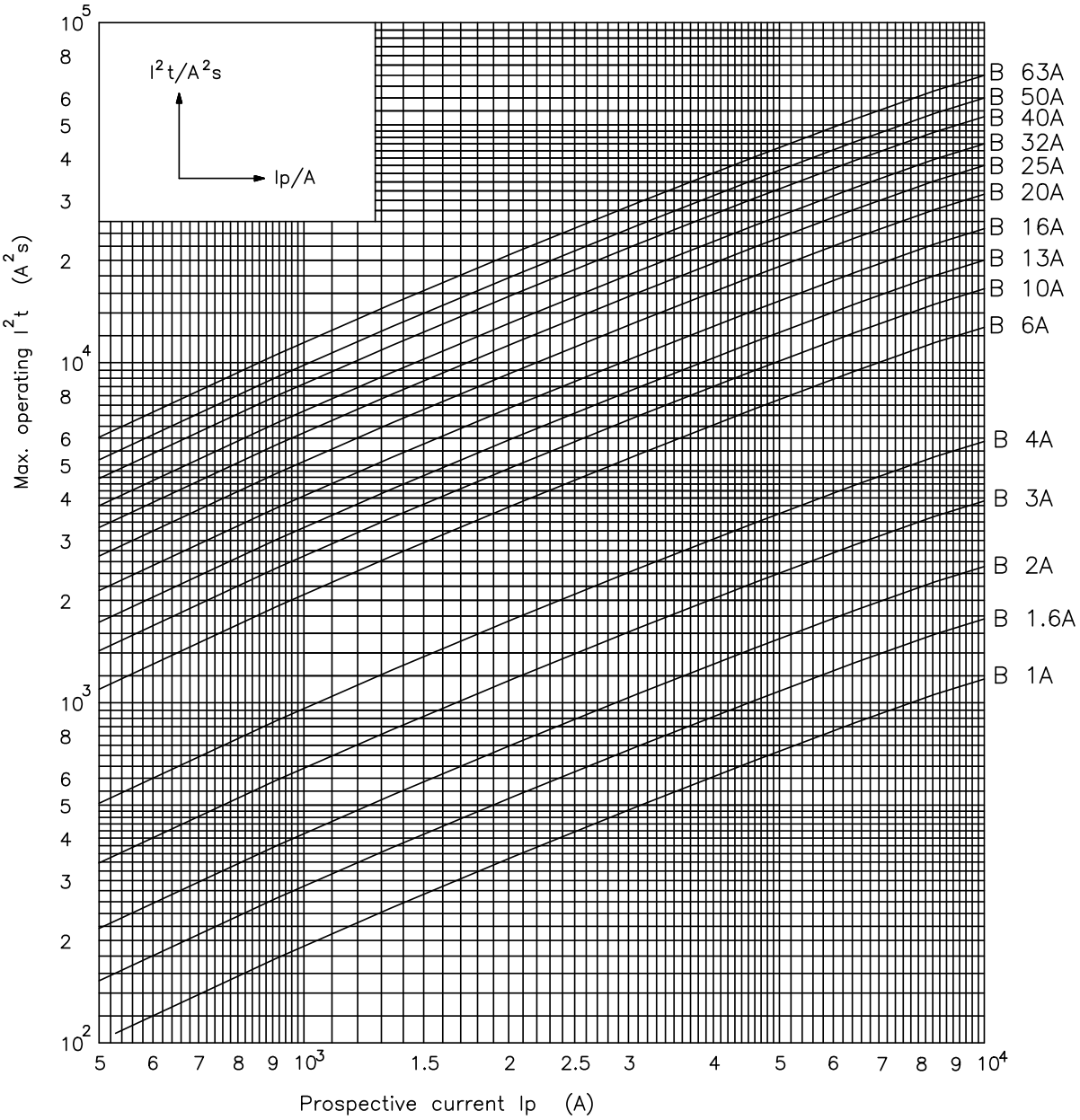
Time current characteristics I/t at 50 and 60Hz, ETIMAT P10 and P10 Reset



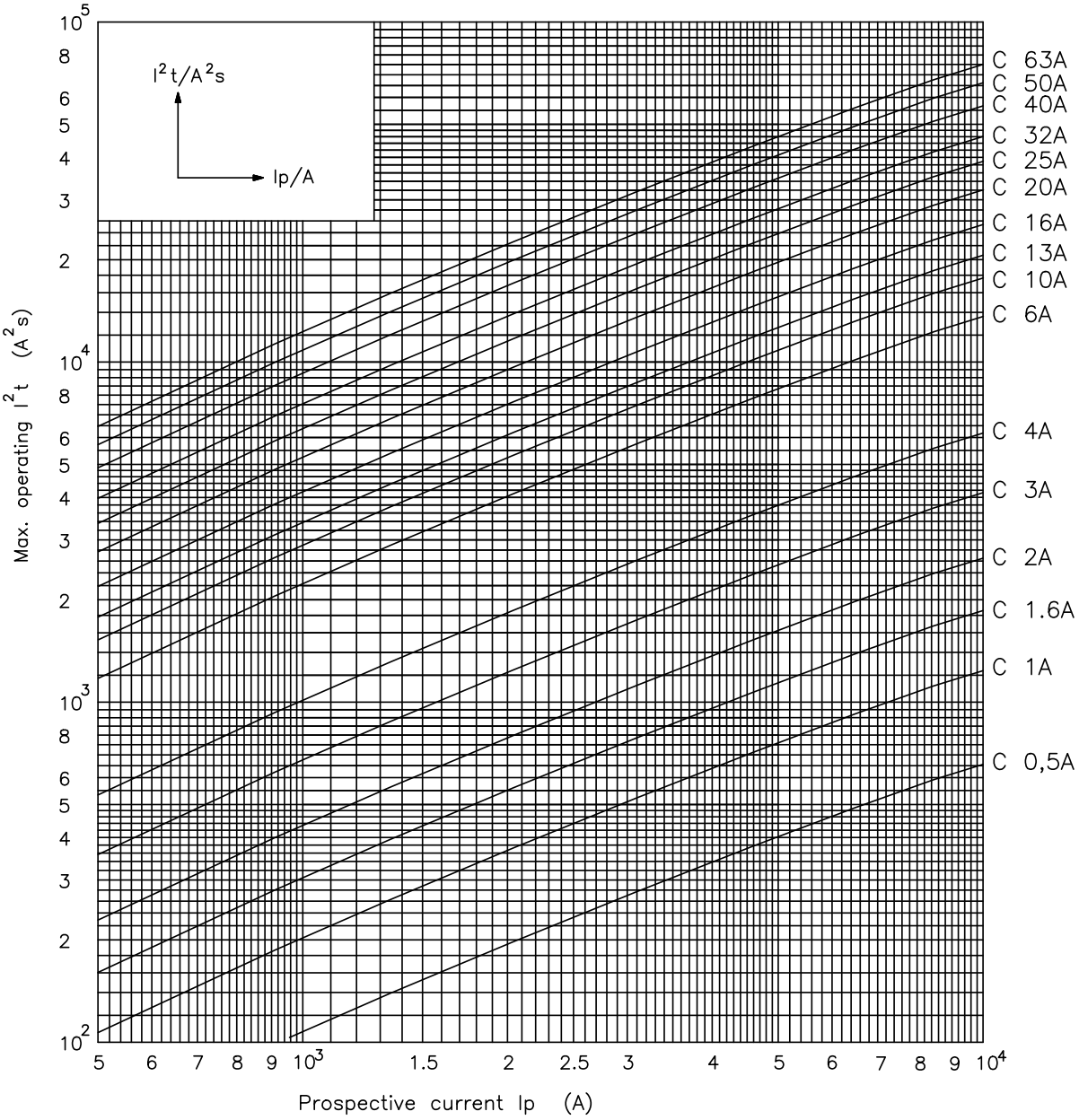
Time current characteristics I/t at 50 and 60Hz, ETIMAT P10 and P10 Reset



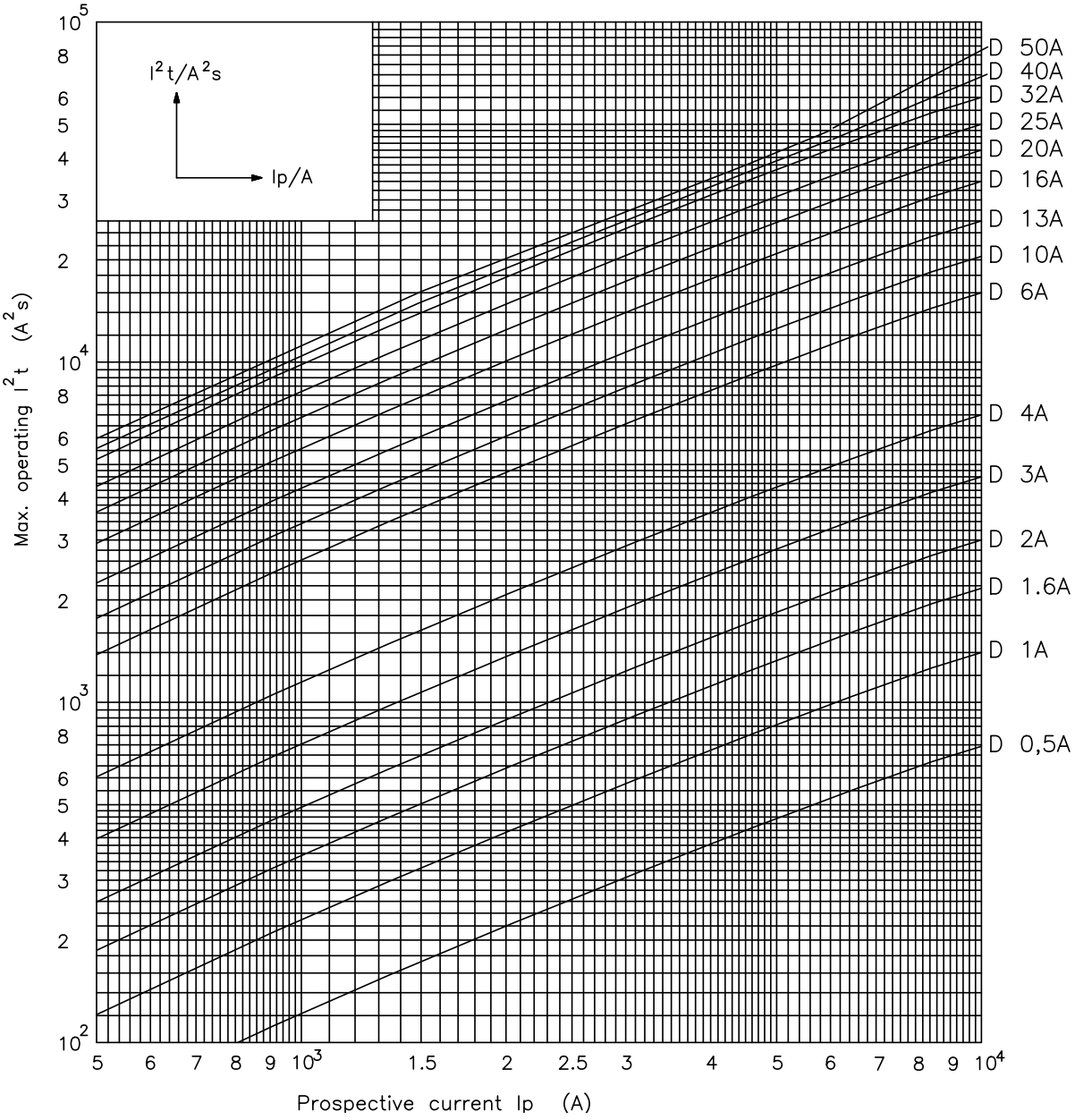
Melting energy characteristics I²t ETIMAT P10 and P10 Reset



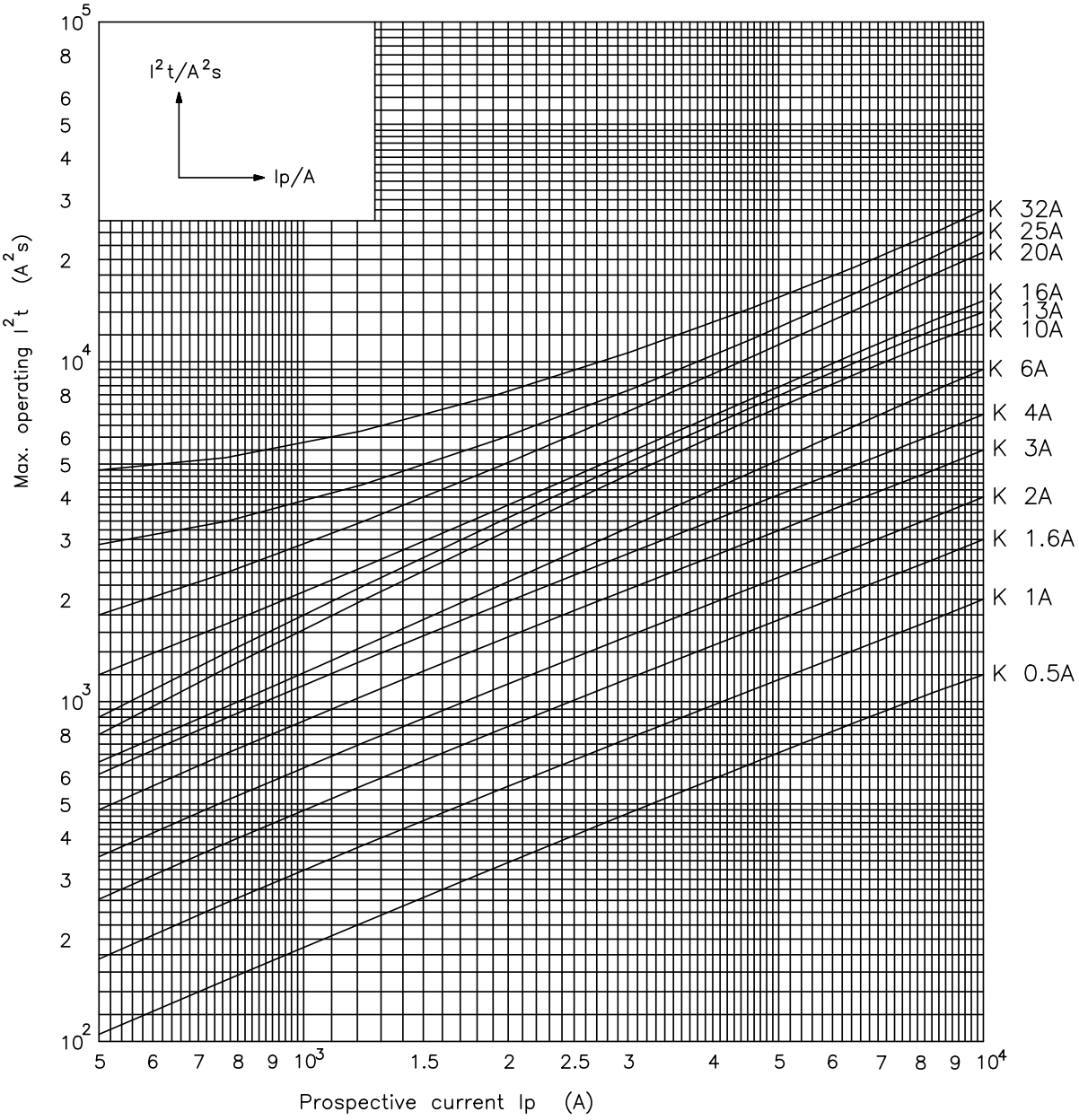
Melting energy characteristics I²t ETIMAT P10 and P10 Reset



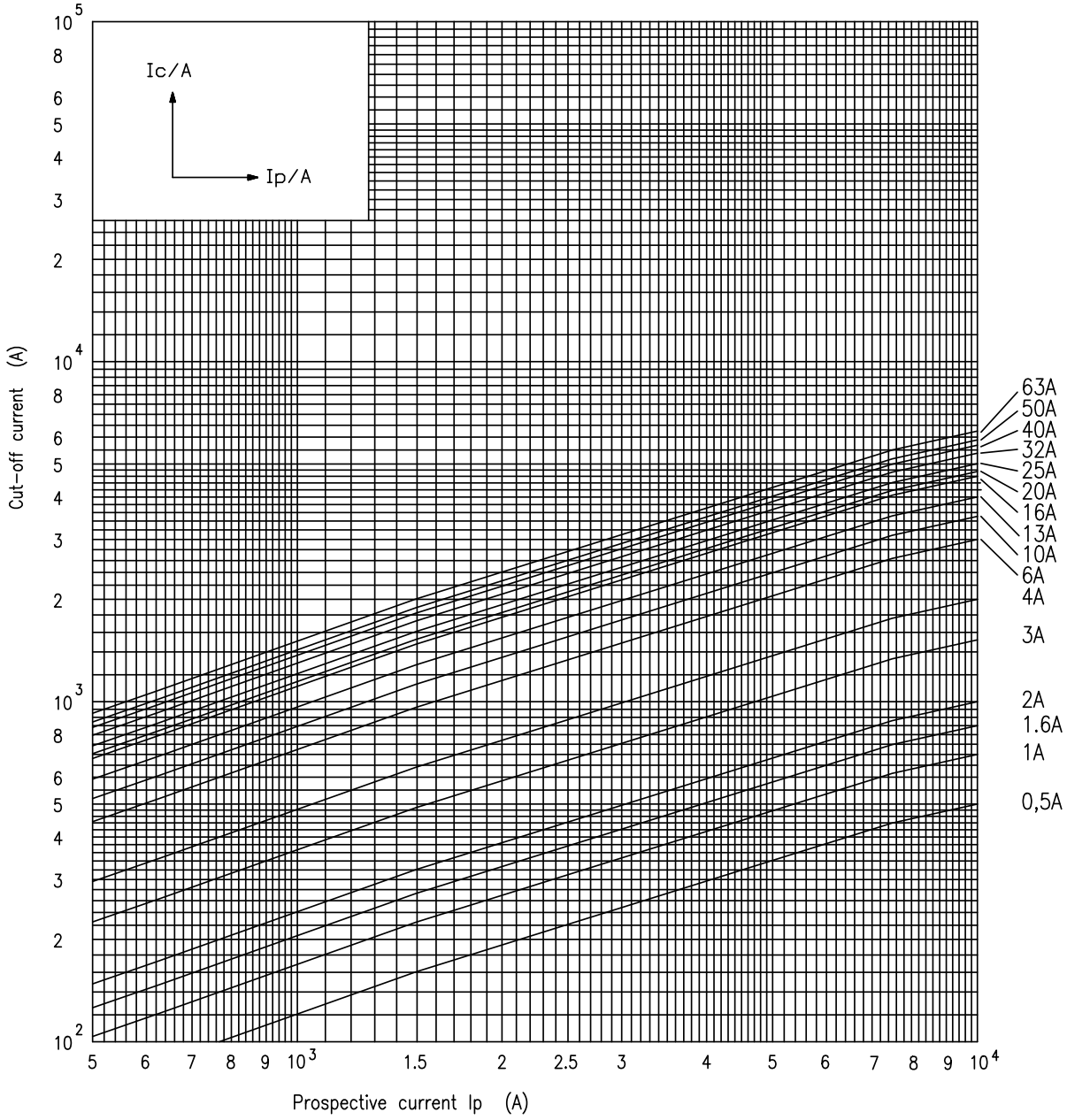
Melting energy characteristics I²t ETIMAT P10 and P10 Reset



Melting energy characteristics I²t ETIMAT P10 and P10 Reset



Cut-off characteristics I²t ETIMAT P10 and P10 Reset



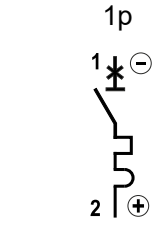
Miniature circuit breaker ETIMAT P10-DC

Rated short-circuit capacity	Rated current	Tripping characteristic
10 kA	**0,5 - 63 A**	**B, C, K, Z**

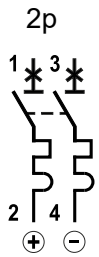
Application: Miniature circuit breakers ETIMAT DC are used for protection of conductors in direct current electric circuits. 1-pole circuit breakers are used for voltages up to 220 V d.c., while 2-pole circuit breakers with poles connected in a series are used for higher voltages (up to 440 V d.c.). When connecting the MCB ETIMAT DC , attention must be paid to polarity as connected in a wrong way the MCB can be destroyed. Note that two 1-pole MCBs cannot be used instead of one 2-pole MCB.

Technical data

Rated voltage - for 1-pole U_n - for 2-pole U_n	220 V DC 220 V /440 V DC
Rated time constant L/R	4 ms
Rated current I_n	0,5-32A (K & Z), 0,5-63A (C), 2-63A (B)
Rated short-circuit capacity	10 kA
Tripping characteristic	B, C, K, Z
Energy limiting class	3
Insulating class	B
Pollution degree	2
Back-up fuse	100 A gG
Ambient temperature	-40°C ... +70°C
Storage temperature	-60°C ... +70°C
Terminals	1-25mm², min 1,4Nm / max 2,5Nm
Terminal screw	M5 (Pozidrive PZ2)
Mounting position	any
Sealing possibility	✓
Terminal cover	✓
Contact position indicator	✓
Locking device	✓
Resistance to vibrations (IEC 60068-2-7)	5g (10,60 & 500Hz)
Standards	IEC 60898, EN 60898, DIN VDE 0641

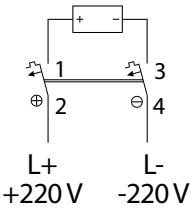


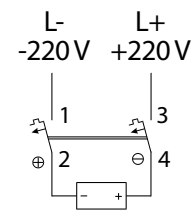
supply top or bottom, considering polarity

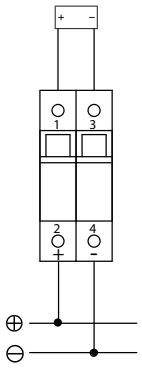


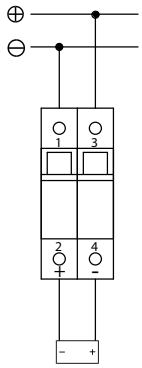
Supply bottom

Supply top









1-pole, characteristic B, C

I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	g	
0,5	220	/	/	ETIMAT P10-DC 1p C0,5	001903021	94	12/108
1		ETIMAT P10-DC 1p B1	001903002	ETIMAT P10-DC 1p C1	001903022	94	12/108
1,6		ETIMAT P10-DC 1p B1,6	001903003	ETIMAT P10-DC 1p C1,6	001903023	94	12/108
2		ETIMAT P10-DC 1p B2	001903004	ETIMAT P10-DC 1p C2	001903024	94	12/108
3		ETIMAT P10-DC 1p B3	001903005	ETIMAT P10-DC 1p C3	001903025	94	12/108
4		ETIMAT P10-DC 1p B4	001903006	ETIMAT P10-DC 1p C4	001903026	94	12/108
6		ETIMAT P10-DC 1p B6	001903007	ETIMAT P10-DC 1p C6	001903027	94	12/108
10		ETIMAT P10-DC 1p B10	001903008	ETIMAT P10-DC 1p C10	001903028	94	12/108
13		ETIMAT P10-DC 1p B13	001903009	ETIMAT P10-DC 1p C13	001903029	94	12/108
16		ETIMAT P10-DC 1p B16	001903010	ETIMAT P10-DC 1p C16	001903030	94	12/108
20		ETIMAT P10-DC 1p B20	001903011	ETIMAT P10-DC 1p C20	001903031	94	12/108
25		ETIMAT P10-DC 1p B25	001903012	ETIMAT P10-DC 1p C25	001903032	95	12/108
32		ETIMAT P10-DC 1p B32	001903013	ETIMAT P10-DC 1p C32	001903033	95	12/108
40		ETIMAT P10-DC 1p B40	001903014	ETIMAT P10-DC 1p C40	001903034	95	12/108
50		ETIMAT P10-DC 1p B50	001903015	ETIMAT P10-DC 1p C50	001903035	103	12/108
63		ETIMAT P10-DC 1p B63	001903016	ETIMAT P10-DC 1p C63	001903036	106	12/108

1-pole, characteristic K, Z

I_n [A]	U_n [V]	Type K	Code No. K	Type Z	Code No. Z	g	
0,5	220	ETIMAT P10-DC 1p K0,5	001903061	ETIMAT P10-DC 1p Z0,5	001903081	94	12/108
1		ETIMAT P10-DC 1p K1	001903062	ETIMAT P10-DC 1p Z1	001903082	94	12/108
1,6		ETIMAT P10-DC 1p K1,6	001903063	ETIMAT P10-DC 1p Z1,6	001903083	94	12/108
2		ETIMAT P10-DC 1p K2	001903064	ETIMAT P10-DC 1p Z2	001903084	94	12/108
3		ETIMAT P10-DC 1p K3	001903065	ETIMAT P10-DC 1p Z3	001903085	94	12/108
4		ETIMAT P10-DC 1p K4	001903066	ETIMAT P10-DC 1p Z4	001903086	94	12/108
6		ETIMAT P10-DC 1p K6	001903067	ETIMAT P10-DC 1p Z6	001903087	94	12/108
10		ETIMAT P10-DC 1p K10	001903068	ETIMAT P10-DC 1p Z10	001903088	94	12/108
13		ETIMAT P10-DC 1p K13	001903069	ETIMAT P10-DC 1p Z13	001903089	94	12/108
16		ETIMAT P10-DC 1p K16	001903070	ETIMAT P10-DC 1p Z16	001903090	94	12/108
20		ETIMAT P10-DC 1p K20	001903071	ETIMAT P10-DC 1p Z20	001903091	94	12/108
25		ETIMAT P10-DC 1p K25	001903072	ETIMAT P10-DC 1p Z25	001903092	95	12/108
32		ETIMAT P10-DC 1p K32	001903073	ETIMAT P10-DC 1p Z32	001903093	95	12/108

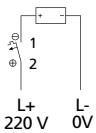
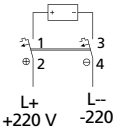
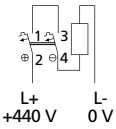
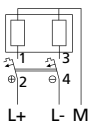
2-pole, characteristic B, C

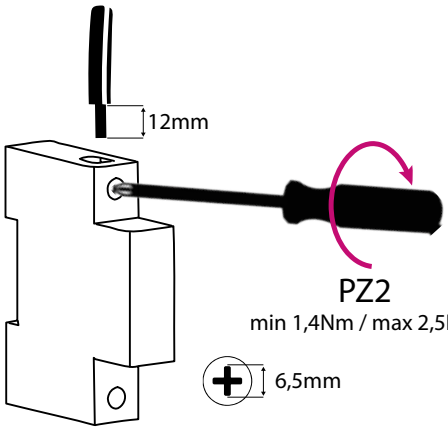
I_n [A]	U_n [V]	Type B	Code No. B	Type C	Code No. C	g	
0,5	440	/	/	ETIMAT P10-DC 2p C0,5	001903221	190	6/54
1		ETIMAT P10-DC 2p B1	001903202	ETIMAT P10-DC 2p C1	001903222	190	6/54
1,6		ETIMAT P10-DC 2p B1,6	001903203	ETIMAT P10-DC 2p C1,6	001903223	190	6/54
2		ETIMAT P10-DC 2p B2	001903204	ETIMAT P10-DC 2p C2	001903224	190	6/54
3		ETIMAT P10-DC 2p B3	001903205	ETIMAT P10-DC 2p C3	001903225	190	6/54
4		ETIMAT P10-DC 2p B4	001903206	ETIMAT P10-DC 2p C4	001903226	190	6/54
6		ETIMAT P10-DC 2p B6	001903207	ETIMAT P10-DC 2p C6	001903227	190	6/54
10		ETIMAT P10-DC 2p B10	001903208	ETIMAT P10-DC 2p C10	001903228	190	6/54
13		ETIMAT P10-DC 2p B13	001903209	ETIMAT P10-DC 2p C13	001903229	190	6/54
16		ETIMAT P10-DC 2p B16	001903210	ETIMAT P10-DC 2p C16	001903230	190	6/54
20		ETIMAT P10-DC 2p B20	001903211	ETIMAT P10-DC 2p C20	001903231	190	6/54
25		ETIMAT P10-DC 2p B25	001903212	ETIMAT P10-DC 2p C25	001903232	193	6/54
32		ETIMAT P10-DC 2p B32	001903213	ETIMAT P10-DC 2p C32	001903233	193	6/54
40		ETIMAT P10-DC 2p B40	001903214	ETIMAT P10-DC 2p C40	001903234	193	6/54
50		ETIMAT P10-DC 2p B50	001903215	ETIMAT P10-DC 2p C50	001903235	208	6/54
63		ETIMAT P10-DC 2p B63	001903216	ETIMAT P10-DC 2p C63	001903236	215	6/54

2-pole, characteristic K, Z

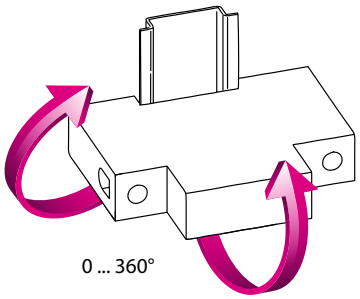
I_n [A]	U_n [V]	Type K	Code No. K	Type Z	Code No. Z	g	
0,5	440	ETIMAT P10-DC 2p K0,5	001903261	ETIMAT P10-DC 2p Z0,5	001903281	190	6/54
1		ETIMAT P10-DC 2p K1	001903262	ETIMAT P10-DC 2p Z1	001903282	190	6/54
1,6		ETIMAT P10-DC 2p K1,6	001903263	ETIMAT P10-DC 2p Z1,6	001903283	190	6/54
2		ETIMAT P10-DC 2p K2	001903264	ETIMAT P10-DC 2p Z2	001903284	190	6/54
3		ETIMAT P10-DC 2p K3	001903265	ETIMAT P10-DC 2p Z3	001903285	190	6/54
4		ETIMAT P10-DC 2p K4	001903266	ETIMAT P10-DC 2p Z4	001903286	190	6/54
6		ETIMAT P10-DC 2p K6	001903267	ETIMAT P10-DC 2p Z6	001903287	190	6/54
10		ETIMAT P10-DC 2p K10	001903268	ETIMAT P10-DC 2p Z10	001903288	190	6/54
13		ETIMAT P10-DC 2p K13	001903269	ETIMAT P10-DC 2p Z13	001903289	190	6/54
16		ETIMAT P10-DC 2p K16	001903270	ETIMAT P10-DC 2p Z16	001903290	190	6/54
20		ETIMAT P10-DC 2p K20	001903271	ETIMAT P10-DC 2p Z20	001903291	190	6/54
25		ETIMAT P10-DC 2p K25	001903272	ETIMAT P10-DC 2p Z25	001903292	193	6/54
32		ETIMAT P10-DC 2p K32	001903273	ETIMAT P10-DC 2p Z32	001903293	193	6/54

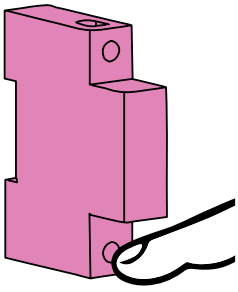
Connecting diagrams in direct current electric circuits

Rated voltage of circuit breaker	220 V ⎓	220/440 V ⎓	220/440 V ⎓	220/440 V ⎓
Voltage between conductors - max.	220 V ⎓	440 V ⎓	440 V ⎓	440 V ⎓
Voltage between conductor and earth - max.	220 V ⎓	220 V ⎓	440 V ⎓	220 V ⎓
Circuit breaker	1-pole	2-pole	2-pole	2-pole
Connecting diagram				

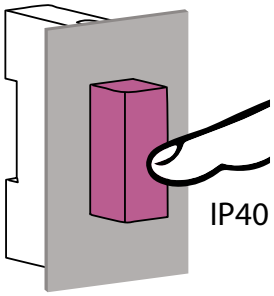


Any mounting position

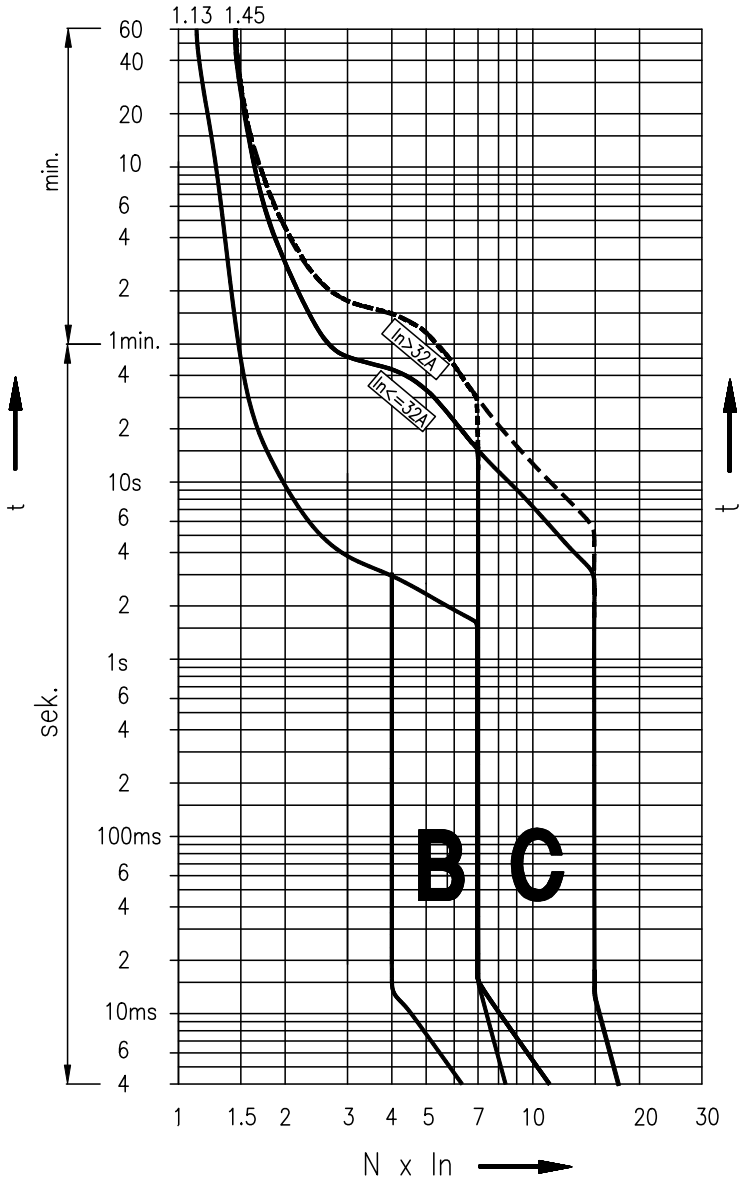


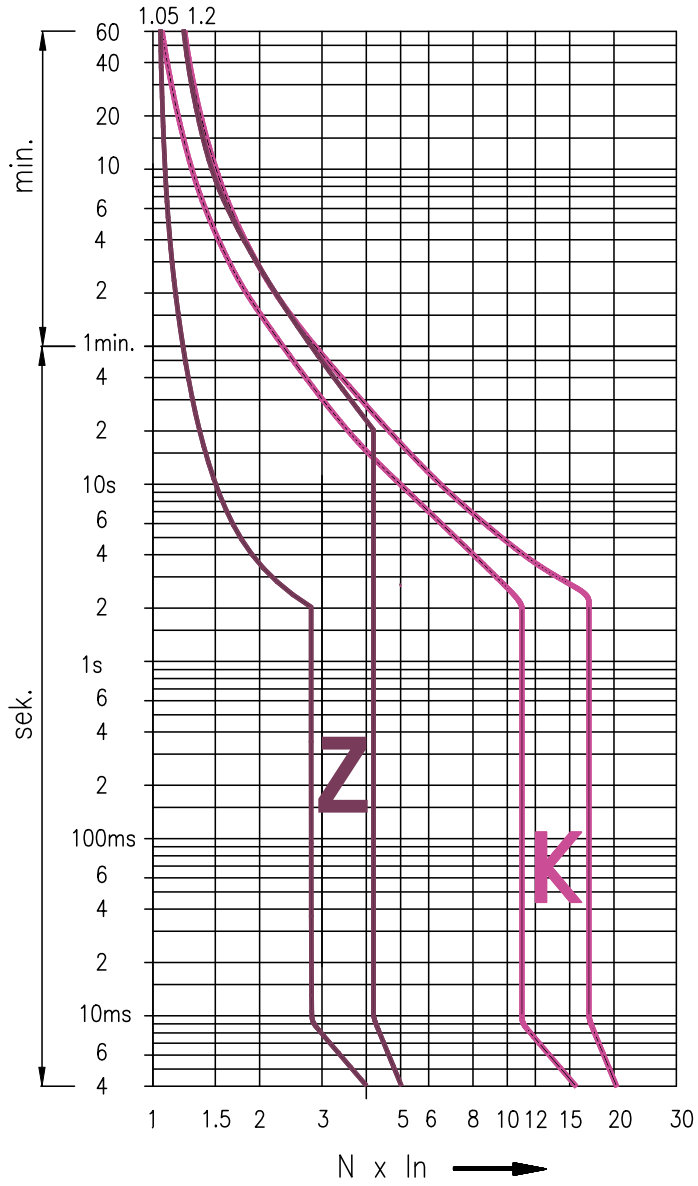


IP20



Time current characteristics I/t, ETIMAT P10-DC





Conductor cross-section [mm²]	Number of single conductors, rigid, single-wire CU conductor				
	1	2	3	4	5
1,5	✓	✓	✓	✓	×
2,5	✓	✓	✓	×	×
4	✓	✓	✓	×	×
6	✓	✓	×	×	×
10	✓	✓	×	×	×
16	✓	×	×	×	×
25	✓	×	×	×	×

Remark: When you use more than 2 cables you have to be careful how those cables are inserted to ensure proper pressure on each cable

Conductor cross-section [mm²]	Number of single conductors, flexible Cu conductors with cable ferrule					
	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	×	×	×
10	✓	✓	×	×	×	×
16	✓	×	×	×	×	×
25	✓	×	×	×	×	×

Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

Accessories for ETIMAT P6, ETIMAT P10(/R) and ETIMAT P10-DC

ETIMAT terminal cover

Code No.	g	
002159011	2	12

Sealing piece ETIMAT

Code No.	g	
001908405	2	12

Locking device

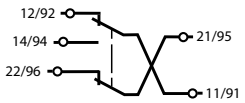
Code No.	g	
001908401	3	1/1

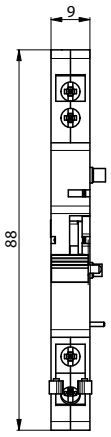
The PS/SS ETIMAT P6/P10 is an auxiliary/signal switch designed for remote signalling. It is used in conjunction with the MCB, to which it is attached on the left side. Although the PS/SS ETIMAT P6/P10 can be fixed initially, it may also be attached at a later stage. The clamps on the device are safe to touch. Its external dimensions are consistent with the MCB, and its built-in width measures 0.5 module (9 mm).

During installation, ensure that the MCB is switched off. The package for the PS/SS ETIMAT P6/P10 includes connection springs if you're using only one PS/SS. However, up to three PS/SS can be fitted to the ETIMAT P6/P10 using special connection springs.

Technical data

Function	Auxiliary or Signal Switch
Rated voltage	230V AC/DC, 110V DC
Rated current	6A (230V AC); 1A (110V DC); 0,5A (220V DC)
Rated frequency	50/60Hz, DC
Index of protection	IP 20 (IP 40)
Terminal capacity	1,5mm^2
Terminal Screw	M3 PH1
Terminal torque	max. 0,5Nm
Ambient temperature	-25°C ... +40°C
Storage temperature	-40°C ... +70°C
Contacts	1x NC , 1x NC/NO
Mounting position	any
Standards	EN 62019





Auxiliary / signal switch PS/SS ETIMAT P6/P10

Type	Code No.	contacts	g	
PS/SS ETIMAT P6/P10	001908421	1xNC, 1xNC/NO	53	1/12

Connection spring for 2x and 3x PS/SS

Type	Code No.	g	
ETIMAT P10 2xPS/SS	027324022	3,7	10
ETIMAT P10 3xPS/SS	027324023	4,5	10

AUX switch connections	status of the breaker ON	OFF
11-14 NO	1	0
11-12 NC	0	1
21-22 NC	0	1

Signal switch connections	status of the breaker ON	manual trip	overcurrent trip
11-14 NO	1	1	0
11-12 NC	0	0	1
21-22 NC	0	0	1

NO - Normally open contact --> during the activation it makes a contact
NC - Normally closed contact --> during the activation it brakes the contact
1 - contact
0 - without a contact

Installation instructions
WARNING: Do not install three auxiliary/signal switches on a single-pole MCB.

1. Before adding the switch, first remove the connection spring (Fig. 1).
2. Adjust the contact position based on the desired function, using the rotary switch as per the markings (Fig. 2).
3. When utilizing two or three auxiliary/signal switches, ensure the function selection matches the guides in Fig. 9 or Fig. 13, respectively.
4. For installations involving two or three additional auxiliary/signal switches, break the plastic windows on their housings, except for the outermost one (Fig. 7, Fig. 11).
5. If breaking the plastic window on the switch, ensure that no fragments enter the body of the switch (Fig. 3).
6. Connect the auxiliary/signal switches to the MCB (Fig. 4, Fig. 8, Fig. 12).
7. Secure the auxiliary/signal switches in place using appropriately sized connection springs (Fig. 5, Fig. 10, Fig. 14). Note: These connection springs are not included in the delivery set.
8. To test the additional auxiliary/signal switches (PS/SS), use a screwdriver to press the triggering mechanism in the "TEST" window of the switch (Fig. 6). Ensure the handle is set to the "ON" position.

Installation of one PS/SS ETIMAT P6/P10 switch

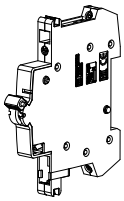


Fig. 1

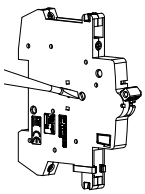


Fig. 2

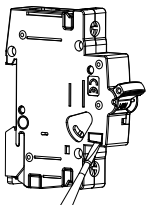


Fig. 3

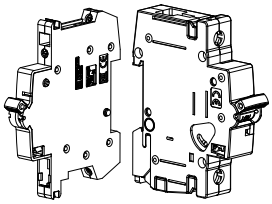


Fig. 4

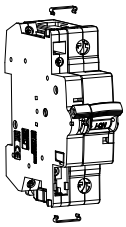


Fig. 5

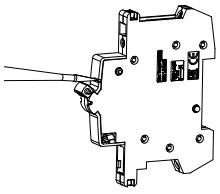


Fig. 6

Installation of two PS/SS ETIMAT P6/P10 switches

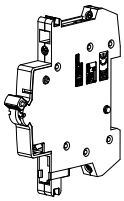


Fig. 1

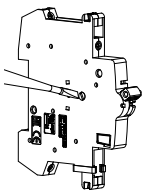


Fig. 2

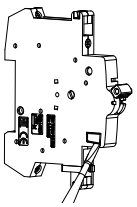


Fig. 7

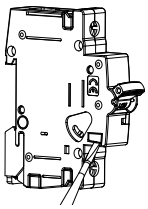


Fig. 3

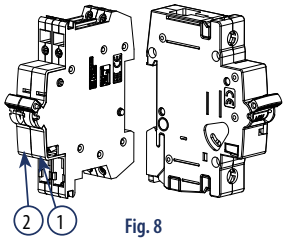


Fig. 8

Functionality 1	2
SS	PS/SS
PS	PS

Fig. 9

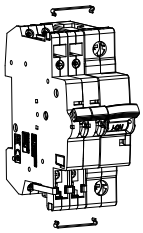


Fig. 10

Installation of three PS/SS ETIMAT P6/P10 switches

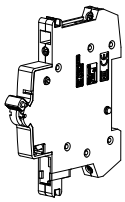


Fig. 1

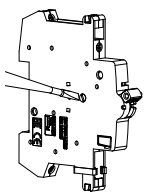


Fig. 2

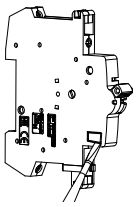


Fig. 11

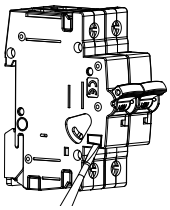


Fig. 3

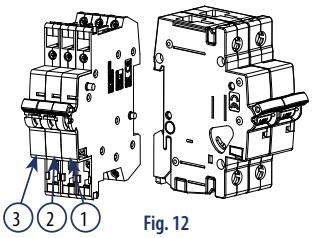


Fig. 12

Functionality 1	2	3
SS	SS	PS/SS
SS	PS	PS
PS	PS	PS

Fig. 13

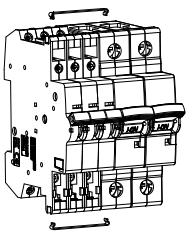
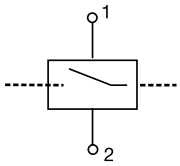


Fig. 14

DA ETIMAT P6/P10 shunt trip release is fixed to the right side of the miniature circuit breaker ETIMAT P6/P10 for remote release of the MCB. Dimensions correspond to those of MCB ETIMAT P6/P10.

Technical data

Rated voltage	12-60V AC/DC, 110-250V AC/DC
Rated frequency	50/60Hz, DC
Max inrush current	3A
Index of protection	IP 20 (IP 40)
Terminals	1-25mm², min 1,4Nm / max 2,5Nm
Terminal screw	M5 (Pozidrive PZ2)
Ambient temperature	-40°C ... +70°C
Storage temperature	-60°C ... +70°C
Mounting on the rail	EN 60715
Mounting position	any
Sealing possibility	✓
Terminal cover	✓
Locking device	✓



Note: Same dimensions as ETIMAT P10

Shunt trip release DA ETIMAT P6/P10

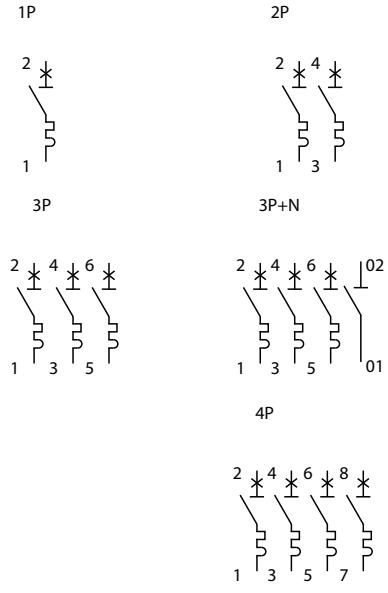
Type	Code No.	g	
DA ETIMAT P6/P10 12-60V AC/DC	001908411	110	1/54
DA ETIMAT P6/P10 110-250V AC/DC	001908412	110	1/54
DA ETIMAT P10/R 12-60V AC/DC	001908413	110	1/54
DA ETIMAT P10/R 110-250V AC/DC	001908414	110	1/54

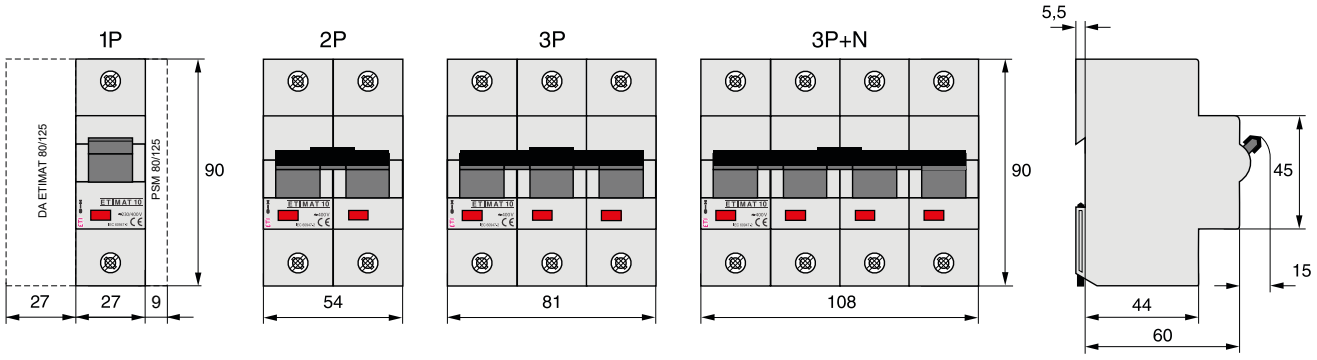
Miniature circuit breaker ETIMAT 10 80 -125A

Rated short-circuit capacity	Rated current	Tripping characteristics
15, 20 kA	**80 - 125 A**	**B, C, D**

Technical data

Rated voltage	80-125 A	240/415V AC, 60V DC/pole	
Rated current	80, 100, 125 A		
Tripping characteristics	B, C, D		
Rated frequency	50/60 Hz		
Rated insulation voltage	440V AC (80-125A)		
Rated impulse withstand voltage U_{imp}	4kV (80-125A)		
Rated short-circuit capacity:	Characteristic B, C	I_n=80, 100 A	20kA (EN 60947-2)
		I_n=125 A	15kA (EN 60947-2)
	Characteristic D	I_n=80 A	20kA (EN 60947-2)
		I_n=100 A	15kA (EN 60947-2)
Energy limiting class	3		
Terminals	80-125 A	2,5-50mm² / 2,5-3,0 Nm	
Build-in width	80-125 A	27mm/Pol	
Terminal screw	M6 PZ2		
Mounting on the rail	EN 60715 (EN 50022)		
Mounting position	any		
Ambient temperature	max -30°C ... +50°C		
Storage temperature	max -50°C ... +70°C		
Mechanical durability (cycles)	80-125 A	min. 20000	
Sealing possibility	ON / OFF		
Back-up fuse	max 200A gL		
Resistance to vibrations (IEC 60068-2-7)	5g (10,60 & 500Hz)		
Standards	EN 60898, EN 60947-2		





1-pole

I_n [A]	Type B	Code No. B	Type C	Code No. C	Type D	Code No. D	g	
80	ETIMAT 10 1p B 80	002121731	ETIMAT 10 1p C 80	002131731	ETIMAT 10 1p D 80	002151731	231	2/72
100	ETIMAT 10 1p B 100	002121732	ETIMAT 10 1p C 100	002131732	ETIMAT 10 1p D 100	002151732	231	2/72
125	ETIMAT 10 1p B 125	002121733	ETIMAT 10 1p C 125	002131733	/	/	231	2/72

2-pole

I_n [A]	Type B	Code No. B	Type C	Code No. C	Type D	Code No. D	g	
80	ETIMAT 10 2p B 80	002123731	ETIMAT 10 2p C 80	002133731	ETIMAT 10 2p D 80	002153731	466	1/36
100	ETIMAT 10 2p B 100	002123732	ETIMAT 10 2p C 100	002133732	ETIMAT 10 2p D 100	002153732	466	1/36
125	ETIMAT 10 2p B 125	002123733	ETIMAT 10 2p C 125	002133733	/	/	466	1/36

3-pole

I_n [A]	Type B	Code No. B	Type C	Code No. C	Type D	Code No. D	g	
80	ETIMAT 10 3p B 80	002125731	ETIMAT 10 3p C 80	002135731	ETIMAT 10 3p D 80	002155731	696	1/18
100	ETIMAT 10 3p B 100	002125732	ETIMAT 10 3p C 100	002135732	ETIMAT 10 3p D 100	002155732	696	1/18
125	ETIMAT 10 3p B 125	002125733	ETIMAT 10 3p C 125	002135733	/	/	696	1/18

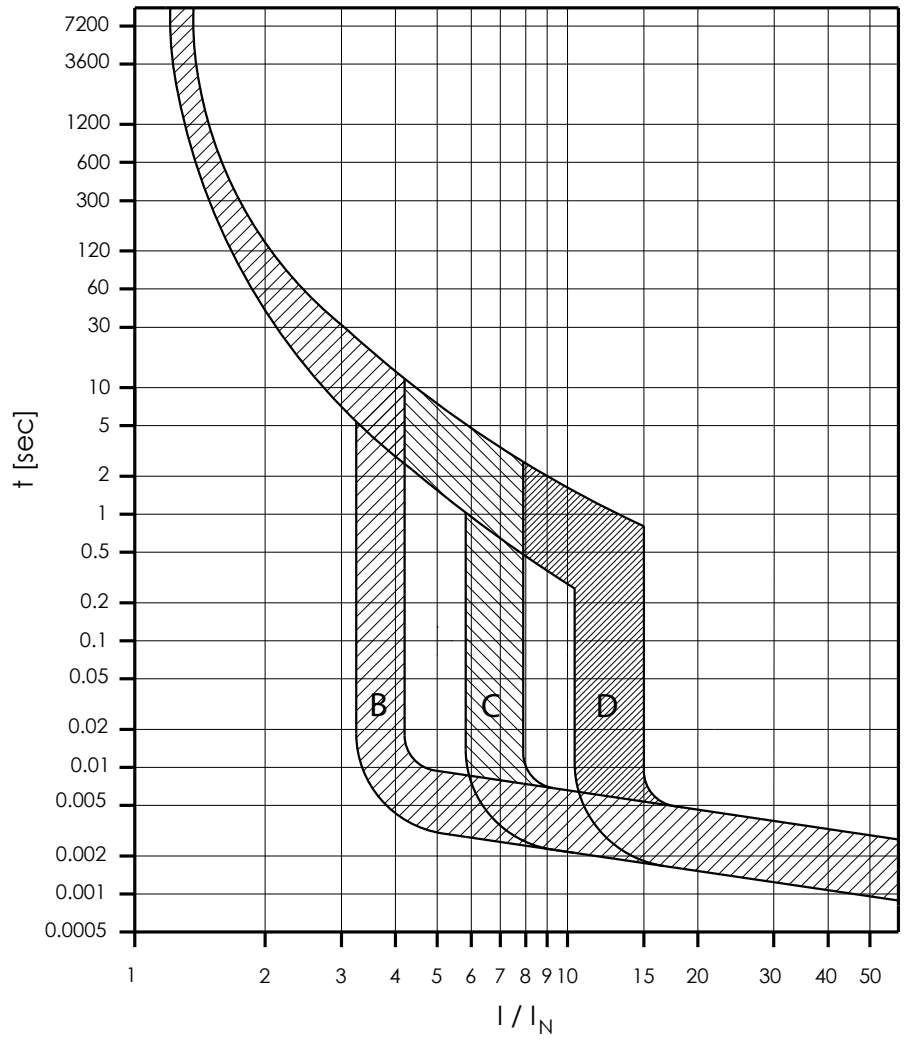
3-pole + N

I_n [A]	Type B	Code No. B	Type C	Code No. C	Type D	Code No. D	g	
80	ETIMAT 10 3p+N B 80	002126731	ETIMAT 10 3p+N C 80	002136731	ETIMAT 10 3p+N D 80	002156731	860	1/14
100	ETIMAT 10 3p+N B 100	002126732	ETIMAT 10 3p+N C 100	002136732	ETIMAT 10 3p+N D 100	002156732	860	1/14
125	ETIMAT 10 3p+N B 125	002126733	ETIMAT 10 3p+N C 125	002136733	/	/	860	1/14

4-pole

I_n [A]	Type B	Code No. B	Type C	Code No. C	g	
80	ETIMAT 10 4p B 80	002127731	ETIMAT 10 4p C 80	002137731	930	1/14
100	ETIMAT 10 4p B 100	002127732	ETIMAT 10 4p C 100	002137732	930	1/14
125	ETIMAT 10 4p B 125	002127733	ETIMAT 10 4p C 125	002137733	930	1/14

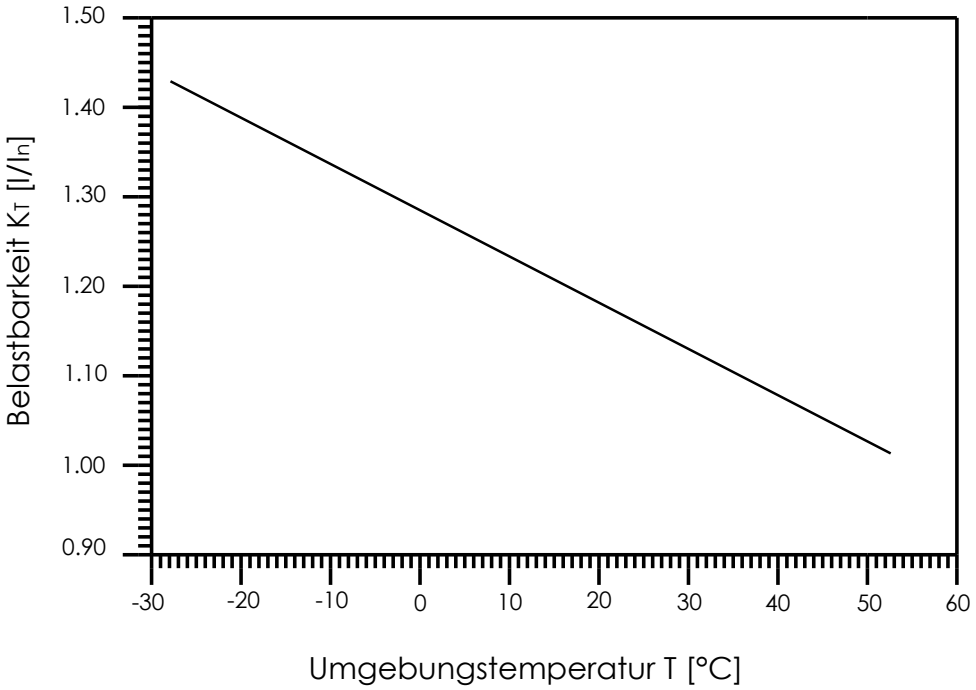
Time current characteristics I/t at 50 and 60Hz, ETIMAT 10 80 -125A



Resistance and power dissipation

characteristic	I_n [A]	R/pole [mΩ]	P/pole [w]
B, C, D	80	1,2	7,1
	100	0,9	9,1
	125	0,66	11,9

Effect of the ambient temperature (°C) K_T on the tripping characteristics of ETIMAT 10 80 -125A

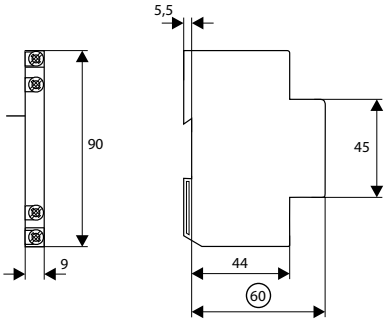


Zulässige Dauerbelastung IL bei Umgebungstemperatur T: $I_L(T) = I_n K_T(T)$

Accessories for ETIMAT10 80 - 125A

Technical data

Rated current	6 A / AC13 (250 V AC)
Rated thermal current I_{th}	8 A
Rated insulation voltage	440 V AC
Max. back-up fuse	6A
Contacts	**1x a-contact, 1x b-contact**
Utilization category AC-13	6 A/250 V AC
	2 A/440 V AC
Utilization category DC-13	4 A/600 V DC
	2 A/110 V DC
	0,5 A/230 V DC
Ambient temperature	max -5°C ... +40°C
Build-in width	9 mm/Pol
Mounting position	any
Mounting on the rail	EN 60715 (EN 50022)
Terminals	1x1mm² ... 2x2,5mm²
Standard	EN 60947-5-1

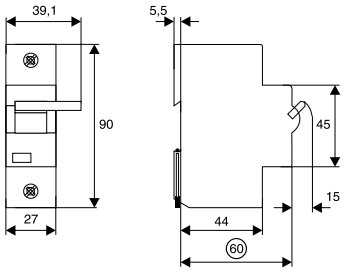


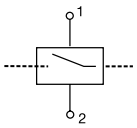
Auxiliary switch PSM 80/125

Type	Code No.	g	
PSM 80 - 125 A	002159121	62	1/12

Technical data

	24V	230V
Responding limit	8 V AC / 11 V DC	70 V AC / 90 V DC
Operating voltage range	12 V...60 V AC / DC	110 V...415 V AC / 110 V...230 V DC
Max. current consumption at the moment of switching on	18 A (24 V)	2 A (230 V)
Duration of current flow at max consumption	4,5 ms (AC) / 2 ms (DC)	4,5 ms (AC) / 4 ms (DC)
Minimum pulse duration	15 ms	10 ms
Internal resistance	2,0 Ω	130 Ω
Duty	100 %	
Tripping time	< 20 ms	
Peak withstand voltage	2 kV	
Service live operating cycles	> 4000	
Upper / lower terminals	lift / lift	
Conductor cross section	2,5 mm² ... 50 mm²	





Shunt trip release DA ETIMAT 80/125

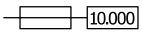
Type	Code No.	g	
DA ETIMAT 80/125 12-60V AC/DC	002159320	173	1/54
DA ETIMAT 80/125 110-415V	002159321	173	1/54

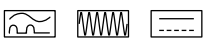
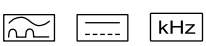
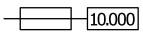
ASTI Residual Current Circuit Breakers - RCCBs

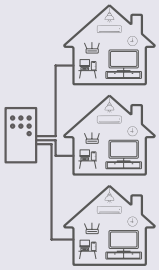
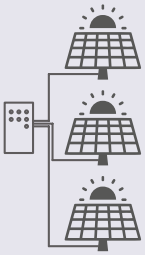
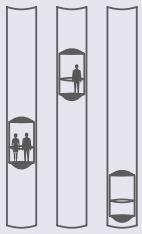
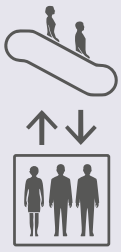
Residual current circuit breakers can be used in TN-S, TN-CS, TT and IT network systems, that is in all systems where neutral and protective conductors are separated. Residual current circuit breakers EFI are used for protection against indirect contact (fault protection) and direct contact (additional protection) of parts under voltage. In the case of protection against indirect contact (fault protection) you can use residual current protective devices with a rated residual current of $I_{\Delta n} \leq 300mA$. Residual current protective devices with a rated residual current of $I_{\Delta n} \leq 30mA$ fulfil the conditions for protection against direct contact (additional protection). For protection against fire, according to DIN VDE 0100-482 and IEC 60364-4-482, all cables and conductors in TN and TT systems must be protected by means of residual current protective devices with rated residual current of $I_{\Delta n} \leq 300mA$. In applications where resistive faults can cause a fire (radiant ceiling heating with panel heating elements), the rated residual current must be $I_{\Delta n} = 30mA$.

Types

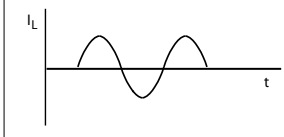
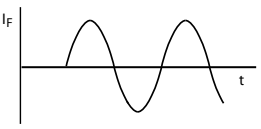
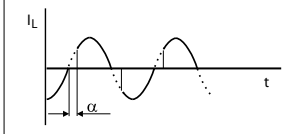
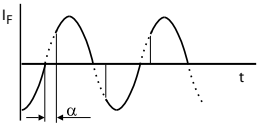
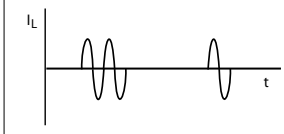
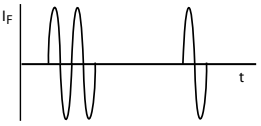
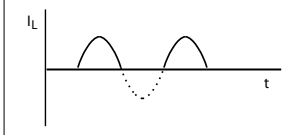
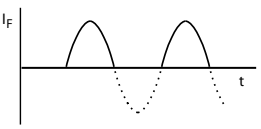
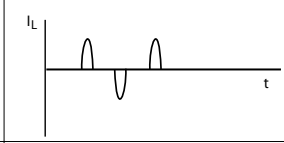
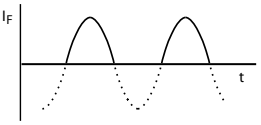
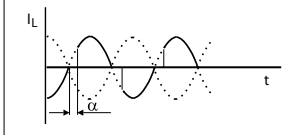
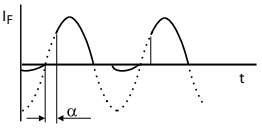
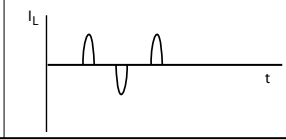
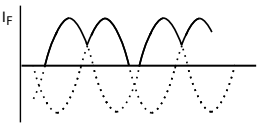
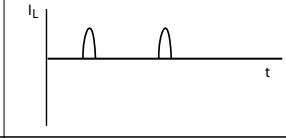
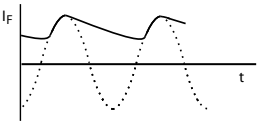
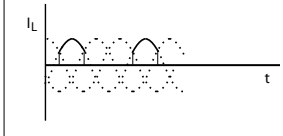
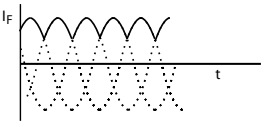
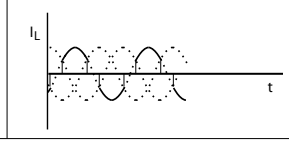
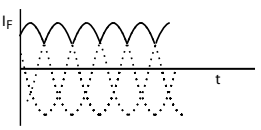
- AC Type: they are sensitive to alternating (sinusoidal) AC residual currents.
- A Type: they are sensitive to alternating (sinusoidal) AC residual currents and pulsating DC residual currents.
- B Type: they are sensitive to alternating (sinusoidal) AC residual currents, pulsating DC residual currents and smooth DC residual currents. Tripping values are defined up to 1kHz.
- B+ Type: they are sensitive to alternating (sinusoidal) AC residual currents, pulsating DC residual currents and smooth DC residual currents. Tripping values are defined up to 20kHz and they are below 420mA.
- Classification regarding break time
- Instantaneous: max. break time 40ms (Inst.)
- G/KV-Short time delay: time delayed min. 10ms and max. 40ms (G/KV)
- S-Selective: time delayed min. 40ms and max. 150ms (S)

EFI-P2 (2M)		Type AC	Type A		
		Inst.	Inst.	G/KV	S
	For alternating residual current	✓	✓	✓	✓
	For alternating and pulsating direct residual current		✓	✓	✓
	Short-circuit capacity with back-up fuse	✓	✓	✓	✓
	Lower temperature limit of application -25°C	✓	✓	✓	✓
	VDE 0664, part 1 (up to 80 A)		✓		✓
	Short time delayed (10 - 40 ms)			✓	
	Selective (time delayed 40 -150 ms)				✓

EFI-P4 (4M)		Type AC	Type A			Type B			Type B+		
		Inst.	Inst.	G/KV	S	Inst.	G/KV	S	Inst.	G/KV	S
	For alternating residual current	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	For alternating and pulsating direct residual current		✓	✓	✓	✓	✓	✓	✓	✓	✓
	For alternating, pulsating direct and smooth DC residual current (up to 1kHz)					✓	✓	✓	✓	✓	✓
	For alternating, pulsating direct and smooth DC residual current (up to 20kHz)								✓	✓	✓
	Short-circuit capacity with back-up fuse	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Lower temperature limit of application -25°C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	VDE 0664, part 1 (up to 80 A)		✓		✓	✓		✓	✓		✓
	Short time delayed (10 - 40 ms)			✓			✓			✓	
	Selective (time delayed 40 -150 ms)				✓			✓			✓

Simple household installations without electronic components	Household installations with electronic components (LCD TV, computers, printers, wash machines, …)	Surge current proof 3kA (8/20µs). High immunity against unwanted tripping. For S: ensuring selectivity in case of serially connected RCD's	Installations where 3f frequency converters and speed regulated machines are used (elevators, cranes). PV systems on a.c. side, Charging stations for electric vehicles, UPS, computer data centres, X-ray devices	Surge current proof 3kA (8/20µs) High immunity against unwanted tripping. For S: ensuring selectivity in case of serially connected RCD's	Requirement for increased fire protection according to VDE 0664-400
					
AC type - Instantaneous **2p / 4p** I_n = 25, 32, 40, 63, 80, 100 A $I_{\Delta n}$ = 30, 100, 300, 500 mA					
A type - Instantaneous **2p / 4p** I_n = 25, 40, 63, 80, 100,125 A $I_{\Delta n}$ = 30, 100, 300, 500 mA					
A type - **G/KV** (short-time delay: time delayed min. 10ms and max. 40ms) & **S** (selective: time delayed min. 40ms and max. 150ms) **2p / 4p** I_n = 25, 40, 63, 80, 100,125 A $I_{\Delta n}$ = 100, 300 mA					
B type – Instantaneous (Tripping values are defined up to 1kHz) **4p** I_n = 25, 40, 63 A $I_{\Delta n}$ = 30, 300 mA					
B type - **G/KV** (short-time delay: time delayed min. 10ms and max. 40ms) & **S** (selective: time delayed min. 40ms and max. 150ms) **4p** I_n = 25, 40, 63, 100,125 A $I_{\Delta n}$ = 100, 300 mA					
B+ type – Instantaneous (Tripping values are defined up to 20kHz and they are below 420mA) according to VDE 0664-400 **4p** I_n = 25, 40, 63 A $I_{\Delta n}$ = 30, 100, 300 mA					

Use of AC, A, and B type of RCCBs in case of different fault conditions

	Connection	Normal mains current	Fault earth current	AC	A	B, B+
1	Single phase			✓	✓	✓
2	Phase control			✓	✓	✓
3	Burst control			✓	✓	✓
4	Single phase rectifier				✓	✓
5	Two-pulse bridge				✓	✓
6	Two-pulse bridge, half controlled				✓	✓
7	Two-pulse bridge between phases				✓	✓
8	Single phase with smoothing					✓
9	Three-phase star					✓
10	Six-pulse bridge between phases					✓

Residual Current Circuit Breakers EFI-P

- Individual test measurements and other production data for each device can be read from the QR code, as well as instruction manuals and other technical materials

- Fully automated assembly line, enabling more intermediate measurements during asssembly process to ensure best functionality of final product

- Patented two-step mechanism for max reliability of operation

- Improved housing attachment with sealed screws
- Power dissipation per pole reduced by up to 45%
- High mechanical endurance: > 10.000 cycles
- High electrical endurance: > 4.000 cycles
- Rated conditional short-circuit current: 10 kA

WATCH THE VIDEO

- All important components are marked with a data matrix code, containing individual test results and thus ensuring exact traceability and highest quality control

- The terminals accept not only wires but also time saving busbars
- RCCBs can be supplied with single phase and three phase busbars
- Supply is possible both from top and bottom terminals

- Basic installation requirements are engraved into housing

- Real contact position indication for easier identification, whether RCCB is in ON or OFF position
- Clearly marked terminals to ensure appropriate connection

ASTI / Residual Current Circuit Breakers

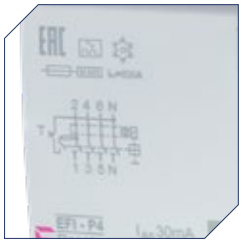
- Reset version: in case of differential current, the button moves to the “trip” (middle) position. In case of manual turn off, the button moves to the “off” (lowest) position.

- NL version: Connection of the neutral conductor on the left side, which allows the use of standard busbars (1p, 3p) for connecting RCCBSs and MCBs

- 127 V version: For use in in lower than standard system voltage (for instance 110V, 125V or 127V) systems.

- The possibility of installing additional accessories (auxiliary switch, shunt trip release)

- All necessary technical & installation information can be found on the front and side of the device



- Test button enables user to check residual functionality

- Better protection of terminals against touching the parts under voltage

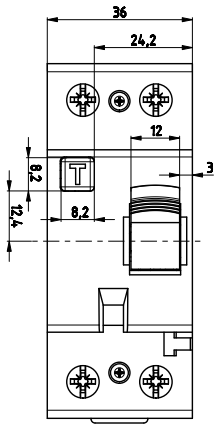
A and AC type residual current circuit breaker EFI-P2(R) & EFI-2

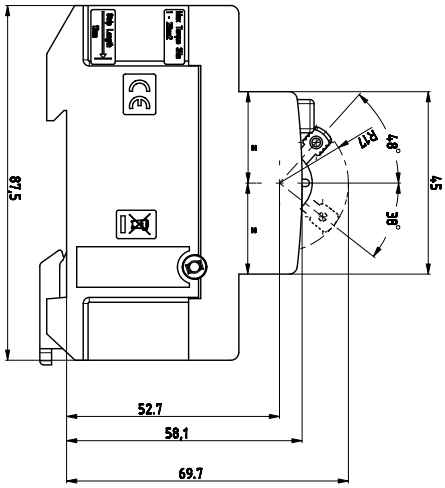
Rated residual current	Rated current	Type
0,03 - 0,5 A	**16 - 125 A**	**A, AC**

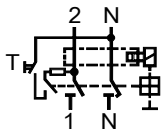
Technical data EFI-P2(R) Instantaneous type AC & A

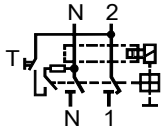
	EFI-P2, EFI-P2R 16-80A	EFI-P2R 100-125A
Electrical		
Rated Voltage U_n	230 / 240 V AC	230 V AC
Rated current I_n	16, 25, 40, 63, 80A	100, 125A
Rated frequency f_n	50/60Hz	50Hz
Rated insulation voltage U_i	440V	400V
Rated impulse withstand voltage (1,2/50µs)	4kV	4kV
Peak withstand current (8/20µs)	400A	250A
Electrical isolation	> 4mm contact space	
Rated residual operating current $I_{\Delta n}$	0,03; 0,1; 0,3 & 0,5A	
Rated conditional short-circuit current I_{cn}	10kA	10kA
Rated making and breaking capacity I_m	800A	1250A
Max back-up fuse for short circuit protection	80A gG	125A gG
Voltage range test circuit	150-264V	150-264V
Min. operating voltage	voltage independent	voltage independent
Insulating class	B	B
Standards	IEC/EN 61008	IEC/EN 61008
Mechanical Endurance (cycles)	> 10.000	> 5.000
Electrical endurance (cycles)	> 4.000	> 2.000
Shock resistance acc. to	IEC/EN 61008-1	IEC/EN 61008-1
Resistance to vibrations acc. To IEC 60068-2-7	5g (10, 60 & 500Hz)	5g (10, 60 & 500Hz)
Mechanical		
Frame size	45mm	45mm
Device height	68mm (DIN rail acc to EN6071)	
Device width	36mm (2 x Module units)	36mm (2 x Module units)
Degree of protection	IP20	IP20
Upper and lower terminals	open mounted/lift terminals	
Terminal capacity	1-25mm²	1-50mm²
Terminal screw	M5 (Pozidrive PZ2)	M6 (Pozidrive PZ2)
Terminal torque	max. 3Nm	max 5,0Nm
Busbar thickness	0,8 - 2 mm	0,8 - 2 mm
Operating temperature	-25°C ... +70°C	-25°C ... +55°C
Storage and transport temperature	-40°C ... +70°C	-40°C ... +70°C
Resistance to climatic conditions	IEC/EN 61008	IEC/EN 61008
Contact position indicator	mechanical red/green	
Mounting position	any	
Mounting on the rail	35mm acc to EN50022	
Supply possibility	top or bottom	

EFI-P2, EFI-P2R 16 - 80A





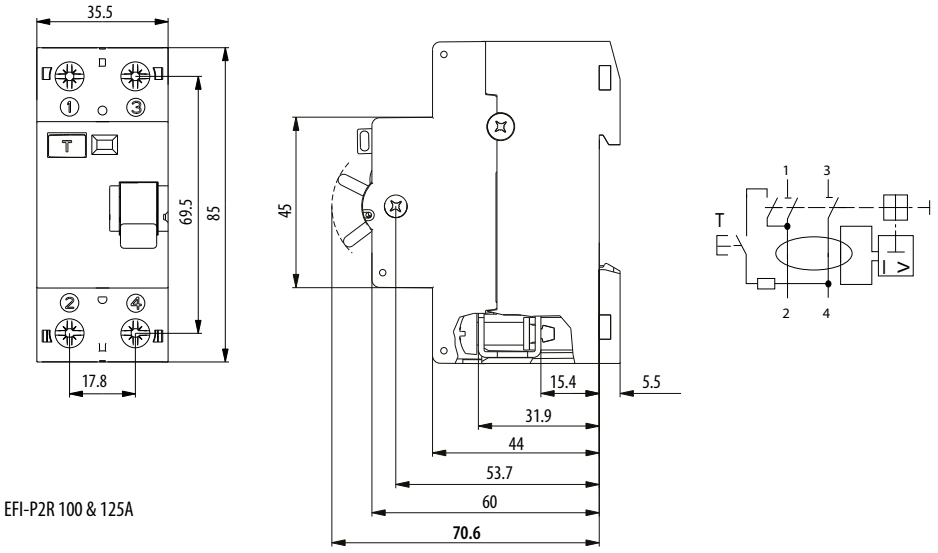




Version with N-pole on the left

I_n [A]	Power dissipation EFI-P2 P/pole [W]
16	0,46-0,51
25	1,22-1,27
40	3,48-3,72
63	2,14-2,58
80	3,53-3,82
100	7,35-7,65
125	10,7-11,3

ASTI / Residual Current Circuit Breakers



EFI-P2R 100 & 125A

EFI-P2 Instantaneous, EFI-P2R Instantaneous

I_n [A]	$I_{\Delta n}$ [A]	Type A	Type A Code No.	Type A Reset	Type A - R Code No.	Type AC	Type AC Code No.	g	
16	0,03	EFI-P2 A 16/0.03	002061110	EFI-P2R A 16/0.03	002061460	EFI-P2 AC 16/0.03	002061210	175	1/54
25		EFI-P2 A 25/0.03	002061111	EFI-P2R A 25/0.03	002061461	EFI-P2 AC 25/0.03	002061211	175	1/54
40		EFI-P2 A 40/0.03	002061112	EFI-P2R A 40/0.03	002061462	EFI-P2 AC 40/0.03	002061212	175	1/54
63		EFI-P2 A 63/0.03	002061113	EFI-P2R A 63/0.03	002061463	EFI-P2 AC 63/0.03	002061213	190	1/54
80		EFI-P2 A 80/0.03	002061114	EFI-P2R A 80/0.03	002061464	EFI-P2 AC 80/0.03	002061214	190	1/54
100		/	/	EFI-P2R A 100/0.03	002061465	/	/	184	1/54
125		/	/	EFI-P2R A 125/0.03	002061466	/	/	184	1/54
16	0,1	EFI-P2 A 16/0.1	002061120	EFI-P2R A 16/0.1	002061470	EFI-P2 AC 16/0.1	002061220	175	1/54
25		EFI-P2 A 25/0.1	002061121	EFI-P2R A 25/0.1	002061471	EFI-P2 AC 25/0.1	002061221	175	1/54
40		EFI-P2 A 40/0.1	002061122	EFI-P2R A 40/0.1	002061472	EFI-P2 AC 40/0.1	002061222	175	1/54
63		EFI-P2 A 63/0.1	002061123	EFI-P2R A 63/0.1	002061473	EFI-P2 AC 63/0.1	002061223	190	1/54
80		EFI-P2 A 80/0.1	002061124	EFI-P2R A 80/0.1	002061474	EFI-P2 AC 80/0.1	002061224	190	1/54
100		/	/	EFI-P2R A 100/0.1	002061475	/	/	184	1/54
125		/	/	EFI-P2R A 125/0.1	002061476	/	/	184	1/54
16	0,3	EFI-P2 A 16/0.3	002061130	EFI-P2R A 16/0.3	002061480	EFI-P2 AC 16/0.3	002061230	175	1/54
25		EFI-P2 A 25/0.3	002061131	EFI-P2R A 25/0.3	002061481	EFI-P2 AC 25/0.3	002061231	175	1/54
40		EFI-P2 A 40/0.3	002061132	EFI-P2R A 40/0.3	002061482	EFI-P2 AC 40/0.3	002061232	175	1/54
63		EFI-P2 A 63/0.3	002061133	EFI-P2R A 63/0.3	002061483	EFI-P2 AC 63/0.3	002061233	190	1/54
80		EFI-P2 A 80/0.3	002061134	EFI-P2R A 80/0.3	002061484	EFI-P2 AC 80/0.3	002061234	190	1/54
100		/	/	EFI-P2R A 100/0.3	002061485	/	/	184	1/54
125		/	/	EFI-P2R A 125/0.3	002061486	/	/	184	1/54
16	0,5	EFI-P2 A 16/0.5	002061140	EFI-P2R A 16/0.5	002061490	EFI-P2 AC 16/0.5	002061240	175	1/54
25		EFI-P2 A 25/0.5	002061141	EFI-P2R A 25/0.5	002061491	EFI-P2 AC 25/0.5	002061241	175	1/54
40		EFI-P2 A 40/0.5	002061142	EFI-P2R A 40/0.5	002061492	EFI-P2 AC 40/0.5	002061242	175	1/54
63		EFI-P2 A 63/0.5	002061143	EFI-P2R A 63/0.5	002061493	EFI-P2 AC 63/0.5	002061243	190	1/54
80		EFI-P2 A 80/0.5	002061144	EFI-P2R A 80/0.5	002061494	EFI-P2 AC 80/0.5	002061244	190	1/54
100		/	/	EFI-P2R A 100/0.5	002061495	/	/	184	1/54
125		/	/	EFI-P2R A 125/0.5	002061496	/	/	184	1/54

16 - 80 A

100, 125A

Reset version

In the reset version, the toggle position clearly indicates the reason for tripping, preventing user mistakes and always making it clear whether the system turning off was intentional (manual) or the result of a fault in the electrical circuit.
In case of differential current, the button moves to the “trip” (middle) position. In case of manual turn off, the button moves to the “off” (lowest) position.

EFI-P2 Special versions

I_n [A]	$I_{\Delta n}$ [A]	Type A 127V	127V Code No.	Type A NL	NL Code No.	g	
16	0,03	EFI-P2 A 16/0.03 127V	002061350	EFI-P2 A 16/0.03 NL	002061410	175	1/54
25		EFI-P2 A 25/0.03 127V	002061351	EFI-P2 A 25/0.03 NL	002061411	175	1/54
40		EFI-P2 A 40/0.03 127V	002061352	EFI-P2 A 40/0.03 NL	002061412	175	1/54
63		EFI-P2 A 63/0.03 127V	002061353	EFI-P2 A 63/0.03 NL	002061413	190	1/54
80		EFI-P2 A 80/0.03 127V	002061354	EFI-P2 A 80/0.03 NL	002061414	190	1/54
16	0,1	EFI-P2 A 16/0.1 127V	002061360	EFI-P2 A 16/0.1 NL	002061420	175	1/54
25		EFI-P2 A 25/0.1 127V	002061361	EFI-P2 A 25/0.1 NL	002061421	175	1/54
40		EFI-P2 A 40/0.1 127V	002061362	EFI-P2 A 40/0.1 NL	002061422	175	1/54
63		EFI-P2 A 63/0.1 127V	002061363	EFI-P2 A 63/0.1 NL	002061423	190	1/54
80		EFI-P2 A 80/0.1 127V	002061364	EFI-P2 A 80/0.1 NL	002061424	190	1/54
16	0,3	EFI-P2 A 16/0.3 127V	002061370	EFI-P2 A 16/0.3 NL	002061430	175	1/54
25		EFI-P2 A 25/0.3 127V	002061371	EFI-P2 A 25/0.3 NL	002061431	175	1/54
40		EFI-P2 A 40/0.3 127V	002061372	EFI-P2 A 40/0.3 NL	002061432	175	1/54
63		EFI-P2 A 63/0.3 127V	002061373	EFI-P2 A 63/0.3 NL	002061433	190	1/54
80		EFI-P2 A 80/0.3 127V	002061374	EFI-P2 A 80/0.3 NL	002061434	190	1/54

NL version

Special versions

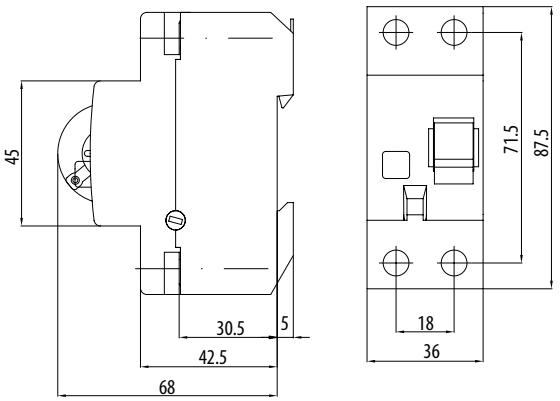
127V version: For use in U_n lower than standard system voltage (for instance 110V, 125V or 127V) system

NL version: Connection of the neutral conductor on the left side, which allows the use of standard busbars (1p, 3p) for connecting RCCBSs and MCBs

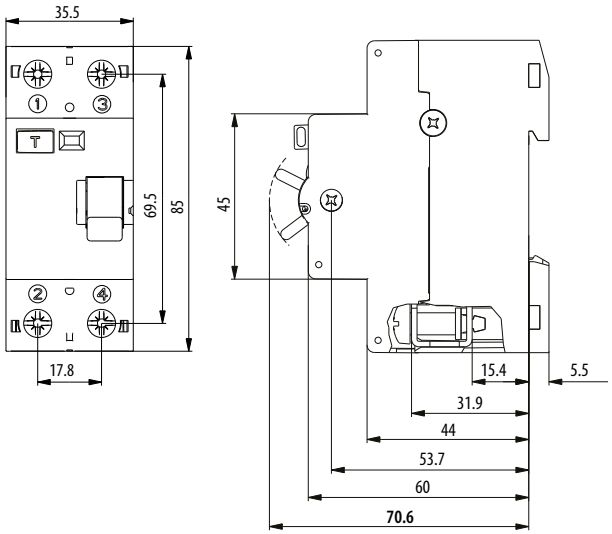
Technical data EFI-2 Short time delay & Selective

Type	G/KV type	S type	S Reset
Electrical			
Rated voltage U_n	230/240V AC	230/240V AC	230V AC
Rated current I_n	25, 40, 63A	25, 40, 63A	100, 125A
Rated Insulation voltage U_i	440V	440V	440V
Rated frequency f_n	50/60Hz	50/60Hz	50Hz
Peak withstand current	3kA (8/20µs) surge current proof	5kA (8/20µs) surge current proof	3kA (8/20µs) surge current proof
Electrical isolation	> 4mm contact space	> 4mm contact space	> 4mm contact space
Rated residual operating current $I_{\Delta n}$	0,03 & 0,1A	0,1 & 0,3A	0,1 & 0,3A
Rated conditional short-circuit current I_{cn}	10kA	10kA	10kA
Rated making and breaking capacity I_m	630A	630A	1250A
Maximum back-up fuse	80A gG	80A gG	125A gG
Insulating class	B	B	B
Standard	IEC/EN 61008, OVE E 8601	IEC/EN 61008	IEC/EN 61008
Mechanical endurance (op. c.)	> 4000	> 4000	> 5000
Electrical endurance (op. c.)	> 2000	> 2000	> 2000
Mechanical			
Frame size	45mm	45mm	45mm
Device height	68mm (DIN rail acc to EN60715)	68mm (DIN rail acc to EN60715)	70,6mm (DIN rail acc to EN60715)
Device width	36mm (2 x Module units 18mm)	36mm (2 x Module units 18mm)	35,5mm (2 x Module units 17,8mm)
Degree of protection	IP20	IP20	IP20
Upper and lower terminals	open mounted/lift terminals	open mounted/lift terminals	open mounted/lift terminals
Terminal capacity	1-25mm^2	1-25mm^2	1-50mm^2
Terminal screw	M5 (Pozidrive PZ2)	M5 (Pozidrive PZ2)	M6 (Pozidrive PZ2)
Terminal torque	2-2,5Nm	2-2,5Nm	2,5-5Nm
Busbar thickness	0,8 - 2 mm	0,8 - 2 mm	0,8 - 2 mm
Operating temperature	-25°C ... +70°C	-25°C ... +70°C	-25°C ... +40°C
Storage and transport temperature	-40°C ... +70°C	-40°C ... +70°C	-35°C ... +60°C
Resistance to climatic conditions	IEC/EN 61008	IEC/EN 61008	acc. to IEC 60068-2-30: 28 cycles (55 °C, 95% relative humidity)
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)	5g (10,60 & 500Hz)	/
Contact position indicator	mechanical red/green	mechanical red/green	mechanical red/green
Supply possibility	Top or bottom	Top or bottom	Top or bottom
Mounting position	any	any	any

EFI-2 G/KV & S 25-63A



EFI-P2R S 100&125A



EFI-2 Short time delay & Selective

I_n [A]	$I_{\Delta n}$ [A]	Type A G/KV-Short time delay	G/KV Code No.	Type A S-Selective	S Code No.	Type A Selective Reset**	S - R Code No.	g	
25	0,03	EFI-2 A G/KV 25/0.03	002062727	/	/	/	/	197	1/54
40		EFI-2 A G/KV 40/0.03	002062728	/	/	/	/	197	1/54
63		EFI-2 A G/KV 63/0.03	002062729	/	/	/	/	206	1/54
25	0,1	EFI-2 A G/KV 25/0.1	002063727	EFI-2 A S 25/0.1	002063732	/	/	193	1/54
40		EFI-2 A G/KV 40/0.1	002063728	EFI-2 A S 40/0.1	002063733	/	/	193	1/54
63		EFI-2 A G/KV 63/0.1	002063729	EFI-2 A S 63/0.1	002063734	/	/	196	1/54
100		/	/	/	/	EFI-P2R A S 100/0.1	002061184	184	1/54
125		/	/	/	/	EFI-P2R A S 125/0.1	002061185	184	1/54
25	0,3	/	/	EFI-2 A S 25/0.3	002064732	/	/	198	1/54
40		/	/	EFI-2 A S 40/0.3	002064733	/	/	198	1/54
63		/	/	EFI-2 A S 63/0.3	002064734	/	/	204	1/54
100		/	/	/	/	EFI-P2R A S 100/0.3	002061194	184	1/54
125		/	/	/	/	EFI-P2R A S 125/0.3	002061195	184	1/54

** Reset version: in case of differential current, the button moves to the "trip" (middle) position. In case of manual turn off, the button moves to the "off" (lowest) position.

G/KV

S

I_n [A]	Power dissipation EFI-2 G/KV & S type P / pole (W)
25	1,29-1,43
40	2,80 - 3,05
63	4,28 - 5,34
100	7,35-7,65
125	10,7-11,3

Conductor cross-section [mm²]	Number of single conductors, rigid, single-wire CU conductor				
	1	2	3	4	5
1,5	✓	✓	✓	✓	×
2,5	✓	✓	✓	×	×
4	✓	✓	✓	×	×
6	✓	✓	×	×	×
10	✓	✓	×	×	×
16	✓	×	×	×	×
25	✓	×	×	×	×

Remark: When you use more than 2 cables you have to be careful how those cables are inserted to ensure proper pressure on each cable

Conductor cross-section [mm²]	Number of single conductors, flexible Cu conductors with cable ferrule					
	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	×	×	×
10	✓	✓	×	×	×	×
16	✓	×	×	×	×	×
25	✓	×	×	×	×	×

Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

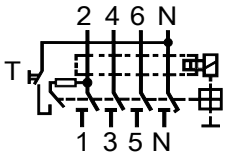
A and AC type residual current circuit breaker EFI-P4(R) & EFI-4

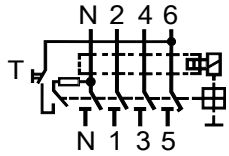
Rated residual current	Rated current	Type
0,03 - 0,5 A	**16 - 100 A**	**A, AC**

Technical data EFI-P4(R), EFI-4 Instantaneous type AC & A

	EFI-P4, EFI-P4R 16-63A	EFI-4 80A, EFI-P4 R 100A, 125A
Electrical		
Rated Voltage U_n	400/415V AC	400V AC
Rated current I_n	16, 25, 40, 63A	80, 100, 125A
Rated frequency f_n	50/60Hz	50Hz
Rated insulation voltage U_i	440V	440V
Rated impulse withstand voltage (1,2/50µs)	4kV	4kV
Peak withstand current (8/20µs)	400A	
Electrical isolation	> 4mm contact space	
Rated residual operating current $I_{\Delta n}$	0,03; 0,1; 0,3 & 0,5A	
Rated conditional short-circuit current I_{cn}	10kA	10kA
Rated making and breaking capacity I_m	630A	800A (I_n=80A); 1250A (I_n=100, 125A)
Max back-up fuse for short circuit protection	63A gG	80A (I_n=80A); 125A (I_n=100, 125A)
Voltage range test circuit	150-264V	150-264V
Min. operating voltage	voltage independent	voltage independent
Insulating class	B	B
Standards	IEC/EN 61008	IEC/EN 61008
Mechanical Endurance (cycles)	> 10.000	> 4.000
Electrical endurance (cycles)	> 4.000	> 2.000
Shock resistance acc. to	IEC/EN 61008-1	IEC/EN 61008-1
Resistance to vibrations acc. To IEC 60068-2-7	5g (10, 60 & 500Hz)	5g (10, 60 & 500Hz)
Mechanical		
Frame size	45mm	45mm
Device height	68mm (DIN rail acc to EN6071)	
Device width	72mm (4 x Module Units)	72mm (4 x Module Units)
Degree of protection	IP20	IP20
Upper and lower terminals	open mounted/lift terminals	
Terminal capacity	1-25mm²	1-25mm² (I_n=80A), 1-50mm² (I_n=100, 125A)
Terminal screw	M5 (Pozidrive PZ2)	M5 (80A) , M6 (100-125A) (Pozidrive PZ2)
Terminal torque	max. 3Nm	max 2,5Nm (80A); max 5,0Nm (100&125A)
Busbar thickness	0,8 - 2 mm	0,8 - 2 mm
Operating temperature	-25°C ... +70°C	-25°C ... +55°C
Storage and transport temperature	-40°C ... +70°C	-35°C ... +60°C
Resistance to climatic conditions	IEC/EN 61008	acc. to IEC 60068-2-30: 28 cycles (55 °C, 95 % relative humidity)
Contact position indicator	mechanical red/green	
Mounting position	any	
Mounting on the rail	35mm acc to EN50022	
Supply possibility	top or bottom	

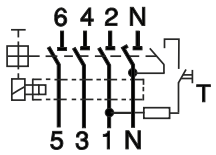
EFI-P4, EFI-P4R 16 - 63A



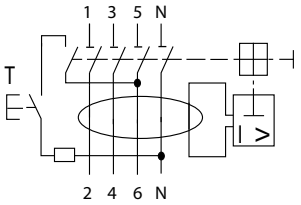


Version with N-pole on the left

EFI-4 80A



EFI-P4R 100 A, 125A



In [A]	Power dissipation EFI-P4 P/pole [W]
16	0,48-0,62
25	1,27-1,52
40	4,14-5,00
63	2,45-3,00
80	8,00-8,90
100	7,35-7,65
125	10,7-11,3

EFI-P4 Instantaneous, EFI-P4R Instantaneous

I_n [A]	$I_{\Delta n}$ [A]	Type A	Type A Code No.	Type A Reset	Type A - R Code No.	Type AC	Type AC Code No.	g	
16	0,03	EFI-P4 A 16/0.03	002061510	EFI-P4R A 16/0.03	002061860	EFI-P4 AC 16/0.03	002061610	300	1/27
25		EFI-P4 A 25/0.03	002061511	EFI-P4R A 25/0.03	002061861	EFI-P4 AC 25/0.03	002061611	300	1/27
40		EFI-P4 A 40/0.03	002061512	EFI-P4R A 40/0.03	002061862	EFI-P4 AC 40/0.03	002061612	300	1/27
63		EFI-P4 A 63/0.03	002061513	EFI-P4R A 63/0.03	002061863	EFI-P4 AC 63/0.03	002061613	330	1/27
80		EFI-4 A 80/0.03	002062545*	/	/	EFI-4 AC 80/0.03	002062145*	380	1/27
100		/	/	EFI-P4R A 100/0.03	002061865	/	/	350	1/27
125		/	/	EFI-P4R A 125/0.03	002061866	/	/	350	1/27
16	0,1	EFI-P4 A 16/0.1	002061520	EFI-P4R A 16/0.1	002061870	EFI-P4 AC 16/0.1	002061620	300	1/27
25		EFI-P4 A 25/0.1	002061521	EFI-P4R A 25/0.1	002061871	EFI-P4 AC 25/0.1	002061621	300	1/27
40		EFI-P4 A 40/0.1	002061522	EFI-P4R A 40/0.1	002061872	EFI-P4 AC 40/0.1	002061622	300	1/27
63		EFI-P4 A 63/0.1	002061523	EFI-P4R A 63/0.1	002061873	EFI-P4 AC 63/0.1	002061623	330	1/27
80		EFI-4 A 80/0.1	002063545*	/	/	EFI-4 AC 80/0.1	002063145*	380	1/27
100		/	/	EFI-P4R A 100/0.1	002061875	/	/	350	1/27
125		/	/	EFI-P4R A 125/0.1	002061876	/	/	350	1/27
16	0,3	EFI-P4 A 16/0.3	002061530	EFI-P4R A 16/0.3	002061880	EFI-P4 AC 16/0.3	002061630	300	1/27
25		EFI-P4 A 25/0.3	002061531	EFI-P4R A 25/0.3	002061881	EFI-P4 AC 25/0.3	002061631	300	1/27
40		EFI-P4 A 40/0.3	002061532	EFI-P4R A 40/0.3	002061882	EFI-P4 AC 40/0.3	002061632	300	1/27
63		EFI-P4 A 63/0.3	002061533	EFI-P4R A 63/0.3	002061883	EFI-P4 AC 63/0.3	002061633	330	1/27
80		EFI-4 A 80/0.3	002064545*	/	/	EFI-4 AC 80/0.3	002064145*	380	1/27
100		/	/	EFI-P4R A 100/0.3	002061885	/	/	350	1/27
125		/	/	EFI-P4R A 125/0.3	002061886	/	/	350	1/27
16	0,5	EFI-P4 A 16/0.5	002061540	EFI-P4R A 16/0.5	002061890	EFI-P4 AC 16/0.5	002061640	300	1/27
25		EFI-P4 A 25/0.5	002061541	EFI-P4R A 25/0.5	002061891	EFI-P4 AC 25/0.5	002061641	300	1/27
40		EFI-P4 A 40/0.5	002061542	EFI-P4R A 40/0.5	002061892	EFI-P4 AC 40/0.5	002061642	300	1/27
63		EFI-P4 A 63/0.5	002061543	EFI-P4R A 63/0.5	002061893	EFI-P4 AC 63/0.5	002061643	330	1/27
80		EFI-4 A 80/0.5	002065545*	/	/	EFI-4 AC 80/0.5	002065145*	380	1/27
100		/	/	EFI-P4R A 100/0.5	002061895	/	/	350	1/27
125		/	/	EFI-P4R A 125/0.5	002061896	/	/	350	1/27

* Old version (EFI-4)

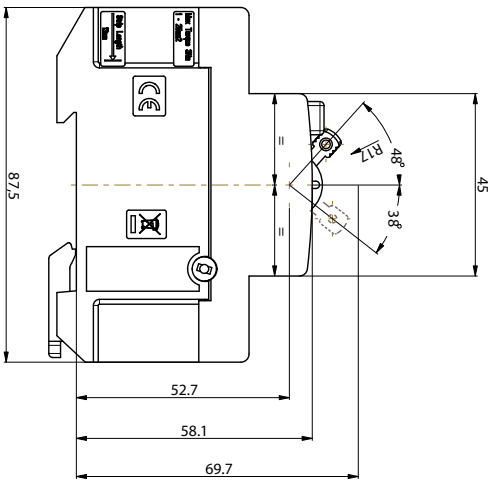
16 - 63 A

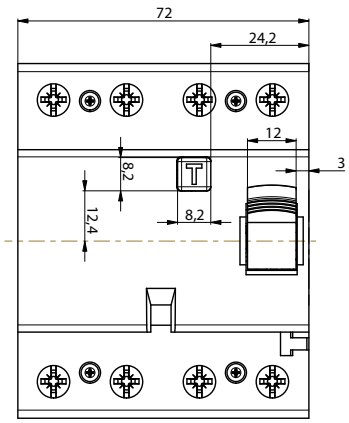
100, 125A

Reset version

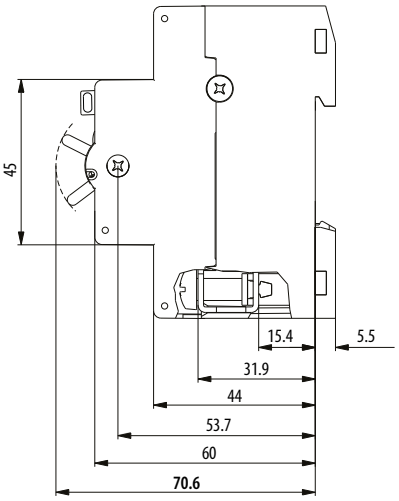
In the reset version, the toggle position clearly indicates the reason for tripping, preventing user mistakes and always making it clear whether the system turning off was intentional (manual) or the result of a fault in the electrical circuit.
In case of differential current, the button moves to the “trip” (middle) position. In case of manual turn off, the button moves to the “off” (lowest) position.

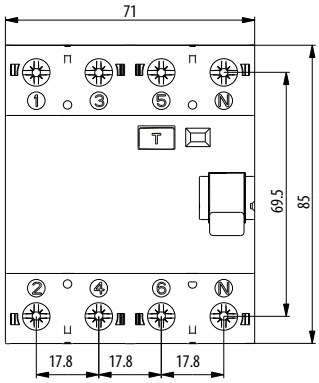
EFI-P4, EFI-P4R





EFI-P4 R 100&125A





EFI-P4 Special versions

I_n [A]	$I_{\Delta n}$ [A]	Type A 127V	127V Code No.	Type A NL	NL Code No.	g	
16	0,03	EFI-P4 A 16/0.03 127V	002061750	EFI-P4 A 16/0.03 NL	002061810	300	1/27
25		EFI-P4 A 25/0.03 127V	002061751	EFI-P4 A 25/0.03 NL	002061811	300	1/27
40		EFI-P4 A 40/0.03 127V	002061752	EFI-P4 A 40/0.03 NL	002061812	300	1/27
63		EFI-P4 A 63/0.03 127V	002061753	EFI-P4 A 63/0.03 NL	002061813	330	1/27
16	0,1	EFI-P4 A 16/0.1 127V	002061760	EFI-P4 A 16/0.1 NL	002061820	300	1/27
25		EFI-P4 A 25/0.1 127V	002061761	EFI-P4 A 25/0.1 NL	002061821	300	1/27
40		EFI-P4 A 40/0.1 127V	002061762	EFI-P4 A 40/0.1 NL	002061822	300	1/27
63		EFI-P4 A 63/0.1 127V	002061763	EFI-P4 A 63/0.1 NL	002061823	330	1/27
16	0,3	EFI-P4 A 16/0.3 127V	002061770	EFI-P4 A 16/0.3 NL	002061830	300	1/27
25		EFI-P4 A 25/0.3 127V	002061771	EFI-P4 A 25/0.3 NL	002061831	300	1/27
40		EFI-P4 A 40/0.3 127V	002061772	EFI-P4 A 40/0.3 NL	002061832	300	1/27
63		EFI-P4 A 63/0.3 127V	002061773	EFI-P4 A 63/0.3 NL	002061833	330	1/27

Special versions

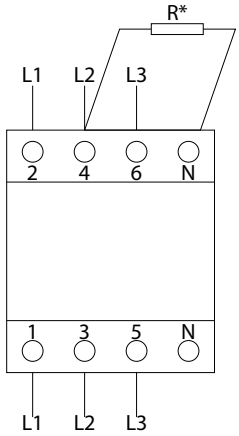
127V version: For use in U_n lower than standard system voltage (for instance 110V, 125V or 127V) system

NL version: Connection of the neutral conductor on the left side, which allows the use of standard busbars (1p, 3p) for connecting RCCBSs and MCBs

Technical data EFI-4 Short time delay & Selective

Type	G/KV type	S type	S Reset
Electrical			
Rated voltage Un	400/415V AC	400/415V AC	400V AC
Rated current In	25, 40, 63A	25, 40, 63A	100 & 125A
Rated Insulation voltage Ui	440V	440V	440V
Rated frequency fn	50/60Hz	50/60Hz	50Hz
Peak withstand current	3kA (8/20µs) surge current proof	5kA (8/20µs) surge current proof	3kA (8/20µs) surge current proof
Electrical isolation	> 4mm contact space	> 4mm contact space	> 4mm contact space
Rated residual operating current IΔn	0,03; 0,1 & 0,3A	0,1 & 0,3A	0,1 & 0,3A
Rated conditional short-circuit current Icn	10kA	10kA	10kA
Rated making and breaking capacity Im	630A	630A	1250A
Maximum back-up fuse	80A gG	80A gG	125A gG
Insulating class	B	B	B
Standard	IEC/EN 61008, OVE E 8601	IEC/EN 61008	IEC/EN 61008
Mechanical endurance (op. c.)	> 4000	> 4000	> 5000
Electrical endurance (op. c.)	> 2000	> 2000	> 2000
Mechanical			
Frame size	45mm	45mm	45mm
Device height	68mm (DIN rail acc to EN60715)	68mm (DIN rail acc to EN60715)	70,6mm (DIN rail acc to EN60715)
Device width	72mm (4 x Module units 18mm)	72mm (4 x Module units 18mm)	71mm (4 x Module units 17,8mm)
Degree of protection	IP20	IP20	IP20
Upper and lower terminals	open mounted/lift terminals	open mounted/lift terminals	open mounted/lift terminals
Terminal capacity	1-25mm^2	1-25mm^2	1-50mm^2
Terminal screw	M5 (Pozidrive PZ2)	M5 (Pozidrive PZ2)	M6 (Pozidrive PZ2)
Terminal torque	2-2,5Nm	2-2,5Nm	2,5-5Nm
Busbar thickness	0,8 - 2 mm	0,8 - 2 mm	0,8 - 2 mm
Operating temperature	-25°C ... +70°C	-25°C ... +70°C	-25°C ... +40°C
Storage and transport temperature	-40°C ... +70°C	-40°C ... +70°C	-35°C ... +60°C
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)	5g (10,60 & 500Hz)	/
Resistance to climatic conditions	IEC/EN 61008	IEC/EN 61008	acc. to IEC 60068-2-30: 28 cycles (55 °C, 95 % relative humidity)
Contact position indicator	mechanical red/green	mechanical red/green	mechanical red/green
Supply possibility	Top or bottom	Top or bottom	Top or bottom
Mounting position	any	any	any

I_n [A]	Power dissipation EFI-4 G/KV & S type P / pole (W)
25	1,40-1,61
40	2,73 - 4,11
63	4,76 - 5,69
100	7,35-7,65
125	10,7-11,3



RCD EFI-4 Type in 3-phase system without neutral conductor:

30mA: R=2k7/1W/500V
100mA: R=1k2/1W/500V
300mA: R=470Ω/2W/500V
500mA: R=270Ω/3W/500V

* Resistor (R) has to be connected between N and 2 or L3 as to ensure proper functionality of the test button.

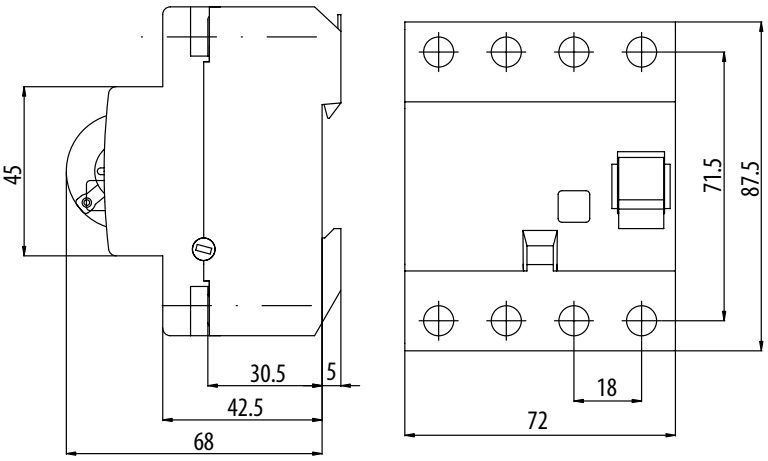
EFI-4 Short time delay & Selective

I_n [A]	$I_{\Delta n}$ [A]	Type A G/KV-Short time delay	G/KV Code No.	Type A S-Selective	S Code No.	Type A Selective Reset**	S - R Code No.	g	
25	0,03	EFI-4 A G/KV 25/0.03	002062747	/	/	/	/	328	1/27
40		EFI-4 A G/KV 40/0.03	002062748	/	/	/	/	328	1/27
63		EFI-4 A G/KV 63/0.03	002062749	/	/	/	/	350	1/27
25	0,1	EFI-4 A G/KV 25/0.1	002063747	EFI-4 A S 25/0.1	002063752	/	/	320	1/27
40		EFI-4 A G/KV 40/0.1	002063748	EFI-4 A S 40/0.1	002063753	/	/	320	1/27
63		EFI-4 A G/KV 63/0.1	002063749	EFI-4 A S 63/0.1	002063754	/	/	338	1/27
100		/	/	/	/	EFI-P4R A S 100/0.1	002061584	350	1/27
125		/	/	/	/	EFI-P4R A S 125/0.1	002061585	350	1/27
25	0,3	EFI-4 A G/KV 25/0.3	002064747	EFI-4 A S 25/0.3	002064752	/	/	320	1/27
40		EFI-4 A G/KV 40/0.3	002064748	EFI-4 A S 40/0.3	002064753	/	/	320	1/27
63		EFI-4 A G/KV 63/0.3	002064749	EFI-4 A S 63/0.3	002064754	/	/	338	1/27
100		/	/	/	/	EFI-P4R A S 100/0.3	002061594	350	1/27
125		/	/	/	/	EFI-P4R A S 125/0.3	002061595	350	1/27

** Reset version: in case of differential current, the button moves to the "trip" (middle) position. In case of manual turn off, the button moves to the "off" (lowest) position.

G/KV

S



Conductor cross-section [mm²]	Number of single conductors, rigid, single-wire CU conductor				
	1	2	3	4	5
1,5	✓	✓	✓	✓	×
2,5	✓	✓	✓	×	×
4	✓	✓	✓	×	×
6	✓	✓	×	×	×
10	✓	✓	×	×	×
16	✓	×	×	×	×
25	✓	×	×	×	×

Remark: When you use more than 2 cables you have to be careful how those cables are inserted to ensure proper pressure on each cable

Conductor cross-section [mm²]	Number of single conductors, flexible Cu conductors with cable ferrule					
	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	×	×	×
10	✓	✓	×	×	×	×
16	✓	×	×	×	×	×
25	✓	×	×	×	×	×

Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

F type residual current circuit breaker EFI-2 & EFI-4

EFI F - SENSITIVE TO RESIDUAL CURRENTS AS TYPE A AND IN ADDITION TO RESIDUAL CURRENTS WITH MIXED FREQUENCIES

- Sensitive to residual currents as type A and in addition to residual currents with mixed frequencies up to 1 kHz that can result from single-phase electrical loads with frequency inverters (acc. to IEC/EN 62423)
- Surge current withstand capability with current waveform 8/20 µs up to 3 kA
- Intended for protection when using washing machines, vacuum cleaners, dishwashers, heating pumps, lighting system ...

FEATURES

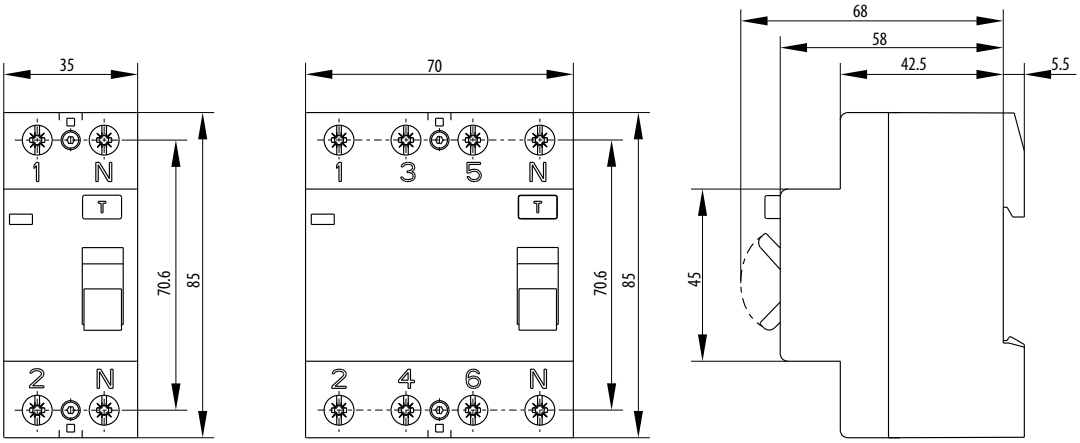
- Short-time delayed RCCB with minimum non-actuating time 10 ms
- The tripping characteristic of type F is not influenced by smooth direct residual currents up to 10 mA.
- Functions of detection, evaluation and interruption do not depend on the line voltage.
- Intended for protection when using washing machines, vacuum cleaners, dishwashers, heating pumps, lighting system ...
- Suitable for isolation
- No overload protection or short-circuit protection is built in RCCB.
- Assembly to a 35 mm wide mounting rail in accordance with EN 60715
- Optional operation position
- Degree of protection IP20; degree of protection IP40 after installation in a distribution box
- Additional color display of the position of main contacts (red – contacts closed, green – contacts open)

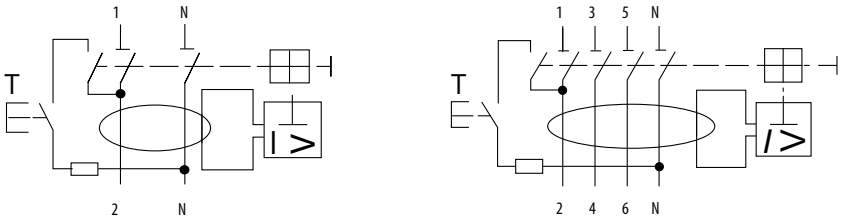
Technical data

Type	EFI-2 F	EFI-4 F
Standards	IEC/EN 61008, IEC/EN 62423	
Approvals	VDE	
Module width	2	4
Number of poles	2	4
Rated voltage	230 V	400 V
Rated insulation voltage	400 V	
Rated impulse withstand voltage	4 kV	
Rated frequency	50 Hz	
Rated current	40, 63 A	
Rated residual current	30, 100 mA	
Residual operating current (AC 50 Hz)	0.5 - 1.0 $I_{\Delta n}$	
Rated conditional short-circuit current	10 kA	
Rated making and breaking capacity	800 A	
Max. back-up fuse for short-circuit current gL	63 A (I_n = 40 A) 80 A (I_n = 63 A)	
Surge current withstand capability	3 kA (8/20 µs surge current)	
Maximum breaking times	1 x $I_{\Delta n}$: < 300 ms; 5 x $I_{\Delta n}$: < 40 ms	
Minimum response time delay	10 ms	
Mechanical endurance	min. 5000 op.c.	
Electrical endurance	min. 2000 op.c.	
Ambient temperature	-25 ... +40 °C	
Storage temperature	-35 ... +60 °C	
Resistance to climate	acc. to IEC 60068-2-30: 28 cycles (55 °C, 95 % relative humidity)	
Terminal capacity	1 ... 35 mm^2	
Screw	M5	
Screw head	PZ2	
Tightening torque	2,0 Nm	
Lenght of removed conductor insulation	15 mm	
Degree of protection	IP20 (IP40 after installation in a distribution box)	
Pollution degree	2	

F type EFI

I_n [A]	$I_{\Delta n}$ [A]	EFI-2 F	Code No.	g	EFI-4 FCode No.		g	
40	0,03	EFI-2 F 40/0.03	002062528	184	EFI-4 F 40/0.03	002062529	316	1/50
63		EFI-2 F 63/0.03	002062621	184	EFI-4 F 63/0.03	002062622	316	1/50
40	0,1	EFI-2 F 40/0.1	002062623	184	EFI-4 F 40/0.1	002062624	316	1/50
63		EFI-2 F 63/0.1	002062625	184	EFI-4 F 63/0.1	002062626	316	1/50





UNIVERSAL CURRENT SENSITIVE RCCBs B and B+ type

APPLICATION
Fault protection (protection against indirect contact of live parts)
Additional protection (protection in case of direct contact of live parts, IΔn≤30mA)
Fire Protection (for locations exposed to fire hazard)

Residual current sensitivity – UNIVERSAL
AC pure sinus residual current, 50/60Hz
A sinus and pulsating direct current, 50/60Hz
B AC + A + smooth direct current + high frequency (1kHz)
B+ AC + A + smooth direct current + high frequency (20kHz)

Basic types
according to rated values:
4p B In = 25A, 40A, 63A, IΔn=30mA, 300mA
4p B+ In = 25A, 40A, 63A, IΔn=30mA, 100mA, 300mA
according to breaking times:
4p B, B+ instantaneous, short time delayed (G/KV), selective (S)
according to the number of poles:
4p, 2p

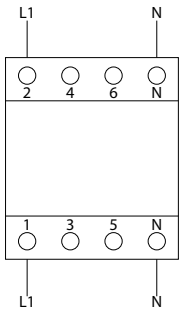
Standards

IEC/EN 61008-1	basic standard for RCCB's AC and A type
IEC/EN 62423	additional requirements for type B
VDE 0664-400 B+	VDE standard for B+ requirements (20kHz)

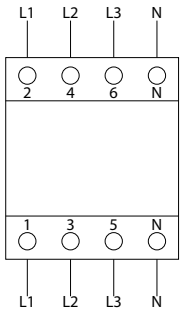
Mode of operation
Pure a.c. and pulsating d.c. type residual current sensitivity, A voltage independent
Smooth d.c. current sensitivity: B, B+ voltage dependent
Minimum operating voltage: 50V

Typical applications
Which are vulnerable to smooth d.c. residual currents:
Frequency converters,
Photovoltaic systems, a.c side,
Charging stations for electric vehicles,
Variable speed machine tools,
UPS, computer data centres
Elevator controls,
Cranes of all kinds
Electronic equipment on construction sites,
Test set-ups in laboratories,
Installation in general where we can expect d.c. smooth direct residual currents, etc.

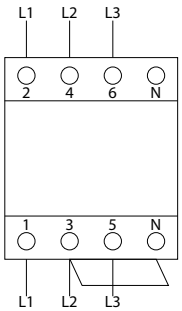
RCD ETI Type B in 1-phase system U_n=240V



RCD ETI Type B in 3-phase system U_n=240/415V



RCD ETI Type B in 3-phase system without neutral conductor - U_n=240V



Technical data

Type		B & B+
Electrical		
Design according to		IEC/EN 61008, IEC/EN 62423
		B+ -> VDE 0664-400
Current test marks as printed onto the device		
Rated voltage U_n		240/415 V AC
Rated frequency f_n		50/60Hz
Mode of operation		A type functionality: voltage independent B and B+ type functionality: voltage dependent
Operation voltage electronic		50 – 253V AC
Voltage range test circuit		196 – 253V AC
Rated residual operating current $I_{\Delta n}$	Instantaneous	30, 100, 300 mA
	K - short time delayed	30, 100, 300 mA
	S - selective	100, 300 mA
Sensitivity		Alternating, pulsed and smooth direct currents
Rated insulation voltage U_i		440 V
Rated impulse withstand voltage U_{imp}		4 kV (1.2/50µs)
Rated conditional short-circuit current I_{cn}		10 kA
Rated making and breaking capacity I_m		800 A
Peak withstand current		3 kA (8/20 µs) surge current proof
Electrical isolation		> 4 mm contact space
Maximum back-up fuse I_n = 25-63A		Short circuit and overload protection 100 A gG/gL
Endurance (operating cycles)	electrical	≥ 4000
	mechanical	≥ 10000
Mechanical		
Frame size		45 mm
Device height		68 mm (DIN rail acc to EN60715)
Device width		72 mm (4xModule Units 18mm)
Degree of protection		IP20
Upper and lower terminals		open mounted/lift terminals
Terminal protection finger and hand touch safe		IEC/EN 61008
Terminal capacity		1 - 25 mm^2
Terminal screw		M5 (Pozidrive PZ2)
Terminal torque		2 - 2.5 Nm
Busbar thickness		0.8 - 2 mm
Operating temperature		-25°C ... +70°C
Storage- and transport temperature		-40°C ... +70°C
Resistance to vibrations acc. to IEC 60068-2-7		5g (10,60 & 500Hz)
Resistance to climatic conditions		IEC/EN 61008
Contact position indicator		mechanical red / green
Supply possibility		top or bottom
Mounting position		any

I_n [A]	Maximum Power dissipation P / pole (W)
25	0,73 - 1,03
40	1,84 - 2,48
63	4,85 - 6,02

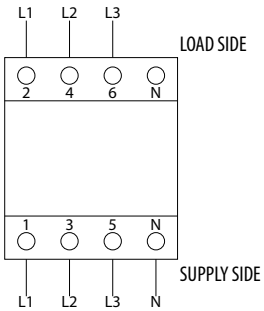
Conductor cross-section	Number of single conductors, rigid, single-wire CU conductor				
[mm^2]	1	2	3	4	5
1,5	✓	✓	✓	✓	×
2,5	✓	✓	✓	×	×
4	✓	✓	✓	×	×
6	✓	✓	×	×	×
10	✓	✓	×	×	×
16	✓	×	×	×	×
25	✓	×	×	×	×

Remark: When you use more than 2 cables you have to be careful how those cables are inserted to ensure proper pressure on each cable

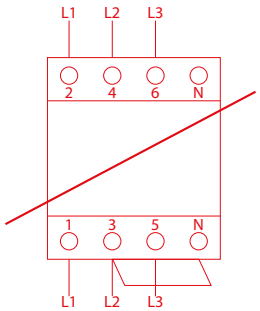
Conductor cross-section	Number of single conductors, flexible Cu conductors with cable ferrule					
[mm^2]	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	×	×	×
10	✓	✓	×	×	×	×
16	✓	×	×	×	×	×
25	✓	×	×	×	×	×

Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

RCD ETI Type B in 3-phase system without neutral conductor - U_n=415V



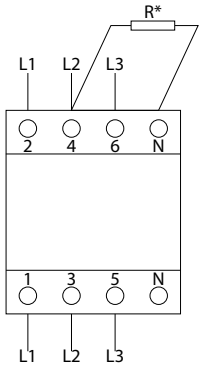
RCD ETI Type B in 3-phase system without neutral conductor - U_n=415V



RCD ETI Type B in 3-phase system without neutral conductor - U_n=415V

30mA: R=2k7/1W (500V)

300mA: R=470Ω/2W (500V)



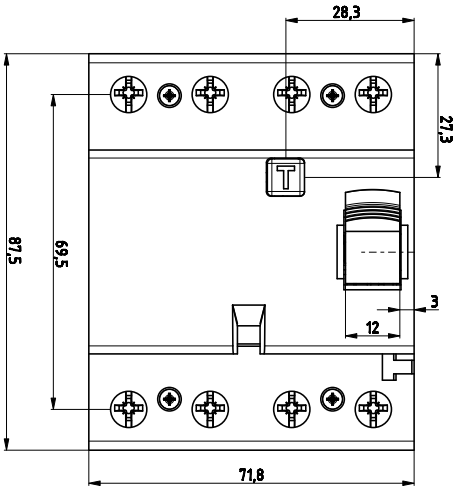
* Resistor (R) has to be connected between N and L2 as to ensure proper functionality of the test button.

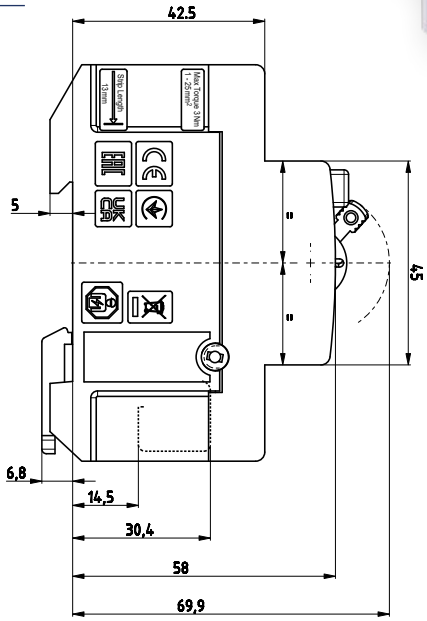
B type residual current circuit breaker EFI-P4 B Instantaneous

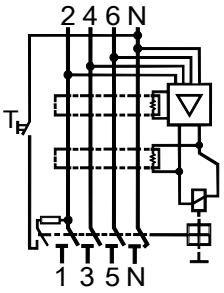
Rated residual current	Rated current	Type
0,03 - 0,3 A	**25 - 63 A**	**B**

EFI-P4 B Instantaneous

I_n [A]	$I_{\Delta n}$ [A]	Type	Code No.	g	
25	0,03	EFI-P4 B 40/0.03	002061951	318	1/27
40		EFI-P4 B 25/0.03	002061952	318	1/27
63		EFI-P4 B 63/0.03	002061953	318	1/27
25	0,3	EFI-P4 B 40/0.3	002061971	318	1/27
40		EFI-P4 B 25/0.3	002061972	318	1/27
63		EFI-P4 B 63/0.3	002061973	318	1/27







B type residual current circuit breaker EFI-4 B G/KV-Short time delay

Rated residual current	Rated current	Type
0,03 - 0,3 A	**25 - 63 A**	**B (G/KV)**

EFI-4 B G/KV-Short time delay

I_n [A]	$I_{\Delta n}$ [A]	Type B G/KV	B G/KV Code No.	G/KV Reset	B G/KV Reset Code No.	g	
25	0,03	EFI-4 B G/KV 25/0.03	002062652		/	340	1/27
40		EFI-4 B G/KV 40/0.03	002062653		/	340	1/27
63		EFI-4 B G/KV 63/0.03	002062654		/	345	1/27
100		/	/	EFI-P4R B G/KV 100/0.03	002061905	350	1/27
125		/	/	EFI-P4R B G/KV 125/0.03	002061906	350	1/27
25	0,1	EFI-4 B G/KV 25/0.1	002063652		/	340	1/27
40		EFI-4 B G/KV 40/0.1	002063653		/	340	1/27
63		EFI-4 B G/KV 63/0.1	002063654		/	345	1/27
100		/	/	EFI-P4R B G/KV 100/0.1	002061915	350	1/27
125		/	/	EFI-P4R B G/KV 125/0.1	002061916	350	1/27
25	0,3	EFI-4 B G/KV 25/0.3	002064652		/	340	1/27
40		EFI-4 B G/KV 40/0.3	002064653		/	340	1/27
63		EFI-4 B G/KV 63/0.3	002064654		/	345	1/27
100		/	/	EFI-P4R B G/KV 100/0.3	002061925	350	1/27
125		/	/	EFI-P4R B G/KV 125/0.3	002061926	350	1/27
100	0,5	/	/	EFI-P4R B G/KV 100/0.5	002061935	350	1/27
125		/	/	EFI-P4R B G/KV 125/0.5	002061936	350	1/27

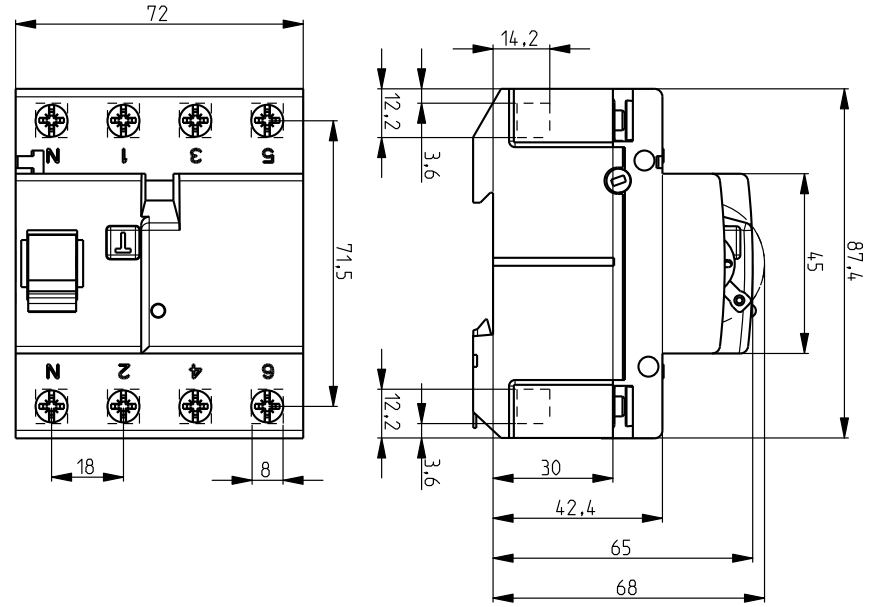
B type residual current circuit breaker EFI-4 B S-Selective

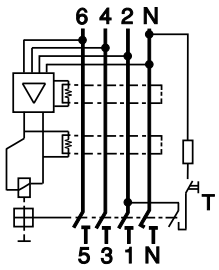
Rated residual current	Rated current	Type
0,1 - 0,3 A	**25 - 63 A**	**B (S)**

EFI-4 B S-Selective

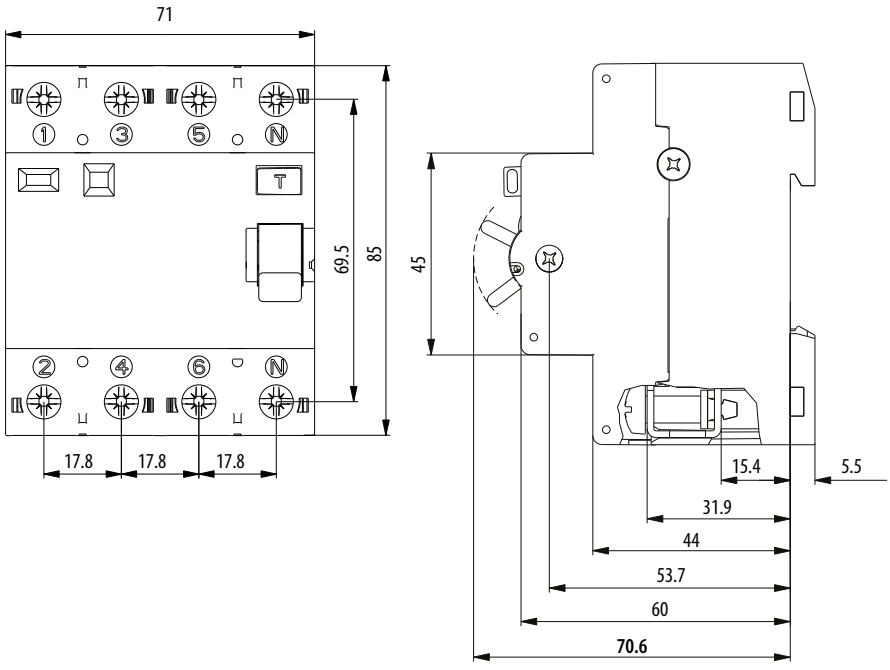
I_n [A]	$I_{\Delta n}$ [A]	Type	Code No.	g	
25	0,1	EFI-4 B S 25/0.1	002063662	340	1/27
40		EFI-4 B S 40/0.1	002063663	340	1/27
63		EFI-4 B S 63/0.1	002063664	345	1/27
25	0,3	EFI-4 B S 25/0.3	002064662	335	1/27
40		EFI-4 B S 40/0.3	002064663	335	1/27
63		EFI-4 B S 63/0.3	002064664	340	1/27

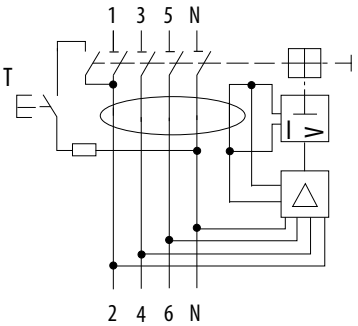
K-Short time delay, S-Selective



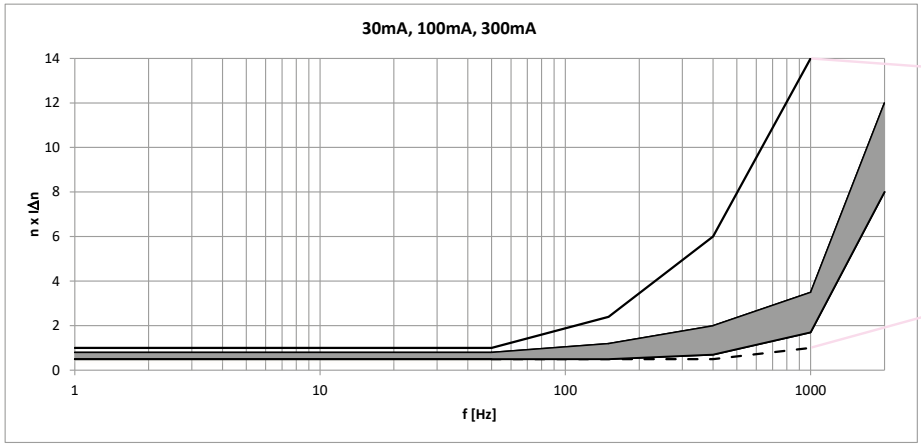


G/KV - Reset (100 & 125A)





EFI B type

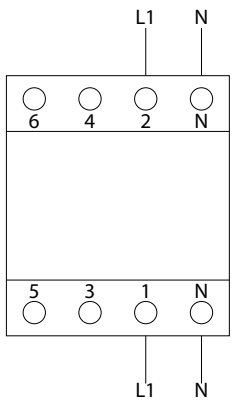


B+ type residual current circuit breaker EFI-4 B+ Instantaneous

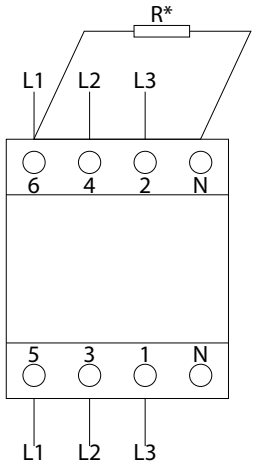
Rated residual current	Rated current	Type
0,03 - 0,3 A	**25 - 63 A**	**B+**

EFI-4 B+ Instantaneous

I_n [A]	$I_{\Delta n}$ [A]	Type	Code No.	g	
25	0,03	EFI-4 B+ 25/0.03	002062647	335	1/27
40		EFI-4 B+ 40/0.03	002062648	335	1/27
63		EFI-4 B+ 63/0.03	002062649	340	1/27
25	0,1	EFI-4 B+ 25/0.1	002063647	335	1/27
40		EFI-4 B+ 40/0.1	002063648	335	1/27
63		EFI-4 B+ 63/0.1	002063649	340	1/27
25	0,3	EFI-4 B+ 25/0.3	002064647	335	1/27
40		EFI-4 B+ 40/0.3	002064648	335	1/27
63		EFI-4 B+ 63/0.3	002064649	340	1/27



RCD ETI Type B+ in 1-phase system U_n=230V



RCD ETI Type B+ in 3-phase system without neutral conductor - U_n=400V

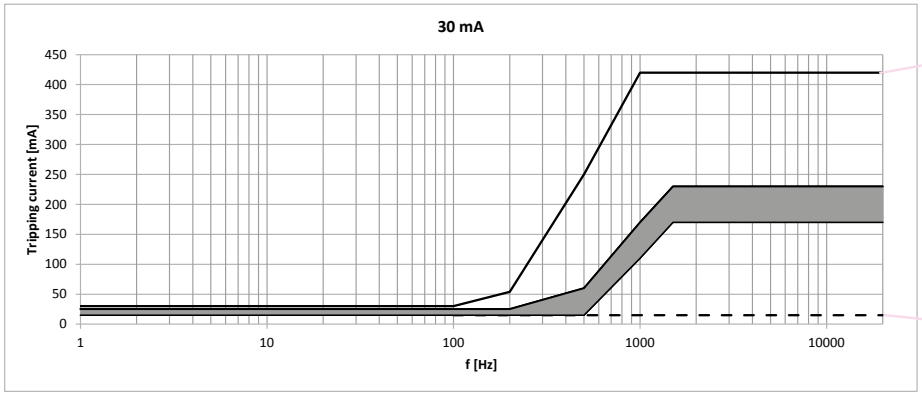
30mA: R=2k7/1W (500V)

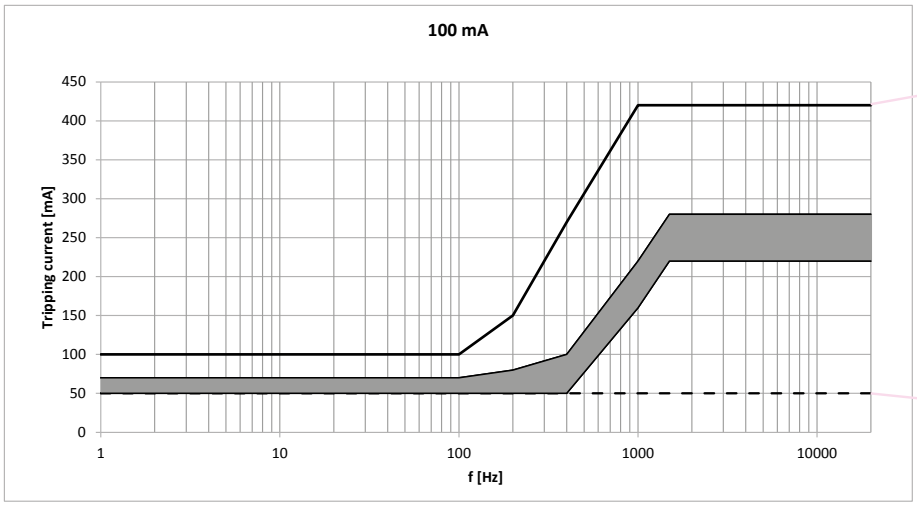
100mA: R=7k5/1W (500V)

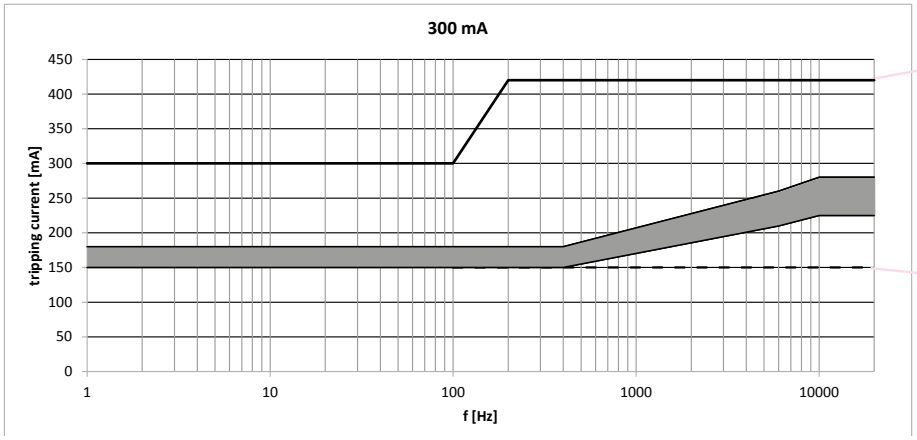
300mA: R=2k7/1W (500V)

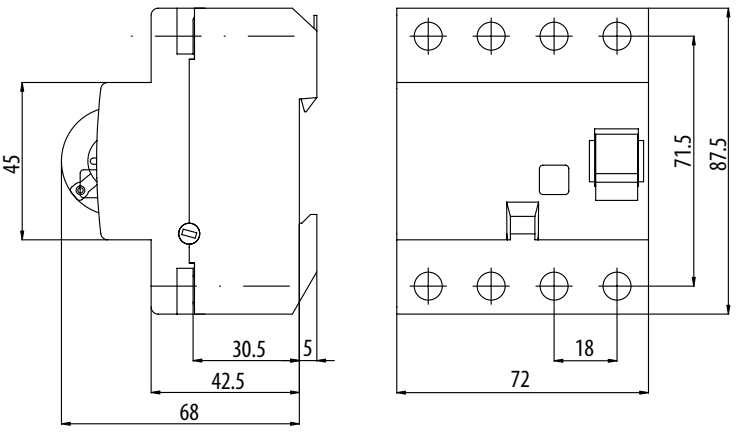
* Resistor (R) has to be connected between N and L1 as to ensure proper functionality of the test button.

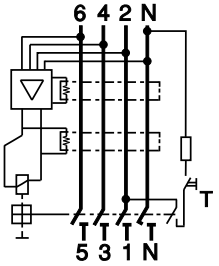
EFI B+ type


30 mA
Tripping current [mA]
450
400
350
300
250
200
150
100
50
0
1
10
100
1000
10000
f [Hz]
Upper limit according to VDE 0664-400
Lower limit according to VDE 0664-400


100 mA
Tripping current [mA]
450
400
350
300
250
200
150
100
50
0
1
10
100
1000
10000
f [Hz]
Upper limit according to VDE 0664-400
Lower limit according to VDE 0664-400


300 mA
tripping current [mA]
450
400
350
300
250
200
150
100
50
0
1
10
100
1000
10000
f [Hz]
Upper limit according to VDE 0664-400
Lower limit according to VDE 0664-400


45
30.5
5
42.5
68
71.5
87.5
18
72

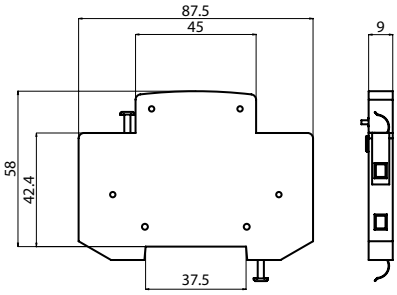

6 4 2 N
T
5 3 1 N

Accessories for residual current circuit breakers EFI

The PS EFI is fixed to EFI series switches. The width of the device is 9 mm, other dimensions are in compliance with EFI switches. The auxiliary switch PS EFI is used for the remote signalling of the state of contact's condition (closed/open) of EFI switches. During fitting, the EFI must be switched off. PS EFI and DA EFI can not be mounted both together, because both can only be mounted on the right side of EFI.

Technical data PS EFI 16-80A

Rated current I_n	6 A (230 V AC), AC 12, 1 A (110 V DC), DC 12
Conditional short-circuit current	1 kA with fuse-link 20 A
Terminals	1-2,5mm², max. 0,5Nm
Terminal Screw	M3 (PH1)
Operating temperature	-25°C ... +70°C
Storage and transport temperature	-40°C ... +70°C
Mounting position	any
Standards	EN 62019



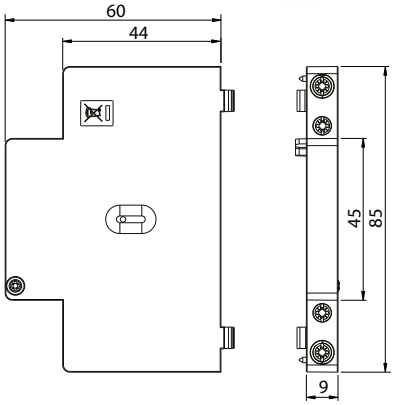
Auxiliary Switch PS EFI 16-80A

Type	Contact	Code No.	g	
PS EFI - MD	NC+NO	002069001	50	1/12
PS EFI - 2M	2xNC	002069002	50	1/12
PS EFI - 2D	2xNO	002069003	50	1/12

NO = make contact
NC = break contact

Technical data PS EFI 100-125A

Rated current I_n	6 A (230 V AC), AC 12, 1,5 A (110 V DC), DC 12
Conditional short-circuit current	10 kA with fuse-link 6 A
Terminals	0,75-2,5mm², max. 0,8Nm
Terminal Screw	M3 (PZ1)
Operating temperature	-25°C ... +70°C
Storage and transport temperature	-40°C ... +70°C
Mounting position	any
Standards	IEC/EN 60947-1, IEC/EN 60947-5-1, IEC/EN 62019, DIN EN 62019 (VDE 0640)



Auxiliary Switch PS EFI 100-125A

Type	Contact	Code No.	g	
PS EFI 100/125 - NC+NO	NC+NO	002069006	31	1/12
PS EFI 100/125 - 2xNC	2xNC	002069007	31	1/12
PS EFI 100/125 - 2xNO	2xNO	002069008	31	1/12

NO = make contact
NC = break contact

Sealing piece EFI-2 16-80A

Code No.	g	
002069011	2	2

Not suitable for EFI F type

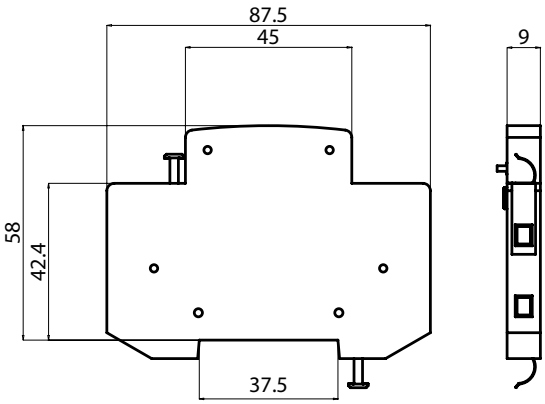
Sealing piece EFI-4 16-80A

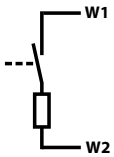
Code No.	g	
002069012	3	2

Not suitable for EFI F type

Technical data DA EFI 16-80

Rated voltage	230V AC
Rated frequency	50/60Hz
Max inrush current	0,8A
Terminals	1-2,5mm^2, max. 0,5Nm
Terminal Screw	M3 (PH1)
Operating temperature	-25°C ... +70°C
Storage and transport temperature	-40°C ... +70°C
Build-in width	9mm
Mounting position	any





Shunt trip release DA EFI 16-80A

Type	Code No.	g	
DA EFI	002069004	45	1/12

Not suitable for EFI F type

Residual Current Circuit Breakers for Protection of EV Charging Stations EFI-P eV

Rated residual current	Rated current	Type
0,03 A	**25 - 63 A**	**eV**

- Meets requirements from standard IEC 60364-7-722 --> Low-Voltage electrical Installations - Requirements for special installations or locations - Supplies for electric vehicles

- Individual test measurements and other production data for each device can be read from the QR code, as well as instruction manuals and other technical materials

- detects smooth DC residual currents above 6 mA
- Rated conditional short-circuit current: 10 kA

- All necessary technical & installation information can be found on the front and side of the device

- Supply is possible both from top and bottom terminals
- RCCBs can be supplied with single phase and three phase busbars

WATCH THE VIDEO

- Basic installation requirements are engraved into housing

- Clearly marked terminals to ensure appropriate connection

- Real contact position indication for easier identification, whether RCCB is in ON or OFF position

- Better protection of terminals against touching the parts under voltage

Technical data EFI-P4 eV

Type	EFI-P4 eV
Electrical	
Rated Voltage U_n	400/415V AC
Rated current I_n	25, 40, 63 A
Rated frequency f_n	50/60Hz
Mode of operation	A type functionality : voltage independent DC functionality: voltage dependent
Sensitivity	Alternating, pulsed and smooth direct currents
Rated insulation voltage U_i	440V
Rated impulse withstand voltage (1,2/50µs)	4kV
Electrical isolation	> 4mm contact space
Rated residual operating current $I_{\Delta n}$	30 mA
DC tripping treshold	6 mA
Rated conditional short-circuit current I_{cn}	10kA
Rated making and breaking capacity I_m	630A
Max back-up fuse for short circuit protection	80A gG
Voltage range test circuit	196 – 253 V AC
Min. operating voltage	80 V
Standards	IEC/EN 61008, IEC 62955:2018
Mechanical Endurance (cycles)	10.000
Electrical endurance (cycles)	2.000
Shock resistance acc. to	IEC/EN 61008-1
Resistance to vibrations acc. To IEC 60068-2-7	5g (10, 60 & 500Hz)
Mechanical	
Frame size	45mm
Device height	68mm (DIN rail acc to EN6071)
Device width	72mm (4 x Module Units)
Degree of protection	IP20
Overvoltage category	III
Upper and lower terminals	open mounted/lift terminals
Terminal capacity	1-25mm²
Terminal screw	M5 (Pozidrive PZ2)
Terminal torque	max. 3Nm
Busbar thickness	0,8 - 2 mm
Operating temperature	-25°C ... +70°C
Storage and transport temperature	-40°C ... +85°C
Resistance to climatic conditions	IEC/EN 61008
Contact position indicator	mechanical red/green
Mounting position	any
Mounting on the rail	35mm acc to EN50022
Supply possibility	top or bottom
Locking device	Locking is possible through button and cover

I_n [A]	Maximum power dissipation P / pole (W)
25	0,73 - 1,03
40	1,84 - 2,48
63	4,85 - 6,02

conductor cross-section [mm²]	Number of single conductors, rigid, single-wire Cu conductor				
	1	2	3	4	5
1,5	✓	✓	✓	✓	×
2,5	✓	✓	✓	×	×
4	✓	✓	✓	×	×
6	✓	✓	×	×	×
10	✓	✓	×	×	×
16	✓	×	×	×	×
25	✓	×	×	×	×

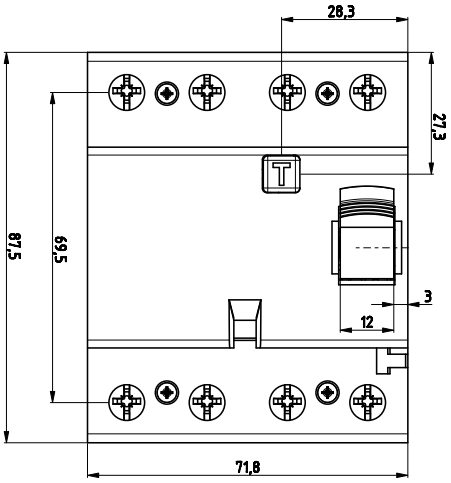
Remark: When you use more than 2 cables you have to be careful how those cables are inserted to ensure proper pressure on each cable

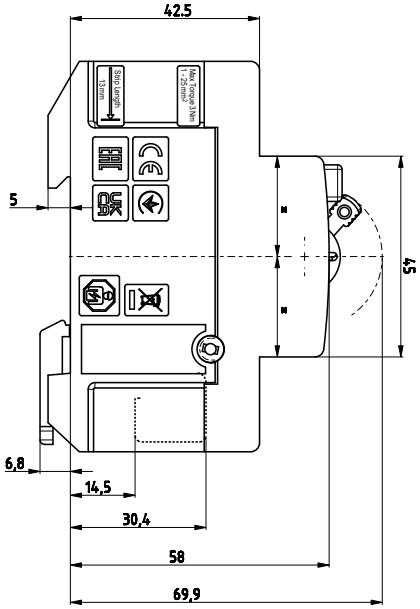
Conductor cross-section [mm²]	Number of single conductors, flexible Cu conductors with cable ferrule					
	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	×	×	×
10	✓	✓	×	×	×	×
16	✓	×	×	×	×	×
25	✓	×	×	×	×	×

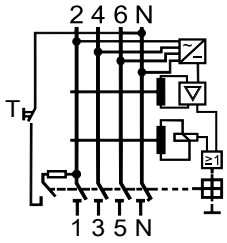
Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

EFI-P4 eV

I_n [A]	$I_{\Delta n}$ [A]	Type	Code No.	g	
25	0,03	EFI-P4 eV 25/0.03	002061991	318	1/27
40		EFI-P4 eV 40/0.03	002061992	318	1/27
63		EFI-P4 eV 63/0.03	002061993	318	1/27

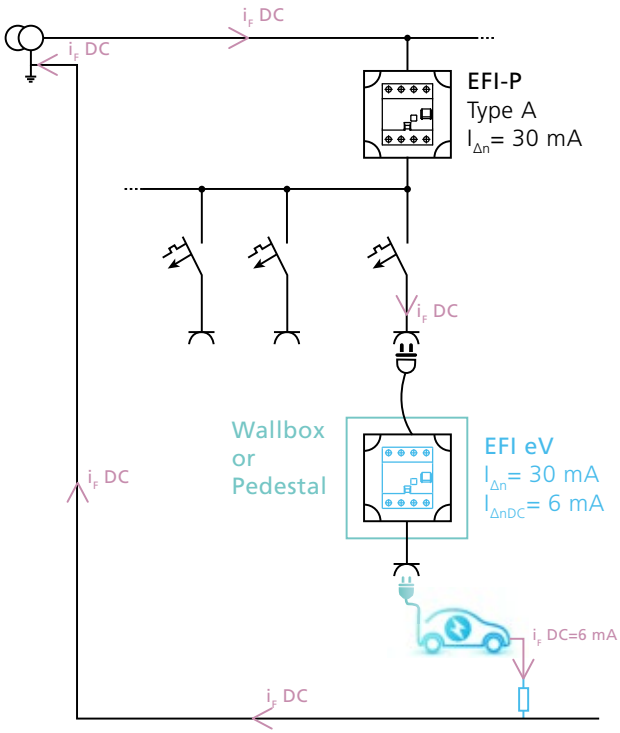






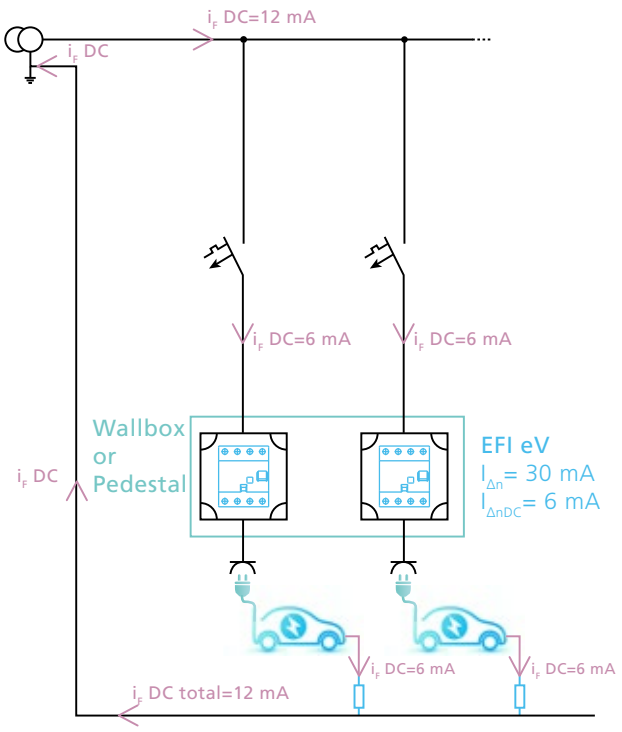
Electrical Design Recommendations

TN-System



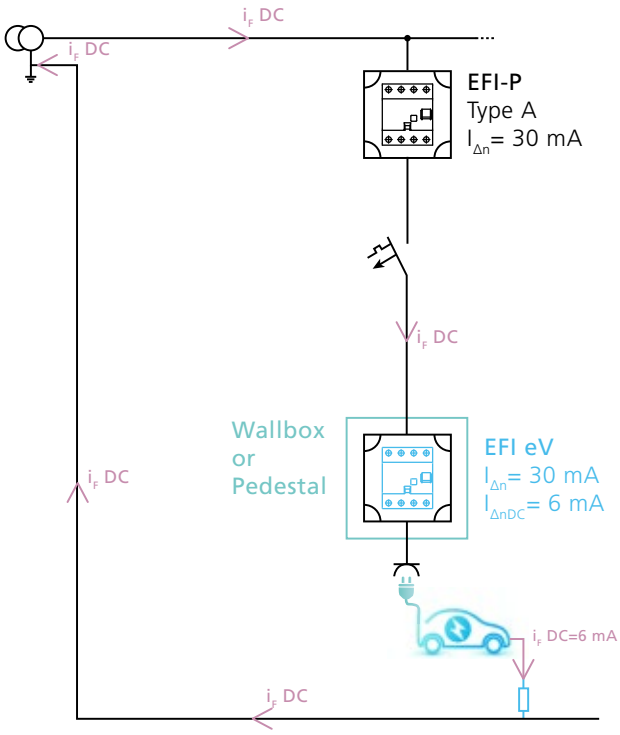
If the charging unit is pluged into an existing socket, protected with a Type A RCCB, additional protection against smooth DC residual currents above 6 mA must be provided (IEC 60364-7-722).

TN-System



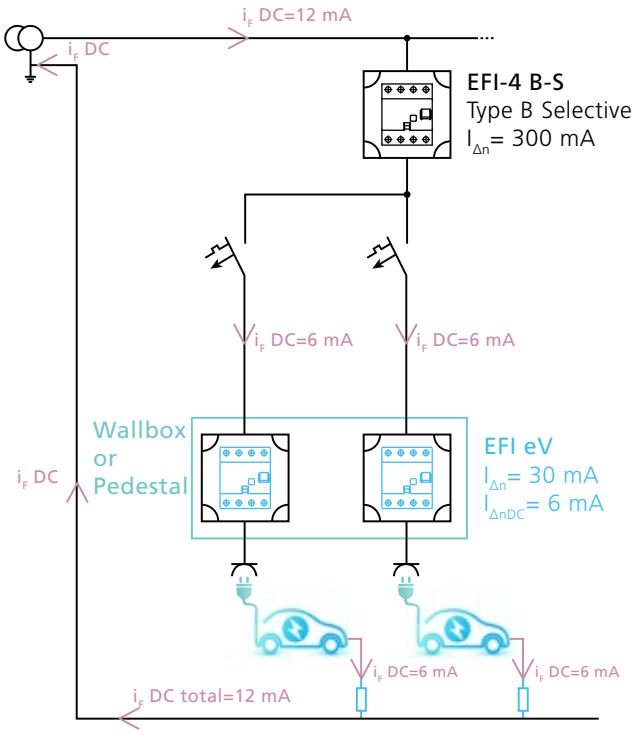
If the charging unit has a fixed connection, EFI eV will provide complete protection against residual currents.

TT-System



In these systems, switch-off times must comply to stricter rules so even the charging units with fixed connection require a Type A RCCB, which needs to be additionally protected against smooth DC residual currents above 6 mA by EFI eV.

TT-System



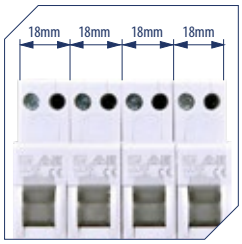
If more charging units are in use, the first RCCB must be a Type B device to protect from the sum of all smooth DC residual currents. Each charging plug socket must also be protected with EFI eV.

ASTI Residual Current Circuit Breakers with Integral Overcurrent Protection - RCBOs

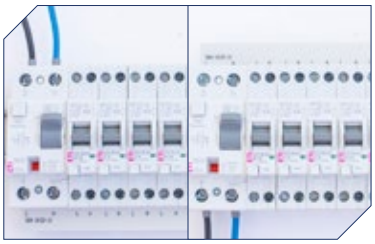
Residual current circuit breaker with integral overcurrent protection KZS -1M

By combining both the MCB (protection against overcurrent faults) and RCCB (protection against residual currents) functions, the RCBO provides enhanced safety and protection for both people and electrical systems. It is commonly used in residential, commercial and industrial electrical installations with operating temperature down to -35° C.

SPACE SAVING
Two devices (MCB and an RCCB) in a single 1-module unit, switching active and neutral pole.



EITHER WAY UP
New universal KZS - 1M UNI enables top and bottom, line and load compatibility for easy, fast either-way-up installations.



All necessary technical and installation information can be found on the front and side of the device

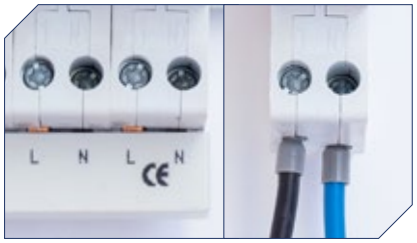
Added protection against any pulsating DC component that can be generated from electrical appliances

Line voltage-dependent differential tripping (minimum supply voltage 85V)

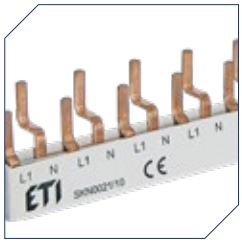
Energy limiting class 3: highest energy limiting performance for optimal protection of cable insulation and maximally reducing risk of fire and other damage

The middle (trip) position of the toggle indicates electric fault tripping

The terminals accept not only wires but also time saving busbars



The possibility of connecting to SKN-type busbars



Easy removal from existing busbar system

ASTI / Residual Current Circuit Creakers with Integral Overcurrent Protection

- Real contact position indication for easier identification, whether RCBO is in ON or OFF position

- Clearly marked terminals ensure appropriate connection
- Increased opening on the N pole (size PZ2 screw drive)

- Sealing possibility

Recommended for use in installations with high level of additional protection required (bathrooms, hospitals, kindergartens etc). Used for fault and additional protection.

Residual current circuit breaker with integral overcurrent protection KZS -1M UNI

Rated short-circuit capacity	Rated current	Tripping characteristic	Rated residual current
6 kA	**6 - 25 A**	**B, C**	**0,01 - 0,03 - 0,1 A**

Description - KZS -1M UNI is a residual current circuit breaker with integral overcurrent protection, functionally dependent on line voltage.
Bi-directional connection.

Technical data

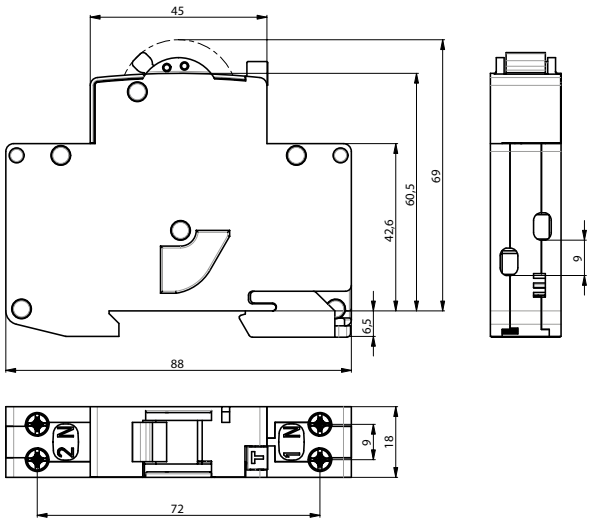
Type	KZS 1M UNI
Rated voltage U_n	230/240 V AC
Rated current I_n	6-25 A
Minimum supply voltage U_{min}	85 V
Rated frequency f_n	50/60 Hz
Rated short-circuit capacity	6.000 A
Back-up fuse	100 A gG
Tripping characteristic	B, C
Rated residual current $I_{\Delta n}$	10, 30, 100 mA
Type of residual release	A, AC
Rated residual making and breaking capacity $I_{\Delta m}$	1500A
Terminals	1-10 mm^2, max. 1,5Nm
Terminal screw	M4 (Pozidrive PZ2)
Width	18 mm
Mounting position	any
Standard	IEC 61009
Length of neutral conductor	-
Operating temperature	-35°C ... +40°C
Storage temperature	-40°C ... +60°C

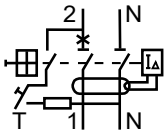
Conductor cross-section	Number of single conductors, rigid, single-wire CU conductor					
[mm²]	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	×
4	✓	✓	✓	×	×	×
6	✓	✓	×	×	×	×
10	✓	×	×	×	×	×

Remark: When you use more than 2 cables you have to be careful how those cables are inserted to ensure proper pressure on each cable

Conductor cross-section	Number of single conductors, flexible Cu conductors with cable ferrule					
[mm²]	1	2	3	4	5	6
1,5	✓	✓	✓	×	×	×
2,5	✓	✓	×	×	×	×
4	✓	✓	×	×	×	×
6	✓	×	×	×	×	×
10	✓	×	×	×	×	×

Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed





KZS - 1M UNI

I_n [A]	$I_{\Delta n}$ [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	0,01	KZS-1M-UNI 1p+N A B6/0.01	002176001	KZS-1M-UNI 1p+N A C6/0.01	002176011	111	1/72
10		KZS-1M-UNI 1p+N A B10/0.01	002176002	KZS-1M-UNI 1p+N A C10/0.01	002176012		
13		KZS-1M-UNI 1p+N A B13/0.01	002176003	KZS-1M-UNI 1p+N A C13/0.01	002176013		
16		KZS-1M-UNI 1p+N A B16/0.01	002176004	KZS-1M-UNI 1p+N A C16/0.01	002176014		
20		KZS-1M-UNI 1p+N A B20/0.01	002176005	KZS-1M-UNI 1p+N A C20/0.01	002176015		
25		KZS-1M-UNI 1p+N A B25/0.01	002176006	KZS-1M-UNI 1p+N A C25/0.01	002176016		
6	0,03	KZS-1M-UNI 1p+N A B6/0.03	002176021	KZS-1M-UNI 1p+N A C6/0.03	002176031	111	1/72
10		KZS-1M-UNI 1p+N A B10/0.03	002176022	KZS-1M-UNI 1p+N A C10/0.03	002176032		
13		KZS-1M-UNI 1p+N A B13/0.03	002176023	KZS-1M-UNI 1p+N A C13/0.03	002176033		
16		KZS-1M-UNI 1p+N A B16/0.03	002176024	KZS-1M-UNI 1p+N A C16/0.03	002176034		
20		KZS-1M-UNI 1p+N A B20/0.03	002176025	KZS-1M-UNI 1p+N A C20/0.03	002176035		
25		KZS-1M-UNI 1p+N A B25/0.03	002176026	KZS-1M-UNI 1p+N A C25/0.03	002176036		
6	0,1	KZS-1M-UNI 1p+N A B6/0.1	002176041	KZS-1M-UNI 1p+N A C6/0.1	002176051	111	1/72
10		KZS-1M-UNI 1p+N A B10/0.1	002176042	KZS-1M-UNI 1p+N A C10/0.1	002176052		
13		KZS-1M-UNI 1p+N A B13/0.1	002176043	KZS-1M-UNI 1p+N A C13/0.1	002176053		
16		KZS-1M-UNI 1p+N A B16/0.1	002176044	KZS-1M-UNI 1p+N A C16/0.1	002176054		
20		KZS-1M-UNI 1p+N A B20/0.1	002176045	KZS-1M-UNI 1p+N A C20/0.1	002176055		
25		KZS-1M-UNI 1p+N A B25/0.1	002176046	KZS-1M-UNI 1p+N A C25/0.1	002176056		

ASTI / Residual Current Circuit Creakers with Integral Overcurrent Protection

KZS - 1M UNI

I_n [A]	$I_{\Delta n}$ [A]	Type AC Characteristic B	Code No. B	Type AC Characteristic C	Code No. C	g	
6	0,01	KZS-1M-UNI 1p+N AC B6/0.01	002176101	KZS-1M-UNI 1p+N AC C6/0.01	002176111	111	1/72
10		KZS-1M-UNI 1p+N AC B10/0.01	002176102	KZS-1M-UNI 1p+N AC C10/0.01	002176112		
13		KZS-1M-UNI 1p+N AC B13/0.01	002176103	KZS-1M-UNI 1p+N AC C13/0.01	002176113		
16		KZS-1M-UNI 1p+N AC B16/0.01	002176104	KZS-1M-UNI 1p+N AC C16/0.01	002176114		
20		KZS-1M-UNI 1p+N AC B20/0.01	002176105	KZS-1M-UNI 1p+N AC C20/0.01	002176115		
25		KZS-1M-UNI 1p+N AC B25/0.01	002176106	KZS-1M-UNI 1p+N AC C25/0.01	002176116		
6	0,03	KZS-1M-UNI 1p+N AC B6/0.03	002176121	KZS-1M-UNI 1p+N AC C6/0.03	002176131	111	1/72
10		KZS-1M-UNI 1p+N AC B10/0.03	002176122	KZS-1M-UNI 1p+N AC C10/0.03	002176132		
13		KZS-1M-UNI 1p+N AC B13/0.03	002176123	KZS-1M-UNI 1p+N AC C13/0.03	002176133		
16		KZS-1M-UNI 1p+N AC B16/0.03	002176124	KZS-1M-UNI 1p+N AC C16/0.03	002176134		
20		KZS-1M-UNI 1p+N AC B20/0.03	002176125	KZS-1M-UNI 1p+N AC C20/0.03	002176135		
25		KZS-1M-UNI 1p+N AC B25/0.03	002176126	KZS-1M-UNI 1p+N AC C25/0.03	002176136		
6	0,1	KZS-1M-UNI 1p+N AC B6/0.1	002176141	KZS-1M-UNI 1p+N AC C6/0.1	002176151	111	1/72
10		KZS-1M-UNI 1p+N AC B10/0.1	002176142	KZS-1M-UNI 1p+N AC C10/0.1	002176152		
13		KZS-1M-UNI 1p+N AC B13/0.1	002176143	KZS-1M-UNI 1p+N AC C13/0.1	002176153		
16		KZS-1M-UNI 1p+N AC B16/0.1	002176144	KZS-1M-UNI 1p+N AC C16/0.1	002176154		
20		KZS-1M-UNI 1p+N AC B20/0.1	002176145	KZS-1M-UNI 1p+N AC C20/0.1	002176155		
25		KZS-1M-UNI 1p+N AC B25/0.1	002176146	KZS-1M-UNI 1p+N AC C25/0.1	002176156		

Residual current circuit breaker with integral overcurrent protection KZS -1MS

Rated short-circuit capacity	Rated current	Tripping characteristic	Rated residual current
6 kA	**4 - 16 A**	**B, C**	**0,03 A**

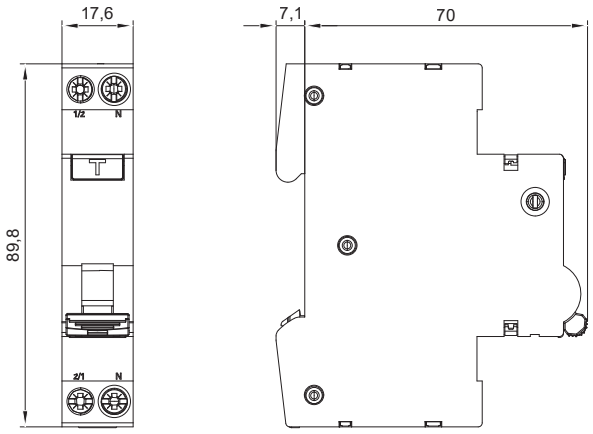
Residual current circuit breakers with overload protection combine residual current detection, short circuit and overcurrent protection in one device, thus enabling combined electric-shock and line protection. The protection devices enhance reliable operation and system availability, simplifying planning.
The new KZS-1MS is one of the first the first electromechanic (voltage independent) RCBO on the EN/IEC market in only one modular width.

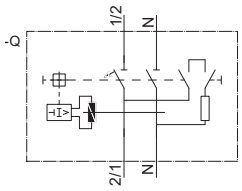
KZS - 1MS

I_n [A]	$I_{\Delta n}$ [A]	Type AC Characteristic B	Code No. B	Type AC Characteristic C	Code No. C	g	
4	0,03			KZS-1MS 1p+N A C4/0.03	002176211	115	1
6		KZS-1MS 1p+N A B6/0.03	002176202	KZS-1MS 1p+N A C6/0.03	002176212		
10		KZS-1MS 1p+N A B10/0.03	002176203	KZS-1MS 1p+N A C10/0.03	002176213		
13		KZS-1MS 1p+N A B13/0.03	002176204	KZS-1MS 1p+N A C13/0.03	002176214		
16		KZS-1MS 1p+N A B16/0.03	002176205	KZS-1MS 1p+N A C16/0.03	002176215		

Technical data

Type	KZS-1MS
Rated voltage U_n	230 V AC
Rated current I_n	4-16A
Rated frequency f_n	50/60 Hz
Rated short-circuit capacity	6.000 A
Rated insulation voltage U_i	253V
Energy limiting class	3
Tripping characteristic	B, C
Rated residual current $I_{\Delta n}$	30 mA
Type of residual release	A
Rated residual making and breaking capacity $I_{\Delta m}$	4,5kA
Peak withstand current	1kA (8/20ms)
Terminals	0,75-10mm2
Terminal screw	M4 (PZ2)
Terminal torque	1,2-2,0 Nm
Width	18mm
Mounting position	any
Operating temperature	-25°C…+40°C
Storage temperature	-40°C…+75°C
Resistance to climate (IEC 60068-2-30)	28 cycles (55°C; 95% rel. humidity)
Overvoltage category	III
Degree of polution	2
Operating cycles	> 10.000
Standard	IEC/EN 61009





I_n [A]	Maximum power dissipation	
	B characteristics	C characteristics
4A		2,3
6A	1,4	1,2
10A	2,2	1,9
13A	2,6	2,5
16A	3,7	3,4

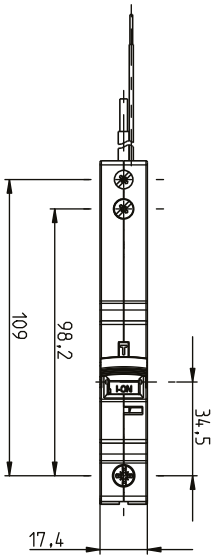
Residual current circuit breaker with integral overcurrent protection KZS -1M FN

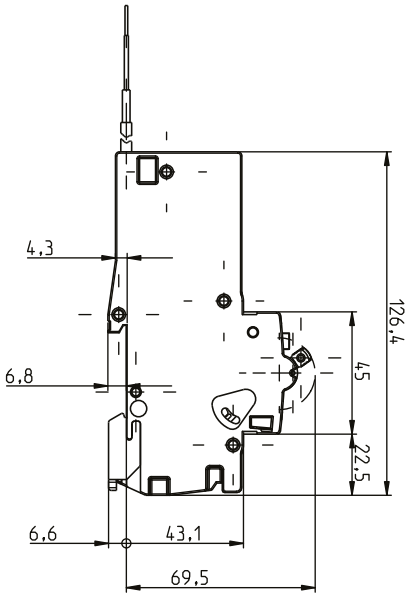
Rated short-circuit capacity	Rated current	Tripping characteristic	Rated residual current
10 kA	**6 - 45 A**	**B, C**	**0,03 - 0,1 A**

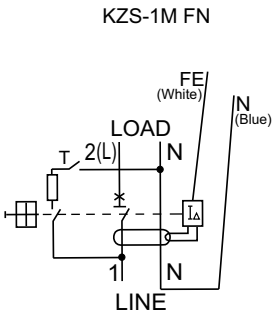
Description:
KZS -1M FN is a residual current circuit breaker with integral overcurrent protection, functionally dependent on line voltage.
It comes in a single pole version that switches the phase pole while the neutral pole stays fixed.
KZS 1M-FN is dependent on voltage and operates at voltages above 85V.
KZS 1M-FN also has a sealing possibility.

Technical data

Type	KZS 1M FN
Rated voltage U_n	230 V AC
Rated current I_n	6-45 A
Minimal supply voltage U_{min}	90 V
Rated frequency f_n	50 Hz
Rated short-circuit capacity	10.000 A
Back-up fuse	100 A gG
Tripping characteristic	B, C
Rated residual current $I_{\Delta n}$	30, 100 mA
Type of residual release	A, AC
Rated residual making and breaking capacity $I_{\Delta m}$	4500A
Terminals	1-25 mm² / 1-16 mm²
Terminal screw	M5 (Pozidrive PZ2)
Width	18 mm
Mounting position	any
Standard	IEC 61009-1 / 61009-2
Length of neutral conductor	600 mm
Operating temperature	-25°C ... +40°C
Storage temperature	-40°C ... +60°C







KZS - 1M FN $I_{\Delta n}$ = 30 mA

I_n [A]	$I_{\Delta n}$ [A]	Type A Characteristic C	Code No. B	Type A Characteristic C	Code No. C	g	
6	230	KZS-1M-FN A B6/0.03	002175581	KZS-1M-FN A C6/0.03	002175591	168	1/42
10		KZS-1M-FN A B10/0.03	002175582	KZS-1M-FN A C10/0.03	002175592	168	1/42
13		KZS-1M-FN A B13/0.03	002175583	KZS-1M-FN A C13/0.03	002175593	168	1/42
16		KZS-1M-FN A B16/0.03	002175584	KZS-1M-FN A C16/0.03	002175594	168	1/42
20		KZS-1M-FN A B20/0.03	002175585	KZS-1M-FN A C20/0.03	002175595	170	1/42
25		KZS-1M-FN A B25/0.03	002175586	KZS-1M-FN A C25/0.03	002175596	170	1/42
32		KZS-1M-FN A B32/0.03	002175587	KZS-1M-FN A C32/0.03	002175597	180	1/42
40		KZS-1M-FN A B40/0.03	002175588	KZS-1M-FN A C40/0.03	002175598	205	1/42
45		KZS-1M-FN A B45/0.03	002175589	KZS-1M-FN A C45/0.03	002175599	205	1/42

KZS - 1M FN $I_{\Delta n}$ = 30 mA

I_n [A]	$I_{\Delta n}$ [A]	Type A Characteristic C	Code No. B	Type A Characteristic C	Code No. C	g	
6	230	KZS-1M-FN AC B6/0.03	002175501	KZS-1M-FN AC C6/0.03	002175521	168	1/42
10		KZS-1M-FN AC B10/0.03	002175502	KZS-1M-FN AC C10/0.03	002175522	168	1/42
13		KZS-1M-FN AC B13/0.03	002175503	KZS-1M-FN AC C13/0.03	002175523	168	1/42
16		KZS-1M-FN AC B16/0.03	002175504	KZS-1M-FN AC C16/0.03	002175524	168	1/42
20		KZS-1M-FN AC B20/0.03	002175505	KZS-1M-FN AC C20/0.03	002175525	170	1/42
25		KZS-1M-FN AC B25/0.03	002175506	KZS-1M-FN AC C25/0.03	002175526	170	1/42
32		KZS-1M-FN AC B32/0.03	002175507	KZS-1M-FN AC C32/0.03	002175527	180	1/42
40		KZS-1M-FN AC B40/0.03	002175508	KZS-1M-FN AC C40/0.03	002175528	205	1/42
45		KZS-1M-FN AC B45/0.03	002175509	KZS-1M-FN AC C45/0.03	002175529	205	1/42

Can be used with auxiliary / signal switch PS/SS (001908421) - page 57

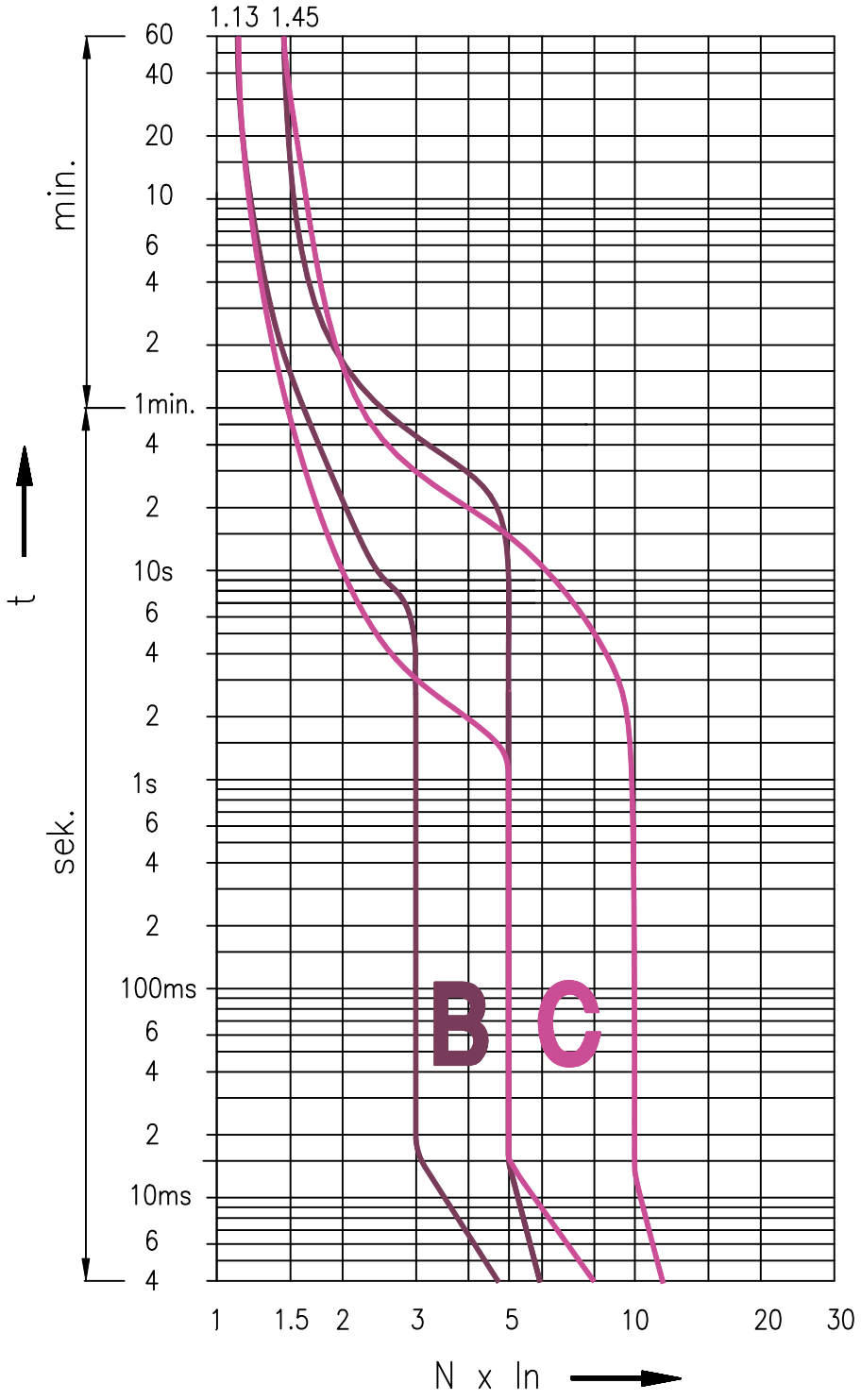
KZS - 1M FN $I_{\Delta n}$ = 100 mA

I_n [A]	$I_{\Delta n}$ [A]	Type A Characteristic C	Code No. B	Type A Characteristic C	Code No. C	g	
6	230	KZS-1M-FN A B6/0.1	002175781	KZS 1M-FN A C6/0.1	002175791	168	1/42
10		KZS-1M-FN A B10/0.1	002175782	KZS 1M-FN A C10/0.1	002175792	168	1/42
13		KZS-1M-FN A B13/0.1	002175783	KZS 1M-FN A C13/0.1	002175793	168	1/42
16		KZS-1M-FN A B16/0.1	002175784	KZS 1M-FN A C16/0.1	002175794	168	1/42
20		KZS-1M-FN A B20/0.1	002175785	KZS 1M-FN A C20/0.1	002175795	170	1/42
25		KZS-1M-FN A B25/0.1	002175786	KZS 1M-FN A C25/0.1	002175796	170	1/42
32		KZS-1M-FN A B32/0.1	002175787	KZS 1M-FN A C32/0.1	002175797	180	1/42
40		KZS-1M-FN A B40/0.1	002175788	KZS 1M-FN A C40/0.1	002175798	205	1/42
45		KZS-1M-FN A B45/0.1	002175789	KZS 1M-FN A C45/0.1	002175799	205	1/42

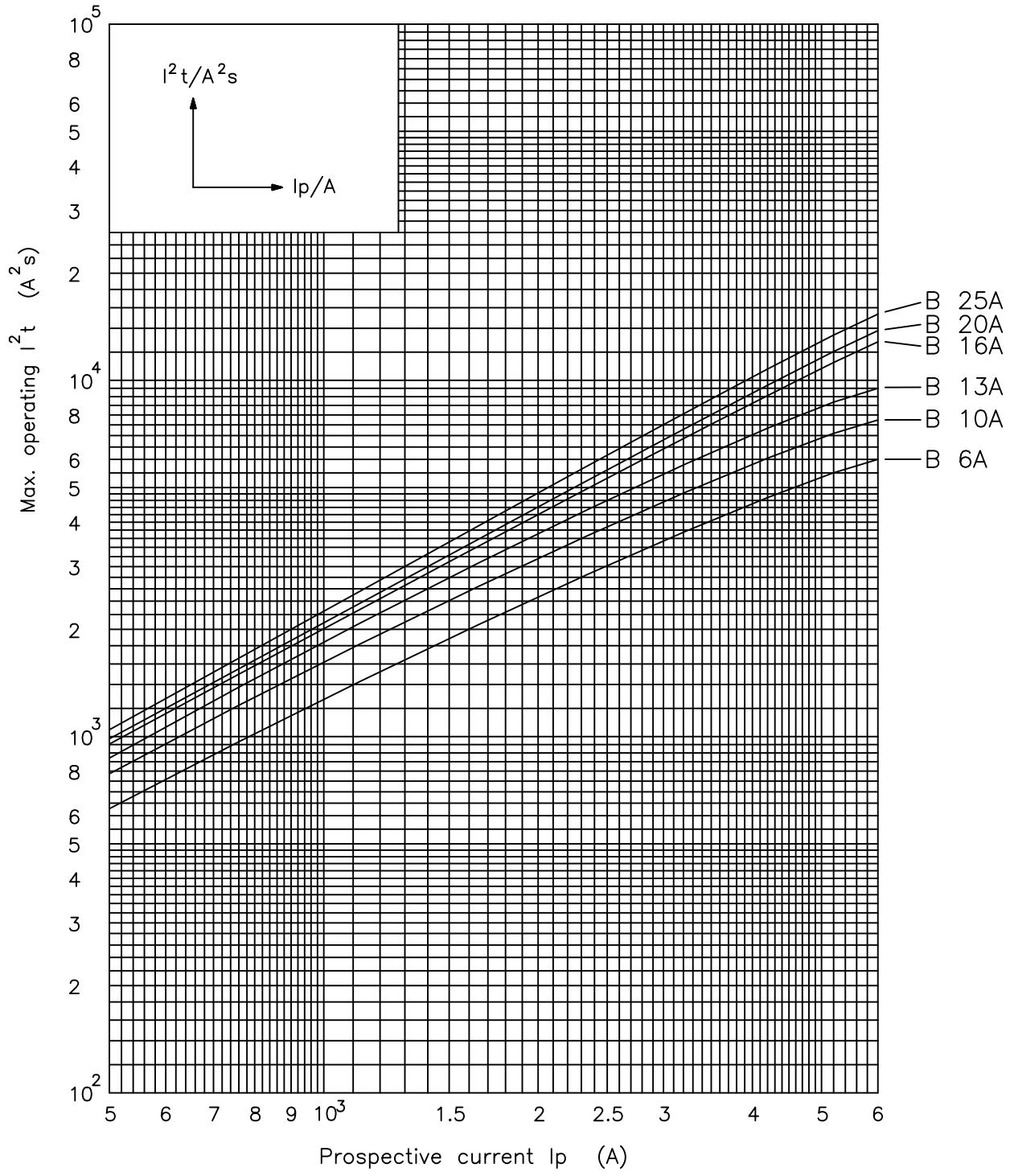
KZS - 1M FN $I_{\Delta n}$ = 100 mA

I_n [A]	$I_{\Delta n}$ [A]	Type A Characteristic C	Code No. B	Type A Characteristic C	Code No. C	g	
6	230	KZS-1M-FN AC B6/0.1	002175511	KZS-1M-FN AC C6/0.1	002175531	168	1/42
10		KZS-1M-FN AC B10/0.1	002175512	KZS-1M-FN AC C10/0.1	002175532	168	1/42
13		KZS-1M-FN AC B13/0.1	002175513	KZS-1M-FN AC C13/0.1	002175533	168	1/42
16		KZS-1M-FN AC B16/0.1	002175514	KZS-1M-FN AC C16/0.1	002175534	168	1/42
20		KZS-1M-FN AC B20/0.1	002175515	KZS-1M-FN AC C20/0.1	002175535	170	1/42
25		KZS-1M-FN AC B25/0.1	002175516	KZS-1M-FN AC C25/0.1	002175536	170	1/42
32		KZS-1M-FN AC B32/0.1	002175517	KZS-1M-FN AC C32/0.1	002175537	180	1/42
40		KZS-1M-FN AC B40/0.1	002175518	KZS-1M-FN AC C40/0.1	002175538	205	1/42
45		KZS-1M-FN AC B45/0.1	002175519	KZS-1M-FN AC C45/0.1	002175539	205	1/42

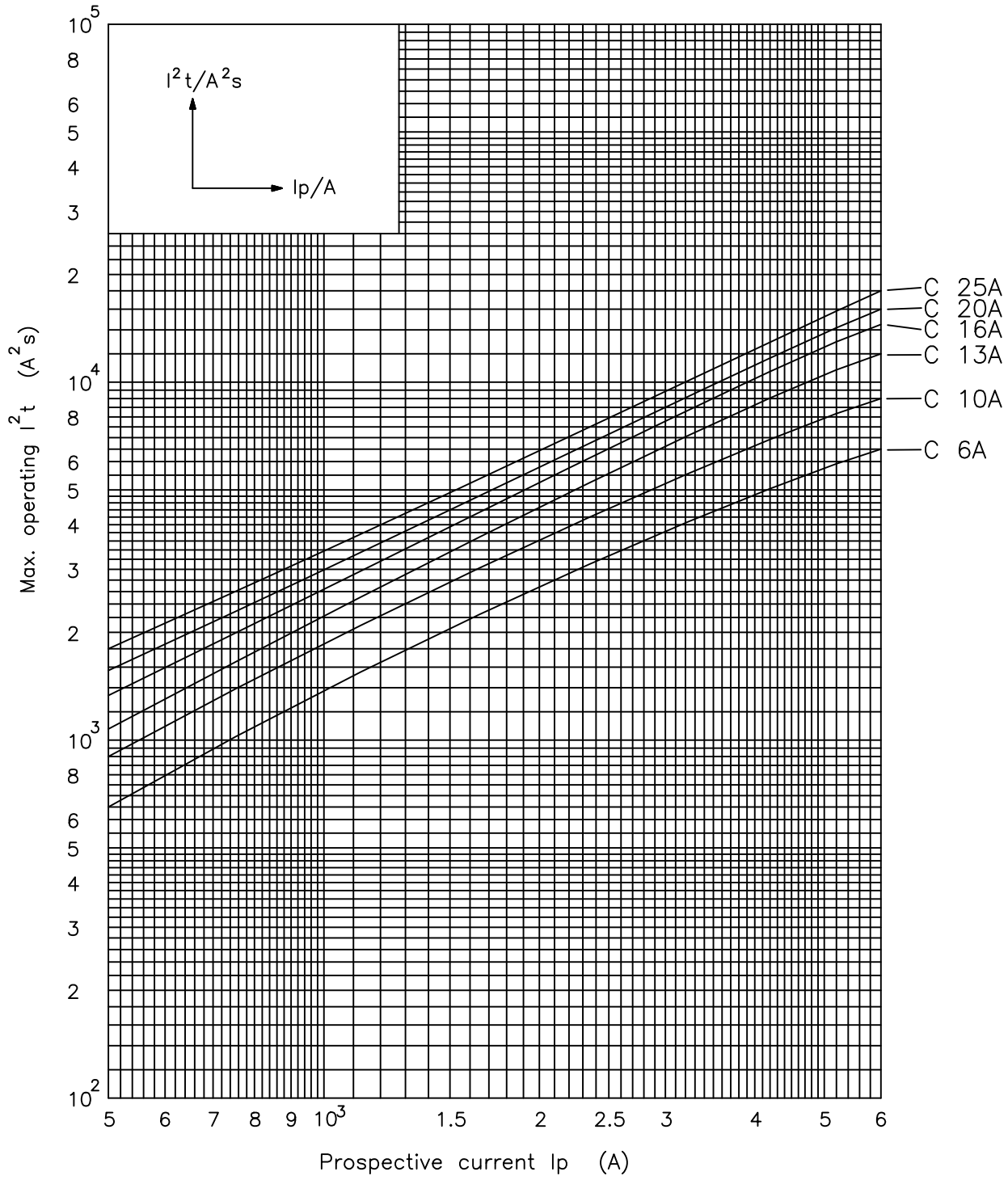
Time current characteristics I/t, KZS-1M



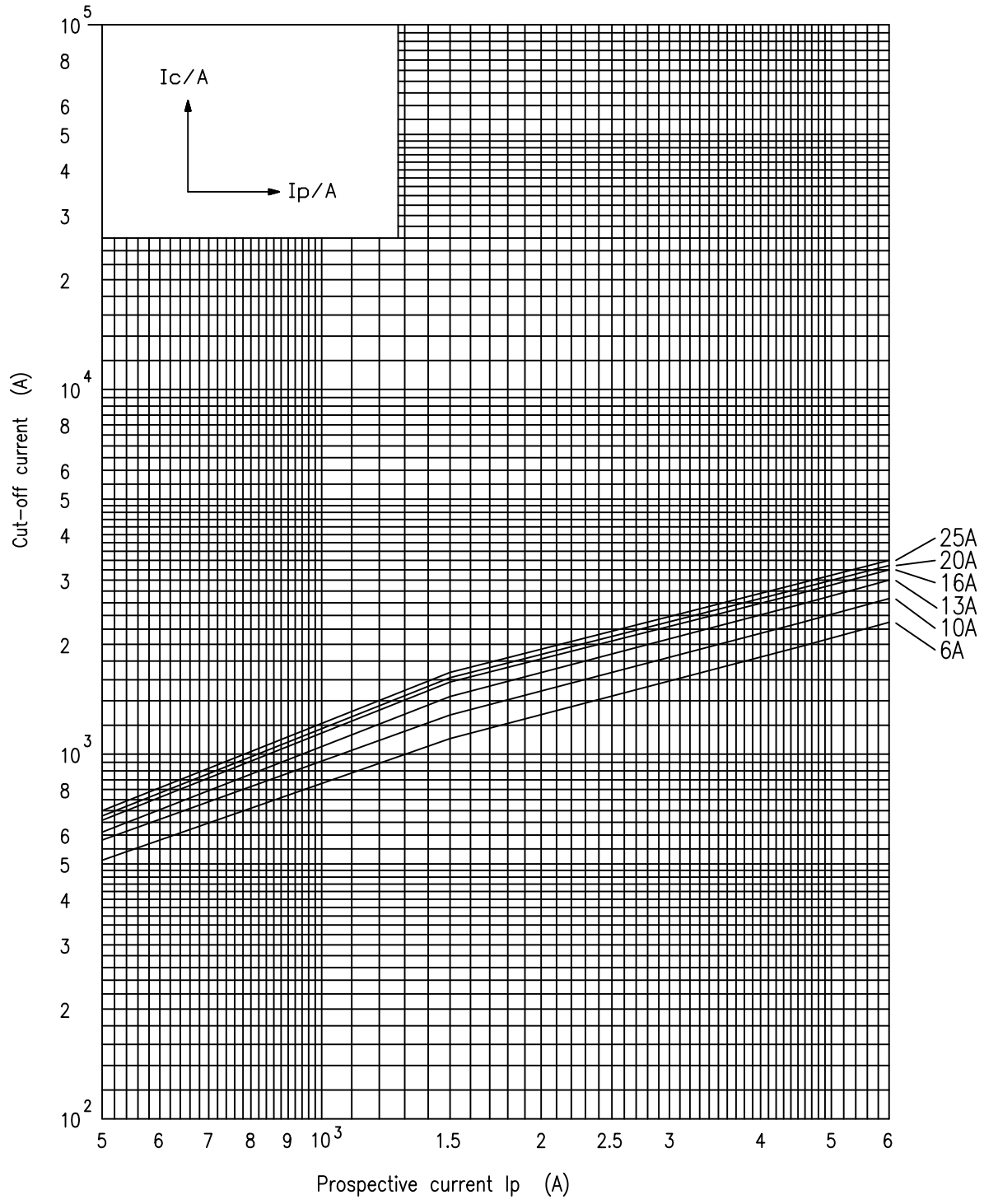
Melting energy characteristics I²t KZS-1M



Melting energy characteristics I²t KZS-1M



Cut-off current characteristics KZS-1M



Residual current circuit breaker with integral overcurrent protection KZS -2M, 4M

- All necessary technical and installation information can be found on the front and side of the device

- Special versions (with LED status signalisation, B type, AFDD type) available

- The terminals accept not only wires but also time saving busbars
- Supply is possible both from top and bottom terminals

- Auxiliary switch PS KZS-2M/4M for KZS-2M, KZS-4M

- Test button enables user to check residual functionality

- Sealing possibility in "ON/OFF" position

- Real contact position indication for easier identification, whether RCBO is in ON or OFF position

- Clearly marked terminals ensure appropriate connection

- Better protection of terminals against touching the parts under voltage

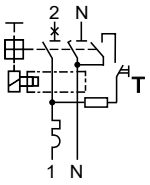
Residual current circuit breaker with integral overcurrent protection KZS-2M

Rated short-circuit capacity	Rated current	Tripping characteristic	Rated residual current
10 kA	**6 - 40 A**	**B, C**	**0,01 - 0,5 A**

Description: KZS (KZS-2M, KZS-4M) is a residual current circuit breaker combining the features of a miniature circuit breaker and a residual current circuit breaker and is functionally independent on line voltage. Used primarily in circuits with an increased requirements regarding touch voltage such as circuits of portable appliances, in kindergartens, schools, hospitals etc.

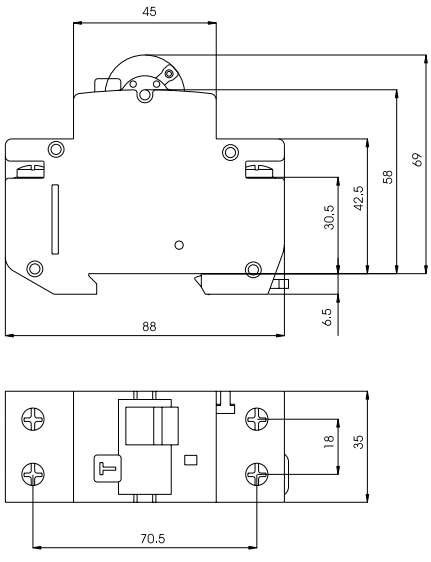
Technical data

Type	INST	G/KV	120 V
Rated voltage U_n	230/240 V AC		
Rated current I_n	6-40 A		
Rated frequency f_n	50 Hz		60 Hz
Rated impulse withstand voltage U_{imp}	4 kV		
Rated short-circuit capacity	10.000 A		
Back-up fuse	100 A gG		
Voltage range test circuit	180-200 V		90-143 V
Tripping characteristic	B, C		
Energy limiting class	3		
Type	A, AC		A
Rated residual current $I_{\Delta n}$	10, 30, 100, 300, 500 mA	30 mA	
Peak withstand current	250 A	3 kA	
Rated residual making and breaking capacity $I_{\Delta m}$	10.000A		
Terminals	1-25 mm², max. 3Nm		
Terminal screw	M5 (Pozidrive PZ2)		
Rated insulation Voltage U_i	500 V		
Peak withstand current	250 A		
Degree of protection	IP20		
Busbar thickness	0,8 - 2 mm		
Operating temperature	-25°C ... +60°C		
Storage temperature	-40°C ... +70°C		
Width	36 mm		
Mounting position	any		
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)		
Standard	IEC 61009, EN 61009		



KZS-2M $I_{\Delta n}$ = 10 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-2M A B6/0.01	002173211	KZS-2M A C6/0.01	002173231	225	1/54
10	KZS-2M A B10/0.01	002173212	KZS-2M A C10/0.01	002173232	225	1/54
13	KZS-2M A B13/0.01	002173213	KZS-2M A C13/0.01	002173233	225	1/54
16	KZS-2M A B16/0.01	002173214	KZS-2M A C16/0.01	002173234	225	1/54
20	KZS-2M A B20/0.01	002173215	KZS-2M A C20/0.01	002173235	225	1/54
25	KZS-2M A B25/0.01	002173216	KZS-2M A C25/0.01	002173236	225	1/54
32	KZS-2M A B32/0.01	002173217	KZS-2M A C32/0.01	002173237	225	1/54
40	KZS-2M A B40/0.01	002173218	KZS-2M A C40/0.01	002173238	225	1/54



ASTI / Residual Current Circuit Creakers with Integral Overcurrent Protection

KZS-2M $I_{\Delta n}$ = 30 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-2M A B6/0.03	002173201	KZS-2M A C6/0.03	002173221	225	1/54
10	KZS-2M A B10/0.03	002173202	KZS-2M A C10/0.03	002173222	225	1/54
13	KZS-2M A B13/0.03	002173203	KZS-2M A C13/0.03	002173223	225	1/54
16	KZS-2M A B16/0.03	002173204	KZS-2M A C16/0.03	002173224	225	1/54
20	KZS-2M A B20/0.03	002173205	KZS-2M A C20/0.03	002173225	225	1/54
25	KZS-2M A B25/0.03	002173206	KZS-2M A C25/0.03	002173226	225	1/54
32	KZS-2M A B32/0.03	002173207	KZS-2M A C32/0.03	002173227	225	1/54
40	KZS-2M A B40/0.03	002173208	KZS-2M A C40/0.03	002173228	225	1/54

KZS-2M $I_{\Delta n}$ = 30 mA

I_n [A]	Type AC Characteristic B	Code No. B	Type AC Characteristic C	Code No. C	g	
6	KZS-2M AC B6/0.03	002173101	KZS-2M AC C6/0.03	002173121	225	1/54
10	KZS-2M AC B10/0.03	002173102	KZS-2M AC C10/0.03	002173122	225	1/54
13	KZS-2M AC B13/0.03	002173103	KZS-2M AC C13/0.03	002173123	225	1/54
16	KZS-2M AC B16/0.03	002173104	KZS-2M AC C16/0.03	002173124	225	1/54
20	KZS-2M AC B20/0.03	002173105	KZS-2M AC C20/0.03	002173125	225	1/54
25	KZS-2M AC B25/0.03	002173106	KZS-2M AC C25/0.03	002173126	225	1/54
32	KZS-2M AC B32/0.03	002173107	KZS-2M AC C32/0.03	002173127	225	1/54
40	KZS-2M AC B40/0.03	002173108	KZS-2M AC C40/0.03	002173128	225	1/54

KZS-2M $I_{\Delta n}$ = 100 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-2M A B6/0.1	002173701	KZS-2M A C6/0.1	002173721	225	1/54
10	KZS-2M A B10/0.1	002173702	KZS-2M A C10/0.1	002173722	225	1/54
13	KZS-2M A B13/0.1	002173703	KZS-2M A C13/0.1	002173723	225	1/54
16	KZS-2M A B16/0.1	002173704	KZS-2M A C16/0.1	002173724	225	1/54
20	KZS-2M A B20/0.1	002173705	KZS-2M A C20/0.1	002173725	225	1/54
25	KZS-2M A B25/0.1	002173706	KZS-2M A C25/0.1	002173726	225	1/54
32	KZS-2M A B32/0.1	002173707	KZS-2M A C32/0.1	002173727	225	1/54
40	KZS-2M A B40/0.1	002173708	KZS-2M A C40/0.1	002173728	225	1/54

KZS-2M $I_{\Delta n}$ = 300 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-2M A B6/0.3	002173401	KZS-2M A C6/0.3	002173421	225	1/54
10	KZS-2M A B10/0.3	002173402	KZS-2M A C10/0.3	002173422	225	1/54
13	KZS-2M A B13/0.3	002173403	KZS-2M A C13/0.3	002173423	225	1/54
16	KZS-2M A B16/0.3	002173404	KZS-2M A C16/0.3	002173424	225	1/54
20	KZS-2M A B20/0.3	002173405	KZS-2M A C20/0.3	002173425	225	1/54
25	KZS-2M A B25/0.3	002173406	KZS-2M A C25/0.3	002173426	225	1/54
32	KZS-2M A B32/0.3	002173407	KZS-2M A C32/0.3	002173427	225	1/54
40	KZS-2M A B40/0.3	002173408	KZS-2M A C40/0.3	002173428	225	1/54

KZS-2M $I_{\Delta n}$ = 300 mA

I_n [A]	Type AC Characteristic B	Code No. B	Type AC Characteristic C	Code No. C	g	
6	KZS-2M AC B6/0.3	002173301	KZS-2M AC C6/0.3	002173321	225	1/54
10	KZS-2M AC B10/0.3	002173302	KZS-2M AC C10/0.3	002173322	225	1/54
13	KZS-2M AC B13/0.3	002173303	KZS-2M AC C13/0.3	002173323	225	1/54
16	KZS-2M AC B16/0.3	002173304	KZS-2M AC C16/0.3	002173324	225	1/54
20	KZS-2M AC B20/0.3	002173305	KZS-2M AC C20/0.3	002173325	225	1/54
25	KZS-2M AC B25/0.3	002173306	KZS-2M AC C25/0.3	002173326	225	1/54
32	KZS-2M AC B32/0.3	002173307	KZS-2M AC C32/0.3	002173327	225	1/54
40	KZS-2M AC B40/0.3	002173308	KZS-2M AC C40/0.3	002173328	225	1/54

KZS-2M $I_{\Delta n}$ = 500 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-2M A B6/0.5	002173901	KZS-2M A C6/0.5	002173921	225	1/54
10	KZS-2M A B10/0.5	002173902	KZS-2M A C10/0.5	002173922	225	1/54
13	KZS-2M A B13/0.5	002173903	KZS-2M A C13/0.5	002173923	225	1/54
16	KZS-2M A B16/0.5	002173904	KZS-2M A C16/0.5	002173924	225	1/54
20	KZS-2M A B20/0.5	002173905	KZS-2M A C20/0.5	002173925	225	1/54
25	KZS-2M A B25/0.5	002173906	KZS-2M A C25/0.5	002173926	225	1/54
32	KZS-2M A B32/0.5	002173907	KZS-2M A C32/0.5	002173927	225	1/54
40	KZS-2M A B40/0.5	002173908	KZS-2M A C40/0.5	002173928	225	1/54

KZS-2M G/KV type $I_{\Delta n}$ = 30 mA

I_n [A]	Type A, G/KV Characteristic B	Code No. B	Type A, G/KV Characteristic C	Code No. C	g	
6	KZS-2M A G/KV B6/0.03	002174101	KZS-2M A G/KV C6/0.03	002174121	225	1/54
10	KZS-2M A G/KV B10/0.03	002174102	KZS-2M A G/KV C10/0.03	002174122	225	1/54
13	KZS-2M A G/KV B13/0.03	002174103	KZS-2M A G/KV C13/0.03	002174123	225	1/54
16	KZS-2M A G/KV B16/0.03	002174104	KZS-2M A G/KV C16/0.03	002174124	225	1/54
20	KZS-2M A G/KV B20/0.03	002174105	KZS-2M A G/KV C20/0.03	002174125	225	1/54
25	KZS-2M A G/KV B25/0.03	002174106	KZS-2M A G/KV C25/0.03	002174126	225	1/54
32	KZS-2M A G/KV B32/0.03	002174107	KZS-2M A G/KV C32/0.03	002174127	225	1/54
40	KZS-2M A G/KV B40/0.03	002174108	KZS-2M A G/KV C40/0.03	002174128	225	1/54

KZS-2M 120 V type $I_{\Delta n}$ = 30 mA

I_n [A]	Type A, 120 V Characteristic B	Code No. B	Type A, 120 V Characteristic C	Code No. C	g	
6	KZS-2M A B6/0.03 120V	002173351	KZS-2M A C6/0.03 120V	002173391	225	1/54
10	KZS-2M A B10/0.03 120V	002173352	KZS-2M A C10/0.03 120V	002173392	225	1/54
13	KZS-2M A B13/0.03 120V	002173353	KZS-2M A C13/0.03 120V	002173393	225	1/54
16	KZS-2M A B16/0.03 120V	002173354	KZS-2M A C16/0.03 120V	002173394	225	1/54
20	KZS-2M A B20/0.03 120V	002173355	KZS-2M A C20/0.03 120V	002173395	225	1/54
25	KZS-2M A B25/0.03 120V	002173356	KZS-2M A C25/0.03 120V	002173396	225	1/54
32	KZS-2M A B32/0.03 120V	002173357	KZS-2M A C32/0.03 120V	002173397	225	1/54
40	KZS-2M A B40/0.03 120V	002173358	KZS-2M A C40/0.03 120V	002173398	225	1/54

Conductor cross-section	Number of single conductors, rigid, single-wire CU conductor				
[mm²]	1	2	3	4	5
1,5	✓	✓	✓	✓	×
2,5	✓	✓	✓	×	×
4	✓	✓	✓	×	×
6	✓	✓	×	×	×
10	✓	✓	×	×	×
16	✓	×	×	×	×
25	✓	×	×	×	×

Remark: When you use more than 2 cables you have to be careful how those cables are inserted to ensure proper pressure on each cable

Conductor cross-section	Number of single conductors, flexible Cu conductors with cable ferrule					
[mm²]	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	×	×	×
10	✓	✓	×	×	×	×
16	✓	×	×	×	×	×
25	✓	×	×	×	×	×

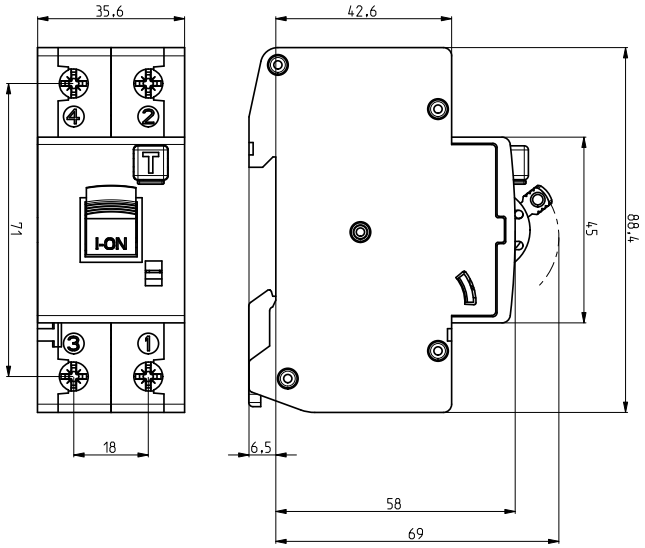
Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

Residual current circuit breaker with integral overcurrent protection KZS-2M 2p

Rated short-circuit capacity	Rated current	Tripping characteristic	Rated residual current
10 kA	**6 - 25 A**	**B, C**	**0,03 A**

Technical data

Rated voltage U_n	230 V AC
Rated current I_n	6-25 A
Rated frequency f_n	50 Hz
Rated short-circuit capacity	10.000 A
Back-up fuse	100 A gG
Tripping characteristic	B, C
Type	A
Rated residual current $I_{\Delta n}$	30, 100 mA
Rated residual making and breaking capacity $I_{\Delta m}$	1500A
Terminals	1-25 mm^2, max. 3Nm
Terminal screw	M5 (Pozidrive PZ2)
Rated insulation Voltage U_i	500 V
Peak withstand current	250 A
Degree of protection	IP20
Busbar thickness	0,8 - 2 mm
Operating temperature	-25°C ... +60°C
Storage temperature	-40°C ... +70°C
Width	36 mm
Mounting position	any
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)
Standard	IEC 61009, EN 61009

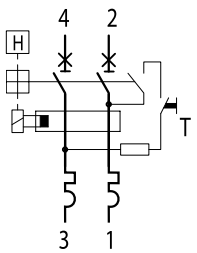


KZS-2M 2p $I_{\Delta n}$ = 30 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-2M2p A B6/0.03	002172501	KZS-2M2p A C6/0.03	002172521	210	1/54
10	KZS-2M2p A B10/0.03	002172502	KZS-2M2p A C10/0.03	002172522	210	1/54
13	KZS-2M2p A B13/0.03	002172503	KZS-2M2p A C13/0.03	002172523	210	1/54
15	KZS-2M2p A B15/0.03	002172504	KZS-2M2p A C15/0.03	002172524	210	1/54
16	KZS-2M2p A B16/0.03	002172505	KZS-2M2p A C16/0.03	002172525	210	1/54
20	KZS-2M2p A B20/0.03	002172506	KZS-2M2p A C20/0.03	002172526	210	1/54
25	KZS-2M2p A B25/0.03	002172507	KZS-2M2p A C25/0.03	002172527	210	1/54

KZS-2M 2p $I_{\Delta n}$ = 100 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-2M2p A B6/0.1	002172471	KZS-2M2p A C6/0.1	002172481	210	1/54
10	KZS-2M2p A B10/0.1	002172472	KZS-2M2p A C10/0.1	002172482	210	1/54
13	KZS-2M2p A B13/0.1	002172473	KZS-2M2p A C13/0.1	002172483	210	1/54
15	KZS-2M2p A B15/0.1	002172474	KZS-2M2p A C15/0.1	002172484	210	1/54
16	KZS-2M2p A B16/0.1	002172475	KZS-2M2p A C16/0.1	002172485	210	1/54
20	KZS-2M2p A B20/0.1	002172476	KZS-2M2p A C20/0.1	002172486	210	1/54
25	KZS-2M2p A B25/0.1	002172477	KZS-2M2p A C25/0.1	002172487	210	1/54



RCBO with LED status signalisation KZS 2M2p EDI

Rated short-circuit capacity	Rated current	Tripping characteristic	Rated residual current
10 kA	**6 - 25 A**	**B, C**	**0,03 A**

Easy and clear identification of the device status:
LED signalisation enables an exact information on which type of fault caused the tripping (red light for overload / short circuit, yellow light for residual current and green for manual operation)
Indication of internal contact position for quick and exact identification of the states of contacts (green for open contacts, red for closed contacts)

Technical data

Rated voltage U_n	~230 V AC
Rated current I_n	6-25 A
Rated frequency f_n	50 Hz
Minimal supply voltage U_{min}	90 V
Min. LED operating voltage U_{min}	150 V
Rated short-circuit capacity	10.000 A
Back-up fuse	100 A gG
Tripping characteristic	B, C
Energy limiting class	3
Type of residual release	A
Rated residual current $I_{\Delta n}$	30 mA
Rated residual making and breaking capacity $I_{\Delta m}$	1500A
Index of protection	IP20
Overvoltage category	III
Ambient temperature	-25 °C ... +40 °C
Storage temperature	-40 °C ... +70 °C
Mounting position	any
Terminals	1-25 mm², max. 3 Nm
Terminal screw	M5 (Pozidrive PZ2)
Width	36 mm
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)
Standard	IEC 61009-2, IEC 61009-1

KZS EDI - "ON"

KZS EDI - "OFF" manual operation (green LED)

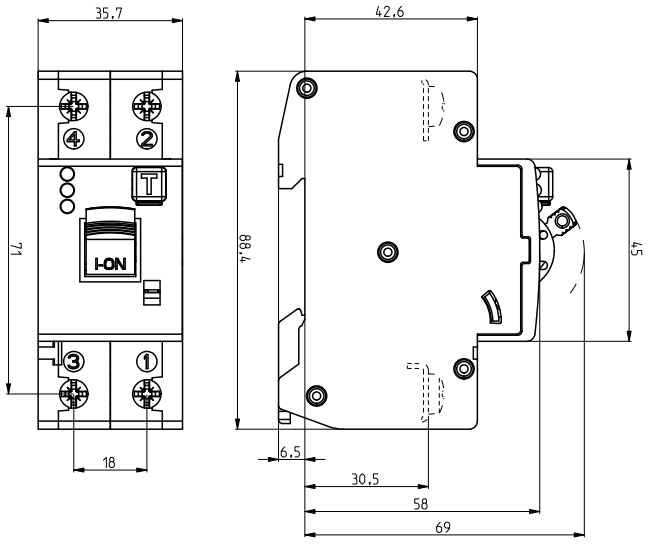
KZS EDI - "OFF" RCD tripped (yellow LED)

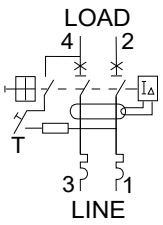
KZS EDI - "OFF" MCB tripped (Red LED)

KZS-2M 2p EDI $I_{\Delta n}$ = 30 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-2M2p EDI A B6/0.03	002172401	KZS-2M2p EDI A C6/0.03	002172411	205	1/54
10	KZS-2M2p EDI A B10/0.03	002172402	KZS-2M2p EDI A C10/0.03	002172412	205	1/54
13	KZS-2M2p EDI A B13/0.03	002172403	KZS-2M2p EDI A C13/0.03	002172413	205	1/54
15	KZS-2M2p EDI A B15/0.03	002172404	KZS-2M2p EDI A C15/0.03	002172414	205	1/54
16	KZS-2M2p EDI A B16/0.03	002172406	KZS-2M2p EDI A C16/0.03	002172416	205	1/54
20	KZS-2M2p EDI A B20/0.03	002172407	KZS-2M2p EDI A C20/0.03	002172417	205	1/54
25	KZS-2M2p EDI A B25/0.03	002172408	KZS-2M2p EDI A C25/0.03	002172418	205	1/54

ASTI / Residual Current Circuit Creakers with Integral Overcurrent Protection





Residual current circuit breaker with integral overcurrent protection KZS-4M 3p

Rated short-circuit capacity	Rated current	Tripping characteristic	Rated residual current
10 kA	**6 - 32 A**	**B, C**	**0,03 A - 0,5 A**

Technical data

Rated voltage U_n	~400 V AC
Rated current I_n	6-32 A
Rated frequency f_n	50/60 Hz
Rated short-circuit capacity	10.000 A
Back-up fuse	100 A gG
Tripping characteristic	B, C
Type	AC, A
Rated residual current $I_{\Delta n}$	30, 100, 300, 500 mA
Rated residual making and breaking capacity $I_{\Delta m}$	4500A
Terminals	1-25 mm^2, max. 3 Nm
Terminal screw	M5 (Pozidrive PZ2)
Rated insulation Voltage U_i	500 V
Peak withstand current	250 A
Resistance according to vibrations acc. to IEC 60068-2-7	5g (10, 60 & 500Hz)
Degree of protection	IP20
Busbar thickness	0,8 - 2 mm
Operating temperature	-25°C ... +60°C
Storage temperature	-40°C ... +70°C
Width	72 mm
Mounting position	any
Standard	EN 61009-1

KZS-4M 3p $I_{\Delta n}$ = 30 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-4M 3p A B6/0.03	002174701	KZS-4M 3p A C6/0.03	002174721	482	1/27
10	KZS-4M 3p A B10/0.03	002174702	KZS-4M 3p A C10/0.03	002174722	482	1/27
13	KZS-4M 3p A B13/0.03	002174703	KZS-4M 3p A C13/0.03	002174723	482	1/27
16	KZS-4M 3p A B16/0.03	002174704	KZS-4M 3p A C16/0.03	002174724	482	1/27
20	KZS-4M 3p A B20/0.03	002174705	KZS-4M 3p A C20/0.03	002174725	482	1/27
25	KZS-4M 3p A B25/0.03	002174706	KZS-4M 3p A C25/0.03	002174726	482	1/27
32	KZS-4M 3p A B32/0.03	002174707	KZS-4M 3p A C32/0.03	002174727	482	1/27

KZS-4M 3p $I_{\Delta n}$ = 30 mA

I_n [A]	Type AC Characteristic B	Code No. B	Type AC Characteristic C	Code No. C	g	
6	KZS-4M 3p AC B6/0.03	002174801	KZS-4M 3p AC C6/0.03	002174821	482	1/27
10	KZS-4M 3p AC B10/0.03	002174802	KZS-4M 3p AC C10/0.03	002174822	482	1/27
13	KZS-4M 3p AC B13/0.03	002174803	KZS-4M 3p AC C13/0.03	002174823	482	1/27
16	KZS-4M 3p AC B16/0.03	002174804	KZS-4M 3p AC C16/0.03	002174824	482	1/27
20	KZS-4M 3p AC B20/0.03	002174805	KZS-4M 3p AC C20/0.03	002174825	482	1/27
25	KZS-4M 3p AC B25/0.03	002174806	KZS-4M 3p AC C25/0.03	002174826	482	1/27
32	KZS-4M 3p AC B32/0.03	002174807	KZS-4M 3p AC C32/0.03	002174827	482	1/27

KZS-4M 3p $I_{\Delta n}$ = 100 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-4M 3p A B6/0.1	002173001	KZS-4M 3p A C6/0.1	002173021	482	1/27
10	KZS-4M 3p A B10/0.1	002173002	KZS-4M 3p A C10/0.1	002173022	482	1/27
13	KZS-4M 3p A B13/0.1	002173003	KZS-4M 3p A C13/0.1	002173023	482	1/27
16	KZS-4M 3p A B16/0.1	002173004	KZS-4M 3p A C16/0.1	002173024	482	1/27
20	KZS-4M 3p A B20/0.1	002173005	KZS-4M 3p A C20/0.1	002173025	482	1/27
25	KZS-4M 3p A B25/0.1	002173006	KZS-4M 3p A C25/0.1	002173026	482	1/27
32	KZS-4M 3p A B32/0.1	002173007	KZS-4M 3p A C32/0.1	002173027	482	1/27

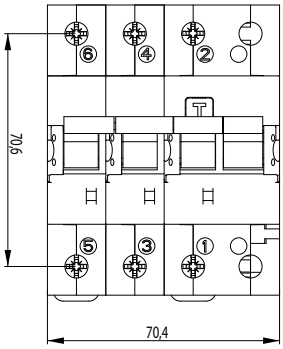
KZS-4M 3p $I_{\Delta n}$ = 300 mA

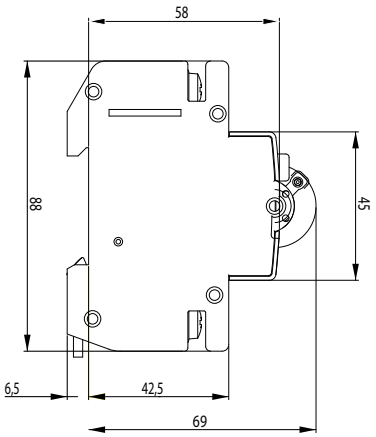
I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-4M 3p A B6/0.3	002174201	KZS-4M 3p A C6/0.3	002174221	482	1/27
10	KZS-4M 3p A B10/0.3	002174202	KZS-4M 3p A C10/0.3	002174222	482	1/27
13	KZS-4M 3p A B13/0.3	002174203	KZS-4M 3p A C13/0.3	002174223	482	1/27
16	KZS-4M 3p A B16/0.3	002174204	KZS-4M 3p A C16/0.3	002174224	482	1/27
20	KZS-4M 3p A B20/0.3	002174205	KZS-4M 3p A C20/0.3	002174225	482	1/27
25	KZS-4M 3p A B25/0.3	002174206	KZS-4M 3p A C25/0.3	002174226	482	1/27
32	KZS-4M 3p A B32/0.3	002174207	KZS-4M 3p A C32/0.3	002174227	482	1/27

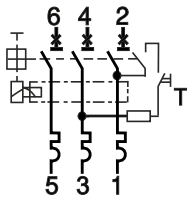
ASTI / Residual Current Circuit Creakers with Integral Overcurrent Protection

KZS-4M 3p $I_{\Delta n}$ = 500 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-4M 3p A B6/0.5	002174301	KZS-4M 3p A C6/0.5	002174321	482	1/27
10	KZS-4M 3p A B10/0.5	002174302	KZS-4M 3p A C10/0.5	002174322	482	1/27
13	KZS-4M 3p A B13/0.5	002174303	KZS-4M 3p A C13/0.5	002174323	482	1/27
16	KZS-4M 3p A B16/0.5	002174304	KZS-4M 3p A C16/0.5	002174324	482	1/27
20	KZS-4M 3p A B20/0.5	002174305	KZS-4M 3p A C20/0.5	002174325	482	1/27
25	KZS-4M 3p A B25/0.5	002174306	KZS-4M 3p A C25/0.5	002174326	482	1/27
32	KZS-4M 3p A B32/0.5	002174307	KZS-4M 3p A C32/0.5	002174327	482	1/27







Conductor cross-section [mm²]	Number of single conductors, rigid, single-wire CU conductor 1	2	3	4	5
1,5	✓	✓	✓	✓	×
2,5	✓	✓	✓	×	×
4	✓	✓	✓	×	×
6	✓	✓	×	×	×
10	✓	✓	×	×	×
16	✓	×	×	×	×
25	✓	×	×	×	×

Remark: When you use more than 2 cables you have to be careful how those cables are inserted to ensure proper pressure on each cable

Conductor cross-section [mm²]	Number of single conductors, flexible Cu conductors with cable ferrule 1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	×	×	×
10	✓	✓	×	×	×	×
16	✓	×	×	×	×	×
25	✓	×	×	×	×	×

Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

Residual current circuit breaker with integral overcurrent protection KZS-4M 3p+N

Rated short-circuit capacity	Rated current	Tripping characteristic	Rated residual current
6 kA	**6 - 32 A**	**B, C**	**0,03 A - 0,5 A**

Technical data

Rated voltage U_n	400/415V AC
Rated current I_n	6-32 A
Rated frequency f_n	50/60 Hz
Rated impulse withstand voltage U_{imp}	4 kV
Rated short-circuit capacity	6.000 A
Back-up fuse	100 A gG
Tripping characteristic	B, C
Energy limiting class	3
Type	AC, A
Rated residual current $I_{\Delta n}$	30, 100, 300, 500 mA
Rated residual making and breaking capacity $I_{\Delta m}$	4500A
Terminals	1-25 mm^2, max. 3 Nm
Terminal screw	M5 (Pozidrive PZ2)
Rated insulation Voltage U_i	500 V
Peak withstand current	250 A
Resistance according to vibrations acc. to IEC 60068-2-7	5g (10, 60 & 500Hz)
Degree of protection	IP20
Busbar thickness	0,8 - 2 mm
Operating temperature	-25°C ... +60°C
Storage temperature	-40°C ... +70°C
Width	70 mm
Mounting position	any
Standard	EN 61009-1

KZS-4M 3p+N $I_{\Delta n}$ = 30 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-4M 3p+N A B6/0.03	002174901	KZS-4M 3p+N A C6/0.03	002174921	515	1/27
10	KZS-4M 3p+N A B10/0.03	002174902	KZS-4M 3p+N A C10/0.03	002174922	515	1/27
13	KZS-4M 3p+N A B13/0.03	002174903	KZS-4M 3p+N A C13/0.03	002174923	515	1/27
16	KZS-4M 3p+N A B16/0.03	002174904	KZS-4M 3p+N A C16/0.03	002174924	515	1/27
20	KZS-4M 3p+N A B20/0.03	002174905	KZS-4M 3p+N A C20/0.03	002174925	515	1/27
25	KZS-4M 3p+N A B25/0.03	002174906	KZS-4M 3p+N A C25/0.03	002174926	515	1/27
32	KZS-4M 3p+N A B32/0.03	002174907	KZS-4M 3p+N A C32/0.03	002174927	515	1/27

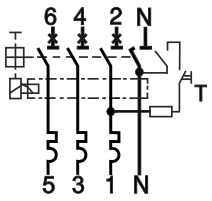
KZS-4M 3p+N $I_{\Delta n}$ = 30 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-4M 3p+N AC B6/0.03	002174001	KZS-4M 3p+N AC C6/0.03	002174021	515	1/27
10	KZS-4M 3p+N AC B10/0.03	002174002	KZS-4M 3p+N AC C10/0.03	002174022	515	1/27
13	KZS-4M 3p+N AC B13/0.03	002174003	KZS-4M 3p+N AC C13/0.03	002174023	515	1/27
16	KZS-4M 3p+N AC B16/0.03	002174004	KZS-4M 3p+N AC C16/0.03	002174024	515	1/27
20	KZS-4M 3p+N AC B20/0.03	002174005	KZS-4M 3p+N AC C20/0.03	002174025	515	1/27
25	KZS-4M 3p+N AC B25/0.03	002174006	KZS-4M 3p+N AC C25/0.03	002174026	515	1/27
32	KZS-4M 3p+N AC B32/0.03	002174007	KZS-4M 3p+N AC C32/0.03	002174027	515	1/27

ASTI / Residual Current Circuit Creakers with Integral Overcurrent Protection

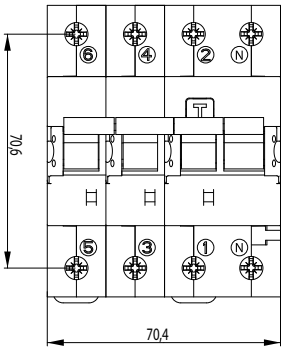
KZS-4M 3p+N $I_{\Delta n}$ = 100 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-4M 3p+N A B6/0.1	002174401	KZS-4M 3p+N A C6/0.1	002174421	515	1/27
10	KZS-4M 3p+N A B10/0.1	002174402	KZS-4M 3p+N A C10/0.1	002174422	515	1/27
13	KZS-4M 3p+N A B13/0.1	002174403	KZS-4M 3p+N A C13/0.1	002174423	515	1/27
16	KZS-4M 3p+N A B16/0.1	002174404	KZS-4M 3p+N A C16/0.1	002174424	515	1/27
20	KZS-4M 3p+N A B20/0.1	002174405	KZS-4M 3p+N A C20/0.1	002174425	515	1/27
25	KZS-4M 3p+N A B25/0.1	002174406	KZS-4M 3p+N A C25/0.1	002174426	515	1/27
32	KZS-4M 3p+N A B32/0.1	002174407	KZS-4M 3p+N A C32/0.1	002174427	515	1/27



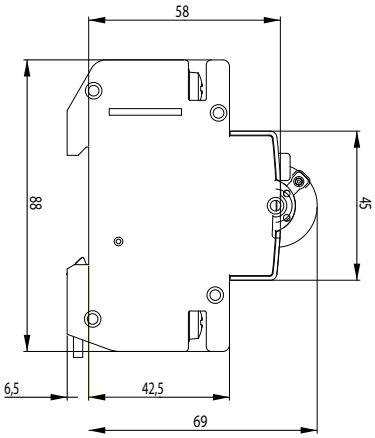
KZS-4M 3p+N $I_{\Delta n}$ = 300 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-4M 3p+N A B6/0.3	002174501	KZS-4M 3p+N A C6/0.3	002174521	515	1/27
10	KZS-4M 3p+N A B10/0.3	002174502	KZS-4M 3p+N A C10/0.3	002174522	515	1/27
13	KZS-4M 3p+N A B13/0.3	002174503	KZS-4M 3p+N A C13/0.3	002174523	515	1/27
16	KZS-4M 3p+N A B16/0.3	002174504	KZS-4M 3p+N A C16/0.3	002174524	515	1/27
20	KZS-4M 3p+N A B20/0.3	002174505	KZS-4M 3p+N A C20/0.3	002174525	515	1/27
25	KZS-4M 3p+N A B25/0.3	002174506	KZS-4M 3p+N A C25/0.3	002174526	515	1/27
32	KZS-4M 3p+N A B32/0.3	002174507	KZS-4M 3p+N A C32/0.3	002174527	515	1/27



KZS-4M 3p+N $I_{\Delta n}$ = 500 mA

I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-4M 3p+N A B6/0.5	002174601	KZS-4M 3p+N A C6/0.5	002174621	515	1/27
10	KZS-4M 3p+N A B10/0.5	002174602	KZS-4M 3p+N A C10/0.5	002174622	515	1/27
13	KZS-4M 3p+N A B13/0.5	002174603	KZS-4M 3p+N A C13/0.5	002174623	515	1/27
16	KZS-4M 3p+N A B16/0.5	002174604	KZS-4M 3p+N A C16/0.5	002174624	515	1/27
20	KZS-4M 3p+N A B20/0.5	002174605	KZS-4M 3p+N A C20/0.5	002174625	515	1/27
25	KZS-4M 3p+N A B25/0.5	002174606	KZS-4M 3p+N A C25/0.5	002174626	515	1/27
32	KZS-4M 3p+N A B32/0.5	002174607	KZS-4M 3p+N A C32/0.5	002174627	515	1/27



KZS-4M 3p+N 120V $I_{\Delta n}$ = 30 mA

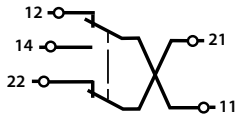
I_n [A]	Type A Characteristic B	Code No. B	Type A Characteristic C	Code No. C	g	
6	KZS-4M 3p+N A B6/0.03 120V	002174451	KZS-4M 3p+N A C6/0.03 120V	002174491	515	1/27
10	KZS-4M 3p+N A B10/0.03 120V	002174452	KZS-4M 3p+N A C10/0.03 120V	002174492	515	1/27
13	KZS-4M 3p+N A B13/0.03 120V	002174453	KZS-4M 3p+N A C13/0.03 120V	002174493	515	1/27
16	KZS-4M 3p+N A B16/0.03 120V	002174454	KZS-4M 3p+N A C16/0.03 120V	002174494	515	1/27
20	KZS-4M 3p+N A B20/0.03 120V	002174455	KZS-4M 3p+N A C20/0.03 120V	002174495	515	1/27
25	KZS-4M 3p+N A B25/0.03 120V	002174456	KZS-4M 3p+N A C25/0.03 120V	002174496	515	1/27
32	KZS-4M 3p+N A B32/0.03 120V	002174457	KZS-4M 3p+N A C32/0.03 120V	002174497	515	1/27

Accessories for KZS

PS KZS-2M/4M is an auxiliary switch used for remote signalling of the RCBO to which it is fixed on the right side. PS KZS-2M/4M may also be fitted later on. Clamps are safe to touch. External dimensions comply with RCBO, built-in width is 0,5 module (9 mm). During fitting, the RCBO must be switched off.
The auxiliary switch can be used in combination with RCBOs manufactured after 1. 10. 2018. The production date is visible on the bottom of the product or above the test button. The number must be greater than 18401.

Technical data

Function	Auxiliary Switch
Rated voltage	230V AC/DC, 110V DC
Rated current	6A (230V AC); 1A (110V DC); 0,5A (220V DC)
Rated frequency	50/60Hz, DC
Index of protection	IP 20 (IP 40)
Terminal capacity	1,5mm^2
Terminal Screw	M3 PH1
Terminal torque	max 0,5Nm
Ambient temperature	-25°C ... +40°C
Storage temperature	-40°C ... +70°C
Contacts	1x NC , 1x NC/NO
Mounting position	any
Standards	EN 62019

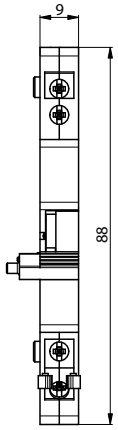


Auxiliary switch PS KZS-2M/4M

Type	Code No.	contacts	g	
PS KZS-2M/4M	002159500	1xNC, 1xNC/NO	53	1/12

AUX switch connections	status of the breaker ON	OFF
11-14 NO	1	0
11-12 NC	0	1
21-22 NC	0	1

NO - Normally open contact --> during the activation it makes a contact
NC - Normally closed contact --> during the activation it brakes the contact
1 - contact
0 - without a contact



Suitable for use with:	
Type	Suitable
KZS-1M	×
KZS 1M-FN	×
KZS-2M	✓
KZS-2M2p	×
KZS-4M 3p	✓
KZS-4M 3p+N	✓
KZS-4M2p	×
AFDD	×

Residual current circuit breaker with integral overcurrent protection KZS-4M 2p B

Rated short-circuit capacity	Rated current	Tripping characteristic	Rated residual current
10 kA	**6 - 40 A**	**B, C**	**0,03 A - 0,3 A**

Technical data

Electrical	
Rated voltage U_n	230 V AC
Rated current I_n	6, 10, 13, 16, 20, 25, 32, 40 A
Rated Insulation voltage U_i	440 V
Peak withstand current	3kA (8/20μs) surge current proof
Electrical isolation	> 4mm contact space
Rated residual operating current $I_{\Delta n}$	30, 100, 300mA
Rated short-circuit capacity	10kA
Maximum back-up fuse	100A gG
Insulating class	B
Standard	IEC/EN 61009-1, IEC/EN 62423
Mechanical endurance	20.000
Electrical endurance	10.000
Mechanical	EN 61009-1
Frame size	45mm
Device height	69 mm
Device width	70 mm
Degree of protection	IP20
Upper and lower terminals	open mounted/lift terminals
Terminal capacity	1-25 mm^2
Terminal screw	M5 (Pozidrive PZ2)
Terminal torque	max 3,0 Nm
Operating temperature	-25°C ... +60°C
Storage and transport temperature	-40°C ... +70°C
Resistance to climatic conditions	IEC/EN 61009
Contact position indicator	mechanical red/green
Supply possibility	Top or bottom

KZS-4M 2p B $I_{\Delta n}$ = 30 mA

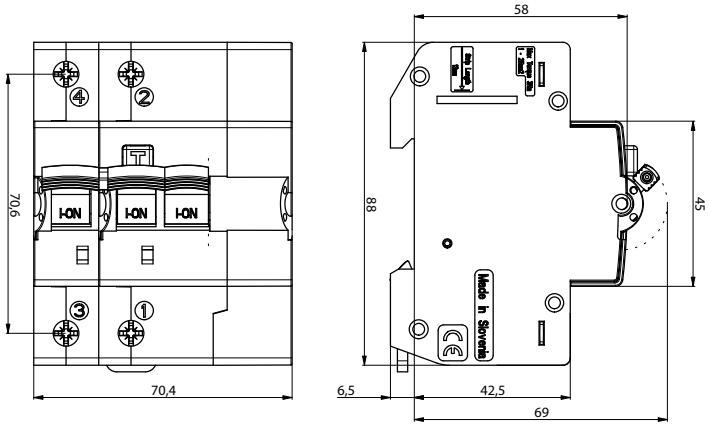
I_n [A]	Characteristic B	Code No. B	Characteristic C	Code No. C	g	
6	KZS-4M 2p B B6/0.03	002174511	KZS-4M 2p B C6/0.03	002174531	369	1/27
10	KZS-4M 2p B B10/0.03	002174512	KZS-4M 2p B C10/0.03	002174532	369	1/27
13	KZS-4M 2p B B13/0.03	002174513	KZS-4M 2p B C13/0.03	002174533	369	1/27
16	KZS-4M 2p B B16/0.03	002174514	KZS-4M 2p B C16/0.03	002174534	369	1/27
20	KZS-4M 2p B B20/0.03	002174515	KZS-4M 2p B C20/0.03	002174535	369	1/27
25	KZS-4M 2p B B25/0.03	002174516	KZS-4M 2p B C25/0.03	002174536	369	1/27
32	KZS-4M 2p B B32/0.03	002174517	KZS-4M 2p B C32/0.03	002174537	369	1/27
40	KZS-4M 2p B B40/0.03	002174518	KZS-4M 2p B C40/0.03	002174538	390	1/27

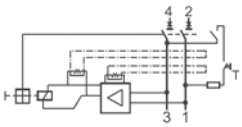
KZS-4M 2p B $I_{\Delta n}$ = 100 mA

I_n [A]	Characteristic B	Code No. B	Characteristic C	Code No. C	g	
6	KZS-4M 2p B B6/0.1	002174611	KZS-4M 2p B C6/0.1	002174631	369	1/27
10	KZS-4M 2p B B10/0.1	002174612	KZS-4M 2p B C10/0.1	002174632	369	1/27
13	KZS-4M 2p B B13/0.1	002174613	KZS-4M 2p B C13/0.1	002174633	369	1/27
16	KZS-4M 2p B B16/0.1	002174614	KZS-4M 2p B C16/0.1	002174634	369	1/27
20	KZS-4M 2p B B20/0.1	002174615	KZS-4M 2p B C20/0.1	002174635	369	1/27
25	KZS-4M 2p B B25/0.1	002174616	KZS-4M 2p B C25/0.1	002174636	369	1/27
32	KZS-4M 2p B B32/0.1	002174617	KZS-4M 2p B C32/0.1	002174637	369	1/27
40	KZS-4M 2p B B40/0.1	002174618	KZS-4M 2p B C40/0.1	002174638	390	1/27

KZS-4M 2p B $I_{\Delta n}$ = 300 mA

I_n [A]	Characteristic B	Code No. B	Characteristic C	Code No. C	g	
6	KZS-4M 2p B B6/0.3	002174811	KZS-4M 2p B C6/0.3	002174831	369	1/27
10	KZS-4M 2p B B10/0.3	002174812	KZS-4M 2p B C10/0.3	002174832	369	1/27
13	KZS-4M 2p B B13/0.3	002174813	KZS-4M 2p B C13/0.3	002174833	369	1/27
16	KZS-4M 2p B B16/0.3	002174814	KZS-4M 2p B C16/0.3	002174834	369	1/27
20	KZS-4M 2p B B20/0.3	002174815	KZS-4M 2p B C20/0.3	002174835	369	1/27
25	KZS-4M 2p B B25/0.3	002174816	KZS-4M 2p B C25/0.3	002174836	369	1/27
32	KZS-4M 2p B B32/0.3	002174817	KZS-4M 2p B C32/0.3	002174837	369	1/27
40	KZS-4M 2p B B40/0.3	002174818	KZS-4M 2p B C40/0.3	002174838	390	1/27



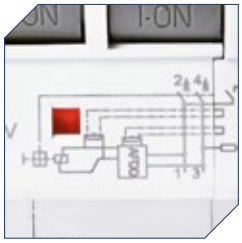


Arc Fault Detection Device AFDD

Rated short-circuit capacity	Rated current	Tripping characteristic	Rated residual current
10 kA	**6 - 32 A**	**B, C**	**0,03 A**

- Complete protection: MCB, RCCB and AFDD in one device

- Overcurrent and short circuit protection of both poles



- Supply is possible both from top and bottom terminals

- LED indication of various types of fault

WATCH THE VIDEO

- All necessary technical & installation information can be found on the front of the device

- Test button enables user to check residual functionality

- High mechanical endurance: 20.000 cycles
- High electrical endurance: 10.000 cycles
- Rated short circuit capacity: 10 kA

- Clearly marked terminals to ensure appropriate connection

- Better protection of terminals against touching the parts under voltage

- Real contact position indication for easier identification, whether the device is in ON or OFF position

Description - KZS AFDD is a device designed to prevent the occurrence of a fire by separating the electrical circuit in cases of arc locking (sparking) caused by a malfunction of the wiring.

Arc locking occurs in areas of the conductor fracture when the contact is lost or due to damage to the insulation between phases, neutral or earth conductors. Often arc circuits occur when the cables and their insulation are deformed by vibrations, thermal extensions and shrinkage, mechanical loads, aging, which leads to the formation of a dangerous spark in the electric circuit. The principle of operation AFDD is based on the tracking and analysis of high-frequency current components occurring in the controlled circuit.

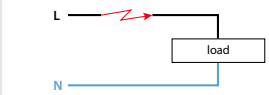
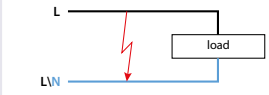
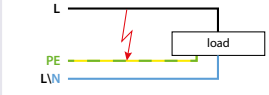
Where should AFDD be used:

- premises in which ignition can lead to the deadly danger to people: kindergartens, elderly homes, educational institutions, hospitals, cinemas, hotels, airports, road and railway stations, bedrooms and children's rooms.
- flammable facilities: woodworking, furniture, paper, printing factories, wooden houses.
- premises, which are of historical or architectural value: libraries, museums, architectural monuments.

Arc locking is an unintentional sequential or parallel electric arc between conductors. It causes dangerous local overheating of conductors and ignition of their insulation, which then spreads to the building structure. This is one of the main causes of household fires due to malfunction of electrical wiring. Arc locking often cannot be detected and stopped using traditional fuses, circuit breakers and residual current devices or their combinations.

The arc locks are divided into three main types:

- *Consistent arc locking (sparking) in the line* - occurs if the wire or unreliable contact is located in series in the electrical circuit. This malfunction is not detected by circuit breakers, residual current protection relay or residual current circuit breakers because the current flowing in a circuit with a serial breakdown is less than the operating current. In this case, the occurrence of ignition is likely in the range of arc currents from 3 to 10A, with the duration of the arc that does not exceed 20 seconds. This type of breakdown is the least noticeable and therefore the most dangerous.
- *The parallel arc circuit between the phase (L) and neutral (N) or the phase (L1) and the phase conductor (L2/ L3)* - occurs when the conductors are sparking in cases of damage. The value of the current is determined by the full resistance in the electrical circuit. If the full resistance in the electrical circuit is too high to reach the current disconnection current of the circuit breaker or a residual current circuit breaker, the electrical circuit will not be switched off. The KZS-AFDD device switches off the arc circuits in a line of 2,5A, which provides reliable protection in this case.
- *The parallel arc circuit between the phase (L) and the earth conductor (PE)* - the protection against arc circuits in relation to the protective earth conductor is securely provided by differential current devices such as residual current protection relays or residual current circuit breakers. KZS-AFDDs react to such breakage in the line and provide fire protection in cases where other residual current devices are not used.

Type of arc locking		The probability of a security device tripping			
		Circuit breaker (MCB, MCCB)	Residual current breaker (RCCB)	Residual current breaker with overcurrent protection (RCBO)	RCBO with arc fault detection function (AFDD)
Sequential arc locking (sparking) in line		✖	✖	✖	✓
Parallel arc locking between phase (L) and neutral (n) or phase (L1) and phase conductor (L2 / L3)		?	✖	?	✓
Parallel arc locking between phase (L) and earth conductor (PE)		?	✓	✓	✓

Technical data KZS - AFDD 3M 2p

Electrical	
Rated Voltage U_n	240 V AC
Rated current I_n	6, 10, 13, 15, 16, 20, 25, 32 A
Rated residual operating current $I_{\Delta n}$	30 mA
Rated frequency f_n	50Hz
Type	A
Tripping characteristic	B, C
Rated short-circuit capacity	10kA
Rated insulation voltage U_i	440 V
Rated impulse withstand voltage U_{imp}	4kV (1,2/50µs)
Peak withstand current	3kA (8/20µs) surge current proof
Voltage range test circuit	135-264V
Min operating voltage for AFDD function	180V
Rated residual making and breaking capacity $I_{\Delta m}$	4500A
Electrical isolation	> 4mm contact space
Max back-up fuse	100A gG
Insulating class	B
Standards	IEC/EN 61009-1, IEC/EN 62606
Mechanical Endurance (cycles)	20.000
Electrical endurance (cycles)	10.000
Mechanical	
Frame size	45mm
Device height	69 mm
Device width	53.5 mm
Degree of protection	IP20
Upper and lower terminals	open mounted/lift terminals
Terminal capacity	1-25 mm^2
Terminal screw	M5 (Pozidrive PZ2)
Terminal torque	max 3,0 Nm
Operating temperature	-25°C ... +50°C
Storage and transport temperature	-40°C ... +70°C
Resistance to climatic conditions	IEC/EN 61009-1
Shock resistance acc. to	IEC/EN 61009-1
Resistance to vibrations acc. to IEC60068-2-7	5g (10,60 & 500Hz)
Contact position indicator	mechanical red/green
Supply possibility	Top or bottom
Mounting on the rail	35mm acc to EN60715
Mounting position	any

KZS-AFDD 3M 2p

I_n [A]	$I_{\Delta n}$ [A]	Characteristic B	Code No. B	Characteristic C	Code No. C	g	
6	0,03	KZS-AFDD 3M2p A B6/0.03	002173811	KZS-AFDD 3M2p A C6/0.03	002173871	377	1/33
10		KZS-AFDD 3M2p A B10/0.03	002173812	KZS-AFDD 3M2p A C10/0.03	002173872	377	1/33
13		KZS-AFDD 3M2p A B13/0.03	002173813	KZS-AFDD 3M2p A C13/0.03	002173873	377	1/33
15		KZS-AFDD 3M2p A B15/0.03	002173819	KZS-AFDD 3M2p A C15/0.03	002173879	377	1/33
16		KZS-AFDD 3M2p A B16/0.03	002173814	KZS-AFDD 3M2p A C16/0.03	002173874	377	1/33
20		KZS-AFDD 3M2p A B20/0.03	002173815	KZS-AFDD 3M2p A C20/0.03	002173875	377	1/33
25		KZS-AFDD 3M2p A B25/0.03	002173816	KZS-AFDD 3M2p A C25/0.03	002173876	377	1/33
32		KZS-AFDD 3M2p A B32/0.03	002173817	KZS-AFDD 3M2p A C32/0.03	002173877	377	1/33

Condition	LED Flashing sequence repeats every 1,5 sec for next 25 sec after powering up	After 25 sec
Series Arc Fault	● ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ...	● ● ● ● ● ● ...
Parallel Arc Fault	● ○ ○ ○ ● ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ...	● ● ● ● ● ● ...
Over Voltage Fault	● ○ ○ ○ ● ○ ○ ○ ● ○ ○ ○ ○ ○ ○ ○ ...	● ● ● ● ● ● ...
Self-Test Fault	● ○ ● ○ ● ○ ● ○ ● ○ ● ○ ● ○ ● ○ ...	● ● ● ● ● ● ...
No Fault	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ...	● ● ● ● ● ● ...

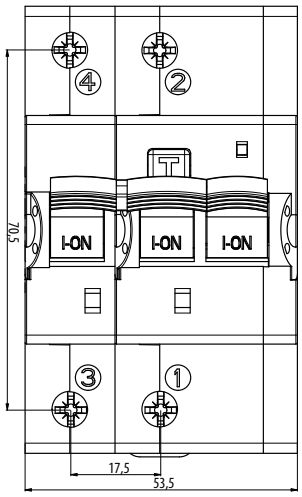
Explanation of the Self-Test Function

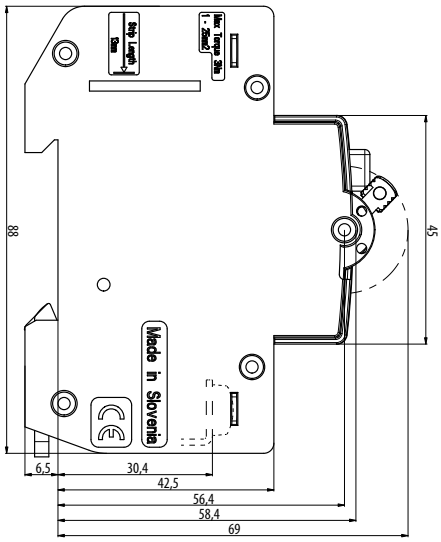
Frequency of the Self-Test on the AFDD:
The self-test function is activated every time the AFDD is powered on and subsequently once every minute while it remains powered.

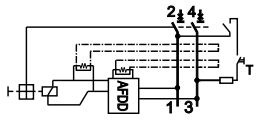
Consequences of a Failed Self-Test:
Should the self-test function fail, the AFDD issues a trip command. This self-test is designed to verify the AFD function. Therefore, if the self-test does not pass, it indicates that the AFD function is not working properly.

Actions after a Self-Test Failure:
In the event of a self-test failure, the device will trip. When the AFDD is re-latched, it signals the self-test fault by flashing its LED, as described in the section about the self-test fault. It will then run another self-test. If this test also fails, the device will trip again. However, if for any reason the AFDD cannot trip (e.g., due to a damaged PMR), it will continuously flash the LED, indicating a self-test fault, as long as it remains powered. If the self-test passes upon re-latching, the LED will stop flashing after 25 seconds.

Standards Compliance:
The self-test feature of the KZS-AFDD device operates automatically and complies with the IEC/EN 61009-1 standard.







I_n [A]	Power dissipation P/pole [W]	Rh [mΩ]	Rh/pole [mΩ]
6	1,5 - 1,7	126	63
10	1,6-1,8	86	43
13	1,8 - 2,0	60	30
16	1,9 - 2,2	48	24
20	2,2 - 2,4	40	20
25	2,8 - 3,1	34	17
32	4,0 - 4,4	24	12

Voltage [V]	Tripping time [s]
255	/
275	5s<t<15s
300	1s<t<5s
350	0,3s<t<0,8
400	0,1s<t<0,2s

ASTI / Residual Current Circuit Creakers with Integral Overcurrent Protection

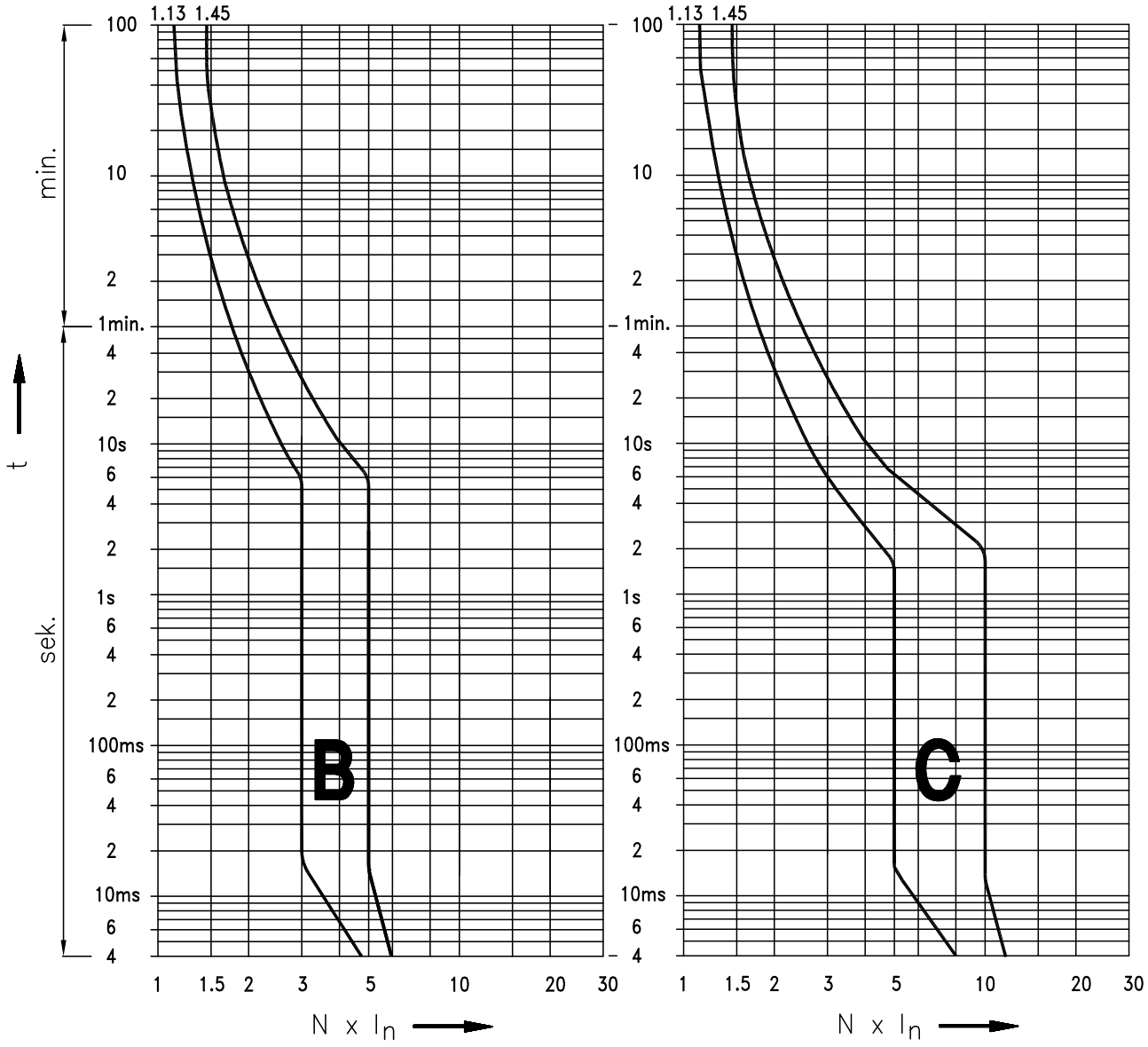
conductor cross-section	Number of single conductors, rigid, single-wire Cu conductor				
[mm²]	1	2	3	4	5
1,5	✓	✓	✓	✓	×
2,5	✓	✓	✓	×	×
4	✓	✓	✓	×	×
6	✓	✓	×	×	×
10	✓	✓	×	×	×
16	✓	×	×	×	×
25	✓	×	×	×	×

Remark: When you use more than 2 cables you have to be careful how those cables are inserted to ensure proper pressure on each cable

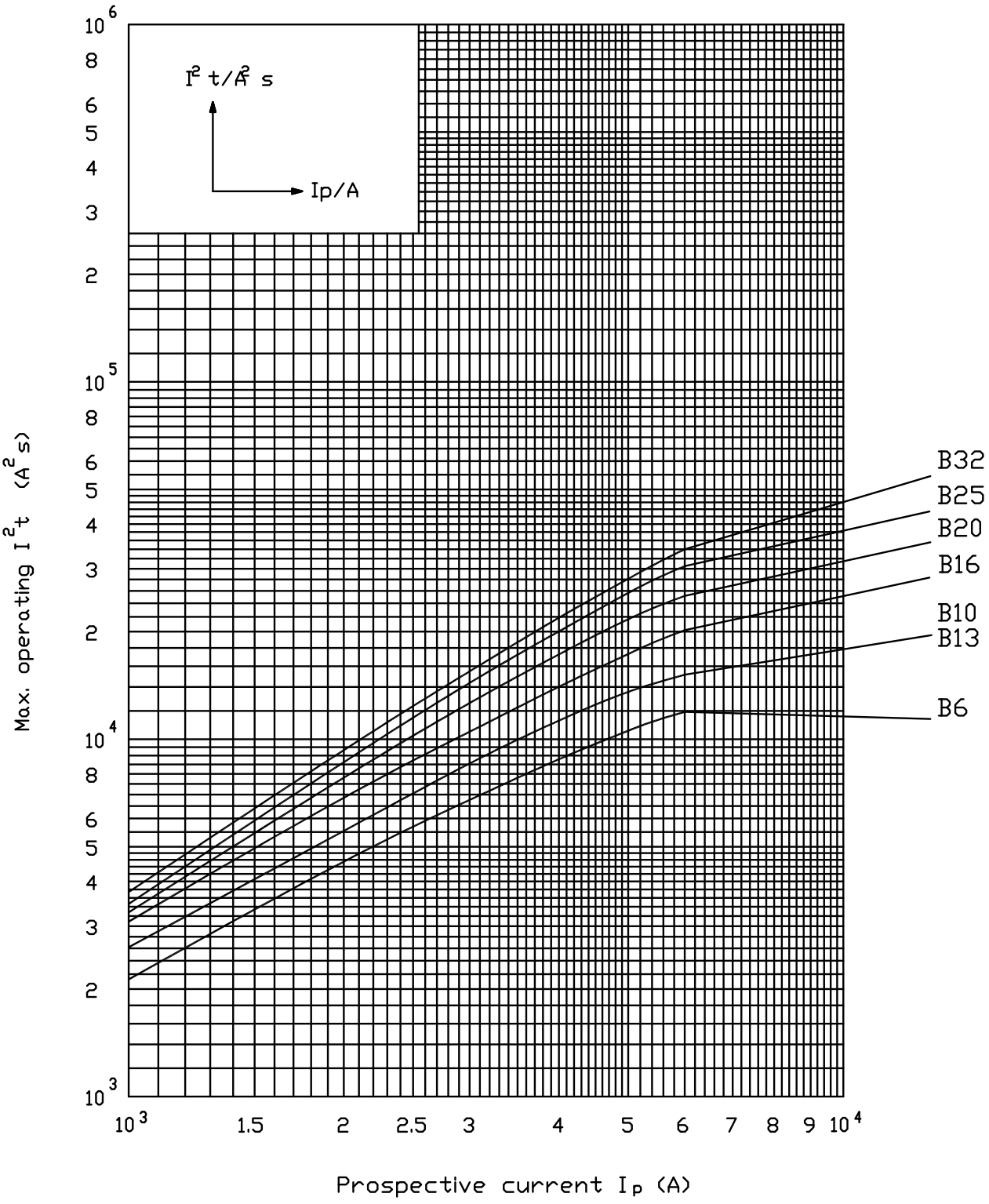
Conductor cross-section	Number of single conductors, flexible Cu conductors with cable ferrule					
[mm²]	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	×	×	×
10	✓	✓	×	×	×	×
16	✓	×	×	×	×	×
25	✓	×	×	×	×	×

Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

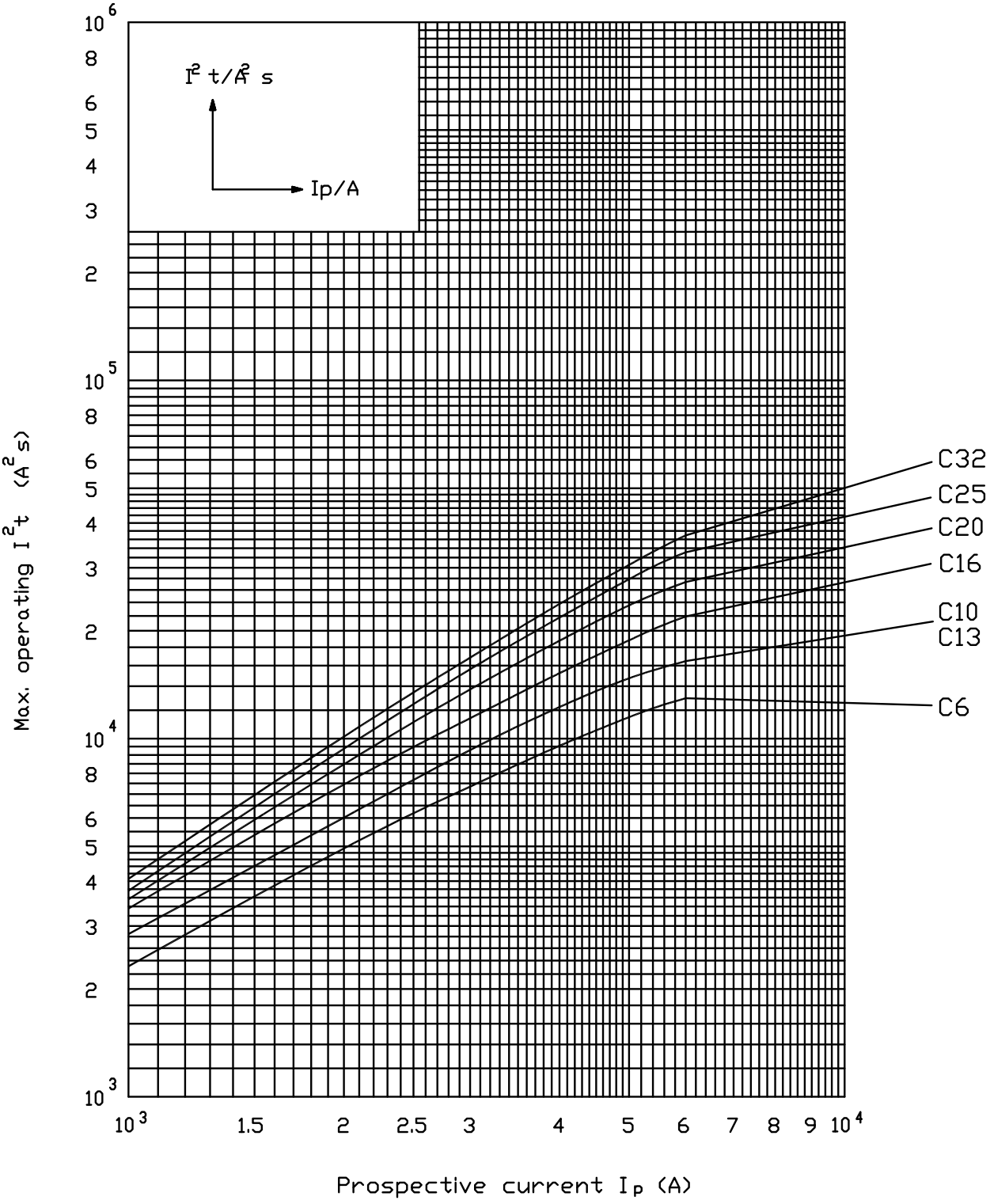
Time current characteristics I/t, KZS-AFDD



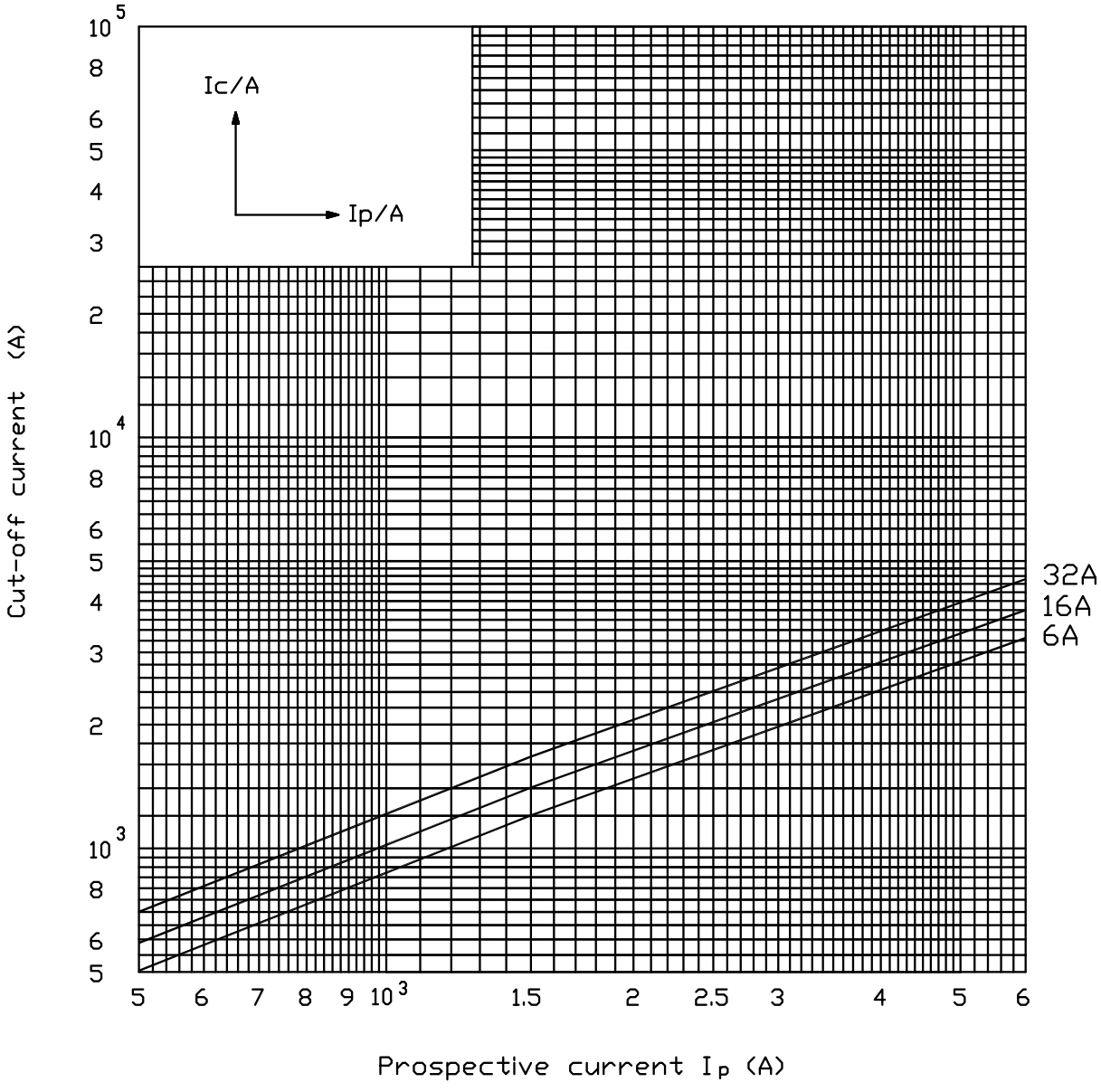
Melting energy characteristics I²t KZS-AFDD



Melting energy characteristics I²t KZS-AFDD



Cut-off current characteristics KZS-AFDD



EVE - ETIREL

Modular and control devices

Build-in switch SV **128**

Build-in devices EVESYS **131**

Control equipment ETIREL **135**

Electromechanical Relays ETIREL **199**

/etigroup

SWITCH TO
A SAFE FUTURE

EVE Build-in Switch SV

Build-in switch SV

Rated current **16 - 125 A**

Utilization category **AC-23B, AC-22B**

Application

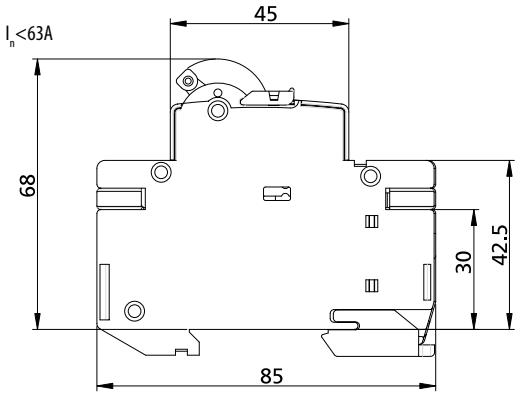
Build-in switch SV is used as a main switch in distribution boxes in houses or as a switch for individual electric circuits. With a build-in switch we can completely replace the cam switch. Build-in switch SV can be sealed either in ON or OFF position.

Advantages

Build-in switch SV has a more robust and simple construction and therefore a more reliable operation. It also shows the status of the contacts. With an additional label the circuit in which the switch is built in can be marked. Switches with $I_n \leq 63A$ have a double switching OFF.

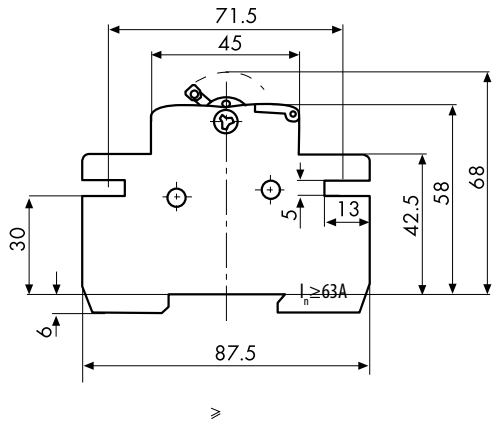
Technical data

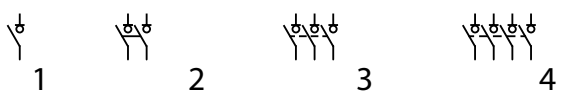
Type	16A-40A
Electrical	
Number of poles	1p, 2p, 3p, 4p
Rated operational voltage Ue	230/400V AC (1p), 400V AC (2p, 3p 4p)
Rated current In	16, 25, 40A
Rated Insulation voltage Ui	1000V
Rated impulse withstand voltage Uimp	4 kV
Utilization category	AC-23B
Rated frequency	50/60Hz
Rated short-time withstand current Icw	800A
Rated short-circuit making capacity Icm	500A
Rated conditional short-circuit current	2000A (with 50A fuse)
Rated making capacity	400A
Rated breaking capacity	320A
Switch Type	Build-in switch
Standard	IEC/EN 60947-3
Mechanical	
Device height	68mm (DIN rail acc to EN60715)
Device width	18mm/p
Degree of protection	IP20
Terminal capacity	1-25mm^2
Terminal screw	M5 (Pozidrive PZ2)
Terminal torque	max. 3Nm
Operating temperature	-25°C ... +55°C
Storage- and transport temperature	-40°C ... +70°C
Contact position indicator	mechanical red/green
Supply possibility	Top or bottom



Technical data

Type	63-125A
Electrical	
Number of poles	1p, 2p, 3p, 4p
Rated operational voltage Ue	1p: 230/400V AC, 24V DC 2p: 400V AC, 48V DC 3p, 4p: 400V AC
Rated current In	63, 80, 100, 125A
Rated Insulation voltage Ui	AC: 1000V; DC:1500V
Rated impulse withstand voltage Uimp	4 kV
Utilization category	AC-22B; DC-22B
Rated frequency	50/60Hz AC, DC
Rated short-time withstand current Icw	1500A / 1s
Rated short-circuit making capacity Icm (peak)	2200A
Rated conditional short-circuit current	4,0kA (with 100A fuse) / 2,5kA (with 125A fuse)
Rated making capacity	400A
Rated breaking capacity	320A
Switch Type	Build-in switch-disconnector
Standard	IEC/EN 60947-3
Mechanical	
Device height	68mm (DIN rail acc to EN60715)
Device width	18mm/pole
Degree of protection	IP20
Terminal capacity	1-50mm^2
Terminal screw	M6 (Pozidrive PZ2)
Terminal torque	max. 3Nm
Operating temperature	-25°C ... +55°C
Storage- and transport temperature	-40°C ... +70°C
Contact position indicator	mechanical red/green
Supply possibility	Top or bottom





EVE / Build-in Switch SV

1-pole

Type	I_n [A]	Code No.	U_n [V]	utilization category	g	
SV 116	16	002423121	230/400	AC-23B	87	12/108
SV 125	25	002423122	230/400	AC-23B	89	12/108
SV 140	40	002423123	230/400	AC-23B	92	12/108
SV 163	63	002423114	230/400	AC-22B	90	12/108
SV 180	80	002423115	230/400	AC-22B	90	12/108
SV 1100	100	002423116	230/400	AC-22B	90	12/108
SV 1125	125	002423117	230/400	AC-22B	90	12/108

2-pole

Type	I_n [A]	Code No.	U_n [V]	utilization category	g	
SV 216	16	002423221	400	AC-23B	173	6/54
SV 225	25	002423222	400	AC-23B	178	6/54
SV 240	40	002423223	400	AC-23B	184	6/54
SV 263	63	002423214	400	AC-22B	180	6/54
SV 280	80	002423215	400	AC-22B	180	6/54
SV 2100	100	002423216	400	AC-22B	180	6/54
SV 2125	125	002423217	400	AC-22B	180	6/54

3-pole

Type	I_n [A]	Code No.	U_n [V]	utilization category	g	
SV 316	16	002423321	400	AC-23B	265	4/36
SV 325	25	002423322	400	AC-23B	270	4/36
SV 340	40	002423323	400	AC-23B	280	4/36
SV 363	63	002423314	400	AC-22B	270	4/36
SV 380	80	002423315	400	AC-22B	270	4/36
SV 3100	100	002423316	400	AC-22B	270	4/36
SV 3125	125	002423317	400	AC-22B	270	4/36

4-pole

Type	I_n [A]	Code No.	U_n [V]	utilization category	g	
SV 416	16	002423421	400	AC-23B	363	3/27
SV 425	25	002423422	400	AC-23B	365	3/27
SV 440	40	002423423	400	AC-23B	380	3/27
SV 463	63	002423414	400	AC-22B	360	3/27
SV 480	80	002423415	400	AC-22B	360	3/27
SV 4100	100	002423416	400	AC-22B	360	3/27
SV 4125	125	002423417	400	AC-22B	360	3/27

EVE Build-in Devices EVESYS

Build-in devices EVESYS

Rated current **25-40 A** | Utilization category **AC-22A**

Modular changeover switches SSQ I-0-II (network - generator) enable simple and trouble-free switching of power supply sources in case of emergency (e.g. mains voltage failure). They are designed for installation in switchgear equipped with TH35 rails adapted for mounting modular devices. Switches can be sealed for the selected positions: I or II.

Advantages:

- the family of SSQ changeover switches expands the EVE modular system range,
- all changeover switches are made in modular form - module width 18 mm,
- the distance between the changeover switch contacts in the open state is larger than 3 mm per one pair of contacts, (two pair of contacts in the current path of changeover switch)
- the changeover switches are equipped with terminals enabling connection of conductors of cross-section:
  - 16 mm^2 for a “wire” type wire
  - 10 mm^2 for a “ stranded wire” type cable.

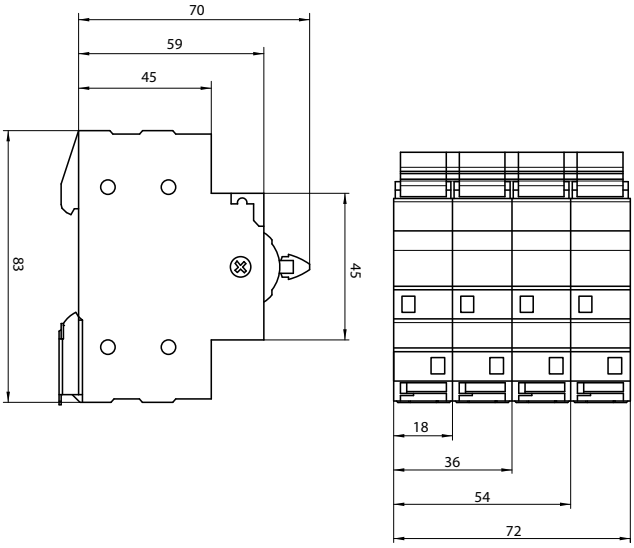
Three-position modular changeover switch I-0-II up to 40 A

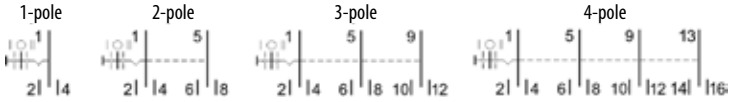
Type	I_n [A]	Code No.	U_n [V]	number of poles	utilization category	g	
SSQ 125	25	002421414	230	1	AC-22A	88	1/12
SSQ 225	25	002421424	400	2	AC-22A	176	1/6
SSQ 325	25	002421434	400	3	AC-22A	264	1/4
SSQ 425	25	002421444	400	4	AC-22A	352	1/3
SSQ 140	40	002421415	230	1	AC-22A	88	1/12
SSQ 240	40	002421425	400	2	AC-22A	176	1/6
SSQ 340	40	002421435	400	3	AC-22A	264	1/4
SSQ 440	40	002421445	400	4	AC-22A	352	1/3

SSQ 440

Technical data

Rated voltage U_n	230/400V AC
Rated current I_n	25A, 40A
Rated frequency f_n	50/60 Hz
Terminals	1,5 - 16 mm^2, max 1,21 Nm
Electrical insulation	>3mm contact space
Rated short-circuit making capacity	1,8 kA
Pollution degree	3 (for Switch)
Degree of protection	IP20
Rated Short-time Withstand Current Icw	0,8 kA, 1 s
Rated impulse withstand voltage Uimp	6 kV
Rated insulation voltage Ui	440 V
Utilization category	AC-22B
Mechanical endurance	> 8.500 op.c.
Electrical endurance	> 1.700 op.c.
Width of the switch	18mm
Standards	PN-IEC 60947-3
Mounting position	any





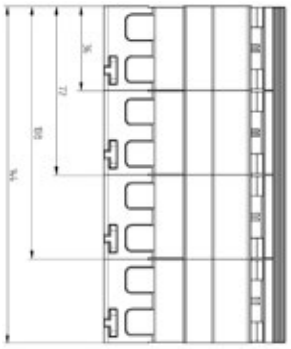
Three-position modular changeover switch I-0-II up to 125 A

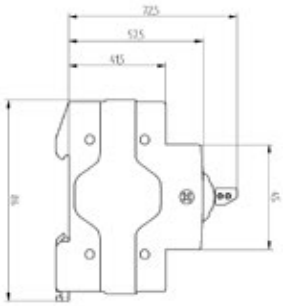
Type	I_n [A]	Code No.	U_n [V]	number of poles	utilization category	g	
SSQ 163	63	002421416	230	1	AC-22B	150	1/51
SSQ 263	63	002421426	400	2	AC-22B	303	1/27
SSQ 363	63	002421436	400	3	AC-22B	456	1/18
SSQ 463	63	002421446	400	4	AC-22B	609	1/14
SSQ 180	80	002421417	230	1	AC-22B	153	1/51
SSQ 280	80	002421427	400	2	AC-22B	306	1/27
SSQ 380	80	002421437	400	3	AC-22B	459	1/18
SSQ 480	80	002421447	400	4	AC-22B	612	1/14
SSQ 1100	100	002421418	230	1	AC-22B	156	1/51
SSQ 2100	100	002421428	400	2	AC-22B	312	1/27
SSQ 3100	100	002421438	400	3	AC-22B	468	1/18
SSQ 4100	100	002421448	400	4	AC-22B	624	1/14
SSQ 1125	125	002421419	230	1	AC-22B	161	1/51
SSQ 2125	125	002421429	400	2	AC-22B	322	1/27
SSQ 3125	125	002421439	400	3	AC-22B	483	1/18
SSQ 4125	125	002421449	400	4	AC-22B	644	1/14

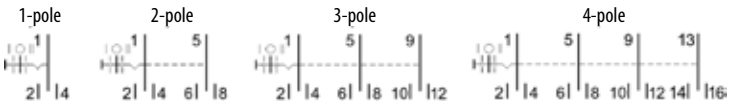
SSQ 1125

Technical data

Rated voltage U_n	230/400V AC
Rated current I_n	63 A, 80 A, 100 A, 125 A
Rated frequency f_n	50/60 Hz
Terminals	2,5 - 50 mm^2, max 3,5 Nm, PZ2
Rated short-circuit making capacity	4 kA
Pollution degree	3 (for Switch)
Degree of protection	IP20
Rated Short-time Withstand Current Icw	0,8 kA, 1 s
Rated impulse withstand voltage Uimp	6 kV
Rated insulation voltage Ui	440 V
Utilization category	AC-22B
Mechanical endurance	> 8.500 op.c.
Electrical endurance	> 1.700 op.c.
Width of the switch	32 mm
Standards	PN-IEC 60947-3
Mounting position	any







Modular indicators SON H

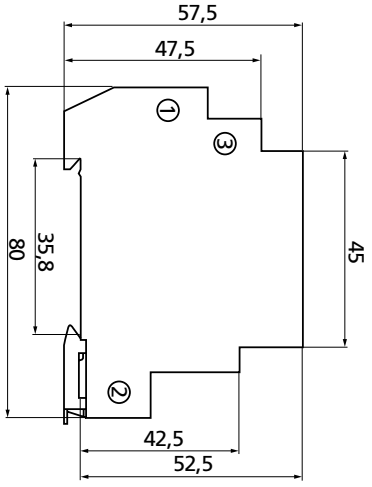
Type	Color	Code No.	g	
SON H-1R	1x red	002471550	40	1/400
SON H-1G	1x green	002471551	40	1/400
SON H-3R	3x red	002471552	48	1/400
SON H-3K	1x red, 1x yellow, 1x green	002471553	48	1/400
SON H-3G	3x green	002471556	48	1/400
SON H-1Y	1x yellow	002471554	40	1/400
SON H-1B	1x blue	002471555	40	1/400
SON H-2GR	1x green, 1x red	002471559	45	1/400

Technical data

	SON H-1R	SON H-1G	SON H-1Y	SON H-1B	SON H-3R	SON H-3K	SON H-3G	SON H-2GR
Rated voltage U_n	240V AC				3x240V AC			2x240V AC
Voltage tolerance	-25%...+10%							
Rated frequency f_n	50/60Hz							
Power consumption	0,267W (240V AC)				1,04W (240V AC)			0,69W (240V AC)
Diode colour	1 red	1 green	1 yellow	1 blue	3 red	1 red, 1 yellow, 1 green	3 green	1 green, 1 red
Protection class	Casing: IP40, terminals IP20							
Humidity	95% (without condansation)							
Material	Self-extinguished material UL94-V0							
Cross section	1-4 mm^2							
Torque	0,6 Nm							
Montage	TH35							
Width	1 Modul							
Standards	IEC EN 61000-3-2; IEC EN 61000-4							

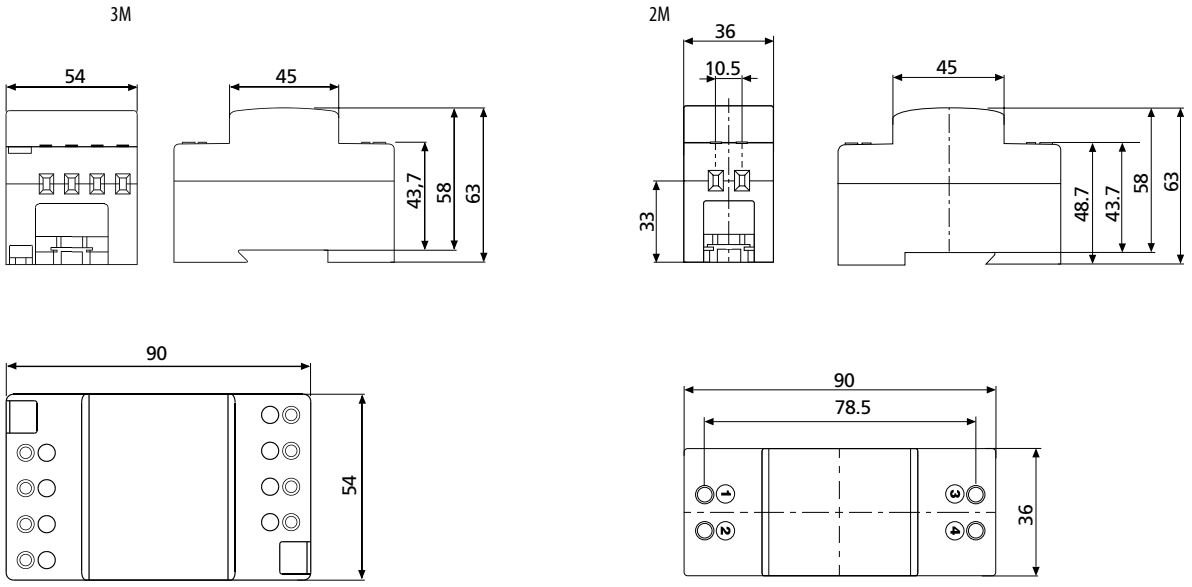
Bell/Buzzer

Type	Code No.	U_n [V]	g	
Bell ZE 220	002412001	230	70	12/108
Bell ZE 8	002412002	8	70	12/108
Buzzer BE 220	002413001	230	54	12/108
Buzzer BE 8	002413002	8	54	12/108



Bell transformer

Type	I_n [A]	Code No.	P_n [VA]	U_{1n} [V]	U_{2n} [V]	g	
Zt 8/8	1	002411005	8	230	4, 6, 8	620	1/36
Zt 8/12	0,63	002411006	8	230	6, 8, 12	600	1/36
Zt 8/8 - 2M	1	002411010	8	230	8	314	1/54
Zt 8/12 - 2M	0,63	002411011	8	230	12	312	1/54

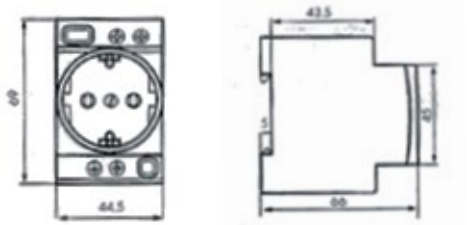


Bell transformer type 3M

Bell transformer type 2M

DIN socket

Type	Code No.	I_n [A]	U_n [V]	pole numbers	g	
T-2P+Z schuko	002414020	10A DC, 16A AC	250V AC	2+PE	77	15



ETIREL Control Equipment

Power relays VS116K, VS316K

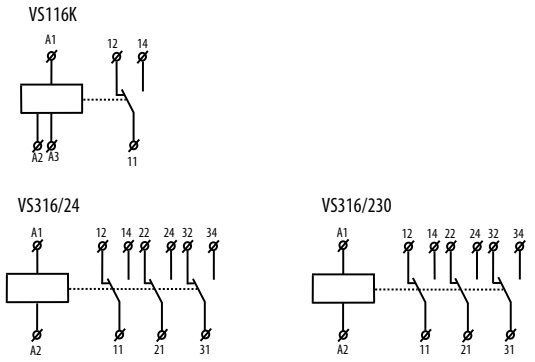
Application: Control signals in low-power circuits, combined with buttons, switches, for automation systems

Advantages:
- Voltage range AC230 or AC / DC 24V,
- 1 module, DIN rail mounting
- Changeover contact 1x16A or 3x16A,
- Output status LED indication

Technical data

	VS116K	VS316/24	VS316/230
Supply terminals	A1 - A2		
Voltage range	230 V AC/50-60 Hz	24 V AC/DC/ 50-60 Hz	230 V AC/ 50-60 Hz
Burden	AC max. 7.5 VA/ 1W	1.6 VA/ 1.2 W	2.5 VA
Supply terminals	A1-A3	x	
Voltage range	24 V AC/DC (50-60 Hz)	x	
Burden	1 VA AC/ 1W DC	x	
Supply voltage tolerance	-15%; +10%		
Output			
Number of contacts	1 x changeover/ SPDT (AgSnO2)	3 x changeover/ 3PDT ($AgSnO_2$)	
Current rating	16 A/ AC1	16A/ AC1	
Breaking capacity	4000VA/ AC1, 384W/ DC	4000VA/ AC1, 384W/ DC	
Inrush current	30 A/ <3s	30 A/ <3s	
Switching voltage	250 V AC1/ 24 V DC		
Min. breaking capacity DC	500 mW		
Output indication	high intensity of LED		
Mechanical life	3x107	1x107	
Electrical life (AC1)	0.7x105	1x105	
Time between switching	min. 2s	20 ms	50 ms
Other information			
Operating temperature	-20 °C ... +55 °C (-4 °F ... 131 °F)		
Storage temperature	-30 °C ... +70 °C (-22 °F ... 158 °F)		
Electrical strength	4 kV (supply-output)		
Operating position	any		
Mounting/DIN rail	DIN rail EN 60715		
Protection degree	IP 40 from front panel		
Overvoltage category	III.		
Pollution degree	2		
Max. cable size (mm^2)	max.1x 2.5 / 2x1.5		
	max. 1x2.5 (AWG 12)		
Dimensions	90 x 17.6 x 64 mm (3.5˝ x 0.7˝ x 2.5˝)		
Weight	54 g (1.9 oz.)	90 g (3.17 oz.)	92 g (3.25 oz.)
Standards	EN 61810-1, EN 61010-1		

Symbol



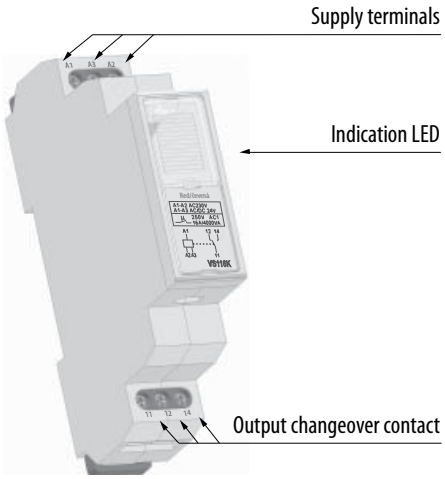
A1 - A2 230V AC
A1 - A3 24V AC/DC

Notes

Max. time of changeover of contact is 10ms.
VS316/24 and VS316/230 enable switching of different phases or 3 phase voltage.

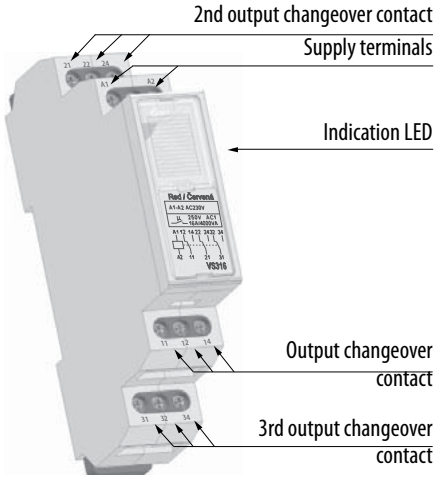
Description

VS116K



terminal A3 only for VS116K

VS316/24, VS316/230



Power relays VS116K, VS316K

Type	Code No.	Voltage U_n	Number of contacts	g	
VS116K	002471211	AC230V / AC/DC 24V	1P	58	1/10
VS316/230 V	002471220	AC230V	3P	84	1/10
VS316/24 V	002471225	AC/DC 24V	3P	84	1/10

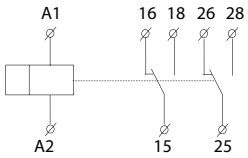
Multifunction time relay with supply voltage disconnection CRM-72TO

- The relay keeps timing according to the set function even after the power supply is disconnected.
- It can be used for delayed switching off of a backup power supply and systems in case of power failure (e.g. emergency lighting, emergency ventilation, electrically and automatically operated doors – lifts, escalators).
- Comfortable and well-arranged time delay (t) setting by rotary switch.
- Adjustable time delay from 0.1 s to 10 m is split into four ranges: (0.1 s – 1 s / 1 s – 10 s / 0.1 m – 1 m / 1 m – 10 m)
- Power supply outages must be in the order of tens to hundreds of milliseconds.
- Multifunction red LED flashes or shines depending on the operating states.

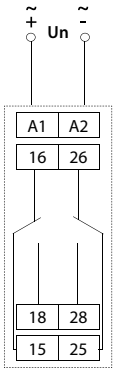
Technical data

	CRM-72TO
Supply terminals	A1 - A2
Supply voltage	12 - 240 V AC/DC(AC 50 - 60 Hz)
Consumption	1,9 VA / 0,9 W
Supply voltage tolerance	-15 %; +10 %
Time circuit	
Number of features	0.1 s - 10 min
Time delay	rotary switch and potentiometer
Time deviation	5 % - mechanical setting
Repeat accuracy	0.2 % - set value stability
Temperature coefficient	0.01 % / °C, at = 20 °C (0.01 % / °F, at = 68 °F)
Output	
Number of contacts	2× changeover (AgNi)
Current rating	8 A / AC1
Breaking capacity	2000 VA / AC1, 192 W / DC
Inrush current	10 A / <3 s
Switching voltage	250 V AC / 24 V DC
Power dissipation (max.)	1,2 W
Mechanical life	3x107
Electrical life (AC1)	0.7x105
Other information	
Operating temperature	-20 °C ... +55 °C (-4 °F ... 131 °F)
Storage temperature	-30 °C ... +70 °C (-22 °F ... 158 °F)
Dielectric strength	3,5 kV
Mounting/DIN rail	DIN rail EN 60715
Protection degree	IP 40 from front panel / IP 20 terminals
Operating position	any
Overvoltage category	III.
Pollution degree	2
Max. cable size(mm^2)	solid wire max. 1x2,5, 2x1,5 (AWG 14)
	stranded with ferrule max. 1x2,5 (AWG 14)
Dimensions	90 x 17,6 x 64 mm
Weight	69g
Standards	EN 61812-1

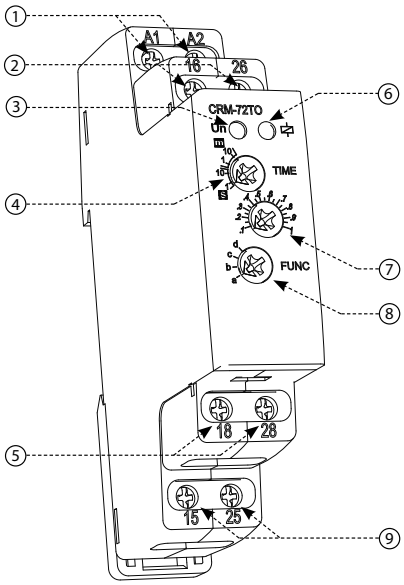
Symbol



Connection



Description



1. Supply voltage terminals (A1-A2)
2. Output contact (16-26)
3. Supply voltage indication
4. Time delay (t) setting
5. Output contact (18-28)
6. Indication of operating states
7. Fine time setting
8. Function setting
9. Output contact (15-25)

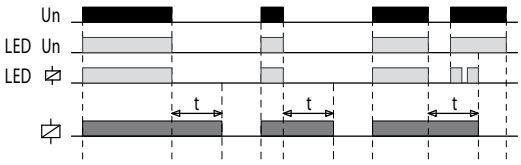
Multifunction time relay with supply voltage disconnection CRM-72TO

Type	Code No.	g	
CRM-72TO UNI	002470096	82	1/10

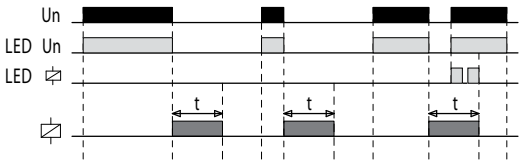
INSTRUCTIONS

Function

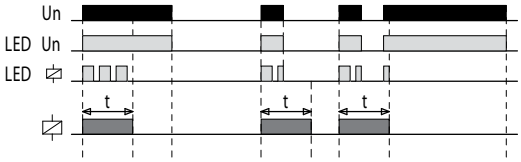
a TRUE OFF DELAY



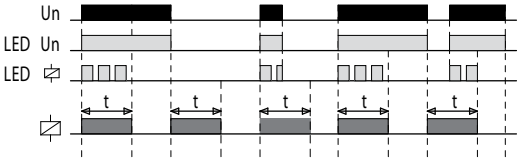
b TRUE SINGLE SHOT



c TRUE INTERVAL ON



d TRUE INTERVAL ON/OFF

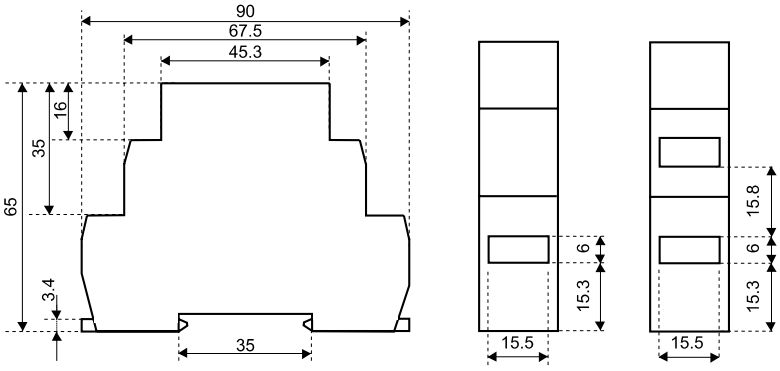


Multifunction time relay CRM-91H, CRM-93H

Advantages

- 1-module, DIN rail mounted
- Universal supply voltage: AC/DC 12V - 240V
- 10 functions:
  - 5 time functions controlled via supply voltage
  - 4 time functions controlled via control input
  - 1 function of memory (latching) relay
- Time scale 0.1 s - 10 days divided into 10 ranges
- User-friendly setting of functions and time via rotary switch
- Output contact:
  - CRM-91H 1x16A changeover
  - CRM-93H 3x8A changeover
- Output indication: multifunction red LED, flashing at certain states

1-module design



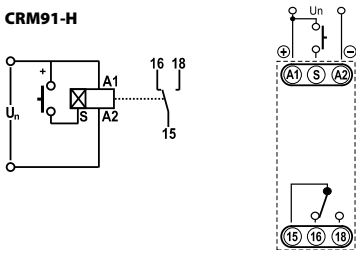
INSTRUCTIONS

Technical data

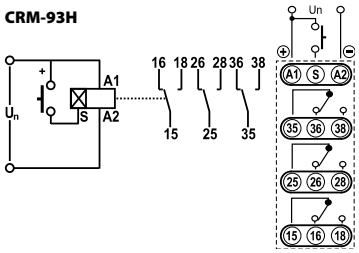
	CRM-91H	CRM-93H
Number of functions	10	
Supply	A1-A2	
Supply voltage	12-240 V AC/DC(50-60 Hz AC)	
Consumption	AC 0,7-3 VA / DC 0,5 - 1,7 W	
Supply indication	green LED	
Time ranges	0.1 s-10 days	
Time settings	rotary switch	
Time deviation	5%-mechanical setting	
Repeat accuracy	0,2%-set value stability	
Temperature coefficient	0,01% / °C at 20 °C	
Output		
Changeover contacts	1	3
Rated current	16 A / AC1	8 A / AC1
Breaking capacity	4000 VA / AC1, 384 W /DC	2000 VA / AC1, 192 W / DC
Inrush current (duty factor 10%)	30 A / <3 s	10 A / <3 s
Switching voltage	250 V AC1 / 24 V DC	
Min. breaking capacity DC	500 mW	
Output indication	multifunction red LED	
Mechanical life	$3x10^7$	
Electrical life	$0,7x10^5$	
Controlling		
Controlling voltage	12-240 V AC/DC	
Consumption of output	0,025-0,2 VA AC/ 0,1-0,7 W DC	
Load between S-A2	✓	
Glow-tubes	✓	
Control. terminals	A1-S	
Impulse length	min. 25 ms/ max. unlimited	
Reset time	max. 150 ms	
Operating temperature	-20...+55 °C	
Storing temperature	-30...+70 °C	
Electrical strength	4 kV	
Operating position	any	
Mounting	DIN rail EN 60715	
Protection degree	IP 40 from frontal panel	
Overvoltage category	III.	
Pollution degree	2	
Max. cable size	$2.5\ mm^2$	
Dimensions	90 x 17,6 x 64 mm	
Standards	EN 61812-1, EN 61010-1	

Connection

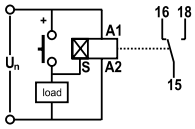
CRM91-H



CRM-93H

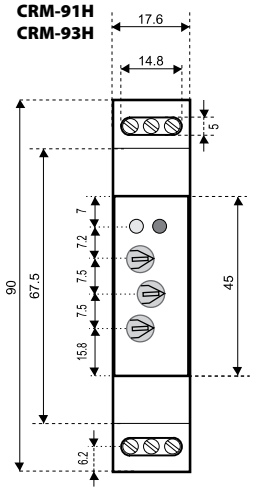


Load with control input possible. Load between S-A2 possible to connect in parallel way, without disturbing of proper operation of the relay.



Dimensions

CRM-91H
CRM-93H



Multifunction time relay CRM-91H, CRM-93H

Type	I_n [A]	Code No.	g	
CRM-91H	16	002470001	68	1/10
CRM-93H	8	002470002	93	1/10

Functions

a) Delay ON after energisation

b) Delay OFF after energisation

c) Cycler beginning with pause after energisation

d) Cycler beginning with impulse after energisation

e) Delay OFF after de-energisation, instant make of output

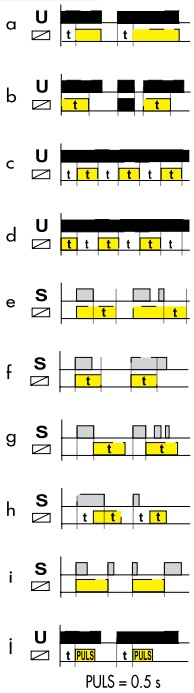
f) Delay OFF responding to make of control contact regardless its length

g) Delay OFF after break of control. contact with instant output

h) Delay OFF after make and break of control. contact

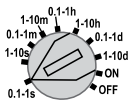
i) Memory (latching) relay

j) Pulse generator

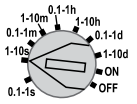


PULS = 0.5 s

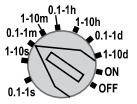
Time ranges



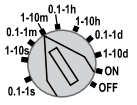
0.1 - 1 s



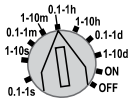
1 - 10 s



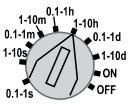
0.1 - 1 min



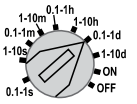
1 - 10 min



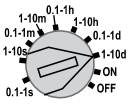
0.1 - 1 h



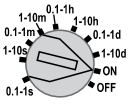
1 - 10 h



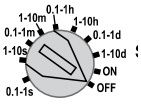
0.1 - 1 **day**



1 - 10 **days**

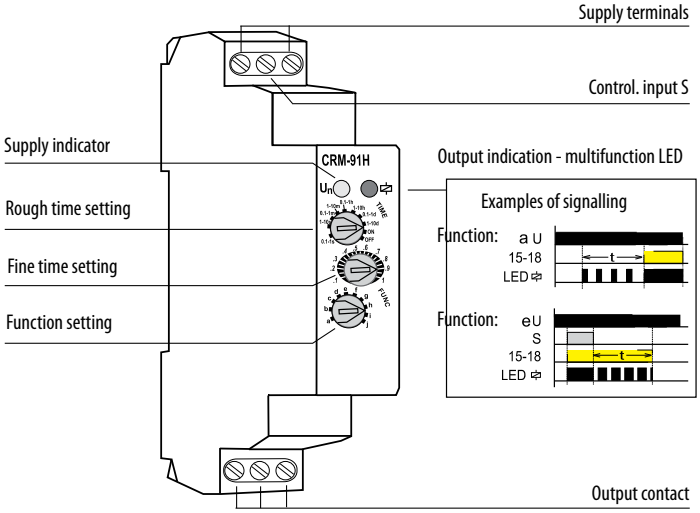


only ON



only OFF

Description



Time relay CRM-2H

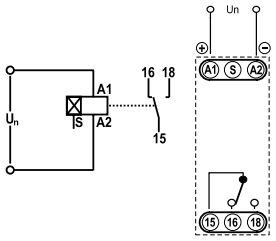
Advantages
- 1-module, DIN rail mounted
- Universal supply voltage: AC/DC 12V - 240V
- 2 time functions:
  - cycler beginning with pulse
  - cycler beginning with pause
- Time scale 0.1s - 100 days divided into 10 time ranges
- Rough time setting by rotary switch
- Output contact: 1x 16 A changeover
- Output indication: multifunction red LED

Technical data

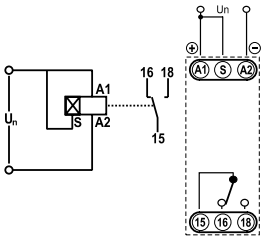
Number of functions	2
Supply	A1-A2
Supply voltage	12-240 V AC/DC (50-60 Hz AC)
Consumption	
Supply indication	green LED
Time ranges	0.1 s-100 days
Time setting	rotary switch and potentiometer
Time deviation	5% mechanical setting
Repeat accuracy	0,2% set value stability
Temperature coefficient	0,01% / °C -> 20 °C
Output	
Changeover contacts	1
Rated current	16A / AC1
Breaking capacity	4000 VA / AC1, 384 W /DC
Inrush current (duty factor 10%)	30 A / <3 s
Switching voltage	250 V AC1 / 24 V DC
Min. breaking capacity DC	500 mW
Output indication	multifunction red LED
Mechanical life	$3x10^7$
Electrical life	$0,7x10^5$
Reset time	max. 150 ms
Operating temperature	-20...+55 °C
Storage temperature	-30...+70 °C
Electrical strength	4 kV (supply-output)
Operating position	any
Mounting/DIN rail	DIN rail EN 60715
Protection degree	IP 40 from frontal panel
Overvoltage category	III
Pollution degree	2
Max. cable size	2,5 mm^2
Dimensions	90x17,6x64 mm^2
Standards	EN 61812-1, EN 61010-1

Connection

Cycler beginning with pulse

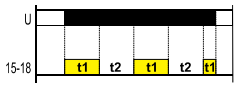


Cycler beginning with pause

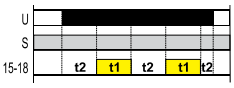


Functions

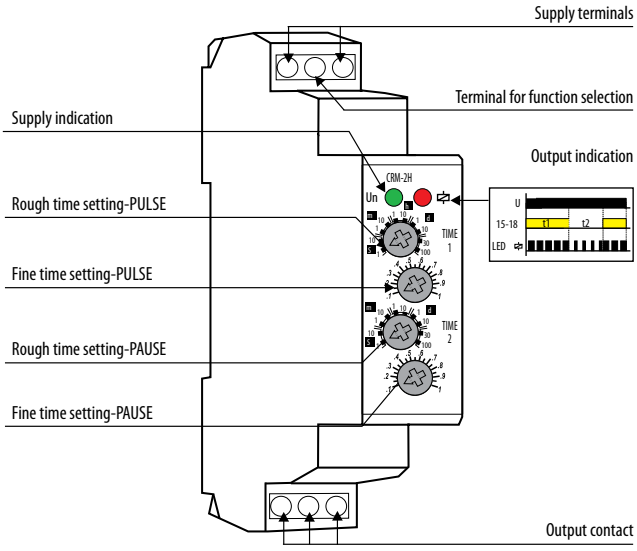
Cycler beginning with pulse



Cycler beginning with pause



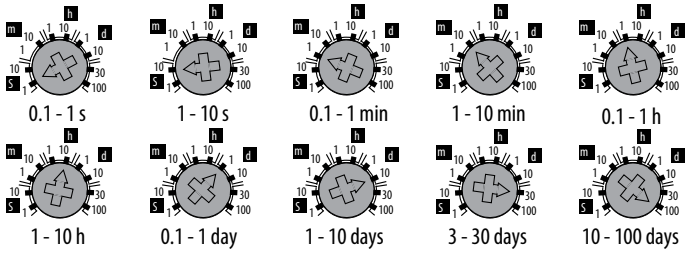
Description



Time relay CRM-2H

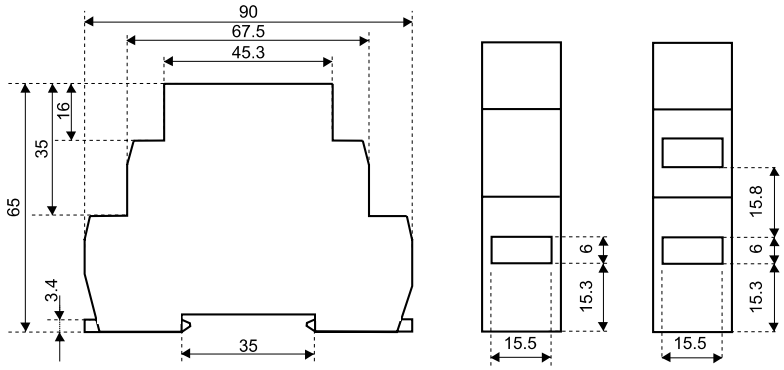
Type	I_n [A]	Code No.	g	
CRM-2H	16	002470003	68	1/10

Time ranges



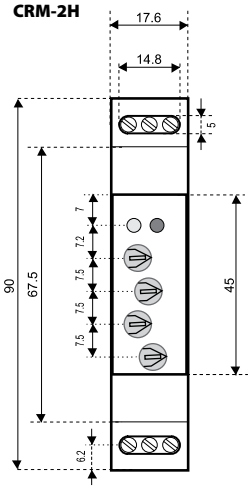
INSTRUCTIONS

1-module design



Dimensions

CRM-2H



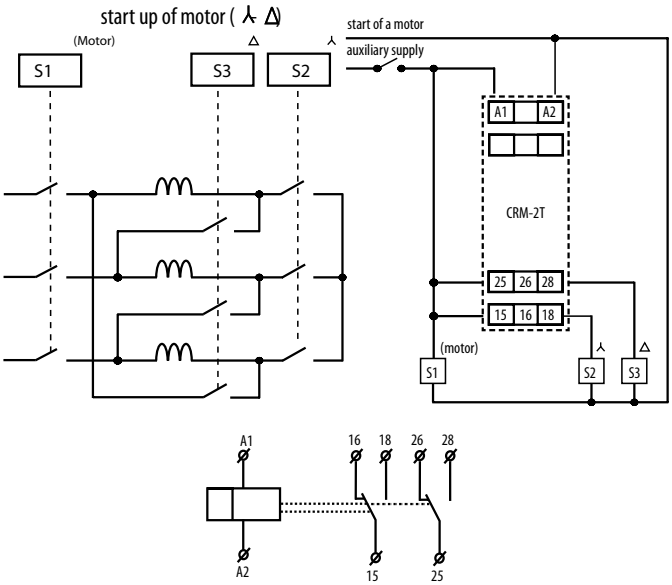
Delay ON star/delta relay CRM-2T

Advantages
- 1-module, DIN rail mounting
- Supply voltage: AC/DC 12V - 240 V
- Generates motor starting cycle star-delta
- Time t1 (star)
  - time scale 0.1 s - 100 days is divided into 10 time ranges
  - rough time setting by rotary switch
  - fine time setting by potentiometer (from 0,1 to1)
- Time t2 (delay) between star/delta:
  - time range 0.1 s - 1 s is set by potentiometer
- Output contact: 2x 16 A (AC1)
- Output indication: multifunction red LED

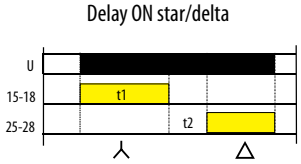
Technical data

	CRM-2T
Number of functions	1
Supply	A1-A2
Universal supply	AC/DC 12-240 V (AC 50-60 Hz)
Consumption	AC 0,7-3VA/DC 0,5-1,7 W
Supply voltage tolerance	-15% - +10%
Supply indication	green LED
Time ranges	t1: 0.1 s - 100 days t2: 0,1s - 1s
Time setting	rotary switch and potentiometer
Time deviation	5%-mechanical setting
Repeat accuracy	0,2%-set value stability
Temperature coefficient	0,01% / °C at 20 °C
Output	
Number of contacts	2 x changeover (AgNi)
Rated current	16 A / AC1
Breaking capacity	4000 VA / AC1, 384 W / DC
Inrush current (duty factor 10%)	30A/<3s
Switching voltage	max. 250 V AC1 / 24 V DC
Min. breaking capacity DC	500 mW
Output indication	multifunction red LED
Mechanical life	$3x10^7$
Electrical life	$0.7x10^5$
Reset time	max. 150 ms.
Controlling	
Operating temperature	-20...+55 °C
Storage temperature	-30...+70 °C
Electrical strength	4 kV
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP 40 from front panel
Overvoltage category	III
Pollution degree	2
Max. cable size	2.5 mm^2
Dimensions	90 x 17,6 x 64 mm
Standards	EN 61812-1, EN 61010-1

Connection



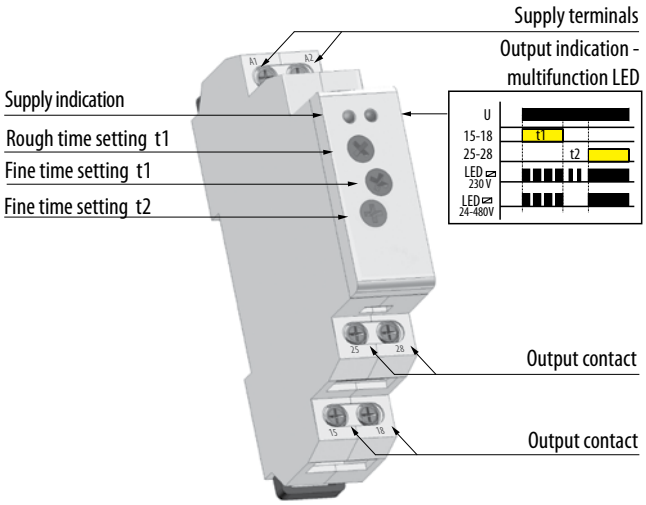
Functions



Delay ON star/delta relay CRM-2T

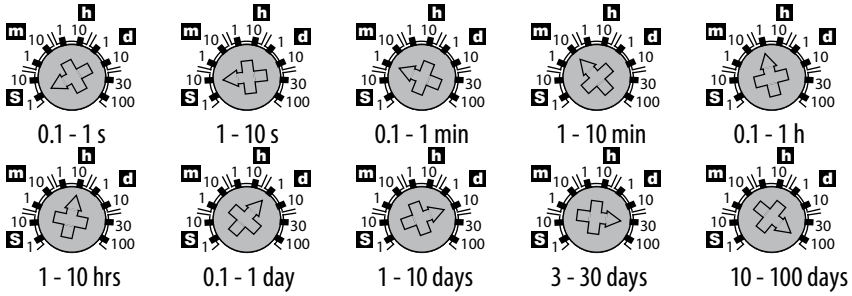
Type	I_n [A]	Code No.	g	
CRM-2T UNI	16	002470013	95	1/10

Description



INSTRUCTIONS

Time ranges



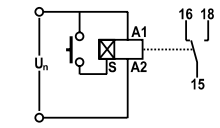
Staircase switch CRM-4

Advantages
- 1-module, DIN rail mounted
- Supply voltage: AC 230 V
- Protection against control push-button blocking
- Time range: 0,5 -10 min
- Selector switch:
  - AUTO: normal function acc. to set time
  - OFF: permanent off
  - ON: permanent on
- Time setting via potentiometer
- Output contact: 1x 16 A changeover (load up to 4000 VA/AC1)

Technical data

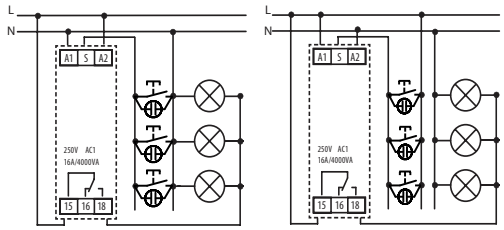
Function	delay OFF
Supply	A1-A2
Supply voltage	230 V AC/50-60 Hz
Consumption	max. 12 VA AC/1.8 W
Supply voltage tolerance	- 15%; + 10%
Supply indication	green LED
Time ranges	0,5 - 10 min
Time setting	potentiometer
Time deviation	10% mechanical setting
Repeat accuracy	5% set value stability
Temperature coefficient	0,05% / °C -> 20 °C
Output	
Changeover contacts	1
Rated current	16 A / AC1
Breaking capacity	4000 VA / AC1, 384 W /DC
Inrush current (duty factor 10%)	30 A / <3 s
Switching voltage	250 V AC1 / 24 V DC
Min. breaking capacity DC	500 mW
Output indication	red LED
Mechanical life	$3x10^7$
Electrical life	$0,7x10^5$
Controlling	
Control. voltage	230 V AC
Consumption of input	0,53 VA AC
Load between S-A2	✓
Glow-tubes	yes, max. 20 pcs. (at 1 mA)
Control. terminals	A1-S
Impulse length	min. 25 ms/max. unlimited
Reset time	max. 150ms
Operating temperature	-20...+55 °C
Storage temperature	-30...+70 °C
Electrical strength	4 kV (supply - output)
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP 40 from frontal panel
Overvoltage category	III
Pollution degree	2
Max. cable size	$2,5\ mm^2$
Dimensions	90x17, 6x64 mm
Standards	EN 60669-2-3, EN 61010-1

Connection

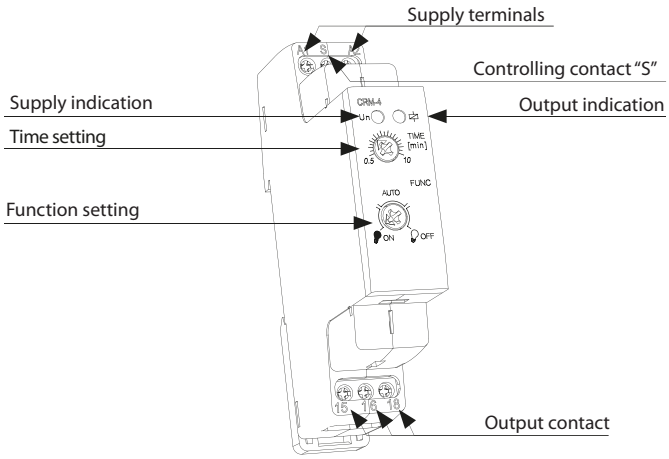


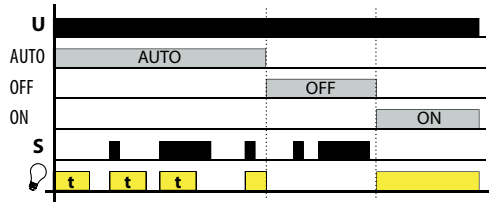
3-wire connection

4- wire connection



Description



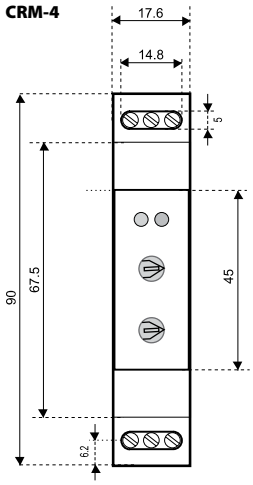


Staircase switch CRM-4

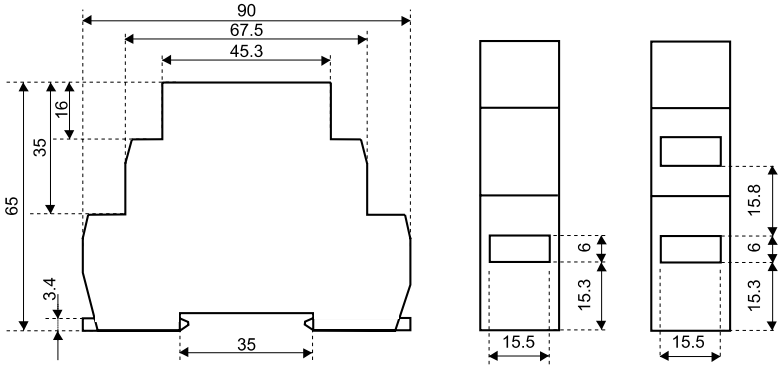
Type	I_n [A]	Code No.	g	
CRM-4	16	002470012	53	1/10

Dimensions

CRM-4



1-module design



Programmable staircase switch CRM-47

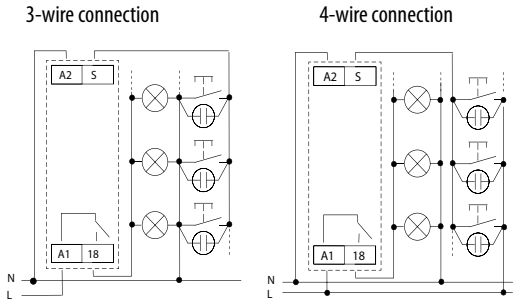
- Staircase switch enables delayed switching off of lighting on stairs, corridors, entrances, common areas or for delayed running of fans in the toilet or bathroom.
- The programmable staircase switch off ers similar application possibil-ities as the CRM-4, while it is possible to extend the delay for functions a, b repeatedly by briefl y pressing the control button (buttons). Each short press multiplies the time set by the potentiometer, i.e. setting the potentiometer to 2 minutes with three presses extends the delay up to 6 minutes. The maximum value of such an extended delay will always be 30 minutes, regardless of the number of presses.
- Long press (>2 s) can switch off the output prematurely and end the ongoing delay.
- Control input with the possibility of loading up to 100 mA load (glow lamp, LED in the button, etc.).
- Function (selectable by potentiometer on the front panel)
  a – STAIRCASE SWITCH, programmable with signalization
  b – STAIRCASE SWITCH, programmable without signalization
  c – MEMORY LATCH (press to switch on, press to switch off)
  d – MEMORY LATCH with delay:
    - ON (permanently closed) - e.g. during cleaning, moving
    - OFF (permanently open) - e.g. when replacing luminaires.
- ZERO CROSS feature: closes the output contact when the voltage crosses zero.
- Adjustable time delay (t) 0.5 – 10 m.
- Handles surge currents up to 80 A.
- 3-wire or 4-wire connection (input S can be controlled by A1 potential)

Technical data

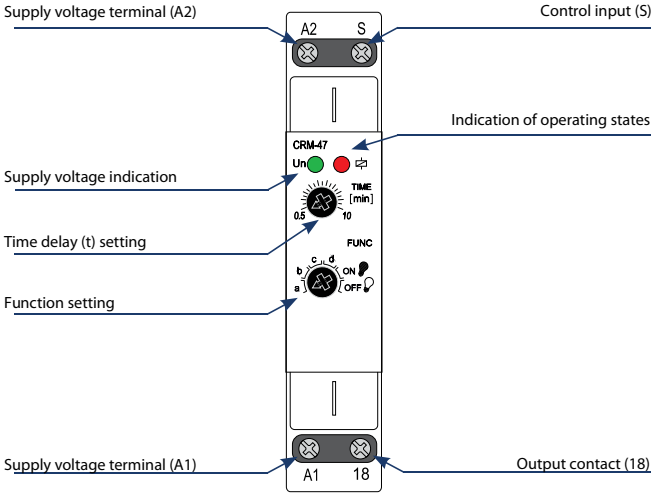
	CRM-47
Power supply	
Supply terminals	A1-A2
Supply voltage	230 V AC / 50-60Hz
Consumption	max. 3VA AC / 1.6 W
Time circuit	
Number of functions	6
Time delay (t)	0.5 - 10 min (prog. 30 min
Time setting	rotary potentiometer
Time deviation	5%-mechanical adjustment
Repeat accuracy	0,2%-set value stability
Temperature coefficient	0.01 % / °C, at = 20 °C
Output	
Number of contacts	1× closing (AgSnO2); closes potential "A1"
Rated current	16 A / AC1
Breaking capacity	4000 VA / AC1, 384W / DC
Inrush current	30A / < 3s.
Switching voltage	max. 250 V AC / 24 V DC
Power dissipation	max. 1,2 W
Mechanical life	10^7
Electrical life (AC1)*	10^5
Control	
Control Voltage	230 V AC
Power the control input max.	4.5 VA / 0.3 W
Glow lamp connection	✓
Max. current of connected glow lamps	100 mA
Control terminals	A1-S / A2-S
Impulse length	min 40ms. / max.unlimited
Reset time	max. 320 ms.
Other data	
Operating temperature	-20...+55 °C
Storage temperature	-30...+70 °C
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP 40 from front panel / IP20 terminals
Overvoltage category	III.
Pollution degree	2
Max. cable size	
- Solid wire max.	1x2,5 mm^2 / 2x1,5 mm^2
- stranded with ferrule max.	1x2,5 mm^2
Dimensions	90 x 17,6 x 64 mm
Standards	EN 61812-1

* For higher loads and frequent switching, it is recommended to strengthen the relay contact with a contactor

Connection



Description



INSTRUCTIONS

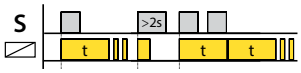
Programmable staircase switch CRM-47

Type	I_n [A]	Code No.	g	
CRM-47 230	16	002470304	70	1/10

Functions

When switching between functions, the red LED flashes.

ⓐ

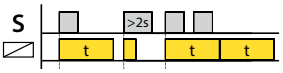


STAIRCASE SWITCH, programmable with signalization

The device timed the set time, 30 and 40s before the end of the time by double flashing of the luminaire announces the impending switch-off. You can increase the time interval by briefly pressing the button repeatedly.

Suitable for resistive loads (e.g. bulbs).

ⓑ

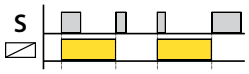


STAIRCASE SWITCH, programmable without signalization

The device will timed the set time without flashing at the end of the interval. You can increase the time interval by briefly pressing the button repeatedly.

The function is suitable for loads that can withstand frequent switching on and off (eg energy saving lamps, LED bulbs).

ⓒ

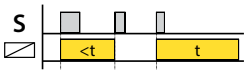


MEMORY LATCH (press to switch on, press to switch off)

By pressing the button the output relay closes and by pressing again the relay opens.

This function is primarily intended for locations where long-term lighting (without timing) is desirable and the unit is controlled from multiple locations (e.g. in office buildings).

ⓓ



MEMORY LATCH with delay

Pressing the button switches the output on/off. If the output is not turned off during the set time "t", it turns off automatically after the timer. This function is suitable for places where lighting is often forgotten (e.g. toilets, corridors, cellars).

Digital time switch SHT-1 and SHT-1/2

Advantages

- 2-modules, DIN rail mounting
- Daily, weekly, monthly, yearly program in one device (SHT-1; SHT-1/2)
- Supply voltage AC230 V or AC/DC 12-240 V
- Switching: according to the program (AUTO) / constantly manual / manually until next program change/random (CUBE)
- Automatic conversion summer/winter time
- Sealable cover of the front panel
- 100 memory places, clear LCD display
- Min. interval 1s
- Pulse/cyclic output
- Output contact: 1x 16A changeover → SHT-1
- Output contact: 2x 16A changeover → SHT – 1/2

Digital time switch SHT-1 and SHT-1/2

Type	I_n [A]	Code No.	g	
SHT-1 UNI	16	002470051	130	1
SHT-1 230V	16	002470050	110	1
SHT-1/2 UNI	16	002470054	130	1
SHT-1/2 230V	16	002470053	110	1

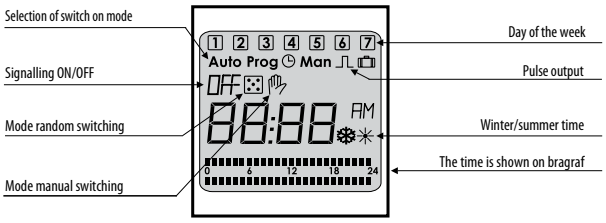
Technical data

Supply terminals		A1-A2
Supply voltage	UNI	12 - 240 V AC/DC (50 AC - 60 Hz)
Consumption	UNI	0,5 - 2 VA AC/ 0,4 - 2 W DC
Supply voltage	230	230 V AC/50 - 60 Hz
Consumption	230	max. 14 VA AC / 2 W
Supply voltage tolerance		-15%; +10%
Back-up supply		✓
Summer/winter time		automatic
Output		
Number of contacts		1x CO → SHT-1, 2X CO → SHT-1/2
Rated current		16 A / AC1
Breaking capacity		4000 VA /AC1, 384 W / DC
Inrush current (duty factor 10%)		30 A / < 3 s
Switching voltage		250 V AC1 /24 V DC
Min. breaking capacity DC		500 mW
Mechanical life		$>3x10^7$
Electrical life (AC1)		$>0,7x10^5$
Time circuit		
Power back-up		3 years
Accuracy		max. +/-1s/dat at 23°C
Minimum interval		1 s
Data stored for		min. 10 years
Program circuit		
Program SHT-1, SHT-1/2		daily, weekly
Data readout		LCD display
Other information		
Operating temperature		-20...+55°C
Storage temperature		-30...+70°C
Electrical strength		4 kV (supply-output)
Operating position		any
Mounting		DIN rail EN 60715
Protection degree		IP 20
Overvoltage category		III
Pollution degree		2
Max. cable size		max. 2x1,5 mm^2, 2x2,5 mm^2
Dimensions		90x35, 6x64mm
Standards		EN 61812-1, EN 61010-1

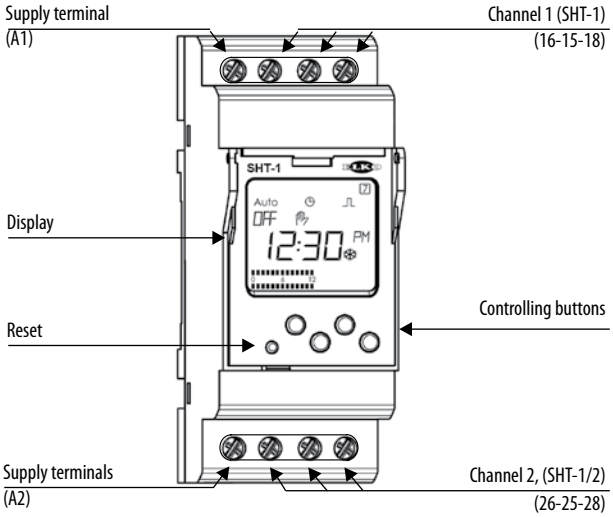
INSTRUCTIONS

WATCH THE VIDEO

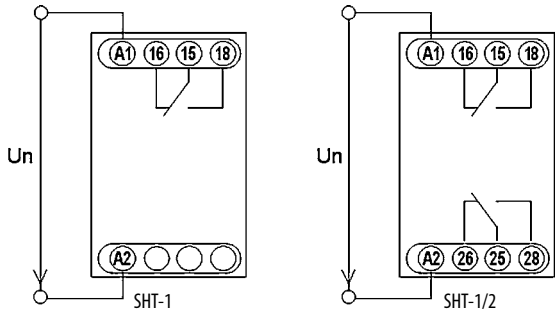
Controlling elements



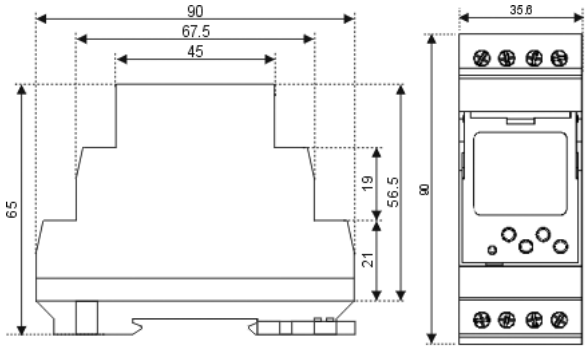
Description



Connection



Dimensions



Digital time switch SHT-13/2 UNI

DESCRIPTION

All-in-One digital time relay, with various programs (daily, weekly, yearly and astronomical, mixed, random). Simple setting after the first start-up, built-in Web Server for setup via Wi-Fi connection. ASTROnomic program with manual entry of geogr. coordinates or selecting one of the preset cities. 2 independant programmable outputs with permanent NO or NC, pulse or cycle mode.

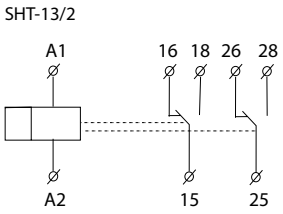
ADVANTAGES

- supply voltage range AC/DC 24 - 240 V, (AC 50-60 Hz)
- replaceable battery to back up the set time (CR2032)
- possible time synchronization through NTP server
- 2 independant output channels (CO 2x16A)
- summer/winter time – AUTO or OFF
- sealable transparent front panel cover
- PIN code protection against unauthorized changes
- Wi-Fi (2.4 GHz)
- Output: 2x changeover, 16 A
- Housing: 2 MODULE size (2 TE), dimensions: 90 × 35 × 64 mm

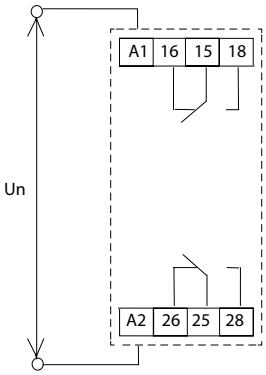
Technical data

Supply terminals	A1-A2
Supply voltage	24 - 240 V AC/DC (50 AC - 60 Hz)
Consumption	Wi-Fi "OFF" 0,5 W / 2 VA; "ON" 1 W / 3 VA
Supply voltage tolerance	-15%; +10%
Output	
Number of contacts	2× changeover (AgSnO2)
Rated current	16 A/AC1; 1 HP|240 Vac, 1/2 HP|120 Vac; PD. B300
Breaking capacity	4000 VA /AC1, 384 W / DC
Inrush current (duty factor 10%)	30 A / < 3 s
Switching voltage	250 V AC1 /24 V DC
Power dissipation (max.)	2.4 W
Mechanical life	$3x10^7$
Electrical life (AC1)	10^5
Time circuit	
Accuracy	max. ±0.5 s/day at 23°C
Minimum interval	1 s
Data stored for	min. 10 years
Set time backup	up to 120 days (CR 2032 - 3V)
Program circuit	
Number of memory locations	200
Program type	daily, weekly, yearly, astro
Displayed data	LCD display with white backlight
Settings via website	by Wi-Fi (2.4 GHz)
Other information	
Operating temperature	-20...+55°C
Storage temperature	-30...+70°C
Dielectric strength: supply – output output 1 – output 2	 AC 4 kV AC 4 kV
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP40 front panel / IP20 terminals
Overvoltage category	III
Pollution degree	2
Cross-wire section – solid/ stranded with ferrule (mm^2)	max. 1× 2.5, 2× 1.5/ max. 1× 2.5 (AWG 14)
Dimensions	90 × 35 × 64 mm
Standards	EN 61812-1

Symbol



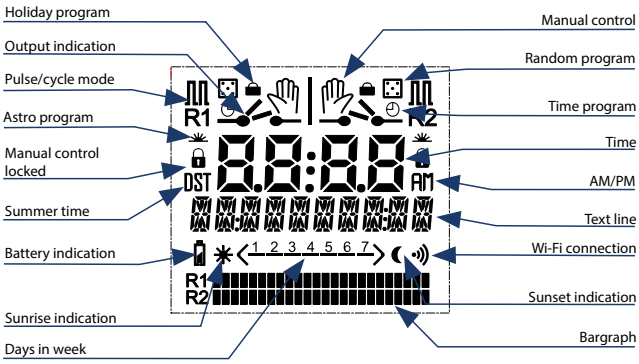
Connection



Digital time switch SHT-13/2 UNI

Type	I_n [A]	Code No.	g	
SHT-13/2 UNI	2x16	002470305	135	1

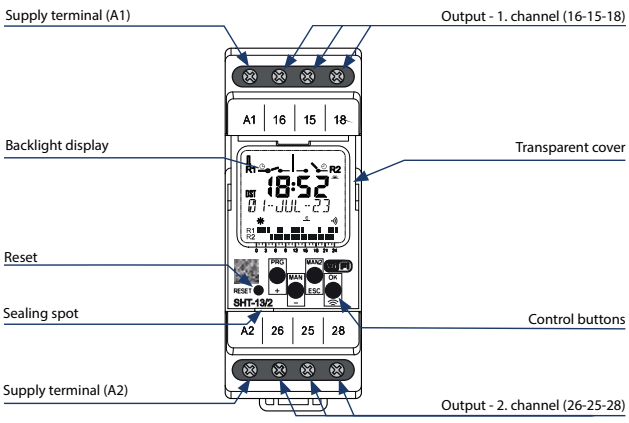
Controlling elements



INSTRUCTIONS

Description

SHT-13/2



WATCH THE VIDEO

Analog electromechanical time switch APC-D1, APC-DR1

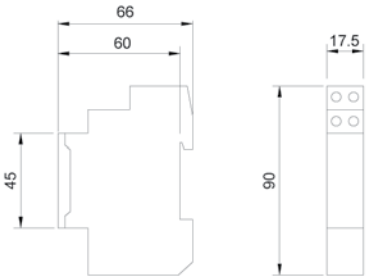
Advantages
- The APC time switch controls any electrical installation by means of daily programs.
- Without (D1) or with (DR1) battery backup.
- Manual switch with permanent ON position.
- Supply voltage : AC 230V
- Sealable cover of frontal panel
- Output contact :1x NO 16A
- Simple dial time setting. Minimum switching time is 15 min.
- 1 module, DIN rail mounting.

INSTRUCTIONS

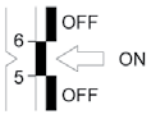
Technical data

	APC-DR1	APC-D1
Supply voltage	230V AC	230V AC
Power reserve	yes (100 hrs)	no
Dial/minimum switching time	15 min	15 min
Operating accuracy	+/- 1s/day at 22°C	+/- 1s/day at 22°C
Program	Daily	Daily
Output contact	1 x NO	1 x NO
Switching capability	16A 125/250V AC1	16A 125/250V AC1
Power consumption	0,5W	0,5W
Operating temperature	-25...+55°C	-10...+45°C
Mounting	DIN rail EN 60715	DIN rail EN 60715
Protection category	IP20	IP20
Overvoltage category	II	II
Dimensions	90 x 17,5 x 66	90 x 17,5 x 66
Standards	EN 60730-2-7	EN 60730-2-7

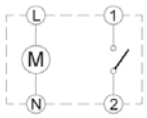
Dimensions



Programming



Connection



Analog electromechanical time switch APC-D1, APC-DR1

Type	In [A]	Code No.	g	
APC-D1	16	002472001	87	1/10
APC-DR1	16	002472002	87	1/10

Analog electromechanical time switch ATS-1DR 230

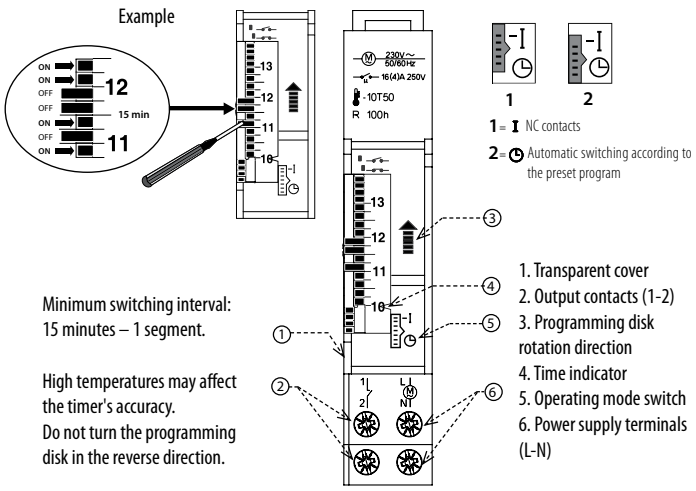
Description

- The mechanical time switch is a simple and inexpensive alternative to digital time switches for controlling heating, ventilation, cooling, lighting systems or pumps depending on real time.
- Daily program.
- Selection of operating modes using the switch on the panel:
  - switches automatically according to the set program
- Power reserve after power off for up to 100 hours after fully charged.
- Sealable transparent front panel cover.
- Supply voltage: AC 230V (50/60 Hz)
- Power consumption (max): 1W (1,5 VA)
- Program: daily
- Minimum operating switching time: 15 min
- Power reserve: max. 100 hrs
- Number of contacts 1x NO (AgNi) 16A AC1
- Mounting: DIN rail EN 60715

Technical data

Supply terminals	L, N
Supply voltage	AC 230 V (50/60 Hz)
Power consumption (max.)	1W (1.5 VA)
Supply voltage tolerance	-10%, +10%
Output	
Number of contacts	1x NO (AgNi)
Rated current	16 A / AC1
Breaking capacity	3500VA/AC1
Switching voltage	250V AC
Mechanical life	>1x10^6
Electrical life (AC1)	>5x10^4
Time circuit	
Program	daily
Number of switching segments	max. +/-1s/daY at 23°C
Minimum interval	1 s
Operating accuracy	+/- 1s / day
Power reserve	max. 100 hours
Other information	
Operating temperature	-10...+50°C
Storage temperature	-10...+50°C
Electrical strength	4 kV (supply-output)
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP20
Overvoltage category	III
Pollution degree	2
Max. cable size	max. 1x 4 mm^2, max. 2x 1,5 mm^2 / with sleeve max. 1x 4 mm^2, max. 2x 1,5 mm^2
Dimensions	90 x 17,5 x 64 mm
Standards	EN 61812-1, EN 60669-1, EN 63044-1

Description

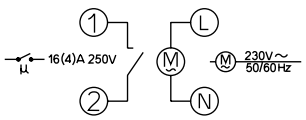


Minimum switching interval: 15 minutes – 1 segment.

High temperatures may affect the timer's accuracy.
Do not turn the programming disk in the reverse direction.

1. Transparent cover
2. Output contacts (1-2)
3. Programming disk rotation direction
4. Time indicator
5. Operating mode switch
6. Power supply terminals (L-N)

Connection



Number of contacts: 1× NO (AgNi)
Rated current: 16 A/AC1
Switching capacity: 4000 VA/AC1
Switching voltage: 250 V AC
Mechanical endurance: 100,000 operations
Electrical endurance (AC1): 30,000 operations

INSTRUCTIONS

Analog mechanical time switch ATS-1DR 230

Type	In [A]	Code No.	g	
ATS-1DR 230	1xNO, 16A AC1	002470297	73	1

Multifunction relay SMR-T, SMR-H, SMR-B

Advantages

- Multifunction relay designated for installation into a wiring box, under wall-switch into an existing installation (SMR-T doesn't need neutral to function)
- Fast solution for exchanging standard wall-switch for a switch controlled by time or for a memory relay controlled by a button

SMR-T

- 3-wire connection, works without neutral wire
- Output: 10-160 VA (resistive load)
- It cannot be used for fluorescent lights and energy saving lights (loads of capacitive type)

SMR-H

- 4-wire connection
- Output 0-200 VA
- It cannot be used for fluorescent lights and energy saving lights (loads of capacitive type)

SMR-B

- 4-wire connection
- 10 functions
- Output contact 1x16A / 4000 VA, 250V AC1
- Enables switching of fluorescent lights and also energy saving lights (see instruction manual technical data)
- Independent galvanically separated input AC/DC 5-250 V (for example for control from a security system)

Technical data

	SMR-T	SMR-H	SMR-B
Number of functions	9	9	10
Connection	3-wires, without neutral	4-wires, with neutral	4-wires, with neutral
Supply voltage		230 V AC / 50-60 Hz	
Consumption (no operation/make)	0,8/3 VA	0,8/3 VA	3 VA
Supply voltage tolerance		- 15%; + 10%	
Time ranges	0,1 s-10 days	0,1 s-10 days	x
Time setting via	via rotary switch and potentiometer	via rotary switch and potentiometer	x
Time deviation	10% mechanical setting	10% mechanical setting	x
Repeat accuracy	2% set value stability	2% set value stability	x
Temperature coefficient	0,1%, °C at 20 °C	0,1%, °C at 20 °C	x
Output	1x triac		1xNO (AgSnO2)
Resistive load	10-160 VA	0-200 VA	16A 125/250 V AC1
Inductive load	10-100 VA	0-100 VA	8A 250 V AC (cos fi > 0,4)
Controlling			
Voltage	230 V AC		
Current	3 mA		
Impulse length	min. 50 ms/ max. unlimited		
Operating temperature	0...+50 °C		
Operating position	any		
Mounting	free at connecting wires		
Protection degree	IP 30 from front panel		
Overvoltage category	III		
Pollution degree	2		
Fuse	F1 A / 250 V	F1 A / 250 V	F1,6 A / 250 V
Outlets	3 x solid wires 0,75 mm^2 length 90 mm		
Glow-laps in button (pcs)	max. 10		
Dimensions	48,5 x 48,5 x 13 mm		
Standards	EN 61010-1		

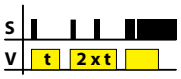
Multifunction relay SMR-T, SMR-H, SMR-B

Type	Code No.	g	
SMR-T	002470004	29	1/14
SMR-H	002470005	31	1/14
SMR-B	002470021	53	1/14

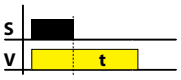
INSTRUCTIONS

Function

Function a - delay off on entrering edge
output times when it is switched. Each following pressing (max. 5x) increases time
Long pressing switches output off



Function b - delay off on downward edge
output times after button is switched off , switches immediately



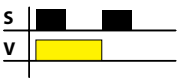
Function c - delay off on downward edge
after switching off output switches on and times.

Function d - cycler - flasher impulser
output cycles in regular interval, cycler starts with an impulse

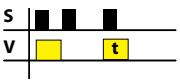
Function e - puls shift
delay on after the switch is switched on and delay on after it is switched off

Function f - delay on
delay on after switch is switched on until it is switched off

Function g - pulse relay
switches on by a press, another pressing switches the output off . The length of pressing doesn't matter, it is possible to set reaction delay by a potentiometer and thus eliminate rebound of a button

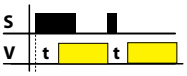


Function h - impulse relay with delay
one press switches on, another one switches the output off in case it is done before the end of timing



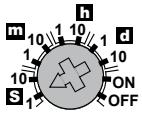
Function i - delay on after switched off
output cycles in regular intervals, cycler starts with a gap

Function j *- cycler starting with gap
delay on after switching on until it is de-energized or a switch is pressed again.

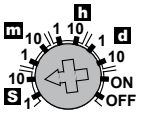


*function j is valid only for SMR-B

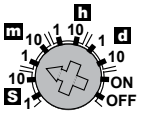
Time ranges



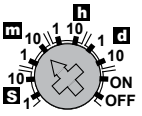
0.1 - 1 s



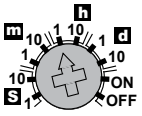
1 - 10 s



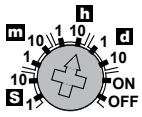
0.1 - 1 min



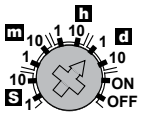
1 - 10 min



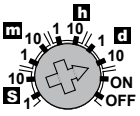
0.1 - 1 hrs



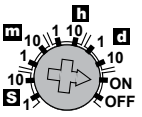
1 - 10 hrs



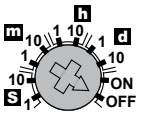
0.1 - 1 day



1 - 10 days

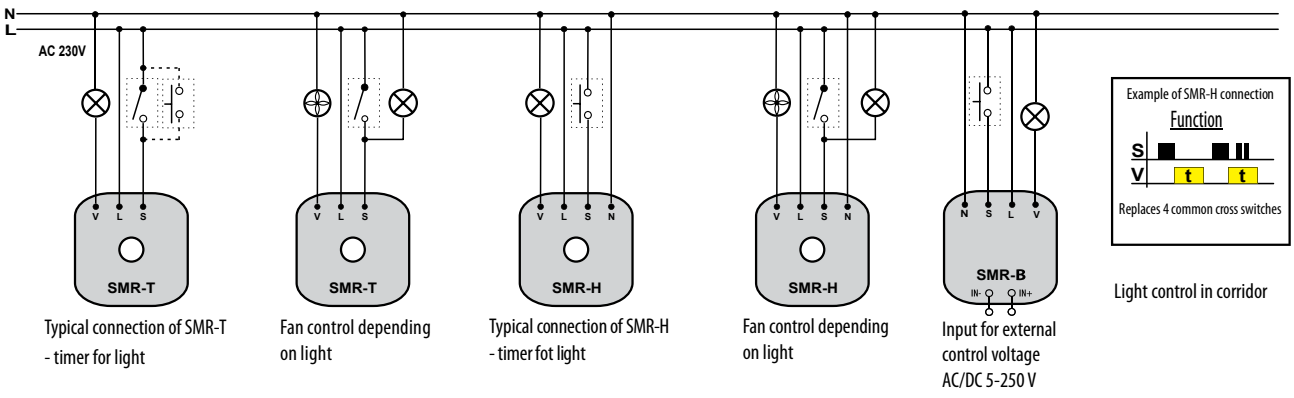


only ON



only OFF

Connection SMR-B, SMR-H, SMR-T



Typical connection of SMR-T - timer for light

Fan control depending on light

Typical connection of SMR-H - timer fot light

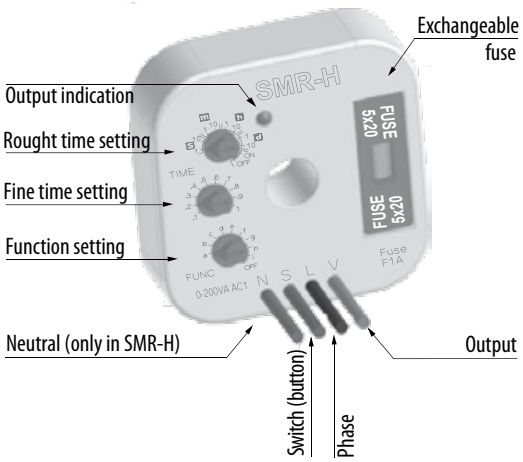
Fan control depending on light

Input for external control voltage AC/DC 5-250 V

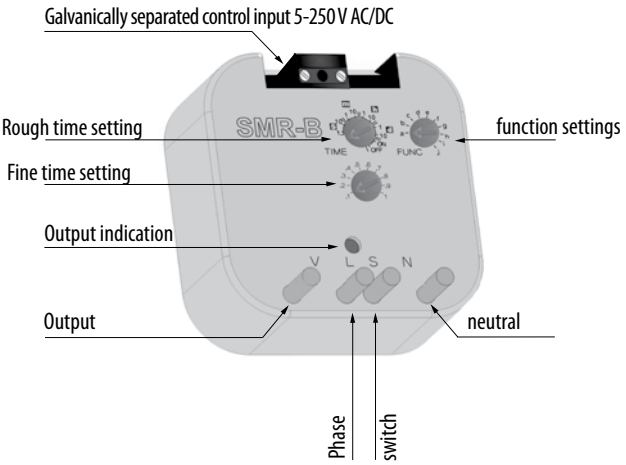
Light control in corridor

Description

SMR-T, H

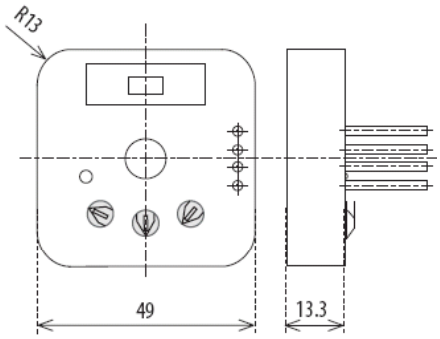


SMR-B

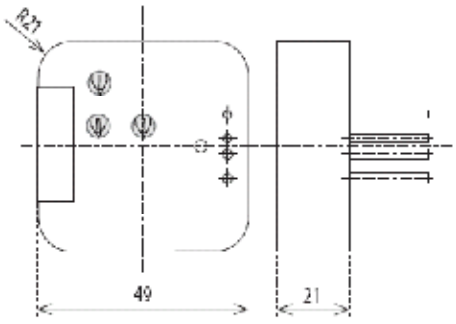


Dimension

SMR-T, SMR-H



SMR B



Memory and latching relays MR-41, MR-42

Advantages

- 1-module, DIN rail mounted
- Supply voltage:
  - UNI AC/DC 12V - 240V
  - 230 AC 230V
- Keeps state in memory when supply disconnected. When energized again, relay returns to the state before disconnecting.

MR-41

- Output contact: 1x changeover 16A/ AC1

MR-42

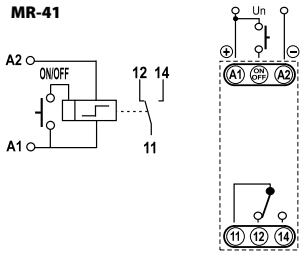
- Options - 2x paralel contacts or the other relay is latching
- Function selected via external wire link between B1-B2
- Output contact: 2x changeover 16A/ AC1

Technical data

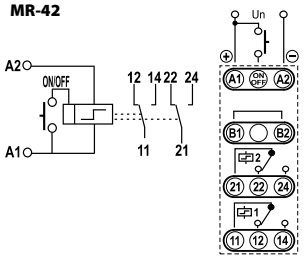
	MR-41	MR-42
Number of functions	1	2
Supply	A1-A2	
Supply voltage UNI	12-240 V AC/DC (50-60 Hz AC)	
Consumption UNI	AC 0,17-3 VA / DC 0,5 - 1,2 W	AC 0,17-12 VA / DC 0,11 - 1,9 W
Supply voltage 230	230 V AC / 50-60 Hz	
Consumption 230	AC max. 12 VA / DC 1,2 W	AC max. 12 VA / DC 1,9 W
Supply indication	green LED	
Output		
Supply voltage tolerance	- 15%; + 10%	
Number of contacts	1xCO	2xCO
Rated current	16 A / AC1	2x16 A / AC1
Breaking capacity	4000 VA / AC1, 384 W /DC	4000 VA / AC1, 2x384 W / DC
Inrush current	30 A / <3 s	30 A / <3 s
Switching voltage	250 V AC1 / 24 V DC	250 V AC1 / 24 V DC
Min. breaking capacity DC	500 mW	500 mW
Output indication	red LED	red LED
Mechanical life	$3x10^7$	
Electrical life	$0,7x10^5$	
Controlling		
Voltage	12-240 V AC/DC	
Consumption of input	AC 0,025-0,2 VA / DC0,1-0,7 W (UNI) , AC 0,53 VA (AC 230V)	
Load between A2 ON/OFF	✓	
Glow-lamps	no (UNI) , yes -max. 4 pcs at 1mA (AC 230V)	
Control terminals	A1 ON/OFF	
Capacitance of cable control:		
-without connected glow lamps	12 nF (UNI), 12nF (230V)	
-with connected glow lamps	9nF (UNI), glow lamps cannot connected/NO 9nF (230V), max. 4pcs (1pc-1mA)	9nF (UNI), glow lamps cannot connected/NO 9nF (230V), max. 4pcs (1pc-1mA)
Impulse length	min. 25 ms/ max. unlimited	
Operating temperature	-20...+55°C	
Storage temperature	-30...+70°C	
Electrical strength	4 kV (supply - output)	
Operating position	any	
Mounting	DIN rail EN 60715	
Protection degree	IP 40 from frontal panel	
Overvoltage category	III	
Pollution degree	2	
Max. cable size	2,5 mm^2	
Dimensions	90x17, 6x64 mm	
Standards	EN 60669-2-2, EN 61010-1	

Connection

MR-41

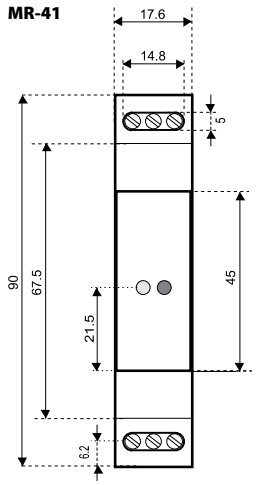


MR-42

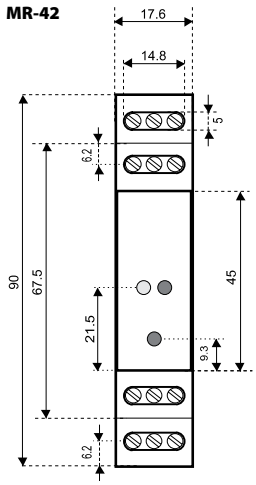


Dimensions

MR-41



MR-42

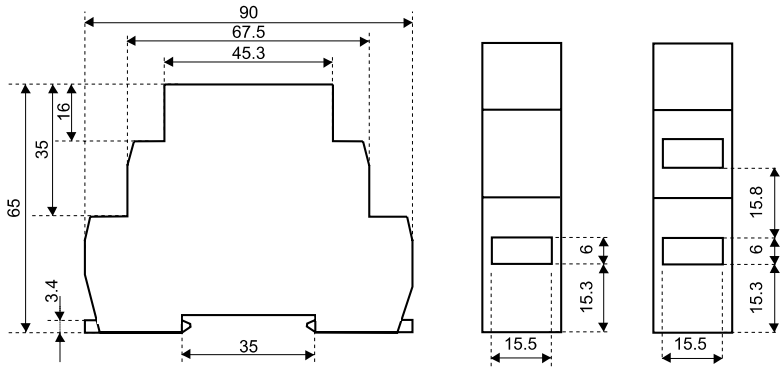


Memory & latching relays MR-41, MR-42

Type	Code No.	g	
MR-41 UNI	002470007	64	1/10
MR-42 UNI	002470008	89	1/10
MR-41 230	002470094	60	1/10
MR-42 230	002470095	85	1/10

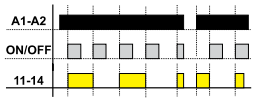
In applications with long control cables and/or leading other connections in parallel MR-41/42 can be exposed to EM disturbances and unstable operation (random switching). We advice using RBS bistable switch instead.

1-module design

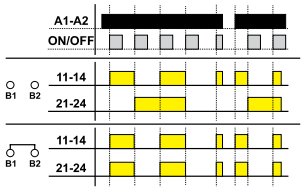


Function

MR-41



MR-42



Dimmers - compatibility with various types of light bulbs

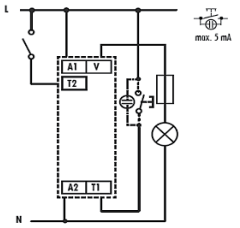
Product	automatically detects type of load	R Standard and halogen light bulbs	L Low voltage light bulbs (12-24V), wounded transformer	C Low voltage light bulbs (12-24V), electronic transformer	ESL Dimmable Energy Saving Lamps (ESL)	LED CATEGORY 1: „LOW COST" LED LAMPS - MULTILED SYSTEMS WITH INTEGRATED LINEAR POWER SUPPLY	LED CATEGORY 2: 1-3 DIMMABLE POWER LED LAMPS WITH INTEGRATED SWITCHING POWER SUPPLY
DIM-2	×	✓	✓	×	×	×	×
DIM-15	×	×	×	×	✓	✓	✓
SMR-M	×	×	×	×	✓	✓	✓
SMR-S	×	✓	✓	×	×	×	×

Staircase switch with dimming DIM-2

Technical data

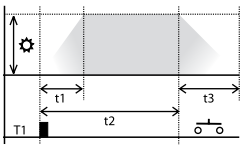
Supply	A1-A2
Supply voltage	230 V AC (50 Hz)
Consumption	max. 5 VA
Supply voltage tolerance	- 15%; + 10%
Supply indication	green LED
Time setting via	potentiometer
Time deviation	10% mechanical setting
Repeat accuracy	5% set value stability
Temperature coefficient	0,01% / °C / 20 °C
Controlling T1	
Terminals	T1-A1
Voltage	230 V AC
Power on control input	max. 1,5 VA
Impulse length	min. 100 ms / max. unlimited
Glow-lamps	yes, max. 5 pcs (at 1 mA)
Controlling T2	
Terminals	T2-A1
Voltage	230 V AC
Power control input	max. 0,1 VA
Impulse length	min. 100 ms / max. unlimited
Glow-lamps	no
Output	contactless - triac
Rated current	2 A
Resistive load	10-500 VA
Inductive load	10-250 VA
Operating temperature	-20...+55 °C
Storage temperature	-30...+70 °C
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP 40 from front panel
Overvoltage category	III
Pollution degree	2
Max. cable size	2,5 mm²
Dimensions	90x17,6x64 mm
Standards	EN 60669-2-1, EN 61010-1

Connection

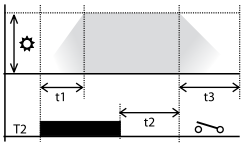


Function

Controlled via input T1 (button)



Controlled via input T2 (switch)



Cycle dim-up time is activated by pressing the button; By repressing the button (during the cycle) it is possible to prolong the time of the cycle.

Legend:

☼	Output / Brightness: 10-100%
t1	Dim-up time: 1-40 s
t2	Time delay: 0s-20min
t3	Dim-down time: 1-40s
T1/T2	Controlling contact

The cycle is started by activating the switch and breaks on max. adjusted brightness level. After the switch is turned off the switch cycle is complete.

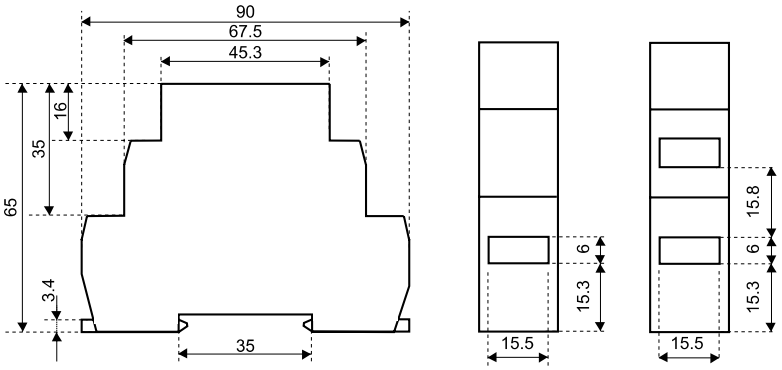
Advantages

- 1-module, DIN rail mounted
- Supply voltage AC 230V
- Function of gradual dim-up and dim-down, controlling inputs for push button and switch
- Protection against button dead locking
- Contactless output: 1x triac
- Load AC1 2A / 500W
- Potentiometers adjust:
  - speed (fluency) of switching on
  - maximum intensity of light
  - time of maximum intensity light
  - speed (fluency) of switching off

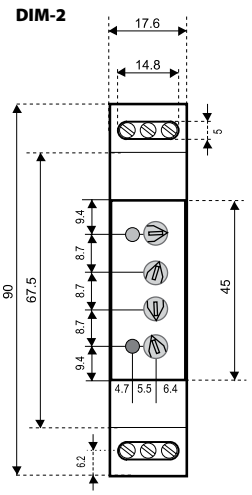
Staircase switch with dimming DIM-2

Type	Code No.	g	
DIM-2	002470009	70	1/10

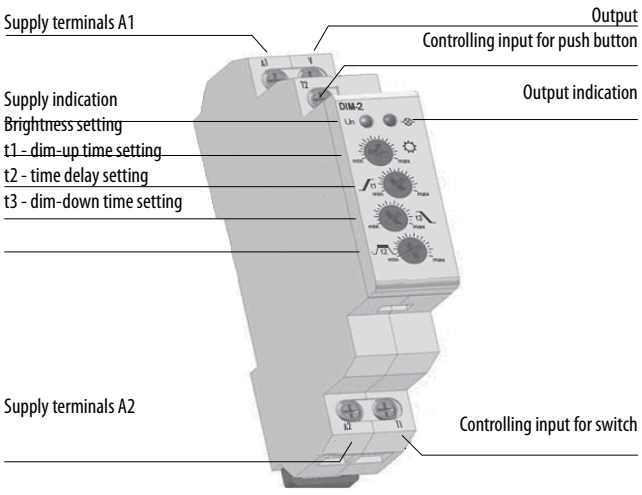
1-module design



Dimensions



Description



INSTRUCTIONS

Dimmers for LED bulbs and dimmable fluorescent lamps DIM-15 and SMR-M

Technical data

	DIM-15	SMR-M
Supply voltage	230V AC / 50-60 Hz	
Supply voltage tolerance	-15%; +10%	
Apparent power	max. 1.5VA	
Loss power	max. 0.7W	
Supply indication	green LED	
Controlling		
Control wire	A1 - T	L - S
Control voltage	230V AC	
Control input power	AC 0.3-0.6 VA	
Control impulse length	min. 80 ms / unlimited	
Glow tubes connection	✓	
Max. amount of glow lamps connected to controlling input	230V - max. 15pcs (measured with glow lamp 0.68mA/230VAC)	230V - max. 10pcs (measured with glow lamp 0.68mA/230VAC)
Output		
Contactless	2 x MOSFET	
Load*	300W (at cos fi=1)	160W (at cos fi=1)
Output status indication	red LED	x
Other data		
Operating temperature	-20 ... +35°C	
Storing temperature	-20 ... +60°C	
Operating position	any	
Mounting	DIN rail EN 60715	free at connection wires
Protection degree	IP40 from front panel / IP10 terminals	IP30 in standard conditions
Overvoltage category	III	
Pollution level	2	
Terminal wires (mm^2)	max. 2x2.5; with sleeve 1x1.5	x
Dimensions	90 x 17.6 x 64 mm	49 x 49 x 21 mm
Weight	57 g	38 g
Standards	EN 60669-2-1, EN 61010-1	

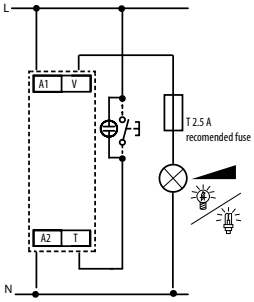
* Due to a large number of light source types, the maximum load depends on the internal construction of dimmable LEDs and ESL bulbs and their power factor cos φ.
The power factor of dimmable LEDs and ESL bulbs ranges from cos φ = 0.95 to 0.4.
An approximate value of maximum load may be obtained by multiplying the load capacity of the dimmer by the power factor of the connected light source.

INSTRUCTIONS

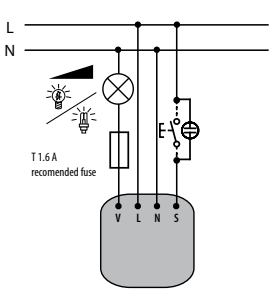
INSTRUCTIONS

Connection

DIM-15

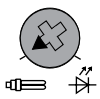


SMR-M

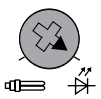


Light source type setting

dimmable saving fluorescent lamps



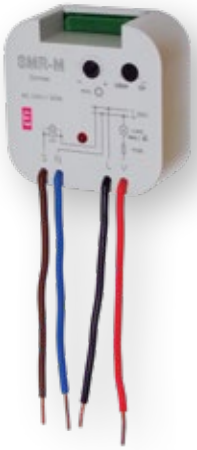
LED bulbs



Advantages
- Designated for dimming of:
  a) LED bulbs and LED light sources
  b) dimmable saving fluorescent lamps
- Enables gradual setting of luminance by push-button (non-detent) or parallel buttons
- Returns to last state upon re-energization
- Type of light source (LED or saving fluorescent lamp) is set by switch-over on the front panel of device
- Minimal luminance, set by potentiometer on the front panel, eliminates flashing of some types of saving fluorescent lamps

DIM-15
- Supply voltage 230V AC
- Output status is indicated by red LED:
  - shines when output is active
  - flashes while heating overload, at the same time output is disconnected
- 1-MODULE version, DIN rail mounting, saddle terminalh)

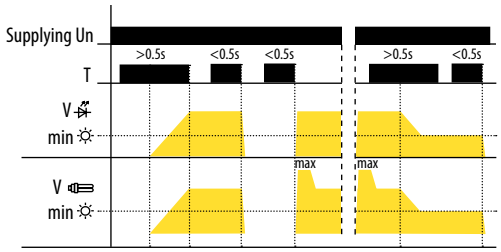
SMR - M
- Button-controlled dimmer intended to be installed in an installation box (e.g. KU-68) into the existing electrical wiring
- Protection against excessive temperature inside the device - switches off the output



Dimmer DIM-15, SMR-M

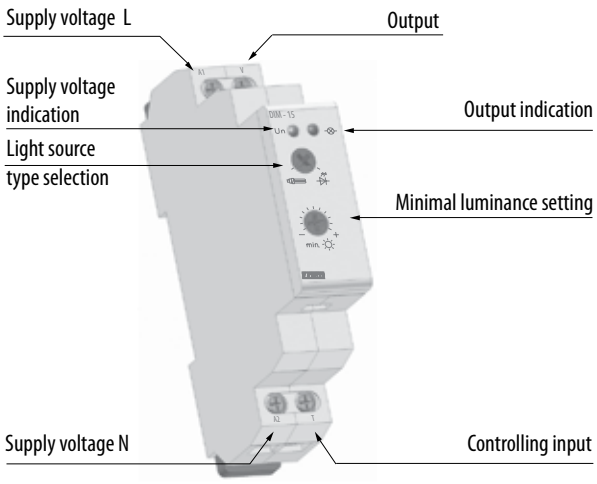
Type	Code No.	g	
DIM-15	002470290	57	1/10
SMR-M	002470291	38	1/14

Functions and controlling



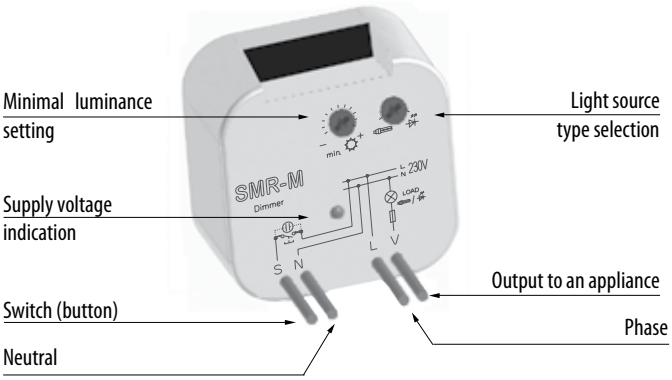
Controlling::
- short button press (<0.5s) turns the light off or on
- long press (>0.5s) enables slight regulation of light intensity
- setting of minimal luminance is possible only during decreasing of luminance by long button press

Devices description



Minimal luminance setting:
LED bulb:
- if the light is turned off, short press (<0.5s) switches the light onto last set luminance level
Saving fluorescent lamp:
- if the light is turned off, short press increases the luminance onto maximal level (saving fluorescent lamps fires up) and then luminance decreases onto set level
- setting of minimal luminance by saving fluorescent lamps serves for harmonizing of lowest light intensity prior its unprompted switching off

Additional information
- it is possible to dim only LED bulbs equipped with capacitator supplying
- it is not possible to dim saving fluorescent lamps without marking: dimmable
- an incorrect setting of light source has effect only on dimming range, it means neither dimmer or load get demaged
- maximal load is counting with usage of LC filter



Dimmer SMR-S

Advantages
- Button-controlled dimmers designated for flush mounting into a wiring box, into an existing installation (SMR-S doesn´t need neutral to function)
- Controlling lamp brightness
- Dimming, control from more places (parallel button connected), possible protection against temperature overrun inside the device – output off.
- By changing wall-switch for a switch with SMR-S/SMR-U installed below effective brightness control can be reached. SMR-S enables dimming of electrical bulbs and wound transformers 12V, halogen lights (inductive load), SMR-U also enables dimming of electronic transformers 12V, halogen lights (capacitive load). It cannot be used for dimming fluorescent lights or energy saving lights.

SMR-S
- 3-wire connection, functional without neutral
- Max. load: 300 VA (resistive loads)
- Contactless output -1x triac
- With exchangeable fuse

Technical data

	SMR-S
Connection	4-wire without neutral
Supply voltage	AC 230 V / 50-60 Hz
Consumption (no operation/make)	max. 3VA
Supply voltage tolerance	- 15%; + 10%
Output	
Resistive load	10-300 VA
Capacitive load	x
Inductive load	10 -150VA
Controlling	
Control Voltage	AC 230 V
Current	3 mA
Impulse length	min. 50 ms/ max. unlimited
Operating temperature	0...+50 °C
Operating position	any
Mounting	free of connecting wires
Protection degree	IP30 from front panel
Overvoltage category	III
Pollution degree	2
Fuse	F 1.6A/ 250V
Output	solid 0,75 mm^2, length 90 mm
Glow-lamps in control button	max. 10 pcs.
Dimensions	49x49x13 mm
Standards	EN 60669-2-1, EN 61010-1

INSTRUCTIONS

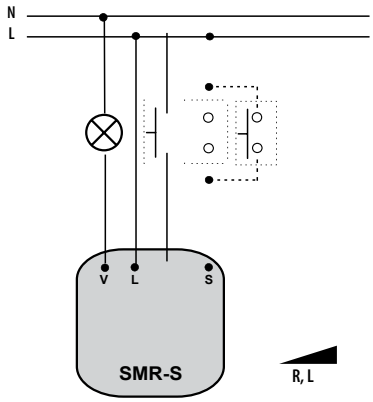
* When load is above 300 VA it is necessary to ensure sufficient cooling; see instruction manual technical data

Warning: it cannot be used for fluorescent lights and energy saving lights!
SMR-U: It is not allowed to connect together loads of inductive and capacitive type at the same time

Dimmer SMR-S

Type	Code No.	g	
SMR-S	002470010	32	1/14

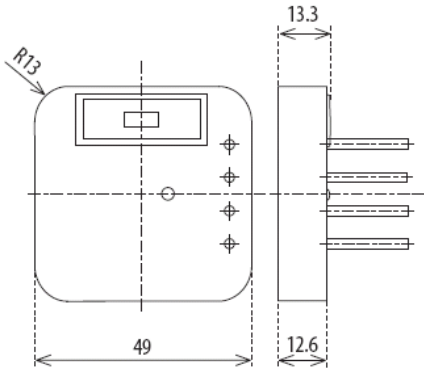
Connection SMR-S, SMR-U



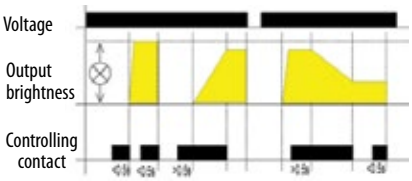
Typical connection of SMR-S
- dimmer of lights

Warning: it cannot be used for fluorescent lights and energy saving lights!
SMR-U: It is not allowed to connect together loads of inductive and capacitive type at the same time

Dimensions

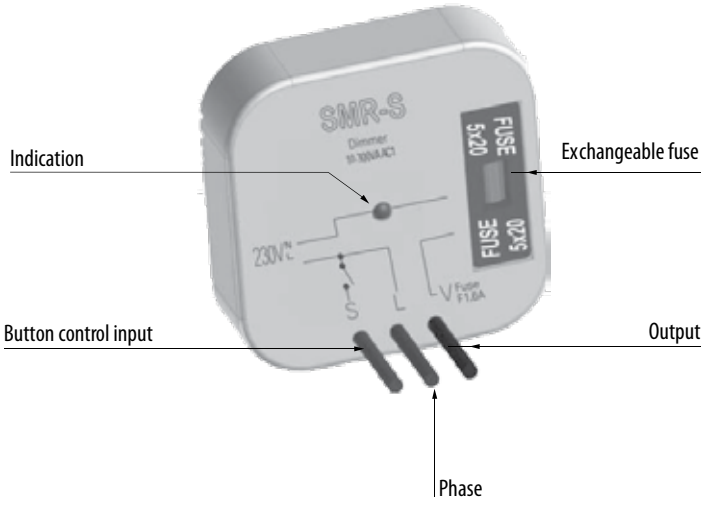


Functions



KA short press (<0.5s) turns a light on, another short press turns it off . A longer press (>0.5s) causes a gradual regulation of light intensity min-max-min round until the button is released. After releasing a set intensity is kept in memory, further short presses turn the light on/off keeping the set intensity. The intensity can be changed by further long press. After de-energising the relay remembers the set value.

Description SMR-S



Twilight switch in IP65 ETS-16b

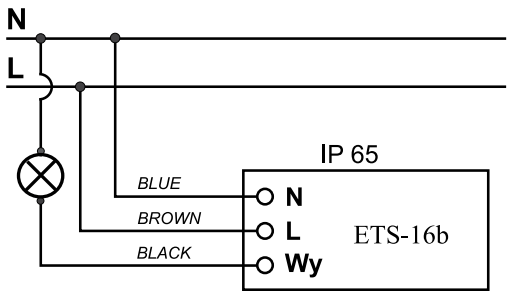
Application
Used for remote control of external lighting. time delay prevents accidental activation of the short-term changes in the intensity lighting. Designed to be mounted on a flat surface (eg a wall, disc)
.

Advantages:
- robust and simple design,
- adjustable-sensitivity threshold,
- IP 65

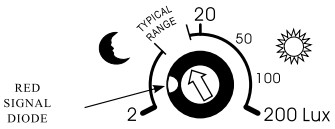
Technical data

	ETS-16b
Voltage	230 V AC
Time delay	cca 20 s
Light level	2-50 Lx
The number and types of contacts	1 NO - NO
Rated current contact	16A/AC1
Installation	on a flat surface
Standards	EN 61812-1, EN 50081, EN 61000
Power supply range	180 - 240 V AC 50Hz
Max load current (AC-1)	16 A
Switch ON treshold	10 lux
Switch off treshold	20 lux
Time delay of switch ON or OFF	cca 20 s
Adjustment range	cca 2 - 200 lux
Working temperature	- 40 °C ... +50 °C
Protection class	IP65

Connection

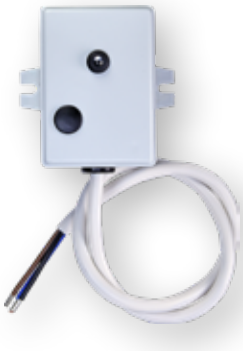


Setting

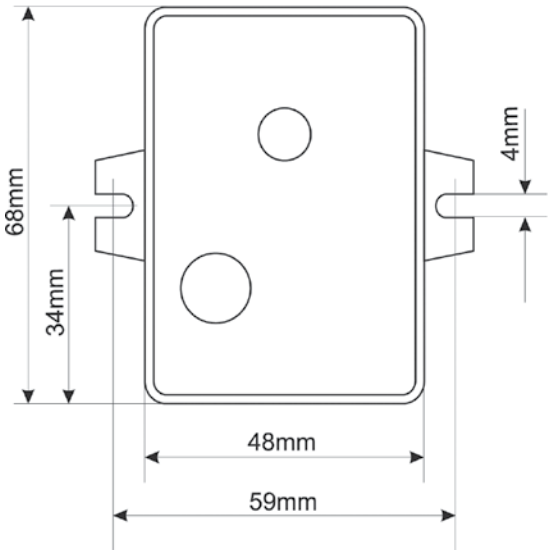


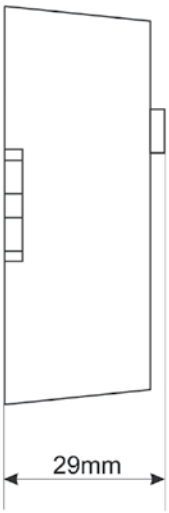
Twilight switch in IP65 TS-16b

Type	Code No.	g	
ETS-16b	002471102	160	1/10



Dimensions





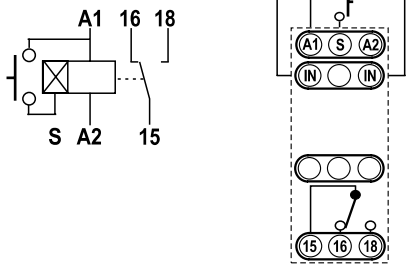
Twilight switch SOU-1 + sensor

Advantages
- 1-module, DIN rail mounted
- Supply voltage: AC 230 V
- Switches according to level ambient light intensity
- Adjustable time pause to eliminate short-term illumination peaks
- Adjustable level of light intensity in 2 ranges 100-50000 Lx and 1-100 Lx
- Controlling input for additional control inputs, e.g. time switch
- External sensor, protection degree IP55, suitable for mounting on the wall (supplied by switch)
- Output contact: 1x changeover 16A / AC1
- LED output indication

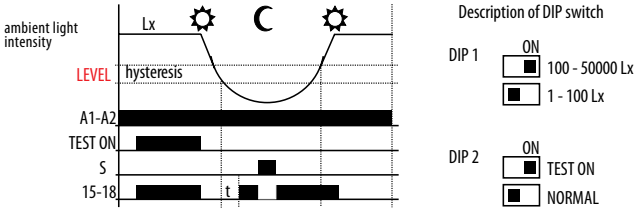
Technical data

Supply	A1-A2
Supply voltage AC 230	230 V AC (50-60 Hz)
Consumption AC 230	max. 12 VA AC / 1,8 W
Supply voltage tolerance	- 15%; + 10%
Supply indication	green LED
Time dwell	0-2 min
Time dwell setting	potentiometer
Measuring range 1)	1-100 Lx
Measuring range 2)	100-50000 Lx
Output	
Number of contacts	1xCO
Rated current	16/AC1
Breaking capacity	4000 VA/AC1, 384 W/DC
Inrush current (duty factor 10%)	30 A/<3 s
Switching voltage	250 V AC1/24 V DC
Min. breaking capacity DC	500 mW
Output indication	red LED
Mechanical life	$3x10^7$
Electrical life	$0,7x10^5$
Controlling	
Voltage	230 V AC
Consumption of input	0,8-530 mVA
Load between S-A2	yes
Glow-lamps	yes, max. 4 pcs (at 1 ms)
Terminals	A1-S
Impulse length	min. 25 ms/ max. unlimited
Reset time	150 ms
Operating temperature	-20...+55 °C
Storage temperature	-30...+70 °C
Electrical strength	4 kV (supply - output)
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP 40 from frontal panel
Connection cable length for sensor	max. 50 m (standard wire)
Overvoltage category	III
Pollution degree	2
Max. cable size	2,5 mm^2
Dimensions	90x17, 6x64 mm
Standards	EN 60255-6, EN 61010-1

Connection



Function



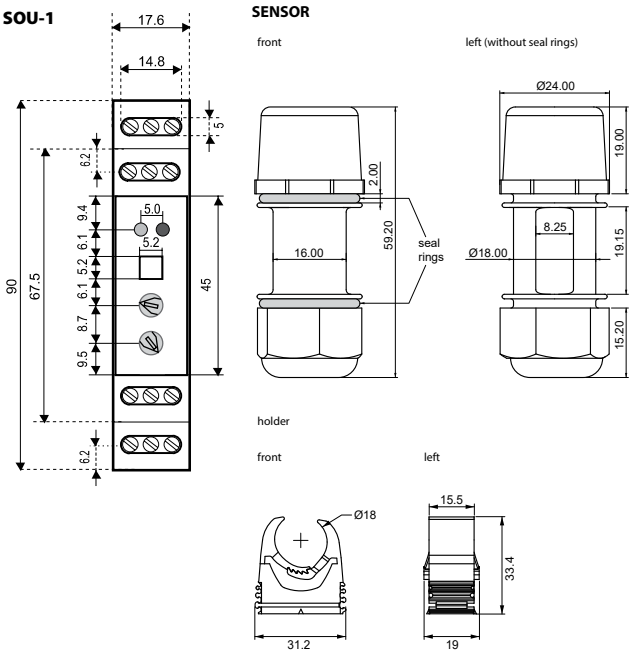
INSTRUCTIONS

Twilight switch SOU-1

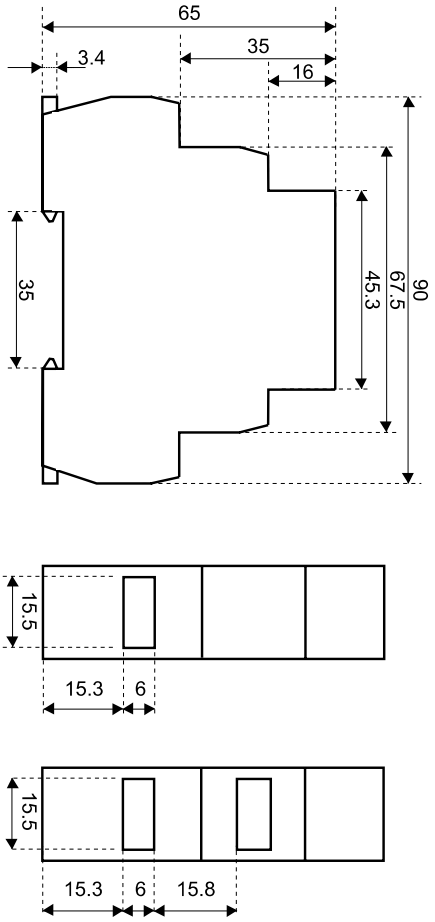
Type	Code No.	g	
SOU-1	002470011	65	1

* Sensor for twilight switch SOU-1 also available separately (code No. 002470052)
Sensor tolerance ±33%

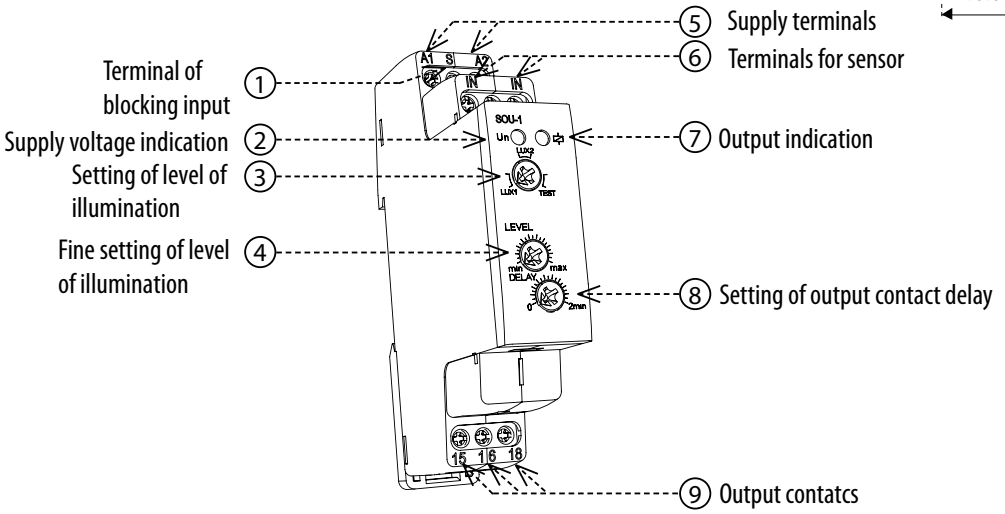
Dimensions



1-module design



Description



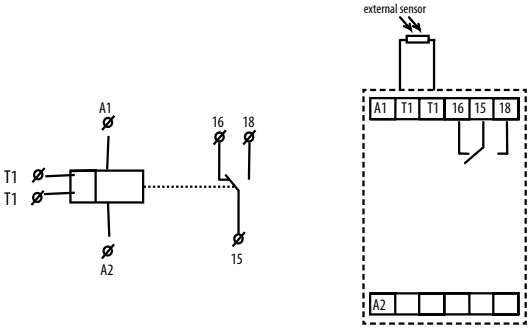
Twilight switch with digital time switch SOU-2 + sensor

Advantages
- 2-module, DIN rail mounting
- Supply voltage: AC 230 V
- Adjustable light intensity 1-50000 lx
- Serves for control of lights on the basis of ambient light intensity and real time (combination of SOU-1 and time switch clock SHT-1 in one device)
- The advantage of real time consists in the blocking function of the twilight switch in the case of an uneconomical use of lights (night hours, weekends etc.)
- Function of random switching enables simulation of presence when nobody is in the building
- Switching: according to the program (AUTO) /permanently manual / random (CUBE)
- External sensor IP65 is suitable for mounting on the wall/ in panel (cover and sensors are part of delivery)

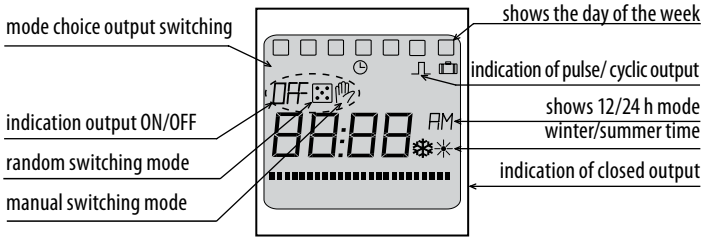
Technical data

	SOU-2
Supply	A1-A2
Supply voltage	230 V AC (50-60Hz)
Consumption	max. 3,5 VA
Supply voltage tolerance	-15% ; +10%
Back-up supply	✓
Summer/winter time	automatic
Output	
Number of contacts	1 changeover (AgNi)
Rated current	8 A / AC1
Breaking capacity	2500 VA / AC1, 240W / DC
Switching voltage	max. 250 V AC1 / 24 V DC
Min. breaking capacity DC	500 mW
Mechanical life	$1x10^7$
Electrical life	$1x10^5$
Time circuit	
Back-up supply	3 years
Accuracy	max. +/- 1s. day (23°C)
Minimal interval	1 min
Data stored for	min. 10 years
Program circuit	
Illumination range	1-50000 Lx
Program place number	100
Program	daily, weekly
Data readout	LCD display
Controlling	
Operating temperature	-20...+55 °C
Storage temperature	-30...+70 °C
Electrical strength	4kV (supply - output)
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP 20 from front panel
Overvoltage category	III
Pollution degree	2
Max. cable size	2.5 mm^2
Dimensions	90 x 35,6 x 64 mm
Standards	EN 61812-1, EN 60669-1, EN 60669-2-1

Connection



Controlling elements



WATCH THE VIDEO

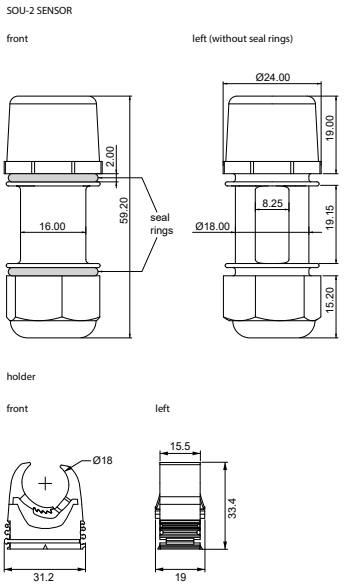
INSTRUCTIONS

Twilight switch with digital time switch SOU-2 + sensor

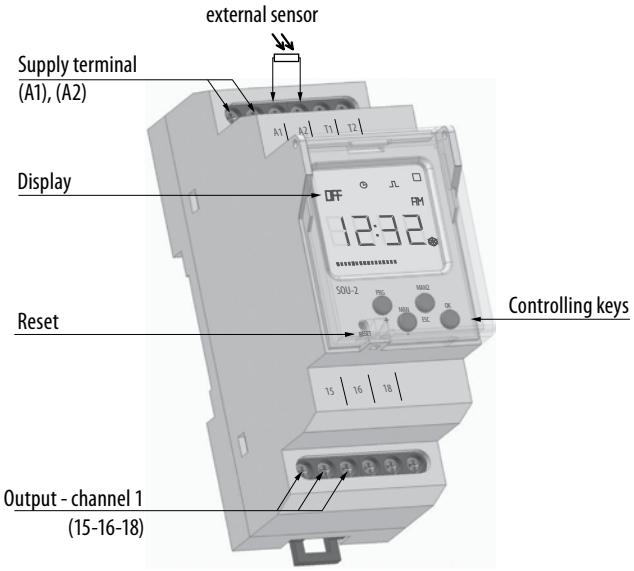
Type	I_n [A]	Code No.	g	
SOU-2 + senzor	16	002470020	130	1

* Sensor for twilight switch SOU-2 also available separately (code No. 002470302)
Sensor tolerance ±33%

Dimensions



Description



Time switch ASTROCLOCK-2

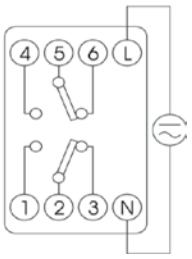
Description
The ASTROCLOCK-2 is a time switch designed to control luminous loads in function of dawn and dusk times. It includes a program that automatically adjusts the dawn lighting-up and dusk switching-off times, without sensors and any need for maintenance. The geographic position location is set up by entering geographic coordinates of location where operating or with selecting nearest city from built in list. This product successfully replaces twilight switches with dusk(light) sensor (photo cell).
Its small size of only two modules makes it ideal for installation on distribution boards with little available space. The unit includes 40 memory spaces in two independent circuits that can be programmed in an astronomic or with fixed time operation or combination.
Advantages

- 2 module – DIN rail mounting.
- Supply voltage: 230V 50/60 Hz.
- Two independent programmable output contacts 2x16A (AC1).
- 40 daily and weekly programs with astronomical or fixed-time manoeuvres.
- Daily astronomical adjustment with offset possibility(±delay).
- Option of automatic switching between summer and winter time.
- Backup power supply: Repaceable CR2032 battery(included).
- High-contrast backlit display.
- Menu languages: ENG, SLO, HR/SRB/BiH, POL, RUS.
- Countries with biggest cities directly supported: Poland, Slovenia, Estonia, Lithuania, Latvia, Russia, Ukraine, Bosnia and Herzegovina, Croatia, Macedonia, Serbia.
- Other cities supported through entering geographic coordinates (zone latitude and longitude).

Technical data

Rated voltage As indicated in the device	230V~ /50-60Hz
Tolerance	± 10%
No. of output contacts	2
Rated current/switching voltage	2x 16A / 250 V~
Maximum recommended loads (N.A)	See Electrical scheme and parameters
Consumption	16 VA (1,3 W)
Display	back-lit liquid crystal display
Accuracy	± 1 s / day at 23 °C
Temperature effect on accuracy	± 0.15 s / °C / 24 h
Power reserve	4 years (without connection to mains), 48 h (without battery and without connection to mains)
Software class and structure	Class A
Memory spaces	40
Types of manoeuvres	SUNRISE, SUNSET, FIXED TIME: ON/OFF, REDUC.
Astronomical adjustment	Daily
Operating temperature	-10 °C ... +45 °C
Transport and storage temperature	-20 °C ... +60 °C
Pollution degree	2
Protection level	IP 20 (EN60529)
Overvoltage category	Class II under correct mounting conditions
Transient impulse voltage	2.5 kV
Keyboard access cover	Sealable
Connection	With screw terminal for section conductors of 4mm² maximum section
Battery	CR2032 - 3 V - 220 mAh
Size	2 DIN modules (35 mm)
Standards	EN 60730-1:2011, EN 60730-2-7:2010 + AC:2011

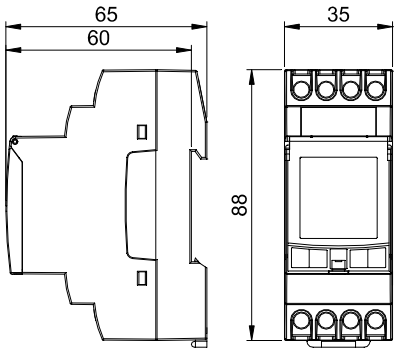
Electrical scheme and parameters

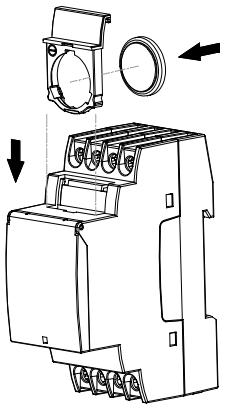


Incandescent	Fluorescent	Low voltage halogen (12 V AC)	Halogen (230 V AC)
3000 W	1200 VA	2000 VA	3000 W

Low consumption lamps	Downlights	LED
600 VA	400 VA	90 VA

Dimensions





Time switch ASTROCLOCK-2

Type	I_n [A]	Code No.	g	
ASTROCLOCK-2	16	002472051	166	1/120

WATCH THE VIDEO

INSTRUCTIONS

Digital time switch ETICLOCK-R1

Description
ETICLOCK-R1 is a digital time switch designed to control an electrical installation. Different types of operations: ON and OFF at a set time, shortterm operations or pulses (1 to 59 seconds) and repetitive cycles (1 to 59 seconds or 1 minute to 23 hours and 59 minutes) applied to one channel (C1). It includes a series of additional functions such as: automatic DST changes, 4 holiday periods, adjustable screen brightness. Menus can be displayed in several languages (ENG, SLO, HR/SRB/BiH, POL, RUS). One voltage free changeover output (channel) allows programming of up 40 operations (programs).

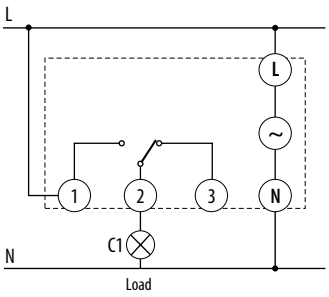
Advantages:

- Rated voltage and frequency: As indicated on the device (230 V AC 50-60Hz)
- Voltage free programmable changeover output contact: 1x16 (10) A / 250 V AC
- Automatic DST change by country can be disabled
- On-screen operating schedule
- Display screen: Back-lit LCD, Menu languages: English, Slovenian, HR/SRB/BiH , Polish, Russian.
- Memory spaces: 40 programs (operations)
- Power reserve:
- 10 years (with 4 years replaceable CR2032 battery and no network connection)
- 48 h (without battery or empty and no network connection)
- Types of operations: ON/OFF, PULSE (1 to 59 sec.) and CYCLES (1 to 59 sec. or 1 min to 23h and 59 min)
- Size: 2 DIN modules (35 mm)

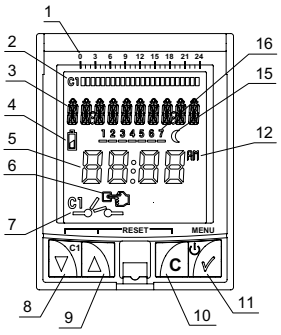
Technical data

	ETICLOCK-R1
Rated voltage and frequency As indicated on the device	(230 V~ 50-60Hz)
Breaking capacity	μ 1x16 (10) A / 250 V AC
Own consumption	16 VA (1.3 W) max.
Contact	AgSnO2 switched
Display screen	LCD
Running accuracy	± 1 s / day at 23 °C
Accuracy variation with temperature	± 0.15 s / °C / 24 h
Power reserve	4 years (with battery and no network connection)
	48 h (no battery and no network connection)
Memory spaces	40
No. of channels	1
Types of operations	ON/OFF, PULSE (1 ... 59 sec.) & CYCLES (1 ... 59 sec. / 1 min ... 23h, 59 min)
Operating temperature	-10 °C ... +45 °C
Transport and storage temperature	-20 °C ... +60 °C
Pollution degree	2
Protection level	IP 20 (EN60529)
Protection class	II under correct mounting conditions
Transient impulse voltage	2.5 kV
Temperature for the ball test	+ 80 °C (21.2.5)
Keyboard access cover	Sealable
Connection	With screw terminal for wire cross section of up to 4mm²
Battery	CR2032 - 3 V - 220 mAh
Size	2x DIN mod. (35 mm)
Standards	EN 60730-1:2011, EN 60730-2-7:2010 + AC:2011

Connection



Controlling elements

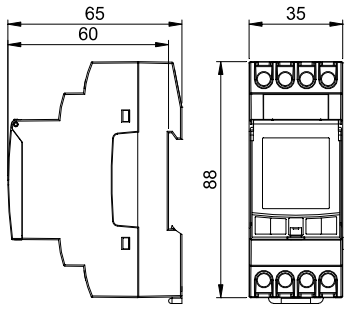


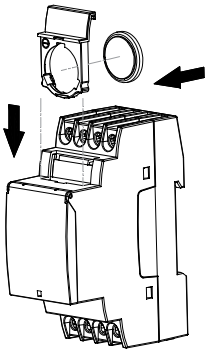
1. Time scale
2. Schedules
3. Text line
4. Low-battery symbol
5. Hour / Date
6. C1 manual operation (blinking)/ C1 permanent manual (fixed)
7. C1 relay status symbol
8. Scroll down / C1 manual operation
9. Go up
10. Cancel option / Go back
11. Accept option / Enter the menu / Switch on the device without power
12. 12 H / 24 H
13. Days of the week

Digital time switch ETICLOCK-R1

Type	I_n [A]	Code No.	g	
ETICLOCK-R1	16	002472053	136	1/10

Dimensions





INSTRUCTIONS

Maximum recommended loads

Load	Designation	Max. load
Incandescent		3000 W
Fluorescent		1200 VA
Low voltage halogen (12 V)		2000 VA
Halogen (230 V)		3000 W
Low consumption lamps		600 VA
Downlights		400 VA
LED	LED	90 VA

Current monitoring relay PRI-51

Advantages

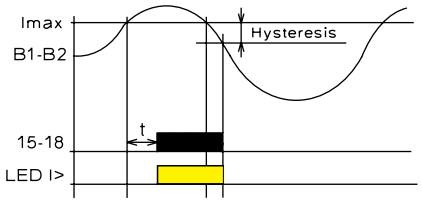
- To monitor heating of rods in shunts, heating of cables, to indicate current flowing, to monitor consumption of one-phase electrical loads
- 1-phase, 1-module, DIN rail mounting
- Universal supply voltage AC 24 V - 240 V and DC 24 V
- Output contact: 1x changeover 8 A/AC1

- Supply is galvanically separated from measured current
- Adjustable delay 0,5 - 10 s to eliminate short current peaks
- Fluent adjusting actuating current via potentiometer, choice of 5 ranges: AC 0.1-1 A, AC 0.2-2 A, AC 0.5-5 A, AC 0.8-8 A, AC 1.6-16 A, AC 0.1 - 10 A

Technical data

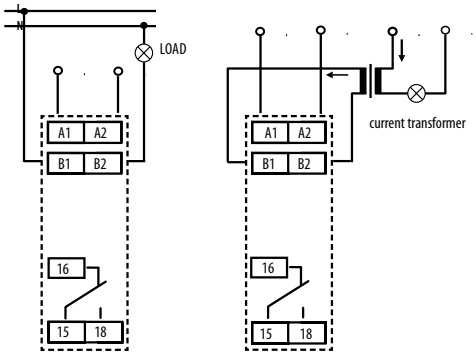
	PRI-51					
Supply circuit						
Supply	A1-A2					
Universal supply	24-240V AC / 24 V DC (50-60 Hz AC)					
Consumption	max. 1,5 VA					
Supply voltage tolerance	-15% - +10%					
Measuring circuit						
Load	between B1 - B2					
Current ranges	PRI51/1	PRI51/2	PRI51/5	PRI51/8	PRI51/16	PRI-51/0.1-10
	AC 0.1-1 A	AC 0.2-2 A	AC 0.5-5 A	AC 0.8-8 A	AC 1.6-16A	AC 0.1 - 10A
Inrush overload <1ms	100 A					
Max. permanent current	1A	2A	5A	8A	16A	10A
Time setting	potentiometer					
Time ranges	0.5 s-10 s					
Setting accuracy - mechanical	5%					
Time deviation	< 1 %					
Limit values tolerance	5%					
Temperature coefficient	< 0.1 % / °C					
Hysteresis	5%					
Output						
Number of contacts	1 x changeover (AgNi)					
Rated current	8 A / AC1					
Breaking capacity	2500 VA / AC1, 240W / DC					
Output indication	green / red LED					
Controlling						
Operating temperature	-20...+55 °C					
Storage temperature	-30...+70 °C					
Electrical strength	4 kV (supply-output)					
Operating position	any					
Mounting	DIN rail EN 60715					
Protection degree	IP 40 from front panel					
Overvoltage category	III.					
Pollution degree	2					
Max. cable size	2,5 mm²					
Dimensions	90 x 17,6 x 64 mm					
Standards	EN 60255-6, EN 61010-1					

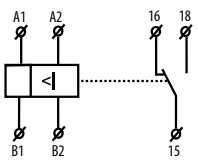
Functions



Connection

Example connection: PRI-51 with current transformer for current range increase

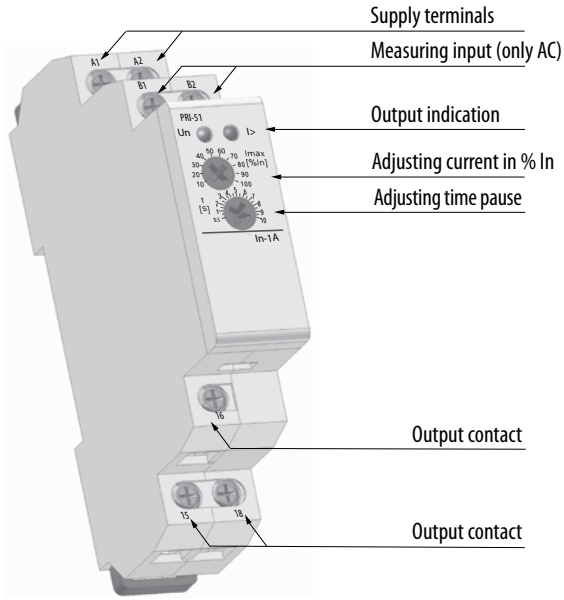




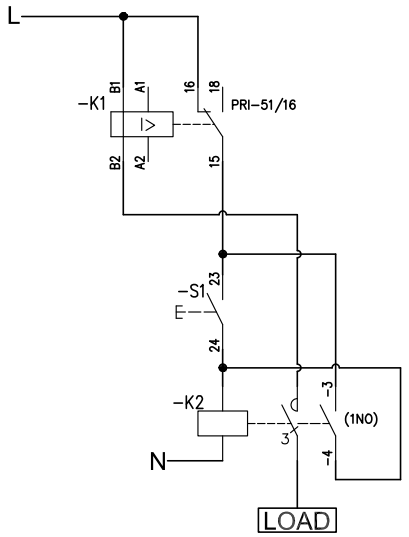
Current monitoring relay PRI-51

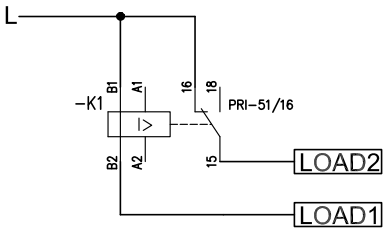
Type	I_n [A]	Code No.	g	
PRI - 51/1	1	002471816	58	1/10
PRI - 51/2	2	002471817	58	1/10
PRI - 51/5	5	002471818	58	1/10
PRI - 51/8	8	002471819	58	1/10
PRI - 51/16	16	002470019	58	1/10
PRI-51/0.1-10	0,1 - 10	002470298	87	1/10

Description



INSTRUCTIONS





LOAD1 -> Critical load - always available (Iset<ILOAD1)
LOAD2 -> Optional load - only when LOAD1 not operating

In case of overload, all the loads will shutdown.

Voltage monitoring relay HRN-31, HRN-32, HRN-36

Advantages

- It is used to monitor the value of alternating or direct voltage in 1-phase circuits.
- Supply voltage from monitored voltage.
- Monitors voltage exceeding the upper voltage level (Umax) and falling below the lower voltage level (Umin) – according to the selected function.
- Smooth adjustment of both voltage levels – the lower level Umin is set in % of the upper level Umax.
- Adjustable time delay (to eliminate short-term voltage drops and spikes).
- Option to select functions with fault state memory (Latch).
- The fault state memory can be reseted by the control input (R).
- Measures true root mean square value of the voltage - TRUE RMS.
- Type HRN-32/2 has an independent output contact for each voltage level

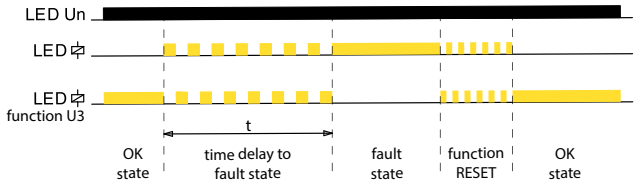
Technical data

	HRN-31, HRN-32, HRN-36		
Type	HRN-31	HRN-32/2	HRN-36
Supply/monitored terminals	A1-A2	A1-A2	A1-A2
Supply/monitored voltage	AC/DC 48 – 276 V (AC 50-60 Hz)	AC/DC 48 – 276 V (AC 50-60 Hz)	DC 6 – 30 V
Consumption (max.)	2.5 VA/0.55 W	2.7 VA/0.65 W	0.35 W
Upper level Umax	160-276 V AC	160-276 V AC	12-30 V DC
Bottom level Umin	30-95% $U_{max.}$	30-95% $U_{max.}$	50-95% U_{max}
Max. permanent voltage	AC 276 V	AC 276 V	DC 36 V
Peak overload (1 s)	AC 290 V	AC 290 V	DC 48 V
Time delay (d)	300 ms		
Time delay (t)	adjustable, 0.5 – 10 s		
Setting accuracy (mechanical)	5 % – mechanical setting		
Repeat accuracy	< 1 %		
Temperature coefficient	< 0,1% / °C		
Hysteresis (fault to OK)	5 % (functions O1, U1, W) Umax – Umin (functions O2, U2, U3)		
Output			
Number of contacts	1 x changeover (AgNi)	1× changeover for each level	1 x changeover (AgNi)
Rated current	16 A/AC1; 1 HP|240 Vac, 1/2 HP|120 Vac; PD. B300		
Breaking capacity	4000 VA/AC1, 384 W/DC1		
Switching voltage	max. 250 V AC1 / 24V DC		
Power dissipation (max.)	1.2 W	2.4 W	1.2 W
Mechanical life	10^7		
Electrical life	10^5		
Controlling			
Operating temperature	-20...+55 °C		
Storage temperature	-30...+70 °C		
Dielectric strength	AC 4 kV (supply – output)		
Operating position	any		
Mounting	DIN rail EN 60715		
Protection degree	IP40 front panel / IP20 terminals		
Overvoltage category	III.		
Pollution degree	2		
Cross-wire section – solid/ stranded with ferrule (mm2)	max. 1× 2.5, 2× 1.5/ max. 1× 2.5 (AWG 14)		
Dimensions	90 × 17.6 × 64 mm		
Standards	EN 60255-1, EN 60255-26, EN 60255-27		

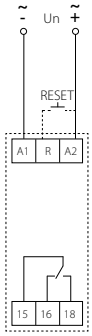
Voltage monitoring relay HRN-31, HRN-32, HRN-36

Type	I_n [A]	Voltage range	Code No.	g	
HRN-31	16	AC/DC 48 – 276 V	002471450	82	1/10
HRN-36	16	DC 6 – 30 V	002471451	95	1/10
HRN-32/2	16	AC/DC 48 – 276 V	002471452	103	1/10

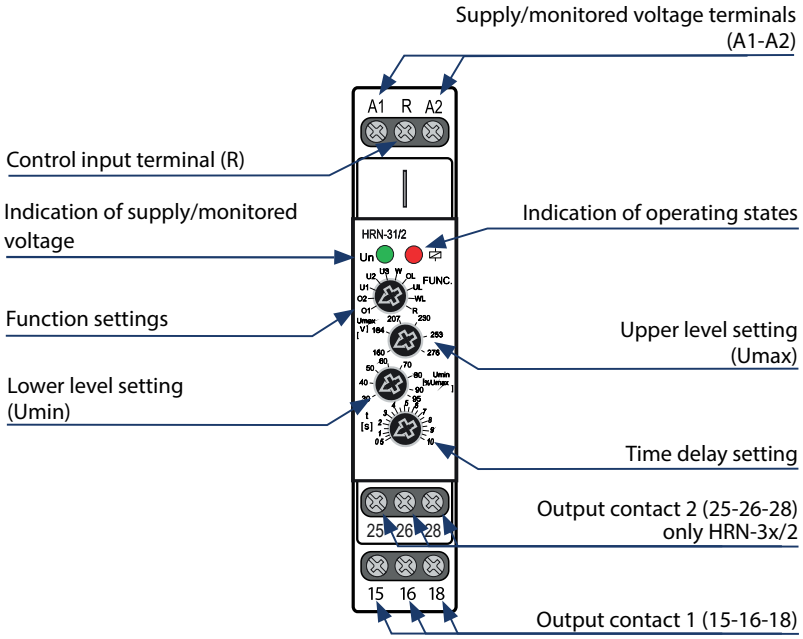
Functions



Connection

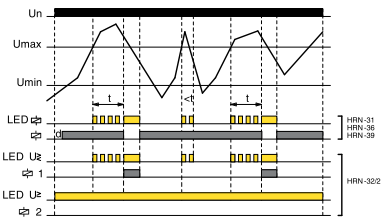


Description

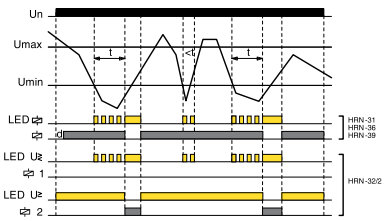


Function description

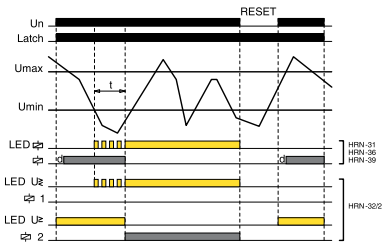
O1 OVER (hysteresis 5%)



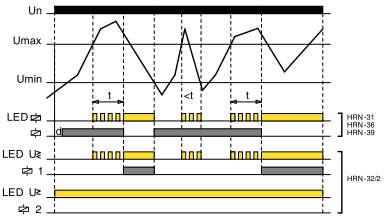
U1 UNDER (hysteresis 5%)



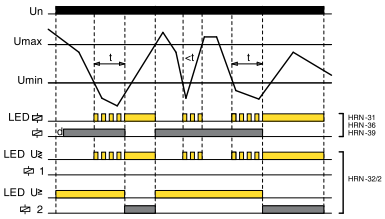
UL UNDER + Latch



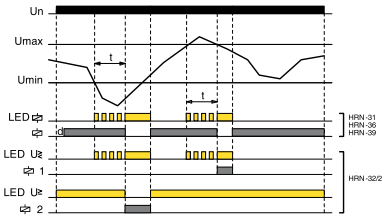
O2 OVER (hysteresis to Umin)



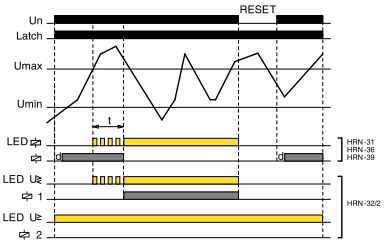
U2 UNDER (hysteresis to Umax)



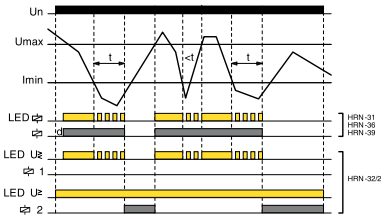
W WINDOW (hysteresis 5%)



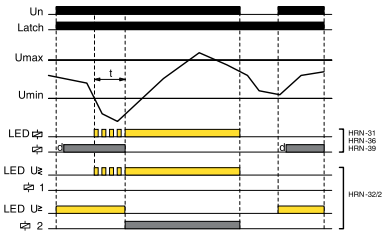
OL OVER + Latch



U3 UNDER (hysteresis to Umax)



WL WINDOW + Latch



OVER:

If the value of the monitored voltage is lower than the set upper level „Umax", the output contact is closed. If the „Umax" is exceeded, the output contact will opens after the set delay (fault state).

If the voltage falls below the fixed hysteresis (O1 function) or the set lower level „Umin" (O2 function), the output contact will closes again.

If the OL function (OVER + Latch) is selected, when the upper voltage level „Umax" is exceeded, the output contact remains open even when the voltage returns from the fault state.

Fault memory reset can be done in two ways:

- Short-term interruption of supply voltage
- Using the control input (R)
- By setting the function switch to position R (RESET) or any function without memory fault

The RESET state lasts for 3 s after switching the function switch from the R position to a function with a memory fault (UL, OL, WL).

When moving to any other function from the R position, this delay does not apply.

UNDER:

If the value of the monitored voltage is higher than the set lower level „Umin", the output contact is closed. When the voltage drops below the „Umin", output contact opens after the set delay (fault state).

If the voltage exceeds the fixed hysteresis (function U1) or the set upper level „Umax" (function U2, U3), the output contact closes again.

If the UL function (UNDER + Latch) is selected, when the voltage drops below the lower level „Umin", the output contact remains open even when returning from the fault state. Fault memory reset can be done as in the previous case.

WINDOW:

If the value of the monitored voltage is lower than upper level „Umax" and at the same time higher than lower level „Umin", the output contact in closed. If the „Umax" is exceeded or drops below the „Umin", output contact opens after the set delay (fault state).

To return from the fault state, a fixed hysteresis is applied.

If the WL function (WINDOW + Latch) is selected, the fault state is again stored in memory and output contact stays open, even when returning from the fault state. Fault memory reset can be done as in the previous cases.

Over/undervoltage monitoring relay HRN-54, HRN-54N

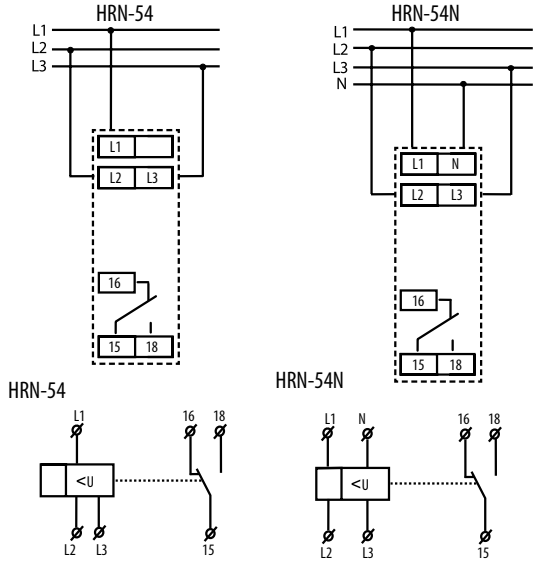
Advantages

- Serves to monitor voltage , phase failure and sequence in switchboards, protection of devices in 3-phase mains
- 1-module, DIN rail mounting
- It is possible to set upper and lower level of monitoring voltage
- Adjustable time delay eliminates short voltage peaks and failures in the mains
- Faulty state is indicated by red LED and by breaking output relay contact
- Output contact: 1x changeover 8 A /250 V AC1
- If the supply voltage falls below 60 % U_n (U_{off} lower level) the relay immediately breaks with no delay
- HRN-54 - supply from all phases which means that the relay is functional also in case when one phase is faulty
- HRN-54N - supply L1-N, means that relay monitors also failure of neutral wire

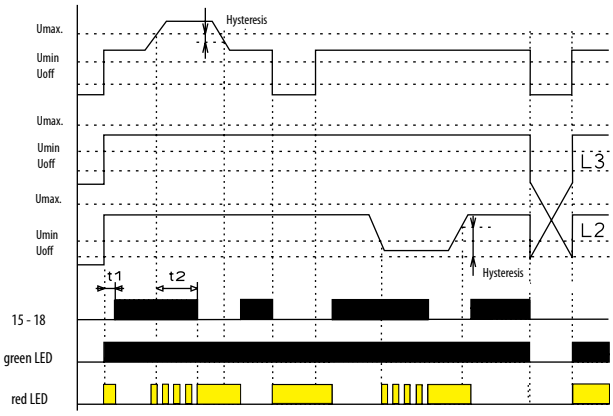
Technical data

	HRN-54	HRN-54N
Supply and measuring	L1,L2,L3	L1,L2,L3,N
Supply	L1,L2,L3	L1,N
Supply/measured voltage	3 x 400 V	3 x 400 V/ 230 V
Level U_{min}	75 - 95% U_n	
Level U_{max}	105 - 125% U_n	
Consumption	max. 2 VA	
Hysteresis	5 %	
Max. permanent overload	3 x 460V AC	3 x 265V AC
Peak overvoltage <1ms.	3 x 500V AC	3 x 288V AC
Time delayT1	max. 500 ms.	
Time delayT2	0.1 - 10 s.	
Output		
Number of contacts	1 x changeover (AgNi)	
Rated current	8 A / AC1	
Breaking capacity	2500 VA / AC1, 240W / DC	
Inrush current	10 A	
Switching voltage	max. 250 V AC1 / 24 V DC	
Min. breaking capacity DC	500mW	
Output indication	red LED	
Mechanical life	$1x10^7$	
Electrical life	$1x10^5$	
Reset time	max. 150 ms.	
Controlling		
Operating temperature	-20...+55 °C	
Storage temperature	-30...+70 °C	
Electrical strength	4 kV	
Operating position	any	
Mounting	DIN rail EN 60715	
Protection degree	IP 40 from front panel	
Overvoltage category	III	
Pollution degree	2	
Max. cable size	2.5 mm^2	
Dimensions	90 x 17,6 x 64 mm	
Standards	EN 60255-6, EN 61010-1	

Connection



Functions



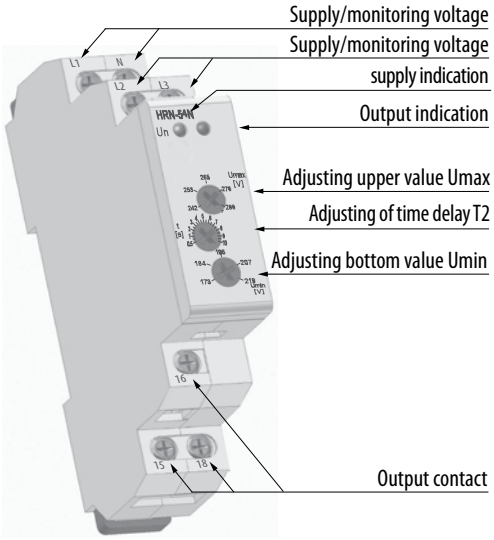
Over/undervoltage monitoring relay HRN-54, HRN-54N

Type	I_n [A]	Code No.	g	
HRN-54	8	002471416	69	1/10
HRN-54N	8	002471412	67	1/10

Function description

Relay in 3-phase main monitors size of phase voltage. It is possible to set two independent voltage levels and thus it is possible to set two independent voltage levels and monitor e.g. undervoltage and overvoltage independent. In normal state when voltage is within set levels, output relay is closed and red LED is off. In case voltage exceeds or falls below the set levels, output relay breaks and red LED shines (LED indicates faulty state – flashes when timing). In case of In case supply voltage falls below 60 % Un (U_{OFF} lower level) relay immediately breaks without delay and faulty state is indicated by red LED. In case timing is in progress and faulty state is indicated, timing is immediately stopped.

Description



Frequency and voltage monitoring relay HRN-100

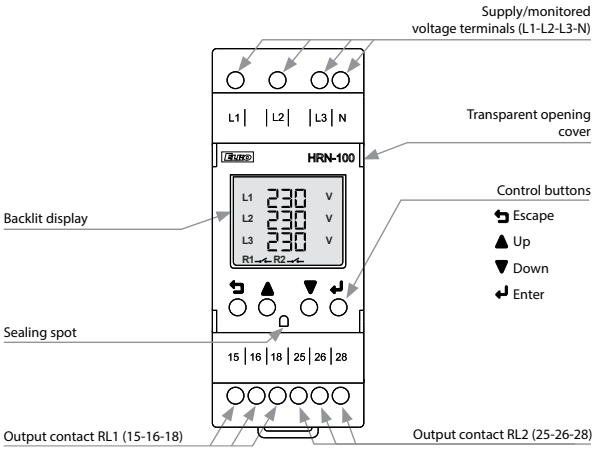
Description:
Multifunction voltage and frequency monitoring relay with LCD display for protection of devices connected to 3 phase network.

Advantages:
- 3-wire or 4-wire connection (with or without neutral).
- Monitoring of upper and lower voltage & frequency in 3-phase circuits, phase sequence, failure and asymmetry incl. neutral fail (only in 4-wire connection).
- The device is supplied from monitored voltage.
- Both output contacts can be set individually.
- Measures real effective value of AC voltage (True RMS).
- Optional response delay of the output contact to the measured fault state or transition from the fault state to the OK state incl. delayed response of output contacts after connecting the power supply.
- Possibility of automatic or manual transition from fault state (memory).
- Optional closing or opening of the output contact when measuring a fault state (Fail Safe / Non Fail Safe).
- Password protection against unauthorized changes to settings.
- Digital backlit display with the possibility of monitoring the current state of the network, incl. possible failures.
- The last five fault states are stored in a history that can be viewed retrospectively.
- Sealable transparent cover for display and controls.

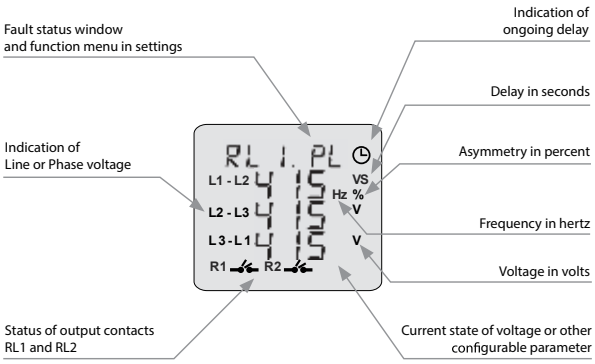
Technical data

	HRN-100
Supply	2
Supply and measuring terminals	L1, L2, L3, (N)
Supply and monitored voltage	U_{LN} = 3 ~ 90 - 288 V, (AC 45-65 Hz) U_{LL} = 3 ~ 155 - 500 V, (AC 45-65 Hz)
Power consumption (max.)	5 VA
Measuring circuit	
Selection of the measured circuit	Phase voltage - 3 phase, 4 wire Line voltage - 3 phase, 3 wire
Adjustable upper (OV) and lower (UV) voltage levels	Phase voltage: 90 - 288 VAC Line voltage: 155 - 500 VAC
Upper (HC) / lower (LC) limit voltage	Phase voltage: 310 VAC / 85 VAC Line voltage: 535 VAC / 150 VA
Adjustable upper (OF) and lower (UF) frequency level	45 - 65 Hz
Adjustable asymmetry	5 - 99 VAC / 2 - 50%
Adjustable voltage and frequency hysteresis level	3 - 20 VAC (OV,UV, HC, LC) 0.5 - 2 Hz (OF, UF)
Adjustable hysteresis asymmetry	3 - 99 VAC / 2 - 15%
Accuracy of measured voltage	+/- 5V
Accuracy of measured frequency	+/- 0,3 Hz
Adjustable delay after supply connection P_{on}	1.5 sec 0 - 999 s (HW initialization 250 ms)
Adjustable delay T_{on}	0,5 - 999 s
Adjustable delay T_{off}	0,1 - 999 s
Fixed delay	<100 ms (phase sequence, failure) <200 ms (HC, LC), <500 ms (neutral fail)
Output	
Number of contacts	2x CO ($AgSnO_2$)
Rated current	5A/AC1
Switching power	1200VA/AC1, 150W/DC1
Switched voltage	240V AC/30V DC
Max. output power dissipation	5W
Mechanical life (AC1)	$1x10^7$
Electrical life	$1x10^5$
Other data	
Operating temperature	-10.. +60 °C
Storage temperature	-20.. +70 °C
Electrical strength	4kV (supply - output)
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP20 terminals/IP40 from front panel
Overvoltage category	III
Pollution degree:	2
Cable size	max. 1x 2,5 mm^2, max. 2x 1,5 mm^2/ with sleeve max. 1x 2,5 mm^2
Dimensions:	90 x 36 x 66,5 mm
Standards:	EN 60255-1:2010, EN 60255-26 + AC:2013, EN 60255-27:2014, EN 50581:2012 + Z1:2019

Description



Controlling elements

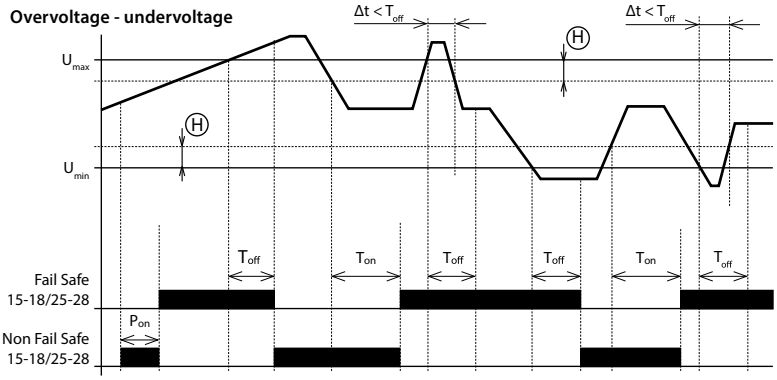


INSTRUCTIONS

Frequency and voltage monitoring relay HRN-100

Type	I_n [A]	Code No.	g	
HRN-100	2 x 5 A (AC1)	002470303	132	1

Overvoltage - undervoltage

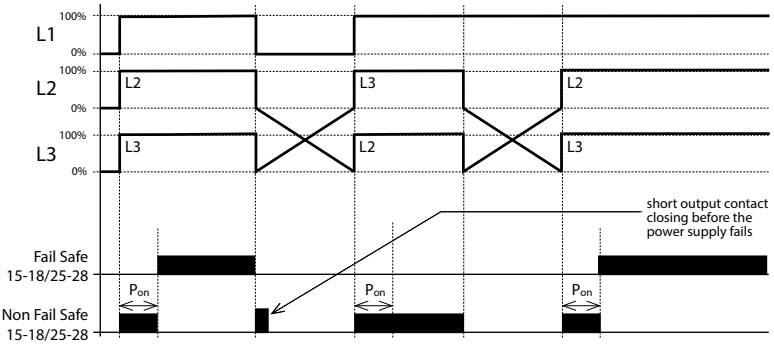


Graph legend:
P_{on} - Power ON delay (delay after power supply connection)
P_{on} = 0 - 999 s (min. 250 ms hardware initialization)
T_{on} - ON Delay (delay to OK state)
T_{on} = 0,5 - 999 s
T_{off} - OFF delay (delay to fault state)
T_{off} = 0,1 - 999 s
T_{off} - Adjustable for OV, UV, OF, UF & asymmetry faults
T_{off} - Phase sequence, failure <100ms;
Neutral fail <500ms

Δt - Duration of the fault state
Ⓗ Hysteresis

- After the supply/monitored voltage is connected, the delay P_{on} starts timing - during the timing the output contact is in a fault state - in the FAIL SAFE mode it is open. After the delay, if the monitored voltage is in the range U_{min}... U_{max}, the output contact closes.
- If the monitored voltage exceeds the set value U_{max}, the time delay to the fault state (T_{off}) starts. After the delay, the output contact opens.
- If the monitored voltage falls below the U_{max} value reduced by the set hysteresis, the time delay start to OK state (T_{on}). After the delay, the output contact closes.
- If the duration of the fault state (Δt) is shorter than the set value T_{off}, the status of the output contact does not change.
- If the monitored voltage falls below the value U_{min}, the time delay to the fault state (T_{off}) starts. After the delay, the output contact opens.
- If the monitored voltage exceeds the value U_{min} increased by the set hysteresis, the time delay start to the OK state (T_{on}). After the delay, the output contact closes.
- If the duration of the fault state (Δt) is shorter than the set value (T_{off}), the status of the output contact does not change.

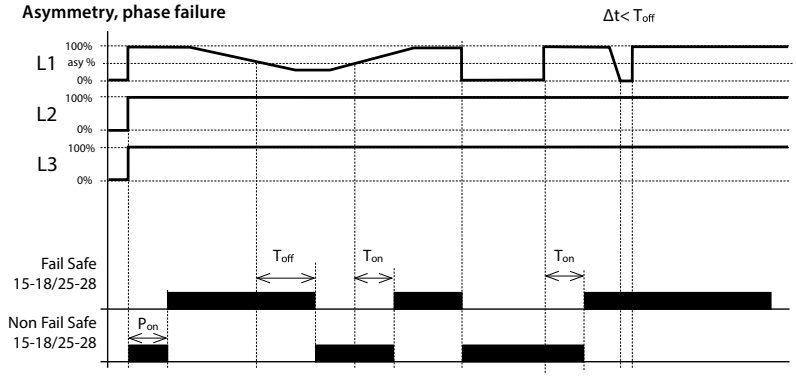
Phase sequence



Graph legend:
P_{on} - Power ON delay (delay after power supply connection)
P_{on} = 0 - 999 s (min. 250 ms hardware initialization)

- After the supply/monitored voltage is connected, the delay P_{on} starts timing - during the timing the output contact is in a fault state - in FAIL SAFE mode it is open. After the delay, if the phase sequence is correct, the output contact closes.
- If the phase sequence is incorrect after the P_{on} delay, the output contact remains open (fault state).

Asymmetry, phase failure



Graph legend:
P_{on} - Power ON delay (delay after power supply connection)
P_{on} = 0 - 999 s (min. 250 ms hardware initialization)
T_{on} - ON Delay (delay to OK state)
T_{on} = 0,5 - 999 s
T_{off} - OFF delay (delay to fault state)
T_{off} = 0,1 - 999 s
T_{off} - Adjustable for OV, UV, OF, UF & asymmetry faults
T_{off} - Phase sequence, failure <100ms;
Neutral fail <500ms

Δt - Duration of the fault state

- After the supply/monitored voltage is connected, the delay P_{on} starts timing - during the timing the output contact is in a fault state - in the FAIL SAFE mode it is open. After the delay, if the phase asymmetry is lower than the set value (absolute or percentage), the output contact closes.
- If the phase asymmetry exceeds the set value, the time delay to the fault state (T_{off}) begins. After the delay, the output contact opens.
- If the phase asymmetry falls below the set value, the time delay starts to OK state (T_{on}). After the delay, the output contact closes.
- If the duration of the fault state (Δt) is shorter than the set value T_{off}, the status of the output contact does not change.
- If a phase failure occurs, the time delay to the fault state (T_{off}) begins. After the delay, the output contact opens.
- If the phase failure resumes, the time delay starts to OK state (T_{on}). After the delay, the output contact closes.
- If the duration of the fault state (Δt) is shorter than the set value T_{off}, the status of the output contact does not change.

Level switch HRH-5

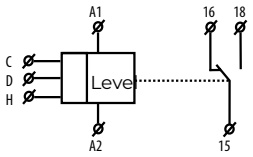
Advantages:

- Relay is designated for monitoring levels in wells, reservoirs, pools, tanks....
- In one device you can choose the following configurations:
- one-level switch of conductive liquids (by connecting H and D)
- two-level switch of conductive liquids
- One-state device monitors one level, two-state device monitors two levels (switches on one level and switches of on another level).
- Choice of function PUMP UP, PUMP DOWN
- Adjustable time delay on the output (0.5 - 10s)
- Sensitivity adjustable by a potentio-meter (5-100kΩ)
- Measuring frequency 10Hz prevents polarization of liquid and raising oxidation of measuring probes
- Galvanically separated supply voltage UNI 24.. 240 VAC/DC
- Output contact 1xchangeover 8A/250V AC1
- 1-module type, mounting onto a DIN rail

Technical data

	HRH-5
Functions:	2
Supply terminals:	A1 - A2
Supply voltage:	24... 240 V AC/ DC
Input:	max. 2 VA
Tolerance of supply voltage:	-15 %; +10 %
Measuring circuit	
Sensitivity (input resistance):	adjustable in range 5 kΩ -100 kΩ
Voltage in electrodes:	max. 3.5 V AC
Current in probes:	<0.1 mA AC
Time response:	max. 400 ms
Max. capacity of probe cable:	max. 400 ms
Time delay (t):	800 nF (sensitivity 5kΩ), 100 nF (sensitivity 100 kΩ)
Time delay after switching on (t1):	adjustable, 0.5 -10 sec
Accuracy	1.5 sec
Accuracy in setting (mechanical):	± 5 %
Output	
Number of contacts:	1x changeover (AgNi)
Rated current:	8 A / AC1
Switched output:	2500 VA , 240 W
Switched voltage:	250 V AC1 / 24 V DC
Min. switched output DC:	500 mW
Mechanical life (AC1):	$1x10^7$
Electrical life:	$1x10^5$
Other data	
Operational temperature:	-20.. +55 °C
Storing temperature:	-30.. +70 °C
Electrical strength:	3.75 kV (supply - sensors)
Operational position:	any
Mounting:	DIN rail EN 60715
Protection degree:	IP 40 from font panel
Overvoltage category:	III
Pollution degree:	2
Profile of connecting wires (mm^2)	max.1x 4, max.2x2.5/ with sleeve max. 1x2.5, 2x1.5
Dimensions:	90 x 17.6 x 64 mm
Weight:	72 g
Applicable standards:	EN 60255-6, EN 61010-1

Symbol

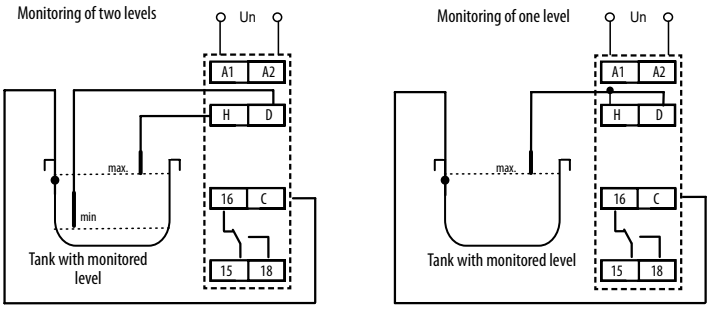


INSTRUCTIONS

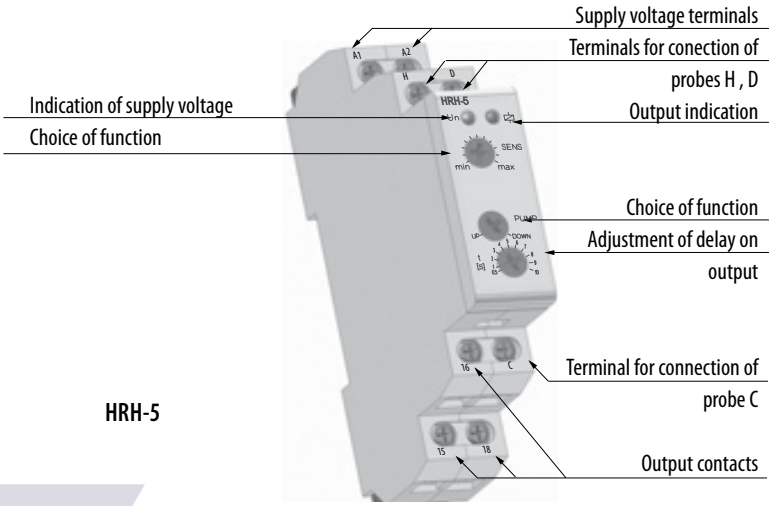
Level switch HRH-5

Type	Code No.	g	
HRH-5	002471715	72	1/8

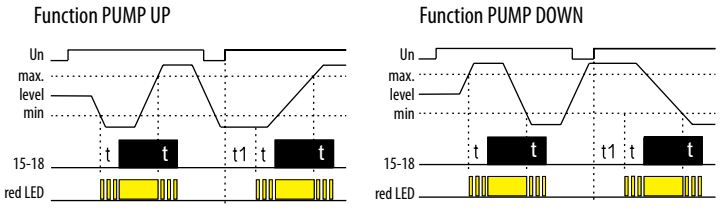
Connection



Description



Functions



Relay is designated for monitoring of levels of conductive liquids with possibility of functions: PUMP UP or PUMP DOWN. To prevent polarization and liquid electrolysis of liquid, and undesirable oxidation of measuring probes, alternating current is used. For measuring use three measuring probes: H- upper level, D- lower level, C - common probe. In case you use a tank made of a conductive material, you can use it as probe C. In case you require monitoring of one level only, it is necessary to connect inputs H and D and connect them to one probe - in this case sensitivity is lowered by half (2.5... 50kΩ). Probe C can be connected with a protective wire of supply system (PE). To prevent undesirable switching out output contacts by various influences (sediment on probes, humidity...) it is possible to set sensitivity of the device according to conductivity of monitored liquid (corresponding to "resistance" of liquid) range 5 up to 100...kΩ. To reduce influences of undesirable switching of output contacts by liquid gorgle in tanks, it is possible to set delay of output reaction 0,5 - 10s.

Level switch HRH-8

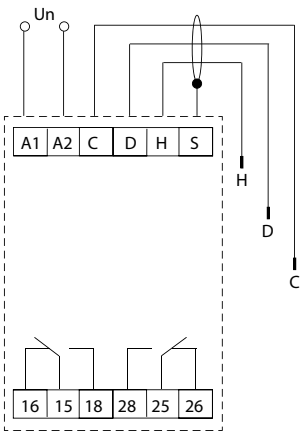
Relay is designed to control the level of conductive liquids in wells, tanks, pools, tankers, reservoirs... (replacement for HRH-1)

- Galvanically isolated supply and guard circuits
- Within one device, the following configurations can be selected:
  - 2x one-level monitoring (in separate tanks)
  - 1x two-level monitoring (in one tank)
  - Pumping from one tank to another
- DIP switch selection on the front panel (8 functions)
- Adjustable probe sensitivity (for each probe separately)
- Adjustable relay switching delay (for each probe separately)
- 10Hz watch frequency prevents polarization of the liquid and increases resistance to interference by network frequency
- 2x output relay (with changeover contact 16A / 250V AC1)
- 3-MODULE design, mounting DIN rail mounting

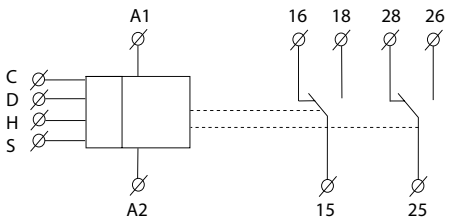
Technical data

		HRH-8
Function		8
Supply terminals		A1-A2
Voltage range		AC 230 V, AC 110 V, AC 400 V, AC/DC 24 V (AC 50 - 60 Hz)
Max load		2,5 W / 5 VA (AC 230 V, AC 110V, AC 400 V), 1,4 W / 2 VA (AC/DC 24 V)
Supply voltage tolerance		-15 %; +10 %
Measuring circuit		
Hysteresis (input - opening)		5 kΩ - 100 kΩ
Voltage on electrode		max. AC 3,5 V
Current in probes		AC < 1 mA
Time reaction		max. 400 ms
Max. cable capacity		800 nF (sensitivity 5kΩ), 100 nF (sensitivity 100 kΩ)
Time delay t		0,5 -10 s
Accuracy		
Setting accuracy (mech.):		± 5 %
Output		
Number of contacts		2x changeover / SPDT (AgNi / Silver Alloy)
Current rating		16 A / AC1
Breaking capacity		4000 VA / AC1, 384 W / DC
Inrush current		30 A / < 3 s
Switching voltage		250 V AC1 / 24 V DC
Output indication		red LED
Mechanical life		$3x10^7$
Electrical life (AC1)		$0,7x10^5$
Other information		
Operating temperature		-20 ... +55 °C
Storage temperature		-30 ... +70 °C
Electrical strength		4 kV (supply - output)
Operating position		any
Mounting		DIN rail EN 60715
Protection degree		IP40 from front panel / IP20 terminals
Overvoltage category		III
Pollution degree		2
Max. cable size (mm^2)	solid wire	max. 1x 2,5 / 2x1,5
	with cavern	1x 1,5 (AWG 12)
Dimensions		90 x 52 x 65 mm
Standards		EN 60255-6, EN 61010-1

Connection



Symbol



Measuring probes

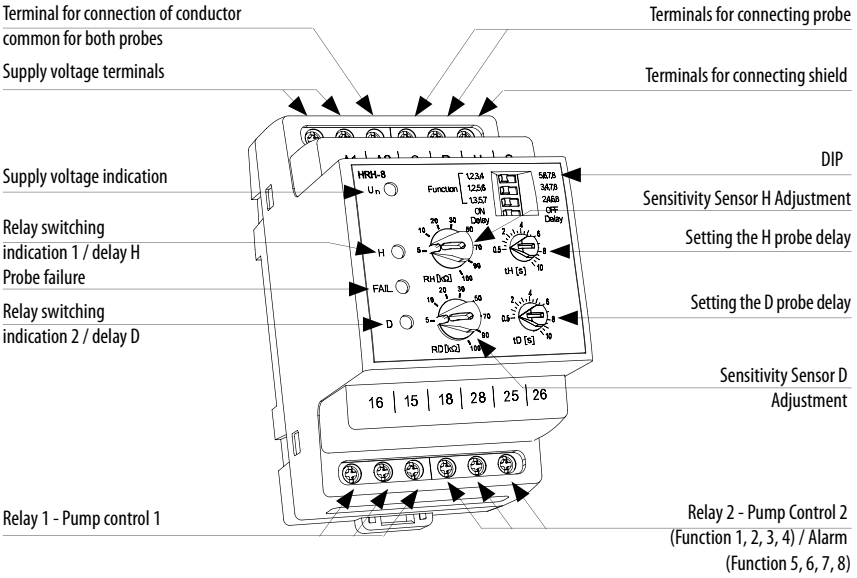
There can be any measuring probe (any conductive contact, it is recommended to use brass or stainless steel).
The probe wire does not need to be shielded, but it is recommended.
When using a shielded wire, the shielding is connected to terminal S.

Level switch HRH-8

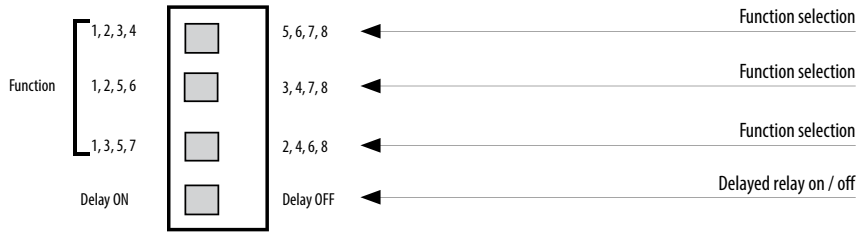
Type	Code No.	g	
HRH-8 230 V AC	002470293	276	1
HRH-8 24V AC/DC	002470294	176	1

HRH-8

Description



Description and importance of DIP switches



Function description

The relay is designed to monitor the level of conductive liquids with a choice of 8 functions:
1) - 2 separate tanks (each with 1 probe) - both PUMP UP (fi lling)
2) - 2 separate tanks (each with 1 probe) - both PUMP DOWN (emptying)
3) - 2 separate tanks (each with 1 probe) - H PUMP DOWN probe, D PUMP UP probe
4) - 2 separate tanks (each with 1 probe) - H PUMP UP probe, probe D PUMP DOWN
5) - both probes in one tank - PUMP UP - maintain level between probes H and D (as HRH-5), relay 1 switches on the pump, relay 2 alarm (level is not between probes H and D)
6) - Both probes in one tank - PUMP DOWN - maintaining the level between probes H and D (as HRH-5), relay 1 switches on the pump, relay 2 alarm (the level is not between probes H and D)
7) - Pumping from the well to the tank - probe D in the well, probe H in the tank. The pump only runs if the probe D is flooded (enough water in the well) and the tank is not full (probe H). The alarm reports a lack of water in the well (probe D is not flooded).
8) - Pumping from the reservoir to the tank - probe D in the reservoir, probe H in the tank. The pump only runs if the probe D is flooded (full reservoir) and the tank is not full (probe H). The alarm reports the status of full tank and reservoir (both probes are flooded).

LED indication: T
he red LED lights up - the corresponding relay is switched on
Red LED flashes - delay timing

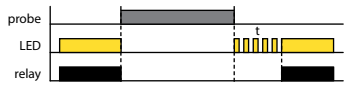
The yellow LED indicates probe failure - Functions 5, 6 probe H is flooded and probe D is not. At the same time both red LEDs flash.

To prevent polarization and electrolysis of the liquid and undesirable oxidation of the monitoring probes, an AC current of 10 Hz is used for monitoring. The low frequency has a positive effect on suppression of interference by 50 (60) Hz. Three probes are used to monitor the level:
H - upper level,
D - lower level and
C - common probe.
In the case of the use of a conductive material tank, it is possible to use the tank itself as a C probe. Probe C can also be connected to the protective conductor of the power supply system (PE).

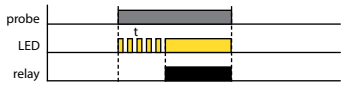
To prevent undesired switching by various influences (soiling of dips, moisture ...), the sensitivity of the device can be set according to the conductivity of the liquid being monitored (corresponding to the "resistance" of the liquid) in the range of 5 to 100 kΩ. To limit the effect of undesired switching of output contacts by raising the liquid level in the tank, it is possible to set the output response delay 0,5 - 10 s.

Functions

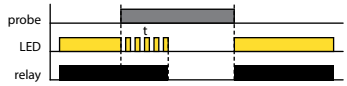
PUMP UP, ON DELAY (Function 1,3,4)



PUMP DOWN, ON DELAY (Function 2,3,4)

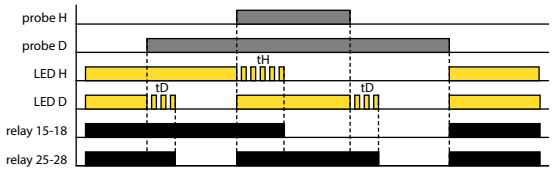


PUMP UP, OFF DELAY (Function 1,3,4)

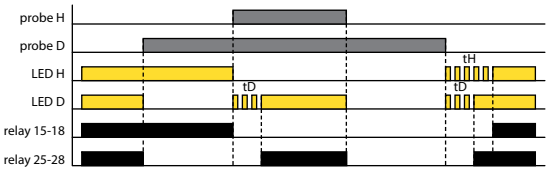


PUMP DOWN, OFF DELAY (Function 2,3,4)

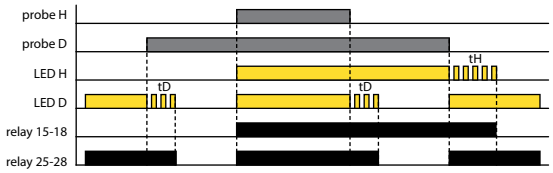
PUMP UP, OFF DELAY (Function 5)



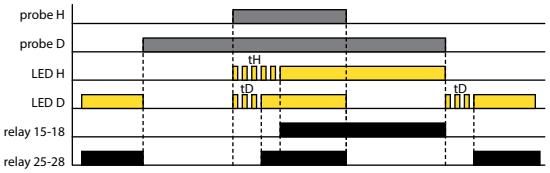
PUMP UP, ON DELAY (Function 5)



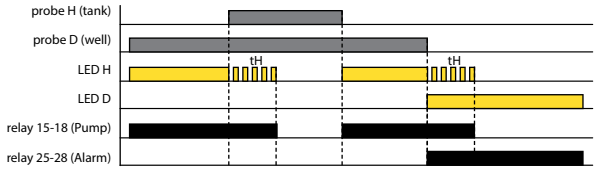
PUMP DOWN, OFF DELAY (Function 6)



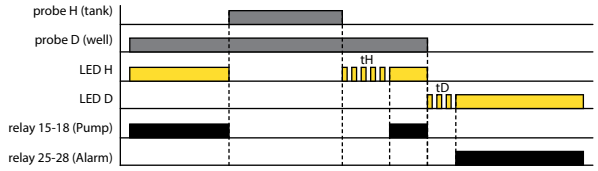
PUMP DOWN, ON DELAY (Function 6)



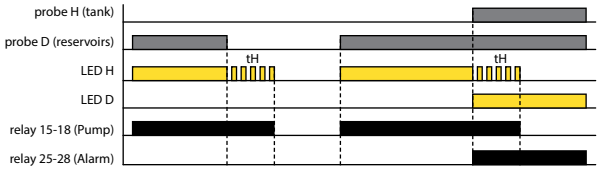
WELL - TANK, OFF DELAY (Function 7)



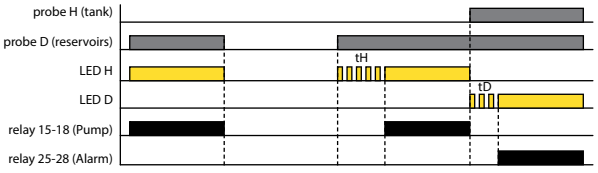
WELL - TANK, ON DELAY (Function 7)



RESERVOIRS - TANK, OFF DELAY (Function 8)



RESERVOIRS - TANK, ON DELAY (Function 8)



Sensors HRH

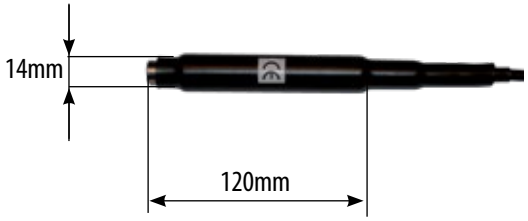
Sensors HRH

Type	Code No.	Description	g	
Sensor SHR-1-M	002471205	Brass sensor without cable, max. wire profile 2,5mm^2, op. temp.(-25 to...+60°C)	9,7	1
Sensor SHR-1-N	002471709	Stainless steel sensor without cable, max. wire profile 2,5mm^2, op. temp.(-25 to...+60°C)	9,7	1
Sensor SHR-2	002471203	Stainless steel sensor without cable, max. wire profile 2,5mm^2 - IP68, op. temp.(+1...+80°C)	48,6	1
Sensor SHR-3	002471230	Stainless steel sensor with 3m cable PVSC 2x0,5mm^2 - IP67, op. temp. (< 95°C)	239	1
Sensor HRH-10	002471703	Sensor with 10m cable	30	1
Sensor HRH-15	002471704	Sensor with 15m cable	35	1
Sensor HRH-20	002471705	Sensor with 20m cable	40	1
Sensor HRH-30	002471706	Sensor with 30m cable	48	1
Sensor HRH-40	002471707	Sensor with 40m cable	62	1

Technical data - Measuring probes HRH

	HRH-5-measuring probes
Cables	10m, 15m, 20m, 30m, 40m
Max. cable size	1,5 mm^2
Insulation voltage Ui	750 V
Fluids	Conductible, unaggressive *

* Special probes for aggressive fluids



Thermostat relay TER-3 (A, B, C)

Advantages

- 1-module, DIN rail mounting
- Red LED indicates status of output, green LED indicates energization of the device
- Single thermostat for temperature monitoring and regulation in range of -30.. +70°C in six ranges
- Can be used for monitoring temperature e.g. in switchboards, heating systems, cooling systems, liquids, radiators, motors, devices, open spaces etc.
- Function of short-circuit or sensor disconnection monitoring
- Possibility to set function"heating"/"cooling" (setting is done by DIP switch)
- Adjustable hysteresis (sensitivity) , switching by potentiometer in range 0.5 -5 K
- Universal supply AC/DC 24V -240 V, not galvanically separated
- Output contact: 1x NO 16 A /250 V AC1
- It is possible to place the sensor directly on terminal block – for temperature monitoring in a switchboard or in its surroundings
- Choice of external thermo sensors with double insulation in standard lengths 3, 6 and 12 m

Thermostat relay TER-3 (A, B, C)

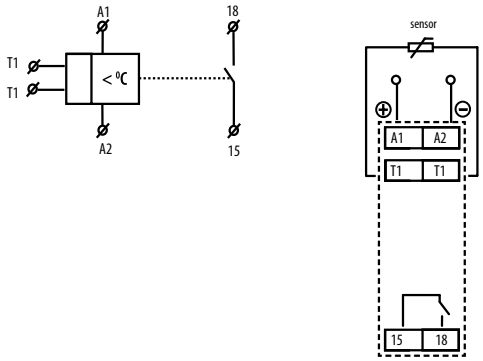
Type	temp. range orsensor length	Code No.	g	
TER-3A	-30...+10 °C	002471801	73	1/10
TER-3B	0...+40 °C	002471813	73	1/10
TER-3C	+30...+70 °C	002471802	73	1/10

*Note: Order sensor TZ from the table below

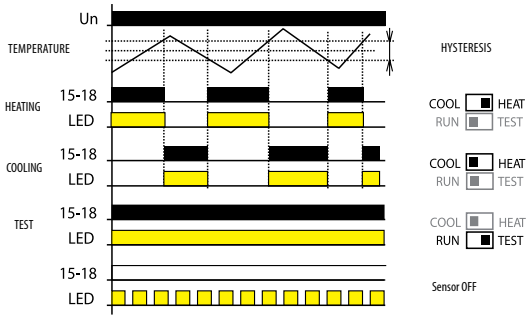
Technical data

	TER-3 (A, B, C)		
Function	single level		
Supply	A1-A2		
Universal supply	AC/DC 24-240 galvanically unseparated		
Consumption	2 VA		
Supply voltage tolerance	-15% - +10%		
Measuring circuit			
Measuring terminals	T1 - T1		
Temperature range	TER-3A	TER-3B	TER-3C
	-30..+10 °C	0..+40 °C	-30..+70 °C
Hysteresis	adjustable in range 0.5...5K		
Sensor	external, termistor NTC		
Sensor fault indication	flashing red LED		
Setting accuracy - mechanical	5%		
Switching difference	0,5°C		
Temperature coefficient	< 0.1 % / °C		
Output			
Number of contacts	1 x changeover (AgNi)		
Rated current	16 A / AC1, 10A/24 V DC		
Breaking capacity	4000 VA / AC1, 300W / DC		
Switching voltage	250V AC1/ 24V DC		
Min. breaking capacity DC	500 mW		
Output indication	red LED		
Mechanical life	$3x10^7$		
Electrical life	$0,7x10^5$		
Controlling			
Operating temperature	-20...+55 °C		
Storage temperature	-30...+70 °C		
Electrical strength	4 kV		
Operating position	any		
Mounting	DIN rail EN 60715		
Protection degree	IP 40 from front panel		
Overvoltage category	III.		
Pollution degree	2		
Max. cable size	2.5 mm^2		
Dimensions	90 x 17,6 x 64 mm		
Standards	EN 60730-2-9, EN 61010-1		

Connection

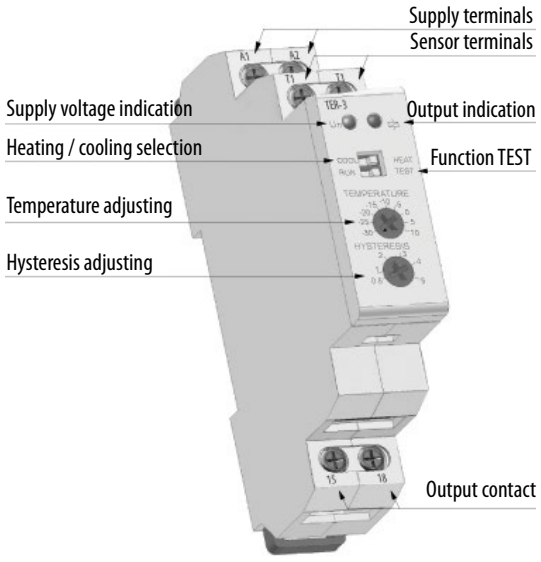


Functions



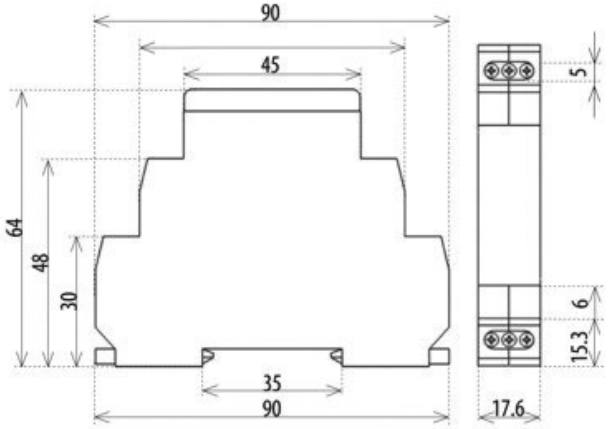
TER-3 It is a single but practical thermostat with a separated sensor for monitoring temperature. The device is placed in a switchboard and an external sensor senses temperature of required space, object or liquid. Supply is not galvanically separated from the sensor. The sensor is double insulated. Maximal length of a delivered sensor is 12m. device has in-built
indication of sensor damage, which means that in case of short-circuit or disconnection red LED flashes. Thanks to adjustable hysteresis , it is advantageous to regulate width of the range and thus define sensitivity of load switching. Sensed temperature is decreased by set hysteresis. When installing it is necessary to keep in mind that hysteresis is increased by temperature gradient between sensor's jacket and thermistor.

Description



Dimensions

1-module devices



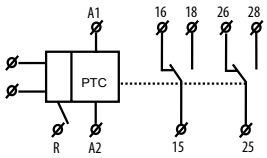
Thermostat for monitoring temperature of motor winding TER-7

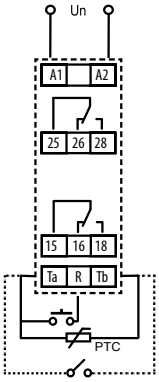
Advantage:
- Monitors temperature of motor winding of motors with built in PTC sensor
- Fixed levels of switching
- MEMORY function - active by DIP switch
- RESET of faulty state:
  - button on the front panel
  - by external contact (remote by two wires)
- Function of short-circuit or sensor disconnection monitoring, red LED flashing indicates faulty sensor
- Output contact: 2x changeover 8 A /250 V AC1
- Red LED shines and indicates exceeded temperature
- Multivoltage supply AC/DC 24-240 V (UNI)
- 1-module, DIN rail assembly possible

Technical data

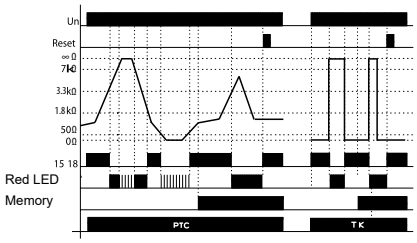
	TER-7
Function	monitoring temperature of motor winding
Supply terminals	A1-A2
Supply voltage	24 - 240 V AC/ DC
Consumption	max. 2 VA
Supply voltage tolerance	-15 %; +10 %
Measuring circuit	
Measuring terminals	Ta-Tb
Cold sensor resistance	50 Ω - 1.5 kΩ
Upper level	3.3 kΩ
Bottom level:	1.8 kΩ
Sensor:	PTC temperature of motor winding
Sensor failure indication	blinking red LED
Accuracy	< 5%
Accuracy in repetition	± 5 %
Temperature dependance	< 0.1 % / °C
Output	
Number of contacts	2x changeover (AgNi)
Rated current	8 A / AC1
Breaking capacity	2000 VA / AC1, 192 W / DC
Inrush current	10 A /< 3 s
Switching voltage	250 V AC1 / 24 V DC
Min. breaking capacity DC	500mW
Mechanical life	$3x10^7$
Electrical life	$0.7x10^5$
Other information	
Operating temperature	- 20 .. +55 °C
Storage temperature	- 30 .. +70 °C
Electrical strength	4 kV (supply - output)
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP 40
Overvoltage category	III.
Pollution degree	2
Max. cable size (mm^2)	solid wire max.1x 2.5 or 2x1.5 with sleeve max. 1x2.5
Dimensions	90 x17.6 x 64 mm,
Weight	83 g
Standard	EN 60730-2-9, EN 61010-1

Symbol and connection





Function



The device controls temperature of motor winding with PTC thermistor which is mostly placed in motor winding or very close to it. Resistance of PTC thermistor run to max 1.5 kΩ in cold stage. By temperature increase the resistance goes strongly up and by overrun the limit of 3.3 kΩ the contact of output relay switch off - mostly contactor controlling a motor. By temperature decrease and thereby decrease of thermistor resistance under 1.8 kΩ the output contact of relay again switches on. The relay has function "Control of sensor fault". This controls interruption or disconnection of sensor. When switch is in position "TK" monitoring of faulty sensor is not functional - it is possible to connect bimetal sensor with only 2 states: ON or OFF. The device can work with bi-metal sensor in this position. Other safety unit is function "Memory". By temperature overrun (and output switches off) the output is hold in faulty stage until service hit. This bring the relay to normal stage (with RESET button) on front panel or by external contact (remote).

Termostat relay TER-7

Type	Code No.	g	
TER-7	002471804	65	1/10

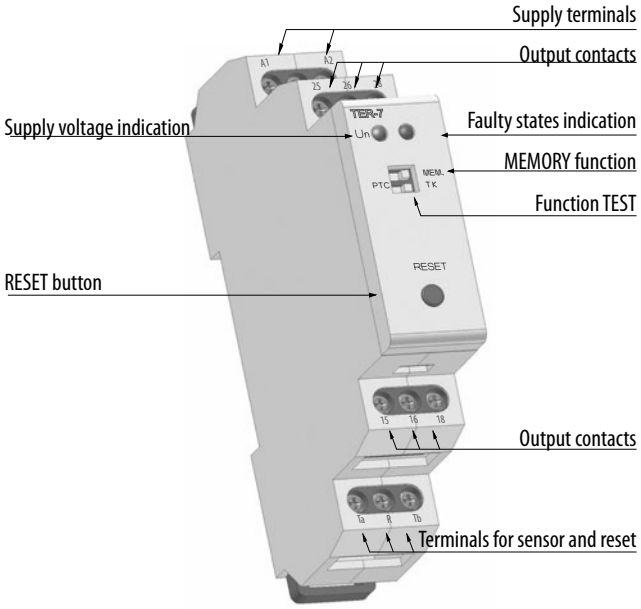
Note:

Sensors could be in series in abide with conditions in technical specification - switching limit.

Warning!:

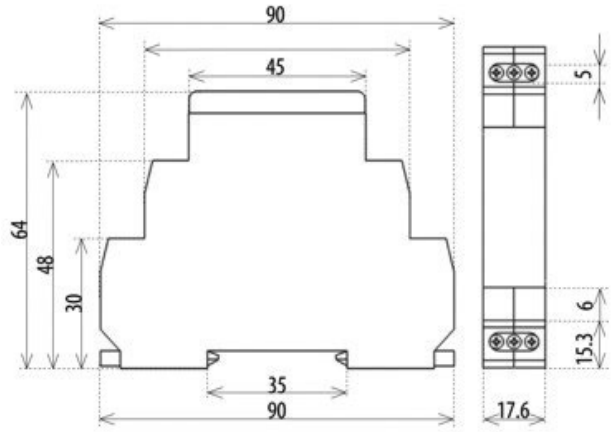
In case of supply from the main, neutral wire must be connected to terminal A2.

Description



Dimensions

1-module devices



Multifunction digital thermostat TER-9

Advantages

- Digital thermostat with 6 functions and in-built time switch clock, with daily and weekly program (as SHT-1). Thermo functions can be managed also in real time
- Complex control of heating and water heating in buildings, solar heating etc
- 2 thermostats in one, 2 temperature inputs, 2 outputs with potential free contact
- Functions: two independent thermostats, 1x dependent, differential thermostat, 2-stage thermostat, thermostat with dead zone, heating functions
- Program setting of output function, calibration of sensors according to reference temperature (off set)
- Thermostat is inferior to a program of digital switch clock
- 2 -module, DIN rail mounting
- Supply AC 230 V or AC/DC 24 V galvanically separated
- Output contact 1x changeover 8 A / 250 V AC1 for each output
- Memory for the most often used temperatures
- Well-arranged display of set and measured data, illuminated LCD by backlight
- Zero error when value setting
- Function of monitoring short-circuits or sensor disconnection

WATCH THE VIDEO

Multifunction digital thermostat TER-9

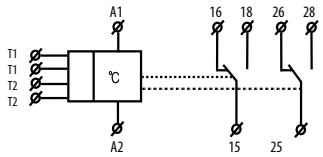
Type	I_n [A]	Code No.	g	
TER-9 24V AC/DC	8	002471803	140	1
TER-9 230V AC	8	002471824	140	1

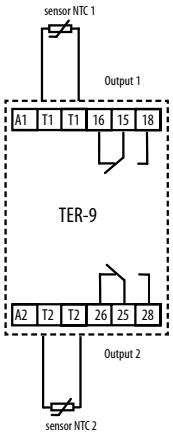
*Note: Order sensor TZ from the table below

Technical data

	TER-9
Number of functions	6
Supply	A1-A2
Supply voltage	AC 230V or AC/DC 24V, galvanically separated
Consumption	max. 3,5 VA
Supply voltage tolerance	-15% - +10%
Measuring circuit	
Measuring terminals	T1 - T1, T2-T2
Temperature range	-40...+110 °C
Hysteresis (sensitivity):)	adjustable in range 0.5...5K
Difference temperature	adjustable 1.. 20 °C
Sensor	termistor NTC 12Ω at 25°C
Sensor fault indication	sign "Err"
Measuring accuracy	5 %
Repeat accuracy	<0,5 %
Temperature coefficient	< 0.1 % / °C
Output	
Number of contacts	1 x changeover for each output (AgNi)
Rated current	8 A / AC1
Breaking capacity	2500 VA / AC1, 240W / DC
Switching voltage	250V AC1/ 24V DC
Min. breaking capacity DC	500 mW
Output indication	ON / OFF
Mechanical life	$1x10^7$
Electrical life	$1x10^5$
Controlling	
Operating temperature	-20...+55 °C
Storage temperature	-30...+70 °C
Electrical strength	4 kV (supply - contact)
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP 40 from front panel
Overvoltage category	III.
Pollution degree	2
Max. cable size	2.5 mm^2
Dimensions	90 x 35,6 x 64 mm
Standards	EN 60730-2-9, EN 61010-1, EN 61812-1

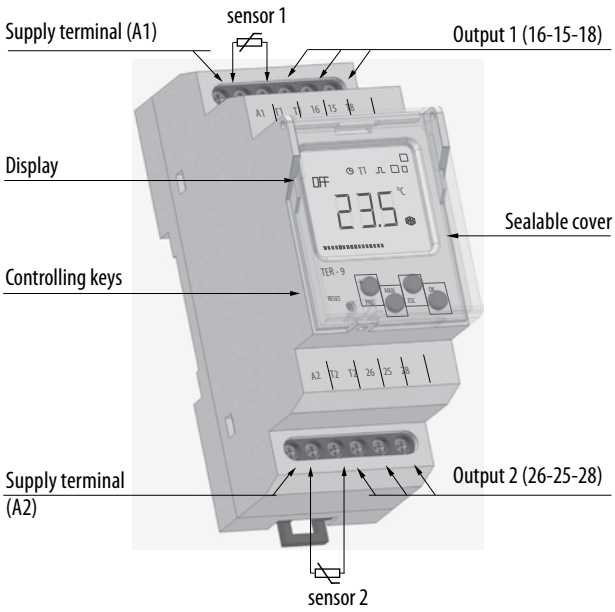
Connection





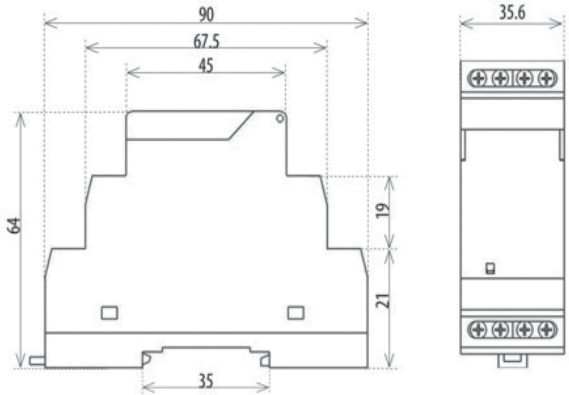
Note: It is possible to operate the device with one sensor. In such case it is necessary to connect resistor10kΩ. This resistor is a part of delivery.

Description



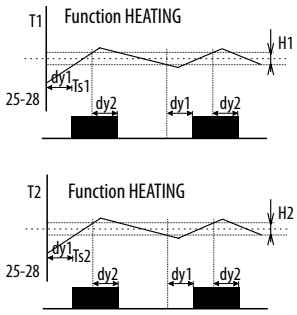
Dimensions

2-module devices



INSTRUCTIONS

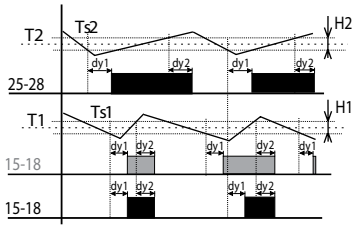
2 independent single-stage thermostat



Legend:
Ts1 - real (measured) temperature 1
Ts2 - real (measured) temperature 2
T1 - adjusted temperature T1
T2 - adjusted temperature T2
H1 - adjusted hysteresis for T1
H2 - adjusted hysteresis for T2
dy1 - set switching delay of the output
dy2 - set delay on output breaking
15-18 output contact (for T1)
25-28 output contact (for T2)

Output contact switched until adjusted temperature is reached. Hysteresis eliminates frequent switching. Heating/cooling function adjusted in the menu.

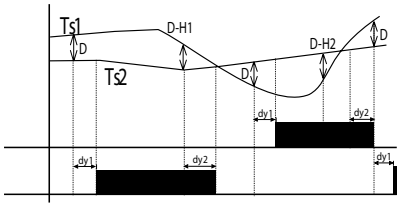
Dependent functions of 2 thermostats



Legend:
Ts1 - real (measured) temperature 1
Ts2 - real (measured) temperature 2
T1 - adjusted temperature T1
T2 - adjusted temperature T2
H1 - adjusted hysteresis for T1
H2 - adjusted hysteresis for T2
dy1- set switching delay of the output
dy2 - set delay on output breaking
25-28 output contact (for T2)
15-18 output contact (intersection T1 and T2)

Output 15-18 is closed, if temperature of both thermostats is bellow an adjusted level. When any thermostat reaches adjusted level, the contact 15-18 open. Serial inner connection of thermostats (logic function AND).

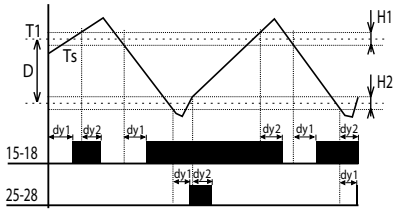
Differential thermostat



Legend:
Ts1 - real (measured) temperature T1
Ts2 - real (measured) temperature T2
D - adjusted difference
dy1- set switching delay of the output
dy2 - set delay on output breaking
15-18 output contact (for T1)
25-28 output contact (for T2)

Switching of output corresponds with input, which has lower temperature when difference is exceeded differential thermostat is used for keeping two identical temperature e.g. in heating systems (boiler and reservoir), solar systems (collector - reservoir, exchanger), water heating (water heater, water distribution) etc.

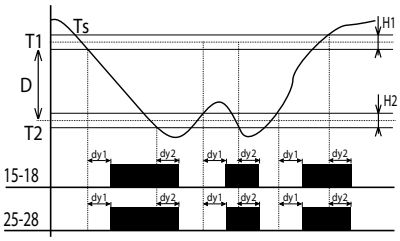
2-stage thermostat



Legend:
Ts - real (measured) temperature
T1 - adjusted temperature
D - adjusted diff erence
H1 - adjusted hysteresis for T1
H2 - adjusted hysteresis for T2
dy1- set switching delay of the output
dy2 - set delay on output breaking
15-18 output contact
25-28 output contact

Typical example of use for two-stage thermostat is e.g in boiler-room, where there are two boilers from which one is main and the other one is auxiliary. The main boiler is managed according to set temperature and auxiliary boiler is switched in case temperature falls under set difference.
Thus it helps to the main boiler in case outside temperature dramatically falls. In the range of difference (D) output 15-18 functions as normal thermostat to input 1 (type 1). In case temperature falls under set difference, output 2 switches.

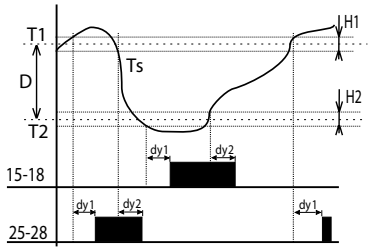
Thermostat with “WINDOW”



Legend:
Ts - real (measured) temperature
T1 - adjusted temperature MAX
T2 - adjusted temperature MIN (T2=T1-D)
H1 - adjusted hysteresis for T1
H2 - adjusted hysteresis for T2
dy1- set switching delay of the output
dy2 - set delay on output breaking
15-18 output contact
25-28 output contact

Output is closed (heating) only if temperature is within adjusted range. If temperature is out of range, the contact opens. T2 is set as T1-D.
The function is used for protection of gutters against freezing.

Thermostat with dead zone



Legend:
Ts - real (measured) temperature
T1 - adjusted temperature T1
T2- adjusted temperature T2 (T2=T1-D)
H1 - adjusted hysteresis for T1
H2 - adjusted hysteresis for T2
dy1- set switching delay of the output
dy2 - set delay on output breaking
15-18 output contact (heating)
25-28 output contact (cooling)

In case of thermostat with a „dead zone“ , it is possible to set temperature T1 and a difference (respectively a width of dead zone D). In case the temperature with set hysteresis H1 is lower than T1, the output contact switches heating ON and when T1 is reached it opens. In case the temperature falls under T2, contact switches cools down and opens when T2 is reached. This function can be used for example for automatic air warming and cooling in ventilation so the sit is always within the range T1 and T2.

Product loadability

Valid for following products: CRM-4, SHT-1, MR-41, MR-42, SOU-1, SHT-1/2, SHT-3, SHT-3/2, CRM-42, SMR-B

relay contact 16 A	Load					AC1	AC3	AC15	DC1 (24/110/220 V)
$AgSNO_2$	2000 W	1000 W	1000 W	750 W	500 W	4000 VA	0,9 kW	750 VA	16A/0,5A/0,35A

Valid for following products: CRM-93H, SOU-2, HRN-54, HRN-54N, PRI-51, TER-9

relay contact 8 A	Load					AC1	AC3	AC15	DC1 (24/110/220 V)
AgNi	500 W	x	x	x	x	2000 VA		375 VA	8A/0,4A/0,25A

Valid for following products: CRM-91H, CRM-2H, CRM-2T, HRN-33, HRN-34, HRN-35, TER-3

relay contact 16 A	Load					AC1	AC3	AC15	DC1 (24/110/220 V)
AgNi	1000 W	x	x	x	x	4000 VA	0,9 kW	750 VA	16A/0,5A/0,35A

Thermal sensor TZ

Temperature sensors are made of thermistor NTC embedded in a metal sleeve by thermo-conductive sealer (TZ)
Sensor TZ:

- cable V03SS-F 2Dx0,5mm with silicon insulation
- suitable mainly for use in extreme temperatures

Technical parameters TZ

Range:	-40...+125°C
Scanning element:	NTC 12K 2%
In air/in water:	(t65) 62s/8s
In air/in water:	(t95) 216s/23s
Cable material:	silicone
Terminal material:	nickel-couted copper
Protection degree:	IP 67
Protection class:	II (double insulation)

Resistive values in dependance on temperature

Temperature (°C)	Sensor NTC (kΩ)
20	14,7
30	9,8
40	6,6
50	4,6
60	3,2
70	2,3

TZ: Thermal sensors for range -40...+125°
TZ-0 - Thermo sensor can be connected directly to terminal block (length of the sensor 110mm)
TZ-3 - Temperature sensor 3m, double isolation silicone
TZ-6 - Temperature sensor 6m, double isolation silicone
TZ-12 - Temperature sensor 12m, double isolation silicone

Thermal sensors TZ

Type	lenght of sensor cable [A]	Code No.	g	
sensor TZ-0	0,11 m.	002471809	4,5	1
sensor TZ-3	3m.	002471810	103	1
sensor TZ-6	6m.	002471811	216	1
sensor TZ-12	12 m.	002471812	418	1

Hour meter HM-1

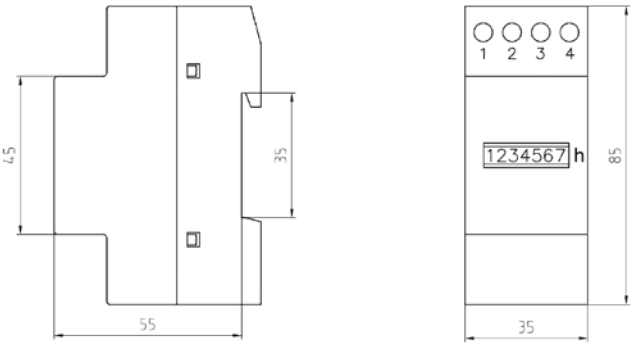
Aplications
- Gen-sets
- Compressors
- Pumps
- Medical equipment
- Control panels
- Air conditioning

Advantages
- 2-module size
- DIN rail mounting
- Long lifetime
- IP40 protection – front
- Operating voltage 230V AC

Technical data

Mechanical data	description
Display	5 integers, 2 decimals
Digit height	4mm
Counting range	99999,99
Reading accuracy	1/100 h (36sec)
Weight	32g
Electrical data	
Operating voltage	230V+/- 10%, 50Hz
Current consumption	max. 8mA
Accuracy	+/- 0,02%
IP protection	IP40
Ambient conditions	
Operating temperature	-25°C .. + 70°C
Storage temperature	-40°C .. + 70°C
Relative humidity	max. 80% / +25°C
Approvals	CE Mark RoHS compliant

Dimensions



Hour meter HM1

Type	Supply voltage [U_e AC]	Code No.	g	
HM-1	230	002472045	35	1

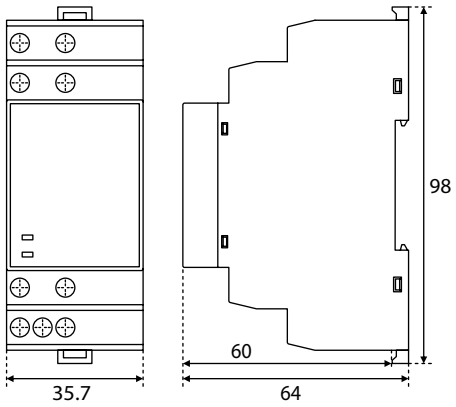
Electronic fuse monitor EFM

- Recognize fuse failure in three-phase or mono-phase system
- Can be used for all sizes and types of fuses
- Signals operation even if loads are switched off
- Automatic reset after replacing the fuse
- Working properly even if:
- Asymmetrical mains
- Independence of phase sequence
- Mains with harmonic waves
- Motors providing feedback
- Internal resistance > 2000 Ω/v
- Output relay 1 pole changeover contact
- Size 2 modules - 35mm - DIN rail mounting EN50.022
- Self-extinguished material UL94 v0
- Typical application: fuses monitoring on 3-ph motor mains
- EU directives - CE marking:
- 2014/30/UE - EMC
- 2014/35/UE - LVD

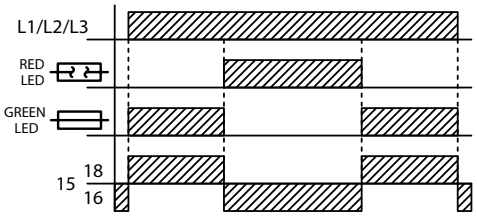
Technical data

		EFM230	EFM400
Input			
Supply voltage AC ±10%	V~	230	400
Nominal Frequency	Hz	50-60 (range:47-63)	
Power consumption (max. AC)	VA	3,6	1,5
Output relay			
Rating	-	8A-250V AC /24V DC	
Max switching power	VA	2000	
Max switching voltage	V~	400	
Min switching load	-	10mA 12V dc	
Contact life		$30x10^3$ ops / $100x10^3$ ops	
Changeover contacts	-	AgNi0.15	
Status indication			
Fuse OK	-	Green LED - Relay ON	
Fuse FAIL	-	Red LED - Relay OFF	
General			
Internal resistance paths	Ω/V	>2000	
Permissible feedback (Ue)	-	max. 90	
Response/Release Time:			
- After Breaking Fuse	ms	<30	
- After Restoring Fuse	ms	<500	
Working temperature	°C	-20...+50	
Storage temperature	°C	-30...+70	
Electrical Insulation	kV	4	
Overvoltage Category	-	III	
Protection degree	IP	20	
Pollution degree	-	2	
Climatic category	-	IEC 60068-1 (20/050/60), DIN 40040 (class D)	
Altitude up to	m	2000	
Dimensions	mm	98x35,7x64	

Dimensions



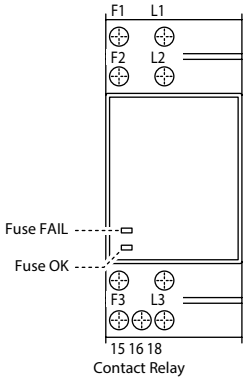
Function



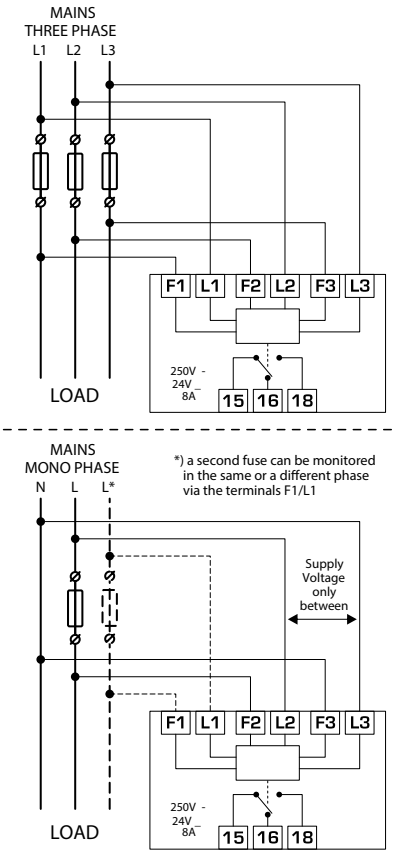
Electronic fuse monitor EFM

Type	I_n [A]	U_n [V AC]	Code No.	Description	g	
EFM230	8	230	002472213	Fuse Monitor 3X230 volts - 1 RelayCO 250VAC 8A	175	1
EFM400	8	400	002472214	Fuse Monitor 3X400 volts - 1 RelayCO 250VAC 8A	175	1

Description



Connection



ETIREL Electromechanical Relays

Electromechanical power relays RERM3

Application
Electromechanical relays RERM are designed for switching, control and signaling of auxiliary and power circuits.

Features
- 3 changeover contacts;
- Control voltages AC 24V, AC 230V;
- Test button without blocking
- Base for relay RERB3-S (DIN rail mounting TH-35);
- Accessories: (metal bracket-holder RER-CLIP-SP);

Electromagnetic Plugin Relays with Mechanical Indication Test Button

Type	Code	Uc rated coil voltage [V]	Indication	No. Of contacts	g	
RERM3-230AC	002473060	230 V AC	-	3 x CO In=16A AC1, 250V AC)	80	1/100
RERM3-230ACL	002473061	230 V AC	LED		80	1/100
RERM3-024AC	002473062	24 V AC	-		80	1/100
RERM3-024ACL	002473063	24 V AC	LED		80	1/100

RERM3-230AC

- Screw terminals (max torque 0.7 Nm);

Plug-in Sockets (Base)

Type	Code	For use with	g	
RERB3-S	002473064	RERM3	70	1/250

RERB3-S

Accessories

Type	Code	For use with	g	
RER-CLIP-SP	002473065	RERB3-S	-	1/1000

RER-CLIP-SP

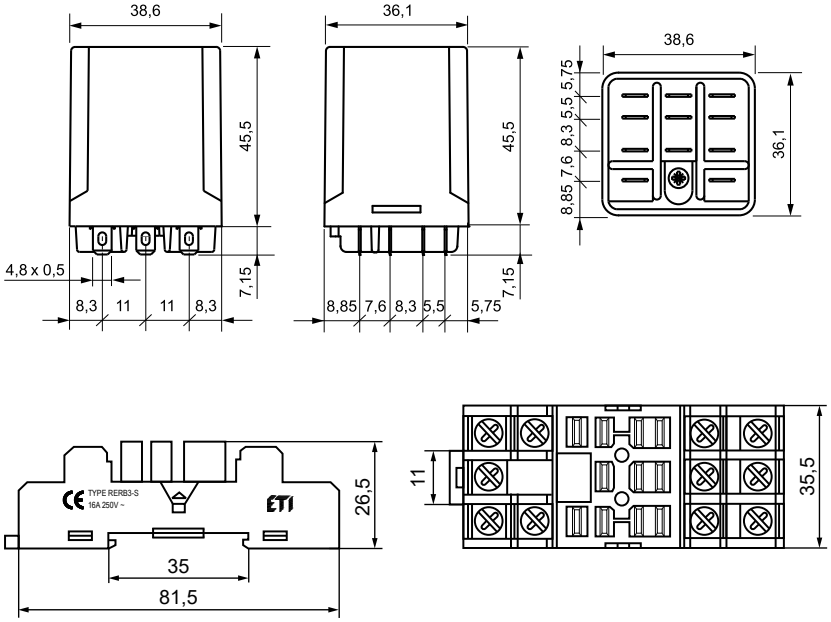
Table 1: Technical data

	RERM3	
Contact Data		
Number and type of contacts	3 CO	
Contact material	AgNi	
Rated / max. switching voltage AC	440 V	
Min. switching voltage	5V	
Rated load (capacity)	16 A / 250 V AC 10 A / 400 V AC	
Min. switching current	5 mA	
Max. inrush current	40A	
Rated current	16A	
Max. breaking capacity AC1	4000 VA	
Min. breaking capacity	0.3W	
Contact resistance	≤ 100 mΩ	
Max. operating frequency (cycles/hour)		
• at rated load AC1	1 200	
• no load	12 000	
Coil data		
Rated voltage	AC: 24V, 240V	
Must release voltage	AC: ≥ 0,15 Un	
Operating range of supply voltage	see next page	
Rated power consumption	2,8 VA (50Hz) / 2,5 VA (60Hz)	
Insulation according to EN 60664-1		
Insulation rated voltage	400 V AC	
Rated surge voltage	4 000 V 1,2 / 50 µs	
Overvoltage category	III	
Insulation pollution degree	2	
Dielectric strength between coil and contacts (basic insulation)	2500 V AC	
Dielectric strength - contact clearance - micro disconnection - full disconnection with contact gap ≥3mm	 1500 V AC 2500 V AC	
Dielectric strength pole-pole (basic insulation)	2500 V AC	
Contact - coil distance		
- Clearance	≥ 5 mm 2CO, 2NO	≥ 4 mm 3CO, 3NO
- Creepage	≥ 8 mm 2CO, 2NO	≥ 5 mm 3CO, 3NO
General data		
Operating / release time (typical values)	20 ms / 15 ms	
Electrical life		
- Resistive AC1	$>10^5$ 16 A, 250 V AC / 10 A, 400 V AC	
- cos φ	See next page	
Mechanical life (cycles)	$>10^7$	
Dimensions	36,1 x 38,6 x 45,5 mm	
Ambient temperature		
- storage	- 40...+85°C	
- operating	- 40...+55°C	
Cover protection category	IP 00	
Environmental protection	RTI	
Shock resistance (NO/NC)	10 g	
Vibration resistance	5g 10...150 Hz	
Solder bath temperature	max. 270°C	
Soldering time	max. 5s	

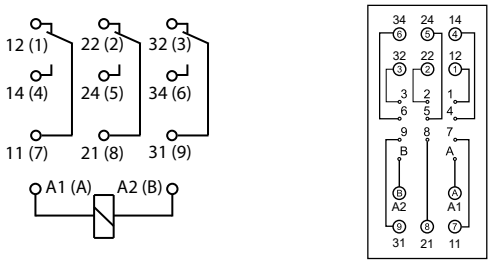
Table 2: Coil data

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
024AC	24	75	± 15%	19,2	26,4
230AC	230	7080	± 15%	184,0	253,0

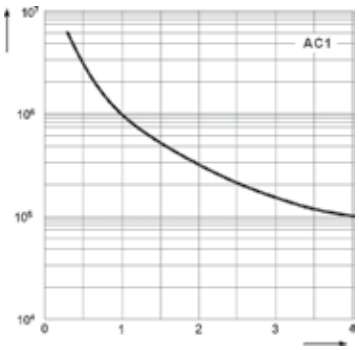
Dimensions



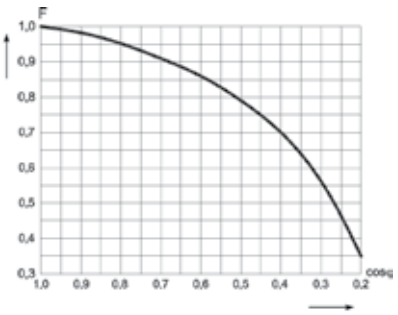
Connection diagram (pin side view)



Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour



Electrical life reduction factor at AC inductive load



Industrial Plugin Electromagnetic Relays

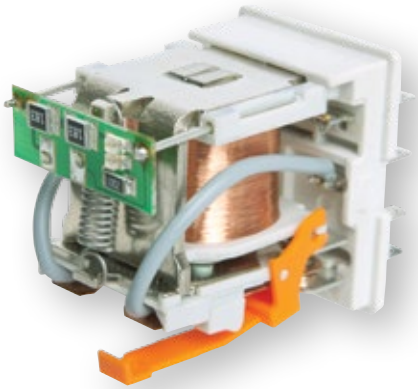
Description

Relays of general application - the new relays are distinguished by a modern design, high reliability and functionality. Modern technology ensures high quality and effectiveness

- ERM2 (2 pole CO »change over contact«) and ERM4 (4 pole CO »change over contact«)
- AC and DC coils (12, 24V), 230V AC only
- Two types of plug-in sockets (M type and T type)
- Accessories (connection terminals, retainer/retractor clips, description plates, RC modules...)
- Colour: grey

Features

- Mechanical indicator with lockable test button as a standard version
- Optional: Light indication (with built in smd LED)
- Mounting on panel or 35 mm rail in accordance with EN60715
- Improved electromagnet efficiency
- Strong insulation between contacts (applied polyamide PA66)
- Cadmium - free contacts
- Miniature dimensions
- Recognitions, certifications, directives: RoHS, CE
- Standards: EN61810-1:2008 (electromechanical relays); EN61984:2002, EN60998-2-1:2001, EN60664-1:2003 (sockets)



Robust design

Test buttons

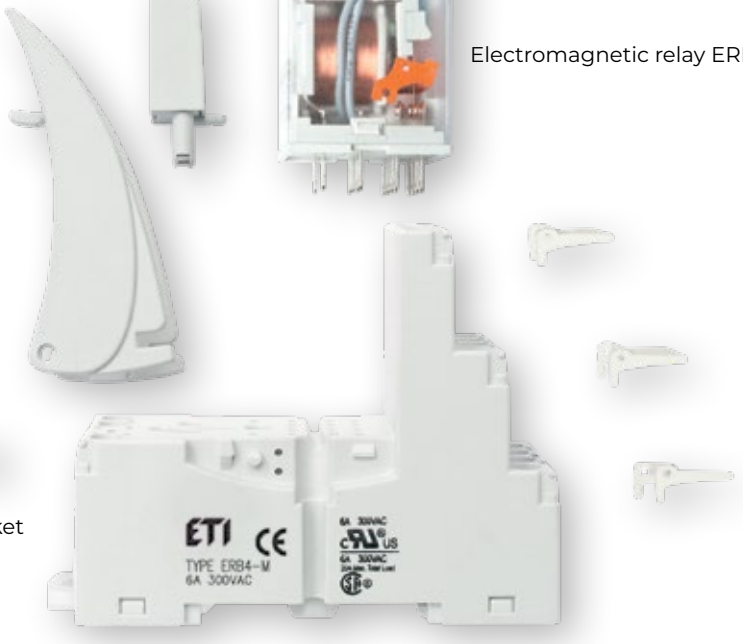
green - DC coils

orange - AC coils

Protecting module ERC

Electromagnetic relay ERM

Retainer / retractor clip - ER-CLIP



Description plate ER-PLATE

Screw terminals plug-in socket ERB

*All parts must be ordered separately

Table 1: Technical data

		ERM2	ERM4
Number and type of contacts		2 CO	4 CO
Contact material		AgNi	
Rated / max. switching voltage AC		250 V / 440 V	250 V / 250 V
Min. switching voltage		10 V	10 V AgNi, 10 V AgNi/Au 0,2 µm, 5 V AgNi/Au 5 µm
Rated load (capacity)	AC1 AC15 AC3 DC1 DC13	12 A / 250 V AC 3 A / 120 V 1,5 A / 240 V 370 W (single-phase motor) 12 A / 24 V DC (see Fig. 3) 0,22 A / 120 V 0,1 A / 250 V	6 A / 250 V AC 1,5 A / 120 V 0,75 A / 240 V (C300) 125 W (single-phase motor) 6 A / 24 V DC (see Fig. 3) 0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA	
Max. inrush current		24 A	12 A
Rated current		12 A	6 A
Max. breaking capacity	AC1	3 000 VA	1 500 VA
Min. breaking capacity		0,3 W	0,3 W AgNi, 0,3 W AgNi/Au 0,2 µm, 0,1 W AgNi/Au 5 µm
Contact resistance		≤ 100 mΩ	
Max. operating frequency (cycles/hour) • at rated load • no load	AC1	1 200 18 000	
Coil data			
Rated voltage 50/60 Hz AC DC		See table 2	
Must release voltage		AC: ≥ 0,2 Un DC: ≥ 0,1 Un	
Operating range of supply voltage		see Table 2	
Rated power consumption	AC DC	1,6 VA 0,9 W	
Insulation according to EN 60664-1			
Insulation rated voltage		250 V AC	
Rated surge voltage		4 000 V 1,2 / 50 µs	2 500 V 1,2 / 50 µs
Overvoltage category		III	II
Insulation pollution degree		3	2
Dielectric strength • between coil and contacts • contact clearance • pole - pole		2 500 V AC type of insulation: basic 1 500 V AC type of clearance: micro-disconnection 2 500 V AC type of insulation: basic	
Contact - coil distance • clearance • creepage		≥ 2,5 mm ≥ 4 mm	≥ 1,6 mm ≥ 3,2 mm
General data			
Operating / release time (typical values)		AC: 10 ms / 8 ms DC: 13 ms / 3 ms	
Electrical life • resistive AC1 • cosΦ		> 10^5 12 A, 250 V AC see Fig. 2	> 10^5 6 A, 250 V AC see Fig. 2
Mechanical life (cycles)		> 2 x 107	
Dimensions (L x W x H)		27,5 x 21,2 x 35,6 mm	
Weight		35 g	
Ambient temperature • storage • operating		-40...+85 °C AC: -40...+55 °C DC: -40...+70 °C	
Cover protection category		IP 40 EN 60529	
Environmental protection		RTI EN 116000-3	
Shock resistance	(NO/NC)	10 g / 5 g	
Vibration resistance		5 g 10...150 Hz	

Electromagnetic Plugin Relays with Mechanical Indication and Lockable Test Button

Type	Code	Uc rated coil voltage [V]	No. Of contacts	g	
ERM4-012DCL	002473021	12 V DC	4 x CO (6A, AC1)	33	10/100
ERM2-024DC	002473000	24 V DC	2 x CO (12A, AC1)	33	10/100
ERM2-024DCL	002473001	24 V DC	2 x CO (12A, AC1)	33	10/100
ERM2-024AC	002473002	24 V AC	2 x CO (12A, AC1)	33	10/100
ERM2-024ACL	002473003	24 V AC	2 x CO (12A, AC1)	33	10/100
ERM2-230AC	002473004	230 V AC	2 x CO (12A, AC1)	33	10/100
ERM2-230ACL	002473005	230 V AC	2 x CO (12A, AC1)	33	10/100
ERM4-024DC	002473006	24 V DC	4x CO (6A, AC1)	33	10/100
ERM4-024DCL	002473007	24 V DC	4x CO (6A, AC1)	33	10/100
ERM4-024AC	002473008	24 V AC	4x CO (6A, AC1)	33	10/100
ERM4-024ACL	002473009	24 V AC	4x CO (6A, AC1)	33	10/100
ERM4-230AC	002473010	230 V AC	4x CO (6A, AC1)	33	10/100
ERM4-230ACL	002473011	230 V AC	4x CO (6A, AC1)	33	10/100

*L - built in LED light indicator (red)
Other coil (control) voltages available upon special request:
V DC: 5, 6, 48, 60, 80, 110, 220
V AC: 6, 12, 42, 48, 60, 80, 110, 115, 120, 127, 220, 240

Ordering designation
ERMX-YYYYYZ

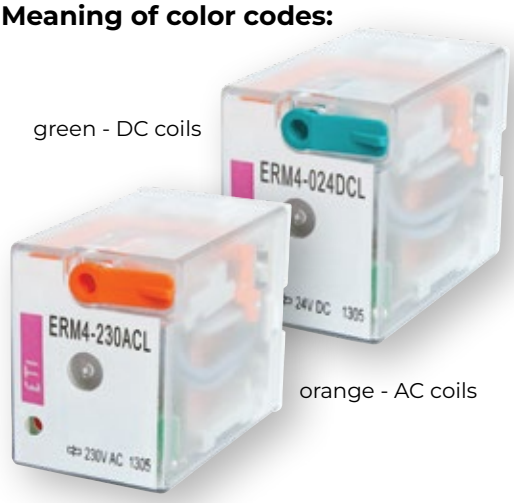
X – Number of contacts:
4: 4 CO (4 changeover)
2: 2 CO (2 changeover)

YYYYY – Coil code:
024AC: 24 V AC 50/60 Hz
230AC: 230 V AC 50/60 Hz
024DC: 24 V DC
012DC: 12 V DC

Z – Additional features:
L – Light indicator (smd LED - red)

Example:
ERM4-024DCL Electromagnetic relay for plugin sockets with mechanical indication and lockable test button, four changeover contacts, coil voltage 24 V DC with light indicator.

Meaning of color codes:



Plug-in Sockets (Base)

Type	Code	For use with	g	
ERB2-T	002473012	ERM2	60	10/100
ERB2-M	002473013	ERM2	71	10/80
ERB4-T	002473014	ERM4	60	10/100
ERB4-M	002473015	ERM4	71	10/80

T - T type
M - M type

ERB2-T, ERB4-T

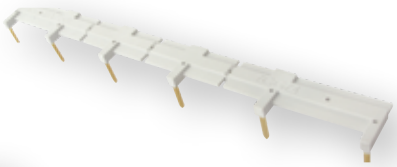
ERB2-M, ERB4-M

Accessories

Type	Code	For use with	g	
ER-CLIP	002473016	ERB-T & ERB-M	4,5	10/300
ER-PLATE	002473017	ERB-T & ERB-M	0,5	50/500
ER-TERMINAL	002473018	ERB-T & ERB-M	1,3	2/20
ERC-024AC	002473019	ERB-T & ERB-M $U_c \leq 24V$ AC	2,6	20/100
ERC-230AC	002473020	ERB-T & ERB-M $U_c \leq 230V$ AC	2,6	20/100
ERC-024ACDCL	002473040	ERB-T & ERB-M U_c= 6 ... 24 V AC/DC	2,9	20/100
ERC-060ACDCL	002473041	ERB-T & ERB-M U_c=24 ... 60 V AC/DC	2,9	20/100
ERC-230ACDCL	002473042	ERB-T & ERB-M U_c=110 ... 230 V AC/DC	2,9	20/100

ER-CLIP
Mechanical lock of relay in socket

ER-PLATE
description



ER-TERMINAL
bridges common input signals (coil terminals A1 or A2) up to 6 relays

ERC
protection module

ERC-(024...230)ACDCL
MOV protection module with indication AC and DC.

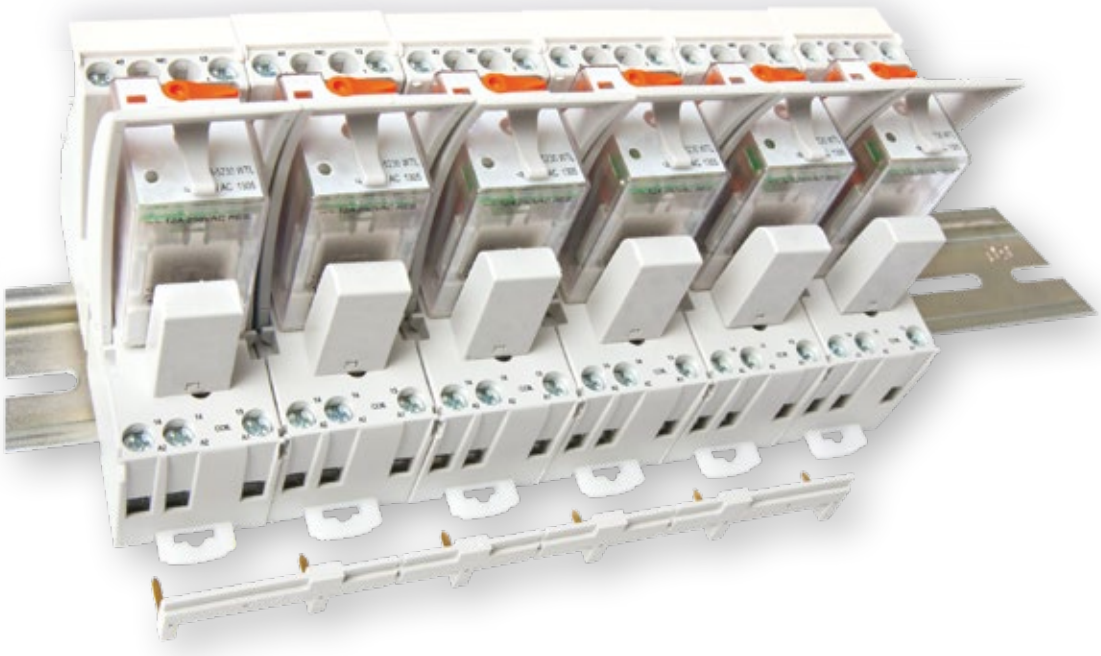
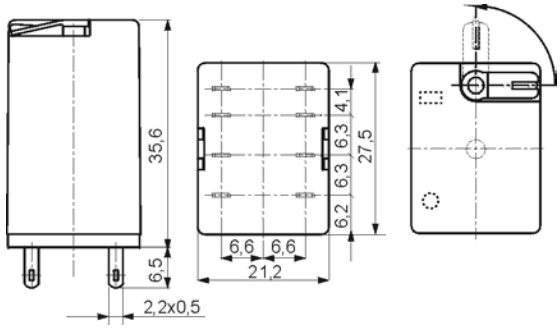


Table 2: Coil data

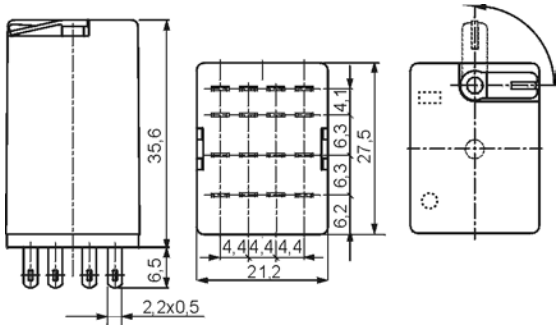
DC voltage version					
Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC min. (at 20 °C)	Coil operating range V DC max. (at 20 °C)
012DC	12	160	± 10%	9,6	21,6
024DC	24	640	± 10%	19,2	43,2
048DC	48	2600	± 10%	38,4	86,4
110DC	110	13600	± 10%	88	198
220DC	220	54000	± 10%	176	250
AC voltage version					
Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC min. (at 20 °C)	Coil operating range V AC max. (at 20 °C)
024AC	24	158	± 10%	19,2	25,3
230AC	230	16100	± 10%	184,0	253

Dimensions

ERM 2

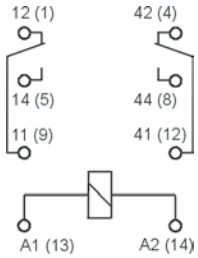


ERM 4

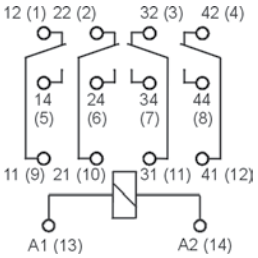


Connection diagram (pin side view)

ERM 2

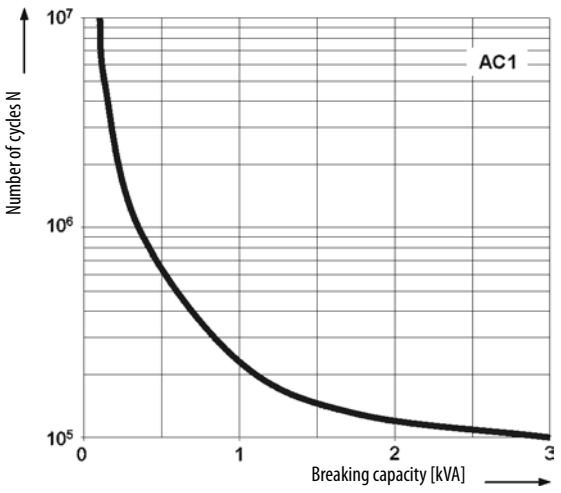


ERM 4

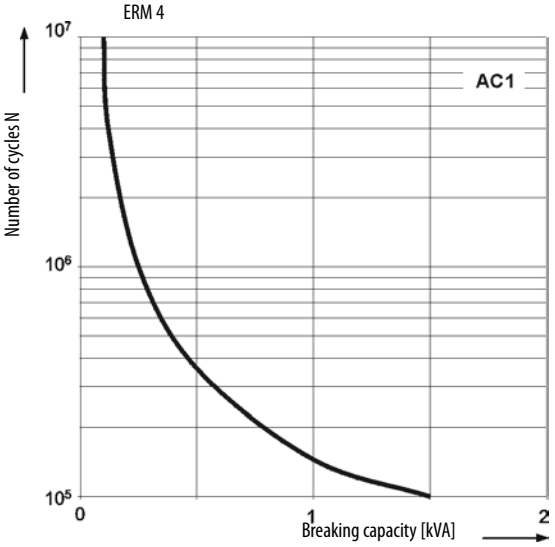


Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour Fig. 1

ERM 2

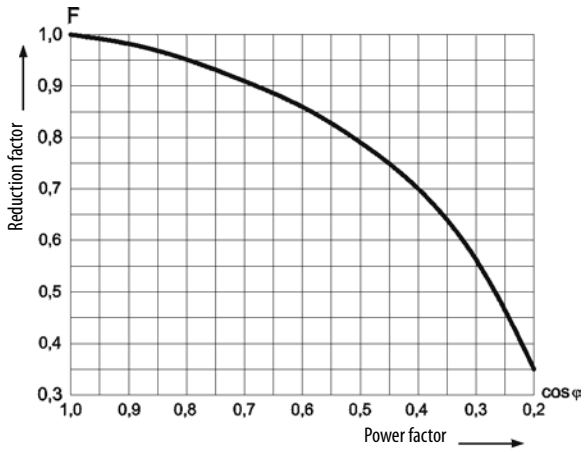


ERM 4



Electrical life reduction factor at AC inductive load Fig. 2

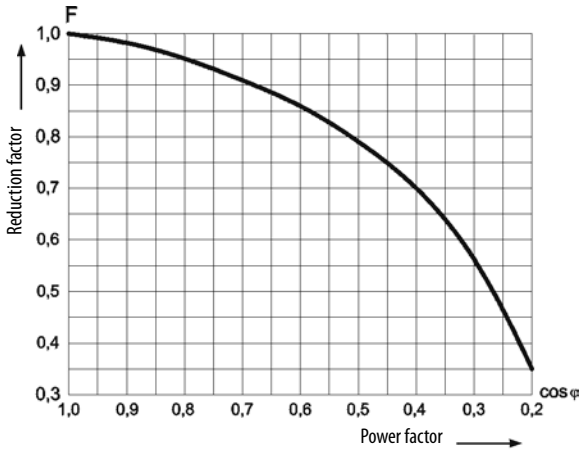
ERM 2



$N_{cos\varphi} = N \times F$

N - electrical life at AC1

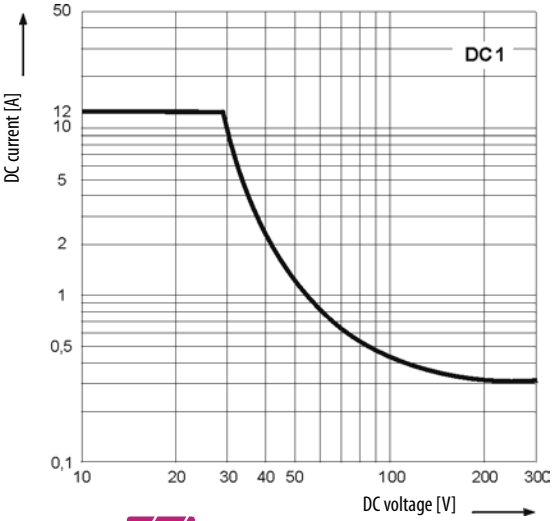
ERM 4



$N_{cos\varphi} = N \times F$

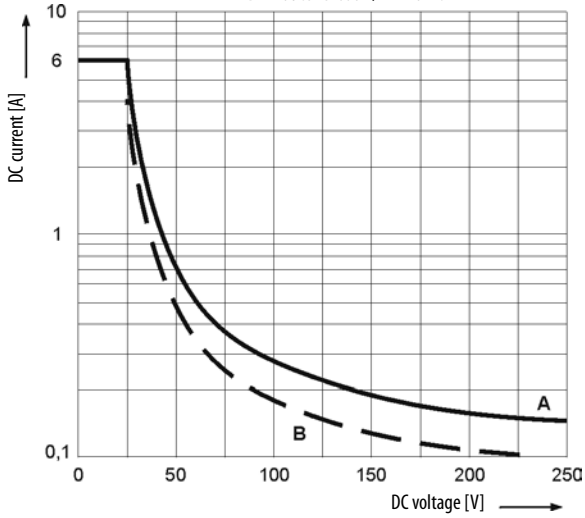
Max. DC resistive load breaking capacity Fig. 3

ERM 2



ERM 4

A - resistive load DC1
B - inductive load L/R = 40 ms



Contact material selection for different load types ERM2 and ERM4

AgNi - for resistive or inductive loads,

Mounting

ERM 2

Relays ERM2 are designed for mounting in plug-in sockets, standard version includes mechanical indicator with lockable front test button.
Relays ERM2 are designed for:

- screw terminals plug-in
- sockets ERB2-T*
- sockets ERB2-M* with clip ER-CLIP
- 35 mm rail mount acc. to EN 60715 or
- panel mounting

protecting modules type ERC are available as accessories /sockets (see below)

*Plug-in sockets ERB2-T and ERB2-M may be linked with interconnection strip type ER-TERMINAL

ERM 4

Relays ERM4 are designed for mounting in plug-in sockets, standard version includes mechanical indicator with lockable front test button.
Relays ERM4 are designed for:

- screw terminals plug-in
- sockets ERB4-T*
- sockets ERB4-M* with clip ER-CLIP
- 35 mm rail mount acc. to EN 60715 or
- panel mounting

protecting modules type ERC are available as accessories /sockets (see below)

*Plug-in sockets ERB4-T and ERB4-M may be linked with interconnection strip type ER-TERMINAL

Plugin Sockets And Accessories

ERB2-T and ERB4-T
Plugin sockets (base) type T

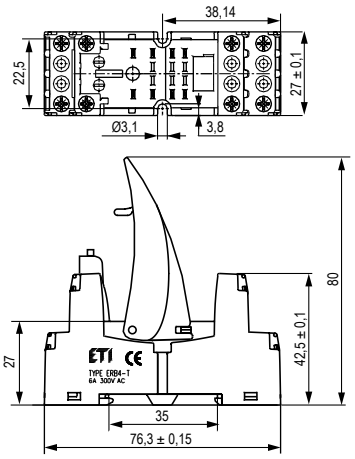
- Screw terminals
- Max. tightening moment for the terminal: 0,7 Nm
- 35 mm rail mount acc. to EN 60715
- or on panel mounting
- 76,3 x 27 x 42,5(80) mm*

*In the bracket the height of socket with retainer / retractor clip is shown.

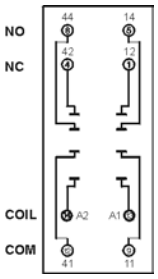
Two poles
12A, 300 V AC
For ERM2

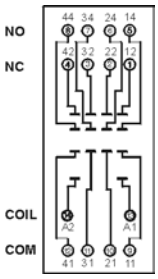
Four poles
6A, 300 V AC
For ERM4

Dimensions



Connection diagram





ERB2-M and ERB4-M
Plugin sockets (base) type M

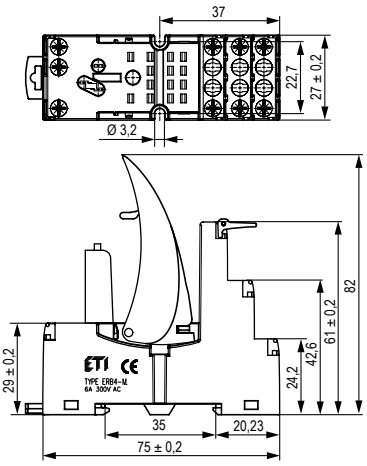
- Screw terminals
- Max. tightening moment for the terminal: 0,7 Nm
- 35 mm rail mount acc. to EN 60715
- or on panel mounting
- 75 x 27 x 61(82) mm*

*In the bracket the height of socket with retainer / retractor clip is shown.

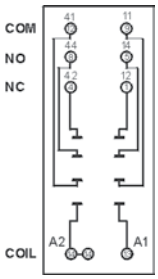
Two poles
12A, 300 V AC
For ERM2

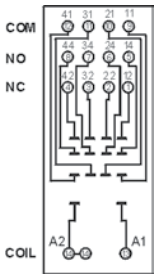
Four poles
6A, 300 V AC
For ERM4

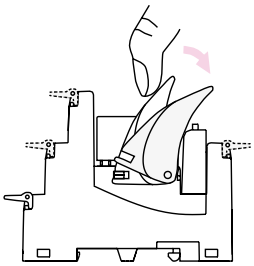
Dimensions



Connection diagram



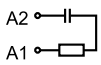




Removing the relay from the socket with a retrainer / retractor clip

Protection RC modules type ERC_AC

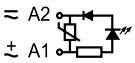
It protects against EMC disturbance and limits overvoltage.



6/24 V AC	ERC-024AC
110/240 V AC	ERC-230AC

Protection RC modules type ERC_ACDCL

It limits overvoltage on AC and DC coils. Coil energizing indication.



6…24 V ACDC	ERC-024ACDCL
24…60 V AC DC	ERC-060ACDCL
110…230 V ACDC	ERC-230ACDCL

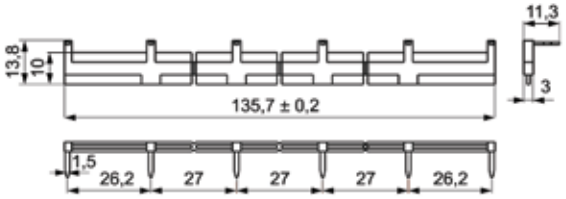
Modules are parallely connected with relay coil

Interconnection strip ER-CLIP

designed for the co-operation with plug-in sockets ERB of miniature industrial relays, which are equipped with screw terminals; sockets and relays are mounted on 35 mm rail mount acc. to EN 60715.

- bridges common input signals (coil terminals A1 or A2)
- maximum permissible current is 10 A / 250 V AC,
- possibility of connection of 6 sockets or relays

Dimensions



Miniature Electromagnetic Relays

Description
Electromechanical relay with 2x CO contacts in miniature housing. Can be used in PCB or with plug-in sockets.

- MER2 (2 pole CO »change over contact«, 2x8A AC1)
- Wide range of control voltages (AC coils: 24V and 230V, DC coils: 5V, 12V, 24V)
- Two types of plugin sockets (M type and T type)
- Accessories (retainer/retractor clips, RC modules...)
- Color: Grey

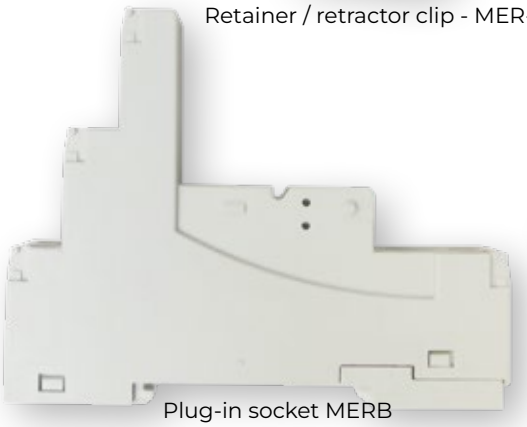
Features
- Cadmium - free contacts; height 15,7 mm
- 5000V / 10 mm reinforced insulation
- For PCB and plug-in sockets
- AC and DC coils
- Compliance with standard EN 60335-1
- RoHS

Miniature electromechanical relay MER

Retainer / retractor clip - MER-CLIP-PL

Protecting module ERC

Description plate MER-PLATE



Plug-in socket MERB

*All parts must be ordered separetely

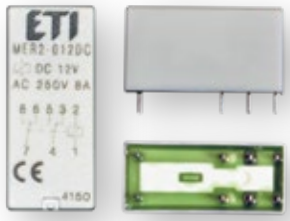
Table 1: Technical data

	MER2
Number and type of contacts	2 CO
Contact material	AgNi
Rated / max. switching voltage AC	250 V / 440 V
Min. switching voltage	5 V AgNi
Rated load (capacity) AC1 AC15 AC3 DC1 DC13	 8 A / 250 V AC 3 A / 120 V 1,5 A / 240 V (B300) 550 W (single-phase motor) 8 A / 24 V DC (see Fig. 3) 0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current	5 mA Agni
Rated current	8 A
Max. breaking capacity AC1	2000 VA
Min. breaking capacity	0,3 W AgNi
Contact resistance	≤ 100 mΩ
Max. operating frequency (cycles/hour) • at rated load AC1 • no load	 600 72 000
Coil data	
Rated voltage 50/60 Hz AC DC	12 ... 240 V 3 ... 110 V
Must release voltage	AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage	See Tables 1, 2 and Fig. 4, 5
Rated power consumption AC DC	0,75 VA 0,4 ... 0,48 W
Insulation according to EN 60664-1	
Insulation rated voltage	400 V AC
Rated surge voltage	4000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength • between coil and contacts • pole - pole	 5000 V AC type of insulation: reinforced 2500 V AC type of insulation: basic
Contact - coil distance • clearance • creepage	 ≥ 10 mm ≥ 10 mm
General data	
Operating / release time (typical values)	7 ms / 3 ms
Electrical life • resistive AC1 • cosΦ • DC L/R = 40 ms	 $> 10^5$ 8 A, 250 V AC see Fig. 2 $> 10^5$ 0,15 A, 220 V DC
Mechanical life (cycles)	$> 3x10^7$
Dimensions (L x W x H)	29 x 12,7 x 15,7 m
Weight	14 g
Ambient temperature • storage • operating	 -40 ... +85 °C AC: -40 ... +70 °C DC: -40 ... +85 °C
Cover protection category	IP40 / IP67
Environmental protection	RTII / RTIII
Shock resistance (NC)	20 g
Vibration resistance	5 g 10 ... 150 Hz
Solder bath temperature/ soldering time	max. 270 °C / max. 5 s

Miniature electromagnetic relays

Type	Code	Uc rated coil voltage [V]	No. Of contacts	g	
MER2-005DC	002473030	5 V DC	2xCO (8A, AC1)	13	20/1000
MER2-012DC	002473031	12 V DC			
MER2-024DC	002473032	24 V DC			
MER2-024AC	002473033	24 V AC			
MER2-230AC	002473034	230 V AC			

By parallel connection of relay main circuit (joining 2 CO contacts), the nominal current of output is increased to 16A.
Other coil (control) voltages available upon special request:
V DC: 3, 6, 9, 18, 36, 48, 60, 110
V AC: 12, 48, 60, 110, 115, 120, 220, 240



Ordering designation
MER2-YYYYY

X – Number of contacts:
2: 2 CO (2 changeover)

024AC: 24 V AC 50/60 Hz
230AC: 230 V AC 50/60 Hz
005DC: 5 V DC
012DC: 12 V DC
024DC: 24 V DC

YYYYY – Coil code:

Example:
MER2-024DC
Miniature electromagnetic relay, two changeover contacts, coil voltage 24 V DC.

Plug-in Sockets (Base)

Type	Code	For use with	g	
MERB-T	002473035	MER2	44	10/100
MERB-M	002473036			10/80

T - T type
M - M type

MERB-T

MERB-M

Accessories

Type	Code	For use with	g	
MER-CLIP-SP	002473037	MERB-T & MERB-M	0,3	25/400
MER-CLIP-PL	002473038			
MER-PLATE	002473039		0,34	10/700
ERC-024AC	002473019	MER2-024AC	2,6	10/200
ERC-230AC	002473020	MER2-230AC		
ERC-024ACDCL	002473040	MERB-T & MERB-M U_c = 6 ... 24 V AC/DC	2,9	20/100
ERC-060ACDCL	002473041	MERB-T & MERB-M U_c =24 ... 60 V AC/DC	2,9	20/100
ERC-230ACDCL	002473042	MERB-T & MERB-M U_c =110 ... 230 V AC/DC	2,9	20/100
MER-TERMINAL	002473048	MERB-T, MERB-M	6	20/200

MER-CLIP-PL

MER-CLIP-SP

Mechanical lock of relay in socket, two types
Standard plastic MS and spring wire type

MER-PLATE
description

ERC-(024…230)ACDCL
MOV protection module with indication AC and DC.
*More data about ERC module can be found on page 208.

ERC
protection module
RC filter
*More data about ERC module can be found on page 208.

MER-TERMINAL

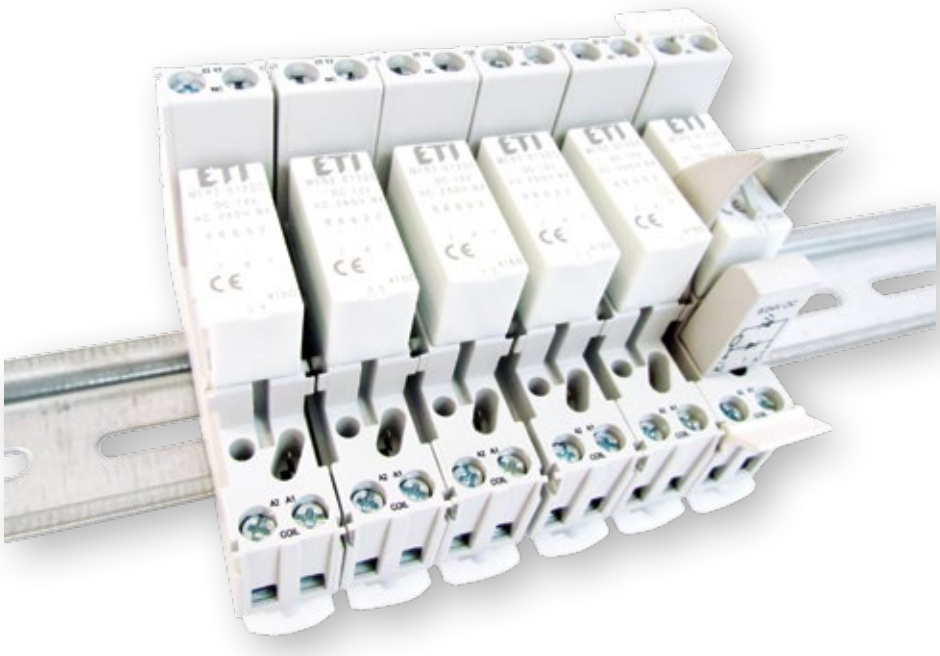
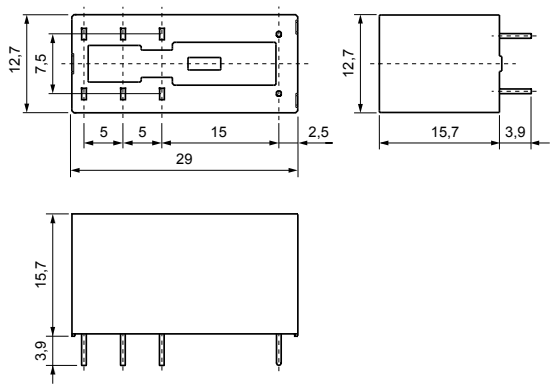


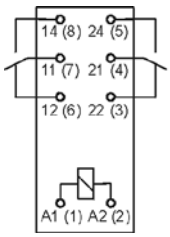
Table 2: Coil data

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC min. (at 20 °C)	Coil operating range V DC max. (at 20 °C)
DC voltage version					
005DC	5	60	± 10%	3,5	12,7
012DC	12	360	± 10%	8,4	30,6
024DC	24	1440	± 10%	16,8	61,2
060DC	60	640	± 10%	19,2	26,4
AC 50/60 Hz voltage version					
024AC	24	400	± 10%	19,2	28,8
230AC	230	38 500	± 10%	184,0	276,0
024AC	24	158	± 10%	19,2	26,4
230AC	230	6100	± 10%	184,0	253,0

Dimensions

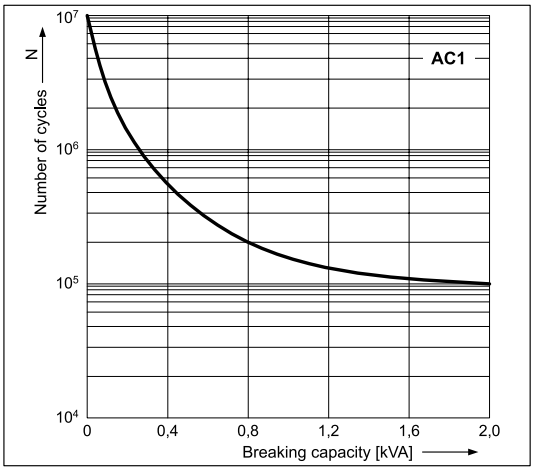


Connection diagram (pin side view)

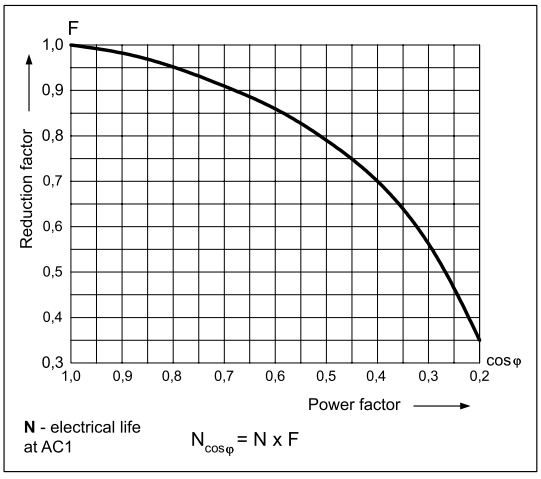


Terminal (pin)	A1(1); A2(2)	22(3); 21(4); 24(5); 12(6); 11(7); 14(8)
[mm]	Ø 0,6	0,5 x 0,9
Drilling hole: • for relays • for sockets	 Ø 1,3 + 0,1 mm Ø 1,5 + 0,1 mm	

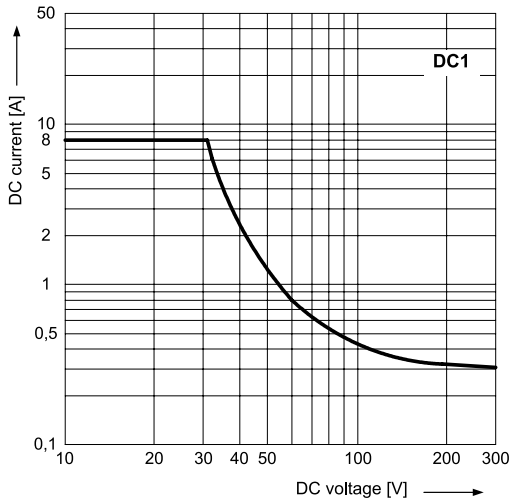
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1



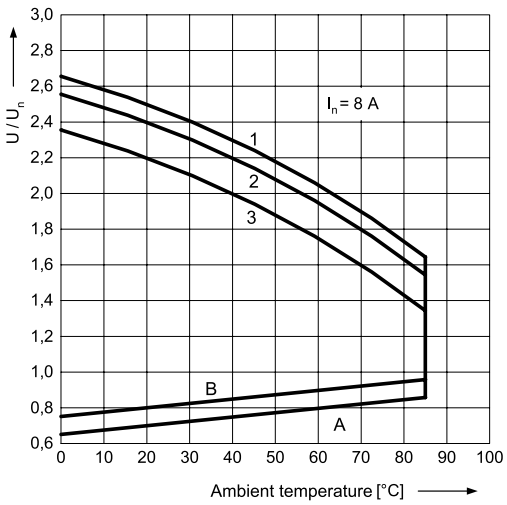
Electrical life reduction factor at AC inductive load Fig. 2



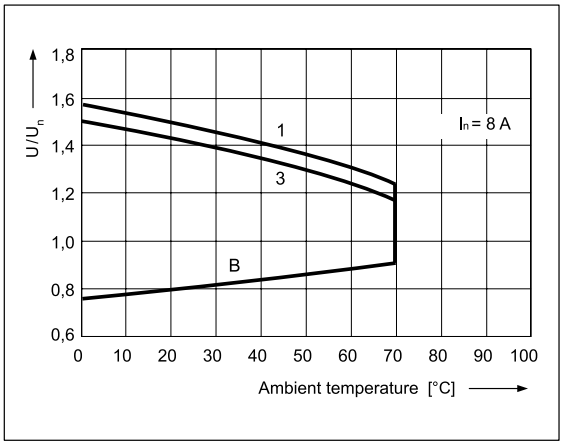
Max. DC resistive load breaking capacity Fig. 3



Coil operating range = DC Fig. 4



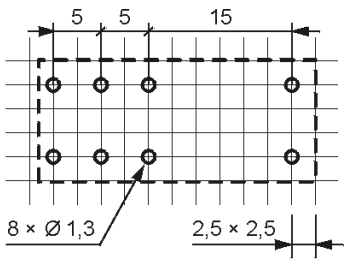
Coil operating range = AC 50 Hz Fig. 5



Description of Fig. 4 and 5

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load

Pinout (soldier side view)



Mounting

Relays MER2 are designed for:
direct PCB mounting
screw terminals plug-in sockets MERB-T and MERB-M

Plugin Sockets And Accessories

MERB-T
Plugin sockets (base) type T

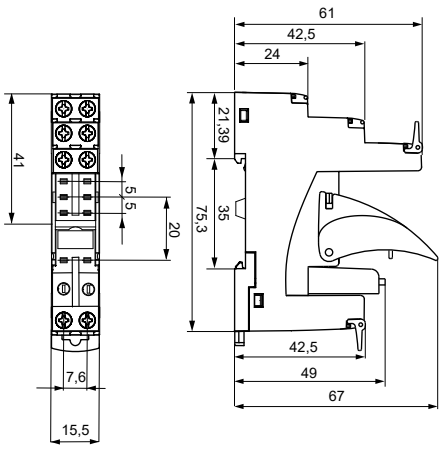
- Screw terminals
- Max. tightening moment for the terminal: 0,7 Nm
- 35 mm rail mount acc. to EN 60715
- or on panel mounting
- 75,3 x 15,5 x 61(67) mm*

*In the bracket the height of socket with retainer / retractor clip is shown.

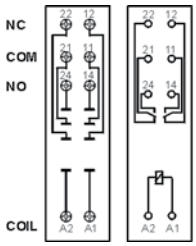
Two poles, 5mm pinout

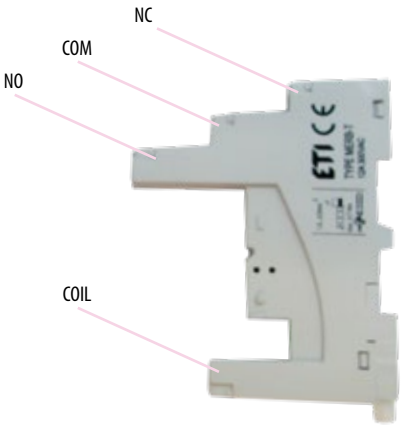
12A, 300 V AC

Dimensions



Connection diagram





MERB-M
Plugin sockets (base) type M

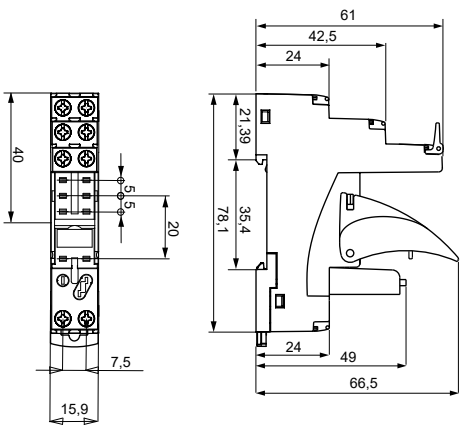
- Screw terminals
- Max. tightening moment for the terminal: 0,7 Nm
- 35 mm rail mount acc. to EN 60715
- or on panel mounting
- 78,1 x 15,9 x 61(66,5) mm*

*In the bracket the height of socket with retainer / retractor clip is shown.

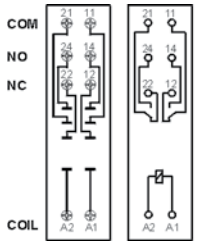
Two poles, 5mm pinout

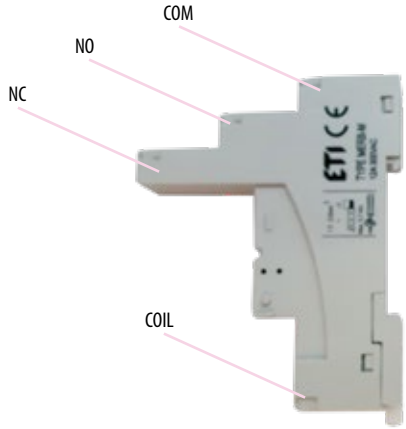
12A, 300 V AC

Dimensions



Connection diagram





SLIM RELAYS SSR & SER, Electromagnetic and solid

Table 1: Technical data

	SER1; Contact data	SSR1; Output circuit - Triac
Number and type of contacts	1 CO	1 NO
Contact material	AgSnO2	-
Rated / max. switching voltage AC	400 V AC / 250 V DC	400 V AC / 440 V AC
Min. switching voltage	10 V AC / DC	20 V AC
Rated load (capacity) AC1 DC1	6 A / 250 V AC 6 A / 24 V DC; 0,15 A / 250 V DC	1,2 A / 400 V AC -
Min. switching current	100 mA	10 mA
Max. inrush current / Max. non-repeat surge current	10 A (t=20 ms)	30 A (t=20 ms)
Rated current	6 A	16 AA
Max. breaking capacity AC1	1 500 VA	1 500 VA
Min. breaking capacity	1 W	-
Contact resistance	≤100 mΩ 100 mA, 24 V	-
Max. operating frequency (cycles/hour) • at rated load AC1 • no load	 360 72 000	-
I^2t for fusing	-	5,1 A^2s (t=1-10 ms)
dI/dt	-	50 A/µs
dV/dt	-	40 V/µs
Input circuit		
Rated voltage AC: 50/60 Hz AC/DC	24 V; 230 V	
Must release voltage / Turn-off voltage	AC: ≥ 0,2 Un DC: ≥ 0,1 Un	
Must operate voltage	AC & DC: ≤ 0,8 Un	-
Rated power consumption AC/DC AC/DC	0,3 ... 1,6 VA / 0,3 ... 1,6 W -	0,3 VA / 0,3 W 24 V AC/DC 1,6 VA / 1,6 W 230 V AC/DC
Insulation according to PN-EN 60664-1		
Insulation rated voltage	400 V AC	600 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs	-
Overvoltage category	III	-
Insulation pollution degree	3	2
Dielectric strength • input - output • input - output • mass - input, output • contact clearance	 4 000 V AC 50/60 Hz, 1 min. (type of insulation: reinforced) 6 000 V 1,2 / 50 µs 2 500 V AC 50/60 Hz, 1 min. 1 000 V AC 50/60 Hz, 1 min. (type of clearance: micro-disconnection)	 4 000 V AC 50/60 Hz, 1 min. (type of insulation: reinforced) - - -
Input - output distance • clearance • creepage	 ≥ 6 mm ≥ 8 mm	-
General data		
Operating / release time (typical values)		
Electrical life • resistive AC1 (cos φ = 0,4) • resistive DC1	 > 0,6 x 105 6 A, 250 V AC; > 2 x 105 2 A, 250 V AC 105 6 A, 30 V DC	-
Mechanical life (cycles)	> 2 x 107	-
Dimensions (L x W x H)	93,8 x 6,2 x 80 mm	
Weight	40 g	
Ambient temperature • storage • operating	 -40...+70 °C -40...+55 °C (-40...+60 °C 24 V DC)	 -40...+70 °C -40...+55 °C
Protection category	IP 20 PN-EN 60529	
Environmental protection	RTI PN-EN 116000-3	
Shock resistance	10 g	
Vibration resistance	5 g 10...500 Hz	

Advantages:
- Width 6,2 mm;
- Interface relay SER1 - with 1 CO contact output;
- 35 mm rail mount acc. to PN-EN 60715;
- May be linked with interconnection strip type
- SR-TERMINAL;
- Equipped in LED green;

Mounting
Relays are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Connections: max. cross section of the cables: 1 x 2,5 mm2 / 2 x 1,5 mm2 (1 x 14 / 2 x 16 AWG), length of the cable deinsulation: 8 mm, max. tightening moment for the terminal: 0,3 Nm. Relays may be linked with interconnection strip type SR-TERMINAL bridges common input or output signals, maximum permissible current is 36 A / 250 V AC.

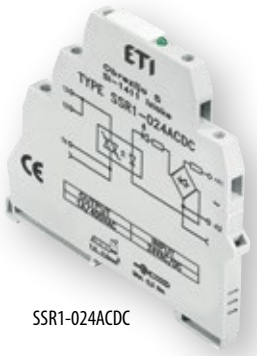
Electromagnetic relays

Type	Code	Uc rated coil voltage [V]	No. Of contacts	I_n [A]	g	
SER1-024ACDC	002473052	24 V AC/DC	1xCO	AC1: 6 A / 250 V DC1: 6A/24 V; 0,15A/250 V	40	10/100
SER1-230ACDC	002473053	230 V AC/DC				

SER1-024ACDC

Solid state relay (triac output)

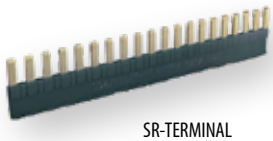
Type	Code	Uc rated coil voltage [V]	No. Of contacts	I_n [A]	g	
SSR1-024ACDC	002473050	24 V AC/DC	1xNO	AC1: 1,2 A/400 V	40	10/100
SSR1-230ACDC	002473051	230 V AC/DC				



SSR1-024ACDC

Accessories

Type	Code	Colour	Description	g	
SR-TERMINAL	002473054	black	max 36A (250VAC) or Max permissible current	12,3	10/100


SR-TERMINAL

SR-TERMINAL: bridging of common input or output signals

Input data SER1

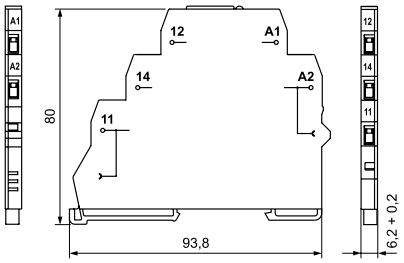
Interface relay code	Rated input voltage, Un	Power of input circuit	Input - voltage range, V	
			min. (20 °C)	max. (55 °C)
SER1-024ACDC	24 V AC/DC	0,5 VA / 0,5 W	19,2	26,4
SER1-230ACDC	230 V AC/DC	0,8 VA / 0,8 W	184,0	253,0

Input data SSR1

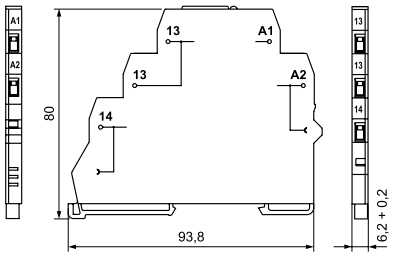
Interface relay code	Rated input voltage Un	Power of input circuit
SSR1-024ACDC	24 V AC/DC	0,3 VA / 0,3 W
SSR1-230ACDC	230 V AC/DC	1,6 VA / 1,6 W

Dimensions

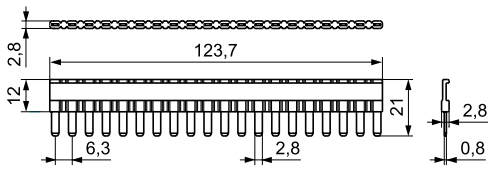
SER1-024ACDC / SER1-230ACDC



SSR1-024ACDC / SSR1-230ACDC

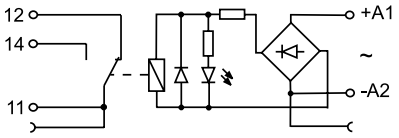


SR-TERMINAL

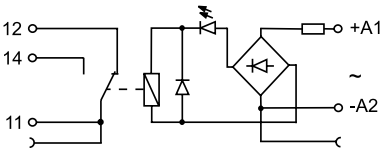


Connection diagram

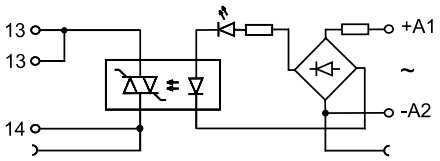
SER1-024ACDC



SER1-230ACDC



SSR1-024ACDC
SSR1-230ACDC



ETICONTROL

ATS Controllers

ATS Controllers **220**

/etigroup

SWITCH TO
A SAFE FUTURE

ETICONTROL ATS controllers

ATS controller (ATC-E, ATC-B)

Applications - Intelligent Power Switch controller ATC is monitoring and controlling device for automatic changeover system ATS (ATS system involves restoration of power consumers by automatically switching to alternative power supply when disconnecting from primary power supply in case of failure and switch back to the primary when stable) for voltages up to 400V. The device is intended for use in all types of industry and controls switching devices such as disconnectors with motor-driven circuit breakers or contactors.

Features:
- LED display with three characters;
- Voltage measured at three phases on;
- network and generator;
- Relay outputs for controlling the switching devices;
- The front panel 96 × 96;
- LED indication - 15 functions;
- Manual or automatic;
- Remote start of the generator;
- Power supply 8-30 V DC

LED indication:
- Alarm;
- In function;
- Start generator;
- Manual mode;
- Automatic mode;
- Voltage measured at generator;
- Generator switching device ON;
- Power through generator;
- Voltage measured at grid;
- Grid switching device ON;
- Power through grid;
- L1(R) indication
- L2(S) indication
- L3 (T) indication
- Running

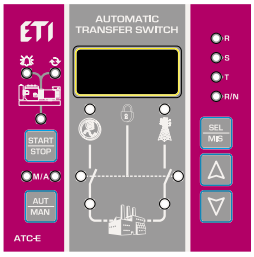
Technical data

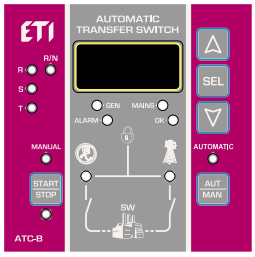
Specifications:		ATC-E	ATC-B
Supply voltage DC	V DC	8 - 30 V DC	
Power consumption (max. AC)	VA	4 VA	
Controlled voltage	V AC	230 V(1F) / 400 V(3F) / 440 V(3F)	
Switch control signal	-	✓	✓
Display Type	-	3 digit, 7 segment	
Measurement type	-	RMS	
Measurement range Voltage	V AC	0 - 500 V AC	
Measurement range of frequency	Hz	45 - 65 Hz	
Accuracy	%	±2 %	
Operating temperature	°C	-10 / +50 °C	
Storage temperature	°C	-30 / +70 °C	
Degree of protection	IP	IP 20	
Max. cable size	mm^2	2,5 mm2 (screw clips)	
Relative humidity	%	95 %	
Housing material	-	UL94 V0 (plastic)	
Type of housing	-	Standard dimensions - 96x96	
Dimensions H × W × D	mm	96 x 96 x 112	
Weight	g	230 g	200 g

ATS controller

Type	U_N (V)	Description	Code	g
ATC-E	DC 8-30V	ATS controller ATC-E with alarm contact block	004656574	230
ATC-B	DC 8-30V	ATS controller ATC-B	004656573	200

ATC-E

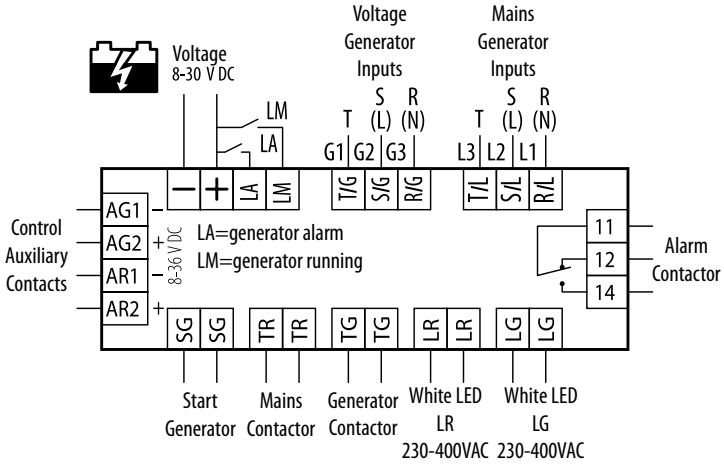




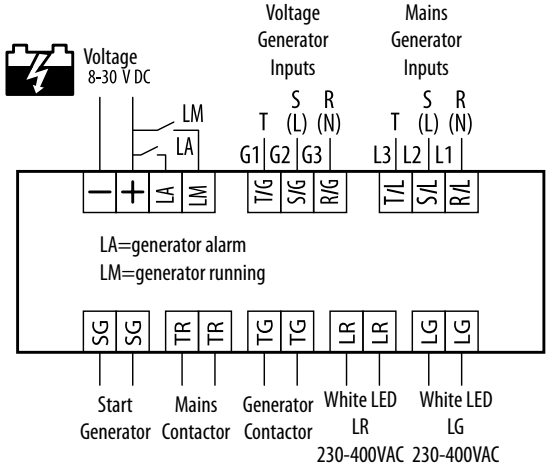
ATC-B

Wiring Diagrams

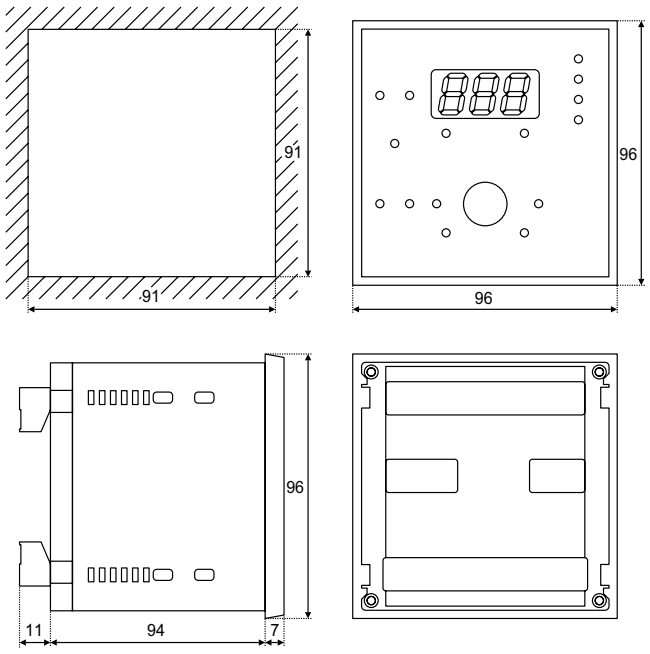
Wiring Diagram ATC-E



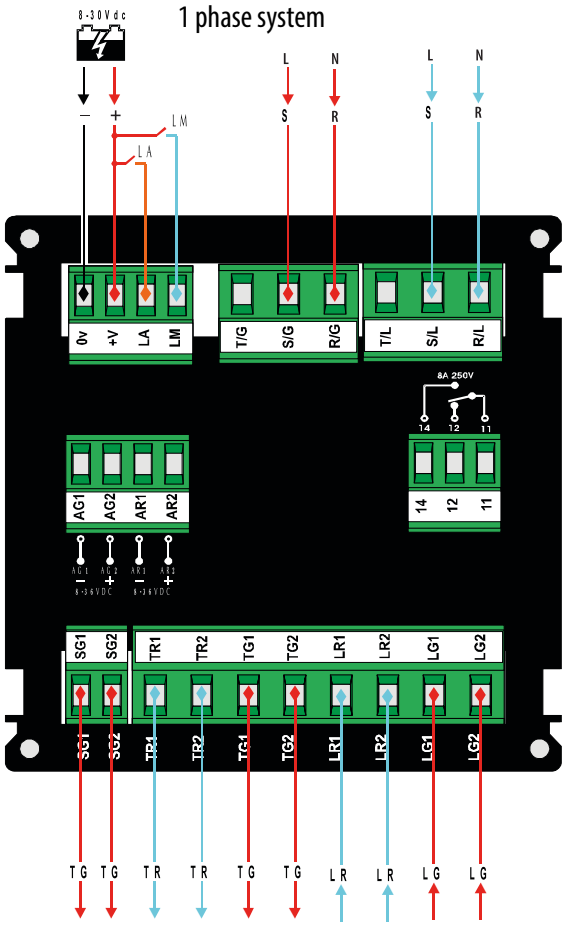
Wiring Diagram ATC-B

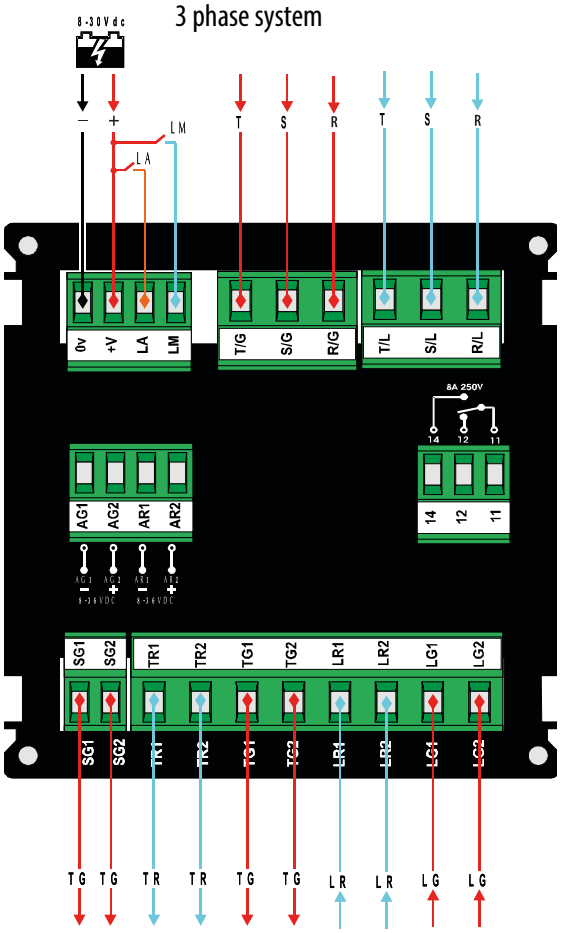


Dimensions



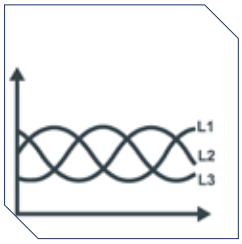
Connecting examples





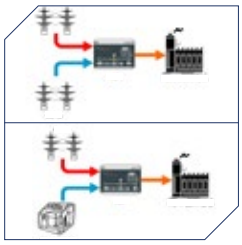
ATS controller (ATSC25)

- Voltage sensing on all phases and phase rotation checking

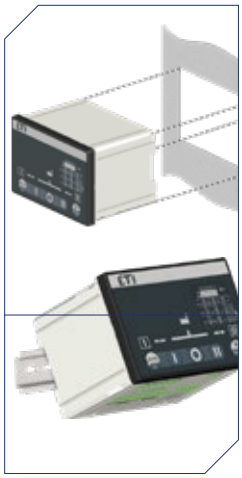


- Miniature DIP switches make it quick and easy to program the controller as well as identify the current state of the controller settings

- Ability to work in Main/ Main or Main/Genset networks



- Door or DIN rail mounting



- Built-in double power supply to ensure uninterrupted operation of the motorised change over load break switch

- Indication of controller status, RS communication, faults and emergency situations

- Fire alarm puts controller in neutral

- 24 VDC aux power supply (for optional use)

ETICONTROL / ATS Controllers

Description
ATSC25 “ATS Controller” in association with an RTSE (Remote transfer switching equipment) forms an ATSE (Automatic transfer switching equipment), the ATSE formed by the association is designed for use in power systems for the safe transfer of a load supply between a normal and alternate source. As a standalone product the ATSC25 is compliant with IEC 61010-2-201.

Functions:
- Monitoring of the availability of a Normal and Alternate source
- Supply to the controller and switch from the Normal or Alternate source
- Transfer orders to the RTSE and position reception from the RTSE
- Intuitive HMI for emergency/local operation
- Clearly visible and indicated HMI
- Suitable for door mounting on the enclosure or DIN Rail mounting inside the enclosure
- Inherent electrical interlock between position orders
- Monitoring of the RTSE stable positions (I – 0 – II)
- Strait forward installation with effective ergonomics
- Power supply continuity for most Utility / Generator or Utility / Utility network applications when linked to an RTSE (Remotely operated transfer switches).

* Programmable with DIP switch settings

Features:
- integrated power supply for MLBS(motorised changeover load break switch) control;
- voltage measurement in three phases @ two networks;
- possibility of power supply 24 V DC;
- Mounting the front panel / TH35 DIN rail;
- operating modes network / network or network / generator;
- input for emergency blocking of the controller (fire input);
- manual or automatic operation;
- visual indication of the connected network;
- self-testing function;
- supply voltage 184-300 V AC;
- Adjustable hysteresis for voltage and frequency.

Technical data

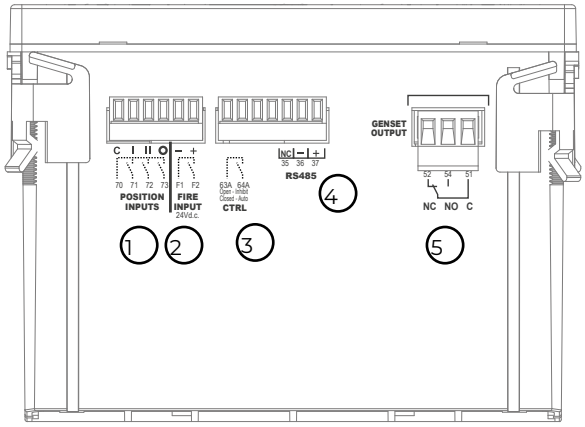
Specifications:		ATSC25
Supplied from measurement circuit		184 - 300 VAC
Power consumption		10 W
Measurement range	linear	90 - 520 VAC
	phase	50 - 300 VAC
Frequency		45 - 65 Hz
Emergency input (fire) voltage, V DC		12 - 24 VDC
Communication interface		RS485
Conductor cross section		
Mounting		DIN rail / door
IP rating		IP 20 (IP40 for front mounting)
Operation temperature		-25 °C ... +60 °C
Operation humidity		80 % / 50 °C 95 % / 40 °C
Dimensions (H × W × D)		96 x 144 x 106
Measurement category		III
Standards		IEC 61010-2-201, IEC 60947-6-1, IEC 60947-1

ATS controller

Type	Description	Code	g	
ATSC25	Automatic transfer switch controller	004661922	1000	1/18

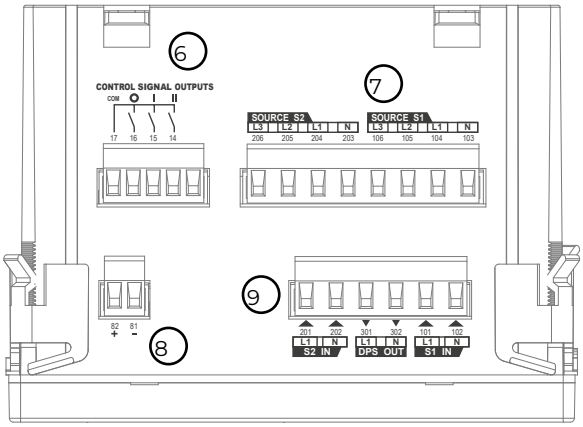
Description

Connectors top view



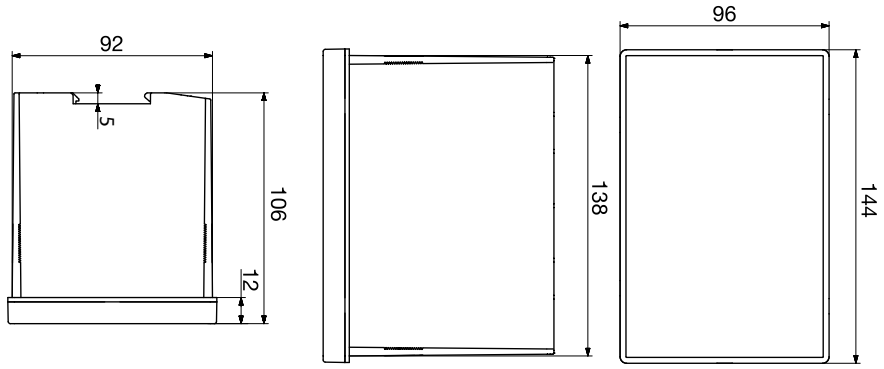
1. RTSE position feedback input
2. 24 V.d.c fire input
3. Enable control when closed / disable control when open
4. RS485 connections
5. Genset Start relay

Connectors bottom view



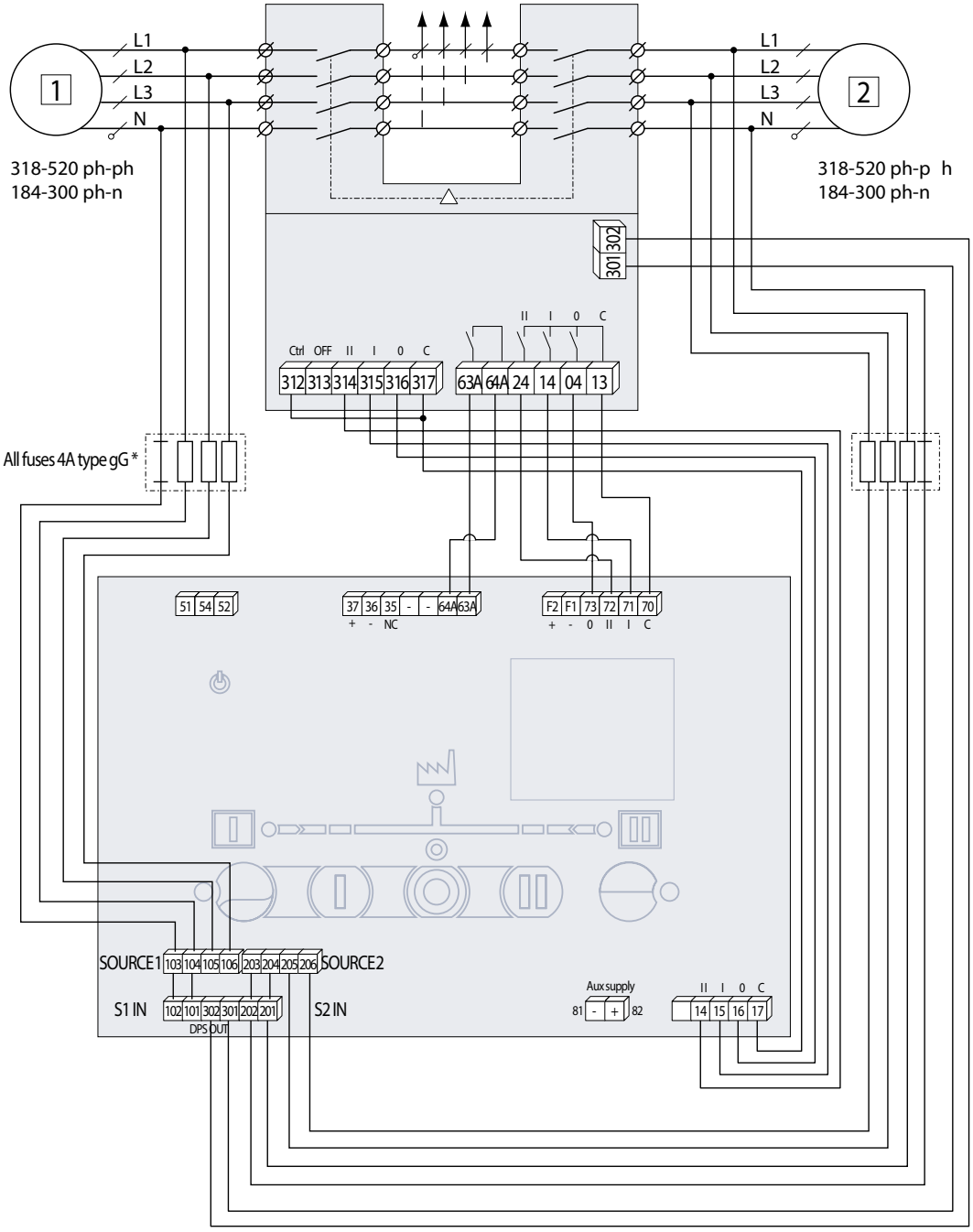
6. RTSE position control outputs
7. Source 1 and 2 voltage inputs
8. 24 V.d.c Aux supply
9. External DPS – Input / output

Dimensions

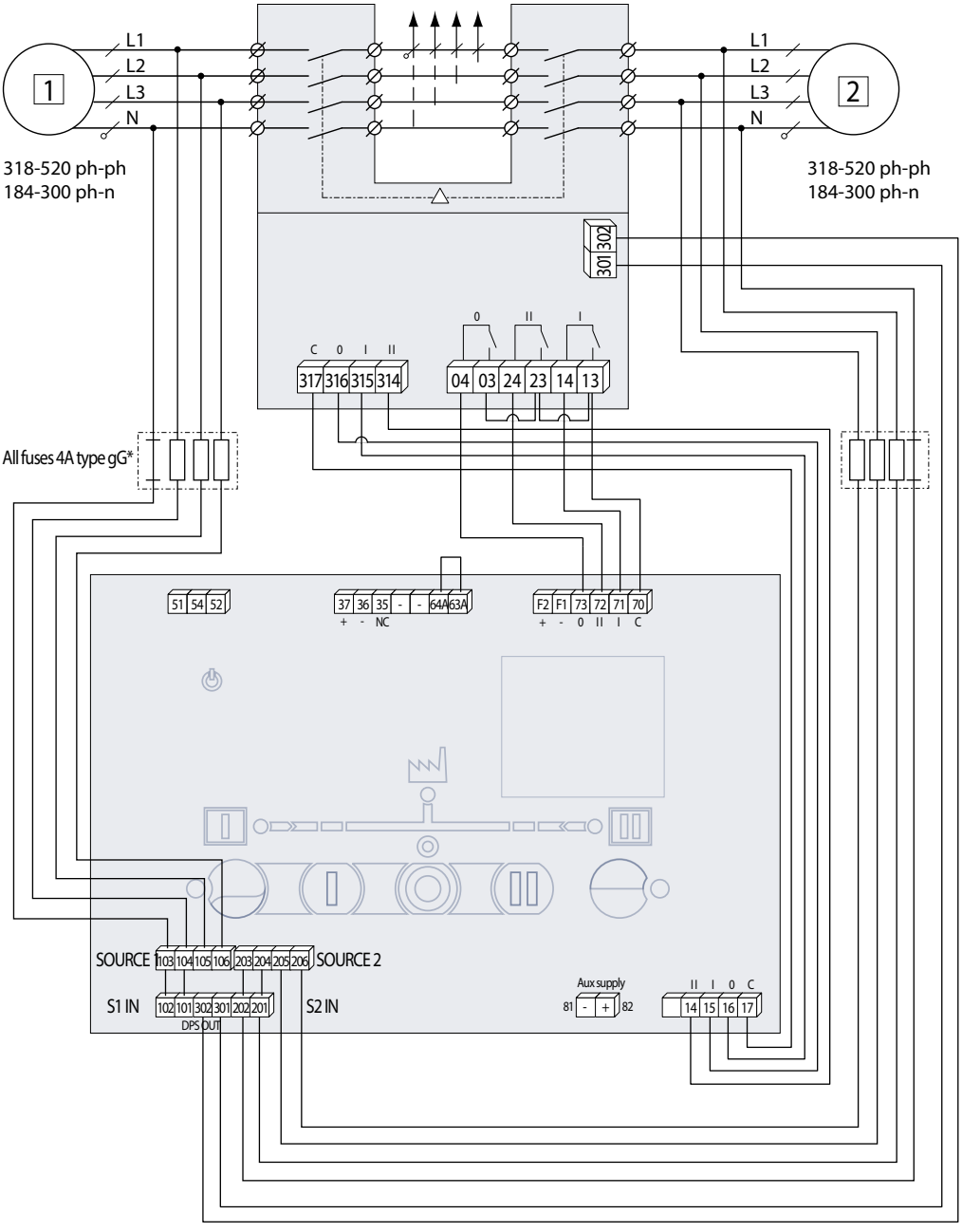


Wiring Diagrams

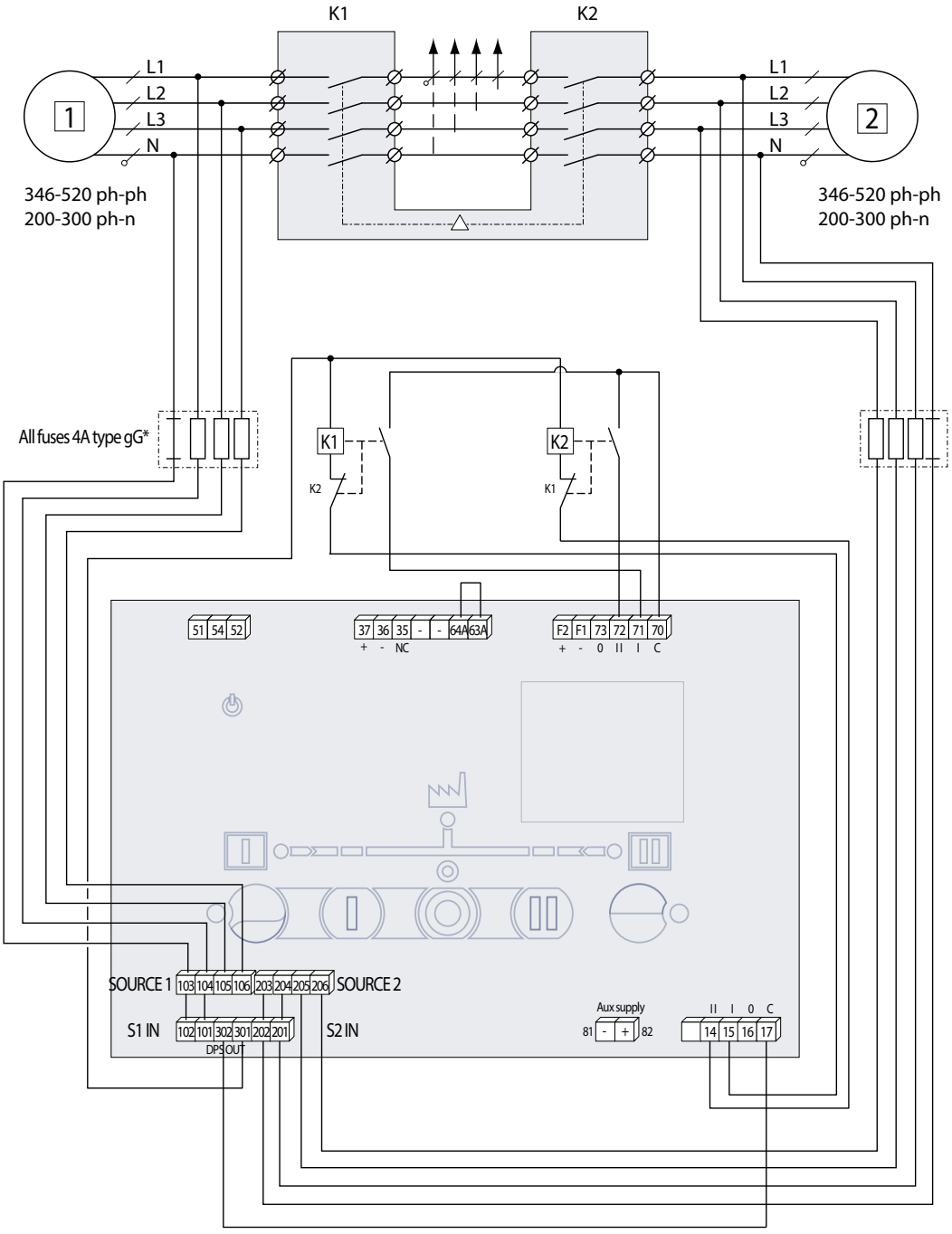
Connection diagrams with MLBS 3P/4P 250...630A



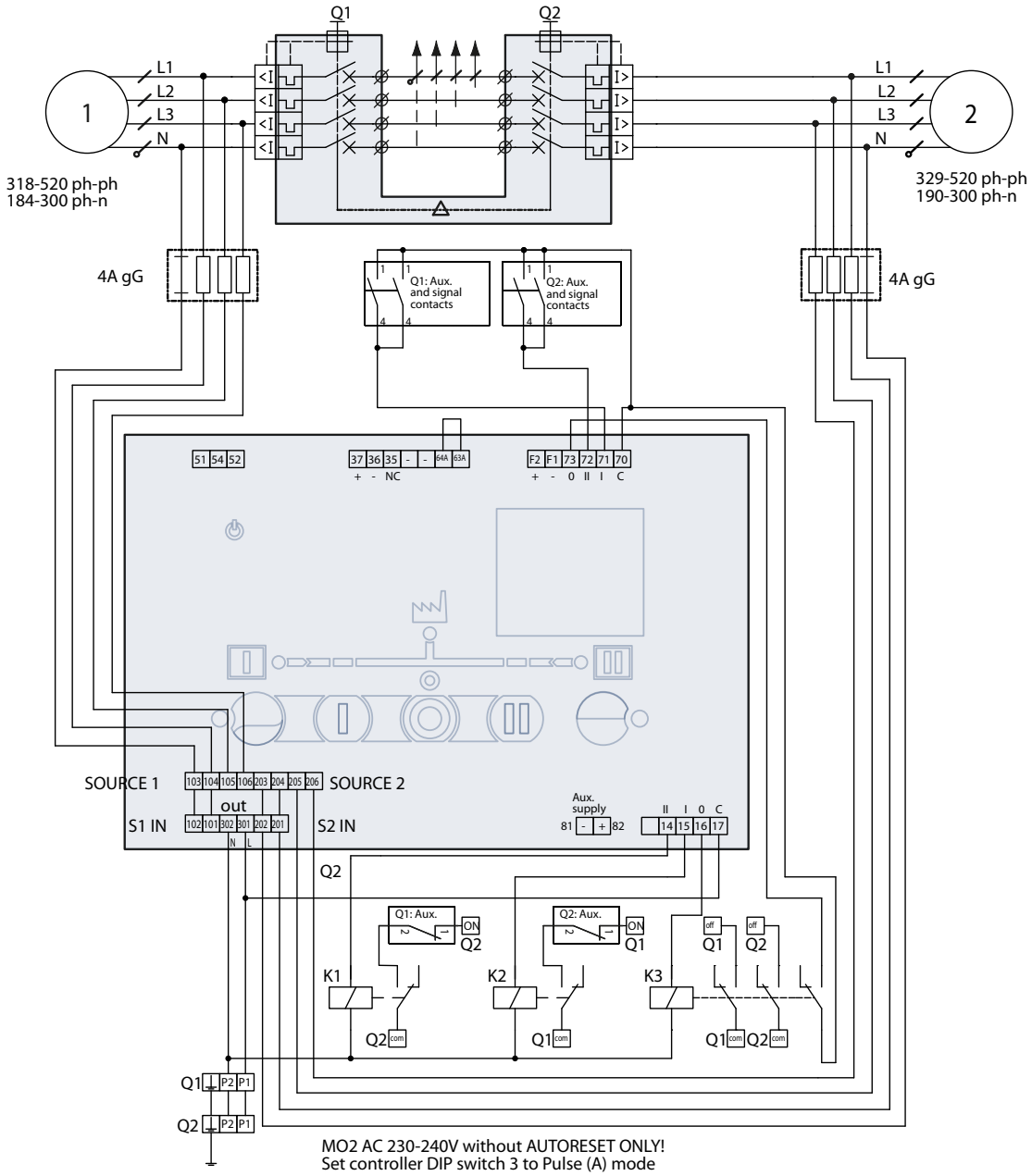
Connection diagrams with MLBS 3P/4P 63...125A



Connection diagrams with standard contactors (CEM or CES) with mechanical interlock (DIP switch 3 on position B)

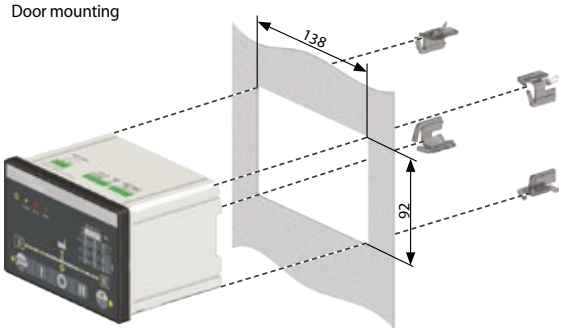


Connections with MCCBs EB2 and MO2



Mounting

Door mounting



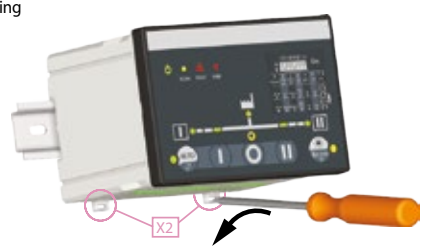
Door cut-out of 93(+0.8) x138(+1) mm, door thickness 1.5- 3mm.
Remove all connectors and clip before inserting the controller in the cut-out then fix the controller in place using all 4 fixations clips

DIN rail mounting

1. Mounting

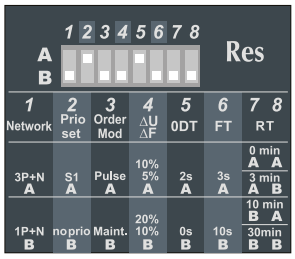
When mounting make sure both clips are pushed up, then clip on the DIN Rail.

2. Unmounting



To remove from the DIN Rail, drag the two mounting clips down before removing the product.

Settings



After changing DIP switch settings press RES button shortly (<3s) to validate.

To reset settings configured through communication long press on RES button > 10s.

DIP Switch		
DIP 1 A/B	A	Three phase network
	B	Single phase network
DIP 2 A/B	A	Priority source 1
	B	No priority
DIP3 A/B	A	Control mode impulse logic
	B	Control mode contactor logic
DIP 4 A/B	A	Overvoltage setting at 10% of nom voltage / overfrequency setting 5% of nominal frequency (hysteresis value is 20% of ΔU/ΔF)
	B	Overvoltage setting at 20% of nom voltage / overfrequency setting 10% of nominal frequency (hysteresis value is 20% of ΔU/ΔF)
DIP5 A/B	A	Load supply down time of 2 second (0DT = 02 sec)
	B	Load supply down time of 0 second (0DT = 0 sec)
DIP6 A/B	A	Wait time of 3s before source is lost (Fail timer = 3s)
	B	Wait time of 10s before source is lost (Fail timer = 10s)
DIP 7 & 8 A/B & A/B	AA	Wait time of 0min before source returns (retrun timer = 0min)
	AB	Wait time of 3min before source returns (retrun timer = 3min)
	BA	Wait time of 10min before source returns (retrun timer = 10min)
	BB	Wait time of 30min before source is lost returns (retrun timer = 30min)

Denomination	Terminal	Description	Characteristics
Control signal outputs (orders to RTSE)	14	Position II order	AC1 – General use – Ie :5A , Ue : 250V DC – General use – Ie 5A, Ue: 30V
	15	Position I order	
	16	Position 0 order	
	17	Common point for position output	
RS485	35	NC – Not connected	RS485 Isolated bus
	36	Negative electrode	
	37	Positive electrode	
Genset output	51	Common point	AC1 – General use – Ie :3A , Ue : 250V DC – General use – Ie 3A, Ue: 30V AC1 – General use – Ie :5A , Ue : 250V DC – General use – Ie 5A, Ue: 30V 150W
	52	Normaly closed contact	
	54	Normaly open contact	
Controller inhibit input	63A	Controller is inhibited when this contact is open	Do not use external voltage - Power from common point
	64A		
Position iputs (return of information from RTSE)	70	Common point for position inputs	Do not use external voltage - Power from common point
	71	Position I RTSE	
	72	Position II RTSE	
	73	Position 0 RTSE	
Fire input	F1	Negative electrode of the 24 V.d.c	11-25 V.d.c
	F2	Positive electrode of the 24 V.d.c	
Optional Aux supply 24V.d.c	81	Negative electrode of the 24 V.d.c	19-30 V.d.c
	82	Positive electrode of the 24 V.d.c	
Source 1 and 2 voltage inputs	103	Source 1 N	Sensing range : 90-520 VAC (ph-n) 50-300 VAC L-N Supply range : 161-300 VAC (ph-n) Max consumption 10 W
	104	Source 1 L1	
	105	Source 1 L2	
	106	Source 1 L3	
	203	Source 2 N	
	204	Source 2 L1	
	205	Source 2 L2	
	206	Source 2 L3	
DPS output (RTSE power supply)	301	Phase output	AC1 – General use – Ie :8A , Ue : 250V DC – General use – Ie 5A, Ue: 30V 150W
	302	Neutral output	

ETIMETER

Network Analyzers

Network Analyzers **232**
Modular Energy Counters **243**
Metering Current transformers **251**

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ETIMETER Network Analyzers

Network Analyzer END20LRS

END20LRS is distinguished by a high measurement accuracy, legible backlight LCD display and an attractive price in relation to offered measuring functions. It is the ideal tool to control and monitor energy quality parameters and energy consumption in all industry branches, public utilities or in public service buildings.
Application - The END20L-RS mains analyser is designed to monitor electrical parameters and quality in three-phase or single-phase low and high voltage networks. The analyser provides accurate measurements of all types of electricity and has a wide range of options for setting the parameters displayed on the screen. The analyser can be connected both directly and via current and voltage transformers. Modbus protocol and pulse output for electricity meters are used for data transfer.
Features and measurements

- power network parameters in 4- wire balanced and unbalanced systems,
- Measurement of current and voltage THD distortion coefficients;
- indications considering values of programmed ratios,
- backlight LCD 3,5" screen,
- digital transmission to the master system through the RS-485 interface (MODBUS RTU).
- protection grade from the frontal side: IP65
- high accuracy class,
- 1x relay output for alarm and 1x pulse output
- programmable output relay;
- W-WH-VA-VAR-VARH power measurement;
- function for measuring the maximum consumption of each phase;
- password protection

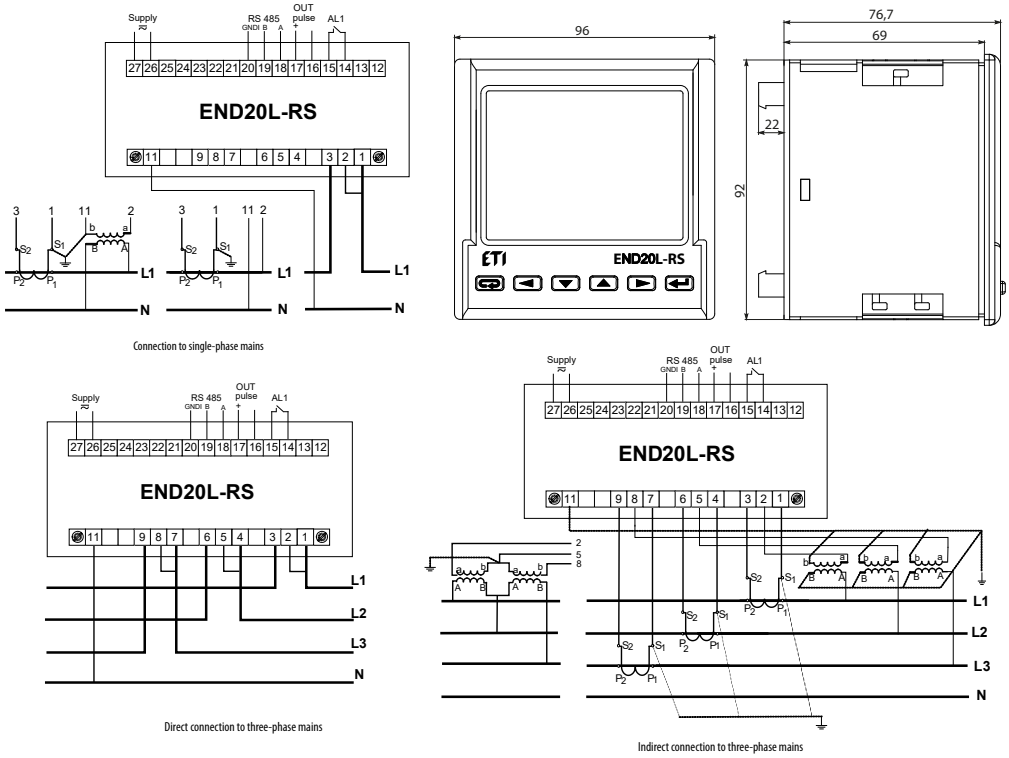
Technical data

	END20LRS
Power supply voltage	85 - 253V AC / 90 - 300V DC
Measurement voltage phase, AC	2,8 - 276V AC
Measuring voltage linear, AC	5 - 480V AC
Measured current	0,002 - 6000 A
Nominal Frequency	47 - 63 Hz
Maximum power input	6 VA
Maximum current input consumption	0,05 VA
Maximum voltage input consumption	0,05 VA
Relay output	potential-free 1 NO (0,5A, 250V AC)
Counter pulse output	NPN (18-27V, 10-27mA), 1000 - 20000 imp/kW
Communication protocol	RS-485 (Modbus RTU)
Communication speed	4.8 / 9.6 / 19.2 / 38.4 kB
Operating temperature	-25 ... +55 °C
Overvoltage Category	300 V, III
Pollution degree	II
Protection degree	IP65 - front panel; IP20 - from the connection side
Dimensions H x W x D	96 x 96 x 77 mm
Installation opening H x W	92,5 x 92,5 mm
Standards	EN 61010-1, 61326-1, 61000-6-4

INSTRUCTIONS

Network Analyzer END20LRS

Type	Description	Code	g	
END20LRS	Analyzer with RS485 port	004656950	500	1



Network Analyzer END25RSA and END25ETHA

END25RSA and END25ETHA meters measure important electrical parameters in 3 phase 4 wire,3 phase 3 wire and 1 phase 2 wire network. It measures electrical parameters like active / reactive / apparent energy , power and all basic parameter. The instrument has two optional outputs. It can be configured as pulse output for energy measurement, limit output, timer function and RTC relay.
END25RSA is basic instrument with RS485 interface (MODBUS RTU) and 2 programmable outputs (Potential free, very fast acting relay contacts. Configurable as pulse output which can be used to drive an external counter for energy measurement. Configurable as limit (alarm) switch).
END25ETHA is more advanced instrument, with ETHERNET interface (MODBUS TCP/IP), real time clock and data logging (8MB memory).

All devices can be configured and monitored via PC with free econ software.

Features

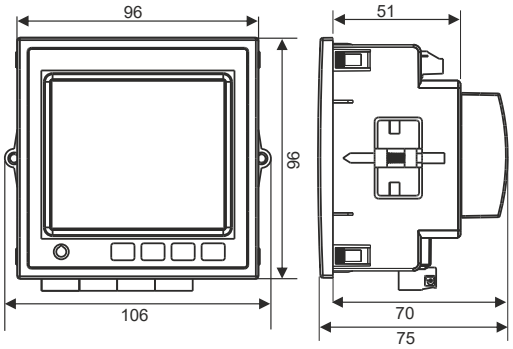
- Measurement of 85 parameters, THD and harmonics up to 31st for voltage & current
- Fully configurable LCD screen - possibility of programming 28 independent screens
- Two optional outputs (END25RSA only). It can be configured as pulse output for energy measurement , limit output and timer function
- RTC - real time clock (END25ETHA only)
- Measurement archive – in-built 8MB Flash (END25ETHA only)
- Data logging for:
- event logging (END25ETHA only)
- time based logging (END25ETHA only)
- load Profile logging (END25ETHA only)
- LCD display with Back-light
- Remote access of measured parameter via RS-485 (Modbus RTU) or through Ethernet interface (Modbus TCP/IP)
- external dimension: 96 x 96m

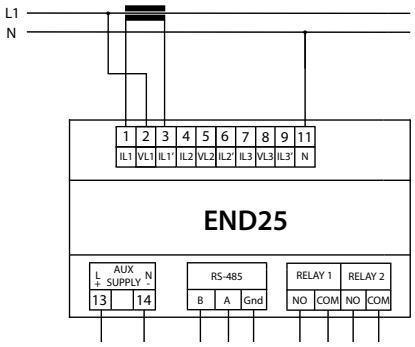
Technical data

	END25RSA	END25ETHA
Power supply voltage	V DC 100 - 550V AC/DC	
Measurement voltage phase, AC	57,7 - 346,4V AC	
Measuring voltage linear, AC	100 - 600V AC	
Measuring current (primary winding)	1/5 A	
Measuring current (secondary winding)	1 - 9999 A	
Nominal Frequency	VA 45 - 65 Hz	
Voltage measuring range	20 - 120 % of Un	
Current measuring range	VA 1 - 120 % of In	
Maximum current/voltage input consumption	V AC <0,3 VA	
Relay output	potential free, 2 NO (5A, 240V AC)	-
Communication protocol	RS-485 (Modbus RTU)	Ethernet (Modbus TCP/IP)
Communication speed	4.8 / 9.6 / 19.2 / 38.4 / 57,6 kB	-
Operating temperature	Hz -10 ... +60 °C	
Overvoltage Category	% III	
Pollution degree	°C II	
Protection degree	IP54 - front panel; IP20 - from the connection side	
Dimensions H x W x D	IP 96 x 96 x 75 mm	
Installation opening H x W	mm2 92 x 92 mm	
Standards	EN 61010-1-2010, 61326-1, 61000-4-3, 60529, 62053	

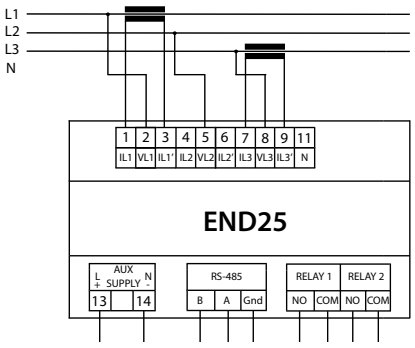
Network Analyzer END25

Type	Description	Code	g	
END25RSA	Analyzer with RS485 port and 2x relay outputs	004656954	400	1
END25ETH	Analyzer with ETHERNET port, RTC and 8MB memory (data logging).	004656955	400	1

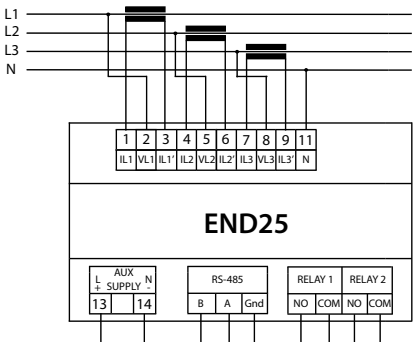




Connection to single-phase mains



Connection to three-phase mains (3 wires)



Connection to three-phase mains (4 wires)

Note: The END25-ETH analyser has no relay outputs and instead of RS-485 terminals there is an RJ-45 connector for Ethernet protocol connection. The measurement and supply terminals are unchanged.

Measured Parameters

Import Active Energy	Power Factor L1	Max Inductive Var Demand	Current L2	Phase Reversal Indication
Export Active Energy	Power Factor L2	Max Capacitive Var Demand	Current L3	Current Reversal Indication
Inductive Reactive Energy	Power Factor L3	Run Hour	System Current THD	Phase Absent Indication
Capacitive Reactive Energy	System Phase Angle	Number of Interruptions	Current L1 THD	Old Import Active Energy
Apparent Energy	Phase Angle L1	System Voltage	Current L2 THD	Advanced version
System Active Power (kW)	Phase Angle L2	Voltage L1	Current L3 THD	Old Export Active Energy
Active Power L1 (kW)	Phase Angle L3	Voltage L2	Individual Harmonics of VL1(Up to 31st Harmonics) Individual Harmonics of VL2 (Up to 31st Harmonics)	Old Inductive Reactive Energy
Active Power L2 (kW)	KVA Demand	Voltage L3		Old Capacitive Reactive Energy
Active Power L3 (kW)	Current Demand	Voltage L12		Old Apparent Energy
System Re-active Power (kVAr)	Import kW Demand	Voltage L23	Individual Harmonics VL3 (Up to 31st Harmonics	Old Run Hour
Re-active Power L1 (kVAr)	Export kW Demand	Voltage L31	Individual Harmonics IL1(Up to 31st Harmonics)	Old On Hour
Re-active Power L2 (kVAr)	Inductive Var Demand	System Voltage THD		Old Number of Interruptions
Re-active Power L3 (kVAr	Capacitive Var Demand	Voltage L1 THD	Individual Harmonics IL2(Up to 31st Harmonic)	Old Max Current Demand
System Apparent Power (KVA)	Max Current Demand	Voltage L2 THD	Individual Harmonics IL3(Up to 31st Harmonics	Old Max VA Demand
Apparent Power L1 (KVA)	Max KVA Demand	Voltage L3 THD		Old Max Import W Demand?
Apparent Power L2 (KVA)	Max Import kW Demand	Parameters	Neutral Current	Old Max Export W Demand
Apparent Power L3 (KVA)	Max Export kW Demand	System Current	Frequency	Old Max Inductive VAr Demand
System Power Factor	On Hour	Current L1	RPM	Old Max Capacitive VAr Demand

Note: 1. Energy on display is autoranging & unit for Energy parameters on modbus are dependent on CTPT ratio or unit selected by user.
2. Parameters are available only on modbus.

Network Analyzer ENA3, ENA3D

Application
Three phase network analyzer is intended for measuring electrical parameters of various loads in industry such as voltage, current, power factor (cos φ), power (W, VAr, VA), single and total harmonic distortion V-I, work hours, ambient temperature. Available in two versions, ENA3 for door mounting and ENA3D for DIN-rail mounting. Display integrated in device shows parameters for each phase separately. 3 independent programmable contact free output relays can be set up for different alarms. Programing is possible directly on device or with connecting to PC by using communication adapter SCUSB485 and free monitoring software not included in package, available on web.

Advantages
- 3 independent programmable alarm relay outputs (NO)
- Programmable alarm relay (Under/Overvoltage - Overcurrent - Frequency - Low power factor Cos φ - Total harmonic distortion)
- 144x144 panel mounting or 9 modules DIN
- Self-extinguished material UL94 V0

Measurements
- Power factor cos φ inductive & capacitive (four quadrants)
- Three phase voltage & current
- Power: W - WH - VA - VAR - VARH
- Single and total harmonic distorsion (THDs) V/I
- Working hours
- Ambient temperature

Communication
- serial interface: TTL, RJ11 connector
- protocol: Proprietary / MODBUS RTU

Technical data

		ENA3	ENA3D
Supply voltage AC ±10%	V ~	3x400 + N, 230 L/N	
Nominal Frequency	Hz	50 - 60 (45 - 65)	
Power consumption (max. AC)	VA	4	
Rated Current (CT)	A	5/1...50000	
Immunity Time For Microbreakings	ms	< 50ms	
Display Type	-	3 Display - 4 Digit - 7 Segment	
Measuring Type	-	True RMS	
Cosφ (L/L)	-	0.00 ... 1.00 ±1%	
Voltage (N/Lx)	VA ~	100 ... 280 ±1%	
Voltage (L/L)	VA ~	180 ... 490 ±1%	
Current (CT)	A	0.05 ... 5.5 ± 0.5%	
Active Power (Lx)	W	Class 1	
Reactive Power (Lx)	VAr	Class 1	
Apparent Power (Lx)	VA	Class 1	
THD of Volt or Current	%	0 ... 255	
Work Hours	h	0 to 9999 (with multiplier)	
Ambient Temperature	°C	00C...+60°C (/ °F)	
Working temperature	°C	-20 ...+60	
Storage temperature	°C	-30 ...+70	
Electrical Insulation	kV	4	
Overvoltage Category	-	II	
Protection degree	IP	41 Front Cover - 20 Terminal Block	
Pollution degree	-	2	
Relative Humidity w/o cond.	%	95	
Altitude up to	m	2000	
Weight	g	680	550
Dimensions	mm	149 x 149 x 60	157 x 89 x 60
Standards	-	2006/95/EC - Low Voltage, 2004/108/EC - EMC	

ENA3

ENA3D

Network Analyzer

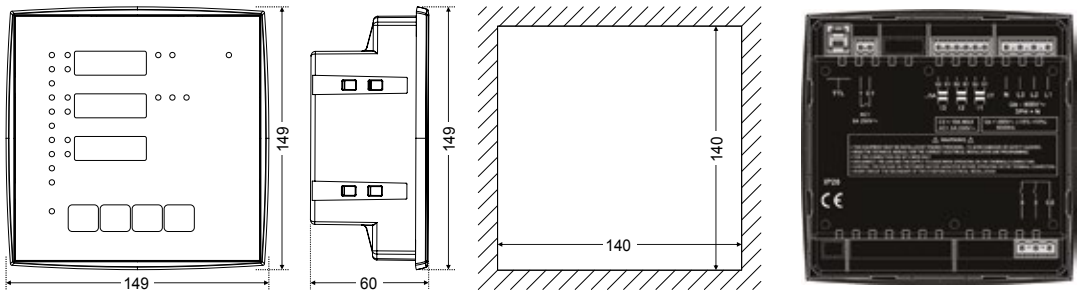
Type	Description	Code	g	
ENA3	3-phase network analyzer for panel mounting	004656578	760	1/30
ENA3D	3-phase network analyzer for DIN-rail mounting	004656579	630	1/40

Communication adapter SCUSB485 is not included and must be ordered separately under reference code: 004656577

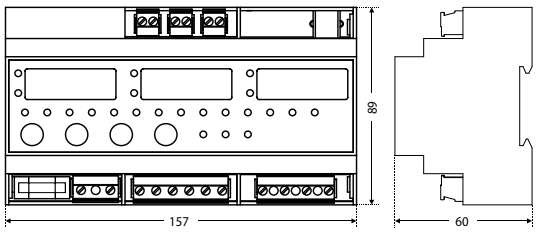
INSTRUCTIONS

Dimensions

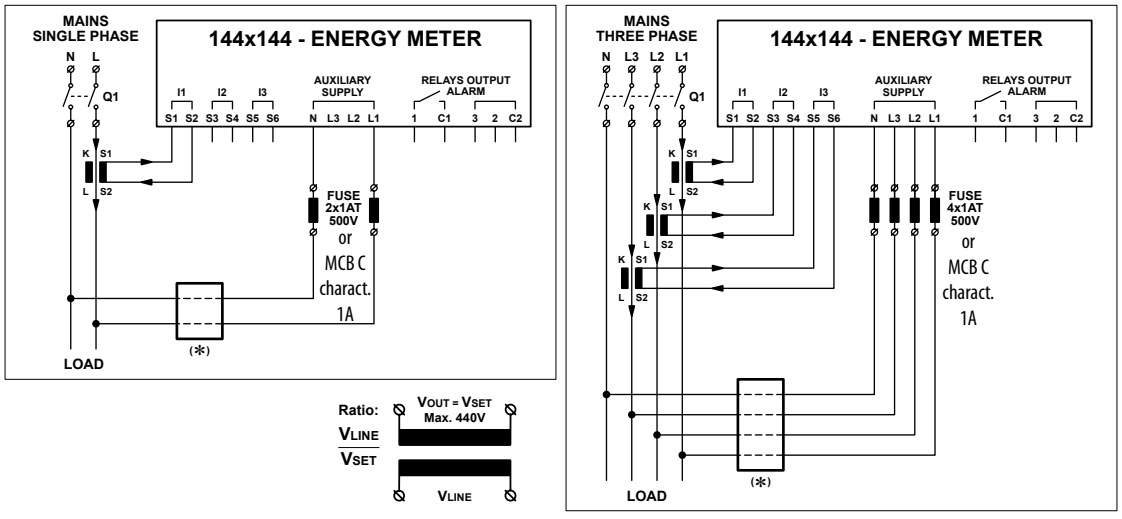
144x144 (mm)

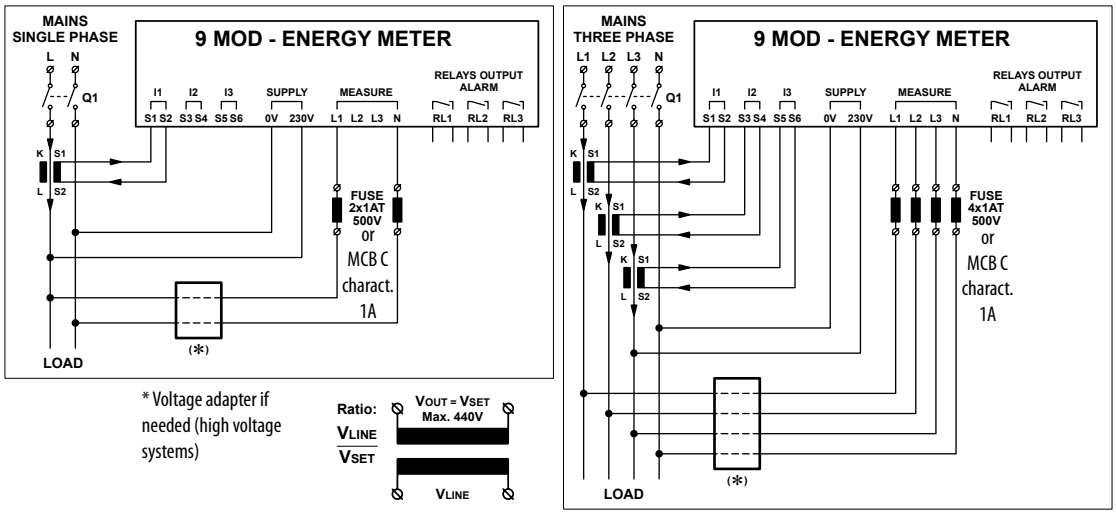


9 MOD (mm)



Wiring Diagrams





Adapter TTL<>USB<>RS485

Features

- Self-extinguished material UL94 v0)
- USB and RS-485 serial interface with cables
- Surge protection on RS-485 line
- Connect remote serial device to a PC
- Power and data flow indicator for troubleshooting
- The RS-485 standard supports half-duplex (2 wire)
- Real time transfer ASCII protocol
- Compact size - 2 module - 35mm
- DIN rail mounting EN 50 022

RoHS
lead-free

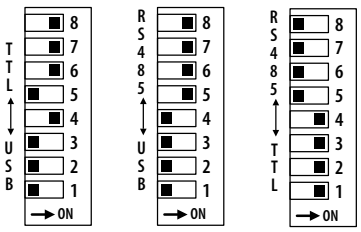
Windows 8.1
Compatible

CE

Technical data

Supply voltage AC -15/+10 %	V ~	230
Nominal Frequency	Hz	50 - 60 (range 47 - 63)
Power consumption (max. AC)	VA	0,5
Serial Interface	-	1 USB + 1 RS-485
Protocol Type	-	Owner - Modbus RTU - ASCII
Baud Rate	kbit/s	≤ 115,2
Max device connection (TTL/RS-485)	V ~	1...99
Working temperature	°C	-10 /+50
Storage temperature	°C	-30 /+70
Electrical Insulation (USB_TTL/RS485)	kV	1
Electrical Insulation (N_L/RS485)	kV	3
Overvoltage Category	-	II
Protection degree	IP	20
Pollution degree	-	2
Relative Humidity w/o cond.	RH %	95
Altitude up to	m	200
Weight	g	95
Dimensions	mm	90 x 36 x 63,4
Standards	-	2006/95/EC, 2004/108/EC

DIP-switch configuration



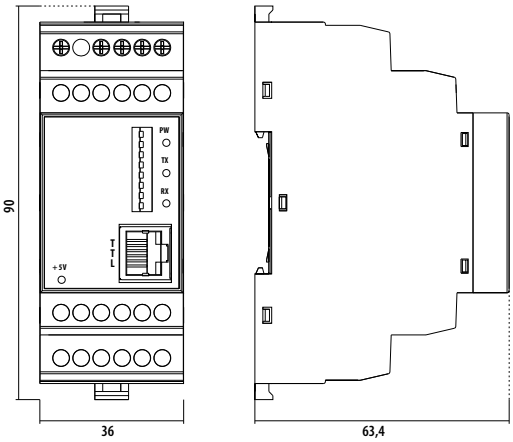
Adapter TTL<>USB<>RS485

Type	Description	Code	g	
SCUSB485	Adapter TTL<>USB<>RS485	004656577	390	1/30

Interface converter TTL > USB <> RS485 can be used with ENA3, ENA3D or PFC 8 DB, PFC 12 DB.
Software(monitoring and programming via PC) and drivers available (free) for Windows on ETI webpage

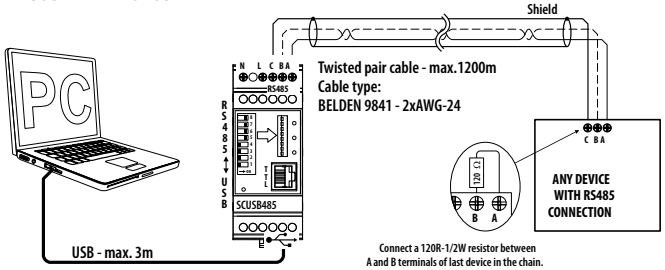
INSTRUCTIONS

Dimensions

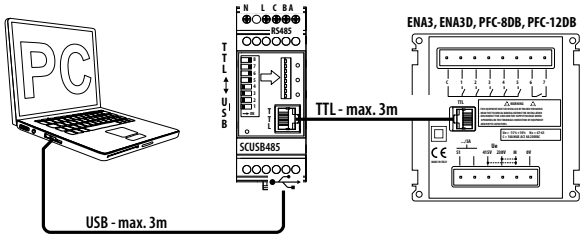


Wiring Diagrams

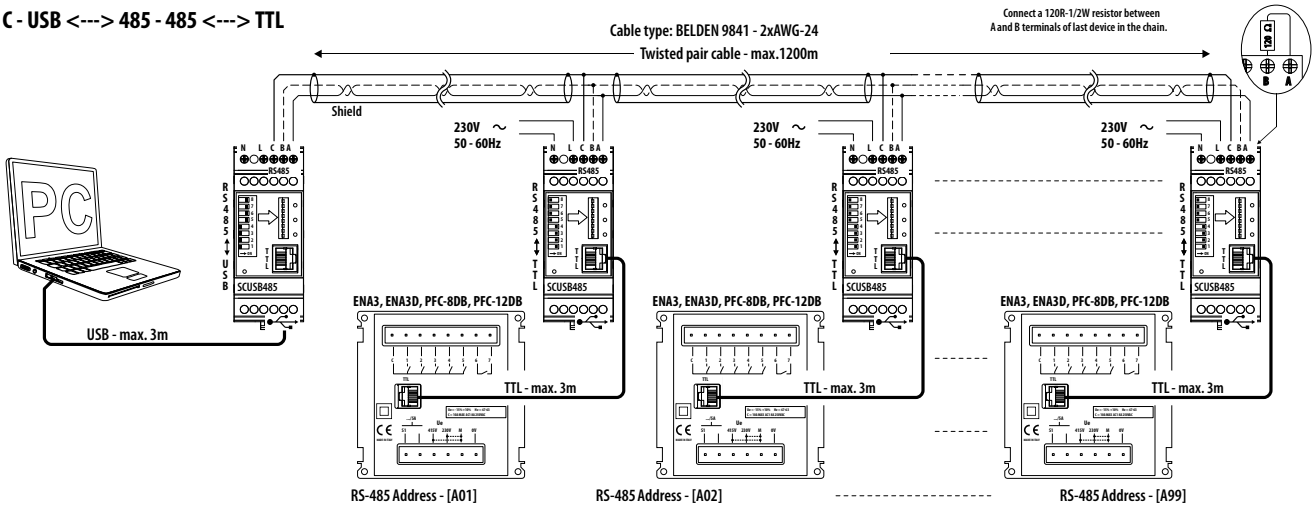
A - USB <---> RS485



B - USB <---> TTL



C - USB <---> 485 - 485 <---> TTL



Download Software and Driver on Website: www.etigroup.eu/support

Network Analyzer ENA33LCD

Description
The power line analyser for accurate monitoring of main electrical parameters in three-phase or single-phase networks. The instrument measures continuous voltage and current according to the norm EN 61000-4-30. Thanks to precise measurement and a high sampling rate, it is also ideal for particular measuring points in electrical energy monitoring systems. Integrated communication interface RS485 with Modbus RTU protocol allows using it as a measuring point in SCADA systems.

Advantages
- TN, TT, IT (virtual N) 3 phase networks
- 3 voltage and 3 current inputs
- calculated current of neutral wire
- continual sampling frequency 6,4 kHz
- THD U and THD I measurement
- odd harmonics of U and I till 19th order (L1, L2, L3)
- power factor (L1) and cosφ (L1, L2, L3)
- P+/-, Q+/-, S (L1, L2, L3, ∑)
- E active +/- , E reactive L +/- , E reactive C +/-
- measurement according the standard EN 61000-4-30
- measuring phase-phase voltage from 0 ... 520 VAC
- memory for maximums / minimums of avg values
- memory for recording of last 20 supply voltage interruptions
- real-time clock with supercap backup
- communication interface RS485 with Modbus RTU protocol

Technical data

		ENA33LCD
Supply voltage	VAC	85 ... 265
System frequency	Hz	50 / 60
Current measuring range	A	0.01 ... 8 A (max permanent current 10 A)
Voltage measuring range L - N	VAC	0 ... 600
Power consumption	VA	1,5
Sampling frequency 50/60Hz	kHz	25,6 / 30,72
Number of inputs / outputs	-	/
Primary voltage measuring transformer ratio		1 ... 750000
Primary current measuring transformer ratio		1 ... 10000
Maximum number of registered auxiliary supply power cuts		20
Communication port	-	RS485 insulated
Communication protocol	-	Modbus RTU
Communication speed	kBd	9.6 / 19.2 / 38.4 / 57.6 / 115
Overvoltage Category	V	300, III
Pollution degree	-	II
Protection degree	IP	IP20 rear panel / IP54 front panel
Dimensions H x W x D	mm	90 x 90 x 67
Panel cut-out dimensions	mm	92 x 92
Site depth	mm	90
Standards		EN 61010-1, EN 62586-1, EN 61000-6-2, EN 61000-6-3

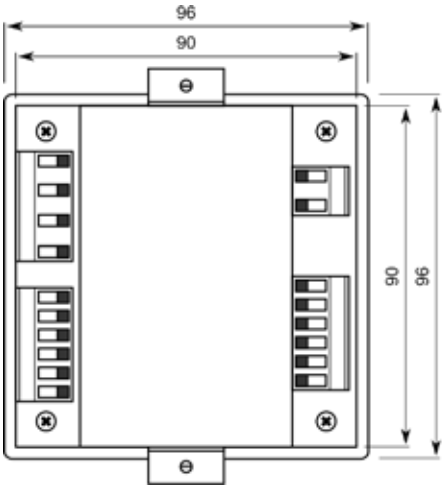
Measured parameters

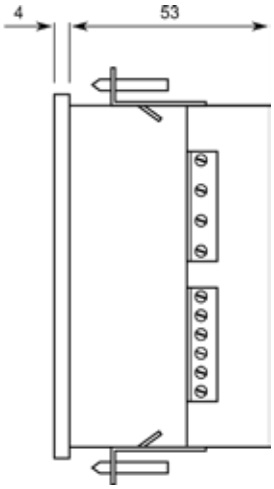
Parameter	L1	L2	L3	L1-L2	L2-L3	L3-L1	ΣL1-L3	Max	Min	AVG	Measuring range	Displayed range	Accuracy
Phase voltage, L – N	✓	✓	✓					✓	✓	✓	10 ... 600 V	0 ... 1 MV	±0.2 %
Line voltage, L – L				✓	✓	✓		✓	✓	✓	18 ... 1000 V	0 ... 1 MV	±0.2 %
Frequency	✓							✓	✓	✓	40 ... 70 Hz	40 ... 70 Hz	10 mHz
Current	✓	✓	✓				✓	✓	✓	✓	0.01 ... 6 A	0 ... 1 MA	±0.2 %
cosφ	✓	✓	✓					✓	✓	✓	0.01 L ... 0.01 C	0.01L ... 0.01C	±1 %
Power factor	✓	✓	✓					✓	✓	✓	0.01 L ... 0.01 C	0.01L ... 0.01C	±1 %
THDU L-N	✓	✓	✓					✓	✓	✓	0 ... 999 %	0 ... 999 %	±5 %
THDU L-L				✓	✓	✓		✓	✓	✓	0 ... 999 %	0 ... 999 %	±5 %
Under and over deviation L	✓	✓	✓					✓	✓	✓			
Under and over deviation L-L	✓	✓	✓					✓	✓	✓			
Voltage unbalance u2, u0								✓	✓	✓			
THDI	✓	✓	✓					✓	✓	✓	0 ... 999 %	0 ... 999 %	±5 %
TDD	✓	✓	✓					✓	✓	✓	0 ... 999 %	0 ... 999 %	±5 %
Voltage harm. (up to 40th)	✓	✓	✓								0 ... 999 %	0 ... 999 %	cl. 1
Current harm. (up to 40th)	✓	✓	✓								0 ... 999 %	0 ... 999 %	cl. 1
Voltage, current asymmetry								✓	✓	✓	0 ... 100 %	0 ... 100 %	0.3 %
K-factor	✓	✓	✓										
Current unbalance i2, i0								✓	✓	✓	0 ... 99.9 %	0 ... 99.9 %	cl. 1
Active power	✓	✓	✓				✓	✓	✓	✓	0 ... 15.3 kW	0 ... 999 MW	±0.4 %
Reactive power	✓	✓	✓				✓	✓	✓	✓	0 ... 15.3 kvar	0 ... 999 MVAr	±0.4 %
Apparent power	✓	✓	✓				✓	✓	✓	✓	0 ... 15.3 kVA	0 ... 999 MVA	±0.4 %
Distortion power	✓	✓	✓				✓	✓	✓	✓			±0.5 %
Active energy +/-	✓	✓	✓				✓				0 ... 999 GWh	0 ... 999 GVh	cl. 0.5
Reactive ind. energy +/-	✓	✓	✓				✓				0 ... 999 Gvarh	0 ... 999 Gvarh	cl. 2
Reactive cap. energy +/-	✓	✓	✓				✓				0 ... 999 Gvarh	0 ... 999 Gvarh	cl. 2
Temperature											-40 . . . +125°C		1°C

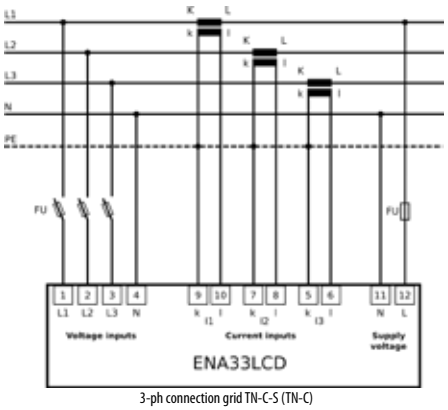
Universal Analyzer

Type	Description	Code	g	
ENA33LCD	Panel mounting 96x96	004656910	460	1

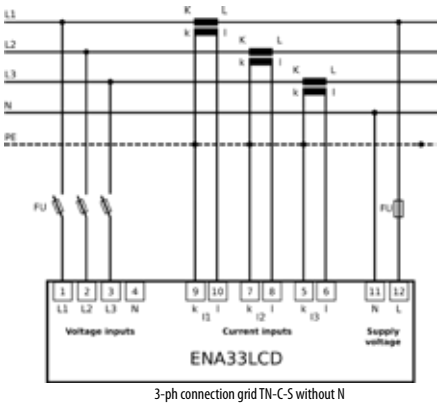
Dimensions



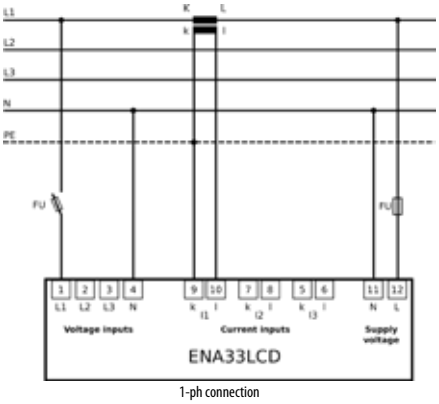




3-ph connection grid TN-C-S (TN-C)



3-ph connection grid TN-C-S without N



1-ph connection

ETIMETER Modular Energy Counters

EVSE-ready 3-phase Modular Energy Meter 80A

EVSE (Electric vehicle supply equipment) ready 3 phase modular Energy Meter 80A with RS485 port, pulse output:

- compact three-phase direct connected DIN-rail mounting meter.
- class B for active energy and class 2 for reactive energy
- maximum current 80 A (i_max).
- RS485 (modbus) communication
- tariff input.
- 70°C ambient operational temperature. (EVSE ready)
- MID certificate available

Meter is intended for energy measurements in three-phase electrical power network and can be used in residential, industrial and utility applications. Meter measures energy directly in 3-wire and 4-wire networks according to the principle of fast sampling of voltage and current signals. A built-in microprocessor calculates energy and other electrical quantities from the measured signals. It also controls LCD, LED, IR and RS485 communication.
A capacitive touch button on the front of the energy meter enables access to switch between measurements and settings in the menu. Connecting terminals can be sealed up against non-authorised access with protection covers.

Features:

- Three phase direct connected DIN-rail mounting meter.
- Class 1 for active energy according to EN 62053-21 and class B according to EN 50470-3.
- Class 2 for reactive energy according to IEC 62053-23.
- Bidirectional energy measurement (import/export).
- Maximum current 80 A (I_max).
- Display segment Matrix LCD.
- LCD display with backlight.
- Multifunctional front red LED.
- Measurements of:
  - power (active/reactive/apparent),
  - energy (active/reactive/apparent, each phase and total),
  - voltage for each phase,
  - current for each phase,
  - phase to phase voltage
  - phase to phase angle,
  - frequency,
  - power factor (for each phase and total),
  - power angle (for each phase and total),
  - active tariff,
  - THD of voltage,
  - THD of current.
- Modbus RS485 Serial communication
- 2nd multifunction pulse output (valid only for IE38MS).
- RS485 Serial communication (valid only for IE38MD).
- NFC (option) enables an easy setting and downloading meter data.
- M-bus Serial communication (valid only for IE38MM).
- Tariff input (230 V AC)
- Tariff management (up to 6 tariffs manageable via communication).
- -25°C ... 70°C ambient operation temperature.
- Sealable terminal cover.
- DIN-rail mounting according to EN 60715.
- 3 DIN modules width.

Modular Energy Counter 3MEM 80 with MID certificate

Type	Description	Code	g	
3MEM80-BEVRSPO-MID	3phase 80 A, SO(Pulse output), RS485, EVSE ready	004657210	248	1/96
3MEM80-BPO-MID	3phase 80 A, 2xSO(Pulse output), EVSE ready	004657211	248	1/96
3MEM80-BMB-MID	3phase 80 A, SO(Pulse output), M-bus, EVSE ready	004657212	248	1/96

General hardware features

	3MEM80-BPO-MID	3MEM80-BMB-MID	3MEM80-BEVRSPO-MID
MID approval	✓	✓	✓
Pulse output S01	✓	✓	✓
Pulse output S02	✓	×	×
Tariff input	✓	✓	✓
85°C display	✓	✓	✓
MODBUS comm. Protocol RS485	×	×	✓
M-bus serial comm.	×	✓	×

INSTRUCTIONS

Technical Data

Rail mounting	DIN EN60715	**Pulse output $S0_1$**	
Main inputs		Pulse rate	500 imp/kWh
Contacts capacity - Flexible (Rigid)	1.5 mm^2 ...25 (16) mm^2	Pulse duration	32 ms ± 2 ms
Connection screws	M5	Rated voltage DC (max)	27 V
Max torque	3.5 Nm (PH2)	Switched current (max)	27 mA
Length or removed isolation	10 mm	Standard	EN 62053-31 (A&B)
Auxiliary contacts		**Pulse output $S0_2$ (option)**	
Contact capacity	0.05 mm^2...1.5 mm^2	Type	Programmable
Screws	M3	Rated voltage DC (max)	27 V
Max torque	0.6 Nm	Switched current (max)	27 mA
Length or removed isolation	8 mm	**M-BUS Serial communication (option)**	
Measuring input		Type	M-BUS
Type	three-phase (3W4, 3W3, 2W3) single-phase (1W)	Speed	300 bit/s to 9600 bit/s (default 2400 bit/s)
		Protocol	M-BUS
Reference (nominal) current (I_ref)	5 A	Primary address	0 – (default)
Maximum current (I_max)	80 A	**Tariff input**	
Minimum current (I_min)	0.25 A	Rated voltage	230 V (-20 %...+15 %)
Transitional current (I_tr)	0.5 A	Input resistance	360 kΩ
Starting current	20 mA	**RS485 Serial communication (option)**	
Power consumption at I_ref	< 0.1 VA	Type	RS485
Nominal voltage (U_n)	3x230 V/400 V (-20 %...+15 %)	Speed	1200 bit/s to 115200 bit/s (default 115200 bit/s)
Power consumption per phase at U_n	< 8 VA	Frame	8, N, 2
Nominal frequency (f_n)	50 Hz and 60 Hz	Protocol	MODBUS RTU
Minimum measuring time	10 s	Address	33 – (default)
Accuracy		**Ambient conditions and Safety**	
Active energy	class 1 EN 62053-21 class B EN 50470-3 ±1.5 % from I_min to I_tr ±1 % from I_tr to I_max	Temperature and climatic condition	EN 62052 11
		Dust/water protection	IP50
		Operating temp. range	-25°C... +70°C (non-condensing humidity)
		Storage temp. range	-40 °C... +85°C
Reactive, Apparent energy	class 2 IEC 62053-23 ±2.5 % from I_min to I_tr ±2 % from I_tr to I_max	Enclosure material	self-extinguish complying UL94 V
		Indoor meter	yes
Voltage	±1 % of measured value	Degree of pollution	2
Current	±1 % of I_ref from I_st to I_ref ±1 % of measured value from I_ref to I_max	Protection class	II
		Installation category	300 V_{rms} cat.III
Active Power	±1 % of nominal power (U_n*I_ref) from I_st to I_ref ±1 % of measured value from I_ref to I_max	Standard	IEC 62052-31
		Mechanical environment	M1
Reactive, Apparent power	±2 % of nominal power from I_st to I_ref ±2 % of measured value from I_ref to I_max	Electromagnetic environment	E2
		Humidity	non condensing
Frequency	±0.5 % of measured value	Installation	DIN Rail 35 mm
LCD		Dimensions (W x H x D)	52.5 mm x 91.7 mm x 68.2 mm
Display type	Matrix (128 x 64)	Colour	RAL 7035
Illumination	white (normal operation) / red (alarm indication)	EU Directives	EU Directive on Measuring Instruments 2014/32/EU. EU Directive on EMC 2014/30/EU. EU Directive on Low Voltage 2014/35/EU. EC Directive WEEE 2002/96/EC.
LED			
Colour	red		
Pulse rate	1000 imp/kWh		
LED on	no load indication		

3-phase Modular Energy Meter 65A

3 phase modular Energy Meter 65A , various options of communication, measurement:

- Compact three-phase direct connected DIN-rail mounting meter
- 3 DIN modules width
- Maximum current 65 A (Imax)
- Class 1 for active energy and class 2 for reactive energy
- Optional: RS485, M-bus comm., Tariff input, pulse output

The meter can be equipped with the following communications and features:

- RS485 serial communication with the MODBUS protocol.
- M-bus serial communication, which enables data transmission and thus connection of the measuring places into the network for the control and management with energy.
- Tariff input. Tariff input provides measurement of two tariffs for selected energy registers.
- A built-in pulse output (option). It is designed for sending data to the devices for checking and monitoring consumed energy.

Features:

- Three phase direct connected DIN-rail mounting meter.
- Class 1 for active energy according to EN 62053- 21, class B according to EN 50470-3.
- Class 2 for reactive energy according to EN 62053-23.
- Bidirectional energy measurement (import/export).
- Maximum current 65 A (Imax).
- Basic current 5 A (Ib).
- Reference voltage 3x230 V/400 V (Un).
- Voltage operating range (-20 % ... +15 %) Un.
- Reference frequencies 50 Hz and 60 Hz.
- Power consumption voltage circuit < 8 VA at Un per phase.
- Power consumption current circuit < 0.8 VA at Ib per phase.
- Temperature range climatic condition as indoor meter according EN 50470.
- Display 7+1 digit (100 Wh resolution).
- Multifunctional front red LED.
- LED constant 1000 imp/kWh.
- Measurements of:
  - power (active/reactive/apparent)
  - energy (active/reactive/apparent, each phase and total),
  - voltage for each phase,
  - current for each phase,
  - phase to phase voltage
  - phase to phase angle,
  - frequency,
  - power factor (for each phase and total),
  - power angle (for each phase and total),
  - active tariff (option),
  - THD of voltage,
  - THD of current.
- Pulse output according to EN 62053-31 (option).
- Tariff input (option).
- RS485 Serial communication (option).
- M-bus Serial communication (option).
- DIN-rail mounting according to EN 60715.
- Sealable terminal cover.

Modular Energy Counter 3MEM65

Type	Description	Code	g	
3MEM65-BPO-MID	3 phase, 65A, Pulse output	004657213	248	1/96
3MEM65-BT-MID	3 phase, 65A, Tariff input	004657214	248	1/96
3MEM65-BRS-MID	3 phase, 65A, RS485	004657215	248	1/96
3MEM65-BMB-MID	3 phase, 65A, M-bus	004657216	248	1/96

INSTRUCTIONS

Technical Data

Rail mounting	DIN EN60715
Main inputs	
Contacts capacity - Rigid (flexible)	1.5 mm^2 ...25 (16) mm^2
Connection screws	M5
Max torque	3.5 Nm (PH2)
Length or removed isolation	10 mm
Auxiliary contacts	
Contact capacity	1 mm^2... 2.5 mm^2
Screws	M3
Max torque	1.2 Nm
Length or removed isolation	8 mm
Measuring input	
Type	three phase (4u)
Reference (nominal) current (I_ref)	5 A
Maximum current (I_max)	65 A
Minimum current (I_min)	0.25 A
Transitional current (I_tr)	0.5 A
Starting current	20 mA
Power consumption at I_ref	< 0.1 VA
Nominal voltage (U_n)	3x230 V/400 V (-20 %...+15 %)
Power consumption per phase at U_n	< 8 VA
Nominal frequency (f_n)	50 Hz and 60 Hz
Minimum measuring time	10 s
Accuracy	
Active energy	class 1 EN 62053-21 class B EN 50470-3 ±1.5 % from I_min to I_tr ±1 % from I_tr to I_max
Reactive, Apparent energy	• class 2 EN 62053-23 ±2.5 % from I_min to I_tr ±2 % from I_tr to I_max
Voltage	±1 % of measured value
Current	±1 % of I_ref from I_st to I_ref ±1 % of measured value from I_ref to I_max
Active Power	±1 % of nominal power (U_n*I_ref) from I_st to I_ref ±1 % of measured value from I_ref to I_max
Reactive, Apparent power	±2 % of nominal power from I_st to I_ref ±2 % of measured value from I_ref to I_max
Frequency	±0.5 % of measured value
LCD	
Number of digits:	8 (7+1)
Height of digits:	4.52 mm
LED	
Colour	red
Pulse rate	1000 imp/kWh
LED on	no load indication

Pulse output (option)	
Pulse rate	1000 imp/kWh
Pulse duration	32 ms ± 2 ms
Rated voltage DC (max)	27 V
Switched current (max)	27 mA
Standard	EN 62053-31 (A&B)
M-BUS Serial communication (option)	
Type	M-bus
Speed	300 bit/s to 9600 bit/s (default 2400 bits/s)
Protocol	M-bus
Address	0 – (default)
RS485 Serial communication (option)	
Type	RS485
Speed	1200 bit/s to 38400 bit/s (default 38400 bit/s)
Frame	8, N, 2
Protocol	MODBUS RTU
Address	33 – (default)
Tariff input (option)	
Rated voltage	230 V (-20 % +15 %)
Input resistance	450 kΩ
Ambient conditions and Safety	
Temperature and climatic condition	EN 62052 11
Dust/water protection	IP50
Operating temp. range	-25°C... +55°C (non-condensing humidity)
Storage temp. range	-40 °C... +70°C
Enclosure material	self-extinguish complying UL94 V
Indoor meter	yes
Degree of pollution	2
Protection class	II
Installation category	300 V_{rms} cat.III
Standard	IEC 62052-31
Mechanical environment	M1
Electromagnetic environment	E2
Humidity	non condensing
Installation	DIN Rail 35 mm
Dimensions (W x H x D)	53.6 mm x 84 mm x 64 mm (69 mm)
Colour	RAL 7035
EU Directives	EU Directive on Measuring Instruments 2014/32/EU. EU Directive on EMC 2014/30/EU. EU Directive on Low Voltage 2014/35/EU. EC Directive WEEE 2002/96/EC.

EVSE-ready 3-phase Modular Energy Meter 40A

EVSE (Electric vehicle supply equipment) ready 3 phase modular Energy Meter 40A with RS485 port:

- Compact three-phase direct connected DIN-rail mounting meter
- 3 DIN modules width
- According to requirements of PTB, VDE and OCMF
- Class 1 for active energy and class 2 for reactive energy
- Maximum current 40 A (Imax)
- 70°C ambient operation temperature (EVSE ready)
- Possibility to connect only on one phase

The 3MEM40-EVRS energy meters are intended for energy measurements in the three-phase and one phase electrical charger stations due to allowed high temperature operation (up to 70'C). Measuring energy directly in 4-wire networks according to the principle of fast sampling of voltage and current signals. A built-in microprocessor calculates power, energy, current, voltage, power factor, power angle, frequency, harmonics of THD voltage and THD current harmonics.

Features:

- 3 DIN modules width three phase direct connected DIN-rail mounting meter
- Class 1 for active energy according to EN 62053-21
- Reference frequency 50 Hz or 60 Hz
- Maximum current 40 A (Imax)
- Basic current 5 A (Ib)
- Reference voltage 3×230 V/400 V (Un)
- Voltage operating range (-20 % ... +15 %)Un
- Two row display 6+2 digit (10 Wh resolution) with backlight
- Multifunctional front LED
- RS485 Serial communication
- Measurement of:
  - power (active/reactive/apparent),
  - energy (active/reactive/apparent) each phase and total),
  - voltage (each phase),
  - current (each phase),
  - phase to phase voltage,
  - phase to phase angle,
  - frequency,
  - power factor (for each phase and total),
  - power angle (for each phase and total),
  - THD of voltage,
  - THD of current.
- Possibility to connect only on one phase (on L3).
- Remote control of backlight LCD.
- 70°C ambient operation temperature.
- Sealable terminal cover.

Modular Energy Counter 3MEM40

Type	Description	Code	g	
3MEM40-EVRS	3 phase, 40A, RS485, EVSE	004657200	248	1/96

INSTRUCTIONS

Technical Data

Rail mounting	DIN EN60715
Main inputs	
Contacts capacity - Rigid (flexible)	1.5 mm^2 ...25 (16) mm^2
Connection screws	M5
Max torque	3.5 Nm (PH2)
Length or removed isolation	10 mm
Auxiliary contacts	
Contact capacity	1 mm^2... 2.5 mm^2
Screws	M3
Max torque	1.2 Nm
Length or removed isolation	8 mm
Measuring input	
Type	three phase (4u)
Reference (nominal) current (I_ref)	5 A
Maximum current (I_max)	40 A
Minimum current (I_min)	0.25 A
Transitional current (I_tr)	0.5 A
Starting current	20 mA
Power consumption at I_ref	< 0.1 VA
Nominal voltage (U_n)	3x230 V/400 V (-20 %...+15 %)
Power consumption per phase at U_n	< 8 VA
Nominal frequency (f_n)	50 Hz and 60 Hz
Minimum measuring time	10 s
Accuracy	
Active energy	class 1 EN 62053-21 class B EN 50470-3 ±1.5 % from I_min to I_tr ±1 % from I_tr to I_max
Reactive, Apparent energy	• class 2 EN 62053-23 ±2.5 % from I_min to I_tr ±2 % from I_tr to I_max
Voltage	±1 % of measured value
Current	±1 % of I_ref from I_st to I_ref ±1 % of measured value from I_ref to I_max
Active Power	±1 % of nominal power (U_n*I_ref) from I_st to I_ref ±1 % of measured value from I_ref to I_max
Reactive, Apparent power	±2 % of nominal power from I_st to I_ref ±2 % of measured value from I_ref to I_max
Frequency	±0.5 % of measured value
LCD	
Type	LCD
Number of energy display rows	2
Number of digits:	8 (6+2)
Height of digits:	4.52 mm
LED	
Colour	red
Pulse rate	1000 imp/kWh
LED on	no load indication

RS485 Serial communication (option)	
Type	RS485
Speed	1200 bit/s to 115200 bit/s (default 115200 bit/s)
Frame	8, N, 1
Protocol	MODBUS RTU
Address	33 – (default)
Ambient conditions and Safety	
Temperature and climatic condition	EN 62052 11
Dust/water protection	IP50
Operating temp. range	-25°C... +70°C
Storage temp. range	-30 °C... +80°C
Enclosure material	self-extinguish complying UL94 V
Indoor meter	yes
Degree of pollution	2
Protection class	II
Installation category	300 V_{rms} cat.III
Standard	IEC 62052-31
Mechanical environment	M1
Electromagnetic environment	E2
Humidity	non condensing
Installation	DIN Rail 35 mm
Dimensions (W x H x D)	53.6 mm x 84 mm x 69.4 mm
Colour	RAL 7035

Single Phase Modular Energy Meter 40A

Single phase modular Energy Meter, direct metering 40A:
- Single-phase direct connected DIN-rail mounting meter
- 1 DIN module width
- Class 1 for active energy and class 2 for reactive energy
- Maximum current 40 A (Imax)
- Communication: s0 (pulse output)

1MEM40-BPO energy meters for measurment in a single-phase electrical network. Can be used in residential, industrial and utility applications. Meters measure energy directly in 2-wire networks according to the principle of fast sampling of voltage and current signals.

Features:
- Single-phase direct connected DIN-rail mounting meter.
- Class 1 for active energy according to EN 62053-21
- Class 2 for reactive energy according to IEC 62053-23.
- Bidirectional energy measurement (imp./exp.).
- Maximum current 40 A (Imax).
- Basic current 5 A (Ib).
- 230 V rated system voltage input (Un).
- Voltage operating range (-20 % ... +15 %) Un.
- Reference frequencies 50 Hz and 60 Hz.
- Power consumption voltage circuit < 10 VA at Un.
- Power consumption current circuit < 0.1 VA at Ib.
- Temperature range climatic condition as indoor meter according IEC 62052-11.
- Custom LCD display with 7 digits (100 Wh resolution).
- Multifunctional front red LED.
- LED constant 1000 imp/kWh.
- Backlight for better visibility.
- Special functions added for easier integration into monitoring and control systems.
- Measurements of:
  - power (active/reactive/apparent),
  - energy (active/reactive/apparent),
  - voltage,
  - current,
  - frequency,
  - power factor,
  - power angle,
  - active tariff (option),
  - THD of voltage,
  - THD of current.
- Pulse output according to IEC 62053-31.
- DIN-rail mounting according to EN 60715.
- 55°C ambient operation temperature.
- Sealable terminal cover.
- 1 DIN module width.

Modular Energy Counter 1MEM40

Type	Description	Code	g	
1MEM40-BPO	Single phase, 40A, S0 (Pulse output)	004657205	84	1/100

INSTRUCTIONS

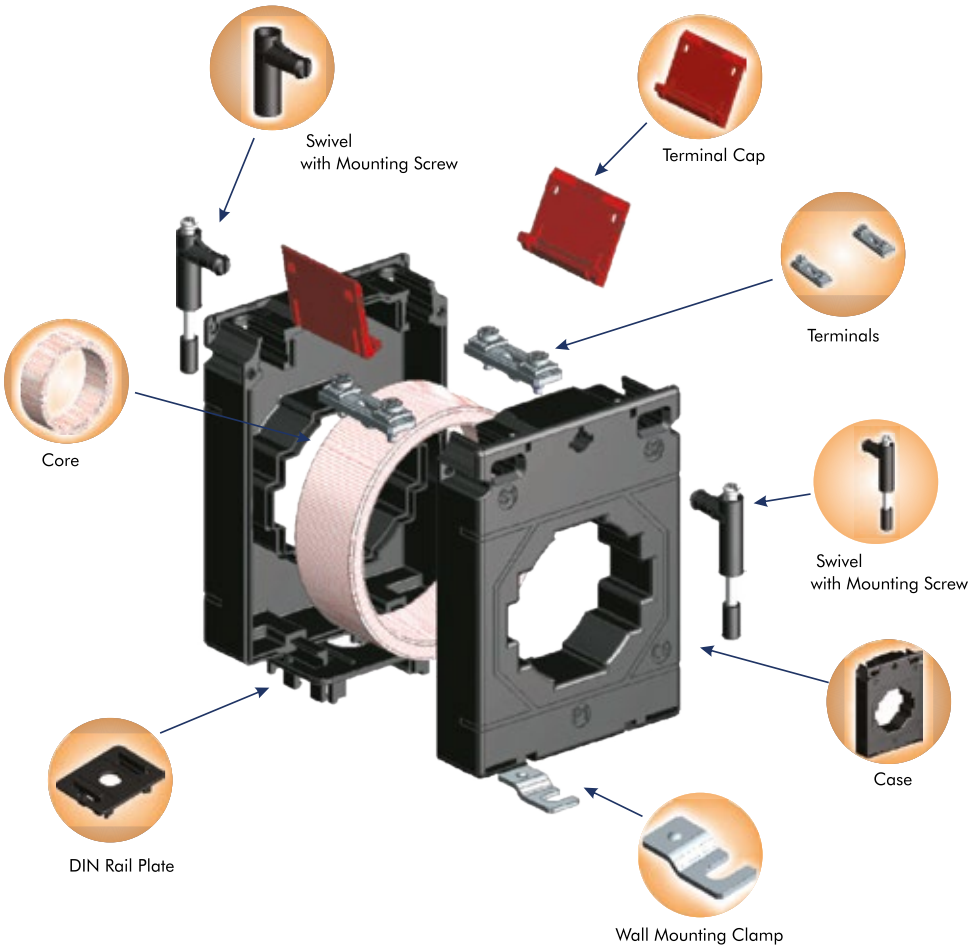
Technical Data

Rail mounting	DIN EN60715
Main inputs	
Contacts capacity - Flexible (Rigid)	1.5 mm^2 ...10 mm^2
Connection screws	M3.5
Max torque	0.8 Nm (PZ2)
Length or removed isolation	10 mm
Auxiliary contacts	
Contact capacity	0.05 mm^2...1 (2.5) mm^2
Screws	M3
Max torque	0.6 Nm
Length or removed isolation	8 mm
Measuring input	
Type	Single phase (1b)
Reference (nominal) current (I_ref)	5 A
Maximum current (I_max)	40 A
Minimum current (I_min)	0.25 A
Transitional current (I_tr)	0.5 A
Starting current	20 mA
Power consumption at I_ref	< 0.1 VA
Nominal voltage (U_n)	3x230 V (-20 %...+15 %)
Power consumption per phase at U_n	< 10 VA
Nominal frequency (f_n)	50 Hz and 60 Hz
Minimum measuring time	10 s
Accuracy	
Active energy	class 1 EN 62053-21 class B EN 50470-3 ±1.5 % from I_min to I_tr ±1 % from I_tr to I_max
Reactive, Apparent energy	• class 2 EN 62053-23 ±2.5 % from I_min to I_tr ±2 % from I_tr to I_max
Voltage	±1 % of measured value
Current	±1 % of I_ref from I_st to I_ref ±1 % of measured value from I_ref to I_max
Active Power	±1 % of nominal power (U_n*I_ref) from I_st to I_ref ±1 % of measured value from I_ref to I_max
Reactive, Apparent power	±2 % of nominal power from I_st to I_ref ±2 % of measured value from I_ref to I_max
Frequency	±0.1 % of measured value
LCD	
Number of digits:	7
Height of digits:	5.5 mm
LED	
Colour	red
Pulse rate	1000 imp/kWh
LED on	no load indication

Pulse output	
Pulse rate	1000 imp/kWh
Pulse duration	32 ms ± 2 ms
Rated voltage DC	27 V max
Switched current	27 mA max
Standard	IEC 62053-31 (A&B)
Ambient conditions and Safety	
Temperature and climatic condition	EN 62052 11
Dust/water protection	IP50
Operating temp. range	-25°C... +55°C
Storage temp. range	-30 °C... +70°C
Enclosure material	self-extinguish complying UL94 V
Indoor meter	yes
Degree of pollution	2
Protection class	II
Installation category	300 V_{rms} cat.III
Standard	IEC 62052-31
Mechanical environment	M1
Electromagnetic environment	E2
Humidity	non condensing
Installation	DIN Rail 35 mm
Dimensions (W x H x D)	17,5 mm x 90,7 mm x 68,2 mm
Colour	RAL 7035
EU Directives	EU Directive on Measuring Instruments 2014/32/EU. EU Directive on EMC 2014/30/EU. EU Directive on Low Voltage 2014/35/EU. EC Directive WEEE 2002/96/EC. EU Directive RED 2014/53/EU

ETIMETER

Metering Current Transformers



Applications
Balanced systems: network analyzers, automatic power factor correction systems (PFCs)

Features
Connection terminal with cover (IP20) for universal connection, no fork needed
Bus bar or din rail mounting, included complete mounting set
Standards: 61869-2

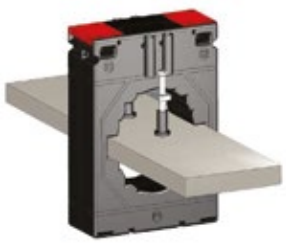
Metering Current transformers - Single Phase

Type	Code No.	Primary/ secondary	Power [VA]	Accuracy class	g	
CTR-30 50/5 CL.1	004805500	50/5	1,25	1	365	1/63
CTR-30 100/5 CL.0,5	004805504	100/5	1,5	0,5	365	1/63
CTR-30 150/5 CL.0,5	004805507	150/5	3,75	0,5	365	1/63
CTR-30 200/5 CL.0,5	004805508	200/5	5	0,5	365	1/63
CTR-30 250/5 CL.0,5	004805509	250/5	5	0,5	365	1/63
CTR-30 300/5 CL.0,5	004805510	300/5	5	0,5	365	1/63
CTR-30 400/5 CL.0,5	004805511	400/5	7,5	0,5	365	1/63
CTR-30 500/5 CL.0,5	004805512	500/5	10	0,5	365	1/63
CTR-30 600/5 CL.0,5	004805513	600/5	15	0,5	365	1/63

Technical data

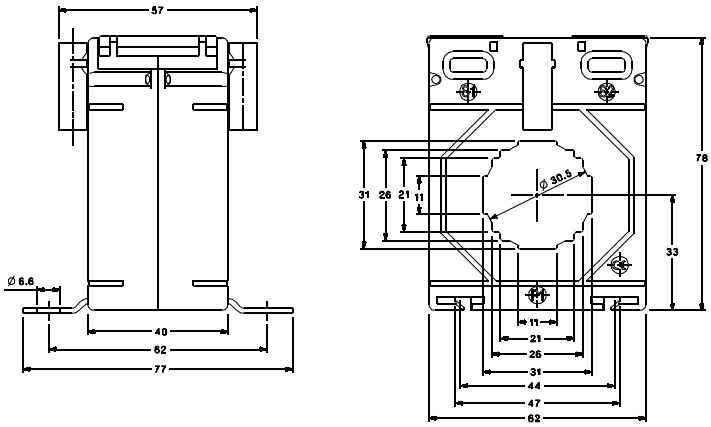
Applicable Standard	IEC 61869, IEC/EN 60044-1, BS 3938
Case	10% glass filled polycarbonate, flame retardant grades classified UL 94V-0
Insulation Class	E (120°C max.)
System voltage	720V max.
Test Voltage	
For Ring (Window) type CT	4kV 50 Hz / 1 min.
For Wound type er	3KV 50Hz / 1 min.
Operating frequency	50Hz or 60Hz Rated Primary rating:- 1A to 7500A
Rated secondary output	5A standard (1A on request)
Ambient temperature	-20°C ... +45°C
Storage temperature	-50°C ... +80°C
Thermal short circuit current (Ith)	60 x In for Busbar type
Dynamic short circuit current (Idyn)	2.5 x I_{th}

Wall mounting



Busbar mounting

Dimensions



Current Transformers (LV Indoor Application)

Accuracy Class	+ / - percentage current (ration) error at percentage of rated current shown below				+ / - phase displacements at percentage of rated current shown below							
					Minutes				Centiradians			
	5	20	100	120	5	20	100	120	5	20	100	120
0.10	0.40	0.20	0.10	0.10	15	8	5	5	0.45	0.24	0.15	0.15
0.20	0.75	0.35	0.20	0.20	30	30	10	10	0.90	0.45	0.30	0.30
0.50	1.50	0.75	0.50	0.50	90	90	30	30	2.70	1.35	0.90	0.90
1	3	1.5	1	1	180	180	60	60	5.40	2.70	1.80	1.80

Limits of Current error and phase displacements for measuring current transformers (for special application)

Accuracy Class	+ / - percentage current (ration) error at percentage of rated current shown below					+ / - phase displacements at percentage of rated current shown below									
						Minutes					Centiradians				
	1	5	20	100	120	1	5	20	100	120	1	5	20	100	120
0.2S	0.75	0.35	0.20	0.20	0.20	30	15	10	10	10	0.90	0.45	0.30	0.30	0.30
0.5S	1.50	0.75	0.50	0.50	0.50	90	45	30	30	30	2.70	1.35	0.90	0.90	0.90

Limits of Current error and phase displacements for measuring current transformers (Class 3 and 5)

Accuracy Class	+ / - percentage current (ration) error at percentage of rated current shown below	
3	3	3
5	5	5

Limits of phase displacement are not specified for class 3 and 5.

Limits of current error and phase displacements for Protection Class CT (5P and 10P)

ETICON

Contactors

Modular contactors for installation into distribution boards 256
Bistable switches RBS 284
Miniature and motor contactors, auxiliary contactors and overload relays 300
Motor protective circuit breakers 375

*Capacitor duty contactors are in the CP chapter, see page 412

/etigroup

SWITCH TO A SAFE FUTURE

ETICON Modular Contactors For Installation Into Distribution Boards

Description
Modular contactors are used for installation in consumer units in dwellings, business premises, hotels, hospitals, shopping centres, sport centers, production halls, warehouses etc.

They are used for remote switching and automatic control of electric devices and equipment, such as:
- lightning
- all types of pumps
- air-conditioning
- electric heating
- single-phase and three-phase motors

They excel in silent operation, long mechanical life time and high quality.

The contactors are designed for mounting on 35 mm mounting rail in accordance with the EN 60715 standard and they can be leaded by means of lead covers. The auxiliary contact block is available for signalization and ventilation module is available for preventing exceeded heating when contactors are used side-by-side.

All contactors have degree of protection IP20.

Besides the basic AC controlled types R20, R25, R40 and R63, types with increased silent operation RD20, RD25, RD40 and RD63 are available. Due to DC magnet and rectifier enable DC and AC voltage control. Surge arrestor is built in for over voltage protection.

Types R20-R, RD20-R, R25-R and RD25-R are upgraded versions of basic types of modular contactors. Besides basic functions they enable manual control with a handle.
Description of the handle positions:
- A: the contactor functions as an installation contactor without manual control
- O: permanently OFF
- I: manual shifting the handle from position A to I causes the contactor to close; when control voltage is applied, the handle is automatically set to position A.

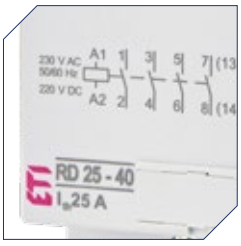
Types RD20-R and RD25-R are provided with a varistor for over voltage protection and a rectifier, which enables control with AC and DC voltage.

Contactors with manual control enable:
- switching depending on tariff (selection of the most convenient tariff)
- switching when control voltage is not applied

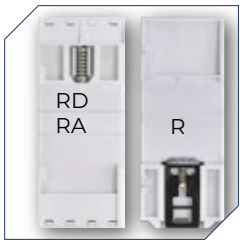
Technical specifications according to:
EN60947-4-1; EN60947-5-1; VDE 0660, IEC 947-4-1; IEC 947-5-1

- Special terminals provide reliable connection with cables.

- Contactors RD series are universal power supply AC/DC with built-in varistor surge protection. RD contactors produce less noise (DC coil inside)



- Spring-loaded latch ensures reliable mounting on DIN rail TH 35



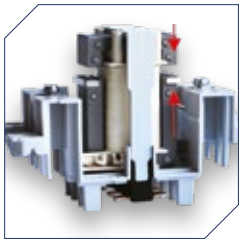
- Contactors series R-R have operating mode switch:
  - Automatic mode (normal operation with control circuit-coil)
  - Manual mode (0 - permanently open, I - constantly closed).
- In manual mode constantly close operation I presence of voltage on control circuit-coil returns contactor in automatic mode operation.

- Contact status can be monitored visually or remote by auxiliary contacts

- Silver contacts provide the best conductivity and lowest contact resistance

- Spring loaded contacts to reduce bouncing effect and prolong contact life time

- Specially designed mechanism consisting of two movable cores significantly reduces the noise level at switching



Modular contactors RA

RA series contactors are used for remote control and automatic monitoring of electrical devices and equipment in both industrial and domestic settings (lighting systems, heating and ventilation systems, switching of small power motors, etc.). They feature a modular design (1, 2, and 3 modules). The range of nominal currents is from 20 to 63 A. Coil control voltage - 230V AC.

Features:
- Low power consumption;
- High switching speed;
- Sealing Possibility;
- Supports additional contact blocks;

Versatile applications across different industries.

Technical data

				RA 20 (2p)	RA 25 (2p)	RA 25 (4p)	RA 32 (2p)	RA 32 (4p)	RA 40 (2p)	RA 40 (4p)	RA 63 (4p)
Rated insulation voltage		U_i	V	440							
Thermal rated current		I_{th}	A	20	25	25	32	32	40	40	63
Protection rating according to IEC / EN 60529				IP20 (IP40 when installed in installation box - distribution board)							
Number of modules				1	1	2	1	2	2	3	
Operating temperature / Storage temperature			°C	-25....+55 (2NO); -15....+70 (1NO); -15....+55 (1NO+1NC, 2NC, 1NC) / -30....+80							
Pollution degree				3							
Permissible humidity				95 % RH @ +55 °C							
Minimum load values				≥ 17V; ≥ 50 mA							
Power dissipation per pole			W	1,7	2,0	2,2	2.5	2.5	2,5	4,0	8.0
Backup fuse		I_v	A	20	25	25	32	32	40	63	80
Noise level during operation			dB	30	30	30	30	30	30	30	30
Rated impulse voltage		U_{imp}	kV	4							
Rated frequency		f	Hz	50/60							
Coil control voltage		U_c	V	230 (AC)							
Switching time:	make time		ms	15-25	15-25	10-30	15-25	10-30		15-20	
	release time			10-30	10-30	10-30	10-30	10-30		35-45	
Coil consumption:	during activation		VA / W	12/10	12/10	33/25	12/10	33/25	33/25	15,4/6	15,4/6
	during operation			2,8/1,2	2,8/1,2	5,5/1,6	2,8/1,2	5,5/1,6	5,5/1,6	7,7/3	7,7/3
Mechanical life				3x106	3x106	3x106	3x106	3x106	10^7	3x106	3x106
Electrical life	• AC-1, AC-7a, AC-21		cycles	200 000		200 000	150 000	150 000	150.000	100 000	
	• AC-3, AC-7b, AC-23			300 000		500 000	300 000	500 000		150 000	
Switching capacity for AC-1, AC-7a, AC-21	1-phase connection, 230 V	P_e	kW	4	5,4	5,4	7	7		8,7	13,3
	3-phase connection, 230 V			-	-	9	-	12		16	24
	3-phase connection, 400 V			-	-	16	-	21		26	40
Switching capacity for AC-3, AC-7b, AC-23	1-phase connection, 230 V			NO:1,3 / NC:0,75	1,3	1,3	NO:1,3 / NC:0,75	1,3		3,7	5
	3-phase connection, 230 V			-	-	2,2	-	2,2		5,5	8,5
	3-phase connection, 400 V			-	-	4	-	4		11	15
Maximum switching frequency (AC-1, AC-7, AC-21)			cycles	600 / year							
Maximum switching frequency (no load)				3000 / year							
Magnetic coil	solid or stranded		mm^2	1-2,5							
	Insulation stripping length		mm	7						8	
	Tightening torque		Nm	0,6 (PZ1) M3							
Main connector	solid		mm^2	1 - 10						1,5 - 25	
	stranded		mm^2	1 - 6						1,5 - 16	
	Insulation stripping length		mm	9						10	
	Tightening torque		Nm	1,2 (PZ1) M3,5						3,5 (PZ2) M5	
Installation of multiple contactors side by side:	at t ≤40 °C			max 3 contactors							
	at t 40...55 °C			max 2 contactors[1)]							
standards				IEC/EN 61095, IEC/EN 60947-4-1, IEC/EN 60947-5-1							

[1)] At temperatures above +40°C, and also when using more than two contactors in a row, it is necessary to install an intermediate spacer IKV (code 2464074) to ensure an air gap.

Rated operating current DC-1 (L/R ≤ 1 ms) Ue=24/ 60/ 110/ 220V DC

U_e / I_e	RA 20 (2p)					RA 25 (2p)					RA 25 (4p)					RA 32 (2p)					RA 32 (4p)					RA 40 (4p)					RA 63 (4p)				
	(V)	24	60	110	220	(V)	24	60	110	220	(V)	24	60	110	220	(V)	24	60	110	220	(V)	24	60	110	220	(V)	24	60	110	220	(V)	24	60	110	220
1p	(A)	20	10	6	0,6	(A)	25	15	6	0,6	(A)	25	15	6	0,6	(A)	32	15	6	0,6	(A)	32	15	6	0,6	(A)	40	18	4	1,2	(A)	63	20	4	1,2
2p*	(A)	20	15	10	6	(A)	25	20	10	6	(A)	25	20	10	6	(A)	32	20	10	6	(A)	32	20	10	6	(A)	40	32	10	8	(A)	63	34	10	8
3p*											(A)	25	25	20	15						(A)	32	32	20	15	(A)	40	40	30	20	(A)	63	30	35	30
4p*	* Series connection																									(A)	40	40	40	40	(A)	63	63	63	63

2-pole, 1 module (17,5 mm), 20 A (AC1, 400 V)

Type	Un,V (AC)	Code No.	Wiring diagram	Contacts NO	Contacts NC	g	
RA 20-20 230V AC	230V	002464092		2	-	130	10/80
RA 20-11 230V AC	230V	002464097		1	1	130	10/80

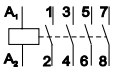
Important: At an ambient temperature of t≤ +40 °C, the maximum number of contactors that can be installed side by side is 3 units. At temperatures from +40 to +55 °C, the maximum is 2 units. When using more units, it is necessary to install an intermediate spacer IKV, Code No. 002464074.

2-pole, 1 module (17,5 mm), 25 A (AC1, 400 V)

Type	Un,V (AC)	Code No.	Wiring diagram	Contacts NO	Contacts NC	g	
RA 25-20 230V AC	230V	002464093		2	-	130	10/80

Important: At an ambient temperature of t≤ +40 °C, the maximum number of contactors that can be installed side by side is 3 units. At temperatures from +40 to +55 °C, the maximum is 2 units. When using more units, it is necessary to install an intermediate spacer IKV, Code No. 002464074.

4-pole, 2 modules (35 mm), 25 A (AC1, 400 V)

Type	Un,V (AC)	Code No.	Wiring diagram	Contacts NO	Contacts NC	g	
RA 25-40 230V AC	230V	002464094		4	0	240	5/40
RA 25-22 230V AC	230V	002464089		2	2		

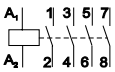
Important: At an ambient temperature of t≤ +40 °C, the maximum number of contactors that can be installed side by side is 3 units. At temperatures from +40 to +55 °C, the maximum is 2 units. When using more units, it is necessary to install an intermediate spacer IKV, Code No. 002464074.

2-pole, 1 module (17,5 mm), 32 A (AC1, 400 V)

Type	Un,V (AC)	Code No.	Wiring diagram	Contacts NO	Contacts NC	g	
RA 32-20 230V AC	230V	002464075		2	-	130	10/80

Important: At an ambient temperature of t≤ +40 °C, the maximum number of contactors that can be installed side by side is 3 units. At temperatures from +40 to +55 °C, the maximum is 2 units. When using more units, it is necessary to install an intermediate spacer IKV, Code No. 002464074.

4-pole, 2 modules (35 mm), 32 A (AC1, 400 V)

Type	Un,V (AC)	Code No.	Wiring diagram	Contacts NO	Contacts NC	g	
RA 32-40 230V AC	230V	002464076		4	-	240	5/40

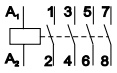
Important: At an ambient temperature of t≤ +40 °C, the maximum number of contactors that can be installed side by side is 3 units. At temperatures from +40 to +55 °C, the maximum is 2 units. When using more units, it is necessary to install an intermediate spacer IKV, Code No. 002464074.

2-pole, 2 modules (35 mm), 40 A (AC1, 400 V)

Type	Un,V (AC)	Code No.	Wiring diagram	Contacts NO	Contacts NC	g	
RA 40-20 230V AC	230V	002464079		2	-	240	3/75

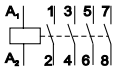
Important: At an ambient temperature of t≤ +40 °C, the maximum number of contactors that can be installed side by side is 3 units. At temperatures from +40 to +55 °C, the maximum is 2 units. When using more units, it is necessary to install an intermediate spacer IKV, Code No. 2464074.

4-pole, 3 modules (52,5 mm), 40 A (AC1, 400 V)

Type	Un,V (AC)	Code No.	Wiring diagram	Contacts NO	Contacts NC	g	
RA 40-40 230V AC	230V	002464095		4	-	400	5/50

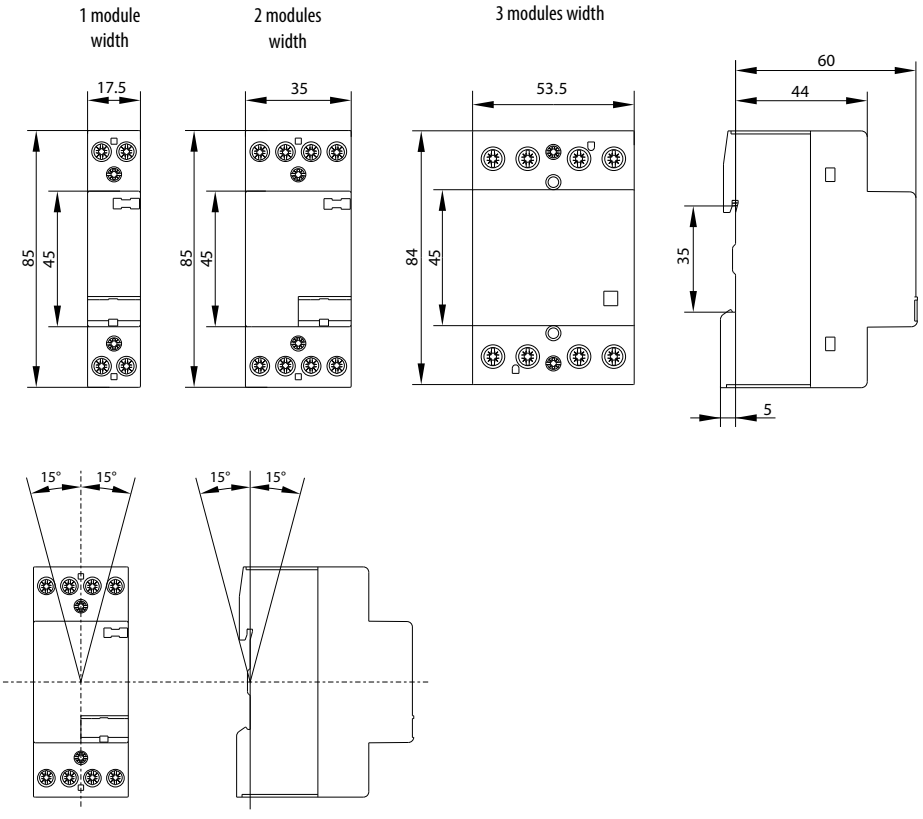
Important: At an ambient temperature of t≤ +40 °C, the maximum number of contactors that can be installed side by side is 3 units. At temperatures from +40 to +55 °C, the maximum is 2 units. When using more units, it is necessary to install an intermediate spacer IKV, Code No. 2464074.

4-pole, 3 modules (52,5 mm), 63 A (AC1, 400 V)

Type	Un,V (AC)	Code No.	Wiring diagram	Contacts NO	Contacts NC	g	
RA 63-40 230V AC	230V	002464096		4	-	400	5/50
RA 63-22 230V AC	230V	002464098		2	2		

Important: At an ambient temperature of t≤ +40 °C, the maximum number of contactors that can be installed side by side is 3 units. At temperatures from +40 to +55 °C, the maximum is 2 units. When using more units, it is necessary to install an intermediate spacer IKV, Code No. 2464074.

Overall dimensions / mounting position.



Accessories

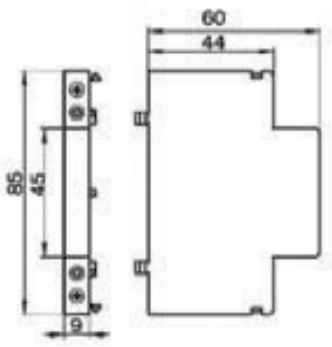
Technical data

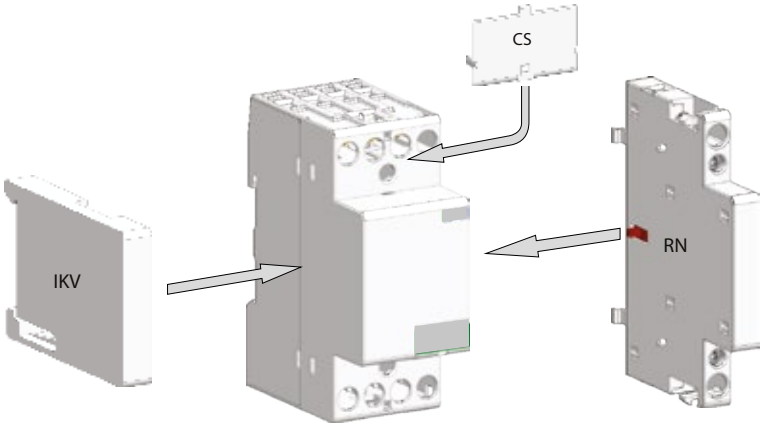
Type					RN
Standards					IEC/EN 60947-5-1
Module width					1/2
Rated insulation voltage Ui			U_i	V	500
Rated impulse withstand voltage Uimp			U_{imp}	kV	4
Thermal current			I_{th}	A	6
Rated operational voltage			U_e	V	230
					400
Rated operational current					
	AC-15	Ue = 230 V	I_e	A	6
		Ue = 400 V			4
Electrical endurance				op. c.	50.000
Mechanical endurance				op. c.	3 x 106
Min. distance of open contacts				mm	4
Contact reliability					12 V; ≥ 5 mA
Power loss per pole				W	0,3
Weight				kg	0,035
Max. back-up fuse for short-circuit protection gL					
Coordination type 2			I_v	A	6
Terminal capacity		rigid	S	mm^2	1...2.5
		flexible			1...2.5
Screw					M3
Screw head					PZ1
Tightening torque				Nm	0,6

Auxiliary contactor block for contactors RA

Type	Code No.	Wiring diagram	g	
RN-20	002464068		30	1
RN-02	002464069		30	1
RN-11	002464070		30	1

Auxiliary contactor block RN can't be used with 1 module size RD contactors.





RA/RD 25

Sealing cover

Type	Code No.	For use with	g	
SC20	002464071	RA 20	3	2
SC25	002464072	RA 25	4	2
SC40/63	002464073	RA 40, RA 60	5	2

Distance piece

Type	Code No.	For use with	g	
IKV	002464074	RA	6	1

Modular contactors R

Data according to IEC 947-4-1, IEC 947-5-1, VDE 0660, EN 60947-4-1, EN 60947-5-1

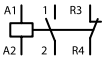
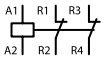
Type				R20	R25 (2p)	R25 (4p)	R40	R63	RH11
Main Contacts									
Rated insulation voltage UI			V AC	4402)	4402)	4402)	4402)	4402)	4402)
Rated operation voltage Ue			V AC	250	440	440	440	440	440
Frequency of operations with AC1, AC3			1/h	300	300	300	600	600	600
Mechanical life			S x 106	1	1	1	1	1	1
Utilization category AC1									
Rated operational current Ie (=Ith)	open at 60°C		A	20	25	25	40	60	-
Contact life			S x 106	0,1	0,1	0,1	0,1	0,1	-
Minimum switch voltage			V/mA	24/100	24/100	24/100	24/100	24/100	17/5
Short time current	10s-current		A	72	72	72	216	240	-
Power loss per pole at Ie/AC1			W	2	3	2	3	7	0,5
Utilization category AC3 Switching of three-phase motors									
Rated operational current Ie			A	-	-	9	27	30	-
Rated operational power of three-phase motors 50-60Hz	220V		kW	-	-	2,2	7,5	8	-
	230-240V		kW	1,14)		2,5	8	8,5	-
	380-415V		kW	-	-	4	12,5	15	-
Contact life AC 3			S x 106	-	-	0,15	0,15	0,15	-
Power consumption of coils									
AC operated	inrush		VA	7-9	7-9	20-25	33-45	33-45	-
	sealed		VA	2,2-4,2	2,2-4,2	4-6	6-8	6-8	-
			W	0,8-1,6	0,8-1,6	1,5-2,5	2-3,3	2-3,3	
Operation range of coils in multiples of control voltage Us	(-40...+40°C)			0,85-1,1	0,85-1,1	0,85-1,1	0,85-1,1	0,85-1,1	-
Short-circuit protection									
Coordination-type "1" according to IEC 947-4-1 max. fuse size	gG/gL		A	35	35	35	63	80	-
Cable cross-sections									
Main connector	solid or stranded		mm^2	1,5-10	1,5-10	1,5-10	2,5-25	2,5-25	0,5-2,53)
	flexible		mm^2	1,5-6	1,5-6	1,5-6	2,5-16	2,5-16	0,5-2,53)
	flexible with multicore cable end		mm^2	1,5-6	1,5-6	1,5-6	2,5-16	2,5-16	0,5-1,5
Clamps per pole				1	1	1	1	1	2
Magnetic coil		solid or stranded	mm^2	0,75-2,5	0,75-2,5	0,75-2,5	0,75-2,5	0,75-2,5	-
		flexible	mm^2	0,5-2,5	0,5-2,5	0,5-2,5	0,5-2,5	0,5-2,5	-
	flexible with multicore cable end		mm^2	0,5-1,5	0,5-1,5	0,5-1,5	0,5-1,5	0,5-1,5	-
Clamps per pole				1	1	1	1	1	-
Auxiliary Contacts									
Rated insulation voltage Ui1)			V AC	-	-	-	-	-	4402)
Thermal rated current Ith	40°C		[A]	-	-	-	-	-	10
Ambient temperature	60°C		[A]	-	-	-	-	-	6
Utilization category AC 15									
Rated operational current Ie	220-240V		[A]	-	-	-	-	-	3
	380-415V		[A]	-	-	-	-	-	2
	440V		[A]	-	-	-	-	-	1,6
Utilization category DC13									
Rated operational current Ie per pole	24-60V		[A]	-	-	-	-	-	2
	110V		[A]	-	-	-	-	-	0,4
	220V		[A]	-	-	-	-	-	0,1
Short circuit protection									
short-circuit current 1kA, contact welding not accepted max. fuse size	gG/gL		[A]	-	-	-	-	-	10
Switching time at control voltage Us±10%									
	make time		ms	7-16	7-16	9-15	11-15	11-15	-
	release time			6-12	6-12	4-8	6-13	6-13	-
	arc duration			10-15	10-15	10-15	10-15	10-15	-
Noise level (operation) acc. to EN ISO 3744 from front, distance 0,5 m			dB	16	16	8	<4	8	<4

1) Suitable for: earthed-neutral systems, overvoltage category I to IV, pollution degree 3 (standard-industry): Uimp 8kV.
2) Suitable for: earthed-neutral systems, overvoltage category I to III, pollution degree 3 (standard-industry): Uimp 4kV.
3) Maximum cable cross-section with prepared conductor.
4) AC5b motor 2-pole 230 V 1,1 kW.

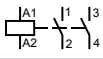
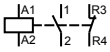
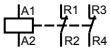
1-pole, 1 module (17,5 mm), 25 A (AC1, 230V)

Type	Code No.	Wiring diagram	g	
R 25-10-24V	002463507		130	12
R 25-10-230V	002463500		130	12

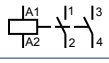
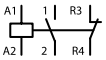
2-pole, 1 module (17,5 mm), 20 A (AC1, 230V)

Type	Code No.	Wiring diagram	g	
R 20-20 230V	002461210		130	12
R 20-20 24 V	002461211		130	12
R 20-11 230 V	002461220		130	12
R 20-11 24 V	002461221		130	12
R 20-02 230 V	002461230		130	12
R 20-02 24 V	002461231		130	12

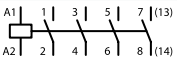
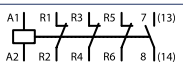
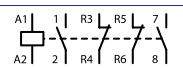
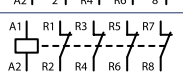
2-pole, 1 module (17,5 mm), 25 A (AC1, 230V)

Type	Code No.	Wiring diagram	g	
R 25-20-24V	002463501		130	12
R 25-20 230V	002463502		130	12
R 25-11 24V	002463503		130	12
R 25-11 230V	002463504		130	12
R 25-02 24V	002463505		130	12
R 25-02 230V	002463506		130	12

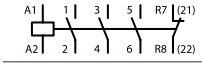
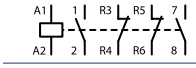
2 pole, 2 modules (35 mm), 63 A(AC1, 400 V)

Type	Code No.	Wiring diagram	g	
R 63-20 230V	002463482		240	6/60
R 63-20 24V	002463483		240	6/60
R 63-11 230V	002463484		240	6/60
R 63-11 24V	002463485		240	6/60

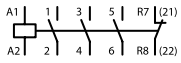
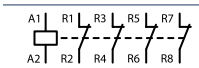
4-pole, 2 modules (35 mm), 25 A (AC1, 400 V)

Type	Code No.	Wiring diagram	g	
R 25-40 230 V	002462310		220	6
R 25-40 24 V	002462311		220	6
R 25-31 230 V	002462320		220	6
R 25-31 24 V	002462321		220	6
R 25-13 230 V	002462330		220	6
R 25-13 24 V	002462331		220	6
R 25-22 230 V	002462340		220	6
R 25-22 24 V	002462341		220	6
R 25-04 230 V	002462350		220	6
R 25-04 24 V	002462351		220	6

4-pole, 3 modules (52,5 mm), 40 A (AC1, 400 V)

Type	Code No.	Wiring diagram	g	
R 40-40 230 V	002463410		360	4
R 40-40 24 V	002463411		360	4
R 40-31 230 V	002463420		360	4
R 40-31 24 V	002463421		360	4
R 40-22 230 V	002463430		360	4
R 40-22 24 V	002463431		360	4
R 40-04 230 V	002463440		360	4
R 40-04 24 V	002463441		360	4

4 pole, 3 modules (52,5mm), 63 A(AC1, 400 V)

Type	Code No.	Wiring diagram	g	
R 63-40 230 V	002463450		360	4
R 63-40 24 V	002463451		360	4
R 63-31 230 V	002463460		360	4
R 63-31 24 V	002463461		360	4
R 63-22 230 V	002463470		360	4
R 63-22 24 V	002463471		360	4
R 63-04 230 V	002463480		360	4
R 63-04 24 V	002463481		360	4

Auxiliary contactor block for contactors R25, R40, R63 (max. 1 piece)

Type	Code No.	Wiring diagram	g	
RH 11	002461101		26	3

*Not available for 1 modules size R contactors, only for 2 and above!

Sealing cover

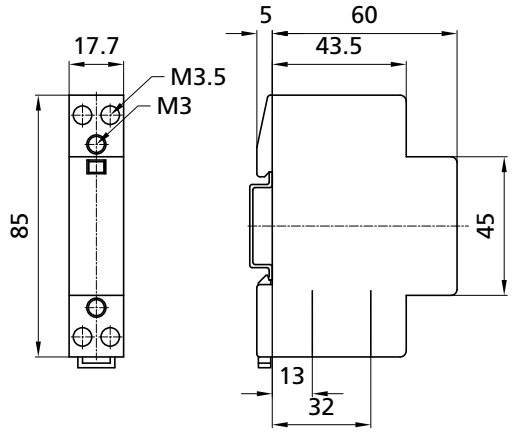
Type	Code No.	For use with	g	
P721	002461110	R 25 (4p)	2	10
P690	002461120	R 40…, R 63…	3	10

Distance piece

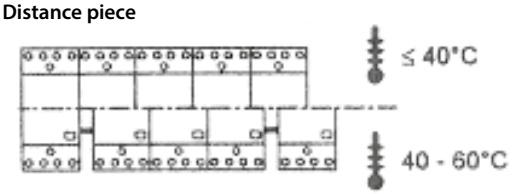
Type	Code No.	For use with	g	
P730	002461130	R20-R63	12	10

Dimensions

R20

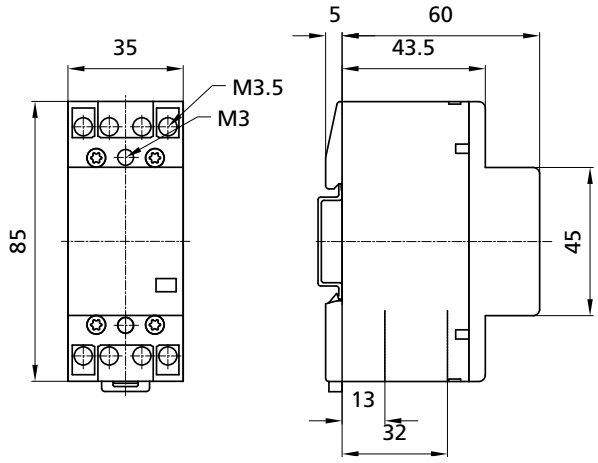


Distance piece

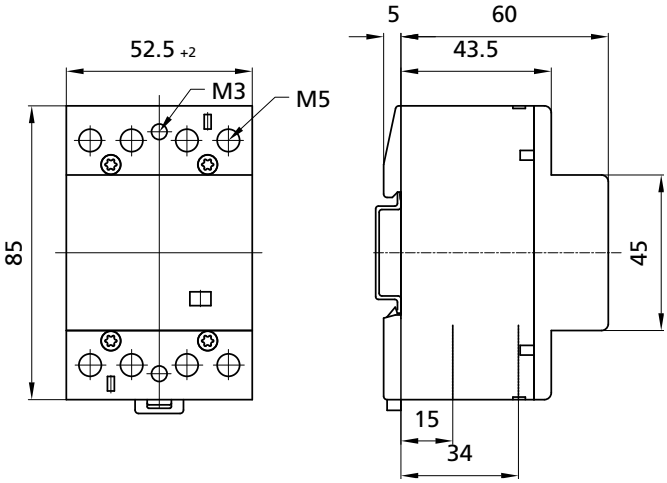


Distance piece is used where ambient temperature is higher than 40°C. Piece width is 1/2 module (8,8 mm)

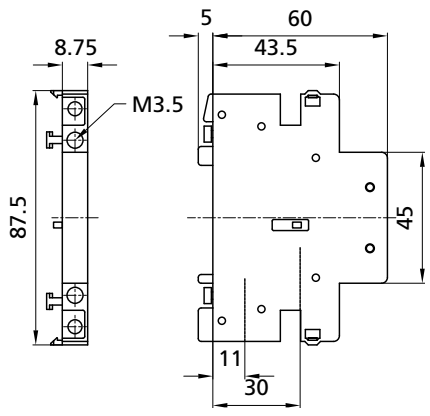
R25



R40,R63



RH11



Utilization category DC1 (Switching of resisitive load)

time constant L/R ≤ 1ms		NO contacts				NC contacts			
		1 pole	2 poles in series	3 poles in series	4 poles in series	1 pole	2 poles in series	3 poles in series	4 poles in series
		(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)
R20	24V DC	20	20	-	-	15	15	-	-
	48V DC	18	20	-	-	13,5	15	-	-
	60V DC	17	20	-	-	12,5	15	-	-
	110V DC	4	10	-	-	3	7,5	-	-
	220V DC	0,4		-	-	0,3		-	-
R25	24V DC	25	25	25	25	18,5	18,5	18,5	18,5
	48V DC	22	25	25	25	16,5	18,75	18,5	18,5
	60V DC	18	25	25	25	13,5	18,75	18,5	18,5
	110V DC	5	16	25	25	3,5	12	18,5	18,5
	220V DC	0,5	4	10	15	0,4	3	7,5	11
R40	24V DC	40	40	40	40	30	30	30	30
	48V DC	25	40	40	40	18,5	30	30	30
	60V DC	19	30	40	40	14	24,5	30	30
	110V DC	7	17	31	40	5	12,5	23	30
	220V DC	0,7	5	15	20	0,5	3,5	11	15
R63	24V DC	63	63	63	63	47	47	47	47
	48V DC	26	44	63	63	19,5	33	47	47
	60V DC	21	36	63	63	15,5	27	47	47
	110V DC	8	18	34	63	6	13,5	25,5	47
	220V DC	0,7	6	16	21	0,5	4,5	12	15,5

Utilization category DC3 & DC5 (Switching of inductive loads)

time constant L/R ≤ 15ms		NO contacts				NC contacts			
		1 pole	2 poles in series	3 poles in series	4 poles in series	1 pole	2 poles in series	3 poles in series	4 poles in series
		(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)
R20	24V DC	10	20	-	-	7,5	15	-	-
	48V DC	4	15	-	-	3	11	-	-
	60V DC	3	12	-	-	2	9	-	-
	110V DC	0,8	4	-	-	0,6	3	-	-
	220V DC	-		-	-	-		-	-
R25	24V DC	15	25	25	25	11	18,5	18,5	18,5
	48V DC	5	17	25	25	3,5	12,75	18,5	18,5
	60V DC	4	13	25	25	3	9,5	18,5	18,5
	110V DC	1	5	15	25	0,7	3,5	11	18,5
	220V DC	0,1	0,5	10	8	0,075	0,375	2	6
R40	24V DC	23	40	40	40	17	30	30	30
	48V DC	10	23	40	40	7,5	17	30	30
	60V DC	5	15	30	40	3,5	11	22,5	30
	110V DC	1,5	5	15	40	1,1	3,5	11	30
	220V DC	0,3	1	4	10	0,2	0,75	3	7,5
R63	24V DC	25	45	63	63	18,5	33,5	47	47
	48V DC	10	25	45	63	7,5	18,5	33,5	47
	60V DC	5	15	30	63	3,5	11	22,5	47
	110V DC	1,5	5	15	45	1,1	3,5	11	33,5
	220V DC	0,3	1	4	10	0,2	0,75	3	7,5

Switching of Lamps

Lamp Type	Power [W]	Current [A]	Capacitors µF	Max. lamps per pole at 230V 50Hz R20	R25	R40	R63
Incandescent lamps	60	0,27	-	22	28	58	85
	100	0,45	-	13	17	35	51
	200	0,91	-	7	8	17	25
	300	1,36	-	4	5	11	16
	500	2,27	-	3	3	7	10
	1000	4,5	-	1	1	3	5
Fluoroscent lamps, uncompensated or serial compensated	11	0,16	-	60	75	210	310
	18	0,37	2,7	25	30	90	140
	24	0,35	2,5	25	30	90	140
	36	0,43	3,4	20	25	70	140
	58	0,67	5,3	14	17	45	70
	65	0,67	5,3	13	16	40	65
	85	0,8	-	11	14	35	60
Fluoroscent lamps, dual-connection	11	0,07	-	2x100	2x110	2x220	2x250
	18	0,11	-	2x50	2x55	2x130	2x200
	24	0,14	-	2x40	2x44	2x110	2x160
	36	0,22	-	2x30	2x33	2x70	2x100
	58	0,35	-	2x20	2x22	2x45	2x70
	65	0,35	-	2x15	2x16	2x40	2x60
	85	0,47	-	2x10	2x11	2x30	2x40
Fluoroscent lamps, parallel compensated	11	0,16	2,0	30	30	100	140
	18	0,37	2,0	20	20	70	90
	24	0,35	3,0	15	15	55	75
	36	0,43	4,5	10	10	38	51
	58	0,67	7,0	6	6	25	30
	65	0,67	7,0	5	5	24	28
	85	0,8	8,0	4	4	18	23

Switching of Lamps

Lamp Type	Power [W]	Current [A]	Capacitors µF	Max. lamps per pole at 230V 50Hz R20	R25	R40	R63
Fluoroscent lamps, with serial electronic	18	0,09	-	40	40	100	150
	36	0,16	-	20	20	50	75
	58	0,25	-	15	15	30	55
	2x18	0,17	-	2x20	2x20	2x50	2x60
	2x36	0,32	-	2x10	2x10	2x25	2x30
	2x58	0,49	-	2x7	2x7	2x15	2x20
Transformers for metal halid low voltage lamps	20		-	40	52	110	174
	50		-	20	24	50	80
	75		-	13	16	35	54
	100		-	10	12	27	43
	150		-	7	9	19	29
	200		-	5	5	14	23
	300		-	3	4	9	14
Mercury-vapour lamps (high pressure lamps), uncompensated e. g. HQL, HPL	50	0,61	-	16	18	38	55
	80	0,8	-	12	14	28	40
	125	1,15	-	8	9	20	28
	250	2,15	-	4	5	11	15
	400	3,25	-	3	4	7	10
	700	5,4	-	1	2	4	6
	1000	7,5	-	1	1	3	4
Mercury-vapour lamps (high pressure lamps), compensated e. g. HQL, HPL	50	0,28	7	7	7	32	46
	80	0,41	8	5	5	25	35
	125	0,65	10	3	3	16	22
	250	1,22	18	2	2	8	12
	400	1,95	25	1	1	5	7
	700	3,45	45	1	1	3	4
	1000	4,8	60	-	-	2	3
Metal halide lamps uncompensated e. g. HQI, HPI, CDM	35	0,53	-	22	24	45	65
	70	1	-	12	14	24	35
	150	1,8	-	6	8	13	18
	250	3	-	4	5	8	12
	400	3,5	-	3	4	6	10
	1000	9,5	-	1	1	2	4
	2000	16,5	-	-	-	1	2
400 V per pole	2000	10,5	-	-	-	1	2
	3500	18	-	-	-	-	1
Metal halide lamps compensated e. g. HQI, HPI	35	0,25	6	8	8	38	50
	70	0,45	12	4	4	20	28
	150	0,75	20	2	2	12	17
	250	1,5	33	1	1	7	10
	400	2,1	35	1	1	5	7
	1000	5,8	95	-	-	2	3
	2000	11,5	148	-	-	1	1
400 V per pole	2000	6,5	58	-	-	1	2
	3500	11,6	100	-	-	-	1
Metal halide lamps with serial electronic (e.g. PCI) 50 -125 x Inlamps for 0,6 ms	20	0,1	integrated	9	9	18	20
	35	0,2	integrated	6	6	11	13
	70	0,36	integrated	5	5	10	12
	150	0,7	integrated	4	4	8	10
Sodium-vapour lamps (low pressure lamps), uncompensated	35	1,5	-	7	9	22	30
	55	1,5	-	7	9	22	30
	90	2,4	-	4	6	13	19
	135	3,5	-	3	4	10	13
	150	3,3	-	3	4	10	13
	180	3,3	-	3	4	10	13
	200	3,3	-	3	4	10	13

Switching of Lamps

Lamp Type	Power [W]	Current [A]	Capacitors µF	Max. lamps per pole at 230V 50Hz R20	R25	R40	R63
Sodium-vapour lamps (low pressure lamps), compensated	35	0,31	20	3	3	12	16
	55	0,42	20	2	2	8	14
	90	0,63	30	1	1	5	9
	135	0,94	45	1	1	3	6
	150	1	40	1	1	3	6
	180	1,16	40	1	1	2	5
	200	1,32	25	-	-	2	4
Sodium-vapour lamps (high pressure lamps), uncompensated	150	1,8	-	5	6	11	22
	250	3	-	4	5	7	13
	330	3,7	-	3	4	6	10
	400	4,7	-	2	2	5	8
	1000	10,3	-	1	1	2	4
Sodium-vapour lamps (high pressure lamps), compensated	150	0,83	20	2	2	7	14
	250	1,5	33	1	1	4	8
	330	2	40	1	1	3	6
	400	2,4	48	1	1	2	5
	1000	6,3	106	-	-	1	2
Sodium-vapour lamps (high pressure lamps) with serial electronic (e.g. PCI) 50-125 x Inlamps for 0,6 ms	20	0,1	integrated	9	9	18	20
	35	0,2	integrated	6	6	11	13
	70	0,36	integrated	5	5	10	12
	150	0,7	integrated	4	4	8	10
LED Lamps	max. inrush current of contactor [A]			195	233	424	565

Modular contactors RD

Data according to IEC 947-4-1, IEC 947-5-1, VDE 0660, EN 60947-4-1, EN 60947-5-1

Type						RD20	RD25	RD40	RD63
General	Standards					IEC/EN 61095 , IEC/EN 60947-4-1, IEC/EN 60947-5-1			
	Module width					1	2	3	
	Mechanical endurance				op. c.	3 x 106		3 x 106	
	Ambient temperature				°C	-25 … +70(2NO, 4NO) -15 … +70 (1NO, 1NO+1NC,3NO,3NO+1NC) -15 … +55 (2NC, 1NC, 2NO+2NC,4NC)			
	Storage temperature				°C	-40 … +80			
	No. of contactors (side-by-side)	≤ 40 °C				max. 3			
		40 - 55 °C				max. 2			
		55 - 70 °C				max. 1 (ventilation modules or least 9 mm free space on each side)			
	Contact reliability					17 V; ≥ 50 mA			
	Min. distance of open contacts				mm	3,6			
	Power dissipation per pole				W	1,7	2,2	4	8
	Overload current withstand capability: 10s				A	72	68	176	240
	Max. back-up fuse for short-circuit protection gL			I_v	A	20	25	63	80
	Coordination type 2								
	Noise level (operation)				dB	20	20	20	20
	Vibration resistance according to IEC/EN 60068-2-6			a	g	switched off: 2 (Z and X axis) / switched on: 3 (Z axis) and 1 (X axis)			
	Shock resistance according to IEC/EN 6068-2-27			a	g	switched off: 10 (Z and X axis) / switched on: 15 (Z axis) and 2 (X axis)			
	Max. operating frequency	DC-1			op. c./h	300			
		AC-1/AC-3/AC-5b/AC-6b				600			
		AC-15				1200			
		no load				3000			
Main circuit	Rated insulation voltage			U_i	V	440		440	
	Rated impulse withstand voltage			U_{imp}	kV	4			
	Thermal current			I_{th}	A	20	25	40	63
	Rated operational voltage			U_e	V	400 [3]		400	
	Rated frequency			f	Hz	50/60			
	Max. thermal current up to +55 °C			I_{th}	A	20	25	40	63
	Max. thermal current @ +70 °C			I_{th}	A	16	20	40	50
	Rated operational current	AC-1/AC-7a		I_e	A	20	25	40	63
		AC-3/AC-7b		I_e	A	9	8,5	22	30
		AC-5a	230 V	I_e	A	8,8	11,2	20	32
		AC-5b	230 V	I_e	A	8,8	9,7	17,6	22
		AC-6a	230 V	I_e	A	4	2,8	10,8	17,2
	Operational power AC-1/AC-7a	single-phase	230 V			3,7	5,4	8,7	13,3 [4]
		three-phase	230 V	P_e	kW	-	9	16	24
		three-phase	400 V			-	16	26	40
	Electrical endurance	AC-1 / AC-7a			op. c.	200.000		100.000	
		AC-3 / AC-7b			op. c.	300.000	500.000	150.000	
		AC-5a / AC-5b / AC-6a / AC-6b / AC-7c			op. c.	100.000			
	Operational power AC-3/AC-7b	single-phase motor	230 V			1.3 -> NO [1]	1.3 [2]	3.7 [2]	5 [2]
		three-phase motor	230 V	P_e	kW	-	2,2	5,5	8,5
		three-phase motor	400 V			-	4	11	15
	Switching of capacitors	AC-6b / AC-7c	230 V	C	µF	30	36	220	330
	Maximum operating frequency	AC-5a / AC-5b / AC-6a / AC-6b / AC-7c			op. c./h	600			

1) Make contacts are marked NO
2) Data for single-phase power are valid for versions -22, -20 and -02
3) Rated operational voltage for versions of contacts -10 and-01 is 230 V
4) Rated power (AC-1) for IK63-04: single-phase 230 V = 10.9 kW; three-phase 230 V = 18.9 kW; three-phase 400 V = 32.9 kW

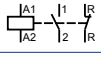
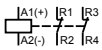
Type							RD20	RD25	RD40	RD63
Main circuit	Rated operational current	DC-1								
	1 pole		U_e = 24 V DC				20	25	40	63
			U_e = 110 V DC	I_e	A		6	6	4	4
			U_e = 220 V DC				0,6	0,6	1,2	1,2
	2 poles connected in series		U_e = 24 V DC				20	25	40	63
			U_e = 110 V DC	I_e	A		10	10	10	10
			U_e = 220 V DC				6	6	8	8
	3 poles connected in series		U_e = 24 V DC				-	25	40	63
			U_e = 110 V DC	I_e	A		-	20	30	35
			U_e = 220 V DC				-	15	20	30
	4 poles connected in series		U_e = 24 V DC				-	25	40	63
			U_e = 110 V DC	I_e	A		-	20	40	63
			U_e = 220 V DC				-	15	40	63
	Electrical endurance	DC-1				op. c.	100.000			
	Maximum operating frequency	DC-1				op. c./h	300			
	Terminal capacity		rigid	S	mm^2		1 … 10		1.5 … 25	
			flexible				1 … 6		1.5 … 16	
	Screw						M3.5		M5	
	Screw Head						PZ1		PZ2	
	Tightening torque					Nm	1,2		3,5	
Auxiliary circuit	Rated operational voltage			U_e	V		230	400	400	400
	Rated insulation voltage			U_i	V		230	440	440	440
	Rated impulse withstand voltage			U_{imp}	kV		4			
	Thermal current			I_{th}	A		20	25	40	63
	Rated operational current AC-15	single-phase	230 V	I_e	A		6			
		single-phase	400 V				-	4		
	Electrical endurance	AC-15				op. c.	300.000	500.000	150.000	
Control circuit	Range of control voltage			U_c	%		85 … 110			
	Control voltages			U_c	V		12 … 230			
	Surge immunity test (1.2/50 µs), acc. to IEC/EN 61000-4-5				kV		2			
	Coil consumption		switch-on		VA/W		2.1/2.1	2.6/2.6 5)	5/5	5/5
			operation				2.1/2.1	2.6/2.6 5)	5/5	5/5
	Make/break delays		make		ms		15 – 45	15 – 45	15 – 20	15 – 20
			break				20 – 50	20 – 70	35 – 45	35 – 45
	Terminal capacity		rigid	S	mm^2		1 … 2.5		1 … 2.5	
			flexible				1 … 2.5		1 … 2.5	
	Screw						M 3.5		M3	
	Screw head						PZ1			
	Tightening torque					Nm	0,6			
Safety	MTTF - Mean time to failure					h	AC-1: 5.000 AC-3: 7.500	AC-1: 5.000 AC-3: 12.500	AC-1: 2.500 AC-3: 3.750	
	MTTFd - Mean time to failure dangerous					h	AC-1: 6.666 AC-3: 10.000	AC-1: 6.666 AC-3: 16.666	AC-1: 3.333 AC-3: 5.000	
	B10 - Number of operating cycles until 10 % of devices fail					op. c.	AC-1: 150.000 AC-3: 225.000	AC-1: 150.000 AC-3: 375.000	AC-1: 75.000 AC-3: 112.500	
	B10d - Number of operating cycles until 10 % of device dangerous B10d = B10/ratio of dangerous failures					op. c.	AC-1: 200.000 AC-3: 300.000	AC-1: 200.000 AC-3: 500.000	AC-1: 100.000 AC-3: 150.000	
	λ - Failure rate					1/h	AC-1: 0,0002 AC-3: 0,000133	AC-1: 0,0002 AC-3: 0,00008	AC-1: 0,0004 AC-3: 0,000266	
	λd - Failure rate dangerous					1/h	AC-1: 0,00015 AC-3: 0,0001	AC-1: 0,00015 AC-3: 0,00006	AC-1: 0,0003 AC-3: 0,0002	
	Ratio of dangerous failures					%	75			
	nop - Operating cycles (operating cycles/h)					op. c./h	300			

5) Coil consumption for version -04 is 3.8 VA/3.8 W

1-pole, 1 module (17,5 mm), 20 A (AC1, 230 V)

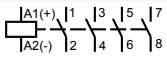
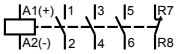
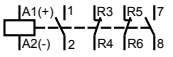
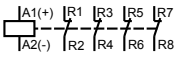
Type	Code No.	Wiring diagram	g	
RD 20-10-230V AC/DC	002464000		130	10
RD 20-10-24V AC/DC	002464001			
RD 20-01-230V AC/DC	002464002			
RD 20-01-24V AC/DC	002464003			

2-pole, 1 module (17,5 mm), 20 A (AC1, 230 V)

RD 20-20-230V AC/DC	002464004		130	10
RD 20-20-24V AC/DC	002464005			
RD 20-11-230V AC/DC	002464006			
RD 20-11-24V AC/DC	002464007			
RD 20-02-230V AC/DC	002464008			
RD 20-02-24V AC/DC	002464009			

Take care of dissipated heat by: ≤ 40 °C max. 3 modules side by side
40 - 55 °C max. 2 modules side by side.
For more contactors together, use distance piece IKV

4-pole, 2 modules (35 mm), 25 A (AC1, 400 V)

Type	Code No.	Wiring diagram	g	
RD 25-40-230V AC/DC	002464010		240	5
RD 25-40-24V AC/DC	002464011			
RD 25-31-230V AC/DC	002464012			
RD 25-31-24V AC/DC	002464013			
RD 25-22-230V AC/DC	002464014			
RD 25-22-24V AC/DC	002464015			
RD 25-04-230V AC/DC	002464016			
RD 25-04-24V AC/DC	002464017			

Take care of dissipated heat by: ≤ 40 °C max. 3 modules side by side
40 - 55 °C max. 2 modules side by side.
For more contactors together, use distance piece IKV

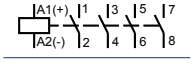
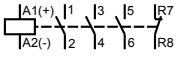
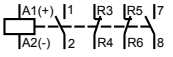
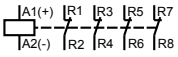
2-pole, 1 module (17,5 mm), 32 A (AC1, 230V)

Type	Code No.	Wiring diagram	g	
RD 32-20 230V AC/DC	002464077		130	10/80

4-pole, 2 modules (35 mm), 32 A (AC1, 400 V)

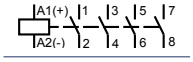
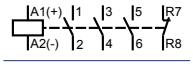
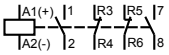
Type	Code No.	Wiring diagram	g	
RD 32-40 230V AC/DC	002464078		244	5/40

4-pole, 3 modules (52,5 mm), 40 A (AC1, 400 V)

Type	Code No.	Wiring diagram	g	
RD 40-40-230V AC/DC	002464018		420	5
RD 40-40-24V AC/DC	002464019			
RD 40-31-230V AC/DC	002464020			
RD 40-31-24V AC/DC	002464021			
RD 40-22-230V AC/DC	002464022			
RD 40-22-24V AC/DC	002464023			
RD 40-04-230V AC/DC	002464024			
RD 40-04-24V AC/DC	002464025			

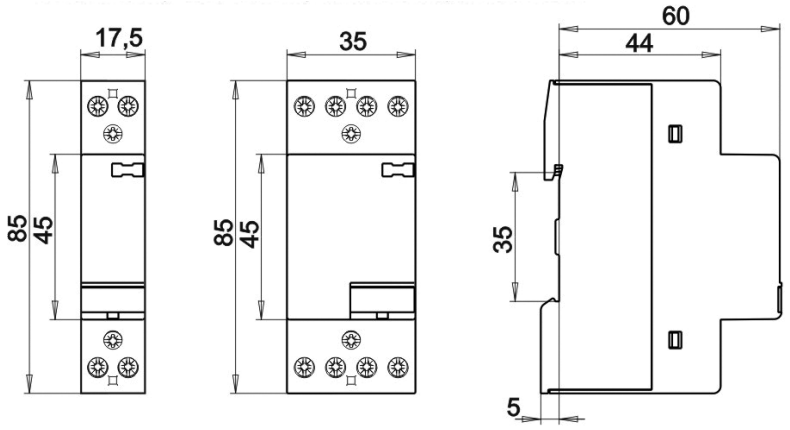
Take care of dissipated heat by: ≤ 40 °C max. 3 modules side by side
40 - 55 °C max. 2 modules side by side.
For more contactors together, use distance piece IKV

4 pole, 3 modules (52,5mm), 63 A(AC1, 400 V)

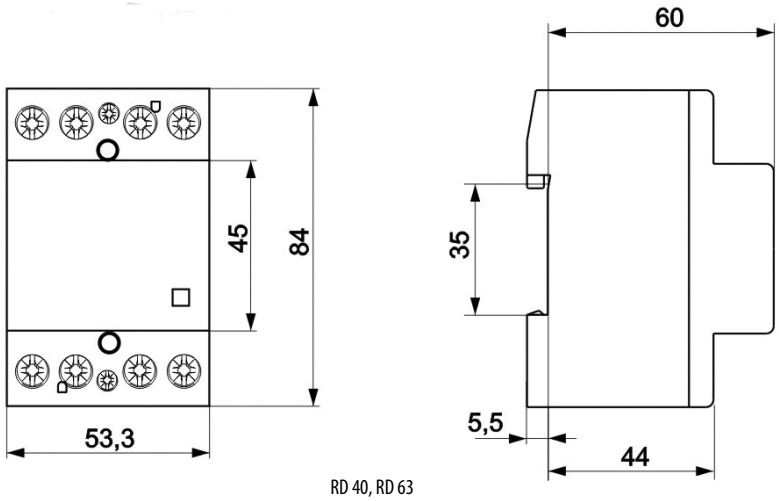
Type	Code No.	Wiring diagram	g	
RD 63-40-230V AC/DC	002464026		420	5
RD 63-40-24V AC/DC	002464027			
RD 63-31-230V AC/DC	002464028			
RD 63-31-24V AC/DC	002464029			
RD 63-22-230V AC/DC	002464030			
RD 63-22-24V AC/DC	002464031			

Take care of dissipated heat by: ≤ 40 °C max. 3 modules side by side
40 - 55 °C max. 2 modules side by side.
For more contactors together, use distance piece IKV

Dimensions



R D 20, RD 25,



RD 40, RD 63

Modular contactors R...R, RD...R

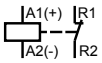
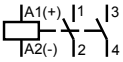
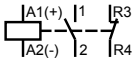
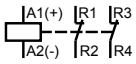
Data according to IEC 947-4-1, IEC 947-5-1, VDE 0660, EN 60947-4-1, EN 60947-5-1

Type							R 20-R	RD 20-R	R 25-R	R D25-R
General	Standards						IEC/EN 61095 , IEC/EN 60947-4-1, IEC/EN 60947-5-1			
	Module width						1		2	
	Mechanical endurance					op. c.	3 x 106			
	Ambient temperature					°C	-25 … +70 (2NO, 4NO) -15 … +70 (1NO, 1NO+1NC,3NO,3NO+1NC) -15 … +55 (2NC, 1NC, 2NO+2NC,4NC)			
	Storage temperature					°C	-40 … +80			
	No. of contactors (side-by-side)		≤ 40 °C				max. 3	max. 3	no limit	max. 3
			40 - 55 °C				max. 2	max. 2		max. 2
			55 - 70 °C				max. 1 (ventilation modules or least 9 mm free space on each side)			
	Contact reliability						17 V; ≥ 50 mA			
	Min. distance of open contacts					mm	3,6			
	Power dissipation per pole					W	1,7	1,7	2,2	2,2
	Overload current withstand capability: 10s					A	72	72	68	68
	Max. back-up fuse for short-circuit protection gL				I_v	A	20	20	25	25
	Coordination type 2									
	Noise level (operation)					dB	30	20	30	20
	Vibration resistance according to IEC/EN 60068-2-6				a	g	switched off: 2 (Z and X axis) / switched on: 3 (Z axis) and 1 (X axis)			
	Shock resistance according to IEC/EN 6068-2-27				a	g	switched off: 10 (Z and X axis) / switched on: 15 (Z axis) and 2 (X axis)			
	Max. operating frequency	DC-1				op. c./h	300			
		AC-1/AC-3/AC-5b/AC-6b					600			
		AC-15					1200			
		no load					3000			
Main circuit	Rated insulation voltage				U_i	V	440		440	
	Rated impulse withstand voltage				U_{imp}	kV	4			
	Thermal current				I_{th}	A	20	20	25	25
	Rated operational voltage				U_e	V	400 [3]	400 [3]	400	400
	Rated frequency				f	Hz	50/60			
	Max. thermal current up to +55 °C				I_{th}	A	20	20	25	25
	Max. thermal current @ +70 °C				I_{th}	A	20	16	20	20
	Rated operational current	AC-1/AC-7a			I_e	A	20	20	25	25
		AC-3/AC-7b			I_e	A	NO: 9, NC: 6		8,5	
		AC-5a	230 V		I_e	A	8,8	8,8	11,2	11,2
		AC-5b	230 V		I_e	A	8,8	8,8	9,7	9,7
		AC-6a	230 V		I_e	A	4	4	2,8	2,8
	Operational power AC-1/AC-7a	single-phase	230 V				3,7	3,7	5,4	5,4
		three-phase	230 V		P_e	kW	-	-	9	9
		three-phase	400 V				-	-	16	16
	Electrical endurance	AC-1/AC-7a				op. c.	200.000			
		AC-3/AC-7b				op. c.	300.000		500.000	
		AC-5a / AC-5b / AC-6a / AC-6b / AC-7c				op. c.	100.000			
	Operational power AC-3/AC-7b	single-phase motor	230 V		P_e	kW	1.3 -> NO [1]	1.3 -> NO [1]	1.3 [2]	1.3 [2]
		three-phase motor	230 V				-	-	2,2	2,2
		three-phase motor	400 V				-	-	4	4
	Switching of capacitors	AC-6b	230 V		C	µF	30	30	36	36
	Maximum operating frequency	AC-5a / AC-5b / AC-6a / AC-6b / AC-7c				op. c./h	600			

1) Make contacts are marked NO
2) Data for single-phase power are valid for versions -22, -20 and -02
3) Rated operational voltage for versions of contacts -10 and-01 is 230 V
4) Rated power (AC-1) for IK63-04: single-phase 230 V = 10.9 kW; three-phase 230 V = 18.9 kW; three-phase 400 V = 32.9 kW

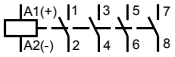
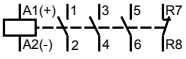
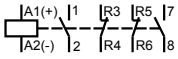
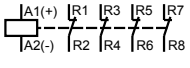
Type							R 20-R	RD 20-R	R 25-R	RD 25-R
Main circuit	Rated operational current	DC-1								
	1 pole		U_e = 24 V DC				20	20	25	25
			U_e = 110 V DC	I_e	A		6			
			U_e = 220 V DC				0,6			
	2 poles connected in series		U_e = 24 V DC				20		25	
			U_e = 110 V DC	I_e	A		10			
			U_e = 220 V DC				6			
	3 poles connected in series		U_e = 24 V DC				-	-	25	25
			U_e = 110 V DC	I_e	A		-	-	20	20
			U_e = 220 V DC				-	-	15	15
	4 poles connected in series		U_e = 24 V DC				-	-	25	25
			U_e = 110 V DC	I_e	A		-	-	20	20
			U_e = 220 V DC				-	-	15	15
	Electrical endurance	DC-1				op. c.	100.000			
	Maximum operating frequency	DC-1				op. c./h	300			
	Terminal capacity		rigid	S	mm^2		1 … 10			
			flexible				1 … 6			
	Screw						M3.5			
	Screw Head						PZ1			
	Tightening torque					Nm	1,2			
Auxiliary circuit	Rated operational voltage			U_e	V		230	230	400	400
	Rated insulation voltage			U_i	V		230	230	440	440
	Rated impulse withstand voltage			U_{imp}	kV		4			
	Thermal current			I_{th}	A		20	20	25	25
	Rated operational current AC-15	single-phase	230 V	I_e	A		6			
		single-phase	400 V				4			
	Electrical endurance					op. c.	300.000		500.000	
Control circuit	Range of control voltage			U_c	%		85 … 110			
	Control voltages			U_c	V		12 … 230			
	Surge immunity test (1.2/50 µs), acc. to IEC/EN 61000-4-5				kV		2			
	Coil consumption	switch-on (handle in A)			VA/W		12/10	2.1/2.1	33/25	2.6/2.6
		switch-on (handle in 1)					6/3.8	2.1/2.1	10/5	2.6/2.6
		operation					2.8/1.2	2.1/2.1	5.5/1.6	2.6/2.6
	Make/break delays		make		ms		15 – 25	15 – 45	10 – 30	15 – 45
			break				10 – 30	20 – 50	10 – 30	20 – 70
	Terminal capacity		rigid		mm^2		1 … 2.5			
			flexible				1 … 2.5			
	Screw						M3			
	Screw head						PZ1			
	Tightening torque					Nm	0,6			
Safety	MTTF - Mean time to failure MTTF = 1/λ = B10/(0,1 nop)					h	AC-1: 5.000 AC-3: 7.500		AC-1: 5.000 AC-3: 12.500	
	MTTFd - Mean time to failure dangerous MTTFd = 1/λd = B10d/(0,1 nop)					h	AC-1: 6.666 AC-3: 10.000		AC-1: 6.666 AC-3: 16.666	
	B10 - Number of operating cycles until 10 % of devices fail					op. c.	AC-1: 150.000 / AC-3: 225.000		AC-1: 150.000 / AC-3: 375.000	
	B10d - Number of operating cycles until 10 % of device dangerous B10d = B10/ratio of dangerous failures					op. c.	AC-1: 200.000 AC-3: 300.000		AC-1: 200.000 AC-3: 500.000	
	λ - Failure rate λ = (0,1 nop)/B10					1/h	AC-1: 0,0002 AC-3: 0,000133		AC-1: 0,0002 AC-3: 0,00008	
	λd - Failure rate dangerous λd = (0,1 nop)/B10d					1/h	AC-1: 0,00015 AC-3: 0,0001		AC-1: 0,00015 AC-3: 0,00006	
	Ratio of dangerous failures					%	75			
	nop - Operating cycles (operating cycles/h)					op. c./h	300			

1-pole, ON - OFF - AUTO, 1 module (17,5 mm), 20 A (AC1, 230V)

Type	Code No.	Wiring diagram	g	
R 20-10-R-230V AC	002464032			
R 20-10-R-24V AC	002464033			
RD 20-10-R-230V AC/DC	002464034			
RD 20-10-R-24V AC/DC	002464035		130	10
R 20-01-R-230V AC	002464036			
R 20-01-R-24V AC	002464037			
RD 20-01-R-230V AC/DC	002464038			
RD 20-01-R-24V AC/DC	002464039			
2-pole, ON - OFF - AUTO, 1 module (17,5 mm), 20 A (AC1, 230V)				
R 20-20-R-230V AC	002464040			
R 20-20-R-24V AC	002464041			
RD 20-20-R-230V AC/DC	002464042			
RD 20-20-R-24V AC/DC	002464043			
R 20-11-R-230V AC	002464044			
R 20-11-R-24V AC	002464045			
RD 20-11-R-230V AC/DC	002464046		130	10
RD 20-11-R-24V AC/DC	002464047			
R 20-02-R-230V AC	002464048			
R 20-02-R-24V AC	002464049			
RD 20-02-R-230V AC/DC	002464050			
RD 20-02-R-24V AC/DC	002464051			

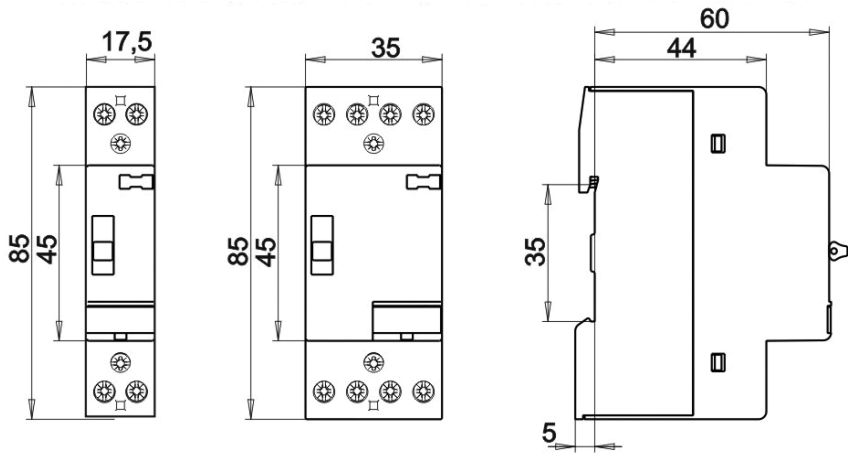
Take care of dissipated heat by: ≤ 40 °C max. 3 modules side by side
40 - 55 °C max. 2 modules side by side.
For more contactors together, use distance piece IKV

4-pole, ON - OFF - AUTO, 2 modules (35 mm), 25 A (AC1, 400 V)

Type	Code No.	Wiring diagram	g	
R 25-40-R-230V AC	002464052			
R 25-40-R-24V AC	002464053			
RD 25-40-R-230V AC/DC	002464054			
RD 25-40-R-24V AC/DC	002464055			
R 25-31-R-230V AC	002464056			
R 25-31-R-24V AC	002464057			
RD 25-31-R-230V AC/DC	002464058			
RD 25-31-R-24V AC/DC	002464059		240	5
R 25-22-R-230V AC	002464060			
R 25-22-R-24V AC	002464061			
RD 25-22-R-230V AC/DC	002464062			
RD 25-22-R-24V AC/DC	002464063			
R 25-04-R-230V AC	002464064			
R 25-04-R-24V AC	002464065			
RD 25-04-R-230V AC/DC	002464066			
RD 25-04-R-24V AC/DC	002464067			

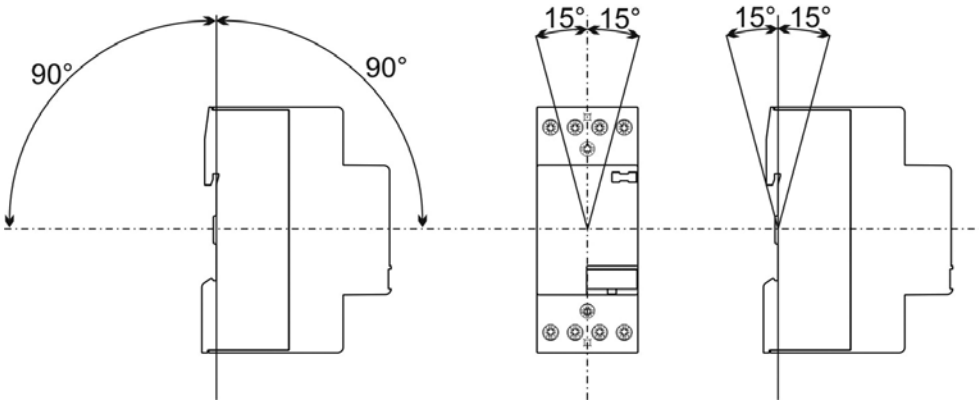
Take care of dissipated heat by: ≤ 40 °C max. 3 modules side by side
40 - 55 °C max. 2 modules side by side.
For more contactors together, use distance piece IKV

Dimensions



RD 20 - R, RD 25 - R

Mounting position



Accessories

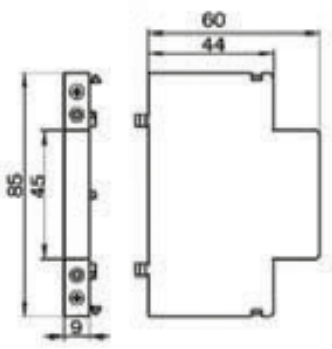
Technical data

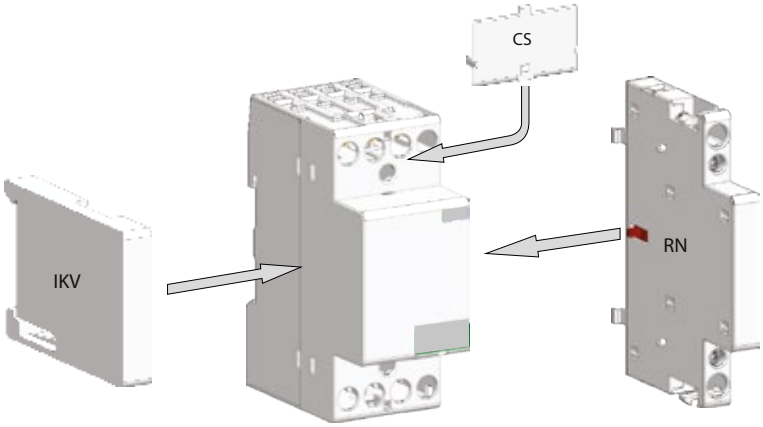
Type					RN
Standards					IEC/EN 60947-5-1
Module width					1/2
Rated insulation voltage Ui			U_i	V	500
Rated impulse withstand voltage Uimp			U_{imp}	kV	4
Thermal current			I_{th}	A	6
Rated operational voltage			U_e	V	230
					400
Rated operational current					
	AC-15	Ue = 230 V	I_e	A	6
		Ue = 400 V			4
Electrical endurance				op. c.	50.000
Mechanical endurance				op. c.	3 x 106
Min. distance of open contacts				mm	4
Contact reliability					12 V; ≥ 5 mA
Power loss per pole				W	0,3
Weight				kg	0,035
Max. back-up fuse for short-circuit protection gL					
Coordination type 2			I_v	A	6
Terminal capacity		rigid	S	mm^2	1...2.5
		flexible			1...2.5
Screw					M3
Screw head					PZ1
Tightening torque				Nm	0,6

Auxiliary contactor block for contactors RD, R...R, RD...R

Type	Code No.	Wiring diagram	g	
RN-20	002464068		30	1
RN-02	002464069		30	1
RN-11	002464070		30	1

* The auxiliary switch should not be applied in combination with RD20 and RD20-R.





RA/RD 25

Sealing cover

Type	Code No.	For use with	g	
SC20	002464071	RD 20, R20...R	3	2
SC25	002464072	RD 25, R25...R	4	2
SC40/63	002464073	RD 40, RD 60	5	2

Distance piece

Type	Code No.	For use with	g	
IKV	002464074	RD, R...R	6	1

LED lamps, Power supplies for LEDs

Max. lamps per pole at 230V 50Hz			
RD20, RD20-R, R20-R	RD25, RD25-R, R25-R	RD40	RD63
max. 2,4 A per pole	max. 3,8 A per pole	max. 11 A per pole	max. 18 A per pole

Type	Power (W)	Current (A)	C (µF)	Max. number of lamps per pole at 230 V 50 Hz			
				RD20	RD25	RD40	RD63
Incandescent lamps (tungsten filament)	60	0,26	–	33	33	65	85
	100	0,44	–	20	20	40	50
	200	0,87	–	10	10	20	25
	500	2,17	–	3	3	8	10
	1000	4,35	–	1	1	4	5
Fluorescent lamps. uncorrected or series correction	18	0,37	2,7	22	24	90	140
	24	0,35	2,5	22	24	90	140
	36	0,43	3,4	17	20	65	95
	58	0,67	5,3	14	17	45	70
Fluorescent lamps. lead-lag circuit	2 x 18	0,11	–	2 x 30	2 x 40	2 x 100	2 x 150
	2 x 24	0,14	–	2 x 24	2 x 31	2 x 78	2 x 118
	2 x 36	0,22	–	2 x 17	2 x 24	2 x 65	2 x 95
	2 x 58	0,35	–	2 x 10	2 x 14	2 x 40	2 x 60
Fluorescent lamps. parallel correction	18	0,12	4,5	7	8	48	73
	24	0,15	4,5	7	8	48	73
	36	000	4,5	7	8	48	73
	58	0,32	7	4	5	31	47
Fluorescent lamps with electronic ballast units (EVG)	18	0,09	–	25	35	100	140
	36	0,16	–	15	20	52	75
	58	0,25	–	14	19	50	72
	2 x 18	0,17	–	2 x 12	2 x 17	2 x 50	2 x 70
	2 x 36	0,32	–	2 x 7	2 x 10	2 x 26	2 x 38
	2 x 58	0,49	–	2 x 7	2 x 9	2 x 25	2 x 36
High-pressure mercury-vapour lamps. uncorrected	50	0,61	–	14	18	38	55
	80	001	–	10	13	29	42
	125	1,15	–	7	9	20	29
	250	2,15	–	4	5	10	15
	400	3,25	–	2	3	7	10
	700	005	–	1	2	4	6
	1000	008	–	1	1	3	4
High-pressure mercury-vapour lamps. parallel correction	50	0,28	7	4	5	31	47
	80	0,41	8	4	5	27	41
	125	0,65	10	3	4	22	33
	250	1,22	18	1	2	12	18
	400	1,95	25	1	1	9	13
	700	3,45	45	–	–	5	7
	1000	005	60	–	–	4	5
Halogen metal-vapour lamps. uncorrected	35	0,53	–	18	22	43	60
	70	001	–	10	12	23	32
	150	002	–	5	7	12	18
	250	003	–	3	4	7	10
	400	004	–	3	3	6	9
	1000	010	–	1	1	2	3
	2000	16,5	–	–	–	1	1
Halogen metal-vapour lamps, parallel correction	35	0,25	6	5	6	36	50
	70	0,45	12	2	3	18	25
	150	0,75	20	1	1	11	15
	250	002	33	–	1	6	9
	400	003	35	–	1	6	8
	1000	006	95	–	–	2	3
	2000	012	148	–	–	1	2
Halogen metal-vapour lamps with electronic ballast unit PCI 50-125 x In lamp for 0.6 ms	20	000	integrated	9	9	18	20
	35	000	integrated	6	6	11	13
	70	0,36	integrated	5	5	10	12
	150	001	integrated	4	4	8	10

Type	Power (W)	Current (A)	C (µF)	Max. number of lamps per pole at 230 V 50 Hz			
				RD20	RD25	RD40	RD63
Transformers for halogen metal-vapour lamps	20	–	–	40	52	110	174
	50	–	–	20	24	50	80
	75	–	–	13	16	35	54
	100	–	–	10	12	27	43
	150	–	–	7	9	19	29
	200	–	–	5	6	14	23
	300	–	–	3	4	9	14
High-pressure sodium-vapour lamps. uncorrected	150	002	–	5	6	17	22
	250	003	–	3	4	10	13
	400	005	–	2	2	6	8
	1000	10,3	–	–	1	3	3
High-pressure sodium-vapour lamps. parallel correction	150	0,83	20	1	1	11	16
	250	002	33	–	1	6	10
	400	002	48	–	–	4	6
	1000	006	106	–	–	2	3
Halogen metal-vapour lamps with electronic ballast unit PCI 50-125 x In lamp for 0.6 ms	20	000	integrated	9	9	18	20
	35	000	integrated	6	6	11	13
	70	0,36	integrated	5	5	10	12
	150	001	integrated	4	4	8	10
Low-pressure sodium-vapour lamps. uncorrected	18	0,35	–	22	27	71	90
	35	002	–	7	9	23	30
	55	002	–	7	9	23	30
	90	002	–	4	5	14	19
	135	004	–	3	4	10	13
	180	003	–	3	4	10	13
Low-pressure sodium-vapour lamps. parallel correction	18	0,35	5	6	7	44	66
	35	0,31	20	1	1	11	16
	55	0,42	20	1	1	11	16
	90	0,63	26	1	1	8	12
	135	0,94	45	–	–	5	8
	180	1,16	40	–	–	4	7
Fluorescent lamps LUMILUX T5 with electronic ballast unit (EVG)	22	0,11	FC	22	30	80	110
	40	0,21		12	15	40	60
	55	0,28		8	12	30	45
	14	0,08	HE	30	40	105	150
	21	0,11		22	30	80	115
	28	0,14		18	22	60	90
	35	0,18		14	18	48	70
	24	0,12	HO	20	26	70	100
	39	0,20		12	16	42	62
	49	0,24		10	14	35	52
	54	0,27		9	13	32	47
	80	0,39		6	8	22	32
	2 x 22	0,23	2 x FC	2 x 11	2 x 15	2 x 40	2 x 55
	2 x 40	0,42		2 x 6	2 x 7	2 x 20	2 x 30
	2 x 55	0,55		2 x 4	2 x 6	2 x 15	2 x 22
	2 x 14	0,15	2 x HE	2 x 15	2 x 20	2 x 52	2 x 75
	2 x 21	0,22		2 x 11	2 x 15	2 x 40	2 x 57
	2 x 28	0,28		2 x 9	2 x 11	2 x 20	2 x 45
	2 x 35	0,36		2 x 7	2 x 9	2 x 24	2 x 35
	2 x 24	0,24	2 x HO	2 x 10	2 x 13	2 x 35	2 x 50
	2 x 39	0,39		2 x 6	2 x 8	2 x 21	2 x 31
	2 x 49	0,48		2 x 5	2 x 7	2 x 17	2 x 26
	2 x 54	0,54		2 x 4	2 x 6	2 x 16	2 x 23
	2 x 80	0,74		2 x 3	2 x 4	2 x 11	2 x 16

Type	Power (W)	Current (A)	C (µF)	Max. number of lamps per pole at 230 V 50 Hz			
				R20-R	RD20-R	R25-R	RD25-R
Incandescent lamp (tungsten filament)	60	0,26	–	33	33	33	33
	100	0,44	–	20	20	20	20
	200	0,87	–	10	10	10	10
	500	2,17	–	3	3	3	3
	1000	4,35	–	1	1	1	1
Fluorescent lamps uncorrected or series correction	18	0,37	2,7	22	22	24	24
	24	0,35	2,5	22	22	24	24
	36	0,43	3,4	17	17	20	20
	58	0,67	5,3	14	14	17	17
Fluorescent lamps lead-lag circuit	2 x 18	0,11	–	2 x 30	2 x 30	2 x 40	2 x 40
	2 x 24	0,14	–	2 x 24	2 x 24	2 x 31	2 x 31
	2 x 36	0,22	–	2 x 17	2 x 17	2 x 24	2 x 24
	2 x 58	0,35	–	2 x 10	2 x 10	2 x 14	2 x 14
Fluorescent lamps parallel correction	18	0,12	4,5	7	7	8	8
	24	0,15	4,5	7	7	8	8
	36	000	4,5	7	7	8	8
	58	0,32	7	4	4	5	5
Fluorescent lamps with electronic ballast units (EVG)	18	0,09	–	25	25	35	35
	36	0,16	–	15	15	20	20
	58	0,25	–	14	14	19	19
	2 x 18	0,17	–	2 x 12	2 x 12	2 x 17	2 x 17
	2 x 36	0,32	–	2 x 7	2 x 7	2 x 10	2 x 10
	2 x 58	0,49	–	2 x 7	2 x 7	2 x 9	2 x 9
High-pressure mercury-vapour lamps uncorrected	50	0,61	–	14	14	18	18
	80	001	–	10	10	13	13
	125	1,15	–	7	7	9	9
	250	2,15	–	4	4	5	5
	400	3,25	–	2	2	3	3
	700	005	–	1	1	2	2
	1000	008	–	1	1	1	1
High-pressure mercury-vapour lamps. parallel correction	50	0,28	7	4	4	5	5
	80	0,41	8	4	4	5	5
	125	0,65	10	3	3	4	4
	250	1,22	18	1	1	2	2
	400	1,95	25	1	1	1	1
	700	3,45	45	–	–	–	–
	1000	005	60	–	–	–	–
Halogen metal-vapour lamps uncorrected	35	0,53	–	18	18	22	22
	70	001	–	10	10	12	12
	150	002	–	5	5	7	7
	250	003	–	3	3	4	4
	1000	010	–	1	1	1	1
	2000	16,5	–	–	–	–	–
Halogen metal-vapour lamps, parallel correction	35	0,25	6	5	5	6	6
	70	0,45	12	2	2	3	3
	150	0,75	20	1	1	1	1
	250	002	33	–	–	1	1
	400	003	35	–	–	1	1
	1000	006	95	–	–	–	–
	2000	11,5	148	–	–	–	–
Halogen metal-vapour lamps with electronic ballast unit PCI 50-125 x In lamp for 0.6 ms	20	000	integrated	9	9	9	9
	35	000	integrated	6	6	6	6
	70	0,36	integrated	5	5	5	5
	150	001	integrated	4	4	4	4

Type	Power (W)	Current (A)	C (µF)	Max. number of lamps per pole at 230 V 50 Hz			
				R20-R	RD20-R	R25-R	RD25-R
Transformers for halogen metal-vapour lamps	20	–	–	40	40	52	52
	50	–	–	20	20	24	24
	75	–	–	13	13	16	16
	100	–	–	10	10	12	12
	150	–	–	7	7	9	9
	200	–	–	5	5	6	6
	300	–	–	3	3	4	4
High-pressure sodium-vapour lamps, uncorrected	150	002	–	5	5	6	6
	250	003	–	3	3	4	4
	400	005	–	2	2	2	2
	1000	10,3	–	–	–	1	1
High-pressure sodium-vapour lamps, parallel correction	150	0,83	20	1	1	1	1
	250	002	33	–	–	1	1
	400	002	48	–	–	–	–
	1000	006	106	–	–	–	–
Halogen metal-vapour lamps with electronic ballast unit PCI 50-125 x In lamp for 0.6 ms	20	000	integrated	9	9	9	9
	35	000	integrated	6	6	6	6
	70	0,36	integrated	5	5	5	5
	150	001	integrated	4	4	4	4
Low-pressure sodium-vapour lamps, uncorrected	18	0,35	–	22	22	27	27
	35	002	–	7	7	9	9
	55	002	–	7	7	9	9
	90	002	–	4	4	5	5
	135	004	–	3	3	4	4
	180	003	–	3	3	4	4
Low-pressure sodium-vapour lamps, parallel correction	18	0,35	5	6	6	7	7
	35	0,31	20	1	1	1	1
	55	0,42	20	1	1	1	1
	90	0,63	26	1	1	1	1
	135	0,94	45	–	–	–	–
	180	1,16	40	–	–	–	–
Fluorescent lamps LUMILUX T5 with electronic ballast unit (EVG)	22	0,11	FC	22	22	30	30
	40	0,21		12	12	15	15
	55	0,28		8	8	12	12
	14	0,08	HE	30	30	40	40
	21	0,11		22	22	30	30
	28	0,14		18	18	22	22
	35	0,18		14	14	18	18
	24	0,12	HO	20	20	26	26
	39	000		12	12	16	16
	49	0,24		10	10	14	14
	54	0,27		9	9	13	13
	80	0,39		6	6	8	8
	2 x 22	0,23	2 x FC	2 x 11	2 x 11	2 x 15	2 x 15
	2 x 40	0,42		2 x 6	2 x 6	2 x 7	2 x 7
	2 x 55	0,55		2 x 4	2 x 4	2 x 6	2 x 6
	2 x 14	0,15	2 x HE	2 x 15	2 x 15	2 x 20	2 x 20
	2 x 21	0,22		2 x 11	2 x 11	2 x 15	2 x 15
	2 x 28	0,28		2 x 9	2 x 9	2 x 11	2 x 11
	2 x 35	0,36		2 x 7	2 x 7	2 x 9	2 x 9
	2 x 24	0,24	2 x HO	2 x 10	2 x 10	2 x 13	2 x 13
	2 x 39	0,39		2 x 6	2 x 6	2 x 8	2 x 8
	2 x 49	0,48		2 x 5	2 x 5	2 x 7	2 x 7
	2 x 54	0,54		2 x 4	2 x 4	2 x 6	2 x 6
	2 x 80	0,74		2 x 3	2 x 3	2 x 4	2 x 4

ETICON Bistable switches RBS

Technical data

Type			RBS220	RBS225	RBS232	RBS420	RBS425	BI432
Standards			IEC/EN 60669-2-2					
Manual control			✓					
Control with impulse voltage			✓					
Indication			With actuator					
Protection degree accordance to IEC/EN 60529			IP 20					
Module width				1			2	
Ambient temperature		°C	-25…+55					
Storage temperature		°C	-30…+80					
Max. resistance to humidity			95 % RH @ +55 °C					
Min. contact reliability			10 V / 100 mA					
Max. shock resistance accordance to IEC/EN 60068-2-27		g	15					
Max. vibration resistance accordance to IEC/EN 60068-2-6		g	3					
Min. distance of open contacts		mm	>3					
Distance between contacts and coil		mm	>6					
Mechanical endurance		cycles	106					
Max. back-up fuse for short-circuit protection (gL)		A	20	25	32	20	25	32
Power dissipation per pole		W	1,5	2	3	1,5	2	3
Rated control voltages	U_c	V	AC: 24, 230, other on request					
Rated frequency of control voltage	f_c	Hz	50 / 60					
Range of control voltage	U_c	%	90…110					
Coil consumption – inrush		VA/W	18 / 13					
Coil consumption – hold		VA/W	9 / 4					
Min. impulse duration at Uc		ms	50					
Min. impulse duration at 0,85 Uc		ms	100					
Min. duration between two impulses		ms	150					
Max. number of impulses per minute			15		7,5		15	7,5
Max. impulse duration at Uc		h	1					
Rated impulse voltage	U_{imp}	kV	4					
Thermal current	I_{th}	A	20	25	32	20	25	32
Rated insulation voltage	U_i	V	440					
Rated operational voltage	U_e	V	440					
Rated frequency	f_e	Hz	50 / 60					
Rated operational current for cosφ = 0,6 acc. to IEC/EN 60669-2-2	I_e	A	20 / 440 V	25 / 440 V	32 / 440 V	20 / 440 V	25 / 440 V	32 / 440 V
Rated operational current for AC-1 acc. to IEC/EN 60947-4-1	I_e	A	20 / 440 V	25 / 440 V	32 / 440 V	20 / 440 V	25 / 440 V	32 / 440 V
Rated operational current for AC-7a acc. to IEC/EN 61095 – Slightly inductive loads in household appliances and similar applications	I_e	A	20 / 440 V	25 / 440 V	32 / 440 V	20 / 440 V	25 / 440 V	32 / 440 V
Rated operational current for AC-21 acc. to IEC/EN 60947-3 – Switching of resistive loads including moderate overloads	I_e	A	20 / 440 V	25 / 440 V	32 / 440 V	20 / 440 V	25 / 440 V	32 / 440 V
Rated operational current for AC-22 acc. to IEC/EN 60947-3			20 / 230 V	25 / 230 V	32 / 230 V	20 / 230 V	25 / 230 V	32 / 230 V
Switching of mixed resistive and inductive loads, including moderate overloads	I_e	A	16 / 440 V	20 / 440 V	25 / 440 V	16 / 440 V	20 / 440 V	25 / 440 V
Rated operational current for AC-23 acc. to IEC/EN 60947-3 Switching of motor loads or other highly inductive loads	I_e	A	16 / 230 V / 1-phase	20 / 230 V / 1-phase	25 / 230 V / 1-phase	16 / 230 V / 1-phase 16 / 230 V / 3-phase 16 / 400 V / 3-phase	20 / 230 V / 1-phase 20 / 230 V / 3-phase 20 / 400 V / 3-phase	25 / 230 V / 1-phase 25 / 230 V / 3-phase 25 / 400 V / 3-phase

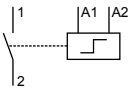
Description

REMOTE SWITCHING
AND AUTOMATIC CONTROL:
- Lightning
- Electric heating
- Electric motors
- Electric equipment

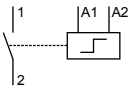
ADVANCED OPERATION:
- Impulse control
- Manual control

OTHER BENEFITS:
- Small switch on coil consumption
- No hold coil consumtion
- Wide application
- Mounting on 35 mm rail
- Sealing terminal covers

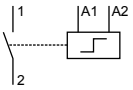
1-pole, 1 module (17,5 mm), 20A (AC1, 440V)

Type	Code No.	Wiring diagram	g	
RBS220-10-230V AC	002464100		130	8
RBS220-10-24V AC	002464112		130	8
RBS220-10-12V AC	002464162		130	8

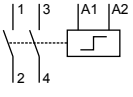
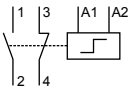
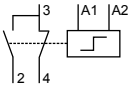
1-pole, 1 module (17,5 mm), 25A (AC1, 440V)

Type	Code No.	Wiring diagram	g	
RBS225-10-230V AC	002464101		130	8
RBS225-10-24V AC	002464113		130	8

1-pole, 1 module (17,5 mm), 32A (AC1, 440V)

Type	Code No.	Wiring diagram	g	
RBS232-10-230V AC	002464102		130	8
RBS232-10-24V AC	002464114		130	8

2-pole, 1 module (17,5 mm), 20A (AC1, 440V)

Type	Code No.	Wiring diagram	g	
RBS220-20-230V AC	002464103		130	8
RBS220-20-24V AC	002464115		130	8
RBS220-11-230V AC	002464106		130	8
RBS220-11-24V AC	002464118		130	8
RBS220-1C-230V AC	002464109		130	8
RBS220-1C-24V AC	002464121		130	8

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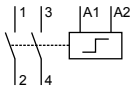
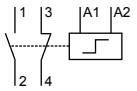
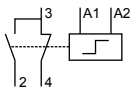
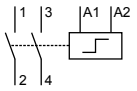
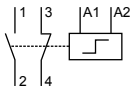
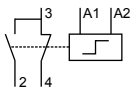
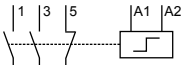
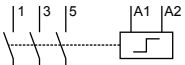
2-pole, 1 module (17,5 mm), 25A (AC1, 440V)

Type	Code No.	Wiring diagram	g	
RBS225-20-230V AC	002464104		130	8
RBS225-20-24V AC	002464116		130	8
RBS225-11-230V AC	002464107		130	8
RBS225-11-24V AC	002464119		130	8
RBS225-1C-230V AC	002464110		130	8
RBS225-1C-24V AC	002464122		130	8

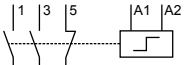
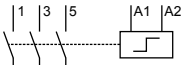
2-pole, 1 module (17,5 mm), 32A (AC1, 440V)

Type	Code No.	Wiring diagram	g	
RBS232-20-230V AC	002464105		130	8
RBS232-20-24V AC	002464117		130	8
RBS232-11-230V AC	002464108		130	8
RBS232-11-24V AC	002464120		130	8
RBS232-1C-230V AC	002464111		130	8
RBS232-1C-24V AC	002464123		130	8

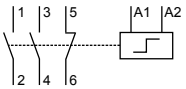
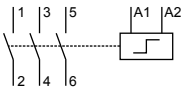
3-pole, 2 modules (35 mm), 20A (AC1, 440V)

Type	Code No.	Wiring diagram	g	
RBS420-21-230V AC	002464127		200	4
RBS420-21-24V AC	002464145		200	4
RBS420-30-230V AC	002464130		200	4
RBS420-30-24V AC	002464148		200	4

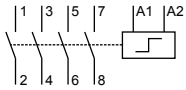
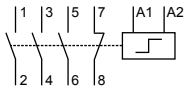
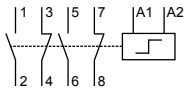
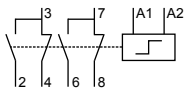
3-pole, 2 modules (35 mm), 25A (AC1, 440V)

Type	Code No.	Wiring diagram	g	
RBS425-21-230V AC	002464128		200	4
RBS425-21-24V AC	002464146		200	4
RBS425-30-230V AC	002464131		200	4
RBS425-30-24V AC	002464149		200	4

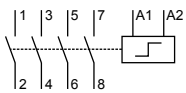
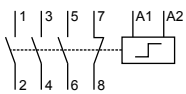
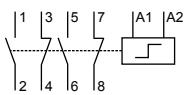
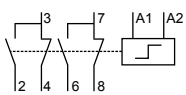
3-pole, 2 modules (35 mm), 32A (AC1, 440V)

Type	Code No.	Wiring diagram	g	
RBS432-21-230V AC	002464129		200	4
RBS432-21-24V AC	002464147		200	4
RBS432-30-230V AC	002464132		200	4
RBS432-30-24V AC	002464150		200	4

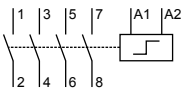
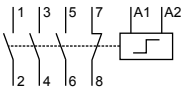
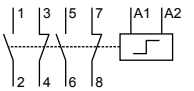
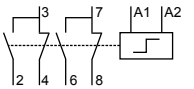
4-pole, 2 modules (35 mm), 20A (AC1, 440V)

Type	Code No.	Wiring diagram	g	
RBS420-40-230V AC	002464124		200	4
RBS420-40-24V AC	002464142		200	4
RBS420-31-230V AC	002464133		200	4
RBS420-31-24V AC	002464151		200	4
RBS420-22-230V AC	002464136		200	4
RBS420-22-24V AC	002464154		200	4
RBS420-2C-230V AC	002464139		200	4
RBS420-2C-24V AC	002464157		200	4

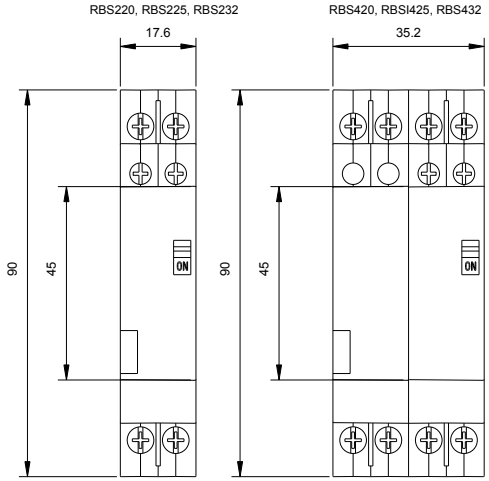
4-pole, 2 modules (35 mm), 25A (AC1, 440V)

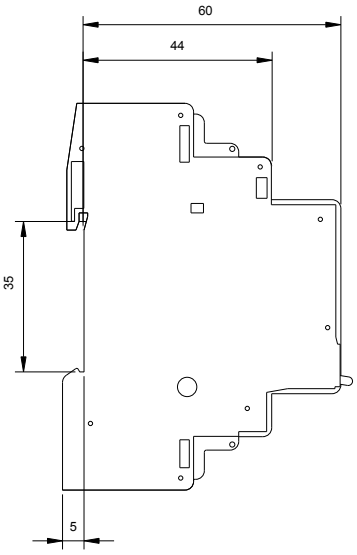
Type	Code No.	Wiring diagram	g	
RBS425-40-230V AC	002464125		200	4
RBS425-40-24V AC	002464143		200	4
RBS425-31-230V AC	002464134		200	4
RBS425-31-24V AC	002464152		200	4
RBS425-22-230V AC	002464137		200	4
RBS425-22-24V AC	002464155		200	4
RBS425-2C-230V AC	002464140		200	4
RBS425-2C-24V AC	002464158		200	4

4-pole, 2 modules (35 mm), 32A (AC1, 440V)

Type	Code No.	Wiring diagram	g	
RBS432-40-230V AC	002464126		200	4
RBS432-40-24V AC	002464144		200	4
RBS432-31-230V AC	002464135		200	4
RBS432-31-24V AC	002464153		200	4
RBS432-22-230V AC	002464138		200	4
RBS432-22-24V AC	002464156		200	4
RBS432-2C-230V AC	002464141		200	4
RBS432-2C-24V AC	002464159		200	4

Dimensions



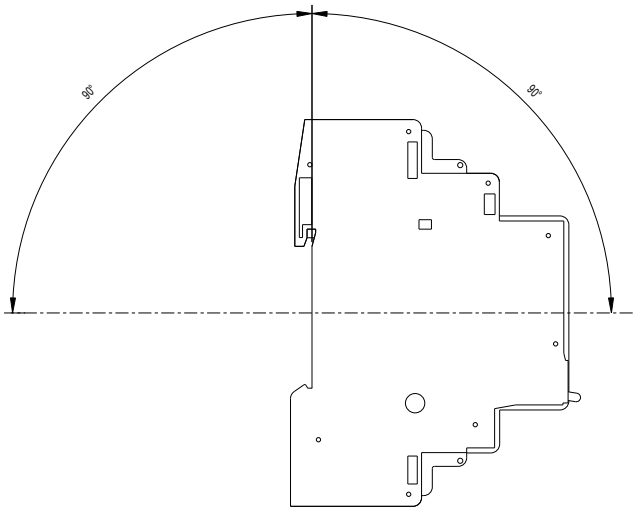


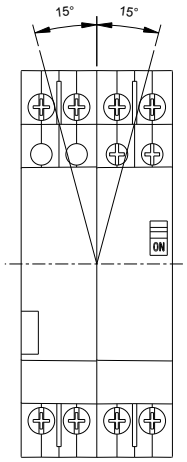
Sealing cover

Type	Code No.	g	
SC	002464160	3	2

*Size of one module - for covering 2-module sized RBS two pcs are needed, one for each side

Mounting position





Technical data

Type			RBS220	RBS225	RBS232	RBS420	RBS425	BI432
Rated operational current for AC-3 acc. to IEC/EN 60947-4-1 Squirrel-cage motors: starting, switching off motors during running	I_e	A	7 / 230 V / 1-phase	8 / 230 V / 1-phase	10 / 230 V / 1-phase	7 / 230 V / 1-phase 6,3 / 230 V / 3-phase 6,6 / 400 V / 3-phase	8 / 230 V / 1-phase 8,7 V / 230 V / 3-phase 8,5 / 400 V / 3-phase	10 / 230 V / 1-phase 11,5 / 230 V / 3-phase 11,3 / 400 V / 3-phase
Rated operational current for AC-7b acc. to IEC/EN 61095 Motor-loads for household applications	I_e	A	7 / 230 V / 1-phase	8 / 230 V / 1-phase	10 / 230 V / 1-phase	7 / 230 V / 1-phase 6,3 / 230 V / 3-phase 6,6 / 400 V / 3-phase	8 / 230 V / 1-phase 8,7 V / 230 V / 3-phase 8,5 / 400 V / 3-phase	10 / 230 V / 1-phase 11,5 / 230 V / 3-phase 11,3 / 400 V / 3-phase
Rated operational current for AC-6a acc. to IEC/EN 60947-4-1 Switching of transformers having inrush current peaks of not more than 30 times peak of rated current	I_e	A	3 / 230 V 1,5 / 400 V	3,6 / 230 V 1,8 / 400 V	4,5 / 230 V 2,2 / 400 V	3 / 230 V 1,5 / 400 V	3,6 / 230 V 1,8 / 400 V	4,5 / 230 V 2,2 / 400 V
Rated operational current for AC-6b acc. to IEC/EN 60947-4-1 – Switching of capacitor banks	C	µF	100 µF / 230 V					
Rated operational current for DC-1 acc. to IEC/EN 60947-4-1 – Non-inductive or slightly inductive loads, resistance furnances	I_e	A	20 / 24 V / 1p	25 / 24 V / 1p	32 / 24 V / 1p	20 / 24 V / 1p	25 / 24 V / 1p	32 / 24 V / 1p
Rated operational current for DC-3 acc. to IEC/EN 60947-4-1 – Shunt-motors: starting, plugging, inching	I_e	A	10 / 24 V / 1p	15 / 24 V / 1p	25 / 24 V / 1p	10 / 24 V / 1p	15 / 24 V / 1p	25 / 24 V / 1p
Rated operational current for DC-5 acc. to IEC/EN 60947-4-1 – Series-motors: starting, plugging, inching	I_e	A	10 / 24 V / 1p	16 / 24 V / 1p	20 / 24 V / 1p	10 / 24 V / 1p	16 / 24 V / 1p	20 / 24 V / 1p
Rated operational current for DC-21 acc. to IEC/EN 60947-3 – Switching of resistive loads including moderate overloads	I_e	A	20 / 24 V / 1p	25 / 24 V / 1p	32 / 24 / V 1p	20 / 24 V / 1p	25 / 24 V / 1p	32 / 24 / V 1p
Rated operational current for DC-22 acc. to IEC/EN 60947-3 – Switching of mixed resistive and inductive loads, including moderate overloads	I_e	A	16 / 24 V / 1p	20 / 24 V / 1p	25 / 24 V / 1p	16 / 24 V / 1p	20 / 24 V / 1p	25 / 24 V / 1p
Rated operational current for DC-23 acc. to IEC/EN 60947-3 – Switching of highly inductive loads (e.g. series motors)	I_e	A	10 / 24 V / 1p	16 / 24 V / 1p	20 / 24 V / 1p	10 / 24 V / 1p	16 / 24 V / 1p	20 / 24 V / 1p
Rated operational current for AC-5a acc. to IEC/EN 60947-4-1 – Switching of electric discharge lamp controls	I_e	A	16 / 230 V					
Rated operational current for AC-5b acc. to IEC/EN 60947-4-1 – Switching of incandescent lamps	I_e	A	10 / 230 V					
Rated operational current for fluorescent lamps acc. to IEC/EN 60669-2-2	I_e	A	16 / 230 V					
Fluorescent / energy saving / compact lamps with electronic control gear	I_e	A	2 / 230 V					
Electrical endurance for all utilization categories			105					
Terminal capacity for main circuit	S	mm^2	1…10 rigid / flexible					
Screw for main circuit			M4					
Screw-head for main circuit			(±) PZ2					
Tightening torque for main circuit		Nm	1,2					
Terminal capacity for control circuit	S	mm^2	1…4 rigid / flexible					
Screw for control circuit			M3					
Screw-head for control circuit			(±) PZ1					
Tightening torque for control circuit		Nm	0,6					

Lamps' type	Power (P) [W]	Current (I) [A]	Capacitor (C) [µF]	Maximum number of lamps per pole at 230 V, 50 Hz			
				RBS216	RBS220, RBS420	RBS225, RBS425	RBS232, RBS432
Incandescent lamps and halogen lamps	11	0,05	-				
	15	0,07	-	133	133	167	233
	18	0,08	-	111	111	139	194
	20	0,09	-	100	100	125	175
	25	0,11	-	80	80	100	140
	28	0,12	-	71	71	89	125
	30	0,13	-	67	67	83	117
	33	0,14	-	61	61	76	106
	35	0,15	-	57	57	71	100
	40	0,17	-	50	50	63	88
	42	0,18	-	48	48	60	83
	46	0,2	-	43	43	54	76
	48	0,21	-	42	42	52	73
	50	0,22	-	40	40	50	70
	53	0,23	-	38	38	47	66
	57	0,25	-	35	35	44	61
	60	0,26	-	33	33	42	58
	70	0,3	-	29	29	36	50
	75	0,33	-	27	27	33	47
	77	0,34	-	26	26	32	45
	80	0,35	-	25	25	31	44
	100	0,44	-	20	20	25	35
	116	0,5	-	17	17	22	30
	120	0,52	-	17	17	21	29
	150	0,65	-	13	13	17	23
	160	0,7	-	13	13	16	22
	200	0,87	-	10	10	13	18
	205	0,89	-	10	10	12	17
	230	1	-	9	9	11	15
	300	1,3	-	7	7	8	12
	400	1,74	-	5	5	6	9
	500	2,17	-	4	4	5	7
	750	3,26	-	3	3	3	5
	1000	4,35	-	2	2	3	4
	1500	6,52	-	1	1	2	2
	2000	8,7	-	1	1	1	2
Transformators for low-voltage halogen lamps (electromagnetic and electronic)	10	0,04	-	100	100	200	300
	20	0,09	-	50	75	100	150
	30	0,13	-	33	50	67	100
	40	0,17	-	25	38	50	75
	50	0,22	-	20	30	40	60
	60	0,26	-	17	25	33	50
	70	0,3	-	14	21	29	43
	80	0,35	-	13	19	25	38
	90	0,39	-	11	17	22	33
	100	0,44	-	10	15	20	30
	150	0,65	-	7	10	13	20
	200	0,87	-	5	8	10	15
	300	1,3	-	3	5	7	10
	400	1,74	-	3	4	5	8

Lamps' type	Power (P) [W]	Current (I) [A]	Capacitor (C) [µF]	Maximum number of lamps per pole at 230 V, 50 Hz			
				RBS216	RBS220, RBS420	RBS225, RBS425	RBS232, RBS432
Compact fluorescent lamps with internal ballasts	3	0,04	-	133	167	250	333
	5	0,06	-	80	100	150	200
	6	0,07	-	67	83	125	167
	7	0,08	-	57	71	107	143
	8	0,09	-	50	63	94	125
	9	0,1	-	44	56	83	111
	10	0,11	-	40	50	75	100
	11	0,12	-	36	45	68	91
	12	0,13	-	33	42	63	83
	13	0,14	-	31	38	58	77
	14	0,15	-	29	36	54	71
	15	0,16	-	27	33	50	67
	16	0,18	-	25	31	47	63
	17	0,19	-	24	29	44	59
	18	0,2	-	22	28	42	56
	20	0,21	-	20	25	38	50
	21	0,22	-	19	24	36	48
	22	0,23	-	19	23	34	45
	23	0,24	-	17	22	33	43
	24	0,25	-	17	21	31	42
	25	0,26	-	16	20	30	40
	26	0,27	-	15	19	29	38
	27	0,124	-	15	19	28	37
	30	0,15	-	13	17	25	33
	33	0,155	-	12	15	23	30
	35	0,164	-	11	14	21	29
	40	0,2	-	10	13	19	25
	50	0,24	-	8	10	15	20
	70	0,312	-	6	7	11	14
Compact fluorescent lamps with external electromagnetic ballasts - uncorrected	5	0,05	-	70	120	180	240
	2x5	0,07	-	50	86	129	171
	7	0,05	-	70	120	180	240
	2x7	0,07	-	50	86	129	171
	9	0,06	-	58	100	150	200
	2x9	0,08	-	44	75	113	150
	10	0,07	-	50	86	129	171
	11	0,08	-	44	75	113	150
	13	0,08	-	44	75	113	150
	16	0,1	-	35	60	90	120
	18	0,12	-	29	50	75	100
	2x18	0,21	-	17	29	43	57
	21	0,12	-	29	50	75	100
	22	0,2	-	18	30	45	60
	24	0,15	-	23	40	60	80
	26	0,15	-	23	40	60	80
	28	0,15	-	23	40	60	80
	32	0,22	-	16	27	41	55
	36	0,21	-	17	29	43	57
	38	0,21	-	17	29	43	57
	40	0,21	-	17	29	43	57
	58	0,32	-	11	19	28	38

Lamps' type	Power (P) [W]	Current (I) [A]	Capacitor (C) [µF]	Maximum number of lamps per pole at 230 V, 50 Hz			
				RBS216	RBS220, RBS420	RBS225, RBS425	RBS232, RBS432
Compast fluorescent lamps with external electromagnetic ballasts - parallel corrected	5	0,05	2	40	50	60	75
	2x5	0,07	2	40	50	60	75
	7	0,05	2	40	50	60	75
	2x7	0,07	2	40	50	60	75
	9	0,06	2	40	50	60	75
	2x9	0,08	2	40	50	60	75
	10	0,07	2	40	50	60	75
	11	0,08	2	40	50	60	75
	13	0,08	2	40	50	60	75
	16	0,1	2	40	50	60	75
	18	0,12	4,5	18	22	27	33
	2x18	0,21	4	20	25	30	38
	21	0,12	3	27	33	40	50
	22	0,2	4,5	18	22	27	33
	24	0,15	4,5	18	22	27	33
	26	0,15	4,5	18	22	27	33
	28	0,15	3,5	23	29	34	43
	32	0,22	4	20	25	30	38
	36	0,21	4,5	18	22	27	33
	38	0,21	4,5	18	22	27	33
	40	0,21	4,5	18	22	27	33
	58	0,32	7	11	14	17	21

Lamps' type	Power (P) [W]	Current (I) [A]	Capacitor (C) [µF]	Maximum number of lamps per pole at 230 V, 50 Hz			
				RBS216	RBS220, RBS420	RBS225, RBS425	RBS232, RBS432
Compact fluorescent lamps with external electronic ballasts	5	0,03	-	100	200	300	400
	7	0,04	-	75	150	225	300
	9	0,05	-	60	120	180	240
	2x9	0,09	-	33	67	100	133
	10	0,05	-	60	120	180	240
	2x10	0,09	-	33	67	100	133
	11	0,07	-	43	86	129	171
	2x11	0,12	-	25	50	75	100
	13	0,07	-	43	86	129	171
	2x13	0,12	-	25	50	75	100
	14	0,08	-	38	75	113	150
	2x14	0,15	-	20	40	60	80
	16	0,07	-	43	86	129	171
	17	0,1	-	30	60	90	120
	2x17	0,18	-	17	33	50	67
	18	0,09	-	33	67	100	133
	2x18	0,17	-	18	35	53	71
	22	0,13	-	23	46	69	92
	2x22	0,21	-	14	29	43	57
	24	0,12	-	25	50	75	100
	2x24	0,23	-	13	26	39	52
	3x24	0,32	-	9	19	28	38
	4x24	0,43	-	9	14	21	28
	26	0,12	-	25	50	75	100
	2x26	0,24	-	13	25	38	50
	28	0,14	-	21	43	64	86
	32	0,16	-	19	38	56	75
	2x32	0,31	-	10	19	29	39
	36	0,16	-	19	38	56	75
	2x36	0,31	-	10	19	29	39
	38	0,17	-	18	35	53	71
	2x38	0,35	-	9	17	26	34
	40	0,2	-	15	30	45	60
	2x40	0,39	-	8	15	23	31
	42	0,2	-	15	30	45	60
	2x42	0,41	-	7	15	22	29
	55	0,27	-	11	22	33	44
	2x55	0,52	-	6	12	17	23
	57	0,28	-	11	21	32	43
	2x57	0,57	-	5	11	16	21
	60	0,31	-	10	19	29	39
	2x60	0,61	-	5	10	15	20
	70	0,34	-	9	18	26	35
	80	0,38	-	8	16	24	32
	2x80	0,76	-	4	8	12	16
	85	0,42	-	7	14	21	29
	100	0,46	-	7	13	20	26
	120	0,58	-	5	10	16	21
	150	0,69	-	4	9	13	17

Lamps' type	Power (P) [W]	Current (I) [A]	Capacitor (C) [µF]	Maximum number of lamps per pole at 230 V, 50 Hz			
				RBS216	RBS220, RBS420	RBS225, RBS425	RBS232, RBS432
Fluorescent lamps with external electromagnetic ballasts - uncorrected	4	0,17	-	94	94	94	94
	6	0,16	-	100	100	100	100
	8	0,15	-	107	107	107	107
	10	0,17	-	94	94	94	94
	11	0,16	-	100	100	100	100
	13	0,17	-	94	94	94	94
	14	0,4	-	40	40	40	40
	15	0,33	-	48	48	48	48
	16	0,2	-	80	80	80	80
	18	0,37	-	43	43	43	43
	20	0,38	-	42	42	42	42
	22	0,37	-	43	43	43	43
	25	0,29	-	55	55	55	55
	30	0,37	-	43	43	43	43
	32	0,43	-	37	37	37	37
	36	0,43	-	37	37	37	37
	38	0,43	-	37	37	37	37
	40	0,43	-	37	37	37	37
	58	0,67	-	24	24	24	24
	65	0,67	-	24	24	24	24
	75	0,67	-	24	24	24	24
	80	0,8	-	20	20	20	20
	85	0,8	-	20	20	20	20
	100	0,96	-	17	17	17	17
	125	0,94	-	17	17	17	17
Fluorescent lamps with external electromagnetic ballasts - parallel corrected	4	0,09	2	40	50	60	75
	6	0,08	2	40	50	60	75
	8	0,08	2	40	50	60	75
	10	0,09	2	40	50	60	75
	11	0,08	2	40	50	60	75
	13	0,09	2	40	50	60	75
	14	0,2	4,5	18	22	27	33
	15	0,17	4,5	18	22	27	33
	16	0,1	2,5	32	40	48	60
	18	0,19	4,5	18	22	27	33
	20	0,19	4,5	18	22	27	33
	22	0,19	5	16	20	24	30
	25	0,15	3,5	23	29	34	43
	30	0,24	4,5	18	22	27	33
	32	0,29	5	16	20	24	30
	36	0,29	4,5	18	22	27	33
	38	0,29	4,5	18	22	27	33
	40	0,29	4,5	18	22	27	33
	58	0,46	7	11	14	17	21
	65	0,46	7	11	14	17	21
	75	0,46	6	13	17	20	25
	80	0,57	7	11	14	17	21
	85	0,57	8	10	13	15	19
	100	0,66	10	8	10	12	15
	125	0,65	18	4	6	7	8

Lamps' type	Power (P) [W]	Current (I) [A]	Capacitor (C) [µF]	Maximum number of lamps per pole at 230 V, 50 Hz			
				RBS216	RBS220, RBS420	RBS225, RBS425	RBS232, RBS432
Series circuit for two fluorescent lamps with external electromagnetic ballast - uncorrected	2x4	0,34	-	47	47	47	47
	2x6	0,32	-	50	50	50	50
	2x8	0,3	-	53	53	53	53
	2x10	0,34	-	47	47	47	47
	2x11	0,32	-	50	50	50	50
	2x13	0,34	-	47	47	47	47
	2x14	0,8	-	20	20	20	20
	2x15	0,66	-	24	24	24	24
	2x16	0,4	-	40	40	40	40
	2x18	0,74	-	22	22	22	22
	2x20	0,76	-	21	21	21	21
	2x22	0,74	-	22	22	22	22
	2x25	0,58	-	28	28	28	28
	2x30	0,74	-	22	22	22	22
	2x32	0,86	-	19	19	19	19
	2x36	0,86	-	19	19	19	19
	2x38	0,86	-	19	19	19	19
	2x40	0,86	-	19	19	19	19
	2x58	1,34	-	12	12	12	12
	2x65	1,34	-	12	12	12	12
	2x75	1,34	-	12	12	12	12
	2x80	1,6	-	10	10	10	10
	2x85	1,6	-	10	10	10	10
	2x100	1,92	-	8	8	8	8
	2x125	1,88	-	9	9	9	9
Series circuit for two fluorescent lamps with external electromagnetic ballast - parallel corrected	2x4	0,17	2	40	50	60	75
	2x6	0,16	2	40	50	60	75
	2x8	0,15	2	40	50	60	75
	2x10	0,17	2	40	50	60	75
	2x11	0,16	2	40	50	60	75
	2x13	0,17	2	40	50	60	75
	2x14	0,4	4,5	18	22	27	33
	2x15	0,33	4,5	18	22	27	33
	2x16	0,2	2,5	32	40	48	60
	2x18	0,37	4,5	18	22	27	33
	2x20	0,38	4,5	18	22	27	33
	2x22	0,37	5	16	20	24	30
	2x25	0,29	3,5	23	29	34	43
	2x30	0,37	4,5	18	22	27	33
	2x32	0,43	5	16	20	24	30
	2x36	0,43	4,5	18	22	27	33
	2x38	0,43	4,5	18	22	27	33
	2x40	0,43	4,5	18	22	27	33
	2x58	0,67	7	11	14	17	21
	2x65	0,67	7	11	14	17	21
	2x75	0,67	6	13	17	20	25
	2x80	0,8	7	11	14	17	21
	2x85	0,8	8	10	13	15	19
	2x100	0,96	10	8	10	12	15
	2x125	0,94	18	4	6	7	8
Lead-lag circuit for fluorescent lamps with external electromagnetic ballasts - series corrected	2x18	0,26	2,7	62	62	62	62
	2x36	0,48	4,5	33	33	33	33
	2x40	0,48	4,5	33	33	33	33
	2x58	0,78	7	21	21	21	21
	2x65	0,78	7	21	21	21	21
	2x80	0,96	9	17	17	17	17
	2x85	0,96	9	17	17	17	17
	2x125	1,2	18	13	13	13	13

Lamps' type	Power (P) [W]	Current (I) [A]	Capacitor (C) [µF]	Maximum number of lamps per pole at 230 V, 50 Hz			
				RBS216	RBS220, RBS420	RBS225, RBS425	RBS232, RBS432
Fluorescent lamps with external electronic ballasts	4	0,03	-	100	200	300	400
	6	0,033	-	91	182	273	364
	2x6	0,06	-	50	100	150	200
	8	0,04	-	75	150	225	300
	2x8	0,08	-	38	75	113	150
	10	0,05	-	60	120	180	240
	2x10	0,09	-	33	67	100	133
	11	0,06	-	50	100	150	200
	13	0,07	-	43	86	129	171
	14	0,08	-	38	75	113	150
	2x14	0,15	-	20	40	60	80
	3x14	0,21	-	14	29	43	57
	4x14	0,28	-	11	21	32	43
	15	0,08	-	38	75	113	150
	2x15	0,13	-	23	46	69	92
	16	0,07	-	43	86	129	171
	2x16	0,14	-	21	43	64	86
	3x16	0,2	-	15	30	45	60
	4x16	0,28	-	11	21	32	43
	18	0,09	-	33	67	100	133
	2x18	0,17	-	18	35	53	71
	3x18	0,24	-	13	25	38	50
	4x18	0,31	-	10	19	29	39
	19	0,11	-	27	55	82	109
	2x19	0,22	-	14	27	41	55
	20	0,11	-	27	55	82	109
	2x20	0,22	-	14	27	41	55
	21	0,11	-	27	55	82	109
	2x21	0,22	-	14	27	41	55
	22	0,11	-	27	55	82	109
	2x22	0,23	-	13	26	39	52
	24	0,12	-	25	50	75	100
	2x24	0,22	-	14	27	41	55
	3x24	0,33	-	9	18	27	36
	4x24	0,43	-	7	14	21	28
	25	0,15	-	20	40	60	80
	2x25	0,28	-	11	21	32	43
	28	0,14	-	21	43	64	86
	2x28	0,27	-	11	22	33	44
	30	0,14	-	21	43	64	86
	2x30	0,27	-	11	22	33	44
	32	0,17	-	18	35	53	71

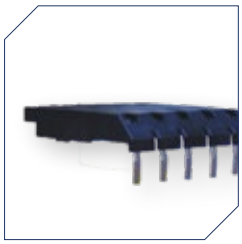
Lamps' type	Power (P) [W]	Current (I) [A]	Capacitor (C) [µF]	Maximum number of lamps per pole at 230 V, 50 Hz			
				RBS216	RBS220, RBS420	RBS225, RBS425	RBS232, RBS432
Fluorescent lamps with external electronic ballasts	2x32	0,35	-	9	17	26	34
	34	0,17	-	18	35	53	71
	2x34	0,35	-	9	17	26	34
	35	0,17	-	18	35	53	71
	2x35	0,34	-	9	18	26	35
	36	0,16	-	19	38	56	75
	2x36	0,31	-	10	19	29	39
	3x36	0,46	-	7	13	20	26
	38	0,15	-	20	40	60	80
	2x38	0,31	-	10	19	29	39
	39	0,19	-	16	32	47	63
	2x39	0,36	-	8	17	25	33
	40	0,21	-	14	29	43	57
	2x40	0,42	-	7	14	21	29
	45	0,24	-	13	25	38	50
	2x45	0,46	-	7	13	20	26
	49	0,24	-	13	25	38	50
	2x49	0,46	-	7	13	20	26
	50	0,25	-	12	24	36	48
	2x50	0,48	-	6	13	19	25
	51	0,22	-	14	27	41	55
	2x51	0,42	-	7	14	21	29
	54	0,26	-	12	23	35	46
	2x54	0,52	-	6	12	17	23
	55	0,28	-	11	21	32	43
	2x55	0,55	-	5	11	16	22
	58	0,25	-	12	24	36	48
	2x58	0,48	-	6	13	19	25
	65	0,25	-	12	24	36	48
	2x65	0,48	-	6	13	19	25
	70	0,3	-	10	20	30	40
	2x70	0,57	-	5	11	16	21
	73	0,38	-	8	16	24	32
	2x73	0,7	-	4	9	13	17
	80	0,4	-	8	15	23	30
	2x80	0,76	-	4	8	12	16
High pressure mercury vapour lamps with external electromagnetic ballasts - uncorrected	50	0,6	-	17	27	27	27
	80	0,8	-	13	20	20	20
	125	1,2	-	8	13	13	13
	250	2,2	-	5	7	7	7
	400	3,3	-	3	5	5	5
	700	5,4	-	2	3	3	3
	1000	7,5	-	1	2	2	2
High pressure mercury vapour lamps with external electromagnetic ballasts - parallel corrected	50	0,3	7	11	14	17	21
	80	0,4	8	10	13	15	19
	125	0,6	10	8	10	12	15
	250	1,2	18	4	6	7	8
	400	1,8	25	3	4	5	6
	700	3,4	40	2	3	3	4
	1000	4,8	60	1	2	2	3

Lamps' type	Power (P) [W]	Current (I) [A]	Capacitor (C) [µF]	Maximum number of lamps per pole at 230 V, 50 Hz			
				RBS216	RBS220, RBS420	RBS225, RBS425	RBS232, RBS432
High pressure mercury vapour lamps which do not require ballasts	160	0,8	-	10	11	14	20
	250	1,2	-	6	7	9	13
	500	2,4	-	3	4	5	7
Metal halide lamps with external electromagnetic ballasts - uncorrected	35	0,5	-	16	32	32	32
	70	1	-	8	16	16	16
	100	1,2	-	7	13	13	13
	150	1,8	-	4	9	9	9
	250	3	-	3	5	5	5
	400	4,6	-	2	3	3	3
	600	6,2	-	1	3	3	3
	1000	9,7	-	1	2	2	2
	2000	12,2	-	0	1	1	1
Metal halide lamps with external electromagnetic ballasts - parallel corrected	35	0,23	6	13	17	20	25
	70	0,42	12	7	8	10	13
	100	0,55	12	7	8	10	13
	150	0,77	20	4	5	6	8
	250	1,26	32	3	3	4	5
	400	2	45	2	2	3	3
	600	3	65	1	2	2	2
	1000	5	85	0	1	1	2
	2000	10,5	125	0	0	1	1
Metal halide lamps with external electronic ballasts	20	0,11	-	27	55	82	109
	35	0,21	-	14	29	43	57
	2x35	0,38	-	8	16	24	32
	50	0,29	-	10	21	31	41
	70	0,38	-	8	16	24	32
	2x70	0,71	-	4	8	13	17
	100	0,56	-	5	11	16	21
	150	0,72	-	4	8	13	17
	250	1,3	-	2	5	7	9
	400	2	-	1	3	5	6
	1000	5	-	0	1	2	2
	2000	6	-	0	1	2	2
High pressure sodium vapour lamps with external electromagnetic ballasts - uncorrected	35	0,53	-	25	30	30	30
	50	0,8	-	16	20	20	20
	70	1	-	13	16	16	16
	100	1,2	-	11	13	13	13
	150	1,8	-	7	9	9	9
	250	3	-	4	5	5	5
	400	4,4	-	3	4	4	4
	600	6,2	-	2	2	2	2
	1000	10,3	-	1	1	1	1

Lamps' type	Power (P) [W]	Current (I) [A]	Capacitor (C) [µF]	Maximum number of lamps per pole at 230 V, 50 Hz			
				RBS216	RBS220, RBS420	RBS225, RBS425	RBS232, RBS432
High pressure sodium vapour lamps with external electromagnetic ballasts - parallel corrected	35	0,22	6	13	17	20	25
	50	0,3	8	10	13	15	19
	70	0,4	12	7	8	10	13
	100	0,55	12	7	8	10	13
	150	0,77	20	4	5	6	8
	250	1,26	32	3	3	4	5
	400	2	45	2	2	3	3
	600	2,9	65	1	1	2	2
	1000	5,1	100	0	0	1	1
High pressure sodium vapour lamps with external electronic ballasts	35	0,21	-	14	29	43	57
	50	0,25	-	12	24	36	48
	70	0,38	-	8	16	24	32
	100	0,56	-	5	11	16	21
	150	0,72	-	4	8	13	17
	250	1,3	-	2	5	7	9
	400	2	-	2	3	5	6
	600	3,1	-	1	2	3	4
	1000	5	-	0	1	2	2
Low pressure sodium vapour lamps with external electromagnetic ballasts - uncorrected	18	0,4	-	25	40	40	40
	35	0,6	-	15	27	27	27
	55	0,6	-	15	27	27	27
	90	0,9	-	10	18	18	18
	135	0,9	-	10	18	18	18
	180	0,9	-	10	18	18	18
Low pressure sodium vapour lamps with external electromagnetic ballasts - parallel corrected	18	0,35	5	16	20	24	30
	35	0,28	20	4	5	6	8
	55	0,35	20	4	5	6	8
	90	0,55	26	3	4	5	6
	135	0,8	40	2	3	3	4
	180	1	40	2	3	3	4
Low pressure sodium vapour lamps with ECG	35	0,16	-	19	38	56	75
	55	0,25	-	12	24	36	48
LED lamps Power supplies for LEDs	-	-	-	max. 2 A per pole	max. 6 A per pole	max. 9 A per pole	max. 12 A per pole

ETICON Miniature and motor contactors, auxiliary contactors and overload relays

- Miniature contactors CEC have possibility to be mounted on printed circuit board with special connection module.



- Contactors CEI series (kit) with mechanical interlock - solution for Reversing the motor or implementation of schemes star delta

- Special socket for RC noise filters (surge supressors)

- Additional time delay relays mounted on side of contactor

- Mechanical interlock assures also mounting of auxiliary contacts

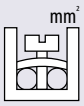
- Front mounted auxiliary contact block

- Overload protection relays (bimetal)

Technical data

Type					CE07	CEC07	CEC09	CEC012	CEC016	CAE04
Standards					IEC/EN 60 947, DIN VDE 0660, UL, CSA					
Rated insulation voltage U_i according to IEC/EN 60947, DIN VDE 0660				V	415 V	690 V				415 V
Rated impulse withstand voltage U_{imp}					4 kV					
Rated operational frequency					25 - 400 Hz					
Degree of protection										
Main circuits					IP20					
Control circuits and auxiliary contacts					IP20					
Ambient temperature										
Operating temperature					-25 ... +550C					
Storage temperature					-55 ... +800C					
Altitude										
Normal values					< 3000 m					
90% Ie/80% U_e					3000 ... 4000 m					
80% Ie/75% U_e					4000 ... 5000 m					
Overvoltage category / Pollution degree					III/3					
Climatic proofing					IEC 60 680-2					
Number of main poles					3	3				4
Rated operational voltage U_e					400-415 V	690 V				400-415 V
Conv. thermal current I_{th} at < 550C										
rated operational current I_e /AC-1					16 A	18 A	20 A	22 A	22 A	16 A
AC3 Utilization category										
Rated operational power										
	230 V		kW		1,5	1,5	2,2	3	4	-
	400/415 V		kW		3	3	4	5,5	7,5	-
	440 V		kW		-	3,7	4,5	5,5	7,5	-
	500 V		kW		-	3,7	4,5	5,5	7,5	-
	690 V		kW		-	3,7	5,5	7,5	7,5	-
AC4 Utilization category										
Rated operational current Ie AC-4 ($U_e \leq 440V$)						2,8	3,5	4,5	5	
Short circuit rating, max. fuse gG (A)					16	20	20	25	25	6
Max. electrical operating frequency										
AC-1				Ops/h	50	300				-
AC-3				Ops/h	300	600				-
AC-4				Ops/h	250	300				-
no load				Ops/h	2000	2500				2500
Mechanical life span				Ops x 106		10				
Electrical life span				Ops x 106	0,8	1,4	1,3	1,2	1,1	1
Maximum number of auxiliary contacts					-	5				-
Rated operational current Ie										
AC-15		220-230 V		A	-	-	-	-	-	6
		380-400 V		A	-	-	-	-	-	4
		415 V		A	-	-	-	-	-	-
		500 V		A	-	-	-	-	-	-
		690 V		A						
DC-13			24 V	A	-	-	-	-	-	2,5
			48 V	A	-	-		-	-	1,5
			110 V	A	-	-		-	-	0,7
			220 V	A	-	-		-	-	0,35
Auxiliary contacts reliability										$U_{e\,min}$=24 V, $I_{e\,min}$=30 mA
Terminal capacity										
Tightening torque				mm^2	1 x / 2 x (0,5...2,5)					
				Nm	0,8	1...1,5				0,8

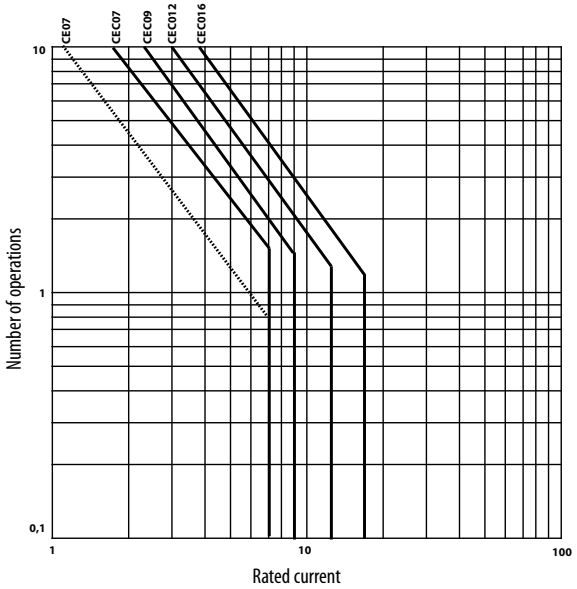
Technical data

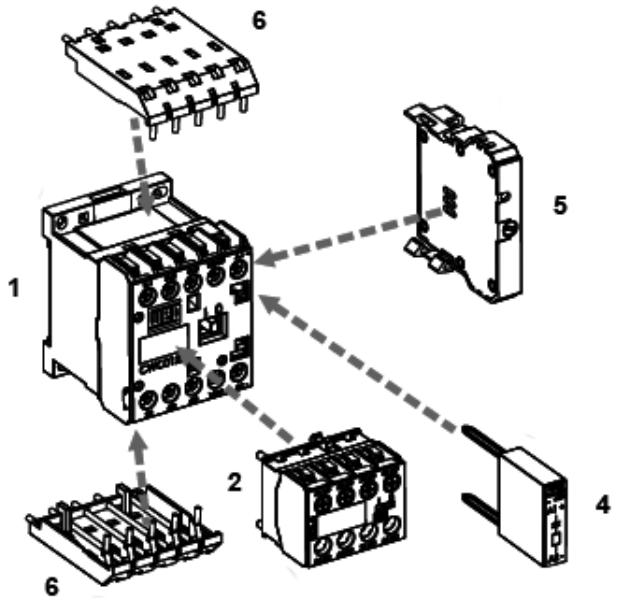
Type				CE07	CEC07	CEC09	CEC012	CEC016	CAE04
Terminal capacity									
				1 x / 2 x (0,5...2,5)					
Tightening torque			Nm	0,8	1...1,5				0,8
Control circuit									
Power consumption of the coil	AC	Closing	VA	20	30				20
		Cosφ			0,8				
		Closed	VA	3,3...5,5	2...3				3,3...5,5
		Cosφ		0,2	0,27				0,2
	DC		W	-	2,6...3,7				-
Switching time	Closing/opening (AC)		ms	9...30 / 5...25	8...20 / 6...13				9...30 / 5...25
	Closing/opening (DC)		ms	-	35...45 / 7...12				-
	Coils rated voltage		V	12-660 VAC	12-660 VAC / 12-440 VDC				12-660 VAC
	Coil operational limits				0,85...1,1				

Power dissipation

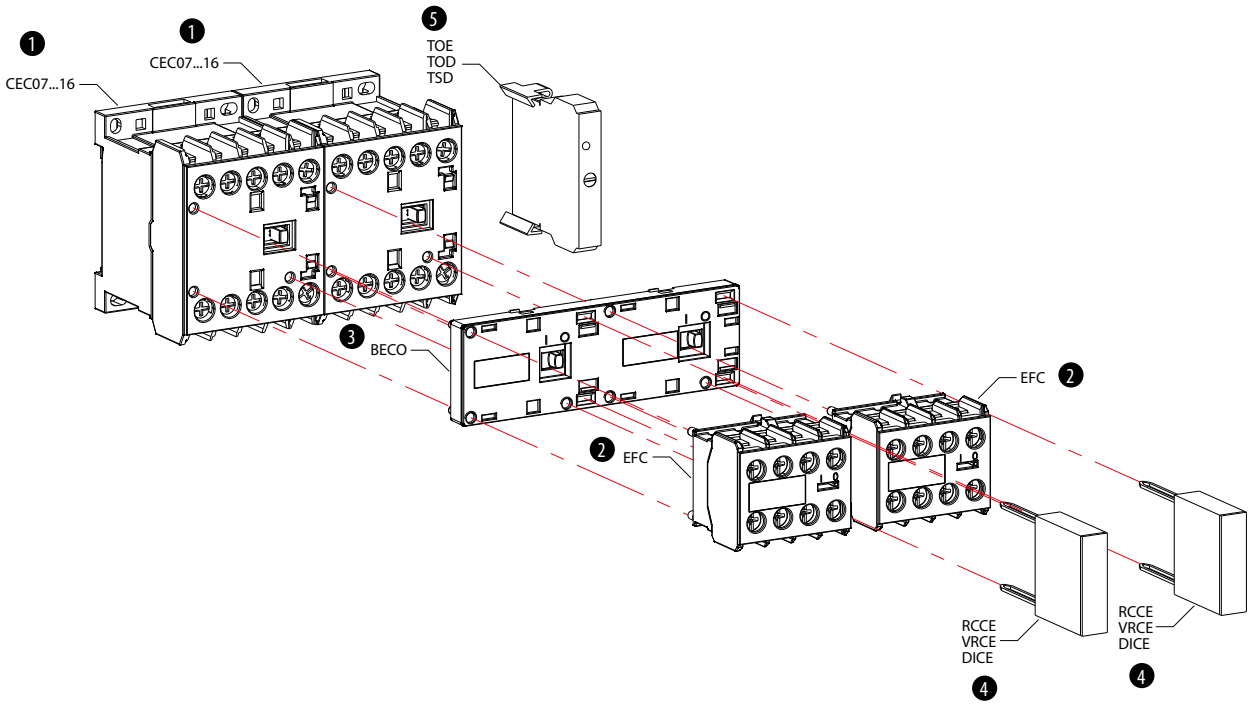
Models	Power dissipation per auxiliary contact pole	Power dissipation per pole	Power dissipation per pole	Thermal power dissipation	
	AC-13	AC-3	AC-1	AC coil	DC coil
CE07	0,6 W	0,3 W	-	2,3 W	-
CEI7	0,6 W	0,3 W	-	2,3 W	-
CAE04	0,6 W	-	-	2,3 W	-
CEC07 3P	0,6 W	0,3 W	1,9 W	1 W	3,15 W
CEC07 4P	-	0,3 W	1,9 W	1 W	3,15 W
CEC09 3P	0,6 W	0,5 W	2,4 W	1 W	3,15 W
CEC09 4P	-	0,5 W	2,4 W	1 W	3,15 W
CEC012 3P	0,6 W	0,7 W	2,4 W	1 W	3,15 W
CEC012 4P	-	0,7 W	2,4 W	1 W	3,15 W
CEC016 3P	0,6 W	1,3 W	2,4 W	1 W	3,15 W
CEC016 4P	-	1,3 W	2,4 W	1 W	3,15 W

Diagram





1 - Mini contactor
2 - Auxiliary frontal contacts block
3 - Mechanical interlock block
4 - Surge suppressor blocks
5 -Timer
6 - Link module for printed circuit board

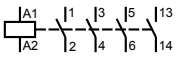
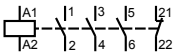


Miniature and auxiliary contactor CE, CAE, CEI7

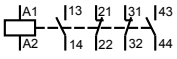
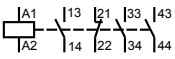
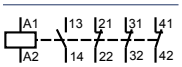
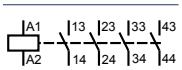
Application:
Miniature contactors are used to remotely control and protect (in combination with overload relays) electric motors and other electric loads with nominal power up to 7,5kW (at 400V AC3 duty), and auxiliary contactors are used for realizing a wide range of control circuits.
Advantages:

- Mounting on DIN rail and mounting plates
- Small size and high technical performance
- Low power loss (current heat loss)
- Protection against direct contact from front (IEC 536) IP20
- Wide range of accessories
- Surge suppressor (as option)
- Reversing starter with mechanical interlock
- Control voltage 24VAC, 48VAC, 110VAC, 230VAC, 400VAC

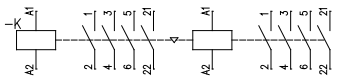
Miniature contactor CE07, 16 A (AC1), 7A, 3 kW (AC3)

Type	Code No.	Wiring diagram	g	
CE07.10-24V-50/60Hz	004641020			
CE07.10-48V-50/60Hz	004641021		130	1
CE07.10-110V-50/60Hz	004641022			
CE07.10-230V-50/60Hz	004641023			
CE07.10-400V-50/60Hz	004641024			
CE07.01-24V-50/60Hz	004641010			
CE07.01-48V-50/60Hz	004641011			
CE07.01-110V-50/60Hz	004641012		130	1
CE07.01-230V-50/60Hz	004641013			
CE07.01-400V-50/60Hz	004641014			

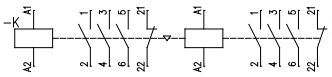
Miniature contactor relay CAE0; 6A (AC15, 230V)

Type	Code No.	Wiring diagram	g	
CAE04.22-230V-50/60Hz	004641343			
CAE04.22-24V-50/60Hz	004641340			
CAE04.31-230V-50/60Hz	004641363			
CAE04.31-24V-50/60Hz	004641360			
CAE04.13-230V-50/60Hz	004641353		180	1
CAE04.13-24V-50/60Hz	004641350			
CAE04.40-230V-50/60Hz	004641383			
CAE04.40-24V-50/60Hz	004641380			

Miniature contactor-reversing starter with mechanical interlock CEI07.10, 16A (AC1), 3,5A, 1,5 kW (AC3)

Type	Code No.	Wiring diagram	g	
CEI7.10-24V-50/60Hz	004641620			
CEI7.10-48V-50/60Hz	004641621		250	1
CEI7.10-110V-50/60Hz	004641622			
CEI7.10-230V-50/60Hz	004641623			
CEI7.10-400V-50/60Hz	004641624			

Miniature contactor-reversing starter with mechanical interlock CEI07.01, 16A (AC1), 3,5A, 1,5 kW (AC3)

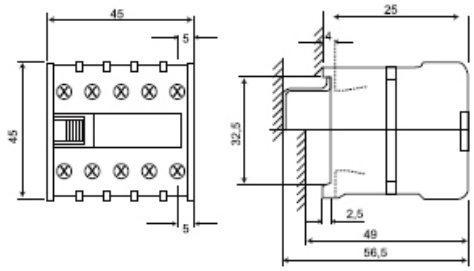
Type	Code No.	Wiring diagram	g	
CEI7.01-24V-50/60Hz	004641610		250	1
CEI7.01-48V-50/60Hz	004641611			
CEI7.01-110V-50/60Hz	004641612			
CEI7.01-230V-50/60Hz	004641613			
CEI7.01-400V-50/60Hz	004641614			

Surge suppressor

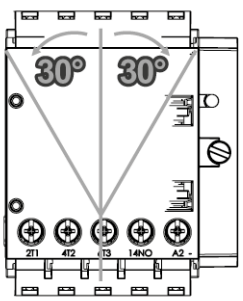
Type	Code No.	Coil voltage	For use with	g	
RCE01	004641701	24-48 VAC	CE07, CEI07	14	1
RCE06	004641702	110-220 VAC	CE07, CEI07	14	1
RCE10	004641703	380-400 VAC	CE07, CEI07	14	1

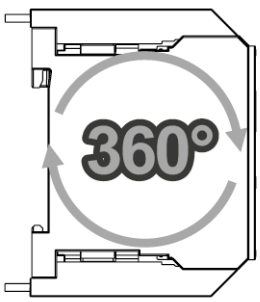
Dimensions

CE07



Mounting





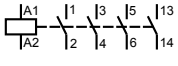
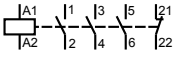
Miniature and auxiliary contactor CEC

Application:
Miniature contactors are used to remotely control and protect (in combination with overload relays) electric motors and other electric loads with nominal power up to 7,5kW (at 400V AC3 duty), and auxiliary contactors are used for realizing a wide range of control circuits.
Advantages:

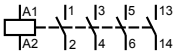
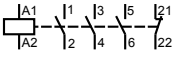
- Mounting on DIN rail and mounting plates
- Small size and high technical performance
- Low power loss (current heat loss)
- Protection against direct contact from front (IEC 536) IP20
- Wide range of accessories
- Surge suppressor (as option)
- Reversing starter with mechanical interlock
- Control voltage 24VAC, 48VAC, 110VAC, 230VAC, 400VAC, 24 VDC, 48 VDC, 110 VDC, 220 VDC

Example of CEC configuration:

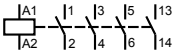
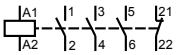
Miniature contactors CEC07; 18A(AC1); 7A,3kW(AC3 400V)

Type	Code No.	Wiring diagram	g	
CEC07.10-24V-50/60Hz	004641050			
CEC07.10-42V-50/60Hz	004641051			
CEC07.10-48V-50/60Hz	004641052			
CEC07.10-110V-50/60Hz	004641053			
CEC07.10-230V-50/60Hz	004641054		180	1
CEC07.10-400V-50/60Hz	004641055			
CEC07.10-24VDC	004641100			
CEC07.10-48VDC	004641130			
CEC07.10-110VDC	004641131			
CEC07.10-220VDC	004641132			
CEC07.01-24V-50/60Hz	004641056			
CEC07.01-42V-50/60Hz	004641057			
CEC07.01-48V-50/60Hz	004641058			
CEC07.01-110V-50/60Hz	004641059			
CEC07.01-230V-50/60Hz	004641060		180	1
CEC07.01-400V-50/60Hz	004641061			
CEC07.01-24VDC	004641101			
CEC07.01-48VDC	004641133			
CEC07.01-110VDC	004641134			
CEC07.01-220VDC	004641135			

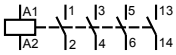
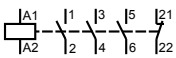
Miniature contactors CEC09; 20A(AC1); 9A,4kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CEC09.10-24V-50/60Hz	004641062			
CEC09.10-42V-50/60Hz	004641063			
CEC09.10-48V-50/60Hz	004641064		180	1
CEC09.10-110V-50/60Hz	004641065			
CEC09.10-230V-50/60Hz	004641066			
CEC09.10-400V-50/60Hz	004641067			
CEC09.10-24VDC	004641102			
CEC09.10-48VDC	004641136		218	1
CEC09.10-110VDC	004641137			
CEC09.10-220VDC	004641138			
CEC09.01-24V-50/60Hz	004641068			
CEC09.01-42V-50/60Hz	004641069			
CEC09.01-48V-50/60Hz	004641070		180	1
CEC09.01-110V-50/60Hz	004641071			
CEC09.01-230V-50/60Hz	004641072			
CEC09.01-400V-50/60Hz	004641073			
CEC09.01-24VDC	004641103			
CEC09.01-48VDC	004641139		218	1
CEC09.01-110VDC	004641140			
CEC09.01-220VDC	004641141			

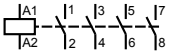
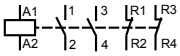
Miniature contactors CEC012; 22A(AC1); 12A,5,5kW(AC3 400V)

Type	Code No.	Wiring diagram	g	
CEC012.10-24V-50/60Hz	004641074			
CEC012.10-42V-50/60Hz	004641075			
CEC012.10-48V-50/60Hz	004641076		180	1
CEC012.10-110V-50/60Hz	004641077			
CEC012.10-230V-50/60Hz	004641078			
CEC012.10-400V-50/60Hz	004641079			
CEC012.10-24VDC	004641104			
CEC012.10-48VDC	004641142		218	1
CEC012.10-110VDC	004641143			
CEC012.10-220VDC	004641144			
CEC012.01-24V-50/60Hz	004641080			
CEC012.01-42V-50/60Hz	004641081			
CEC012.01-48V-50/60Hz	004641082		180	1
CEC012.01-110V-50/60Hz	004641083			
CEC012.01-230V-50/60Hz	004641084			
CEC012.01-400V-50/60Hz	004641085			
CEC012.01-24VDC	004641105			
CEC012.01-48VDC	004641145		218	1
CEC012.01-110VDC	004641146			
CEC012.01-220VDC	004641147			

Miniature contactors CEC016; 22A(AC1); 16A,7,5kW(AC3 400V)

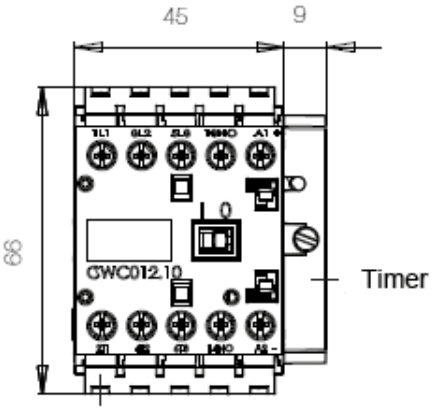
Type	Code No.	Wiring diagram	g	
CEC016.10-24V-50/60Hz	004641086			
CEC016.10-42V-50/60Hz	004641087			
CEC016.10-48V-50/60Hz	004641088		180	1
CEC016.10-110V-50/60Hz	004641089			
CEC016.10-230V-50/60Hz	004641090			
CEC016.10-400V-50/60Hz	004641091			
CEC016.10-24VDC	004641106			
CEC016.10-48VDC	004641148		218	1
CEC016.10-110VDC	004641149			
CEC016.10-220VDC	004641150			
CEC016.01-24V-50/60Hz	004641092			
CEC016.01-42V-50/60Hz	004641093			
CEC016.01-48V-50/60Hz	004641094		180	1
CEC016.01-110V-50/60Hz	004641095			
CEC016.01-230V-50/60Hz	004641096			
CEC016.01-400V-50/60Hz	004641097			
CEC016.01-24VDC	004641107			
CEC016.01-48VDC	004641151		218	1
CEC016.01-110VDC	004641152			
CEC016.01-220VDC	004641153			

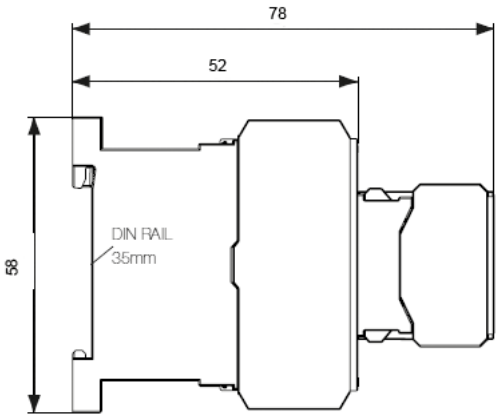
4-pole miniature contactors

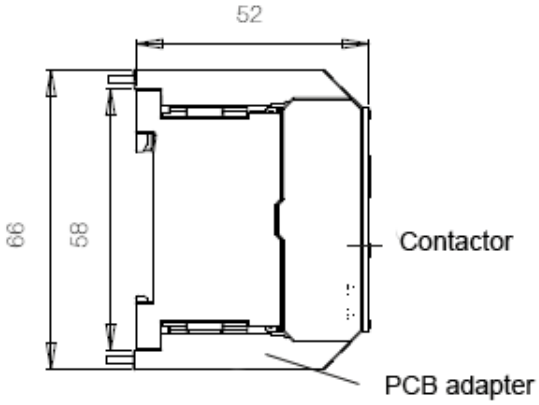
Type	Code No.	Wiring diagram	g	
CEC07.4P-230V-50/60Hz	004641200			
CEC09.4P-230V-50/60Hz	004641201			
CEC012.4P-230V-50/60Hz	004641202			
CEC016.4P-230V-50/60Hz	004641203		180	1
CEC07.4P-24VDC	004641210			
CEC09.4P-24VDC	004641211			
CEC012.4P-24VDC	004641212			
CEC016.4P-24VDC	004641213			
CEC07.PR-230V-50/60HZ	004641204			
CEC09.PR-230V-50/60HZ	004641205			
CEC012.PR-230V-50/60HZ	004641206			
CEC016.PR-230V-50/60HZ	004641207		180	1
CEC07.PR-24V-DC	004641214			
CEC09.PR-24V-DC	004641215			
CEC012.PR-24V-DC	004641216			
CEC016.PR-24V-DC	004641217			

Dimensions

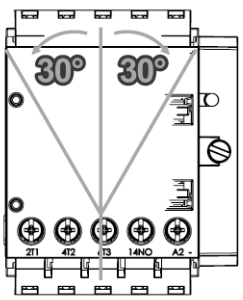
- Dimensions with PCB adapter

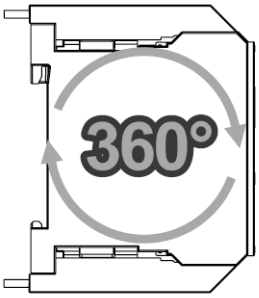




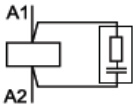
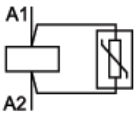
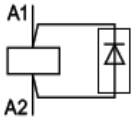


Mounting





Surge suppressor

Type	Code No.	voltage	Wiring diagram	g	
RCCE-1	004641720	12-24V 50/60Hz		6	1
RCCE-2	004641721	24-48V 50/60Hz			
RCCE-3	004641722	48-127V 50/60Hz			
RCCE-4	004641723	127-250V 50/60Hz			
RCCE-5	004641724	250-380V 50/60Hz			
RCCE-6	004641725	380-510V 50/60Hz			
VRCE-1	004641726	12-48V AC/12-60V DC		6	1
VRCE-2	004641727	50-127V AC/60-180V DC			
VRCE-3	004641728	130-275V AC/180-300V DC			
VRCE-4	004641729	277-380V AC/300-510V DC			
VRCE-5	004641730	400-510V AC			
DICE-1	004641731	12-600V DC		6	1

Mechanical interlock

Type	Code No.	g	
BEC0	004643603	15	1

For use with CEC

Printed circuit board adapter

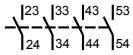
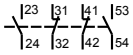
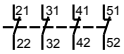
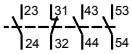
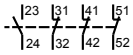
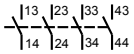
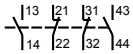
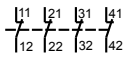
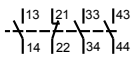
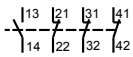
Type	Code No.	g	
CEC0	004642720	126	1

For use with CEC

Overload relay RE17D

Type	Code No.	Current setting range [A]	For use with	g	
RE17D-0,4	004641400	0,28-0,4	CEC07 – CEC016	150	1
RE17D-0,63	004641401	0,4-0,63			
RE17D-0,8	004641402	0,56-0,8			
RE17D-1,2	004641403	0,8-1,2			
RE17D-1,8	004641404	1,2-1,8			
RE17D-2,8	004641405	1,8-2,8			
RE17D-4,0	004641406	2,8-4,0			
RE17D-6,3	004641407	4-6,3			
RE17D-8,0	004641408	5,6-8			
RE17D-10	004641409	7-10			
RE17D-12,5	004641410	8-12,5			
RE17D-15	004641411	10-15			
RE17D-17	004641412	11-17			

Auxiliary contact blocks

Type	Code No.	Wiring diagram	For use with	g	
EFC0-20	004641520		CEC0 3 pole	28	1
EFC0-11	004641521				
EFC0-02	004641522				
EFC0-40	004641523				
EFC0-22	004641524				
EFC0-04	004641525				
EFC0-31	004641526				
EFC0-13	004641527				
EFC4-20	004641540		CEC0 4 pole	28	1
EFC4-11	004641541				
EFC4-02	004641542				
EFC4-40	004641543				
EFC4-22	004641544				
EFC4-04	004641545				
EFC4-31	004641546				
EFC4-13	004641547				

EFC0

EFCA

EFC4

Example of using EFC0 and RCCE

Auxiliary contact block

Standards			IEC 60947-5-1, IEC 60947-4-1
Rated Insulation voltage U_i	IEC, VDE 0660	(V)	1000
Rated operational voltage U_e	IEC, VDE 0660	(V)	690
Conv. thermal current I_{th}		A	10
Rated operational current (I_e)			
AC-15(IEC 60947-5-1)	Ue ≤ 240V	(A)	10
	380-400V	(A)	6
	415-440V	(A)	6
	500V	(A)	4
	660-690V	(A)	-
UL, CSA 1)			A600
DC-13(IEC 60947-5-1)	24V	(A)	1,5
	60V	(A)	0,5
	110V	(A)	0,4
	220-240V	(A)	0,4
UL, CSA [1)]			Q600
Short circuit protection max. fuse gL/gG		(A)	10
Control circuit reliability		(V / mA)	17 / 5
Electrical life span		c. op.	1.000.000
Mechanical life span		c. op.	10.000.000
Nr. of conductors and cross section	Stranded without end sleeve	mm^2	2x (0,5...2,5)
Tightening torque		Nm	0,8...1,5

Electronic timer blocks TOE, TOD, TSD

Inputs	Rated insulation voltage (U_i)		V	300
	Supply voltage (U_e)	1 - 2 terminals	V	24...240 V AC/DC 50/60 Hz (TOE)
				24...60 V AC/DC 50/60 Hz (TOD)
				100...60 V AC/DC 50/60 Hz (TOD)
				220-240 V AC 50/60 Hz (TSD)
				110-130 V AC (TSD)
				24-28 V AC 50/60 Hz (TSD)
	Command (U_c) (only TOD)	2 - B1 terminals	V	24...60 V AC/DC 50/60 Hz (TOD)
				100...240 V AC/DC 50/60 Hz (TOD)
	Voltage limits			0,85 - 1,1 x Uc -> AC
				0,8 - 1,25 x Uc -> DC
	Consumption		mA	≤ 5
Time adjustment	Min. time for Reset		ms	100
	Min. command time (only TOD)		ms	50
	Setting accuracy (% of the full scale value)		%	+/-5
	Repeat accuracy		%	+/-1
	Changeover time Y - Δ		ms	50

Motor contactor CES

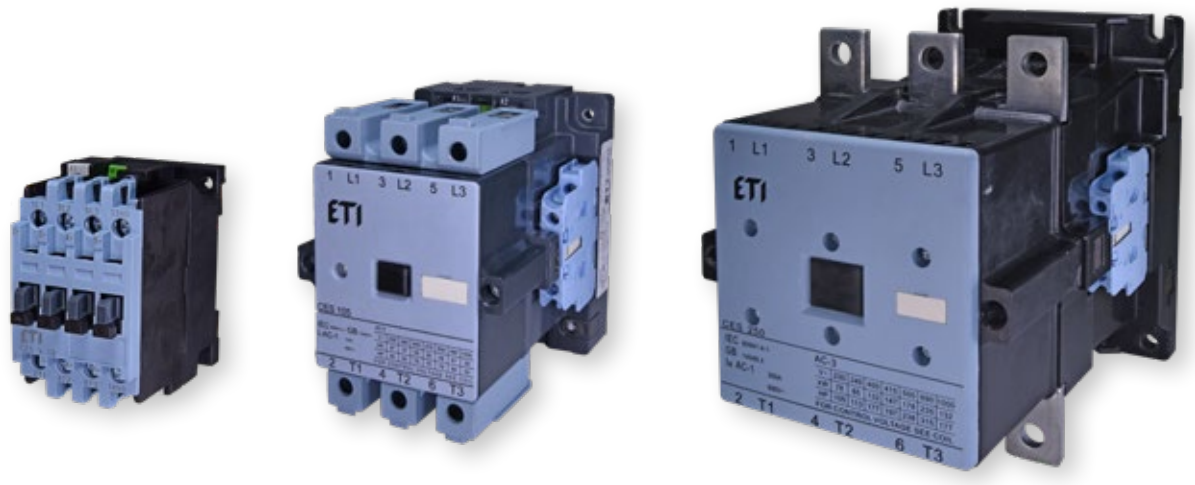
ETICON CES SERIES

IEC 60947-4-1
Contact reliability
Contactors are used to remotely control and protect (in combination with overload relays) electric motors and other electric loads with nominal power up to 200kW (at 400V AC3 duty)

Auxiliary contacts
CES 6 to CES 45:
Up to 4 auxiliary contact blocks with 1 NO or 1 NC contact can be snapped onto the basic units (front).
CES 65 to CES 105:
Maximum 4 auxiliary contact blocks with 1 NO + 1 NC contacts (lateral) assembled.

When the contactors are energized, the NC contacts open before the NO contacts close.

CES 65..400 NOT POSSIBLE TO MOUNT ON DIN RAIL

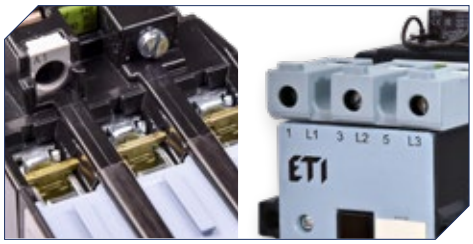


Ordering:

CES	9	.	0	1	-	230V	-	50/60Hz
	1		2	3		4		5		6

1 - Contactor type
2 - Rated operational current Ie (AC3)
3 - Number and type NO auxiliary contacts
4 - Number and type NC auxiliary contacts
5 - Coil voltage
6 - Frequency

CES 40...105 contactor terminals allow simultaneous connection not only single-stranded and stranded conductors, but also conductors of different sections.



Additional EMC filters can be installed (CES 140...400 have already integrated).

Voltage range control at 230 V AC: from 0.85 up to 1.15 x Us in accordance with IEC 60947.

CES 6...45 additional aux. contact blocks can be installed on front of device.

Design allows to mount contactor on DIN rail TH 35 or directly on panel

Additional 2nd aux. contact block can be installed on each side of contactor CES65...300.

Overload relays (bimetal) tripping class 10

Mechanical interlock can be installed between 2 contactors.

Possible to mount overload relay directly on contactor or DIN rail TH 35 with mounting adapter CES-AD-RT

Contact endurance of the main contacts

The characteristic curves show the contact endurance of contactors when switching resistive and inductive three-phases loads (AC-1/AC-3) depending on the breaking current and the rated operational voltage. It is assumed that the control devices operate randomly, i.e. not in synchronism with the phase angle of the supply system.

The rated operational current Ie for AC-4 duty (breaking 6 times the rated operational current) is selected for a contact endurance of approximately 200,000 operating cycles.

If a shorter endurance is sufficient, the rated operational current Ie/ AC-4 can be increased.

If mixed operation is involved, i.e. normal switching (breaking of rated operational current in AC-3 duty) with intermittend inching (breaking multiples of the rated operational current in AC-4 duty) the contact endurance can be calculated approximately from the following equation:

$$X = \frac{A}{1 + \frac{C}{100}\left(\frac{A}{B} - 1\right)}$$

Legend to the equation:

X Contact endurance for mixed operation in operating cycles

A Contact endurance for normal operation (Ia=Ie) in operating cycles

B Contact endurance for inching (Ia= multiple of Ie) in operating cycles

C Percentage of inching operations in total operations

Short-circuit protection of CES 6 to CES 105 contactors without overload relay
Fuses, utilization category gG
or miniature circuit-breaker with C-characteristics

Technical data

Contactor	Type		CES 6	CES 9	CES 12	CES 18	CES 25	CES 32
Main circuit								
With fuses								
- acc. to IEC 60947-4-1	Type of coordination "1"[1]	A	32	32	32	32	63	63
	Type of coordination "2"[1]	A	20	20	25	25	40	40
- weld-free[2]	$I_k \geq 100 \times I_e$	A	10	10	10	10	16	16
With miniature circuit breaker	C-characteristic	A	16	16	25	25	--	--
Auxiliary circuit (short circuit current $I_k \geq 1$ kA)								
Contactor	Size		0 ... 1					
	Type		CES 6 ... CES 32					
With fuses		A	16					
		A	6, if overload relay auxiliary contacts are in the contactor coil circuit					
with miniature circuit-breaker		A	10					
with C-characteristics		A	3, if overload relay auxiliary contacts are in the contactor coil circuit					
Contactor	Type		CES 40	CES 45	CES 65	CES 75	CES 85	CES 105
Main circuit								
With fuses								
- acc. to IEC 60947-4-1	Type of coordination "1"[1]	A	80	80	160	160	250	250
	Type of coordination "2"[1]	A	63	63	100	100	125	160
- weld-free[2]	$I_k \geq 100 \times I_e$	A	25	25	63	80	125	125
With miniature circuit breaker	C-characteristic	A	--	--	--	--	--	--
Auxiliary circuit (short circuit current $I_k \geq 1$ kA)								
Contactor	Size		0 ... 4					
	Type		CES 40 ... CES 105					
With fuses		A	16					
		A	6, if overload relay auxiliary contacts are in the contactor coil circuit					
with miniature circuit-breaker		A	10					
with C-characteristics		A	3, if overload relay auxiliary contacts are in the contactor coil circuit					

1) In accordance with IEC 60947-4-1:
Type of coordination "1": Destruction of contactor and overload relay is admissible. Contactor and/or overload relay must be replaced if necessary.
Type of coordination "2": No damage can be tolerated on the overload relay, but contact welding on the contactor is permitted if the contacts can easily be separated.
2) Test conditions according to IEC 60947-4-1.

Motor contactor CES 6; 25A(AC1); 6A/2,2kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 6.10-24V-50/60Hz	004646500		370	1
CES 6.10-110V-50/60Hz	004646503		370	1
CES 6.10-230V-50/60Hz	004646501		370	1
CES 6.10-400V-50Hz	004646502		370	1
CES 6.10-24V DC	004646504		0,58	1
CES 6.01-24V-50/60Hz	004646505		370	1
CES 6.01-110V-50/60Hz	004646508		370	1
CES 6.01-230V-50/60Hz	004646506		370	1
CES 6.01-400V-50Hz	004646507		370	1
CES 6.01-24V DC	004646509		580	1

CES 6.10 - Integrated auxiliary contact 1xNO; CES 6.01 - Integrated auxiliary contact 1xNC

CES 6

Motor contactor CES 9; 25A(AC1); 9A/4kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 9.10-24V-50/60Hz	004646510		370	1
CES 9.10-110V-50/60Hz	004646511		370	1
CES 9.10-230V-50/60Hz	004646512		370	1
CES 9.10-400V-50Hz	004646513		370	1
CES 9.10-24V DC	004646514		580	1
CES 9.01-24V-50/60Hz	004646515		370	1
CES 9.01-110V-50/60Hz	004646516		370	1
CES 9.01-230V-50/60Hz	004646517		370	1
CES 9.01-400V-50Hz	004646518		370	1
CES 9.01-24V DC	004646519		580	1

CES 9.10 - Integrated auxiliary contact 1xNO; CES 9.01 - Integrated auxiliary contact 1xNC

CES 9

Motor contactor CES 12; 25A(AC1); 12A/5,5kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 12.10-24V-50/60Hz	004646520		370	1
CES 12.10-110V-50/60Hz	004646521		370	1
CES 12.10-230V-50/60Hz	004646522		370	1
CES 12.10-400V-50Hz	004646523		370	1
CES 12.10-24V DC	004646524		580	1
CES 12.10-42V-50/60Hz	004646525		370	1
CES 12.01-24V-50/60Hz	004646526		370	1
CES 12.01-110V-50/60Hz	004646527		370	1
CES 12.01-230V-50/60Hz	004646528		370	1
CES 12.01-400V-50Hz	004646529		370	1
CES 12.01-24V DC	004646530		580	1

CES 12.10 - Integrated auxiliary contact 1xNO; CES 12.01 - Integrated auxiliary contact 1xNC

CES 12

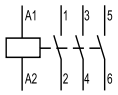
Motor contactor CES 18; 25A(AC1); 18A/7,5kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 18.10-24V-50/60Hz	004646531		370	1
CES 18.10-110V-50/60Hz	004646532		370	1
CES 18.10-230V-50/60Hz	004646533		370	1
CES 18.10-400V-50Hz	004646534		370	1
CES 18.10-24V DC	004646535		580	1
CES 18.01-24V-50/60Hz	004646536		370	1
CES 18.01-110V-50/60Hz	004646537		370	1
CES 18.01-230V-50/60Hz	004646538		370	1
CES 18.01-400V-50Hz	004646539		370	1
CES 18.01-24V DC	004646540		580	1

CES 18.10 - Integrated auxiliary contact 1xNO; CES 18.01 - Integrated auxiliary contact 1xNC

CES 18

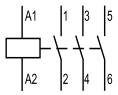
Motor contactor CES 25; 42A(AC1); 25A/11kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 25.00-24V-50/60Hz	004646541		410	1
CES 25.00-110V-50/60Hz	004646542		410	1
CES 25.00-230V-50/60Hz	004646543		410	1
CES 25.00-400V-50Hz	004646544		410	1
CES 25.00-24V DC	004646545		660	1
CES 25.00-42V-50/60Hz	004646546		410	1

Auxiliary contacts top or side mounted must be ordered separately

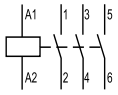
CES 25...32

Motor contactor CES 32; 42A(AC1); 32A/15kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 32.00-24V-50/60Hz	004646547		410	1
CES 32.00-110V-50/60Hz	004646548		410	1
CES 32.00-230V-50/60Hz	004646549		410	1
CES 32.00-400V-50Hz	004646550		410	1
CES 32.00-24V DC	004646551		660	1

Auxiliary contacts top or side mounted must be ordered separately

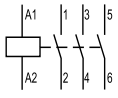
Motor contactor CES 40; 65A(AC1); 40A/18,5kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 40.00-24V-50/60Hz	004646552		670	1
CES 40.00-110V-50/60Hz	004646553		670	1
CES 40.00-230V-50/60Hz	004646554		670	1
CES 40.00-400V-50Hz	004646555		670	1

Auxiliary contacts top or side mounted must be ordered separately

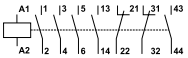
CES 40...45

Motor contactor CES 45; 65A(AC1); 45A/22kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 45.00-24V-50/60 Hz	004646556		640	1
CES 45.00-230V-50/60 Hz	004646557		640	1
CES 45.00-400V-50Hz	004646558		640	1
CES 45.00-110V-50/60 Hz	004646559		640	1

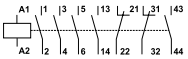
Auxiliary contacts top or side mounted must be ordered separately

Motor contactor CES 65; 90A(AC1); 65A/30kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 65.22-230V-50/60Hz	004646560		1.625	1
CES 65.22-24V-50/60Hz	004646561		1.625	1

Included side mounted auxiliary contacts 2xNO+2xNC

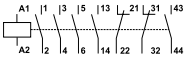
Motor contactor CES 75; 100A(AC1); 75A/37kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 75.22-24V-50/60 Hz	004646562		2.530	1
CES 75.22-230V-50/60 Hz	004646563		2.530	1

Included side mounted auxiliary contacts 2xNO+2xNC

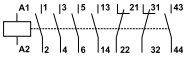
CES 65...105

Motor contactor CES 85; 120A(AC1); 85A/45kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 85.22-24V-50/60 Hz	004646564		2.530	1
CES 85.22-230V-50/60 Hz	004646565		2.530	1

Included side mounted auxiliary contacts 2xNO+2xNC

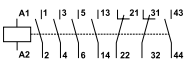
Motor contactor CES 105; 120A(AC1); 105A/55kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 105.22-230V-50/60Hz	004646566		3.758	1
CES 105.22-24V-50/60Hz	004646567		3.758	1

Included side mounted auxiliary contacts 2xNO+2xNC

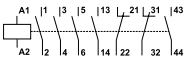
CES 140

Motor contactor CES 140; 160A(AC1); 140A/75kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 140.22-230V-50/60Hz	004646568		3.300	1

Included side mounted auxiliary contacts 2xNO+2xNC

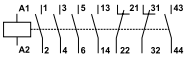
Motor contactor CES 170; 210A(AC1); 170A/90kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 170.22-230V-50/60Hz	004646569		4.800	1

Included side mounted auxiliary contacts 2xNO+2xNC

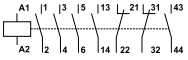
CES 170...205

Motor contactor CES 205; 220A(AC1); 205A/110kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 205.22-230V-50/60Hz	004646570		4.800	1

Included side mounted auxiliary contacts 2xNO+2xNC

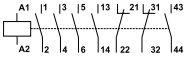
Motor contactor CES 250; 300A(AC1); 250A/132kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 250.22-230V-50/60Hz	004646571		6.200	1

Included side mounted auxiliary contacts 2xNO+2xNC

CES 250...300

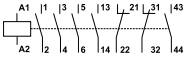
Motor contactor CES 300; 320A(AC1); 300A/160kW(AC3, 400V)

Type	Code No.	Wiring diagram	g	
CES 300.22-230V-50/60Hz	004646572		6.200	1

Included side mounted auxiliary contacts 2xNO+2xNC

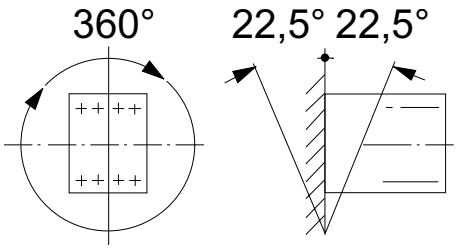
CES 400

Motor contactor CES 400; 500A(AC1); 400A/200kW(AC3, 400V)

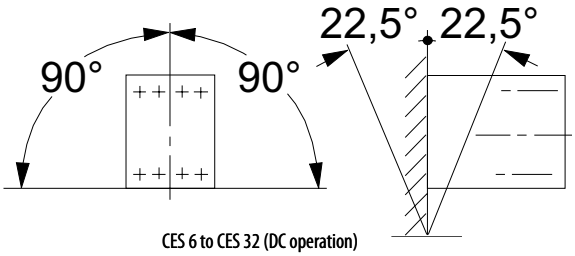
Type	Code No.	Wiring diagram	g	
CES 400.22-230V-50/60Hz	004646573		6.800	1

Included side mounted auxiliary contacts 2xNO+2xNC

Mounting position

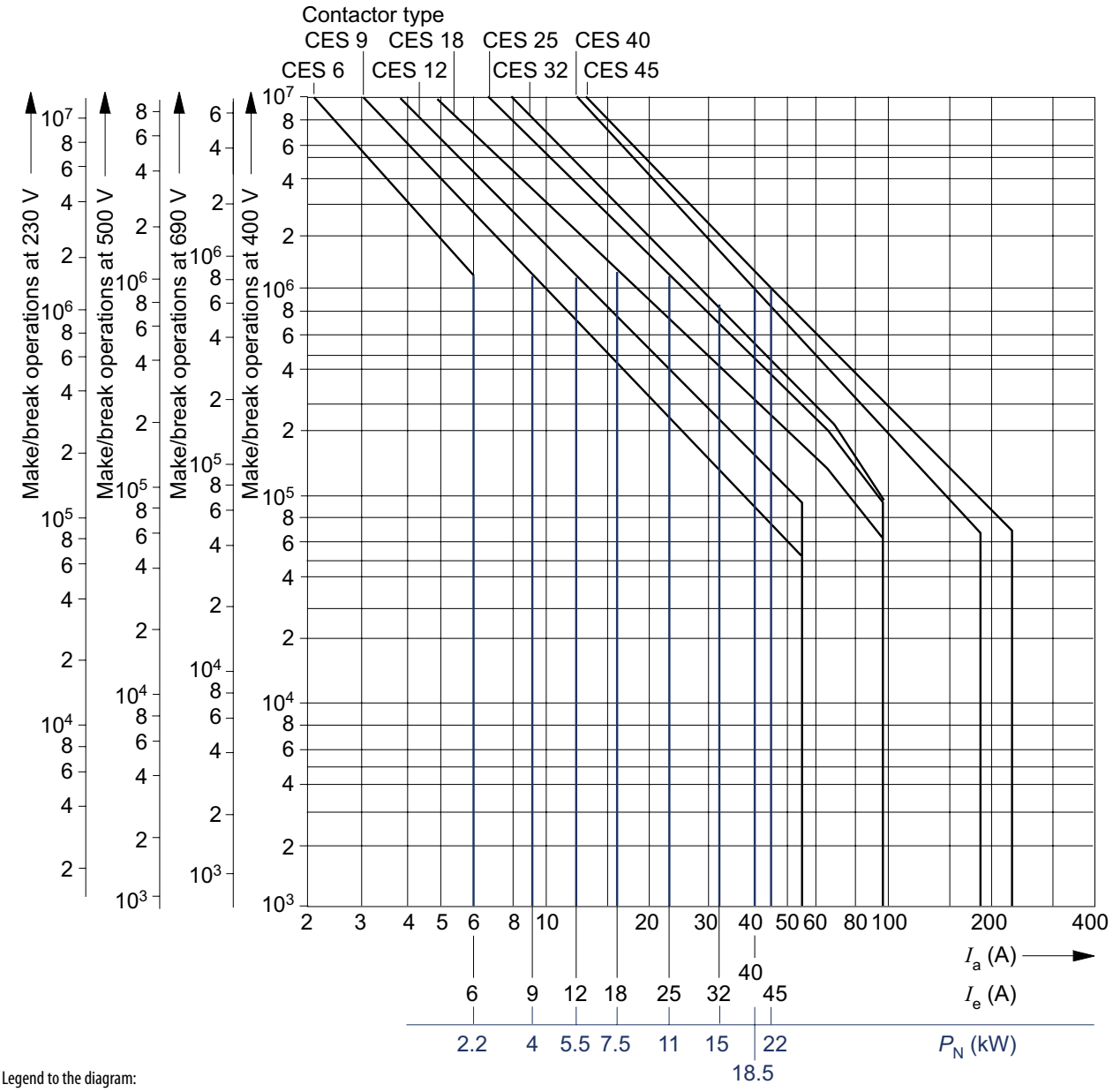


CES 6 to CES 32 (AC operation)



CES 6 to CES 32 (DC operation)
CES 40 to CES 105 (AC operation)

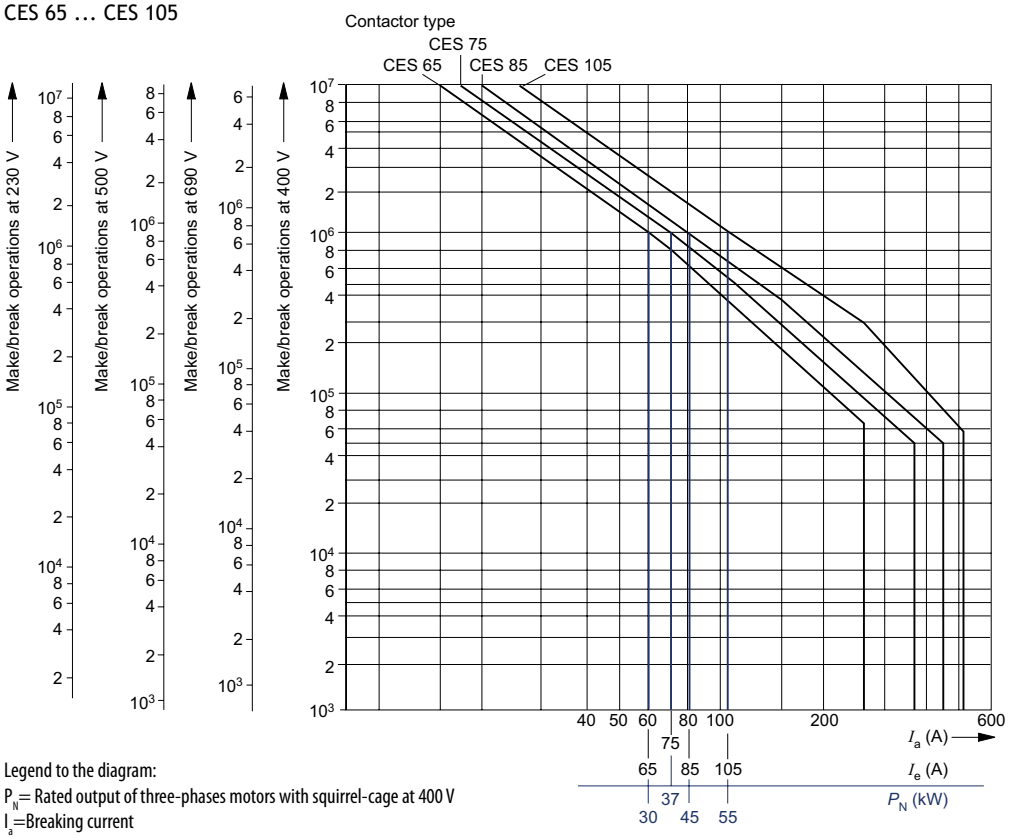
CES 6 … CES 45



Legend to the diagram:
P_N = Rated output of three-phases motors with squirrel-cage at 400 V
I_a =Breaking current
I_e =Rated operational current

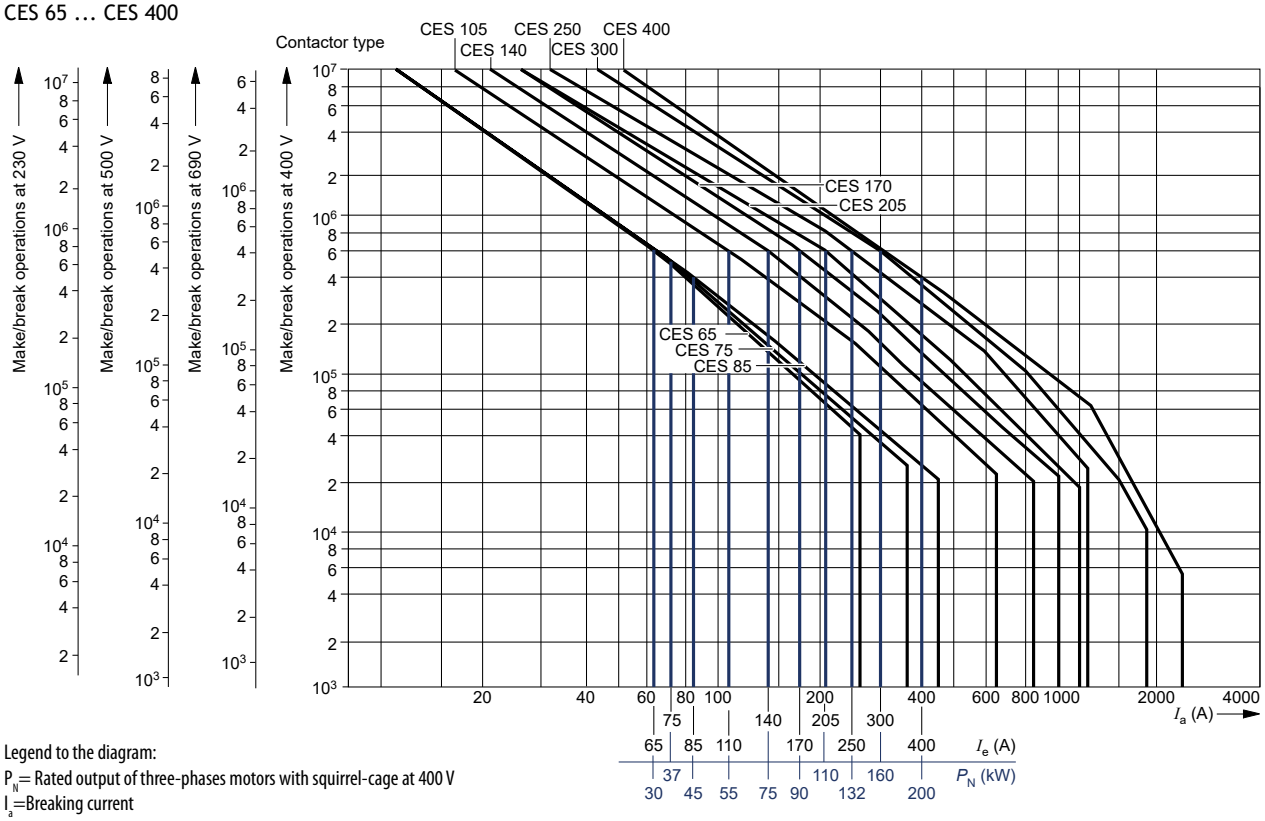
CES contactors

CES 65 … CES 105



Legend to the diagram:
P_N = Rated output of three-phases motors with squirrel-cage at 400 V
I_a =Breaking current
I_e =Rated operational current

CES 65 … CES 400



Legend to the diagram:
P_N = Rated output of three-phases motors with squirrel-cage at 400 V
I_a =Breaking current
I_e =Rated operational current

Technical data

Contactor	Type			CES 6 ... CES 18	CES 25, CES 32
General data					
Mechanical endurance	Basic units		Operating cycles	15 Mio	
	Auxiliary contact blocks			10 Mio	
Rated insulation voltage U_i (pollution degree 3)			V	690	
Rated impulse withstand voltage U_{imp}			kV	8	
Protective separation[1] between coil and main contacts			V	≤ 500	≤ 690
Permissible ambient temperature[2]			°C	-25 to +55 in operation, -50 to +80 when stored	
Degree of protection	acc. to IEC 60947-1			IP 20	
Power consumption of the coils				(with cold coil) and 1.0 x Us	
AC operation			Hz	50/60	
	closing		VA	77/71	
	cos φ			0.81/0.75	
	closed		VA	11/9	
	cos φ			0.28/0.27	
DC operation	closing = closed		W	6.2	
Permissible residual current of the electronics (at 0-Signal)				$< 8\ mA \times \frac{220\ V}{Us}$ AC operation	$< 1.25\ mA \times \frac{220\ V}{Us}$ DC operation
Coil voltage tolerance				0.8 ... 1.1 x U_s	
Operating times at 0.8 to 1.1 x U_s	Break time = opening time + arcing time			(Values are applicable with the coil in cold state and at operating temperature)	
AC operation	closing time		ms	8 ... 35	10 ... 35
	opening time		ms	4 ... 18	5 ... 20
DC operation	closing time		ms	20 ... 170	35 ... 180
	opening time		ms	10 ... 25	10 ... 25
Arcing time			ms	10	10
Operating times at 1.0 x U_s					
AC operation	closing time		ms	10 ... 25	10 ... 25
	opening time		ms	5 ... 18	5 ... 20
DC operation	closing time		ms	30 ... 70	40 ... 80
	opening time		ms	12 ... 20	10 ... 20
Shock resistance	Rectangular pulse	AC	g/ms	7.7/5 & 4.4/10	5.5/5 & 3.2/10
		DC	g/ms	9.3/5 & 5.4/10	5.8/5 & 3.4/10
	Sine pulse	AC	g/ms	12/5 & 6.8/10	8.7/5 & 5.1/10
		DC	g/ms	14.7/5 & 8.5/10	9/5 & 5.3/10
Conductor cross-selections (screw connection; 1 or 2 conductor connection possible)	Main conductor:				
	solid		mm^2	2 x (0.5 ... 1); 2 x (1 ... 2.5); 1 x 4	2 x (2.5 ... 6)
	finely stranded with end sleeve		mm^2	2 x (0.5 ... 1); 2 x (0.75 ... 2.5)	2 x (0.5 ... 1); 2 x (1.5 ... 4)
	Pin-end connector (DIN 46 231)		mm^2	1 x (1 ... 2.5)	1 x (1 ... 6)
	solid or stranded		AWG	2 x (18 ... 12)	2 x (14 ... 10)
	Terminal screw			M3.5	M4
	Auxiliary conductor:				
	solid		mm^2	2 x (0.5 ... 1); 2 x (1 ... 2.5)	2 x (0.5 ... 1); 2 x (1 ... 2.4)
	finely stranded with end sleeve		mm^2	2 x (0.5 ... 1); 2 x (0.75 ... 2.5)	2 x (0.5 ... 1); 2 x (0.75 ... 2.5)
	Pin-end connector (DIN 46 231)		mm^2	2 x (1 ... 1.5)	2 x (1 ... 1.5)
	solid or stranded		AWG	2 x (18 ... 12)	2 x (18 ... 12)
Specified tightening torque of the terminal screws	Main conductor:			0.8 ... 1.4 Nm (7 ... 12 lb.in)	1 ... 1.5 Nm (8.8 ... 13 lb.in)
	Auxiliary conductor			0.8 ... 1.4 Nm (7 ... 12 lb.in)	0.8 ... 1.4 Nm (7 ... 12 lb.in)
Operating frequency z in operating cycles per hour (o.c./h)				Operation:	Operation:
				AC / DC	AC / DC
Contactors without overload relay	No-load operating frequency		1/h	10000 / 1500	5000 / 1500
	Rated duty at AC-1		1/h	1500 / 1500	1500 / 1500
	at AC-2 and AC-3		1/h	1000 / 1000	750 / 750
	at AC-4		1/h	250 / 250	250 / 250
Contactor with overload relay (mean value)			1/h	15	15

1) Acc. to IEC 60947-1, Annex N.

2) When CES 6 to CES 32 AC operated contactors are mounted in rows, the minimum gap between them must be 5 mm when the coil voltage is 1.1 x Us, the ambient temperature ≥ 45 °C and the load factor of all relays is 100 %.

Technical data

Contactor	Type			CES 40		CES 45	
General data							
Mechanical endurance	Basic units		Operating cycles	10 Mio			
	Auxiliary contact blocks		Operating cycles	10 Mio			
Rated insulation voltage U_i (pollution degree 3)			V	690			
Rated impulse withstand voltage U_{imp}			kV	8			
Protective separation[1] between coil and main contacts			V	≤ 415			
Permissible ambient temperature			°C	-25 to +55 in operation, -50 to +80 when stored			
Degree of protection	acc. to IEC 60947-1			IP 00			
Power consumption of the coils				(with cold coil) and 1.0 x Us			
AC operation			Hz	50/60			
	closing		VA	121/117			
	p.f.			0.79/0.72			
	closed		VA	16.5/13			
	p.f.			0.27/0.28			
Coil voltage tolerance				0.8 ... 1.1 x Us			
Operating times at 0.8 to 1.1 x U_s	Break time = opening time + arcing time						
AC operation[2]	closing time		ms	13 ... 57			
	opening time		ms	5 ... 10			
Arcing time			ms	10			
Operating times at 1.0 x U_s							
AC operation[2]	closing time		ms	13 ... 32			
	opening time		ms	5 ... 10			
Shock resistance	Rectangular pulse	AC	g/ms	5.7/5 & 3.3/10			
		DC	g/ms	5.7/5 & 3.3/10			
	Sine pulse	AC	g/ms	9/5 & 5.2/10			
		DC	g/ms	9/5 & 5.2/10			
Conductor cross-selections (screw connection; 1 or 2 conductor connection possible)	Main conductor:			Front terminal connected	Back terminal connected	Both terminal connected: Front terminal	Back terminal
	solid		mm²	1 ... 16	1 ... 16	1 ... 16	1 ... 16
	finely stranded without end sleeve		mm²	2.5 ... 16	1.5 ... 16	2.5 ... 10	1.5 ... 16
	finely stranded with end sleeve		mm²	1 ... 16	1 ... 16	1 ... 10	1 ... 16
	standed		mm²	2.5 ... 25	1.5 ... 25	2.5 ... 10	1.5 ... 25
	Pin-end connector (DIN 46 231)		mm²	1 ... 6	1 ... 6	1 ... 6	1 ... 6
	solid or stranded		AWG	14 ... 3	16 ... 3	14 ... 6	16 ... 3
	Terminal screw			M5	M5	M5	M5
	Auxiliary conductor:						
	solid		mm²	2 x (0.5 ... 1); 2 x (1 ... 2.5)			
	finely stranded with end sleeve		mm²	2 x (0.5 ... 1); 2 x (0.75 ... 2.5)			
	Pin-end connector (DIN 46 231)		mm²	2 x (1 ... 1.5)			
	solid or stranded		AWG	2 x (18 ... 12)			
Specified tightening torque of the terminal screws	Main conductor:			2.5 ... 3.0 Nm (22 ... 26.5 lb.in)			
	Auxiliary conductor			0.8 ... 1.4 Nm (7 ... 12 lb.in)			
Operating frequency z in operating cycles per hour (o.c./h)				Operation:		Operation:	
				AC	DC	AC	DC
Contactors without overload relay	No-load operating frequency		1/h	5000	on request	5000	on request
	Rated duty at AC-1		1/h	1200	1200	1200	1200
	at AC-2		1/h	600	600	600	600
	at AC-3		1/h	600	600	600	600
	at AC-4		1/h	250	250	200	600
Contactor with overload relay (mean value)			1/h	15		15	

1) Acc. to IEC 60947-4-1, Annex N.

2) The opening time delay of the NO contacts and the closing time of the NC contacts are increased when the contactor coil is protected against voltage peaks (diode 6 to 9 times; diode combination 2 to 6 times, varistor + 2 to 5 ms).

Technical data

Contactor	Type			CES 65	CES 75	CES 85	CES 105
General data							
Mechanical endurance		Operating cycles		10 million (AC operation)			
Rated insulation voltage U_i (pollution degree 3)			V	1000			
Rated impulse withstand voltage U_{imp}			kV	8			
Protective separation[1] between coil and main contacts			V	≤ 500		≤ 690	
Permissible ambient temperature			°C	-25 to +55 in operation, -50 to +80 when stored			
Degree of protection	acc. to IEC 60947-1			IP 00/oper type, operating mechanism IP40			
Power consumption of the coils				(with cold coil) and 1.0 x Us			
AC operation			Hz	50/60			
	closing		VA	225/192		398/345	
	p.f.			0.6/0.54		0.5/0.4	
	closed		VA	24/16		46/29	
	p.f.			0.29/0.29		0.23/0.24	
Coil voltage tolerance				0.8 ... 1.1 x Us			
Operating times at 0.8 to 1.1 x U_s	Break time = opening time + arcing time						
AC operation[2]	closing time		ms	15 ... 40		20 ... 50	
	opening time		ms	5 ... 25		5 ... 30	
Arcing time			ms	10 ... 15			
Operating times at 1.0 x U_s							
AC operation[2]	closing time		ms	17 ... 30		22 ... 35	
	opening time		ms	5 ... 25		5 ... 30	
Shock resistance	Rectangular pulse	AC	g/ms	11.2/5 & 6/10		8.4/5 & 4.8/10	
		DC	g/ms	10.7/5 & 6.2/10 (14.5 & 7.7/10)1)		8.3/5 & 4.75/10	
	Sine pulse	AC	g/ms	17.6/5 & 10.3/10		13.2/5 & 7.5/10	
		DC	g/ms	16.8/5 & 9.7/10 (22/5 & 12/10)1)		13/5 & 7.4/10	
Conductor cross-selections (screw connection; 1 or 2 conductor connection possible)	Main conductor: - with box terminal			Front terminal connected	Back terminal connected	Both terminal connected Front terminal / Back terminal	
	solid		mm²	6 ... 16	1 ... 16	1 ... 16	1 ... 16
	finely stranded without end sleeve		mm²	10 ... 35	1.5 ... 16	1.5 ... 16	1.5 ... 16
	finely stranded with end sleeve		mm²	6 ... 35	1 ... 16	1 ... 16	1 ... 16
	standed		mm²	16 ... 50	1.5 ... 25	1.5 ... 25	1.5 ... 25
	solid or stranded		mm²	10 ... 1/0	16 ... 3	16 ... 3	16 ... 3
	Terminal screw			M6			
	Tightening torque - without box terminal			4 ... 6 Nm (36 ... 52 lb. in)			
	finely stranded with cable lug		mm²	10 ... 352)			
	standed with cable lug		mm²	10 ... 502)			
	solid or stranded		AWG	7 ... 1/0			
	Terminal bar (max. width)		mm	12			
	Terminal screw			M6 x 20			
	Tightening torque			4 ... 6 Nm (36 ... 52 lb. in)			
	Auxiliary conductor:						
	solid		mm²	2 x (0.5 ... 1); 2 x (1 ... 2.5); 1 x 4			
	finely stranded with end sleeve		mm²	2 x (0.5 ... 1); 2 x (0.75 ... 2.5)			
	Pin-end connector (DIN 46 231)		mm²	2 x (1 ... 1.5)			
	solid or stranded		AWG	2 x (18 ... 12)			
	Tightening torque		mm²	0.8 ... 1.4 Nm (7 ... 12 lb. in)			

1) In accordance with IEC 60947-1, Annex N.

2) The opening time delay of the NO contacts and the closing time of the NC contacts are increased when the contactor coil is protected against voltage peaks (diode 6 to 9 times; diode combination 2 to 6 times, varistor + 2 to 5 ms).

Technical data

Contactors			Type	CES 140	CES 170	CES 205	CES 250	CES 300	CES 400
Rated power AC-3, 400V			KW	75	90	110	132	160	200
Rated operational current I_e	40° C AC-1	40° C AC-1	A	160	210	220	300	320	500
at 400V,	AC-3	AC-3	A	140	170	205	250	300	400
at 400V,	AC-4	AC-4	A	68	75	96	110	125	150
Conventional thermal current I_{th}	400V, +40° C		A	160	210	220	300	300	400
Ambient Temperature	Operation		° C	-25 ... +55					
	Storage		° C	-25 ... +70					
Humidity				+40°C no more than 50%, +25°C no more than 90%					
Altitude without derating			m	≤2000					
Mechanical Life			mil. cycles	4	4	4	4	4	4
Electrical Life			mil. cycles	0,6	0,6	0,6	0,6	0,6	0,4
Max. Operating Frequency without overload relay	at AC- 3	at AC- 3	cycles/hr.	1200	600	600	600	600	600
	at AC- 4	at AC- 4	cycles/hr.						
Rated insulation voltage U_i			V	1000	1000	1000	1000	1000	1000
Rated impulse withstand voltage U_{imp}			kV	8	8	8	8	8	8
Power consumption of the coils	AC operation	Closing	VA	550	910	910	1430	1430	2450
		Cos φ		0,45	0,38	0,38	0,34	0,34	0,21
		Closed	VA	39	58	58	84	84	115
		Cos φ		0,24	0,26	0,26	0,24	0,24	0,33
Coil type				AC 50/60Hz 24V, 110V, 220V, 380V					
Operating range o f coil	at U_s AC		x U_s	0.8-1.1	0.8-1.1	0.8-1.1	0.8-1.1	0.8-1.1	0.8-1.1
AC operation at 1xU_s	Opening		ms	8…30	8…30	8…30	8…30	8…30	8…20
	Closing		ms	20…50	20…50	20…50	20…50	20…50	17…65
Conductor cross-selections (screw connection; 1 or 2 conductor connection possible)	Main conductor:								
	finely stranded with cable lug		mm^2	35 ... 95		50 ... 240			
	stranded with cable lug		mm^2	50 ... 120		70 ... 240			
	solid or stranded		AWG	1/0 ... 250 MCM		2/0 ... 500 MCM			
	Terminal bar (max. with)		mm	20 x 3		25 x 3			
	Terminal screw			M8 x 25		M10 x 30			
	Tightening torque		Nm	10 ... 14		14 ... 24			
Degrees of Protection				IP00					
Short circuit protection without overload relay	Coordination type 2		A	225	315	315	355	450	460
Auxiliary switch block pre-mounted in side			1NO+1NC	√	√	√	√	√	√
			2NO+2NC	√	√	√	√	√	√
			4NO+4NC	√	√	√	√	√	√
Auxiliary switch block in addition - Top mounted			NO/NC	x					
Auxiliary switch block	Rated insulation voltage U_i		V	690					
	Rated impulse withstand voltage U_{imp}		kV	6					
	Rated current capacity			AC-15: 360VA; DC-13 33W					
	Conventional thermal current I_{th}		A	10					
Dimensions (AC - Operation) H / B; Width			mm	≤120 mm	≤ 135mm		≤ 145mm		≤ 160mm
Mounting				Screw mounted, Vertical +/- 22.5°C					
Main circuit Terminal screw type				Busbar - Hex head					
Certificates & Standards				CE, RoHS					

Technical data

Contactor	Type			CES 6	CES 9	CES 12	CES 18	CES 25	CES 32
Load ratings of the contactors with AC									
Thermal load	10 s current[1]		A	90	90	96	96	176	176
Power loss per conducting path	at I_e/AC-3		W	0.6	0.6	1.1	1.1	1.6	1.6
AC-1 duty, switching resistive load[2]									
Rated operational currents I_e	at 40 °C to	690 V	A	25	25	25	25	38	38
	at 55 °C to	690 V	A	20	20	20	20	32	32
Minimum conductor cross-section at Ie load	at 40 °C		mm^2	4	4	4	4	10	10
	at 55 °C		mm^2	4	4	4	4	10	10
AC-2 and AC-3 duty									
Rated operational currents I_e	up to	400 V	A	6	9	12	18	25	32
		500 V	A	6	9	12	16	17	32
		690 V	A	6	6.6	8.8	12.2	12.2	27
Max. rating of slipring or squirrel-cage motors at 50 and 60 Hz	at	230 V	kW	1.5	2.4	3.3	4	5.5	8.5
		400 V	kW	2.2	4	5.5	7.5	11	15
		500 V	kW	3	5.5	7.5	9	11	21
		690 V	kW	4	5.5	7.5	11	11	23
AC-4 duty (contact endurance approx. 200.000 operating cycles Ia = 6 x I_e)									
Rated operational currents I_e	up to	400 V	A	3.1	3.3	4.3	7.7	8.5	15.6
		690 V	A	3.1	3.3	4.3	7.7	8.5	15.6
Ratings of squirrel-cage motors at 50 and 60 Hz	at	230 V	kW	0.8	0.85	1.15	2	2.2	4.3
Max. permitted rated operational current Ie/AC-4 =^ I_e/AC-3 up to 500 V with endurance and operating frequency		400 V	kW	1.15	1.4	1.9	3.5	4	7.5
		690 V	kW	1.9	2.4	3.3	6	6.6	13

Contactor	Type			CES 40	CES 45	CES 65	CES 75	CES 85	CES 105
Load ratings of the contactors with AC									
Thermal load	10 s current1)		A	400	400	360	500	800	800
Power loss per conducting path	at Ie/AC-3		W	2.0	2.5	3.5	6	7.5	10
AC-1 duty, switching resistive load[2]									
Rated operational currents I_e	at 40 °C to	690 V	A	65	65	90	100	105	105
	at 55 °C to	690 V	A	55	55	80	90	100	105
Minimum conductor cross-section at Ie load	at 40 °C		mm^2	16	16	35	35	50	50
	at 55 °C		mm^2	16	16	25	35	35	35
AC-2 and AC-3 duty									
Rated operational currents I_e	up to	400 V	A	40	45	65	75	85	105
		500 V	A	32	38	40	63	75	85
		690 V	A	27	27	40	63	75	75
		1000 V	A	--	--	6	6	30	30
Max. rating of slipring or squirrel-cage motors at 50 and 60 Hz	at	230 V	kW	11	15	18.5	22	26	37
		400 V	kW	18.5	22	30	37	45	55
		500 V	kW	21	25	30	41	50	59
		690 V	kW	23	23	39	56	67	67
		1000 V	A	--	--	--	--	39	39
AC-4 duty (contact endurance approx. 200.000 operating cycles Ia = 6 x I_e)									
Rated operational currents I_e	up to	400 V	A	18.5	24	28	34	42	54
		690 V	A	18.5	24	28	34	42	54
		1000 V	A	--	--	--	23	23	34
Ratings of squirrel-cage motors at 50 and 60 Hz	at	230 V	kW	5.2	7.3	8.5	10.3	12	16.3
Max. permitted rated operational current I_e/AC-4 =^ I_e/AC-3 up to 500 V with endurance and operating frequency		400 V	kW	9	12.6	14.7	17.9	22	28.4
		690 V	kW	15.5	20.8	24.3	29.5	38	49
		1000 V	kW	--	--	--	30	30	45

1) Acc. to IEC 60947-4-1.

2) Industrial furnaces and electric heaters with resistance heating for example (higher current during heating-up allowed for).

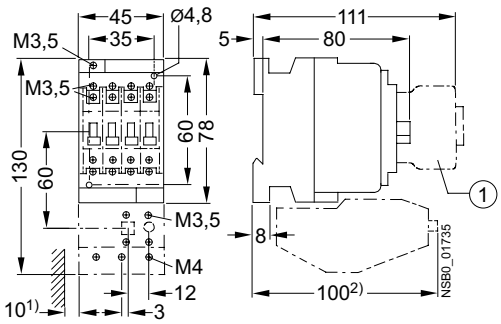
Technical data

Contactor	Type			CES 140	CES 170	CES 205	CES 250	CES 300	CES 400
Load ratings of the contactors with AC									
Thermal load	10 s current[1]		A	1140	1360	1640	2500	2500	3400
Power loss per conducting path	at I_e/AC-3		W	14	14	20	16	23	40
AC-1 duty, switching resistive load[2]									
Rated operational currents I_e	at 40 °C to	690 V	A	170	230	240	325	325	425
	at 55 °C to	690 V	A	160	210	220	300	300	400
Minimum conductor cross-section at Ie load	at 40 °C		mm^2	70	120	120	185	185	2x150
	at 55 °C		mm^2	70	95	120	185	185	240
AC-2 and AC-3 duty									
Rated operational currents I_e	up to	500 V	A	140	170	205	250	300	400
		690 V	A	110	170	170	250	250	400
		1000 V	A	42	68	68	95	95	180
Max. rating of slipring or squirrel-cage motors at 50 and 60 Hz	at	230 V	kW	45	56	66	82	96	131
		400 V	kW	75	95	115	142	168	232
		500 V	kW	98	118	145	178	210	289
		690 V	kW	105	163	163	245	245	397
		1000 V	A	65	90	90	132	132	250
AC-4 duty (contact endurance approx. 200.000 operating cycles Ia = 6 x I_e)									
Rated operational currents I_e	up to	690 V	A	68	75	96	110	125	150
		1000 V	A	34	42	42	57	57	80
Ratings of squirrel-cage motors at 50 and 60 Hz	at	230 V	kW	21	23	30	35	40	49
Max. permitted rated operational current I_e/AC-4 =^ I_e/AC-3 up to 500 V with endurance and operating frequency		400 V	kW	36	40	52	61	69	85
		690 V	kW	63	69	90	105	119	147
		1000 V	kW	45	55	55	75	75	110

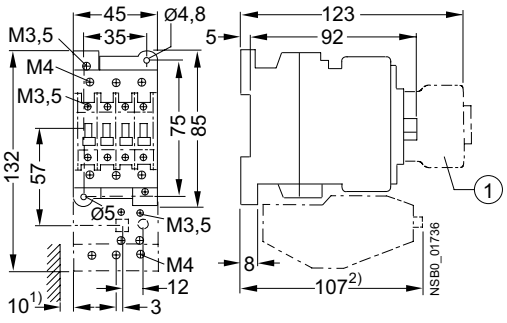
Dimensional drawings

AC operation

CES 6 ... CES 18



CES 25 ... CES 32



1 Auxiliary switch block

1) Minimum clearance from the earthed parts.

2) Dimension for the square OFF-button (stroke 3 mm). Dimension for the round RESET-button (stroke 2.5 mm) less then 2.5 mm.

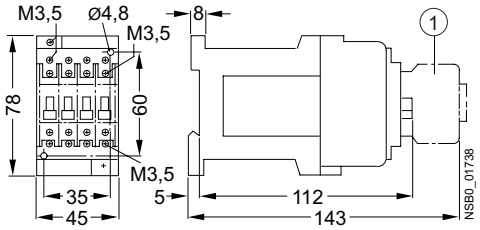
1 Auxiliary switch block

1) Minimum clearance from the earthed parts.

2) Dimension for the square OFF-button (stroke 3 mm). Dimension for the round RESET-button (stroke 2.5 mm) less then 2.5 mm.

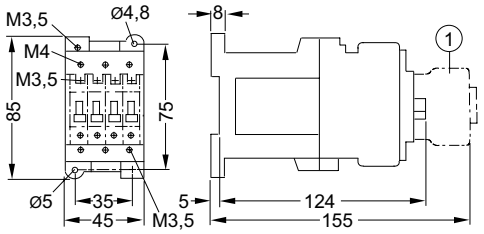
DC operation

CES 6 ... CES 18



1 Auxiliary switch block

CES 25 ... CES 32

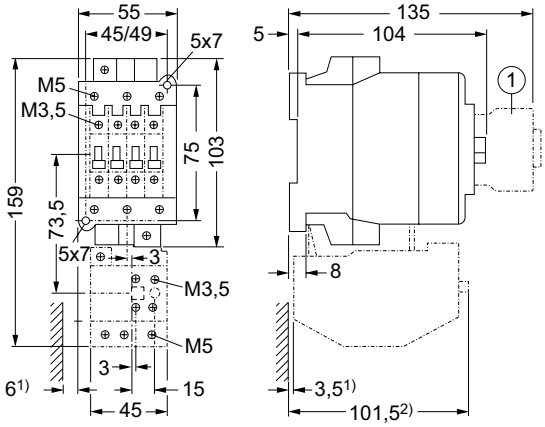


1 Auxiliary switch block

• Clearance when mounted in rows:

When CES 6 to CES 32 AC operated contactors are mounted in rows, the minimum gap between them must be 5 mm when the coil voltage 1.1 x Us the ambient temperature ≥ 45 °C and the load factor of all relays is 100 %.

CES 40 ... CES 45

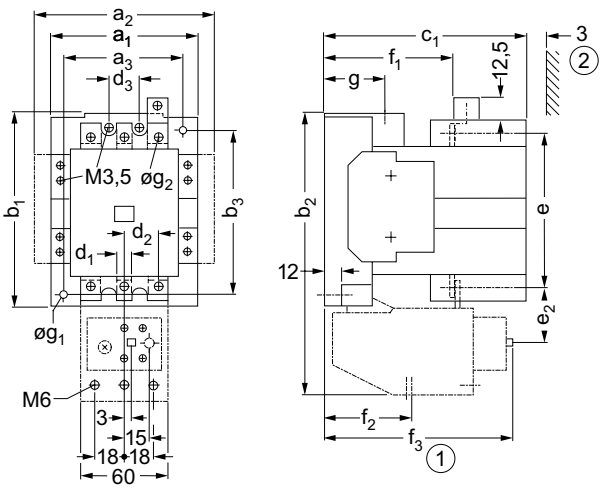


1 Auxiliary switch block

1) Minimum clearance from the earthed parts.

2) Dimension for the square OFF-button (stroke 3 mm). Dimension for the round RESET-button (stroke 2.5 mm) less then 2.5 mm.

CES 65 ... CES 140

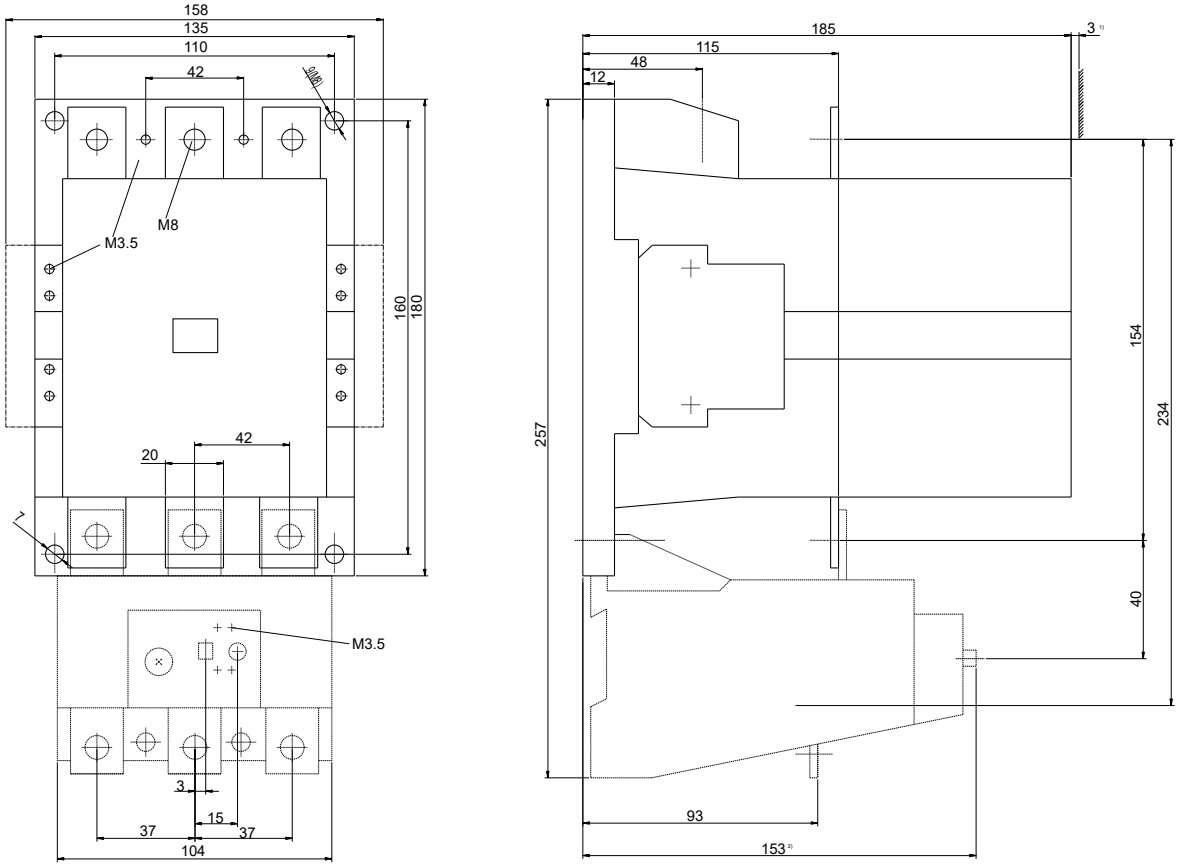


1 Dimension for the square OFF-button (stroke 3 mm) Dimension for the round RESET-button (stroke 2.5 mm) less then 2.5 mm.

2 Minimum clearance from insulated components 3 mm Minimum clearance from earthed components 10 mm

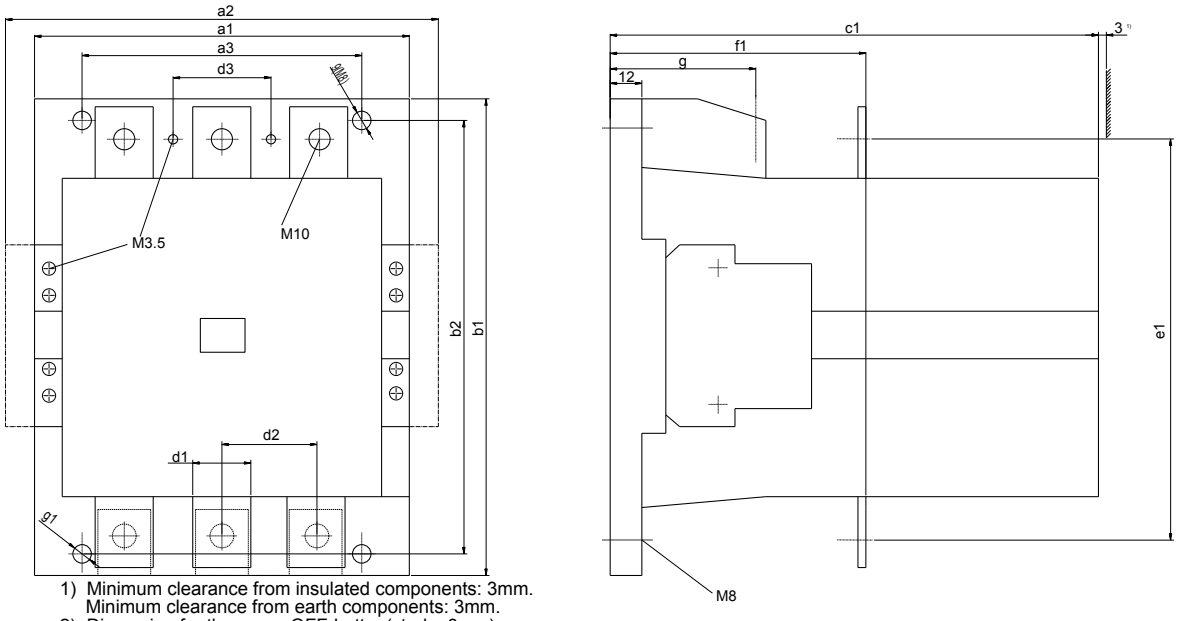
	a1	a2	a3	b1	b2	b3	c1	d1	d2	d3	e	e2	f1	f2	f3	g1	g2
CES 65 CES 75	90	113	70	117	175	100	123	8	26.5	25	94	80	63	122	28	4.8	6.1 (M6)
CES 85	100	123	80	133	194	110	140	8	26.5	25	107	89	63	122	39	5.5	6.1 (M6)
CES 105	100	123	80	133	194	110	140	10.5	26.5	25	116	89	63	122	39	5.5	6.1 (M6)
CES 140	120	143	100	150	232	130	150	20	42	37	139	40.5	93	80	146	6.3	9 (M)

CES 170 ... CES 205



1) Minimum clearance from insulated components: 3mm.
   Minimum clearance from earth components: 3mm.
2) Dimension for the quqre OFF-button(stroke 3mm).
   Dimension for the round RESET-button(Stroke 2.5mm) less 2.5mm.

CES 250 ... CES 400



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   Dimension for the round RESET-button(Stroke 2.5mm) less 2.5mm.

	a1	a2	a3	b1	b2	c1	d1	d2	d3	(c1)1	e1	f1	g	g1
CES 250 - CES 300	145	168	120	200	180	198	25	48	48	198	168	132	58	9
CES 400	160	183	130	200	180	222	25	48	48	222	178	150	65	9

	AC operation for 0.8…1.1U_s		DC operation for 0.85…1.1U_s		Arcing time
	opening delay	closing delay	opening delay	closing delay	
CES 6	5 … 25	8 … 35	10 … 25	20 … 170	10
CES 9	5 … 25	8 … 35	10 … 25	20 … 170	10
CES 12	5 … 25	8 … 35	10 … 25	20 … 170	10
CES 18	5 … 25	8 … 35	10 … 25	20 … 170	10
CES 25	5 … 25	10 … 35	10 … 25	35 … 180	10
CES 32	5 … 25	10 … 35	10 … 25	35 … 180	10
CES 40	5 … 25	13 … 57	13 … 17	54 … 182	10
CES 45	5 … 25	13 … 57	13 … 17	54 … 182	10
CES 65	5 … 25	15 … 40	100 … 120	15 … 88	10 … 15
CES 75	5 … 25	15 … 40	100 … 120	15 … 88	10 … 15
CES 85	5 … 30	20 … 50	90 … 140	20 … 90	10 … 15
CES 105	5 … 30	20 … 50	90 … 140	20 … 90	10 … 15
CES 140	8 … 30	20 … 50	-	-	10 … 15
CES 170	8 … 30	20 … 50	-	-	10 … 15
CES 205	8 … 30	20 … 50	-	-	10 … 15
CES 250	8 … 30	20 … 50	-	-	10 … 15
CES 300	8 … 30	20 … 50	-	-	10 … 15
CES 400	8 … 20	17 … 65	-	-	10 … 15

Accessories

Auxiliary contact block - front mounted; 5,6A(230V, AC-15/AC-14), 3,8A(400V, AC-15/AC-14)

Type	Code No.	Description	For use with	Wiring diagram	g	
CES-BCF 10	004646574	1 NO	CES 6…CES 45		20	10
CES-BCF 01	004646575	1 NC	CES 6…CES 45		20	10

Up to max. 4 contacts

CES-BCF

Auxiliary contact block - lateral; 5,6A(230V, AC-15/AC-14), 3,8A(400V, AC-15/AC-14)

Type	Code No.	Description	For use with	Wiring diagram	g	
CES-BCSU 11	004646576	1 NO + 1 NC	CES65…CES 400		52	2
CES-BCSS 11	004646577	1 NO + 1 NC	CES65…CES 400		42	2

Up to max. 4 contacts, 2 per each side
BCSU - upgrade contact with screws
BCSS - spare part only, no mounting screws
Possible to order only multiples of 2pcs (2, 4, 6, 8…) due to the default packaging system

CES-BCSU 11

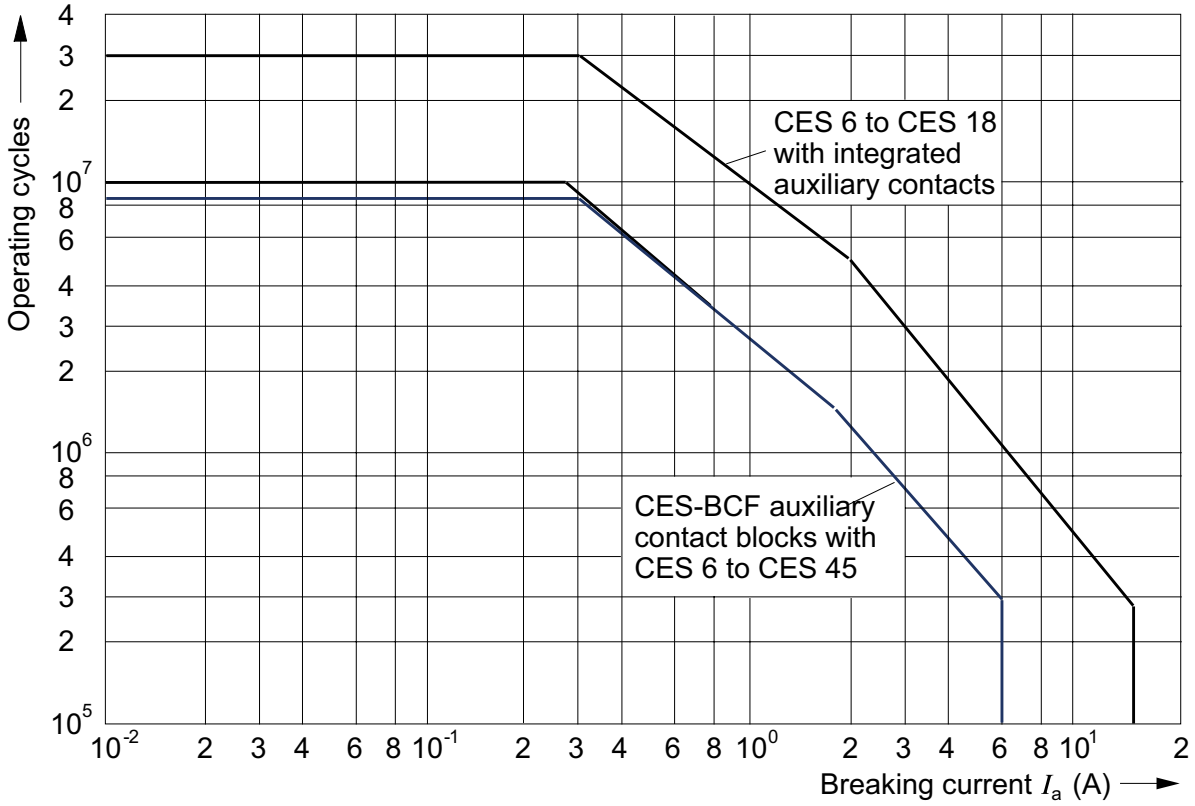
CES-BCSS 11

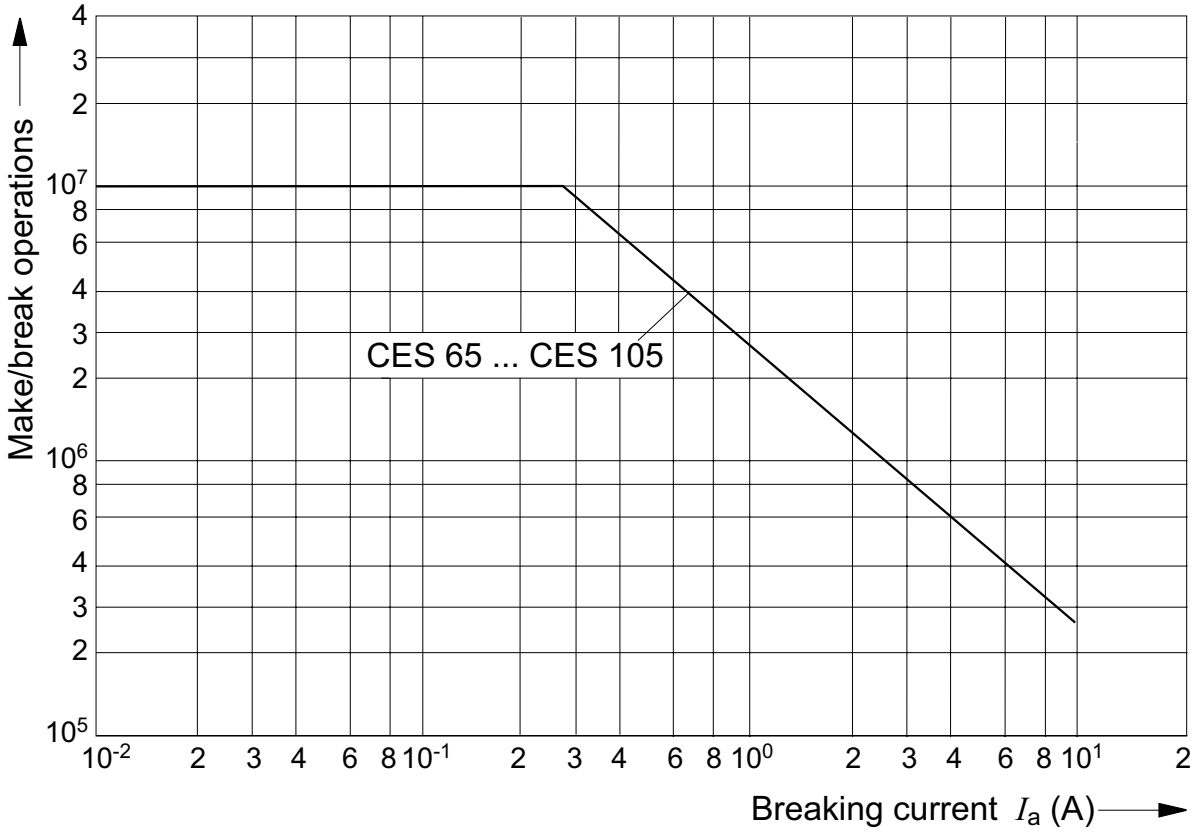
Auxiliary contacts for CES contactors Technical Data

Type			CES 6 ... CES 32[1]	CES 6 ... CES 18[2]	CES 40, CES 45[1]	CES 65 ... CES 400
Rated insulation voltage U_i (pollution degree 3)		V	690	690	690	1000
Conventional free-air thermal current I_{th} = rated operational current Ie		A	10	10	10	10
AC duty Rated operational current I_e / AC-15/AC-14 at rated operational voltage U_e	24 V	A	6	10	10	10
	110 V	A	6	10	10	10
	125 V	A	6	10	10	10
	220 V	A	6	10	6	6
	230 V	A	5,6	9,6	5,6	5,6
	380 V	A	4	6	4	4
	400 V	A	3,8	5,5	3,6	3,6
	500 V	A	2,5	4	2,5	2,5
	660 V	A	2	2	2,5	2,5
	690 V	A	1,8	1,8	2,3	2,3
DC duty Rated operational current I_e/DC-12 at rated operational voltage U_e	24 V	A	10	10	--	--
	48 V	A	10	10	--	--
	110 V	A	5,5	2,1	--	--
	125 V	A	--	--	--	--
	220 V	A	1,2	0,8	--	--
	440 V	A	0,28	0,6	--	--
	600 V	A	0,14	0,6	--	--
Rated operational current I_e/DC-13 at rated operational voltage U_e	24 V	A	10	10	--	--
	48 V	A	4,6	5	--	--
	110 V	A	0,8	0,9	--	--
	125 V	A	--	--	--	--
	220 V	A	0,3	0,45	--	--
	440 V	A	0,11	0,25	--	--
	600 V	A	0,08	0,2	--	--

1) Mountable auxiliary contact blocks.
2) Integrated auxiliary contacts.

Contact endurance of the auxiliary contacts





Mechanical interlock for mechanical locking of contactors

Type	Code No.	For use with	g	
CES-MIL 6-45	004646578	CES6…CES45	20	1
CES-MIL 65-300	004646579	CES65…CES300	130	1
CES-MIL 400	004646580	CES400	130	1

CES-MIL 6-45

CES-MIL 65-300

Only the same mechanical size contactors can be connected with mechanical interlock!

Contactor	Mechanical interlock offset setting Q1, Q2	Y (mm)
CES-MIL 65-300	CES 65...75	0
	CES 85...105	8
	CES 140	8
	CES 170...205	16
	CES 250...300	36
CES -MIL 400	CES400	-

Y (mm) mechanical interlock offset setting

Surge suppressor

Type	Code No.	Coil voltage	For use with	g	
CES-DIC3	004646581	24 - 250 VDC	CES6…CES32	15	1
CES-VR4	004646582	24-48 VAC	CES6…CES45	15	1
CES-VR5	004646583	127-240 VAC	CES6…CES45	15	1
CES-VR6	004646584	240-400 VAC	CES6…CES45	23	1
CES-VR7	004646585	24-48 VAC	CES65…CES400	14	1
CES-VR8	004646586	127-240 VAC	CES65…CES400	15	1

Already integrated in CES140…CES400

CES-DIC3

Overload relay

Thermal overload relays

Type	Code No.	Current setting range [A]	For use with	g	
CES-RT0-0,4	004646587	0,25 - 0,4	CES6…CES18	140	1
CES-RT0-0,63	004646588	0,4 - 0,63	CES6…CES18	140	1
CES-RT0-1	004646589	0,63 - 1	CES6…CES18	140	1
CES-RT0-1,6	004646590	1 - 1,6	CES6…CES18	140	1
CES-RT0-2,5	004646591	1,6 - 2,5	CES6…CES18	140	1
CES-RT0-4.0	004646592	2,5 - 4	CES6…CES18	140	1
CES-RT0-6,3	004646593	4 - 6,3	CES6…CES18	140	1
CES-RT0-10	004646594	6,3 - 10	CES6…CES18	140	1
CES-RT0-12,5	004646595	8 - 12,5	CES6…CES18	140	1
CES-RT0-18	004646596	12,5 - 18	CES6…CES18	140	1
CES-RT1-16	004646597	10 - 16	CES25…CES32	200	1
CES-RT1-25	004646598	16 - 25	CES25…CES32	200	1
CES-RT1-32	004646599	25 - 32	CES25…CES32	200	1
CES-RT2-36	004646600	25 - 36	CES40…CES45	200	1
CES-RT2-45	004646601	36 - 45	CES40…CES45	200	1
CES-RT3-57	004646602	40 - 57	CES65…CES105	400	1
CES-RT3-70	004646603	57 - 70	CES65…CES105	400	1
CES-RT3-88	004646604	70 - 88	CES65…CES105	400	1
CES-RT3-105	004646605	88 - 105	CES65…CES105	400	1
CES-RT4-120	004646606	90 - 120	CES140…CES400	700	1
CES-RT4-135	004646607	110 - 135	CES140…CES400	700	1
CES-RT4-150	004646608	120 - 150	CES140…CES400	700	1
CES-RT4-160	004646609	135 - 160	CES140…CES400	700	1
CES-RT4-180	004646610	150 - 180	CES140…CES400	2.500	1
CES-RT4-250	004646611	160 - 250	CES140…CES400	2.500	1
CES-RT4-400	004646612	250 - 400	CES140…CES400	2.500	1

CES-RT0

CES-RT1

CES-RT2

CES-RT3

CES-RT4 120, 135, 150

CES-RT4 160, 180

CES-RT4 250, 400

Overload relay mounting kits for rails TH35

Type	Code No.	For use with	g	
CES-AD-RT0	004646613	CES-RT0	50	1
CES-AD-RT1	004646614	CES-RT1	50	1
CES-AD-RT2	004646615	CES-RT2	132	1
CES-AD-RT3	004646616	CES-RT3	164	1

CES-AD-RT

Technical data according to IEC 60947-4-1

Type		CES-RT0	CES-RT1	CES-RT2	CES-RT3
General data					
Trip class		CLASS 10A (2s < tA ≤ 10s at 7.2 x Ie from cold state)			
Phase failure sensitivity by differential phase shift		✓	✓	✓	✓
Changeover to automatic reset		✓	✓	✓	✓
RESET button with trip-free feature		✓	✓	✓	✓
Temperature compensation		✓	✓	✓	✓
Switch position indicator		✓	✓	✓	✓
Test button actuates the NO and NC contacts		✓	✓	✓	✓
Terminal for contactor coil		✓	✓	✓	✗ [1)]
Permissible ambient temperature	°C	-25 ... +55			
Degree of protection acc. to IEC 60947-1		IP00/open or IP20			
Shock resistance	g/ms	8/10			
Main circuit					
Rated insulation voltage Ui (Pollution degree 3)	AC/DC V	690			
Rated impulse withstand voltage Uimp	kV	6			
Type of current, frequency range		DC; AC ≤ 400 Hz			
Conductor cross-sections					
Terminal screw		M4	M5	M4	M5
solid or stranded	mm^2	2.5 ... 6	1.5 ... 25	1.5 ... 25	2.5 ... 35
finely stranded with end sleeve	mm^2	1.5 ... 4	1 ... 16	1 ... 16	1.5 ... 25
Flat bars	mm	--	--	--	--
Tightening torque	Nm	1 ... 1.5	2.5 ... 3	2.5 ... 3	2.5 ... 3
	lb.in	9 ... 13	22 ... 26.5	22 ... 26.5	22 ... 26.5
Power loss per conduction path (max.)					
at lowest value	W (VA)	0.9	1.2	1.2	2.6
at highest value of the setting range	W (VA)	2.25	3	3	4
Auxiliary circuit					
Auxiliary contacts		1 NO + 1 NC			
Conductor cross-sections					
Terminal screw		M3.5			
solid or stranded	mm^2	2 x (0.5 ... 1)/2 x (1 ... 2.5)			
finely stranded with end sleeve	mm^2	2 x (0.5 ... 1)/2 x (0.75 ... 2.5)			
Tightening torque	Nm	0.8 ... 1.4			
	lb.in	7 ... 12			
Rated insulation voltage Ui (pollution degree 3)		Unequal potential (NO + NC)	Equal potential (NO + NC connected as changeover contact)	Unequal potential (NO + NC)	Equal potential (NO + NC connected as changeover contact)
	V	400	690	400	690
Rated impulse withstand voltage Uimp	kV	6			
Switching capacity		AC-15:			
Rated operational voltage Ue	V	24; 60; 125; 230; 400; 500; 690;			
Rated operational current Ie	A	2; 1.5; 1.25; 1.15; 1.1; 1; 0.8			
Conventional thermal current Ith	A	6			
Short-circuit protection		Fuses, utilization category gG 6A or miniature circuit-breaker with C-characteristics 3A			

Technical data according to IEC 60947-4-1

Main circuit			CES-RT4							
Current seting [Suggested]		A	90-120	110-135	120-150	135-160	150-180	170-205	160-250	250-400
Tripping class		Class	10A							
Protection functions	Tripping due to overload		✓							
	Tripping due to phase unbalance		✓							
	Tripping due to phase failure		✓							
	Phase failure sensitivity by differential phase shift		✓ (according to IEC60947-4-1)							
	Temperature compensation		✓							
Functions	Test button		✓							
	Reset button		Manual and Automatic RESET							
	Switch position indicator		✓							
	Terminal A2 for contactor coil connection		×							
Functions	Operation	°C	-25 ... +55							
	Storage/transport	°C	-25 ... +70							
	Temperature compensation	°C	≤ 70							
Altitude without derating		m	≤2000							
Rated insulation voltage U_i (polution degree 3)		V	1000							
Rated impulse withstand voltage U_{imp}		kV	6							
Type of current, frequency range			DC, AC ≤ 400Hz							
Degree of protection			IP00							
Touch protection			Finger-safe (with accessories)							
Resistance to extreme climates - air humidity		%	< 90%, 25° C; < 50%, 40° C							
Mounting			stand-alone mounting (the terminal busbar should fit contactor terminal)							
Terminals	Main current terminals		Busbar - Hex head							
	Auxiliary contact terminal		Remain as existing							
Max. wire diameter size	Single wire	mm^2	50 ... 120						≤200 A: 185, >200 :240	
	Stranded wire	mm^2								
	finely stranded with end sleeve	mm^2	25 ... 95						----	
	Terminal size	[mm x mm]	20 x 3						20 x 3 / 2 x 30 x 5	
Auxiliary circuit										
Number of NO contacts			1	1	1	1	1	1	1	1
Number of NC contacts			1	1	1	1	1	1	1	1
Rated insulation voltage U_i (polution degree 3)		V	≥400							
Rated impulse withstand voltage U_{imp}		kV	6							
Conventional thermal current I_{th}		A	6							
Rated operational current I_e AC-15		A	Ue=220V, Ie=1.15A;Ue=380V, Ie=1.1A							
Dimensions H / B / T ; Width		mm			≤ 104mm		≤ 104mm		≤ 150mm	
Certificates & Standards			CE, RoHS							

Short circuit protection with fuses for motor feeders with short-circuit currents up to 50 kA at 690V, 50/60 Hz[1)]
Permissible short-circuit fuses for motor starters consisting of overload relay and contactor, contactor assembly

Technical data according to IEC 60947-4-1

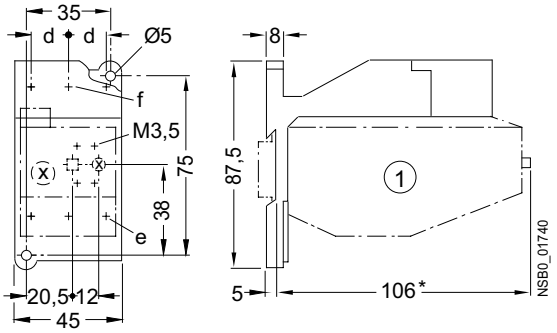
Setting range	Fuse links				
	Fuses, utilization category gG Type of coordination[2)]		Fuses, utilization category aM Type of coordination[2)]	Fuses acc.to British Standards BS 88 Type T Type of coordination[2)]	
	"1"	"2"	"2"	"1"	"2"
A	A	A	A	A	A
CES-RT0					
0.1 ... 0.16	35	0.5 slow[3)]	--	25	--
0.16 ... 0.25	35	1[3)]	--	25	
0.25 ... 0.4	35	1.6[3)]	--	25	
0.4 ... 0.63	35	2	--	25	2
0.63 ... 1	35	4	--	25	4
1 ... 1.6	35	6	--	25	6
1.6 ... 2.5	35	6	--	25	10
2.5 ... 4	35	10	--	25	10
4 ... 6.3	35	16	--	25	16
6.3 ... 10	35	25	--	25	20
8 ... 12.5	35	25	--	25	20
12.5 ... 18	35	25	--	25	25
CES-RT1					
6.3 ... 10	63	25		63	25
10 ... 16	63	35	20	63	35
16 ... 25	63	50	40	63	50
25 ... 32	63	50	50	63	50

Setting range	Fuse links				
	Fuses, utilization category gG Type of coordination[2)]		Fuses, utilization category aM Type of coordination[2)]	Fuses acc.to British Standards BS 88 Type T Type of coordination[2)]	
	"1"	"2"	"2"	"1"	"2"
A	A	A	A	A	A
CES-RT2					
16 ... 25	80	50		100	10
25 ... 36	80	80		100	10
36... 45	80	80	--	100	16
CES-RT3					
40 ... 57	160	125	63	160	100
57 ... 70	160	125	63	160	100
70 ... 88	250	160	100	160	125
88 ... 105	250	200	125	160	200
CES-RT4					
90 ... 120	315	224	125	315	224
110 ... 135	315	224	160	315	224
120 ... 150	315	224	160	315	224
135 ... 160	355	224	160	355	224
150 ... 180	355	224	200	355	224
160 ... 250	500	400	250	500	400
250 ... 400	800	500	400	800	500

1) Voltage tolerance +5 %.
2) Coordination of short-circuit equipment according to IEC 60947-4-1:
Type of coordination "1":
The contactor or starter must not endanger persons or the installation in the event of a short-circuit.
They do not need to be suitable for further operation without repair and the renewal of parts.
Type of coordination "2":
The contactor or starter must not endanger persons or the installation and must be suitable for further use.
There is a danger of contact welding.
3) D-fuse links U_N = 500 V

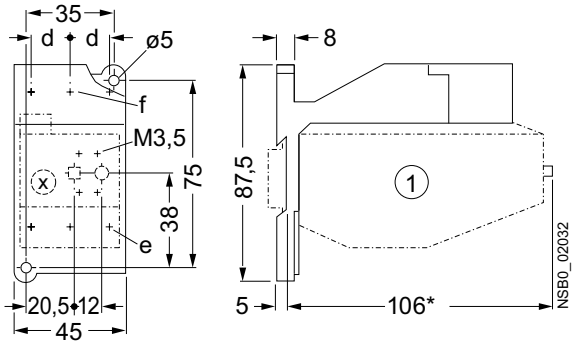
Dimensional drawings

CES-RT0, CES-RT1, with stand-alone adapter



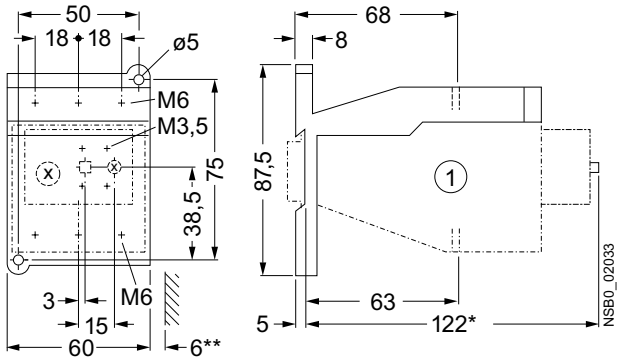
	d	e	f
CES-RT0 & CES-AD-RT0	10	M4	M3.5
CES-RT1 & CES-AD-RT1	14.3	M5	M4

CES-RT2 with CES-AD-RT2 stand-alone adapter

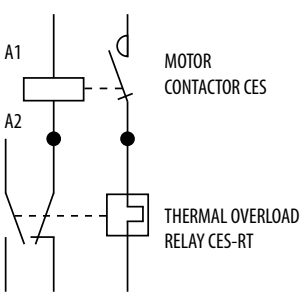


	d	e	f
CES-RT2 & CES-AD-RT2	18.5	M5	M5

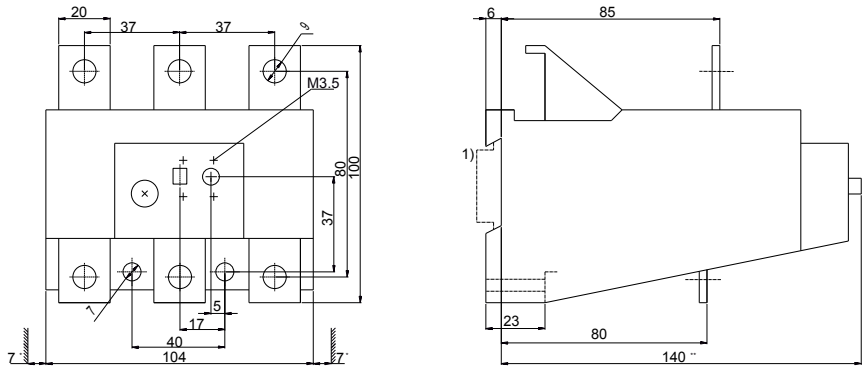
CES-RT3 with CES-AD-RT3 stand-alone adapter



APPLICATION NOTE:

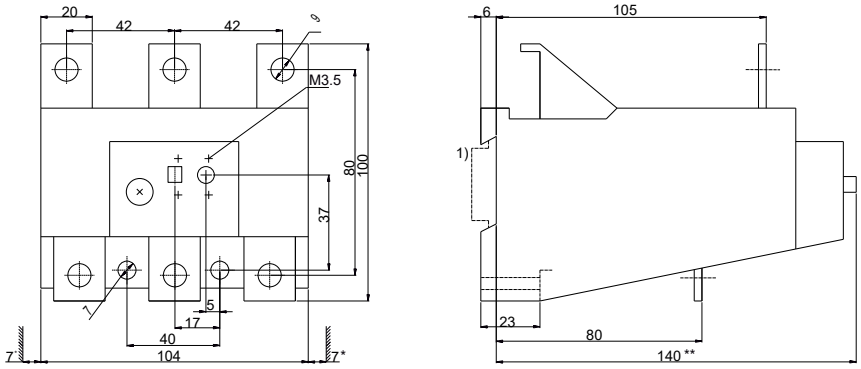


CES-RT4 120, 135, 150



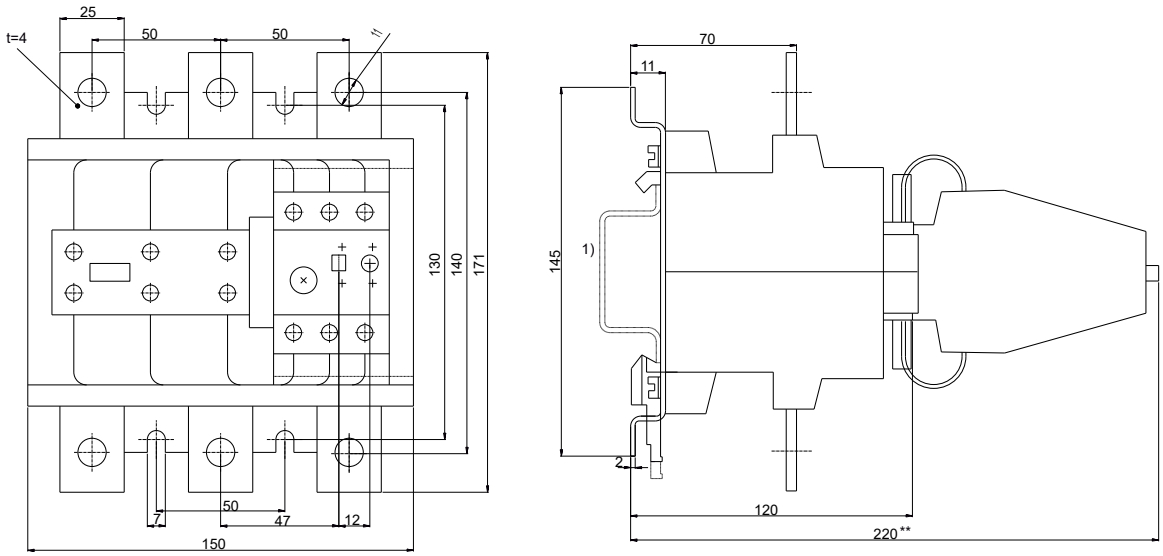
* Dimension for the ground engaging component
** Dimension for the suqre OFF-button(storke 3mm)
Dimension for the round RESET-button(Stroke 2.5mm) less 2.5mm
1) For 35mm standard (DIN) mounting rail

CES-RT4 160, 180



* Dimension for the ground engaging component
** Dimension for the suqre OFF-button(storke 3mm)
Dimension for the round RESET-button(Stroke 2.5mm) less 2.5mm
1) For 35mm standard (DIN) mounting rail

CES-RT4 250, 400



** Dimension for the square OFF-button(Stroke 3mm)
Dimension for the round RESET-button(Stroke 2.5mm) less 2.5mm
1) For 35mm standard (DIN) mounting rail

Motor contactor CEM

Application

Contactors are used to remotely control and protect (in combination with overload relays) electric motors and other electric loads with nominal power up to 300kW (at 400V AC3 duty).

Advantages

- Mounting on DIN rail and mounting plates
- High technical performance
- Low power loss (current heat loss)
- Protection against direct contact from front (IEC 536) IP20
- Wide range of accessories
- Surge suppressor (as option)
- Control voltage 24VAC, 48VAC, 110VAC, 230VAC, 400VAC

IE3 CONFORM

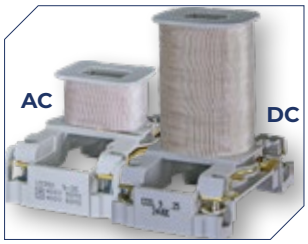
Ordering:

CEM9.01-230V-50/60Hz

I(AC3)[A] — Coil voltage

Nr. of NO — Nr. of NC - Number and type of auxiliary contacts

- Possible to exchange coils with different coil voltages.



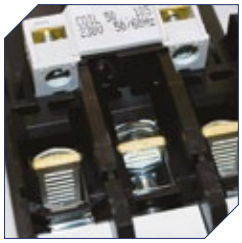
- Additionaly EMC filter can be connected close to coil to supress RF signals and surges.

- Lateral (side mounting) of auxiliary contacts.

- Mechanical interlock can lock two different size contactors
  New: mechanical interlock with integrated aux. contacts BLIME 9-105 02.

- Front mounted auxiliary contacts

- CEM 32 ... CEM105 Contactor terminals allow simultaneous connection not only single-stranded and stranded conductors, but also conductors of different sections.

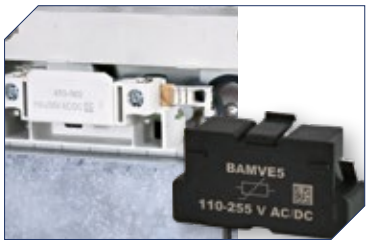


- Mounting on DIN rail or directly on panel.

- Wide range of bimetal relays for overload protection. Possible to install directly on contactor or on DIN rail by using additional adapter BF.

ETICON / Miniature and motor contactors, auxiliary contactors and overload relays

- Built in Varistor (EMC filter).



- Replacement control coils and electronics available.

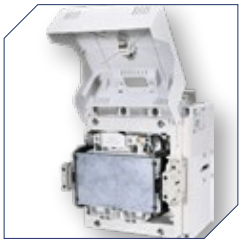
- Additional protection covers against touch.

- Possibility to install additional 2nd aux. contact block on each side of contactor.

- Additional TBE terminals allow simultaneous connection not only single-stranded and stranded conductors, but also conductors of different sections.

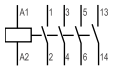
- Possible to install mechanical interlock between 2 contactors.

- Easy access for maintenance and visual control of damages.



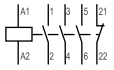
- Overload bimetal relays for overload protection are available.

Motor contactor CEM9.10; 25A(AC1); 9A; 4kW(AC3)*

Type	Code No.	Wiring diagram	g	
CEM9.10-24V-50/60Hz	004642120		295	1
CEM9.10-48V-50/60Hz	004642121		295	1
CEM9.10-110V-50/60Hz	004642122		295	1
CEM9.10-230V-50/60Hz	004642123		295	1
CEM9.10-400V-50/60Hz	004642124		295	1
CEM9.10-24V DC	004642220		510	1
CEM9.10-220V DC	004642221		510	1

* Auxiliary contact 1NO integrated

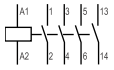
Motor contactor CEM9.01; 25A(AC1); 9A; 4kW(AC3)*

Type	Code No.	Wiring diagram	g	
CEM9.01-24V-50/60Hz	004642110		295	1
CEM9.01-48V-50/60Hz	004642111		295	1
CEM9.01-110V-50/60Hz	004642112		295	1
CEM9.01-230V-50/60Hz	004642113		295	1
CEM9.01-400V-50/60Hz	004642114		295	1
CEM9.01-24V DC	004642210		510	1
CEM9.01-220V DC	004642211		510	1

* Auxiliary contact 1NC integrated

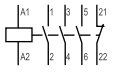
For auxiliary contact blocks, see page 355

Motor contactor CEM12.10; 25A(AC1); 12A; 5.5kW(AC3)*

Type	Code No.	Wiring diagram	g	
CEM12.10-24V-50/60Hz	004643120		295	1
CEM12.10-48V-50/60Hz	004643121		295	1
CEM12.10-110V-50/60Hz	004643122		295	1
CEM12.10-230V-50/60Hz	004643123		295	1
CEM12.10-400V-50/60Hz	004643124		295	1
CEM12.10-24V DC	004643220		510	1
CEM12.10-220V DC	004643221		510	1

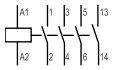
* Auxiliary contact 1NO integrated

Motor contactor CEM12.01; 25A(AC1); 12A; 5.5kW(AC3)*

Type	Code No.	Wiring diagram	g	
CEM12.01-24V-50/60Hz	004643110		295	1
CEM12.01-48V-50/60Hz	004643111		295	1
CEM12.01-110V-50/60Hz	004643112		295	1
CEM12.01-230V-50/60Hz	004643113		295	1
CEM12.01-400V-50/60Hz	004643114		295	1
CEM12.01-24V DC	004643210		510	1
CEM12.01-220V DC	004643211		510	1

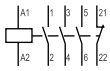
* Auxiliary contact 1NC integrated

Motor contactor CEM18.10; 32A(AC1); 18A; 7.5kW(AC3)*

Type	Code No.	Wiring diagram	g	
CEM18.10-24V-50/60Hz	004644120		295	1
CEM18.10-48V-50/60Hz	004644121		295	1
CEM18.10-110V-50/60Hz	004644122		295	1
CEM18.10-230V-50/60Hz	004644123		295	1
CEM18.10-400V-50/60Hz	004644124		295	1
CEM18.10-24V DC	004644220		510	1
CEM18.10-220V DC	004644221		510	1

* Auxiliary contact 1NO integrated

Motor contactor CEM18.01; 32A(AC1); 18A; 7.5kW(AC3)*

Type	Code No.	Wiring diagram	g	
CEM18.01-24V-50/60Hz	004644110		295	1
CEM18.01-48V-50/60Hz	004644111		295	1
CEM18.01-110V-50/60Hz	004644112		295	1
CEM18.01-230V-50/60Hz	004644113		295	1
CEM18.01-400V-50/60Hz	004644114		295	1
CEM18.01-24V DC	004644210		510	1
CEM18.01-220V DC	004644211		510	1

* Auxiliary contact 1NC integrated

For auxiliary contact blocks, see page 355

Motor contactor CEM25.00; 45A(AC1); 25A; 11kW(AC3)

Type	Code No.	Wiring diagram	g	
CEM25.00-24V-50/60Hz	004645100		295	1
CEM25.00-48V-50/60Hz	004645101		295	1
CEM25.00-110V-50/60Hz	004645102		295	1
CEM25.00-230V-50/60Hz	004645103		295	1
CEM25.00-400V-50/60Hz	004645104		295	1
CEM25.00-24V DC	004645200		510	1
CEM25.00-220V DC	004645201		510	1

For different configurations of auxiliary contacts up to 4 auxiliary contacts can be added to contactor and must be ordered separately.

Motor contactor CEM32.00; 60A(AC1); 32A; 15kW(AC3)

Type	Code No.	Wiring diagram	g	
CEM32.00-24V-50/60Hz	004646100		520	1
CEM32.00-48V-50/60Hz	004646101		520	1
CEM32.00-110V-50/60Hz	004646102		520	1
CEM32.00-230V-50/60Hz	004646103		520	1
CEM32.00-400V-50/60Hz	004646104		520	1
CEM32.00-24V DC**	004646200		850	1
CEM32.00-220V DC**	004646201		850	1

For different configurations of auxiliary contacts up to 4 auxiliary contacts can be added to contactor and must be ordered separately.

** 24V DC (24...28 V DC), 220V DC (208...240V DC)

Motor contactor CEM40.00; 60A(AC1); 40A; 18.5kW(AC3)

Type	Code No.	Wiring diagram	g	
CEM40.00-24V-50/60Hz	004647100		540	1
CEM40.00-48V-50/60Hz	004647101		540	1
CEM40.00-110V-50/60Hz	004647102		540	1
CEM40.00-230V-50/60Hz	004647103		540	1
CEM40.00-400V-50/60Hz	004647104		540	1
CEM40.00-24V DC**	004647200		850	1
CEM40.00-220V DC**	004647201		850	1

For different configurations of auxiliary contacts up to 4 auxiliary contacts can be added to contactor and must be ordered separately

** 24V DC (24...28 V DC), 220V DC (208...240V DC).

Motor contactor CEM50.00; 80A(AC1); 50A; 22kW(AC3)

Type	Code No.	Wiring diagram	g	
CEM50.00-24V-50/60Hz	004648100		1105	1
CEM50.00-48V-50/60Hz	004648101		1105	1
CEM50.00-110V-50/60Hz	004648102		1105	1
CEM50.00-230V-50/60Hz	004648103		1105	1
CEM50.00-400V-50/60Hz	004648104		1105	1
CEM50.00-24V DC **	004648200		1240	1
CEM50.00-220V DC **	004648201		1240	1

For different configurations of auxiliary contacts up to 6 auxiliary contacts can be added to contactor and must be ordered separately.

** 24V DC (24...28 V DC), 220V DC (208...240V DC)

Motor contactor CEM65.00; 110A(AC1); 65A; 30kW(AC3)

Type	Code No.	Wiring diagram	g	
CEM65.00-24V-50/60Hz	004649100		1120	1
CEM65.00-48V-50/60Hz	004649101		1120	1
CEM65.00-110V-50/60Hz	004649102		1120	1
CEM65.00-230V-50/60Hz	004649103		1120	1
CEM65.00-400V-50/60Hz	004649104		1120	1
CEM65.00-24V DC **	004649200		1240	1
CEM65.00-220V DC **	004649201		1240	1

For different configurations of auxiliary contacts up to 6 auxiliary contacts can be added to contactor and must be ordered separately.

** 24V DC (24...28 V DC), 220V DC (208...240V DC)

For auxiliary contact blocks, see page 355

Motor contactor CEM80.00; 110A(AC1); 80A; 37kW(AC3)

Type	Code No.	Wiring diagram	g	
CEM80.00-24V-50/60Hz	004650100		1130	1
CEM80.00-48V-50/60Hz	004650101		1130	1
CEM80.00-110V-50/60Hz	004650102		1130	1
CEM80.00-230V-50/60Hz	004650103		1130	1
CEM80.00-400V-50/60Hz	004650104		1130	1
CEM80.00-24V DC **	004650200		1240	1
CEM80.00-220V DC **	004650201		1240	1

For different configurations of auxiliary contacts up to 6 auxiliary contacts can be added to contactor and must be ordered separately.

** 24V DC (24...28 V DC), 220V DC (208...240V DC)

** Range of operating voltages is shown in technical part of catalogue

Motor contactor CEM95.00; 140A(AC1); 95A; 45kW(AC3)

Type	Code No.	Wiring diagram	g	
CEM95.00-24V-50/60Hz	004651100		1450	1
CEM95.00-48V-50/60Hz	004651101		1450	1
CEM95.00-110V-50/60Hz	004651102		1450	1
CEM95.00-230V-50/60Hz	004651103		1450	1
CEM95.00-400V-50/60Hz	004651104		1450	1
CEM95.00-24V DC **	004651200		1500	1
CEM95.00-220V DC **	004651201		1500	1

For different configurations of auxiliary contacts up to 6 auxiliary contacts can be added to contactor and must be ordered separately.
** 24V DC (24...28 V DC), 220V DC (208...240V DC)

Motor contactor CEM105.00; 140A(AC1); 105A; 55kW(AC3)

Type	Code No.	Wiring diagram	g	
CEM105.00-24V-50/60Hz	004652100		1470	1
CEM105.00-48V-50/60Hz	004652101		1470	1
CEM105.00-110V-50/60Hz	004652102		1470	1
CEM105.00-230V-50/60Hz	004652103		1470	1
CEM105.00-400V-50/60Hz	004652104		1470	1
CEM105.00-24V DC **	004652200		1500	1
CEM105.00-220V DC **	004652201		1500	1

For different configurations of auxiliary contacts up to 6 auxiliary contacts can be added to contactor and must be ordered separately.
** 24V DC (24...28 V DC), 220V DC (208...240V DC)

For auxiliary contact blocks, see page 355

Motor contactor CEM112.22(E); 180A(AC1); 112A; 55kW(AC3)*

Type	Code No.	Wiring diagram	g	
CEM112.22-24V-50/60Hz	004653140			
CEM112.22--48V-50/60Hz	004653141			
CEM112.22--110V-50/60Hz	004653142			
CEM112.22--230V-50/60Hz	004653143			
CEM112.22--400V-50/60Hz	004653144		2400	1
CEM112E.22-28V AC/DC **	004646018			
CEM112E.22-130V AC/DC **	004646019			
CEM112E.22-250V AC/DC **	004646020			
CEM112E.22-415V AC/DC **	004646021			

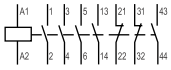
* Integrated auxiliary contacts: two side mounted auxiliary contact blocks 2 X (1NO + 1 NC)
**28V AC/DC (24...28V), 130V AC/DC (110...130V), 250V AC/DC (208...250V), 415V AC/DC (360...415V)
Surge suppressor is already integrated

Motor contactor CEM150E.22; 225A(AC1); 150A; 75kW(AC3)*

Type	Code No.	Wiring diagram	g	
CEM150E.22-28V AC/DC **	004654240			
CEM150E.22-130V AC/DC **	004646023		2400	1
CEM150E.22-250V AC/DC **	004654241			
CEM150E.22-415V AC/DC **	004646025			

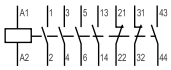
* Integrated auxiliary contacts: two side mounted auxiliary contact blocks 2 X (1NO + 1 NC)
**28V AC/DC (24...28V), 130V AC/DC (110...130V), 250V AC/DC (208...250V), 415V AC/DC (360...415V)
Surge suppressor is already integrated

Motor contactor CEM180.22(E); 225A(AC1); 180A; 90kW(AC3)*

Type	Code No.	Wiring diagram	g	
CEM180.22-24V-50/60Hz	004655140			
CEM180.22--48V-50/60Hz	004655141			
CEM180.22--110V-50/60Hz	004655142			
CEM180.22--230V-50/60Hz	004655143			
CEM180.22--400V-50/60Hz	004655144		3900	1
CEM180E.22-28V AC/DC **	004646029			
CEM180E.22-130V AC/DC **	004646026			
CEM180E.22-250V AC/DC **	004646027			
CEM180E.22-415V AC/DC **	004646028			

* Integrated auxiliary contacts: two side mounted auxiliary contact blocks 2 X (1NO + 1 NC)
**28V AC/DC (24...28V), 130V AC/DC (110...130V), 250V AC/DC (208...250V), 415V AC/DC (360...415V)
Surge suppressor is already integrated

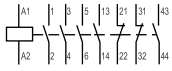
Motor contactor CEM250.22(E); 350A(AC1); 250A; 132kW(AC3)*

Type	Code No.	Wiring diagram	g	
CEM250.22-24V-50/60Hz	004656140			
CEM250.22--48V-50/60Hz	004656141			
CEM250.22--110V-50/60Hz	004656142			
CEM250.22--230V-50/60Hz	004656143			
CEM250.22--400V-50/60Hz	004656144		6000	1
CEM250E.22-28V AC/DC **	004646030			
CEM250E.22-130V AC/DC **	004646031			
CEM250E.22-250V AC/DC **	004646032			
CEM250E.22-415V AC/DC **	004646033			

* Integrated auxiliary contacts: two side mounted auxiliary contact blocks 2 X (1NO + 1 NC)
**28V AC/DC (24...28V), 130V AC/DC (110...130V), 250V AC/DC (208...250V), 415V AC/DC (360...415V)
Surge suppressor is already integrated
** Range of operating voltages is shown in the technical part of catalogue

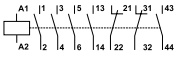
For auxiliary contact blocks, see page 355

Motor contactor CEM300.22(E), 410A(AC1), 300A, 160kW(AC3)*

Type	Code No.	Wiring diagram	g	
CEM300E.22-28V AC/DC	004656300			
CEM300E.22-50V AC/DC	004656301			
CEM300E.22-72V AC/DC	004656302			
CEM300E.22-130V AC/DC	004656303		6900	1
CEM300E.22-250V AC/DC	004656304			
CEM300E.22-415V AC/DC	004656305			

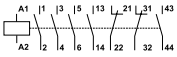
* Integrated auxiliary contacts: two side mounted auxiliary contact blocks 2 X (1NO + 1 NC)
**28V AC/DC (24...28V), 130V AC/DC (110...130V), 250V AC/DC (208...250V), 415V AC/DC (360...415V)
Surge suppressor is already integrated

Motor contactor CEM450.22(E), 600A(AC1), 450A, 260kW(AC3)*

Type	Code No.	Wiring diagram	g	
CEM450E.22-255V AC/DC	004656306		12000	1

* Integrated auxiliary contacts: two side mounted auxiliary contact blocks 2 X (1NO + 1 NC)
Surge suppressor is already integrated

Motor contactor CEM560.22(E), 700A(AC1), 560A, 300kW(AC3)*

Type	Code No.	Wiring diagram	g	
CEM560E.22-255V AC/DC	004656307		12000	1

* Integrated auxiliary contacts: two side mounted auxiliary contact blocks 2 X (1NO + 1 NC)
Surge suppressor is already integrated

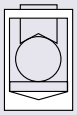
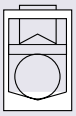
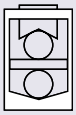
Contactors CEM up to 132 kW Technical Data

Type	CEM 9	CEM 12	CEM 18	CEM 25	CEM 32	CEM 40	CEM 50	CEM 65	CEM 80	CEM 95	CEM 105	CEM 112E	CEM 150E	CEM 180E	CEM 250E	CEM 300E
Standards	IEC/EN 60 947, DIN VDE 0660															
Rated insulation voltage U_i (V) to IEC/EN 60 947, DIN VDE 0660	1000 V															
Rated impulse withstand voltage U_{imp}	6 kV						8 kV									
Rated operational frequency	25 - 400 Hz															
Degree of protection	Protection against direct contact from the front when actuated by a perpendicular test finger (IEC 536)															
Main circuits	IP20						IP10							IP00		
Control circuits and auxiliary contacts	IP20															
Ambient temperature Operating temperature	-25 ... +55 °C															
Storage temperature	-55 ... +80 °C															
Altitude																
Normal values 90 % Ie/80 % Ue 80 % Ie/75 % Ue	≤ 3000 m 3000 ... 4000 m 4000 ... 5000 m															
Overvoltage category/Pollution degree	III/3															
Climatic proofing	IEC 68-2															
Main circuits																
Number of poles	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Rated operation voltage U_e	690 V						1000V									
Conv. thermal current I_{th} at ≤ 55°C																
Rated operational current I_e/AC-1	25 A	25 A	32 A	45 A	60 A	60 A	90 A	110 A	110 A	140 A	140 A	180 A	225 A	225 A	350A	410A
AC-3 Duty																
Rated operational power																
230 V kW	2,2	3	4	6,5	9	11	15	18,5	22	25	30	30	45	55	75	90
400 V kW	4	5,5	7,5	11	15	18,5	22	30	37	45	55	55	75	90	132	160
415-440 V kW	4,5	5,5	9	12,5	15	22	30	37	45	55	55	55	90	110	150	185
500 V kW	5,5	7,5	10	15	18,5	25	30	40	45	55	65	75	90	110	160	200
690 V kW	5,5	7,5	10	15	18,5	30	33	45	45	55	65	80	80	132	200	200
Short circuit rating																
max. fuse gG (A)	25	35	35	50	63	80	100	125	125	160	200	224	250	250	400	500

Contactors CEM up to 132 kW Technical Data

Type		CEM 9	CEM 12	CEM 18	CEM 25	CEM 32	CEM 40	CEM 50	CEM 65	CEM 80	CEM 95	CEM 105	CEM 112E	CEM 150E	CEM 180E	CEM 250E	CEM 300E
max. electrical operating frequency																	
AC-1	Ops/h	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	600	600	600	600	600
AC-3	Ops/h	1200	1200	1200	1200	1200	1200	1200	1200	1200	600	600	600	600	600	600	600
AC-4	Ops/h	360	360	360	360	360	360	200	200	200	200	200	150	150	150	150	150
no load	Ops/h	9000	9000	9000	9000	9000	9000	5000	5000	5000	5000	5000	4000	4000	4000	4000	4000
Mechanical life span	Ops x 106	10															
Electrical life span	Ops x 106	1,6	1,8	1,2				1,1					1,0				
Control circuit																	
Rated insulation voltage	U_i (V)	1000 V															
Nominal voltages	U_s 50 Hz (V)	24 - 690 V															
Nominal voltages	U_s 60 Hz (V)	24 - 690 V															
Nominal voltages	U_s DC (V)	12 - 440 V															
Pick-up and drop-out values																	
Pick-up x	U_s (V)	0,8 - 1,1				0,8 - 1,1		0,8 - 1,1					0,8 - 1,1				
Drop-out x	U_s (V)	0,35 - 0,55				0,4 - 0,6		0,4 - 0,6					0,3 - 0,5				
Control circuit alternating current AC																	
Opening and closing times (Valid at U_s)																	
Between coil energization and NO contact closing	(ms)	8 ... 20				10 ... 19		15 ... 30			15 ... 30		20 ... 30		30 ... 50	35 ... 50	
Between coil de-energization and NO contact opening	(ms)	6 ... 13				5 ... 25		9 ... 15			9 ... 15		10 ... 26		10 ... 26	12 ... 26	
Control circuit direct current DC																	
Opening and closing times (Valid at U_s)																	
Between coil energization and NO contact closing	(ms)	35 ... 45				50 ... 60		50 ... 60			50 ... 60						
Between coil de-energization and NO contact opening	(ms)	7 ... 12				55 ... 60		55 ... 60			55 ... 60						
Power consumption of the coil	50/60 Hz																
Pick-up	(VA)	70				98		255					213		214	229	
	(cos φ)	0,85				0,69		0,32					0,71		0,68	0,73	
Sealing	(VA)	4...7,2				6,6...12,3		13,1...19,1					14,8		14,5	14,1	
	(cos φ)	0,28				0,34		0,54					0,26		0,27	0,26	
Power consumption of the coil, DC coils																	
Pick-up	(W)	3,8...7,5				240		340					166		154	171	
Sealing	(W)	3,8...7,5				6		6,5					2,4		2,4	2,5	
Power dissipations																	
PD per pole @ Ie AC-3	(W)	0,2	0,3	0,8	1	1,3	1,5	2,1	3,6	5,5	6,9	8,4	6,2	11,1	13,8	17,9	25,7
PD of coils, AC coils	(W)	2,0	2,0	2,0	2,0	4,2	4,2	10,3	10,3	10,3	10,3	10,3	3,9	3,9	3,9	3,7	3,7
PD of coils, DC coils	(W)	7,5	7,5	7,5	7,5	6	6	6,5	6,5	6,5	6,5	6,5	2,4	2,4	2,4	2,5	2,5

Contactors CEM up to 132 kW Technical Data

Type		CEM 9 ... CEM 18	CEM25	CEM32 & CEM40	CEM50 & CEM80	CEM95 & CEM105	CEM112E & CEM 150E	CEM180E	CEM250E & CEM300E
Main terminal capacity (mm^2)									
Solid, stranded and finely stranded without end sleeve		2x (1... 2,5) 2x (2,5...6) 2x (0,25...2,5)	2x (1... 2,5) 2x (2,5... 10) 2x (1...2,5)						
Finaly stranded with end sleeve		2x (2,5...6) 2x (13...16)	2x (2,5...10) 2x (13...17)						
One conductor on top									
Stranded				**0,75...16**	**1...35**	**1,5...50**			
Stranded with end sleeve				**0,75...16**	**1...35**	**1,5...50**			
Stranded without end sleeve				**1...16**	**1,5...35**	**2,5...50**			
Finaly stranded				**1...16**	**1,5...35**	**2,5...50**			
One conductor on bottom									
Solid				1...16	2,5...35	4...35			
Stranded with end sleeve				1... 16	2,5...35	4...35			
Stranded without end sleeve				1,5...16	6...35	6...35			
Finaly stranded				1,5...16	6...35	6...35			
Two conductors on top									
Solid				0,75...16	1...35	1,5...50			
Stranded with end sleeve				0,75...16	1...35	1,5...50			
Stranded without end sleeve				1...16	1,5...35	2,5...50			
Finaly stranded				1...16	1,5...35	2,5...50			
Two conductors					on bottom				
Solid				1...16	2,5...35	4...35			
Stranded with end sleeve				1...16	2,5...35	4...35			
Stranded without end sleeve				1,5...16	6...35	6...35			
Finaly stranded				1,5...16	6...35	6...35			
Solid and stranded with end sleeve Bar							2 x (25...70) 2 x (15x3)	2 x (50...120) 2 x (20x3)	2 x (50...150) 2 x (30x5)
Tightening torque (N.m)		1...1,7	1,6...3	2...2,5	4...6	5...6,5	10	13	17

Auxiliary contacts

Type			CEM9	CEM12	CEM18	BCXMFE...	BCXMLE ...
Rated insulation voltage U_i							
acc. IEC/EN 60 947		(V)		1000		1000	
Rated operational voltage U_e		(V)		690		690	
Conv. thermal current I_{th}		(A)		20		10	
Rated operational current I_e							
AC-15	220 - 240 V	(A)		10		6	
	380 - 400 V	(A)		6		4	
	415 V	(A)		5		3,5	
	500 V	(A)		4		2,5	
DC-13	24 V	(A)		6		6	
	48 V	(A)		4		4	
	110 V	(A)		2		2	
	220 V	(A)		0,7		0,7	
Making capacity I_m							
AC-15/AC-11	$U_e \leq$ 400 V 50/60 Hz	(A)		250		90	
DC-13/DC-11	$U_e \leq$ 220 V DC	(A)		250		90	
Breaking capacity Ic							
AC-15/AC-11	$U_e \leq$ 400 V 50/60 Hz	(A)		250		60	
DC-13/DC-11	$U_e \leq$ 220 V DC	(A)		2		0,95	
Short circuit protection							
max. fuse gG		(A)		16		10	
Control circuit reliability				I_e min. = 5 mA, U_e min. = 17 V			
Electrical life span				106			
Mechanical life span				15 x 106			
Impedance /pole		mR		2,5			

Power Circuit - CEM 450-560

Three pole version			CEM450	CEM560
Rated thermal current I_{th} (temp ≤ 55 °C)		(A)	600	700
Rated operational current I_e AC-3 (Ue ≤ 440V)		(A)	450	560
Rated operational voltage U_e	acc. IEC / VDE 0660	(V)	1000	1000
	acc. UL / CSA	(V)	-	-
Rated insulation voltage U_i (pollution degree 3)	acc. IEC / VDE 0660	(V)	1000	1000
	acc. UL / CSA	(V)	-	-
Rated impluse withstand voltage U_{imp} (acc. IEC 60947-1)		(kV)	8	8
Maximum continuous current AC-1 (temp ≤ 55 °C)		(A)	600	690
Rated operational current I_e AC-4 (Ue ≤ 440V)		(A)	280	345
Frequency limits		(Hz)	25...400	25...400
Making capacity (RMS) (IEC 60947)		(A)	5600	6300
Breaking capacity (RMS) (IEC 60947)	(U_e ≤ 400V)	(A)	4480	5040
	(U_e = 500V)	(A)	4480	5040
	(U_e = 550V)	(A)	4009	4511
	(U_e = 690V)	(A)	3000	3380
Short-time current	1 seg	(A)	8544	10626
	5 seg	(A)	5733	7128
	10 seg	(A)	4500	5600
	30 seg	(A)	2990	3726
	1 min	(A)	2208	2748
(at temp ≤ 40 °C)	3 min	(A)	1391	1716
No current flowing during recovery time.	Recovery time	(min.)	10	10
Electrical Endurance at I_e AC-3 (IEC 60947)		ops. (million)	0,6	0,6
Protection against short-circuits with fuses. Without TOR				
Coordination type "1"	gL/gG	(A)	1000	1260
Coordination type "2"	gL/gG	(A)	630	800
Without welding	gL/gG	(A)	500	500
Short-circuit Interrupting Capacity CSA	600V - acc. UL/	(kA)	-	
Impedance per pole		(mΩ)	0,2	0,2
Power dissipation per pole	AC-1	(W)	72	98
	AC-3	(W)	41	63
Insulation resistance between adjacent poles, poles and earth and between input and output			> 10MΩ	
Degree of protection (acc. VDE 0160 - Part 100)	Main terminals		IP00	
	Coil terminals		IP20	
Relative Humidity			5 to 95% at 40°C (non-condensing)	
Mounting			Screw to panel	

AC - Utilisation Category for CEM 450-560

Utilisation category AC-1			CEM450	CEM560
Rated thermal current I_{th} (temp ≤ 55 °C)		(A)	600	690
Max. Operational current at ambient temperature of. (up to 690V)"	55 °C	(A)	600	690
	70 °C	(A)	370	420
	75 °C	(A)	-	-
Max. Operational power (q ≤ 55 °C) (Three-phase resistors)	220 / 230 V	(kW)	228	263
	380 / 400 V	(kW)	395	454
	415 / 440 V	(kW)	431	496
	500 V	(kW)	520	597
	575 / 600 V	(kW)	598	687
	660 / 690 V	(kW)	685	788
Cable size		(mm^2)	2 x (50x5)	
Current values for connection of	2 poles in parallel		I_e x 1,7	
	3 poles in parallel		I_e x 2,4	
Percentage of the max. operational current at	600 ops./h	(%)	100	100
	1200 ops./h	(%)	80	80
	3000 ops./h	(%)	-	-

AC - Utilisation Category for CEM 450-560

Utilisation category AC-3			CEM450	CEM560
Operational current Ie (temp ≤ 55°C)	U_e ≤ 440 V	(A)	450	560
	500 V	(A)	415	465
	550 V	(A)	380	420
	690 V	(A)	315	397
	1000 V	(A)	200	235
"Max. Operational power Three-phase motors (50/60 Hz)"	220 / 230 V	(kW)	150	185
		(HP)	200	250
	380 / 400 V	(kW)	260	300
		(HP)	350	400
	415 / 440 V	(kW)	260	300
		(HP)	350	400
	500 V	(kW)	260	330
		(HP)	350	450
	660 / 690 V	(kW)	300	370
		(HP)	400	500
	1000 V	(kW)	260	330
		(HP)	350	450
Percentage of the max. operational current at	600 ops./h	(%)	100	100
	1200 ops./h	(%)	75	75
	3000 ops./h	(%)	-	-

Electronic Control Circuit - AC 50/60Hz / DC

Coils with electronic module			CEM112 / 150	CEM180 / 215	CEM250 / 300	CEM450/560
Rated insulation voltage U_i (pollution degree 3)	acc. IEC / VDE 0660 (V)		1000			
	acc. UL / CSA (V)			600		-
Standard voltages		(V)				110-255 V 50/60 Hz / DC
Voltage Operating limits - acc. IEC 60947-1						
Coil Operating Limits		xU_s	0.8...1.1	0.8...1.1	0.8...1.1	0.8....1.1
	Pick-up	xU_s	0.6 ... 0.75	0.6 ... 0.75	0.6 ... 0.75	0.6 ... 0.75
	Drop-out	xU_s	0.4 ... 0.6	0.4 ... 0.6	0.4 ... 0.6	0.4 ... 0.6
Consumption - AC (at 1,0 x U_s and cold coil)						
Electronic coils (at 60Hz)	Magnetic circuit closed	(VA)	16.3	21.5	35.2	38.5
	Power factor		0.26	0.27	0.26	0.26
	Thermal power dissipation	(W)	4.2	5.8	9.2	10.0
	Magnetic circuit closing	(VA)	322	426	518	700
	Power factor		0.71	0.68	0.73	-
Consumption - DC (at 1,0 x U_s and cold coil)						
Electronic coils at DC	Magnetic circuit closed	(W)	12.5	12.5	12.5	25
	Magnetic circuit closing	(W)	415	375	380	780
Opening and closing times (Values at U_s)						
Between coil energization and:	NO contact closing	(ms)	40...70	40...70	65...85	80...110
Between coil de-energization and:	NO contact opening	(ms)	50...70	55...75	40...65	50...90
Mechanical endurance		ops.	10 million	10 million	10 million	3 million
Maximum rate	No load	ops./h	1000	1000	1000	1000
	AC1 and AC3 at rated power	ops./h	600	600	600	300
	AC4 at rated power	ops./h	150	150	150	150

AC - Utilisation Category for CEM 450-560

Utilisation category AC-4				CEM450	CEM560
Operational current I_e AC-4	Ue ≤ 440 V	(A)		280	345
	500 V	(A)		211	220
	690 V	(A)		160	195
	1000 V	(A)		100	125
Operational power Three-phase motors (50/60 Hz) (200.000 operations)	220 / 230 V	(kW)		75	90
		(HP)		100	125
	380 / 400 V	(kW)		150	185
		(HP)		200	250
	415 / 440 V	(kW)		150	185
		(HP)		200	250
	500 V	(kW)		130	185
		(HP)		200	250
	660 / 690 V	(kW)		150	185
		(HP)		200	250
	1000 V	(kW)		132	150
		(HP)		175	200
Max. Operational current I_e (U_e ≤ 400 V) (35.000 operations)		(A)		450	560
Max. Operational power (U_e ≤ 380/400 V)		(kW)		260	300
Maximum frequency of switching		(ops./h)		350	400

DC - Utilisation Category for CEM450-560

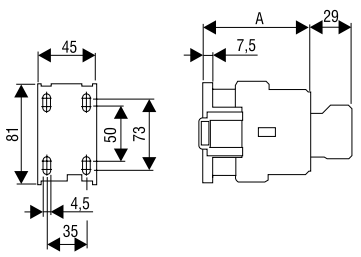
Utilisation category DC-1 (L/R ≤ 1 ms)		CEM450	CEM560
U_e (V)	Poles in serie	Max. Operational current I_e (A)	
24V	1	450	560
	2	600	690
	3	600	690
110V	1	225	280
	2	450	560
	3	600	690
220V	1	45	56
	2	300	345
	3	600	690
440V	1	-	-
	2	150	172
	3	300	345

DC - Utilisation Category for CEM450-560

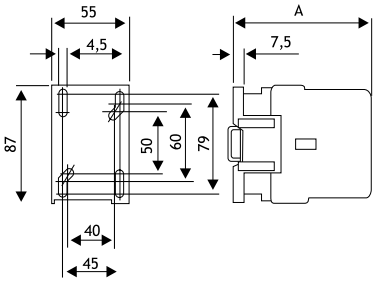
Utilisation category DC-3 / DC-5 (L/R ≤ 15 ms)		CEM450	CEM560
U_e (V)	Poles in serie	Max. Operational current I_e (A)	
24V	1	350	450
	2	450	560
	3	450	560
110V	1	200	260
	2	350	400
	3	400	450
220V	1	30	35
	2	160	200
	3	300	345
440V	1	-	-
	2	50	65
	3	150	180

Dimensions

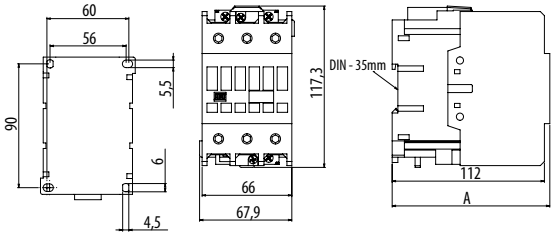
	AC/DC
CEM9	A=87
CEM12	A=87
CEM18	A=87
CEM25	A=87



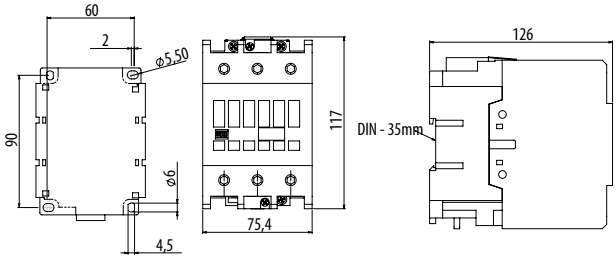
	AC	DC
CEM32	A=98	A=118
CEM40	A=98	A=118



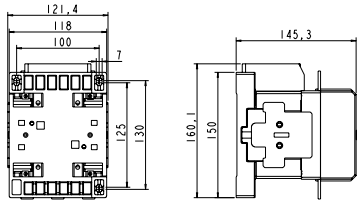
	AC/DC
CEM50	A=116
CEM65	A=116
CEM80	A=116



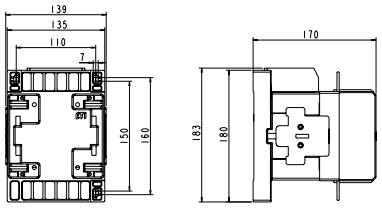
	AC/DC
CEM95	A=126
CEM105	A=126



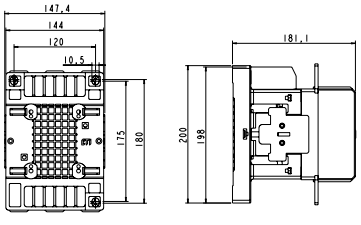
CEM112(E)
CEM150E



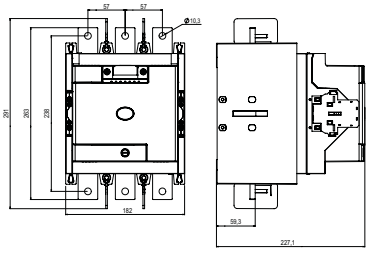
CEM180(E)

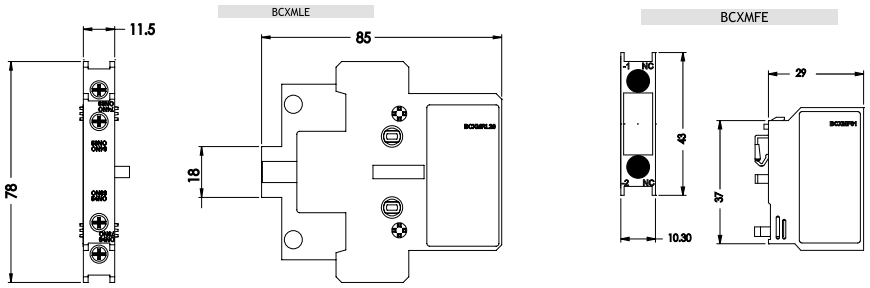


CEM250(E)
CEM300(E)



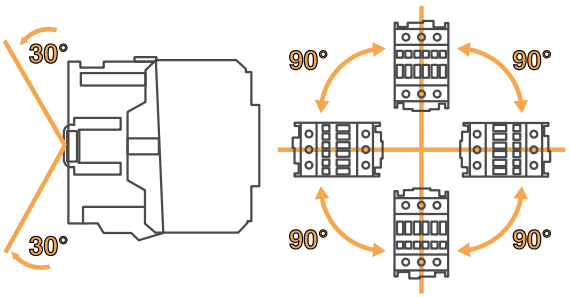
CEM 450(E)
CEM 560(E)



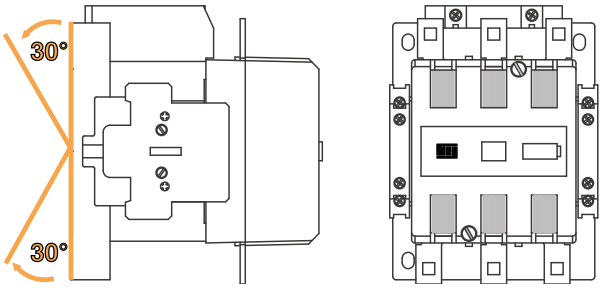


Mounting position

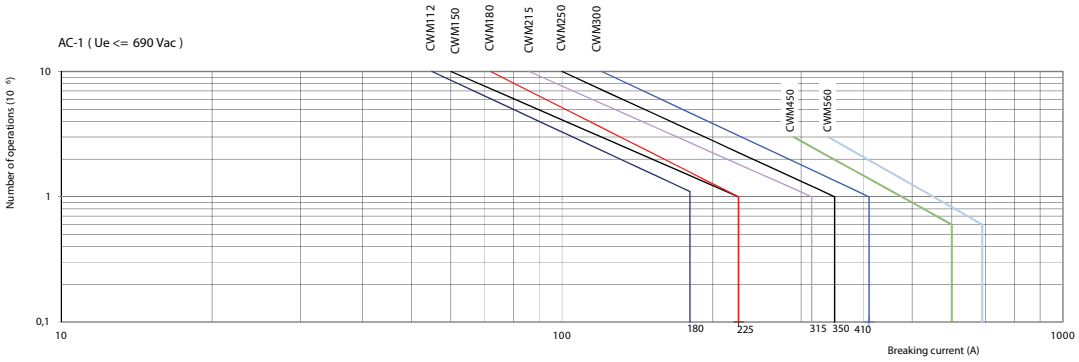
CEM9...105

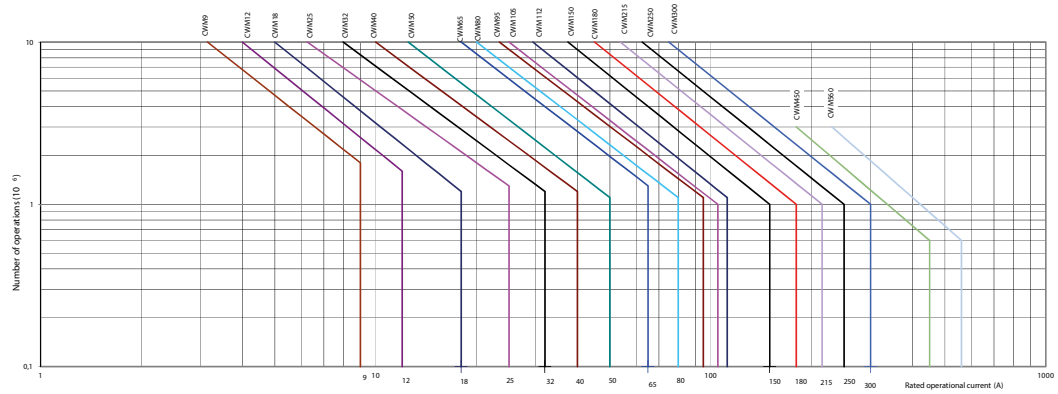


CEM112...300



Diagram





Accessories

Auxiliary contact block - front mounted

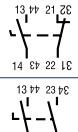
Type	Code No.	Description	For use with	Wiring diagram	g	
BCXMFE10	004641510	1 NO	CEM9-CEM105		15	1
BCXMFE01	004641501	1 NC	CEM9-CEM105		15	1
BCXMFAE10	004642510	1 NO - early-make	CEM9-CEM105		15	1
BCXMFRE01	004643510	1 NC - late-break	CEM9-CEM105		15	1
BCXMFE10S*	004646094	Special aux. Contact 1xNO	CEM9-CEM105		15	1
BCXMFE01S*	004646095	Special aux. Contact 1xNC	CEM9-CEM105		15	1

not for CEM7,5CN and CEM10CN!
available free aux. contact blocks places:

CEM 9	....	CEM 40: 4 contact blocks
CEM 50	....	CEM 105: 6 contact blocks
CEM 112	....	CEM 300: mounting not available - only lateral, see below

*Special aux. contacts (Au -gold) for low signals switching min. 1mA /17V

Auxiliary contact block - lateral

Type	Code No.	Description	For use with	Wiring diagram	g	
BCXMLE11	004644511	1 NO - 1 NC (main)	CAEM4, CEM9-CEM300		15	1
BCXMLE20	004644520	2 NO (main)	CAEM4, CEM9-CEM300		15	1
BCXMRLE11	004645511	1 NO - 1 NC side mounted (upgraded)	CAEM4, CEM9-CEM300		15	1
BCXMRLE20	004645520	2 NO side mounted (upgraded)	CAEM4, CEM9-CEM300		15	1
BLRBE-11	004656308	1 NO - 1 NC side mounted (upgrade)	CEM450-CEM560		34	1
BLBE-11	004656325	1 NO - 1 NC side mounted (spare part)	CEM450-CEM560		34	1

not for CEM7,5CN and CEM10CN!
Main" lateral auxiliary contact block can be mounted on the front side of the contactor, it can be upgraded max. with one additional auxiliary contact block.

Max. number of auxiliary contacts together (top and side mounted):
max. 4: CEM9-CEM25, CAEM 4
max. 6: CEM32-CEM40
max. 8: CEM50-CEM105
max. 8: CEM112-CEM300

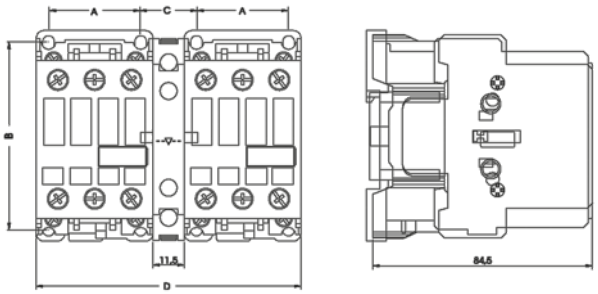
Mechanical interlock

Type	Code No.	For use with	g	
BLIME 9-105	004643601	CEM9-CEM105	50	1
BLIME9-105 02*	004646093	CEM9-CEM105	69	1
BLIME 112-300E	004643602	CEM112(E)-CEM560(E)	150	1

*Mechanical interlock with integrated auxiliary contacts 2xNC

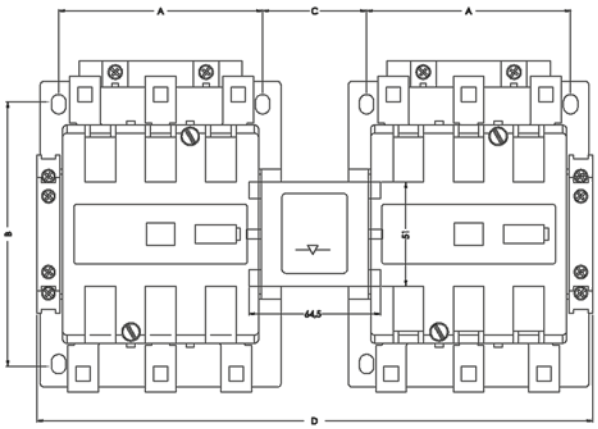
Dimensions

BLIME9-105



Contactors	A	B	C	D
CEM9...25	35	72,5	22	102
CEM32...40	45	79	22	122
CEM50...80	57	90	22	144
CEM95...105	57	90	29	162

BLIME 112-300E



Contactors	A	B	C	D
CEM112...150	100	130	51	272,5
CEM180	110	160	58,5	303,5
CEM250...300	120	180	57	325,4
CEM250...300	175	196	57	414

Mechanical interlocks BLIME: Contactor sizes & compatibility		
Contactor		Same size Q1=Q2
BLIME 9-105	004643601	CEM9…CEM105
BLIME 112-300E	004643602	CEM112(E)-CEM300(E)

AC coils		Different size	
		Q1	Q2
BLIME 9-105	004643601	CEM9…CEM105	CEM9…CEM105
BLIME 112-300E	004643602	CEM112…CEM150	CEM112…CEM150
		CEM250…300	CEM250…300

DC coils		Different size	
		Q1	Q2
BLIME 9-105	004643601	CEM9…18	CEM9…18
BLIME 9-105	004643601	CEM32…40	CEM32…40
BLIME 9-105	004643601	CEM50…CEM105	CEM50…CEM105

AC&DC coils		Different coil	
		C1	C2
BLIME 9-105	004643601	CEM50…105 DC coil	CEM9…105 AC coil

Surge suppressor

Type	Code No.	Coil voltage	For use with	g	
BAMRCE4	004642701	24-48 VAC	CEM9-CEM40	14	1
BAMRCE5	004642702	50-127 VAC	CEM9-CEM40	14	1
BAMRCE6	004642703	130-250 VAC	CEM9-CEM40	14	1
BAMRCE7	004642705	24-48 VAC	CEM50-CEM105	14	1
BAMRCE8	004642706	50-127 VAC	CEM50-CEM105	14	1
BAMRCE9	004642707	130-250 VAC	CEM50-CEM105	14	1
BAMDIE10	004643701	12-600 VDC	CEM9-CEM105	14	1
BAMRCE13	004642708	24-48 VAC	CEM112-CEM250	14	1
BAMRCE14	004642711	50-250 VAC	CEM112-CEM250	14	1
BAMVE5 255V/ACDC	004656320	100-255VAC	CEM450E-CEM560E	18	1

Terminal blocks

Type	Code No.	For use with	g	
TBE150	004646090	CEM112…CEM150	210	1
TBE180	004646091	CEM180	270	1
TBE300	004646092	CEM250…CEM300	575	1

Spare contacts*

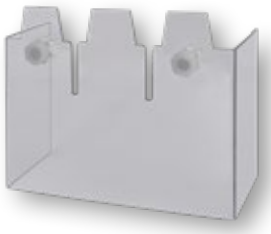
Type	Code No.	For use with	g	
SCCEM450	004656323	CEM450(E)	1120	1
SCCEM560	004656324	CEM560(E)	1120	1

*1(pc) reference code includes 3 spare contacts (1 pc = 3 spare contacts -> 3 moving parts and 6 fixed parts)

Terminal cover

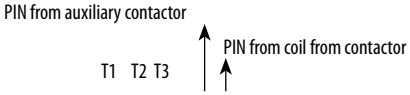
Type	Code No.	For use with	g	
CCEM150	004646080	CEM112...CEM150	231	1
CCEM180	004646081	CEM180	231	1
CCEM300	004646082	CEM250...CEM300	231	1
CCEM560	004656309	CEM450...CEM560	231	1

*1(pc) reference code includes 2 covers (1pc=top+bottom)



Overload relay

- phase-failure sensitivity to IEC/EN 60947-4-1, DIN VDE 0660T.102
- tripping class 10 according to standard 60947-4-1
- temperature compensation
- auxiliary contact 1NO/1NC
- hand/auto/reset



Overload relay RE27D

Type	Code No.	Current setting range [A]	For use with	g	
RE27D-0,4	004642400	0,28-0,4	CEM09 ... CEM25	147	1
RE27D-0,63	004642401	0,4-0,63			
RE27D-0,8	004642402	0,56-0,8			
RE27D-1,2	004642403	0,8-1,2			
RE27D-1,8	004642404	1,2-1,8			
RE27D-2,8	004642405	1,8-2,8			
RE27D-4,0	004642406	2,8-4,0			
RE27D-6,3	004642407	4-6,3			
RE27D-8,0	004642408	5,6-8			
RE27D-10	004642409	7-10			
RE27D-12,5	004642410	8-12,5			
RE27D-15	004642411	10-15			
RE27D-17	004642412	11-17			
RE27D-23	004642413	15-23			
RE27D-32	004642414	22-32			

Overload relay RE67.1D

Type	Code No.	Current setting range [A]	For use with	g	
RE67.1D-40	004643415	25-40	CEM32... CEM40	300	1
RE67.1D-50	004643416	32-50			

Overload relay RE67.2D

Type	Code No.	Current setting range [A]	For use with	g	
RE67.2D-57	004644417	40-57	CEM50 ... CEM80	310	1
RE67.2D-63	004644418	50-63			
RE67.2D-70	004644419	57-70			
RE67.2D-80	004644420	63-80			

Overload relay RE117.1D

Type	Code No.	Current setting range [A]	For use with	g	
RE117.1D-97	004645421	75-97	CEM95... CEM105	520	1
RE117.1D-112	004645422	90-112			

Overload relay RE117.2D

Type	Code No.	Current setting range [A]	For use with	g	
RE117.2D-97	004646421	75-97	CEM112(E)	550	1
RE117.2D-112	004646422	90-112			

Overload relay RE317.2D

Type	Code No.	Current setting range [A]	For use with	g	
RE317D-150	004647423	100-150	CEM150(E) ... CEM250(E)	900	1
RE317D-215	004647424	140-215			
RE317D-310	004647425	200-310			
RE317D-420	004656312	275-420	CEM450(E)	2000	

Overload relay RE407D

Type	Code No.	Current setting range [A]	For use with	g	
RE407D-600	004656313	400-600	CEM560(E)	3600	1

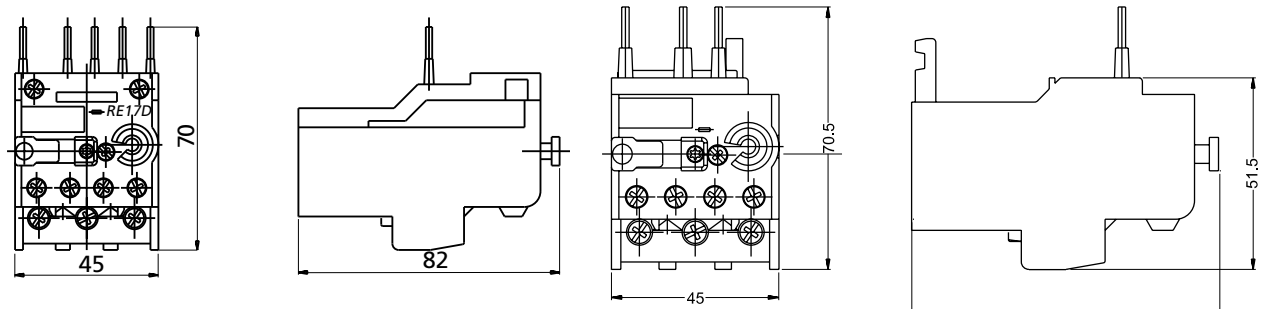
Overload relay connection bars

Type	Code No.	For use with	g	
GAE317-11D	004656310	CEM450(E)+RE317D-420	253	1
GAE407-1D	004656311	CEM560(E)+RE407D-600	461	1

*1(pc) reference code includes 3 bars for one 3 pole connection

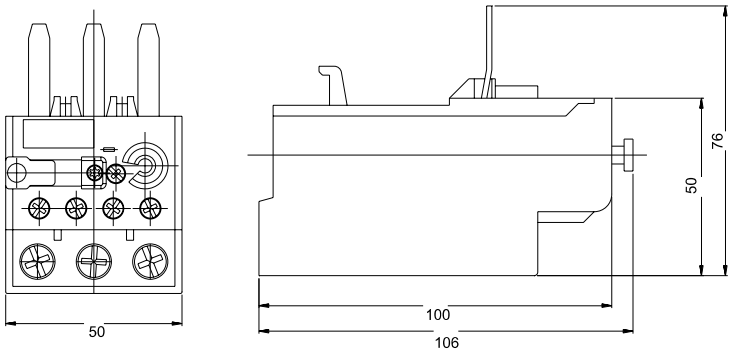
Overload relay mounting kits for rails TH35

Type	Code No.	For use with	g	
BF27D	004641901	RE27D	50	1
BF67.1D	004641902	RE67.1,	95	1
BF67.2D	004641904	RE67.2	95	1
BF117D	004641903	RE117.1D	110	1

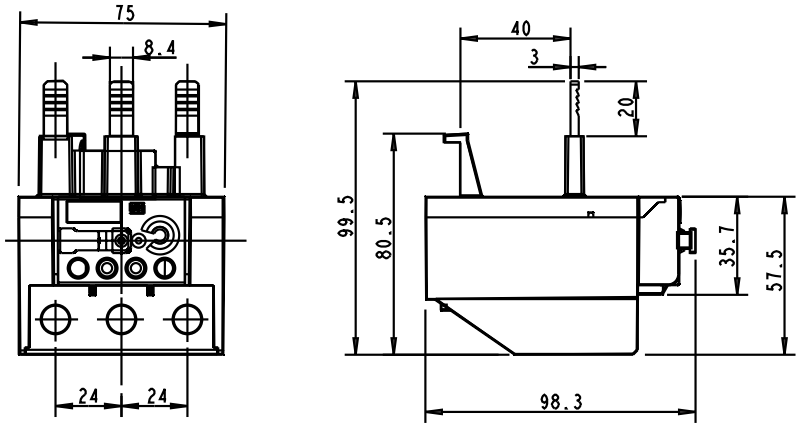


RE17D

RE27D



RE67D



RE117.1D

RE Thermal Overload Relays in Contactor Assemblies for Wye-Delta Starters

When using thermal overload relays in conjunction with contactor assemblies for wye-delta starters, it should be taken into consideration that only 0.58 (√3 / 3) x the motor current flows through the main contactor. An overload relay mounted on the main contactor must be set to the same multiple of the motor current.

A second overload relay may be mounted on the wye contactor if it is desired the load to be optimally protected in wye operation. The wye current is 1/3 of the rated motor current. The relay must then be set to this current.

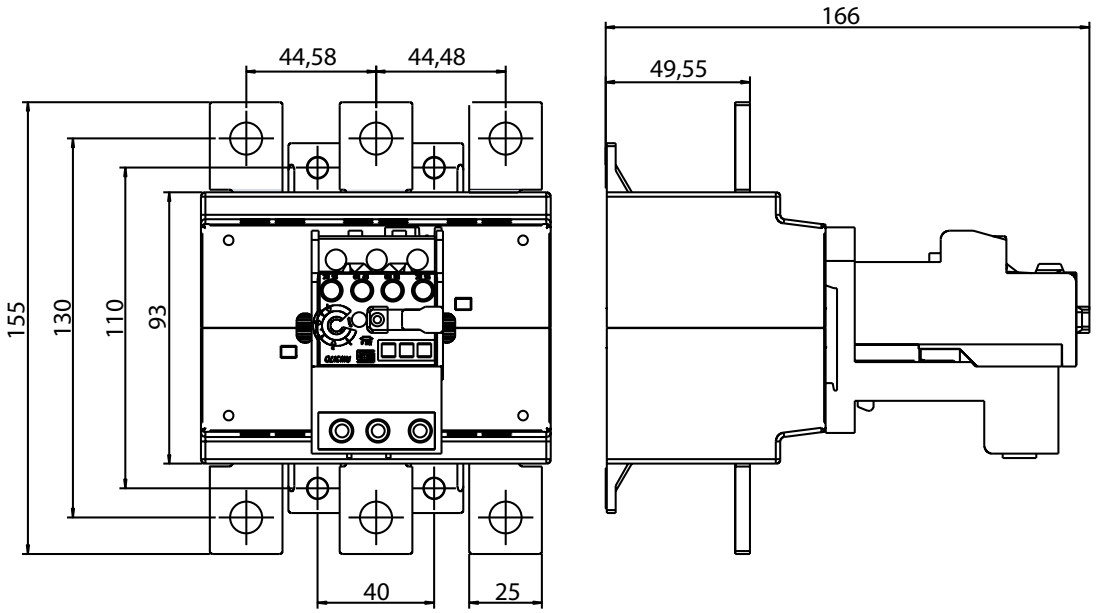
Protection Against Short-Circuit

The RE thermal overload relays must be protected against short-circuits by fuses or circuit breakers.

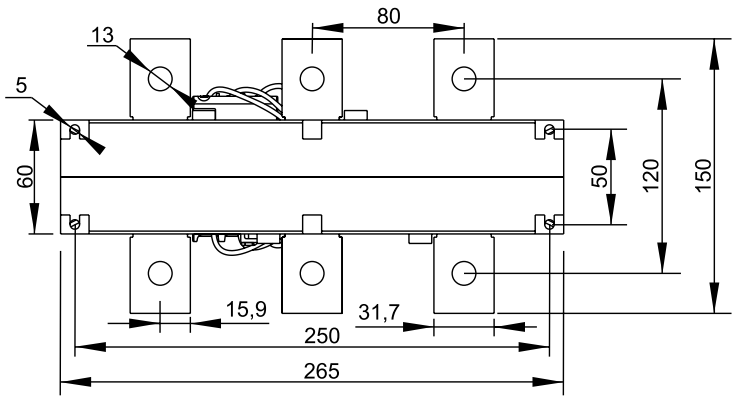
Ambient Air Temperature Compensation

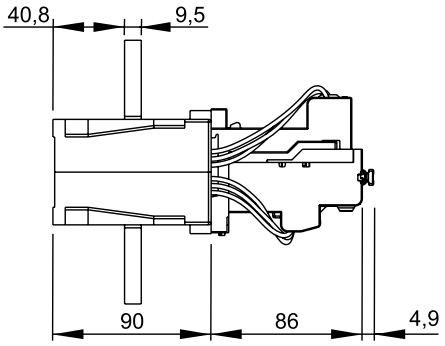
RE thermal overload relays are temperature compensated. Its trip point is not affected by temperature, and it performs consistently at the same value of current. The time-current characteristics of REs refer to a stated value of ambient air temperature within the range of -20 °C to +60 °C and are based on no previous loading of the overload relay (i.e. from an initial cold state). For ambient air temperature within the range of +60 °C up +80 °C (maximum ambient air temperature), the current correction factor shown in the table below should be applied:

Ambient air temperature [°C]	Current correction factor
65	0,94
70	0,87
75	0,81
80	0,73



RE317D

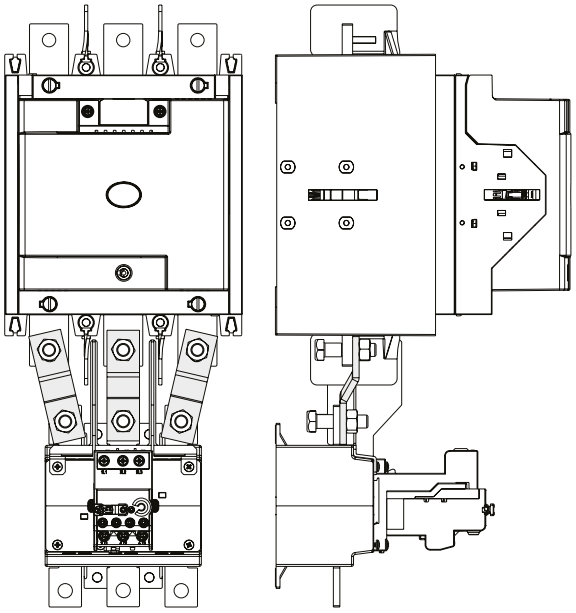




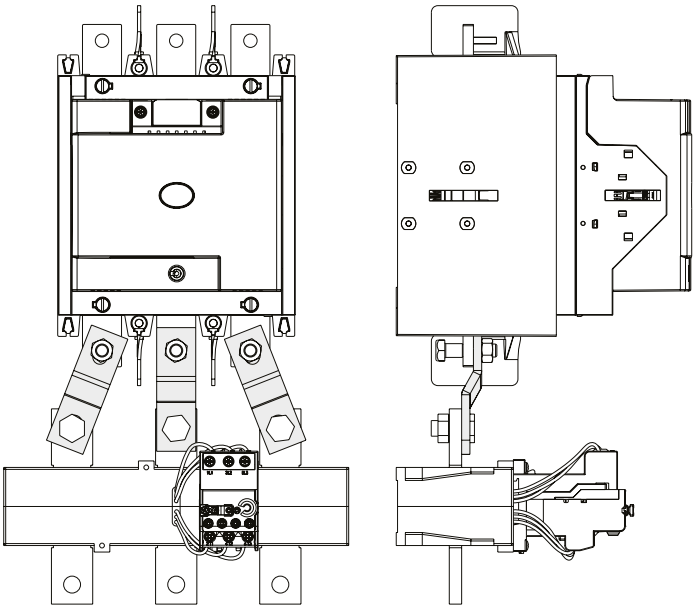
RE407D

overload relay current setting	recommended fuse gG (A)
0,28-0,4	2
0,4-0,63	2
0,56-0,8	2
0,8-1,2	4
1,2-1,8	6
1,8-2,8	6
2,8-4	10
4-6,3	16
5,6-8	20
7-10	25
8-12,5	25
10-15	35
11-17	35
15-23	50
22-32	63
25-40	80
32-50	100
40-57	100
50-63	100
57-70	125
63-80	125
75-97	200
90-112	250
100-150	315
140-215	355
200-310	500
275-420	710
400-600	1000

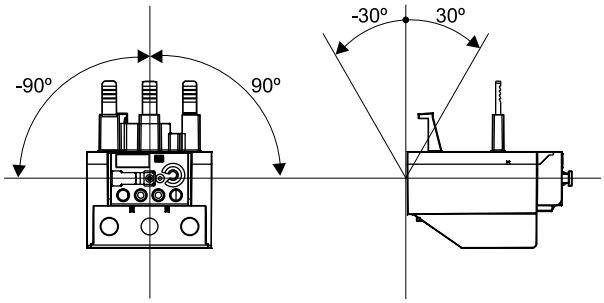
CEM450E/560E + RE317D (200...420A)



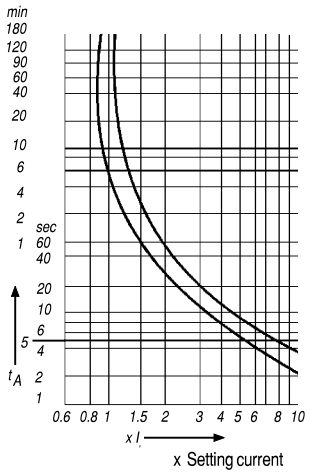
CEM450E/560E + RE407D (400...600A)



Mounting position for RE17D to RE117D



RE...D Tripping characteristic



These tripping characteristics show mean values of the tolerance range at 20°C ambient temperature starting from cold. They show the tripping times in relation to the response current. At operational temperature, the tripping time of the overload relay drops to approximately 25 % of the shown.

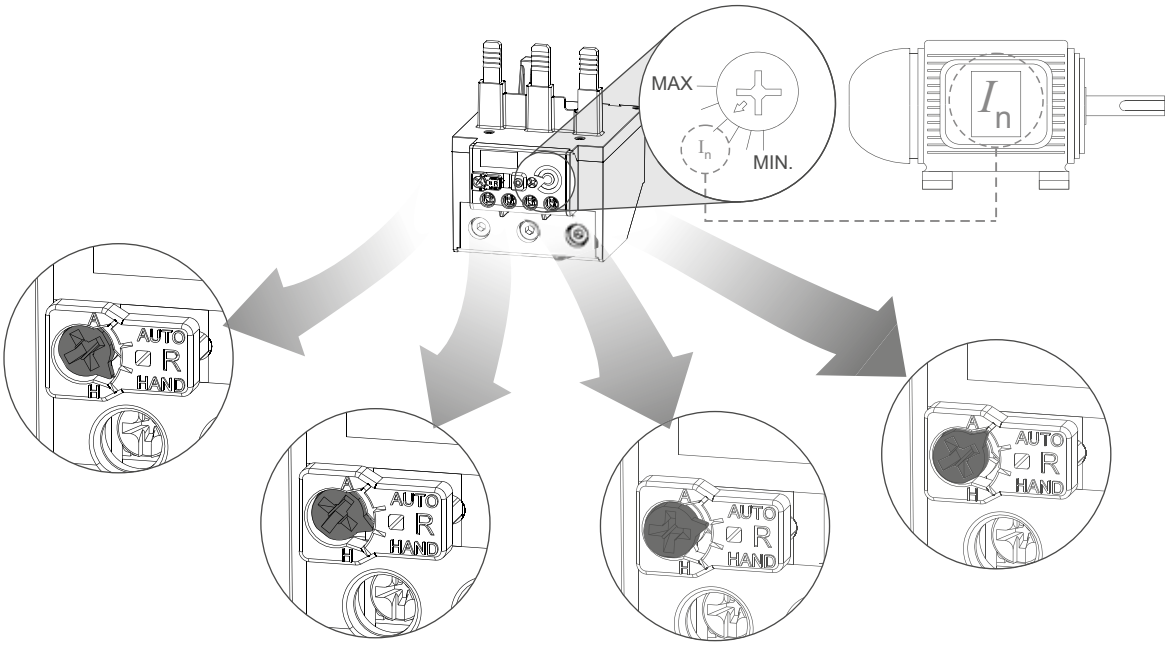
Overload relay

Type			RE17D	RE27D	RE67D	RE117D	RE317D	RE407D
General technical data								
Standards			IEC/EN 60 947, DIN VDE 0660					
Current setting		(A)	0,28 - 17	0,28 - 32	25 - 80	75 - 112	100 - 420	400 - 840
Tripping Class acc. to IEC 60947-4-1			10					
Temperature compensation			continuous					
Rated insulation voltage Ui acc. IEC/EN 60 947/DIN VDE 0660		(V)	690				1000	
Rated impulse withstand voltage Uimp		(kV)	6				8	
Rated operational frequency		(Hz)	0 - 400				50/60	
Degree of protection			IP 20					
Protection against direct contact from the front when actuated by a perpendicular test fi nger (IEC 536)			finger and back-of-hand proof					
Ambient temperature Operating temperature		°C	-25 ... +60					
Storage temperature		°C	-40 ... +70					
Power dissipation (value of setting range)	lower	(W)	0,9		1,5	2,3	1	
	higher	(W)	1,4	1,7	4,7		1,9	
Aux. Contacts impedance (pole)		mR	2,5					
Terminal capacity								
solid mm²			2x 1,5 - 6		1x 6 -35	1x 25 - 35	2x35-120 (100-215A) 2x95-150 (200-420A)	-
flexible without cable mm²			2x 1,5 - 6		1x 6 -35	1x 25 - 35	2x35-120 (100-215A) 2x95-150 (200-420A)	-
flexible with cable lug mm²			2x 1,5 - 6		1x 6 -35	1x 25 - 35	2x35-120 (100-215A) 2x95-150 (200-420A)	-
stranded mm²			2x 1,5 - 10		1x 6 -35	1x 25 - 35	2x35-120 (100-215A) 2x95-150 (200-420A)	-
busbar		mm	-		-	-	max 2x (25 x 5)	max 2x (60 x 10)
Tightening torque Nm			2,3		4	6	141 (100-215A) 230 (200-420A)	230
Auxiliary contacts								
Rated insulation voltage Ui acc. IEC/EN 60 947/DIN VDE 0660		(V)	690					
Rated operational voltage Ue		(V)	690					
Rated thermal current Ith		(A)	6					
Rated operational current Ie AC-15	24 V	(A)	4					
	60 V	(A)	3,5					
	125 V	(A)	3					
	230 V	(A)	2					
	400 V	(A)	1,5					
	500 V	(A)	0,5					
	690 V	(A)	0,3					
Rated operational current Ie DC-13	24 VDC	(A)	1					
	60 VDC	(A)	0,5					
	110 VDC	(A)	0,25					
	220 VDC	(A)	0,1					
Terminal capacity	Terminal screw		M3,5 x 10 Philips					
	Cable size	mm²	2 x 1-2,5					
	AWG-wire		16-12					
Tightening torque		Nm	1,5					

Minimum fuse size for the protection of three-phase motors.
The maximum size is governed by the requirements of the associated switchgear or overload relay.

Motor rating			230 V			400 V			500 V			690 V		
			Rated motor current	Fuse		Rated motor current	Fuse		Rated motor current	Fuse		Rated motor current	Fuse	
				Starting direct	Y/Δ		Starting direct	Y/Δ		Starting direct	Y/Δ		Starting direct	Y/Δ
[kW]	cosφ	η(%)	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]
0,06	0,7	58	0,37	2	-	0,21	2	-	0,17	2	-	0,12	2	-
0,09	0,7	60	0,54	2	-	0,31	2	-	0,25	2	-	0,18	2	-
0,12	0,7	60	0,72	4	2	0,41	2	-	0,3	2	-	0,24	2	-
0,18	0,7	62	1,04	4	2	0,6	2	-	0,48	2	-	0,35	2	-
0,25	0,7	62	1,4	4	2	0,8	4	2	0,7	2	-	0,5	2	-
0,37	0,72	66	2	6	4	1,1	4	2	0,9	2	2	0,7	2	-
0,55	0,75	69	2,7	10	4	1,5	4	2	1,2	4	2	0,9	4	2
0,75	0,79	71	3,2	10	4	1,9	6	4	1,5	4	2	1,1	4	2
1,1	0,81	74	4,6	10	6	2,6	6	4	2,1	6	4	1,5	4	2
1,5	0,81	74	6,3	16	10	3,6	6	4	2,9	6	4	2,1	6	4
2,2	0,81	78	8,7	20	10	5	10	6	4	10	4	2,9	10	4
3	0,82	80	11,5	25	16	6,6	16	10	5,3	16	6	3,8	10	4
4	0,82	83	14,8	32	16	8,5	20	10	6,8	16	10	4,9	16	6
5,5	0,82	86	19,6	32	25	11,3	25	16	9	20	16	6,5	16	10
7,5	0,82	87	26,4	50	32	15,2	32	16	21,1	25	16	8,8	20	10
11	0,84	87	38	80	40	21,7	40	25	17,4	32	20	12,6	25	16
15	0,84	88	51	100	63	29,3	63	32	23,4	50	25	17	32	20
18,5	0,84	88	63	125	80	36	63	40	28,9	50	32	20,9	32	25
22	0,84	92	71	125	80	41	80	50	33	63	32	23,8	50	25
30	0,85	92	96	200	100	55	100	63	44	80	50	32	63	32
37	0,86	92	117	200	125	68	125	80	54	100	63	39	80	50
45	0,86	93	141	250	160	81	160	100	65	125	80	47	80	63
55	0,86	93	173	250	200	99	200	125	79	160	80	58	100	63
75	0,86	94	233	315	250	134	200	160	107	200	125	78	160	100
90	0,86	94	279	400	315	161	250	200	129	200	160	93	160	100
110	0,86	94	342	500	400	196	315	200	157	250	160	114	200	125
132	0,87	95	401	630	500	231	400	250	184	250	200	134	250	160
160	0,87	95	486	630	630	279	400	315	224	315	250	162	250	200
200	0,87	95	607	800	630	349	500	400	279	400	315	202	315	250
250	0,87	90	-	-	-	437	630	500	349	500	400	253	400	315
315	0,87	96	-	-	-	544	800	630	436	630	500	316	500	400
400	0,88	96	-	-	-	683	1000	800	547	800	630	396	630	400
450	0,88	96	-	-	-	769	100	800	615	800	630	446	630	630
500	0,88	97	-	-	-	-	-	-	-	-	-	491	630	630
560	0,88	97	-	-	-	-	-	-	-	-	-	550	800	630
630	0,88	97	-	-	-	-	-	-	-	-	-	618	800	630

The rated motor currents apply to normal, internal-ventilated and enclosed fan-cooled three-phase motors at 1500 rpm.
D.O.L. Starting: Maximum starting current 6 x rated motor current. Maximum starting time 5 seconds.
Y/D-starting: Maximum starting current 2 x rated motor current. Maximum starting time 15 seconds.
Set the overload relay in the phase lead to 0,58 x rated motor current.
Rated fuse currents for Y/D-starting also apply to three-phase motors with slip-ring rotors.
Use a larger fuse if the rated current or starting current is higher and/or if the starting time is longer.
The table applies to "slow" or "gL" fuse (VDE 0636)
By NH fuse with aM characteristics, select fuse size to match rated current.



	A AUTO HAND H	A AUTO HAND H	A AUTO HAND H	A AUTO HAND H
97-98 NO 95-96 NC	MANUAL RESET - Device must be reset manualy after overload by pushing the button. Relay must cool down before reset. - Testing not available in this mode.	MANUAL RESET AND TEST - Device must be reset manualy after overload by pushing the button. Relay must cool down before reset. - Test function available in this mode.	AUTOMATIC RESET AND TEST - Automatic reset of thermal protection, after cool down. - Test circuit is available.	AUTOMATIC RESET - Automatic reset of thermal protection, after cool down. - Testing not available in this mode.

4 Pole Motor Contactors

4 pole motor contactors

Type	Code No.	Rated current AC3 [A]	Rated current AC1 [A]	g	
CEB10.00-230V-50/60HZ*	002462000	10	25	260	1/66
CEB14.00-230V-50/60HZ*	002462001	14	25	260	1/66
CEB18.00-230V-50/60HZ*	002462002	18	32	260	1/66
CEB22.00-230V-50/60HZ*	002462003	22	32	260	1/66
CEB24.00-230V-50/60HZ*	002462004	24	50	610	1/28
CEB32.00-230V-50/60HZ*	002462005	32	65	610	1/28
CEB40.00-230V-50/60HZ*	002462006	40	80	610	1/28
CEB50.00-230V-50/60HZ**	002462007	50	110	1060	1/16
CEB62.00-230V-50/60HZ**	002462008	62	120	1060	1/16
CEB74.00-230V-50/60HZ**	002462009	74	130	1060	1/16

*max 4 additional aux. Contacts top (front) mounted (BCF or BCFE)
**max 6 additional aux. Contacts top (front) mounted (BCF or BCFE) and 2 side mounted BCS

Aux. Contact block - top (front) mounted

Type	Code No.	For use with	AC15 [A]	Wiring diagram	g	
CEB-BCFE 10	002462100	CEB10…CEB74	3	1NO	111	10/1020
CEB-BCFE 01	002462101	CEB10…CEB74	3	1NC	111	10/1020
CEB-BCF 10	002462102	CEB10…CEB74	6	1NO	180	10/800
CEB-BCF 01	002462103	CEB10…CEB74	6	1NC	180	10/800

Aux. Contact block - side mounted

Type	Code No.	For use with	AC15 [A]	Wiring diagram	g	
CEB-BCS1 11	002462104	CEB10…CEB22	6	1NO+1NC	330	10/160
CEB-BCS2 11	002462105	CEB24…CEB74	6	1NO+1NC	330	10/160
CEB-BCS2 02	002462106	CEB24…CEB74	6	2NC	310	10/160

Mechanical interlock for mechanical locking of contactors (ATS systems…)

Type	Code No.	For use with	g	
CEB-MIL 10-40	002462107	CEB10…CEB40	10	10/100
CEB-MIL 50-74	002462108	CEB50…CEB74	23	10/50

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Main Contacts		Type	CEB10.00	CEB14.00	CEB18.00	CEB22.00	CEB24.00	CEB32.00	CEB40.00	CEB50.00	CEB62.00	CEB74.00
Rated insulation voltage U_i [1]		V AC	690	690	690	690	690	690	690	830	830	830
Making capacity I_{eff}	at U_e = 690V AC	A	200	200	200	200	400	500	500	700	900	900
	1000V AC	A	-	-	-	-	-	-	-	-	-	-
Breaking capacity I_{eff}	400V	A	180	180	200	200	380	400	400	600	800	800
CEB10 to CEB22	cosφ= 0,65 500V AC	A	150	150	180	180	300	370	370	500	700	700
CEB24 to CEB74	cosφ= 0,35 690V AC	A	100	100	150	150	260	340	340	400	500	500
	1000V AC	A	-	-	-	-	-	-	-	-	-	-
Utilization category AC1												
Switching of resistive load												
Rated operational current I_e (=I_{th})	690V	**A**	**25**	**25**	**32**	**32**	**50**	**65**	**80**	**110**	**120**	**130**
at 40°C, open												
Rated operational power	220V	kW	9,5	9,5	12,2	12,2	19,0	24,7	30,4	41,9	45,7	49,5
of three-phase resistive loads	230V	kW	9,9	9,9	12,7	12,7	19,9	25,9	31,8	43,8	47,7	51,7
50-60Hz, cosφ= 1	240V	kW	10,4	10,4	13,3	13,3	20,8	27,0	33,2	45,7	49,8	54,0
	380V	kW	16,4	16,4	21,0	21,0	32,9	42,7	52,6	72,3	78,9	85,5
	400V	kW	17,3	17,3	22,1	22,1	34,6	45,0	55,4	76,1	83,0	90,0
	415V	kW	17,9	17,9	23,0	23,0	35,9	46,7	57,4	79,0	86,2	93,3
	440V	kW	19,0	19,0	24,4	24,4	38,1	49,5	60,9	83,7	91,3	99,0
	500V	kW	21,6	21,6	27,7	27,7	43,3	56,2	69,2	95,2	103,8	112,5
	660V	kW	28,5	28,5	36,5	36,5	57,1	74,2	91,3	125,6	137,0	148,4
	690V	kW	29,8	29,8	38,2	38,2	59,7	77,6	95,5	131,3	143,2	155,2
	1000V	kW	-	-	-	-	-	-	-	-	-	
Rated operational current I_e (=I_{th})	690V	A	25	25	32	32	40	55	65	90	100	110
at 40°C, inside the enclosure 60°C												
Rated operational power	220V	kW	9,5	9,5	12,2	12,2	15,2	20,9	24,7	34,3	38,1	41,9
of three-phase resistive loads	230V	kW	9,9	9,9	12,7	12,7	15,9	21,9	25,9	35,8	39,8	43,8
50-60Hz, cosφ= 1	240V	kW	10,4	10,4	13,3	13,3	16,6	22,8	27,0	37,4	41,5	45,7
	380V	kW	16,4	16,4	21,0	21,0	26,3	36,2	42,7	59,2	65,7	72,3
	400V	kW	17,3	17,3	22,1	22,1	27,7	38,1	45,0	62,3	69,2	76,1
	415V	kW	17,9	17,9	23,0	23,0	28,7	39,5	46,7	64,6	71,8	79,0
	440V	kW	19,0	19,0	24,4	24,4	30,4	41,9	49,5	68,5	76,1	83,7
	500V	kW	21,6	21,6	27,7	27,7	34,6	47,6	56,2	77,9	86,5	95,2
	660V	kW	28,5	28,5	36,5	36,5	45,7	62,8	74,2	102,8	114,2	125,6
	690V	kW	29,8	29,8	38,2	38,2	47,7	65,7	77,6	107,4	119,4	131,3
	1000V	kW	-	-	-	-	-	-	-	-	-	
Minimum cross-section of conductor												
at load with I_e (=I_{th})		mm²	4	4	6	6	10	16	25	35	50	50
Utilization category AC2 and AC3												
Switching of three-phase motors												
Rated operational current I_e	220V	A	12	15	18	22	24	32	40	50	63	74
open and enclosed	230V	A	11,5	14,5	18	22	24	32	40	50	62	74
	240V	A	11	14	18	22	24	32	40	50	62	74
	380-400V	**A**	**10**	**14**	**18**	**22**	**24**	**32**	**40**	**50**	**62**	**74**
	415V	A	9	14	18	22	23	30	40	50	62	74
	440V	A	9	14	18	22	23	30	40	50	62	74
	500V	A	8,9	11,9	15	15	22,5	28,5	28,5	44	54	64,5
	660-690V	A	6,7	9	12	12	17,5	21	21	33	42	49
	1000V	A	-	-	-		-	-	-	-	-	-
Rated operational power	220-230V	kW	3	4	5	6	6	8,5	11	12,5	18,5	22
of three-phase motors	240V	kW	3	4	5	7	7	9	11,5	13,5	19	23
50-60Hz	**380-400V**	**kW**	**4**	**5,5**	**7,5**	**11**	**11**	**15**	**18,5**	**22**	**30**	**37**
	415V	kW	4,5	6	8,5	12	12	16	20	24	33	40
	440V	kW	4,5	6	8,5	12	12	16	20	24	33	40
	500V	kW	5,5	7,5	10	10	15	18,5	18,5	30	37	45
	660-690V	kW	5,5	7,5	10	10	15	18,5	18,5	30	37	45
	1000V	kW	-	-	-	-	-	-	-	-	-	-

1) Suitable at 690V for: earthed-neutral systems, overvoltage category I to IV, pollution degree 3 (standard-industry): U_{imp} = 8kV.
Data for other conditions on request.

Contactors

Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

Main Contacts		Type	CEB10.00	CEB14.00	CEB18.00	CEB22.00	CEB24.00	CEB32.00	CEB40.00	CEB50.00	CEB62.00	CEB74.00
Utilization category AC4												
Switching of squirrel cage motors, inching												
Rated operational current I_e	220V	A	12	15	18	18	24	30	40	50	63	63
open and enclosed	230V	A	11,5	14,5	18	18	24	30	40	50	62	62
	240V	A	11	14	18	18	24	32	40	50	62	62
	380-400V	**A**	**10**	**14**	**18**	**18**	**24**	**32**	**40**	**50**	**62**	**62**
	415V	A	9	14	18	18	23	30	37	45	60	60
	440V	A	9	14	18	18	23	30	37	45	55	55
	500V	A	9	12	16	16	17,5	21	21	33	42	42
	660V	A	7	9	9	9	17	20	20	31	40	40
	690V	A	6,5	8,5	8,5	8,5	17	20	20	31	40	40
	1000V	A	-	-	-	-	-	-	-	-	-	-
Rated operational power	220-230V	kW	3	4	5	5	6	8,5	11	12,5	18,5	18,5
of three-phase motors	240V	kW	3	4	5	5	7	9	11,5	13,5	19	19
50-60Hz	**380-400V**	**kW**	**4**	**5,5**	**7,5**	**7,5**	**11**	**15**	**18,5**	**22**	**30**	**30**
	415V	kW	4,5	6	8,5	8,5	12	16	20	24	33	33
	440V	kW	4,5	6	8,5	8,5	12	16	20	24	33	33
	500V	kW	5,5	7,5	10	10	15	18,5	18,5	30	37	37
	660-690V	kW	5,5	7,5	10	10	15	18,5	18,5	30	37	37
	1000V	kW	-	-	-	-	-	-	-	-	-	-
Utilization category AC5a												
Switching of gas discharge lamps												
Rated operational current I_e												
per pole at 220/230V												
Fluorescent lamps,												
uncompensated and serial compensated		A	20	20	25	25	40	52	64	88	96	104
parallel compensated		A	7	9	9	9	18	22	22	30	40	40
dual-connection		A	22,5	22,5	28	28	45	58	72	98	108	117
Metal halide lamps[1],												
uncompensated		A	12	15	19	19	30	39	48	66	72	78
parallel compensated		A	7	9	9	9	18	22	22	30	40	40
Mercury-vapour lamps[2],												
uncompensated		A	22,5	25	28	28	45	58	72	99	108	117
parallel compensated		A	7	9	9	9	18	22	22	30	40	40
Mixed light lamps[3]		A	20	20	25	25	40	52	64	88	96	104
LED-Lamps												
consider the inrush current of the lamp ballast			max. lamps per pole ($I_{nLED} \leq I_{th}$) =					inrush current of contactor / inrush current of lamp/EVG				
and cosφ of the lamp.												
max inrush current of contactor		A	282	282	282	282	564	705	705	987	1269	1268
Utilization category AC5b												
Switching of incandescent lamps [4]												
Rated operational current I_e												
per pole at 220/230V		A	12,5	12,5	12,5	12,5	25	31	31	43	56	56

1) Metal halide lamps and sodium-vapour lamps (high- and low-pressure lamps)
2) High-pressure lamps
3) Blended lamps, containing a mercury high-pressure unit and a tungsten helix in a flourescent glass bulb (daylight lamps)
4) Current inrush approx. 16 x I_e

			CEB10.00	CEB14.00	CEB18.00	CEB22.00	CEB24.00	CEB32.00	CEB40.00	CEB50.00	CEB62.00	CEB74.00
Utilization category DC1												
Switching of resistive load												
Time constant L/R ≤1ms												
Rated operational current I_e 1 pole	24V - 60V	A	20	25	32	32	50	65	80	110	120	130
	110V	A	6	6	6	6	10	10	10	12	12	12
	220V	A	0,8	0,8	0,8	0,8	1,4	1,4	1,4	1,4	1,4	1,4
2 poles in series	24V - 110V	A	20	25	32	32	50	65	80	110	120	130
	220V	A	6	6	6	6	10	10	10	12	12	12
3 poles in series	24V - 110V	A	20	25	32	32	50	65	80	110	120	130
	220V	A	16	20	20	20	30	35	35	63	80	80
Utilization category DC3 and DC5												
Switching of shunt motors and series motors												
Time constant L/R ≤15ms												
Rated operational current I_e 1 pole	24V	A	20	25	32	32	50	65	80	110	120	130
	60V	A	6	6	6	6	30	30	30	60	60	60
	110V	A	1,2	1,2	1,2	1,2	1,8	1,8	1,8	1,8	1,8	1,8
	220V	A	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,25	0,25	0,25
2 poles in series	24V - 60V	A	20	25	32	32	50	65	80	110	120	130
	110V	A	6	6	6	6	30	30	30	60	60	60
	220V	A	1,2	1,2	1,2	1,2	1,8	1,8	1,8	1,8	1,8	1,8
3 poles in series	24V	A	20	25	32	32	50	65	80	110	120	130
	60V	A	20	25	32	32	40	40	40	80	80	80
	110V	A	20	20	20	20	40	40	40	80	80	80
	220V	A	2,5	2,5	2,5	2,5	4	4	4	5	5	5

			CEB10.00 CEB14.00 CEB18.00 CEB22.00	CEB24.00 CEB32.00	CEB40.00 CEB50.00 CEB62.00 CEB74.00
Control Circuit					
Power consumption of coils					
AC operated	inrush	VA	33-45	90-115	140-165
	sealed	VA	7-10	9-13	13-18
		W	2,6-3	2,7-4	5,4-7
Operation range of coils					
in multiples of control voltage U_s					
AC operated			0,85-1,1	0,85-1,1	0,85-1,1
			0,8-1,1	0,8-1,1	0,8-1,1
Switching time at control voltage U_s ±10% [2) 3)]					
AC operated	make time	ms	8-16	10-25	12-28
	release time	ms	5-13	8-15	8-15
	arc duration	ms	10-15	10-15	10-15
Cable cross-section					
Magnet coil	solid	mm²	0,75-2,5	0,75-2,5	0,75-2,5
	flexible	mm²	0,5-2,5	0,5-2,5	0,5-2,5
	flexible with multicore cable end	mm²	0,5-1,5	0,5-1,5	0,5-1,5
Clamps per pole			2	2	2

Accessories

Data according to IEC 947-5-1, EN 60947-5-1, VDE 0660

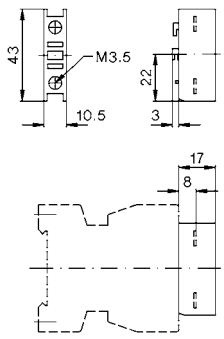
Type			CEB-BCFE		CEB-BCF	CEB-BCS
Rated insulation voltage U_i [1]		V AC	690		690	690
Thermal rated current I_{th} to bis 690V						
Ambient temperature	max. 40°C	A	10		25	10
	max. 60°C	A	6		20	6
Frequency of operations z		1/h	3000	-	3000	3000
Mechanical life		S x 10^6	10		10	10
Power loss per pole at I_e/AC1		W	0,5		1,5	0,5
Utilization category AC15						
Rated operational	220-240V	A	3		6	3
current I_e	380-400V	A	2		3	2
	440V	A	1,6		2	1,6
	500V	A	1,2		2	1,2
	660-690V	A	0,6		1	0,6
Utilization category DC13						
Rated operational	24V	A	2		8	2
current I_e	48V	A	2		8	2
	60V	A	2		8	2
	110V	A	0,4		1	0,4
	220V	A	0,1		0,1	0,1
Short circuit protection short-circuit current 1kA, contact welding not accepted max. fuse size	gL (gG)	A	20		25	20
For contactors with thermal overload relay or auxiliary contacts the device with the smaller admissible control fuse (contactor or thermal overload relay) determines the fuse size.						
Cable cross-sections						
	solid or stranded	mm^2	0,75-2,5		0,75-2,5	0,75-2,5
	flexible	mm^2	0,75-2,5		0,75-2,5	0,75-2,5
	flexible with multicore cable end	mm^2	0,5-1,5		0,5-1,5	0,5-1,5
	solid	AWG	14 - 12		14 - 12	14 - 12
	flexible	AWG	18 - 12		18 - 12	18 - 12
Cables per clamp			2		2	2

1) Suitable for: earthed-neutral systems, overvoltage category I to IV, pollution degree 3 (standard-industry): U_{imp} = 8kV. Data for other conditions on request.
2) Command duration min. 30ms, 10% duty cycle, max. 30 sec.

Dimensions Accessories

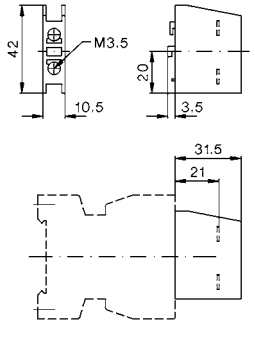
Aux. cont. blocks, terminal blocks

CEB-BCFE 10 **CEB-BCFE 01**

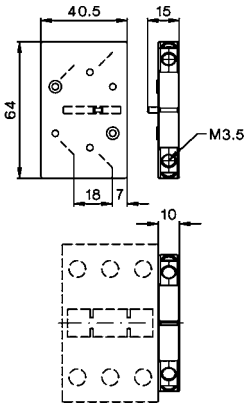


Auxiliary contact blocks

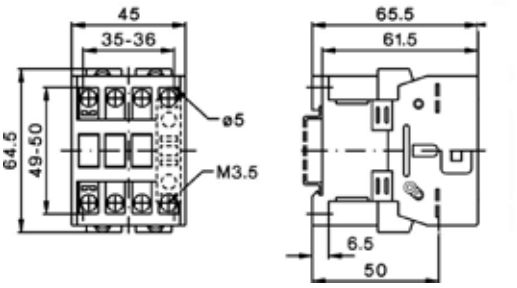
CEB-BCF 10 **CEB-BCF 01**



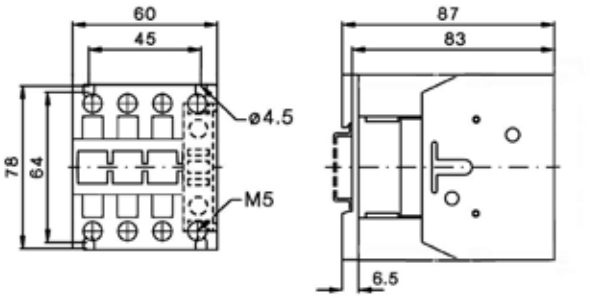
CEB-BCS1 11 CEB-BCS2 11
CEB-BCS2 02



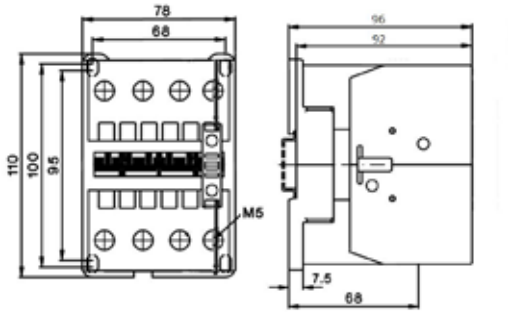
CEB10.00
CEB14.00
CEB18.00
CEB22.00



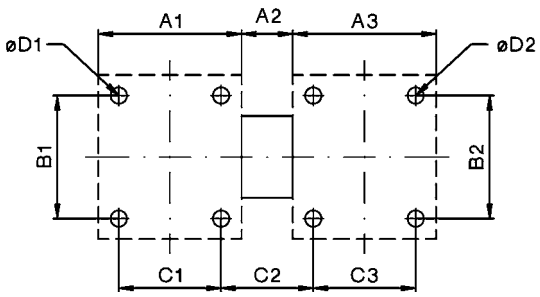
CEB24.00
CEB32.00
CEB40.00



CEB50.00
CEB62.00
CEB74.00



Mechanical interlocks



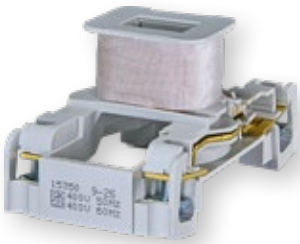
Type	Contactor 1	Contactor 2	A1	A2	A3	B1	B2	C1	C2	C3	D1	D2
CEB-MIL 10-40	CEB10.00 to CEB40.00	CEB10.00 to CEB40.00	45	7	45	50	50	35	17	35	4,5	4,5
	CEB10.00 to CEB22.00	CEB10.00 to CEB22.00	45	7	45	80	50	35	17	35	4,5	4,5
	CEB24.00 to CEB40.00	CEB22.00 to CEB40.00	45	7	45	80	50	35	17	35	4,5	4,5
CEB-MIL 50-74	CEB50.00 to CEB74.00	CEB24.00 to CEB40.00	60	12	55	100	65	50	22	45	5,5	4,5
	CEB50.00 to CEB74.00	CEB50.00 to CEB74.00	60	12	60	100	100	50	22	50	5,5	5,5

Individual coil for control voltage contactor

Individual coil for control voltage contactor

Type	Code No.	AC; DC coil	For use with	g	
BCAE4-25-24 V-50/60 Hz*	004641810	AC	CEM9 - CEM 25	65	1
BCAE4-25-48 V-50/60 Hz*	004641811	AC			
BCAE4-25-110 V-50/60 Hz*	004641812	AC			
BCAE4-25-230 V-50/60 Hz*	004641813	AC			
BCAE4-25-400 V-50/60 Hz*	004641814	AC			
BCCE-25-24 V DC*	004642810	DC		120	
BCCE-25-48 V DC*	004642811	DC			
BCCE-25-110 V DC*	004642812	DC			
BCCE-25-220 V DC*	004642813	DC			
BCAE-40-24 V-50/60 Hz*	004641820	AC	CEM32 - CEM40	110	
BCAE-40-48 V-50/60 Hz*	004641821	AC			
BCAE-40-110 V-50/60 Hz*	004641822	AC			
BCAE-40-230 V-50/60 Hz*	004641823	AC			
BCAE-40-400 V-50/60 Hz*	004641824	AC			
BCCE-40-24 V DC*	004642820	DC		180	
BCCE-40-48 V DC*	004642821	DC			
BCCE-40-110 V DC*	004642822	DC			
BCCE-40-220 V DC*	004642823	DC			
BCAE-105-24 V-50/60 Hz	004641830	AC	CEM50 - CEM105	140	
BCAE-105-48 V-50/60 Hz	004641831	AC			
BCAE-105-110 V-50/60 Hz	004641832	AC			
BCAE-105-230 V-50/60 Hz	004641833	AC			
BCAE-105-400 V-50/60 Hz	004641834	AC			
BCCE-105-24 V DC	004642830	DC		220	
BCCE-105-48 V DC	004642831	DC			
BCCE-105-110 V DC	004642832	DC			
BCCE-105-220 V DC	004642833	DC			
BCAE-112-24 V-50/60 Hz	004641840	AC	CEM112	235	
BCAE-112-48 V-50/60 Hz	004641841	AC			
BCAE-112-110 V-50/60 Hz	004641842	AC			
BCAE-112-230 V-50/60 Hz	004641843	AC			
BCAE-112-400 V-50/60 Hz	004641844	AC			
BCAE-180-24 V-50/60 Hz	004641850	AC	CEM180	400	
BCAE-180-48 V-50/60 Hz	004641851	AC			
BCAE-180-110 V-50/60 Hz	004641852	AC			
BCAE-180-230 V-50/60 Hz	004641853	AC			
BCAE-180-400 V-50/60Hz	004641854	AC			
BCAE-250-24 V-50/60 Hz	004641860	AC	CEM250	675	
BCAE-250-48 V-50/60 Hz	004641861	AC			
BCAE-250-110 V-50/60 Hz	004641862	AC			
BCAE-250-230 V-50/60 Hz	004641863	AC			
BCAE-250-400 V-50/60 Hz	004641864	AC			

* Only AC coils can be fitted to AC controlled contactors
& only DC coils can be fitted to DC controlled contactors.



Individual coil for control voltage contactor

Type	Code No.	AC/CD coil	For use with	g	
BCEE-150E-28 V	004646044	AC/DC	CEM112E - CEM150E	235	1
BCEE-150E-130 V	004646045				
BCEE-150E-250 V	004646046				
BCEE-150E-415 V	004646047				
BCEE-180E-28 V	004646048		CEM180E	400	
BCEE-180E-130 V	004646049				
BCEE-180E-250 V	004646050				
BCEE-180E-415 V	004646051				
BCEE-300E-28 V	004646052		CEM250E - CEM300E	670	
BCEE-300E-130 V	004646053				
BCEE-300E-250 V	004646054				
BCEE-300E-415 V	004646055				
BCEE-560E 255V-AC/DC	004656322		CEM450E - CEM560E	1360	1/16

Electronic modules for BCEE coils

Type	Code No.	AC/CD coil	For use with	g	
MEE-300 28V-AC/DC	004646070	AC/DC	BCEE-150E-28 V, BCEE-180E-28 V, BCEE-300E-28 V	96	1
MEE-300 110V-AC/DC	004646072		BCEE-150E-130 V, BCEE-180E-130 V, BCEE-300E-130 V		
MEE-300 250V-AC/DC	004646073		BCEE-150E-250 V, BCEE-180E-250 V, BCEE-300E-250 V		
MEE-300 415V-AC/DC	004646074		BCEE-150E-415 V, BCEE-180E-415 V, BCEE-300E-415 V		
MEE-560 255V-AC/DC	004656321		BCEE-560E-255V		

ETICON Motor protective circuit breakers

Motor protective circuit breakers MSP

Description
The MSP0, MSP1 motor starter protectors are compact motor starter protectors for currents up to 52 A which operate according to the current limiting principle. The devices are used for switching and protecting motors or other loads. They are fitted with instantaneous overcurrent releases and inverse-time delayed overload relay. Motor starter protectors and contactors can be combined to form fuseless starter combinations. The MSP0, MSP1 motor starter protectors are suitable for use in any climate.

Motor Starter Protectors
· for motor protection
- MSP0: 0,4...25 A
- MSP1: 22...52 A

The characteristic curves of these motor starter protectors are specially laid-out for the overload and short-circuit protection of motors. The inverse-time delayed releases
("a releases") are adjustable for setting the rated current of the motors to be protected. The instantaneous short-circuit releases ("n releases") are fixed-set to 12 times the value so as to assure faultless starting of the motors.

Technical data **according to IEC 60947-1; IEC 60947-2; IEC 60947-4-1**

Type		MSP0				MSP1			
General data									
Number of poles		3				3			
Max. rated current I_n									
• motor protection	A	25				52			
Permissible ambient temperature									
• at full rated current	°C	-20 ... +55							
• in storage	°C	-50 ... +80							
Rated operational voltage U_e	V	690							
Rated frequency	Hz	50/60							
Rated insulation voltage U_i	V	750							
Rated impulse withstand voltage U_{imp}	kV	6							
Utilization category									
• to IEC 60947-2 (motor starter protectors)		A							
• to IEC 60947-4-1 (motor starters)		AC-3							
Mechanical endurance									
• up to 25 A	Operating cyles	100000				100000			
• 25 A upwards		--				30000			
Number of operating cycles/h (on load)	1/h	25				25			
Degree of protection with open terminals/with conductors connected		IP00/IP20							
Temperatures compensation to IEC 60947-4-1		✓							
Phase failure sensitivity to IEC 60947-4-1		✓							
Power loss P_v per breaker									
I_n	A	0,6	4	6	25	2,4	6	25	63
P_v	W	5	6	7	9	8	7	14	23

Motor protective circuit breaker MSP

Type	Code No.	Rated current [A]	Thermal overload release [A]	Instantaneous overcurrent release [A]	Motor power [kW]	g	
MSP0-0,6	004646618	0,6	0,4…0,6	7,2	0,12/0,18	290	1
MSP0-1,0	004646619	1	0,6…1,0	12	0,25	290	1
MSP0-1,6	004646620	1,6	1,0…1,6	19	0,37/0,55	290	1
MSP0-2,4	004646621	2,4	1,6…2,4	29	0,75	290	1
MSP0-4,0	004646622	4	2,4…4,0	48	1,1/1,5	290	1
MSP0-6,0	004646623	6	4,0…6,0	72	2,2	290	1
MSP0-10	004646624	10	6,0…10	120	3/4	290	1
MSP0-16	004646625	16	10…16	190	7,5	290	1
MSP0-20	004646626	20	14…20	240	7,5	290	1
MSP0-25	004646627	25	18…25	300	11	290	1
MSP1-32	004646628	32	22…32	380	15	760	1
MSP1-40	004646629	40	28…40	480	18,5	760	1
MSP1-52	004646630	52	36…52	600	22	760	1

MSP0

MSP1

Auxiliary contacts				
Utilization category			AC-15	
Rated operational voltage U_e	AC V	230	400	500
Rated operational current I_e	A	3	1.5	1
Utilization category			DC-13	
Rated operational voltage U_e DC L/R200 ms	DC V	24	60	220
Rated operational current I_e	A	2.3	0.7	0.3

Type		MSP0	MSP1
Cross-section for main conductors			
Solid or stranded	mm^2	2 x (1 ... 6)	1 x 1.5 ... 2 x 16 or 1 x 25 + 1 x 10
Finely stranded with end sleeve	mm^2	2 x (1 ... 4)	1 x 1.5 ... 2 x 10 or 1 x 16 + 1 x 10
Cross-sections for auxiliary and control connecting leads			
Solid or stranded	mm^2	1 x 0.5 ... 2 x 2.5	--
Finely stranded with end sleeve	mm^2	1 x 0.5 ... 2 x 1.5	--

Rated short-circuit breaking capacity

The table shows the rated ultimate short-circuit breaking capacity I_{cu} and the rated service short-circuit breaking capacity I_{cs} for the MSP motor starter protectors with respect to rated current I_n and reated operational voltage U_e.

Infeed is permitted at top or bottom without reduction of rated data. In the short-circuit proof areas, I_{cu} is at least 100 kA. A backup fuse is therefore not necessary.

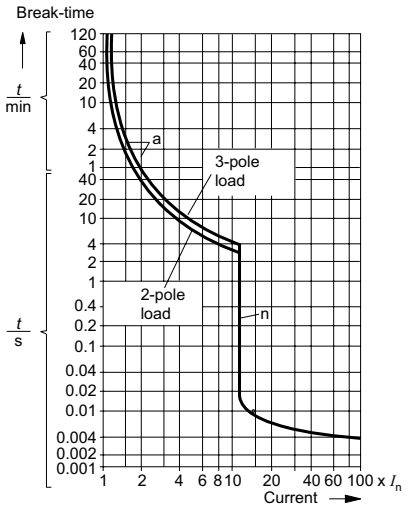
In the other areas, when the short-circuit current at the installation point exceeds the rated short-circuit breaking capacity given in the table for the motor starter protectors, the motor starter protector must be protected by a backup fuse. See the following table for the maximum reated current for the backup fuse. With a backup fuse according to the table, the maximum short-circuit current is permitted to equal the rated breaking capacity of the backup fuse.

Motor Starter Protectors	Rated current In	Up to AC 240 V			Up to AC 415 V			Up to AC 440 V			Up to AC 500 V			Up to AC 690 V		
		I_{cu}	I_{cs}	Max. Backup fuse (gL/gG)	I_{cu}	I_{cs}	Max. Backup fuse (gL/gG)	I_{cu}	I_{cs}	Max. Backup fuse (gL/gG)	I_{cu}	I_{cs}	Max. Backup fuse (gL/gG)	I_{cu}	I_{cs}	Max. Backup fuse (gL/gG)
Type	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A
MSP0	≤ 1 A	Short-circuit proof up to 100 kA, backup														
	1.6 A	fuse is not necessary												2	2	20
	2.4 A										10 (50)	10 (50)	35	2	2	35
	3.2 & 4 A							10 (50)	10 (50)	50	3 (50)	3 (50)	50	2	2	50
	5 & 6 A							5 (50)	5 (50)	63	3 (50)	3 (50)	63	2	2	63
	8 & 10 A				10 (50)	10 (50)	80	5 (50)	5 (50)	80	3 (5)	3 (5)	80	2	2	80
	13 & 16 A				6 (50)	6 (50)	80	5 (30)	5 (30)	80	3 (5)	3 (5)	80	2	2	80
	20 & 25 A	10 (50)	10 (50)	100	6 (50)	6 (50)	80	5 (30)	5 (30)	80	3 (5)	3 (5)	80	2	2	80
MSP1	≤ 2.4 A	Short-circuit proof up to 100 kA, backup														
	4 A	fuse is not necessary												4	4	80
	6 A											50		4	4	100
	10 A								50		10	5	160	4	4	125
	16 A							25	13	200	10	5	160	4	4	125
	25 A					50		25	13	200	10	5	200	4	4	160
	32 & 52 A				35	17	200	25	13	200	10	5	200	4	4	160

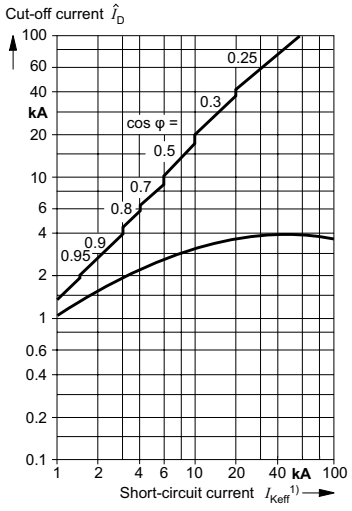
Curves

Characteristic curves
The characteristic curves are obtained in the cold state and 3-pole loading.
At operating temperature, the tripping time of the thermal releases drops by about 25 %. With 3-pole loading, the deviation in tripping time for 3 times the current and upwards is ±20 %.

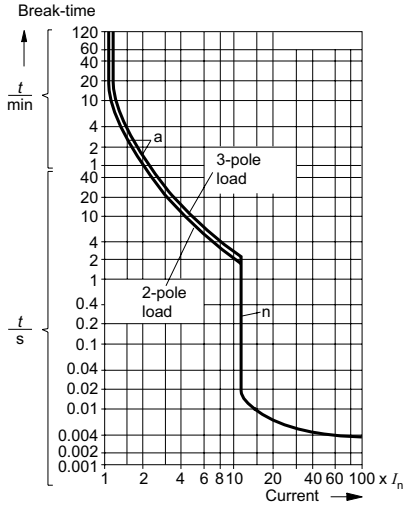
Characteristic curves for MSP0
The characteristic curves shown here apply for a MSP0-6 motor starter protector with a rated current of 6 A, a current setting range of 4 to 6 A and a tripping current for the instantaneous overcurrent release of 72 A, at a rated voltage of AC 50 Hz, 400 V.



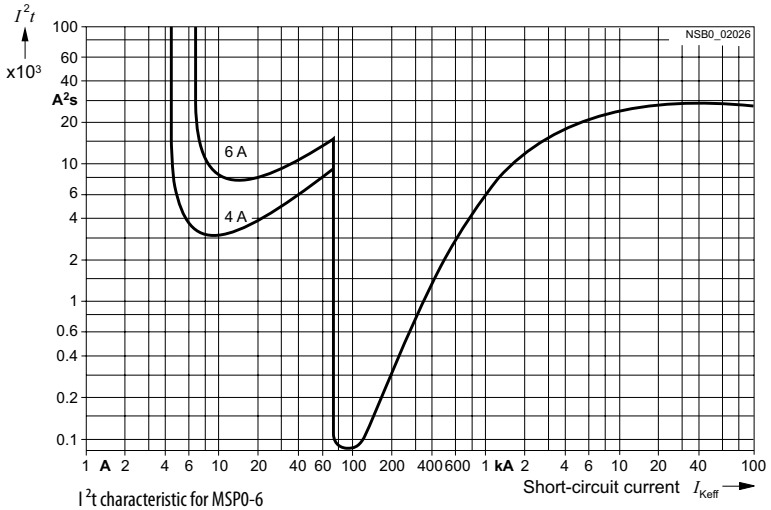
Schematic representation of the time/current characteristic for MSP0



Current limiting characteristic for MSP0-6



Schematic representation of the time/current characteristic for MSP1



I²t characteristic for MSP0-6

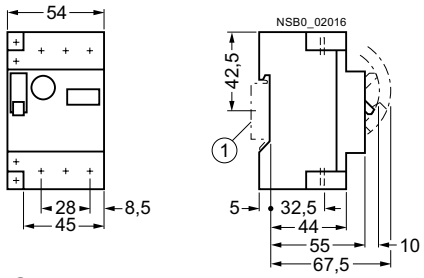
Characteristic curves for MSP1

The characteristic curves shown here apply for a motor starter protector with a rated current of 25 A and a tripping current for the instantaneous overcurrent release of 300 A, at a rated voltage of AC 50 Hz, 400 V.

Relation between short-circuit breaking capacity I, related power factor and minimum short-circuit making capacity to IEC 60947-2.			
Short-circuit breaking capacity		Power factor cos φ	Short-circuit making capacity
		A	
	I ≤ 3000	0.9	1.42 x I
3000 <	I ≤ 4500	0.8	1.47 x I
4500 <	I ≤ 6000	0.7	1.5 x I
6000 <	I ≤ 10000	0.5	1.7 x I
10000 <	I ≤ 20000	0.3	2.0 x I
20000 <	I ≤ 50000	0.25	2.1 x I
50000 <	I	0.2	2.2 x I

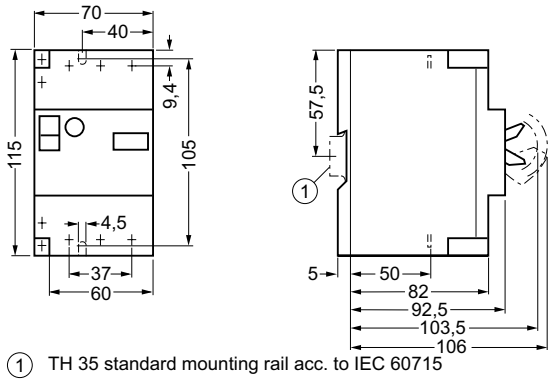
Dimensions

MSP0



1 TH 35 standard mounting rail acc. to IEC 60715

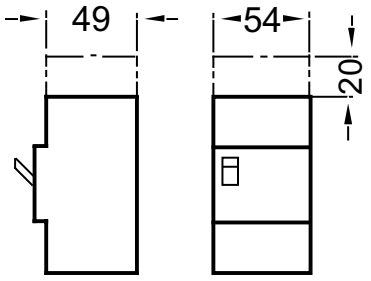
MSP1



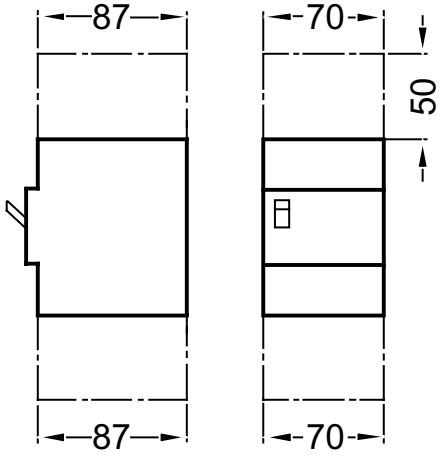
1 TH 35 standard mounting rail acc. to IEC 60715

Space required above arc chutes
Minimum clearance with rated voltage to adjacent parts as well as non-insulated live parts.
The spacing of minimum 1 cm with MSP0 and minimum 2 cm with MSP1 between large-surface covers and arc openings should be observed.

MSP0

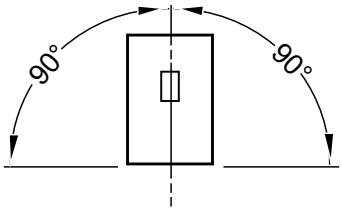


MSP1

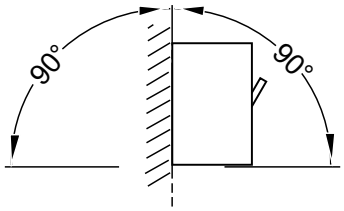


Uninsulated conductors must be insulated within the space required above arc chutes.

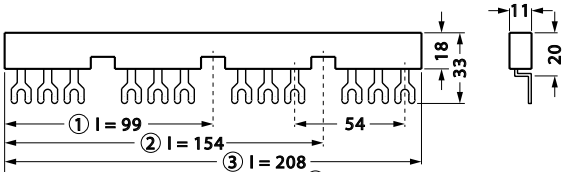
Permissible mounting position
MSP0, MSP1 motor starter protectors permissible mounting position due to the position of the operating parts



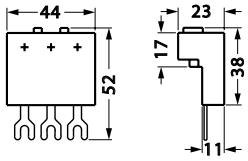
Front view



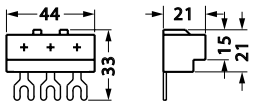
Lateral view



three-phase busbar
① For 2 devices: MSP-IZ2
② For 3 devices: MSP-IZ3
③ For 4 devices: MSP-IZ4



MSP-TA2
three-phase feed-in terminal, type I

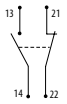


MSP-TA1
three-phase feed-in terminal, type II

Accessories

Combinations:
Right hand side of MSP: An auxiliary contact and/or a short-circuit signalling contact
Left hand side of MSP: Undervoltage release or Shunt release

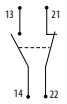
Short circuit trip indication

Type	Code No.	Description	Wiring diagram	g	
MSP-AS	004646617	1NO+1NC (AC-15: 3A/230V, 1.5A/400V, 1A/500V)		40	1

width= 9mm

MSP-AS

Auxiliary contact

Type	Code No.	Description	Wiring diagram	g	
MSP-PS11	004646631	1NO+1NC (AC-15: 3A/230V, 1.5A/400V, 1A/500V)		40	1

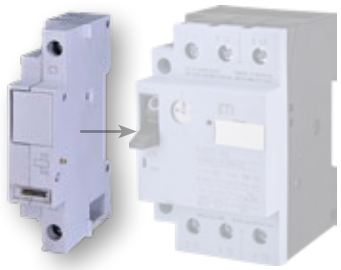
width= 9mm

MSP-PS11

Shunt release

Type	Code No.	Rated voltage Un	Operation range	g	
MSP-A 230	004646632	230 VAC (220-230V 50Hz)	154-253 VAC	110	1
MSP-A 24	004646633	24 VAC (24V 50Hz, 24-60V DC)	16.8 - 26.4 VAC, 16.8 - 66VDC	110	1

width=18mm, operation range: 0.7-1.1*Un

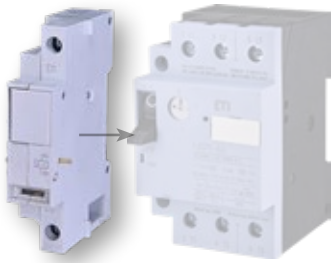


MSP-A 230

Undervoltage release

Type	Code No.	Rated voltage Un	Operation range (for keeping)	g	
MSP-U 240	004646634	240 V 50Hz	204-264 VAC	110	1

width=18mm, Falling(tripping) voltage: 0.35-0.7 Un, keeping voltage: 0.85-1.1Un.



MSP-U 240

Connection terminals

Type	Code No.	Description	g	
MSP-IZ2	004646635	busbar connection of 2 MSPs	50	1
MSP-IZ3	004646636	busbar connection of 3 MSPs	50	1
MSP-IZ4	004646637	busbar connection of 4 MSPs	100	1
MSP-TA1	004646638	3 phase line side terminal	110	1
MSP-TA2	004646639	3 phase line side terminal (in combination with MSP-IZ...)	50	1

MSP-IZ3

MSP-TA1

MSP-TA2

Motor protective circuit breakers MPE

General technical data

				MPE25	MPE80
Operational inst. current I_u			A	0,16 ... 40	50 ... 80
Rated short-circuit capacity			kA	50	60
Standards				IEC/EN 60 947	
Climatic proffing				damp heat, constant to IEC 60 068-2-3 damp heat, cyclical to IEC 60 068-2-30	
Ambient temperature	Storage		°C	-50 ... +80	
	Open		°C	-20 ... +70	
	Enclosed		°C	-20 ... +35	
Mounting position				any position	
Degree of protection				IP20	
Protection against direct contact				IP20	
Shock resistance to IEC 60 068-2-27			g	15	
Altitude			m	2000	
Conductor cross-section for main circuit	solid & stranded		mm^2	1 x (1,5 ... 6) / 2 x (1,5 ... 6)	1 x (1,5 ... 35) / 2 x (2,5 ... 35)
Tightening torque	main circuits		Nm	2,0...2,5	6
	control circuits		Nm	1,0...1,25	
Main contacts					
Rated impulse withstand voltage U_{imp}			kV	6	
Overvoltage categ./pollution degree				III/3	
Rated operational voltage U_e			V	690	
Rated operational current I_e			A	25 or setting current of overload release	
Rated frequency			Hz	50/60	
Current heat losses, 3-pole at oper. T			W	5 (MPE25-0,1 - MPE25-0,63)	
			W	6 (MPE25-1 - MPE25-6,3)	
			W	7 (MPE25-10)	
			W	8 (MPE25-16 - MPE25-25)	
			W	10 (MPE25-32)	
Life span, mechanical / electrical			Ops.	100.000 / 100.000	50.000 / 25.000
Maximum operating frequency			Ops./h	15	
Releases					
Temperature compensation			°C	-20 ... +60	
Adjustable overload releases			x Iu	0,6 - 1	
Fixed short circuit releases			x Iu	13	
Phase failure sensitivity				IEC/EN 60 947-4-1	
Auxiliary contacts					
Rated impulse withstand voltage			kV	6	
Overvoltage category/pollution degree				III/3	
Rated operational voltage			V	690 (250 -> ACBFE...)	
Rated operational current					
AC-15	24V	I_e	A	6 (2 -> ACBFE)	
	230V	I_e	A	4 (0,5 -> ACBFE)	
	380V-415V	I_e	A	3 (Ø -> ACBFE)	
	440V-500V	I_e	A	2 (Ø -> ACBFE)	
DC-13	24V	I_e	A	2 (1 -> ACBFE)	
	60V	I_e	A	0.5 (0,15 -> ACBFE)	
	110V	I_e	A	0.5 (Ø -> ACBFE)	
	220V	I_e	A	0.25 (Ø -> ACBFE)	
Control circuit reliability at U_e				Umin = 17V, Imin = 5mA	
	Fault probability			< 1 fault in 1 milion operations	
Short-circuit rating without welding	Fuse gG		A	10	
Conductors cross-section for auxiliary and control circuits	solid or stranded		mm^2	1 x (0,5 ... 2,5) / 2 x (0,5 ... 2,5)	

Advantages

- With overload and short circuit protection
- Fixed short circuit release 13 x Iu
- With phase-failure sensitivity according to IEC/EN 60947-4-1
- With temperature compensation
- Can be used as main switch
- MPE25 up to 10A at 400/415V are self-protected
- MPE25 above 10A provide a breaking capacity of 50kA at 400/415V according to IEC/EN 60947-2
- MPE80 provide a breaking capacity of 60kA at 380V according to IEC/EN 60947-2

IE3 CONFORM

Motor protective circuit breaker MPE

Type	Code No.	Operational inst. current I_u (A)	Setting overl. release I_r (A)	Short-circuit release I_{rm} (A)	g	
MPE25-0,16	004648001	0,16	0,1-0,16	2,08	322	1
MPE25-0,25	004648002	0,25	0,16-0,25	3,25	322	1
MPE25-0,40	004648003	0,4	0,25-0,4	5,2	322	1
MPE25-0,63	004648004	0,63	0,4-0,63	8,2	322	1
MPE25-1,0	004648005	1	0,63-1,0	13	322	1
MPE25-1,6	004648006	1,6	1,0-1,6	20,8	322	1
MPE25-2,5	004648007	2,5	1,6-2,5	32,5	322	1
MPE25-4,0	004648008	4	2,5-4,0	52	322	1
MPE25-6,3	004648009	6,3	4,0-6,3	82	322	1
MPE25-10	004648010	10	6,3-10	130	322	1
MPE25-16	004648011	16	10-16	208	322	1
MPE25-20	004648012	20	16-20	260	322	1
MPE25-25	004648013	25	20-25	325	322	1
MPE25-32	004648014	32	25-32	416	322	1
MPE25-40	004648015	40	32-40	520	322	1
MPE80-50	004648016	50	40-50	650	1070	1
MPE80-65	004648017	65	50-65	845	1070	1
MPE80-80	004648018	80	65-80	1040	1070	1

Example of MPE configuration:

MPE25-0,16 ... 40 - Overload and Short-Circuit Protection

Reference values for selecting protection of three-phase electric motors 60 Hz - 4 poles			Rated current In [A]	Overload release setting In [A]	Instantaneous magnetic trip 13x In Im [A]
220-240 V cv / kW	380-415 V cv / kW	440-480 V cv / kW			
-	-	-	0.16	0.1...0.16	2.08
-	-	-	0.25	0.16...0.25	3.25
-	-	0.16 / 0.12	0.4	0.25...0.4	5.2
-	0.16 / 0.12	0.25 / 0.18	0.63	0.4...0.63	8.2
0.16 / 0.12	0.33 / 0.25	0.33 / 0.25	1	0.63...1	13
0.33 / 0.25	0.5 / 0.37	1 / 0.75	1.6	1...1.6	20.8
0.5 / 0.37	1 / 0.75	1.5 / 1.1	2.5	1.6...2.5	32.5
1 / 0.75	2 / 1.5	2 / 1.5	4	2.5...4	52
1.5 / 1.1	3 / 2.2	4 / 3	6.3	4...6.3	82
3 / 2.2	6 / 4.5	7.5 / 5.5	10	6.3...10	130
5 / 3.7	10 / 7.5	12.5 / 9.2	16	10...16	208
7.5 / 5.5	12.5 / 9.2	15 / 11	20	16...20	260
-	15 / 11	-	25	20...25	325
12.5 / 9.2	20 / 15	20 / 15	32	25...32	416
15 / 11	25 / 18.5	25 / 18.5	40	32...40	520

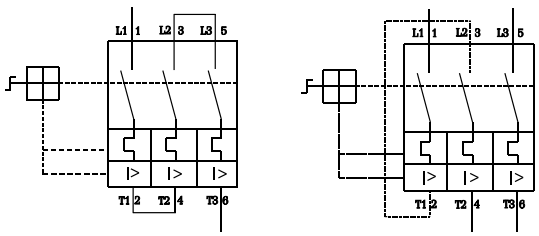
MPE80-50...80 - Overload and Short-Circuit Protection

Reference values for selecting protection of three-phase electric motors 60 Hz - 4 poles			Rated current In [A]	Overload release setting In [A]	Instantaneous magnetic trip 13x In Im [A]
220-240 V cv / kW	380-415 V cv / kW	440-480 V cv / kW			
15 / 11	25 / 18.5	30 / 22	40	32...40	520
-	30 / 22	40 / 30	50	40...50	650
25 / 18.5	40 / 30	50 / 37	65	50...65	845
30 / 22	50 / 37	60 / 45	80	65...80	1,040

Technical data

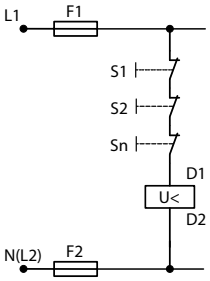
Tripping devices				
Rated operational voltage		Ue	V	200-415V
Conductor cross-section for main circuit	solid or stranded		mm^2	1 x (0,5 to 2,5) / 2 x (0,5 to 2,5)
Shunt Releases				
Operating range			x Us	0,7 - 1,1
Power consumption	Pull		VA	10
	Sealing		VA	4.5
Undervoltage Releases				
Pick-up voltage			x Us	0,85 - 1,1
Drop-out voltage			x Us	0,7 - 0,35

MPE25 wired 1- or 2-pole

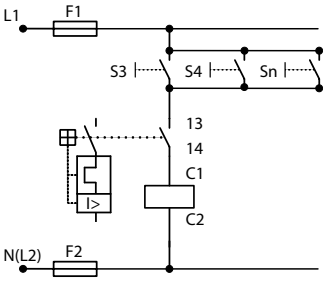


Typical circuits

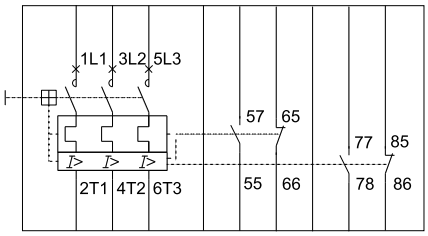
Undervoltage release
URMPE



Shunt release
SRMPE



Trip Signalling Block
TSBE



Altitude - Factor of Correction

Altitude (above the sea level) - h	Rated operational voltage Ue	Factor of correction Iu
h < 2000m	690V	1 x In
2000m < h < 3000m	550V	0,96 x In
3000m < h < 4000m	480V	0,93 x In
4000m < h < 5000m	420V	0,90 x In

Breaking capacity of motor protective circuit breakers MPE25

Model	Max. Current	220-230 V ac			380-415 V ac			440 V ac			460-500 V ac			630-690 V ac		
		I_{cu}	I_{cs}	Max. fuse (gL/gG)	I_{cu}	I_{cs}	Max. fuse (gL/gG)1)	I_{cu}	I_{cs}	Max. fuse (gL/gG)1)	I_{cu}	I_{cs}	Max. fuse (gL/gG)1)	I_{cu}	I_{cs}	Max. fuse (gL/gG)1)
		kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A
MPE25	0.16	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-
	0.25	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-
	0.4	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-
	0.63	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-
	1	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-
	1.6	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-
	2.5	100	100	-	100	100	-	100	100	-	100	100	-	8	8	25
	4	100	100	-	100	100	-	100	100	-	100	100	-	8	8	35
	6.3	100	100	-	100	100	-	100	100	-	100	100	-	8	8	50
	10	100	100	-	100	100	-	50	25	80	42	21	63	8	8	50
	16	100	100	-	50	25	100	50	15	80	10	8	80	5	5	63
	20	100	100	-	50	25	125	50	15	80	10	8	80	5	5	63
	25	100	100	-	50	25	125	50	15	100	10	8	80	5	5	80
	32	100	100	-	50	25	125	25	15	100	10	8	100	5	5	100
	40	100	100	-	30	15	125	20	10	125	10	5	125	5	2	125
MPE80	40	100	100	-	65	65	160	65	65	125	35	35	125	8	8	125
	50	100	100	-	65	65	160	65	65	160	35	35	160	8	8	160
	65	100	100	-	65	65	200	65	65	200	35	35	200	8	8	200
	80	65	65	224	65[2] / 10[3]	25[2] / 10[3]	224	10	10	224	10	10	224	6	6	224

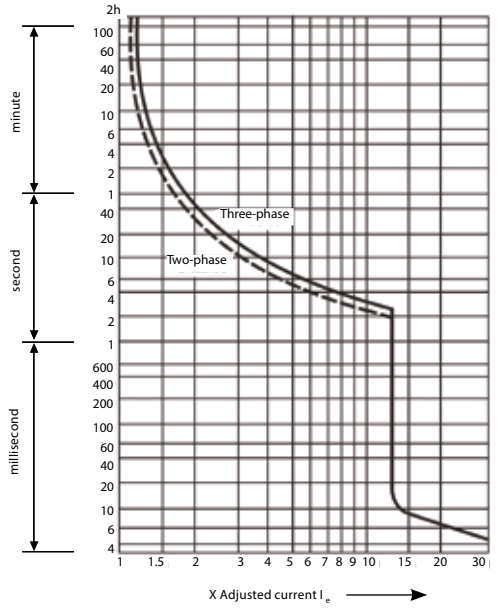
Icc = Prospective short-circuit current
Icu = Rated ultimate short-circuit breaking capacity
Ics = Rated service short-circuit breaking capacity

Notes: 1) Fuse required if the prospective short-circuit current exeeds the rated ultimate short circuit breaking capacity (Icc>Icu)
2) Ue≤380 V.
3) Ue=400/415 V.

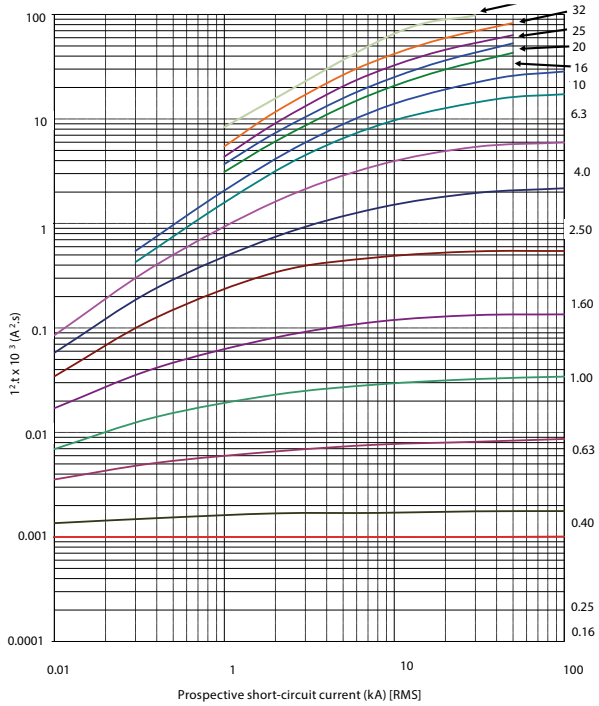
Curves

The tripping characteristic shows the motor circuit breaker trip time in relation to the rated current. The curves show average tolerance range values for an ambient temperature of 20 °C, starting in cold state.
Thermal trip time when working in operating temperature is reduced to around 25% of the presented values. Under normal operating conditions, all 3 circuit breaker phases must be conducting.

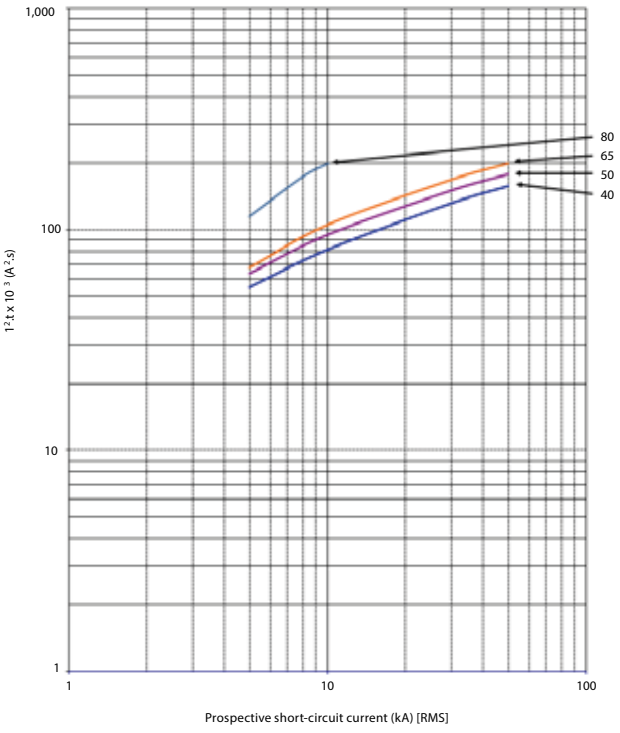
MPE25...80



MPE25, MPE80 I-t diagram



MPE25 Let-through characteristics at 415V

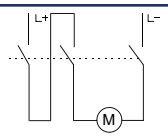
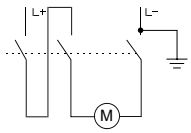
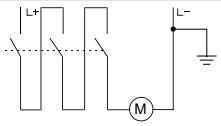


MPE80 Let-through characteristics at 415V

The MPE 25 switching of direct current

The MPE circuit breakers for alternating current are able to switch direct current. However, you are obliged to observe the maximum permissible DC voltage per conducting path. In case of higher voltages, series connection of 2 or 3 conducting parts is required. The response characteristics of the overload releases remain unchanged. The response thresholds of the short-circuit releases are increased with direct current by approximately 35%.

The following table shows suggestions for switching direct current:

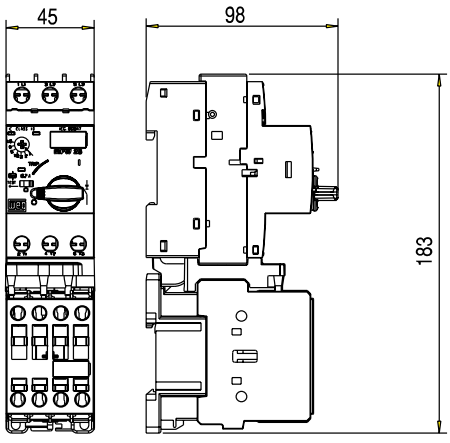
Recommended Connection	Highest Permissible Direct Voltage	Explanation
	150V DC	2-poles switching Ungrounded system If ground fault can be excluded, or if every ground is immediately corrected (via ground-fault monitoring), the maximum permissible DC voltage can be multiplied by 3
	300V DC	2-poles switching Grounded system The grounded pole should be assigned to the individual conducting path so that in the event of a ground fault there are always 2 conducting paths in series
	450V DC	1-pole switching Grounded system 3 conducting paths in series. The grounded pole should be assigned to the unswitched conducting path.

DC short-circuit breaking capacity (time constant <=5ms)

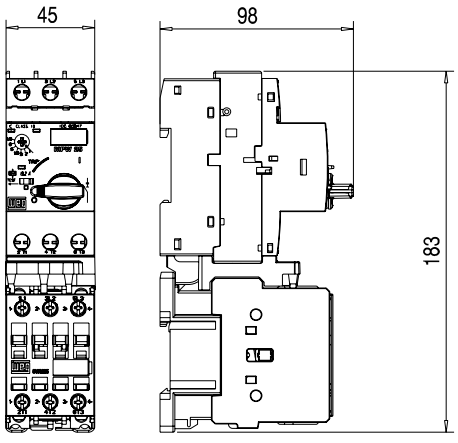
- 1 conducting path DC 150V	10kA
- 2 conducting paths in series DC 350V	10kA
- 3 conducting paths in series DC 350V	10kA

Dimensions

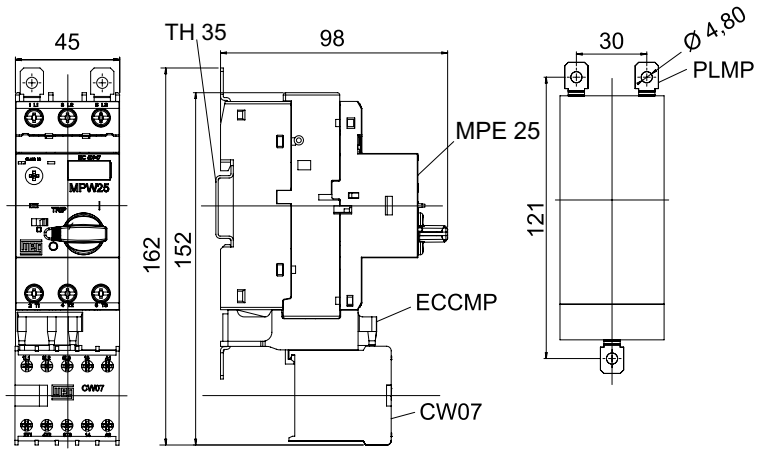
MPE25 + CEM9…CEM18



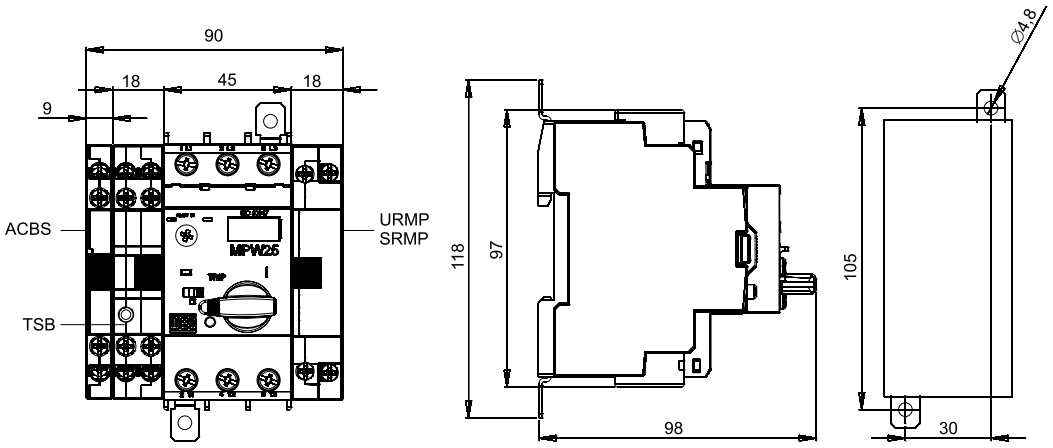
MPE25 + CEM25



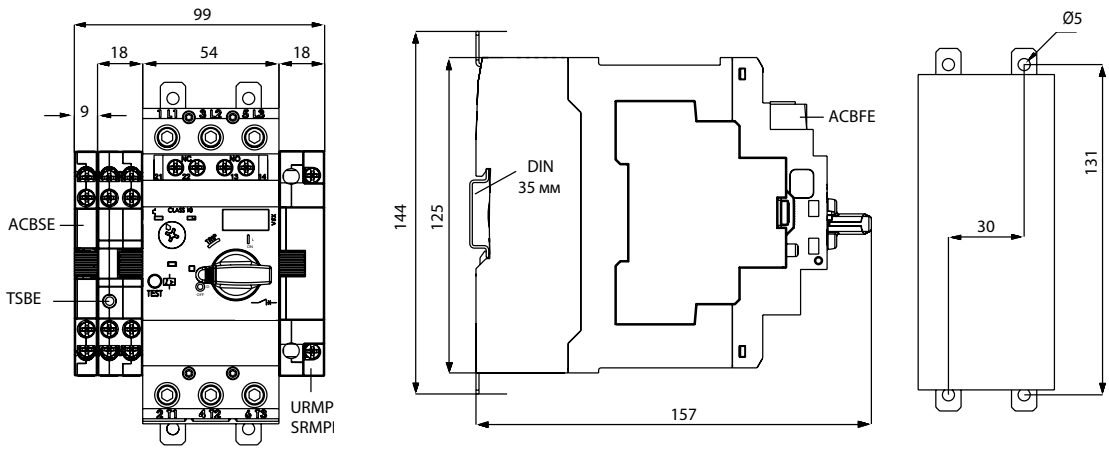
MPE25+ CE07



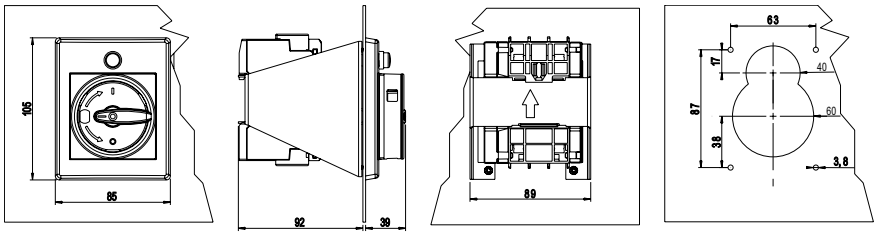
MPE25 + Accessories



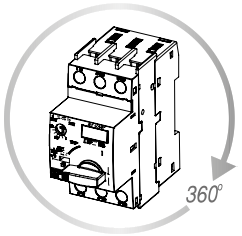
MPE80 + Accessories



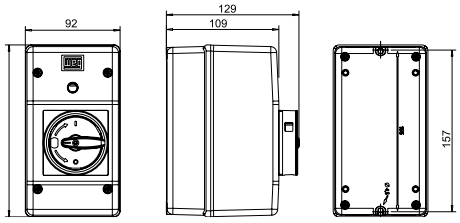
Frontal plate FMEE55E



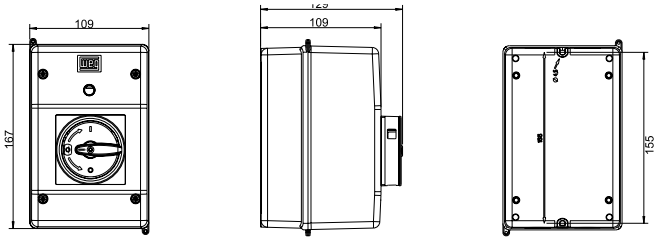
Mounting position



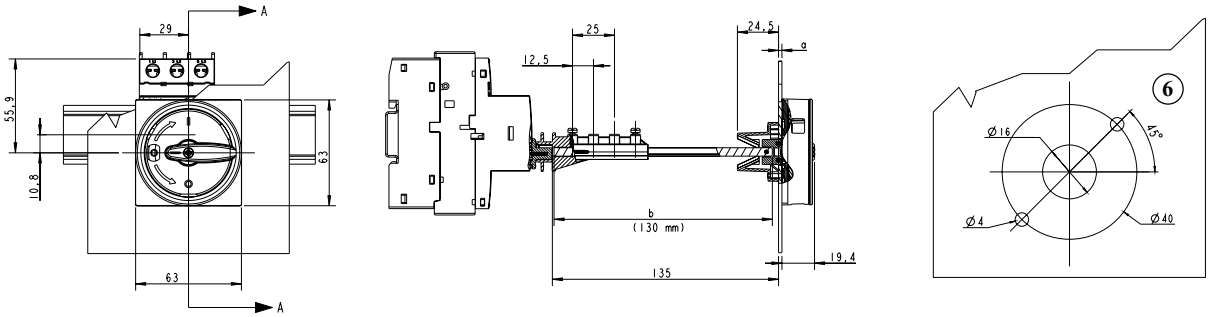
Insulated Enclosure - MPEE55



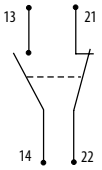
Insulated Enclosure - MLPEE55



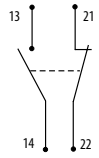
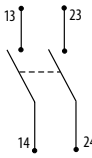
Door coupling rotary handle RMMPE

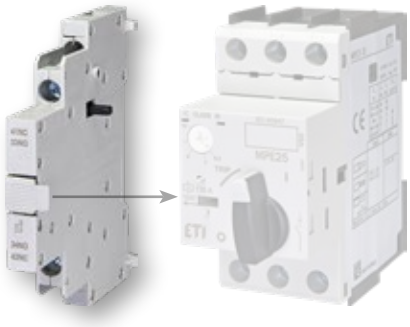


Front mountable auxiliary contact block, the 45mm widths - MPE remain unchanged

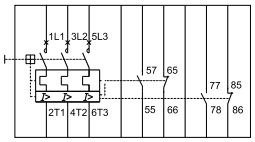
Type	Code No.	Wiring diagram	Auxiliary contacts NO, NC	g	
ACBFE-11	004648021		1, 1	20	1

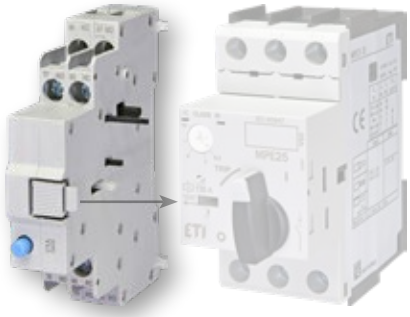
Left side mountable contact block, can be combined with front mountable auxiliary contact block

Type	Code No.	Wiring diagram	Auxiliary contacts NO, NC	g	
ACBSE-11	004648022		1, 1	38	1
ACBSE-20	004648023		2,0	38	1

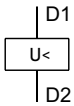


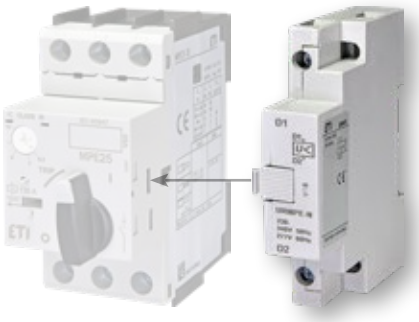
Trip indicating contact block, mounted on the left side

Type	Code No.	Wiring diagram	Notes	g	
TSBE	004648024		Separate tripped and short-circuit 1NC for each circuit. Allows mounting with lateral aux. contact block. Left side mounting. TBSE alarms, 1NO +	150	1

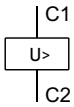


Undervoltage release, mounted on the right side

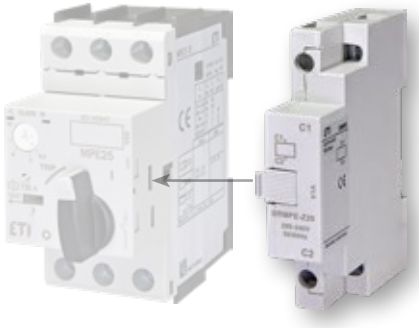
Type	Code No.	Wiring diagram	actuating voltages	g	
URMPE-N	004648027		230-240V AC	115	1
URMPE-U	004648028		400-415V AC		



Shunt release, mounted on the right side

Type	Code No.	Wiring diagram	actuating voltages	g	
SRMPE-Z20	004648030		200-240V AC	115	1

Pick-up voltage 0,7 x Ue 100%DF



Accessories

Type	Code No.	Description	g	
SCMPE	004648025	Scale cover	15	5
PLMPE	004648026	Push-in-lugs	25	2

Insulated enclosure with black/grey rotary handle, IP55

For use with	Code No.	Notes	Type	g	
MPE25 + ACBFE11 + ACBSE11 // ACBSE20 + PL..	004648032	with black/grey rotary handle with integrated PE(N) terminal	MPEE55G	365	1
MPE25 + URMPE // SRMPE + ACBFE11 + ACBSE11 ali ACBSE20 + PL..	004648033	lockable in OFF position with 3 padlocks two M25 metric cable entry knockout, top and bottom	MLPEE55G	415	1

Insulated enclosure with red/yellow rotary handle, IP55

For use with	Code No.	Notes	Type	g	
MPE25 + ACBFE11 + ACBSE11 // ACBSE20 + PL..	004648034	with red/yellow rotary handle for use as Emergency-Stop switches to IEC/EN 60204 with integrated PE(N) terminal	MPEE55G-E	365	1
MPE25 + URMPE // SRMPE + ACBFE11 + ACBSE11 or ACBSE20 + PL..	004648035	lockable in OFF position with 3 padlocks two M25 metric cable entry knockout, top and bottom	MLPEE55G-E	415	1

Neutral terminal

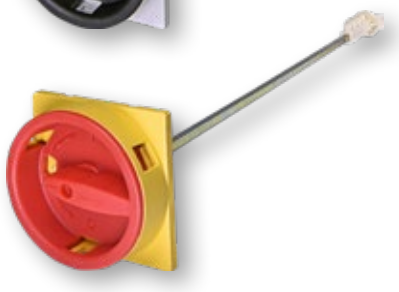
For use with	Code No.	Description	Type	g	
MPEE55G, MLPEE55G, MPEE55G-E & MLPEE55G-E	004648038	for connection of a 5th conductor	NL-MPEE	365	1

Flush mounting enclosure

Type	Code No.	colour	Description	g	
FMEE55	004648036	black	- for MPE mounting on panel door - degree of protection IP55 - moulded plastic front plate with rotary operating mechanism - lockable in OFF position - allows access. ACBFE-11, ACBSE-11 or ACBSE-20 and URMPE / SRMPE - allow installation of sig. lamp	200	1
FMEE55-E	004648037	red/yellow		200	1

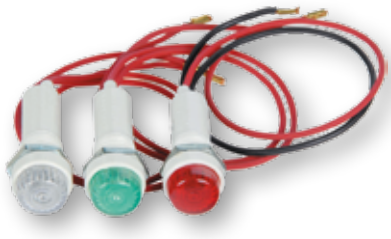
Door coupling rotary handle black/grey and red/yellow, IP55

Type	Code No.	colour	Notes	g	
RMMPE130 (130 mm)	004648039	black	- extension shaft, length 130 to 155mm - extension shaft, length 330 to 355mm - door coupling rotary handle black/grey - extension shaft can be cut ot any required length min. 80mm - thickness of panel door 1 to 3,5mm - for use of main switch IEC/EN60204 - ON/OFF/Tripped position - lockable in OFF pos. with 3 padlocks - the MPE can also be used turned 900	76	1
RMMPE330 (330 mm)	004648040			114	
RMMPE130E (130 mm)	004648041	red/yellow		76	1
RMMPE330E (330 mm)	004648042			114	



Indicator light

Type	Code No.	Notes	colour	g	
PLE230 PLE400	004648043 004648044	voltage: 210…230V voltage: 400…560V	red	17	10
PLE230G PLE400G	004648045 004648046	voltage: 210…230V voltage: 400…560V	green		
PLE230W PLE400W	004648047 004648048	voltage: 210…230V voltage: 400…560V	white		



Circuit breaker-contactor link module

Type	Code No.	Notes	For use with	g	
ECCMPE07	004648052	for electrical and mechanical linking motor protective circuit breaker	CE07	27	1
ECCMPE25*	004648053	MPE25 and contactor	CEM9…25		

*For contactors with AC coil only!

Motor protective circuit breaker MS25

Main application field: control (start-up, protection and switch-off) of AC electric motors with powers up to 11 kW (380/400 V) or other consumers up to 25 A; it can also be used as the main switch according to EN 60204 or VDE 0113 standards.

Versions:
- MS25 - with overload and short circuit protection

Manual control:
- START, STOP, push-buttons
- Test of release function (TEST)

- Phase-failure sensitivity according to IEC/EN 60947-4-1
- Automatic switch-off with thermal or magnetic release
- Control with under-voltage release or shunt release
- Isolating distance between contacts: 4.5 mm per contact place
- Hard wire or fine wire connection
- Simple and fast mounting by snap fitting on 35 mm wide mounting rail in compliance with EN 60715; fixing with two screws is also possible
- Vertical or horizontal operation position

Technical data - General

Standards		IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-5-1, IEC/EN 60204
Climatic class		constant damp heat acc. to IEC 60068-2-78 cyclic damp heat acc. to IEC 60068-2-30
Degree of protection		IP20, after terminals covering IP20
Ambient temperature	°C	-25 … +60
Storage temperature	°C	-25 … +70
Temperature range of thermal compensation for overload release	°C	-5 … +40
Mechanical and electrical endurance		100,000
Shock resistance acc. to IEC 68-2-27	g	20
Vibration resistance acc. to IEC 68-2-6		5 g - f = 5 … 150 Hz
Overvoltage category / pollution degree		III / 3
Rated insulation voltage U_i	V	690
Rated impulse withstand voltage U_{imp}	kV	6
Weight	kg	0.252

Motor protective circuit breaker MS25

Type	Code No.	Operational inst. current I_u (A)	Setting overl. release I_r (A)	g	
MS25-0,16	004600010	0.16	0,1-0,16	255	1
MS25-0,25	004600020	0.25	0,16-0,25	255	1
MS25-0,40	004600030	0.4	0,25-0,4	255	1
MS25-0,63	004600040	0.63	0,4-0,63	255	1
MS25-1,0	004600050	1	0,63-1,0	255	1
MS25-1,6	004600060	1.6	1,0-1,6	255	1
MS25-2,5	004600070	2.5	1,6-2,5	255	1
MS25-4,0	004600080	4	2,5-4,0	255	1
MS25-6,3	004600090	6.3	4,0-6,3	255	1
MS25-10	004600100	10	6,3-10	255	1
MS25-16	004600110	16	10-16	255	1
MS25-20	004600120	20	16-20	255	1
MS25-25	004600320	25	20-25	255	1

Technical data - Main circuit

Designation of connection terminals			1 - L1 ; 3 - L2 ; 5 - L3 ; 2 - T1 ; 4 - T2 ; 6 - T3
Terminal capacity	rigid	S (mm^2)	0.75 … 6
	flexible		0.75 … 4
Screw			with self-lifting clamp, protected against falling out
Screw head			PZ2
Tightening torque		Nm	1,8
Max. operational voltage	Ue	V	690
Setting range		A	0.1 - 0.16 (MS25); 0.16 - 0.25 (MS25); 0.25 - 0.4; 0.4 - 0.63; 0.63 - 1; 1 - 1.6; 1.6 - 2.5; 2.5 - 4; 4 - 6.3; 6.3 - 10; 10 - 16; 16 - 20; 20 - 25
No. of poles			3
Operating current of thermal	I		1.05 Ir < I ≤ 1.20 Ir
overload release			Ir. . . .set value
Sensitivity to phase failure			✓
Operating current of magnetic	I		11 In< I ≤ 14 In ± 20 %
overload release			In . . . upper setting limit
Power dissipation on pole at load with In	P	W	2 - 2.5
Utilization category	IEC/EN 60947-4-1		AC-3
	IEC/EN 60947-2		A
Trip class acc. to IEC/EN 60947-4-1			10A

MST25 motor protection switches and max. back-up fuses for short-circuit protection:

Type	Max. back-up fuse Ue <400 V gL (A)
MST 25 - 0,4	1
MST 25 - 0,63	2
MST 25 - 1	2
MST 25 - 1,6	4
MST 25 - 2,5	6
MST 25 - 4	16
MST 25 - 6,3	20
MST 25 - 10	25
MST 25 - 16	35
MST 25 - 20	50
MST 25 - 25	50

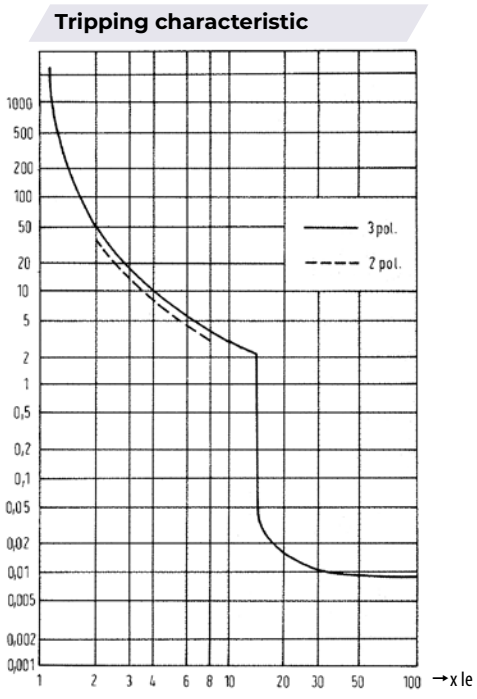
MS25 motor protection switches, rated ultimate short-circuit breaking capacity Icu and max. back-up fuses if prospective short-circuit current Icp exceeds Icu:

Type	Operating current of short-circuit release (A)	Rated ultimate short-circuit breaking capacity Icu (kA)				Max. back-up fuse, if Icp > Icu (gL) (A)			
		230 V	400 V	500 V	690 V	230 V	400 V	500 V	690 V
MS 25 - 0,16	2,2	50	50	50	50	No back-up fuse required			
MS 25 - 0,25	3,5	50	50	50	50				
MS 25 - 0,4	6	50	50	50	50				
MS 25 - 0,63	9	50	50	50	50				
MS 25 - 1	14	50	50	50	50				
MS 25 - 1,6	23	50	50	50	50				
MS 25 - 2,5	35	50	50	3	2,5			25	20
MS 25 - 4	56	50	50	3	2,5			35	25
MS 25 - 6,3	88	50	50	3	2,5			50	35
MS 25 - 10	140	50	6	3	2,5		80	50	35
MS 25 - 16	224	6	4	2,5	2	80	80	63	35
MS 25 - 20	280	6	4	2,5	2	80	80	63	50
MS 25 - 25	350	6	4	2,5	2	80	80	63	50

Switch selection for motor protection

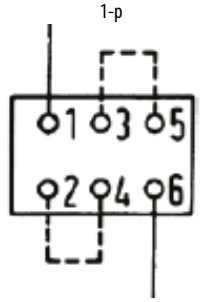
Standard motor power						
Single-phase		3-phase				
220 V 230 V 240 V	220 V 230 V 240 V	380 V 400 V 415 V	440 V	500 V	660 V 690 V	Setting range
kW						A
		0,02			0,06	0,1 ... 0,16
		0,06	0,06	0,06	0,09	0,16 ... 0,25
	0,06	0,09	0,12	0,12	0,18	0,25 ... 0,4
	0,09	0,12	0,18	0,25	0,25	0,4 ... 0,63
0,06 ... 0,09	0,09 ... 0,12	0,18 ... 0,25	0,25	0,37	0,37 ... 0,55	0,61 ... 1
0,12	0,18 ... 0,25	0,37 ... 0,55	0,37 ... 0,55	0,55 ... 0,8	0,75 ...1,1	1 ... 1,6
0,18 ... 0,25	0,37	0,75 ... 1,1	0,75 ... 1,1	1,1	1,5	1,6 ... 2,5
0,37	0,55 ... 0,8	1,1 ... 1,5	1,5	1,5 ... 2,2	2,2 ... 3	2,5 ... 4
0,55 ... 0,75	1,1 ... 1,5	2,2 ... 2,5	2,2 ... 3	3	4	4 ... 6,3
1,1 ... 1,5	1,5 ... 2,5	3 ... 4	4 ... 5	4 ... 5,5	5,5 ... 7,5	6,3 ... 10
2,2	3 ... 4	5 ... 7,5	5,5 ... 9	7,5 ... 9	11	10 ... 16
3	5,5	9	11	11 ... 12,5	15	16 ... 20
	5,5 ... 7,5	11 ... 12,5	12,5	15	18,5	20 ... 25

Tripping characteristic

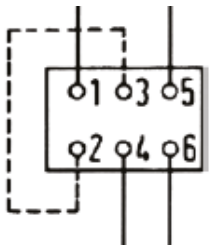


Connection diagram

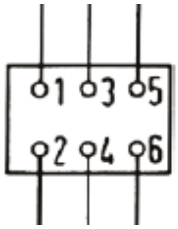
1-p



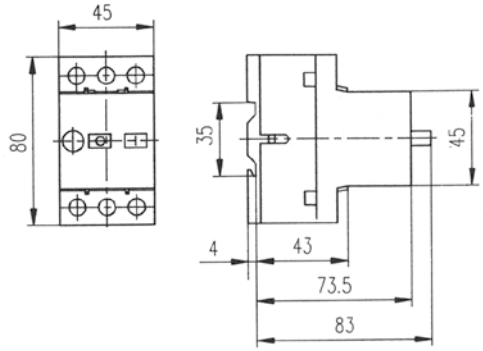
2-p



3-p



Dimensions



Accessories

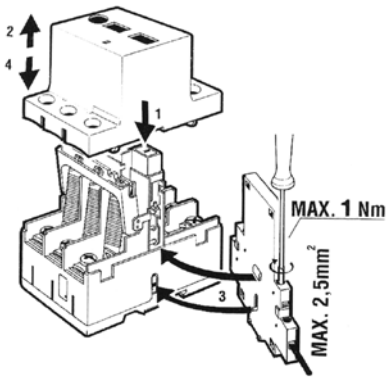
Auxiliary switch for lateral mounting PS

Rated insulation voltage Ui	V	500V
Thermal current Ith	A	6 A
Rated operational current at AC-15 230V/400V/500V Ie	A	3,5 A /2 A /1,5 A
Terminal capacity	mm²	0,75 - 2,5 mm²
Tightening torque	Nm	1

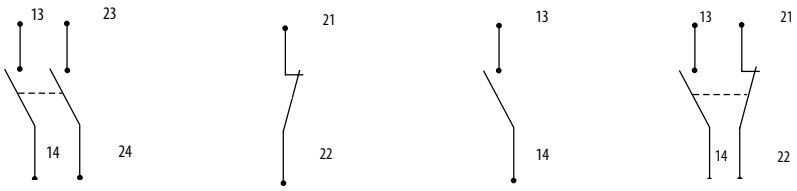
Auxiliary switch for lateral mounting PS

Type	Code No.	Wiring diagram	Auxiliary contacts NO, NC	g	
PS 20	004600160		2,0	30	1/10
PS 01	004600150		0,1	30	1/10
PS 10	004600140		1,0	30	1/10
PS 11	004600130		1,1	30	1/10

PS mounting

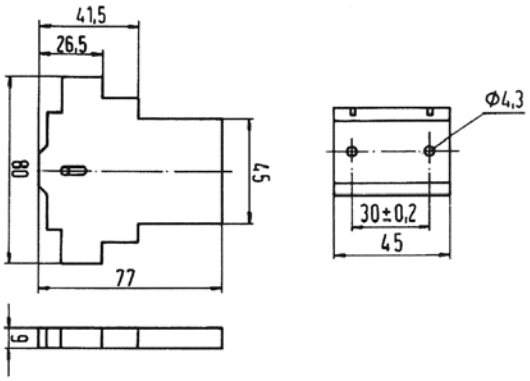


PS designation of contacts



PS 20 PS 01 PS 10 PS 11

Dimensions



Shunt release

Type	Code No.	Wiring diagram	actuating voltages	g	
A 230	004600170	C1 C2	220V-240V	30	1/10

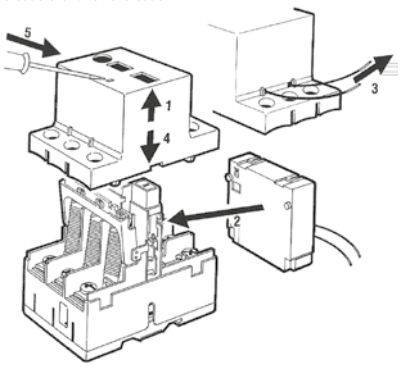
Undervoltage release

Type	Code No.	Wiring diagram	actuating voltages	g	
U 230	004600180	D1 U< D2	220V-240V	30	1/10

Under-voltage release U, Shunt release A

Standard		IEC 60947-5-1, UL 60947-5-1
Approvals		CE, UL, EAC
Control voltages Uc	V	230, 400
Rated frequency f	Hz	50/60
Pick-up voltage	x Uc	< 0.85
Drop-out voltage		0.7 ... 0.35
Power consumption switch-on operation switch-on operation	VA/W	 7.5 / 4.3 3.8 / 1.3
Duty cycle tON/tOFF	%	100
Noise level	dB	< 35
Mechanical and electrical endurance	op. c.	100.000

Mounting of Under-voltage release U or shunt release A



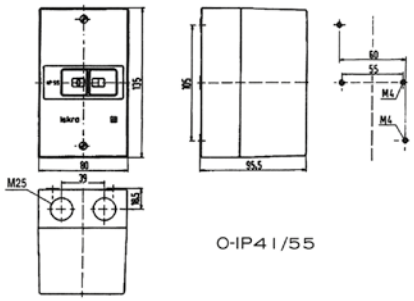
Enclosure O Front plate CP

Type	Code No.	IP	g	
O - 41	004600190	41	250	1
O - 55	004600200	55	250	1
CP - 41	004600210	41	200	1
CP - 55	004600220	55	200	1

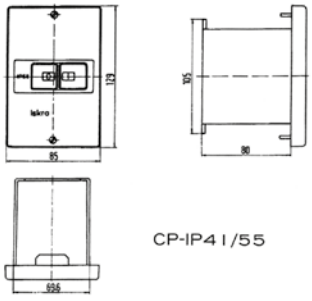
O-IP41/55

CP-IP41/55

Dimensions



O-IP41/55



CP-IP41/55

Emergency stop push-button

Type	Code No.	g	
NAT	004600270	15	1/20
NAT-lock	004600280	20	1/20

Padlocking feature Z

Type	Code No.	g	
Z	004600260	30	1/10

Neutral link NL

Type	Code No.	g	
NL	004600330	10	1/10

Signal lamp SS

Type	Code No.	Colour	g	
SS B 400V	004600230	white	10	1/25
SS R 400V	004600240	red	10	1/25
SS Z 400V	004600250	green	10	1/25

CP

Reactive Power Compensation Components

Three-phase capacitors **402**
Capacitor duty contactors CEM_CN **412**
Digital power factor controllers **415**
Three-phase harmonic filters **419**

/etigroup

ETI
SWITCH TO
A SAFE FUTURE

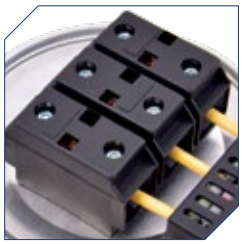
CP Three phase low voltage power capacitors LPC

- Equipped with discharge resistors (Discharge time ≤ 3 minutes to 75 V)
- LPC 1..5 kVAr

- LPC 10..50 kVAr

- Capacitors 1 ... 5 kVar connected with a double FASTON connector Included protection cover for electrical parts)

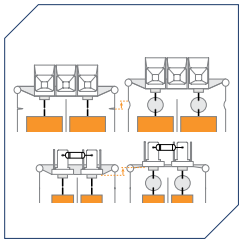
- 10 ... 50 kVar capacitor terminals with universal screws (for slot "flat" screwdriver + Allen key "Imbus")



- rated power range: 1kVAr to 50kVAr
- Rated voltage range: 400, 440 460, 480, 525 V

- Ground fixation with thread, for vertical use only.

- Overpressure disconnection system



Rated voltage: 400-525V, 50Hz (60Hz uppon request) **Rated power: 1-50kVAr**

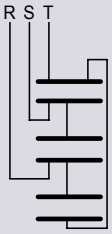
APPLICATION

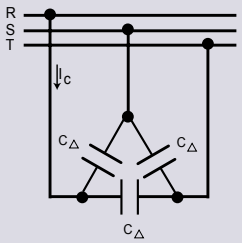
The LPC capacitors are used for reactive power factor correction of inductive consumers (transformers, electric motors, rectifiers, fluorescent lamps and many others in industrial networks) individually or assembled into automatic capacitor banks.

DELTA CONNECTION

DESCRIPTION

LPC capacitors are manufactured with low loss metallized self-healing polypropylene film. Dry type capacitors are filled with a non-toxic an ecological polyurethane resin, this resin provides an excellent heat dissipation properties. This capacitors are mounted in aluminium housing with overpressure disconnection system. Two types of connectors, faston connector for capacitors with rated power up to 5kVAr, for higher values above 5kVAr screw terminal type.



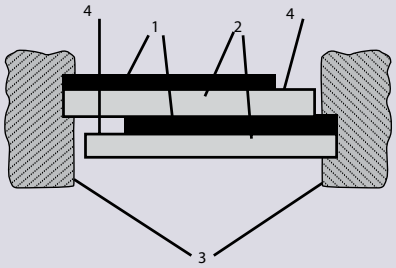


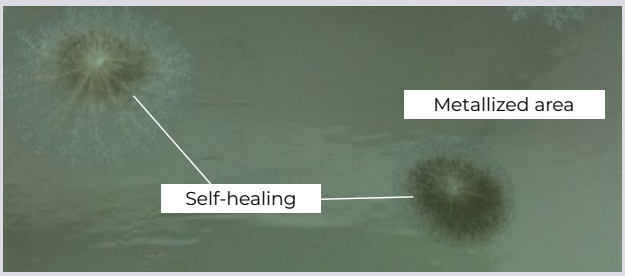
FEATURES:

Depending on the values of the constants of every dielectric, there is a limit potential difference, which all materials can manage throughout the thickness. This limit is defined as dielectric strength. Because of determined electric-power system conditions or extreme temperatures, inadmissible for the correct working of the capacitor, this voltage limit can be exceeded. Thus, the dielectric can break down and an electric arc will be formed between the plates.

The propylene film self-healing means that the electric arc will not generate a short circuit, but will evaporate the metal which surrounds the breakthrough point. This way, the isolation between plates is repaired in the latter breakthrough point. After this self-healing, the capacitor can work in normal conditions, with a capacitance leak inferior to 100 pF.

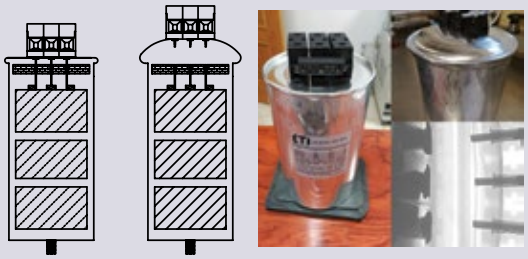
1 Electrodes (Metallized Film)
2 Prolypylene Film (Dielectric)
3 Electric connection
4 No metallized area





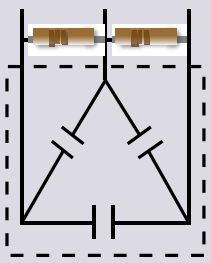
Overpressure disconnection system

In order to avoid problems caused by overvoltage, harmonics, high temperatures, etc. capacitors have been designed with an overpressure disconnection system. When the terminal cover expands, the internal connections are interrupted and disconnecting the capacitor.



Discharge resistor

When handling a capacitor, there is a need of taking into account a series of security precautions. When a capacitor is disconnected off the voltage, it remains charged with the supply voltage. If the plates are shorten and touched, they can cause a dangerous accident due to the violent discharge of the capacitor. Three-phase capacitors must also be equipped with a discharge resistor, which can discharge voltage until its maximum value is 75V in an interval of 3 minutes as demanded by standard EN-60831-1/2. ETI's LPC capacitors already have discharge resistors, which ensure that this time is less than 2 minutes. It is therefore recommended that the reconnection time on the PFC controller should not be less than 120s. Except in case of using extra discharge resistors (page 409).

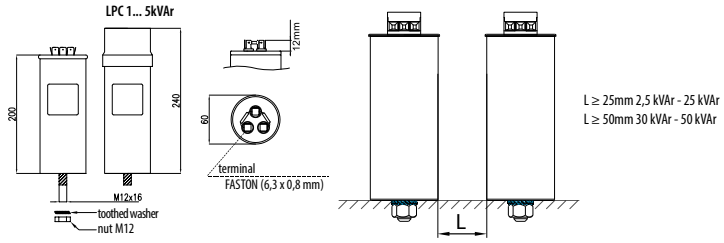


$$U_{(t)} = U_o e^{\frac{-t}{RC}}$$

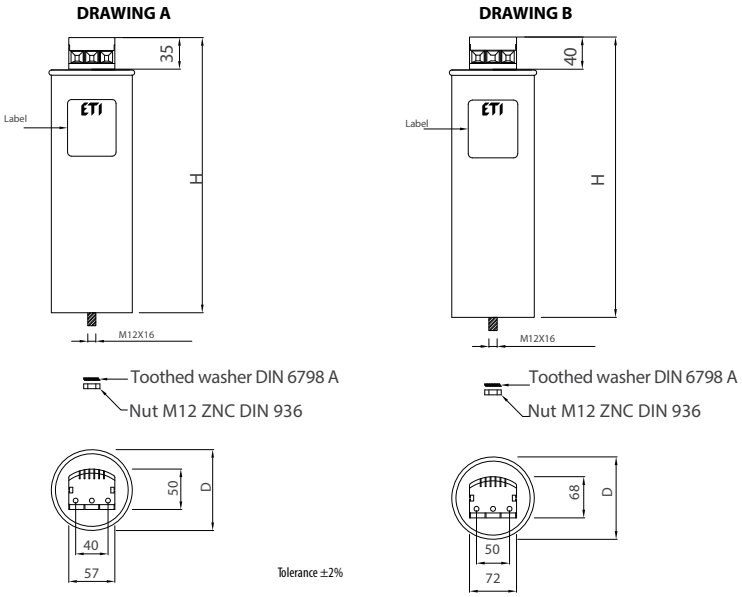
Three phase low voltage power capacitors LPC

Rated voltage at 50Hz	Code No.	Type	Rated Power [kVAr]	Rated capacitance [uF]	Rated current [A]	D (diameter) x H (Height) [mm]	Terminal type	Weight [kg]	Packaging [pcs]
400	004656700	LPC 1 kVAr, 400V, 50Hz	1	3x 6,6	1,4		Faston	0,75	1
400	004656701	LPC 1.5 kVAr, 400V, 50Hz	1,5	3x 9,9	2,2		Faston	0,75	1
400	004656702	LPC 2.5 kVAr, 400V, 50Hz	2,5	3x 16,6	3,6		Faston	0,75	1
400	004656703	LPC 3 kVAr, 400V, 50Hz	3	3x 19,9	4,3		Faston	0,75	1
400	004656704	LPC 4 kVAr, 400V, 50Hz	4	3x 26,5	5,8		Faston	0,75	1
400	004656705	LPC 5 kVAr, 400V, 50Hz	5	3x 33,2	7,2		Faston	0,75	1
440	004656710	LPC 2.5 kVAr, 440V, 50Hz	2,5	3x 13,7	3,3		Faston	0,75	1
440	004656711	LPC 3 kVAr, 440V, 50Hz	3	3x 16,4	3,9		Faston	0,75	1
440	004656712	LPC 4 kVAr, 440V, 50Hz	4	3x 21,9	5,2		Faston	0,75	1
440	004656713	LPC 5 kVAr, 440V, 50Hz	5	3x 27,4	6,6		Faston	0,75	1
460	004656720	LPC 2.5 kVAr, 460V, 50Hz	2,5	3x 12,5	3,1	60x240	Faston	0,75	1
460	004656721	LPC 3 kVAr, 460V, 50Hz	3	3x 15,0	3,8		Faston	0,75	1
460	004656722	LPC 4 kVAr, 460V, 50Hz	4	3x 20,1	5,0		Faston	0,75	1
460	004656723	LPC 5 kVAr, 460V, 50Hz	5	3x 25,1	6,3		Faston	0,75	1
480	004656730	LPC 2.5 kVAr, 480V, 50Hz	2,5	3x 11,5	3,0		Faston	0,75	1
480	004656731	LPC 3 kVAr, 480V, 50Hz	3	3x 13,8	3,6		Faston	0,75	1
480	004656732	LPC 4 kVAr, 480V, 50Hz	4	3x 18,4	4,8		Faston	0,75	1
480	004656733	LPC 5 kVAr, 480V, 50Hz	5	3x 23,0	6,0		Faston	0,75	1
525	004656740	LPC 2.5 kVAr, 525V, 50Hz	2,5	3x 9,6	2,7		Faston	0,75	1
525	004656741	LPC 3 kVAr, 525V, 50Hz	3	3x 11,5	3,3		Faston	0,75	1
525	004656742	LPC 4 kVAr, 525V, 50Hz	4	3x 15,4	4,4		Faston	0,75	1
525	004656743	LPC 5 kVAr, 525V, 50Hz	5	3x 19,2	5,5		Faston	0,75	1

LPC 1 kVAr - LPC 5 kVAr

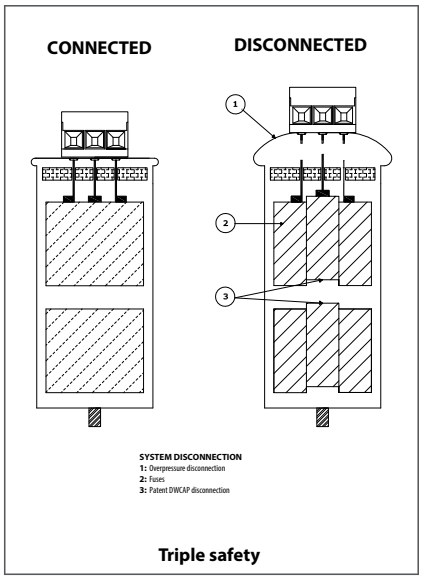


LPC 10 kVAr - LPC 50 kVAr



Three phase low voltage power capacitors LPC

Rated voltage at 50Hz	Code No.	Type	Rated Power [kVAr]	Rated capacitance [uF]	Rated current [A]	D (diameter) x H (Height) [mm]	Terminal type	Weight [kg]	Packaging [pcs]
400	004656750	LPC 10 kVAr, 400V, 50Hz	10	3x 66,3	14,4	85x260	Screw terminal	1,6	1
400	004656751	LPC 12.5 kVAr, 400V, 50Hz	12,5	3x 82,9	18,0	100x260	Screw terminal	2,2	1
400	004656752	LPC 15 kVAr, 400V, 50Hz	15	3x 99,5	21,7	100x260	Screw terminal	2,2	1
400	004656753	LPC 20 kVAr, 400V, 50Hz	20	3x 132,6	28,9	100x260	Screw terminal	2,2	1
400	004656754	LPC 25 kVAr, 400V, 50Hz	25	3x 165,8	36,1	120x350	Screw terminal	2,9	1
400	004656755	LPC 30 kVAr, 400V, 50Hz	30	3x 198,9	43,3	120x350	Screw terminal	3,9	1
400	004656756	LPC 40 kVAr, 400V, 50Hz	40	3x 265,3	57,7	120x350	Screw terminal	5,1	1
400	004656757	LPC 50 kVAr, 400V, 50Hz	50	3x 331,6	72,2	120x350	Screw terminal	5,1	1
440	004656760	LPC 10 kVAr, 440V, 50Hz	10	3x 54,8	13,1	85x260	Screw terminal	1,6	1
440	004656761	LPC 12.5 kVAr, 440V, 50Hz	12,5	3x 68,5	16,4	100x260	Screw terminal	2,2	1
440	004656762	LPC 15 kVAr, 440V, 50Hz	15	3x 82,2	19,7	100x260	Screw terminal	2,2	1
440	004656763	LPC 20 kVAr, 440V, 50Hz	20	3x 109,6	26,2	100x350	Screw terminal	2,9	1
440	004656764	LPC 25 kVAr, 440V, 50Hz	25	3x 137,0	32,8	100x350	Screw terminal	2,9	1
440	004656765	LPC 30 kVAr, 440V, 50Hz	30	3x 164,4	39,4	120x350	Screw terminal	3,9	1
440	004656766	LPC 40 kVAr, 440V, 50Hz	40	3x 219,2	52,5	136x350	Screw terminal	5,1	1
440	004656767	LPC 50 kVAr, 440V, 50Hz	50	3x 274,0	65,6	136x350	Screw terminal	5,1	1
460	004656770	LPC 10 kVAr, 460V, 50Hz	10	3x 50,1	12,6	85x260	Screw terminal	1,6	1
460	004656771	LPC 12.5 kVAr, 460V, 50Hz	12,5	3x 62,7	15,7	100x260	Screw terminal	2,2	1
460	004656772	LPC 15 kVAr, 460V, 50Hz	15	3x 75,2	18,8	100x260	Screw terminal	2,2	1
460	004656773	LPC 20 kVAr, 460V, 50Hz	20	3x 100,3	25,1	100x350	Screw terminal	2,9	1
460	004656774	LPC 25 kVAr, 460V, 50Hz	25	3x 125,4	31,4	100x350	Screw terminal	2,9	1
460	004656775	LPC 30 kVAr, 460V, 50Hz	30	3x 150,4	37,7	120x350	Screw terminal	3,9	1
460	004656776	LPC 30.8 kVAr, 460V, 50Hz	30,8	3x 154,4	38,7	120x350	Screw terminal	3,9	1
460	004656777	LPC 40 kVAr, 460V, 50Hz	40	3x 200,6	50,2	136x350	Screw terminal	5,1	1
460	004656778	LPC 50 kVAr, 460V, 50Hz	50	3x 250,7	62,8	136x350	Screw terminal	5,1	1
480	004656780	LPC 10 kVAr, 480V, 50Hz	10	3x 46,1	12,0	85x260	Screw terminal	1,6	1
480	004656781	LPC 12.5kVAr, 480V, 50Hz	12,5	3x 57,6	15,0	100x260	Screw terminal	2,2	1
480	004656782	LPC 15 kVAr, 480V, 50Hz	15	3x 69,1	18,0	100x260	Screw terminal	2,2	1
480	004656783	LPC 20 kVAr, 480V, 50Hz	20	3x 92,1	24,1	100x350	Screw terminal	2,9	1
480	004656784	LPC 25 kVAr, 480V, 50Hz	25	3x 115,1	30,1	100x350	Screw terminal	3,9	1
480	004656785	LPC 30 kVAr, 480V, 50Hz	30	3x 138,2	36,1	120x350	Screw terminal	3,9	1
480	004656786	LPC 40 kVAr, 480V, 50Hz	40	3x 184,2	48,1	136x350	Screw terminal	5,1	1
480	004656787	LPC 50 kVAr, 480V, 50Hz	50	3x 230,3	60,1	136x350	Screw terminal	5,1	1
525	004656790	LPC 10 kVAr, 525V, 50Hz	10	3x 38,5	11,0	85x260	Screw terminal	1,6	1
525	004656791	LPC 12.5kVAr, 525V, 50Hz	12,5	3x 48,1	13,7	100x260	Screw terminal	2,2	1
525	004656792	LPC 15 kVAr, 525V, 50Hz	15	3x 57,7	16,5	100x260	Screw terminal	2,2	1
525	004656793	LPC 20 kVAr, 525V, 50Hz	20	3x 77,0	22,0	100x350	Screw terminal	2,9	1
525	004656794	LPC 25 kVAr, 525V, 50Hz	25	3x 96,2	27,5	100x350	Screw terminal	2,9	1
525	004656795	LPC 30 kVAr, 525V, 50Hz	30	3x 115,5	33,0	120x350	Screw terminal	3,9	1
525	004656796	LPC 40 kVAr, 525V, 50Hz	40	3x 154,0	44,0	136x350	Screw terminal	5,1	1
525	004656797	LPC 50 kVAr, 525V, 50Hz	50	3x 192,5	55,0	136x350	Screw terminal	5,1	1



Triple safety

Temperature (IEC 60831-1/2)

Symbol	Ambient temperature °C		
	Maximum	Highest mean over any period of	
		24h	1 year
A	40	30	20
B	45	35	25
C	50	40	30
D	55	45	35

Dimensions

Dimensions	Connection terminal	DRAWING
DxH (mm)	Max. cable section 1 kV-RV (mm²)	
70x260	10	DRAWING A
85x260	10	
100x260	10	
120x265	35	DRAWING B
136x265	35	

Technical data

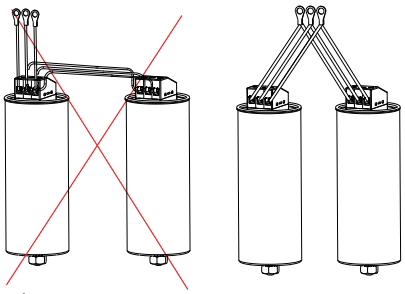
Standards	IEC 60831-1/2 EN 60831-1/2		
Capacitance tolerance	-5% +10%		
Frequency	50Hz (60Hz upon request)		
Temperature range	-25°C ... +55°C*		
Dielectric losses	≤0.2 W/kVAr		
Total losses	≤0.45 W/kVAr		
Maximum over voltage	1,1 x Un		
Maximum over current	1,5 x In		
Max. THD in voltage	2%		
Max. THD in current	25%		
Discharge resistance	Incorporated; ≤ 2 min to 75V		
Connection	Delta		
Casing	Aluminium case		
Disconnection system	Overpressure		
Dielectric	Metalized polypropylene film, self-healing		
Voltage test between terminals	2,15 x Un 2 sec.		
Voltage test terminals to case	3kV for 10 second. AC		
Terminal type	Connector		
Inrush current	200 x In		
Protection	IP 20, indoor mounting		
Humidity	max 95%		
Expected	120.000 Hrs. (Temp. level C)		
Altitude	Max. 2000 above sea level		
Screw terminal Tightening torque	≤ 20 kVAr 100Ncm ≥ 25kVAr 250Ncm		
Ambient temperature °C	Max	Highest mean over any period of	
		24h	1 year
	55	45	35

*Special declaration for lower temperature (-40°C) available on request

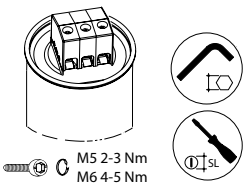
Cable cross section

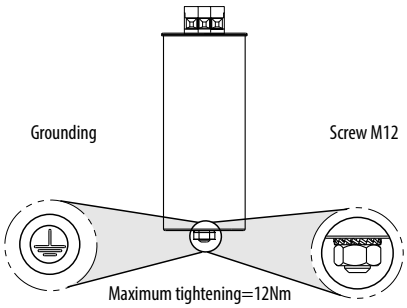
Q_N (kVAr)	Un		Terminal	Connection
	400V, 50Hz			
	I_N (A)	(mm², Cu)		
2,5	3,6	2,5		
5	7,4	2,5		
7,5	10,8	2,5		
10	14,4	4,0		
12,5	18,1	6,0		
15	21,6	6,0		
20	29,0	10,0		
25	36,0	10,0		
30	43,0	16,0		
40	58,0	25,0		
50	72,0	35,0		

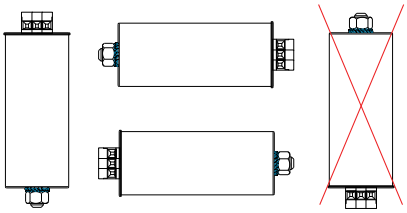
Cross – section values of the connection wires shown in the table are approximate and they are valid for normal operation conditions due to technical characteristics of the equipment.



⚠ ATTENTION! Parallel interconnection of two or more capacitors through the same terminals is prohibited.







Three phase low voltage power capacitors LPC with double winding

Advantages:
- Extra low size capacitors
- Triple safety
- Patented technology

Characteristics and utility:
- Three phase capacitor dual winding internally delta connected
- Discharge resistors incorporated
- Reactive power factor correction
- Dry type
- Connector type terminal
- Indoor mounting

Triple safety:
- Overpressure disconnection system
- Protection by internal fuses
- DWCAP system (patented) internal windings
- displacement

Construction and materials:
- Low losses metallized self-healing polypropylene film, high density, high temperature and greater dielectric resistance volt/μ
- Polyurethane self-extinguishing resin V0, developed under standard UL94
- Aluminium case with botton fixing M12x16

Standards:
- IEC 60831-1/2
- EN 60831-1/2

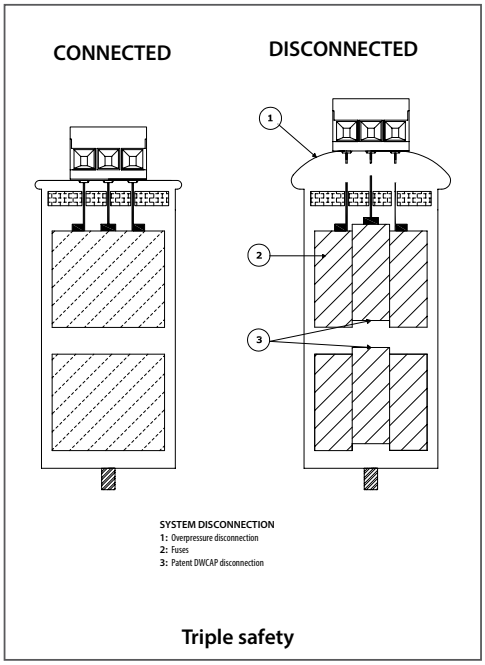
Certifications:

AENOR Certified Product B78/000001

DWCAP Series CERTIFIED AND PATENTED PRODUCT

Three phase low voltage power capacitors LPC with double winding

Rated voltage at 50Hz	Code No.	Type	Rated Power [kVAr]	Rated capacitance [uF]	Rated current [A]	D (diameter) x H (Height) [mm]	Terminal type	Weight [kg]	Packaging [pcs]
400V	004656850	LPC-DW 7.5 kVAr, 400V, 50Hz	7,5	3x 49,74	10,83	70 x 260	Screw terminal	1,1	1
400V	004656851	LPC-DW 10 kVAr, 400V, 50Hz	10	3x 66,31	14,43	85 x 260		1,62	1
400V	004656852	LPC-DW 12.5 kVAr, 400V, 50Hz	12,5	3x 82,89	18,04	85 x 260		1,62	1
400V	004656853	LPC-DW 15 kVAr, 400V, 50Hz	15	3x 99,47	21,65	100 x 260		2,11	1
400V	004656854	LPC-DW 20 kVAr, 400V, 50Hz	20	3x 132,63	28,87	120 x 265		3,23	1
400V	004656855	LPC-DW 25 kVAr, 400V, 50Hz	25	3x 165,79	36,08	120 x 265		3,13	1
400V	004656856	LPC-DW 30 kVAr, 400V, 50Hz	30	3x 198,94	43,3	136 x 265		4,01	1
400V	004656857	LPC-DW 35 kVAr, 400V, 50Hz	35	3x 232	50,5	136 x 265		4,2	1
400V	004656867	LPC-DW 40 kVAr, 400V, 50Hz	40	3x 265	57,7	136 x 265		4,2	1
440V	004656858	LPC-DW 7.5 kVAr, 440V, 50Hz	7,5	3x 41,1	9,84	70x260		1,2	1
440V	004656859	LPC-DW 10 kVAr, 440V, 50Hz	10	3x 54,81	13,12	70x260		1,1	1
440V	004656860	LPC-DW 12.5 kVAr, 440V, 50Hz	12,5	3x 68,51	16,4	85x260		1,6	1
440V	004656861	LPC-DW 15 kVAr, 440V, 50Hz	15	3x 82,21	19,68	85x260		1,6	1
440V	004656862	LPC-DW 20 kVAr, 440V, 50Hz	20	3x 109,61	26,24	100x260		2,08	1
440V	004656863	LPC-DW 25 kVAr, 440V, 50Hz	25	3x 137,01	32,8	120x265		3,21	1
440V	004656864	LPC-DW 30 kVAr, 440V, 50Hz	30	3x 164,42	39,36	120x265		4,07	1
440V	004656865	LPC-DW 35 kVAr, 440V, 50Hz	35	3x 191,82	45,93	136x265		4,11	1
440V	004656866	LPC-DW 40 kVAr, 440V, 50Hz	40	3x 219,22	52,49	136x265		4	1



Temperature (IEC 60831-1/2)

Symbol	Ambient temperature °C		
	Maximum	Highest mean over any period of	
		24h	1 year
A	40	30	20
B	45	35	25
C	50	40	30
D	55	45	35

Dimensions

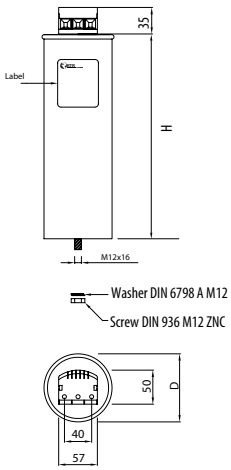
Dimensions	Connection terminal	DRAWING
D x H (mm²)	Max. cable section 1 kV-RV (mm²)	
70x230	10	DRAWING A
85x230	10	
100x230	10	
120x230	35	DRAWING B
136x230	35	

Technical data

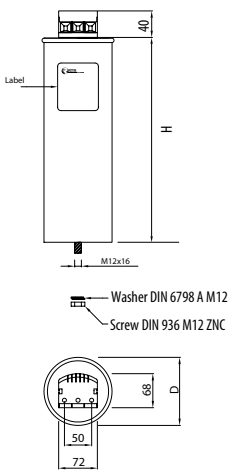
Standards	IEC 60831-1/2 EN 60831-1/2		
Capacitance tolerance	-5% +10%		
Frequency	50Hz (60Hz upon request)		
Temperature range	-25°C ... +55°C*		
Dielectric losses	≤0.2 W/kVAr		
Total losses	≤0.45 W/kVAr		
Maximum over voltage	8 h/day: 30 min/day: 5 min/day: 1 min/day:		
Maximum over current	1,5 x In		
Max. THD in voltage	2%		
Max. THD in current	25%		
Discharge resistance	Incorporated		
Connection	Delta		
Voltage test between terminals	2,15 x Un 2 sec.		
Voltage test terminals to case	3kV for 10 second. AC		
Inrush current	≤ 200 x In		
Protection	IP 20		
Humidity	max. 95%		
Expected	100.000 Hrs. (Temp. level D) 120.000 Hrs. (Temp. level C)		
Altitude	Max. 2000 above sea level		
Mounting position	Universal		
Ambient temperature °C	max.	Highest mean over any period of	
		24h	1 year
	55	45	35

*without resistors

DRAWING A



DRAWING B

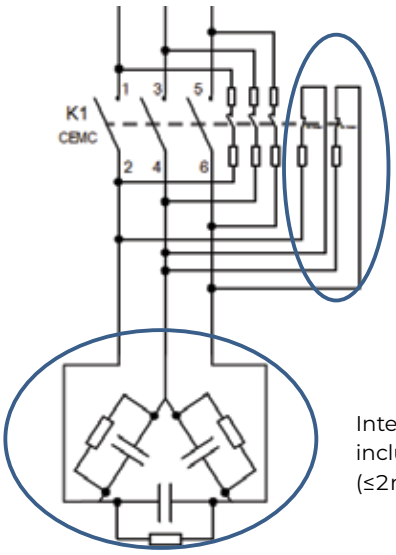


Extra discharge resistors for fast and secure discharge of capacitors

Set of 2 extra discharge resistors for fast and secure discharge of capacitors

Type	Code No.	Resistance [ohm]	Power [W]	Weight [g]	Packaging [pcs]
LPC EDR 1K8, 10W	004656798	1K8	10	30	200

To connect extra discharge resistors, 2 auxiliary contacts NC on capacitor duty contactor must be used



Extra discharge resistors 1K8 10W with auxiliary NC contacts (capacitor empty in less then 5s)

Integrated discharge resistors already included with capacitor for slow discharge (≤2min to 75V demand by IEC 60831 - 1/2)

Individual Power Factor Correction for Low Voltage Motors

Rated motor power [kW]	Power rating of capacitor in (kvar) with respect to motor power, speed of rotation and load									
	3000 r / min		1500 r/min		1000 r/min		750 r/min		500 r/min	
	No load(kVAr)	Full load (kVAr)	No load(kVAr)	Full load (kVAr)	No load(kVAr)	Full load (kVAr)	No load(kVAr)	Full load (kVAr)	No load(kVAr)	Full load (kVAr)
5,5	2,2	2,9	2,4	3,3	2,7	3,6	3,2	4,3	4	5,2
7,5	3,4	4,4	3,6	4,8	4,1	5,4	4,6	6,1	5,5	7,2
11	5	6,5	5,5	7,2	6	8	7	9	7,5	10
15	6,5	8,5	7	9,5	8	10	9	12	10	13
18,5	8	11	9	12	10	13	11	15	12	16
22	10	12,5	11	13,5	12	15	13	16	15	19
30	14	18	15	20	17	22	22	25	22	28
37	18	24	20	27	22	30	26	34	29	39
45	19	28	21	31	24	34	28	38	31	43
55	22	34	25	37	28	41	32	46	36	52
75	28	45	32	49	37	54	41	60	45	68
90	34	54	39	59	44	65	49	72	54	83
110	40	64	46	70	52	76	58	85	63	98
132	45	72	53	80	60	87	67	97	75	110
160	54	86	64	96	72	103	81	116	91	132
200	66	103	77	115	87	125	97	140	110	160
250	75	115	85	125	95	137	105	150	120	175

It is useful to compensate rarely switched low voltage motors with a fixed connected capacitor due to technical and cost reasons.

Description - The required capacitor power is calculated with the following formula:
$Q_n = 0,9 \cdot U_n \cdot I_{mag} \cdot \sqrt{3}$
where:
Q_n - capacitor power (VAr)
U_n - rated voltage (V)
I_{mag} - motor magnetising current (A)

Quick discharging with a bigger capacitor can cause self-excitation. If quick discharging of the motor is not possible, the motor can compensate itself according to the actual consumption of reactive power.

Capacitor power versus working voltage

Capacitor working power depends on working voltage

$$(U_e / U_n)^2 \cdot Q_c = Q_f$$

where:
U_e - mains voltage;
U_n - capacitor rated voltage
Q_c - capacitor power at rated voltage
Q_f - capacitor actual power

Rated voltage	Rated capacity (µF)	Rated Power (kVAr) at U_n = 380 V	Rated Power (kVAr) at U_n = 400 V	Rated Power (kVAr) at U_n = 420 V	Rated Power(kVAr) at U_n = 440 V
400 V 50 Hz	3 x 16,6	2,3	2,5	-	-
	3 x 19,9	2,7	3	-	-
	3 x 26,5	3,6	4	-	-
	3 x 33,2	4,5	5	-	-
	3 x 66,3	9,0	10	-	-
	3 x 83,3	11,3	12,5	-	-
	3 x 100	13,6	15	-	-
	3 x 133,0	18,1	20	-	-
	3 x 165,8	22,6	25	-	-
	3 x 198,9	27,1	30	-	-
440 V 50 Hz	3 x 13,7	1,9	2,1	2,3	2,5
	3 x 16,5	2,2	2,5	2,7	3
	3 x 21,9	3,0	3,3	3,6	4
	3 x 27,4	3,7	4,1	4,6	5
	3 x 54,9	7,5	8,3	9,1	10
	3 x 68,6	9,3	10,3	11,4	12,5
	3 x 82,3	11,2	12,4	13,7	15
	3 x 110,0	14,9	16,5	18,2	20
	3 x 137,1	18,6	20,7	22,8	25
	3 x 164,4	22,4	24,8	27,3	30

Table definition of reactive power capacitor bank (kVAr), necessary to achieve a desired cos

The value of factor K read from table should be multiplied with the value of active power to determine kVAr required for power factor correction.

Capacitive reactive power is calculated by formula:

$$Q_c = P \cdot K$$

P – real power of the load
$\cos \varphi_0$ – $\cos \varphi$ the system without power factor correction
$\cos \varphi_1$ – required $\cos \varphi$ achieved with power factor correction
Q_c – reactive power of compensation system
K – factor read from table defined by $\cos \varphi_0$ and $\cos \varphi_1$ (see table bellow)

Existing power factor	Required power factor $\cos \varphi_1$												
$\cos \varphi_0$	0,7	0,75	0,8	0,82	0,84	0,86	0,88	0,9	0,92	0,94	0,96	0,98	1,00
0,5	0,71	0,85	0,98	1,03	1,09	1,14	1,19	1,25	1,31	1,37	1,44	1,53	1,73
0,52	0,62	0,76	0,89	0,94	1	1,05	1,1	1,16	1,22	1,28	1,35	1,44	1,64
0,54	0,54	0,68	0,81	0,86	0,91	0,97	1,02	1,07	1,13	1,2	1,27	1,36	1,56
0,56	0,46	0,6	0,73	0,78	0,83	0,89	0,94	1	1,05	1,12	1,19	1,28	1,48
0,58	0,38	0,52	0,65	0,71	0,76	0,81	0,86	0,92	0,98	1,04	1,11	1,2	1,4
0,6	0,31	0,45	0,58	0,64	0,69	0,74	0,79	0,85	0,91	0,97	1,04	1,13	1,33
0,62	0,25	0,38	0,52	0,57	0,62	0,67	0,73	0,78	0,84	0,9	0,97	1,06	1,27
0,64	0,18	0,32	0,45	0,5	0,55	0,61	0,66	0,72	0,77	0,84	0,91	1	1,2
0,66	0,12	0,26	0,39	0,44	0,49	0,54	0,6	0,65	0,71	0,78	0,85	0,94	1,14
0,68	0,06	0,2	0,33	0,38	0,43	0,48	0,54	0,59	0,65	0,72	0,79	0,88	1,08
0,7		0,14	0,27	0,32	0,37	0,43	0,48	0,54	0,59	0,66	0,73	0,82	1,02
0,72		0,08	0,21	0,27	0,32	0,37	0,42	0,48	0,54	0,6	0,67	0,76	0,96
0,74		0,03	0,16	0,21	0,26	0,32	0,37	0,42	0,48	0,55	0,62	0,71	0,91
0,76			0,11	0,16	0,21	0,26	0,32	0,37	0,43	0,49	0,56	0,65	0,86
0,78			0,05	0,1	0,16	0,21	0,26	0,32	0,38	0,44	0,51	0,6	0,8
0,8				0,05	0,1	0,16	0,21	0,27	0,32	0,39	0,46	0,55	0,75
0,82					0,05	0,1	0,16	0,21	0,27	0,34	0,41	0,49	0,7
0,84						0,05	0,11	0,16	0,22	0,28	0,35	0,44	0,65
0,86							0,05	0,11	0,17	0,23	0,3	0,39	0,59
0,88								0,06	0,11	0,18	0,25	0,34	0,54
0,9									0,06	0,12	0,19	0,28	0,48
0,92										0,06	0,13	0,22	0,43
0,94											0,07	0,16	0,36

Calculations

Three-phase capacitor power:

$$Q_c = C \cdot 3 \cdot V^2 \cdot 2 \cdot \pi \cdot f_n$$

Example: 3 x 331.5µF at 400V/50Hz
0.0003315 · 3 · 400 ² · 314.16 = 50 kVAr

The resonant frequency (fr) and filtering factor (p) in systems with compensation filters:

$$f_r = f_n \cdot \sqrt{\frac{1}{p}} \quad \text{or} \quad p = \left(\frac{f_n}{f_r}\right)^2$$

Example: for p = 0.07 at 50 Hz; fr = 189 Hz

The calculation of the power factor cos :

$$\cos \varphi = \frac{P}{S} \quad \text{or} \quad \cos \varphi = \sqrt{\frac{1}{1 + \tan \varphi^2}} \quad \text{or} \quad \cos \varphi = \sqrt{\frac{1}{1+\left(\frac{Q}{P}\right)^2}}$$

Fuse selection (gG):
In=1,6*I
For Umain=400V, Un=min. 690V

Three-phase capacitor power with detuning reactor in series

$$Q_c = \frac{C \cdot 3 \cdot V^2 \cdot 2 \cdot \pi \cdot f_n}{1 - p}$$

Example: 3 x 331.5µF at 400V/50Hz at p = 7%
0.0003315 · 3 · 400 ² · 314.16 / 1 - 0.07 = 53.8 kVAr

Phase current of capacitor:

$$I = \frac{Q_c}{V \cdot \sqrt{3}} \quad \text{or} \quad Q_c = I \cdot V \cdot \sqrt{3}$$

Example: 25 kVAr at 400V
25000 / (400 · 1.73) = 36 A

Example: Qc=25kVAr, Umain=400V.
In=1,6*36 = 57,6 => 63A , Un=690V, gG fuse.

V = Rated voltage (V)
I = Rated current (A)
fn = Line frequency (Hz)
fr = Resonance frequency (Hz)
p = Filtering factor
Qc= Capacitor power (VAr)
C = Capacitance (F, farad)
P = Active power (W)
S = Apparent power (VA)
Q = Reactive Power (VAr)
In = Rated current of fuse (A)
Un= Rated voltage of fuse (V)

CP Contactors for capacitor banks CEM CN

Application
Contactors for capacitor switching were specially designed for power factor correction capacitor operation (utilization category AC-6b).
Capacitors are pre-charged through resistors that reduce the peak current to the contactor when CEM_CN special contactors are switched on.
After the pre-charge, the main contactors close allowing passage of rated current.

Advantages
- Mounting on DIN rails and on mounting plates
- Technical specification according to IEC 60947-4
- Built-in pre-charge resistors
- High reliability
- Reduced dimensions
- Standard control voltage 230V AC

CEM 25CN

CEM 32CN

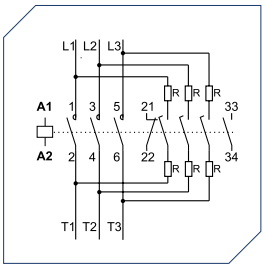
CEM 50CN

CEM 60CN

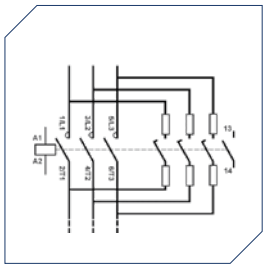
CEM 80CN

Capacitor duty contactor CEM_CN

Type	Code No.	Rated oper. power 380/415V (kVAr)	Aux. contacts built-in	Weight [g]	Packaging [pcs]
CEM7,5CN.11-230V-50Hz	004643800	7,5	1NC+1NO	345	1
CEM10CN.11-230V-50Hz	004643801	10	1NC+1NO	345	1
CEM18CN.10-230V-50Hz	004644130	15	1NO	619	1
CEM25CN.10-230V-50Hz	004645130	20	1NO	619	1
CEM32CN.10-230V-50Hz	004646130	25	1NO	670	1
CEM50CN.10-230V-50Hz	004648140	40	1NO	1370	1
CEM65CN.10-230V-50Hz	004649140	50	1NO	1389	1
CEM80CN.10-230V-50Hz	004650140	61	1NO	1700	1



CEM7,5CN...CEM10CN


CEM18CN...CEM65CN

Operating principle:
When capacitor bank being switched on, the capacitors are uncharged and the system sees them as a short circuit for a quick period of time. The in-rush current is the result of this little short circuit and usually lasts for some milliseconds. It may reach 100 times the rated current, being one of the main reasons for the short life of a capacitor.

The CEM CN contactor is assembled with damping resistors which limit the high in-rush current when the capacitors are switched on. They are assembled with and early-make contact block, which is switched on before the main contacts, thus, limiting the in-rush current.

However, the damping resistors don't influence the final load, since they are switched off after 5 milliseconds, leaving only the capacitors in parallel with your inductive load, providing the proper power factor correction. This process increases the lifetime of the capacitors and also prevents net distortions.

Capacitor duty contactor CEM CN (230 V 50/60 Hz)

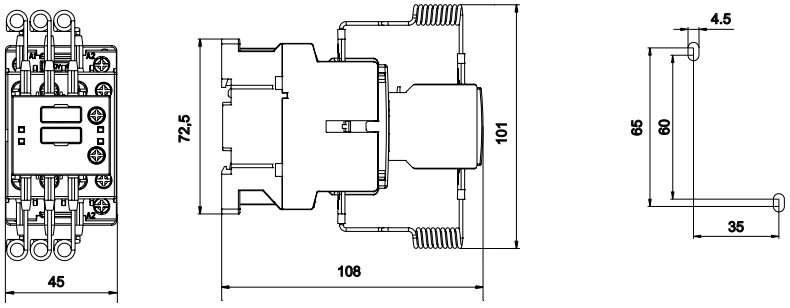
			CEM7,5CN.11-230V-50Hz	CEM10CN.11-230V-50Hz	CEM18CN.10-230V-50Hz	CEM25CN.10-230V-50Hz	CEM32CN.10-230V-50Hz	CEM50CN.10-230V-50Hz	CEM65CN.10-230V-50Hz	CEM80CN.10-230V-50Hz
Voltage(V)/ rated power (kVAr) AC-6b (t° = 55°C)	220-230V	kVAr	4 (230V)	5 (230V)	8	11	15	25	30	35
	380-415V	kVAr	7,5 (400V)	10 (400V)	15	20	25	40	50	61
	440V	kVAr	7,5	10	16	23	30	45	60	71
	480V	kVAr	9 (500V)	12,5	17	25	33	50	65	77
	660-690V	kVAr	11	22	25	34	45	65	87	106
AC-6b utilization category(Ie)	(55°C)	A	11	22	21	30	40	60	77	93
AC-6b utilization category(Ie)	(70°C)	A	-	-	15	22	34	50	62	67
Recommended max. fuse (gL/gG)		A	25	35	35	50	63	100	125	160
Cross section		mm2	1,5...6	1,5...6	6	2 x 10	2 x 16	2 x 35	2 x 35	35
Tightening torque		Nm	1,2	1,2	1 ... 1,7	1,6 ... 3	2,5 ... 4	4 ... 6	4 ... 6	5 ... 6,5
Max electrical operating frequency op/h**			240		120					
Auxiliary contacts built-in			1xNO, 1xNC	1xNO, 1xNC	1xNO	1xNO	1xNO	1xNO	1xNO	1xNO
Electrical lifespan		..x103	250	250	100					
Dimensions (W/H/D)		mm	45/101/108	45/101/108	45/113/129	45/113/129	55/125/140	66/185/158	66/185/158	75/185/167
Code No.			004643800	004643801	004644130	004645130	004646130	004648140	004649140	004650140
Weight		g	345	345	619	619	670	1370	1389	1700

*Accessories (aux. contacts for CEM18CN - CEM80CN and other accessories) can be found in ETICON, page 279
**Recharge time should not be less than 1 minute

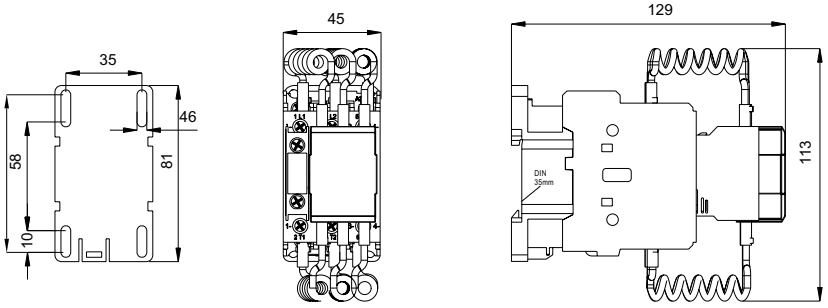
Auxiliary contact block - lateral - for CEM7,5 and CEM10CN

Type	Code No.	Description	For use with	Wiring diagram	Weight [g]	Packaging [pcs]
BCMLE11	004643802	1NO + 1NC	CEM7,5CN & CEM10CN		50	2

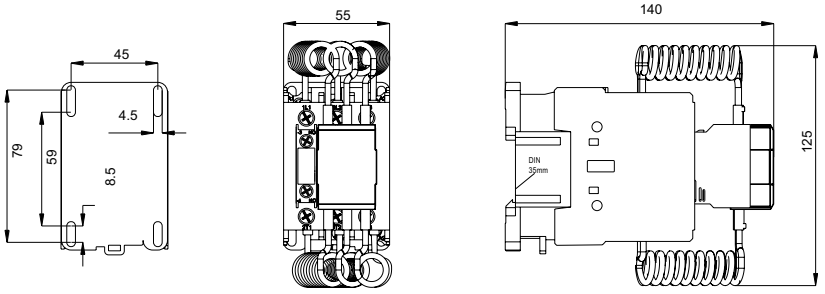
CEM 7,5CN, CEM 10CN



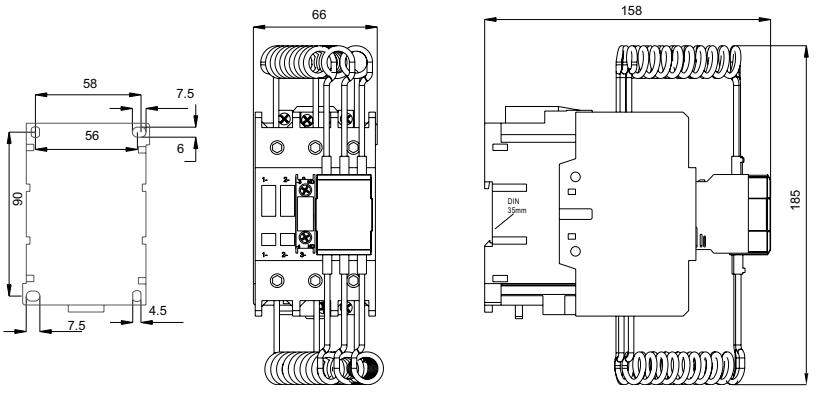
CEM 18CN, CEM 25CN



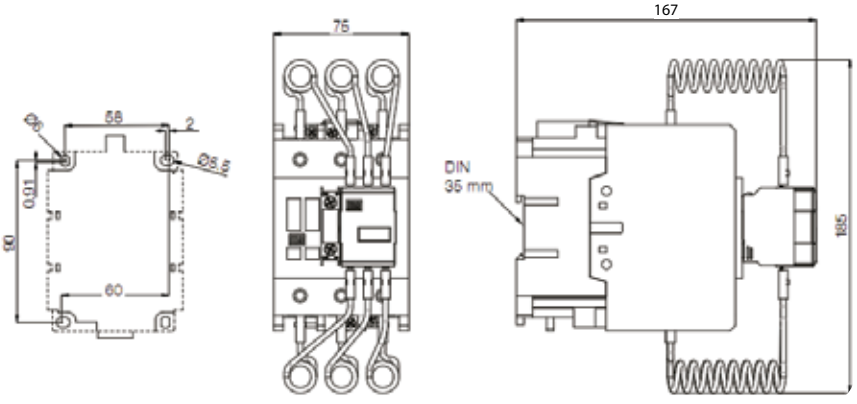
CEM 32CN



CEM 50CN, CEM 65CN



CEM 80CN



CP Power factor controllers

Automatic power factor correction controller series PFC 6, 8, 12 RS

Description
An essential way of electrical energy cost reduction is the compensation of the reactive power caused by various type of loads. The main part of central and group power factor correction in systems with a variable load is the power factor controller. A proper power factor controller and the correct design of PFC (Power factor correction) system are the key to the reduction of reactive energy costs. Nowadays, when four-quadrant energy meters are used, the right power factor controller is essential to achieve the highest efficiency of PFC system. Reliable, smart and advanced ETI controllers assure effective reduction of reactive energy and long working life of PFC systems.

MAIN ADVANTAGES
- Circular usage of steps: The controller switches all steps that have the same power circularly in order to use them equally and prolong their working life time.
- Fast action: Optimal regulation is achieved in one regulation cycle with a minimum number of switched stages. Since the controller knows the needed compensation power, it can connect or disconnect several steps in one cycle.

REGULATION METHODS:
The power factor controller digitalizes measured phase voltage and phase current in one or three phases. From these values the controller then calculates power factor, effective values of voltage, current and powers. On the basis of allowed reactive power, which is set as a requested power factor value, the controller calculates the requested compensation power. In accordance with its size and direction, the controller connects or disconnects the appropriate capacitor steps.
- APFR (average power factor regulation): The controller quantifies an average power factor from active and apparent power over a defined period. This method assures that the controller reacts smartly to load changes taking into account the size of load and cos . Thanks to the APFR system, the power factor controller reduces the number of switching operations together with a precisely kept requested power factor result.
- SHTD: This method uses the deceleration of time to reaction according to the size of the difference between the target power factor and instantaneous value. For every second of difference the time to the reaction is reduced by the square of difference until 0 (the moment of reaction).
- Instantaneous power factor: This method reacts to every change of the instantaneous power factor by the connection or disconnection of the exact size of reactive power step. This method is mainly used for the dynamic power factor correction system based on thyristor switching modules.

Advantages:
- monitoring of U, I, P, Q, S, cos , THDU, THDI, odd harmonics up to the 19th order, temperature
- three regulation methods (APFR default)
- small design 97 x 97 mm for pannel mounting, PFC 6 RS and PFC 8 RS
- automatic or manual configuration of measuring circuit connection (load must not vary during the auto-detection process).
- automatic or manual detection of connected capacitor steps
- universal current transformer input ../1A and ../5A
- internal temperature sensor
- temperature levels for ventilator control and steps disconnection
- ready for applications with de-compensation reactor steps
- monitoring of switching operations and operation time
- setting of discharging and min. operation time for each step
- memory for min. and max. values
- discharging time and min. operation time setting for each step
- last step output programmable for alarm purposes
- second tariff activation by external input, PFC 12 RS only
- programmable alarms and independent alarm output at PFC 12 RS only

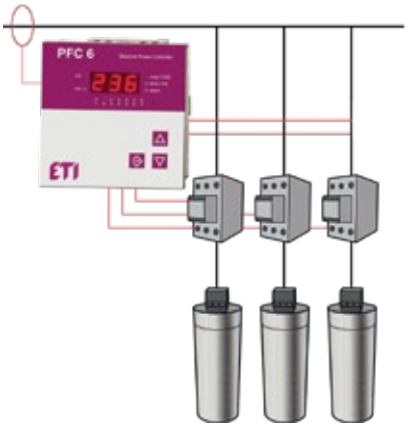
Controllers for compensation of 3 phase balanced loads (single phase current measurement)

Power factor controllers PFC 6 (6 outputs), PFC 8 (8 outputs) and PFC 12 (12 outputs) are designed for usage in standard LV and MV power factor correction applications operated by mechanical contactors. Despite the small size of power factor controllers, they offer four quadrant measurement and regulation, automatic detection of measuring circuits and capacitor steps, high sensitivity, reliability and design for the hardest conditions.

Technical data

Supply and measuring voltage	400 VAC (+10%, -15%)
System frequency	50 Hz / 60 Hz
Power consumption	<3,2 VA
Current range	5mA - 6A
Current input accuracy	± 0,2%
Voltage input accuracy	± 0,5%
THD_U and THD_I accuracy	(U>10%UN) ±5% / (I>10%IN) ±5%
Phase error for I>3%In	± 3° (otherwise ±1°)
Switching power of relay output	250 V AC / 5 A
Range of requested power factor	0.8 inductive ÷ 0.8 capacitive
Step reconnection delay	5 ÷ 900 s
Step disconnection delay	5 ÷ 900 s
Step power setting	999 kVAr inductive ÷ 999 kVAr capacitive
System connection detection	manual / automatic
Communication interface	RS485 (Modbus RTU)
Working temperature	-40°C ÷ +70°C
IP rating	IP20 rear, IP54 front panel
Site depth	55mm
Related norms	EN 61010-1, EN50081-1, EN50082-1

Type	Code No.	Rated voltage Un	Description	Communication module	Weight (kg)	Packaging (pcs)
PFC 6 RS	004656905	400 V AC (+10%, -15%)	Single phase current measurement	RS485	0,65	1
PFC 8 RS	004656906				0,65	1
PFC 12 RS	004656907				1,2	1



WATCH THE VIDEO

Technical data

Type	Number of steps	Measuring and supply voltage	LED segment display	Tariff input	Alarm output	Last step alarm output	3-ph current measurment	RS 485 communication module	Front panel dimension	Panel cutout
PFC 6 RS	6	400 V AC	✓			•		•	97x97mm	91x91mm
PFC 8 RS	8					•		•	97x97mm	91x91mm
PFC 12 RS	12			•	•			•	144x144mm	138x138mm

Over temperature control
The controller offers the possibility of the temperature alarm working in two levels. The first level starts the ventilation of the cabinet. The second level disconnects all steps and gives an alarm notification on the display.

Symbol menu
Every parameter in the monitoring and service menu is represented by a three or four character symbol. Symbols are logical and assure user friendly experience and an easy understanding of all parameters and measured values shown on the segment display.

Dichromatic LED indication
Each step of the controller has an operation status indicated by a dichromatic LED. Different colours and logical signalization identify the operation status and settings of each step.

Last step alarm output PFC 6 RS, PFC 8 RS
The last step normally functions as a standard compensation step. Nevertheless it can be removed from the regulation algorithm and enabled for alarm purposes. The configuration of the last step operated as an alarm output is easily done in the setup menu.

RS485 interface
The power factor controllers are equipped with the RS485 communication interface with communication protocol Modbus RTU.

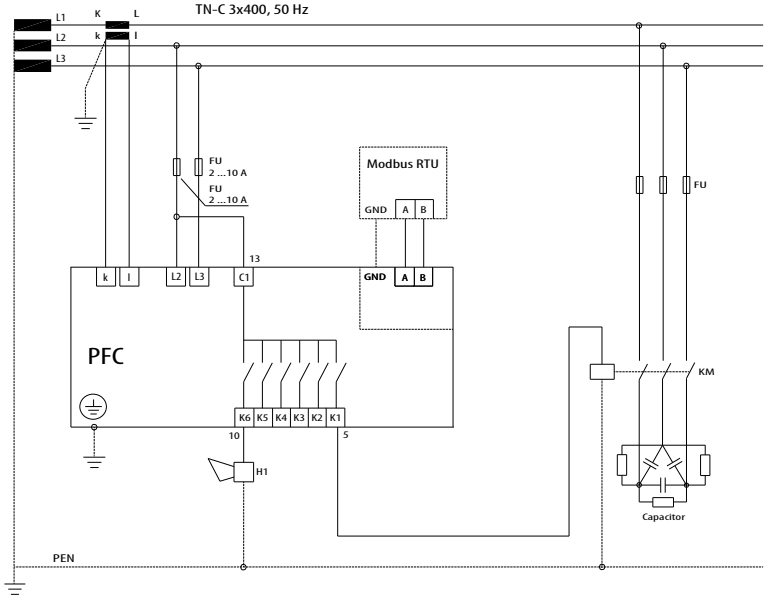
Harmonics measurement
The controllers offer a wide range of monitoring features which are enlarged by THDU, THDI and also the particular odd harmonics of U and I up to the 19th order.

De-compensation
The controllers have features for smart decompensation with several reactor steps operated in a similar way as capacitor steps or only one reactor that is tuned by capacitor steps.

Tariff input, PFC 12 RS
The power factor controller has an input for the second tariff of cos . The value of the second tariff cos can be defined in the controller's service menu. Applying the signal to input activates the second tariff of cos .

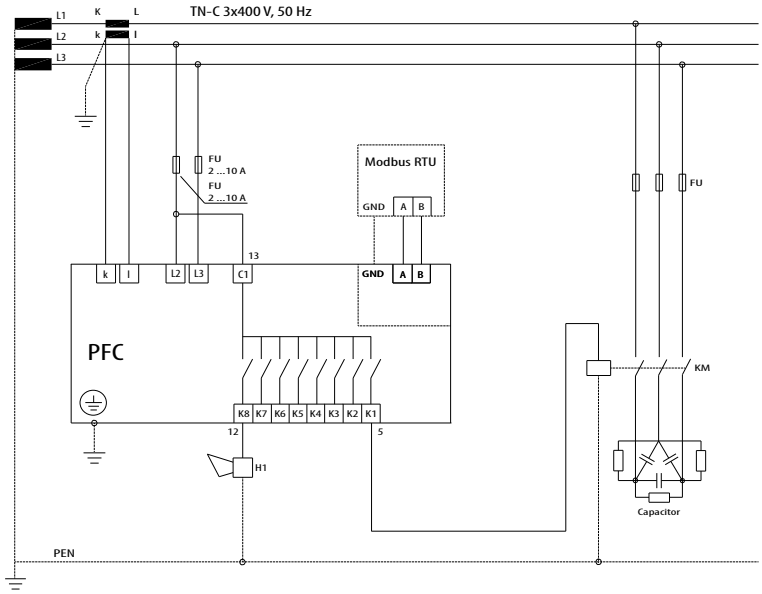
Wiring diagrams of automatic PFC system

PFC 6 electrical scheme



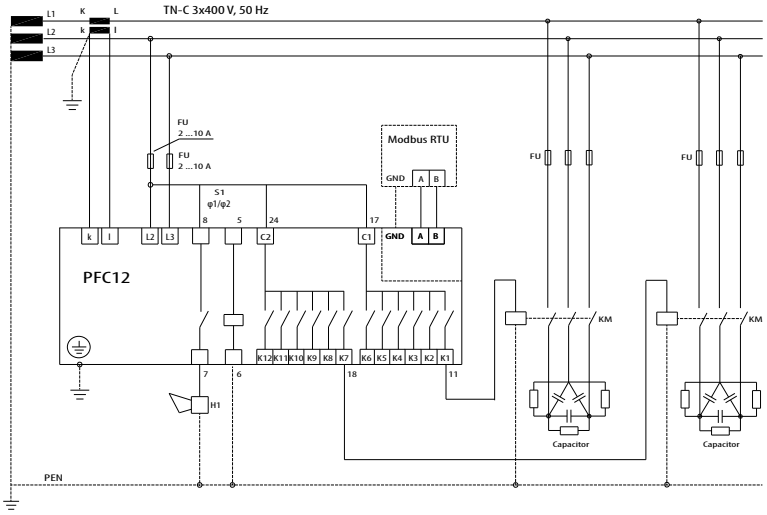
*Capacitor steps with the same power have to be connected next to each other (no different values between).
**Before current circuit disconnection make short-out of CT.

PFC 8 electrical scheme



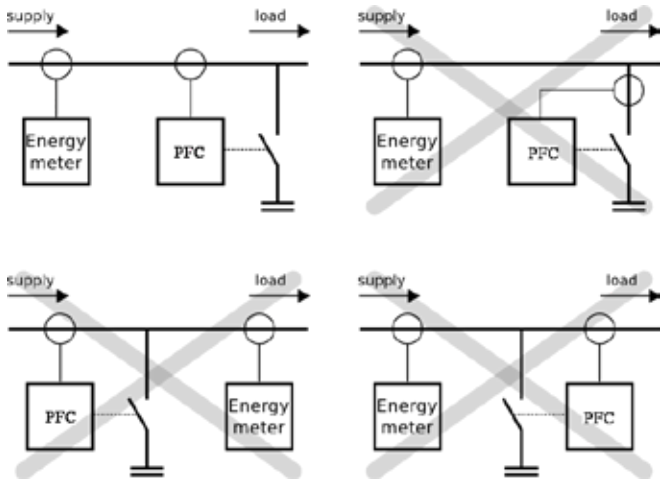
*Capacitor steps with the same power have to be connected next to each other (no different values between).
**Before current circuit disconnection make short-out of CT.

PFC 12 electrical scheme



*Capacitor steps with the same power have to be connected next to each other (no different values between).
**Before current circuit disconnection make short-out of CT.

Position of controller



CP Three-phase harmonic filters

Technical data

Complince standard	IEC-60289;IEC-076
Tolerance "L"	3%
Permisible overload	1,07 x In
Linearity Inductance	1,60 x In
Heat insulation	F (155ºC)
Thermal protection	90ºC
Room temperature	45ºC
Proof stress	4KV
Protection degree	IP00
Detuning factor (p%)	7% - 14%

Constructive Characteristics - Three phase harmonic filters are made of low losses magnetic plates, permanent regime class F (1550C) copper conductor and thermal protection relay.
With the purpose of increasing filters ventilation, windings are separated among them, improving thermal dissipation.
Available factor p is 7% and 14% with resonance frequency 189 Hz and 134 Hz for 50 Hz networks.
With this standard values in three phase networks and balanced loads, the 5th (250 Hz) harmonic and higher resonant phenomenons are eliminated avoiding resonance between inductive impedance and three phase capacitors for power factor correction and preventing network capacitors and capacitor banks for overloads, caused by harmonics.

Table selection of three-phase harmonic filters for capacitor banks

400V-50Hz-7%-189Hz Copper

Type	Reactive power (kVAr)	Code No.	Power loss (W)	Inductance (mH)	Suggested Capacitance µF	Rated current (A) Ieff	Weight (kg)	Capacitors
HFL 7/5 Cu	5	004656800	30	7,66	3x 30,84	7,2	7,5	2x LPC 3 kVAr, 460V, 50Hz
HFL 7/10 Cu	10	004656801	60	3,83	3x 61,67	14,4	8,5	LPC 12.5 kVAr, 460V, 50Hz
HFL 7/12,5 Cu	12,5	004656802	70	3,07	3x 77,09	18	9	LPC 15 kVAr, 460V, 50Hz
HFL 7/15 Cu	15	004656803	80	2,56	3x 92,51	21,7	9,5	LPC 20 kVAr, 480V, 50Hz
HFL 7/20 Cu	20	004656804	100	1,92	3x 123,35	28,9	16	LPC 25 kVAr, 460V, 50Hz
HFL 7/25 Cu	25	004656805	110	1,53	3x 154,18	36,1	16,5	LPC 30 kVAr, 460V, 50Hz
HFL 7/30 Cu	30	004656806	120	1,28	3x 185,02	43,3	17,5	LPC 40 kVAr, 480V, 50Hz
HFL 7/40 Cu	40	004656807	150	0,96	3x 246,69	57,7	28,5	LPC 50 kVAr, 460V, 50Hz
HFL 7/50 Cu	50	004656808	180	0,77	3x 308,36	72,2	30	2x LPC 30.8 kVAr, 460V, 50Hz
HFL 7/100 Cu	100	004656809	350	0,38	3x 616,73	144	43	4x LPC 30.8 kVAr, 460V, 50Hz

400V-50Hz-14%-134Hz Copper

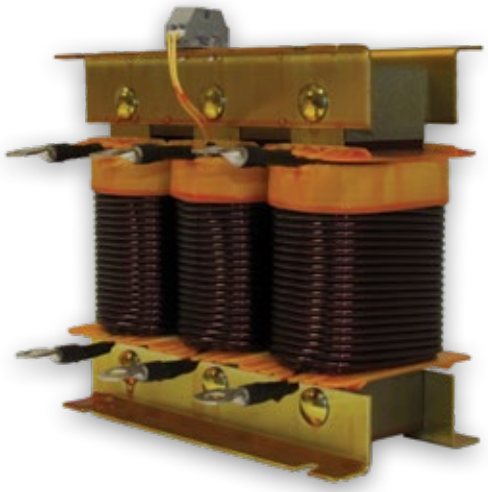
Type	Reactive power (kVAr)	Code No.	Power loss (W)	Inductance (mH)	Suggested Capacitance µF	Rated current (A) Ieff	Weight (kg)	Capacitors
HFL 14/5 Cu	5	004656810	60	16,58	3x 28,52	7,2	15	2x LPC 3 kVAr, 480V, 50Hz
HFL 14/10 Cu	10	004656811	90	8,29	3x 57,03	14,4	15	LPC 15 kVAr, 525V, 50Hz
HFL 14/12,5 Cu	12,5	004656812	120	6,63	3x 71,29	18	16	LPC 15 kVAr, 480V, 50Hz
HFL 14/15 Cu	15	004656813	150	5,53	3x 85,55	21,7	16	LPC 20 kVAr, 480V, 50Hz
HFL 14/20 Cu	20	004656814	150	4,15	3x 114,06	28,9	19,5	LPC 25 kVAr, 480V, 50Hz
HFL 14/25 Cu	25	004656815	190	3,32	3x 142,58	36,1	20,5	LPC 30 kVAr, 480V, 50Hz
HFL 14/30 Cu	30	004656816	220	2,76	3x 171,09	43,3	31	LPC 40 kVAr, 480V, 50Hz
HFL 14/40 Cu	40	004656817	290	2,07	3x 228,12	57,7	34,5	LPC 50 kVAr, 480V, 50Hz
HFL 14/50 Cu	50	004656818	330	1,66	3x 285,15	72,2	37	2x LPC 30 kVAr, 480V, 50Hz

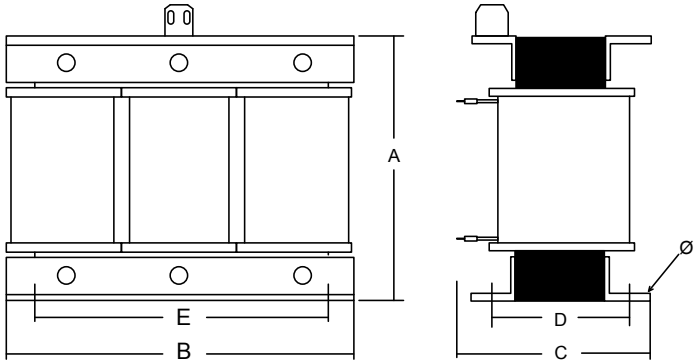
400V-50Hz-7%-189Hz Aluminium

Type	Reactive power (kVAr)	Code No.	Power loss (W)	Inductance (mH)	Suggested Capacitance µF	Rated current (A) Ieff	Weight (kg)	Capacitors
HFL 7/20 Al	20	004656820	100	1,92	3x 123,35	28,9	14,5	LPC 25 kVAr, 460V, 50Hz
HFL 7/25 Al	25	004656821	120	1,53	3x 154,18	36,1	17	LPC 30 kVAr, 460V, 50Hz
HFL 7/30 Al	30	004656822	130	1,28	3x 185,02	43,3	26	LPC 40 kVAr, 480V, 50Hz
HFL 7/40 Al	40	004656823	160	0,96	3x 246,69	57,7	26,5	LPC 50 kVAr, 460V, 50Hz
HFL 7/50 Al	50	004656824	200	0,77	3x 308,36	72,2	27	2x LPC 30.8 kVAr, 460V, 50Hz

400V-50Hz-14%-134Hz Aluminium

Type	Reactive power (kVAr)	Code No.	Power loss (W)	Inductance (mH)	Suggested Capacitance µF	Rated current (A) Ieff	Weight (kg)	Capacitors
HFL 14/20 Al	20	004656830	170	4,15	3x 114,06	28,9	27	LPC 25 kVAr, 480V, 50Hz
HFL 14/25 Al	25	004656831	200	3,32	3x 142,58	36,1	27	LPC 30 kVAr, 480V, 50Hz
HFL 14/30 Al	30	004656832	240	2,76	3x 171,09	43,3	44	LPC 40 kVAr, 480V, 50Hz
HFL 14/40 Al	40	004656833	290	2,07	3x 228,12	57,7	44,5	LPC 50 kVAr, 480V, 50Hz
HFL 14/50 Al	50	004656834	370	1,66	3x 285,15	72,2	45	2x LPC 30 kVAr, 480V, 50Hz





Copper Wire Reactors – Mechanical Dimensions

Type	Dimensions mm					
Cu	A	B	C	D	E	Φ
HFL 7/5 Cu	170	180	80	70	140	9
HFL 7/10 Cu	170	180	90	80	140	9
HFL 7/12,5 Cu	170	180	90	80	140	9
HFL 7/15 Cu	170	180	90	80	140	9
HFL 7/20 Cu	220	240	100	90	200	9
HFL 7/25 Cu	220	240	100	90	200	9
HFL 7/30 Cu	220	240	100	90	200	9
HFL 7/40 Cu	270	300	120	100	200	9
HFL 7/50 Cu	270	300	120	100	200	9
HFL 7/100 Cu	320	360	150	125	300	9

Copper Wire Reactors – Mechanical Dimensions

Type	Dimensions mm					
Cu	A	B	C	D	E	Φ
HFL 14/5 Cu	220	240	100	90	200	9
HFL 14/10 Cu	220	240	100	90	200	9
HFL 14/12,5 Cu	220	240	100	90	200	9
HFL 14/15 Cu	220	240	100	90	200	9
HFL 14/20 Cu	220	240	110	100	200	9
HFL 14/25 Cu	220	240	110	100	200	9
HFL 14/30 Cu	270	300	120	100	200	9
HFL 14/40 Cu	270	300	130	110	200	9
HFL 14/50 Cu	270	300	130	110	200	9

Aluminum Wire Reactors – Mechanical Dimensions

Type	Dimensions mm					
Al	A	B	C	D	E	Φ
HFL 7/20 Al	220	240	100	90	200	9
HFL 7/25 Al	220	240	110	100	200	9
HFL 7/30 Al	270	300	120	100	200	9
HFL 7/40 Al	270	300	120	100	200	9
HFL 7/50 Al	270	300	120	100	200	9

Aluminum Wire Reactors – Mechanical Dimensions

Type	Dimensions mm					
Al	A	B	C	D	E	Φ
HFL 14/20 Al	270	300	120	100	200	9
HFL 14/25 Al	270	300	120	100	200	9
HFL 14/30 Al	320	360	160	135	300	9
HFL 14/40 Al	320	360	160	135	300	9
HFL 14/50 Al	320	360	160	135	300	9

ETIBREAK

Moulded Case Circuit Breakers And Switch Disconnectors

Low Breaking Capacity
Moulded Case Circuit Breakers EB2S **422**
Low Voltage Moulded Case Circuit
Breakers EB2 And Low Voltage Switch
Disconnectors ED2 **441**
Low Voltage Moulded Case Circuit Breakers With
Residual Current Protection EB2R **467**
Accessories **472**
Low Voltage Moulded Case Circuit Breakers NBS **516**

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SWITCH TO
A SAFE FUTURE

ETIBREAK Low Breaking Capacity Moulded Case Circuit Breakers EB2S

Low Breaking Capacity Moulded Case Circuit Breakers EB2S

Possibility of installation together with modular devices under a 45mm front panel.

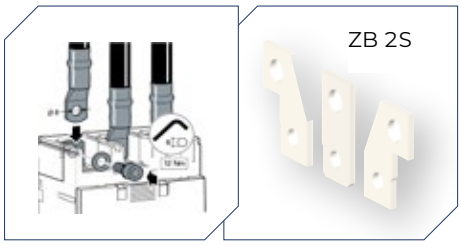
Protective covers (IP 20) prevent contact with live parts; partition barriers ensure terminal insulation; the MCCB housing has double insulation.

Unique accessory cover opens with only one screw.

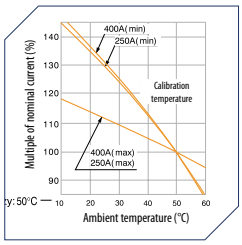
New series EB2S of MCCBs has excellent performances with reduced dimensions and new modern design.

Practical internal accessories can be installed with one touch:
- auxiliary switch
- alarm switch
- shunt trip unit
- undervoltage trip unit

EB2S series complies to safety recommendation standard IEC 60204-1. EB2S is marked with IEC symbol "direct opening action". This makes these devices also ideal for all OEM applications where safety and reliability are essential.

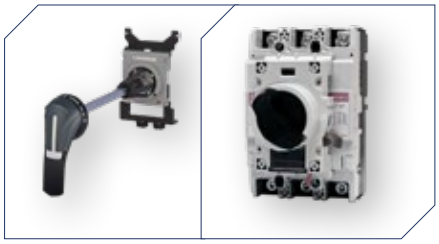


The ZB 2S busbar adapter supports large cross-section or multiple conductor connections.

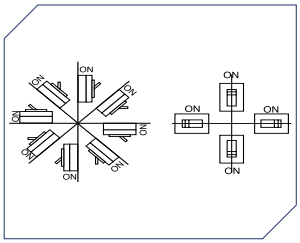


ETIBREAK 2S breakers are calibrated at 50°C.

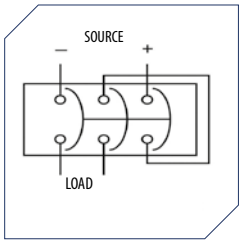
Remote breaker operation is enabled by a motor drive.



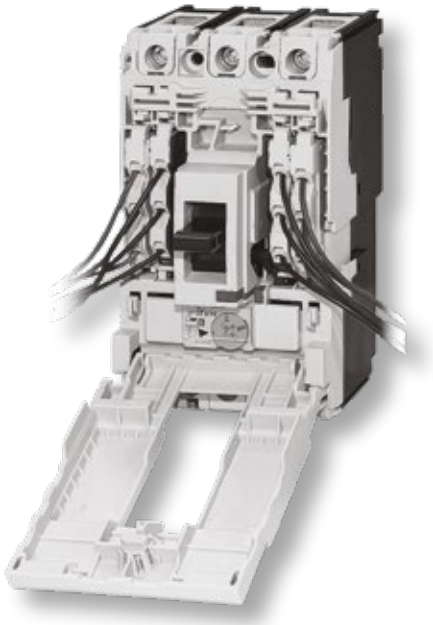
Rotary handles enable manual operation of circuit breakers, installable on the breaker itself or on the cabinet door.



EB2S breakers can be installed at any angle without affecting performance.



All breakers with thermal-magnetic protection can be used in DC circuits up to 250V.

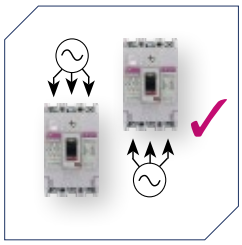


Mountable on a panel or TH 35 rail (160 frame only).

User can select between fixed and adjustable protection:
- Frame size 160A: fixed (series LF, SF & HF) or thermal trip adjustable (series LA, SA & HA)
- Frame size 250A: fixed (series LF, SF & HF) or thermal-magnetic trip adjustable (series LA, SA & HA)

WATCH THE VIDEO

All breaker components are eco-friendly: PBDE/PBB-free thermoplastic rubber, cadmium-free contacts, and lead-free soldering.



ETIBREAK 2S breakers support top or bottom load connection without affecting protection characteristics.

Application
MCCBs protect cables, power lines, motors, and other electrical equipment from short circuits and overloads.

Features:

- Compact dimensions
- Direct drive system
- Short-circuit current limitation through rapid arc quenching
- Minimal arc quenching time due to the special contact group design
- Adjustable thermal and magnetic protections
- Cable lug compatibility
- Mountable on a panel
- TH 35 rail mounting option (ETIBREAK 2S160 frame only)
- High voltage rating: up to 690V AC and 250V DC (for thermal-magnetic breakers only)
- Universal accessories for all ETIBREAK 2S series frames

Technical data

Dimensions	160 & 250
Rated current	16 - 250A
Number of poles	1, 3
Impulse withstand voltage Uimp	8 kV
Rated insulation voltage Ui	690 & 800 V
Breaking capacity Icu	16, 25, 40 kA
Standards	IEC 60947-2, EN 60947-2

ETIBREAK EB2S 160

EB2S 160 LF - economic, fixed protection

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400V [kA]	Adjustment thermal/magnetic	kg	
EB2S 160/3LF 16A 3p	16	004671801					
EB2S 160/3LF 20A 3p	20	004671802					
EB2S 160/3LF 25A 3p	25	004671803					
EB2S 160/3LF 32A 3p	32	004671804					
EB2S 160/3LF 40A 3p	40	004671805					
EB2S 160/3LF 50A 3p	50	004671806	3			0,80	
EB2S 160/3LF 63A 3p	63	004671807					
EB2S 160/3LF 80A 3p	80	004671808					
EB2S 160/3LF 100A 3p	100	004671809					
EB2S 160/3LF 125A 3p	125	004671810					
EB2S 160/3LF 160A 3p	160	004671811		16/8	fixed/fixed		1
EB2S 160/4LF 16A 4p	16	004671814					
EB2S 160/4LF 20A 4p	20	004671815					
EB2S 160/4LF 25A 4p	25	004671816					
EB2S 160/4LF 32A 4p	32	004671817					
EB2S 160/4LF 40A 4p	40	004671818					
EB2S 160/4LF 50A 4p	50	004671819	4			1,00	
EB2S 160/4LF 63A 4p	63	004671820					
EB2S 160/4LF 80A 4p	80	004671821					
EB2S 160/4LF 100A 4p	100	004671822					
EB2S 160/4LF 125A 4p	125	004671823					
EB2S 160/4LF 160A 4p	160	004671824					

Legend:
L -> economic, lower short-circuit breaking capacity
S -> standard short-circuit breaking capacity
H -> high short-circuit breaking capacity

EB2S 160 SF - standard, fixed protection

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400V [kA]	Adjustment thermal/magnetic	kg	
EB2S 160/3SF 16A 3p	16	004671827					
EB2S 160/3SF 20A 3p	20	004671828					
EB2S 160/3SF 25A 3p	25	004671829					
EB2S 160/3SF 32A 3p	32	004671830					
EB2S 160/3SF 40A 3p	40	004671831					
EB2S 160/3SF 50A 3p	50	004671832	3			0,80	
EB2S 160/3SF 63A 3p	63	004671833					
EB2S 160/3SF 80A 3p	80	004671834					
EB2S 160/3SF 100A 3p	100	004671835					
EB2S 160/3SF 125A 3p	125	004671836					
EB2S 160/3SF 160A 3p	160	004671837					
EB2S 160/4SF 16A 4p	16	004671840		25/13	fixed/fixed		1
EB2S 160/4SF 20A 4p	20	004671841					
EB2S 160/4SF 25A 4p	25	004671842					
EB2S 160/3SF 32A 4p	32	004671843					
EB2S 160/4SF 40A 4p	40	004671844					
EB2S 160/4SF 50A 4p	50	004671845	4			1,00	
EB2S 160/4SF 63A 4p	63	004671846					
EB2S 160/4SF 80A 4p	80	004671847					
EB2S 160/4SF 100A 4p	100	004671848					
EB2S 160/4SF 125A 4p	125	004671849					
EB2S 160/4SF 160A 4p	160	004671850					

EB2S 160 HF - high capacity, fixed protection

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400V [kA]	Adjustment thermal/magnetic	kg	
EB2S 160/3HF 16A 3p	16	004671853					
EB2S 160/3HF 20A 3p	20	004671854					
EB2S 160/3HF 25A 3p	25	004671855					
EB2S 160/3HF 32A 3p	32	004671856					
EB2S 160/3HF 40A 3p	40	004671857					
EB2S 160/3HF 50A 3p	50	004671858	3			0,80	
EB2S 160/3HF 63A 3p	63	004671859					
EB2S 160/3HF 80A 3p	80	004671860					
EB2S 160/3HF 100A 3p	100	004671861					
EB2S 160/3HF 125A 3p	125	004671862					
EB2S 160/3HF 160A 3p	160	004671863					
EB2S 160/4HF 16A 4p	16	004671866		40/20	fixed/fixed		1
EB2S 160/4HF 20A 4p	20	004671867					
EB2S 160/4HF 25A 4p	25	004671868					
EB2S 160/4HF 32A 4p	32	004671869					
EB2S 160/4HF 40A 4p	40	004671870					
EB2S 160/4HF 50A 4p	50	004671871	4			1,00	
EB2S 160/4HF 63A 4p	63	004671872					
EB2S 160/4HF 80A 4p	80	004671873					
EB2S 160/4HF 100A 4p	100	004671874					
EB2S 160/4HF 125A 4p	125	004671875					
EB2S 160/4HF 160A 4p	160	004671876					

EB2S 160 adjustable protection

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400V [kA]	Adjustment thermal/magnetic	kg	
EB2S 160/3LA 25A 3p	25	004671879					
EB2S 160/3LA 40A 3p	40	004671880					
EB2S 160/3LA 63A 3p	63	004671881					
EB2S 160/3LA 80A 3p	80	004671882	3			0,80	
EB2S 160/3LA 100A 3p	100	004671883					
EB2S 160/3LA 125A 3p	125	004671884					
EB2S 160/3LA 160A 3p	160	004671885					
EB2S 160/4LA 25A 4p	25	004671889		16/8	adjustable (0.63-1)/ fixed		1
EB2S 160/4LA 40A 4p	40	004671890					
EB2S 160/4LA 63A 4p	63	004671891					
EB2S 160/4LA 80A 4p	80	004671892	4			1,0	
EB2S 160/4LA 100A 4p	100	004671893					
EB2S 160/4LA 125A 4p	125	004671894					
EB2S 160/4LA 160A 4p	160	004671895					

EB2S 160 adjustable protection

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400V [kA]	Adjustment thermal/magnetic	kg	
EB2S 160/3SA 25A 3p	25	004671899					
EB2S 160/3SA 40A 3p	40	004671900					
EB2S 160/3SA 63A 3p	63	004671901					
EB2S 160/3SA 80A 3p	80	004671902	3			0,80	
EB2S 160/3SA 100A 3p	100	004671903					
EB2S 160/3SA 125A 3p	125	004671904					
EB2S 160/3SA 160A 3p	160	004671905					
EB2S 160/4SA 25A 4p	25	004671909		25/13	adjustable (0.63-1)/ fixed		1
EB2S 160/4SA 40A 4p	40	004671910					
EB2S 160/4SA 63A 4p	63	004671911					
EB2S 160/4SA 80A 4p	80	004671912	4			1,0	
EB2S 160/4SA 100A 4p	100	004671913					
EB2S 160/4SA 125A 4p	125	004671914					
EB2S 160/4SA 160A 4p	160	004671915					

EB2S 160 adjustable protection

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400V [kA]	Adjustment thermal/magnetic	kg	
EB2S 160/3HA 25A 3p	25	004671919					
EB2S 160/3HA 40A 3p	40	004671920					
EB2S 160/3HA 63A 3p	63	004671921					
EB2S 160/3HA 80A 3p	80	004671922	3			0,80	
EB2S 160/3HA 100A 3p	100	004671923					
EB2S 160/3HA 125A 3p	125	004671924					
EB2S 160/3HA 160A 3p	160	004671925		40/20	adjustable (0.63-1)/ fixed		1
EB2S 160/4HA 25A 4p	25	004671929					
EB2S 160/4HA 40A 4p	40	004671930					
EB2S 160/4HA 63A 4p	63	004671931					
EB2S 160/4HA 80A 4p	80	004671932	4			1,0	
EB2S 160/4HA 100A 4p	100	004671933					
EB2S 160/4HA 125A 4p	125	004671934					
EB2S 160/4HA 160A 4p	160	004671935					

ETIBREAK EB2S 250

EB2S 250 fixed protection

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400V [kA]	Adjustment thermal/magnetic	kg	
EB2S 250/3LF 200A 3p	200	004671812	3	16/8	fixed/fixed	1,50	1
EB2S 250/3LF 250A 3p	250	004671813					
EB2S 250/4LF 200A 4p	200	004671825	4			1,90	
EB2S 250/4LF 250A 4p	250	004671826					

EB2S 250 fixed protection

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400V [kA]	Adjustment thermal/magnetic	kg	
EB2S 250/3SF 200A 3p	200	004671838	3	25/19	fixed/fixed	1,50	1
EB2S 250/3SF 250A 3p	250	004671839					
EB2S 250/4SF 200A 4p	200	004671851	4			1,90	
EB2S 250/4SF 250A 4p	250	004671852					

EB2S 250 fixed protection

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400V [kA]	Adjustment thermal/magnetic	kg	
EB2S 250/3HF 200A 3p	200	004671864	3	40/20	fixed/fixed	1,50	1
EB2S 250/3HF 250A 3p	250	004671865					
EB2S 250/4HF 200A 4p	200	004671877	4			1,90	
EB2S 250/4HF 250A 4p	250	004671878					

EB2S 250 adjustable protection

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400V [kA]	Adjustment thermal/magnetic	kg	
EB2S 250/3LA 200A 3p	200	004671887	3	16/8	adjustable (0.63-1)/ adjustable (5-11)	1,50	1
EB2S 250/3LA 250A 3p	250	004671888					
EB2S 250/4LA 200A 4p	200	004671897	4			1,90	
EB2S 250/4LA 250A 4p	250	004671898					

EB2S 250 adjustable protection

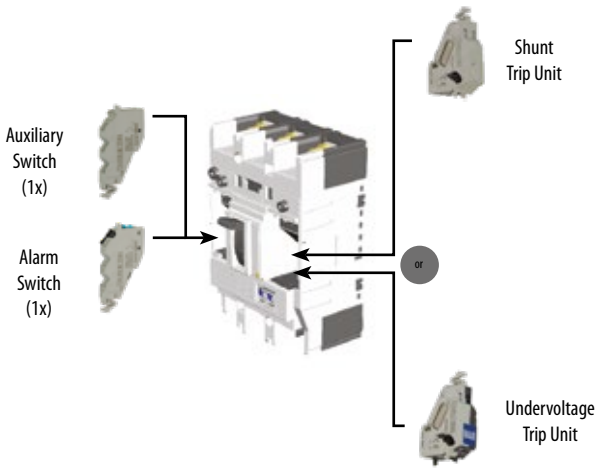
Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400V [kA]	Adjustment thermal/magnetic	kg	
EB2S 250/3SA 200A 3p	200	004671907	3	25/19	adjustable (0.63-1)/ adjustable (5-11)	1,50	1
EB2S 250/3SA 250A 3p	250	004671908					
EB2S 250/4SA 200A 4p	200	004671917	4			1,90	
EB2S 250/4SA 250A 4p	250	004671918					

EB2S 250 adjustable protection

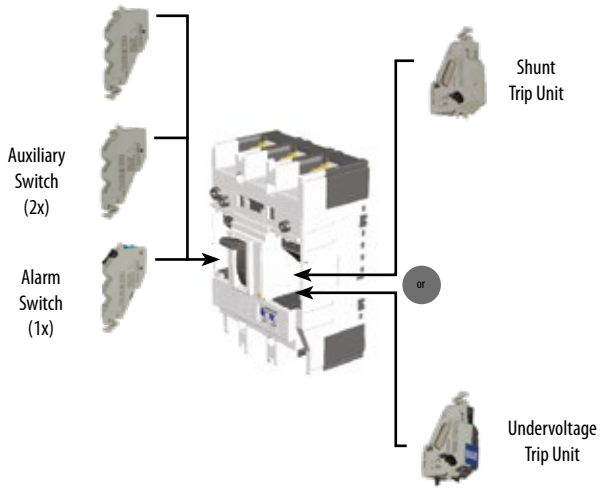
Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400V [kA]	Adjustment thermal/magnetic	kg	
EB2S 250/3HA 200A 3p	200	004671927	3	40/20	adjustable (0.63-1)/ adjustable (5-11)	1,50	1
EB2S 250/3HA 250A 3p	250	004671928					
EB2S 250/4HA 200A 4p	200	004671937	4			1,90	
EB2S 250/4HA 250A 4p	250	004671938					

Internal accessories

EB2S 160 F&A



EB2S 250 F&A



- Status indication switches mount in the left side of the MCCB.
- Only one alarm switch can be fitted to an MCCB.

Accessories for EB2S 160 and 250

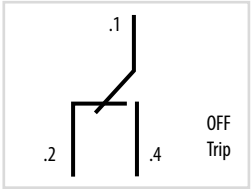
Internal accessories (can be mounted by customer)	Code No.	Description	Poles	
Auxiliary switch, PS2S 160-250	004671950	1 changeover contact	3, 4	1
Alarm switch, SS2S 160-250	004671951	1 changeover contact		
Shunt trip unit, DA2S 160-250 AC 200-240V	004671953	AC 200-240V		
Shunt trip unit, DA2S 160-250 AC 380-450V	004671954	AC 380-450V		
Shunt trip unit, DA2S 160-250 DC 24V	004671955	DC 24V		
Undervoltage trip unit, NA2S 160-250 AC 200-240V	004671956	AC 200-240V		
Undervoltage trip unit, NA2S 160-250 AC 380-450V	004671957	AC 380-450V		
Undervoltage trip unit, NA2S 160-250 DC 24V	004671958	DC 24V		

Ratings of Auxiliary switch

Volts (V)	AC Amperes (A)		DC Amperes (A)	
	Resistive Load	Inductive Load	Resistive Load	Inductive Load
480	-	-	-	-
250	3	2	0.4	0.05
125	3	2	3	2

The inductive load means power factor of no smaller than 0.4 and time constant of no larger than 7 ms.

Auxiliary Switch



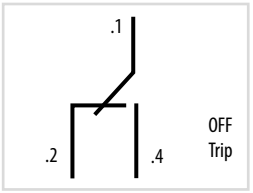
Terminal designations and function

Ratings of Alarm switch

Volts (V)	AC Amperes (A)		DC Amperes (A)	
	Resistive Load	Inductive Load	Resistive Load	Inductive Load
480	-	-	-	-
250	3	2	0.4	0.05
125	3	2	3	2

The inductive load means power factor of no smaller than 0.4 and time constant of no larger than 7 ms.

Alarm Switch



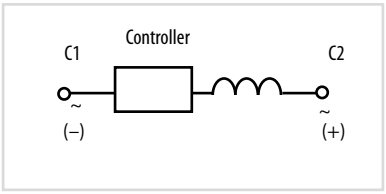
Terminal designations and function

Ratings of Shunt Trip

Rated Voltage	Voltage AC		Voltage DC
	200-240	380-450	24
Excitation Current (A)	0.014	0.0065	0.03

Shunt Trip Unit

The permissible voltage is from 85% to 110% of the rated voltage for AC or 75% to 125% thereof for DC.
Ensure that the voltage does not drop exceeding the permissible voltage range when SHT is actuated.
Breaker contacts usually start opening within 30 ms after the rated voltage is applied to the breaker.

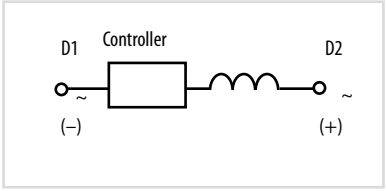


Terminal Designations of Shunt Trips

Ratings of Undervoltage Trips

Rated Voltage	Power supply capacity (VA) Voltage AC		Excitation current (mA) Voltage DC
	200-240	380-450	24
Power Supply Capacity (A)	2.8	2.3	23

Undervoltage Trips



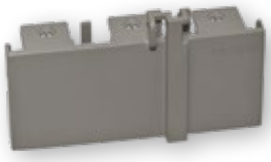
Terminal Designations of Undervoltage Trips

External accessories

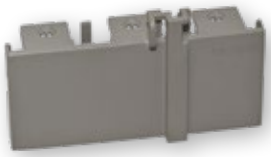
Accessories for EB2S 160

	Code No.	Poles	
Breaker mounted handle, RO2S 160	004671970	3, 4	1
Panel mounted handle, RO2S 160P	004671971		
Attach busbar, ZB2S 160/3 Spread	004671972	3	set = 3pcs
Attach busbar, ZB2S 160/4 Spread	004671977	4	set = 4pcs
Interpole barrier, IZ2S 160	004671973	3	1
Terminal covers, PR2S 160/3 long	004671974	3	
Terminal covers, PR2S 160/4 long	004671990	4	
Terminal covers, PR2S 160/3 wide	004671991	3	
Terminal covers, PR2S 160/4 wide	004671992	4	
Terminal covers, PR2S 160/3 RC	004671993	3	
Terminal covers, PR2S 160/4 RC	004671994	4	
Din Rail Adaptor, DIN-S 160	004671975	3, 4	
Rear Connections, RC2S 160/3	004671978	3	set = 3pcs
Rear Connections, RC2S 160/4	004671979	4	set = 4pcs

RO2S



PR2S RC



PR2S RC

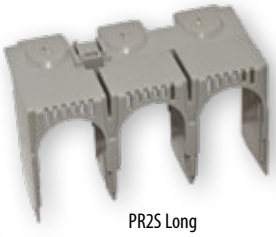
PR2S Long

Accessories for EB2S 250

	Code No.	Poles	
Motor operator, MO2S 250 AC230-240V	004671980	3, 4	1
Motor operator, MO2S 250 DC24V	004671981		
Breaker mounted handle, RO2S 250	004671982		
Panel mounted handle, RO2S 250P	004671983		
Attach busbar, ZB2S 250/3 Spread	004671984	3	set = 3pcs
Attach busbar, ZB2S 250/4 Spread	004671995	4	set = 4pcs
Rear Connections, RC2S 250/3	004671996	3	set = 3pcs
Rear Connections, RC2S 250/4	004671997	4	set = 4pcs
Cable Clamps, SP2S 250/3	004671998	3	set = 3pcs
Cable Clamps, SP2S 250/4	004671999	4	set = 4pcs
Interpole barrier, IZ2S 250	004671985	3, 4	1
Terminal covers, PR2S 250/3 short	004671986	3	
Terminal covers, PR2S 250/4 short	004672000	4	
Terminal covers, PR2S 250/3 long	004672001	3	
Terminal covers, PR2S 250/4 long	004672002	4	
Terminal covers, PR2S 250/3 spread	004672003	3	
Terminal covers, PR2S 250/4 spread	004672004	4	
Terminal covers, PR2S 250/3 RC	004672005	3	
Terminal covers, PR2S 250/4 RC	004672006	4	
Terminal covers, PR2S 250/3 CC	004672007	3	
Terminal covers, PR2S 250/4 CC	004672008	4	
Busbar adapter 3p, DA-60/250/3/FE-5	001696162	3	
Busbar adapter 4p, DA-60/250/4/FE-5	001696163	4	
DIN 125 & 250	004671186	3, 4	

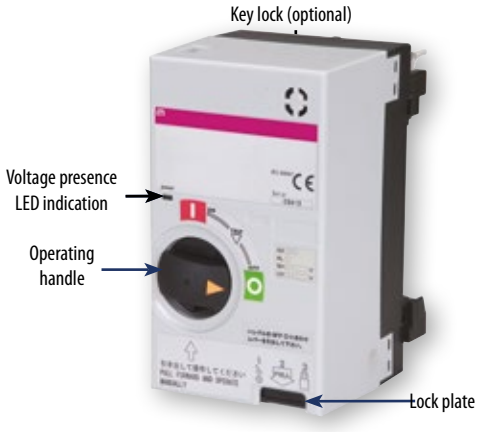
DIN-S

MO2S


PR2S Long

PR2S Short

DA-60



Features

- Installation and removal ease: Simply rotate two knobs allows the motor operator to be installed on or removed from the breaker.
- High-speed, stable actuation: The operating time as short as up to 0.1 second makes it possible to use the motor operators for synchronized closing of breakers.
- Silent operation: MO2S use a direct drive system, providing operational silence.
- “Lock-in off” capability: This capability allows the breaker to be padlocked in the OFF state. Up to thee padlocks with a 5 to 8 mm hasp diameter can be used. Padlocks are not supplied.

Ratings and specifications

Rated operational voltage (1*)		230-240V AC
		24V DC
Peak steady-state/starting current, A (2*)	230-240V AC	3.5/7
	24V DC	18/26
Operation method		Motor driven (direct drive system)
Operating time, s at rated voltage	ON	0.1
	OFF/RESET	0.1 (3*, 4*)
Operating switch ratings		100V 0.1A (open voltage/current: 44V/4 mA) (*5)
Power supply required		300VA or higher
Dielectric withstand voltage (for one minute)		1500V AC(1000V AC -> 24V DC)
Weight		1.4kg

1*: Permissible operating range is 85% to 110%.

2*: The currents shown are at the maximum rated operational voltage.

3*: The operating time is the value when the rated operational voltage is supplied. Allow the longer time for the motor operator to complete the operation.

4*: The motor operator is of a short time duty. Do not subject it to more than 10 continuous ON-OFF operations. If this occurs, allow the motor operator to cool for at least 15 minutes.

5*: When the rated operational voltage is DC24V the open voltage will be DC22V.

Motorized operation

The motor operator has an input-signal self-hold circuit; closing the ON or OFF switch (see circuit diagrams shown bellow) momentarily allows activating the motor operator. To reset the tripped breaker to the OFF position, close the OFF (RESET) switch. The voltage presence LED indication is on when the power is supplied to the motor operator.

n Auto reset feature (optional)
The auto reset feature allows the breaker to be automatically reset approx. 1.5 seconds after the breaker trips open. This option contains auto-reset switches and does not require to use auxiliary or alarm switches installed in the breaker.

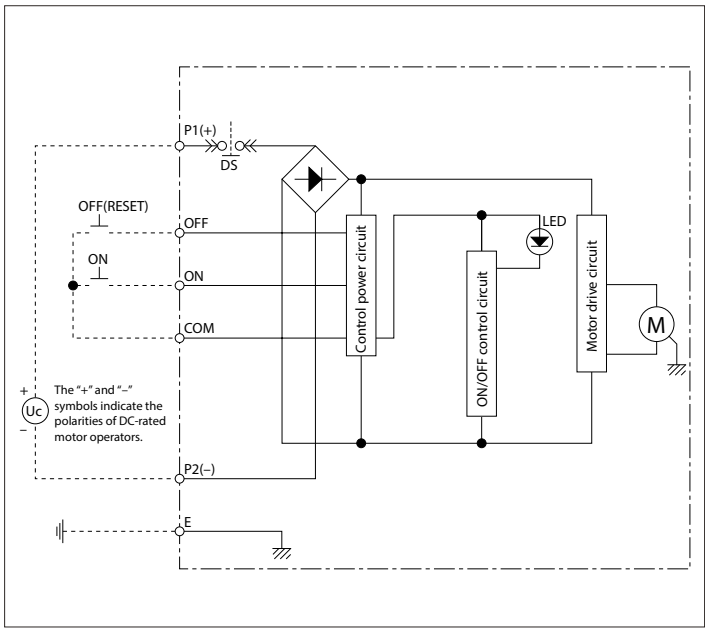
Note : that after the thermal OCR trips a thermal-magnetic breaker, the breaker cannot be immediately closed though it can be auto-reset. Wait for a few minutes after the tripping and provide a close signal to the breaker. This option resets the tripped breaker automatically, regardless of the cause of the tripping.

Manual operation

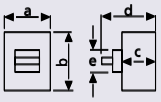
Pull the operating handle out. Rotating the handle counterclockwise turns ON the breaker and clockwise turns OFF or resets the breaker.

Operation precautions
1. Ensure that the actual operation voltage ranges from 85% to 110% of the rated one.
2. Use operation switches whose ratings and power capacity is as specified in the "Ratings and Specifications" table on the previous page.
3. Use noise filters if the control power supply of the motor operator is shared by peripheral devices. Otherwise, power supply noise may cause malfunction of the peripheral devices.
4. When the motors are used in conjunction with the mechanical interlock the electrical interlock should be provided between the motors in order to avoid the simultaneous closing. The followings are the available electrical interlock cables.

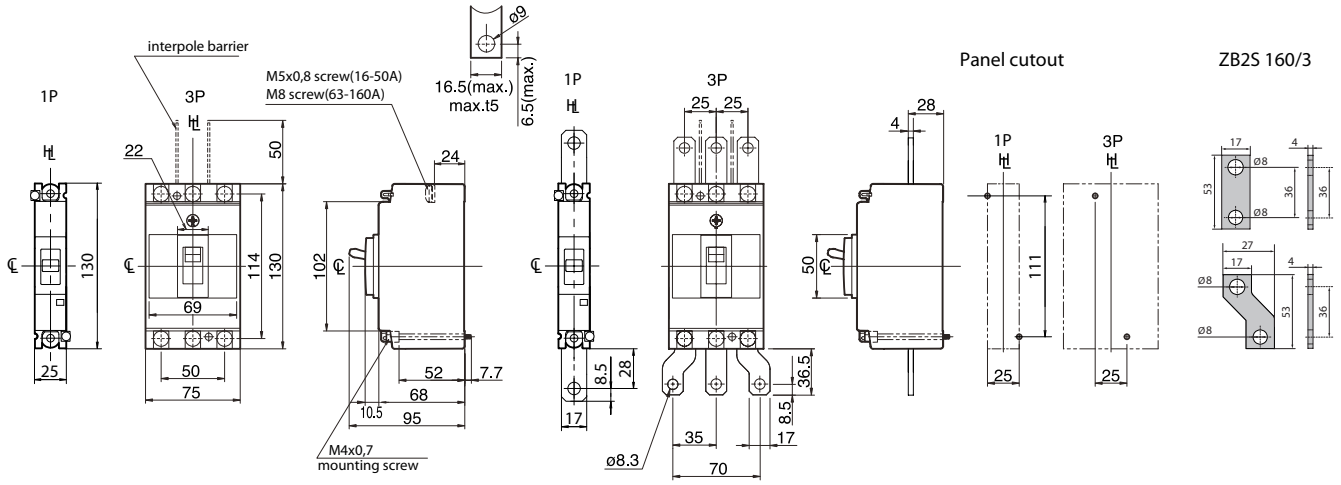
Wiring diagram



*F - fixed, A - adjustable

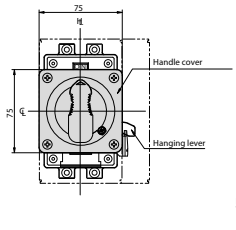
Product series	description	unit	condition	EB2S 160 F			EB2S 160 A			EB2S 250 F			EB2S 250 A		
Model-type				LF	SF	HF	LA	SA	HA	LF	SF	HF	LA	SA	HA
Number of poles				3, 4											
Nominal current ratings															
	In	(A)	50°C	16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 160			25, 40, 63, 80, 100, 125, 160			200, 250			200, 250		
Electrical characteristics															
Rated insulation voltage	Ui	(V)		690	690	690	690	690	690	690	690	690	690	690	690
Rated impulse withstand voltage	Uimp	(kV)		8	8	8	8	8	8	8	8	8	8	8	8
Ultimate breaking capacity	Icu	(kA)	690V AC	-	-	6	-	-	6	-	-	4	-	-	4
(IEC, JIS, AS/NZS)			525V AC	6	7,5	10	6	7,5	10	6	10	25	6	7,5	10
			440V AC	10	15	25	10	15	25	10	15	30	10	15	30
			380/400/415V AC	16	25	40	16	25	40	16	25	40	16	25	40
			240V AC	25	35	50	25	35	50	25	35	85	25	35	85
			250V DC	13	20	25	13	20	25	13	15	25	13	15	25
			125V DC	20	30	40	20	30	40	20	25	40	20	25	40
Service breaking capacity	Ics	(kA)	690V AC	-	-	3	-	-	3	-	-	2	-	-	2
(IEC, JIS, AS/NZS)			525V AC	3	4	7,5	3	4	7,5	3	7,5	13	3	6	7,5
			440V AC	5	7,5	13	5	7,5	13	5	12	15	5	12	15
			380/400/415V AC	8	13	20	8	13	20	8	19	20	8	19	20
			240V AC	13	18	25	13	18	25	13	27	43	13	27	43
			250V DC	7	10	13	7	10	13	7	12	13	7	12	13
			125V DC	10	15	20	10	15	20	10	19	20	10	19	20
Rated short-circuit making capacity	Icm	(kA)	peak	33	33	33	33	33	33	33	33	33	33	33	33
Rated short-circuit withstand current	Icw	(kA)	rms	-	-	-	-	-	-	-	-	-	-	-	-
Protection															
Fixed thermal, fixed magnetic					■			-			■			-	
Adjustable thermal, fixed magnetic					-			■			-			-	
Adjustable thermal, adjustable magnetic					-			-			-			■	
Utilization category					A			A			A			A	
Outline dimensions															
	height (b)	(mm)			130			130			165			165	
	width (a)	(mm)	3 pole		75			75			105			105	
	width (a)	(mm)	4 pole		100			100			140			140	
	depth (c)	(mm)			68			68			68			68	
	depth (d)	(mm)			93			93			95			95	
	toggle cutout(e)	(mm)			45			45			45			45	
Weight		(kg)	3 pole		0.8			0.8			1.5			1.5	
			4 pole		1.0			1.0			1.9			1.9	
Operation															
Direct Opening Action					■			■			■			■	
Trip button					■			■			■			■	
Suitable for isolation					■			■			■			■	
Standards				IEC 60947-2, EN 60947-2											

Dimensions of EB2S 160. Handles.

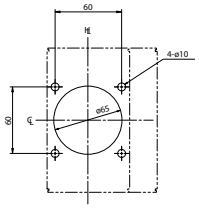


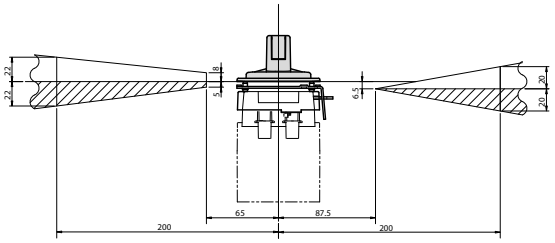
RO2S 160

Overall dimensions



Panel cutout dimensions

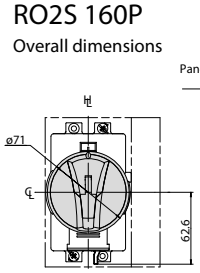


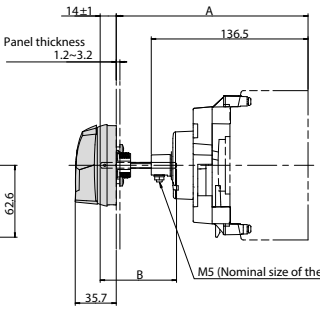


Positional relationship between the shaft and the handle. Side view of the circuit breaker.
The shaft must not extend beyond the shaded area.

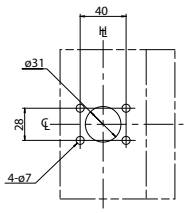
RO2S 160P

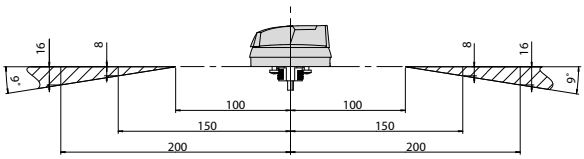
Overall dimensions





Panel cutout dimensions

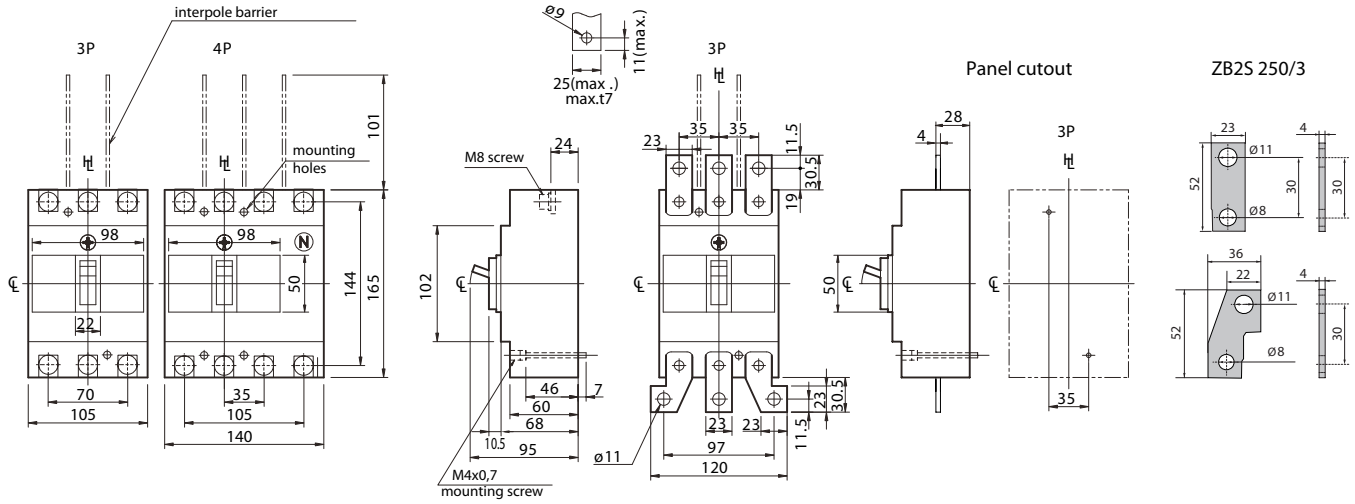




Positional relationship between the shaft and the handle. Side view of the circuit breaker.
The shaft must not extend beyond the shaded area.

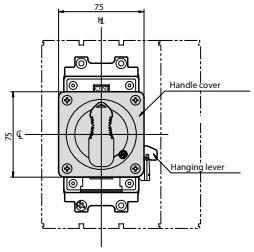
A±1,1	B±0,5	
175 min	74,5	* min – means the minimum length A with the shaft trimmed; * max – means the maximum length A without trimming the shaft; + The shaft can be trimmed to the required length.
453 max	352,5	A: Distance from the panel surface to the mounting surface of the circuit breaker. B: Length of the square shaft used.

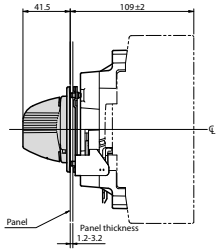
Dimensions of EB2S 250. Handles.



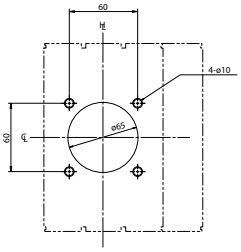
RO2S 250

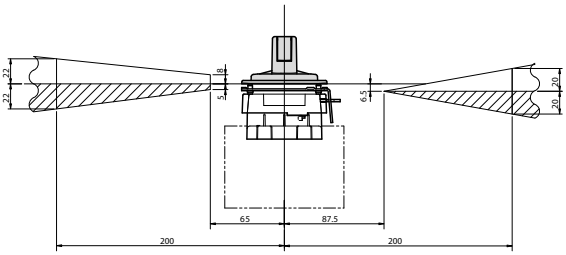
Overall dimensions





Panel cutout dimensions

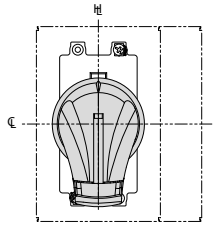


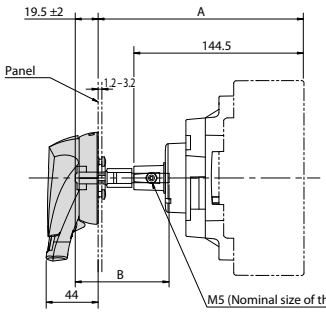


Positional relationship between the shaft and the handle. Side view of the circuit breaker.
The shaft must not extend beyond the shaded area.

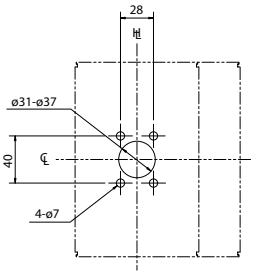
RO2S 250P

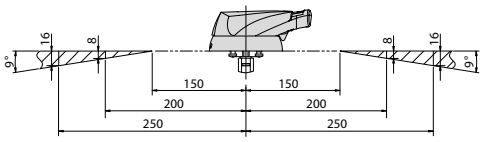
Overall dimensions





Panel cutout dimensions

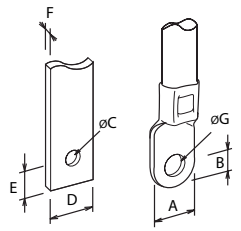




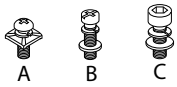
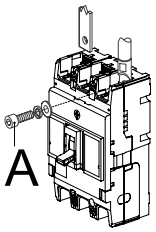
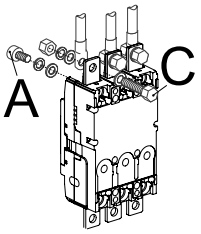
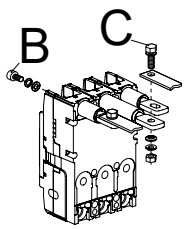
Positional relationship between the shaft and the handle. Side view of the circuit breaker.
The shaft must not extend beyond the shaded area.

A±1,1	B±0,5	
175 min	80	** min – means the minimum length A with the shaft trimmed; * max – means the maximum length A without trimming the shaft; + The shaft can be trimmed to the required length.
453 max	358	A: Distance from the panel surface to the mounting surface of the circuit breaker. B: Length of the square shaft used.

Dimensions of connected components



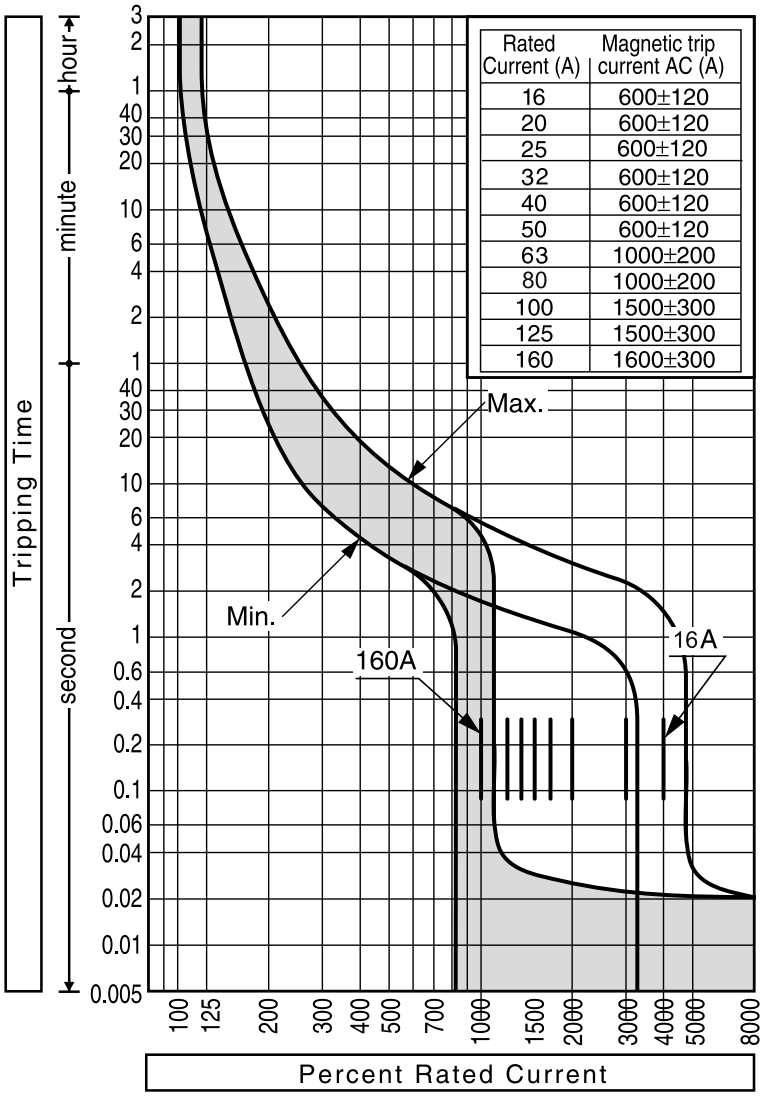
	EB2S 160	EB2S 250
	mm	mm
A	16,5	≤22
B	9	≤11
C	9	8,4
D	16,5	≤25
E	9	≤11
F	≤5	≤7
G	9	9

Type of connecting element	Front connection		Rear connection
	cable lug	busbar adapters	
			

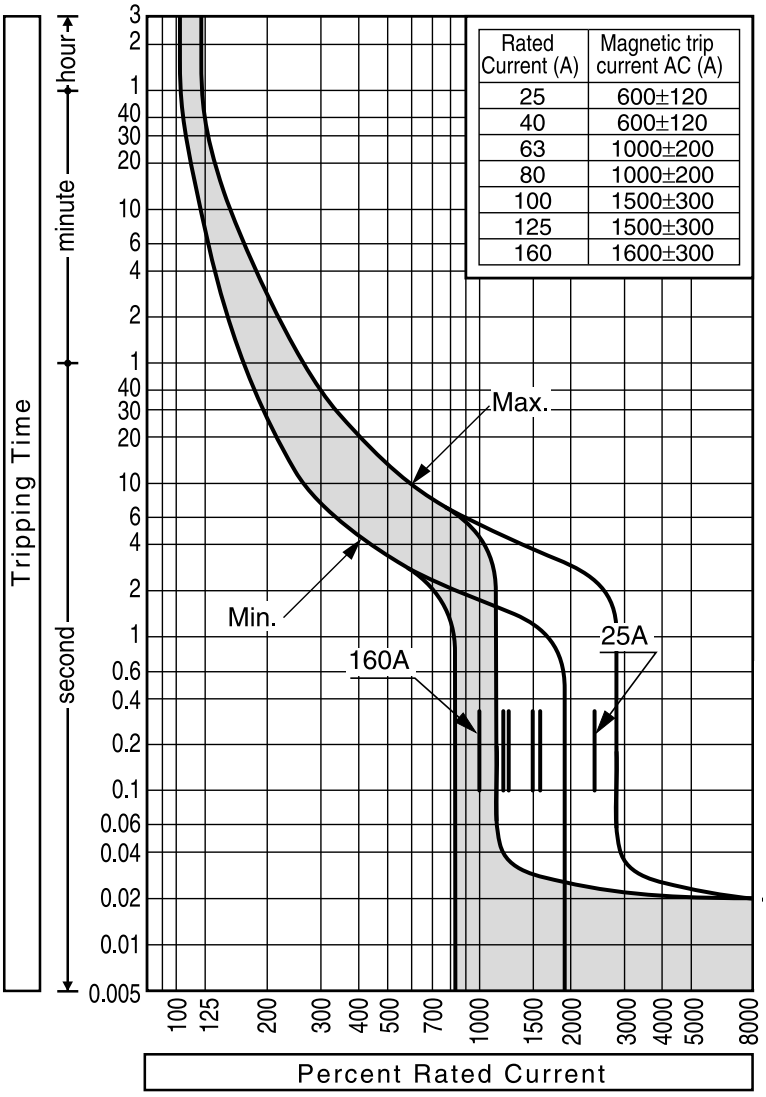
Frame size	Rated current	Supplied with the MCCB	Supplied with the MCCB	Supplied with busbar adapters	Supplied with the MCCB	Supplied with the MCCB
EB2S 160	16 - 50 A	M5x14 (A) 2,3 ... 3,4 (Nm)	M5x14 (A) 2,3 ... 3,4 (Nm)	M8x22 (C) 11,8 ... 18,6 (Nm)	M5x14 (B) 2,3 ... 2,8 (Nm)	M8x23 (C) 2,3 ... 4,5 (Nm)
	63 - 160 A	M8x14 (B) 4,9 ... 6,9 (Nm)	M8x14 (B) 4,9 ... 6,9 (Nm)	M8x22 (C) 11,8 ... 18,6 (Nm)	M6x18 (C) 7,8 ... 11,8 (Nm)	M8x22 (C) 11,8 ... 18,6 (Nm)
EB2S 250	200 - 250 A	M8x18 (C) 7,8 ... 12,7 (Nm)	M8x18 (C) 7,8 ... 12,7 (Nm)	M10x25 (C) 22,5 ... 37,2 (Nm)	M6x18 (C) 7,8 ... 11,8 (Nm)	M8x25 (C) 11,8 ... 18,6 (Nm)

Time current characteristics I/t

EB2S 160 LF, EB2S 160 SF, EB2S 160 HF

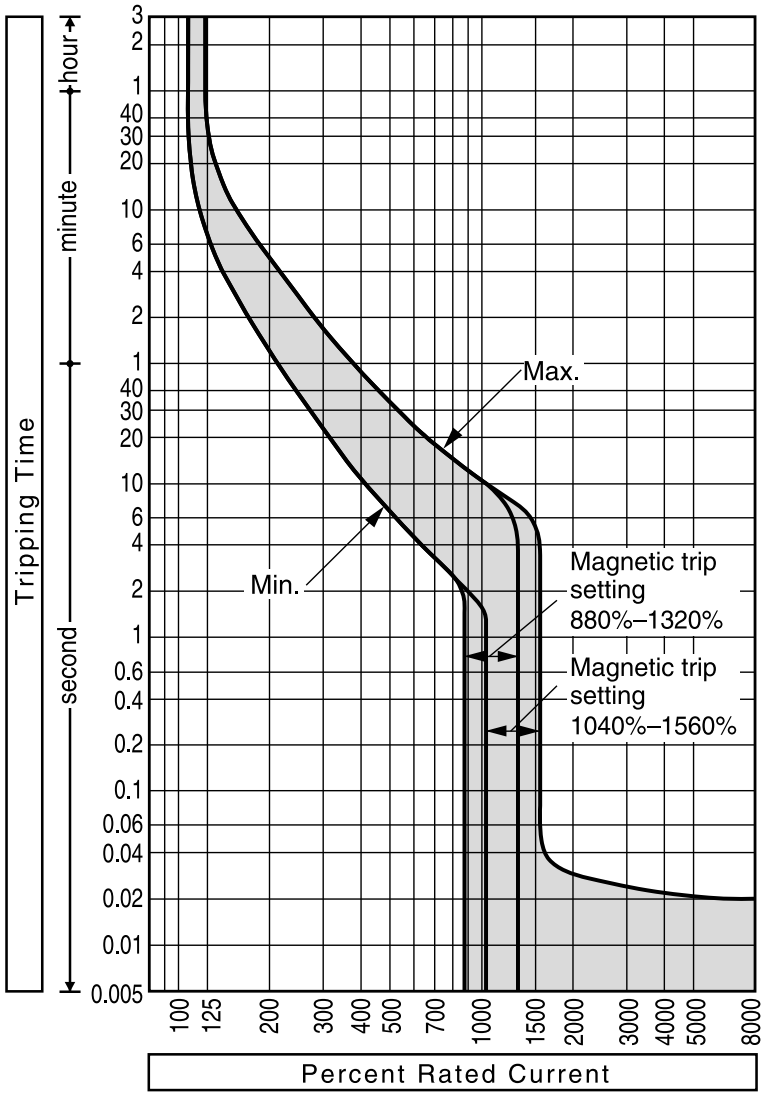


EB2S 160 LA, EB2S 160 SA, EB2S 160 HA



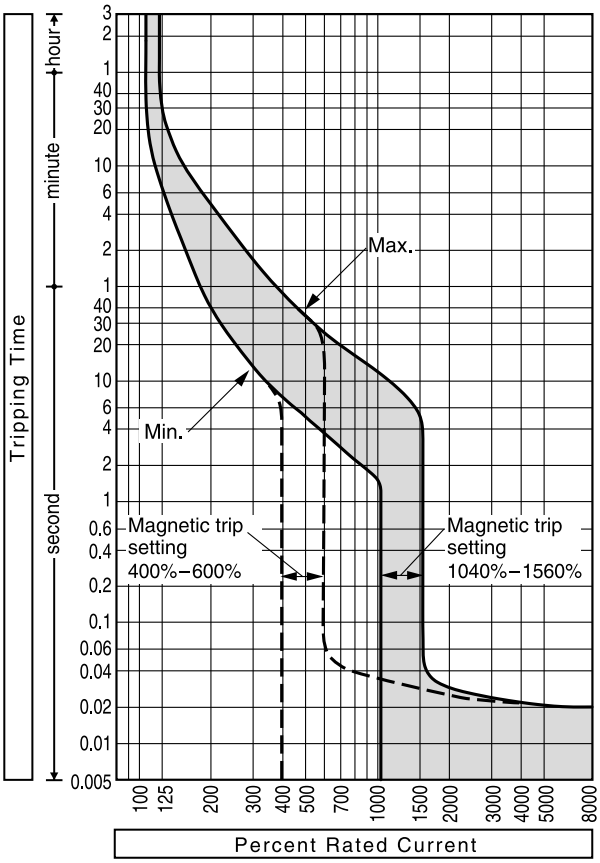
Rated Current (A)	Magnetic trip current AC (A)
25	600±120
40	600±120
63	1000±200
80	1000±200
100	1500±300
125	1500±300
160	1600±300

EB2S 250 LF, EB2S 250 SF, EB2S 250 HF

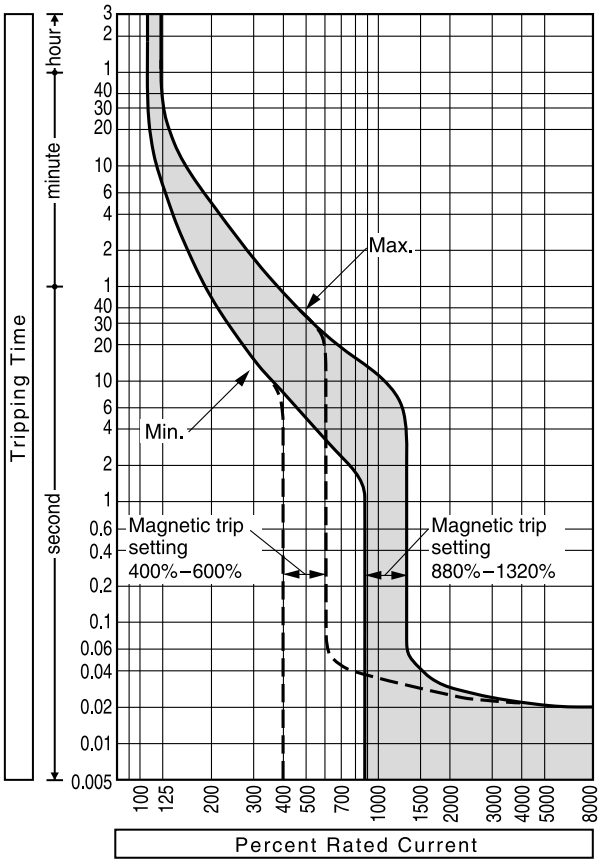


EB2S 250 LA, EB2S 250 SA, EB2S 250 HA

200A



250A



ETIBREAK Low Voltage Moulded Case Circuit Breakers And Low Voltage Switch Disconnectors

Moulded Case Circuit Breaker ETIBREAK EB2

Low voltage moulded case circuit breakers are used for the switching and protection of power supply cables, motors and other electrical equipment against overloads and short circuit faults. They provide, beside protection function, other functions as remote ON/OFF operation, undervoltage protection, main switch etc.
They are available in range from 20 A up to1600 A in 3 and 4 pole versions.

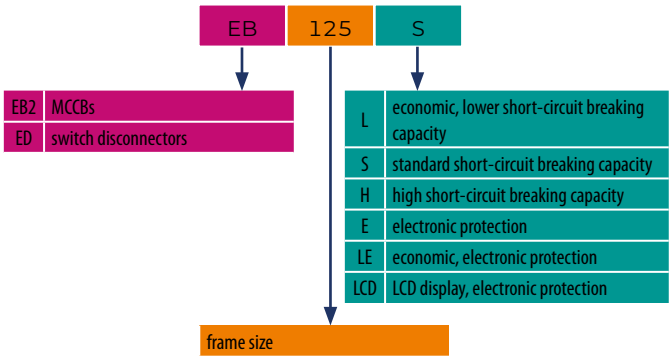
Advantages:

- Small dimensions,modular sizes
- Possibility of field-instalable accessories – up to 1600A frame size series 2 (EB2)
- High short circuit breaking capacity (up to 125 kA)
- Fast break mechanism
- Reduced energy let through I^2t – minimises thermal stresses
- Reduced tripping time – minimises damage after fault
- Reduced peak short current ampacity – minimised electrodynamic stresses on conductors and protected equipment
- Installation on mounting plate, 125 & 250 A frame size also on DIN-rail
- Wide range of accessories
- Compact design with high mechanical strength
- High dielectric withstand voltages (8 kV a.c.)
- Voltage level up to 690 V a.c. and 250 V d.c. – only MCCB's with thermal-magnetic tripping unit
- Direct opening – recommendation according to standard IEC 60204-1 – up to 1600 A frame size series 2 (EB2)
- Common internal accessories – up to 1600 A frame size series 2 (EB2)
- Visual safety
- Unsurpassed flexibility
- Direct drive system
- Short-circuit current limitation via rapid arc extinguishing
- Minimal arc extinguishing time due to a specialized contact group design
- Adjustable thermal and magnetic protection
- Cable lug compatibility
- Mountable on a panel
- High voltage rating: up to 690V AC and 250V DC (for thermal-magnetic breakers only)
- Universal accessories for all ETIBREAK2 series frames

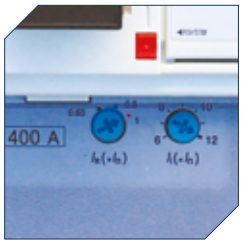
Technical data

Dimensions	125, 160&250, 400&630, 800, 1000, 1250, 1600
Rated current	20 - 1600A
Number of poles	3
Impulse withstand voltage Uimp	8 kV
Rated insulation voltage Ui	800 V
Breaking capacity Icu	25 ÷ 125 kA
Standards	IEC 60947-2, EN 60947-2

ETIBREAK2 accessories fit all frame sizes (except undervoltage release), install easily without tools, and are color-coded for identification.

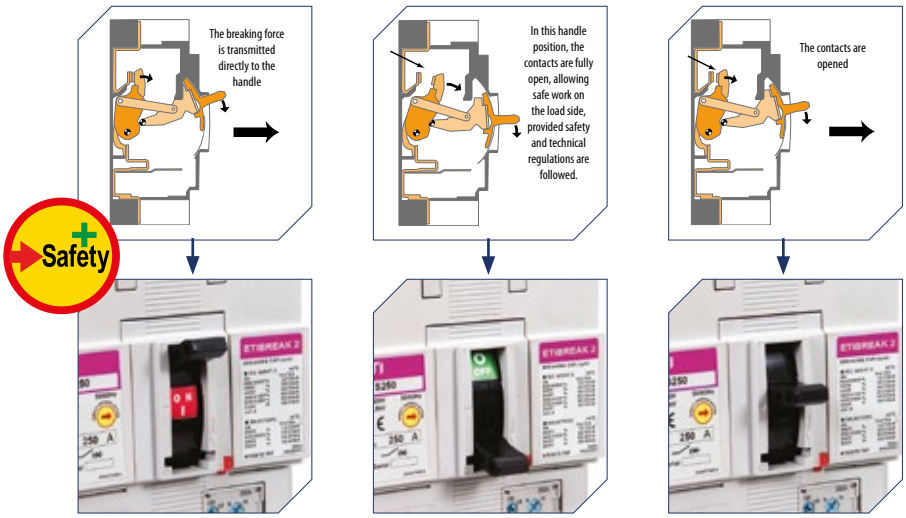


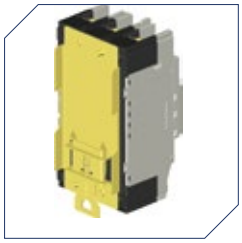
The model and type of the MCCB can be identified by the marking on the housing.



Magnetic protection in EB2 400 breakers is adjustable from 6 to 12 x I_n.

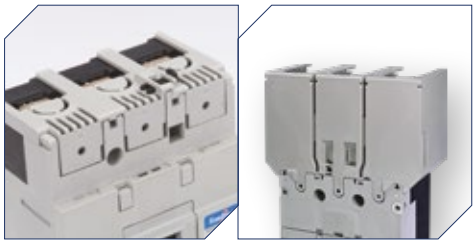
ETIBREAK2 MCCBs offer adjustable thermal and magnetic protections. Overload protection ranges from 0.63 to 1 x I_n, and magnetic protection is adjustable from 6 to 10 (12, 13) x I_n for EB2 125-250 breakers.





ETIBREAK2 MCCBs in the EB2 125 frame can be mounted on a TH 35 rail using an adapter. The design also allows alignment with MCBs (45mm height).

IEC 60204-1 recommends devices with direct disconnection to reduce short-circuit risks. The EB2 breaker handle and indicators align with the contact position, ensuring clear status visibility. ETIBREAK2 breakers, with direct disconnection, are among the safest for industrial use. During normal operation, color indicators show ON or OFF. In case of an emergency trip, the indicators are fully hidden, and only the black handle remains visible.



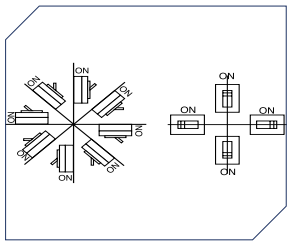
- Risk of contact with live parts is minimized:
  - Multiple terminal protective cover options (IP 20)
  - Handle protection (IP 30)
  - Partition barriers ensure maximum insulation between breaker terminals
  - Double insulation of the housing

- To prevent simultaneous power supply from two sources, three types of interlocking are used:
  - Rigid mechanical interlock
  - Flexible mechanical interlock
  - Slide-type interlock

- Breakers with electronic trip units offer overload protection adjustable from 0.4 to 1 x I_n and feature seven preset magnetic protection settings.

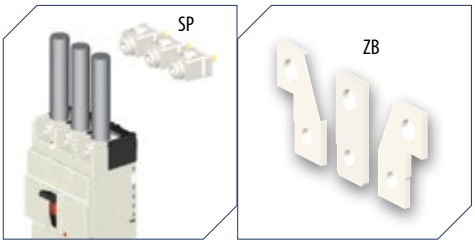
- Plug-in design allows easy breaker replacement without disrupting connections.

- Manual operation of breakers is enabled by rotary handles, mountable on the breaker or cabinet door. Yellow-red handles are used for operating the 'backup' circuit.

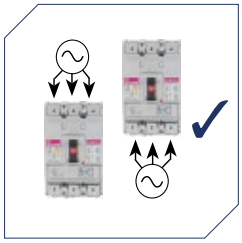


- ETIBREAK2 breakers can be installed at any angle without affecting performance.

- Remote breaker operation is enabled by a motor drive.

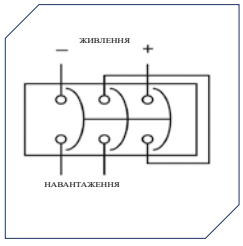


- Special SP 2 clamps are used for connecting flexible (stranded) conductors. The ZB 2 busbar adapter is used for large cross-section or multiple conductor connections.

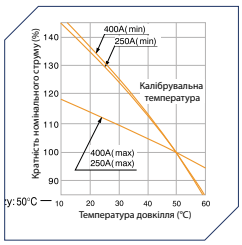


- ETIBREAK2 breakers support top or bottom load connections without affecting protection characteristics.

- All breaker components are eco-friendly: PBDE/PBB-free thermoplastic rubber, cadmium-free contacts, and lead-free soldering.



- All thermal-magnetic breakers can be used in DC circuits up to 250V.



- ETIBREAK2 breakers are calibrated at 50°C

Thermal magnetic
Thermal magnetic MCCBs are available in frame sizes from 125A to 800A. All frame sizes have adjustable both thermal and magnetic trip settings. Overload protection is adjustable between 63 % and 100 % of I_n, meanwhile short-circuit between 6-13xI_n (more details in the technical part of catalogue).

ETIBREAK EB2 125

Legend: EB2 -> series 2
L -> economic, lower short-circuit breaking capacity
S -> standard short-circuit breaking capacity
H -> high short-circuit breaking capacity

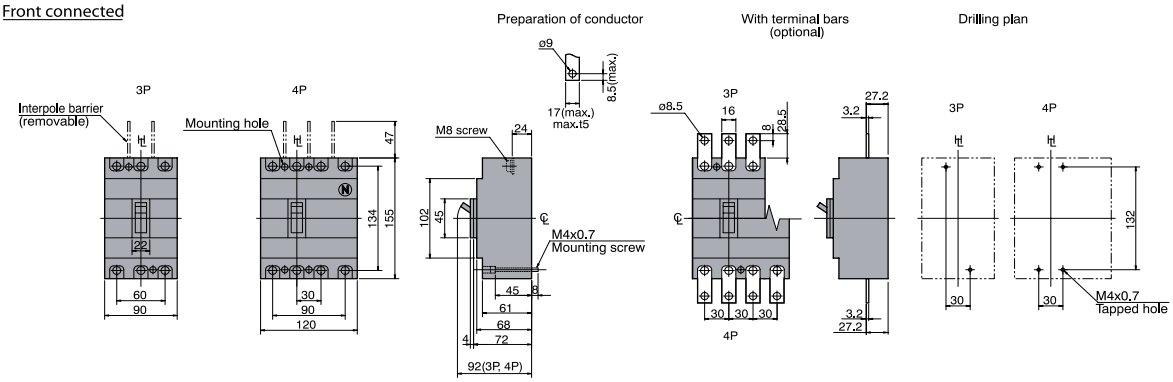
Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400/415V [kA]	Adjustment thermal/ magnetic	kg	
EB2 125/3L 20A 3p	20	004671021	3	25/19	0,63-1/ 6-12	1,1	1
EB2 125/3L 32A 3p	32	004671022			0,63-1/ 6-12		
EB2 125/3L 50A 3p	50	004671023			0,63-1/ 6-12		
EB2 125/3L 63A 3p	63	004671024			0,63-1/ 6-12		
EB2 125/3L 100A 3p	100	004671025			0,63-1/ 6-12		
EB2 125/3L 125A 3p	125	004671026			0,63-1/ 6-10		
EB2 125/4L 20A 4p	20	004671027	4		0,63-1/ 6-12	1,4	
EB2 125/4L 32A 4p	32	004671028			0,63-1/ 6-12		
EB2 125/4L 50A 4p	50	004671029			0,63-1/ 6-12		
EB2 125/4L 63A 4p	63	004671030			0,63-1/ 6-12		
EB2 125/4L 100A 4p	100	004671031			0,63-1/ 6-12		
EB2 125/4L 125A 4p	125	004671032			0,63-1/ 6-10		
EB2 125/3S 20A 3p	20	004671041	3	36/36	0,63-1/ 6-12	1,1	1
EB2 125/3S 32A 3p	32	004671042			0,63-1/ 6-12		
EB2 125/3S 50A 3p	50	004671043			0,63-1/ 6-12		
EB2 125/3S 63A 3p	63	004671044			0,63-1/ 6-12		
EB2 125/3S 100A 3p	100	004671045			0,63-1/ 6-12		
EB2 125/3S 125A 3p	125	004671046			0,63-1/ 6-10		
EB2 125/4S 20A 4p	20	004671047	4		0,63-1/ 6-12	1,4	
EB2 125/4S 32A 4p	32	004671048			0,63-1/ 6-12		
EB2 125/4S 50A 4p	50	004671049			0,63-1/ 6-12		
EB2 125/4S 63A 4p	63	004671050			0,63-1/ 6-12		
EB2 125/4S 100A 4p	100	004671051			0,63-1/ 6-12		
EB2 125/4S 125A 4p	125	004671052			0,63-1/ 6-10		
EB2 125/3H 20A 3p	20	004672101	3	65/36	0,63-1/ 6-12	1,1	1
EB2 125/3H 32A 3p	32	004672102			0,63-1/ 6-12		
EB2 125/3H 50A 3p	50	004672103			0,63-1/ 6-12		
EB2 125/3H 63A 3p	63	004672104			0,63-1/ 6-12		
EB2 125/3H 100A 3p	100	004672105			0,63-1/ 6-12		
EB2 125/3H 125A 3p	125	004672106			0,63-1/ 6-10		
EB2 125/4H 20A 4p	20	004672107	4		0,63-1/ 6-12	1,4	
EB2 125/4H 32A 4p	32	004672108			0,63-1/ 6-12		
EB2 125/4H 50A 4p	50	004672109			0,63-1/ 6-12		
EB2 125/4H 63A 4p	63	004672110			0,63-1/ 6-12		
EB2 125/4H 100A 4p	100	004672111			0,63-1/ 6-12		
EB2 125/4H 125A 4p	125	004672112			0,63-1/ 6-10		
EB2 125/3V 20A 3p 1000V	20	004671371	3	4/4*	0,63-1/ 6-12	1,1	1
EB2 125/3V 32A 3p 1000V	32	004671372			0,63-1/ 6-12		
EB2 125/3V 50A 3p 1000V	50	004671373		6/4*	0,63-1/ 6-12		
EB2 125/3V 63A 3p 1000V	63	004671374			0,63-1/ 6-12		
EB2 125/3V 100A 3p 1000V	100	004671375			0,63-1/ 6-12		
EB2 125/3V 125A 3p 1000V	125	004671376			0,63-1/ 6-10		

*1100V AC

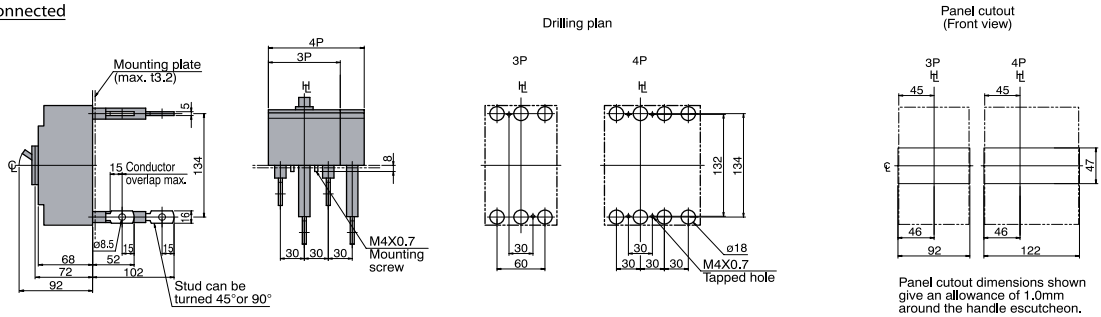
Dimensions

EB2 125

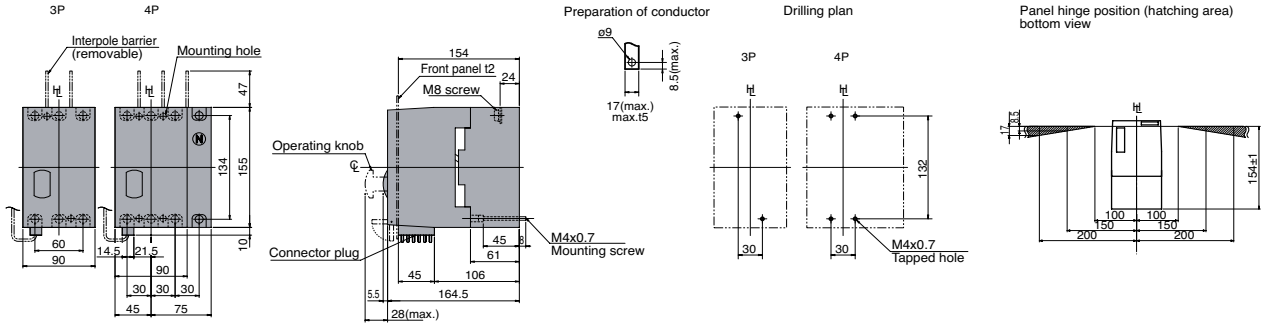
Front connected



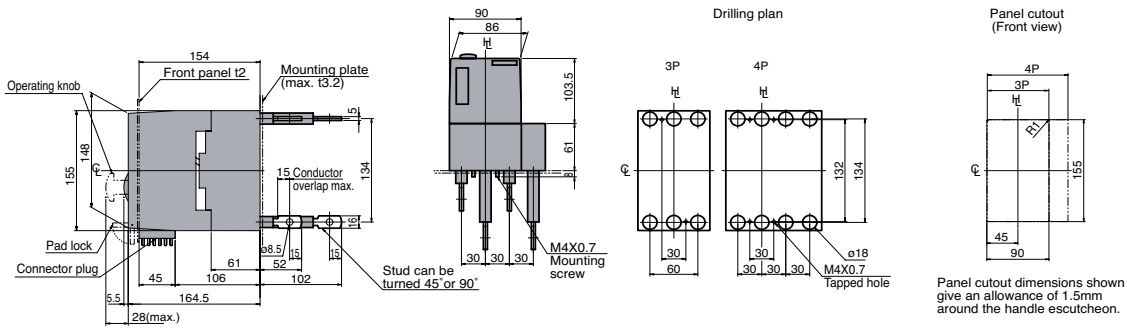
Rear connected



Front connected with Motor Operator



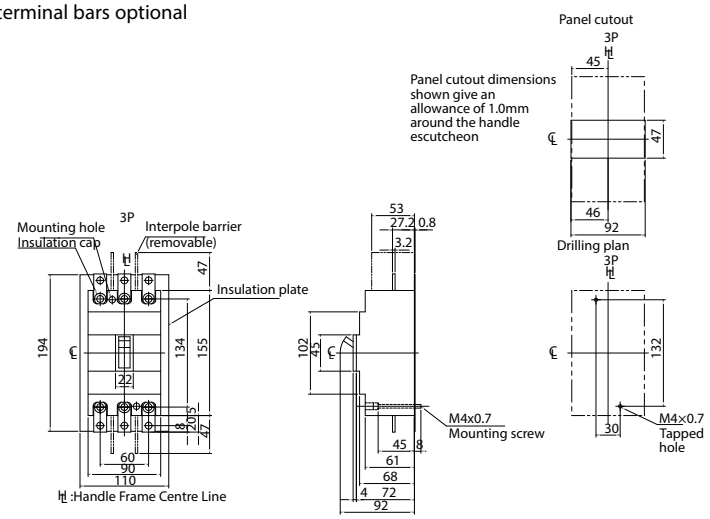
Rear connected with Motor Operator



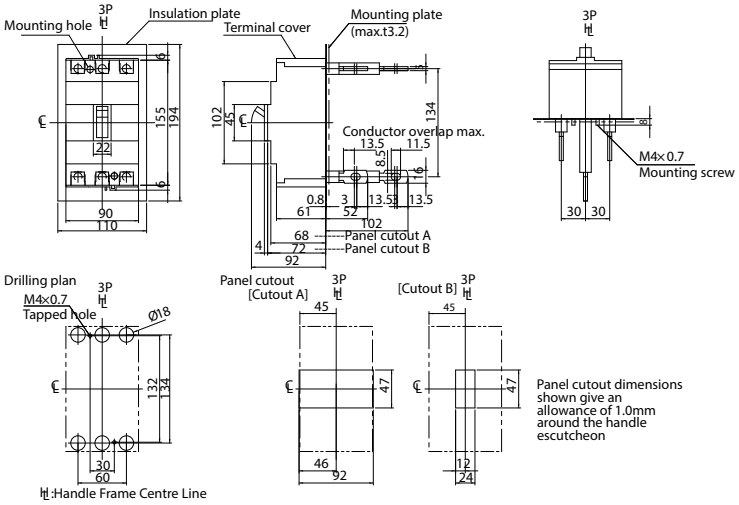
Dimensions

EB2 125 1000V

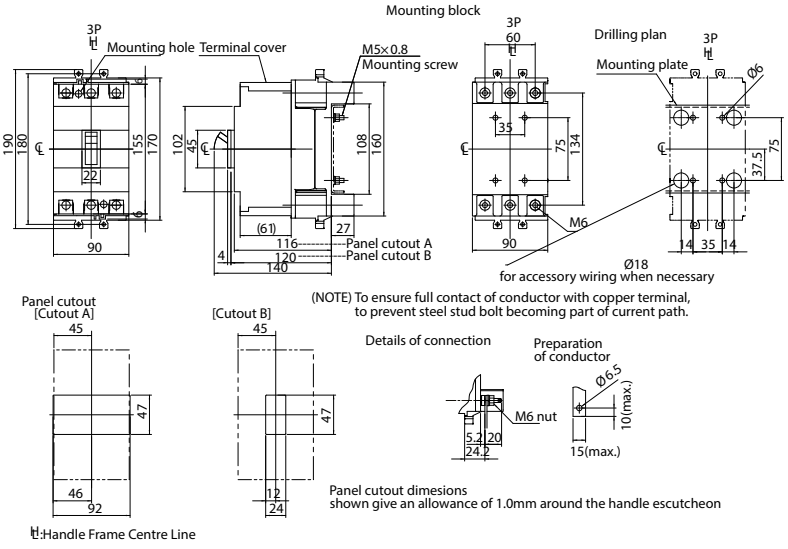
Front connected with terminal bars optional



Rear connected



Plug in (PMB)



ETIBREAK EB2 160/250

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400/415V [kA]	Adjustment thermal/ magnetic	kg	
EB2 250/3L 200A 3p	200	004671072	3	25/19	0,63-1/ 6-13	1,5	1
EB2 250/3L 250A 3p	250	004671073			0,63-1/ 6-10		
EB2 250/4L 200A 4p	200	004671075	4		0,63-1/ 6-13	1,9	
EB2 250/4L 250A 4p	250	004671076			0,63-1/ 6-10		
EB2 160/3S 160A 3p	160	004671061	3	36/36	0,63-1/ 6-13	1,5	1
EB2 250/3S 200A 3p	200	004671082			0,63-1/ 6-13		
EB2 250/3S 250A 3p	250	004671083			0,63-1/ 6-10		
EB2 160/4S 160A 4p	160	004671062	4		0,63-1/ 6-13	1,9	
EB2 250/4S 200A 4p	200	004671085			0,63-1/ 6-13		
EB2 250/4S 250A 4p	250	004671086			0,63-1/ 6-10		
EB2 160/3H 160A 3p	160	004672120	3	65/36	0,63-1 / 6-13	1,5	1
EB2 250/3H 160A 3p	160	004672130			0,63-1 / 6-13		
EB2 250/3H 200A 3p	200	004672131			0,63-1 / 6-13		
EB2 250/3H 250A 3p	250	004672132			0,63-1 / 6-10		
EB2 160/4H 160A 4p	160	004672121	4		0,63-1 / 6-13	1,9	
EB2 250/4H 160A 4p	160	004672133			0,63-1 / 6-13		
EB2 250/4H 200A 4p	200	004672134			0,63-1 / 6-13		
EB2 250/4H 250A 4p	250	004672135			0,63-1 / 6-10		
EB2 250/3V 160A 3p 1000V	160	004671377	3	6/4*	0,63-1 / 6-13	1,5	1
EB2 250/3V 250A 3p 1000V	250	004671378			0,63-1 / 6-10		

*1100V AC

Microprocessor's MCCBs

Microprocessor's MCCBs are available in frame sizes from 250 A up to 1600 A, with rated current from 40 A up to 1600 A. All frame sizes have adjustable thermal and magnetic protection.
Series 2: Protection against overload can be adjusted between 0,4 – 1 x I_n, meanwhile short-circuit protection has already preset different curves, which can be easily selected according to the type of load.

Optional Functions:

A - Standard relay with LSI Characteristic (where no letters are present then MCCB is A type)
P - Preferential Trip Alarm
G - Ground Fault
N - Neutral Protection
S - Phase rotation function
C - Comunication function
W - Electrical energy pulse
H - Harmonic current

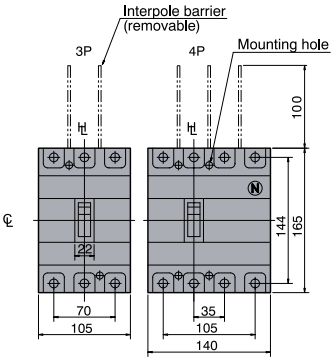
ETIBREAK EB2 250

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400/415V [kA]	Adjustment thermal/magnetic	kg	
EB2 250/3LE 40A 3p	40	004671351	3	36/36	0,4-1/ adjustable	2,5	1
EB2 250/3LE 125A 3p	125	004671352					
EB2 250/3LE 160A 3p	160	004671353					
EB2 250/3LE 250A 3p	250	004671354					
EB2 250/4LE 40A 4p	40	004671355	4			3,3	
EB2 250/4LE 125A 4p	125	004671356					
EB2 250/4LE 160A 4p	160	004671357					
EB2 250/4LE 250A 4p	250	004671358					
EB2 250/3E 40A 3p	40	004671301	3	70/70	0,4-1/ adjustable	2,5	1
EB2 250/3E 125A 3p	125	004671302					
EB2 250/3E 160A 3p	160	004671303					
EB2 250/3E 250A 3p	250	004671304					
EB2 250/4E 40A 4p	40	004671305	4			3,3	
EB2 250/4E 125A 4p	125	004671306					
EB2 250/4E 160A 4p	160	004671307					
EB2 250/4E 250A 4p	250	004671308					

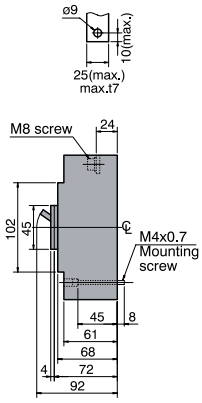
Dimensions

EB2 160 & EB2 250

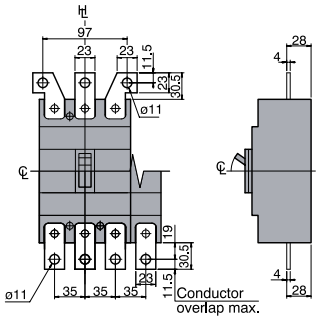
Front connected



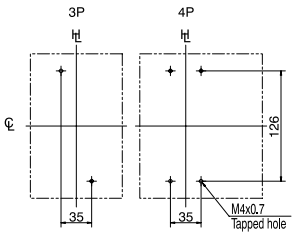
Preparation of conductor



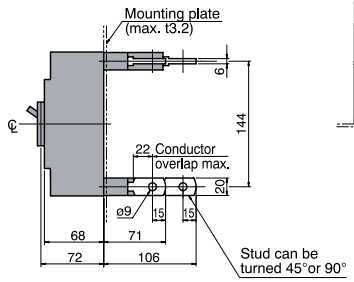
With terminal bars
(optional)

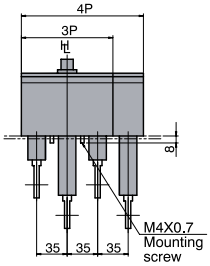


Drilling plan

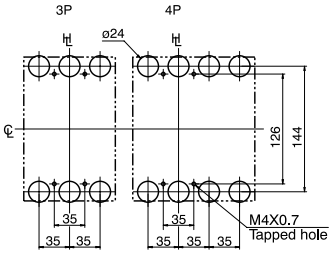


Rear connected

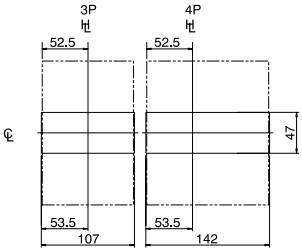




Drilling plan

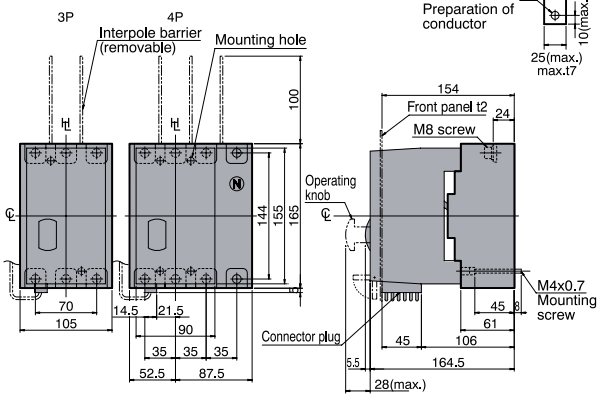


Panel cutout
(Front view)

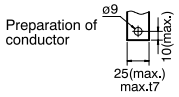


Panel cutout dimensions shown
give an allowance of 1.0mm
around the handle escutcheon.

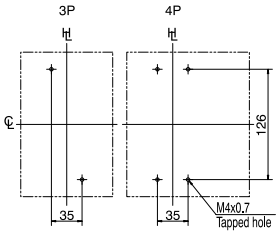
Front connected with Motor Operator



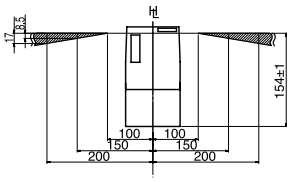
Preparation of
conductor



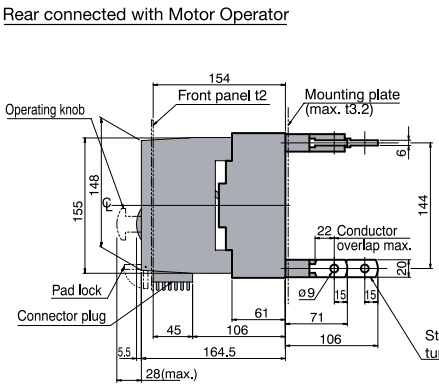
Drilling plan

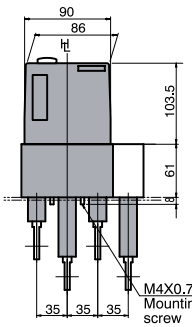


Panel hinge position (hatching area)
bottom view

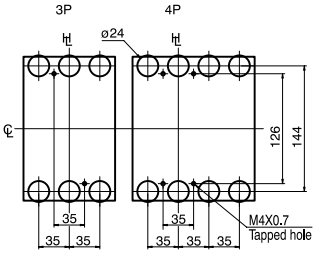


Rear connected with Motor Operator

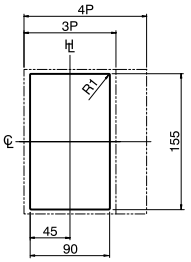




Drilling plan



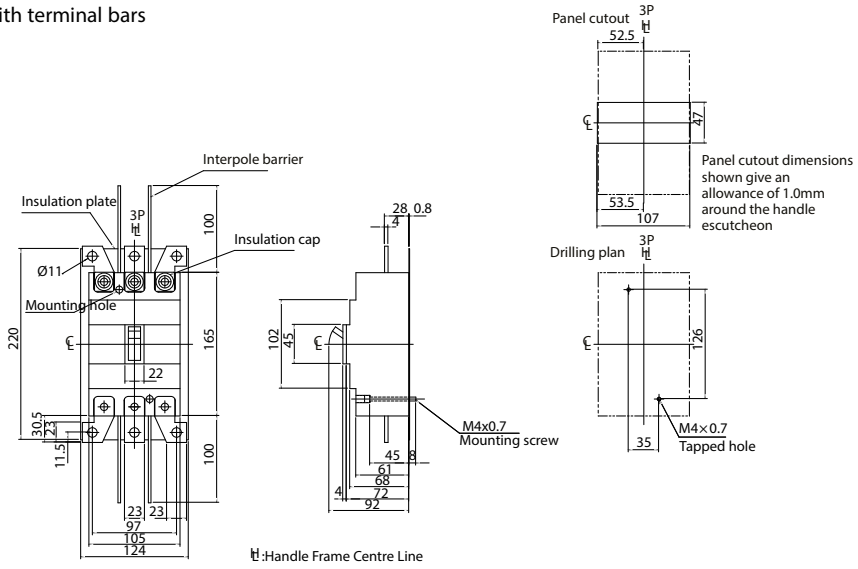
Panel cutout
(Front view)



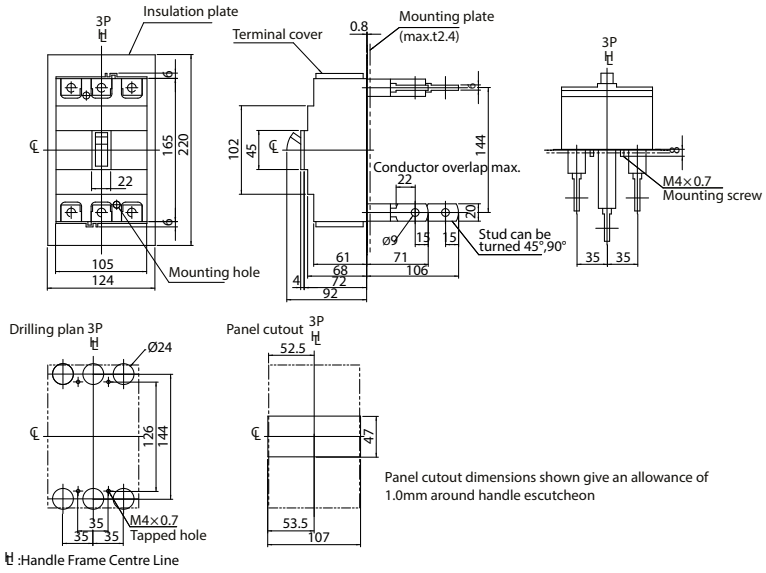
Panel cutout dimensions shown
give an allowance of 1.5mm
around the handle escutcheon.

EB2 250 1000V

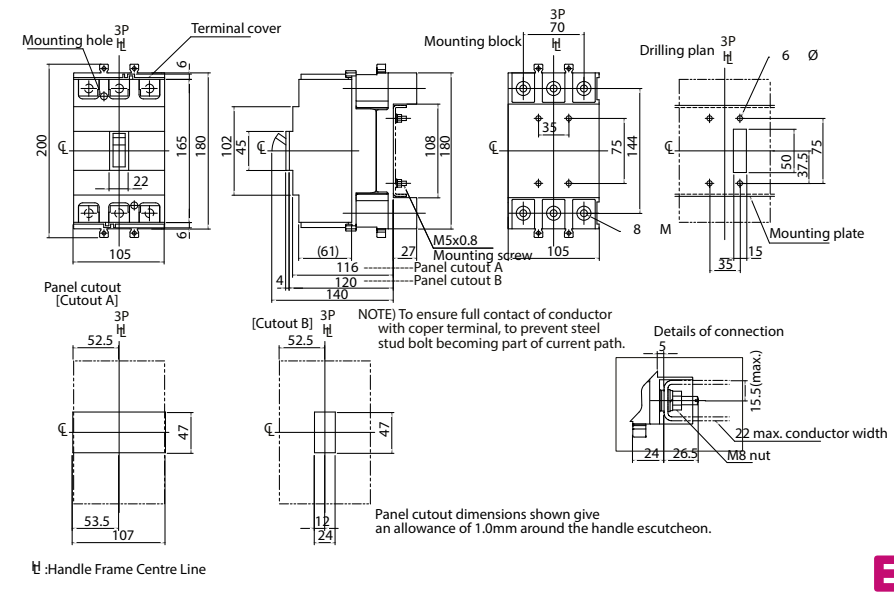
Front connected with terminal bars



Rear connected

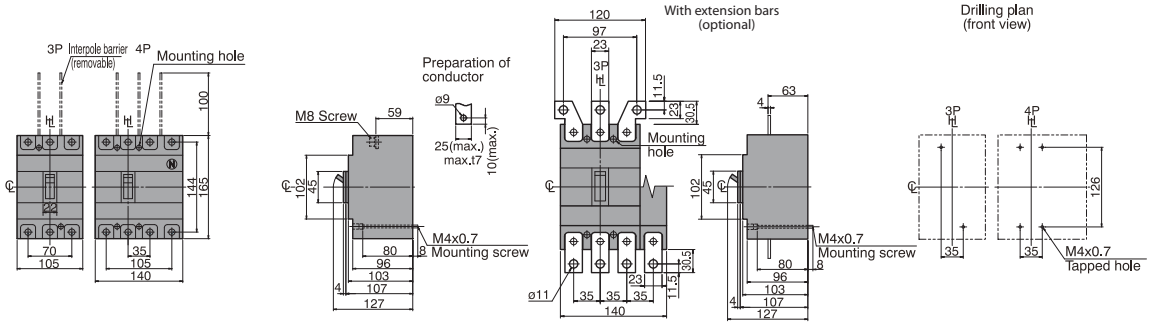


Plug in (PMB)

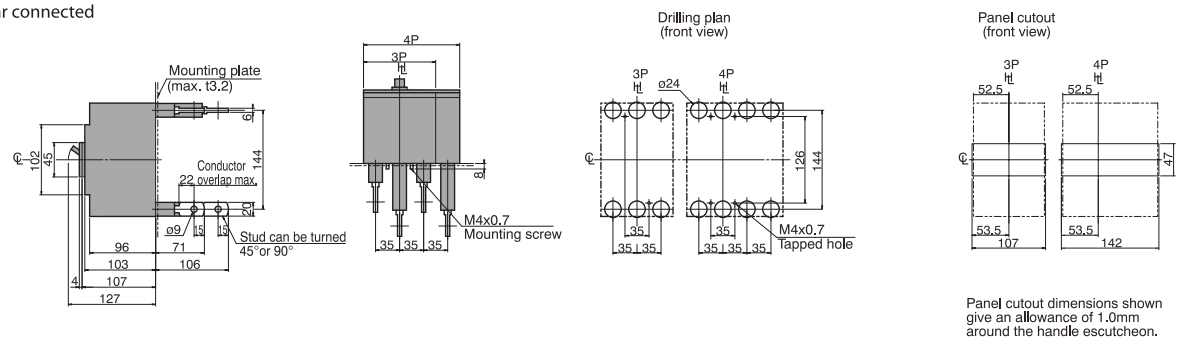


EB2 250/_E (Microprocessor's MCCBs)

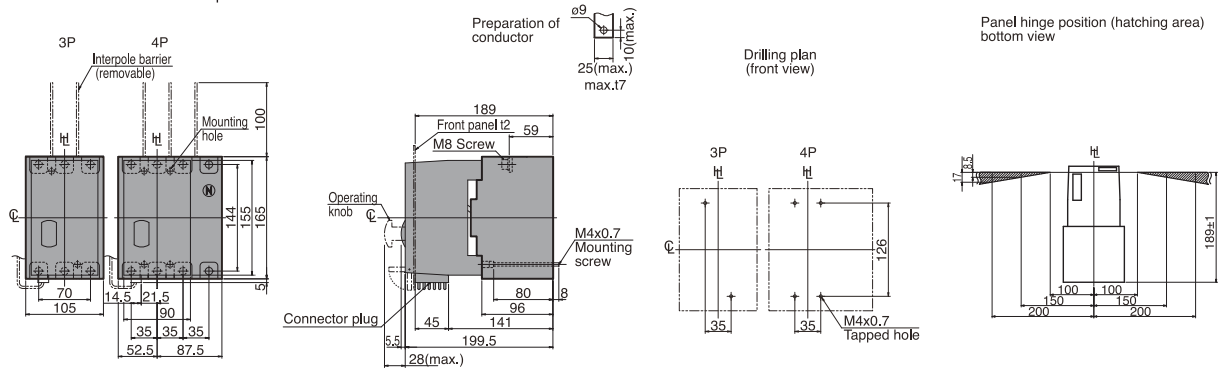
Front connected



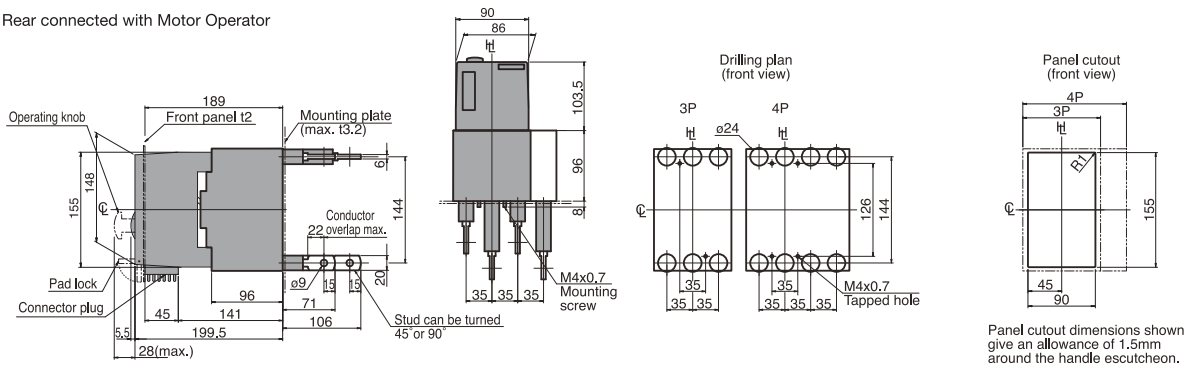
Rear connected



Front connected with Motor Operator



Rear connected with Motor Operator



ETIBREAK EB2 400

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400/415V [kA]	Adjustment thermal/magnetic	kg	
EB2 400/3LF 400A 3p	400A	004671105	3	25/25	fixed/fixed	4,2	1
EB2 400/3SF 400A 3p	400A	004671106	3	36/36	fixed/adjustable (6-12)	4,2	1
EB2 400/4SF 400A 4p	400A	004671108	4	36/36	fixed/adjustable (6-12)	5,6	1
EB2 400/3L 250A 3p	250	004671091	3	25/25	0,63-1/ 6-12	4,2	1
EB2 400/3L 400A 3p	400	004671092	3	25/25	0,63-1/ 6-12	4,2	1
EB2 400/4L 250A 4p	250	004671093	4	25/25	0,63-1/ 6-12	5,6	1
EB2 400/4L 400A 4p	400	004671094	4	25/25	0,63-1/ 6-12	5,6	1
EB2 400/3S 250A 3p	250	004671101	3	50/50	0,63-1/ 6-12	4,3	1
EB2 400/3S 400A 3p	400	004671102	3	50/50	0,63-1/ 6-12	4,3	1
EB2 400/4S 250A 4p	250	004671103	4	50/50	0,63-1/ 6-12	5,7	1
EB2 400/4S 400A 4p	400	004671104	4	50/50	0,63-1/ 6-12	5,7	1

ETIBREAK EB2 400

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400/415V [kA]	Adjustment thermal/magnetic	kg	
EB2 400/3E 250A 3p	250	004671111	3	50/50	0,4-1/ adjustable	4,3	1
EB2 400/3E 400A 3p	400	004671112	3	50/50	0,4-1/ adjustable	4,3	1
EB2 400/3E 400A 3p APG	400	004671115	3	50/50	0,4-1/ adjustable	4,3	1
EB2 400/4E 250A 4p	250	004671113	4	50/50	0,4-1/ adjustable	5,7	1
EB2 400/4E 400A 4p	400	004671114	4	50/50	0,4-1/ adjustable	5,7	1
EB2 400/4E 400A 4p APGN	400	004671116	4	50/50	0,4-1/ adjustable	5,7	1
EB2 400/3VE 400A 3p 1100V*	400	004671379	3	12,5/6,3	0,63-1/adjustable	4,8	1

* No external or internal accessories available

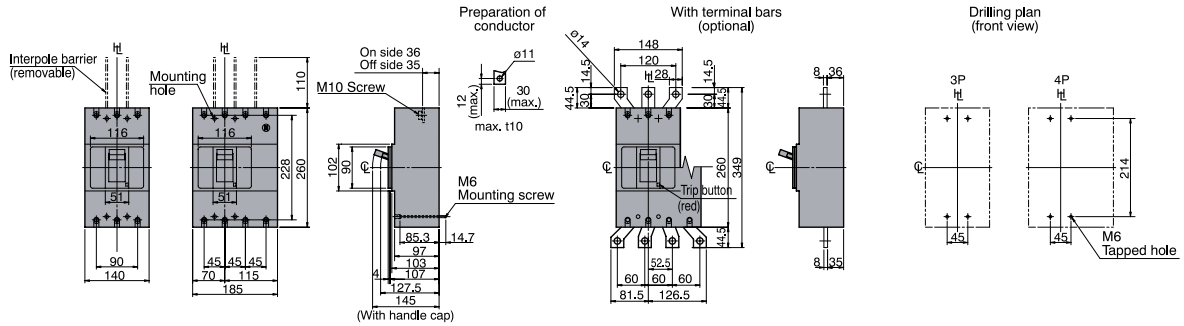
ETIBREAK EB2 400 LCD

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400/415V [kA]	Adjustment thermal/magnetic	kg	
EB2 400/3LCD 250A 3p A	250	004672144	3	50/50	0,4-1 / adjustable	4,3	1
EB2 400/3LCD 250A 3p APCWH	250	004672145	3	50/50	0,4-1 / adjustable	4,3	1
EB2 400/3LCD 400A 3p A	400	004672146	3	50/50	0,4-1 / adjustable	4,3	1
EB2 400/3LCD 400A 3p APCWH	400	004672147	3	50/50	0,4-1 / adjustable	4,3	1
EB2 400/4LCD 250A 4p A	250	004672148	4	50/50	0,4-1 / adjustable	5,7	1
EB2 400/4LCD 250A 4p AGN	250	004672290	4	50/50	0,4-1 / adjustable	5,7	1
EB2 400/4LCD 250A 4p APGNS	250	004672154	4	50/50	0,4-1 / adjustable	5,7	1
EB2 400/4LCD 250A 4p APCWH	250	004672155	4	50/50	0,4-1 / adjustable	5,7	1
EB2 400/4LCD 250A 4p APGNSCWH	250	004672291	4	50/50	0,4-1 / adjustable	5,7	1
EB2 400/4LCD 400A 4p A	400	004672156	4	50/50	0,4-1 / adjustable	5,7	1
EB2 400/4LCD 400A 4p AGN	400	004672292	4	50/50	0,4-1 / adjustable	5,7	1
EB2 400/4LCD 400A 4p APGNS	400	004672157	4	50/50	0,4-1 / adjustable	5,7	1
EB2 400/4LCD 400A 4p APCWH	400	004672158	4	50/50	0,4-1 / adjustable	5,7	1
EB2 400/4LCD 400A 4p APGNSCWH	400	004672293	4	50/50	0,4-1 / adjustable	5,7	1
EB2 400/4HLCD 250A 4p AGN	250	004672295	4	70/70	0,4-1 / adjustable	5,7	1
EB2 400/4HLCD 250A 4p APGNSCWH	250	004672296	4	70/70	0,4-1 / adjustable	5,7	1
EB2 400/4HLCD 400A 4p AGN	400	004672297	4	70/70	0,4-1 / adjustable	5,7	1
EB2 400/4HLCD 400A 4p APGNSCWH	400	004672298	4	70/70	0,4-1 / adjustable	5,7	1

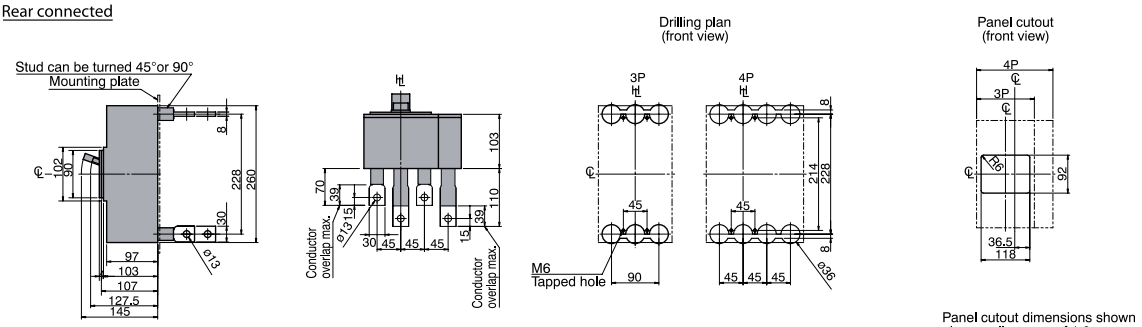
Dimensions

EB2 400

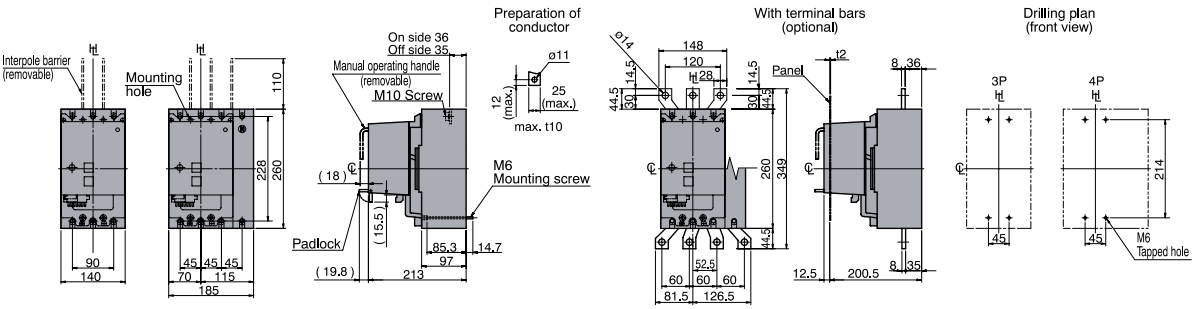
Front connected



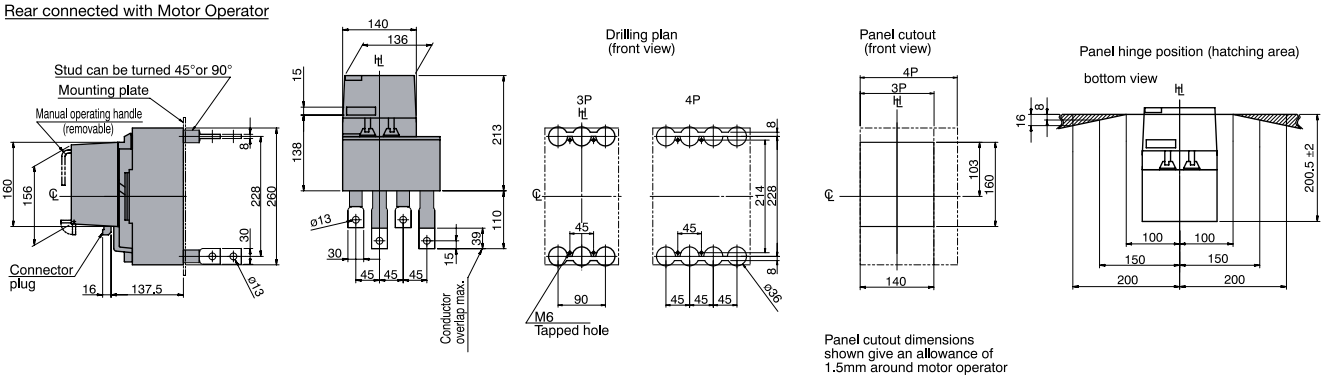
Rear connected



Front connected with Motor Operator



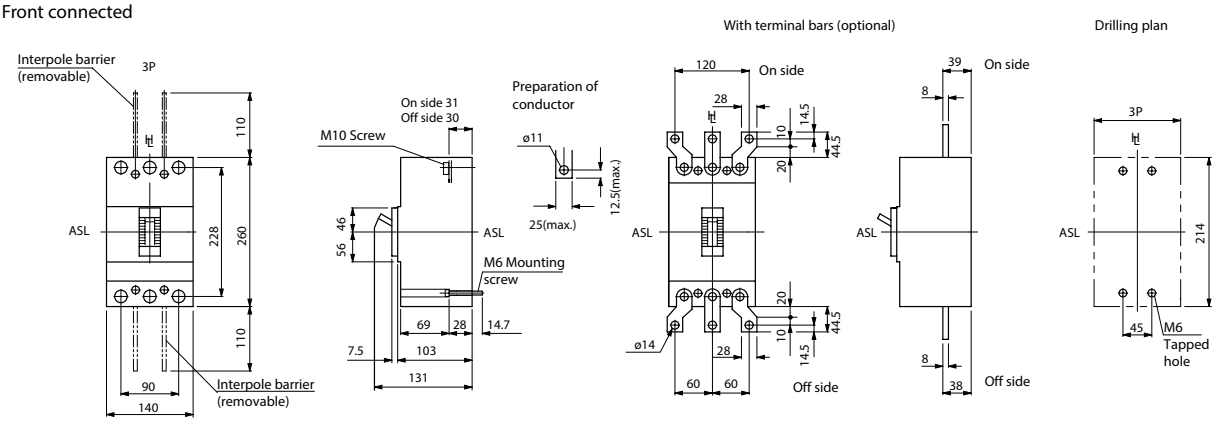
Rear connected with Motor Operator



EB2 400 1100V

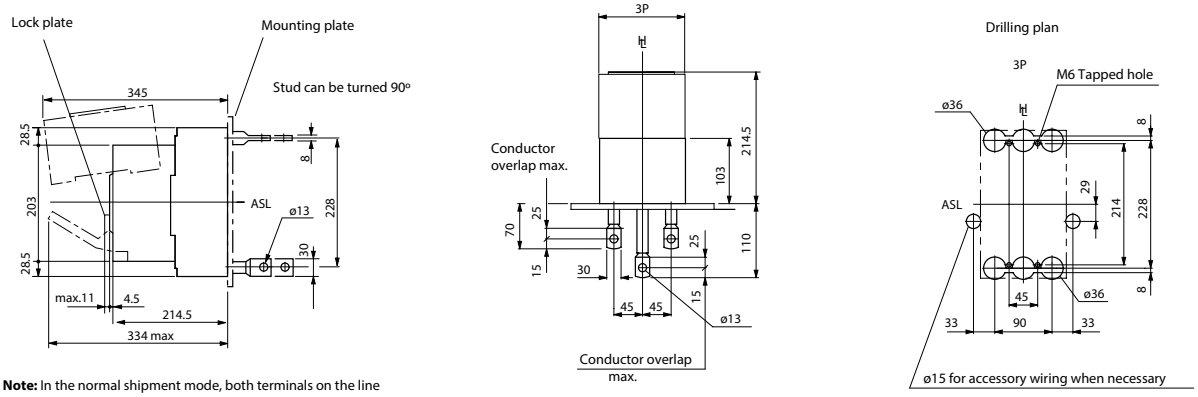
ASL : Arrangement Standard Line
⊬ : Handle Frame Centre Line

Front connected



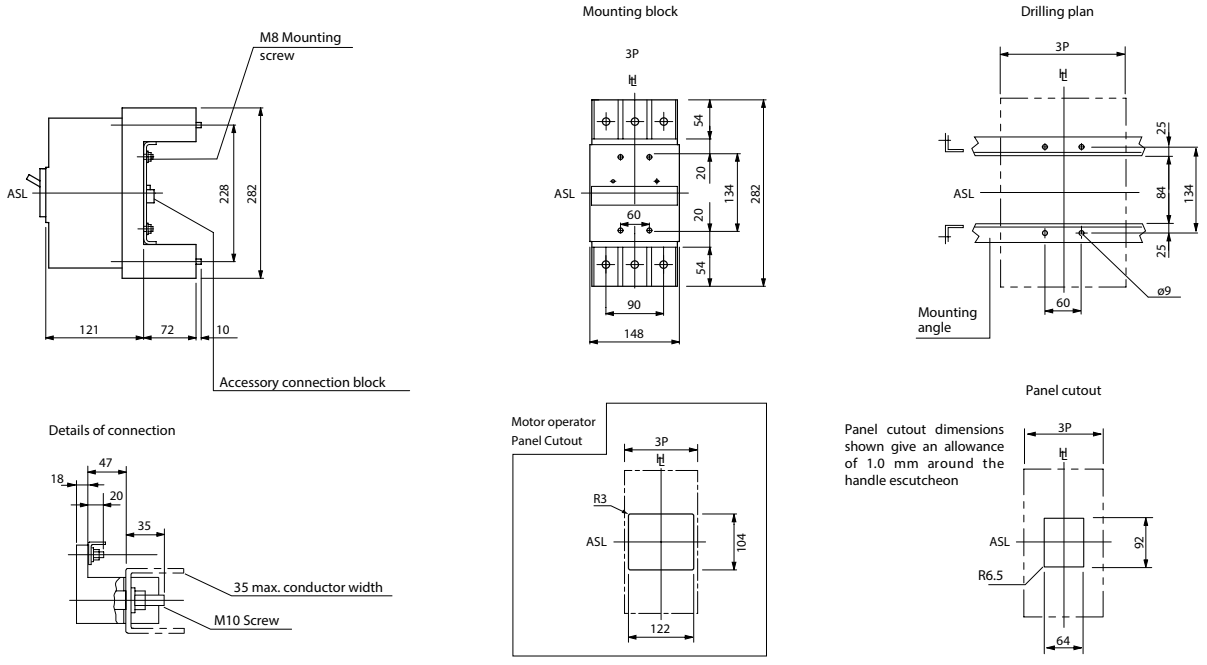
Note: Breakers with terminal bars available on request

Rear connected with motor operator



Note: In the normal shipment mode, both terminals on the line side and the load side are in the horizontal direction.

Plug-in connected



ETIBREAK EB2 630/800

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400/415V [kA]	Adjustment thermal/magnetic	kg	
EB2 800/3LF 630A 3p	630	004671117	3	36/36	fixed/adjustable (5-10)	8	1
EB2 800/3LF 800A 3p	800	004672204				8,5	
EB2 800/4LF 630A 4p	630	004671118	4			11	
EB2 800/4LF 800A 4p	800	004672205				11,5	
EB2 800/3L 630A 3p	630	004672150	3	36/36	0,63-1 / 5-10	8,5	1
EB2 800/3L 800A 3p	800	004672151					
EB2 800/4L 630A 4p	630	004672152	4			11,5	
EB2 800/4L 800A 4p	800	004672153					
EB2 800/3S 630A 3p	630	004672160	3	50/50	0,63-1 / 5-10	8,5	1
EB2 800/3S 800A 3p	800	004672161					
EB2 800/4S 630A 4p	630	004672162	4			11,5	
EB2 800/4S 800A 4p	800	004672163					
EB2 800/3H 630A 3p	630	004672170	3	70/50	0,63-1 / 5-10	8,5	1
EB2 800/3H 800A 3p	800	004672171					
EB2 800/4H 630A 4p	630	004672172	4			11,5	
EB2 800/4H 800A 4p	800	004672173					

ETIBREAK EB2 630

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400/415V [kA]	Adjustment thermal/magnetic	kg	
EB2 630/3LE 630A 3p	630	004671121	3	36/36	0,4-1/ adjustable	3,75	1
EB2 630/4LE 630A 4p	630	004671122	4			4,95	
EB2 630/4LE 630A 4p APGN	630	004671123	4			6,5	
EB2 630/3E 630A 3p	630	004671127	3	50/50	0,4-1/ adjustable	3,75	1
EB2 630/4E 630A 4p	630	004671128	4			4,95	
EB2 630/4E 630A 4p APGN	630	004671129	4			6,5	
EB2 630/3HE 630A 3p	630	004672140	3	70/70	0,4-1/ adjustable	3,75	1
EB2 630/4HE 630A 4p	630	004672141	4			4,95	
EB2 630/3VE 630A 3p 1100V*	630	004671380	3	18/13,5	0,63-1/adjustable	9,6	1

* No external or internal accessories available

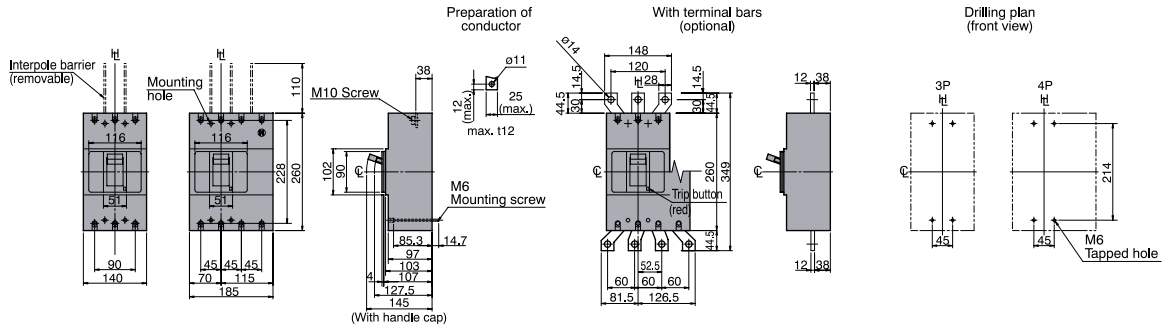
ETIBREAK EB2 630 LCD

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400/415V [kA]	Adjustment thermal/magnetic	kg	
EB2 630/3LLCD 630A 3p A	630	004672122	3	36/36	0,4-1/ adjustable	5	1
EB2 630/3LLCD 630A 3p APCWH	630	004672123					
EB2 630/4LLCD 630A 4p A	630	004672124	4			6,5	
EB2 630/4LLCD 630A 4p AGN	630	004672125					
EB2 630/4LLCD 630A 4p APGNS	630	004672126					
EB2 630/4LLCD 630A 4p APCWH	630	004672127					
EB2 630/4LLCD 630A 4p APGNSCWH	630	004672128					
EB2 630/4LCD 630A 4p AGN	630	004672142	4	50/50	0,4-1/ adjustable	6,5	1
EB2 630/4LCD 630A 4p APGNSCWH	630	004672143					

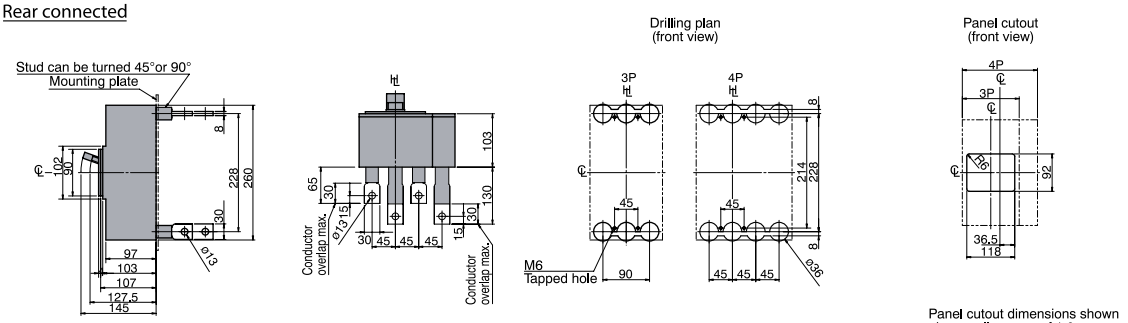
Dimensions

EB2 630

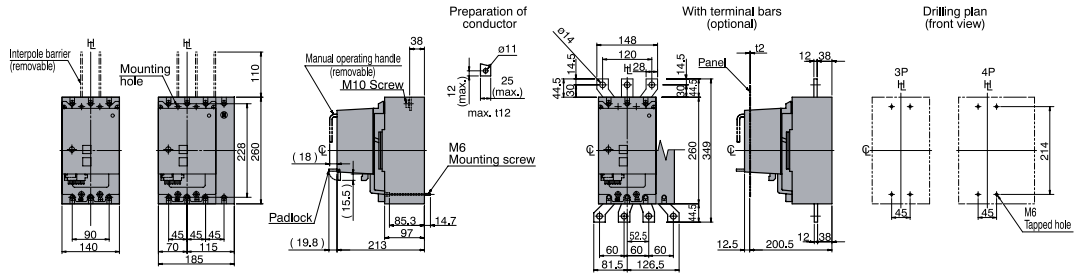
Front connected



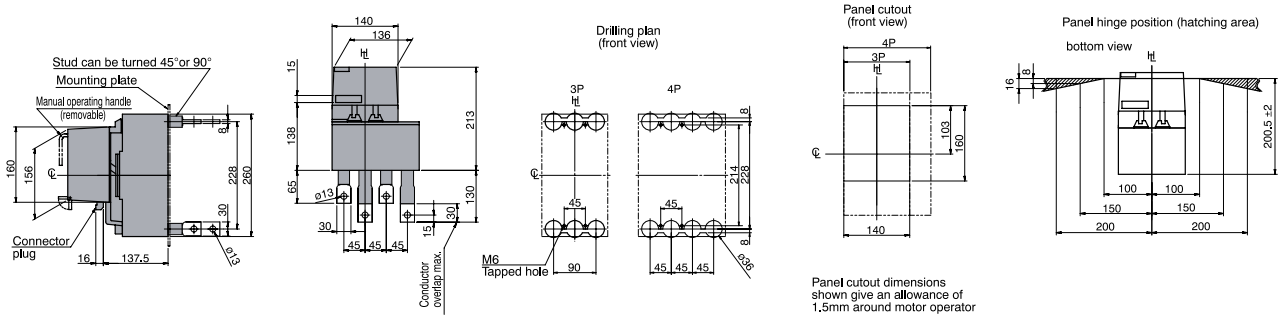
Rear connected



Front connected with Motor Operator



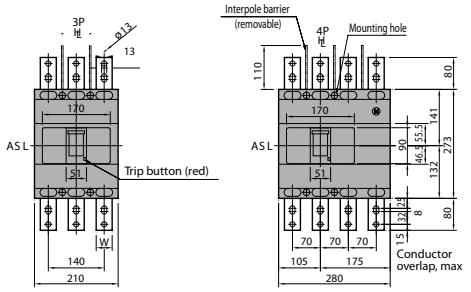
Rear connected with Motor Operator

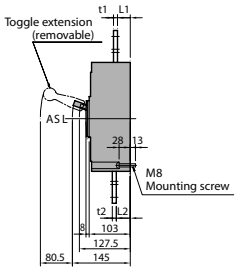


Dimensions

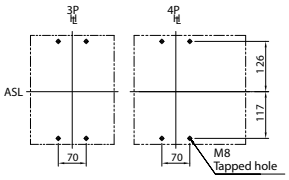
EB2 800

Front connected with extension bars (optional)



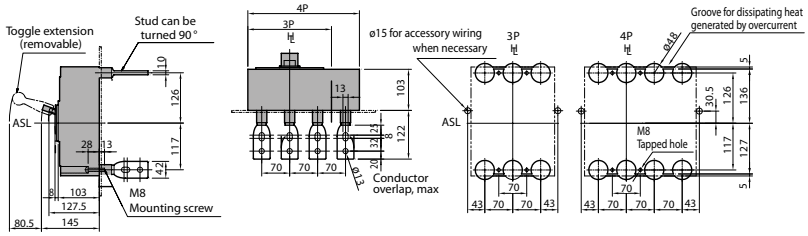


Drilling plan (front view)

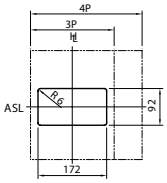


Breaker Type	Rated Current	t1	t2	L1	L2	W
EB2 800 Thermal magnetic	630A	8	8	32	34	40
	800A	10	10	32	35	40
EB2 800 Electronic	630A	8	8	32	36	40
	800A	10	10	32	36	40

Rear connected



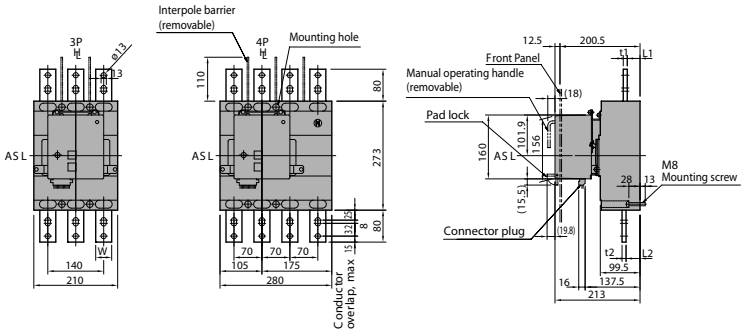
Panel cutout (front view)



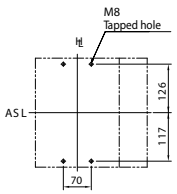
Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

Note: Studs are factory installed in horizontal direction both on the line and load sides.

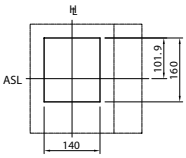
Front connected with Motor Operator



Drilling plan (front view)

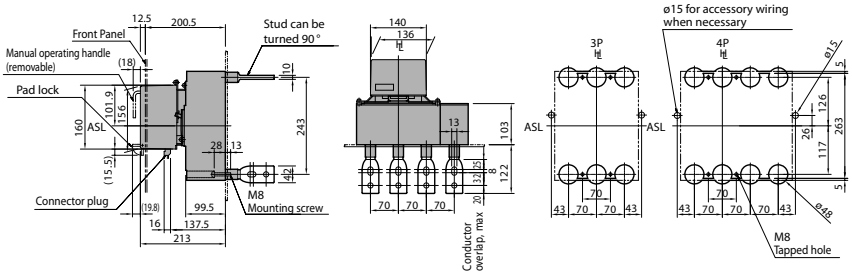


Panel cutout (front view)

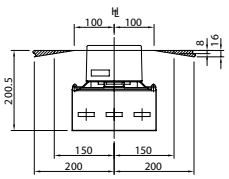


Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

Rear connected with Motor Operator



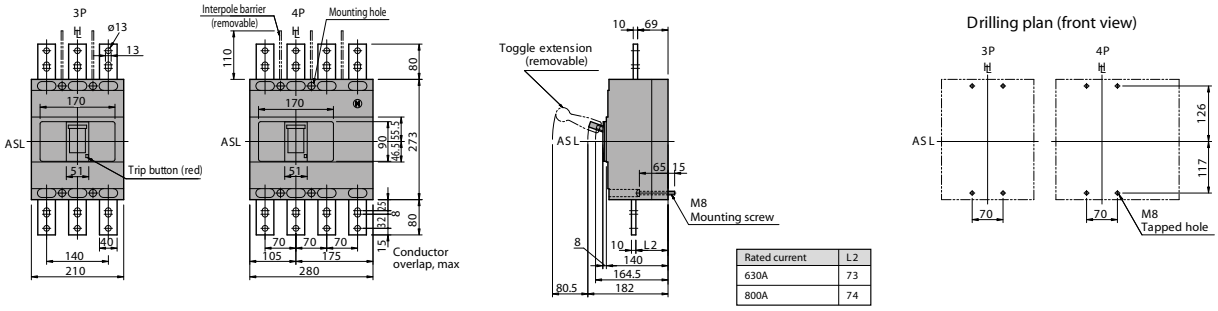
Panel hinge position (hatching area) (bottom view)



Note: Studs are factory installed in horizontal direction both on the line and load sides.

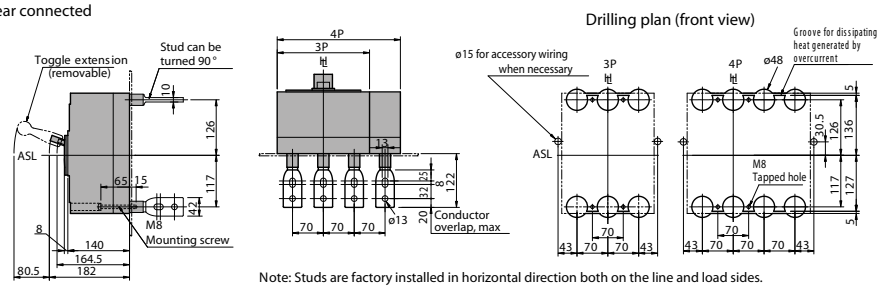
EB2 800 HE

Front connected



Rated current	L2
630A	73
800A	74

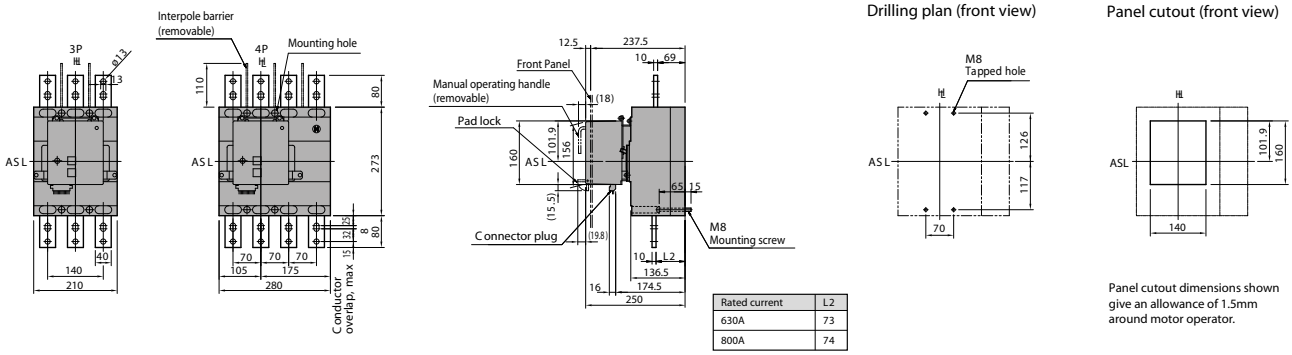
Rear connected



Note: Studs are factory installed in horizontal direction both on the line and load sides.

Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

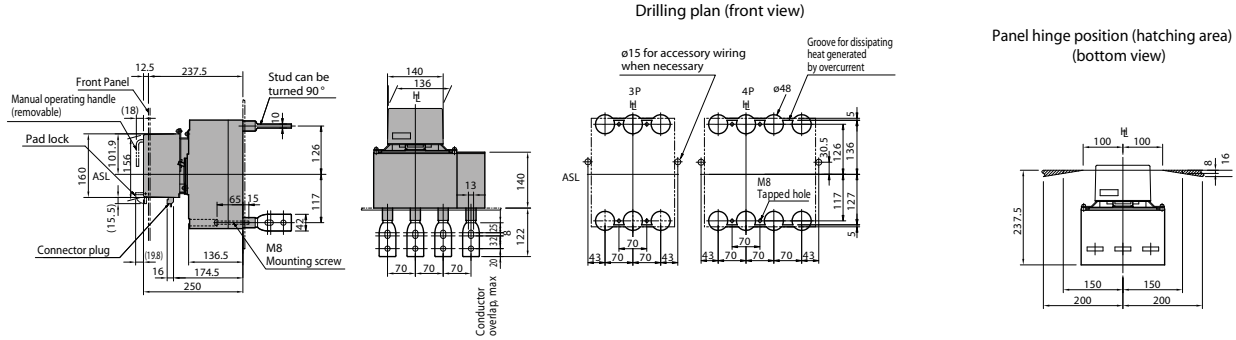
Front connected with Motor Operator



Rated current	L2
630A	73
800A	74

Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

Rear connected with Motor Operator

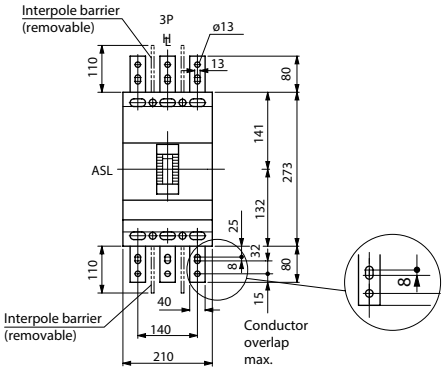


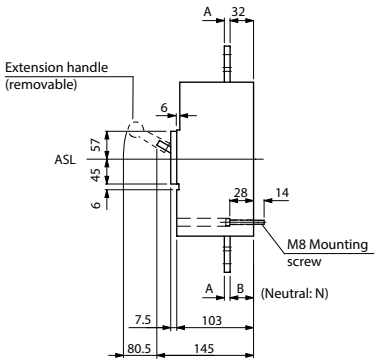
Note: Studs are factory installed in horizontal direction both on the line and load sides.

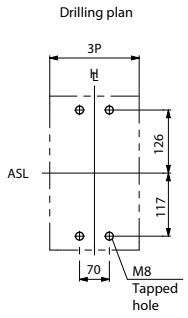
EB2 630 & 800 1100V

ASL : Arrangement Standard Line
卌 : Handle Frame Centre Line

Front connected



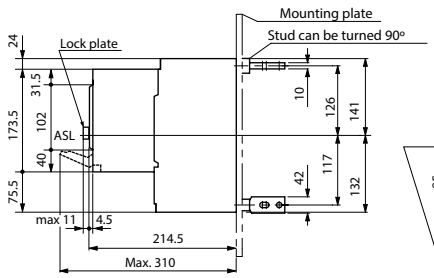


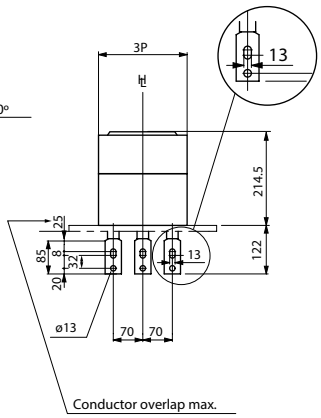


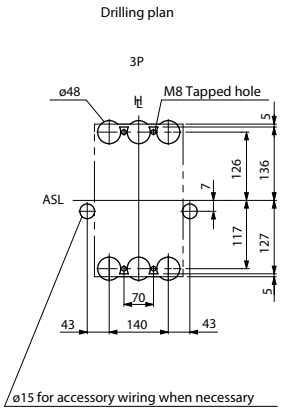
Breaker type	A	B	N
VS630-NE	8	36	36
VS800-NE	10	36	36

Note: Breakers with terminal bars available on request

Rear connected with motor operator

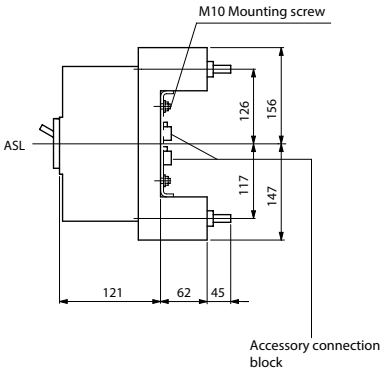


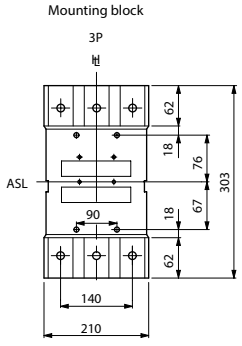


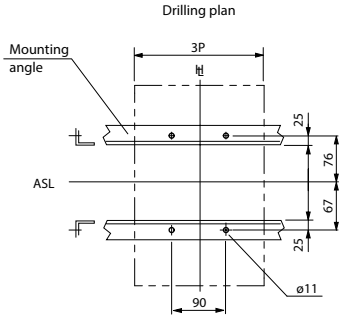


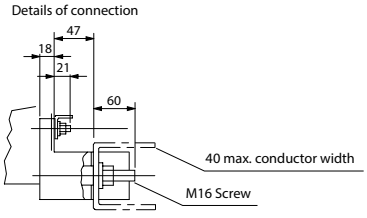
Note:In the normal shipment mode, both terminals on the line side and the load side are in the horizontal direction.

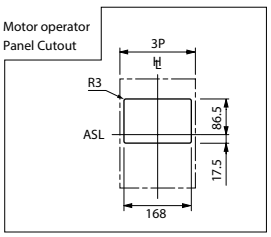
Plug-in connected

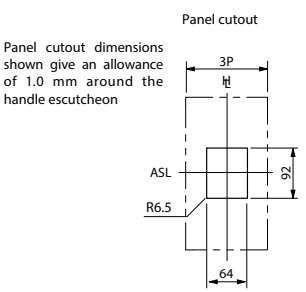












ETIBREAK EB2 800

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400/415V [kA]	Adjustment thermal/magnetic	kg	
EB2 800/3LE 800A 3p	800	004672180	3	50/50	0,4-1 / adjustable	9,1	1
EB2 800/4LE 800A 4p	800	004672181	4			12,3	
EB2 800/4LE 800A 4p AGN	800	004672182	4			12,3	
EB2 800/4LE 800A 4p APGN	800	004672183	4			12,3	
EB2 800/3E 800A 3p	800	004672190	3	70/70	0,4-1 / adjustable	9,1	1
EB2 800/3E 800A 4p	800	004672191	4			12,3	
EB2 800/3HE 630A 3p	630	004672200	3	125/94	0,4-1 / adjustable	13,3	1
EB2 800/3HE 800A 3p	800	004672201				14,8	
EB2 800/4HE 630A 4p	630	004672202	4			16,8	
EB2 800/4HE 800A 4p	800	004672203				18,8	
EB2 800/3VE 800A 3p 1100V*	800	004671381	3	18/13,5	0,63-1/adjustable	9,7	1

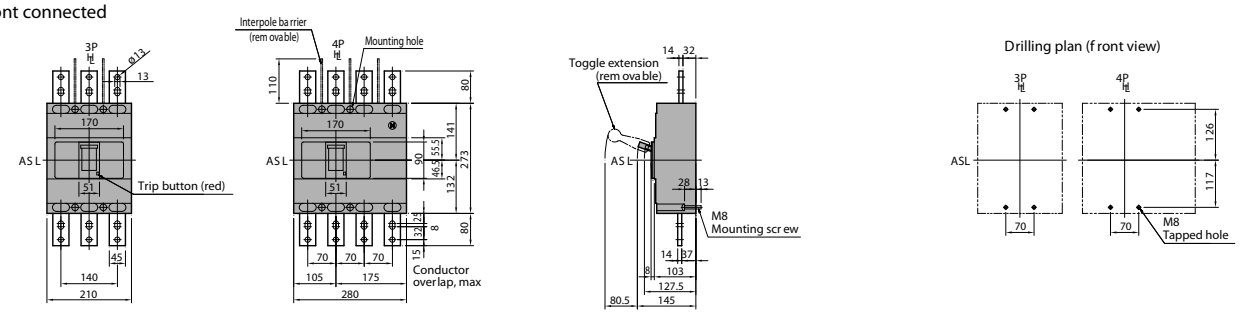
* No external or internal accessories available

ETIBREAK EB2 1000

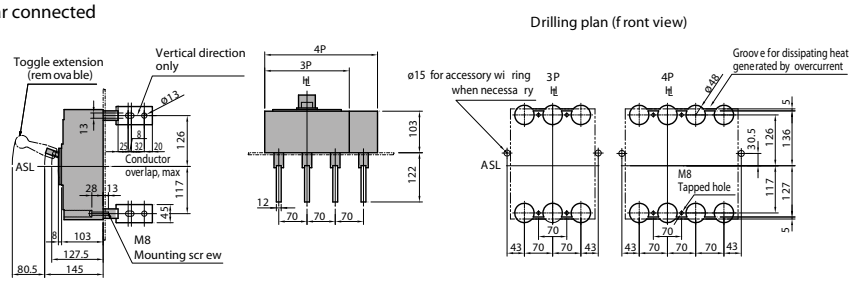
Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400/415V [kA]	Adjustment thermal/magnetic	kg	
EB2 1000/3LE 1000A 3p	1000	004672210	3	50/38	0,4-1 / adjustable	11	1
EB2 1000/4LE 1000A 4p	1000	004672211	4			14,8	
EB2 1000/4LE 1000A 4p APGN	1000	004672212	4			14,8	
EB2 1000/3E 1000A 3p	1000	004672220	3	70/50	0,4-1 / adjustable	11	1
EB2 1000/3E 1000A 4p	1000	004672221	4			14,8	
EB2 1000/4E 1000A 4p APGN	1000	004672222	4			14,8	

EB2 1000

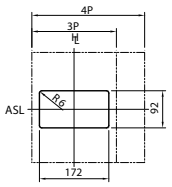
Front connected



Rear connected

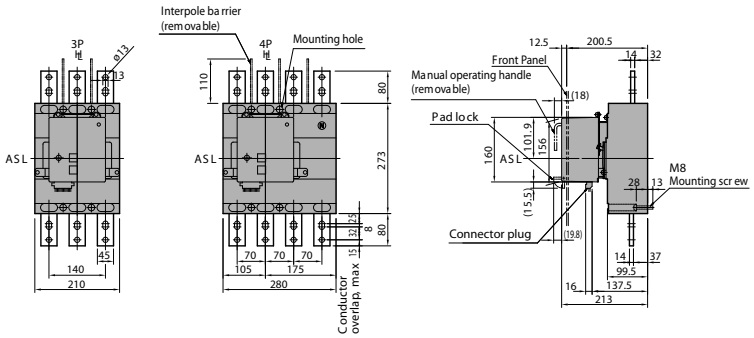


Panel cutout (front view)

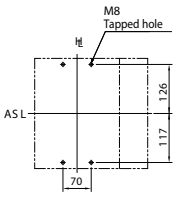


Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

Front connected with Motor Operator

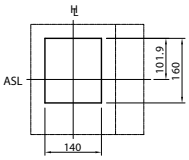


Drilling plan (front view)



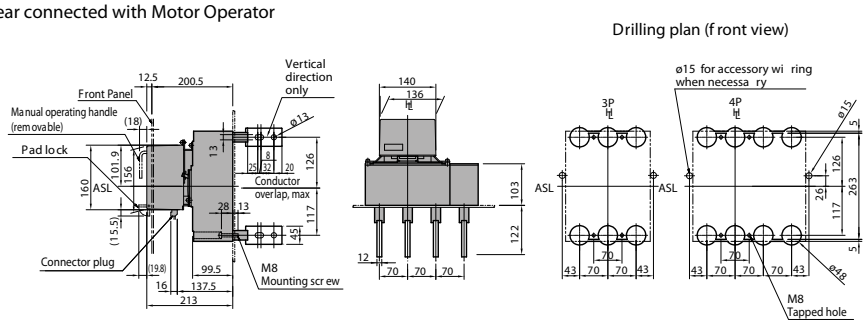
Insulator

Panel cutout (front view)

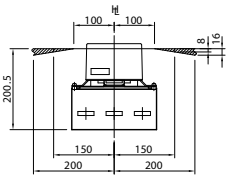


Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

Rear connected with Motor Operator



Panel hinge position (hatching area) (bottom view)



Note: Studs are factory installed in horizontal direction both on the line and load sides.

ETIBREAK EB2 1250

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400/415V [kA]	Adjustment thermal/magnetic	kg	
EB2 1250/3LE 1250A 3p	1250	004672230	3	50/38	0,4-1 / adjustable	19,8	1
EB2 1250/4LE 1250A 4p	1250	004672231	4			25	
EB2 1250/4LE 1250A 4p APGN	1250	004672232	4			25	
EB2 1250/3E 1250A 3p	1250	004672240	3	70/50	0,4-1 / adjustable	19,8	1
EB2 1250/3E 1250A 4p	1250	004672241	4			25	
EB2 1250/4E 1250A 4p APGN	1250	004672242	4			25	
EB2 1250/3VE 800A 3p 1100V	800	004671382	3	30/20	0,4-1/adjustable	19,8	1
EB2 1250/3VE 1250A 3p 1100V	1250	004671383	3			19,8	

ETIBREAK EB2 1600

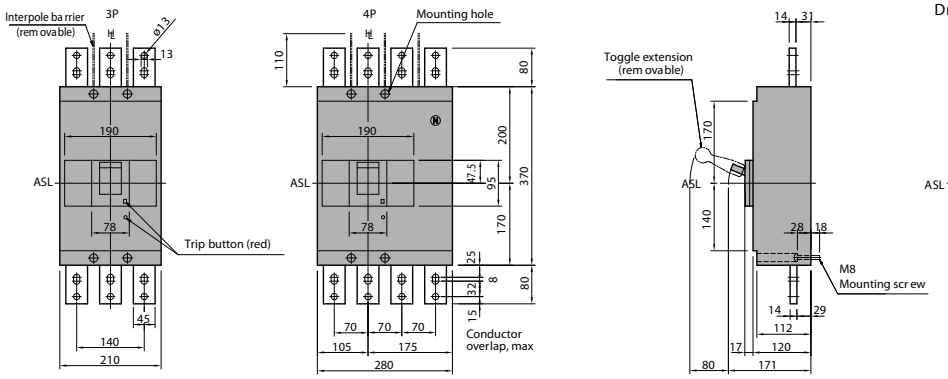
Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} 400/415V [kA]	Adjustment thermal/magnetic	kg	
EB2 1600/3LE-FC 1600A 3p	1600	004672250	3	50/38	0,4-1 / adjustable	27	1
EB2 1600/4LE-FC 1600A 4p	1600	004672251	4			35	
EB2 1600/4LE-FC 1600A 4p APGN	1600	004672252	4			35	
EB2 1600/3LE-RC 1600A 3p	1600	004672270	3			27	
EB2 1600/4LE-RC 1600A 4p	1600	004672271	4			35	
EB2 1600/4LE-RC 1600A 4p APGN	1600	004672272	4			35	
EB2 1600/3E-RC 1600A 3p	1600	004672280	3	100/75	0,4-1 / adjustable	27	1
EB2 1600/4E-RC 1600A 4p	1600	004672281	4			35	
EB2 1600/4E-RC 1600A 4p APGN	1600	004672282	4			35	
EB2 1600/3E-FC 1600A 3p	1600	004672260	3			27	
EB2 1600/3E-FC 1600A 4p	1600	004672261	4			35	
EB2 1600/4E-FC 1600A 4p APGN	1600	004672262	4			35	

FC - Front Conection
RC - Rear Conection

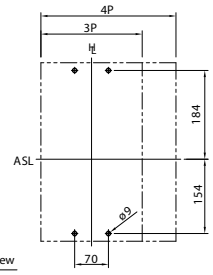
Dimensions

EB2 1250

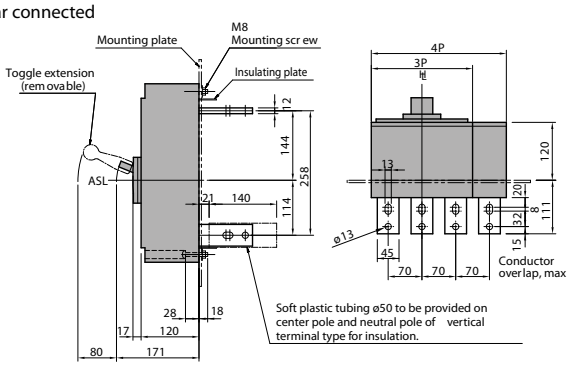
Front connected



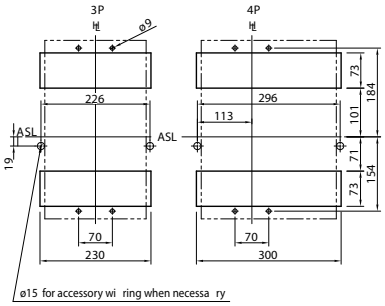
Drilling plan (front view)



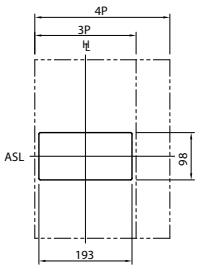
Rear connected



Drilling plan (front view)



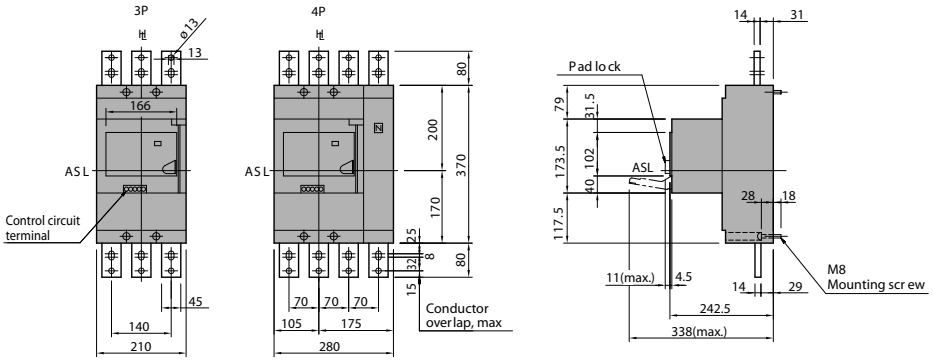
Panel cutout (front view)



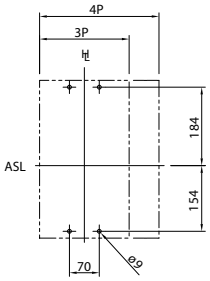
Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

Note: Studs are factory installed in horizontal direction both on the line and load sides.

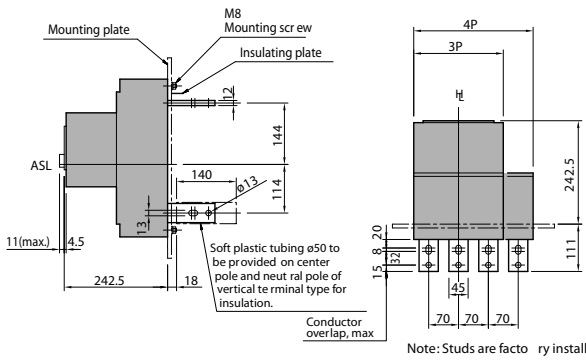
Front connected with Motor Operator



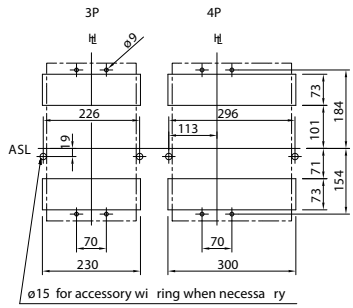
Drilling plan (front view)



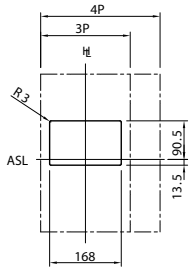
Rear connected with Motor Operator



Drilling plan (front view)



Panel cutout (front view)



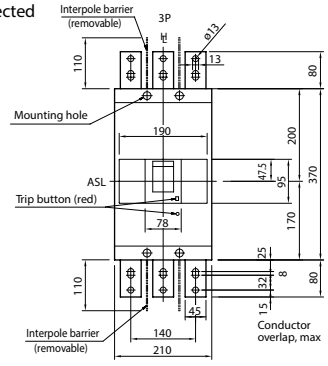
Panel cutout dimensions shown give an allowance of 1.0mm around motor operator.

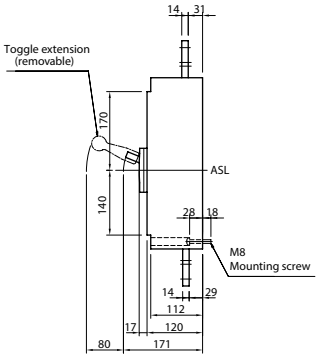
Note: Studs are factory installed in horizontal direction both on the line and load sides.

EB2 1250 1100V

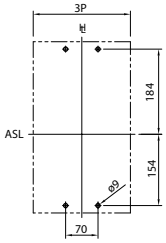
ASL : Arrangement Standard Line
⊬ : Handle Frame Centre Line

Front connected

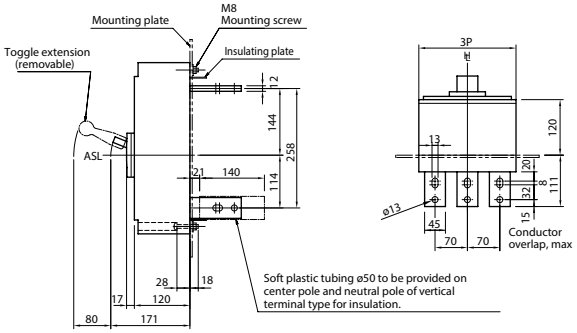




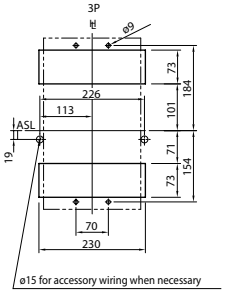
Drilling plan (front view)



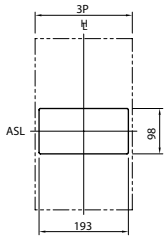
Rear connected



Drilling plan (front view)



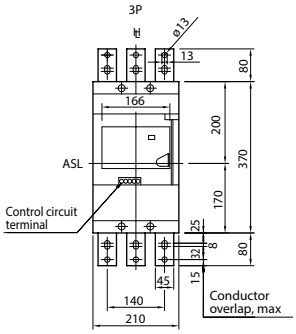
Panel cutout (front view)

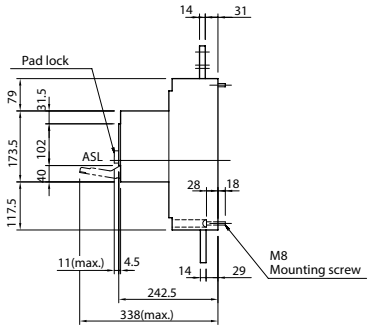


Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

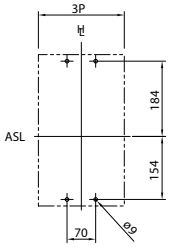
Note: Studs are factory installed in horizontal direction both on the line and load sides.

Front connected with Motor Operator

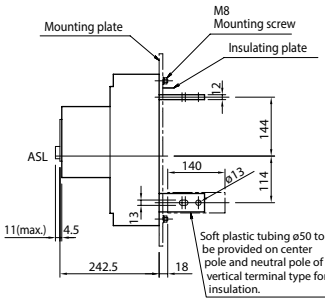


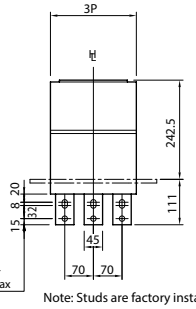


Drilling plan (front view)

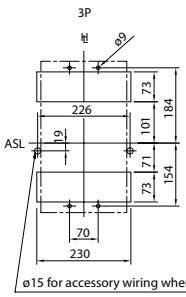


Rear connected with Motor Operator

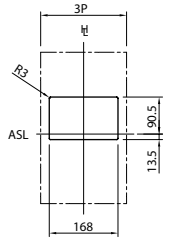




Drilling plan (front view)



Panel cutout (front view)

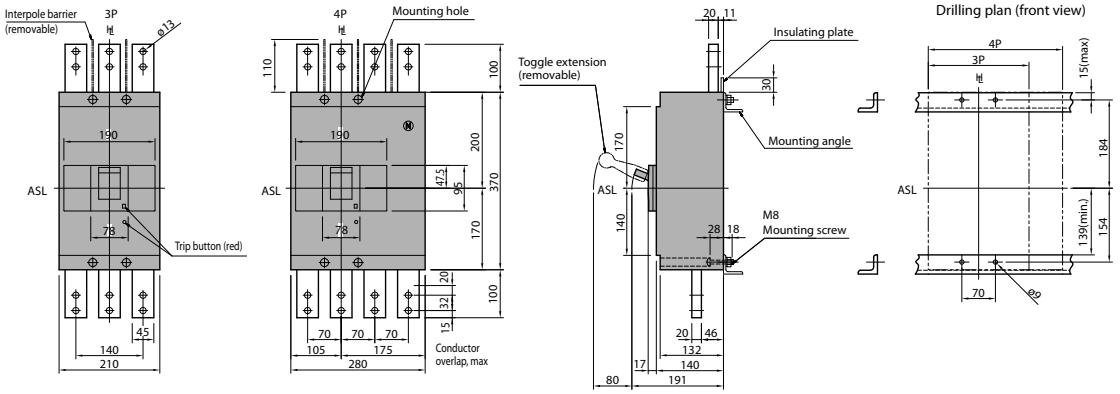


Panel cutout dimensions shown give an allowance of 1.0mm around motor operator.

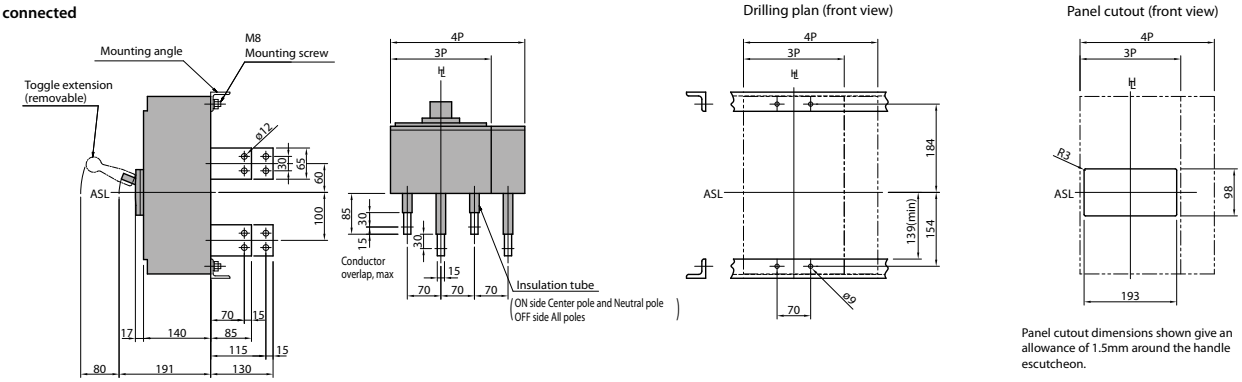
Note: Studs are factory installed in horizontal direction both on the line and load sides.

EB2 1600

Front connected

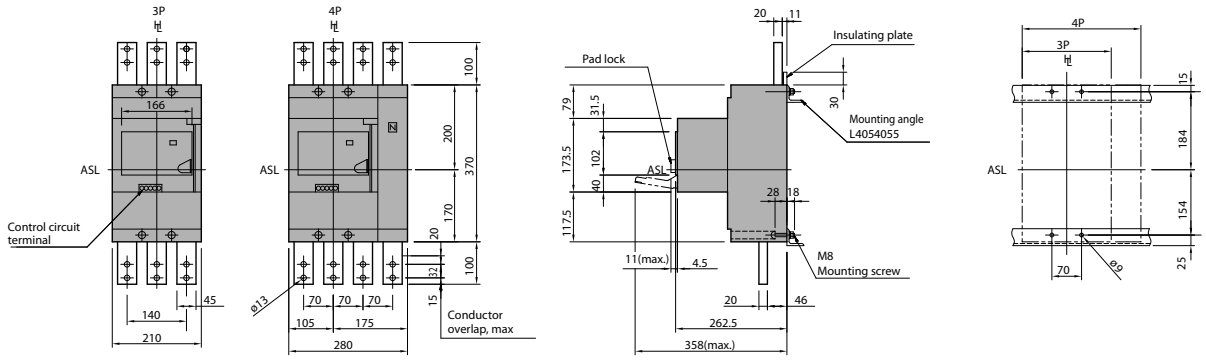


Rear connected

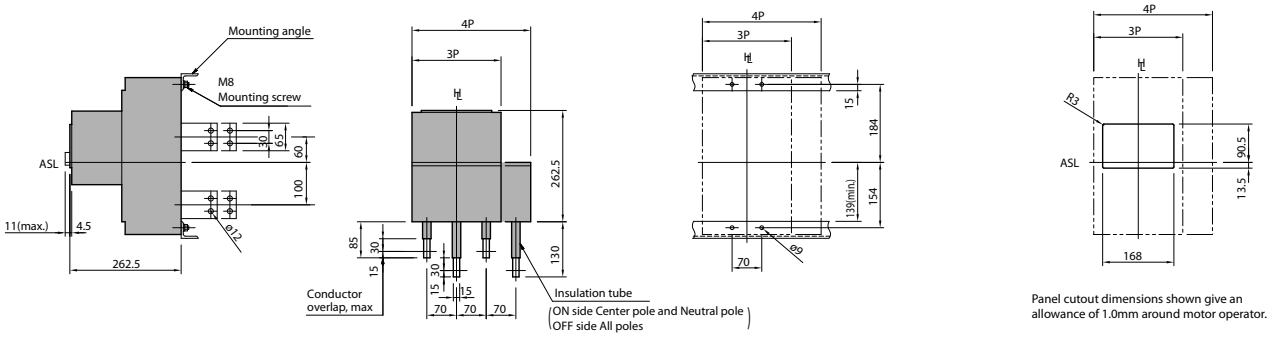


Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

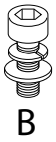
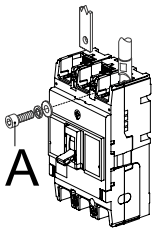
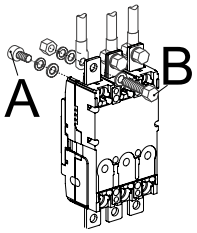
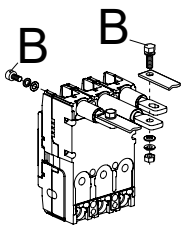
Front connected with Motor Operator



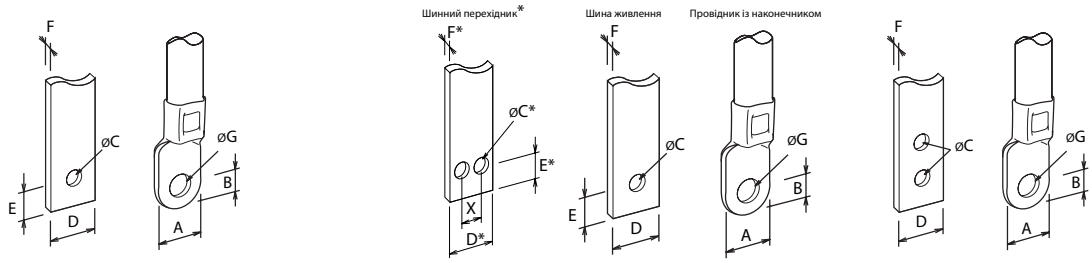
Rear connected with Motor Operator



Panel cutout dimensions shown give an allowance of 1.0mm around motor operator.

Type of connecting element		Front connection			Rear connection	
		cable lug	busbar adapters			
						
Frame size	Rated current	Supplied with the MCCB	Supplied with the MCCB	Supplied with busbar adapters	Supplied with the MCCB	Supplied with the MCCB
EB2 125	20-125	M8x16 (A) / 4,9 ... 6,9 (Nm)	M8x16 (A) / 4,9 ... 6,9 (Nm)	M8x25 (B) / 11,8 ... 18,6 (Nm)	M6x20 (B) / 7,8 ... 11,8 (Nm)	M8x25 (B) / 11,8 ... 18,6 (Nm)
EB2 160/250	160-250	M8x20 (B) / 7,8 ... 12,7 (Nm)	M8x20 (B) / 7,8 ... 12,7 (Nm)	M10x25 (B) / 22,5 ... 37,2 (Nm)		
EB2 400	400	M10x25 (B) / 13,7 ... 22,5 (Nm)	M10x25 (B) / 13,7 ... 22,5 (Nm)	M12x35 (B) / 40,2 ... 65,7 (Nm)	M10x20 (B) / 18,6 ... 29,4 (Nm)	M12x35 (B) / 40,2 ... 65,7 (Nm)
EB2 630	630	M10x30 (B) / 13,7 ... 22,5 (Nm)	M10x30 (B) / 13,7 ... 22,5 (Nm)	M12x40 (B) / 40,2 ... 65,7 (Nm)	M8x25 (B) / 8,8 ... 14,7 (Nm)	M12x30 (B) / 40,2 ... 65,7 (Nm)
EB2 800 LF	630-800	-	M12x40 (B) / 40,2 ... 65,7 (Nm)		M10x27 (B) / 18,6 ... 29,4 (Nm)	M12x40 (B) / 40,2 ... 65,7 (Nm)
EB2 800	630	M8x25 (B) / 9,5 ... 14,5 (Nm)	M8x25 (B) / 9,5 ... 14,5 (Nm)	M12x40 (B) / 40,2 ... 65,7 (Nm)		
	800	M8x30 (B) / 9,5 ... 14,5 (Nm)	M8x30 (B) / 9,5 ... 14,5 (Nm)			
EB2 1000	1000	-	M12x55 (B) / 40,2 ... 65,7 (Nm)		M12x47 (B) / 40,2 ... 65,7 (Nm)	
EB2 1250&1600	1250	-				
	1600	-	M12x60 (B) / 40,2 ... 65,7 (Nm)		M10x45 (B) / 22,5 ... 37,2 (Nm)	

Dimensions of connected components



	EB2 125	EB2 160/250	EB2 400	EB2 630	EB2 800 (630A)	EB2 800 (800A)	EB2 800 LF	EB2 1000	EB2 1250/1600
	mm	mm	mm	mm	mm	mm	mm	mm	mm
A	≤16	≤22	≤25	≤25	≤50,5	≤50,5	≤50,5	≤50,5	≤50,5
B	≤8	≤11	≤12,5	≤12,5	≤19	≤19	≤19	≤19	≤21
C	8,4	8,4	10,5	10,5	13 (9)*	13 (9)*	13	13	13
D	≤17	≤25	≤25	≤25	≤50,5 (≤40)*	≤50,5 (≤40)*	≤50,5	≤50,5	≤50,5
E	≤8,5	≤10	≤12	≤12	11,5*	-	-	-	-
F	≤5	≤7	≤10	≤12	≤10 (≤10)*	≤10 (≤12)*	10	10	10
G	9	9	11	11	13	13	13	13	13
X	-	-	-	-	≤25	≤25	-	-	-

* Dimensions for connecting busbar adapters ZB2 S800-630 & ZB2 S800-800 (Straight) or direct power bus connection to EB2 800 (630/800).

Clamps for flexible conductors SP

	Conductor cross-section (mm^2)
SP2 125/3	1,5 - 50 (1 Conductor)
SP2 160&250/3	35 - 120 (1 Conductor)
SP2 400/3	80 - 240 (1 Conductor)
	60 - 120 (2 Conductors)

Low Voltage Switch Disconnector ETIBREAK ED2

ETIBREAK ED2 125-1600

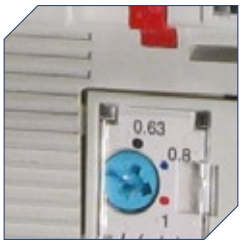
Type	I_n [A]	Code No.	Poles	I_{cm} [kA peak]	U_e AC/DC [V]	kg	
ED2 125/3	125	004671271	3	3,6	690/250	1,1	1
ED2 160/3	160	004671272	3	6	690/250	1,5	1
ED2 250/3	250	004671273	3	6	690/250	1,5	1
ED2 400/3	400	004671274	3	9	690/250	4,2	1
ED2 630/3	630	004671275	3	9	690/250	4,4	1
ED2 800/3	800	004672370	3	17	690/250	8,5	1
ED2 1000/3	1000	004672373	3	17	690/250	10,4	1
ED2 1250/3	1250	004672371	3	32	690/250	18,2	1
ED2 1250/3 PI 3C	1250	004672374	3	32	690/250	18,2	1
ED2 1600/3 FC	1600	004672372	3	45	690/250	24,9	1
ED2 125/4	125	004671276	4	3,6	690/250	1,4	1
ED2 160/4	160	004671277	4	6	690/250	1,9	1
ED2 250/4	250	004671278	4	6	690/250	1,9	1
ED2 400/4	400	004671279	4	9	690/250	5,6	1
ED2 630/4	630	004671280	4	9	690/250	5,8	1
ED2 800/4	800	004672380	4	17	690/250	11,5	1
ED2 1000/4	1000	004672383	4	17	690/250	14,0	1
ED2 1250/4	1250	004672381	4	32	690/250	23,4	1
ED2 1600/4 FC	1600	004672382	4	45	690/250	32,9	1

Note:
All internal and external accessories for MCCBs can also be mounted to corresponding type of switch disconnectors.

ED2 1250/3 PI 3C:
This is an already prepared Plug-in version for ED2 with 3 AUX terminals on conversion side. Beside that you have to order base side (NPF) and AUX terminals for base side (please see accessories for 1250AF)

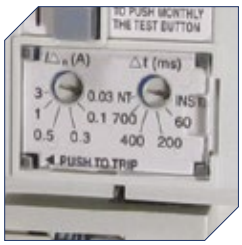
ETIBREAK Low Voltage Moulded Case Circuit Breakers With Residual Current Protection

- Breaking capacities as on MCCBs



- Adjustable overload protection I_r can be set between 63% and 100% of I_n

- Type A: Tripping is ensured for residual sinusoidal AC in the presence of residual pulsating DC.



- Adjustable residual current tripping thresholds between 30mA and 3A. Adjustable time delay for residual current protection between 60ms and 700ms including INST (instantaneous) and NT (No Trip).

- Voltage Presence LED Indicator and Trip Indicator (the yellow button pops up to indicate tripping due to residual current)

- Test Button (to test the residual current detection and tripping system)

- Dielectric test device plug (to allow dielectric testing with the EB2R closed – ON)

Main advantages:
- Combined protection against overloads, short circuits and earth leakage integrated in one device
- The new EB2R save the space
- The EB2R has the same dimensions and fixing as the EB2 MCCBs
- The EB2R eliminates the need for either an external relay with current transformers or add-on block
- Residual current is adjustable
- Earth leakage protection time delay is adjustable
- Wide range of accessories (as MCCB – only shunt/undervoltage trip units can not be fitted to EB2R)

ETIBREAK EB2R 125

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} [kA]	Adjustment thermal/ magnetic	kg	
EB2R 125/3L 20A 3P	20	004671501	3	25/19	0.63-1/12	1,1	1
EB2R 125/3L 32A 3P	32	004671502	3	25/19	0.63-1/12	1,1	1
EB2R 125/3L 50A 3P	50	004671503	3	25/19	0.63-1/12	1,1	1
EB2R 125/3L 63A 3P	63	004671504	3	25/19	0.63-1/12	1,1	1
EB2R 125/3L 100A 3P	100	004671505	3	25/19	0.63-1/12	1,1	1
EB2R 125/3L 125A 3P	125	004671506	3	25/19	0.63-1/10	1,1	1
EB2R 125/4L 20A 4P	20	004671507	4	25/19	0.63-1/12	1,4	1
EB2R 125/4L 32A 4P	32	004671508	4	25/19	0.63-1/12	1,4	1
EB2R 125/4L 50A 4P	50	004671509	4	25/19	0.63-1/12	1,4	1
EB2R 125/4L 63A 4P	63	004671510	4	25/19	0.63-1/12	1,4	1
EB2R 125/4L 100A 4P	100	004671511	4	25/19	0.63-1/12	1,4	1
EB2R 125/4L 125A 4P	125	004671512	4	25/19	0.63-1/10	1,4	1

Note: all internal and external accessories can be used with EB2R – only exceptions are DA shunt trip unit and NA undervoltage trip unit (cannot be fitted to EB2R)

Residual current monitor and pre trip module - ETIBREAK EB2R 125

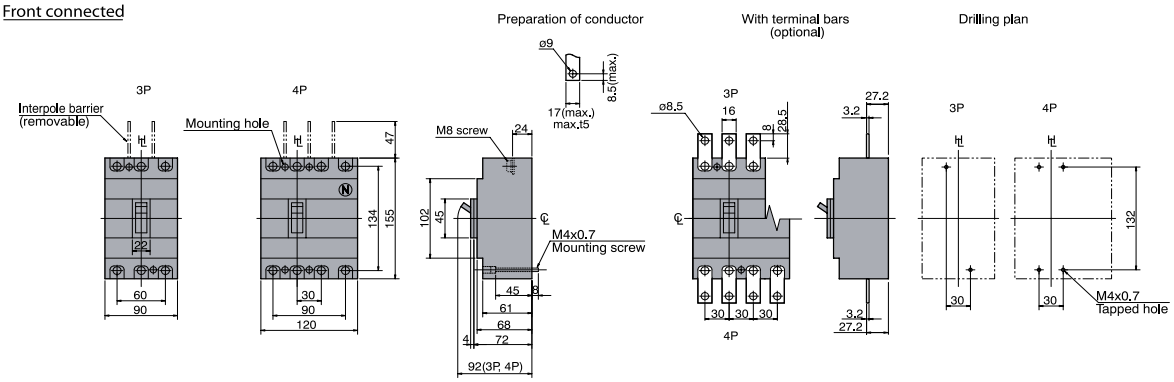
Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} [kA]	Adjustment thermal/ magnetic	kg	
EB2R-M 125/3L 20A 3P	20	004671513	3	25/19	0,63-1/12	1,1	1
EB2R-M 125/3L 32A 3P	32	004671514			0,63-1/12	1,1	
EB2R-M 125/3L 50A 3P	50	004671515			0,63-1/12	1,1	
EB2R-M 125/3L 63A 3P	63	004671516			0,63-1/12	1,1	
EB2R-M 125/3L 100A 3P	100	004671517			0,63-1/12	1,1	
EB2R-M 125/3L 125A 3P	125	004671518			0,63-1/10	1,1	
EB2R-M 125/4L 20A 4P	20	004671519	4		0,63-1/12	1,4	
EB2R-M 125/4L 32A 4P	32	004671520			0,63-1/12	1,4	
EB2R-M 125/4L 50A 4P	50	004671521			0,63-1/12	1,4	
EB2R-M 125/4L 63A 4P	63	004671522			0,63-1/12	1,4	
EB2R-M 125/4L 100A 4P	100	004671523			0,63-1/12	1,4	
EB2R-M 125/4L 125A 4P	125	004671524			0,63-1/10	1,4	

Note: all internal and external accessories can be used with EB2R – only exceptions are DA shunt trip unit and NA undervoltage trip unit (cannot be fitted to EB2R)

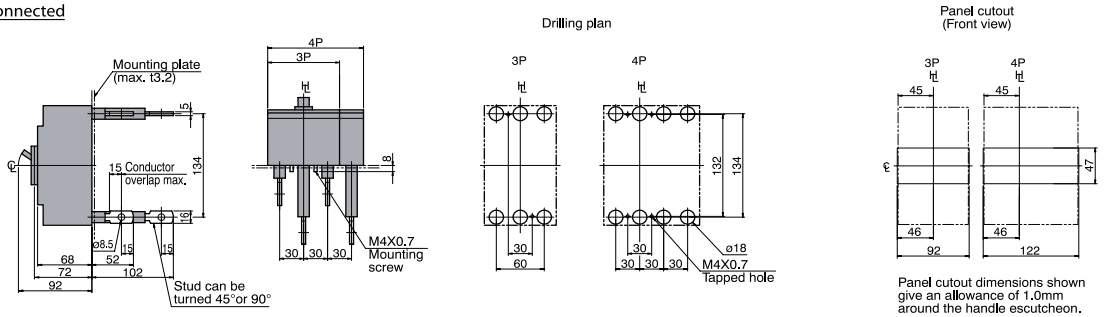
Dimensions

EB2R 125

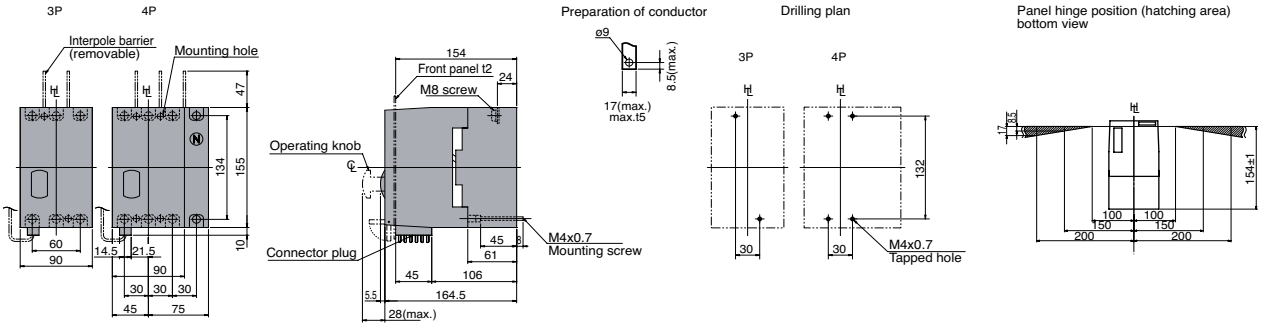
Front connected



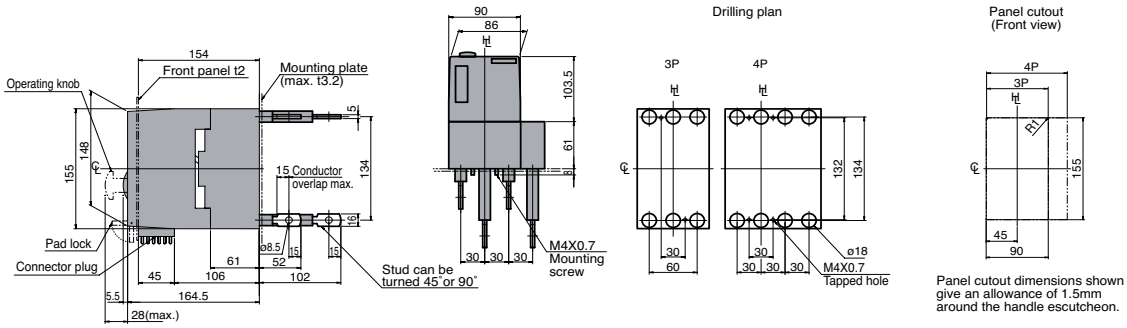
Rear connected



Front connected with Motor Operator



Rear connected with Motor Operator



ETIBREAK EB2R 250

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} [kA]	Adjustment thermal/ magnetic	kg	
EB2R 250/3L 160A 3P	160	004671581	3	25/19	0.63-1/13	1,5	1
EB2R 250/3L 250A 3P	250	004671582	3	25/19	0.63-1/10	1,5	1
EB2R 250/4L 160A 4P	160	004671583	4	25/19	0.63-1/13	1,9	1
EB2R 250/4L 250A 4P	250	004671584	4	25/19	0.63-1/10	1,9	1

Note: all internal and external accessories can be used with EB2R – only exceptions are DA shunt trip unit and NA undervoltage trip unit (cannot be fitted to EB2R)

Residual current monitor and pre trip module - ETIBREAK EB2R 250

Type	I_n [A]	Code No.	Poles	I_{cu}/I_{cs} [kA]	Adjustment thermal/ magnetic	kg	
EB2R-M 250/3L 160A 3P	160	004671585	3	25/19	0,63-1/13	1,5	1
EB2R-M 250/3L 250A 3P	250	004671586			0,63-1/10	1,5	
EB2R-M 250/4L 160A 4P	160	004671587	4		0,63-1/13	1,9	
EB2R-M 250/4L 250A 4P	250	004671588			0,63-1/10	1,9	

Note: all internal and external accessories can be used with EB2R – only exceptions are DA shunt trip unit and NA undervoltage trip unit (cannot be fitted to EB2R)

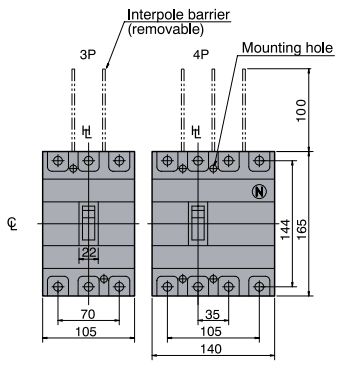
Residual current monitor and pre trip module (optional)

- normally open alarm contact (2A, 250V AC) closes on detection of residual current. Alarm treshold is adjustable.
- Green LED indicates voltage is present
- Red LED provides visual indications of residual current.
- Can be configured to provide trip + alarm or alarm only.
- Remote trip terminals allow tripping by push-button
- Can be configured to provide voltage drop protection.

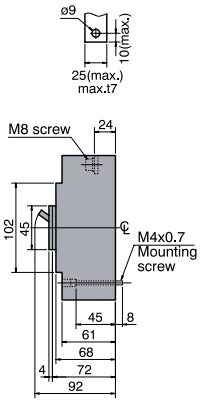
Dimensions

EB2R 250

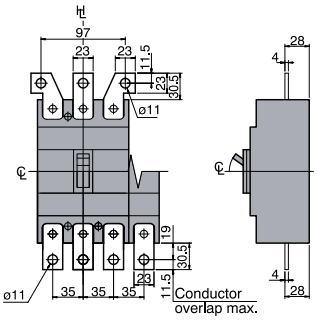
Front connected



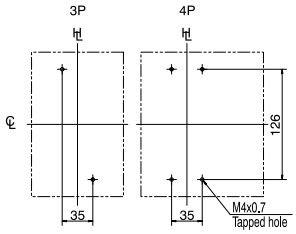
Preparation of conductor



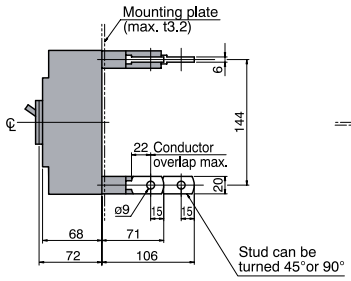
With terminal bars
(optional)

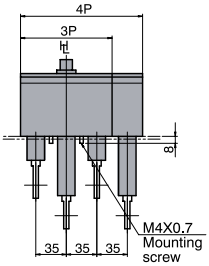


Drilling plan

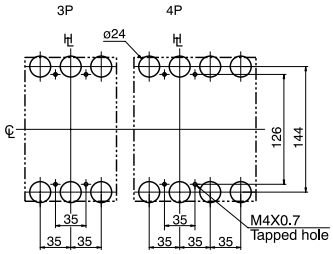


Rear connected

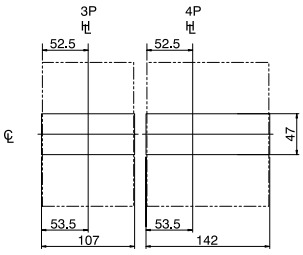




Drilling plan

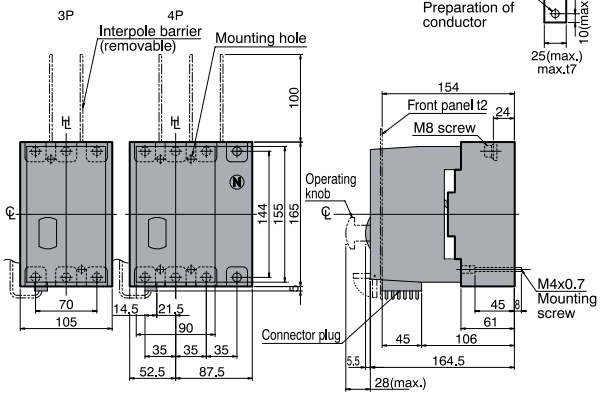


Panel cutout
(Front view)



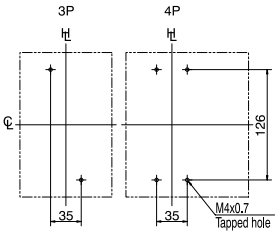
Panel cutout dimensions shown
give an allowance of 1.0mm
around the handle escutcheon.

Front connected with Motor Operator

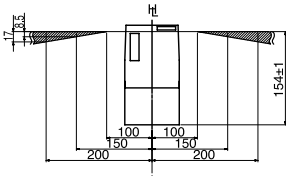


Preparation of
conductor

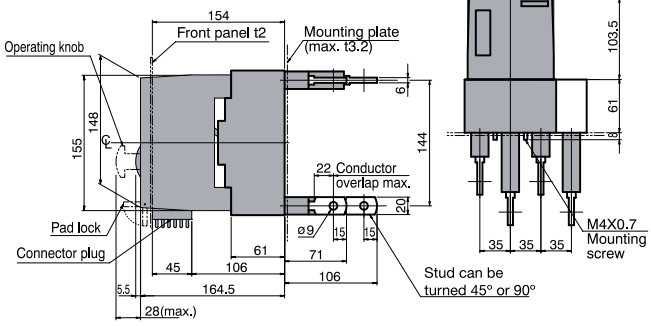
Drilling plan

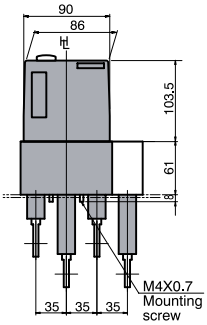


Panel hinge position (hatching area)
bottom view

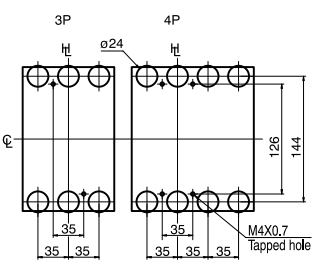


Rear connected with Motor Operator

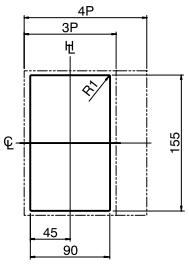




Drilling plan



Panel cutout
(Front view)



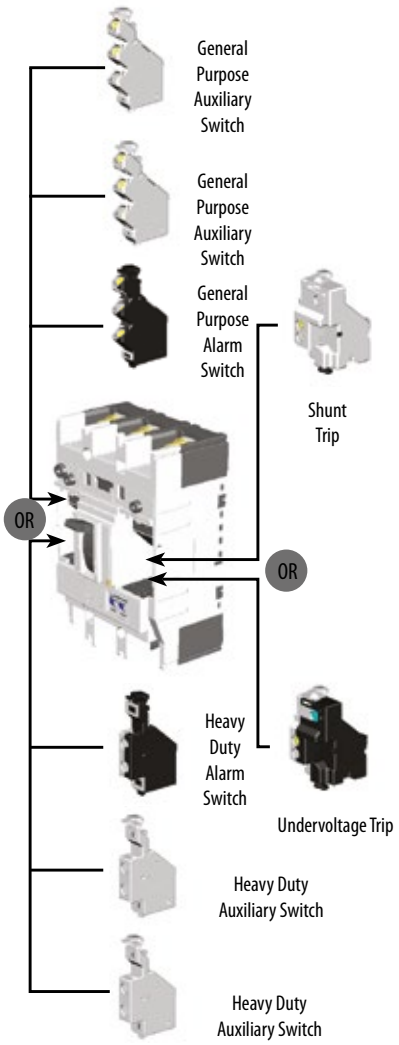
Panel cutout dimensions shown
give an allowance of 1.5mm
around the handle escutcheon.

ETIBREAK Accessories

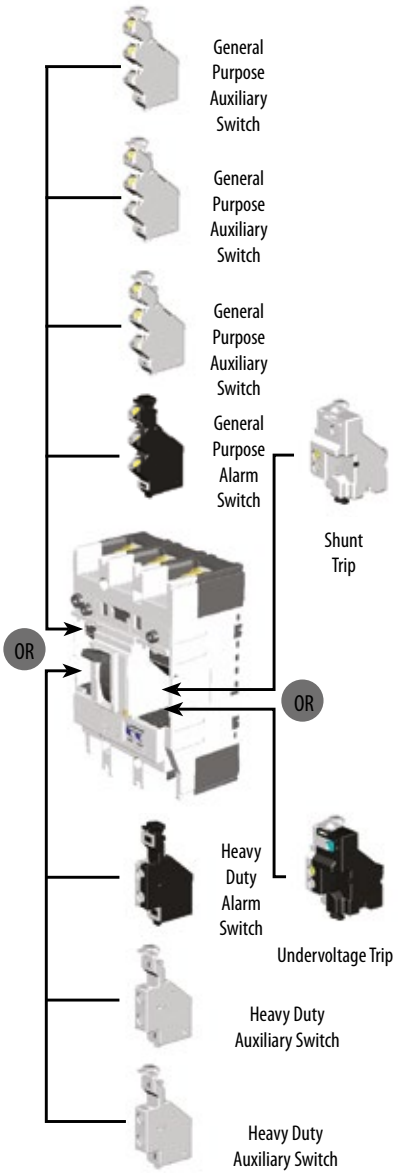
Internal accessories

Ampere Frame size (A):

125, 160, 250

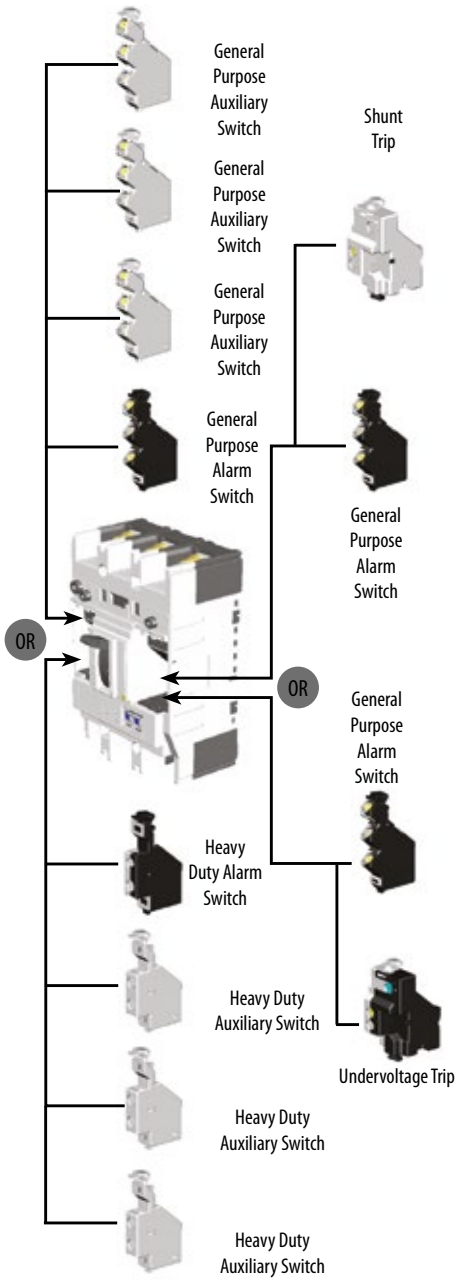


400, 630

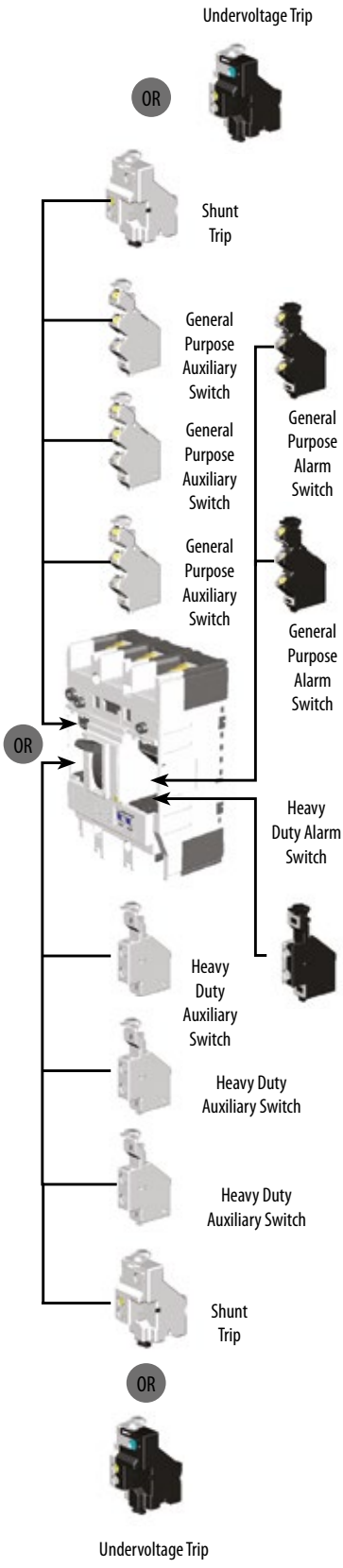


Ampere Frame size (A):

800, 1000



1250, 1600



- Status indication switches mount in the left side of the MCCB. General purpose and heavy duty status indication switches cannot be mixed in the same MCCB. Only one alarm switch can be fitted to an MCCB.
- Shunt trips and undervoltage trips mount in the right side of the MCCB.
- It is not possible to install a shunt trip and an undervoltage trip in an MCCB as they occupy the same location. Undervoltage trips can provide remote tripping if necessary by wiring a normally closed contact or pushbutton in series with the protected supply.
- Undervoltage trips with time delays require an external time delay controller which clips to the side of the MCCB.

Undervoltage trip for EB2, ED2 125-630

Internal accessories can be mounted by customer	Code No.	Description	Poles	
Undervoltage trip unit NA2 125-630AF AC200-240V	004671153	200-240 V AC	3, 4	1/1
Undervoltage trip unit NA2 125-630AF AC380-450V	004671154	380-450 V AC	3, 4	1/1
Undervoltage trip unit NA2 125-630AF DC24V	004671155	24 V DC	3, 4	1/1
Undervoltage trip unit NA2 125-630AF DC100-120V	004671156	100-120 V DC	3, 4	1/1
Undervoltage trip unit NA2 125-630AF DC200-240V	004671157	200-240 V DC	3, 4	1/1

Important note: The shunt trip unit DA and undervoltage trip unit NA cannot be mounted in the same breaker

NA2

Undervoltage trip for EB2, ED2 800-1600

Internal accessories can be mounted by customer	Code No.	Description	Poles	
Undervoltage trip unit NA2 800-1600AF AC380-415V	004672299	AC 380-415V	3, 4	1/1
Undervoltage trip unit NA2 800-1600AF AC220-240V	004672300	AC 220-240 V	3, 4	1/1
Undervoltage trip unit NA2 800-1600AF AC415-450V	004672301	AC 415-450 V	3, 4	1/1
Undervoltage trip unitNA2 800-1600AF DC24V	004672302	24 V DC	3, 4	1/1
Undervoltage trip unit NA2 800-1600AF DC100-120V	004672303	100-120 V DC	3, 4	1/1
Undervoltage trip unit NA2 800-1600AF DC200-240V	004672304	200-240 V DC	3, 4	1/1

Important note: The shunt trip unit DA and undervoltage trip unit NA cannot be mounted in the same breaker

PS2

Undervoltage trip for EB2, ED2 125-630AF - Time Delay

Internal accessories can be mounted by customer	Code No.	Description	Poles	
NA2 TD 125-630AF AC230-240V	004672341	230-240V AC	3, 4	1/1
NA2 TD 125-630AF AC380-415V	004672342	380-415V AC	3, 4	1/1
NA2 TD 125-630AF AC440-450V	004672343	440-450V AC	3, 4	1/1
NA2 TD 125-630AF DC24V	004672344	24V DC	3, 4	1/1
NA2 TD 125-630AF DC115-120V	004672345	115-120V DC	3, 4	1/1

Important note: The shunt trip unit DA and undervoltage trip unit NA cannot be mounted in the same breaker
Time delay of 500ms
Time delay units are fitted to the outside of MCCBs

Undervoltage trip for EB2, ED2 400-630AF only 4p - Time Delay

Internal accessories can be mounted by customer	Code No.	Description	Poles	
NA2 TD 4p 400-630AF AC230-240V	004672365	230-240V AC	4	1/1
NA2 TD 4p 400-630AF AC380-415V	004672366	380-415V AC	4	1/1
NA2 TD 4p 400-630AF AC440-450V	004672367	440-450V AC	4	1/1
NA2 TD 4p 400-630AF DC24V	004672368	24V DC	4	1/1
NA2 TD 4p 400-630AF DC115-120V	004672369	115-120V DC	4	1/1

Important note: The shunt trip unit DA and undervoltage trip unit NA cannot be mounted in the same breaker
Time delay of 500ms
Time delay units are fitted to the outside of MCCBs

Undervoltage trip for EB2, ED2 800-1000AF - Time Delay

Internal accessories can be mounted by customer	Code No.	Description	Poles	
NA2 TD 800-1000AF AC230-240V	004672305	230-240V AC	3, 4	1/1
NA2 TD 800-1000AF AC380-415V	004672306	380-415V AC	3, 4	1/1
NA2 TD 800-1000AF AC440-450V	004672307	440-450V AC	3, 4	1/1
NA2 TD 800-1000AF DC24V	004672308	24V DC	3, 4	1/1
NA2 TD 800-1000AF DC115-120V	004672309	115-120V DC	3, 4	1/1

Important note: The shunt trip unit DA and undervoltage trip unit NA cannot be mounted in the same breaker
Time delay of 500ms
Time delay units are fitted to the outside of MCCBs

Undervoltage trip for EB2, ED2 1250-1600AF - Time Delay

Internal accessories can be mounted by customer	Code No.	Description	Poles	
NA2 TD 1250-1600AF AC230-240V	004672390	230-240V AC	3, 4	1/1
NA2 TD 1250-1600AF AC380-415V	004672391	380-415V AC	3, 4	1/1
NA2 TD 1250-1600AF AC440-450V	004672392	440-450V AC	3, 4	1/1
NA2 TD 1250-1600AF DC24V	004672393	24V DC	3, 4	1/1
NA2 TD 1250-1600AF DC115-120V	004672394	115-120V DC	3, 4	1/1

Important note: The shunt trip unit DA and undervoltage trip unit NA cannot be mounted in the same breaker
Time delay of 500ms
Time delay units are fitted to the outside of MCCBs

Auxiliary & Alarm switch for EB2, ED2 125-1600 AF

Internal accessories can be mounted by customer	Code No.	Description	Poles	
Auxiliary switch, PS2 125-1600AF	004671141	1 changeover contact	3, 4	1/1
Auxiliary switch, heavy duty PS2-NO 125-1600AF	004671142	1 contact, NO	3, 4	1/1
Auxiliary switch, heavy duty PS2-NC 125-1600AF	004671143	1 contact, NC	3, 4	1/1
Alarm switch SS2 125-1600AF	004671144	1 changeover contact	3, 4	1/1
Alarm switch, heavy duty SS2-NO 125-1600AF	004671145	1 contact, NO	3, 4	1/1
Alarm switch, heavy duty SS2-NC 125-1600AF	004671146	1 contact, NC	3, 4	1/1

SS2

Shunt trip for EB2, ED2 125-1000A

Internal accessories can be mounted by customer	Code No.	Description	Poles	
DA2 125-1000AF AC200-240V	004671147	AC200-240V	3, 4	1/1
DA2 125-1000AF AC380-450V	004671148	AC380-450V	3, 4	1/1
DA2 125-1000AF DC24V	004671149	DC24V	3, 4	1/1
DA2 125-1000AF DC48V	004671150	DC48V	3, 4	1/1
DA2 125-1000AF DC100-120V	004671151	DC110-120V	3, 4	1/1
DA2 125-1000AF DC 200-240V	004671152	DC 200-240V	3, 4	1/1
DA2 125-1000AF DC 12V	004671159	12V DC	3, 4	1/1
DA2 125-1000AF AC 24V	004671189	24V AC	3, 4	1/1

Important note: The shunt trip unit DA and undervoltage trip unit NA cannot be mounted in the same breaker

DA2

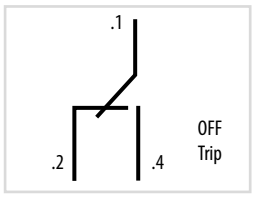
Shunt trip for EB2, ED2 1250 & 1600A

Internal accessories can be mounted by customer	Code No.	Description	Poles	
DA2 1250-1600AF AC200-240V	004671135	AC200-240V	3, 4	1/1
DA2 1250-1600AF AC380-450V	004671136	AC380-450V	3, 4	1/1
DA2 1250-1600AF DC24V	004671137	DC24V	3, 4	1/1
DA2 1250-1600AF DC48V	004671138	DC48V	3, 4	1/1
DA2 1250-1600AF DC100-120V	004671139	DC110-120V	3, 4	1/1
DA2 1250-1600AF DC 200-240V	004671140	DC 200-240V	3, 4	1/1
DA2 1250-1600AF AC 24V	004671190	24V AC	3, 4	1/1

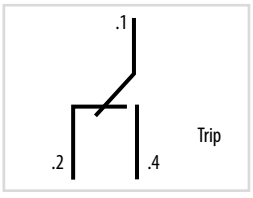
Important note: The shunt trip unit DA and undervoltage trip unit NA cannot be mounted in the same breaker

General Purpose Auxiliary Switch

General Purpose Alarm Switch



Terminal Designations and Function of General Purpose Auxiliary Switch

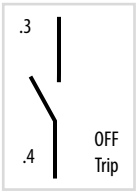


Terminal Designations and Function of General Purpose Alarm Switch

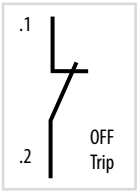
General purpose auxiliaries and alarm switch ratings

Volts (V)	AC Amperes (A)		Volts (V)	DC Amperes (A)		Minimum Load
	Resistive Load	Inductive Load		Resistive Load	Inductive Load	
440	-	-	250	-	-	100mA -> 15V DC.
240	3	2	125	0.4	0.05	
110	3	2	30	3	2	

Heavy Duty Auxiliary Switch

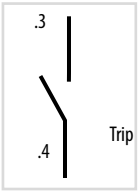


Terminal Designations and Function of Heavy Duty Auxiliary Switch NO contact

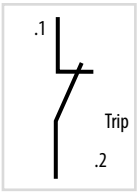


Terminal Designations and Function of Heavy Duty Auxiliary Switch, NC contact

Heavy Duty Alarm Switch



Terminal Designations and Function of Heavy Duty Alarm Switch, NO contact



Terminal Designations and Function of Heavy Duty Alarm Switch, NC contact

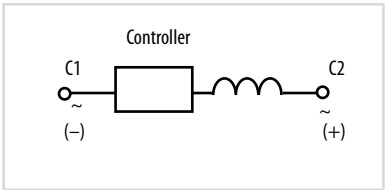
Ratings of Heavy Duty Auxiliary and Alarm switches

Volts (V)	AC Amperes (A)		Volts (V)	DC Amperes (A)	
	Resistive Load	Inductive Load		Resistive Load	Inductive Load
440	3	3	250	0.5	0.5
240	4	4	125	1	1
110	5	5	48	3	2.5
48	6	6	24	6	2.5

Shunt Trips

Ratings of Shunt Trips

Rated Voltage	Voltage AC		Voltage DC			
	200-240	380-450	24	48	100-120	200-240
Excitation Current (A)	0.014	0.0065	0.03	0.03	0.011	0.011

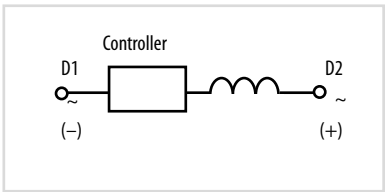


Terminal Designations of Shunt Trips

Undervoltage Trips

Ratings of Undervoltage Trips

Rated Voltage	Power supply capacity (VA) Voltage AC		Excitation current (mA) Voltage DC		
	200-240	380-450	24	100-120	200-240
Power Supply Capacity (A)	1.4	2.28	23	10	10



Terminal Designations of Undervoltage Trips

External accessories

IZ – Interpole barrier. Installed between MCCB teminal, which increases the distance between poles to reduce the possibility of creepage.

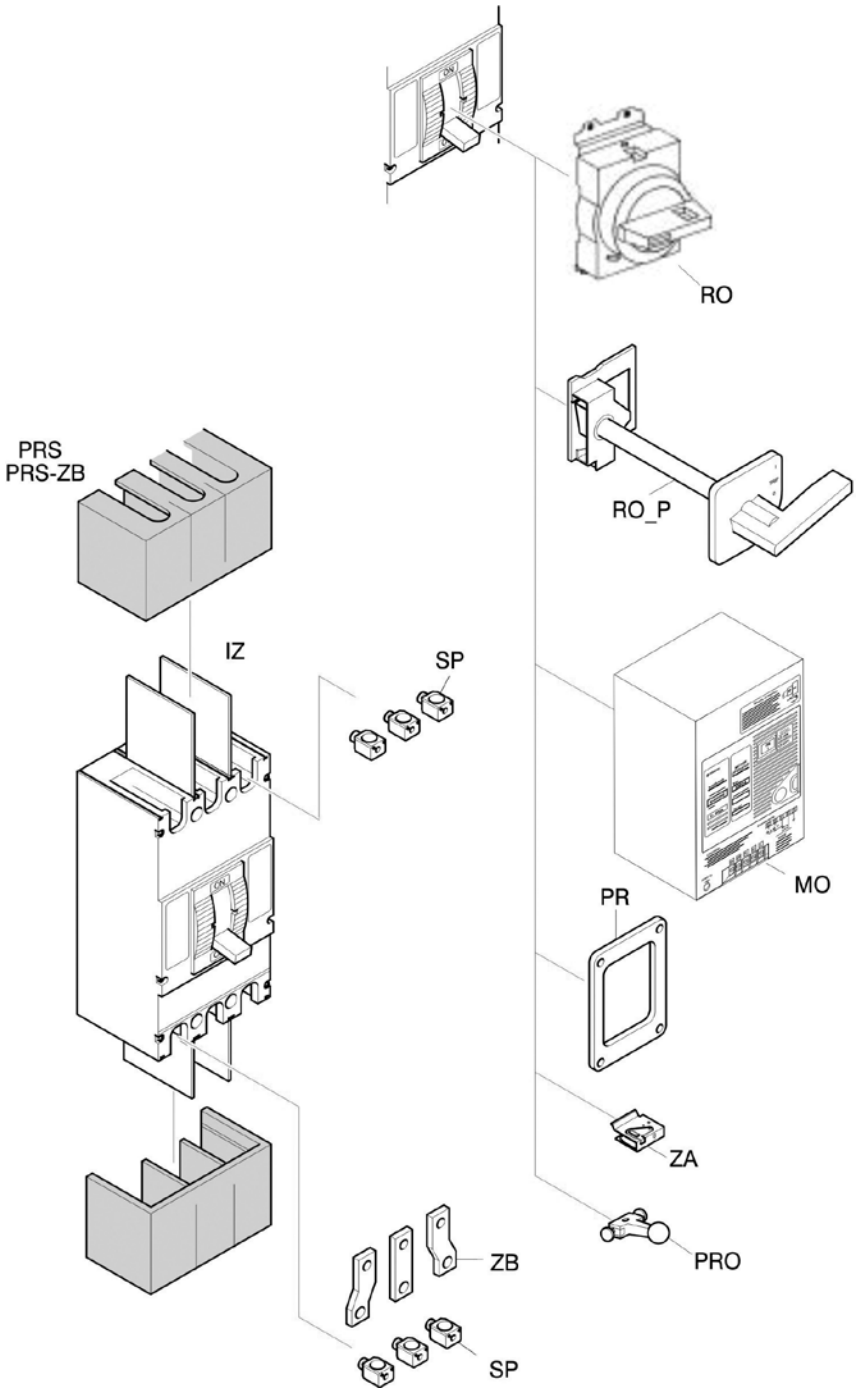
PRS – Terminal cover. The terminal covers are applied to the MCCB to prevent accidental contact with live parts and thereby protection against direct contact.

PRS-ZB – Terminal cover for att. Busbar. The terminal covers are applied to the MCCB to prevent accidental contact with live parts and thereby protection against direct contact. The width is different because of attach busbar.

SP – Solderless terminal

RO – Operating handle, breaker mounted. It's used when MCCB is installed in control centre/ switchboard

RO_P – Operating handle, panel mounted, variable depth. This consists of an operating mechanism mounted on the breaker, an operating handle mounted on the panel door and a square shaft to connect the mechanism with the handle.



MO – Motor operator. Enabling to switch MCCB ON or OFF remotly.
PR – Door flange. Accessory for mounting on panel door.
ZA – Handle lock. Enables the MCCB to be padlocked in neither the ON or OFF position.

ZB – Attach busbar. Used for easier instalation on busbar systems (widen terminals).
PRO – Handle extension. Used for easier manipulation ON/OFF at bigger MCCB's.

Accessories for EB2, ED2 125-1600 AF

	Code No	Poles	
Plug for aux. And alarm switches PSPSS 125-630AF	004671457	3, 4	1/1
Plug for shunt trips and underv. trips PSHUV 125-630AF	004671458	3, 4	1/1
Socket – for internal accessories PIO 125-1000AF	004671459	3, 4	1/1
Mechanical interlock, MW cable 1m	004671178	3, 4	1/1
Mechanical interlock, MW cable 1,5m	004671179	3, 4	1/1
OCR checker 200-240V AC	004672310	3, 4	1/1
Terminal cover lock PZ 125-630AF	004672400	3, 4	1/1

PSPSS / PSHUV

Accessories for EB2, ED2 125

	Code No	Poles	
Attach busbar, ZB2 125/3 Straight	004671161	3	3
Attach busbar, ZB2 125/4 Straight	004671162	4	3
Solderless Terminal, SP2 125/3	004671163	3	4
Solderless Terminal, SP2 125/4	004671164	4	4
Rear connections, RC2 125/3	004671187	3	3
Rear connections, RC2 125/4	004671188	4	4

PIO

ZB2 Straight

Accessories for EB2, ED2 125

	Code No	Poles	
Motor Operator, MO2 125 AC230-240V	004671165	3, 4	1
Motor Operator, MO2 125 AC100-110V	004671311	3, 4	1
Motor Operator, MO2 125 DC24V	004671313	3, 4	1
Motor Operator, MO2 125 DC48V	004671314	3, 4	1
Motor Operator, MO2 125 DC100V	004671315	3, 4	1
Motor Operator, MO2 125 AC230-240V, reset	004671166	3, 4	1
Motor Operator, MO2 125 AC100-110V, reset	004671316	3, 4	1
Motor Operator, MO2 125 DC24V, reset	004671318	3, 4	1
Motor Operator, MO2 125 DC48V, reset	004671319	3, 4	1
Motor Operator, MO2 125 DC100V, reset	004671320	3, 4	1
Motor Operator, MO2 125 DC220V, reset	004671327	3, 4	1

MO2

Accessories for EB2, ED2 125

	Code No	Poles	
Door Flange, PR2 125-250	004671167	3, 4	1
Door Flange, PR2 - mot 125-250	004671472	3, 4	1
Breaker mounted handle IP3X, RO2 125, black	004671168	3, 4	1
Breaker mounted handle IP3X, RO2 125, keylock (cylindrical), black	004671169	3, 4	1
Breaker mounted handle IP3X, RO2 125, red	004671321	3, 4	1
Breaker mounted handle IP3X, RO2 125, keylock (cylindrical), red	004671322	3, 4	1
Door mounted handle IP55, RO2 125P, black	004671170	3, 4	1
Door mounted handle IP65, RO2 125P, keylock (cylindrical), black	004671171	3, 4	1
Door mounted handle IP55, RO2 125P, red	004671323	3, 4	1
Door mounted handle IP65, RO2 125P, keylock (cylindrical), red	004671324	3, 4	1

Handle operating mechanism can be padlocked in OFF

IP3X RO2

Accessories for EB2, ED2 125

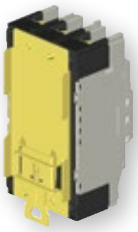
	Code No	Poles	
Slide mechanical interlock, MS 125 3P, MO or RO assembly not possible	004671172	3	1
Slide mechanical interlock, MS 125 4P, MO or RO assembly not possible	004671173	4	1
Link mechanical interlock, MLR 125 right, MO or RO assembly possible	004671174	3, 4	1
Link mechanical interlock, MLL 125 left 3p, MO or RO assembly possible	004671175	3	1
Link mechanical interlock, MLL 125 left 4p, MO or RO assembly possible	004671176	4	1
Wire mechanical interlock, MW 125, mechanism, MO or RO assembly possible	004671177	3, 4	1

Link mechanical configuration; MLR_right + MLL_left
Wire mechanical configuration; 2x MW_mech. + MW_cable

MLR+MLL

Accessories for EB2, ED2 125

	Code No	Poles	
OCR sealing cover 125 & 250	004671160	3, 4	1
Handle locks, ZA2 125-250	004671180	3, 4	1
Terminal cover lock, PZ 125-630AF	004672400	3, 4	1
Terminal cover, PRS2 125/3, front	004671181	3	1
Terminal cover, PRS2 125/4, front	004671182	4	1
Terminal cover, PRS2-SP 125/3, cable clamps	004671183	3	1
Terminal cover, PRS2-SP 125/4, cable clamps	004671184	4	1
Terminal cover, PRS2-NPF 125/3, plug-in	004671473	3	1
Terminal cover, PRS2-NPF 125/4, plug-in	004671474	4	1
Interpol barrier, IZ2 125	004671185	3, 4	1
DIN rail adapter, DIN 125 & 250	004671186	3, 4	1



DIN 125, 250

PRS2

Accessories for EB2, ED2 125

	Code No	Poles	
Fixed plug-in 3-p, NPF 125	004671451	3	1
Fixed plug-in 4-p, NPF 125	004671452	4	1
Plug-in Conversion 3-p, NPI 125	004671453	3	1
Plug-in Conversion 4-p, NPI 125	004671454	4	1
Extension terminal for fixed Plug-in 3-p, SK3 125	004671455	3	3
Extension terminal for fixed Plug-in 4-p, SK4 125	004671456	4	4

- basic configuration: fixed plug-in + plug-in conversion
- extension terminals is used when fixed part of plug-in is under mounting plate - not used for basic configuration
- if additional accessories are installed in MCCB, plugs and sockets (PSPSS, PSHUV and PIO) are required

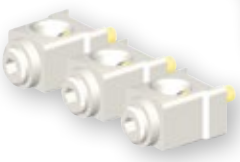
NPF

NPI

Accessories for EB2, ED2 160 and EB2, ED2 250

	Code No	Poles	
Attach busbar ZB2 250/3 Offset	004671191	3	3
Attach busbar, ZB2 250/4 Straight	004671192	4	4
Attach busbar, ZB2 250/3 Straight	004671325	3	3
Solderless Terminal, SP2 250/3	004671193	3	3
Solderless Terminal, SP2 250/4	004671194	4	4
Rear connections, RC2 250/3S-L	004671477	3	3
Rear connections, RC2 250/3E	004671478	3	3
Rear connections, RC2 250/4S-L	004671479	4	4
Rear connections, RC2 250/4E	004671480	4	4
Busbar adapter 3p, DA-60/250/3/FE-5	001696162	3	1
Busbar adapter 4p, DA-60/250/4/FE-5	001696163	4	1

ZB2 Offset



SP2

RC2

DA-60

Accessories for EB2, ED2 160 and EB2, ED2 250

	Code No	Poles	
Motor Operator, MO2 250 AC230-240V	004671195	3, 4	1
Motor Operator, MO2 250 AC100-110V	004671331	3, 4	1
Motor Operator, MO2 250 DC24V	004671333	3, 4	1
Motor Operator, MO2 250 DC48V	004671334	3, 4	1
Motor Operator, MO2 250 DC100V	004671335	3, 4	1
Motor Operator, MO2 250, AC230-240, reset	004671196	3, 4	1
Motor Operator, MO2 250 AC100-110V, reset	004671336	3, 4	1
Motor Operator, MO2 250 DC24V, reset	004671338	3, 4	1
Motor Operator, MO2 250 DC48V, reset	004671339	3, 4	1
Motor Operator, MO2 250 DC100V, reset	004671340	3, 4	1
Motor Operator, MO2 250 DC 200-220V, reset	004671328	3, 4	1

MO2

Accessories for EB2, ED2 160 and EB2, ED2 250

	Code No	Poles	
Door Flange, PR2 125-250	004671167	3, 4	1
Door Flange, PR2 - mot 125-250	004671472	3, 4	1
Breaker mounted handle IP3X, RO2 250, black	004671197	3, 4	1
Breaker mounted handle IP3X, RO2 250, keylock (cylindrical), black	004671198	3, 4	1
Breaker mounted handle IP3X, RO2 250, red	004671341	3, 4	1
Breaker mounted handle IP3X, RO2 250, keylock (cylindrical), red	004671342	3, 4	1
Door mounted handle IP55, RO2 250P, black	004671199	3, 4	1
Door mounted handle IP65, RO2 250P, black	004671200	3, 4	1
Door mounted handle IP55, RO2 250P, red	004671343	3, 4	1
Door mounted handle IP65, RO2 250P, red	004671344	3, 4	1

Handle operating mechanism can be padlocked in OFF

IP3X RO2

Accessories for EB2, ED2 160 in EB2, ED2 250

	Code No	Poles	
Slide mechanical interlock, MS 250 3P, MO or RO assembly not possible	004671201	3	1
Slide mechanical interlock, MS 250 4P, MO or RO assembly not possible	004671202	4	1
Link mechanical interlock, MLR 250 right, MO or RO assembly possible	004671203	3, 4	1
Link mechanical interlock, MLL 250 left 3p, MO or RO assembly possible	004671204	3	1
Link mechanical interlock, MLL 250 left 4p, MO or RO assembly possible	004671205	4	1
Wire mechanical interlock, MW 250, mechanism, MO or RO assembly possible	004671206	3, 4	1

Link mechanical interlock configuration; MLR_right + MLL_left
Wire mechanical interlock configuration; 2xMW_mech. + MW_cable

MS

Accessories for EB2, ED2 160 and EB2, ED2 250

	Code No	Poles	
OCR sealing cover 125 & 250	004671160	3, 4	1
Handle locks, ZA2 125-250	004671180	3, 4	1
Terminal cover lock, PZ 125-630AF	004672400	3, 4	1
Terminal cover, PRS2 250/3, front	004671207	3	1
Terminal cover, PRS2 250/4, front	004671208	4	1
Terminal cover, PRS2-SP 250/3, cable clamps	004671209	3	1
Terminal cover, PRS2-SP 250/4, cable clamps	004671210	4	1
Terminal cover, PRS2-NPF 250/3, plug-in	004671475	3	1
Terminal cover, PRS2-NPF 250/4, plug-in	004671476	4	1
DIN rail adapter, DIN 125 & 250	004671186	3, 4	1

PRS2

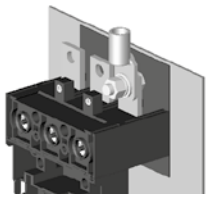
PRS2 SP

Accessories for EB2, ED2 160 and EB2, ED2 250

	Code No	Poles	
Interpol barrier, IZ2 250	004671211	3, 4	1
Lateral block, LTBL 250, left	004671212	3. 4	1
Lateral block, LTBR 250, right	004671213	3, 4	1
Fixed plug-in 3-p, NPF 250	004671460	3	1
Fixed plug-in 4-p, NPF 250	004671461	4	1
Plug-in Conversion 3-p, NPI 250 for use with EB2 160/3S, 250/3L_S	004671462	3	1
Plug-in Conversion 4-p, NPI 250 for use with EB2 160/4S, 250/4L_S	004671463	4	1
Plug-in Conversion 3-p, NPI 250_E for use with EB2 250/3E	004671485	3	1
Plug-in Conversion 4-p, NPI 250_E for use with EB2 250/4E	004671486	4	1
Extension terminal for fixed Plug-in 3-p, SK3 250	004671464	3	set = 3 pcs
Extension terminal for fixed Plug-in 4-p, SK4 250	004671465	4	set = 4 pcs

- basic configuration: fixed plug-in + plug-in conversion
- extension terminals is used when fixed part of plug-in is under mounting plate - not used for basic configuration
- if additional accessories are installed in MCCB, plugs and sockets (PSPSS, PSHUV and PIO) are required,

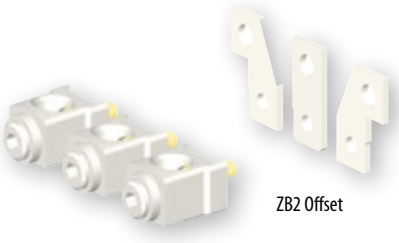
IZ2



SK3

Accessories for EB2, ED2 400 and EB2, ED2 630

	Code No	Poles	
Attach busbar, ZB2 400/3 Offset	004671221	3	set = 3 pcs
Attach busbar, ZB2 400/4 Offset	004671222	4	set = 4 pcs
Attach busbar, ZB2 400/3 Straight	004671326	3	set = 3 pcs
Attach busbar, ZB2 630/3 Straight	004671223	3	set = 3 pcs
Attach busbar, ZB2 ZB2 630/3 Offset	004671220	3	set = 3 pcs
Attach busbar, ZB2 630/4 Offset	004671224	4	set = 4 pcs
Solderless Terminal, SP2 400/3	004671225	3	set = 3 pcs
Solderless Terminal, SP2 400/4	004671226	4	set = 4 pcs
Rear connections, RC2 400/3	004671247	3	3
Rear connections, RC2 400/4	004671248	4	4
Rear connections, RC2 630/3	004671249	3	3
Rear connections, RC2 630/4	004671250	4	4



ZB2 Offset

SP2

RC2

Accessories for EB2, ED2 400 and EB2, ED2 630

	Code No	Poles	
Motor Operator, MO2 630, AC100-240V	004671227	3, 4	1
Motor Operator, MO2 630 DC24V	004671441	3, 4	1
Motor Operator, MO2 630 DC100-120V	004671442	3, 4	1
Motor Operator, MO2 630, AC100-240V, reset	004671228	3, 4	1
Motor Operator, MO2 630 DC24V, reset	004671443	3, 4	1
Motor Operator, MO2 630 DC100-120V, reset	004671444	3, 4	1
Motor Operator, MO2 630 DC200-220V, reset	004671329	3, 4	1

MO2

Accessories for EB2, ED2 400 and EB2, ED2 630

	Code No	Poles	
Breaker mounted handle IP3X, RO2 630, black	004671229	3, 4	1
Breaker mounted handle IP3X, RO2 630, keylock, black	004671230	3, 4	1
Breaker mounted handle IP3X, RO2 630, red	004671445	3, 4	1
Breaker mounted handle IP3X, RO2 630, keylock, red	004671446	3, 4	1
Door mounted handle IP55, RO2 630 P, black	004671231	3, 4	1
Door mounted handle IP65, RO2 630P, black	004671232	3, 4	1
Door mounted handle IP55, RO2 630P, red	004671447	3, 4	1
Door mounted handle IP65, RO2 630P, red	004671448	3, 4	1

Handle operating mechanism can be padlocked in OFF

IP55, RO2P

Accessories for EB2, ED2 400 and EB2, ED2 630

	Code No	Poles	
Slide mechanical interlock, MS 630 3P, MO or RO assembly not possible	004671233	3	1
Slide mechanical interlock, MS 630 4P, MO or RO assembly not possible	004671234	4	1
Link mechanical interlock, MLR 630 right , MO or RO assembly possible	004671235	3, 4	1
Link mechanical interlock, MLL 630 left 3p, MO or RO assembly possible	004671236	3	1
Link mechanical interlock, MLL 630 left 4p, MO or RO assembly possible	004671237	4	1
Wire mechanical interlock, MW 630, mechanism, MO or RO assembly possible	004671238	3, 4	1

Link mechanical interlock configuration; MLR_right + MLL_left
Wire mechanical interlock configuration; 2xMW_mech. + MW_cable

MW

Accessories for EB2, ED2 400 and EB2, ED2 630

	Code No	Poles	
Handle locks, ZA2 400/1000	004671239	3, 4	1
Terminal cover lock, PZ 125-630AF	004672400	3, 4	1
Terminal cover, PRS2 630/3, front	004671240	3	1
Terminal cover, PRS2 630/4, front	004671241	4	1
Terminal cover, PRS2-SP 630/3, cable clamps	004671242	3	1
Terminal cover, PRS2-SP 630/4, cable clamps	004671243	4	1
Interpol barrier, IZ2 400-1600	004671244	3, 4	1
Lateral block, LTBL 400-1000, left	004671245	3, 4	1
Lateral block, LTBR 400-1000, right	004671246	3, 4	1
Door Flange , PR2 400-630	004671449	3, 4	1

PRS2

Accessories for EB2, ED2 400 and EB2, ED2 630

	Code No	Poles	
Fixed plug-in 3-p, NPF 400-630	004671466	3	1
Fixed plug-in 4-p, NPF 400-630	004671467	4	1
Plug-in Conversion 3-p, NPI 400-630AF - 400A 3p	004671468	3	1
Plug-in Conversion 4-p, NPI 400-630AF - 400A 4p	004671469	4	1
Plug-in Conversion 3-p, NPI 400-630AF - 630A 3p	004671487	3	1
Plug-in Conversion 4-p, NPI 400-630AF - 630A 4p	004671488	4	1
Extension terminal for fixed Plug-in 3-p, SK3 400-630	004671470	3	set = 3 pcs
Extension terminal for fixed Plug-in 4-p, SK4 400-630	004671471	4	set = 4 pcs

- at 630A plug-in Conversion is max Rated current 504A at 50°C and 535,5A at 30°C and 40°C
- basic configuration: fi xed plug-in + plug-in conversion
- extension terminals is used when fi xed part of plug-in is under mounting plate - not used for basic configuration
- if additional accessories are installed in MCCB, plugs and sockets (PSPSS, PSHUV and PIO) are required,

NPI

Accessories for EB2, ED2 800

	Code No	Poles	
Attach busbar, ZB2 S800-630/3 Straight	004672320	3	set = 3 pcs
Attach busbar, ZB2 S800-630/4 Straight	004672321	4	set = 4 pcs
Attach busbar, ZB2 S800-800/3 Straight	004672322	3	set = 3 pcs
Attach busbar, ZB2 S800-800/4 Straight	004672323	4	set = 4 pcs

ZB2 Straight

Accessories for EB2, ED2 800 and EB2, ED2 1000

	Code No	Poles	
Motor Operator, MO2 800-1000, AC100-240V	004672324	3, 4	1
Motor Operator, MO2 800-1000 DC24-48V	004672325	3, 4	1
Motor Operator, MO2 800-1000 DC100-120V	004672326	3, 4	1
Motor Operator, MO2 800-1000 AC100-240V, reset	004672396	3, 4	1
Motor Operator, MO2 800-1000 DC24-48V, reset	004672397	3, 4	1
Motor Operator, MO2 800-1000 DC100-120V, reset	004672398	3, 4	1

Accessories for EB2, ED2 800 and EB2, ED2 1000

	Code No	Poles	
Handle Operating Mechanism, RO2 800-1000, black	004672327	3, 4	1
Handle Operating Mechanism, RO2 800-1000, key lock, black	004672328	3, 4	1
Handle Operating Mechanism, RO2 800-1000, red	004672329	3, 4	1
Handle Operating Mechanism, RO2 800-1000, key lock, red	004672330	3, 4	1
External Handle Operating Mechanism, RO2 800-1000 P, black	004672331	3, 4	1
External Handle Operating Mechanism, RO2 800-1000P, red	004672332	3, 4	1
Toggle Extension, PRO2 800-1600A	004672319	3, 4	1

Door mounted handle
(door interlock handle)

Accessories for EB2, ED2 800 and EB2, ED2 1000

	Code No	Poles	
Slide mechanical interlock, MS 800 3P, MO or RO assembly not possible	004672333	3	1
Slide mechanical interlock, MS 800 4P, MO or RO assembly not possible	004672334	4	1
Link mechanical interlock, MLR 800-1000 right , MO or RO assembly possible	004672335	3, 4	1
Link mechanical interlock, MLL 800-1000 left 3p, MO or RO assembly possible	004672336	3	1
Link mechanical interlock, MLL 800-1000 left 4p, MO or RO assembly possible	004672337	4	1
Wire mechanical interlock, MW 800-1000, mechanism, MO or RO assembly possible	004672338	3, 4	1

Link mechanical interlock configuration; MLR_right + MLL_left
Wire mechanical interlock configuration; 2xMW_mech. + MW_cable

MW_cable

Accessories for EB2, ED2 800 and EB2, ED2 1000

	Code No	Poles	
Handle locks, ZA2 400/1000	004671239	3, 4	1
Terminal cover, PRS2 800-1000/3, front	004672339	3	1
Terminal cover, PRS2 800-1000/4, front	004672340	4	1
Interpol barrier, IZ2 400-1600	004671244	3, 4	1
Lateral block, LTBL 400-1000, left	004671245	3	1
Lateral block, LTBR 400-1000, right	004671246	4	1

PRS2

Accessories for EB2, ED2 800

	Code No	Poles	
Fixed, Plug-in 3-p, NPF 800/3 AB	004672402	3	1
Fixed, Plug-in 4-p, NPF 800/4 AB	004672404	4	1
Plug-in Conversion 3-p, NPI 800/3	004672405	3	1
Plug-in Conversion 4-p, NPI 800/4	004672406	4	1
3 flat bars for Plug-in mount blocks, ZB2 800/3 NPF	004672407	3	set = 3 pcs
4 flat bars for Plug-in mount blocks, ZB2 800/4 NPF	004672408	4	set = 4 pcs
Plug for aux. and alarm switches PSPSS 800-1000AF	004671491	3, 4	1
Plug for shunt trips and underv. trips PSHUV 800-1000AF	004671492	3, 4	1

- basic configuration: fi xed plug-in + plug-in conversion
- extension terminals is used when fi xed part of plug-in is under mounting plate - not used for basic configuration
- if additional accessories are installed in MCCB, plugs and sockets (PSPSS, PSHUV and PIO) are required,
- AB suitable for attach bars

NPF

NPI

Accessories for EB2, ED2 1250 and EB2, ED2 1600

	Code No	Poles	
Motor Operator, MO2 1250-1600, AC240V	004672350	3, 4	1
Motor Operator, MO2 1250-1600 DC24-48V	004672351	3, 4	1
Motor Operator, MO2 1250-1600 DC100-110V	004672352	3, 4	1

Handle Operating Mechanism

Accessories for EB2, ED2 1250 and EB2, ED2 1600

	Code No	Poles	
Handle Operating Mechanism, RO2 1250-1600, black	004672353	3, 4	1
Handle Operating Mechanism, RO2 1250-1600, key lock, black	004672354	3, 4	1
Handle Operating Mechanism, RO2 1250-1600, red	004672355	3, 4	1
Handle Operating Mechanism, RO2 1250-1600, key lock, red	004672356	3, 4	1
External Handle Operating Mechanism, RO2 1250-1600 P, black	004672357	3, 4	1
External Handle Operating Mechanism, RO2 1250-1600P, red	004672358	3, 4	1
Toggle Extension, PRO2 800-1600A	004672319	3, 4	1

Accessories for EB2, ED2 1250

	Code No	Poles	
Slide mechanical interlock, MS 1250 3P, MO or RO assembly not possible	004672359	3	1
Slide mechanical interlock, MS 1250 4P, MO or RO assembly not possible	004672360	4	1

Accessories for EB2, ED2 1250

	Code No	Poles	
Fixed plug-in 3-p, NPF 1250/3	004672411	3	1
Fixed plug-in 4-p, NPF 1250/4	004672412	4	1
Plug-in Conversion 3-p, NPI 1250/3	004672413	3	1
Plug-in Conversion 4-p, NPI 1250/4	004672414	4	1
AUX terminal 1250A Base Side	004672415	3, 4	1

- Plug in version of MCCB has to be assembled by ETI
- max 3 AUX terminals can be used and each has 5 connections

Accessories for EB2, ED2 1250

	Code No	Poles	
Terminal cover, PRS2 1250/3, front	004672361	3	1
Terminal cover, PRS2 1250/4, front	004672362	4	1
Interpol barrier, IZ2 400-1600	004671244	3, 4	3/4

Terminal Cover

Detailed Technical Data for MCCBs EB2

Product series	description	unit	condition	EB2 125				EB2 160	
Model-type				L	S	H	V	S	H
Number of poles				3, 4			3	3, 4	
Nominal current ratings									
	In	(A)	50°C	20,32,50,				160	
				63,100,125					
Electrical characteristics									
Rated operational voltage	Ue	(V)	AC 50/60 Hz	690	690	690	1100	690	690
			DC	250	250	250	-	250	250
Rated insulation voltage	Ui	(V)		800	800	800	1100	800	800
Rated impulse withstand voltage	Uimp	(kV)		8	8	8	8	8	8
Ultimate breaking capacity	Icu	(kA)	1100V AC	-	-	-	4*/6**	-	-
(IEC, JIS, AS/NZS)			690V AC	-	6	6		7.5	7.5
			525V AC	8	22	25		25	25
			440V AC	15	25	50		25	50
			400/415V AC	25	36	65		36	65
			220/240V AC	35	50	85		65	85
			250V DC	25	25	40		40	40
Service breaking capacity	Ics	(kA)	1100V AC	-	-	-	4	-	-
(IEC, JIS, AS/NZS)	Ics	(kA)	690V AC	-	6	6		7.5	7.5
			525V AC	6	22	22		25	25
			440V AC	12	25	25		25	25
			400/415V AC	19	36/30	36/33		36	36
			220/240V AC	27	50	85		65	85
			250V DC	19	19	40		40	40
Rated breaking capacity (NEMA)		(kA)	480V AC	8	22	25		22	25
			240VAC	35	50	85		65	85
Protection									
Adjustable thermal, adjustable magnetic				■	■		■	■	
Fixed thermal, fixed magnetic				■					
Microprocessor									
Utilisation category				A	A		A	A	
Installation									
Front connection				■	■		■	■	
Attached flat bar				•	•		•	•	
Solderless terminal (cable clamp)				•	•		•	•	
Rear connection				•	•		•	•	
Plug-in				•	•		•	•	
Draw- out				-	-			-	
DIN rail mounting				•	•		-	-	
Dimensions	h	(mm)		155	155		155	165	
	w	(mm)		90	90		90	105	
				120	120			140	
	d	(mm)		68	68		68	68	
Weight		(kg)		1.1	1.1		1.1	1.5	
				1.4	1.4			1.9	
Operation									
Direct Opening Action				■	■		■	■	
Toggle operation				■	■		■	■	
Variable depth / direct mount operating handle				•	•		•	•	
Motor operator				•	•		•	•	
Endurance	Electrical	cycles	415V AC	30000	30000			20000	
			1100V AC				1000		
	Mechanical	cycles		30000	30000		7000	30000	
Standards				IEC 60947-2, EN 60947-2					

■ Standard • Optional - Not Available

*20, 32A
**50, 63, 100, 125A

Product series	description	unit	condition	EB2 250				EB2 250	
Model-type				L	S	H	V	LE	E
Number of poles				3, 4			3	3, 4	
Nominal current ratings									
	In	(A)	50°C	200, 250			160, 250	40, 125, 160, 250	
Electrical characteristics									
Rated operational voltage	Ue	(V)	AC 50/60 Hz	690	690	690	1100	690	690
			DC	250	250	250	-	-	-
Rated insulation voltage	Ui	(V)		800	800	800	1100	800	800
Rated impulse withstand voltage	Uimp	(kV)		8	8	8	8	8	8
Ultimate breaking capacity	Icu	(kA)	1100V AC	-	-	-	6	-	-
(IEC, JIS, AS/NZS)			690V AC	-	7.5	7.5		7,5	20
			525V AC	10	25	25		25	35
			440V AC	15	25	50		25	50
			400/415V AC	25	36	65		36	70
			220/240V AC	35	65	85		65	125
			250V DC	25	40	40		-	-
Service breaking capacity	Ics	(kA)	1100V AC	-	-	-	4	-	-
(IEC, JIS, AS/NZS)			690V AC	-	7.5	7.5		7,5	15
			525V AC	7.5	25	25		25	35
			440V AC	12	25	25		25	50
			400/415V AC	19	36	36		36	70
			220/240V AC	27	65	85		65	125
			250V DC	19	40	40		-	-
Rated breaking capacity (NEMA)		(kA)	480V AC	10	22	25		25	35
			240VAC	35	65	85		65	125
Rated short-time withstand current	Icw	(kA)	0.3 s	-	-		-	-	-
Protection									
Adjustable thermal, adjustable magnetic				■	■		■	-	-
Fixed thermal, fixed magnetic								-	-
Microprocessor								■	■
Utilisation category				A	A		A	A	A
Installation									
Front connection				■	■		■	■	■
Attached flat bar				•	•		•	•	•
Solderless terminal (cable clamp)				•	•		•	•	•
Rear connection				•	•		•	•	•
Plug-in				•	•		•	•	•
Draw- out				-	-			-	-
DIN rail mounting				-	-		-	-	-
Dimensions	h	(mm)		165	165		165	165	165
	w	(mm)	3 pole	105	105		105	105	105
		(mm)	4 pole	140	140			140	140
	d	(mm)		68	68		68	103	103
Weight		(kg)	3 pole	1.5	1.5		1.5	2.3	2.5
			4 pole	1.9	1.9			3.1	3.3
Operation									
Direct Opening Action				■	■		■	■	■
Toggle operation				■	■		■	■	■
Variable depth / direct mount operating handle				•	•		•	•	•
Motor operator				•	•		•	•	•
Endurance	Electrical	cycles	415V AC	10000	10000			10000	10000
			1100V AC				10000		
	Mechanical	cycles		30000	30000		70000	30000	30000
Standards				IEC 60947-2, EN 60947-2					

■ Standard • Optional - Not Available

ETIBREAK / Additional Technical Data

Product series	description	unit	condition	EB2 400		EB2 400			EB2 630			
Model-type				L	S	E, LCD	HLCD	VE	LE, LLCD	E, LCD	HE	VE
Number of poles				3, 4	3, 4	3, 4	4	3	3, 4	3, 4	3, 4	3
Nominal current ratings												
	In	(A)	50°C	250, 400	250, 400	250, 400		400	630	630	630	630
Electrical characteristics												
Rated operational voltage	Ue	(V)	AC 50/60 Hz	525	690	690	690	1100	690*	690*	690*	1100
			DC	250	250	-	-	-	-	-	-	-
Rated insulation voltage	Ui	(V)		800	800	800	800	1100	800	800	800	1100
Rated impulse withstand voltage	Uimp	(kV)		8	8	8	8	8	8	8	8	8
Ultimate breaking capacity	Icu	(kA)	1100V AC					12,5				18
(IEC, JIS, AS/NZS)			690V AC	-	20	20	20		10*	20*	20*	
			525V AC	15	30	30	30		15	30	30	
			440V AC	22	45	45	65		25	45	65	
			400/415V AC	25	50	50	70		36	50	70	
			220/240V AC	35	85	85	100		50	85	100	
			250V DC	25	40	-	-		-	-	-	
Service breaking capacity	Ics	(kA)	1100V AC					6,3				13,5
(IEC, JIS, AS/NZS)			690V AC	-	15	15	15		10*	15*	15*	
			525V AC	15	30	30	30		15	30	30	
			440V AC	22	45	45	50		25	45	50	
			400/415V AC	25	50	50	50		36	50	50	
			220/240V AC	35	85	85	85		50	85	85	
			250V DC	19	40	-	-		-	-	-	
Rated breaking capacity (NEMA)		(kA)	480V AC	15	25	25	30		15	25	30	
			240VAC	35	85	85	100		50	85	100	
Rated short-time withstand current	Icw	(kA)	0.3 s	-	-	5	5	-	-	-		-
Protection												
Adjustable thermal, adjustable magnetic				■	■							
Fixed thermal, fixed magnetic												
Microprocessor						■	■	■	■	■	■	■
Utilisation category				A	A	B	B	A	A	A	A	A
Installation												
Front connection				■	■	■	■	■	■	■	■	-
Attached flat bar				•	•	•	•	•	•	•	•	■
Solderless terminal (cable clamp)				•	•	•	•	-	-	-	-	-
Rear connection				•	•	•	•	•	-	-	-	•
Plug-in				•	•	•	•	•				•
Draw- out				•	•	•	•	-	-	-	-	-
DIN rail mounting				-	-	-	-	-	-	-	-	-
Dimensions	h	(mm)		260	260	260	260	260	260	260	260	273
	w	(mm)	3 pole	140	140	140	-	140	140	140	140	210
		(mm)	4 pole	185	185	185	185		185	185	185	
	d	(mm)		103	103	103	103	103	103	103	103	103
Weight		(kg)	3 pole	4.2	4.2	4.3	-	4,8	5.0	5.0	5.0	9,6
			4 pole	5.6	5.6	5.7	5.7		6.5	6.5	6.5	
Operation												
Direct Opening Action				■	■	■	■	-	■	■	■	-
Toggle operation				■	■	■	■	■	■	■	■	■
Variable depth / direct mount operating handle				•	•	•	•	•	•	•	•	•
Motor operator				•	•	•	•	•	•	•	•	•
Endurance	Electrical	cycles	415V AC	4500	4500	4500	4500		4500	4500	4500	
			1100V AC					1000				1000
	Mechanical	cycles		15000	15000	15000	15000	5000	15000	15000	15000	5000
Standards				IEC 60947-2, EN 60947-2								

■ Standard • Optional - Not Available

* MCCB can not be used in IT system at this voltage

Product series	description	unit	condition	EB2 800			EB2 800			
Model-type				L	S	H	LE	E	HE	VE
Number of poles				3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3
Nominal current ratings										
	In	(A)	50°C	630, 800	630, 800	630, 800	800	800	800	800
Electrical characteristics										
Rated operational voltage	Ue	(V)	AC 50/60 Hz	690	690	690	690	690	690	1100
			DC	250	250	250	-	-		
Rated insulation voltage	Ui	(V)		800	800	800	800	800	800	1100
Rated impulse withstand voltage	Uimp	(kV)		8	8	8	8	8	8	8
Ultimate breaking capacity	Icu	(kA)	1100V AC							18
(IEC, JIS, AS/NZS)			690V AC	10*	20*	25*	20*	25*	25*	
			525V AC	15*	30	45	30	35	40	
			440V AC	30	50	65	50	65	125	
			400/415V AC	36	50	70	50	70	125	
			220/240V AC	50	85	100	85	100	150	
			250V DC	50	50	50	-	-	-	
Service breaking capacity	Ics	(kA)	1100V AC							13,5
(IEC, JIS, AS/NZS)			690V AC	10*	20*	20*	20*	20*	20*	
			525V AC	15*	30	34	30	30	34	
			440V AC	30	50	50	50	50	94	
			400/415V AC	36	50	50	50	50	94	
			220/240V AC	50	85	75	85	75	150	
			250V DC	50	50	50	-	-	-	
Rated breaking capacity (NEMA)		(kA)	480V AC	15	30	45	30	35	40	
			240V AC	50	85	100	85	100	150	
Rated short-time withstand current	Icw	(kA)	0,3 sec	-	-	-	10	10	10	-
Protection										
Adjustable thermal, adjustable magnetic				■	■	■	-	-	-	-
Fixed thermal, fixed magnetic				-	-	-	-	-	-	-
Microprocessor				-	-	-	■	■	■	■
Utilisation category				A	A	A	B	B	B	A
Installation										
Front connection				■	■	■	■	■	-	-
Attached flat bar				•	•	•	•	•	■	■
Solderless terminal (cable clamp)				•	•	•	-	-	-	-
Rear connection				•	•	•	-	-	•	•
Plug-in				•	•	•	-	-	•	•
Draw- out				-	-	-	-	-	-	-
DIN rail mounting				-	-	-	-	-	-	-
Dimensions	h	(mm)		273	273	273	273	273	273	273
	w	(mm)	3 pole	210	210	210	210	210	210	210
		(mm)	4 pole	280	280	280	280	280	280	
	d	(mm)		103	103	103	103	103	140	103
Weight		(kg)	3 pole	8,5	8,5	8,5	9,1	9,1	12,3	9,7
			4 pole	11,5	11,5	11,5	12,3	12,3	14,8	
Operation										
Direct Opening Action				■	■	■	■	■	■	-
Toggle operation				■	■	■	■	■	■	■
Variable depth / direct mount operating handle				•	•	•	•	•	•	•
Motor operator				•	•	•	•	•	•	•
Endurance	Electrical	cycles	690V AC	4000	4000	4000	4000	4000	4000	
			1100V AC							500
	Mechanical	cycles		10000	10000	10000	10000	10000	10000	3000
Standards				IEC 60947-2, EN 60947-2						

■ Standard • Optional - Not Available

* MCCB can not be used in IT system at this voltage

Product series	description	unit	condition	EB2 1000		EB2 1250			EB2 1600	
Model-type				LE	E	LE	E	VE	LE	E
Number of poles				3, 4	3, 4	3, 4	3, 4	3	3, 4	3, 4
Nominal current ratings										
	In	(A)	50°C	1000	1000	1250	1250	800, 1250	1600	1600
Electrical characteristics										
Rated operational voltage	Ue	(V)	AC 50/60 Hz	690	690	690	690	1100	690	690
			DC	-	-	-	-		-	-
Rated insulation voltage	Ui	(V)		800	800	800	800	1100	800	800
Rated impulse withstand voltage	Uimp	(kV)		8	8	8	8	8	8	8
Ultimate breaking capacity	Icu	(kA)	1100V AC					30		
(IEC, JIS, AS/NZS)			690V AC	20*	25*	20*	25*		20*	45*
			525V AC	30	45	30	45		30	65
			440V AC	45	65	45	65		45	85
			400/415V AC	50	70	50	70		50	100/85
			220/240V AC	85	100	85	100		85	125
			250V DC	-	-	-	-		-	-
Service breaking capacity	Ics	(kA)	1100V AC					20		
(IEC, JIS, AS/NZS)			690V AC	15*	20*	15*	20*		15*	34*
			525V AC	23	34	23	34		23	50
			440V AC	34	50	34	50		34	65
			400/415V AC	38	50	38	50		38	75/65
			220/240V AC	65	75	65	75		65	94
			250V DC	-	-	-	-		-	-
Rated breaking capacity (NEMA)		(kA)	480V AC	30	45	30	45		30	65
			240V AC	85	100	85	100		85	125
Rated short-time withstand current	Icw	(kA)	0,3 sec	-	-	15	15	15	20	20
Protection										
Adjustable thermal, adjustable magnetic				-	-	-	-	-	-	-
Fixed thermal, fixed magnetic				-	-	-	-	-	-	-
Microprocessor				■	■	■	■	■	■	■
Utilisation category				A	A	B	B	B	B	B
Installation										
Front connection				-	-	-	-	-	-	-
Attached flat bar				■	■	■	■	■	■	■
Solderless terminal (cable clamp)				-	•	-	-	-	-	-
Rear connection				•	-	-	-	•	•	•
Plug-in				-	-	-	-	•	-	-
Draw- out				-	-	-	-	-	-	-
DIN rail mounting				-	-	-	-	-	-	-
Dimensions	h	(mm)		273	273	370	370	370	370	370
	w	(mm)	3 pole	210	210	210	210	210	210	210
		(mm)	4 pole	280	280	280	280		280	280
	d	(mm)		103	103	120	120	120	140	140
Weight		(kg)	3 pole	11	11	19,8	19,8	19,8	27	27
			4 pole	14,8	14,8	25	25		35	35
Operation										
Direct Opening Action				■	■	■	■	■	■	■
Toggle operation				■	■	■	■	■	■	■
Variable depth / direct mount operating handle				•	•	•	•	•	•	•
Motor operator				•	•	•	•	•	•	•
Endurance	Electrical	cycles	690V AC	4000	4000	4000	4000		2000	2000
			1100V AC					4000		
	Mechanical	cycles		10000	10000	5000	5000	5000	5000	5000
Standards				IEC 60947-2, EN 60947-2						

■ Standard • Optional - Not Available

* MCCB can not be used in IT system at this voltage

Product series	description	unit	condition	EB2R	EB2R
Model-type				125L	250L
Number of Poles				3, 4	3, 4
Nominal current ratings					
	In	(A)	50°C	20, 32, 50	160, 250
				63, 100, 125	
Electrical characteristics					
Rated operational voltage	Ue	(V)	AC 50/60 Hz	525	525
Rated impulse withstand voltage	Uimp	(kV)		8	8
Ultimate breaking capacity	Icu	(kA)	525V AC	8	10
(IEC, JIS, AS/NZS)			440V AC	15	15
			400/415V AC	25	25
			220/240V AC	35	35
Service breaking capacity	Ics	(kA)	525V AC	6	7.5
(IEC, JIS, AS/NZS)			440V AC	12	12
			400/415V AC	19	19
			220/240V AC	27	27
Protection					
Adjustable thermal, adjustable magnetic				■	■
Residual current protection, Type A				■	■
Utilization category				A	A
Installation					
Front connection				■	■
Attached flat bar				•	•
Solderless terminal (cable clamp)				•	•
Rear connection				•	•
Plug-in				-	-
DIN rail mounting				•	-
Dimensions	h	(mm)		155	165
	w	(mm)	3 pole	90	105
			4 pole	120	140
	d	(mm)		68	68
Weight		(kg)	3 pole	1.1	1.5
			4 pole	1.4	1.9
Operation					
Direct Opening Action				■	■
Toggle operation				■	■
Variable depth / direct mount operating handle				•	•
Mechanical interlocks				-	-
Motor operator				•	•
Endurance	Electrical	cycles	440V AC	30000	30000
	Mechanical	cycles		30000	30000
Standards				IEC 60947-2, EN 60947-2	

■ Standard • Optional - Not Available

ETIBREAK / Additional Technical Data

Product series	description	unit	condition	EB2 400		EB2 800	
Model-type				LF	SF	LF	LF
Number of poles				3	3, 4	3, 4	
Nominal current ratings							
	In	(A)	50°C	400 (45°C)	400 (45°C)	630 (45°C)	800 (45°C)
Electrical characteristics							
Rated operational voltage	Ue	(V)	AC 50/60 Hz	690	690	690	690
			DC	250	250	250	250
Rated insulation voltage	Ui	(V)		690	690	690	690
Rated impulse withstand voltage	Uimp	(kV)		8	8	8	8
Ultimate breaking capacity	Icu	(kA)	3,817	10	15	10	10
(IEC, JIS, AS/NZS)			525V AC	15	22	15	15
			440V AC	22	30	30	30
			400/415V AC	25	36	36	36
			220/240V AC	35	50	50	50
			250V DC	35	40	50	50
Service breaking capacity	Ics	(kA)	690V AC	10	15	10	10
(IEC, JIS, AS/NZS)			525V AC	15	22	15	15
			440V AC	22	30	30	30
			400/415V AC	25	36	36	36
			220/240V AC	35	50	50	50
			250V DC	35	40	50	50
Rated breaking capacity (NEMA)		(kA)	480V AC				
			240VAC				
Rated short-time withstand current			0.3 s				
Protection							
Fixed thermal, adjustable magnetic				-	■		
Fixed thermal, fixed magnetic				■		-	-
Microprocessor				-	-	-	-
Utilisation category				A	A	A	A
Installation							
Front connection				■	■	-	-
Attached flat bar				•	•	■	■
Solderless terminal (cable clamp)				•	•	•	•
Rear connection				•	•	•	•
Plug-in				•	•	•	•
Draw- out						-	-
DIN rail mounting				-	-	-	-
Dimensions	h	(mm)		260	260	273	273
	w	(mm)	3 pole	140	140	210	210
		(mm)	4 pole	-	185	280	280
	d	(mm)		103	103	103	103
Weight		(kg)	3 pole	4.2	4.2	8	8,5
			4 pole	-	5.6	11	11,5
Operation							
Direct Opening Action				■	■	■	■
Toggle operation				■	■	■	■
Variable depth / direct mount operating handle				•	•	•	•
Motor operator				•	•	•	•
Endurance	Electrical cycles		415V AC	4500	4500	4000	4000
	Mechanical cycles			15000	15000	10000	10000
Standards				IEC 60947-2, EN 60947-2			

■ Standard • Optional - Not Available

Detailed Technical Data for Low Voltage Switch Disconnectors ED2

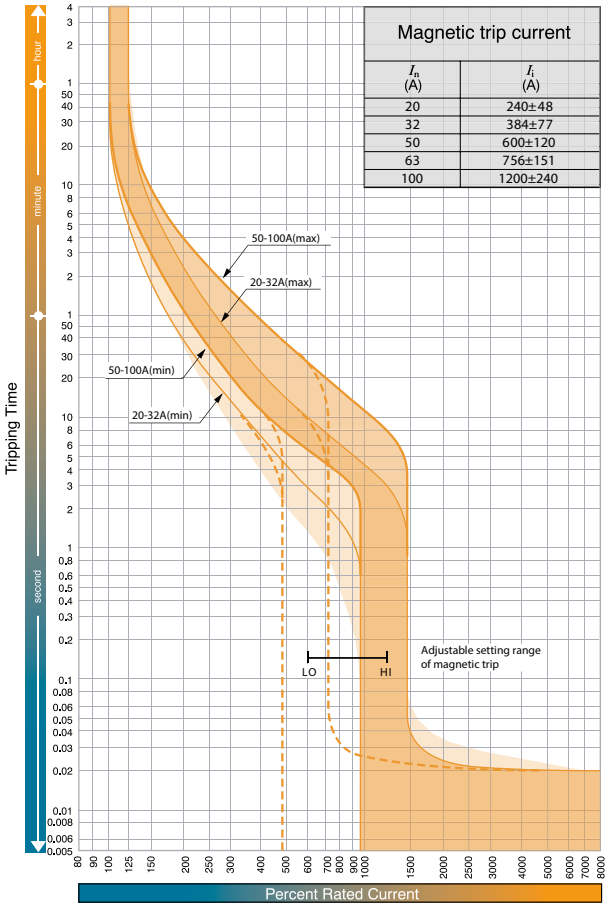
Product series	desc.	unit	condition	ED2	ED2	ED2	ED2	ED2	ED2	ED2	ED2	ED2
Model-type				125	160	250	400	630	800	1000	1250	1600
Number of Poles				3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4
Nominal current ratings												
	In	(A)		125	160	250	400	630	800	1000	1250	1600
Electrical characteristics												
Rated operational voltage	Ue	(V)	AC 50/60 Hz	690	690	690	690	690	690	690	690	690
			DC	250	250	250	250	250	250	250	250	250
Rated insulation voltage	Ui	(V)		800	800	800	800	800	800	800	800	800
Rated impulse withstand voltage	Uimp	(kV)		8	8	8	8	8	8	8	8	8
Rated short-circuit making capacity	Icm	(kA peak)		3,6	6	6	9	9	17	17	32	45
Rated short-time withstand current	Icw	(kA rms)	0.3s	2	3	3	5	5	10	10	10	10
			AC	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A
			DC	DC-22A	DC-22A	DC-22A	DC-22A	DC-22A	DC-22A	DC-22A	DC-22A	DC-22A
Installation												
Front connection				■	■	■	■	■	■	-	-	-
Attached flat bar				•	•	•	•	•	•	■	■	•
Solderless terminal				•	•	•	•	•	-	-	-	-
Rear connection				•	•	•	•	•	•	•	•	■
Plug-in				•	•	•	•	•	•	-	•	-
Draw- out				•	•	•	•	•	•	-	•	•
DIN rail mounting				•	-	-	-	-	-	-	-	-
Dimensions	h	(mm)		155	165	165	260	260	273	273	370	370
	w	(mm)	3 pole	90	105	105	140	140	210	210	210	210
		(mm)	4 pole	120	140	140	185	185	280	280	280	280
	d	(mm)		68	68	68	103	103	103	103	120	140
Weight		(kg)	3 pole	1.1	1.5	1.5	4.2	4.4	8,5	10,4	18,2	24,9
			4 pole	1.4	1.9	1.9	5.6	5.8	11,5	14,0	23, 4	32,9
Operation												
Direct Opening Action				■	■	■	■	■	■	■	■	■
Toggle operation				■	■	■	■	■	■	■	■	■
Variable depth / direct mount operating handle				•	•	•	•	•	•	•	•	•
Motor operator				•	•	•	•	•	•	•	•	•
Endurance	Elec.	cycles	415V AC	30000	10000	10000	4500	4500	4000	4000	4000	2000
	Mech.	cycles		30000	30000	30000	15000	15000	10000	10000	5000	5000
Standards				IEC 60947-2, EN 60947-2						IEC 60947-3, EN 60947-3		

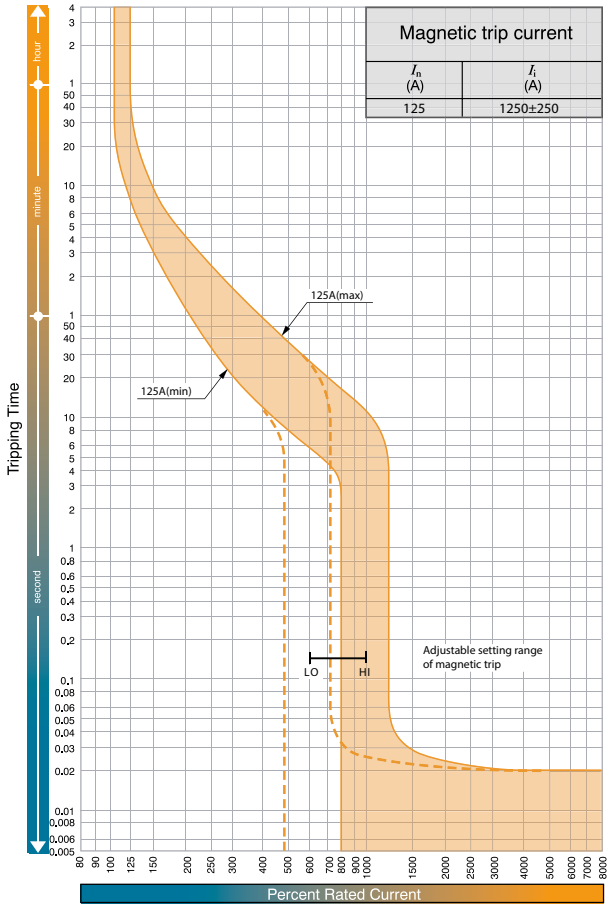
Thermal magnetic adjustments and characteristics

Thermal adjustment
Low voltage moulded case circuit breakers have a wide thermal adjustment range, one of the largest on the market. The rated current 'Ir' is continuously adjustable from 63% to 100% of this nominal current 'In'. There are three main points of calibration marked at 63%, 80% and 100%.

Magnetic adjustment
An adjustable magnetic characteristics allows short-circuit protection to be matched to the load and supply characteristics, for example motor inrush current or generator short-circuit current.

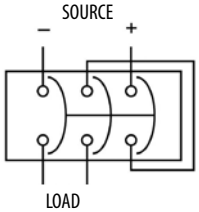
Time, current characteristics curves
EB2 125



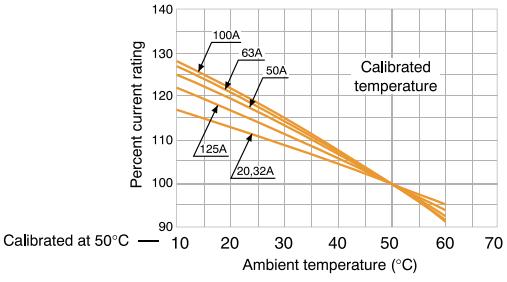


Special applications of thermal magnetic MCCBs

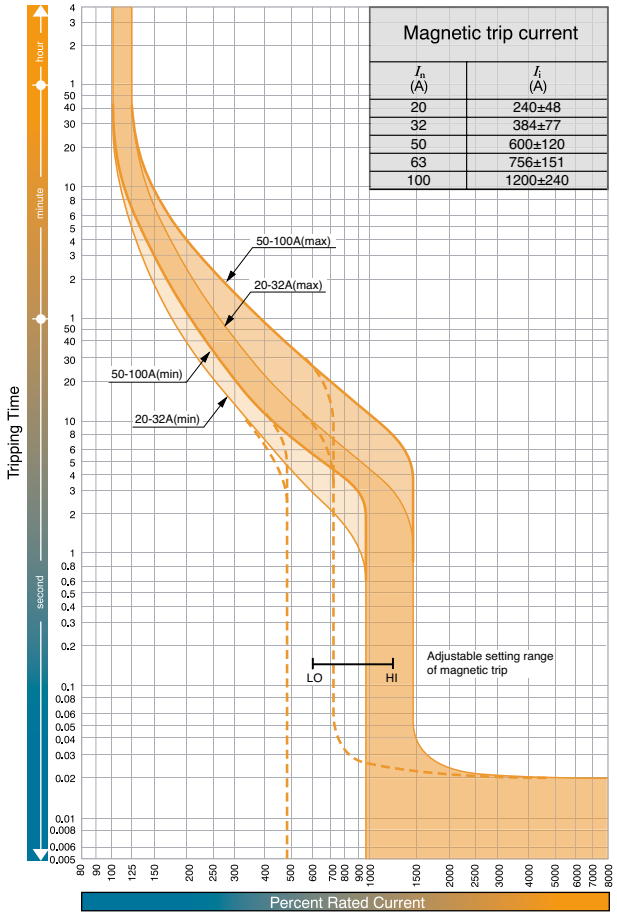
All standard thermal magnetic MCCBs are suitable for DC application up to 250 V DC.

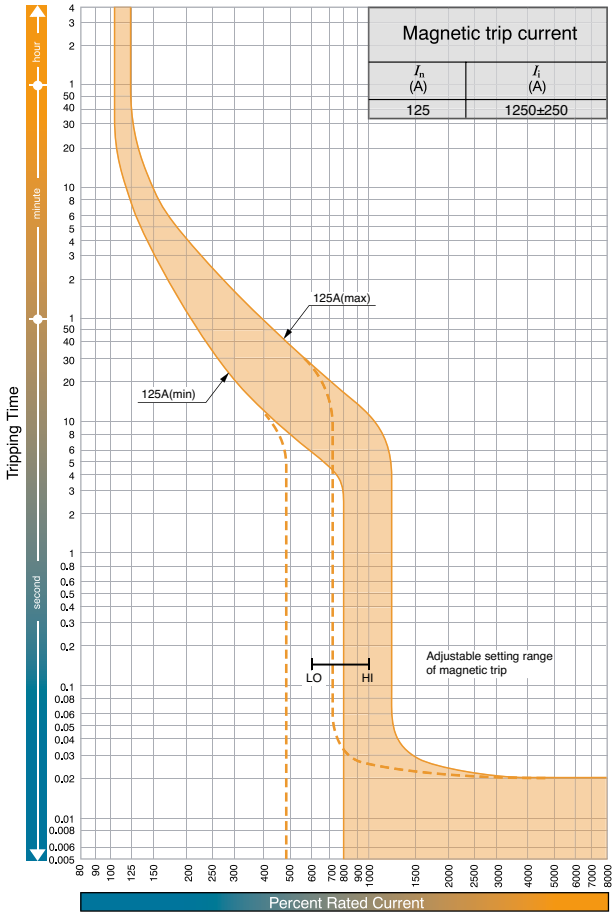


Ambient compensating curves

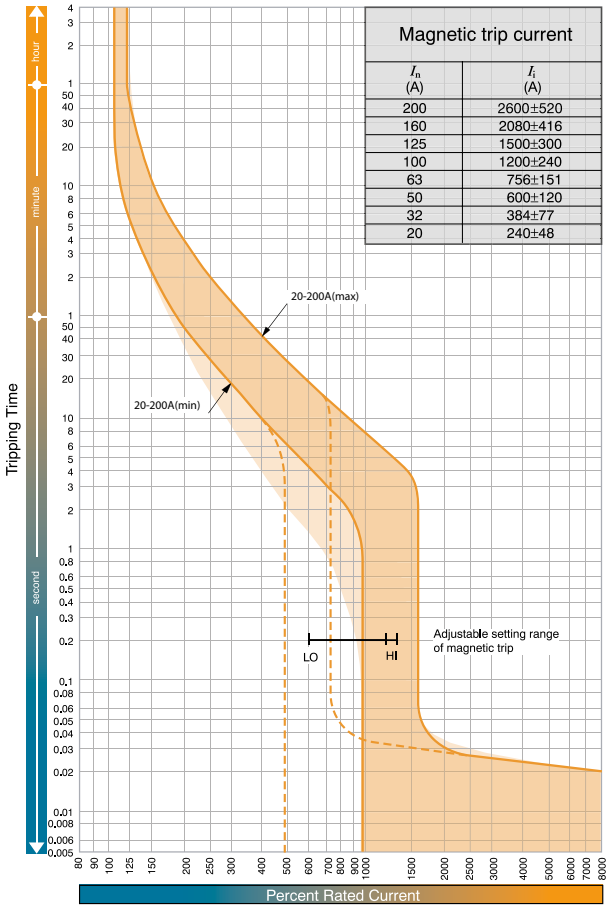


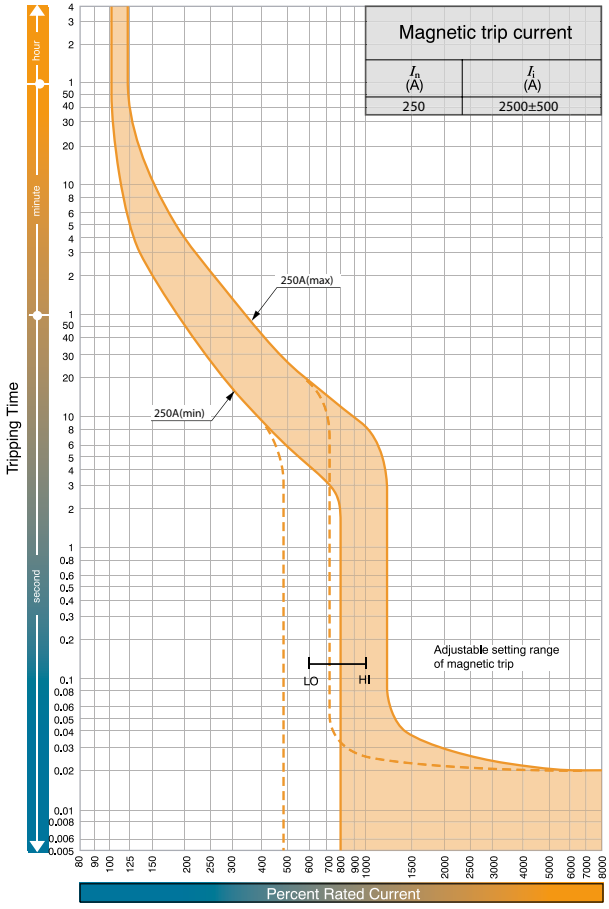
Time, current characteristics curves
EB2 125 1000V



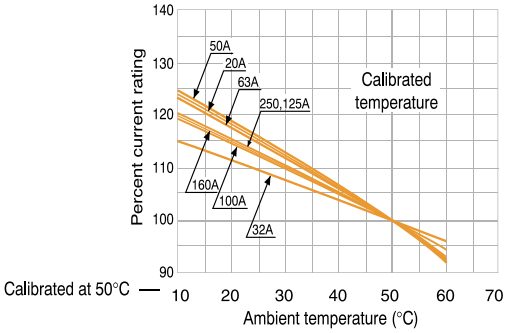


Time, current characteristics curves
EB2 160 and EB2 250





Ambient compensating curves



Special applications of thermal magnetic MCCBs

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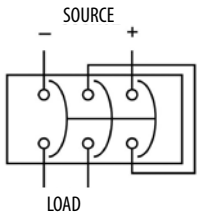
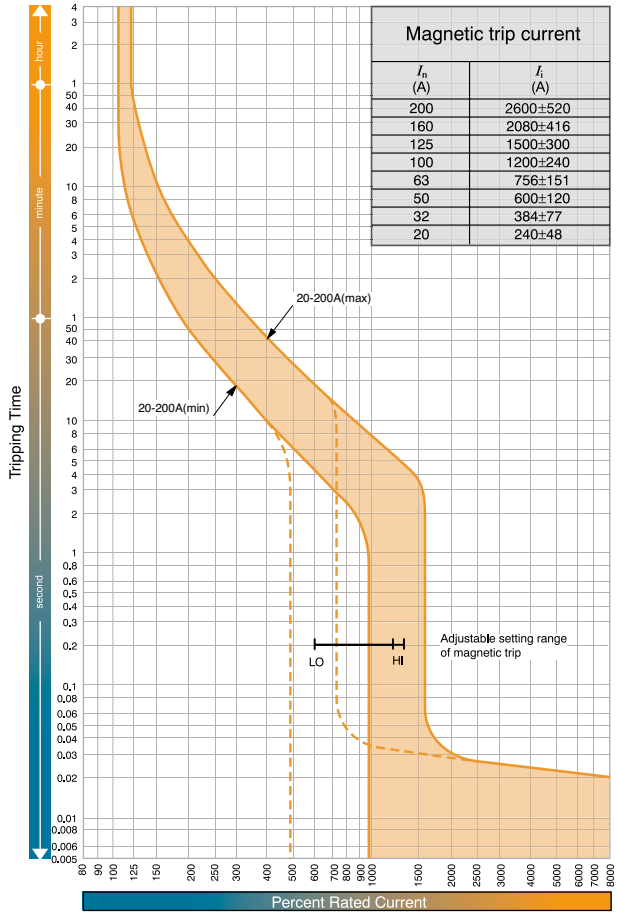
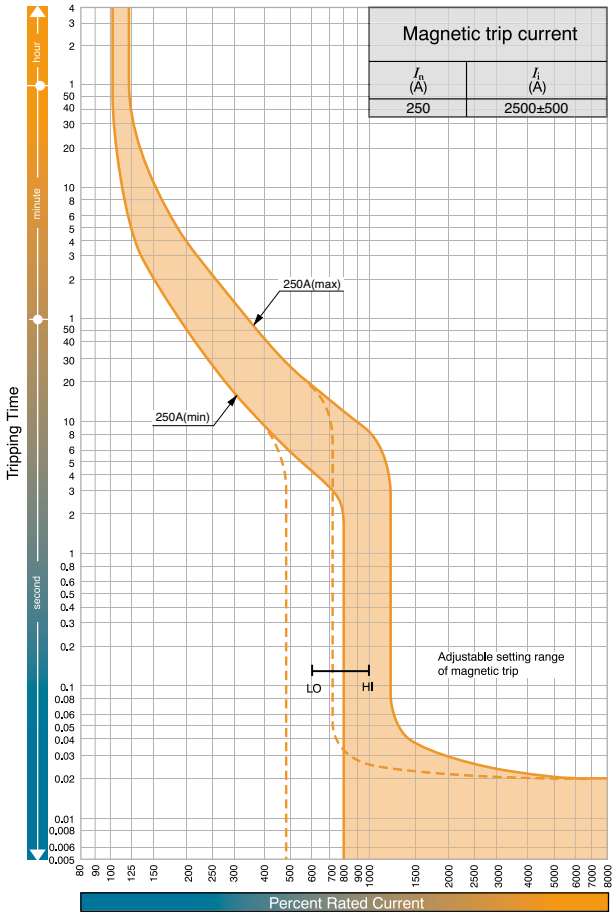
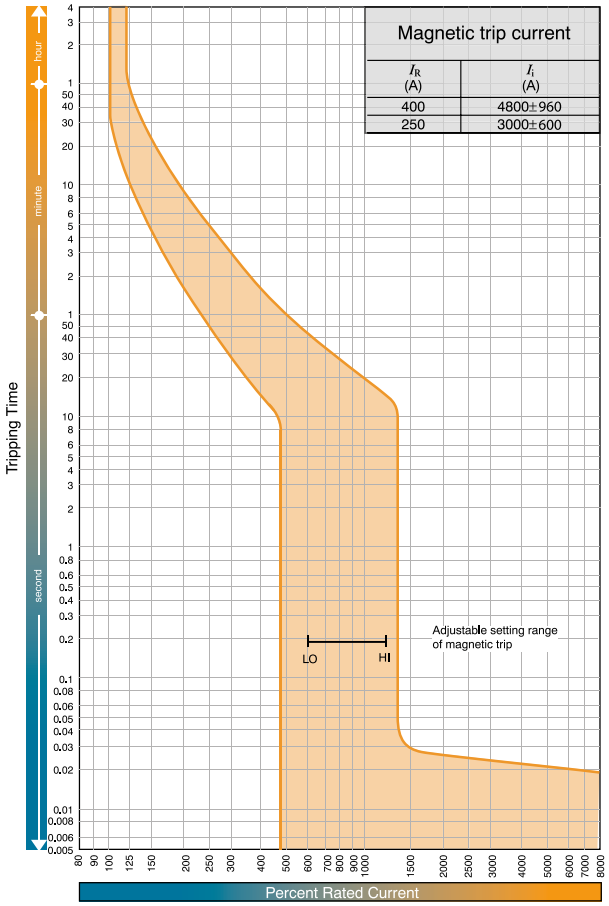


Time, current characteristics curves
EB2 250 1000V

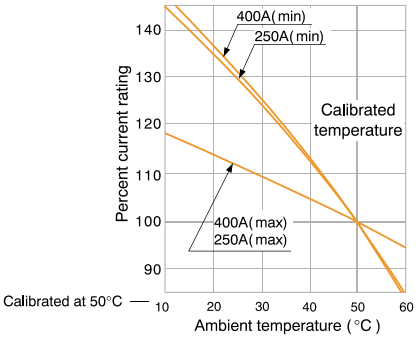




Time, current characteristics curves
EB2 400



Ambient compensating curves



Special applications of thermal magnetic MCCBs

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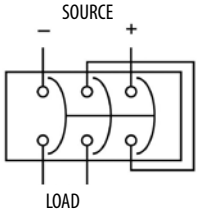
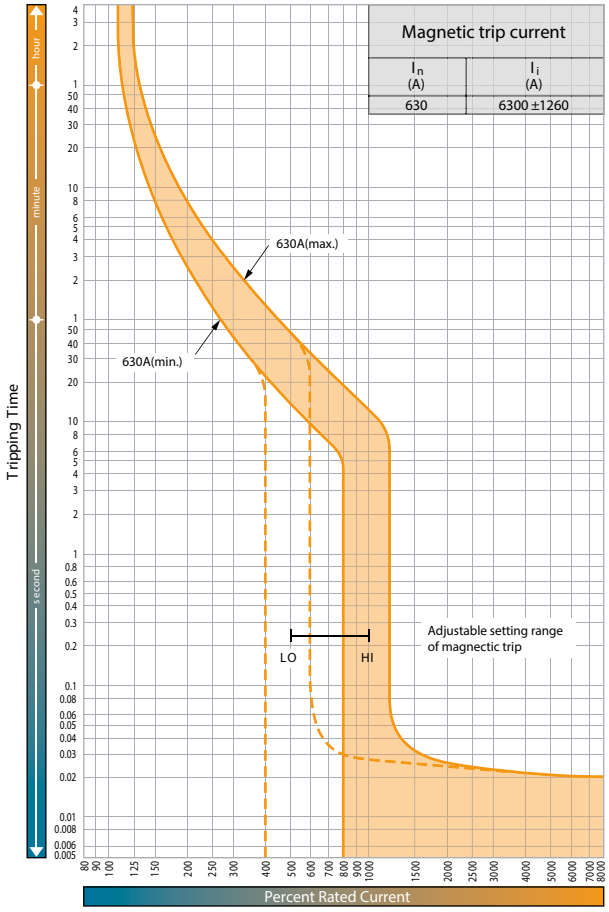
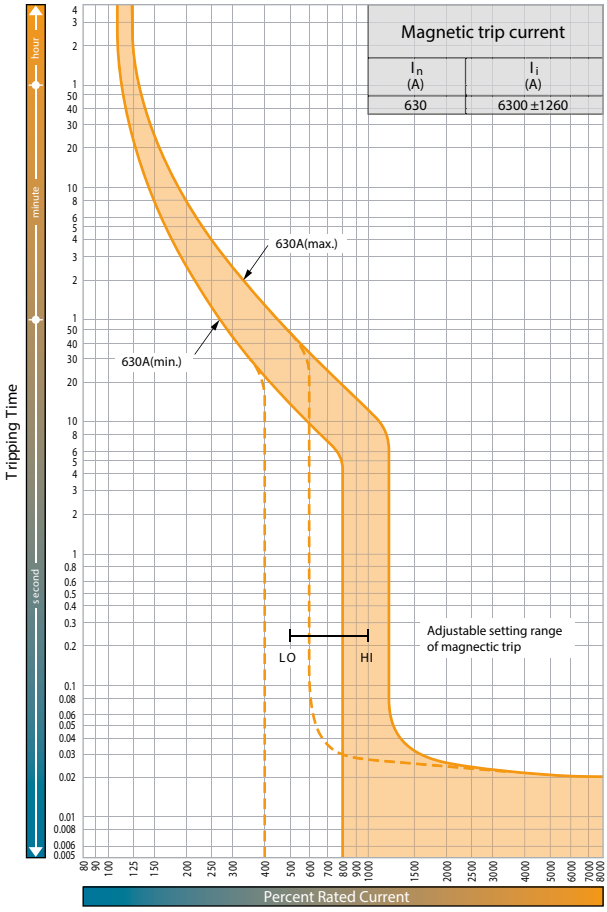
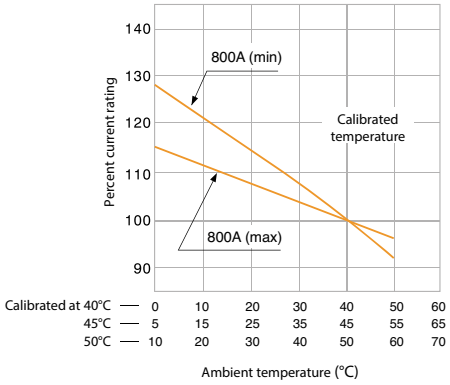


Time, current characteristics curves
EB2 630 and EB2 800





Ambient compensating curves



Special applications of thermal magnetic MCCBs

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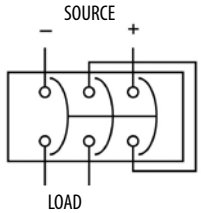
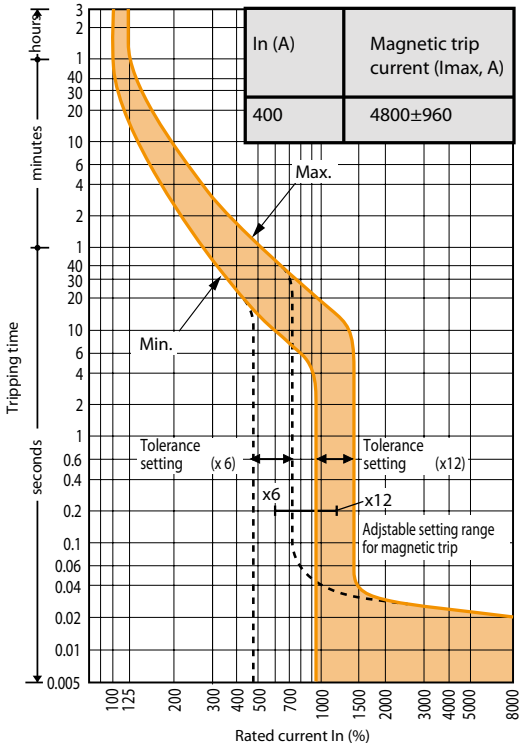
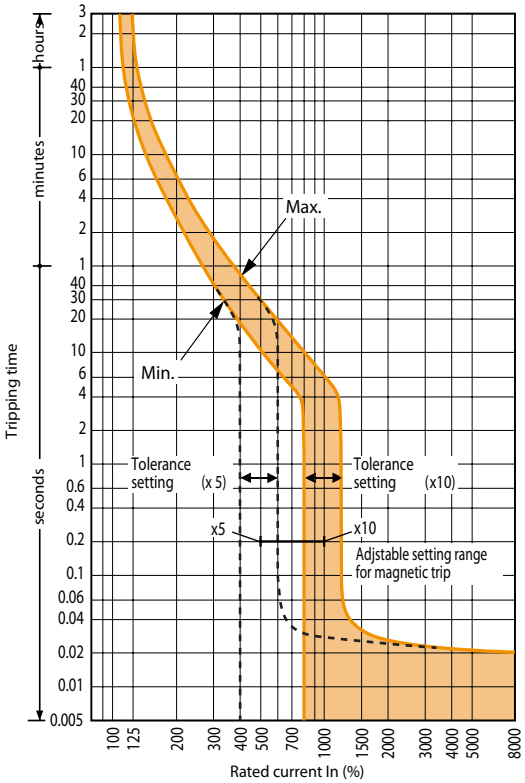


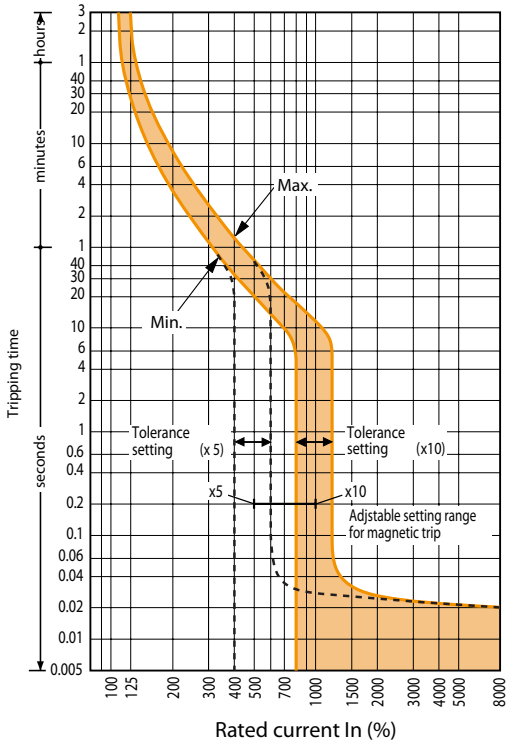
Time, current characteristics curves
EB2 400 SF



Time, current characteristics curves
EB2 800/LF 630A



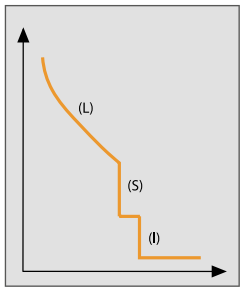
Time, current characteristics curves
EB2 800/LF 800A



Microprocessor (electronic) based characteristics and adjustments EB2 series

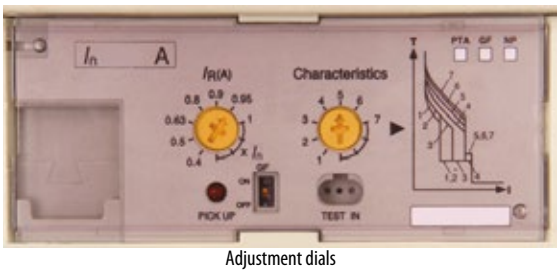
Etibreak 2 MCCBs from 250A to 1600A frame sizes are available with
electronic protection units. Current ratings, In, of 40A, 125A, 160A, 250A, 400A, 630A, 800A, 1000A, 1250A and 1600A are available. These offer great flexibility as their characteristics can be set to suit a wide range of application conditions. Overload protection can be set between 0.4 and 1.0 times In.

Selecting a Preset Characteristic for a 400A Etibreak 2 MCCB with Electronic Protection



Electronic protection characteristic

Every Etibreak electronic protection unit includes overload protection (L), delayed short-circuit protection (S) and instantaneous protection (I) as standard.



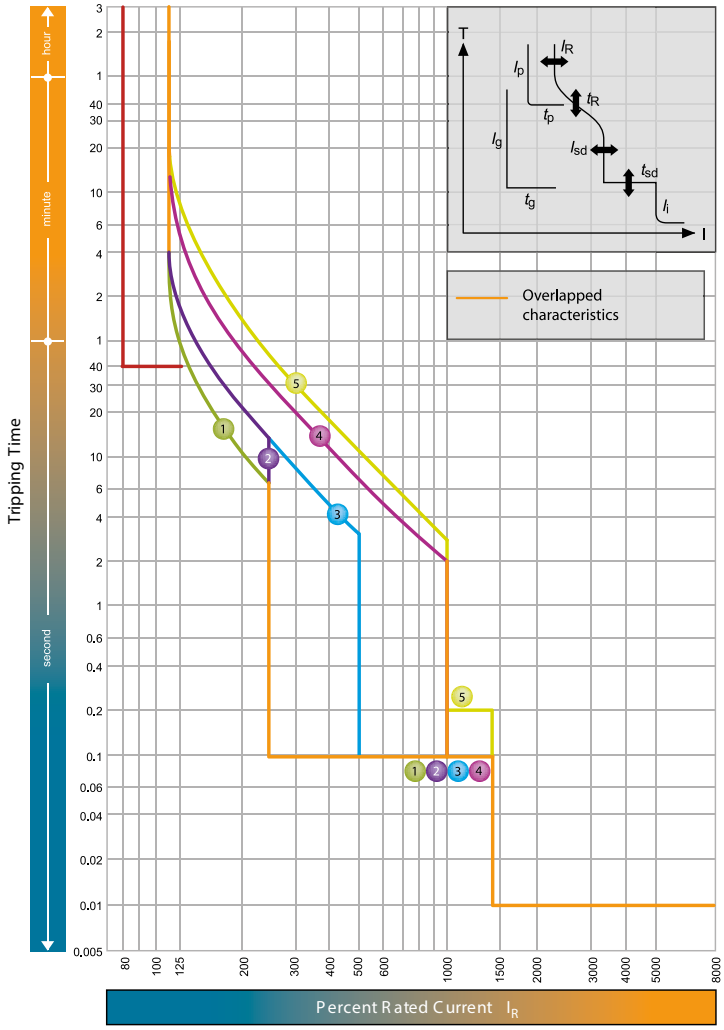
Adjustment dials

The left adjustment dial sets the rated current to match the conductor rating. The right adjustment dials select one of six on 630A models preset characteristics. The effects of the left adjustment dial (labelled IR(A)), and the right adjustment dial (labelled Characteristics) are detailed in the tables shown underneath each time/current graph.

Tolerances of Characteristics

Characteristics		Tolerance
Long Time Delay (LTD)	tR	+/- 20%
Short Time Delay (STD)	Isd	+/- 15%
	tsd	Total clearnig time +50ms, resettable time - 20ms
Instantaneous (INST)	Ii	+/- 20%

EB2 250 LE &E

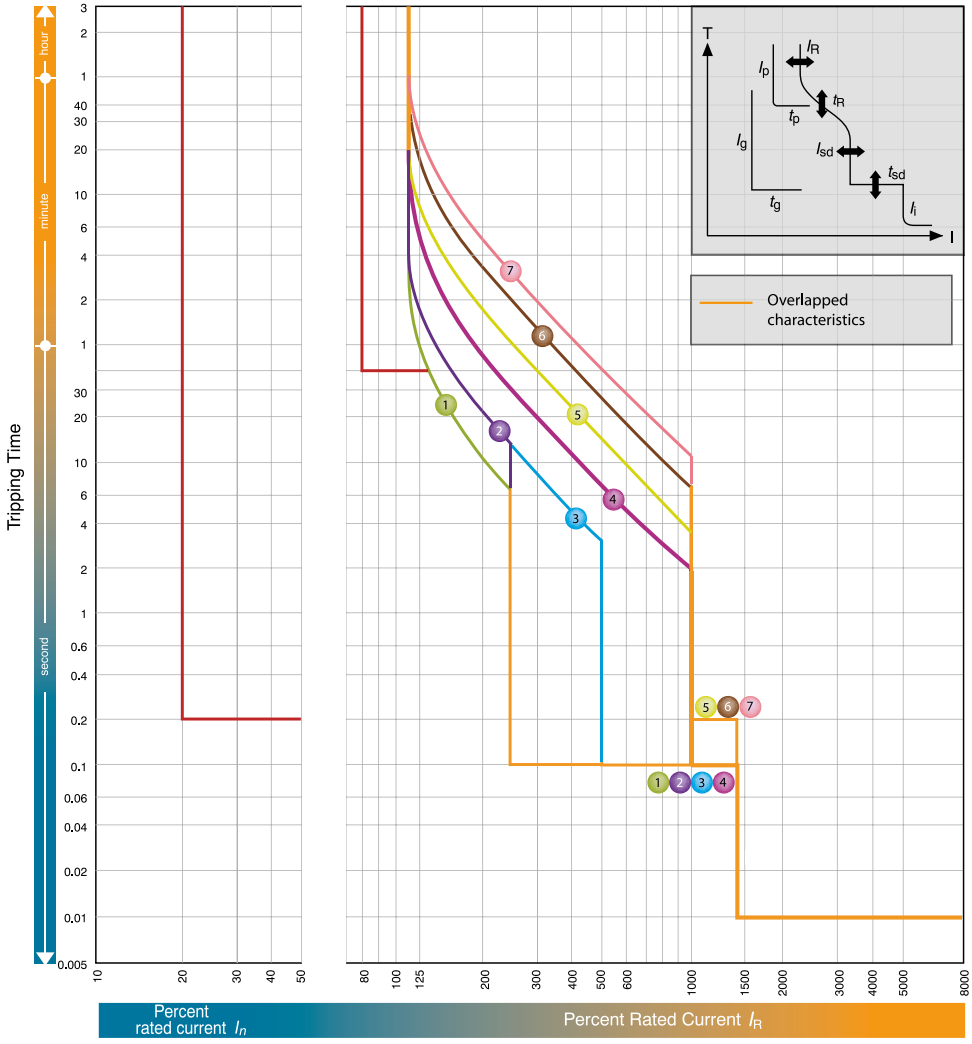


I_n = 40, 125, 160, 250

			I_R (A)							
			LTD Pick-up current I_R	x I_n	0.4	0.5	0.63	0.8	0.9	0.95	1.0
			Characteristics	**No.**	**1**	**2**	**3**	**4**	**5**		
Standard	LTD	Index t_R	Index (s)		11	21	21	5	7,5		
					@ 200 % x I_R			@ 200 % x I_R			
	STD	Index I_{sd}	Index x I_R		2,5		5	10			
		Index t_{sd}	Index (s)		0,1				0,2		
	INST	Index I_i	Index x I_R		14 (Max: 13 x I_n) Note (1)						

Note: (1) I_i max. = 12 x I_n.

EB2 400 E, LCD, HLCD

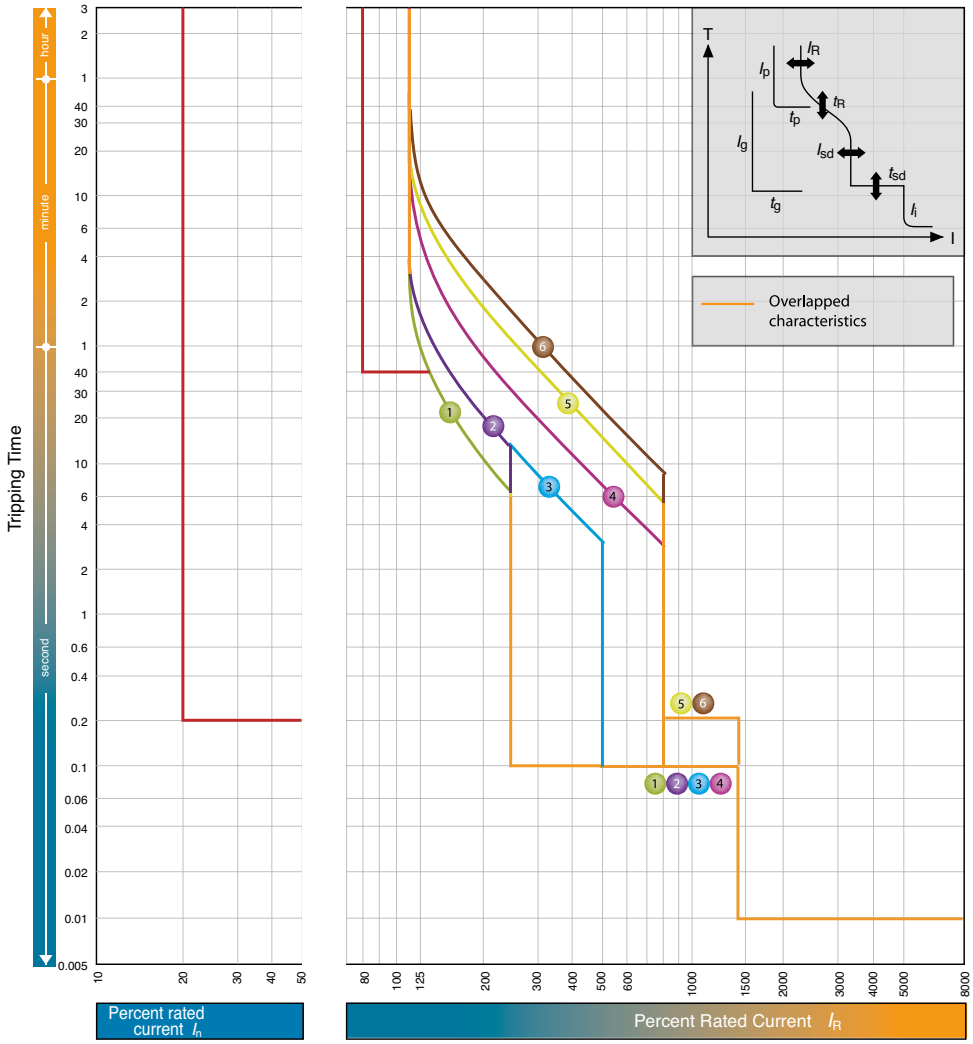


I_n = 250*, 400

				I_R (A)							
		LTD Pick-up current I_R	x I_n	0.4	0.5	0.63	0.8	0.9	0.95	1.0	
		Characteristics	**No.**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	
Standard	LTD	Index t_R	Index (s)	11	21	21	5	10	19	29	
				@ 200 % x I_R			@ 600 % x I_R				
	STD	Index I_{sd}	Index x I_R	2.5		5		10			
		Index t_{sd}	Index (s)	0.1					0.2		
	INST	Index I_i	Index x I_R	14 (Max: 13 x I_n)**							
Option	PTA	Index I_p	Index x I_R	0,8							
		Index t_p	Index (s)	40							
	GF	Index I_g	Index x I_n	0,2							
		Index t_g	Index (s)	0,2							
	NP	Index I_N	Index x I_R	1,0/0,5***							
		Index t_N	Index (s)	t_N=t_R							

Notes:
* GF is not available when In is 250A.
**Ii max. = 13 x In.
*** 1,0 x IR or 0,5 x IR can be selected. Characteristic of neutral protection (tN vs. IN) is identical to characteristic of phase protection (tR vs. IR).
**** When you specify gF on MCCBs with 3 poles the terminal block is automatically fitted to connect with the external neutral CT for 3 phases 4 wires system. See terminal blocks in section 4.

EB2 630 LE, E, LCD, HLCD

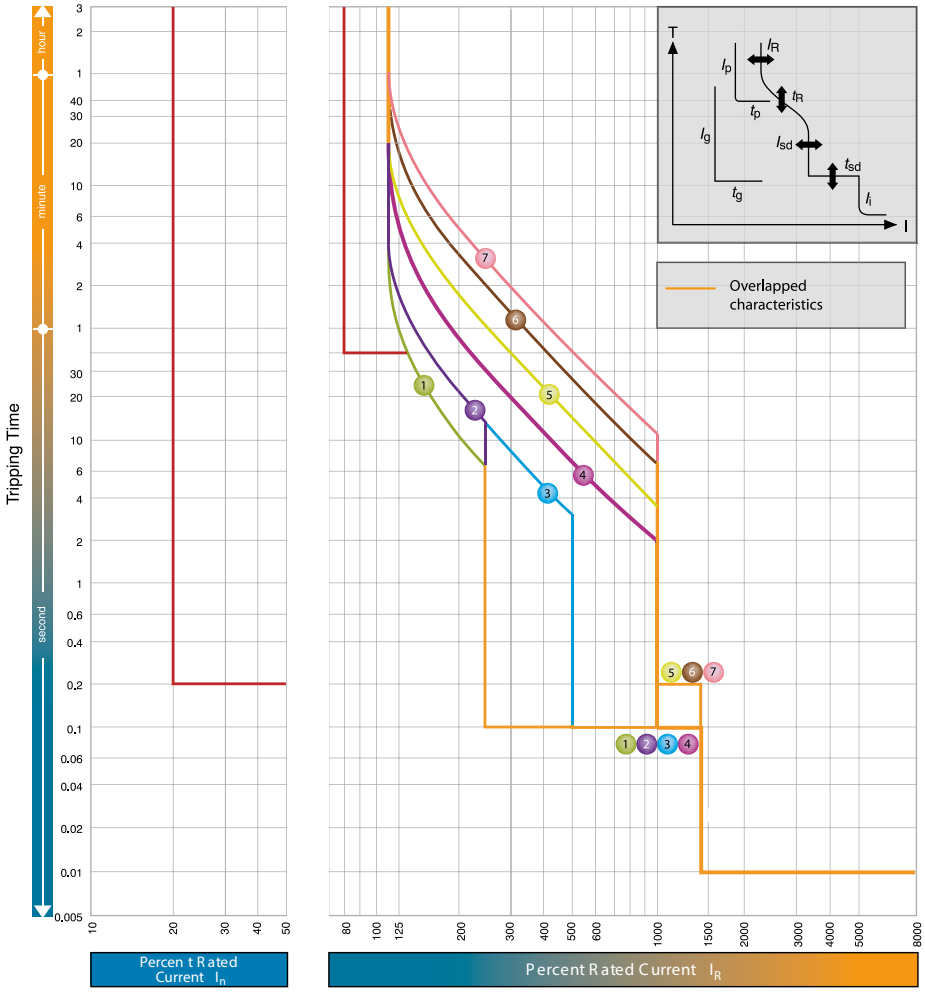


I_n = 630A

				I_R (A)								
	LTD Pick-up current I_R		x I_n	0.4	0.5	0.63	0.8	0.85	0.9	0.95	1.0	
	Characteristics		**No.**	**1**	**2**	**3**	**4**	**5**	**6**			**
Standard	LTD	Index t_R	Index (s)	11	21	21	5	10	16			
				@ 200 % x I_R			@ 600 % x I_R					
	STD	Index I_{sd}	Index x I_R	2.5		5	8					
		Index t_{sd}	Index (s)	0.1			0.2					***
	INST	Index I_i	Index x I_R	14 (Max: 10 x I_n)*								
Option	PTA	Index I_p	Index x I_R	0,8								
		Index t_p	Index (s)	40								
	GF	Index I_g	Index x I_n	0,2								
		Index t_g	Index (s)	0,2								
	NP	Index I_N	Index x I_R	1,0/0,5**								
		Index t_N	Index (s)	t_N=t_R								

Notes:
*Ii max. = 10 x In.
** 1,0 x IR or 0,5 x IR can be selected. Characteristic of neutral protection (tN vs. IN) is identical to characteristic of phase protection (tR vs. IR).
*** When you specify gF on MCCBs with 3 poles the terminal block is automatically fitted to connect with the external neutral CT for 3 phases 4 wires system. See terminal blocks in section 4.

EB2 800 LE, E, HE



I_n = 800

				I_R (A)							
		LTD Pick-up current I_R		x I_n	0.4	0.5	0.63	0.8	0.9	0.95	1.0
	Characteristics			No.	1	2	3	4	5	6	7
Standard	LTD	Index t_R		Index (s)	11 @ 200 % x I_R	21	21	5 @ 600 % x I_R	10	19	29
	STD	Index I_{sd}		Index x I_R	2.5		5		10		
		Index t_{sd}		Index (s)	0.1					0.2	
	INST	Index I_i		Index x I_R	14 (max.: 12 x I_n)*						
Option	PTA	Index I_p		Index x I_R	0,8						
		Index t_p		Index (s)	40						
	GF	Index I_g		Index x I_n	0,2						
		Index t_g		Index (s)	0,2						
	NP	Index I_N		Index x I_R	1,0/0,5***						
		Index t_N		Index (s)	t_N=t_R						

Notes:
*Ii max. = 12 x In.
** 1,0 x IR or 0,5 x IR can be selected. Characteristic of neutral protection (tN vs. IN) is identical to characteristic of phase protection (tR vs. IR).
*** When you specify gF on MCCBs with 3 poles the terminal block is automatically fitted to connect with the external neutral CT for 3 phases 4 wires system. See terminal blocks in section 4.

Characteristics for 1100V AC MCCBs with frame sizes: 400AF, 630AF & 800AF

In addition to the standard overload and short circuit protection, there are a number of options available to meet specific applications.

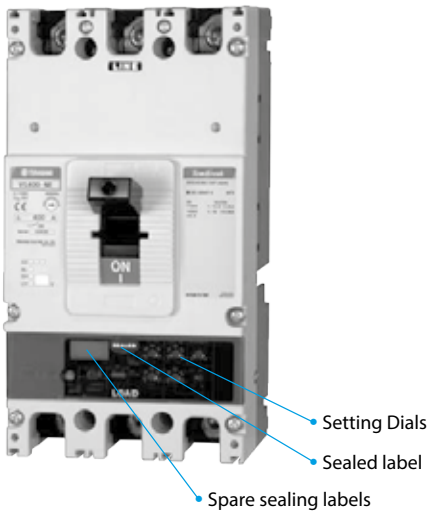
MCCB Type	LTD	STD	INST	PICK-UP LED	TEST PORT	GFT
EB2 400-VE	◉	◉	◉	◉	◉	–
EB2 630-VE	◉	◉	◉	◉	◉	○
EB2 800-VE	◉	◉	◉	◉	◉	○

◉ Standard
○ Optional
– Not available

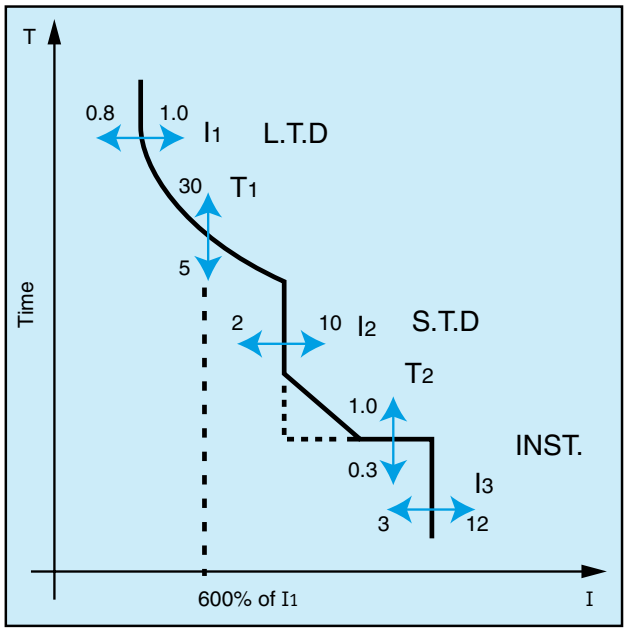
Legend		Application
LTD	**Long Time Delay**	: Overload protection, True R.M.S.
STD	**Short Time Delay**	: Short circuit protection and selectivity
INST	**Instantaneous**	: Short circuit protection, fast acting
Pick-up LED		: Lights on LTD overload, flashes on PTA pick-up
Test Port		: Facility for TNS-1 OCR checker for calibration checking
GFT	**Ground Fault Trip**	: Protection against ground faults

Access to Setting Dials

To adjust the settings on the microprocessor EB2, the sealed label must be broken and the covering fixing screws removed. To adjust the individual trip settings, turn the setting dial with a flat bladed screw driver. Align the setting required between the black dots marked on the dial.

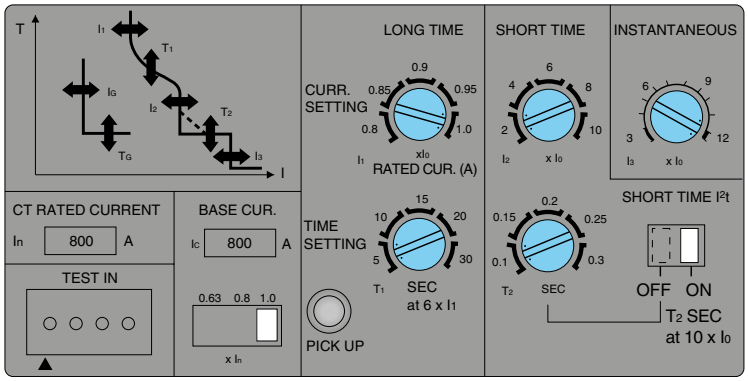


Standard Time Currents Curves for 1100 V AC MCCBs with frame sizes: 400AF, 630AF & 800AF



Each part of the characteristic curve can be independently adjusted.

Standard Microprocessor Adjustments



Setting Dial		Available Adjustments	
Base Current Setting	I_0	0.63 - 0.8 - 1.0 x I_n	Amps
LTD Pick up	I_1	0.8 - 0.85 - 0.9 - 0.95 - 1.0 x I_0	Amps
LTD Setting	T_1	5 - 10 - 15 - 20 - 25 - 30 (at I_1 x 600%)	Secs
STD Pick up	I_2	2 - 4 - 6 - 8 - 10 x I_0	Amps
STD Setting	T_2	0.1 - 0.15 - 0.2 - 0.25 - 0.3	Secs
INST Pick up	I_3	3 - 12 x I_0 (continuously adjustable)	Amps

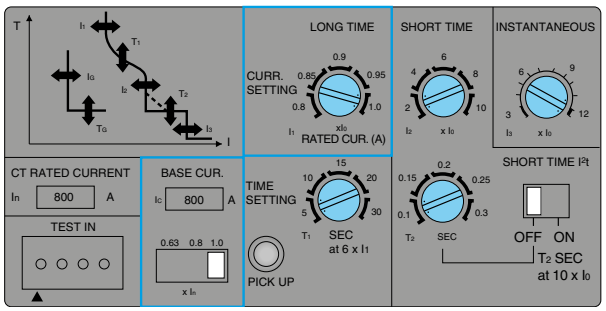
Overload Adjustment for 1100V AC MCCBs (400AF, 630AF & 800AF)

The rated current of the microprocessor based EB2 is adjusted using two current multipliers. This process achieves high accuracy adjustment from 50% to 100%. These are the LTD pickup dial I_1 and the Base Current I_0 selector switch.
The rated current (LTD pickup) is achieved as follows:

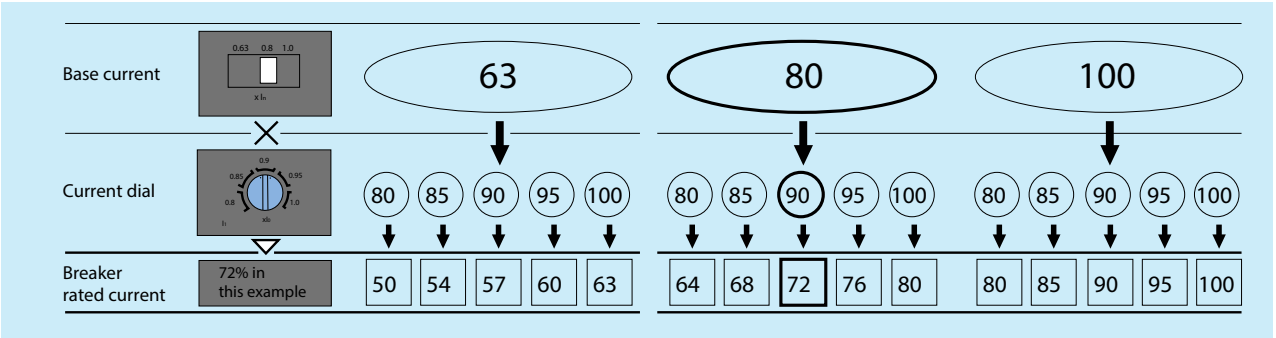
$$I_{RATED} = I_n \times I_0 \times I_1$$

In the example shown on the right the rating would be:

$$I_{RATED} = 1250 \times 1.0 \times 1.0 = 1250A$$



In total there are 15 possible increments of adjustment between 50 and 100% as shown below.



Example - Settings

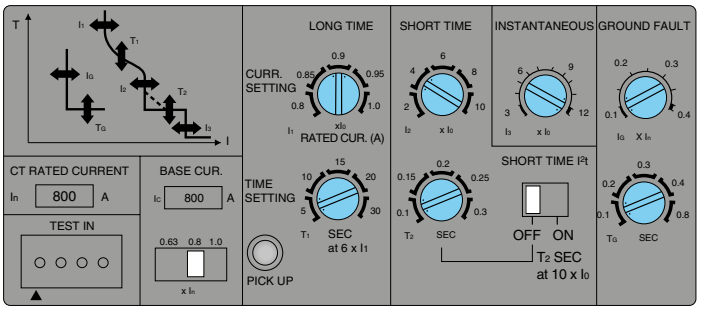
In the example shown on the right what are all the settings in Amps?

Solution I_{RATING} LTD pickup = $I_n \times I_0 \times I_1$
800 x 0.8 x 0.9 = 576A

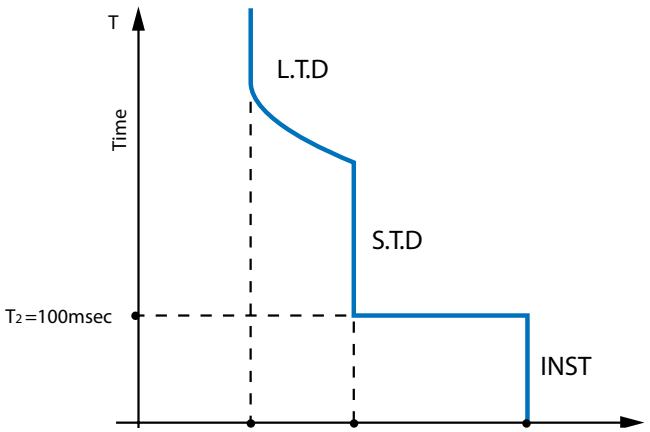
STD pickup = $I_n \times I_0 \times I_2$
800 x 0.8 x 4 = 2560A

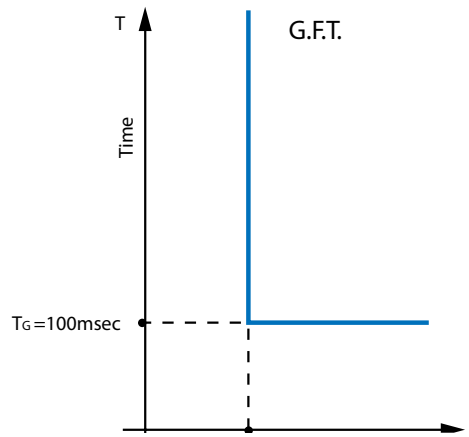
INST pickup = $I_n \times I_0 \times I_3$
800 x 0.8 x 12 = 7680A

GFT pickup = $I_n \times I_G$
800 x 0.1 = 80A
(Note that GFT is a function of I_n and not I_0)

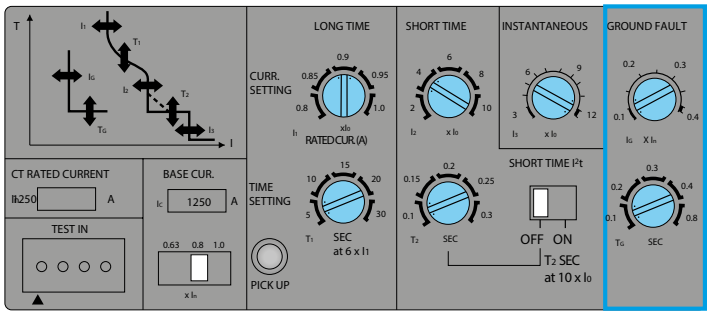


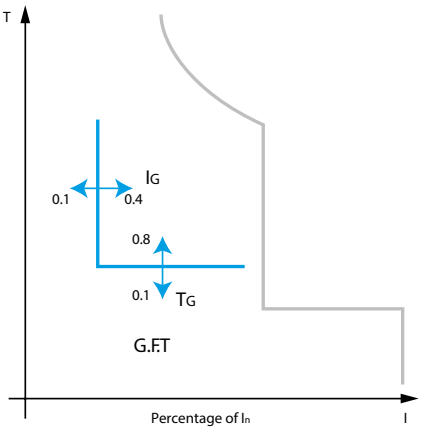
Example - Time/Current Curves





Ground Fault Adjustments





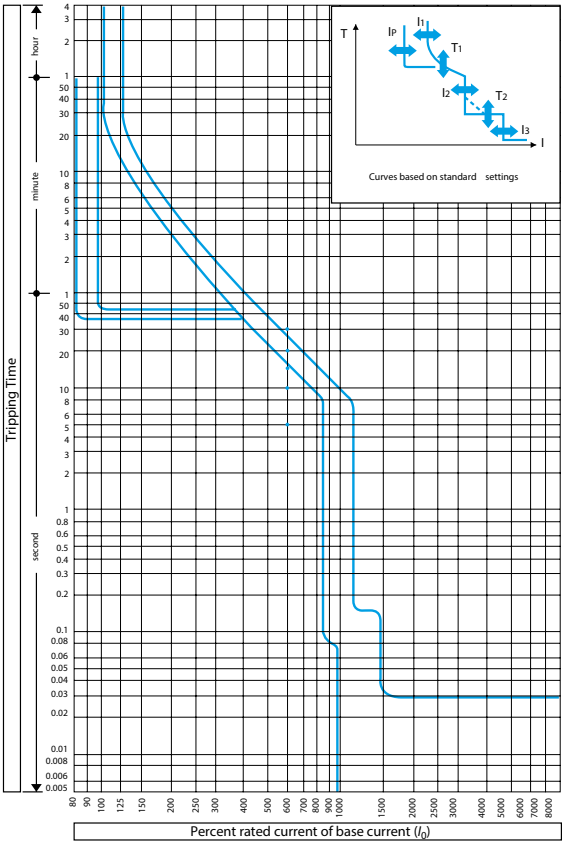
Setting Dial		Available Adjustments	
GFT Pickup	I_G	0.1 to 0.4 continuously adjustable x I_n	Amps
GFT Setting	T_G	0.1 - 0.2 - 0.3 - 0.4 - 0.8	seconds

When a 3 pole MCCB is used on a 3 phase 4 wire system a separate CT is required for the neutral line. No control power is required for this option.

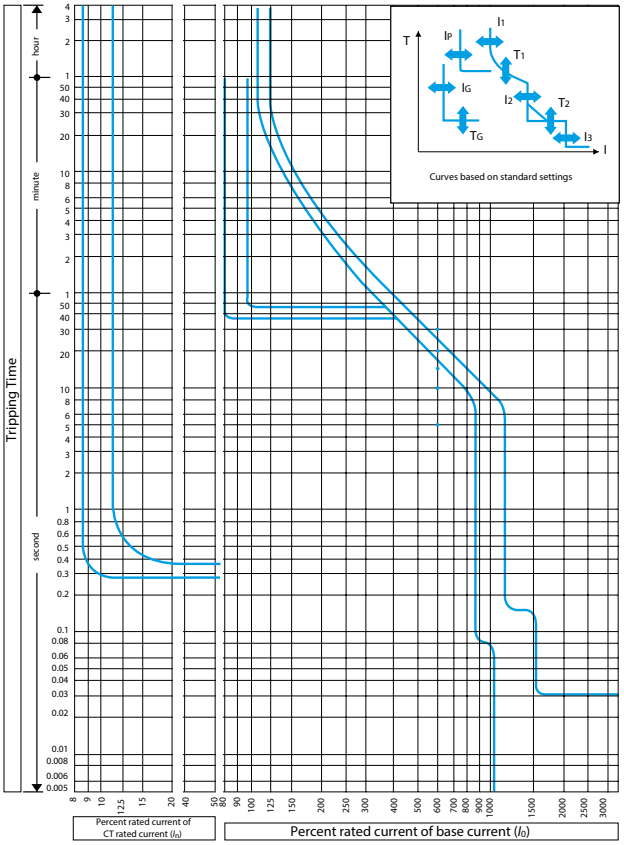
THERMAL MAGNETIC CHARACTERISTICS

1100V AC MCCBs (400A, 630A and 800A Frames)

Time/current characteristic curves
EB2 400-VE



Time/current characteristic curves
EB2 630-VE, EB2 800-VE



Overcurrent tripping characteristics

CT rated current (A) (I_n)	63, 125, 250, 400
Base current setting (A): (I_o)	(I_n) x (0.63-0.8-1.0)
Long time-delay pick-up current (A): (I_1)	(I_o)x (0.8- 0.85- 0.9- 0.95- 1.0) Non-tripping at (I_1) setting x 105% and below. Tripping at 125% and above.
Long time-delay time settings (S) (T_1)	(5–10–15–20–30) at (I_1) x 600% current. Setting tolerance ± 20%
Short time-delay pick-up current (A): (I_2)	(I_n) x (2-4-6-8-10) Setting tolerance ± 15%
Short time-delay time settings (S) (T_2)	Opening time (0.1, 0.15, 0.2, 0.25, 0.3) in the definite time-delay. Total clearing time is + 50 mS and resettable time -20mS for the time-delay setting
Instantaneous trip pick-up current (A) (I_3)	Continuously adjustable from (I_o) x (3 to12) Setting tolerance ± 20%

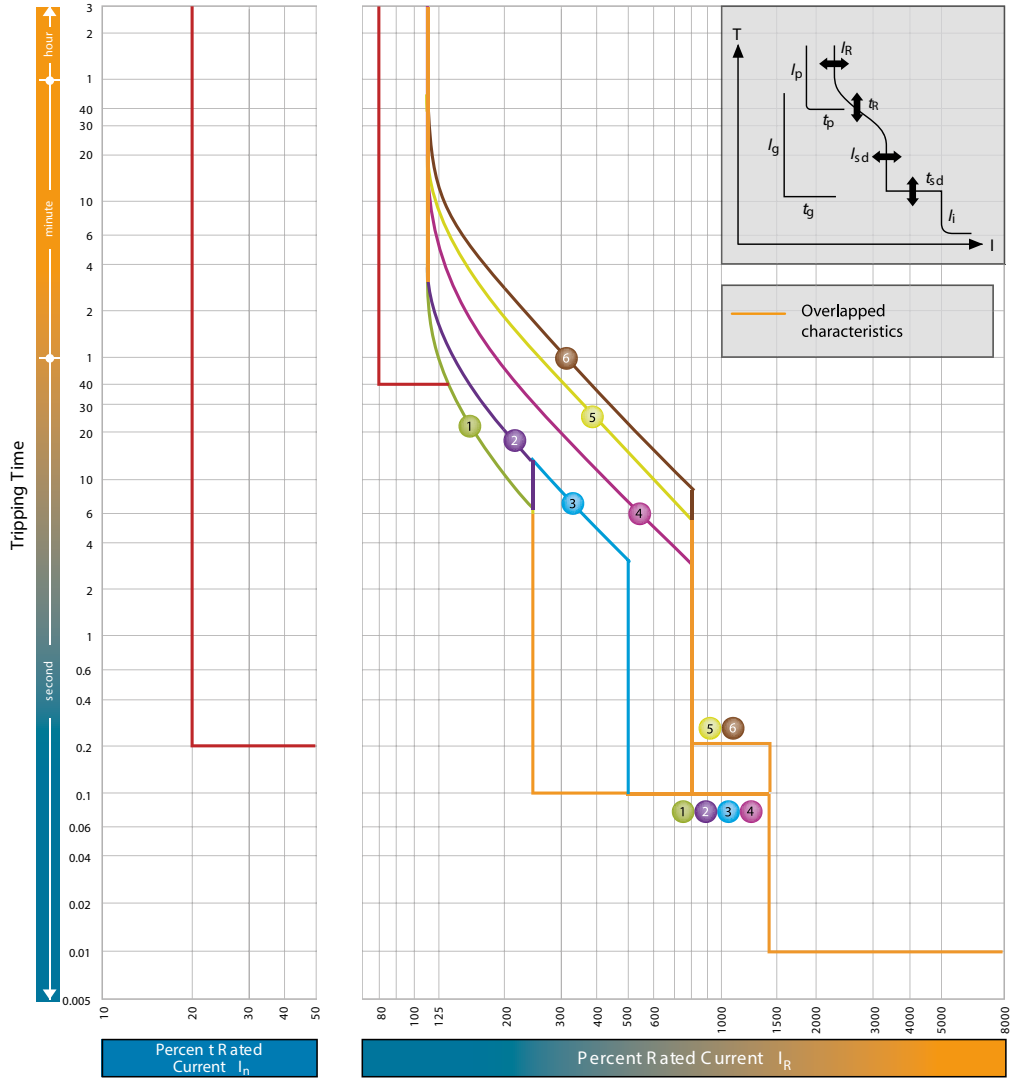
Note: * Optional
Note: The underlined values will be applied as standard ratings unless otherwise specified when ordering.

Overcurrent tripping characteristics

CT rated current (A) (I_n)	630, 800
Base current setting (A): (I_o)	(I_n) x (0.63-0.8-1.0)
Long time-delay pick-up current (A): (I_1)	(I_o) x (0.8- 0.85- 0.9- 0.95- 1.0) Non-tripping at (I_1) setting x 105% and below. Tripping at 125% & above.
Long time-delay time settings (S) (T_1)	(5–10–15–20–30) at (I_1) x 600% current. Setting tolerance ± 20%
Short time-delay pick-up current (A): (I_2)	(I_o) x (2-4-6-8-10) Setting tolerance ± 15%
Short time-delay time settings (S) (T_2)	Opening time (0.1, 0.15, 0.2, 0.25, 0.3) in the definite time-delay. Total clearing time is + 50 mS and resettable time -20mS for the time-delay setting.
Instantaneous trip pick-up current (A) (I_3)	Continuously adjustable from (I_o) x (3 to 12) Setting tolerance ± 20%
* Ground fault trip pick-up current (A): (I_G)	Continiuously adjustable from (I_n) x (0.1 to 0.4) Setting tolerance ± 15%
* Ground fault trip time setting (S): (T_G)	Opening time (0.1-0.2-0.3-0.4-0.8) in the definite time-delay. Total clearing time is + 50mS and resettable time is - 20mS for the time-delay settings

Note: * Optional
Note: The underlined values will be applied as standard ratings unless otherwise specified when ordering.

EB2 1000 LE, E

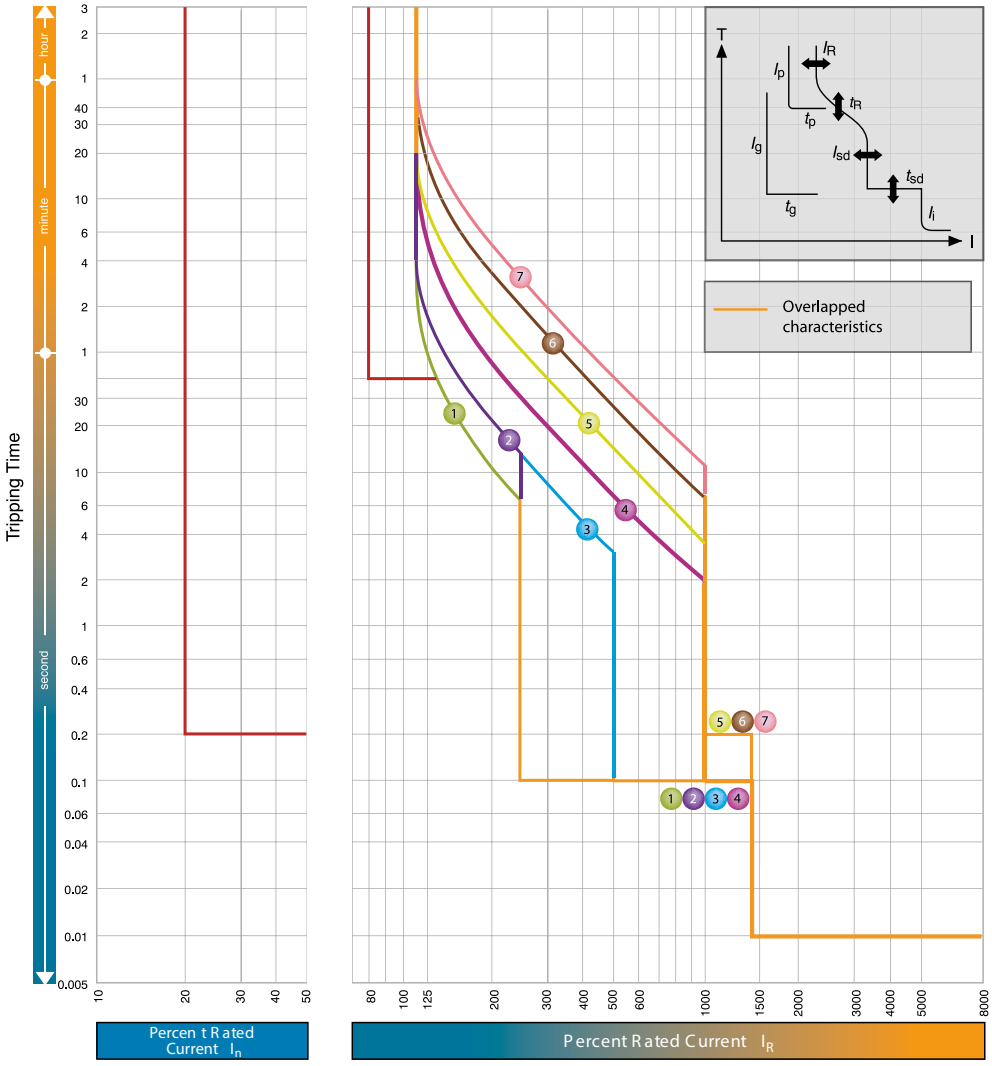


I_n = 1000A

				I_R (A)								
	LTD Pick-up current I_R		x I_n	0.4	0.5	0.63	0.8	0.85	0.9	0.95	1.0	
	Characteristics		No.	1	2	3	4	5	6			
Standard	LTD	Index t_R	Index (s)	11 @ 200 % x I_R		21	21	5	10	16 @ 600 % x I_R		**
	STD	Index I_{sd}	Index x I_R	2.5		5			8			
		Index t_{sd}	Index (s)			0.1				0.2		
	INST	Index I_i	Index x I_R	14 (max.: 10 x I_n)*								***
Option	PTA	Index I_p	Index x I_R	0,8								
		Index t_p	Index (s)	40								
	GF	Index I_g	Index x I_n	0,2								
		Index t_g	Index (s)	0,2								
	NP	Index I_N	Index x I_R	1,0/0,5***								
		Index t_N	Index (s)	t_N=t_R								

Notes:
*Ii max. = 10 x In.
** 1,0 x IR or 0,5 x IR can be selected. Characteristic of neutral protection (tN vs. IN) is identical to characteristic of phase protection (tR vs. IR).
*** When you specify gF on MCCBs with 3 poles the terminal block is automatically fitted to connect with the external neutral CT for 3 phases 4 wires system. See terminal blocks in section 4.

EB2 1250 LE, E



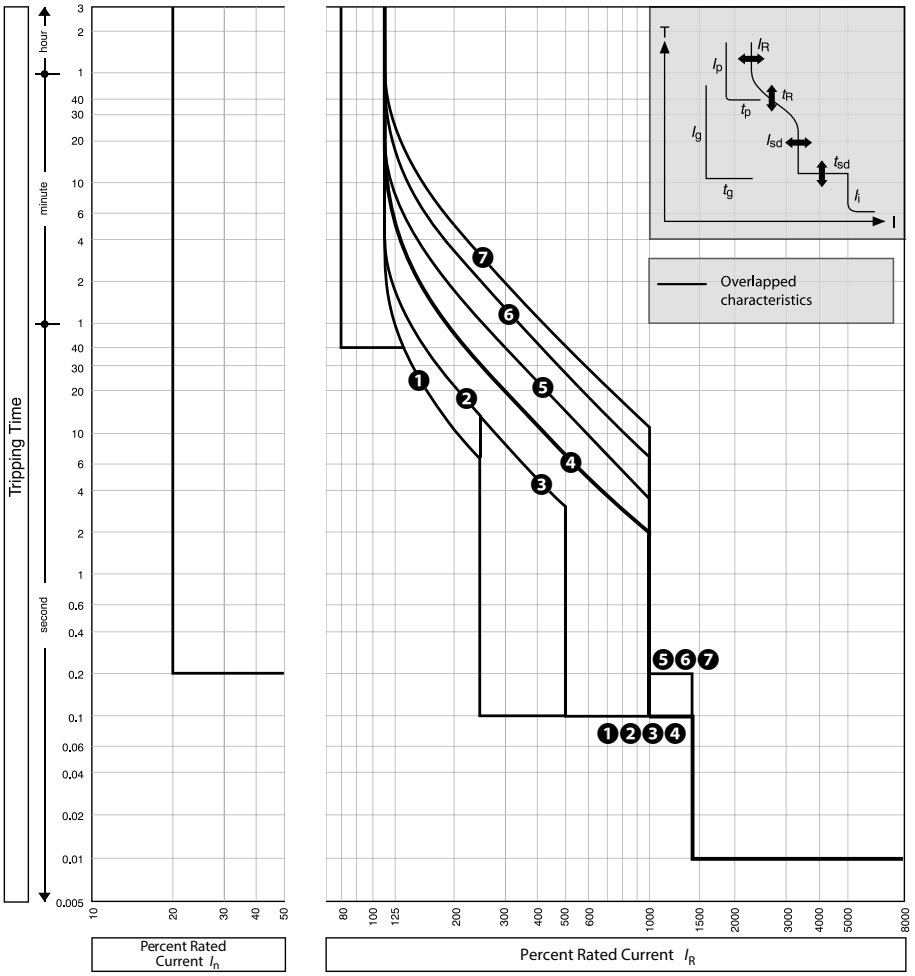
I_n = 1250

				I_R (A)							
		LTD Pick-up current I_R	x I_n	0.4	0.5	0.63	0.8	0.9	0.95	1.0
	Characteristics		No.	1	2	3	4	5	6	7
Standard	LTD	Index t_R	Index (s)	11 @ 200 % x I_R	21	21	5 @ 600 % x I_R	10	19	29
	STD	Index I_{sd}	Index x I_R	2.5		5		10		
		Index t_{sd}	Index (s)	0.1					0.2	
	INST	Index I_i	Index x I_R	14 (max.: 12 x I_n)*						
Option	PTA	Index I_p	Index x I_R	0,8						
		Index t_p	Index (s)	40						
	GF	Index I_g	Index x I_n	0,2						
		Index t_g	Index (s)	0,2						
	NP	Index I_N	Index x I_R	1,0/0,5***						
		Index t_N	Index (s)	t_N=t_R						

Notes:
*Ii max. = 12 x In.
** 1,0 x IR or 0,5 x IR can be selected. Characteristic of neutral protection (tN vs. IN) is identical to characteristic of phase protection (tR vs. IR).
*** When you specify gF on MCCBs with 3 poles the terminal block is automatically fitted to connect with the external neutral CT for 3 phases 4 wires system. See terminal blocks in section 4.

ELECTRONIC CHARACTERISTICS (STANDARD TYPE)

EB2 1250-VE

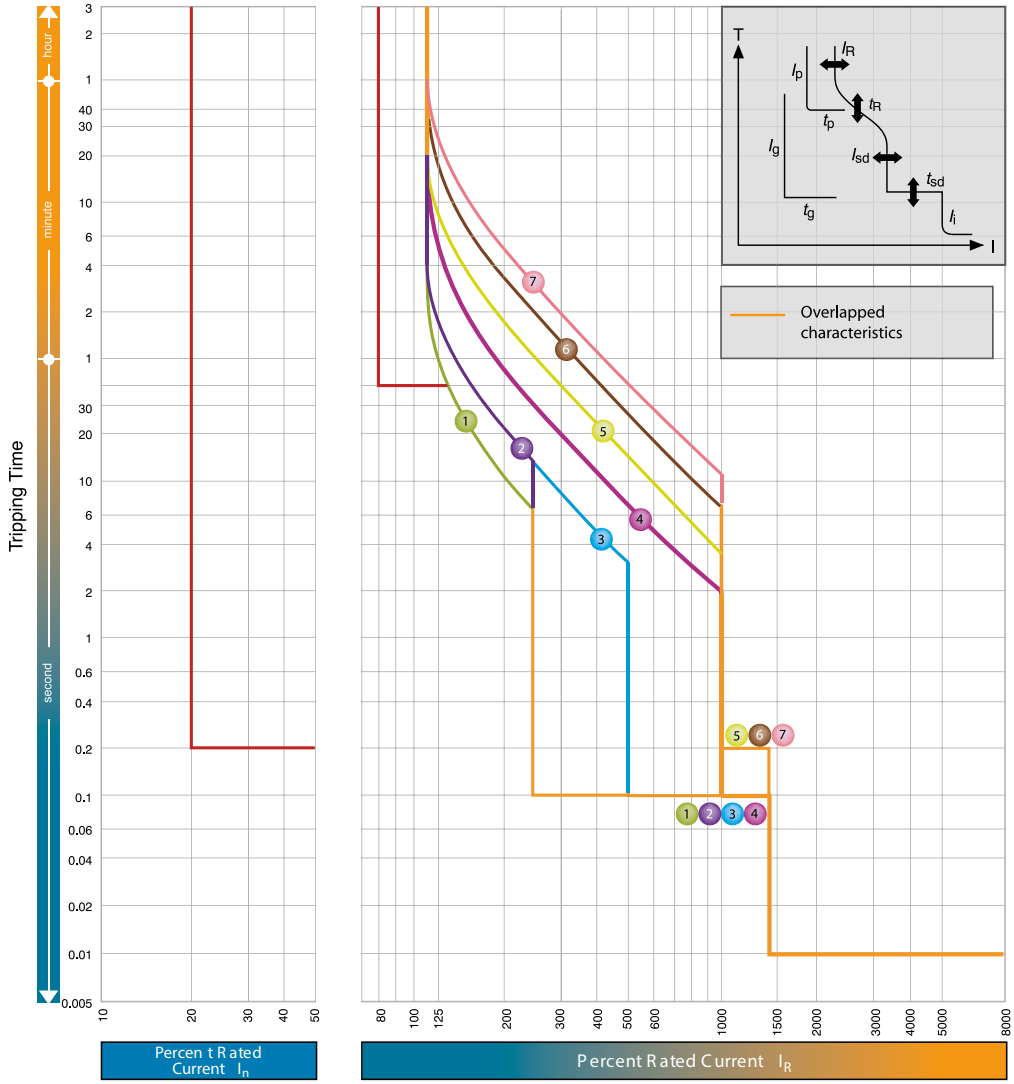


I_n = 800A; 1250A

	I_R (A)									
	LTD Pick-up current IR		xI_n	0.4	0.5	0.63	0.8	0.9	0.95	1.0
	Characteristics		No.	1	2	3	4	5	6	7
Standard	LT	t_R	(s)	11	21	21	5	10	19	29
				at 200% x I_R			at 600% x I_R			
	ST	I_{sd}	xI_R	2.5		5	10			
		t_{sd}	(s)	0.1			0.2			
	INST	I_i	xI_R	14(Max: 12 x I_n) Note (1)						
Option	GF Note (3)	I_g	xI_n	0.2						
		t_g	(s)	0.2						

Note:
(1) I_i max. = 12 x I_n. (2) When you specify GF on MCCBs with 3 poles the terminal block is automatically fitted to connect with the external neutral CT for 3 phases 4 wires system.

EB2 1600 LE, E



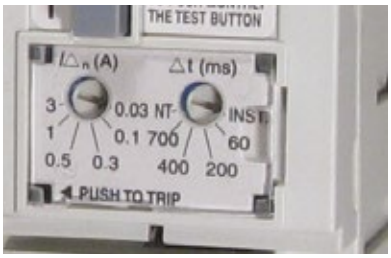
I_n = 1600A

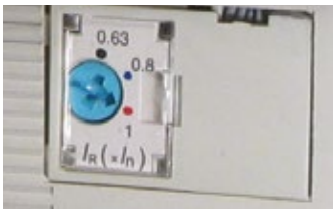
				I_R (A)							
			LTD Pick-up current I_R	x I_n	0.4	0.5	0.63	0.8	0.9	0.95	1.0
		Characteristics		No.	1	2	3	4	5	6	7
Standard	LTD	Index t_R		Index (s)	11 @ 200 % x I_R	21 @ 200 % x I_R	21 @ 200 % x I_R	5 @ 600 % x I_R	10 @ 600 % x I_R	19 @ 600 % x I_R	29 @ 600 % x I_R
	STD	Index I_{sd}		Index x I_R	2.5		5		10		
		Index t_{sd}		Index (s)	0.1					0.2	
	INST	Index I_i		Index x I_R	14 (max.: 12 x I_n)*						
Option	PTA	Index I_p		Index x I_R	0,8						
		Index t_p		Index (s)	40						
	GF	Index I_g		Index x I_n	0,2						
		Index t_g		Index (s)	0,2						
	NP	Index I_N		Index x I_R	1,0/0,5***						
		Index t_N		Index (s)	t_N=t_R						

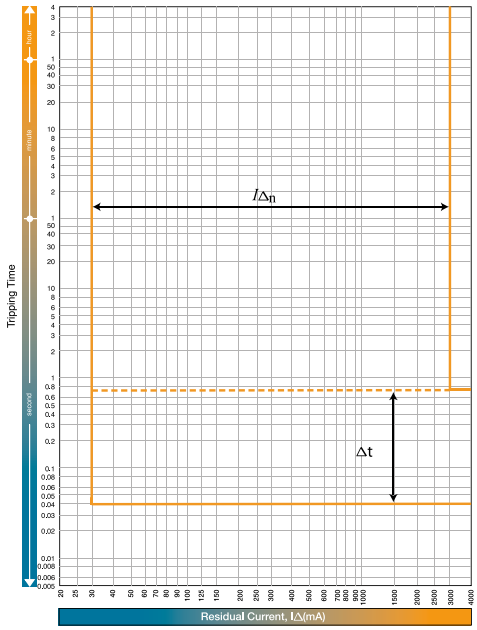
Notes:
*Ii max. = 12 x In.
** 1,0 x IR or 0,5 x IR can be selected. Characteristic of neutral protection (tN vs. IN) is identical to characteristic of phase protection (tR vs. IR).
*** When you specify gF on MCCBs with 3 poles the terminal block is automatically fitted to connect with the external neutral CT for 3 phases 4 wires system. See terminal blocks in section 4.

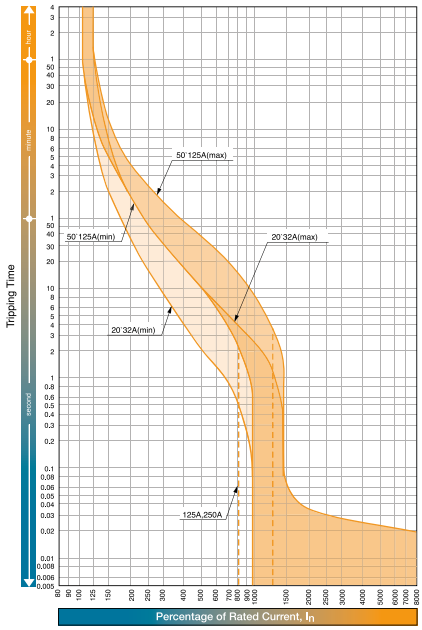
EB2R adjustments

Model	$I_{\Delta n}$	Δt (ms)	I_n (A)	I_i
	Residual current ID is the adjustable tripping threshold for earth leakage protection. It can be set between 30mA and 3A. Available settings are 30mA, 100mA, 300mA, 500mA, 1000mA and 3000mA. Available settings are shown below	Time delay Δt is introduced to the residual current (earth leakage) protection characteristic. Available settings are; INST, 60ms, 200ms, 400ms, 700ms and NT. INST means EB2R set to time delay 0 (max. actual tripping time is 40ms) NT means No trip (tripping time is 0) The maximum breaking time is shown in brackets. Note that IΔn is set at 30mA, Δt defaults 0.	IR is the adjustable tripping threshold for overload protection. It can be set between 0,63 and 1,0 times In. Available In ratings are shown below	Ii is the tripping threshold for short-circuit protection. It is fixed at the values shown below
EB2R 125	0.03, 0.1, 0.3, 0.5, 1, 3	0(40), 60(195), 200(365), 400(620), 700(950), NT (∞)	20, 32, 50, 63, 100	12 x I_n (+/- 20%)
EB2R 125	0.03, 0.1, 0.3, 0.5, 1, 3	0(40), 60(195), 200(365), 400(620), 700(950), NT (∞)	125	10 x I_n (+/- 20%)
EB2R 250	0.03, 0.1, 0.3, 0.5, 1, 3	0(40), 60(195), 200(365), 400(620), 700(950), NT (∞)	160	13 x I_n (+/- 20%)
EB2R 250	0.03, 0.1, 0.3, 0.5, 1, 3	0(40), 60(195), 200(365), 400(620), 700(950), NT (∞)	250	10 x I_n (+/- 20%)









ETIBREAK Low Voltage Moulded Case Circuit Breakers NBS

Low voltage moulded case circuit breakers are used for the switching and protection of power supply cables, motors and other electrical equipment against overloads and short circuit faults.

NBS-TMS series MCCBs can be adjusted between 0.8 - 1.0 x I_n, while short-circuit protection is fixed at 10 x I_n.

NBS-TMD series MCCBs can be adjusted between 0.8 - 1.0 x I_n for frame sizes up to 250A, and between 0.7 - 1.0 x I_n for frame sizes from 315A to 630A. Short-circuit protection is adjustable between 5 - 10 x I_n.

Microprocessor breakers:
NBS-E 100, 160, 250, 400, 630: Standard LSI adjustment dial:
- L - Overload protection
- S - Delayed short-circuit protection
- I - Instantaneous protection

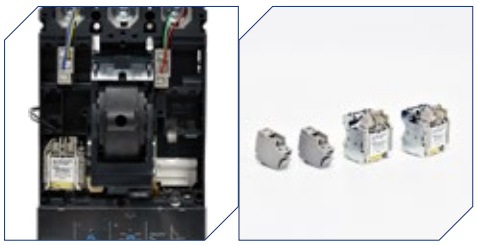
NBS-E 1600: LI protection relay:
- L - Overload protection
- I - Instantaneous protection

NBS-E LCD microprocessor trip units feature an LSI trip unit with adjustable:
- Overload protection
- Short-circuit protection (current and time)
- Instantaneous short-circuit current

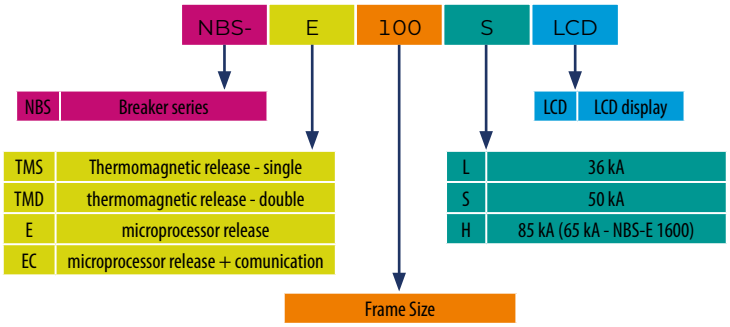
NBS-EC LCD microprocessor trip units provide an LSI trip unit with:
- Overload protection adjustment
- Short-circuit protection adjustment (current and time)
- Instantaneous short-circuit current adjustment
- RS-485 communication port
- Source Microprocessor power supply

Additionally, NBS-EC LCD offers advanced protection functions:
- High and low voltage protection
- Disconnection, asymmetry, and phase change protection
- Frequency control (over and under)
- Temperature monitoring and overheating protection

All protection functions have 3 modes of operation:
- Trip: Protection activates, and the breaker trips when control values are exceeded.
- Alarm: The red LED flashes when control values are exceeded.
- OFF: Protection functions and indicators are disabled.



Auxiliary and Alarm Contacts suit all frames up to 1600A. SHT and UVT types:
Type 1: Frames 100-630A
Type 2: Frame 1600A



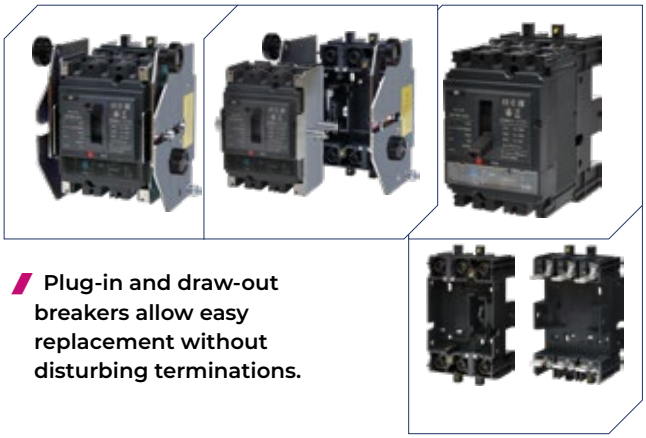
All data on the front side of the breaker are laser printed.

NBS-E and NBS-EC series allow disabling protection functions, enabling the circuit breaker to be used as a switch disconnector.

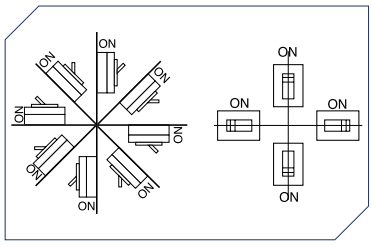
Standard Frame Sizes

Indication on the breaker and the handle shows the status "ON" / "OFF" or "TRIP"

The risk of touching live parts has been minimized by:
- Terminal protection covers
- Interpole barriers, which provide maximum insulation between phases at the terminals



Plug-in and draw-out breakers allow easy replacement without disturbing terminations.



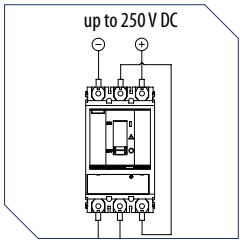
ETIBREAK NBS circuit breakers can be mounted at any angle without affecting performance.

Marking plate on the breaker body indicates minimum and maximum value of the MCCB current

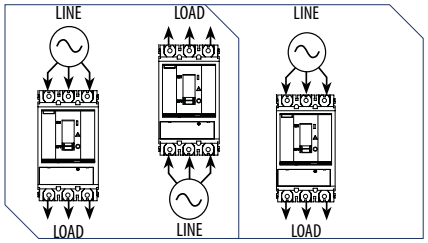
Motor operator provide the possibility of remote ON/ OFF function of MCCB.

Adjustment dials are protected by a transparent cover that can be sealed.

Door-mounted handles enable manual operation of breakers installed in cabinets from the outside.



TMS and TMD series of MCCB's can be used in systems with DC voltage up to 250V.



TMS, TMD, E, and E LCD support bidirectional power flow without performance loss, while EC LCD allows top entry only.

NBS-TC clamps are used for flexible (multicore) conductors. NBS-ZB extension bars are used for compression terminals or flat bars.

Technical data

Frame Size ETIBREAK NBS	100&160&250, 400&630, 1600
Nominal currents	20 - 1600A
Number of poles	3 & 4
Rated impulse withstand voltage Uimp	8 kV
Rated insulation voltage Ui	1000 V
Ultimate breaking capacity Icu	36 - 85 kA
Standards	IEC 60947-2, EN 60947-2

ETIBREAK NBS-TMS/TMD (L - 36kA, with thermomagnetic release

ETIBREAK NBS-TMS 100/3L...4L (L - 36kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	Adjustment thermal/magnetic	kg	
NBS-TMS 100/3L 20A 3P	20	004673001	3	36	(0,8...0,9...1)xIn / 10xIn	1,9	1
NBS-TMS 100/3L 25A 3P	25	004673010				1,9	1
NBS-TMS 100/3L 32A 3P	32	004673002				1,9	1
NBS-TMS 100/3L 40A 3P	40	004673003				1,9	1
NBS-TMS 100/3L 50A 3P	50	004673004				1,9	1
NBS-TMS 100/3L 63A 3P	63	004673005				1,9	1
NBS-TMS 100/3L 80A 3P	80	004673006				1,9	1
NBS-TMS 100/3L 100A 3P	100	004673007				1,9	1
NBS-TMS 100/4L 20A 4P	20	004673011	4	36		2,15	1
NBS-TMS 100/4L 25A 4P	25	004673020				2,15	1
NBS-TMS 100/4L 32A 4P	32	004673012				2,15	1
NBS-TMS 100/4L 40A 4P	40	004673013				2,15	1
NBS-TMS 100/4L 50A 4P	50	004673014				2,15	1
NBS-TMS 100/4L 63A 4P	63	004673015				2,15	1
NBS-TMS 100/4L 80A 4P	80	004673016				2,15	1
NBS-TMS 100/4L 100A 4P	100	004673017				2,15	1

NBS-TMS 100/3L
NBS-TMS 160/3L

ETIBREAK NBS-TMS 160/3L...4L (L - 36kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	Adjustment thermal/magnetic	kg	
NBS-TMS 160/3L 125A 3P	125	004673008	3	36	(0,8...0,9...1)xIn / 10xIn	1,9	1
NBS-TMS 160/3L 160A 3P	160	004673009				1,9	1
NBS-TMS 160/4L 125A 4P	125	004673018	4	36	(0,8...0,9...1)xIn / 10xIn	2,15	1
NBS-TMS 160/4L 160A 4P	160	004673019				2,15	1

NBS-TMD 250/3L

ETIBREAK NBS-TMD 250/3L ...4L(L - 36kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	Adjustment thermal/magnetic	kg	
NBS-TMD 250/3L 200A 3P	200	004673071	3	36	(0,8...0,9...1)xIn /(5-10)xIn	1,9	1
NBS-TMD 250/3L 250A 3P	250	004673072				1,9	1
NBS-TMD 250/4L 200A 4P	200	004673073	4	36	(0,8...0,9...1)xIn /(5-10)xIn	2,15	1
NBS-TMD 250/4L 250A 4P	250	004673074				2,15	1

NBS-TMD 250/4L

ETIBREAK NBS-TMD 400/3L...4L (L - 36kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	Adjustment thermal/magnetic	kg	
NBS-TMD 400/3L 315A 3P	315	004673101	3	36	(0,7..0,8...0,9..1)xIn/ (5-10)xIn	6,75	1
NBS-TMD 400/3L 400A 3P	400	004673102				6,75	1
NBS-TMD 400/4L 315A 4P	315	004673103	4	36	(0,7..0,8...0,9..1)xIn/ (5-10)xIn	8,75	1
NBS-TMD 400/4L 400A 4P	400	004673104				8,75	1

NBS-TMD 400/4L

ETIBREAK NBS-TMD 630/3L...4L (L - 36kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	Adjustment thermal/magnetic	kg	
NBS-TMD 630/3L 500A 3P	500	004673131	3	36	(0,7..0,8...0,9..1)xIn/(5-10)xIn	6,75	1
NBS-TMD 630/3L 600A 3P	600	004673132				6,75	1
NBS-TMD 630/4L 500A 4P	500	004673133	4	36	(0,7..0,8...0,9..1)xIn/(5-10)xIn	8,75	1
NBS-TMD 630/4L 600A 4P	600	004673134				8,75	1

NBS-TMD 400/3L
NBS-TMD 630/3L

ETIBREAK NBS-TMS/TMD (S - 50kA, with thermomagnetic release)

ETIBREAK NBS-TMS 100/3S...4S (S - 50kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	Adjustment thermal/magnetic	kg	
NBS-TMS 100/3S 20A 3P	20	004673021	3	50	(0,8...0,9...1)xIn / 10xIn	1,9	1
NBS-TMS 100/3S 25A 3P	25	004673030				1,9	1
NBS-TMS 100/3S 32A 3P	32	004673022				1,9	1
NBS-TMS 100/3S 40A 3P	40	004673023				1,9	1
NBS-TMS 100/3S 50A 3P	50	004673024				1,9	1
NBS-TMS 100/3S 63A 3P	63	004673025				1,9	1
NBS-TMS 100/3S 80A 3P	80	004673026				1,9	1
NBS-TMS 100/3S 100A 3P	100	004673027				1,9	1
NBS-TMS 100/4S 20A 4P	20	004673031	4	50		2,15	1
NBS-TMS 100/4S 25A 4P	25	004673040				2,15	1
NBS-TMS 100/4S 32A 4P	32	004673032				2,15	1
NBS-TMS 100/4S 40A 4P	40	004673033				2,15	1
NBS-TMS 100/4S 50A 4P	50	004673034				2,15	1
NBS-TMS 100/4S 63A 4P	63	004673035				2,15	1
NBS-TMS 100/4S 80A 4P	80	004673036				2,15	1
NBS-TMS 100/4S 100A 4P	100	004673037				2,15	1

NBS-TMS 100/3S
NBS-TMS 160/3S

NBS-TMS 100/4L

ETIBREAK NBS-TMS 160/3S...4S (S - 50kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	Adjustment thermal/magnetic	kg	
NBS-TMS 160/3S 125A 3P	125	004673028	3	50	(0,8...0,9...1)xIn / 10xIn	1,9	1
NBS-TMS 160/3S 160A 3P	160	004673029				1,9	1
NBS-TMS 160/4S 125A 4P	125	004673038	4	50	(0,8...0,9...1)xIn / 10xIn	2,15	1
NBS-TMS 160/4S 160A 4P	160	004673039				2,15	1

NBS-TMD 250/3S

ETIBREAK NBS-TMD 250/3S...4S (S - 50kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	Adjustment thermal/magnetic	kg	
NBS-TMD 250/3S 200A 3P	200	004673075	3	50	(0,8...0,9...1)xIn / (5-10)xIn	1,9	1
NBS-TMD 250/3S 250A 3P	250	004673076				1,9	1
NBS-TMD 250/4S 200A 4P	200	004673077	4	50	(0,8...0,9...1)xIn / (5-10)xIn	2,15	1
NBS-TMD 250/4S 250A 4P	250	004673078				2,15	1

ETIBREAK NBS-TMD 400/3S...4S (S - 50kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	Adjustment thermal/magnetic	kg	
NBS-TMD 400/3S 315A 3P	315	004673105	3	50	(0,7..0,8...0,9..1)xIn/(5-10)xIn	6,75	1
NBS-TMD 400/3S 400A 3P	400	004673106				6,75	1
NBS-TMD 400/4S 315A 4P	315	004673107	4	50	(0,7..0,8...0,9..1)xIn/(5-10)xIn	8,75	1
NBS-TMD 400/4S 400A 4P	400	004673108				8,75	1

NBS-TMD 400/3S
NBS-TMD 630/3S

ETIBREAK NBS-TMD 630/3S...4S (S - 50kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	Adjustment thermal/magnetic	kg	
NBS-TMD 630/3S 500A 3P	500	004673135	3	50	(0,7..0,8...0,9..1)xIn/(5-10)xIn	6,75	1
NBS-TMD 630/3S 600A 3P	600	004673136				6,75	1
NBS-TMD 630/4S 500A 4P	500	004673137	4	50	(0,7..0,8...0,9..1)xIn/(5-10)xIn	8,75	1
NBS-TMD 630/4S 600A 4P	600	004673138				8,75	1

ETIBREAK NBS-E (L - 36kA, S - 50kA, H - 65/85kA, with microprocessor release)

ETIBREAK NBS-E 100...250/3L...4L (L - 36kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	$L(I_r)/S(I_{sd})/I(I_i)$	kg	
NBS-E 100/3L 100A 3P	100	004673041	3	36	(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 1500A	1,9	1
NBS-E 160/3L 160A 3P	160	004673055			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 2400A	1,9	1
NBS-E 250/3L 250A 3P	250	004673079			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 3000A	1,9	1
NBS-E 100/4L 100A 4P	100	004673042	4	36	(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 1500A	2,15	1
NBS-E 160/4L 160A 4P	160	004673056			0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 2400A	2,15	1
NBS-E 250/4L 250A 4P	250	004673080			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 3000A	2,15	1

NBS-E 100/3L ..3S ..3H
NBS-E 160/3L ..3S ..3H
NBS-E 250/3L ..3S ..3H

ETIBREAK NBS-E 400&630/3L...4L (L - 36kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	$L(I_r)/S(I_{sd})/I(I_i)$	kg	
NBS-E 400/3L 400A 3P	400	004673109	3	36	(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 4800A	6,75	1
NBS-E 630/3L 630A 3P	630	004673139			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 6930A	6,75	1
NBS-E 400/4L 400A 4P	400	004673110	4	36	(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 4800A	8,75	1
NBS-E 630/4L 630A 4P	630	004673140			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 6930A	8,75	1

NBS-E 400/3L ..3S ..3H
NBS-E 630/3L ..3S ..3H

ETIBREAK NBS-E 800...1600/3L...4L (L - 36kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	$L(I_r)/S(I_{sd})/I(I_i)$	kg	
NBS-E 1600/3L 800A 3P	800	004673160	3	36	(0,4-1) x In / (1,5-10) x Ir	13,8	1
NBS-E 1600/3L 1000A 3P	1000	004673161			(0,4-1) x In / (1,5-10) x Ir	13,8	1
NBS-E 1600/3L 1250A 3P	1250	004673162			(0,4-1) x In / (1,5-10) x Ir	13,8	1
NBS-E 1600/3L 1600A 3P	1600	004673163			(0,4-1) x In / (1,5-10) x Ir	13,8	1
NBS-E 1600/4L 800A 4P	800	004673165	4	36	(0,4-1) x In / (1,5-10) x Ir	17,5	1
NBS-E 1600/4L 1000A 4P	1000	004673166			(0,4-1) x In / (1,5-10) x Ir	17,5	1
NBS-E 1600/4L 1250A 4P	1250	004673167			(0,4-1) x In / (1,5-10) x Ir	17,5	1
NBS-E 1600/4L 1600A 4P	1600	004673168			(0,4-1) x In / (1,5-10) x Ir	17,5	1

NBS-E 1600/3L ..3S ..3H

ETIBREAK NBS-E 100...250/3S...4S (S - 50kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	$L(I_r)/S(I_{sd})/I(I_i)$	kg	
NBS-E 100/3S 100A 3P	100	004673043	3	50	(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 1500A	1,9	1
NBS-E 160/3S 160A 3P	160	004673057			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 2400A	1,9	1
NBS-E 250/3S 250A 3P	250	004673081			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 3000A	1,9	1
NBS-E 100/4S 100A 4P	100	004673044	4	50	(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 1500A	2,15	1
NBS-E 160/4S 160A 4P	160	004673058			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 2400A	2,15	1
NBS-E 250/4S 250A 4P	250	004673082			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 3000A	2,15	1

ETIBREAK NBS-E 400&630/3S...4S (S - 50kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / S (I_{sd}) / I (I_i)	kg	
NBS-E 400/3S 400A 3P	400	004673111	3	50	(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 4800A	6,75	1
NBS-E 630/3S 630A 3P	630	004673141			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 6930A	6,75	1
NBS-E 400/4S 400A 4P	400	004673112	4	50	(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 4800A	8,75	1
NBS-E 630/4S 630A 4P	630	004673142			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 6930A	8,75	1

ETIBREAK NBS-E 800...1600/3S...4S (S - 50kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / I (I_{sd})	kg	
NBS-E 1600/3S 800A 3P	800	004673170	3	50	(0,4-1) x In / (1,5-10) x Ir	13,8	1
NBS-E 1600/3S 1000A 3P	1000	004673171			(0,4-1) x In / (1,5-10) x Ir	13,8	1
NBS-E 1600/3S 1250A 3P	1250	004673172			(0,4-1) x In / (1,5-10) x Ir	13,8	1
NBS-E 1600/3S 1600A 3P	1600	004673173			(0,4-1) x In / (1,5-10) x Ir	13,8	1
NBS-E 1600/4S 800A 4P	800	004673175	4	50	(0,4-1) x In / (1,5-10) x Ir	17,5	1
NBS-E 1600/4S 1000A 4P	1000	004673176			(0,4-1) x In / (1,5-10) x Ir	17,5	1
NBS-E 1600/4S 1250A 4P	1250	004673177			(0,4-1) x In / (1,5-10) x Ir	17,5	1
NBS-E 1600/4S 1600A 4P	1600	004673178			(0,4-1) x In / (1,5-10) x Ir	17,5	1

NBS-E 100/4L ..4S ..4H
NBS-E 160/4L ..4S ..4H
NBS-E 250/4L ..4S ..4H

ETIBREAK NBS-E 100...250/3H...4H (H - 85kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / S (I_{sd}) / I (I_i)	kg	
NBS-E 100/3H 100A 3P	100	004673045	3	85	(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 1500A	1,9	1
NBS-E 160/3H 160A 3P	160	004673059			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 2400A	1,9	1
NBS-E 250/3H 250A 3P	250	004673083			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 3000A	1,9	1
NBS-E 100/4H 100A 4P	100	004673046	4	85	(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 1500A	2,15	1
NBS-E 160/4H 160A 4P	160	004673060			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 2400A	2,15	1
NBS-E 250/4H 250A 4P	250	004673084			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 3000A	2,15	1

NBS-E 400/4L ..4S ..4H

ETIBREAK NBS-E 400&630/3H...4H (H - 85kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / S (I_{sd}) / I (I_i)	kg	
NBS-E 400/3H 400A 3P	400	004673113	3	85	(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 4800A	6,75	1
NBS-E 630/3H 630A 3P	630	004673143			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 6930A	6,75	1
NBS-E 400/4H 400A 4P	400	004673114	4	85	(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 4800A	8,75	1
NBS-E 630/4H 630A 4P	630	004673144			(0,4-1) x In x (0,9-1) / (1,5-10) x Ir / 6930A	8,75	1

ETIBREAK NBS-E 800...1600/3H...4H (H - 65kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / I (I_{sd})	kg	
NBS-E 1600/3H 800A 3P	800	004673180	3	65	(0,4-1) x In / (1,5-10) x Ir	13,8	1
NBS-E 1600/3H 1000A 3P	1000	004673181			(0,4-1) x In / (1,5-10) x Ir	13,8	1
NBS-E 1600/3H 1250A 3P	1250	004673182			(0,4-1) x In / (1,5-10) x Ir	13,8	1
NBS-E 1600/3H 1600A 3P	1600	004673183			(0,4-1) x In / (1,5-10) x Ir	13,8	1
NBS-E 1600/4H 800A 4P	800	004673185	4	65	(0,4-1) x In / (1,5-10) x Ir	17,5	1
NBS-E 1600/4H 1000A 4P	1000	004673186			(0,4-1) x In / (1,5-10) x Ir	17,5	1
NBS-E 1600/4H 1250A 4P	1250	004673187			(0,4-1) x In / (1,5-10) x Ir	17,5	1
NBS-E 1600/4H 1600A 4P	1600	004673188			(0,4-1) x In / (1,5-10) x Ir	17,5	1

NBS-E 1600/4L ..4S ..4H

ETIBREAK NBS-E (L - 36kA, S - 50kA, with microprocessor release and LCD display)

ETIBREAK NBS-E 100...250/3L...4L LCD (L - 36kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / S (I_{sd}) / I (I_i)	kg	
NBS-E 100/3L LCD 100A 3P	100	004673047	3	36	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	1,9	1
NBS-E 160/3L LCD 160A 3P	160	004673061				1,9	1
NBS-E 250/3L LCD 250A 3P	250	004673085				1,9	1
NBS-E 100/4L LCD 100A 4P	100	004673048	4	36	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	2,15	1
NBS-E 160/4L LCD 160A 4P	160	004673062				2,15	1
NBS-E 250/4L LCD 250A 4P	250	004673086				2,15	1

NBS-E 100/3L ..3S LCD
NBS-E 160/3L ..3S LCD
NBS-E 250/3L ..3S LCD

ETIBREAK NBS-E 400&630/3L...4L LCD (L - 36kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / S (I_{sd}) / I (I_i)	kg	
NBS-E 400/3L LCD 400A 3P	400	004673115	3	36	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	6,75	1
NBS-E 630/3L LCD 630A 3P	630	004673145				6,75	1
NBS-E 400/4L LCD 400A 4P	400	004673116	4	36	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	8,75	1
NBS-E 630/4L LCD 630A 4P	630	004673146				8,75	1

NBS-E 400/3L ..3S LCD NBS-E 630/3L ..3S LCD

ETIBREAK NBS-E 100...250/3S...4S LCD (S - 50kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / S (I_{sd}) / I (I_i)	kg	
NBS-E 100/3S LCD 100A 3P	100	004673049	3	50	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	1,9	1
NBS-E 160/3S LCD 160A 3P	160	004673063				1,9	1
NBS-E 250/3S LCD 250A 3P	250	004673087				1,9	1
NBS-E 100/4S LCD 100A 4P	100	004673050	4	50	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	2,15	1
NBS-E 160/4S LCD 160A 4P	160	004673064				2,15	1
NBS-E 250/4S LCD 250A 4P	250	004673088				2,15	1

ETIBREAK NBS-E 400&630/3S...4S LCD (S - 50kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / S (I_{sd}) / I (I_i)	kg	
NBS-E 400/3S LCD 400A 3P	400	004673117	3	50	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	6,75	1
NBS-E 630/3S LCD 630A 3P	630	004673147				6,75	1
NBS-E 400/4S LCD 400A 4P	400	004673118	4	50	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	8,75	1
NBS-E 630/4S LCD 630A 4P	630	004673148				8,75	1

ETIBREAK NBS-E 800&1600/3L...4L LCD (L - 36kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / S (I_{sd}) / I (I_i)	kg	
NBS-E 1600/3L LCD 800A 3P	800	004673190	3	36	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	13,8	1
NBS-E 1600/3L LCD 1000A 3P	1000	004673191				13,8	1
NBS-E 1600/3L LCD 1250A 3P	1250	004673192				13,8	1
NBS-E 1600/3L LCD 1600A 3P	1600	004673193				13,8	1
NBS-E 1600/4L LCD 800A 4P	800	004673195	4	36	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	17,5	1
NBS-E 1600/4L LCD 1000A 4P	1000	004673196				17,5	1
NBS-E 1600/4L LCD 1250A 4P	1250	004673197				17,5	1
NBS-E 1600/4L LCD 1600A 4P	1600	004673198				17,5	1

ETIBREAK NBS-E 800&1600/3S...4S LCD (L - 50kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / S (I_{sd}) / I (I_i)	kg	
NBS-E 1600/3S LCD 800A 3P	800	004673200	3	36	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	13,8	1
NBS-E 1600/3S LCD 1000A 3P	1000	004673201				13,8	1
NBS-E 1600/3S LCD 1250A 3P	1250	004673202				13,8	1
NBS-E 1600/3S LCD 1600A 3P	1600	004673203				13,8	1
NBS-E 1600/4S LCD 800A 4P	800	004673205	4	36	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	17,5	1
NBS-E 1600/4S LCD 1000A 4P	1000	004673206				17,5	1
NBS-E 1600/4S LCD 1250A 4P	1250	004673207				17,5	1
NBS-E 1600/4S LCD 1600A 4P	1600	004673208				17,5	1

ETIBREAK NBS-EC (L - 36kA, S - 50kA, with microprocessor release, LCD display +RS485)

ETIBREAK NBS-EC 100&160&250/3L...4L LCD (L - 36kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / S (I_{sd}) / I (I_i)	kg	
NBS-EC 100/3L LCD 100A 3P	100	004673051	3	36	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	1,9	1
NBS-EC 160/3L LCD 160A 3P	160	004673065				1,9	1
NBS-EC 250/3L LCD 250A 3P	250	004673089				1,9	1
NBS-EC 100/4L LCD 100A 4P	100	004673052	4	36	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	2,15	1
NBS-EC 160/4L LCD 160A 4P	160	004673066				2,15	1
NBS-EC 250/4L LCD 250A 4P	250	004673090				2,15	1

NBS-EC 100/3L ..3S LCD
NBS-EC 160/3L ..3S LCD
NBS-EC 250/3L ..3S LCD

ETIBREAK NBS-EC 400&630/3L...4L LCD (L - 36kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / S (I_{sd}) / I (I_i)	kg	
NBS-EC 400/3L LCD 400A 3P	400	004673119	3	36	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	6,75	1
NBS-EC 630/3L LCD 630A 3P	630	004673149				6,75	1
NBS-EC 400/4L LCD 400A 4P	400	004673120	4	36	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	8,75	1
NBS-EC 630/4L LCD 630A 4P	630	004673150				8,75	1

NBS-EC 400/3L ..3S LCD NBS-EC 630/3L ..3S LCD

ETIBREAK NBS-EC 100&160&250/3S...4S LCD (S - 50kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / S (I_{sd}) / I (I_i)	kg	
NBS-EC 100/3S LCD 100A 3P	100	004673053	3	50	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	1,9	1
NBS-EC 160/3S LCD 160A 3P	160	004673067				1,9	1
NBS-EC 250/3S LCD 250A 3P	250	004673091				1,9	1
NBS-EC 100/4S LCD 100A 4P	100	004673054	4	50	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	2,15	1
NBS-EC 160/4S LCD 160A 4P	160	004673068				2,15	1
NBS-EC 250/4S LCD 250A 4P	250	004673092				2,15	1

ETIBREAK NBS-EC 400&630/3S...4S LCD (S - 50kA)

Type	I_N [A]	Code No.	Poles	$I_{cs}=I_{cu}$ 415V [kA]	L (I_r) / S (I_{sd}) / I (I_i)	kg	
NBS-EC 400/3S LCD 400A 3P	400	004673121	3	50	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	6,75	1
NBS-EC 630/3S LCD 630A 3P	630	004673151				6,75	1
NBS-EC 400/4S LCD 400A 4P	400	004673122	4	50	(0,4-1) x In / (1,5-12) x Ir / (2-15) x In	8,75	1
NBS-EC 630/4S LCD 630A 4P	630	004673152				8,75	1

Internal accessories

Auxiliary switch for NBS

Type	Code No.	Description	Compatibility	
NBS-PS 100-1600AF	004673211	Auxiliary switch 1xCO	NBS 20-1600A	1/1

Operating current: 24V AC/DC – AC15/3A, DC14/1A; 220/240V AC – AC15/2A; 380/440V AC – AC15/1.5A.

Auxiliary switch 1xCO

Signal switch for NBS

Type	Code No.	Description	Compatibility	
NBS-SS 100-1600AF	004673212	Signal switch 1xCO	NBS 20-1600A	1/1

Operating current: 24V AC/DC – AC15/3A, DC14/1A; 220/240V AC – AC15/2A; 380/440V AC – AC15/1.5A.

Signal switch 1xCO

Shunt trip for NBS

Type	Code No.	Description	Compatibility	
NBS-DA 100-630AF AC220/230V	004673215	Shunt trip AC 220-230V	NBS 20-630A	1/1
NBS-DA 100-630AF AC380/400V	004673216	Shunt trip AC 380-400V		1/1
NBS-DA 1600AF AC220/230V	004673217	Shunt trip AC 220-230V	NBS 800-1600A	1/1
NBS-DA 1600AF AC380/400V	004673218	Shunt trip AC 380-400V		1/1
NBS-DA 100-630AF DC24V	004673219	Shunt trip DC 24V	NBS 20-630A	1/1
NBS-DA 1600AF DC24V	004673220	Shunt trip DC 24V	NBS 800-1600A	1/1

IMPORTANT NOTE: The shunt trip unit NBS-DA and undervoltage trip unit NBS-NA cannot be mounted in the same breaker

Shunt trip
NBS-DA 100-630AF

Shunt trip
NBS-DA 1600AF

Undervoltage trip for NBS

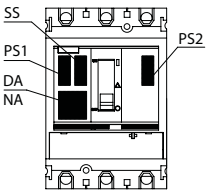
Type	Code No.	Description	Compatibility	
NBS-NA 100-630AF AC220/230V	004673221	Undervoltage trip AC 220-230V	NBS 20-630A	1/1
NBS-NA 100-630AF AC380/400V	004673222	Undervoltage trip AC 380-400V		1/1
NBS-NA 1600AF AC220/230V	004673223	Undervoltage trip AC 220-230V	NBS 800-1600A	1/1
NBS-NA 1600AF AC380/400V	004673224	Undervoltage trip AC 380-400V		1/1

IMPORTANT NOTE: The shunt trip unit NBS-DA and undervoltage trip unit NBS-NA cannot be mounted in the same breaker

Undervoltage trip NBS-NA
100-630AF

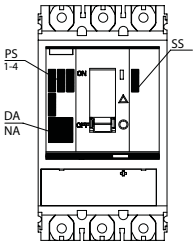
Undervoltage trip
NBS-NA 1600AF

ETIBREAK NBS 100, 160, 250



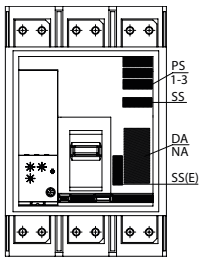
NBS-PS 100-1600AF
NBS-SS 100-1600AF

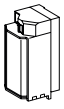
ETIBREAK NBS 400, 630



NBS-DA 100-630AF
NBS-NA 100-630AF

ETIBREAK NBS 1600





NBS-DA 1600AF
NBS-NA 1600AF

NBS-MO 100-250

NBS-MO 400-630

External accessories

Motor operator for NBS

Type	Code No.	Description	Compatibility	kg	
NBS-MO 100-250AF AC220/230V	004673231	Motor operator AC 220-230V	NBS 20-250A	1,32	1
NBS-MO 400-630AF AC220/230V	004673232	Motor operator AC 220-230V	NBS 400-630A	3,67	1
NBS-MO 1600AF AC220/230V	004673233	Motor operator AC 220-230V	NBS 800-1600A	4,76	1
NBS-MO 100-250AF AC220/230V 4P	004673281	Motor operator AC 220-230V	NBS 20-250A	1,5	1
NBS-MO 400-630AF AC220/230V 4P	004673282	Motor operator AC 220-230V	NBS 400-630A	3,9	1
NBS-MO 1600AF AC220/230V 4P	004673283	Motor operator AC 220-230V	NBS 800-1600A	5,0	1

NBS-MO 1600

Door mounted handle for NBS

Type	Code No.	Description	Compatibility	kg	
NBS-RO 100-250AF	004673225	Door mounted handle	NBS 20-250A	0,45	1
NBS-RO 400-630AF	004673226	Door mounted handle	NBS 400-630A	0,65	1
NBS-RO 1600AF	004673227	Door mounted handle	NBS 800-1600A	2,12	1

NOTE: NBS-RO 100-250AF, NBS-RO 400-630AF - shaft length 470mm. NBS-RO 1600AF - shaft length 425mm.

Plug-in kit for NBS

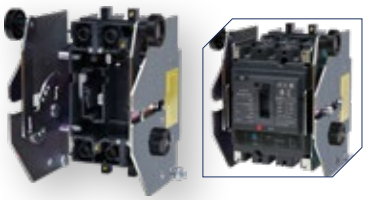
Type	Code No.	Description	Compatibility	kg	
NBS-PLIN 100-250AF 3P	004673271*	Plug-in base	NBS 20-250A	1,25	1
NBS-PLIN 400-630AF 3P	004673272**	Plug-in base	NBS 400-630A	3,42	1
NBS-PLIN 100-250AF 4P	004673273*	Plug-in base	NBS 20-250A	1,6	1
NBS-PLIN 400-630AF 4P	004673274**	Plug-in base	NBS 400-630A	4,52	1

NOTE: * Caution! The maximum rated current of the kit NBS-PLIN for NBS 100&250A circuit breakers without exceeding the permissible temperature is 210A. ** Caution! The maximum rated current of the kit NBS-PLIN for NBS 400&630A circuit breakers without exceeding the permissible temperature is 500A. NBS-PRS protective covers are included.

Draw-out set for NBS

Type	Code No.	Description	Compatibility	kg	
NBS-DOS 100-250AF 3P	004673275*	Chassis	NBS 20-250A	3,34	1
NBS-DOS 400-630AF 3P	004673276**	Chassis	NBS 400-630A	7,90	1
NBS-DOS 100-250AF 4P	004673277*	Chassis	NBS 20-250A	-	1
NBS-DOS 400-630AF 4P	004673278**	Chassis	NBS 400-630A	-	1

NOTE: * Caution! The maximum rated current of the kit NBS-DOS for NBS 100&250A circuit breakers without exceeding the permissible temperature is 210A. ** Caution! The maximum rated current of the kit NBS-DOS for NBS 400&630A circuit breakers without exceeding the permissible temperature is 500A.



Terminal protective cover for NBS

Type	Code No.	Description	Compatibility	kg	
NBS-PRS 100-250AF 3P	004673235	Terminal cover	NBS 20-250A	0,08	2
NBS-PRS 400-630AF 3P	004673236	Terminal cover	NBS 400-630A	0,16	2
NBS-PRS 100-250AF 4P	004673237	Terminal cover	NBS 20-250A	0,11	2
NBS-PRS 400-630AF 4P	004673238	Terminal cover	NBS 400-630A	0,22	2

Interpole barriers for NBS

Type	Code No.	Description	Compatibility	kg	
NBS-IZ 100-250AF 3P	004673241	Interpole barriers	NBS 20-250A	0,10	4
NBS-IZ 400-630AF 3P	004673242	Interpole barriers	NBS 400-630A	0,15	4
NBS-IZ 1600AF 3P	004673243	Interpole barriers	NBS 800-1600A	0,20	4
NBS-IZ 100-250AF 4P	004673244	Interpole barriers	NBS 20-250A	0,15	6
NBS-IZ 400-630AF 4P	004673245	Interpole barriers	NBS 400-630A	0,23	6
NBS-IZ 1600AF 4P	004673246	Interpole barriers	NBS 800-1600A	0,30	6

Attach busbars for NBS

Type	Code No.	Description	Compatibility	kg	
NBS-ZB 100-250AF 3P	004673251	Interpole barriers	NBS 20-250A	0,28	6
NBS-ZB 400-630AF 3P	004673252	Interpole barriers	NBS 400-630A	0,75	6
NBS-ZB 1600AF 3P	004673253	Interpole barriers	NBS 800-1600A	3,15	6
NBS-ZB 100-250AF 4P	004673254	Interpole barriers	NBS 20-250A	0,38	8
NBS-ZB 400-630AF 4P	004673255	Interpole barriers	NBS 400-630A	1,01	8
NBS-ZB 1600AF 4P	004673256	Interpole barriers	NBS 800-1600A	4,29	8

Cable clamp terminals for NBS

Type	Code No.	Description	Compatibility	kg	
NBS-TC 100-250AF 3P	004673261	Clamps for flexible conductors 150-240mm^2	NBS 20-250A	0,12	6
NBS-TC 100-250AF 4P	004673262	Clamps for flexible conductors 150-240mm^2	NBS 20-250A	0,27	8

Release types

Thermomagnetic release NBS-TMS

MCCB's with thermomagnetic release can be used in industrial and comercial electrical instalations for protection of cables supplied by transformers.

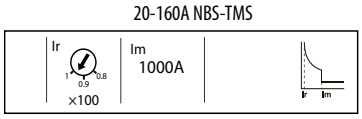
Protection:
Thermal protection (I_r)
Overload protection (thermal protection) is ensured by using a bimetallic plate which will be activated when its temperature, due to overcurent, will increase and consequently activate the switching mechanism which will trip the MCCB.
Overload protection setting I_r - adjustable in amperes (A) within 0.8 - 1 of rated current of the MCCB.

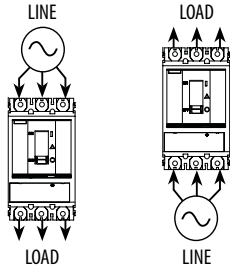
Magnetic protection (I_m)
Protection against short circuits is carried out using an electromagnetic release, which performs an instant shutdown of the MCCB, when the I_m set point is exceeded. In this series of MCCB's I_m is fixed and it is 10 x I_n.

Note: Adjustment dials are covered with transparent covers which can be sealed.

Thermomagnetic relese NBS-TMS

Rated current (A)	I_n @ 40°C	20	25	32	40	50	63	80	100	125	160
MCCB type	NBS-TMS 100	•	•	•	•	•	•	•	•		
	NBS-TMS 160									•	•
Thermal protection											
Current setting (A) Release between 1.05 and 1.2 Ir	$I_r = I_n$ x ...	Adjustable in range from 0.8 to 1 x In									
Time adjustment (s)	t_r	NON - adjustable									
Electromagnetic protection											
Current setting (A) Tolerance ±20%	I_m	NON - adjustable Im = 10 x In									





Thermomagnetic release NBS-TMD

MCCB's with thermomagnetic release can be used in industrial and comercial electrical instalations for protection of cables supplied by transformers.

Protection:
Thermal protection (I_r)
Overload protection (thermal protection) is ensured by using a bimetallic plate which will be activated when its temperature, due to overcurent, will increase and consequently activate the switching mechanism which will trip the MCCB.
Overload protection setting settings I_r - adjustable in amperes for ratings 200-250A within 0.8 - 1, and for ratings 315-600A within 0.7 - 1 of the rated current of MCCB.

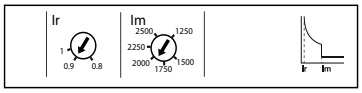
Magnetic protection (I_m)
Protection against short circuits is carried out using an electromagnetic release, which performs an instant shutdown of the MCCB, when the I_m set point is exceeded. In this series of MCCB's I_m is adjustable between 5 and 10 x I_n.

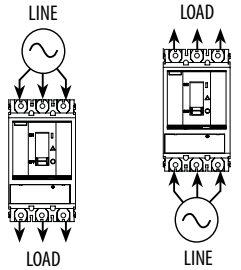
Note: Adjustment dials are covered with transparent covers which can be sealed.

Thermomagnetic release NBS-TMD

Rated current (A)	I_n @ 40°C	200	250	315	400	500	600
MCCB type	NBS-TMD 250	•	•				
	NBS-TMD 400			•	•		
	NBS-TMD 630					•	•
Thermal protection							
Current setting (A) Release between 1.05 and 1.2 Ir	$I_r = I_n$ x ...	Adjustable in range from 0.8 to 1 x In		Adjustable in range from 0.7 to 1 x In			
Time adjustment (s)	t_r	NON - adjustable					
Electromagnetic protection							
Current setting (A) Tolerance ±20%	I_m	Adjustable Im = (5-10) x In					

200-600A NBS-TMD





Electronic release NBS-E (100-630A)

MCCB's with electronic release can be used in industrial and comercial electrical instalations for protection of cables supplied by transformers.

Protection:
Adjustment dials on the front panel provides fine adjustment.

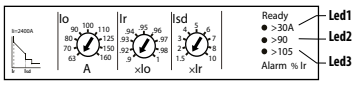
L Overload protection (Ir)
Inverse time protection against overloads with 2 adjustment dials:
Io- rough adjustment between 0,4 to 1 x In
Ir - fine adjustment between 0,9 and 1 of set Io

S Fixed time delayed short-circuit protection (Isd)
Protection with an adjustable pick-up Isd. Tripping takes place after a very short delay used to allow discrimination with the downstream device.
I Instantaneous short-circuit protection (Ii)
Instantaneous short-circuit protection with non-adjustable current setting Ii.

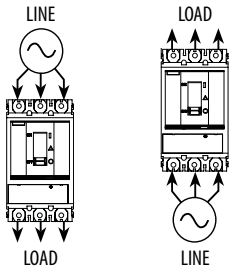
Indication:
On the front panel of the MCCB are 3 LED lights indicating the status of the breaker:
Green - ready LED. Flashes slowly, signaling that MCCB is working and is prepared to operate, protect the instalation. Minimum load current is required so that this function will work.... minimum load current of 30A for MCCB with rated current up to 250A and 50A for MCCB with a rated current of more than 250A.
Orange - overload warning LED. Lights up when current is higher than 90% of the set value of Ir.
Red - overload alarm LED. Lights up when the current is higher than 105% of the set value of Ir.

Note: Adjustment dials are covered with transparent covers which can be sealed.

100-630A NBS-E



Indication
- Led1 - green
- Led2 - orange
- Led3 - red



Electronic release NBS-E

Rated current (A)	In @ 40°C	100	160	250	400	630
MCCB type	NBS-E 100	•				
	NBS-E 160		•			
	NBS-E 250			•		
	NBS-E 400				•	
	NBS-E 630					•

(L) Overload protection										
		I_o	Value of possible current settings depending on In adjustment dials positions							
Current setting (A) Switching off between 1,05 and1,2 Ir	$I_n = 100$	$I_o =$	40	45	50	55	63	70	80	90	100
	$I_n = 160$	$I_o =$	63	70	80	90	100	110	125	150	160
	$I_n = 250$	$I_o =$	100	112	125	140	160	175	200	225	250
	$I_n = 400$	$I_o =$	160	180	200	230	250	280	320	360	400
	$I_n = 630$	$I_o =$	250	280	320	350	400	450	500	570	630
	$I_r = I_o$ x ...		Fine adjustment from 0.9 to 1, possible positions (0.9 – 0.92 – 0.93 – 0.94 – 0.95 – 0.96 – 0.97 – 0.98 – 1) for each value of Io								
Time adjustment (s)	t_r		NON - adjustable								
Selective current disconnection with constant time setting											
Current setting(A) Tolerance±10%	$I_{sd} = I_r$ x ...		1,5	2	3	4	5	6	7	8	10
Time delay (ms)	t_{sd}		NON - adjustable								
	min tripping time		20								
	max tripping time		80								
Instantaneous protection											
Current setting (A) Tolerance ±15 %	NON - adjustable Ii		1500		2400		3000		4800		6930
	min tripping time		10ms								
	max tripping time		50ms								

Electronic release NBS-E (800-1600A)

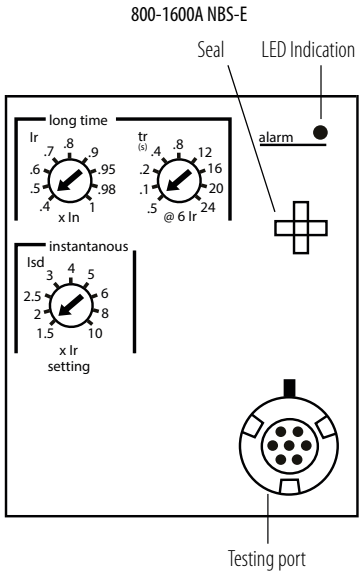
MCCB's with electronic release can be used in industrial and comercial electrical instalations for protection of cables supplied by transformers.

Protection:
Protection settings are made by using adjustment dials on the front panel of the MCCB.

L Overload protection (Ir)
Inverse time protection against overloads with 2 adjustment dials:
Ir- setting of release current in amperes between 0,4 to 1 x In
tr - overload time protection setting

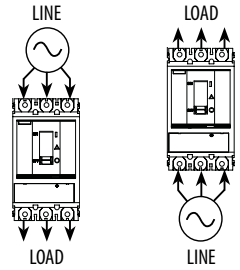
I Instantaneous short-circuit protection (Isd)
Protection with an adjustable pick-up Isd. Tripping takes place after a very short
delay used to allow discrimination with the downstream device.

Indication:
On the front panel of the MCCB is an overload LED alarm which lights up when the load exceeds the set value of Ir.



Electronic release NBS-E

Rated current(A)	In @ 40°C		800		1000		1250		1600	
MCCB type	NBS-E 800		•							
	NBS-E 1000				•					
	NBS-E 1250						•			
	NBS-E 1600								•	
(L) Overload protection										
		I_r	Value of possible current settings depending on In adjustment dials positions							
Current setting (A) Switching off between 1,05 and 1,2 I_r	I_n = 800	I_r =	320	400	480	560	640	720	760	784	800
	I_n = 1000	I_r =	400	500	600	700	800	900	950	980	1000
	I_n = 1250	I_r =	500	625	750	875	1000	1125	1187	1225	1250
	I_n = 1600	I_r =	640	800	960	1120	1280	1440	1520	1568	1600
Time setting (s)	Load current		Adjusted value								
			0,5	1	2	4	8	12	16	20	24
	1,5 x I_r (tolerance 0-30%)		12,5	25	50	100	200	300	400	500	600
	6 x I_r (tolerance 0-20%)		0,5	1	2	4	8	12	16	20	24
	7,2 x I_r (tolerance 0-20%)		0,7	0,69	1,38	2,7	5,5	8,3	11	13,8	16,6
(I) Instantaneous protection											
Current setting (A) Tolerance ±10%	$I_{sd} = I_r$ x ...		1,5	2	2,5	3	4	5	6	8	10
	min tripping time		20 ms								
	max tripping time		80 ms								



Electronic release NBS-E LCD

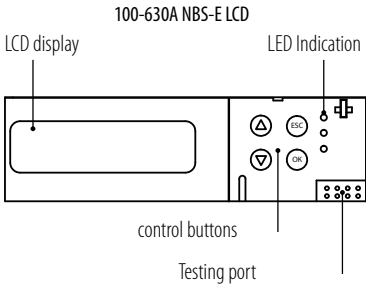
NBS-E LCD MCCB's have a built-in display to indicate parameter settings and display of measurement values and are equipped with a microprocessor-based trip unit, which has significant advantages compared to a thermomagnetic release: a diverse selection of settings needed by the user, high accuracy of execution of the given program, status indicators of release.
This makes it possible to use these switches in various areas, in particular during construction of selective protection schemes
Protection:
Protection settings are made using the control buttons on the front panel of the MCCB with the possibility of fine adjustment. The setting buttons are covered with transparent covers which can be sealed.
L Overload protection (Ir)
Inverse time protection against overloads with 2 adjustments:
Ir- setting of release current in amperes
tr - overload time protection setting

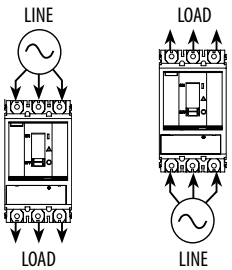
S Time delay short-circuit protection (Isd)
Selective current tripping with adjustable current setting Isd and adjustable time setting tsd.

I Instantaneous short-circuit protectio (Ii)
Instantaneous short-circuit protection with adjustable current setting Ii.

Indication:
Green - ready LED. Flashes slowly, signaling that MCCB is working and is prepared to operate, protect the instalation. Minimum load current is required so that this function will work.... minimum load current of 30A for MCCB with rated current up to 250A and 50A for MCCB with a rated current of more than 250A.
Orange - overload warning LED. Lights up when current is higher than 90% of the set value of Ir.
Red - overload alarm LED. Lights up when the current is higher than 105% of the set value of Ir.

NBS-E LCD MCCB's do not have a built-in microprocessor power source, therefore, for setting the necessary settings, through the circuit breaker should flow minimum load current. For MCCB's with rated current up to 250A the minimum load current must be greater than 40A and for MCCB's with rated current from 400A, the minimum load current must be higher than 50A.





Electronic release NBS-E LCD

Rated current(A)	In @ 40°C		100	160	250	400	630
MCCB type	NBS-E 100 LCD		•				
	NBS-E 160 LCD			•			
	NBS-E 250 LCD				•		
	NBS-E 400 LCD					•	
	NBS-E 630 LCD						•
(L) Overload protection							
Current setting (A) Switching off between 1,05 and 1,2 Ir	$I_r = \ldots$	Settings by using control buttons	The exact setting of the overload protection is carried out by using buttons with a step of 1A in the range between 0.4 and 1 x In				
Time adjustment (s) Tolerance 0-20%	$t_r = \ldots$	Settings by using control buttons	The setting is carried out using control buttons in steps by 0.1 s. / OFF - overload protection is disabled.				
Time setting (s) Tollerance 0-20%	Load current		Setting value				
			1,5	2	4	8	12
	$1,5 \times I_r$		33	50	100	200	300
	$6 \times I_r$		1,5	2	4	8	12
	$7,2 \times I_r$		1	1,4	2,8	5,5	8,2
(S) Fixed time delay short circuit protection							
Current setting (A) Tolerance ±10%	$I_{sd} = I_r \times \ldots$		The exact setting of the short-circuit protection is carried out by using control buttons in steps of 0.5 x In in the range between 1.5 and 12 x In				
Time setting (s)	$t_{sd} = \ldots$		Settings using the control buttons / OFF - protection against short circuits is disabled.				
			Settings value				
			0,00	0,10	0,20	0,30	0,40
	min tripping time (ms)		20	80	140	230	350
	max tripping time (ms)		80	140	200	320	500
(I) Instantaneous short circuit protection							
Current setting (A) Tolerance ±15%	$I_i = \ldots$		Adjustment is carried out using the control buttons with a step of 1 x In in the range from 2 to 15 x In / OFF - instantaneous protection is disabled				
	min tripping time		10 ms				
	max tripping time		50 ms				

Electronic release NBS-EC LCD

NBS-EC LCD MCCB's have a built-in display to indicate parameter settings and display of measurement values and are equipped with a microprocessor-based trip unit, which has significant advantages compared to a thermomagnetic release: a diverse selection of settings needed by the user, high accuracy of execution of the given program, status indicators of release.
This makes it possible to use these switches in various areas, in particular during construction of selective protection schemes.

Protection:
Protection settings are made using the control buttons on the front panel of the MCCB with the possibility of fine adjustment. The setting buttons are covered with transparent covers which can be sealed.

L Overload protection (Ir)
Inverse time protection against overloads with 2 adjustments:
Ir- setting of release current in amperes
tr - overload time protection setting

S Time delay short-circuit protection (Isd)
Selective current tripping with adjustable current setting Isd and adjustable time setting tsd.
I Instantaneous short-circuit protectio (Ii)
Instantaneous short-circuit protection with adjustable current setting Ii.

Indication:
On the front panel of the MCCB are 3 LED lights indicating the status of the breaker:
Green - ready LED. Flashes slowly, signaling that MCCB is working and is prepared to operate, protect the instalation. Minimum load current is required so that this function will work.... minimum load current of 30A for MCCB with rated current up to 250A and 50A for MCCB with a rated current of more than 250A.
Orange - overload warning LED. Lights up when current is higher than 90% of the set value of Ir.
Red - overload alarm LED. Lights up when the current is higher than 105% of the set value of Ir.

NBS-EC LCD MCCB's have a built-in RS 485 communication port and a power source microprocessor. When connecting the supply voltage to any of two upper terminals of the switch, the microprocessor is activated, making it possible to configure it. In addition to basic protections NBS-EC LCD switches have a number of additional protections and functions.
When installing these MCCB's, it is important to follow the connection diagram:
power supply - from the top, load - from the bottom.

Additional protection and features

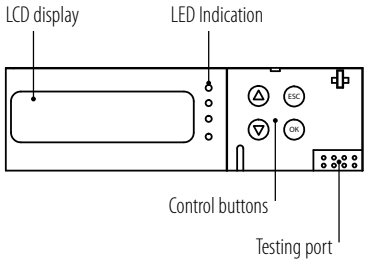
Over-voltage protection	Umax	Voltage range adjustment	140-520 V (Phase)	Trip - Switching OFF Alarm - Signalisation OFF - Protection is disabled
		Tripping time adjustment	36-1 s	
Under-voltage protection	Umin	Voltage range adjustment	100-500 V (Phase)	
		Tripping time adjustment	36-1 s	
Phase loss protection	Open-phase	Voltage range adjustment	50-80 V (Phase)	
		Tripping time adjustment	0,2-5 s	
Phase sequence protection	Phase rotation	Choice of configurations	ABC; ACB	
		Fixed trigger time	0,3s	
Over-frequency protection	Fmax	Frequency adjustment range	45-65 Hz	
		Tripping time adjustment	0,2-5 s	
Under-frequency protection	Fmin	Frequency adjustment range	45-65 Hz	
		Tripping time adjustment	0,2-5 s	
Phase asymmetry protection	Uunbal	Asymmetry adjustment range	5-30 %	
		Tripping time adjustment	1-40 s	
Over temperature protection	Overtemper.	Temperature control range	40-80 °C	
		Tripping time adjustment	1-60 s	
Measurement	I	Current in each phase, current unbalance ratio		
	U	Phase and line voltage, voltage imbalance factor		
	F	Frequency		
Event registration log	Trip history	Registration of trippings due to various types of protection		
	Alarm history	Registration of warnings		
	CO history	Registration of ON and OFF functions		
Additionally	RTC	Built-in real-time clock		
	Temperature	Built-in temperature sensor		
	Contact wear	Contact wear monitoring		
	User password	Ability to set a password to protect against unauthorized access		

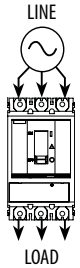
All protection functions have 3 modes of operation:
Trip - the protective function is enabled. If the control values are exceeded, the MCCB is turned off;
Alarm - LED alarm is on. When the control values are exceeded, red LED starts to flash;
OFF - protection functions and indications are disabled.

Electronic release NBS EC LCD

Rated current(A)	In @ 40°C	100	160	250	400	630
Electronic release	NBS-EC 100 LCD	•				
	NBS-EC 160 LCD		•			
	NBS-EC 250 LCD			•		
	NBS-EC 400 LCD				•	
	NBS-EC 630 LCD					•
(L) Overload protection						
Current setting (A) Switching off between 1.05 and 1.2 Ir	$I_r = \ldots$ Settings by using control buttons	The exact setting of the overload protection is carried out by using buttons with a step of 1A in the range between 0.4 and 1 x In				
Time adjustment (s) Tolerance 0-20%	$t_r = \ldots$ Settings by using control buttons	The setting is carried out using control buttons in steps by 1 s				
Time setting (s) Tollerance 0-20%	Load current	Setting value				
		0,5	1	2	4	8	16	24
	1,5 x I_r	15	25	50	100	200	400	600
	6 x I_r	0,5	1	2	4	8	16	24
	7,2 x I_r	0,35	0,7	1,4	2,8	5,5	11	16
(S) Fixed time delay short circuit protection						
Current setting (A) Tolerance ±10%	$I_{sd} = I_r$ x ...	The exact setting of the short-circuit protection is carried out by using control buttons in steps of 0.5 x In in the range between 1.5 and 12 x In				
Time setting (s)	$t_{sd} = \ldots$	Settings using the control buttons				
		Setting value				
		0,00	0,10	0,20	0,30	0,40
	min tripping time (ms)	20	80	140	230	350
	max tripping time (ms)	80	140	200	320	500
(I) Instantaneous short circuit protection						
Current setting (A) Tolerance ±15%	$I_i = \ldots$	Adjustment using buttons in steps of 1A in the range from 2 to 15x In				
	min tripping time	10ms				
	max tripping time	50ms				

100-630A NBS-EC LCD





WARNING! Connection scheme:
Power supply - from the top,
Load - from the bottom.

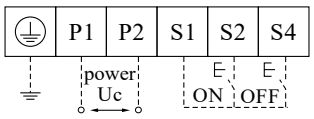
Electrical control using motorised operation

Application - Motor operators provide the possibility of opening and closing an MCCB on application of electrical control signals.

Ratings and specifications

		100, 160, 250	400, 630	1600
MCCB Frame size				
Rated operating voltage		220-230V AC		
Rated frequency		50-60Hz		
Power loss	Rated working power (W)	2W	2W	2W
	Peak value (W)	25W	50W	65W
Required power supply (W)		>100W	>200W	>200W
Starting current (A)		≤0,25A	≤0,45A	≤0,50A
Rated parameters	Voltage (V)	AC230V	AC230V	AC230V
	Voltage (A)	Only voltage is required for starting, no current		
Operating method		Direct drive		
Tripping time		0,7-1,5 s		
Dielectric properties		1500V < 5 s		
Operating temperature range		-5 ~ +40°C		
Climatic conditions		50°C, humidity 90%		
Weight (kg)		1,28	3,58	4,00

Motor operator connection diagram



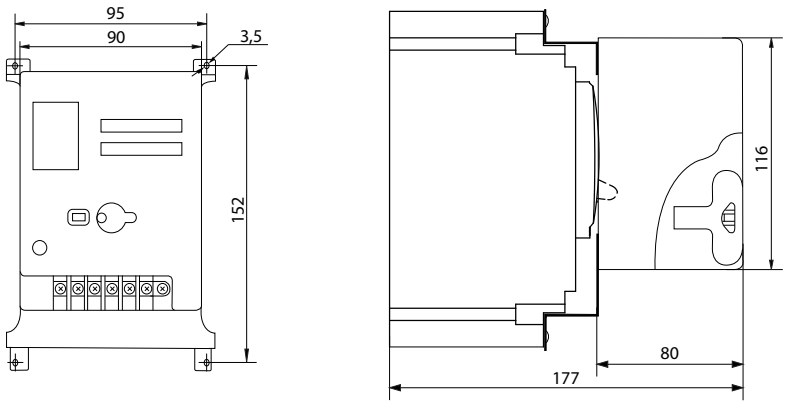
The NBS-MO is a special device driven by a small DC motor, the purpose of which is remote control of MCCB's with rated currents from 20 to 1600A.
- To install the Motor operator on the NBS 100, 160 & 250 it is necessary to remove the extension handle. For installing the Motor operator on the NBS 400, 630 & 1600, it is necessary to replace the extension handle on the MCCB with the one that comes together with Motor operator.
- The motor drive allows 10 operations (ON/OFF) in a row with at least 10s pause between operations.
- In the presence of voltage in the control circuit of the Motor operator, the process of switching ON and OFF ends automatically if the contacts of the electric drive control buttons were in the closed position for at least 0.2 seconds.
- After installing the Motor operator, you should first carry out a trial operation manually so that you check whether it is possible to turn ON and OFF the MCCB and switch it to the "TRIP" position.
- When connecting a Motor operator without an installed MCCB and supplying connections on terminals, continuous rotation of the drive mechanism without stops is considered as a normal mode of operation.

IMPORTANT! After the automatic activation of the device, it is necessary to eliminate the cause of tripping, inspect the device and only then turn the toggle to the "OFF" position. Turning ON can be performed after identifying and eliminating the causes of the tripping.

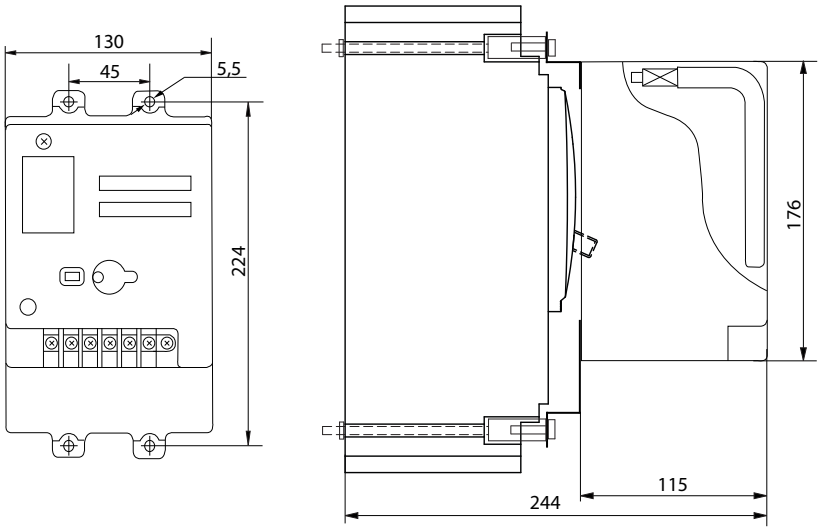
IMPORTANT! For manual control, rotate the handle 180 degrees clockwise, counterclockwise rotation is prohibited.
If the angle of rotation was less than 180 degrees, turning ON the MCCB, using the control terminals, will not be possible. To do this, it is necessary to set the handle to the correct angle manually or send a command to the "OFF" terminal.
If the angle of rotation was less than 180 degrees when opening the power contacts of the MCCB, using the manual control handle, then when the mode switch is turned to the "AUTO" position, the Motor operator will automatically move the mechanism, after which the ON comand can be given.

Dimensions of Motor operator

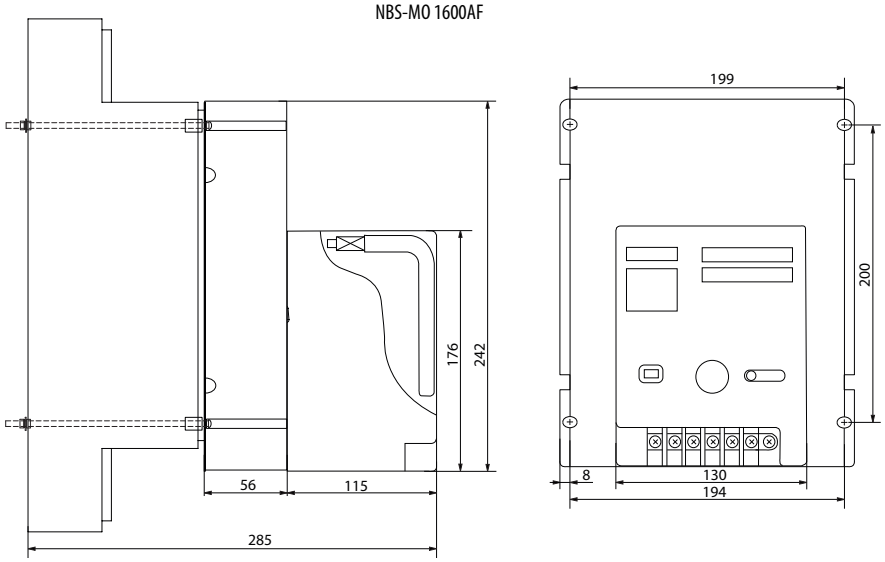
NBS-MO 100-250AF



NBS-MO 400-630AF



NBS-MO 1600AF



Technical data

				NBS 100								NBS 160								NBS 250							
Parameters/Electrical characteristics																											
Release type				TMS		E			E LCD		EC LCD	TMS		E			E LCD		EC LCD	TMD		E			E LCD		EC LCD
Nr. Poles				3 / 4								3 / 4								3 / 4							
Nominal current	In	(A)	40°C	20, 25, 32, 40, 50, 63, 80, 100		100			100		100	125, 160		160			160		160	200, 250		250			250		250
Model-type				L	S	L	S	H	L	S	L	S	L	S	L	S	H	L	S	L	S	L	S	H	L	S	L	S
Service breaking capacity Ics = 100% Icu	Ics	(kA)	415 V	36	50	36	50	85	36	50	36	50	36	50	36	50	85	36	50	36	50	36	50	85	36	50	36	50
			500 V	25	35	25	35	50	25	35	25	35	25	35	25	35	50	25	35	25	35	25	35	50	25	35	25	35
			690 V	6									6									6						
Rated operational voltage	Ue	(V)	AC 50/60 Hz	690									690									690						
			DC	250		-							250		-							250		-				
Rated insulation voltage	Ui	(V)		1000									1000									1000						
Rated impulse withstand voltage	Uimp	(kV)		8									8									8						
Protection																											
Adjustable thermal / fixed magnetic				■		-			-		-	■		-			-		-	-		-			-		-
Adjustable thermal / adjustable magnetic				-		-			-		-	-		-			-		-	■		-			-		-
Microprocessor				-		■			■		■	-		■			■		■	-		■			■		■
Utilisation category				A								A								A							
Installation																											
Front connection				■								■								■							
Attached flat bar				•								•								•							
Cable clamp terminals				•								•								•							
Plug-in				•								•								•							
Draw-out				•								•								•							
Dimensions 3P / 4P	h	(mm)		161								161								161							
	w	(mm)		105 / 140								105 / 140								105 / 140							
	d	(mm)		86								86								86							
Weight 3P / 4P	W	(kg)		1,9 / 2,15								1,9 / 2,15								1,9 / 2,15							
Operation																											
Direct opening action				■								■								■							
Door mounted handle				•								•								•							
Motor operator				•								•								•							
Endurance	Electrical			10000								8000								8000							
	Mechanical			20000								20000								20000							

■ - Standard
• - Optional
- - Not available

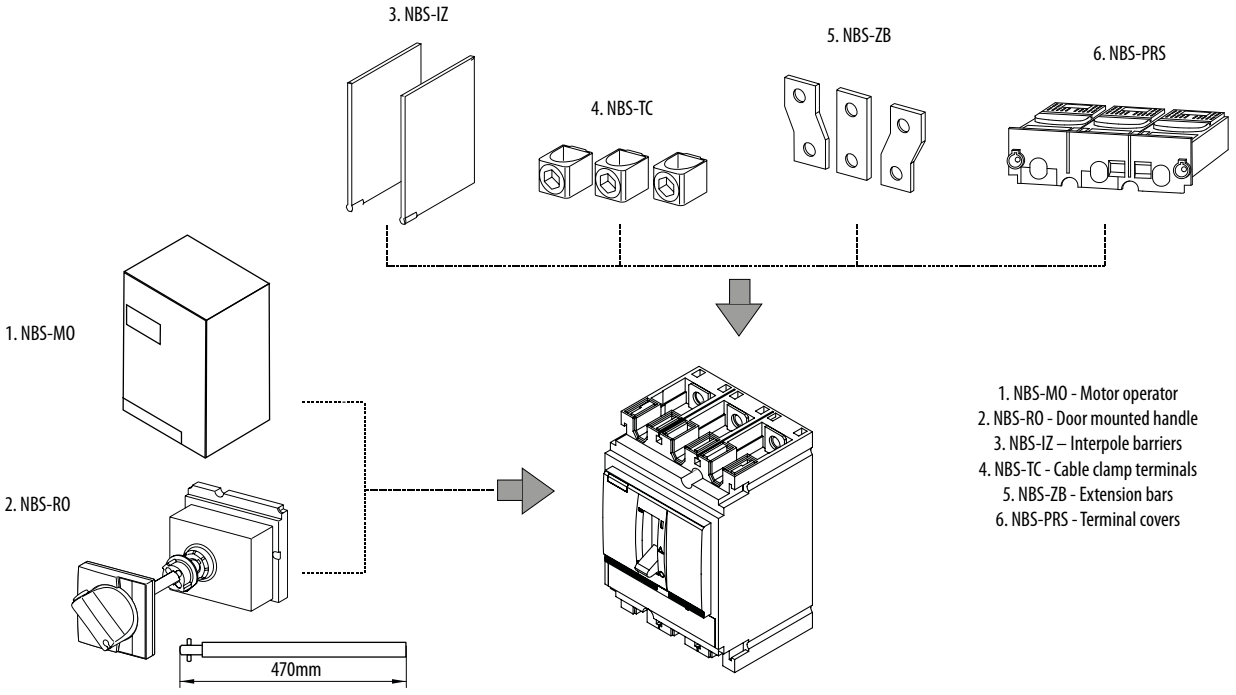
Technical data

				NBS 400								NBS 630								NBS 1600		
Parameters/Electrical characteristics																						
Release type				TMD		E			E LCD		EC LCD		TMD		E			E LCD		EC LCD		E		
Nr. Poles				3 / 4									3 / 4									3 / 4		
Nominal current	In	(A)	40°C	315, 400		400			400		400		500, 600		630			630		630		800, 1000, 1250, 1600		
Model-type				L	S	L	S	H	L	S	L	S	L	S	L	S	H	L	S	L	S	L	S	H
Service breaking capacity Ics = 100% Icu	Ics	(kA)	415 V	36	50	36	50	85	36	50	36	50	36	50	36	50	85	36	50	36	50	36	50	65
			500 V	25	35	25	35	50	25	35	25	35	25	35	25	35	50	25	35	25	35	25	35	45
			690 V	8	10	8	10	10	8	10	8	10	8	10	8	10	10	8	10	8	10	10	20	30
Rated operational voltage	Ue	(V)	AC 50/60 Hz	690									690									690		
			DC	250		-							250		-							-		
Rated insulation voltage	Ui	(V)		1000									1000									1000		
Rated impulse withstand voltage	Uimp	(kV)		8									8									8		
Protection																								
Adjustable thermal / fixed magnetic				-		-			-		-		-		-			-		-		-		
Adjustable thermal / adjustable magnetic				■		-			-		-		■		-			-		-		-		
Microprocessor				-		■			■		■		-		■			■		■		■		
Utilisation category				A									A									B		
Installation																								
Front connection				■									■									■		
Attached flat bar				•									•									•		
Cable clamp terminals				-									-									-		
Plug-in				•									•									-		
Draw-out				•									•									-		
Dimensions 3P / 4P	h	(mm)		255									255									326		
	w	(mm)		140 / 185									140 / 185									210 / 280		
	d	(mm)		111									111									147		
Weight 3P / 4P	W	(kg)		6,75 / 8,75									6,75 / 8,75									13,8 / 17,5		
Operation																								
Direct opening action				■									■									■		
Door mounted handle				•									•									•		
Motor operator				•									•									•		
Endurance	Electrical			6000									5000									1500		
	Mechanical			10000									10000									10000		

■ - Standard
• - Optional
- - Not available

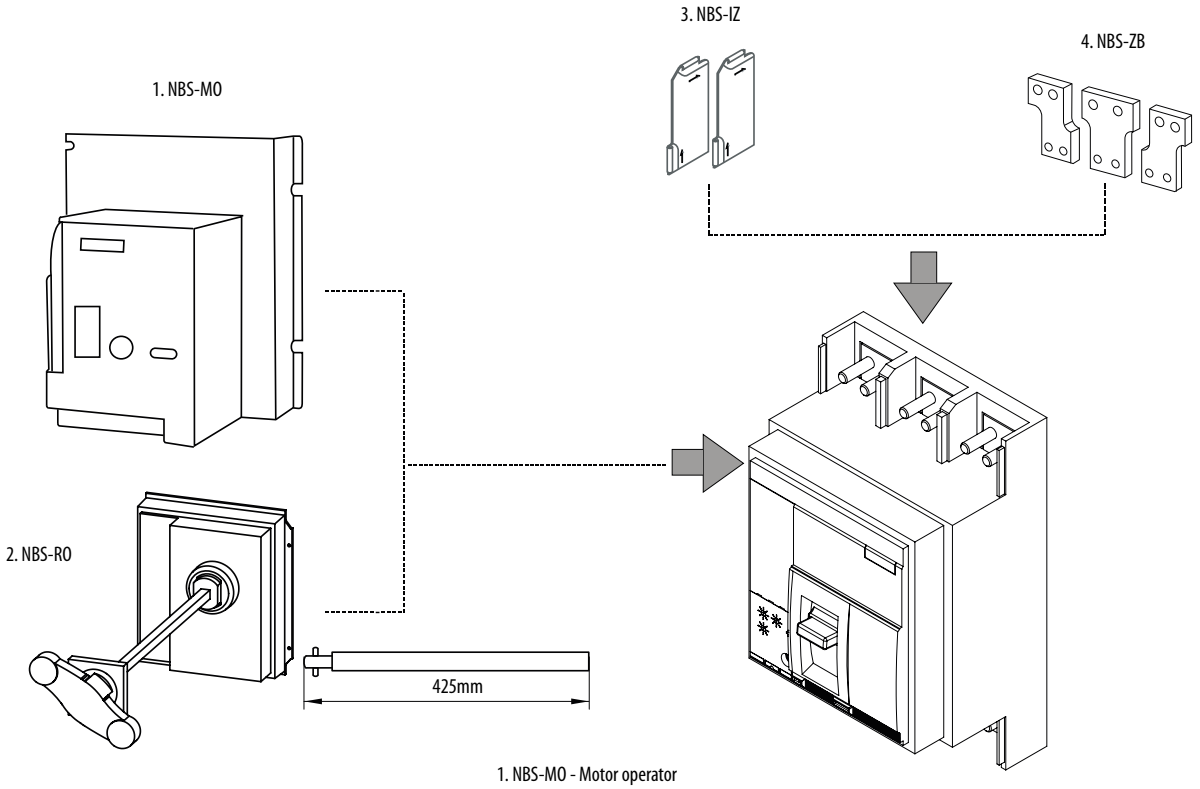
External accessories

NBS 100, 160, 250, 400, 630



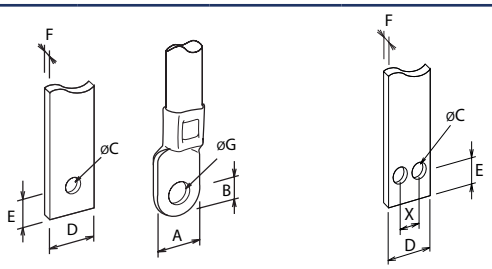
1. NBS-MO - Motor operator
2. NBS-RO - Door mounted handle
3. NBS-IZ – Interpole barriers
4. NBS-TC - Cable clamp terminals
5. NBS-ZB - Extension bars
6. NBS-PRS - Terminal covers

NBS 1600

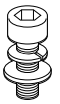
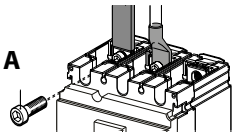
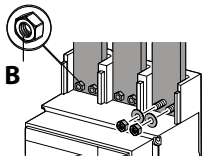


1. NBS-MO - Motor operator
2. NBS-RO - Door mounted handle
3. NBS-IZ – Interpole barriers
4. NBS-ZB - Extension bars

Dimensions of connection accessories



	NBS 100 (mm)	NBS 160/250 (mm)	NBS 400/630 (mm)	NBS 1600 (mm)
A	≤25	≤25	≤32	-
B	≤10	≤10	≤15	-
C	≥6	≥8	≥10	≥11
D	≤25	≤25	≤32	≤45
E	≤10	≤10	≤15	≤10,5
F	≤6	≤6	≤10	≤10
G	≥6	≥8	≥10	-
X	-	-	-	25

Connecting type element	Front connection NBS 100, 160, 250, 400, 630	Front connection NBS 1600
 A B	 A	 B

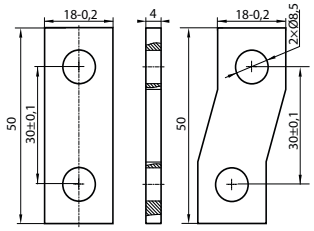
Frame size	Rated current	In complete with MCCB	In complete with MCCB
NBS 100	20-100	M6x20 (A) / 3 (Nm)	-
NBS 160/250	125-250	M8x20 (A) / 6 (Nm)	-
NBS 400/630	400-630	M10x27,5 (A) / 10 (Nm)	-
NBS 1600	800-1600	-	M10 (B) / 10 (Nm)

Cable clamp terminals

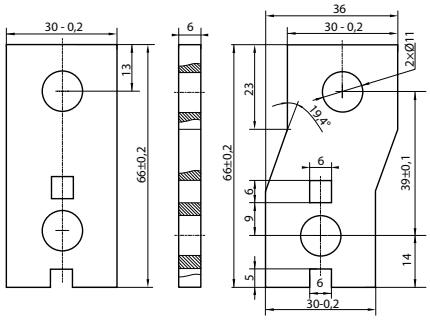
NBS-TC 100-250AF 3P

S=120-185 mm 2
(1 conductor) Cu/Al

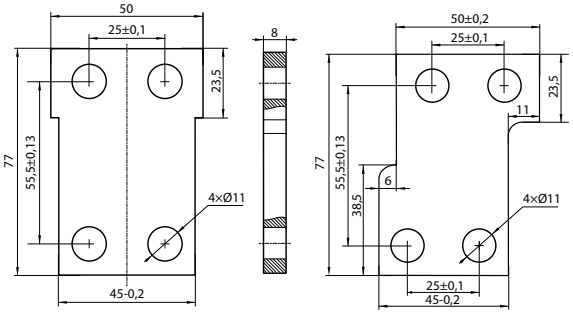
Extension bars NBS-ZB



NBS-ZB 100-250AF 3P



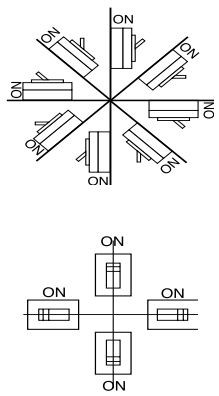
NBS-ZB 400-630AF 3P



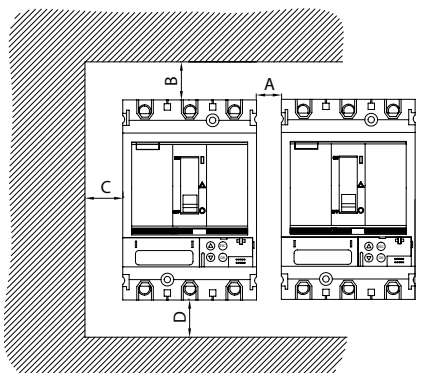
NBS-ZB 1600AF 3P

Installation

Mounting angle

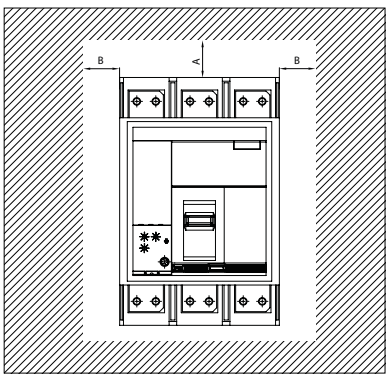


Minimum distance for NBS 100, 160, 250, 400, 630



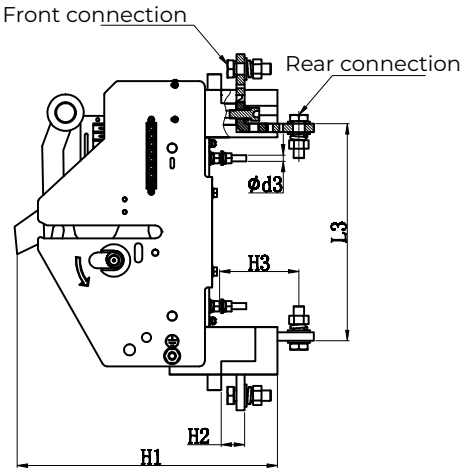
	(mm)
A	0
B	30
C	5
D	30

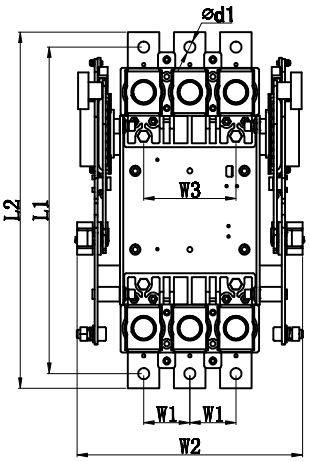
Minimum distance for NBS 1600

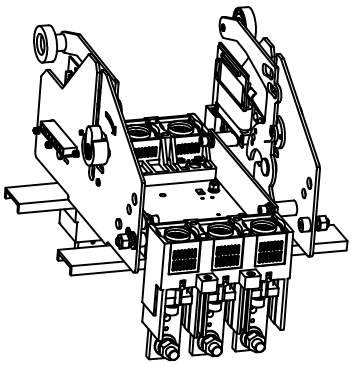


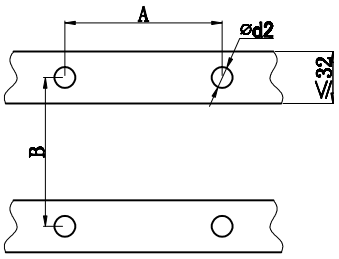
	A	B
	(mm)	
Isolated parts	0	0
Metal parts	120	10
Live parts	180	60

Dimensions NBS-DOS (for Draw-out version ETIBREAK NBS 100-630)





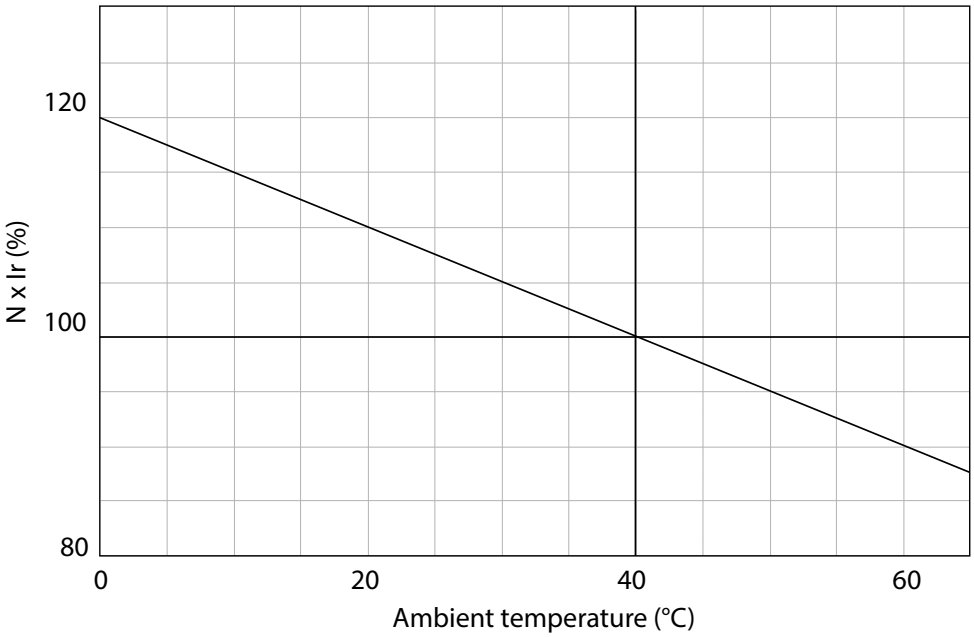




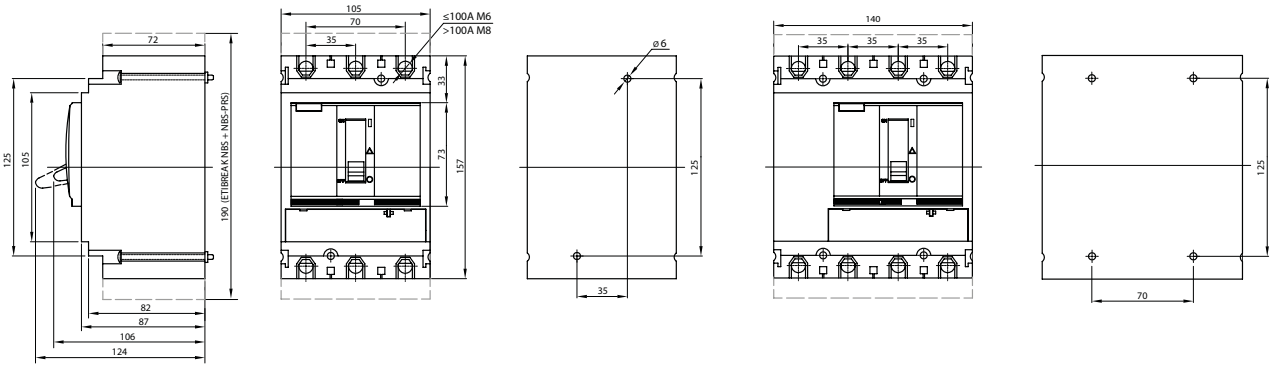
Type	Outline dimensions											Mounting dimensions		
	L1	L2	L3	H1	H2	H3	W1	W2	W3	Ød1	Ød3	A	B	Ød2
NBS-DOS 100-250AF 3P	199	217	124	182	17	40	35	180	70	8,5	M5	68	75	6
NBS-DOS 400-630AF 3P	313	340	206	268	23	85	45	215	90	11	M6	100	150	7

Temperature compensation of time-current characteristics for ETIBREAK NBS

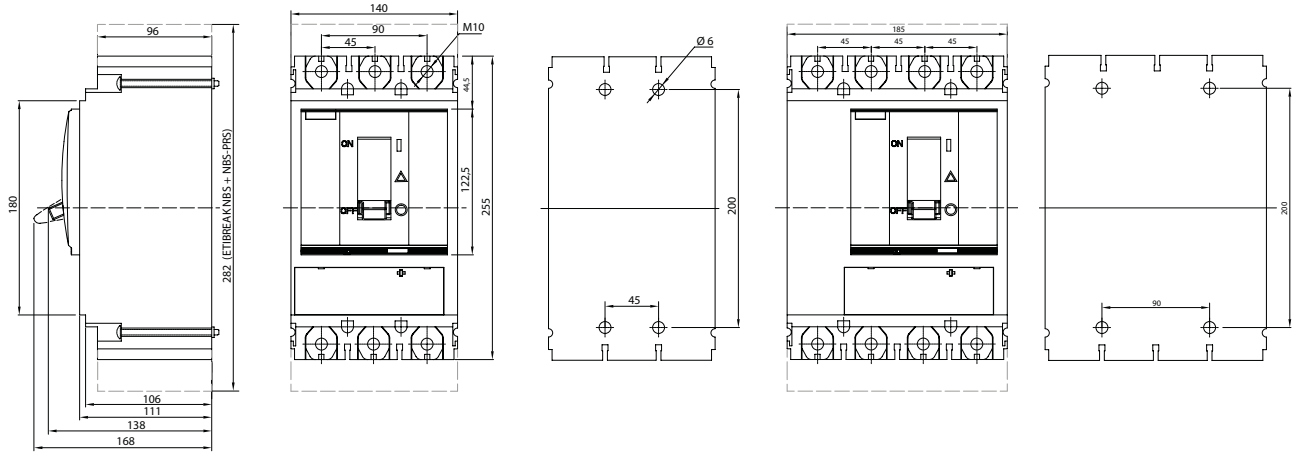
Effect of the ambient temperature on the tripping characteristics
Calibration temperature is 40°C



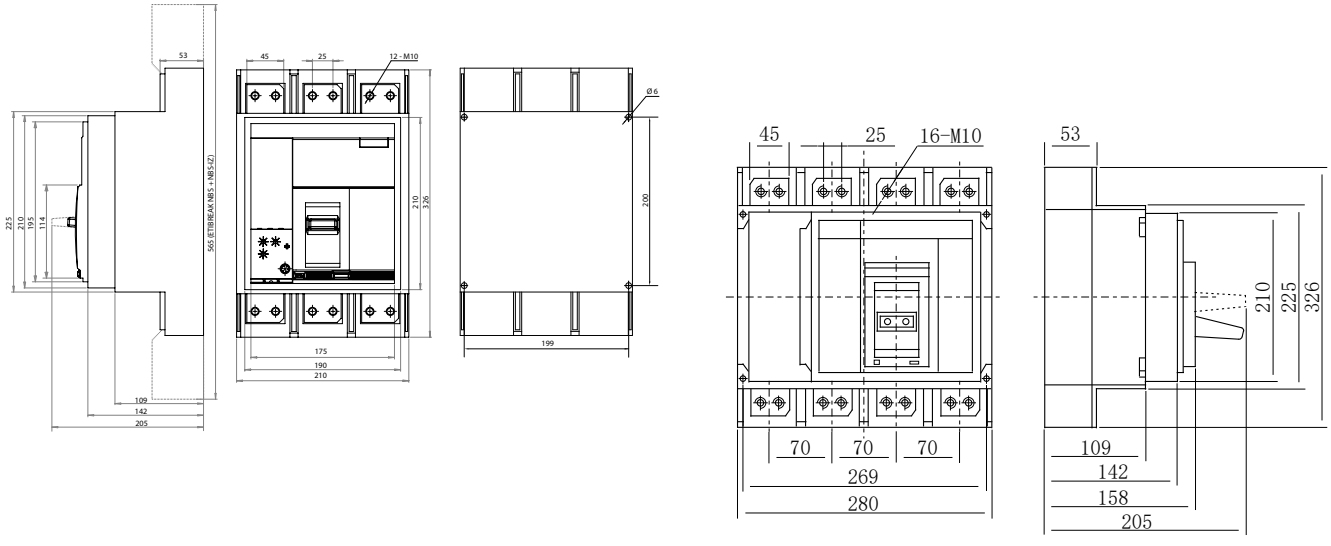
Dimensions ETIBREAK NBS 100, 160, 250



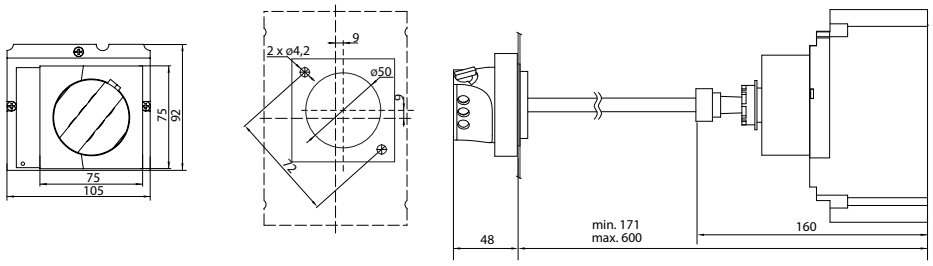
Dimensions ETIBREAK NBS 400, 630



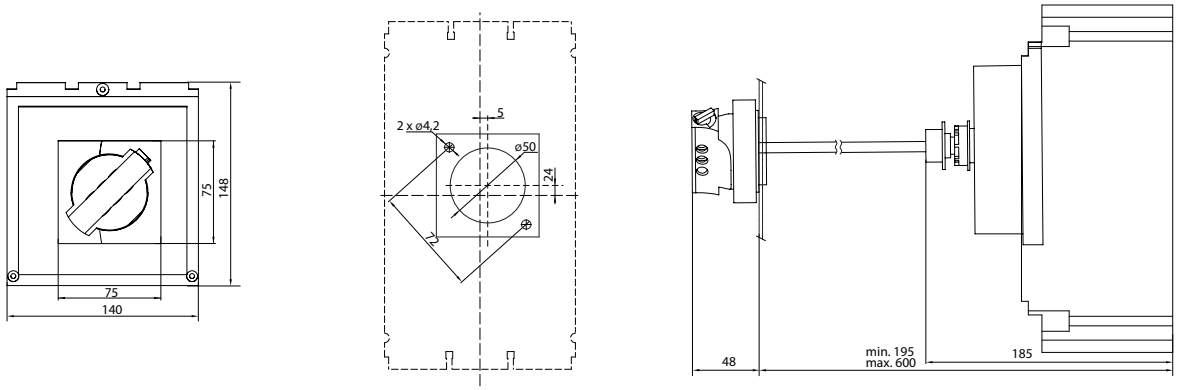
Dimensions ETIBREAK NBS 1600



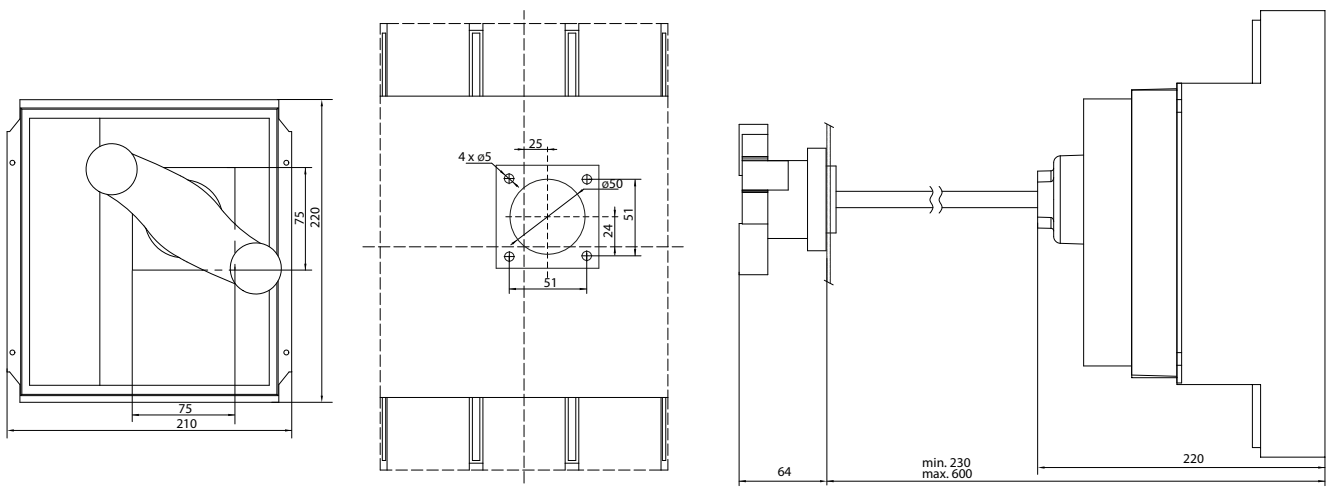
Dimensions NBS-RO 100-250



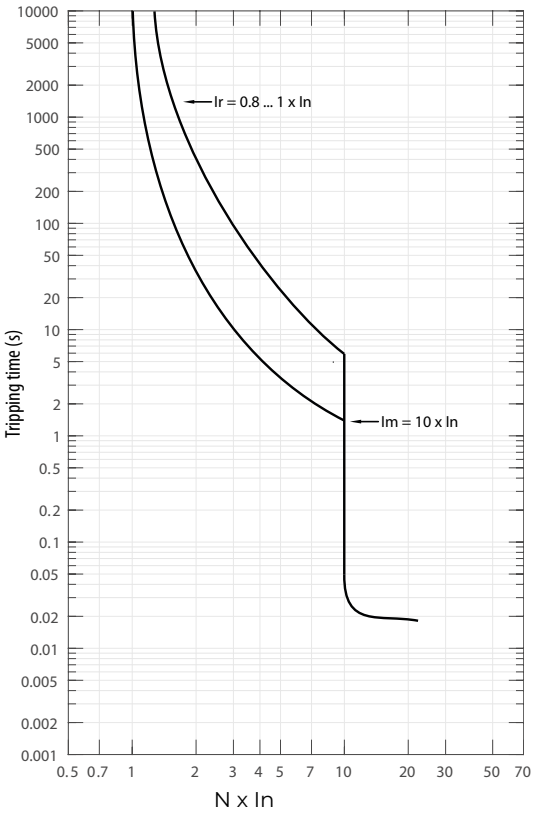
Dimensions NBS-RO 400-630



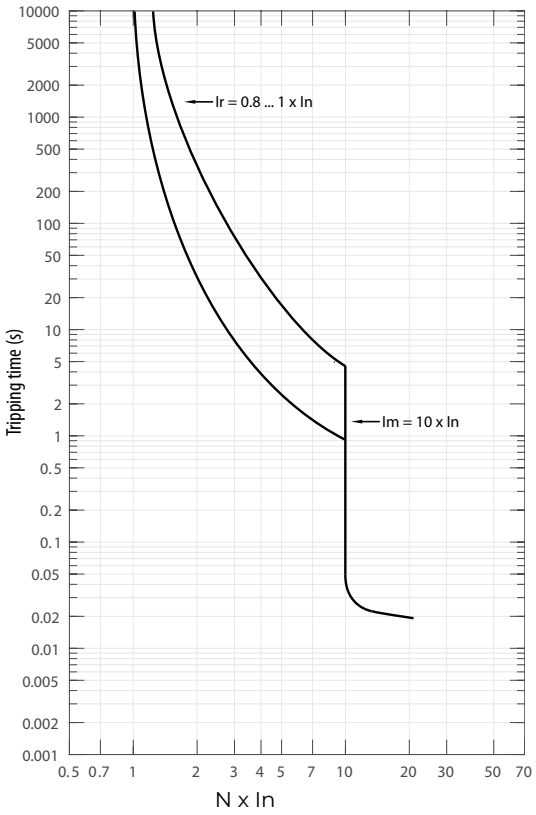
Dimensions NBS-RO 1600



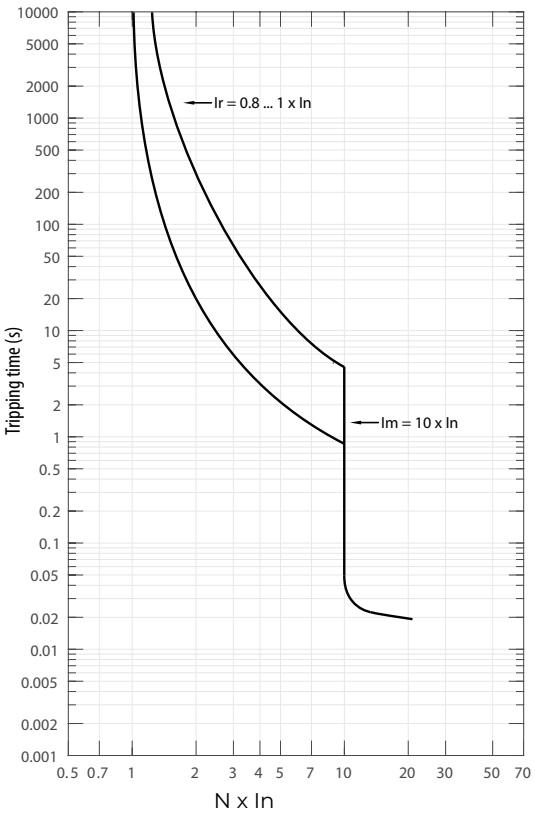
NBS-TMS 100/3 (20A) I/t characteristic



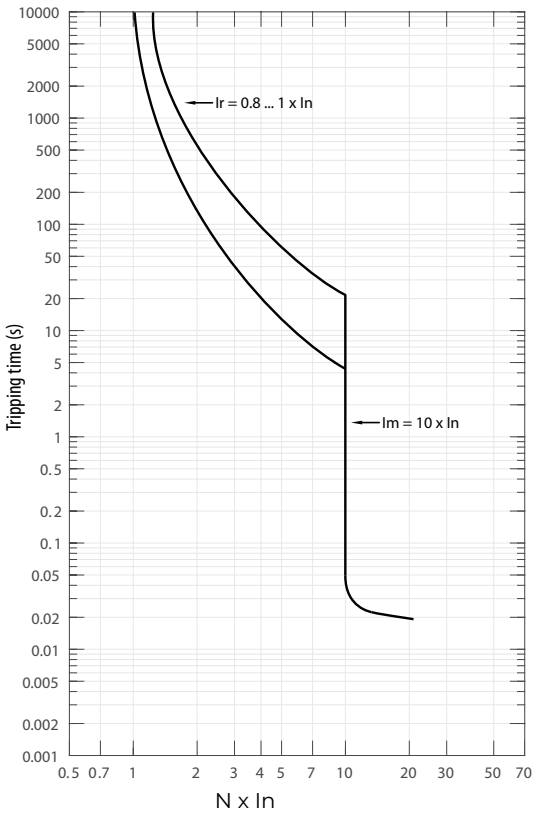
NBS-TMS 100/3 (25A) I/t characteristic



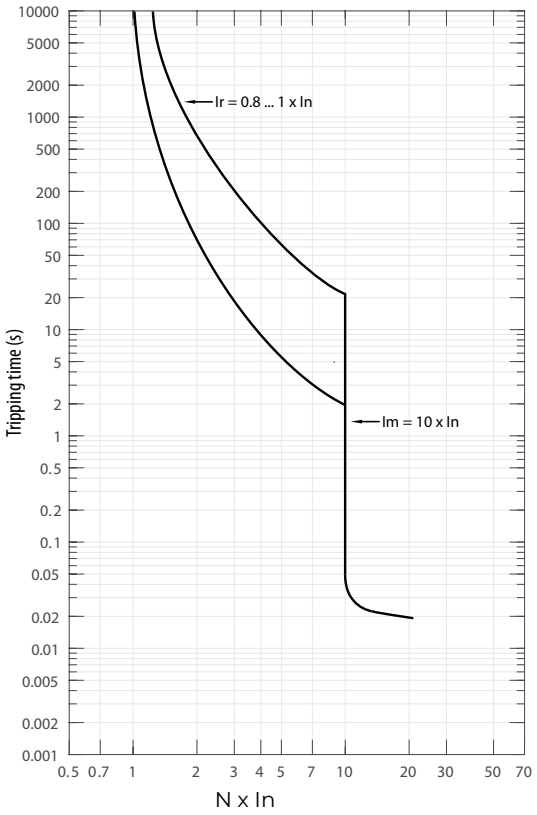
NBS-TMS 100/3 (32, 40A) I/t characteristic



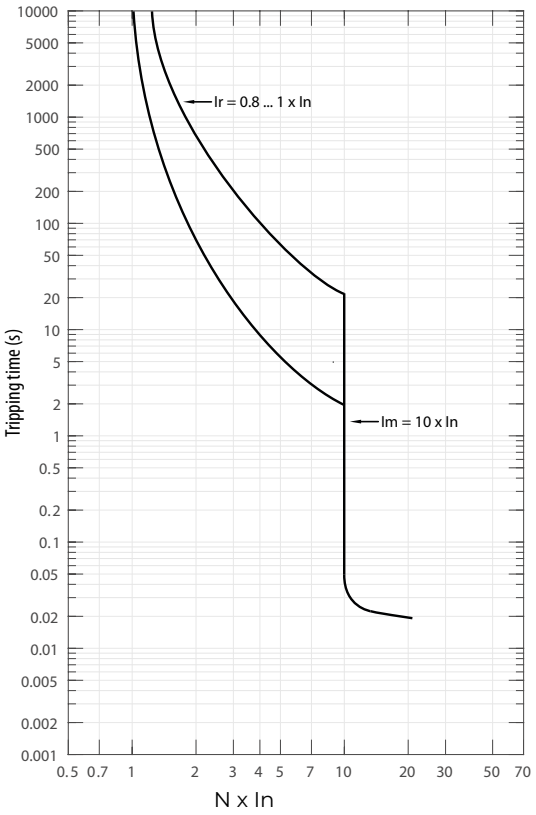
NBS-TMS 100/3 (50, 63A) I/t characteristic



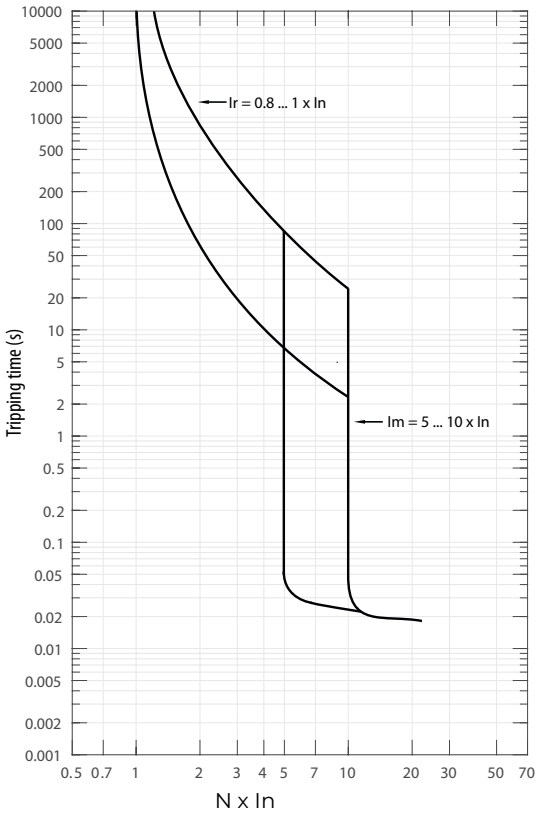
NBS-TMS 100/3 (80, 100A) I/t characteristic



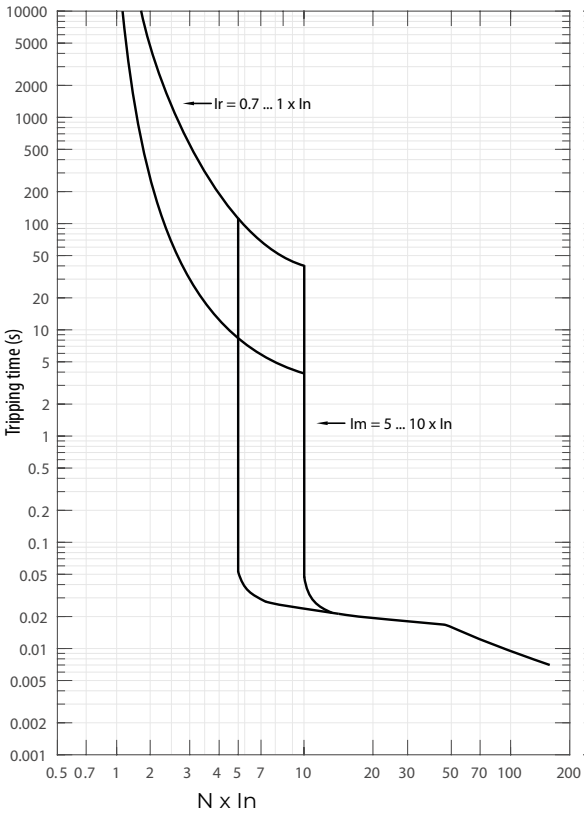
NBS-TMS 160/3 (125, 160A) I/t characteristic



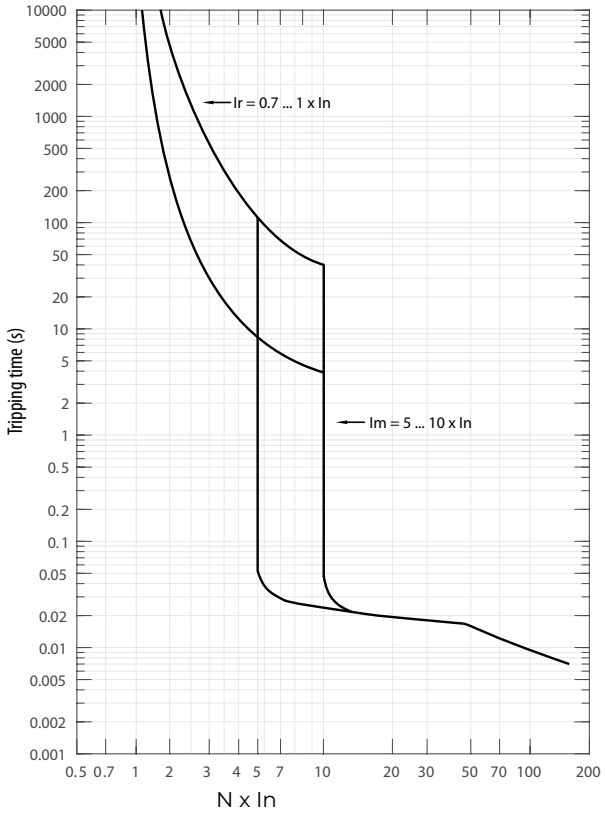
NBS-TMD 250/3 (200, 250A) I/t characteristic



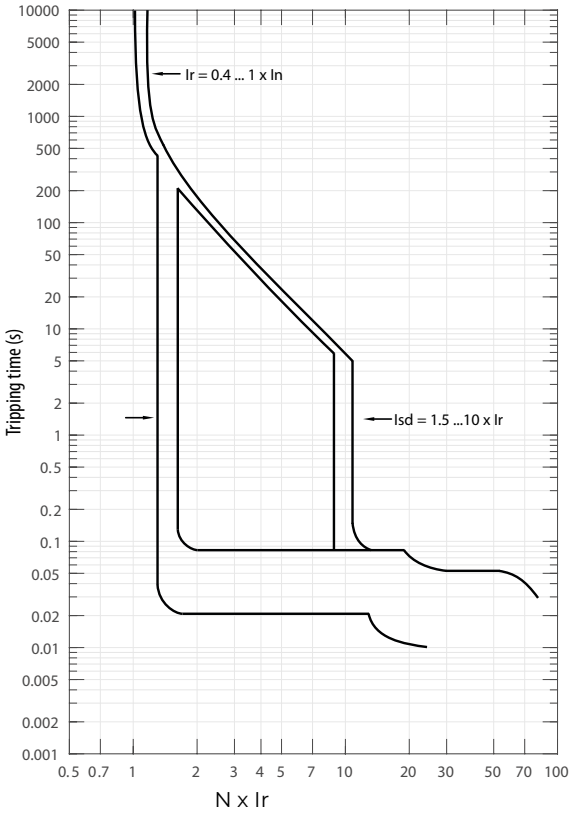
NBS-TMD 400/3 (315, 400A) I/t characteristic



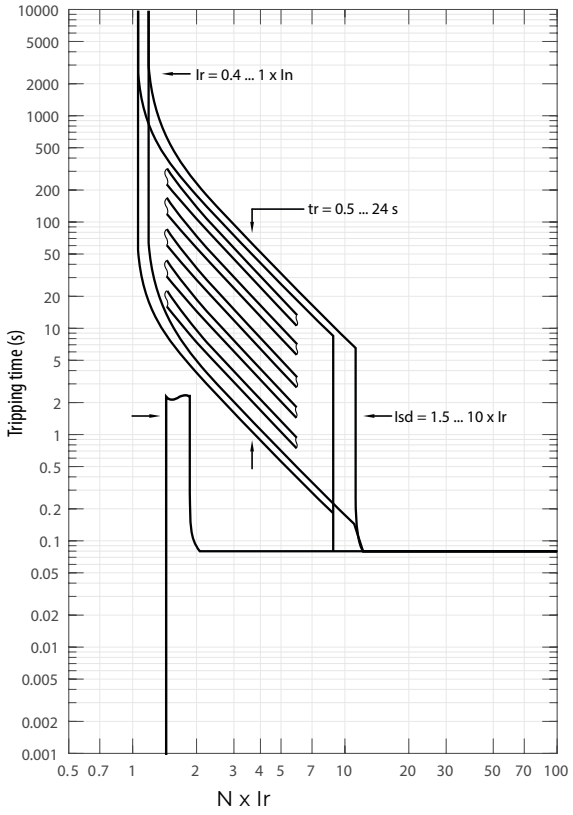
NBS-TMD 630/3 (500, 600A) I/t characteristic



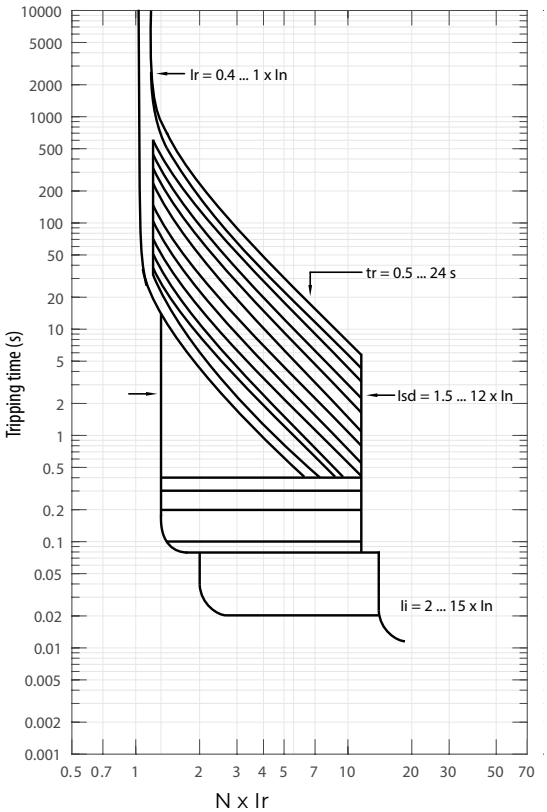
NBS-E (100 - 630A) I/t characteristic



NBS-E (800 - 1600A) I/t characteristic



NBS-E&EC LCD (100 - 630A) I/t characteristic



ETIPOWER

Air Circuit Breakers

Preassembled Air Circuit Breakers **548**
EPL..., EPH..
On Demand Air Circuit Breakers EP **574**

/etigroup

SWITCH TO
A SAFE FUTURE

ETIPOWER Air Circuit Breakers

Air Circuit Breakers EPL..., EPH...

- Integrated draw-in/ out handle ensures reliable operation

- SHT and UVT coils for different voltages. Easy replacement.

- Counter in standard version of ACB

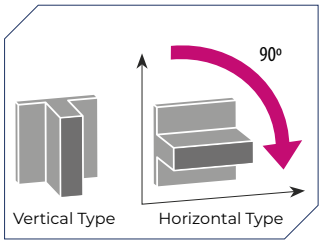
- Possibility to use mechanical interlock for up to 3 devices in both draw-out and fixed versions

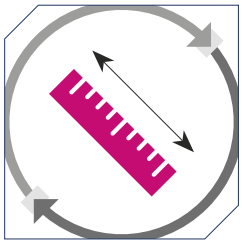
- Advanced OCR protection for demanding applications. Switch disconnectors versions available for all current sizes

- Wide selection options due to model dualization, compact design, and a current range from 630 A to 6300 A.

- FIX version

- D/O version





Multipurpose

Versatile Design: The busbar terminal can be adjusted to horizontal or vertical orientation for EPL/EPH models:
- A-frame: 630 A to 1600 A
- B-frame: 2000 A to 3200 A

For currents above 4000 A, horizontal/vertical adjustments require additional components. Please contact our company for details.

Retrofit

Customized Retrofit ACBs can be Provided
New products can be developed to ensure compatibility and installation according to the cradle phase, pole, earth, and terminal dimensions of previously installed ACBs.

- Maximum Breaking Capacity:
  150 kA (At 500 V, EPH D Frame)

- Rated Impulse Withstand Voltage (Uimp) :
  12 kV

- Type per Rating
  2 Frames, EPL 1600/3200 A
  4 Frames, EPH 2000/4000/5000/6300 A

- 100 % N Phase Current Flow Capacity for all Types
  The neutral conductor is designed to handle the full load current (100%) of the phase conductors, ensuring:
  - Full Neutral Current Capacity: It can handle imbalances in the system effectively, especially in cases with high harmonics or single-phase loads.
  - Improved Safety and Reliability: This avoids overheating or damage to the neutral conductor, even under maximum load conditions.
  - Versatility: The feature is standard across all device types or models offered.

- A Frame [85 kA]
- 630 ... 1600 A (EPL) / 630 ... 2000 A (EPH)

- B Frame [100 kA]
- 2000 ... 3200 A (EPL) / 630 ... 4000 A (EPH)

- C Frame [100 kA]
- 3200 ... 5000 A (EPH)

- D Frame [150 kA]
- 4000 ... 6300 A (EPH)

EPH

Model name	
EPL	Air Circuit Breaker
EPH	Air Circuit Breaker
EPL-D	Switch Disconnector

12

Rated Frame	
6	630A
8	800A
10	1000A
12	1250A
16	1600A
20	2000A[1]
6	6300A
8	8000A
10	1000A
12	1250A
16	1600A
20	2000A
25	2500A
32	3200A
40	4000A
32	3200A
40	4000A
50	5000A
40	4000A
50	5000A
63	6300A

3

No. of Poles	
3	3 Pole
4	4 Pole

J

Mounting Method	
Independent Release of Draw-Out Type (Control Power) of Main Unit	
A	Auto Connection
J	Manual Connection
Fixed Type (Terminal Form)	
H	Horizontal Type
V	Vertical Type
T	Upper Side: Horizontal/Lower Side:Vertical
L	Upper Side: Vertical/Lower Side: Horizontal
P[2]	Front Type and Mounting Type Selected by Customer
Draw-Out Type(Combined with Cradle)	
B	Auto Connection + Horizontal Type
C	Auto Connection +Vertical Type
D	Auto Connection + Upper Side: Horizontal / Lower Side: Vertical
E	Auto Connection + Upper Side: Vertical / Lower Side: Horizont
G[2]	Auto Connection + Front Type/Mounting Type Selected by Customer
K	Manual Connection + Horizontal Type
M	Manual Connection + Vertical Type
N	Manual Connection + Upper: Horizontal/ Lower: Vertical
Q	Manual Connection + Upper: Horizontal/ Lower: Vertical
R[2]	Manual Connection + Front Type/Mounting Type Selected by Customer

A

Frame Category & Neutral Pole	
A	630 ~ 2000 AF 3/4P Standard RST (N)
W	630 ~ 2000 AF 4P Reverse Phase NRST
B	630 ~ 4000 AF 3/4P Standard RST (N)
X	630 ~ 4000 AF 4P Reverse Phase NRST
C	3200 ~ 5000 AF 3/4P Standard RST (N)
Y	3200 ~ 5000 AF 4P Reverse Phase NRS
D	4000 ~ 6300 AF 3/4P Standard RST (N)
Z	4000 ~ 6300 AF 4P Reverse Phase NRST

Execution

Execution	
D/	Draw-out
F/	Fixed

1) A frame, 2000 A is only available for vertical terminal busbar arrangement.
2) P, G, R type of fixed terminal busbar arrangement should be ordered per terminal and mounted personally.
(Refer to the additional components). Applicable frames are A06 - -16, B06 32.
3) CT for Over-Current
- A/W Frame : 200 - 2000 A
- B/X Frame :400 - 4000 A
- C/Y Frame : 3,200 - 5000 A
- D/Z Frame : 4,000 - 6300 A 4)
4) When applying OCR high-end type P, H type, place an order for voltage module (EPLH VM) additionally for mounting

M2

Charging Motor Power	
M0	Manual Type
M1	AC/DC 110V
M2	AC/DC 220V
M7	DC 24V
M8	DC 48V
M9	DC 125V

C2

Closing Coil	
C0	N/A
C1	AC/DC 110V
C2	AC/DC 220V
C3	AC 380V
C4	AC 440V
C7	DC 24V
C8	DC 48V
C9	DC 125V

S2

Trip Coil	
S0	N/A
S1	AC/DC 110
S2	AC/DC 220
S3	AC 380V
S4	AC 440V
S7	DC 24V
S8	DC 48V
S9	DC 125V
Trip Supervision Coil	
T1	AC/DC 110V
T2	AC/DC 220V
T3	AC 380V
T4	AC 440V
T7	DC 24V
T8	DC 48V
T9	DC 125V

/PR-...

Over-Current Trip	
General Feeder	
00	N/A
50 Hz	
50	PR-LN
51	PR-LA
52	PR-LAG
54	PR-LP [4]
55	PR-LH [4]
60 Hz	
60	PR-LN
61	PR-LA
62	PR-LAG
64	PR-LP [4]
65	PR-LH [4]
Generator	
50 Hz	
57	PR-SN
58	PR-SA
59	PR-SP [4]
60 Hz	
67	PR-SN
68	PR-SA
69	PR-SP [4]

-K

CT [3]	
0	OCR N/A
O	200A
V	320A
E	400A
T	630A
H	800A
J	1000A
K	1250A
L	1600A
M	2000A
N	2500A
P	3200A
Q	4000A
S	5000A
X	6300A

$U_{\square}$: Applicable only for instantaneous type ACBs and when only the UVT coil is installed. For time delay types, place a separate order for the time delay controller (EPLH) and install it externally.
$V_{\square}$: Applicable only for time delay types with the UVT coil installed in the main unit and the time delay controller mounted at the side of the cradle. In case of dimension constraints, order EPLH V for separate installation.
B0: The mechanical interlock device must be ordered separately. When B0 is specified, only the interlocked components inside the main unit are assembled for release. (Refer to additional components for details.)
SI Application: When Secondary Trip (SI) is applied, the UVT coil cannot be used simultaneously.
Trip Coil Monitoring Contact: Using this contact changes the configuration to 4a3b. When the MCP function of B8 OCR is applied, it can be configured as 4a5b. If both functions are used simultaneously, the configuration will be 3a3b.
Main Unit Order Codes (A/J/Fixed Type): Combination with cradle accessories is not possible when ordering only the main unit. Cradle accessory arrangements are available only when purchased with a cradle. For independent main unit release, place a separate order (EPLH). Refer to additional components for details.
Position Switch: Cannot be used in overlapping configurations and can only be installed on the right side of the cradle. For combinations outside the standard options, contact us for a custom inquiry.
Incompatible Combinations:
- The mechanical interlock device (B0), external auxiliary contact (MC), and fixing block (AF) cannot be used together.
- AA and BA (BH) cannot be attached simultaneously.
- UVT and Secondary Trip Coil cannot be installed together.
Control Terminal Safety Cover (BC): Available only for automatic connection systems.
Short "b" (AK): Available only for automatic connection systems and attaches to terminals 51 and 52. For additional mounting, place a separate order (EPLH).
Front Cover (AG): Shipped with the front cover inserted, even if attached separately during assembly.
Standard Accessories (MR): AE, AC, AF, and AM are included as standard options and are not marked separately.
Auxiliary Contacts: The standard version of the ACB includes 5 pairs of auxiliary contacts (5x NO and 5x NC).

Versatile Solutions for Various Applications

The EPL/EPH series air circuit breakers combine high breaking capacity with advanced overcurrent relay (OCR) functionality, enabling them to meet the diverse needs of industrial buildings, data centers, equipment manufacturers, and more. With 100% N-phase current flow capacity across all models, the breakers provide reliable protection against abnormal conditions, such as harmonic distortion.

Advanced Accessories and Protection Features - Overcurrent Relay (OCR)
The OCR is equipped with enhanced power monitoring capabilities, including temperature monitoring, fault recording, and storage, ensuring a stable and reliable power supply.

Types of Protection and Features:
N Type
Overcurrent Protection: Long-time (L), Short-time (S), Instantaneous (I), Ground Fault (G)
World's first NFC-enabled functionality
Fault recording (10 events) and waveform data (4 cycles) viewable via mobile app

A Type
Overcurrent Protection: L/S/I/G
Self-powered operation
Individual continuous power contact
Fault recording (256 events) and waveform data (4 cycles) viewable via communication
Supports MODBUS communication and external CT/ZCT for ground/earth leakage detection

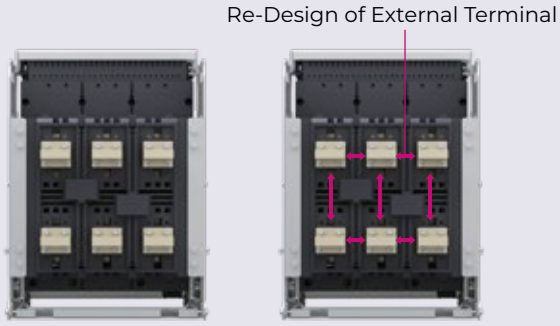
P Type
Overcurrent Protection: L/S/I/G
External power supply
Individual continuous power contact
Fault recording (256 events) and waveform data (4 cycles) viewable via communication
Additional features: Over-voltage/under-voltage protection, power and energy monitoring, power factor display

H Type
Overcurrent Protection: L/S/I/G with precise minute current adjustments
External power supply
Individual continuous power contact
Fault recording (256 events) and waveform data (4 cycles) viewable via communication
Voltage/current harmonics analysis (1st to 63rd order)
Real-time 3-phase waveform visualization

Flexible Busbar Terminal Design
The busbar terminal configuration can be adjusted between horizontal and vertical orientations to accommodate customer panel layouts:
A-frame: 630 A to 1600 A
B-frame: 630 A to 3200 A

Easy Maintenance with Draw-In/Out Design
The breakers feature a draw-in/out mechanism integrated into the body, enabling convenient maintenance and quick operational adjustments.

Customized Retrofit Solutions
Customized retrofit ACBs can be developed to ensure compatibility with existing installations, considering cradle phase, pole, earth, and terminal dimensions of previously installed devices.
Economic Benefits: Avoids the need for busbar and external box replacement, reduces construction time, and allows uninterrupted replacement for retrofitting.
Enhanced Stability: Extends lifespan with the latest relay technology and ensures high-breaking performance.
Seamless Compatibility: Provides stable operation with compatible control terminal bars, busbar structures, and plug-in devices.
Technical Support: Comprehensive inspection of old panel accessories to ensure customer satisfaction.



Standard Cradle Cradle Retrofit

Equipped with Temperature Sensor
The integrated temperature sensor enables reliable and accurate measurement of heat sources, with a measurement range of -5°C to 250°C.

Applied Standards and Certifications
The EPL/EPH series air circuit breakers are certified in compliance with IEC 60947-1 and IEC 60947-2 by recognized testing institutions. They can be installed and used according to the environmental conditions and usage parameters defined by these standards.
Certifications Obtained:
- CB Certification (DEKRA, KERI): IEC 60947-1, 2
- CE Mark

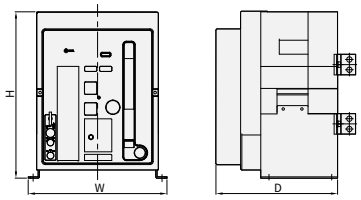
Technical data

				EPL		EPH			
				A Frame	B Frame	A Frame	B Frame	C Frame	D Frame
Rated Current [In max]	Based on 40 °C		A	06 : 630	20 : 2000	06 : 630	06 : 630	32 : 3200	40 : 4000
				08 : 800	25 : 2500	08 : 800	08 : 800	40 : 4000	50 : 5000
				10 : 1000	32 : 3200	10 : 1000	10 : 1000	50 : 5000	63 : 6300
				12 : 1250		12 : 1250	12 : 1250		
				16 : 1600		16 : 1600	16 : 1600		
						20 : 2000	20 : 2000		
							25 : 2500		
							32 : 3200		
							40 : 4000		
Rated Operational Voltage [Ue]			V	690		690			
Rated Insulation Voltage [Ui]			V	1000		1000			
Frequency			Hz	50/60		50/60			
No. of Poles			P	3, 4		3, 4			
Current Setting Range (…× In max)			A	0.4 ~ 1.0		0.4 ~ 1.0			
Rated Current of Neutral Pole (N) (··· %×In)			A	100 %	100 %	100 %	100 %	100 %	100 %
Rated Breaking Capacity [Icu] [Sym]									
IEC 60947-2 Category "B" KS C 4620	AC	690/600/550 V	kA	50	70 [1] (KS : 65)	65	85	85	100
		500/480/460 V		65	85	85	100	100	150
		415/380/230/220 V		65	85	85	100	100	150
Rated Service Short-Circuit Breaking Capacity [Ics] …%×Icu			kA	100 %	100 %	100 %	100 %	100 %	100 %
Rated Service Short-Circuit Breaking Capacity									
IEC 60947-2 Kategoria "B" KS C 4620	AC	690/600/550 V	kA	105	154	143	187	187	220
		500/480/460 V		143	187	187	220	220	330
		415/380/230/220 V		143	187	187	220	220	330
Rated Short-Time withstand Voltage [Icw] (Without Inst)									
1 s			kA	50	70	65	85	85	100
2 s				35	65	42	75	75	85
3 s				28	50	35	65	65	75
Rated Impulse withstand Voltage[Uimp]			kV	12		12			
Total Breaking-Time			ms	40 [3]		40 [3]			
Closing Operational Time									
Motor Charging Time (s) max.				10		10			
Rated Trip Time (ms) max.				80		80			
Lifecycle (Cycles)									
Mechanical				20000	15000	20000	15000	10000	10000
Electrical				5000	5000	5000	5000	2000	2000
Weight									
3 Pole	Draw-Out Type - D/O		kg	63	87	63	87 (107) [2]	145	169
	Fixed Type - FIX			34	44	34	44 (61) [2]	76	108
4 Pole	Draw-Out Type - D/O			74	103	74	103 (140) [2]	173	214
	Fixed Type - FIX			44	55	44	55 (80) [2]	81	137
(W×H×D)									
3 Pole	Draw-Out Type - D/O		mm	328×460×368.4	399×460×368.4	328×460×368.4	399×460×368.4	624×460×368.4	766×460×368.4
	Fixed Type - FIX			337.4×404.4×295.8	408.4×404.4×295.8	337.4×404.4×295.8	408.4×404.4×295.8	633.4×404.4×295.8	775.4×404.4×295.8
4 Pole	Draw-Out Type - D/O			413×460×368.4	514×460×368.4	413×460×368.4	514×460×368.4	794×460×368.4	996×460×368.4
	Fixed Type - FIX			422.4×404.4×295.8	523.4×404.4×295.8	422.4×404.4×295.8	523.4×404.4×295.8	803.4×404.4×295.8	1005×404.4×295.8

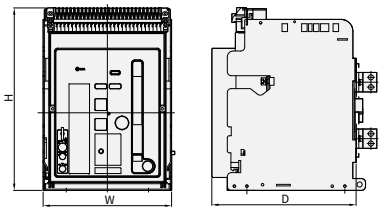
1) 70 kA is DEKRA certified
2) 4,000 AF
3) In case of MCR and override setting, INST is 50 ms.

Life time is the limit lifespan and is not the guaranteed lifespan. In case of maintenance, it is charged. In the event of abnormalities in accessories during use, it can be replaced. Quality Assurance : Based on IEC 60947-2's number of opening/closing within the warranty period.

Fixed Type - FIX



Draw-Out Type - D/O



Air Circuit Breakers

Circuit breakers equipped with OCR (PR-LP), without motor drive and coils

Type	Code No.	In [A]	Ampere Frame [AF]	No. of poles	Frame type	Terminal busbar arrangement	Rated Breaking Capacity [kA]	kg	Width (mm)	Depth (mm)	Height (mm)	
EPL-06 3H AD/M0C0S0/PR-LP	004690300	630	A	3	D/O	Horizontal	65	68	600	700	600	1
EPL-08 3H AD/M0C0S0/PR-LP	004690301	800	A	3	D/O	Horizontal	65	68	600	700	600	1
EPL-10 3H AD/M0C0S0/PR-LP	004690302	1000	A	3	D/O	Horizontal	65	68	600	700	600	1
EPL-12 3H AD/M0C0S0/PR-LP	004690303	1250	A	3	D/O	Horizontal	65	68	600	700	600	1
EPL-16 3H AD/M0C0S0/PR-LP	004690304	1600	A	3	D/O	Horizontal	65	68	600	700	600	1
EPL-20 3H BD/M0C0S0/PR-LP	004690305	2000	B	3	D/O	Horizontal	85	92	600	700	600	1
EPL-25 3H BD/M0C0S0/PR-LP	004690306	2500	B	3	D/O	Horizontal	85	92	600	700	600	1
EPL-32 3H BD/M0C0S0/PR-LP	004690307	3200	B	3	D/O	Horizontal	85	92	600	700	600	1
EPL-06 4H AD/M0C0S0/PR-LP	004690308	630	A	4	D/O	Horizontal	65	79	600	700	600	1
EPL-08 4H AD/M0C0S0/PR-LP	004690309	800	A	4	D/O	Horizontal	65	79	600	700	600	1
EPL-10 4H AD/M0C0S0/PR-LP	004690310	1000	A	4	D/O	Horizontal	65	79	600	700	600	1
EPL-12 4H AD/M0C0S0/PR-LP	004690311	1250	A	4	D/O	Horizontal	65	79	600	700	600	1
EPL-16 4H AD/M0C0S0/PR-LP	004690312	1600	A	4	D/O	Horizontal	65	79	600	700	600	1
EPL-20 4H BD/M0C0S0/PR-LP	004690313	2000	B	4	D/O	Horizontal	85	111	650	1050	620	1
EPL-25 4H BD/M0C0S0/PR-LP	004690314	2500	B	4	D/O	Horizontal	85	111	650	1050	620	1
EPL-32 4H BD/M0C0S0/PR-LP	004690315	3200	B	4	D/O	Horizontal	85	111	650	1050	620	1
EPL-06 3H AF/M0C0S0/PR-LP	004690316	630	A	3	FIX	Horizontal	65	39	600	700	600	1
EPL-08 3H AF/M0C0S0/PR-LP	004690317	800	A	3	FIX	Horizontal	65	39	600	700	600	1
EPL-10 3H AF/M0C0S0/PR-LP	004690318	1000	A	3	FIX	Horizontal	65	39	600	700	600	1
EPL-12 3H AF/M0C0S0/PR-LP	004690319	1250	A	3	FIX	Horizontal	65	39	600	700	600	1
EPL-16 3H AF/M0C0S0/PR-LP	004690320	1600	A	3	FIX	Horizontal	65	39	600	700	600	1
EPL-20 3H BF/M0C0S0/PR-LP	004690321	2000	B	3	FIX	Horizontal	85	49	600	700	600	1
EPL-25 3H BF/M0C0S0/PR-LP	004690322	2500	B	3	FIX	Horizontal	85	49	600	700	600	1
EPL-32 3H BF/M0C0S0/PR-LP	004690323	3200	B	3	FIX	Horizontal	85	49	600	700	600	1
EPL-06 4H AF/M0C0S0/PR-LP	004690324	630	A	4	FIX	Horizontal	65	49	600	700	600	1
EPL-08 4H AF/M0C0S0/PR-LP	004690325	800	A	4	FIX	Horizontal	65	49	600	700	600	1
EPL-10 4H AF/M0C0S0/PR-LP	004690326	1000	A	4	FIX	Horizontal	65	49	600	700	600	1
EPL-12 4H AF/M0C0S0/PR-LP	004690327	1250	A	4	FIX	Horizontal	65	49	600	700	600	1
EPL-16 4H AF/M0C0S0/PR-LP	004690328	1600	A	4	FIX	Horizontal	65	49	600	700	600	1
EPL-20 4H BF/M0C0S0/PR-LP	004690329	2000	B	4	FIX	Horizontal	85	63	650	1050	620	1
EPL-25 4H BF/M0C0S0/PR-LP	004690330	2500	B	4	FIX	Horizontal	85	63	650	1050	620	1
EPL-32 4H BF/M0C0S0/PR-LP	004690331	3200	B	4	FIX	Horizontal	85	63	650	1050	620	1
EPH-40 3H BD/M0C0S0/PR-LP	004690340	4000	B	3	D/O	Horizontal	85	112	600	700	600	1

Circuit breakers equipped with OCR (PR-LP), with motor drive (24V DC), shunt trip (24V DC) and closing coil (24V DC)

Type	Code No.	In [A]	Ampere Frame [AF]	No. of poles	Frame type	Terminal busbar arrangement	Rated Breaking Capacity [kA]	kg	Width (mm)	Depth (mm)	Height (mm)	
EPL-06 3H AD/M7C7S7/PR-LP	004694700	630	A	3	D/O	Horizontal	65	70	600	700	600	1
EPL-08 3H AD/M7C7S7/PR-LP	004694701	800	A	3	D/O	Horizontal	65	70	600	700	600	1
EPL-10 3H AD/M7C7S7/PR-LP	004694702	1000	A	3	D/O	Horizontal	65	70	600	700	600	1
EPL-12 3H AD/M7C7S7/PR-LP	004694703	1250	A	3	D/O	Horizontal	65	70	600	700	600	1
EPL-16 3H AD/M7C7S7/PR-LP	004694704	1600	A	3	D/O	Horizontal	65	70	600	700	600	1
EPL-20 3H BD/M7C7S7/PR-LP	004694705	2000	B	3	D/O	Horizontal	85	94	600	700	600	1
EPL-25 3H BD/M7C7S7/PR-LP	004694706	2500	B	3	D/O	Horizontal	85	94	600	700	600	1
EPL-32 3H BD/M7C7S7/PR-LP	004694707	3200	B	3	D/O	Horizontal	85	94	600	700	600	1
EPL-06 4H AD/M7C7S7/PR-LP	004694708	630	A	4	D/O	Horizontal	65	81	600	700	600	1
EPL-08 4H AD/M7C7S7/PR-LP	004694709	800	A	4	D/O	Horizontal	65	81	600	700	600	1
EPL-10 4H AD/M7C7S7/PR-LP	004694710	1000	A	4	D/O	Horizontal	65	81	600	700	600	1
EPL-12 4H AD/M7C7S7/PR-LP	004694711	1250	A	4	D/O	Horizontal	65	81	600	700	600	1
EPL-16 4H AD/M7C7S7/PR-LP	004694712	1600	A	4	D/O	Horizontal	65	81	600	700	600	1
EPL-20 4H BD/M7C7S7/PR-LP	004694713	2000	B	4	D/O	Horizontal	85	112	650	1050	620	1
EPL-25 4H BD/M7C7S7/PR-LP	004694714	2500	B	4	D/O	Horizontal	85	112	650	1050	620	1
EPL-32 4H BD/M7C7S7/PR-LP	004694715	3200	B	4	D/O	Horizontal	85	112	650	1050	620	1
EPL-06 3H AF/M7C7S7/PR-LP	004694716	630	A	3	FIX	Horizontal	65	41	600	700	600	1
EPL-08 3H AF/M7C7S7/PR-LP	004694717	800	A	3	FIX	Horizontal	65	41	600	700	600	1
EPL-10 3H AF/M7C7S7/PR-LP	004694718	1000	A	3	FIX	Horizontal	65	41	600	700	600	1
EPL-12 3H AF/M7C7S7/PR-LP	004694719	1250	A	3	FIX	Horizontal	65	41	600	700	600	1
EPL-16 3H AF/M7C7S7/PR-LP	004694720	1600	A	3	FIX	Horizontal	65	41	600	700	600	1
EPL-20 3H BF/M7C7S7/PR-LP	004694721	2000	B	3	FIX	Horizontal	85	51	600	700	600	1
EPL-25 3H BF/M7C7S7/PR-LP	004694722	2500	B	3	FIX	Horizontal	85	51	600	700	600	1
EPL-32 3H BF/M7C7S7/PR-LP	004694723	3200	B	3	FIX	Horizontal	85	51	600	700	600	1
EPL-06 4H AF/M7C7S7/PR-LP	004694724	630	A	4	FIX	Horizontal	65	51	600	700	600	1
EPL-08 4H AF/M7C7S7/PR-LP	004694725	800	A	4	FIX	Horizontal	65	51	600	700	600	1
EPL-10 4H AF/M7C7S7/PR-LP	004694726	1000	A	4	FIX	Horizontal	65	51	600	700	600	1
EPL-12 4H AF/M7C7S7/PR-LP	004694727	1250	A	4	FIX	Horizontal	65	51	600	700	600	1
EPL-16 4H AF/M7C7S7/PR-LP	004694728	1600	A	4	FIX	Horizontal	65	51	600	700	600	1
EPL-20 4H BF/M7C7S7/PR-LP	004694729	2000	B	4	FIX	Horizontal	85	64	650	1050	620	1
EPL-25 4H BF/M7C7S7/PR-LP	004694730	2500	B	4	FIX	Horizontal	85	64	650	1050	620	1
EPL-32 4H BF/M7C7S7/PR-LP	004694731	3200	B	4	FIX	Horizontal	85	64	650	1050	620	1
EPH-40 3H BD/M7C7S7/PR-LP	004694740	4000	B	3	D/O	Horizontal	85	114	600	700	600	1

Circuit breakers equipped with OCR (PR-LP), with motor drive (230V AC/DC), shunt trip (230V AC/DC) and closing coil (230V AC/DC)

Type	Code No.	In [A]	Ampere Frame [AF]	No. of poles	Frame type	Terminal busbar arrangement	Rated Breaking Capacity [kA]	kg	Width (mm)	Depth (mm)	Height (mm)	
EPL-06 3H AD/M2C2S2/PR-LP	004695700	630	A	3	D/O	Horizontal	65	70	600	700	600	1
EPL-08 3H AD/M2C2S2/PR-LP	004695701	800	A	3	D/O	Horizontal	65	70	600	700	600	1
EPL-10 3H AD/M2C2S2/PR-LP	004695702	1000	A	3	D/O	Horizontal	65	70	600	700	600	1
EPL-12 3H AD/M2C2S2/PR-LP	004695703	1250	A	3	D/O	Horizontal	65	70	600	700	600	1
EPL-16 3H AD/M2C2S2/PR-LP	004695704	1600	A	3	D/O	Horizontal	65	70	600	700	600	1
EPL-20 3H BD/M2C2S2/PR-LP	004695705	2000	B	3	D/O	Horizontal	85	94	600	700	600	1
EPL-25 3H BD/M2C2S2/PR-LP	004695706	2500	B	3	D/O	Horizontal	85	94	600	700	600	1
EPL-32 3H BD/M2C2S2/PR-LP	004695707	3200	B	3	D/O	Horizontal	85	94	600	700	600	1
EPL-06 4H AD/M2C2S2/PR-LP	004695708	630	A	4	D/O	Horizontal	65	81	600	700	600	1
EPL-08 4H AD/M2C2S2/PR-LP	004695709	800	A	4	D/O	Horizontal	65	81	600	700	600	1
EPL-10 4H AD/M2C2S2/PR-LP	004695710	1000	A	4	D/O	Horizontal	65	81	600	700	600	1
EPL-12 4H AD/M2C2S2/PR-LP	004695711	1250	A	4	D/O	Horizontal	65	81	600	700	600	1
EPL-16 4H AD/M2C2S2/PR-LP	004695712	1600	A	4	D/O	Horizontal	65	81	600	700	600	1
EPL-20 4H BD/M2C2S2/PR-LP	004695713	2000	B	4	D/O	Horizontal	85	112	650	1050	620	1
EPL-25 4H BD/M2C2S2/PR-LP	004695714	2500	B	4	D/O	Horizontal	85	112	650	1050	620	1
EPL-32 4H BD/M2C2S2/PR-LP	004695715	3200	B	4	D/O	Horizontal	85	112	650	1050	620	1
EPL-06 3H AF/M2C2S2/PR-LP	004695716	630	A	3	FIX	Horizontal	65	41	600	700	600	1
EPL-08 3H AF/M2C2S2/PR-LP	004695717	800	A	3	FIX	Horizontal	65	41	600	700	600	1
EPL-10 3H AF/M2C2S2/PR-LP	004695718	1000	A	3	FIX	Horizontal	65	41	600	700	600	1
EPL-12 3H AF/M2C2S2/PR-LP	004695719	1250	A	3	FIX	Horizontal	65	41	600	700	600	1
EPL-16 3H AF/M2C2S2/PR-LP	004695720	1600	A	3	FIX	Horizontal	65	41	600	700	600	1
EPL-20 3H BF/M2C2S2/PR-LP	004695721	2000	B	3	FIX	Horizontal	85	51	600	700	600	1
EPL-25 3H BF/M2C2S2/PR-LP	004695722	2500	B	3	FIX	Horizontal	85	51	600	700	600	1
EPL-32 3H BF/M2C2S2/PR-LP	004695723	3200	B	3	FIX	Horizontal	85	51	600	700	600	1
EPL-06 4H AF/M2C2S2/PR-LP	004695724	630	A	4	FIX	Horizontal	65	51	600	700	600	1
EPL-08 4H AF/M2C2S2/PR-LP	004695725	800	A	4	FIX	Horizontal	65	51	600	700	600	1
EPL-10 4H AF/M2C2S2/PR-LP	004695726	1000	A	4	FIX	Horizontal	65	51	600	700	600	1
EPL-12 4H AF/M2C2S2/PR-LP	004695727	1250	A	4	FIX	Horizontal	65	51	600	700	600	1
EPL-16 4H AF/M2C2S2/PR-LP	004695728	1600	A	4	FIX	Horizontal	65	51	600	700	600	1
EPL-20 4H BF/M2C2S2/PR-LP	004695729	2000	B	4	FIX	Horizontal	85	64	650	1050	620	1
EPL-25 4H BF/M2C2S2/PR-LP	004695730	2500	B	4	FIX	Horizontal	85	64	650	1050	620	1
EPL-32 4H BF/M2C2S2/PR-LP	004695731	3200	B	4	FIX	Horizontal	85	64	650	1050	620	1
EPH-40 3H BD/M2C2S2/PR-LP	004695740	4000	B	3	D/O	Horizontal	85	114	600	700	600	1

Air Switch Disconnectors

Air switch disconnectors without motor drive and coils

Type	Code No.	In [A]	Ampere Frame [AF]	No. of poles	Frame type	Terminal busbar arrangement	kg	Width (mm)	Depth (mm)	Height (mm)	
EPL-D-06 3H AD/M0C0S0	004696000	630	A	3	D/O	Horizontal	65	600	700	600	1
EPL-D-08 3H AD/M0C0S0	004696001	800	A	3	D/O	Horizontal	65	600	700	600	1
EPL-D-10 3H AD/M0C0S0	004696002	1000	A	3	D/O	Horizontal	65	600	700	600	1
EPL-D-12 3H AD/M0C0S0	004696003	1250	A	3	D/O	Horizontal	65	600	700	600	1
EPL-D-16 3H AD/M0C0S0	004696004	1600	A	3	D/O	Horizontal	65	600	700	600	1
EPL-D-20 3H BD/M0C0S0	004696005	2000	B	3	D/O	Horizontal	89	600	700	600	1
EPL-D-25 3H BD/M0C0S0	004696006	2500	B	3	D/O	Horizontal	89	600	700	600	1
EPL-D-32 3H BD/M0C0S0	004696007	3200	B	3	D/O	Horizontal	89	600	700	600	1
EPL-D-06 4H AD/M0C0S0	004696008	630	A	4	D/O	Horizontal	76	600	700	600	1
EPL-D-08 4H AD/M0C0S0	004696009	800	A	4	D/O	Horizontal	76	600	700	600	1
EPL-D-10 4H AD/M0C0S0	004696010	1000	A	4	D/O	Horizontal	76	600	700	600	1
EPL-D-12 4H AD/M0C0S0	004696011	1250	A	4	D/O	Horizontal	76	600	700	600	1
EPL-D-16 4H AD/M0C0S0	004696012	1600	A	4	D/O	Horizontal	76	600	700	600	1
EPL-D-20 4H BD/M0C0S0	004696013	2000	B	4	D/O	Horizontal	108	650	1050	620	1
EPL-D-25 4H BD/M0C0S0	004696014	2500	B	4	D/O	Horizontal	108	650	1050	620	1
EPL-D-32 4H BD/M0C0S0	004696015	3200	B	4	D/O	Horizontal	108	650	1050	620	1
EPL-D-06 3H AF/M0C0S0	004696016	630	A	3	FIX	Horizontal	36	600	700	600	1
EPL-D-08 3H AF/M0C0S0	004696017	800	A	3	FIX	Horizontal	36	600	700	600	1
EPL-D-10 3H AF/M0C0S0	004696018	1000	A	3	FIX	Horizontal	36	600	700	600	1
EPL-D-12 3H AF/M0C0S0	004696019	1250	A	3	FIX	Horizontal	36	600	700	600	1
EPL-D-16 3H AF/M0C0S0	004696020	1600	A	3	FIX	Horizontal	36	600	700	600	1
EPL-D-20 3H BF/M0C0S0	004696021	2000	B	3	FIX	Horizontal	46	600	700	600	1
EPL-D-25 3H BF/M0C0S0	004696022	2500	B	3	FIX	Horizontal	46	600	700	600	1
EPL-D-32 3H BF/M0C0S0	004696023	3200	B	3	FIX	Horizontal	46	600	700	600	1
EPL-D-06 4H AF/M0C0S0	004696024	630	A	4	FIX	Horizontal	46	600	700	600	1
EPL-D-08 4H AF/M0C0S0	004696025	800	A	4	FIX	Horizontal	46	600	700	600	1
EPL-D-10 4H AF/M0C0S0	004696026	1000	A	4	FIX	Horizontal	46	600	700	600	1
EPL-D-12 4H AF/M0C0S0	004696027	1250	A	4	FIX	Horizontal	46	600	700	600	1
EPL-D-16 4H AF/M0C0S0	004696028	1600	A	4	FIX	Horizontal	46	600	700	600	1
EPL-D-20 4H BF/M0C0S0	004696029	2000	B	4	FIX	Horizontal	60	650	1050	620	1
EPL-D-25 4H BF/M0C0S0	004696030	2500	B	4	FIX	Horizontal	60	650	1050	620	1
EPL-D-32 4H BF/M0C0S0	004696031	3200	B	4	FIX	Horizontal	60	650	1050	620	1
EPH-D-40 3H BD/M0C0S0	004696040	4000	B	3	D/O	Horizontal	109	600	700	600	1

Air switch disconnectors equipped with OCR (PR-LP), with motor drive (24V DC), shunt trip (24V DC) and closing coil (24V DC)

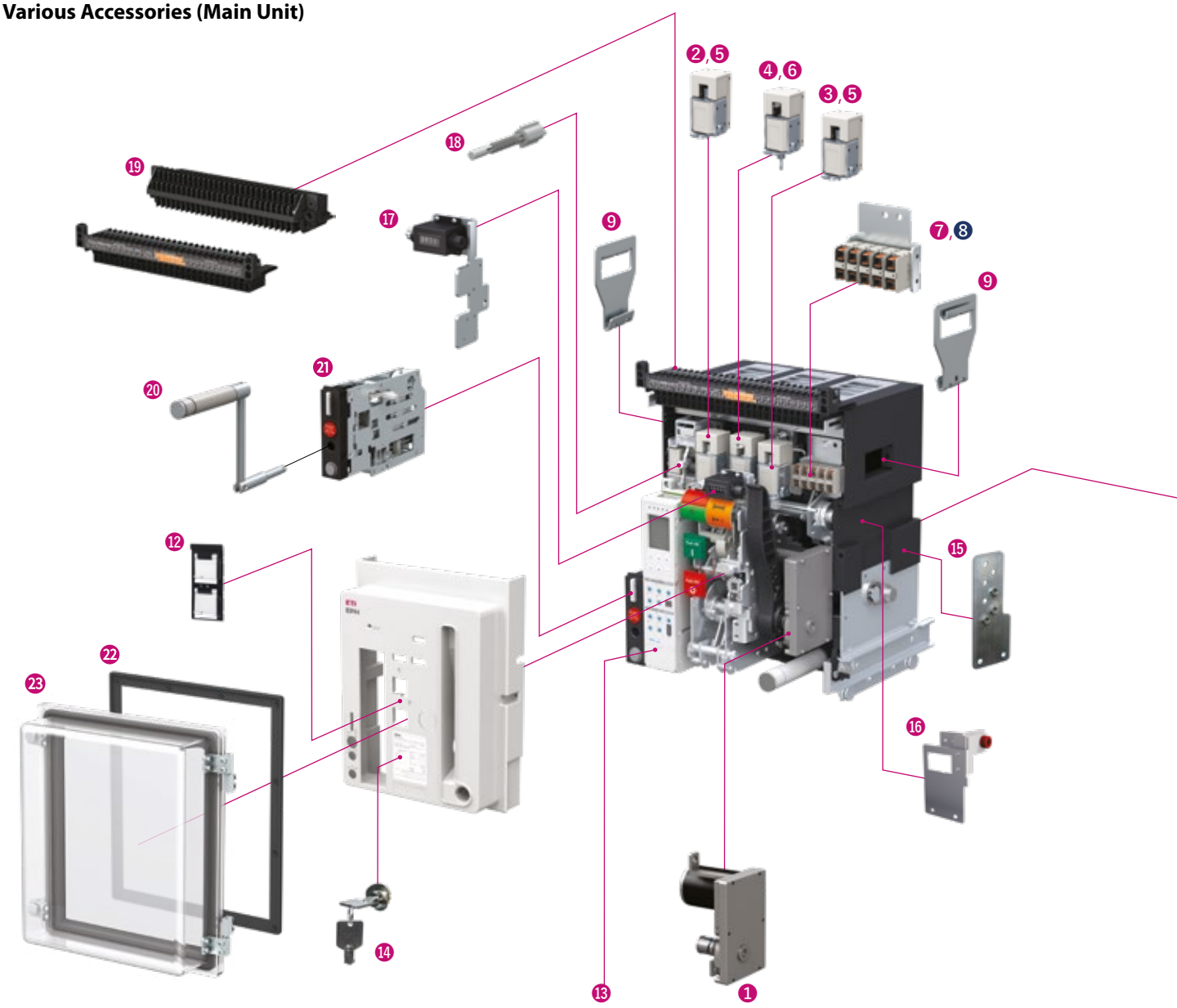
Type	Code No.	In [A]	Ampere Frame [AF]	No. of poles	Frame type	Terminal busbar arrangement	kg	Width (mm)	Depth (mm)	Height (mm)	
EPL-D-06 3H AD/M7C7S7	004696400	630	A	3	D/O	Horizontal	67	600	700	600	1
EPL-D-08 3H AD/M7C7S7	004696401	800	A	3	D/O	Horizontal	67	600	700	600	1
EPL-D-10 3H AD/M7C7S7	004696402	1000	A	3	D/O	Horizontal	67	600	700	600	1
EPL-D-12 3H AD/M7C7S7	004696403	1250	A	3	D/O	Horizontal	67	600	700	600	1
EPL-D-16 3H AD/M7C7S7	004696404	1600	A	3	D/O	Horizontal	67	600	700	600	1
EPL-D-20 3H BD/M7C7S7	004696405	2000	B	3	D/O	Horizontal	91	600	700	600	1
EPL-D-25 3H BD/M7C7S7	004696406	2500	B	3	D/O	Horizontal	91	600	700	600	1
EPL-D-32 3H BD/M7C7S7	004696407	3200	B	3	D/O	Horizontal	91	600	700	600	1
EPL-D-06 4H AD/M7C7S7	004696408	630	A	4	D/O	Horizontal	78	600	700	600	1
EPL-D-08 4H AD/M7C7S7	004696409	800	A	4	D/O	Horizontal	78	600	700	600	1
EPL-D-10 4H AD/M7C7S7	004696410	1000	A	4	D/O	Horizontal	78	600	700	600	1
EPL-D-12 4H AD/M7C7S7	004696411	1250	A	4	D/O	Horizontal	78	600	700	600	1
EPL-D-16 4H AD/M7C7S7	004696412	1600	A	4	D/O	Horizontal	78	600	700	600	1
EPL-D-20 4H BD/M7C7S7	004696413	2000	B	4	D/O	Horizontal	109	650	1050	620	1
EPL-D-25 4H BD/M7C7S7	004696414	2500	B	4	D/O	Horizontal	109	650	1050	620	1
EPL-D-32 4H BD/M7C7S7	004696415	3200	B	4	D/O	Horizontal	109	650	1050	620	1
EPL-D-06 3H AF/M7C7S7	004696416	630	A	3	FIX	Horizontal	38	600	700	600	1
EPL-D-08 3H AF/M7C7S7	004696417	800	A	3	FIX	Horizontal	38	600	700	600	1
EPL-D-10 3H AF/M7C7S7	004696418	1000	A	3	FIX	Horizontal	38	600	700	600	1
EPL-D-12 3H AF/M7C7S7	004696419	1250	A	3	FIX	Horizontal	38	600	700	600	1
EPL-D-16 3H AF/M7C7S7	004696420	1600	A	3	FIX	Horizontal	38	600	700	600	1
EPL-D-20 3H BF/M7C7S7	004696421	2000	B	3	FIX	Horizontal	48	600	700	600	1
EPL-D-25 3H BF/M7C7S7	004696422	2500	B	3	FIX	Horizontal	48	600	700	600	1
EPL-D-32 3H BF/M7C7S7	004696423	3200	B	3	FIX	Horizontal	48	600	700	600	1
EPL-D-06 4H AF/M7C7S7	004696424	630	A	4	FIX	Horizontal	48	600	700	600	1
EPL-D-08 4H AF/M7C7S7	004696425	800	A	4	FIX	Horizontal	48	600	700	600	1
EPL-D-10 4H AF/M7C7S7	004696426	1000	A	4	FIX	Horizontal	48	600	700	600	1
EPL-D-12 4H AF/M7C7S7	004696427	1250	A	4	FIX	Horizontal	48	600	700	600	1
EPL-D-16 4H AF/M7C7S7	004696428	1600	A	4	FIX	Horizontal	48	600	700	600	1
EPL-D-20 4H BF/M7C7S7	004696429	2000	B	4	FIX	Horizontal	61	650	1050	620	1
EPL-D-25 4H BF/M7C7S7	004696430	2500	B	4	FIX	Horizontal	61	650	1050	620	1
EPL-D-32 4H BF/M7C7S7	004696431	3200	B	4	FIX	Horizontal	61	650	1050	620	1
EPH-D-40 3H BD/M7C7S7	004696440	4000	B	3	D/O	Horizontal	111	600	700	600	1

Air switch disconnectors equipped with OCR (PR-LP), with motor drive (230V AC/DC), shunt trip (230V AC/DC) and closing coil (230V AC/DC)

Type	Code No.	In [A]	Ampere Frame [AF]	No. of poles	Frame type	Terminal busbar arrangement	kg	Width (mm)	Depth (mm)	Height (mm)	
EPL-D-06 3H AD/M2C2S2	004696600	630	A	3	D/O	Horizontal	67	600	700	600	1
EPL-D-08 3H AD/M2C2S2	004696601	800	A	3	D/O	Horizontal	67	600	700	600	1
EPL-D-10 3H AD/M2C2S2	004696602	1000	A	3	D/O	Horizontal	67	600	700	600	1
EPL-D-12 3H AD/M2C2S2	004696603	1250	A	3	D/O	Horizontal	67	600	700	600	1
EPL-D-16 3H AD/M2C2S2	004696604	1600	A	3	D/O	Horizontal	67	600	700	600	1
EPL-D-20 3H BD/M2C2S2	004696605	2000	B	3	D/O	Horizontal	91	600	700	600	1
EPL-D-25 3H BD/M2C2S2	004696606	2500	B	3	D/O	Horizontal	91	600	700	600	1
EPL-D-32 3H BD/M2C2S2	004696607	3200	B	3	D/O	Horizontal	91	600	700	600	1
EPL-D-06 4H AD/M2C2S2	004696608	630	A	4	D/O	Horizontal	78	600	700	600	1
EPL-D-08 4H AD/M2C2S2	004696609	800	A	4	D/O	Horizontal	78	600	700	600	1
EPL-D-10 4H AD/M2C2S2	004696610	1000	A	4	D/O	Horizontal	78	600	700	600	1
EPL-D-12 4H AD/M2C2S2	004696611	1250	A	4	D/O	Horizontal	78	600	700	600	1
EPL-D-16 4H AD/M2C2S2	004696612	1600	A	4	D/O	Horizontal	78	600	700	600	1
EPL-D-20 4H BD/M2C2S2	004696613	2000	B	4	D/O	Horizontal	109	650	1050	620	1
EPL-D-25 4H BD/M2C2S2	004696614	2500	B	4	D/O	Horizontal	109	650	1050	620	1
EPL-D-32 4H BD/M2C2S2	004696615	3200	B	4	D/O	Horizontal	109	650	1050	620	1
EPL-D-06 3H AF/M2C2S2	004696616	630	A	3	FIX	Horizontal	38	600	700	600	1
EPL-D-08 3H AF/M2C2S2	004696617	800	A	3	FIX	Horizontal	38	600	700	600	1
EPL-D-10 3H AF/M2C2S2	004696618	1000	A	3	FIX	Horizontal	38	600	700	600	1
EPL-D-12 3H AF/M2C2S2	004696619	1250	A	3	FIX	Horizontal	38	600	700	600	1
EPL-D-16 3H AF/M2C2S2	004696620	1600	A	3	FIX	Horizontal	38	600	700	600	1
EPL-D-20 3H BF/M2C2S2	004696621	2000	B	3	FIX	Horizontal	48	600	700	600	1
EPL-D-25 3H BF/M2C2S2	004696622	2500	B	3	FIX	Horizontal	48	600	700	600	1
EPL-D-32 3H BF/M2C2S2	004696623	3200	B	3	FIX	Horizontal	48	600	700	600	1
EPL-D-06 4H AF/M2C2S2	004696624	630	A	4	FIX	Horizontal	48	600	700	600	1
EPL-D-08 4H AF/M2C2S2	004696625	800	A	4	FIX	Horizontal	48	600	700	600	1
EPL-D-10 4H AF/M2C2S2	004696626	1000	A	4	FIX	Horizontal	48	600	700	600	1
EPL-D-12 4H AF/M2C2S2	004696627	1250	A	4	FIX	Horizontal	48	600	700	600	1
EPL-D-16 4H AF/M2C2S2	004696628	1600	A	4	FIX	Horizontal	48	600	700	600	1
EPL-D-20 4H BF/M2C2S2	004696629	2000	B	4	FIX	Horizontal	61	650	1050	620	1
EPL-D-25 4H BF/M2C2S2	004696630	2500	B	4	FIX	Horizontal	61	650	1050	620	1
EPL-D-32 4H BF/M2C2S2	004696631	3200	B	4	FIX	Horizontal	61	650	1050	620	1
EPH-D-40 3H BD/M2C2S2	004696640	4000	B	3	D/O	Horizontal	111	600	700	600	1

Accessories

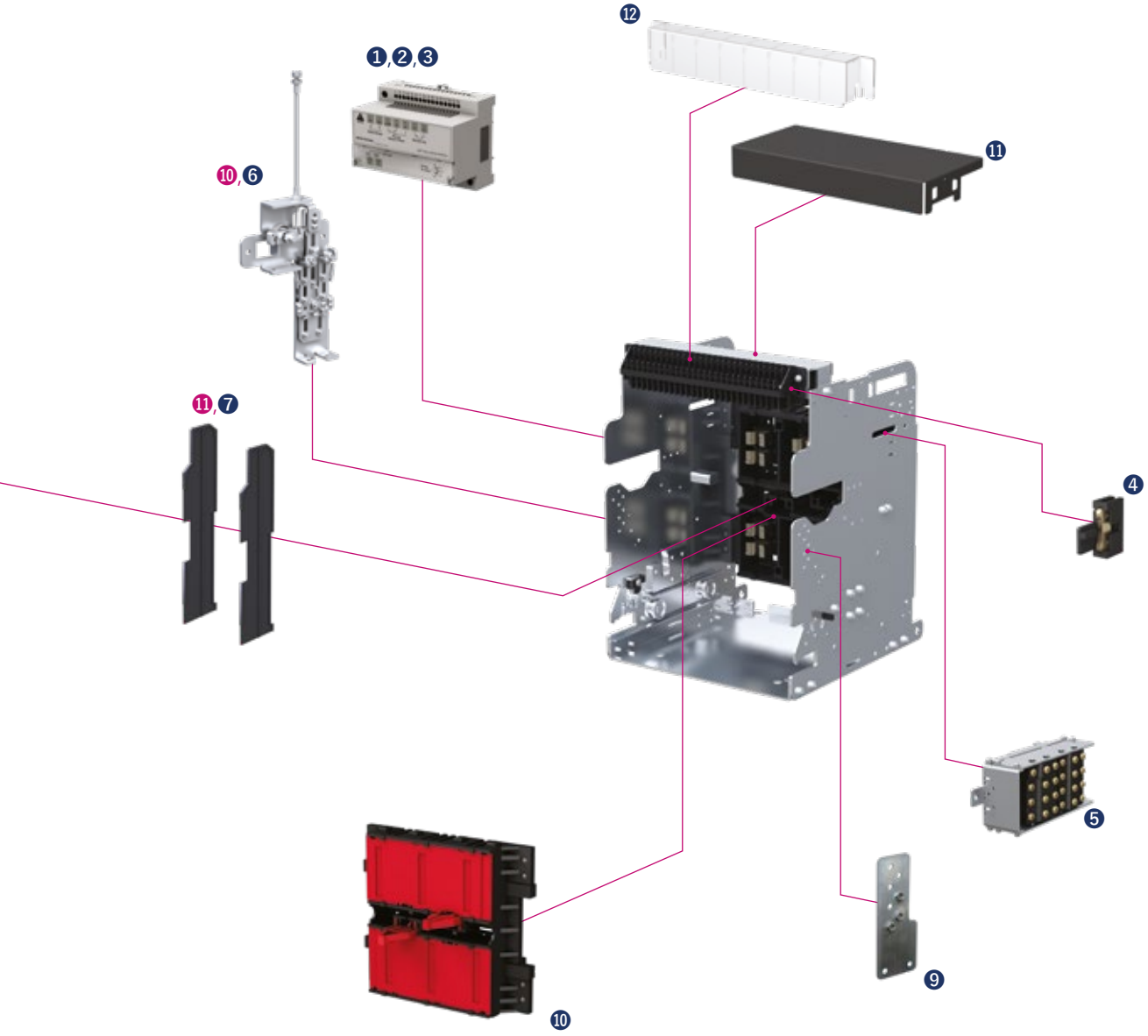
Various Accessories (Main Unit)



Accessories for Circuit Breaker

1. Spring Charge Geared Motor
2. Closing Coil
3. Trip Coil
4. Secondary SHT Trip Coil
5. Trip Coil Supervision
6. UVT Coil
7. AUX Switch (5x NO and 5X NC)
9. Lifting Lug
10. Mechanical Interlock
11. Phase Insulation Barrier
12. On/Off Button Lock
13. OCR
14. Key Lock
15. Miss-Insertion Preventer
16. Fixing Block
17. Counter
18. OCR & Alarm S/W Reset Button
19. Test Jumper
20. Draw-In/Out Handle
21. Position Pad Lock
22. Door Flange
23. Dust Cover

Various Accessories (Cradle)



Accessories for Cradle

1. UVT Time Delay Controller
2. Remote Closing Prevention Module
3. Temperature Monitoring Device Module
4. Short “b” Contact
5. Position Switch
6. Mechanical Interlock
7. Phase Insulation Barrier
8. Mechanical Operated Cell Switch
9. Miss-Insertion Preventer
10. Safety Shutter
11. Arc Shield
12. Control Terminal Protection Cover

Motor operators

Type	Code No.	Rated operational voltage [V]	kg	Width (mm)	Depth (mm)	Height (mm)	
EPLH-M1U	004697000	AC/DC110V	1,550	180	130	110	1
EPLH-M2U	004697001	AC/DC220V	1,550	180	130	110	1
EPLH-M7U	004697002	DC24V	1,550	180	130	110	1
EPLH-M8U	004697003	DC48V	1,550	180	130	110	1
EPLH-M9U	004697004	DC125V	1,550	180	130	110	1

Closing coils

Type	Code No.	Rated voltage [V]	kg	Width (mm)	Depth (mm)	Height (mm)	
EPLH-C1	004697005	AC/DC110V	0,190	45	50	100	1
EPLH-C2	004697006	AC/DC220V	0,190	45	50	100	1
EPLH-C3	004697007	AC380V	0,190	45	50	100	1
EPLH-C4	004697008	AC440V	0,190	45	50	100	1
EPLH-C7	004697009	DC24V	0,190	45	50	100	1
EPLH-C8	004697010	DC48V	0,190	45	50	100	1
EPLH-C9	004697011	DC125	0,190	45	50	100	1

Shunt trips (SHT)

Type	Code No.	Rated voltage [V]	kg	Width (mm)	Depth (mm)	Height (mm)	
EPLH-S1	004697012	AC/DC110V	0,185	45	50	100	1
EPLH-S2	004697013	AC/DC220V	0,185	45	50	100	1
EPLH-S3	004697014	AC380V	0,185	45	50	100	1
EPLH-S4	004697015	AC440V	0,185	45	50	100	1
EPLH-S7	004697016	DC24V	0,185	45	50	100	1
EPLH-S8	004697017	DC48V	0,185	45	50	100	1
EPLH-S9	004697018	DC125	0,185	45	50	100	1

Secondary shunt trips (SHT)

Type	Code No.	Rated voltage [V]	kg	Width (mm)	Depth (mm)	Height (mm)	(pc)
EPLH-SS1	004697019	AC/DC110V	0,185	45	50	100	1
EPLH-SS2	004697020	AC/DC220V	0,185	45	50	100	1
EPLH-SS3	004697021	AC380V	0,185	45	50	100	1
EPLH-SS4	004697022	AC440V	0,185	45	50	100	1
EPLH-SS7	004697023	DC24V	0,185	45	50	100	1
EPLH-SS8	004697024	DC48V	0,185	45	50	100	1
EPLH-SS9	004697025	DC125	0,185	45	50	100	1

Undervoltage coils (UVT)

Type	Code No.	Rated voltage [V]	kg	Width (mm)	Depth (mm)	Height (mm)	
EPLH-U1	004697033	AC/DC110V	0,200	45	50	100	1
EPLH-U2	004697034	AC/DC220V	0,200	45	50	100	1
EPLH-U3	004697035	AC380V	0,200	45	50	100	1
EPLH-U4	004697036	AC440V	0,200	45	50	100	1
EPLH-U7	004697037	DC24V	0,200	45	50	100	1
EPLH-U8	004697038	DC48V	0,200	45	50	100	1
EPLH-U9	004697039	DC125	0,200	45	50	100	1

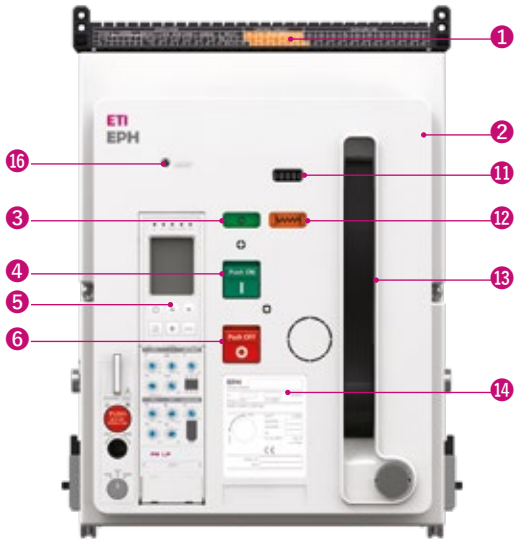
Position switches

Type	Code No.	Type of contact	kg	Width (mm)	Depth (mm)	Height (mm)	
EPLH-AQ	004697052	TEST:1C, CONN:1C	0,53	210	100	60	1
EPLH-AR	004697053	CONN:2C	0,53	210	100	60	1
EPLH-AS	004697054	TEST:2C	0,53	210	100	60	1
EPLH-AT	004697055	ISOLATED:1C, INSERTED:1C	0,53	210	100	60	1
EPLH-AU	004697056	INSERTED:2C	0,53	210	100	60	1
EPLH-AV	004697057	ISOLATED:2C	0,53	210	100	60	1
EPLH-PS	004697058	TEST:1C, ISOLATED:1C, CONN:2C	0,62	210	100	60	1
EPLH-P4	004697059	TEST:2C,CONN:2C	0,62	210	100	60	1
EPLH-PQ	004697060	INSERTED:1C, ISOLATED:1C, TEST:1C, CONN:1C	0,62	210	100	60	1
EPLH-P8	004697061	INSERTED:2C, ISOLATED:2C, TEST:2C, CONN:2C	0,62	210	100	60	1
EPLH-PR	004697062	INSERTED:1C, ISOLATED:1C, TEST:3C, CONN:3C	0,9	210	100	60	1

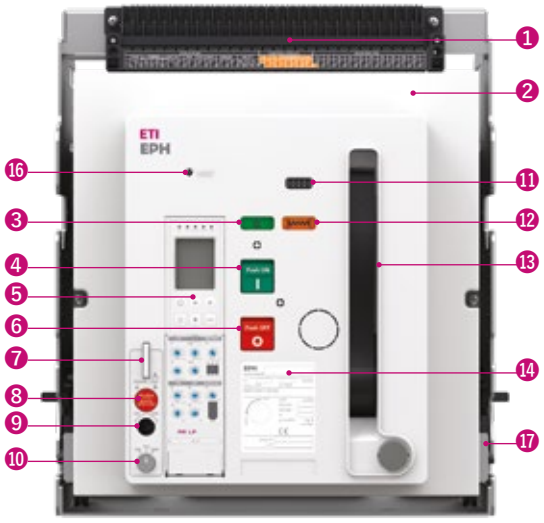
Accessories EPL

Type	Code No.	Description	kg	
EPLH-VM	004697128	Voltage Module	0,08	1
EPLH-AG	004697122	Door flange IP30	0,27	1
EPLH-DC	004697123	Dust Cover IP52	2,1	1
EPLH-FHVA3F	004697093	Upper & lower front type + Horizontal/Vertical terminal (A frame,630-1600A,3P)	7,24	1
EPLH-FHVA4F	004697094	Upper & lower front type + Horizontal/Vertical terminal (A frame, 630-1600A, 4P)	9,6	1
EPLH-FHVB3F	004697095	Upper & lower front type + Horizontal/Verticalterminal (B frame, 2000-3200A, 3P)	15,4	1
EPLH-FHVB4F	004697096	Upper & lower front type + Horizontal/Vertical terminal (B frame, 2000-3200A, 4P)	19,6	1
EPLH-FRA3F	004697124	Upper & lower front type terminal 6 (A frame,630-1600A,3P)	12,11	1
EPLH-FRA4F	004697125	Upper & lower front type terminal 8 (A frame,630-1600A,4P)	16,15	1
EPLH-FRB3F	004697126	Upper & lower front type terminal 6 (B frame, 2000-3200A, 3P)	25	1
EPLH-FRB4F	004697127	Upper & lower front type terminal 8 (B frame, 2000-3200A, 4P)	31,53	1
EPLH-DWB1	004697180	A & B & C & D Frame Draw-Out (Fixed) Type 2 Way MI (External Mounting Kit Only)	2,1	1
EPLH-DWB2	004697181	A & B & C & D Frame Draw-Out (Fixed) Type 3 Way MI (External Mounting Kit Only)	4,2	1
EPLH-FWB1	004697182	A & C Frame Fixed Type 2 Way MI (External Mounting Kit Only)	2,7	1
EPLH-FWB2	004697183	A & C Frame Fixed Type 3 Way MI (External Mounting Kit Only)	4,7	1
EPLH-B0DA	004697184	A Frame Interlock Part (B0)	0,2	1
EPLH-B0DB	004697185	B Frame Interlock Part (B0)	0,2	1
EPLH-B0DC3	004697186	C Frame 3P Interlock Part (B0)	0,2	1
EPLH-B0DC4	004697187	C Frame 4P Interlock Part (B0)	0,2	1
EPLH-B0DD3	004697188	D Frame 3P Interlock Part (B0)	0,2	1
EPLH-B0DD4	004697189	D Frame 4P Interlock Part (B0)	0,2	1
EPLH-B0FA	004697190	A Frame Interlock Part (B0) + Fixed Type of Installation Bracket	0,8	1
EPLH-B0FB	004697191	B Frame Interlock Part (B0) + Fixed Type of Installation Bracket	0,8	1
EPLH-B0FC3	004697192	C Frame 3P Interlock Part (B0) + Fixed Type of Installation Bracket	0,8	1
EPLH-B0FC4	004697193	C Frame 4P Interlock Part (B0) + Fixed Type of Installation Bracket	0,8	1
EPLH-B0FD3	004697194	D Frame 3P Interlock Part (B0) + Fixed Type of Installation Bracket	0,8	1
EPLH-B0FD4	004697195	D Frame 4P Interlock Part (B0) + Fixed Type of Installation Bracket	0,8	1
EPLH-DWB1A	004697196	A Frame Draw-Out Type 2 Way MI + Interlock Part (B0)	2,2	1
EPLH-DWB2A	004697197	A Frame Draw-Out Type 3 Way MI + Interlock Part (B0)	4,4	1
EPLH-DWB1B	004697198	B Frame Draw-Out Type 2 Way MI + Interlock Part (B0)	2,2	1
EPLH-DWB2B	004697199	B Frame Draw-Out Type 3 Way MI + Interlock Part (B0)	4,4	1
EPLH-DWB1C3	004697200	C Frame 3P Draw-Out 2 Way MI + Interlock Part (B0)	2,3	1
EPLH-DWB1C4	004697201	C Frame 4P Draw-Out 2 Way MI + Interlock Part (B0)	2,3	1
EPLH-DWB2C3	004697202	C Frame 3P Draw-Out 3 Way MI + Interlock Part (B0)	4,5	1
EPLH-DWB2C4	004697203	C Frame 4P Draw-Out 3 Way MI + Interlock Part (B0)	4,5	1
EPLH-DWB1D3	004697204	D Frame 3P Draw-Out 2 Way MI + Interlock Part (B0)	2,3	1
EPLH-DWB1D4	004697205	D Frame 4P Draw-Out 2 Way MI + Interlock Part (B0)	2,3	1
EPLH-DWB2D3	004697206	D Frame 3P Draw-Out 3 Way MI + Interlock Part (B0)	4,5	1
EPLH-DWB2D4	004697207	D Frame 4P Draw-Out 3 Way MI + Interlock Part (B0)	4,5	1
EPLH-FWB1A	004697208	A Frame Fixed Type 2 Way MI + Interlock Part (B0)	2,8	1
EPLH-FWB2A	004697209	A Frame Fixed Type 3 Way MI + Interlock Part (B0)	4,9	1
EPLH-FWB1B	004697210	B Frame Fixed Type 2 Way MI + Interlock Part (B0)	2,8	1
EPLH-FWB2B	004697211	B Frame Fixed Type 3 Way MI + Interlock Part (B0)	4,9	1
EPLH-FWB1C3	004697212	C Frame 3P Fixed Type 2 Way MI + Interlock Part (B0)	2,9	1
EPLH-FWB1C4	004697213	C Frame 4P Fixed Type 2 Way MI + Interlock Part (B0)	2,9	1
EPLH-FWB2C3	004697214	C Frame 3P Fixed Type 3 Way MI + Interlock Part (B0)	5	1
EPLH-FWB2C4	004697215	C Frame 4P Fixed Type 3 Way MI + Interlock Part (B0)	5	1
EPLH-FWB1D3	004697216	D Frame 3P Fixed Type 2 Way MI + Interlock Part (B0)	2,9	1
EPLH-FWB1D4	004697217	D Frame 4P Fixed Type 2 Way MI + Interlock Part (B0)	2,9	1
EPLH-FWB2D3	004697218	D Frame 3P Fixed Type 3 Way MI + Interlock Part (B0)	5	1
EPLH-FWB2D4	004697219	D Frame 4P Fixed Type 3 Way MI + Interlock Part (B0)	5	1

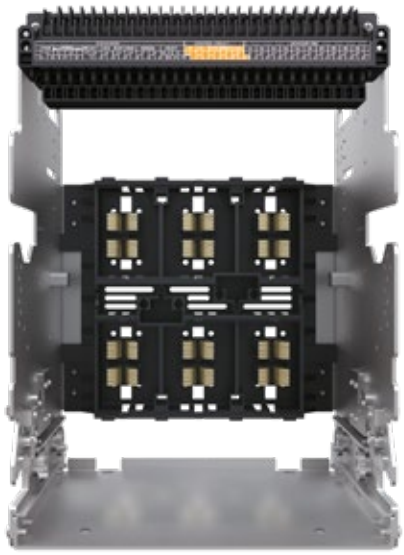
External Structure



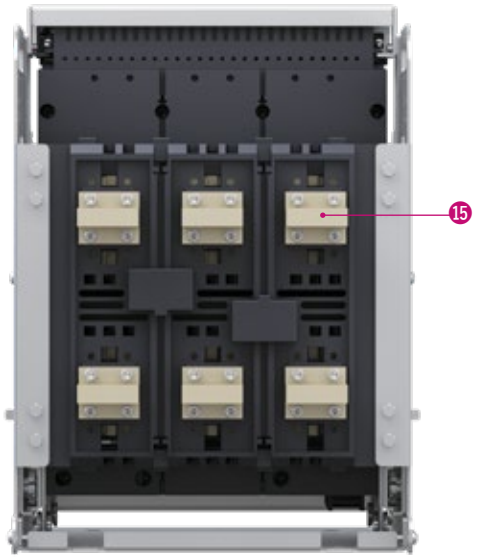
Draw-In/Out Type (ACB Body)



Draw-In/Out Type (Including Cradle)



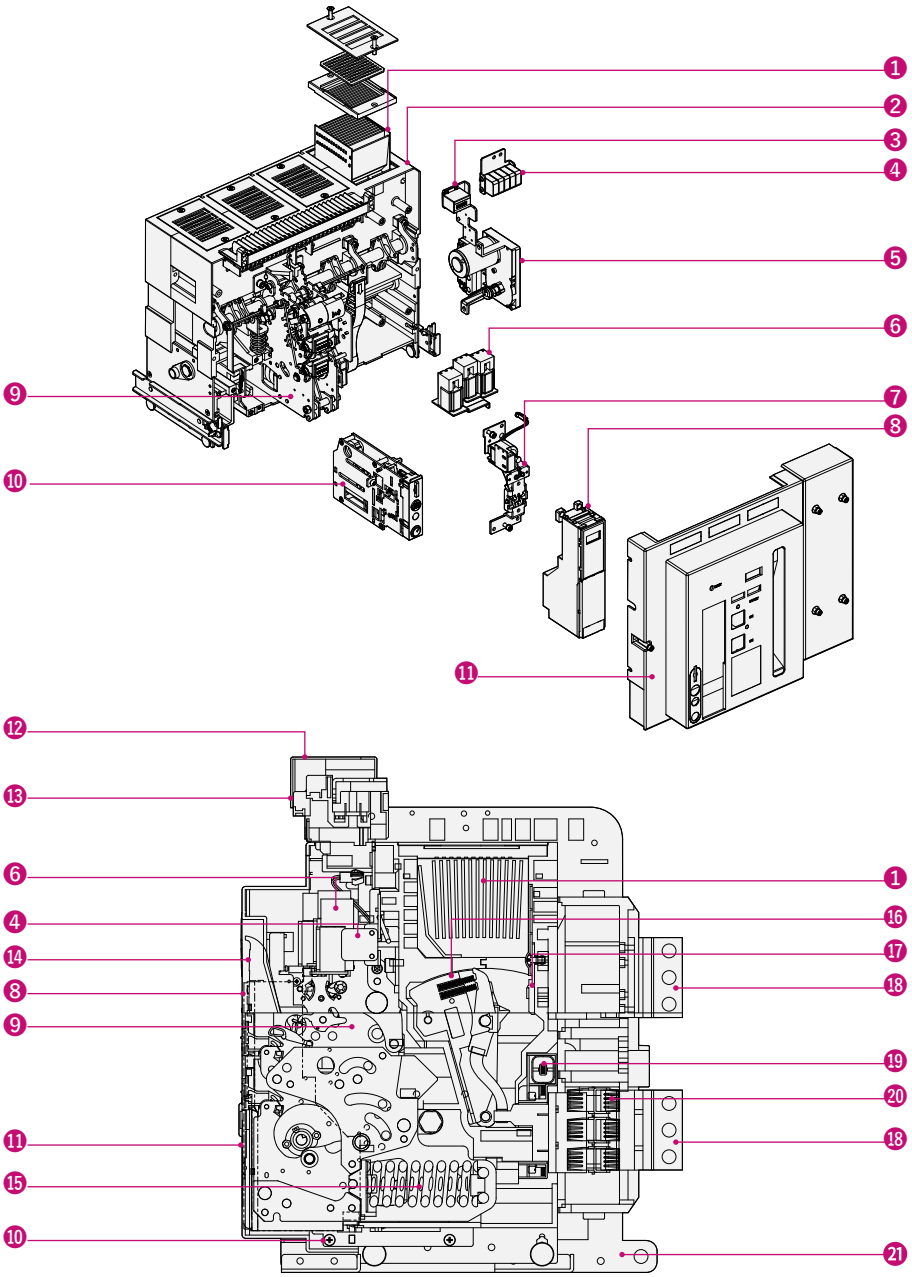
Cradle Front



Cradle Rear

1 Control Circuit Terminal
2 Front Cover
3 Close/Open Indicator
4 Close Button
5 Overcurrent Relay Device
6 Open Button
7 Position Padlock
8 Position Lock Release Button
9 Draw-In/Out Handle Insertion Hole
10 Position Indicator
11 Counter
12 Charged/Discharged Indicator
13 Manual Charging Handle
14 Rating Nameplate
15 Terminal Busbar
16 OCR & Alarm S/W Reset Button
17 Draw-In/Out Guide Rail

Internal Structure



❶ DI Grid	❾ Mechanism	⓰ Moving Contact
❷ CO Unit	❿ DR Device	⓱ Fixed Contact
❸ Counter	⓫ Cover	⓲ Terminal
❹ AUX Switch	⓬ Control Terminal Protection Cover	⓳ Current Transformer(CT)
❺ Motor operator	⓭ Control Terminal	⓴ Terminal Clip
❻ Closing/Trip/UVT Coil	⓮ Manual Charging Handle	㉑ Cradle
❼ MHT Device	⓯ Closing Spring	
❽ OCR		

EP Series air circuit breaker has been designed so that upon closing, the N phase is closed earlier than R, S, T phase and upon opening, the N phase is disconnected last in order to reduce burden of main contact and to prevent ripple effect of accident of N phase.

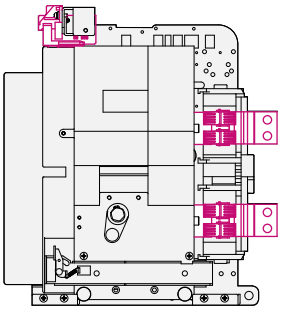
Convenient Connection Method

With EP Series air circuit breaker, 4 types of mounting (Connected, test, isolated, removed) are possible and offer easy maintenance.

Sliding Body Type (In Case of Draw-In/Out Type)

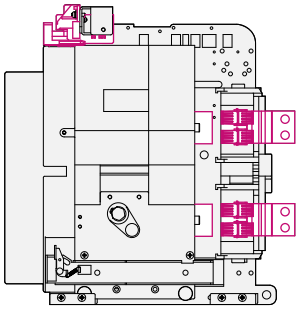
Connected Position

As a commonly used status, the main circuit and control circuit are both connected.



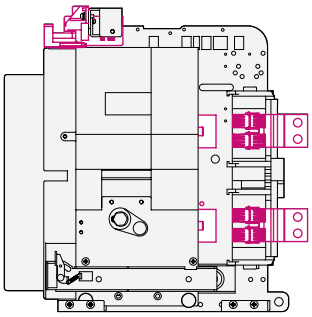
Test Position

As a status in which the main circuit is isolated and the control circuit is connected, the circuit breaker can be turned On/Off with the switchgear door closed.



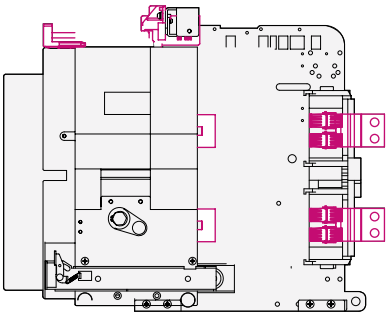
Isolated Position

With the main circuit and control circuit both isolated, the air circuit cannot be turned On/Off.



Removed Position

The air circuit braeaker body has completely been removed from the cradle.

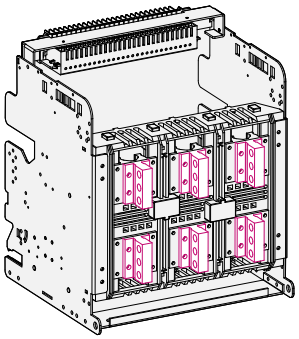


Connection Method

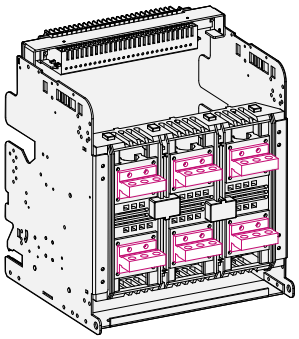
Enhanced user convenience through on-site adaptability: each terminal can be rotated 90 degrees to accommodate different busbar types in low-voltage switchgear.

Standard Type

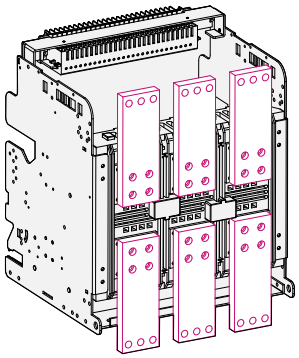
Vertical Type



Horizontal Type

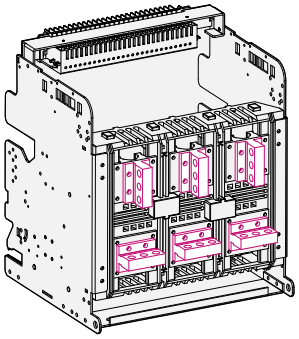


Front Type

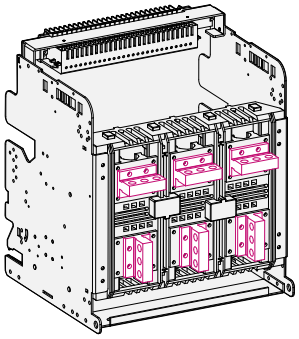


Combined Type

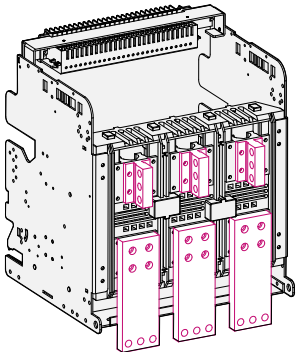
(Upper) Vertical Type +
(Lower) Horizontal Type



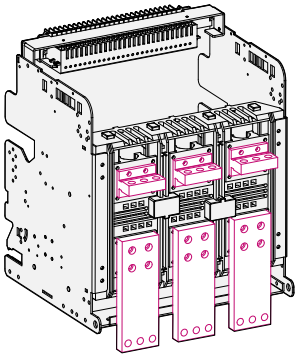
(Upper) Horizontal Type +
(Lower) Vertical Type



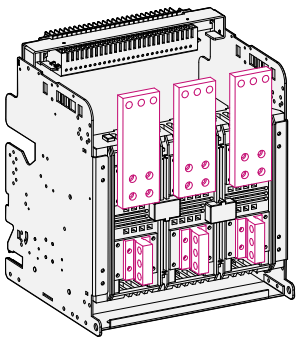
(Upper) Vertical Type +
(Lower) Front Type



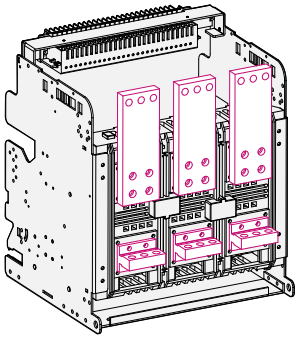
(Upper) Horizontal Type +
(Lower) Front Type



(Upper) Front Type +
(Lower) Vertical Type



(Upper) Front Type +
(Lower) Horizontal Type



Terminal Configuration and Compatibility
Terminal Change Options:

- Terminal changes are supported for EPL/EPH A frame (630–1600 A) and B frame (2000–3200 A) models.
- For current ratings above 4000 A, horizontal or vertical terminal adjustments require additional parts. Please contact our company for further details.

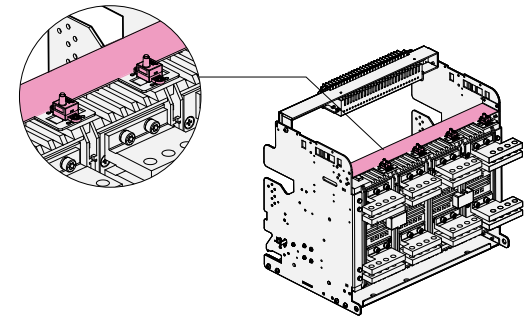
Front Type Terminal:

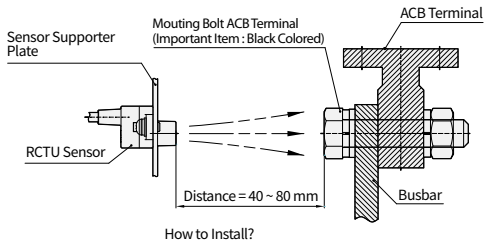
- The front-type terminal is designed for switchgear installations with spatial restrictions.
- For B frame (3200 A), the front-type terminal is provided separately for 2000 A and 2500 A.
- Front-type terminals must be purchased as separate components.

Temperature Sensor

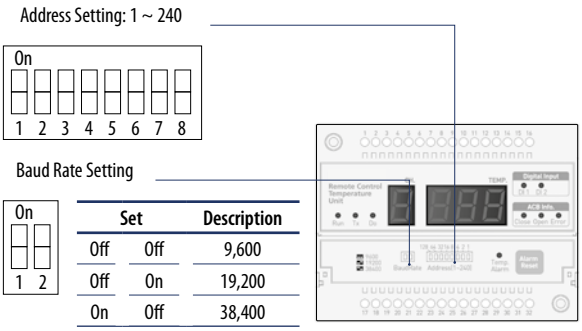
The integrated temperature sensor enables reliable and accurate measurement of heat sources, with a measurement range of -5℃ to 250℃.

Example of IR Sensor Application



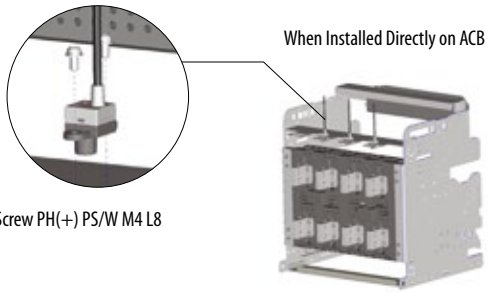


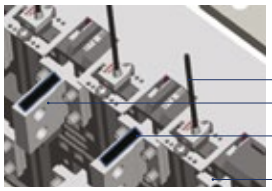
How to Install?



Set		Description
Off	Off	9,600
Off	On	19,200
On	Off	38,400

Installation of IR Sensor





IR Temperature Sensor Installation Guidelines

Ensure the IR temperature sensor is installed with sufficient insulation distance from the measurement point to avoid interference.

Recommended distance: Maintain a gap of 50–80 mm between the sensor and the measurement point.

Surface requirements: The measurement point should have a non-reflective surface to ensure accurate readings. A matte black coating is recommended to minimize reflection and optimize sensor performance.

⚠ Caution

Surface Reflection Impact:

The measurement accuracy of the IR sensor varies based on the reflectivity of the metal surface.

Use surfaces coated with matte black or non-metallic varnish for accurate measurements. Avoid metallic varnishes as they can distort readings.

Measurement Point Size:

The size of the measurement point depends on the Distance-to-Spot (D:S) Ratio and the distance from the surface.

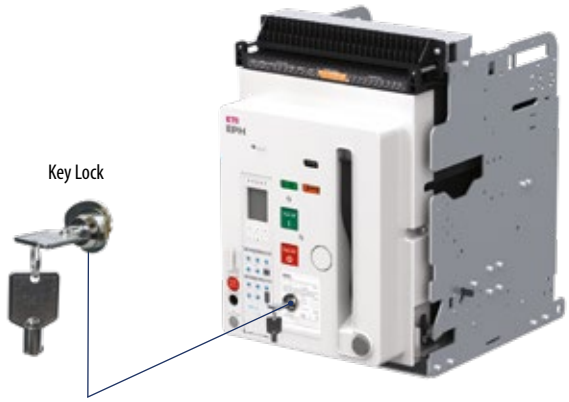
This sensor operates with a D:S Ratio of 8:1, meaning the measurement point's diameter is 1/8th of the distance from the sensor.

Key Lock

The Key Lock device ensures safety by maintaining the interlock condition to prevent electric or manual closing when the circuit breaker is open.
Operation Details:

- When the key is used to unlock, electric and manual On/Off operations become possible.
- When the key is removed, the circuit breaker becomes interlocked, preventing operation.
- To lock the device, the Off button must be pressed before turning the key to the lock position.

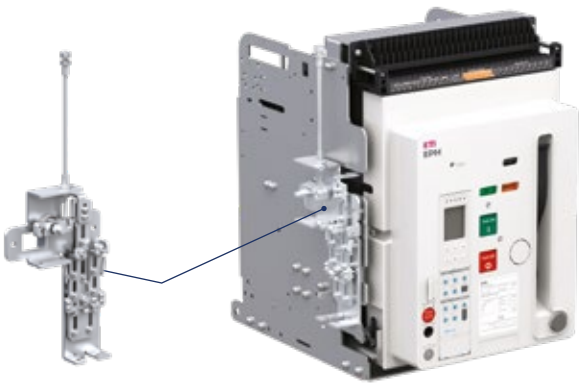
Ordering Information:
The key lock is mounted on the main unit. To include this feature, add AB to the order form when placing an order for the main unit.



Mechanical Interlock (MI)

The Mechanical Interlock (MI) is a device designed to mechanically link the closing and tripping operations of 2 or 3 circuit breakers. It operates using a combination of the MI unit and interlock components pre-installed within the main unit.
Key Features and Installation Guidelines:

- MI Unit and Components:
  - The MI unit is a separate product that must be ordered and installed additionally after the ACB is mounted in the panel.
  - When ordering the main unit, include BO in the order code to have only the interlock components pre-installed inside the main unit.
- External Mounting Kit:
  - The external MI mounting kit must be ordered separately as an additional product.
- Connection Requirements:
  - The MI wire must be connected within a 2-meter distance between ACBs.
- Panel Installation:
  - A square hole of 100 mm x 200 mm is required in the panel for installation.



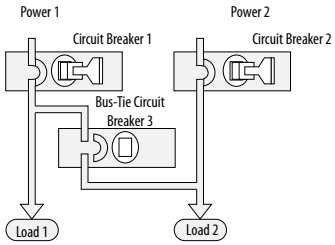
Mechanical Interlock

Key Lock & Key Interlock

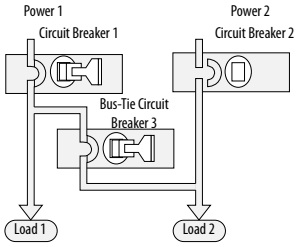
The Key Lock and Key Interlock system provides enhanced safety and control by interlocking multiple circuit breakers.
System Functionality:

- Up to three circuit breakers equipped with key lock devices can be integrated into the system.
- Using two keys, only two circuit breakers can be closed at a time, ensuring the third breaker remains interlocked.
- This configuration ensures a stable load distribution and prevents simultaneous operation of all breakers, enhancing system safety.

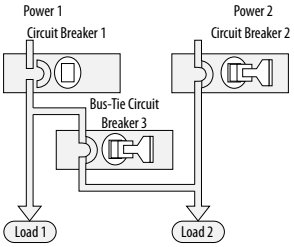
Circuit Breaker 3 cannot be closed



Circuit Breaker 2 cannot be closed



Circuit Breaker 1 cannot be closed



Example : Parallel feed at 2 power is prevented in case bus-tie circuit breaker is used .

Over Current Relay (OCR)

Function	General Feeder					Generator (Marine Type)		
Type	N	A		P	H	N	A	P
	PR-LN	PR-LA	PR-LG	PR-LP	PR-LH	PR-SN	PR-SA	PR-SP
Frequency								
50 Hz	50	50	50	50	50	50	50	50
60 Hz	60	60	60	60	60	60	60	60
Control Power								
External Power	☒	■	■	■	■	☒	■	■
Self-Power	■	■	■	■	■	■	■	■
Protection Function								
LTD (Long Time)	■	■	■	■	■	■	■	■
STD (Short Time)	■	■	■	■	■	■	■	■
INST (Instantaneous)	■	■	■	■	■	■	■	■
Pre-Trip Alarm	☒	■	■	■	■	☒	■	■
Ground Fault Trip	■	■	☒	■	■	☒	☒	☒
ELT Function	☒	☒	■ Outer CT Ground 2) (Ground fault at more than 30 A)	☒	☒	☒	☒	☒
Thermal Function	■	■	■	■	■	■	■	■
Field Test	☒	■	■	■	■	☒	■	■
Fail Safe	■	■	■	■	■	■	■	■
Indication								
True RMS Detection Method	■	■	■	■	■	■	■	■
LED Indication per Trip Type	☒	■	■	■	■	☒	■	■
Fault LED	L [1]	PTA, L, S/I, G	PTA, L, S/I, leakage	PTA, L, S/I, G	PTA, L, S/I, G	L [1]	PTA, L, S/I	PTA, L, S/I
Real-Time LCD Indication of Load Rate per Phase	☒	■	■	■	■	☒	■	■
Measurement LCD	☒	■	■	■	■	☒	■	■
Output Contact								
Integrated Instantaneous Contact (1a)	■	☒	☒	☒	☒		☒	☒
Individual Continuous Contact (4a)	☒	■	■	■	■	☒	■ [4]	■ [4]
Operation								
MCR [3]	☒	☐	☐	☐	☐	☒	☐	☐
Communication	NFC	Modbus-RTU				NFC	Modbus-RTU	
Event/Fault Recording	■	■	■	■	■	■	■	■

■: Standard, ☐: Option

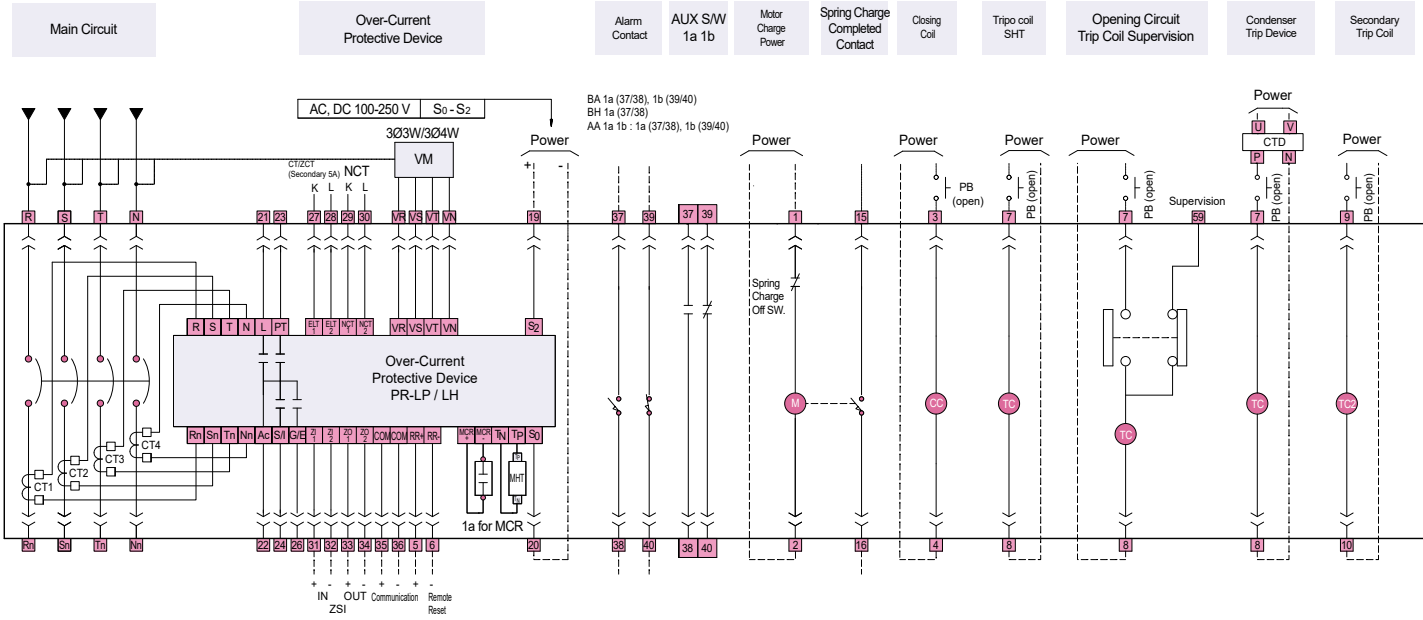
1) Indicates reserve before operation during long time delay.

2) ZCT designated by the customer is used.

3) ZCT designated by our company is used.

4) As for marine type, individual continuous contact is 3a.

Circuit diagram



Symbol Description

CT	Current Transformer
L	LTD Terminal
PT	Pre-Trip Alarm
G	Ground Fault Contact
S / I	STD/INST Contact
Ac	Common Contact
NCT	NCT (Neutral CT) Input
ZI	Zone Selective Interlock Input
ZO	Zone Selective Interlock Output
MCR +,-	MCR Input Terminal
Tp / Tn	MHT Output Terminal
M	Charging Motor
CC	Close Coil
TC	Trip Coil
UVT	Under-Current Voltage Trip Coil
CT	Magnetic Hold Trigger
SO/S2	OCR Power

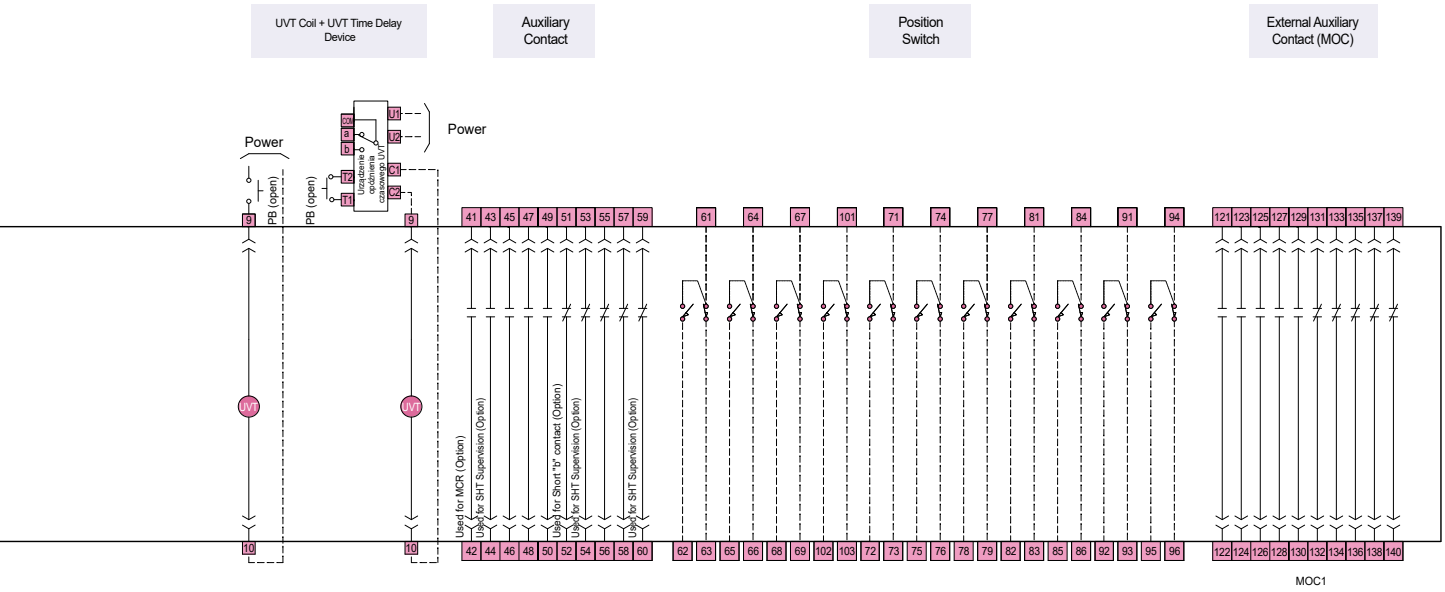
RR : Remote Reset • VM : Voltage Module • VR ~ VN : Voltage Phase Input
• R ~ N : Current Input • Rn ~ Nn : Current Input

Terminal Description

1 2	Charge Motor Power
3 4	Closing Coil Power
7 8	Trip Coil Power
9 10	UVT Coil Power
15 16	Spring Charge Switch
19 20	OCR Control Power
22 21	LTD Contact
22 23	Pre-Trip Alarm/Temperature Alarm Contact
22 24	STD/INST Contact
22 26	GFT/ELT Contact
22 30	NCT (Neutral CT) Input Terminal
31 ~ 34	ZSI (Zone Selective Interlock)
41 ~ 60	Auxiliary Contact
61 ~ 96	Position Switch

—— Manufacture's Wiring
---- User's Wiring
Disconnecting Device (Draw-Out Type)

This circuit diagram is equipped with the 'PR-LA' type of OCR and please refer to main ACB catalogue for other types of OCR.



TEST position	CONNECTION position	Pozycja ODIZOLOWANY	INSERT position
61-62 ON	71-72 ON	81-82 ON	84-85 ON
61-63 OFF	71-73 OFF	81-83 OFF	84-86 OFF
64-65 ON	74-75 ON	84-85 ON	91-92 ON
64-66 OFF	74-76 OFF	84-86 OFF	91-93 OFF
67-68 ON	77-78 ON		94-95 ON
67-69 OFF	77-79 OFF		94-96 OFF
101-102 ON			
101-103 OFF			

Control Jack Lay-Out

OCR																Operating					Auxiliary Switch (5x NO and 5X NC)									
POW	OCR Contact					ELT	N-CT	ZSI		COM	Temp		V Input			M	CC	TC	UVT	CHA	1a	2a	3a	4a	5a	1b	2b	3b	4b	5b
	COM	L	S/I	P/T	G/E																									
19	21		23		27	29	31		33	35	37		39	VR	VT	1	3	7	9	15	41	43	45	47	49	51	53	55	57	59
20	22		24		26	28	30		32	34	36		38	40	VS	VN	2	4	8	10	16	42	44	46	48	50	52	54	56	58	60
OCR Protection Relay																Operating Circuit					Auxiliary Switch									

OCR													
POW	OCR Contact					ELT	N-CT	ZSI		COM	Temp		V Input	
	COM	L	S/I	P/T	G/E									
19	21		23		27	29	31		33	35	37		39	VR	VT
20	22		24		26	28	30		32	34	36		38	40	VS	VN
OCR Protection Relay																

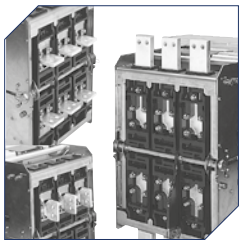
Operating				
M	CC	TC	UVT	CHA
1	3	7	9	15
2	4	8	10	16
Operating Circuit				

Auxiliary Switch									
1a	2a	3a	4a	5a	1b	2b	3b	4b	5b
41	43	45	47	49	51	53	55	57	59
42	44	46	48	50	52	54	56	58	60
Auxiliary Switch									

Air Circuit Breakers EP

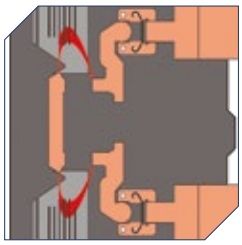
ETIPOWER EP ACBs have the world's smallest depth resulting in space saving in switchboards.

ETIPOWER EP is the world's first "Double Break" ACB, having two breaking contacts per phase, what means that the short time withstand rating (ICW, 1sec) is equal to ICS for all models.



Three types of main circuit terminal arrangements are available:
- vertical terminals,
- horizontal terminals,
- front connections.
Different types of terminal arrangements can be specified for the line and load sides.

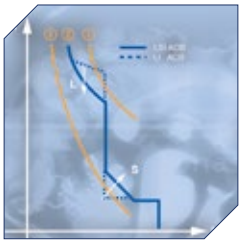
The ETIPOWER EP ACB dissipates all arc energy within its unique "Double Break" arc chamber. The internal energy dissipation within the ACB allows the clearance distance of the ACB to nearby earthed metal to be zero. This will assist in minimizing switchboard height and costs.



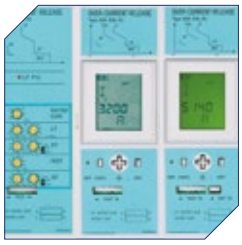
The unique "Double Break" main contact system ensures extremely fast interruption of short circuit currents and substantially reduces main contacts wear, what accordingly increase service life.

The fixed and moving main contacts can easily be replaced in the field (changing each pole takes around 15 minutes).

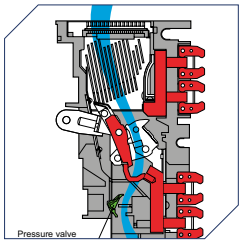
There are no clamp screws or flexible leads in the main circuit contact units, what improves the reliability in ON-OFF operation.



Our protection relays have LSI characteristics as standard. This provides an adjustable time delay on overload (L) and also the I^2t ramp characteristic (S). The settings of these characteristics allow a wide range of selectivity when grading with other protective devices.



The ETIPOWER series is equipped with RMSD sensing over-current release (OCR) having a wide range of protection functions and capabilities.
- Type L: protection of industrial equipment and transformers;
- Type S: protection of generators;
- Type R: general circuit protection

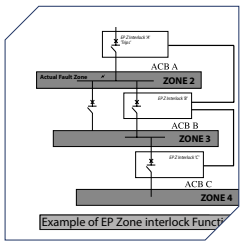


The EP6 ACB interrupts the current at two points on the line side while dissipating heat from contacts or terminals by efficient air convection through a pressure valve.

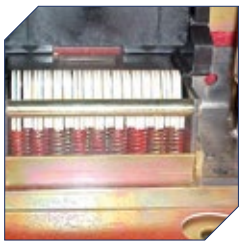
An ON-OFF button cover prevents inadvertent or unauthorized operation of the ON or OFF button. It can be locked with up to three padlocks.

The ON-OFF Cycle Counter is a mechanical 5-bit readout that shows the number of ON-OFF cycles the ACB has performed.

Double Opening and closing Coils provides extended control system redundancy to an ACB. It provides the end user with ultimate reliability on critical UPS circuits connected to critical loads.



In conventional discrimination systems, short time delays are used to allow a short-circuit current to be tripped by the circuit breaker nearest the fault. With the ETIPOWER Z Interlock system the breaker nearest the fault irrespective of the short time delay setting will trip first.



The unique design of ETIPOWER ACBs allows for the earthing of either the busbar or the circuit of a low voltage system.

The key lock is available in two types: the lock-in ON type that locks the ACB in the closed position, and the lock-in OFF type that locks the ACB in the open position.

When the ACB is fitted with a key lock, the operator cannot operate the ACB unless using a matched key.

Using the position padlock lever prevents the breaker body from inadvertently being drawn out. The position padlock lever in the pulled-out position locks the breaker body in the CONNECTED, TEST, or ISOLATED position. Up to three padlocks can be installed.

A door flange provides IP20 protection. For IP31 protection you have to specify the door flange with a gasket.

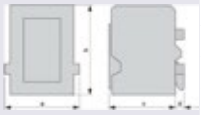
An IP cover provides an IP55 grade of protection (IEC 60529). Even if the breaker body is on the ISOLATED position, IP cover can still be fitted on the ACB.

Application - Air circuit breakers ETIPOWER are used for protection of distribution lines, generators and other electrical equipment from effects of overload and short-circuit currents.

Air circuit breakers ETIPOWER are available in 3 frame sizes from 800A to 6300A, with a voltage up to 690V:
- size 1: current from 800 to 2000A
- size 2: current 2500 to 3200A (Type SB at 4000A made in 2 sizes)
- size 3: current 4000A - 6300A

Sizes 1 and 2 have two versions, draw-out and fixed. There are many options for connecting and wide range of accessories.

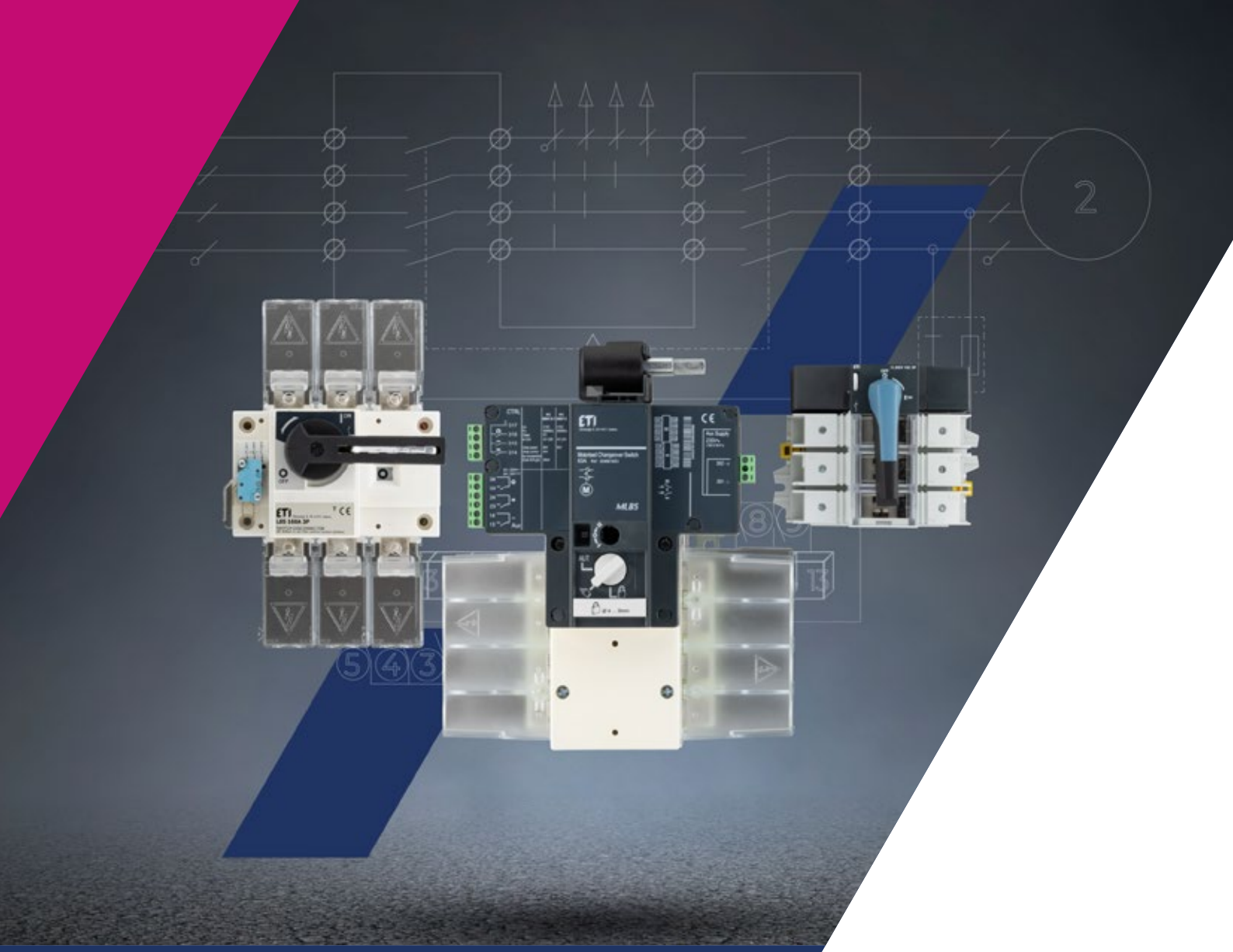
Two types of level breaking capacity:
- Type S (standard) from 65kA to 100kA
- Type H (high breaking capacity) from 80kA to 120kA (optional)

technical specifications / Type		EP 208 S	EP 212 S	EP 216 S	EP 220 S	EP 325 S	EP 332 S	EP 440 SB	EP 650 S	EP 663 S
Number of poles		3p / 4p	3p / 4p	3p / 4p	3p / 4p	3p / 4p	3p / 4p	3p / 4p	3p / 4p	3p / 4p
Rated Current In (A)		800	1250	1600	2000	2500	3200	4000	5000	6300
Neutral pole amperes frame (4pole) In (A)		800	1250	1600	2000	2500	3200	4000	5000	6300
Rated operational voltage Un (V)		690	690	690	690	690	690	690	690	690
Rated breaking capacity, kA (ICS=ICU)	U_n=690V AC	50	50	50	50	65	65	85	85	85
	U_n=440V AC	65	65	65	65	85	85	100	120	120
Rated breaking capacity, kA (ICU)	U_n=600V DC	40	40	40	40	40	40	40	40	40
	U_n=250V DC	40	40	40	40	40	40	40	40	40
Rated short time withstand current, kA (ICW)	t=1s	65	65	65	65	85	85	100	120	120
	t=3s	50	50	50	50	65	65	75	85	85
Mechanical life	with maintenance	30000	30000	30000	25000	20000	20000	15000	10000	10000
	without maintenance	15000	15000	15000	12000	10000	10000	8000	5000	5000
Electrical life	without maintenance (Un=460V AC)	12000	12000	12000	10000	7000	7000	3000	1000	1000
	(Un=690V AC)	10000	10000	10000	7000	5000	5000	2500	500	500
Total breaking time (s)		0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,05	0,05
Type of Mounting		Fixed / Drawout							Drawout	
Total Fixed Weight (kg)		53/59	53/59	54/60	54/60	80/92	80/92	-/-	-/-	-/-
Total Draw-Out Weight (kg)		73 / 86	73 / 86	76 / 90	79 / 94	105 / 125	105 / 125	126 / 158	200/260	220/285
Outline Dimension (mm)										
Fixed Type	a	360 / 445	360 / 445	360 / 445	360 / 445	466 / 586	466 / 586	- / -	- / -	- / -
	b	460	460	460	460	460	460	-	-	-
	c	290	290	290	290	290	290	-	-	-
	d	75	75	75	75	75	75	-	-	-
Draw-out Type 	a	354 / 439	354 / 439	354 / 439	354 / 439	460 / 580	460 / 580	460 / 580	799/1034	799/1034
	b	460	460	460	460	460	460	460	460	460
	c	345	345	345	345	345	345	345	380	380
	d	40	40	40	40	40	40	140	60	60

Air circuit breakers ETIPOWER are available with three types of OCRs (over-current release):
- AGR-11: Standard OCR with adjustment dial serves as the current protection and overload ground fault protection, neutral protection and signalling overload.
- AGR-21/22B LCD Type provides protection & measurement of current (only) and has trip signal for each function, the signal is permanent. It has a possibility of communications on the M-bus protocol.
- AGR-31B Enhanced OCR with backlit. It provides protection & measurement of current, voltage, Power etc... It has permanent trip signal for each function.

Standard Specification includes:
- Padlockable Mechanical Close & Open Buttons
- Mechanical Close & Open Indicators
- Mechanical Indication of spring Charged/ Discharged State
- 4AB Auxiliary contacts
- Terminal Cover
- IP20 Door Flange
- Horizontal or Vertical
- Busbar Connections
- Spring Charged main Circuit Shutters
- Control Circuit Shutters
- Position Indicator
- Drawout Handle

Note: A full description and specifications of Air circuit breakers are in the catalogue ETIPOWER 2010.



ETISWITCH

Switch Disconnectors

Compact Load Break Switch CLBS **578**

with Visible break - CLBSV **590**

Change Over - CLBSV..CO **595**

Load Break Switch LBS **599**

Change Over LBS..CO **611**

Motorised Change Over MLBS..CO (1-0-2) **620**

Fuse Load Break Switch FLBS **630**

Rotary Cam Switches **637**

/etigroup

SWITCH TO
A SAFE FUTURE

ETISWITCH Compact Load Break Switch CLBS

Compact Load Break Switch CLBS

Possibility of direct, remote front and side control

Special type of mounting on the TH 35 busbar (no tools required)

Terminal covers provide protection against accidental contact and phase separation of the switch, while perforation allows temperature monitoring of the contacts without removing the covers

Compact load break switch CLBS 100-125A have sealing option terminal covers

Handle position in load-break switches indicates the status of the contact group

Padlocking the handle

Possibility of self-assembly of 1-0-2 load disconnectors using two CLBS load disconnectors and CLBS-CK conversion kit.

Load disconnectors/switches have the option of installing optional accessories, such as

Additional pole, 4th pole

Auxiliary contact

Neutral pole N

Protective earth module PE

Characteristics according to IEC 60947-3

Type				CLBS 16	CLBS 25	CLBS 40	CLBS 63	CLBS 80	CLBS 100	CLBS 125
Current		(In)		16A	25A	40A	63A	80A	100A	125A
Rated insulation voltage		(Ui)	(V)	800	800	800	800	800	800	800
Rated impulse withstand voltage		(Uimp)	(kV)	8	8	8	8	8	8	8
Thermal current 40°C		(Ith)	(A)	16	25	40	63	80	100	125
Rated operational currents (Ie)	AC-20 A/B	415V AC	(A)							
	AC-21 A/B	415V AC	(A)							
	AC-22 A/B	415V AC	(A)							
	AC-23 A/B	415V AC	(A)			40		80	100	125
	AC-20 A/B	500V AC	(A)				63			
	AC-21 A/B	500V AC	(A)							
	AC-22 A/B	500V AC	(A)							
	AC-23 A/B	500V AC	(A)			25		63	80	100
	AC-20 A/B	690V AC	(A)	16	25					
	AC-21 A/B	690V AC	(A)			40		80	100	125
	AC-22 A/B	690V AC	(A)			32/40	40/63	63/80	80/100	100/125
	AC-23 A/B	690V AC	(A)			25	40	40	63	63
	DC-20 A/B	110V DC	(A)							
	DC-21 A/B[1]	110V DC	(A)							
	DC-20 A/B	250V DC	(A)			40	63	80	100	125
	DC-21 A/B[2]	250V DC	(A)							
	DC-20 A/B	400V DC	(A)							
	DC-21 A/B[3]	400V DC	(A)			25	40	40	63	63
Operational power in AC 23 [4]		400V AC	(kW)	7,5	11	18,5	30	37	45	55
		500V AC	(kW)	7,5	11	18,5	30	37	45	55
		690V AC	(kW)	7,5	15	15	30	37	45	55
Short-circuit capacity Icw		1 s.	(kA)	1,26	1,26	1,26	1,5	1,5	2,75	2,75
		0,25 s.	(kA)	1,8	1,8	1,8	2,1	2,1	3,9	3,9
Fuse protected short-circuit withstand (kA rms prospective) [5]										
Associated fuse rating			(A)	16	25	40	63	80	100	125
Prospective short-circuit current			(kA)	50	50	50	50	50	25	25
Circuit breaker protected short-circuit withstand with any circuit breaker that ensures tripping in less than 0.3s										
Rated short-time withstand current		0,3 s.	(kA)	2,5	2,5	2,5	3	3	5	5
Connection										
Minimum Cu cable cross-section		mm^2		1,5	1,5	1,5	2,5	2,5	10	10
Maximum Cu cable cross-section		mm^2		16	16	16	35	35	70	70
Tightening torque min/max		Nm		2/2,2	2/2,2	2/2,2	3,5/3,85	3,5/3,85	4/4,4	4/4,4
Durability (number of operating cycles)		cycles		100 000	100 000	100 000	100 000	100 000	100 000	100 000
Operating effort - 3 pole device		Nm		1	1	1	1,4	1,4	1,6	1,6
Operating effort - 4 pole device		Nm		1,2	1,2	1,2	1,6	1,6	2	2
Power dissipation		W/pole		0,15	0,4	0,9	1,5	2,4	4,3	7,1

Category with index A = frequent operation
Category with index B = infrequent operation.
[1] - one pole per polarity.
[2] - 3-pole device with 2 poles in series for the "+" and 1 pole for the "-".
[3] - 4-pole device with 2 poles in series per polarity.
[4] - The power value is given for information only, the current values vary from one manufacturer to another.
[5] - For a rated operational voltage Ue = 415 VAC.

Description
CLBS are manually operated and modular multipolar load break switches in range 16A-125A. They make and break under load conditions and provide safety isolation for any low voltage circuit, particularly for machine control circuits. Through the use of accessories, CLBS can be transformed into multipolar load break or 3/4 pole changeover switches. CLBS change over switches provide on load changeover switching between two sources or two low voltage power circuits, as well as their safety isolation. CLBS switches have been designed, qualified and tested according to the criteria defined by standard IEC 60947-3.

CLBS body (no handle included) 3 POLES 16 - 125 A

Type	Code No.	I_n [A]	Number of poles	g	
CLBS 16 3P	004661400	16	3	230	1/24
CLBS 25 3P	004661401	25	3	228	1/24
CLBS 40 3P	004661402	40	3	228	1/24
CLBS 63 3P	004661403	63	3	320	1/24
CLBS 80 3P	004661404	80	3	322	1/24
CLBS 100 3P	004661405	100	3	600	1/12
CLBS 125 3P	004661406	125	3	624	1/12

Front(direct and external) and right side operation

CLBS 16 3p

CLBS 125 3p

Technical data

Type				CLBSCD 63 3P	CLBSCD 100 3P
Thermal current 40°C		(Ith)	(A)	63	100
Rated insulation voltage		(Ui)	(V)	800	800
Rated impulse withstand voltage		(U imp)	(kV)	8	8
Rated operational currents (Ie)	AC-21A/B	415V	(A)	63/63	100/100
	AC-22A/B	415V	(A)	63/63	100/100
	AC-23A/B	415V	(A)	63/63	100/100
	AC-21A/B	690V	(A)	63/63	100/100
Rated short-time withstand current Icw		1 s.	(kA)	-	1,5
Rated short-circuit making capacity Icm			(kA)	-	2,1
Rated conditional short-circuit					
Associated gG fuse rating			(A)	-	100
Prospective short-circuit			(kA)	-	25
Limited cut off current			(kA)	-	8,6

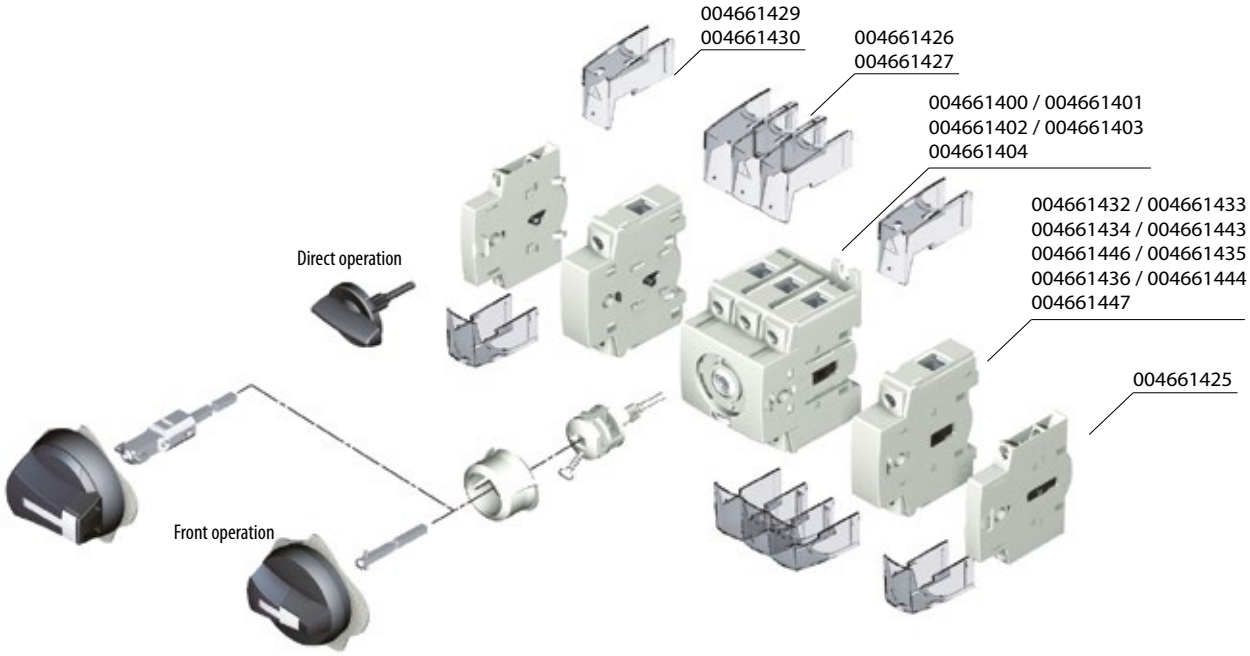
WATCH THE VIDEO

CLBSCD series (CLBS switch with reduced short circuit current capability)

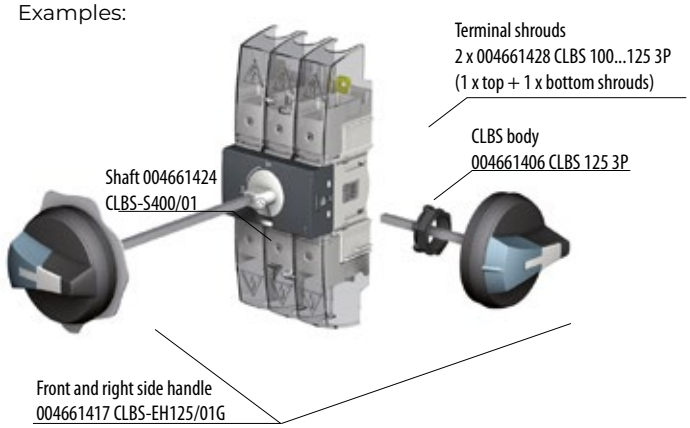
Type	Code No.	I_n [A]	Number of poles	g	
CLBSCD 63 3P	004661910	63	3	210	1/24
CLBSCD 100 3P	004661911	100	3	310	1/24

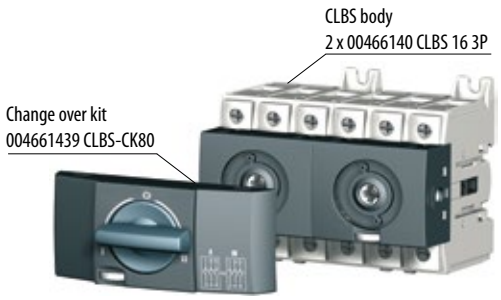
With CLBSCD 63 3P can be applied with the same accessories as with CLBS 40 3P (CLBS40 body)
With CLBSCD 100 3P can be applied with the same accessories as with CLBS 80 3P (CLBS 80 body)

Accessories



Examples:





Direct handle for direct operation

Type	Description	Code No.	For use with	g	
CLBS-DH80/B	Direct handle, black	004661410	CLBS 16-80A 3P	10	1/200
CLBS-DH125/B	Direct handle, black	004661411	CLBS 100-125A 3P	8	1/200
CLBS-DH80/YR	Direct handle, red	004661412	CLBS 16-80A 3P	10	1/200

Type definition: Handle type / color initials

CLBS-DH80/B CLBS-DH125/B CLBS-DH80Y/R

The products' colour or shape may be different as on picture

Door interlocked front and right side handle IP65 (shaft not included)

Type	Description	Code No.	For use with	g	
CLBS-EH80/G	Door interlocked handle, grey front	004661415	CLBS 16-80A 3P	101	1/45
CLBS-EH125/G	Door interlocked handle, grey front	004661416	CLBS 100-125A 3P	103	1/45
CLBS-EH125/01G	Door interlocked handle, grey front	004661417	CLBS 16-125A 3P	190	1/25

Type definition: Handle type / color initials

CLBS-EH80/G CLBS-EH125/G CLBS-EH125/01G

Door interlocked front and right side handle IP65 (shaft not included).

Type	Description	Code No.	For use with	g	
CLBS-EH80/YR	Door interlocked handle, red front	004661418	CLBS 16-80A 3P	102	1/45
CLBS-EH125/YR	Door interlocked handle, red front	004661419	CLBS 100-125A 3P	104	1/45
CLBS-EH125/01YR	Door interlocked handle, red front	004661420	CLBS 16-125A 3P	200	1/25

Type definition: Handle type / color initials

CLBS-EH80/YR CLBS-EH125/YR CLBS-EH125/01YR

Shaft for door interlocked front and right side handle

Type	Description	Code No.	For use with	g	
CLBS-S200	Shaft, 200 mm	004661422	CLBS-EH80 CLBS-EH125	60	1/110
CLBS-S320	Shaft, 320 mm	004661423	CLBS-EH80 CLBS-EH125	80	1/90
CLBS-S400/01	Shaft, 400 mm	004661424	CLBS-EH125/01	125	1/25

For 3/4 pole switches, shaft extensions are for external front and side operation.
Not for use with Change over kit and handles

CLBS-S

Guiding cone

Type	Description	Code No.	For use with	g	
CLBS-GC EH80, 125	Guiding cone	004661421	CLBS-EH80 CLBS-EH125	130	1/240
LBS-GC (CLBS-EH125/01)	Guiding cone	004661489	CLB-EH125/01	29	1/25

To guide the shaft extension into the external handle. This accessory enables handle to engage extension shaft with a misalignment of up to 15 mm. Required for shaft lengths over 320 mm.

CLBS-GC EH125/01

Door mounting kit (handle not included)

Type	Description	Code No.	For use with	g	
CLBS-DMK80	Compact version	004661413	CLBS 16-80A 3P	60	1/50
CLBS-DMK125	Steel support	004661414	CLBS 100-125A 3P	120	1/20

This kit enables the direct mounting of the switch on the panel door, or on the left or right side of the panel. The connection clamps of the switch are always accessible. The external handle is quick and easy to install with the supplied locking nut mounted on the inside of the enclosure.
Not compatible with CLBS-EH125/01 handles

CLBS-DMK80 CLBS-DMK125

Additional pole, 4th pole CLBS-4P

Type	Description	Code No.	For use with	g	
CLBS-4P/16	Additional pole	004661432	CLBS 16A 3P	72	1/36
CLBS-4P/25	Additional pole	004661433	CLBS 25A3P	72	1/36
CLBS-4P/40	Additional pole	004661434	CLBS 40A 3P	72	1/36
CLBS-4P/63	Additional pole	004661435	CLBS 63A 3P	100	1/36
CLBS-4P/80	Additional pole	004661436	CLBS 80A 3P	102	1/36
CLBS-4P/100	Additional pole	004661437	CLBS 100 A 3P	200	1/16
CLBS-4P/125	Additional pole	004661438	CLBS 125 A 3P	205	1/16

Installation of 4th pole converts 3 pole CLBS to 4 pole load break switch or 3 pole CLBS changeover switch into a 4 pole changeover switch.

CLBS-4P 16..80

CLBS-4P 100-125

Solid neutral pole CLBS-N

Type	Description	Code No.	For use with	g	
CLBS-N/40	Solid neutral pole	004661443	CLBS 16-40A 3P	200	1/36
CLBS-N/80	Solid neutral pole	004661444	CLBS 63-80A 3P	200	1/36
CLBS-N/125	Solid neutral pole	004661445	CLBS 100-125A 3P	200	1/16

Neutral pole is fixed and can not be switched.

CLBS-N 100-125

CLBS-N 16..80

Protective earth pole CLBS-PE

Type	Description	Code No.	For use with	g	
CLBS-PE/40	Protective earth pole	004661446	CLBS 16-40A 3P	200	1/36
CLBS-PE/80	Protective earth pole	004661447	CLBS 63-80A 3P	200	1/36
CLBS-PE/125	Protective earth pole	004661448	CLBS 100-125A 3P	200	1/16

Protective earth pole is fixed and can not be switched.

CLBS-PE 16..80

CLBS-PE 100-125

Auxiliary contact

Type	I [A]	Description	Code No.	For use with	g	
CLBS-PS11	10	Auxiliary contact NO+NC	004661425	CLBS 16-125A	44	1/52

Pre-break and signalisation of positions 0 and 1 by NO+NC. Auxiliary switch allows to anticipate switching of the main poles. It can be mounted on the left or on the right side of the device.

CLBS-PS11

Change over kit (direct handle included) I-0-II

Type	Description	Code No.	For use with	g	
CLBS-CK80	Change over kit, black handle 1-0-2	004661439	2xCLBS 16-80A 3P	74	1/42
CLBS-CK125	Change over kit, black handle 1-0-2	004661440	2xCLBS 100-125A 3P	240	1/10

Two CLBS bodies must be ordered separetely for one Change over kit

CLBS-CK80

CLBS-CK125

The products' colour or shape may be different as on picture

Change over kit (direct handle included) I-I+II-II

Type	Description	Code No.	For use with	g	
CLBS-CKI+II80	Change over kit, black handle 1-1+2-2	004661522	2xCLBS 16-80A 3P	90	1/42
CLBS-CKI+II125	Change over kit, black handle 1-1+2-2	004661523	2xCLBS 100-125A 3P	240	1/10

Two CLBS bodies must be ordered separetely for one Change over kit

Door interlocked front handle IP65 (shaft not included) for change over switch - External front operation

Type	Description	Code No.	For use with	g	
CLBS-EH80/G CO	Door interlocked front handle, grey front 1-0-2	004661441	CLBS-CK80	101	1/45
CLBS-EH125/G CO	Door interlocked front handle, grey front 1-0-2	004661442	CLBS-CK125	101	1/45

Type definition: Handle type / color initials

CLBS-EH80/G CO

CLBS-EH125/G CO

Shafts for door interlocked front handle on change over switches

Type	Description	Code No.	For use with	g	
CLBSV-S200	Shaft, 200mm	004661886	CLBS-EH125/G CO	0,05	1/100
CLBS-S200		004661422	CLBS-EH80/G CO		
CLBS-S320	Shaft, 320mm	004661423	CLBS-EH80/G CO		

For front operation only.

CLBSV-S200

Applications

Top and bottom protection against direct contact with the terminals or connection parts. An opening on each terminal cover makes it possible to insert a temperature measurement probe.

Terminal shrouds (covers)

Type	Description	Code No.	For use with	g	
CLBS-TS40 3P	Terminal shroud 3P 16-40A	004661426	CLBS 16-40A	20	1/110
CLBS-TS80 3P	Terminal shroud 3P 63-80A	004661427	CLBS 63-80A	20	1/125
CLBS-TS125 3P	Terminal shroud 3P 100-125A	004661428	CLBS 100-125A	63	1/22
CLBS-TS40 1P	Terminal shroud 1P 16-40A	004661429	CLBS 16-40A	8	1/200
CLBS-TS80 1P	Terminal shroud 1P 63-80A	004661430	CLBS 63-80A	6	1/200
CLBS-TS125 1P	Terminal shroud 1P 100-125A	004661431	CLBS 100-125A	22	1/120

One reference code includes 2 pcs 1 for top and 1 for bottom contacts.

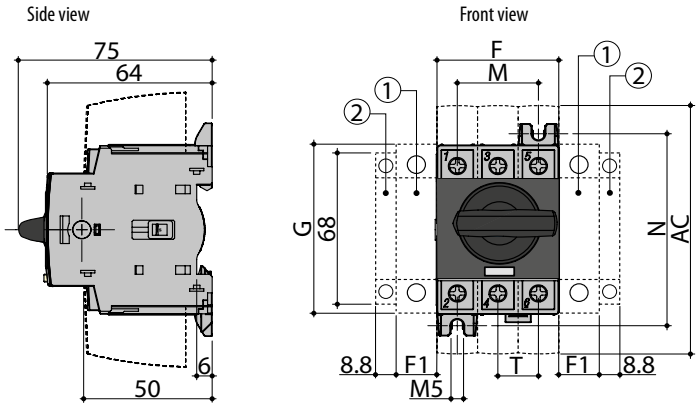
CLBS-TS80 3P

CLBS-TS80 1P

The products' colour or shape may be different as on picture

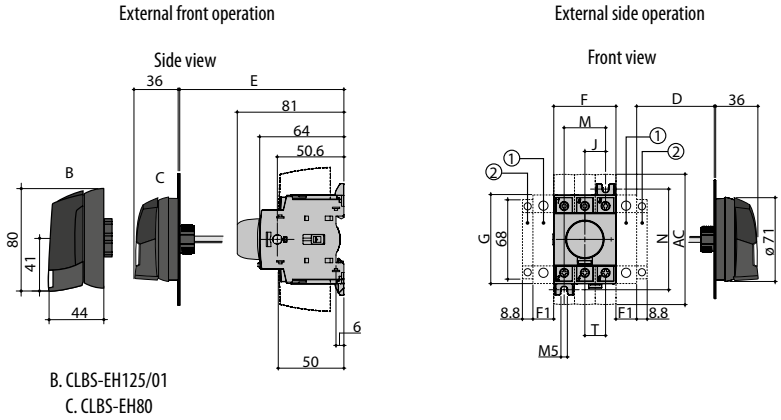
Dimensions

CLBS 16 - CLBS 80 3P, CLBSCD 63 3P, CLBSCD 100 3P - direct operation with handle



1. Location for: 1 switched fourth pole module (1 per device max.)
or 1 unswitched neutral pole
or 1 protective earth module
or 1 auxiliary contact.
2. Position for 1 auxiliary contact only.
Note: max 2 additional blocks.
More information about acceptable combinations of auxiliary switches and additional poles on the following page.

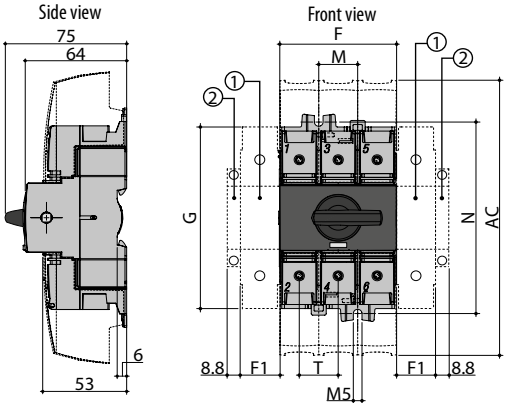
CLBS 16 - CLBS 80 3P, CLBSCD 63 3P, CLBSCD 100 3P



1. Location for: 1 switched fourth pole module (1 per device max.)
or 1 unswitched neutral pole
or 1 protective earth module
or 1 auxiliary contact.
2. Position for 1 auxiliary contact only.
Note: max 2 additional blocks.
More information about acceptable combinations of auxiliary switches and additional poles on the following page.

Rating	Overall dimensions, (mm)				Terminal shrouds, (mm)	Switch body, (mm)				Switch mounting, (mm)		Connection, (mm)
[A]	D min	D max	E min	E max	AC	F	F1	G	J	M	N	T
16-40	30	235	100	372	110	45	15	68	15	30	75	15
63-80	30	235	100	372	110	52.5	17.5	76	17.5	35	85	17.5

CLBS 100-CLBS 125 3P - direct operation with handle

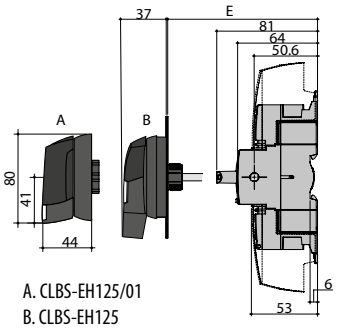


1. Location for: 1 switched fourth pole module (1 per device max.)
or 1 unswitched neutral pole
or 1 protective earth module
or 1 auxiliary contact.
2. Position for 1 auxiliary contact only.
Note: max 2 additional blocks.
More information about acceptable combinations of auxiliary switches and additional poles on the following page.

CLBS 100-CLBS 125

External front operation

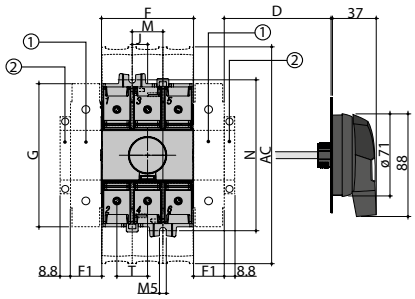
Side view



A. CLBS-EH125/01
B. CLBS-EH125

External side operation

Front view



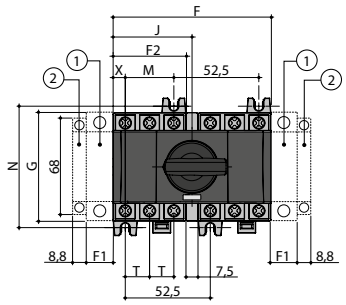
1. Location for: 1 switched fourth pole module (1 per device max.)
or 1 unswitched neutral pole
or 1 protective earth module
or 1 auxiliary contact.
2. Position for 1 auxiliary contact only.
Note: max 2 additional blocks.
More information about acceptable combinations of auxiliary switches and additional poles below.

Rating	Overall dimensions, (mm)				Terminal shrouds, (mm)	Switch body, (mm)				Switch mounting, (mm)		Connection, (mm)
[A]	D min	D max	E min	E max	AC	F	F1	G	J	M	N	T
100-125	30	201	100	372	189	78	26	124.6	13	26	131.4	26

Direct operation

CLBS 16 - CLBS 80 3P, CLBSCD 63 3P, CLBSCD 100 3P - with change over kit

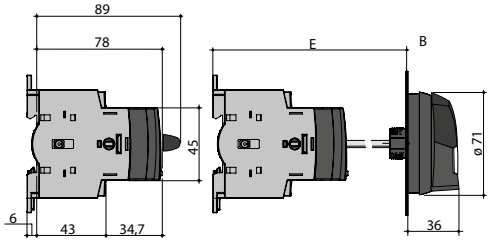
Side view



External front operation

CLBS 16 - CLBS 80 3P, CLBSCD 63 3P, CLBSCD 100 3P - with change over kit

Front view



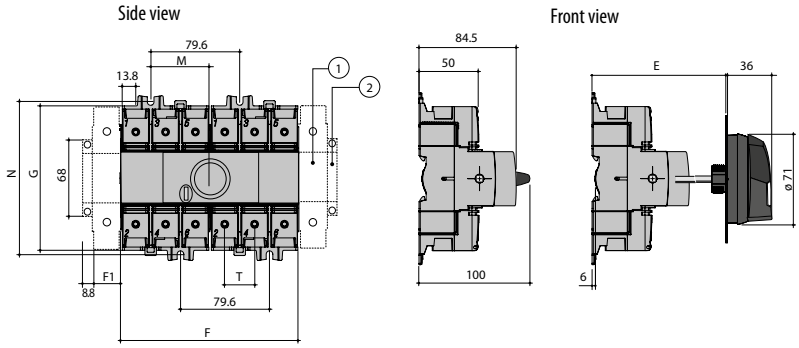
Rating	Overall dimensions, (mm)		Switch body, (mm)					Switch mounting, (mm)		Connection, (mm)	
[A]	E min	E max	F	F1	F2	G	J	M	N	T	X
16-40	105	372	97.5	15	45	68	48.75	30	75	15	7.5
63-80	105	372	105	17.5	52.5	76	52.5	35	85	17.5	8.75

Direct front operation

CLBS 100 - CLBS 125 -with change over kit

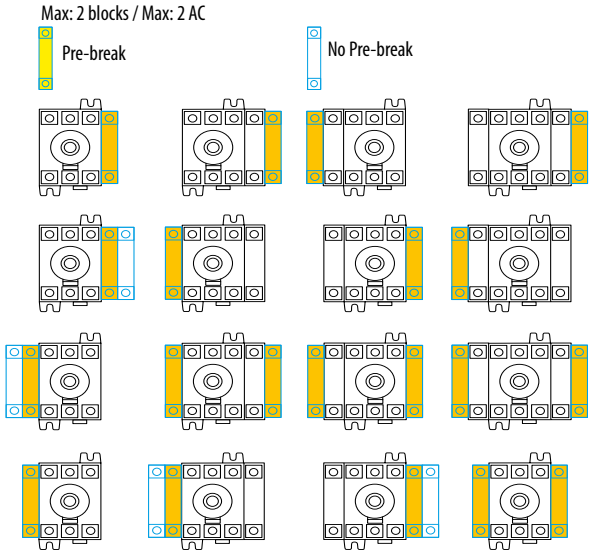
External front operation

CLBS 100 - CLBS 125 -with change over kit



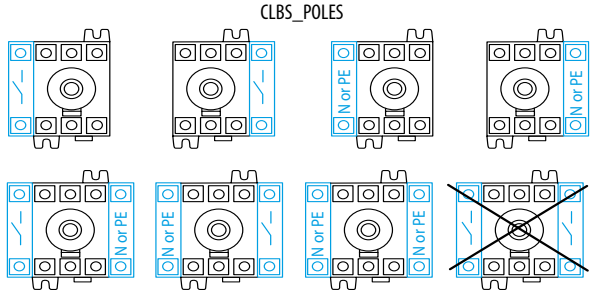
Rating	Overall dimensions, (mm)		Switch body, (mm)			Switch mounting, (mm)		Connection, (mm)
(A)	E min	E max	F	F1	G	M	N	T
100-125	105	372	159	26	124.5	52.8	131.5	26

Auxiliary contact configurations CLBS-PS11 (NO+NC)

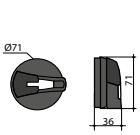


Contact type	Nominal current	Operating current Ie (A), 230V AC	
	(A)	AC-13	AC-15
NO+NC	10	10	6

Configuration additional pole, solid neutral pole and protective earth pole

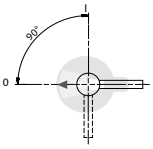


CLBS-EH80
(16-80A)

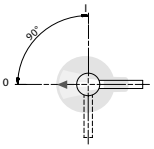


CLBS_EH

Direct front operation

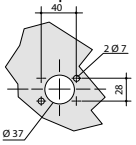


Right side operation

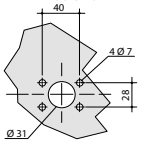


Door drilling

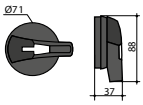
IP55 with 2 fixing clips



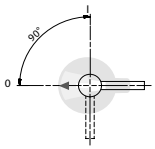
IP65 with 4 fixing screws



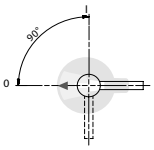
CLBS-EH125
(100-125A)



Direct front operation

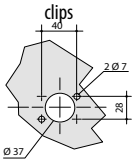


Right side operation

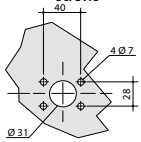


Door drilling

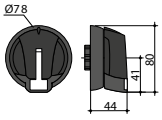
IP55 with 2 fixing clips



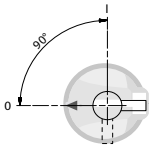
IP65 with 4 fixing screws



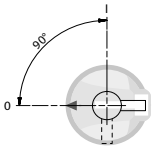
CLBS-EH125/01
(16-125A)



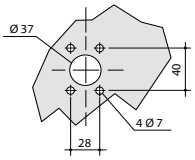
Direct front operation



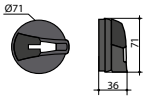
Right side operation



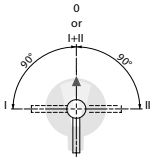
Door drilling



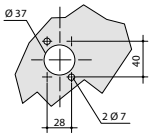
CLBS-EH80/G CO
CLBS-EH125/G CO



Direct front operation

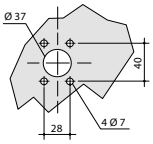


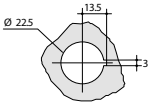
IP55 with 2 fixing clips



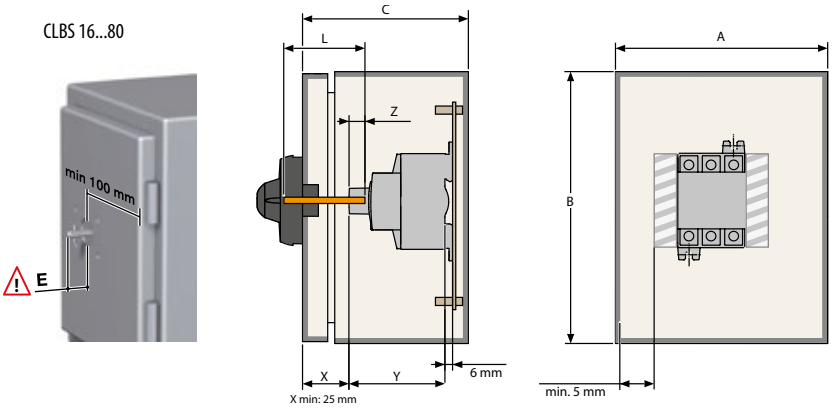
Door drilling

IP65 with 4 fixing screws





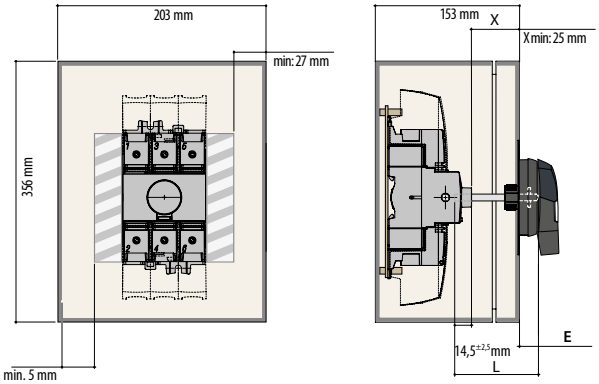
CLBS 16...80



	16A - 40A	60A - 80A
	mm	mm
A	152	203
B	203	254
C	102	102
Y	75	75

		E	
	16-125A	min.	max.
CLB-EH80, CLBS-EH125	L=X+32 mm	13 mm	15mm
CLBS-EH125/01	L=X+38,5 mm	17,5 mm	21,5 mm

CLBS 100...125



Shafts and GT enclosures (ETIBOX)		Default shaft length used with handle(mm)	
Z (depth of enclosure, mm)	X(mm)	CLB-EH80, CLBS-EH125	CBLS-EH125/01
150mm	49	200	400
200mm	99	200	400
250mm	149	200	400
300mm	199	320	400

CLBS and ETIBOX, DIDO-E COMPATIBILITY:
CLBS 0-1 up to 125A + CO (changeover kits CLBS-CK I-0-II, I-I+II-II): SOLID GT, GSX, HXS, DIDO ECH (IP65)
CLBS 0-1 up to 125A: DIDO ECT, ECM, ACT (IP40), ECG

ETISWITCH Compact Load Break Switch with Visible Break - CLBSV

Possibility to connect additional contacts with pre-break function

Double-visible chain break ensures safe maintenance

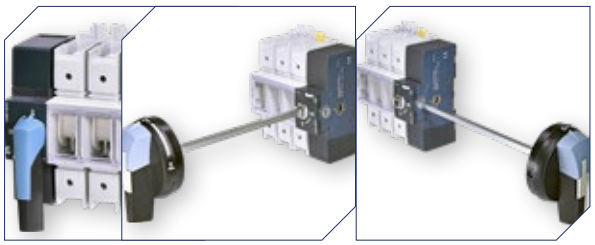
Special type of mounting on the TH 35 rail (does not require special tools)

Handle can be locked with a padlock

Ability to seal terminal covers

Terminal covers ensure accidental contact protection, phase separation, and allow contact temperature monitoring through perforated holes.

The position of the handle indicates the status of the contact group



Possibility of direct, external front and side control

Universal mounting system allows mounting on the TH-35 bus and mounting plate

Compact Load Break Switch with Visible Break - CLBSV (0-1)

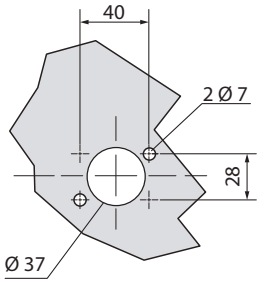
Characteristics according to IEC 60947-3

Type				CLBSV 100	CLBSV 125	CLBSV 160
Rated Current		(In)		100A	125A	160A
Rated insulation voltage		(Ui)	(V)	800	800	800
Rated impulse withstand voltage		(Uimp)	(kV)	8	8	8
Thermal current 40°C		(Ith)	(A)	100	125	160
Rated operational currents (Ie)	AC-20 A/B	415V AC	(A)	100	125	160
	AC-21 A/B	415V AC	(A)			160
	AC-22 A/B	415V AC	(A)			160
	AC-23 A/B	415V AC	(A)			125/160
	AC-20 A/B	500V AC	(A)			160
	AC-21 A/B	500V AC	(A)			160
	AC-22 A/B	500V AC	(A)			125/160
	AC-23 A/B	500V AC	(A)	80	100	100
	AC-20 A/B	690V AC	(A)	100	125	160
	AC-21 A/B	690V AC	(A)			
	AC-22 A/B	690V AC	(A)	63/80	80/100	100/125
	AC-23 A/B	690V AC	(A)	63	80	80
	DC-20 A/B	110V DC	(A)	100	125	160
	DC-21 A/B[1]	110V DC	(A)	100/100(1)	125/125(1)	160/160(1)
	DC-20 A/B	250V DC	(A)	100	125	160
	DC-21 A/B[2]	250V DC	(A)	100/100(2)	125/125(2)	160/160(2)
	DC-20 A/B	400V DC	(A)	100	125	160
	DC-21 A/B[3]	400V DC	(A)	100/100(3)	125/125(3)	160/160(3)
Operational power in AC 23 [4]		400V AC	(kW)	45	55	75
		500V AC	(kW)	45	55	75
		690V AC	(kW)	45	55	75
Short-circuit capacity Icw		1 s.	(kA)		4	
		0,25 s.	(kA)		4	
Fuse protected short-circuit withstand (kA rms prospective) [5]						
Associated fuse rating			(A)	100	65	50
Prospective short-circuit current			(kA)	100	125	160
Circuit breaker protected short-circuit withstand with any circuit breaker that ensures tripping in less than 0.3s						
Rated short-time withstand current		0,3 s.	(kA)		7	
Connection						
Minimum Cu cable cross-section		mm^2		10	10	10
Maximum Cu cable cross-section		mm^2		70	70	70
Tightening torque min/max		Nm		4/4,4	4/4,4	4/4,4
Mechanical life		cycles		50 000	50 000	50 000
Operating effort - 3 pole device		Nm			4	
Operating effort - 4 pole device		Nm			4,2	

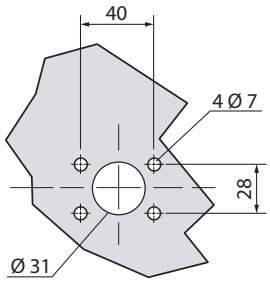
Category with index A = frequent operation
Category with index B = infrequent operation.
[1] - one pole per polarity.
[2] - 3-pole device with 2 poles in series for the "+" and 1 pole for the "-".
[3] - 4-pole device with 2 poles in series per polarity.
[4] - The power value is given for information only, the current values vary from one manufacturer to another.
[5] - For a rated operational voltage Ue = 415 VAC.

Mounting hole

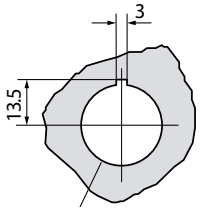
IP55 with two mounting clips

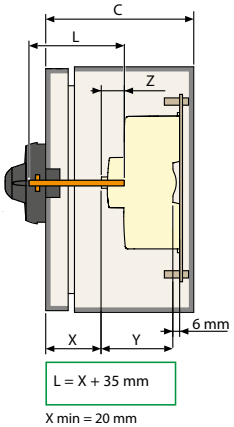


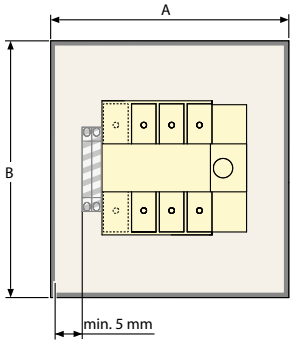
IP65 with 4 fixing screws



With fastening nut







Applications - CLBSV are manually operated multi-pole devices for switching low voltage electrical circuits with currents up to 160A. The CLBSV line of load switches has been designed and tested in full compliance with the criteria defined in IEC 60947-3.

0-1 load break switch with visible break CLBSV 100 - 160 A

Type	Code No	Description	I_n [A]	Number of poles	g	
CLBSV 100 3P	004661880	Load break switch 0-1	100	3	840	1/28
CLBSV 125 3P	004661881	Load break switch 0-1	125	3	820	1/28
CLBSV 160 3P	004661882	Load break switch 0-1	160	3	820	1/28

Front (direct or external) and side (external) operation. Handle not included.

CLBSV 100 3P

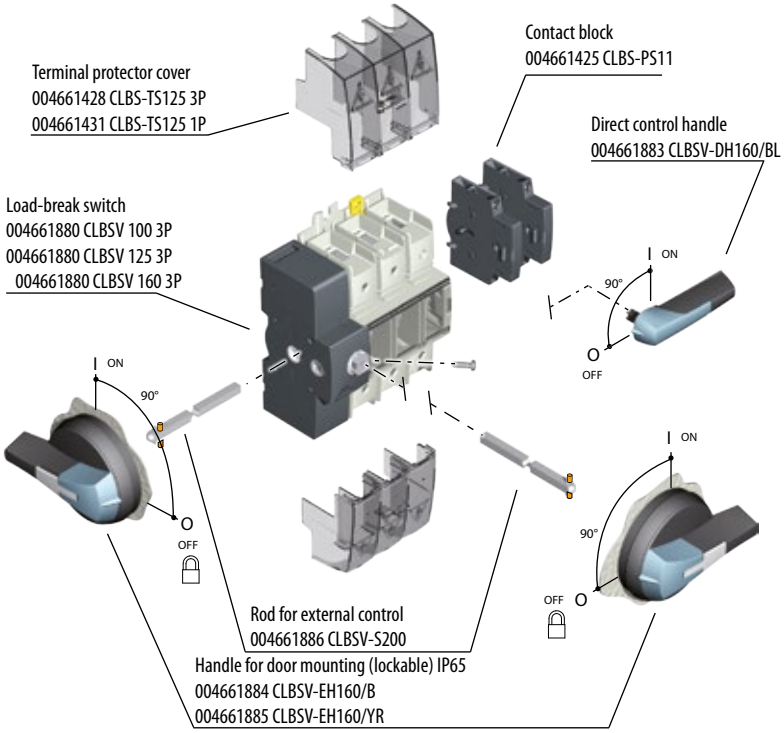
0-1 load break switch with visible break CLBSV 100 - 160 A

Type	Code No	Description	I_n [A]	Number of poles	g	
CLBSV 100 4P	004661989	Load break switch 0-1	100	4	1000	1/28
CLBSV 125 4P	004661990	Load break switch 0-1	125	4	1000	1/28
CLBSV 160 4P	004661991	Load break switch 0-1	160	4	1000	1/28

CLBSV 100 4P

Accessories

Mounting example:



Direct control knobs for mounting on switches CLBSV

Type	Code No	Description	For use with	g	
CLBSV-DH160/BL	004661883	Handle on switch body, blue	CLBSV 100-160A 3P	20	1/25

Direct front control

CLBSV-DH160/BL

Door interlocked front handle IP65 (shaft not included). IP65

Type	Code No	Description	For use with	g	
CLBSV-EH160/B	004661884	Remote handle, black	CLBSV 100-160A 3P	90	1/45
CLBSV-EH160/YR	004661885	Remote handle, red	CLBSV 100-160A 3P	90	1/45

External front and side operation. Shaft not included.
Allows door opening in the ON position.

CLBSV-EH160/B CLBSV-EH160/YR

External control shaft

Type	Code No	Description	For use with	g	
CLBSV-S200	004661886	Shaft, 200mm	CLBSV-EH160/B, CLBSV-EH160/YR	50	1/100

The shaft is used for external front and side operation.

CLBSV-S200

Contact block

Type	Code No	Description	I_n [A]	For use with	g	
CLBS-PS11	004661425	Contact block, 1NO+1NC	10	CLBS 16-125A	44	1/52

Application: Pre-breaking and position signaling (0 and I) via NO+NC auxiliary contacts. Up to two auxiliary contact blocks can be installed.

CLBS-PS11

Terminal cover for CLBSV

Type	Code No	Description	For use with	g	
CLBS-TS125 3P	004661428	Terminal cover 3P	CLBSV 100-160A	63	1/22
CLBS-TS125 1P	004661431	Terminal cover 1P		22	1/120

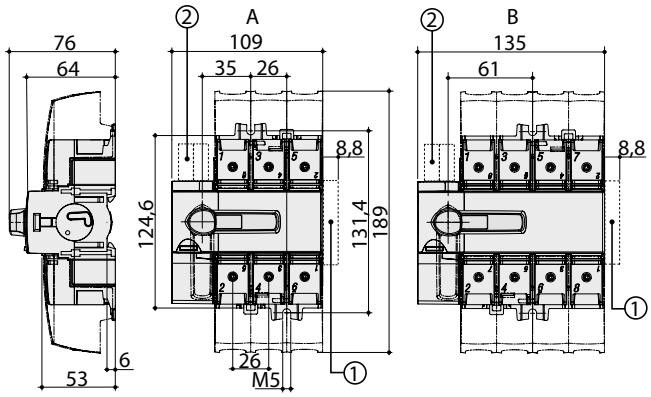
Note: One set is required to protect both upper and lower terminals.

Application - Protection against direct contact with upper and lower terminals.
The cover includes openings for temperature sensor installation.

CLBS-TS125 3P CLBS-TS125 1P

Dimensions

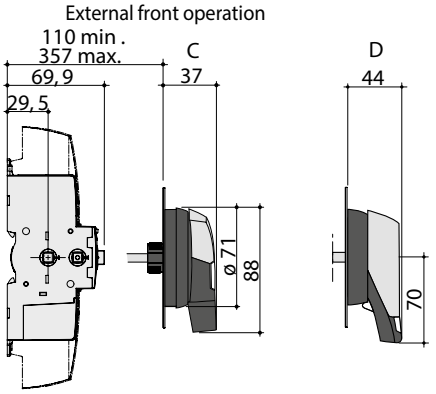
Direct front operation



A. 3 poles
B. 4 poles

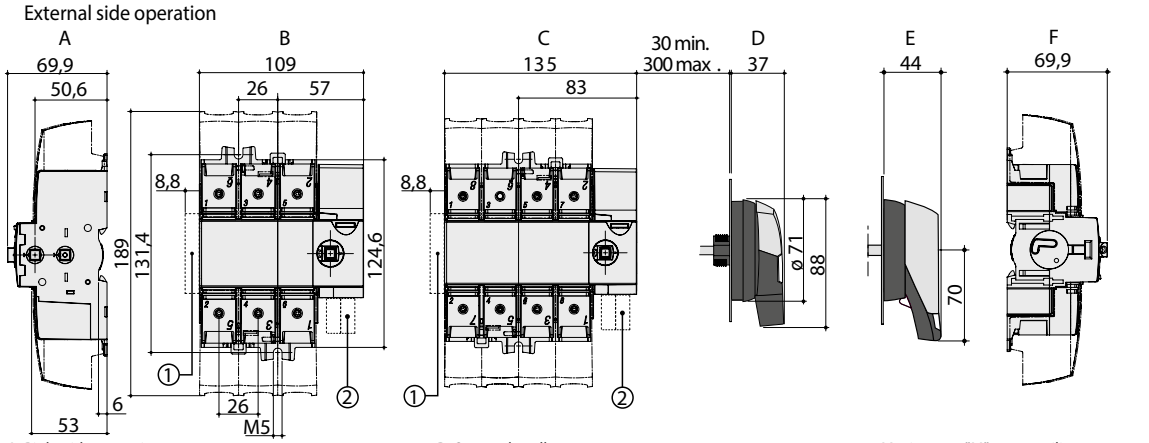
C. S0 type handle
D. S1 type handle

External front operation



1. Maximum 4 "M" type auxiliary contacts
2. Maximum 2 "U" type auxiliary contacts

External side operation



A. Right side operation
B. 3 poles
C. 4 poles

D. S0 type handle
E. S1 type handle
F. Left side operation

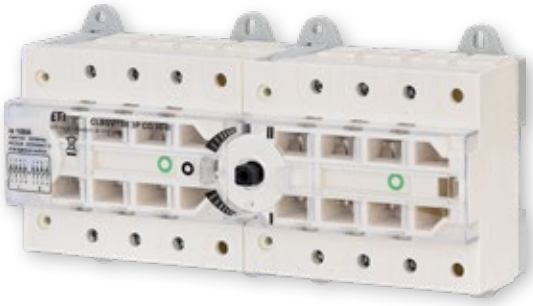
1. Maximum 4 "M" type auxiliary contacts
2. Maximum 2 "U" type auxiliary contacts

ETISWITCH Compact Load Break Change Over Switch with Visible Break CLBSV..CO

The clamping terminal screws are locked in the housing (when fully unscrewed, they remain in the terminal)

Universal mounting system allows mounting on the TH-35 busbar and mounting plate

Special type of mounting on the TH 35 busbar (no special tools required)



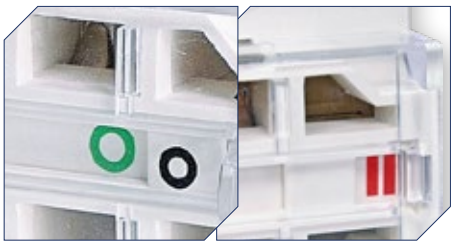
Option to connect auxiliary contacts with pre-breaking function

Double visible circuit break ensures safe maintenance

Possibility to lock the handle with a padlock

The connection bar allows the switch outputs to be interconnected

Possibility of direct and external front control



Indicator of the breaker's power contact position

Compact Load Break Change Over Switch with Visible Break CLBSV..CO

Characteristics according to IEC 60947-3

Type				CLBSV 63 CO	CLBSV 100 CO	CLBSV 125 CO
Rated Current		(In)		63A	100A	125A
Rated insulation voltage		(Ui)	(V)	800	800	800
Rated impulse withstand voltage		(Uimp)	(kV)	8	8	8
Thermal current 40°C		(Ith)	(A)	63	100	125
Rated operational currents (Ie)	AC-20 A/B	415V AC	(A)	63	100	125
	AC-21 A/B	415V AC	(A)			
	AC-22 A/B	415V AC	(A)			
	AC-23 A/B	415V AC	(A)			
	AC-20 A/B	690V AC[1]	(A)		100	125
	AC-21 A/B	690V AC[1]	(A)			
	AC-22 A/B	690V AC[1]	(A)	40/63	80/100	100/125
	AC-23 A/B	690V AC[1]	(A)	40	63	63
Operational power in AC 23		400V AC	(kW)	30	45	55
		500V AC	(kW)	30	45	55
		690V AC	(kVAr)	30	45	55
Reactive power		400V AC	(kA)	1,5	2,75	2,75
Short-circuit capacity Icw		1 s.	(kA)	1,5	2,75	2,75
		0,25 s.	(kA)	2,1	3,9	3,9
Fuse protected short-circuit withstand (kA rms prospective)						
Associated fuse rating			(A)	63	100	125
Prospective short-circuit current			(kA)	50	25	25
Circuit breaker protected short-circuit withstand with any circuit breaker that ensures tripping in less than 0.3s						
Rated short-time withstand current		0,3 s.	(kA)	3	5	5
Connection						
Minimum Cu cable cross-section		mm^2		2,5	10	10
Maximum Cu cable cross-section		mm^2		35	70	70
Tightening torque min/max		Nm		3,5/3,85	4/4,4	4/4,4
Durability (number of operating cycles)		cycles		100 000	100 000	100 000
Operating effort - 3 pole device		Nm		1,4	1,6	1,6

Category with index A = frequent operation
Category with index B = infrequent operation.
[1] Available with terminal covers or phase barriers

Load disconnectors 1-0-2 with visible break CLBSV..CO 63 - 125 A

Type	Code No	Description	I_n [A]	Number of poles	g	
CLBSV 63 3P CO I-0-II	004661890	Load-break switch 1-0-2	63	3	1250	1
CLBSV 100 3P CO I-0-II	004661891	Load-break switch 1-0-2	100	3	1360	1
CLBSV 125 3P CO I-0-II	004661892	Load-break switch 1-0-2	125	3	1360	1

Front (direct or external) control. The handle is not included

CLBSV 63 3P CO I-0-II

Load disconnectors 1-1+2-2 with visible break CLBSV..CO 63 - 125 A

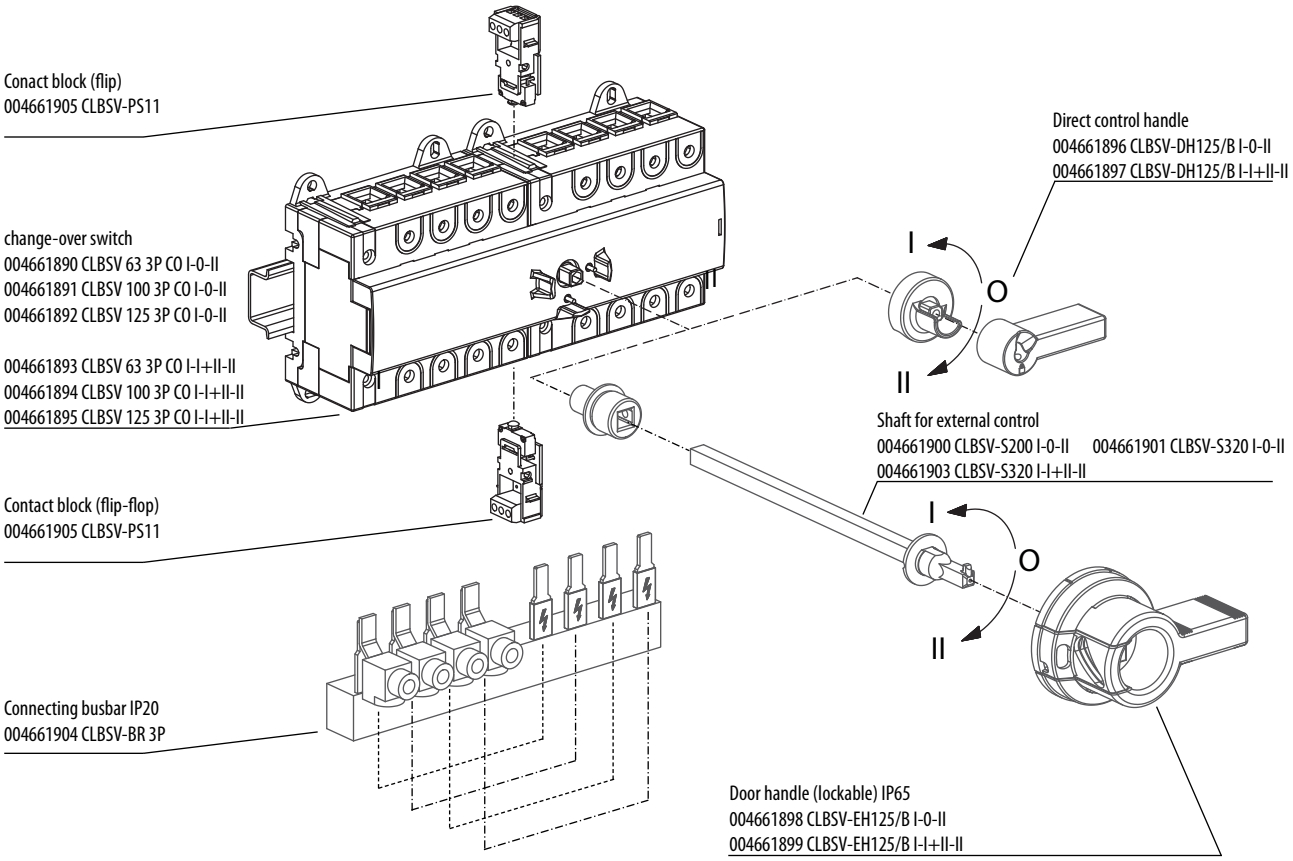
Type	Code No	Description	I_n [A]	Number of poles	g	
CLBSV 63 3P CO I-I+II-II	004661893	Load switch 1-1+2-2	63	3	1360	1
CLBSV 100 3P CO I-I+II-II	004661894	Load switch 1-1+2-2	100	3	1360	1
CLBSV 125 3P CO I-I+II-II	004661895	Load switch 1-1+2-2	125	3	1360	1

Front (direct or external) control. The handle is not included

CLBSV 125 3P CO I-I+II-II

Accessories

Mounting example:



Direct handle for direct operation CLBSV..CO

Type	Code No	Description	For use with	g	
CLBSV-DH125/B I-0-II	004661896	Handle on switch housing I-0-II, black	CLBSV..CO I-0-II	30	1/50
CLBSV-DH125/B I-I+II-II	004661897	Handle on switch housing I-I+II-II, black	CLBSV..CO I-I+II-II	40	1/50

Direct front control

CLBSV-DH125/B I-0-II

Door interlocked front handle IP65 (shaft not included). IP65

Type	Code No	Description	For use with	g	
CLBSV-EH125/B I-0-II	004661898	Handle remote I-0-II, black	CLBSV..CO I-0-II	220	1/20

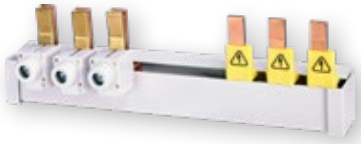
External front operation. Shaft not included.
Allows door opening in the ON position.

CLBSV-EH125/B I-0-II

Connecting busbar IP20

Type	Code No	Description	For use with	g	
CLBSV-BR 3P	004661904	Connection busbar IP20, 3p	CLBSV..CO	30	1/100

Application: To create a common connection between devices I and II at the top or bottom of the switch.



CLBSV-BR 3P

External control shaft

Type	Code No	Description	For use with	g	
CLBSV-S200 I-0-II	004661900	Shaft, 200mm	CLBSV..CO I-0-II	190	1/30
CLBSV-S320 I-0-II	004661901	Shaft, 320mm		250	1/25
CLBSV-S320 I-I+II-II	004661903	Shaft, 320mm	CLBSV..CO I-I+II-II	214	1

The shaft is used for external front operation.

CLBSV-S200 I-0-II

Contact block (flip-flop)

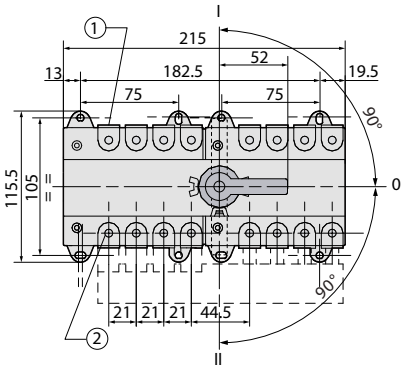
Type	Code No	Description	For use with	g	
CLBSV-PS11	004661905	Contact block, 1NO/NC (change-over)	CLBSV..CO I-0-II	30	1/25

Application: Pre-breaking and signaling of positions I and II, with a CO auxiliary contact for each position.

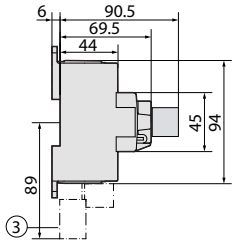
CLBSV-PS11

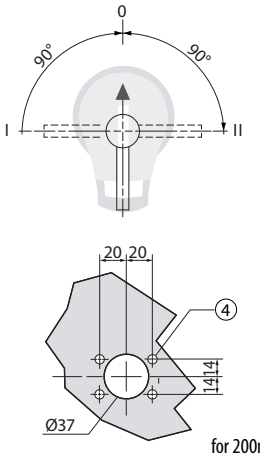
Dimensions

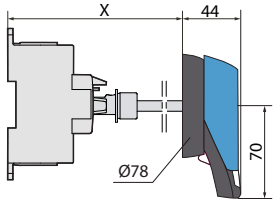
Direct control



External control



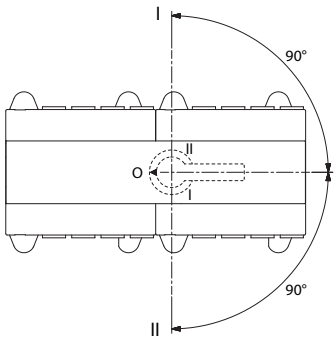




1. Max. connection
   - solid conductor: 50 mm²;
   - Stranded conductor: 35 mm²

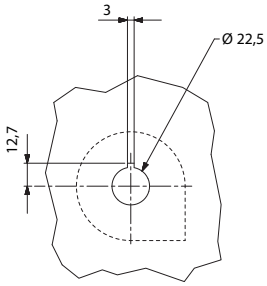
2. Hexagon socket No. 5 1 4.5 mm
3. Connecting busbar
4. Mounting with 2 or 4 7 mm screws

for 200mm stem - X = Min. 128mm, Max. 290mm
for 320mm rod - X = Min. 128mm, Max. 410mm

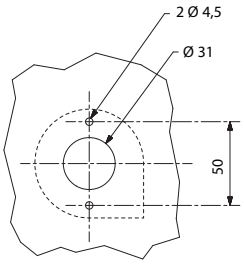


Mounting hole

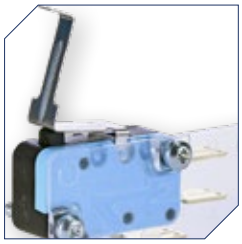
With fastening nut



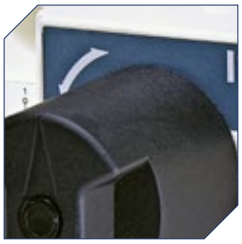
With fixing screws



ETISWITCH Load Break Switch LBS



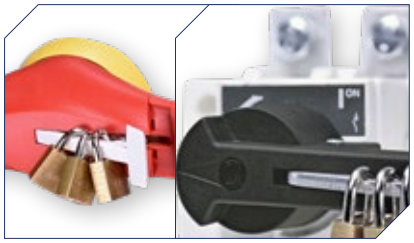
Ability to connect auxiliary contacts



Position of the handle indicates the status of the contact group

Terminal covers ensure accidental contact protection, phase separation, and allow contact temperature monitoring through perforated holes.

The use of glass fibre reinforced polyester provides high mechanical and temperature resistance of the LBS load disconnector enclosure



Possibility to lock the handle with a padlock

Load disconnectors up to 630A are supplied with screws for connection

Indicator of the breaker's power contact position

Load Break Switch LBS

Characteristics according to IEC 60947-3

Type				LBS 160	LBS 250	LBS 400	LBS 630	LBS 800	LBS 1000
Current		(In)	(A)	160	250	400	630	800	1000
Rated insulation voltage		(Ui)	(V)	800	800	1000	1000	1000	1000
Rated impulse withstand voltage		(U imp)	(kV)	8	8	12	12	12	12
Thermal current 40°C		(Ith)	(A)	160	250	400	630	800	1000
Rated operational currents (Ie)	AC-20 A/B	415V AC	(A)	160/160	250/250	400/400	630/630	800/800	1000/1000
	AC-21 A/B	415V AC	(A)	160/160	250/250	400/400	630/630	800/800	1000/1000
	AC-22 A/B	415V AC	(A)	160/160	250/250	400/400	630/630	800/800	1000/1000
	AC-23 A/B	415V AC	(A)	160/160	250/250	400/400	500/500	800/800	1000/1000
	DC-20 A/B	220V DC	(A)	160/160	250/250	400/400	630/630	800/800	1000/1000
	DC-21 A/B	220V DC	(A)	160/160	250/250	400/400	630/630	800/800	1000/1000
	DC-22 A/B	220V DC	(A)	160/160	250/250	400/400	500/500	800/800	1000/1000
	DC-23 A/B	220V DC	(A)	125/125	200/200	400/400	500/500	800/800	1000/1000
	DC-20 A/B	440V DC	(A)	160/160	250/250	400/400	630/630	800/800	1000/1000
	DC-21 A/B(2)	440V DC	(A)	160(3)/160(3)	200(3)/200(3)	400(3)/400(3)	500(3)/500(3)	800(4)/800(4)	1000(4)/1000(4)
	DC-22 A/B(2)	440V DC	(A)	125(3)/125(3)	200(3)/200(3)	400(3)/400(3)	500(3)/500(3)	800(4)/800(4)	1000(4)/1000(4)
	DC-23 A/B(3)	440V DC	(A)	125(4)/125(4)	200(4)/200(4)	400(4)/400(4)	500/500	800(4)/800(4)	1000(4)/1000(4)
	DC-20 A/B	500V DC	(A)	160/160	250/250	400/400	630/630	800/800	1000/1000
	DC-21 A/B(2)	500V DC	(A)	125(3)/125(3)	200(3)/200(3)	400(3)/400(3)	500(3)/500(3)	800(4)/800(4)	1000(4)/1000(4)
	DC-22 A/B(3)	500V DC	(A)	125(4)/125(4)	200(4)/200(4)	315(4)/400(4)	500(4)/500(4)	800(4)/800(4)	1000(4)/1000(4)
	DC-23 A/B(3)	500V DC	(A)	125(4)/125(4)	200(4)/200(4)	315(4)/400(4)	500(4)/500(4)	800(4)/800(4)	1000(4)/1000(4)
Operational power in AC 23 (1) (5)		415V AC	(kW)	80/80	132/132	220/220	280/280	450/450	560/560
Reactive power(5)		400 V	(kVAr)	75	115	185	290	365	460
Short-circuit capacity Icw		1 s.	(kA)	7	9	13	13	35	35
		0,25 s.	(kA)	11,9	15,3	26	26	73,5	73,5
Fuse protected short-circuit withstand (kA rms prospective)									
Associated fuse rating(6)			(A)	160	250	400	630	800	1000
Prospective short-circuit current			(kA)	100	50	100	70	50	100
Circuit breaker protected short-circuit withstand with any circuit breaker that ensures tripping in less than 0.3s									
Rated short-time withstand current Icw		0,3 s.	(kA)	15	17	25	25	50	65
Connection									
Minimum Cu cable cross-section		mm^2		50	95	185	2x150	2x185	2x240
Maximum Cu cable cross-section		mm^2		95	150	240	2x300	2x300	4x185
Minimum Cu busbar cross-section		mm		-	-	-	2x30x5	2x40x5	2x50x5
Maximum Cu busbar width		mm		25	32	40	50	63	63
Tightening torque min/max		Nm		9/-	20/-	20/-	20/-	40/45	40/45
Operating effort		Nm		6,5	10	14,5	14,5	37	37
Durability (number of operating cycles)		cycles		10 000	10 000	10 000	10 000	3 000	3 000
Power dissipation		W/pole		3	5,8	10,8	30,9	39,7	42

(1) Category with index A = frequent operation - Category with index B = infrequent operation.
(2) With terminal shrouds or phase barrier.
(3) 3-pole device with 2 pole in series for the «+» and 1 pole for the «-».
(4) 4-pole device with 2 poles in series per polarity.
(5) The power value is given for information only, the current values vary from one manufacturer to another.
(6) For a rated operational voltage Ue = 415 VAC.

Characteristics according to IEC 60947-3

Type				LBS 1250	LBS 1600	LBS 2000	LBS 2500	LBS 3200
Current		(In)	(A)	1250	1600	2000	2500	3200
Rated insulation voltage		(Ui)	(V)	1000	1000	1000	1000	1000
Rated impulse withstand voltage		(U imp)	(kV)	12	12	12	12	12
Thermal current 40°C		(Ith)	(A)	1250	1600	2000	2500	3200
Rated operational currents (Ie)	AC-20 A/B	415V AC	(A)	1250/1250	1600/1600	2000/2000	2500/2500	3200/3200
	AC-21 A/B	415V AC	(A)	1250/1250	1600/1600	2000/2000	2500/2500	3200/3200
	AC-22 A/B	415V AC	(A)	1250/1250	1600/1600	2000/2000	2500/2500	2500/3200
	AC-23 A/B	415V AC	(A)	1250/1250	1250/1250	1600/1600	1600/1600	1600/1600
	DC-20 A/B	220V DC	(A)	1250/1250	1600/1600	2000/2000	2500/2500	3200/3200
	DC-21 A/B	220V DC	(A)	1250/1250	1250/1600	2000/2000	2000/2500	2000/2500
	DC-22 A/B	220V DC	(A)	1250/1250	1250/1250	1250/1600	1250/1600	1250/1600
	DC-23 A/B	220V DC	(A)	1250/1250	1250/1250	1250/1250	1250/1250	1250/1250
	DC-20 A/B	440V DC	(A)	1250/1250	1600/1600	2000/2000	2500/2500	3200/3200
	DC-21 A/B[2]	440V DC	(A)	1250[4]/1250[4]	1250[4]/1600[4]	2000[4]/2000[4]	2000[4]/2500[4]	2500[4]/3200[4]
	DC-22 A/B[2]	440V DC	(A)	1250[4]/1250[4]	1250[4]/1250[4]	1250[4]/1250[4]	1250[4]/1250[4]	1250[4]/1250[4]
	DC-23 A/B[3]	440V DC	(A)	1250[4]/1250[4]	1250[4]/1250[4]	1250[4]/1250[4]	1250[4]/1250[4]	1250[4]/1250[4]
	DC-20 A/B	500V DC	(A)	1250/1250	1600/1600	2000/2000	2500/2500	3250/3250
	DC-21 A/B[2]	500V DC	(A)	1250[4]/1250[4]	1250[4]/1600[4]	1250[4]/1250[4]	1250[4]/1250[4]	1250[4]/1250[4]
	DC-22 A/B[3]	500V DC	(A)	1250[4]/1250[4]	1250[4]/1250[4]	1250[4]/1250[4]	1250[4]/1250[4]	1250[4]/1250[4]
	DC-23 A/B[3]	500V DC	(A)	1250[4]/1250[4]	1250[4]/1250[4]	1000[4]/1000[4]	1000[4]/1000[4]	1000[4]/1000[4]
Operational power in AC 23 [1][5]		415V AC	(kW)	710/710	710/710	710/710	710/710	710/710
Reactive power[5]		400 V	(kVAr)	-	-	-	-	-
Short-circuit capacity Icw		1 s.	(kA)	35	50	50	50	50
		0,25 s.	(kA)	73,5	75	80	80	80
Fuse protected short-circuit withstand (kA rms prospective)								
Associated fuse rating[6]			(A)	1250	2x800	2x1000	2x1250	-
Prospective short-circuit current			(kA)	100	100	100	100	-
Circuit breaker protected short-circuit withstand with any circuit breaker that ensures tripping in less than 0.3s								
Rated short-time withstand current Icw		0,3 s.	(kA)	65	100	100	100	100
Connection								
Minimum Cu cable cross-section		mm^2		-	-	-	-	-
Maximum Cu cable cross-section		mm^2		4x185	4x185	-	-	-
Minimum Cu busbar cross-section		mm		2x60x5	2x80x5	3x100x5	4x100x5	4x100x5
Maximum Cu busbar width		mm		63	100	100	100	100
Tightening torque min/max		Nm		40/45	40/45	40/45	40/-	40/-
Operating effort		Nm		37	56	75	75	75
Durability (number of operating cycles)		cycles		3 000	4 000	3 000	3 000	3 000
Power dissipation		W/pole		80	122	140	205	340

(1) Category with index A = frequent operation - Category with index B = infrequent operation.
(2) With terminal shrouds or phase barrier.
(3) 3-pole device with 2 pole in series for the «+» and 1 pole for the «-».
(4) 4-pole device with 2 poles in series per polarity.
(5) The power value is given for information only, the current values vary from one manufacturer to another.
(6) For a rated operational voltage Ue = 415 VAC.

Description
LBS is manually operated 3 pole or 4 pole load break switch in range 160-3200A. It makes and breaks under load conditions and provides safety isolation. LBS is designed for 415 VAC and DC low voltage electrical circuits. LBS switches have been designed, qualified and tested according to the criteria defined by standard IEC 60947-3.

LBS body (no handle included) 3/4 POLES

Type	Code No.	I_n [A]	Number of poles	g	
LBS 160 3P	004661450	160	3	1,11	1
LBS 250 3P	004661451	250	3	1,71	1
LBS 400 3P	004661452	400	3	4,00	1
LBS 630 3P	004661453	630	3	4,36	1
LBS 800 3P	004661454	800	3	8,63	1
LBS 1000 3P	004661455	1000	3	9,70	1
LBS 1250 3P	004661456	1250	3	9,15	1
LBS 1600 3P	004661457	1600	3	12,70	1
LBS 2000 3P	004661458	2000	3	22,08	1
LBS 2500 3P	004661459	2500	3	22,37	1
LBS 3200 3P	004661460	3200	3	27,54	1
LBS 160 4P	004661461	160	4	1,25	1
LBS 250 4P	004661462	250	4	2,07	1
LBS 400 4P	004661463	400	4	4,87	1
LBS 630 4P	004661464	630	4	5,39	1
LBS 800 4P	004661465	800	4	11,75	1
LBS 1250 4P	004661466	1250	4	12,32	1
LBS 1600 4P	004661467	1600	4	15,89	1
LBS 2500 4P	004661468	2500	4	28,85	1
LBS 3200 4P	004661469	3200	4	33,80	1

In front direct or external front operation

LBS 160A 3P / LBSCD 200A 3P

LBS 800A - 1000A 3P

LBS 2000A-3200A 3P

Characteristics according to IEC 60947-3

Type				LBSCD 200	LBSCD 315	LBSCD 400
Current		(In)	(A)	200	315	400
Rated insulation voltage		(Ui)	(V)	800	800	800
Rated impulse withstand voltage		(U imp)	(kV)	8	8	8
Thermal current 40°C		(Ith)	(A)	200	315	400
Rated operational currents (Ie)	AC-21 A/B[1]	400V AC	(A)	200/200	315/315	400/400
	AC-22 A/B[1]	400V AC	(A)	200/200	315/315	400/400
	AC-23 A/B[1]	400V AC	(A)	160/160	250/250	250/250
	AC-21 A/B[1]	500V AC	(A)	160/160	250/250	250/250
	AC-22 A/B[1]	500V AC	(A)	125/125	250/250	250/250
	AC-23 A/B[1]	500V AC	(A)	100/100	200/250	200/250
	AC-20 A/B[1]	690V AC	(A)	200/200	315/315	400/400
	AC-21 A/B[1]	690V AC	(A)	160/160	200/250	200/250
	AC-22 A/B[1]	690V AC	(A)	125/125	125/160	125/160
	AC-23 A/B[1]	690V AC	(A)	63/80	100/125	100/125
	DC-20 A/B[1]	220V DC	(A)	200/200	315/315	400/400
	DC-21 A/B[1]	220V DC	(A)	160/160	250/250	250/250
	DC-22 A/B[1]	220V DC	(A)	160/160	250/250	250/250
	DC-23 A/B[1]	220V DC	(A)	125/125	200/200	200/200
	DC-20 A/B[1]	400V DC	(A)	200/200	315/315	400/400
	DC-21 A/B[1]	400V DC	(A)	160/160	250/250	250/250
	DC-22 A/B[1]	400V DC	(A)	125[3]/125[3]	200[3]/200[3]	200[3]/200[3]
	DC-23 A/B[1]	400V DC	(A)	125[3]/125[3]	200[3]/200[3]	200[3]/200[3]
	DC-20 A/B[1]	500V DC	(A)	200/200	315/315	400/400
	DC-21 A/B[1]	500V DC	(A)	125[3]/125[3]	200[3]/200[3]	200[3]/200[3]
	DC-22 A/B[1]	500V DC	(A)	125[3]/125[3]	200[3]/200[3]	200[3]/200[3]
	DC-23 A/B[1]	500V DC	(A)	125[3]/125[3]	200[3]/200[3]	200[3]/200[3]
Operational power in AC 23 [1] [5]		400V AC	(kW)	80/80	132/132	132/132
		500V AC	(kW)	63/63	140/160	140/160
		690V AC	(kW)	55/75	150/185	150/185
Reactive power[5]		400V AC	(kVAr)	75	115	145
Fuse protected short-circuit withstand (kA rms prospective)						
Associated fuse rating[6]			(A)	200	315	400
Prospective short-circuit current			(kA)	50	30	18
Short-circuit operation						
Rated short-time withstand current Icw		1 s	(kA)	7	9	9
Dynamic short-circuit withstand current			(kA)	18	23	23
Connection						
Minimum Cu cable cross-section		mm^2		50	95	185
Maximum Cu cable cross-section		mm^2		95	185	240
Minimum Cu busbar cross-section		mm		-	-	-
Maximum Cu busbar width		mm		25	32	32
Tightening torque min/max		Nm		9	20	20
Operating effort		Nm		6,5	10	14,5
Durability (number of operating cycles)		cycles		10 000	10 000	5 000

(1) Category with index A = frequent operation - Category with index B = infrequent operation.
(2) With terminal shrouds or phase barrier.
(3) 3-pole device with 2 pole in series for the «+» and 1 pole for the «-».
(4) 4-pole device with 2 poles in series per polarity.
(5) The power value is given for information only, the current values vary from one manufacturer to another.
(6) For a rated operational voltage Ue = 415 VAC.

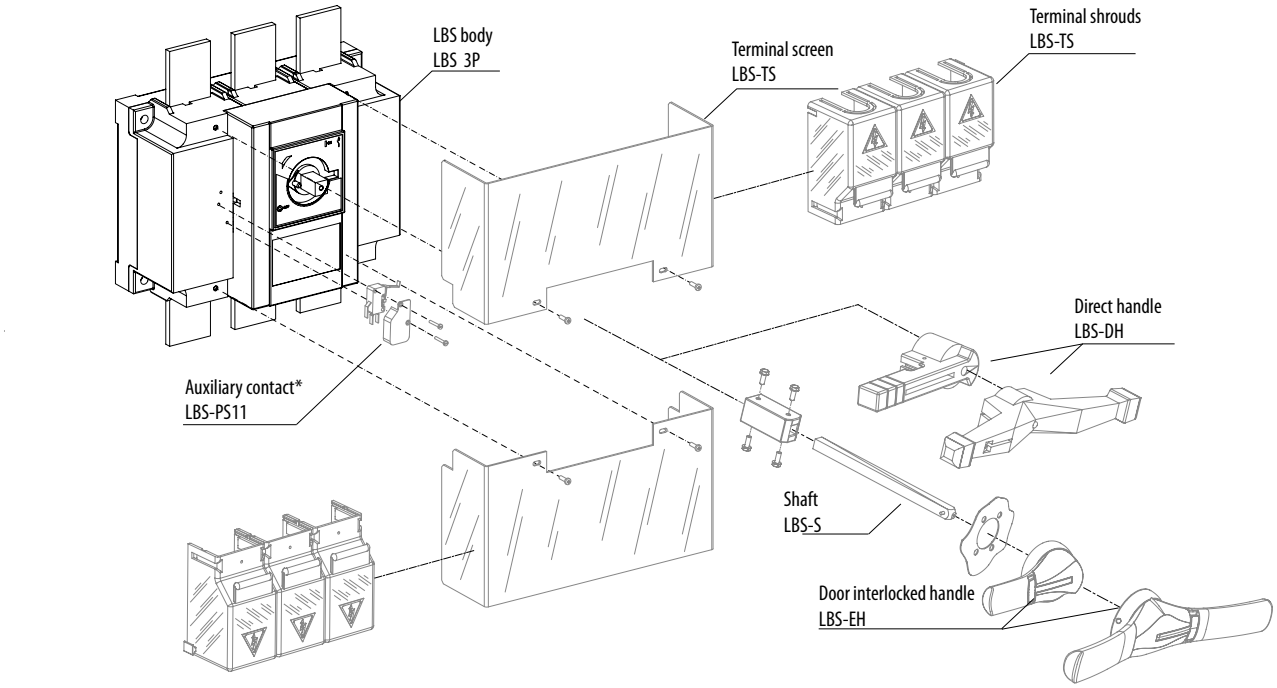
LBSCD series (LBS switch with reduced short circuit current capability) 3/4 POLES

Type	Code No.	I_n [A]	Number of poles	g	
LBSCD 200 3P	004661912	200	3	0,47	1
LBSCD 315 3P	004661913	315	3	1,76	1
LBSCD 400 3P	004661914	400	3	1,85	1
LBSCD 200 4P	004661915	200	4	1,2	1
LBSCD 315 4P	004661916	315	4	2,2	1
LBSCD 400 4P	004661917	400	4	2,28	1

With LBSCD 200 can be applied the same accessories as with LBS 160 (LBS 160 body)
With LBSCD 315 can be applied the same accessories as with LBS 250 (LBS 250 body)
With LBSCD 400 can be applied the same accessories as with LBS 250 (LBS 250 body)

LBSCD 200A 3P

Accessories



*Only one auxiliary contact can be mounted to each switch body

Direct handle for direct operation

Type	Description	Code No	For use with	g	
LBS-DH160/B	Direct handle, black	004661480	LBS 160A	91	1/25
LBS-DH630/B	Direct handle, black	004661481	LBS 250-630A	100	1/25
LBS-DH3200/B (CO)	Direct handle, black	004661482	LBS 800-3200A	295	1/20

Type definition: Handle type / color initials

Door interlocked handle IP65 (shaft not included).

Type	Description	Code No	For use with	g	
LBS-EH630/ G...400/G FLBS	Door interlocked handle, grey front	004661483	LBS 160-630A	250	1/20
LBS-EH1600/G	Door interlocked handle, grey front	004661484	LBS 800-1600A	340	1/10
LBS-EH3200/BL	Door interlocked handle, blue front	004661485	LBS 2000-3200A	1.500	1

Type definition: Handle type / color initials

LBS-EH630/G...400/G FLBS LBS-EH1600/G LBS-EH3200/BL

Door interlocked handle IP65 (shaft not included).

Type	Description	Code No	For use with	g	
LBS-EH630/YR	Door interlocked handle, red front	004661486	LBS 160-630A	250	1/20
LBS-EH1600/YR	Door interlocked handle, red front	004661487	LBS 800-1600A	340	1/10
LBS-EH3200/YR	Door interlocked handle, red front	004661488	LBS 2000-3200A	1.500	1

Type definition: Handle type / color initials

LBS-EH630/YR LBS-EH1600/YR LBS-EH3200/YR

Shaft for door interlocked handle

Type	Description	Code No	For use with	g	
LBS-S200/630 (CO)..../400 FLBS	Shaft, 200mm, 10x10mm	004661490	LBS-EH630A	160	1/25
LBS-S200/1600 (CO)	Shaft, 200mm, 15x12mm	004661491	LBS-EH1600A	360	1/25
LBS-S200/3200 (CO)	Shaft, 200mm, 15x15mm	004661492	LBS-EH3200A	350	1/10
LBS-S320/630 (CO)..../400 FLBS	Shaft, 320mm, 10x10mm	004661493	LBS-EH630A	250	1/50
LBS-S320/1600 (CO)	Shaft,320mm, 15x12mm	004661494	LBS-EH1600A	490	1/25
LBS-S320/3200 (CO)	Shaft, 320mm, 15x15mm	004661495	LBS-EH3200A	376	1/15
LBS-S500/630 (CO)..../400 FLBS	Shaft, 500mm, 10x10mm	004661496	LBS-EH630A	390	1/20
LBS-S400/1600(CO)	Shaft, 400mm, 15x12mm	004661497	LBS-EH1600A	580	1/20
LBS-S450/3200(CO)	Shaft, 450mm, 15x15mm	004661498	LBS-EH3200A	971	1/20

15x12mm: one side with 12x12mm, second side with 15x15mm.

LBS-S320/1600 (CO)

Guiding cone

Type	Description	Code No	For use with	g	
LBS-GC (CLBS-EH125/01)	Guiding cone	004661489	LBS-EH630-3200	29	1/25

To guide the shaft extension into the external handle. This accessory enables the handle to engage the extension shaft with a misalignment of up to 15 mm. Required for shaft lengths over 320 mm.

LBS-GC (CLBS-EH80, 125)

Auxiliary contact

Type	I [A]	Description	Code No	For use with	g	
LBS-PS11	16	Auxiliary contact (CO)	004661499	LBS 160-3200A	26	1/30
LBS-2PS11	16	2nd auxiliary contact (CO)	004661918	LBS 160-3200A	26	1/30

Pre-break and signalling of positions 0 and I. Connection to the control circuit 6.35 mm fast-on terminal.
Electrical characteristics 30 000 operations. Only one auxiliary contact can be mounted to each switch body

LBS-PS11

Terminal shrouds (covers)

Type	Description	Code No	For use with	g	
LBS-TS160 3P (CO)	Terminal shrouds, 3P	004661500	LBS 160A 3P	79	1/20
LBS-TS250 3P (CO)	Terminal shrouds, 3P	004661501	LBS 250A 3P	121	1/10
LBS-TS630 3P (CO)	Terminal shrouds, 3P	004661502	LBS 400-630A 3P	242	1/5
LBS-TS4P/160 (CO)	Terminal shrouds, 4P	004661506	LBS 160A 4P	100	1/15
LBS-TS4P/250 (CO)	Terminal shrouds, 4P	004661507	LBS 250A 4P	157	1/8
LBS-TS4P/630 (CO)	Terminal shrouds, 4P	004661508	LBS 400-630A 4P	311	1/4

Perforations allow remote thermographic inspection without the need to remove the shrouds.
The terminal shrouds also provide phase separation for LBS 160 to 630 A.
Terminal covers assure top and bottom protection against direct contact with terminals or connection parts.
One reference includes 3 pcs (3pole)/ 4 pcs (4pole) for top or bottom contacts , to protect all 2 references shall be ordered

LBS-TS160 3P (CO)

Terminal screen

Type	Description	Code No	For use with	g	
LBS-TS1250 3P	Terminal screen, 3P	004661503	LBS 800-1250A 3P	127	1/25
LBS-TS1600 3P	Terminal screen, 3P	004661504	LBS 1600A 3P	163	1/20
LBS-TS3200 3P	Terminal screen, 3P	004661505	LBS 2000-3200A 3P	266	1/1
LBS-TS4P/1250	Terminal screen, 4P	004661509	LBS 800-1250A 4P	161	1/20
LBS-TS4P/1600	Terminal screen, 4P	004661510	LBS 1600A 4P	223	1/30
LBS-TS4P/3200	Terminal screen, 4P	004661511	LBS 2000-3200A 4P	350	1/1

Top or bottom, to protect all 2 references shall be ordered

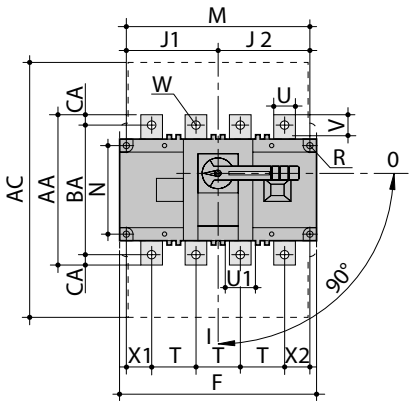
LBS-TS1250 3P

Dimensions

LBS 160 - LBS 630
LBS CD

Direct front operation

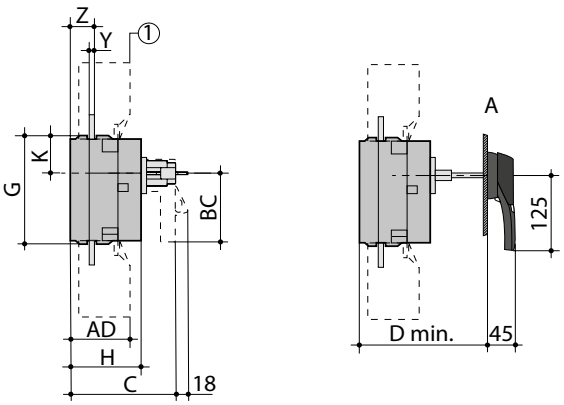
Front view



I. Terminal shrouds

External front operation

Side view



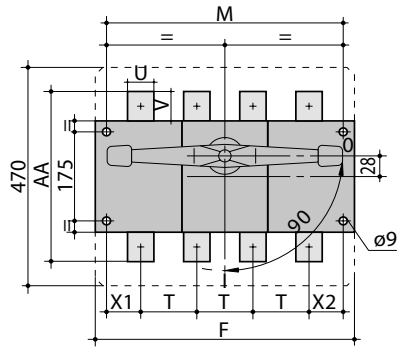
A.Handle type: LBS-EH630

Rating	Overall dimensions (mm)		Terminal shrouds, (mm)	Switch body, (mm)									Switch mounting, (mm)						Connection, (mm)											
(A)	C	D min	AC	AD	F (3p)	F (4p)	G	H	J1 (3p)	J1 (4p)	J2	K	BC	M (3p)	M (4p)	N	R	T	U	U1	V	W	X1 (3p)	X1 (4p)	X2	Y	Z	AA	BA	CA
160, CD 200	115	125	235	50	140	170	93	65	45	75	75	31.5	80	120	150	65	5.5	36	20	20.5	25	9	28	22	20	3.5	20.5	135	115	10
250, CD 315, CD 400			280	60	180	230	108	75	55	105	105	34	115	160	210	80	5.5	50	20	25.5	21.5	11	33	33	27	3.5	22.5	160	130	15
400	160	165	401	89	230	290	170	110	75	135	135	55	115	210	270	140	7	65	32	45.5	29	11	42.5	37.5	37.5	5	36	235	205	15
630																			45		41.5	13						260	220	20

LBS 800 - LBS 1600

Direct front operation

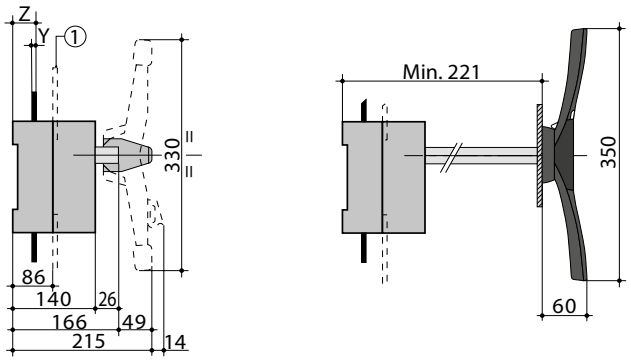
Front view



I. Terminal shrouds

External front operation

Side view



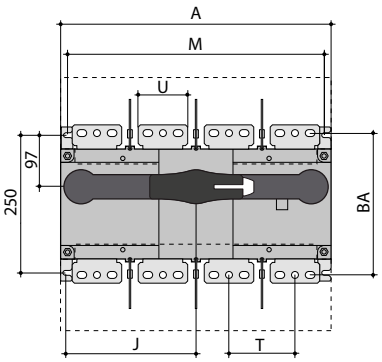
B. Handle type: LBS-EH1600

Rating	Switch body, (mm)		Switch mounting, (mm)		Connection, (mm)							
(A)	F (3p)	F (4p)	M (3p)	M (4p)	T	U	V	Y	X1	X2	Z	AA
800 - 1000	280	360	255	335	80	50	60.5	7	47.5	47.5	46.5	321
1250						60	65					330
1600	372	492	347	467	120	90	44	8	53.5	53.5	47.5	288

LBS 2000 - LBS 3200

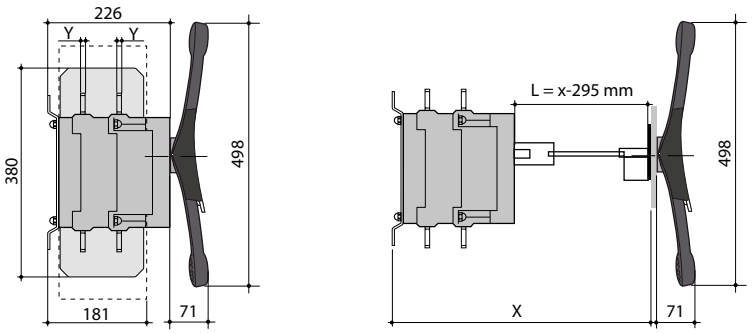
Direct front operation

Front view



External front operation

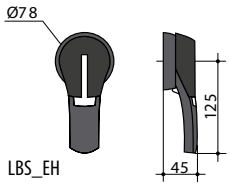
Side view



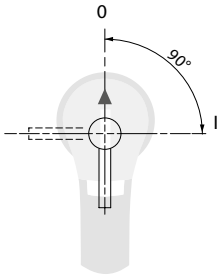
Handle type: LBS-EH3200

Rating	Overall dimensions, (mm)		Switch body, (mm)		Switch mounting, (mm)		Connection, (mm)			
(A)	A (3p)	A (4p)	J (3p)	J (4p)	M (3p)	M (4p)	T	U	Y	BA
2000-3200	372	492	173.5	233.5	347	367	120	90	8	258

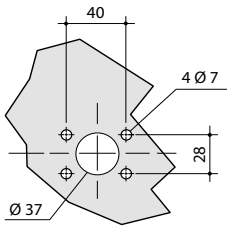
Handle type LBS-EH630



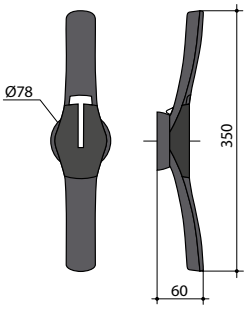
Direct front operation



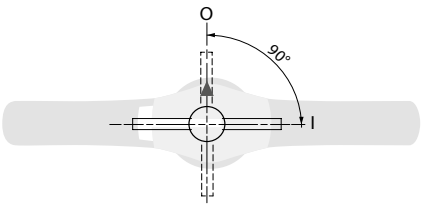
Door drilling



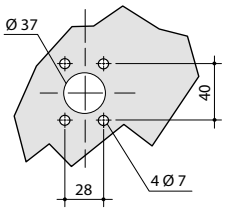
Handle type LBS-EH1600



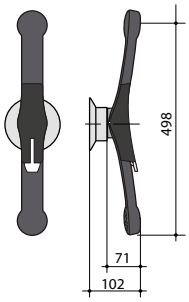
Direct front operation



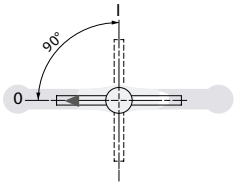
Door drilling



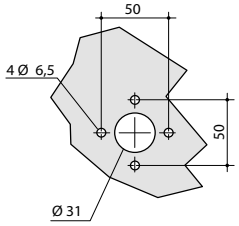
Handle type LBS-EH3200



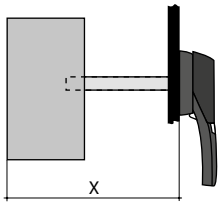
Direct front operation



Door drilling

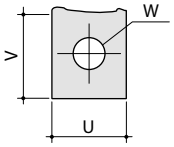


Rating (A)	Dimension X (mm)	Shaft length (mm)
LBS 160	125 - 250	200
	125 - 370	320
	125 - 550	500
LBS 250	135 - 265	200
	135 - 385	320
	135 - 565	500
LBS 400-630	165 - 295	200
	165 - 415	320
	165 - 595	500
LBS 800-1600	221 - 343	200
	221 - 463	320
	221 - 543	400
LBS 2000-3200	415 - 570	200
	415 - 690	320
	415 - 820	450



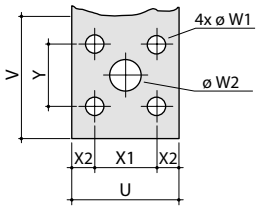
Rating (A)	U (mm)	V (mm)	W (mm)
160	20	25	9
250	25	21.5	11
400	32	29	11
630	45	41.5	13

Connection terminal dimensions:



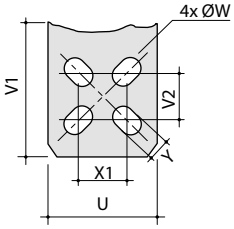
LBS-160-630

Rating (A)	U (mm)	V (mm)	W1 (mm)	W2 (mm)	X1 (mm)	X2 (mm)	Y (mm)
800 - 1000	50	60.5	9	16	28.5	11	33



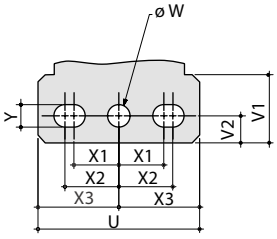
LBS-800-1000

Rating (A)	U (mm)	V1 (mm)	V2 (mm)	W (mm)	X1 (mm)	Y (mm)
1250	60	65	28.5	16	28.5	11



LBS-1250

Rating (A)	U (mm)	V1 (mm)	V2 (mm)	W (mm)	X1 (mm)	X2 (mm)	X3 (mm)	Y (mm)
1600-3200	90	35.8	15	12.5	25	30	45	12.5

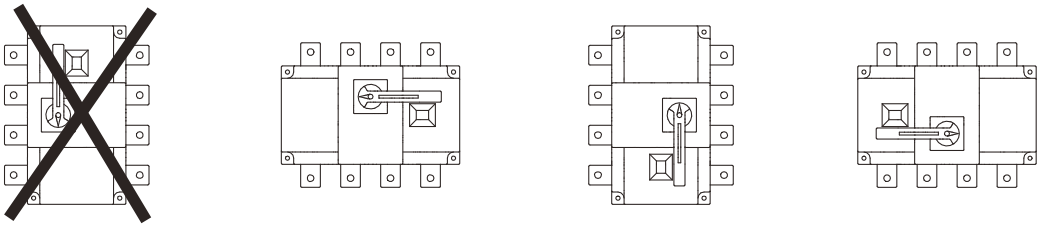


LBS-1600-3200

LBS-PS11 Auxiliary contact (change over NO/NC)

Rating (A)	Contact type	Current nominal (A)	Operating current Ie (A)									
			230 V AC		400 V AC		24 V DC			48 V DC		
			AC-12	AC-13/15	AC-12	AC-13/15	DC-12	DC-13	DC-14	DC-12	DC-13	DC-14
160-3200	CO	16	16	4	12	3	2,5	2,5	1	2,5	1,2	0,2

LBS 160...3200 mounting positions:



Connection

Current (A)	Piece	Quantity to order per pole (1)	Code No.
3200	Bridging bar part A		included
3200	Bar - piece E	1	004661602
3200	T piece - part C	1	004661599

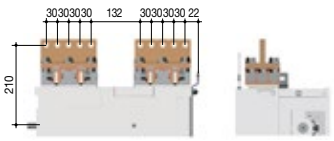
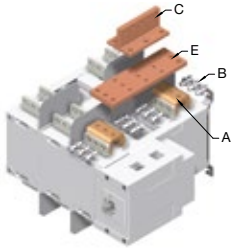


Fig. 2



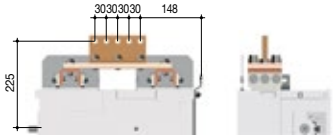


Fig. 3

ETISWITCH Load Break Change Over Switch LBS..CO

Description

LBS CO is manual 3 pole or 4 pole changeover switch with positive break indication in range 160-3200A. It provides changeover under load for two low voltage power circuits, as well as it's safety isolation by double breaking per pole. LBS CO switches have been designed, qualified and tested according to the criteria defined by standard IEC 60947-3 and IEC 60947-6-1. It can be utilised with a direct front or external operation handle.

Advantages

Double breaking per pole, achieved through its sliding bar contact system, is a proven design that offers very high durability and short-circuit withstand. The position indicator is located directly on the sliding bar contact mechanism, ensuring it can be seen in all circumstances. The use of glass fibre reinforced polyester gives the LBS high mechanical and thermal resistance.

General characteristics

- Double positive break indication given through a position indication window, located directly on the product, and by the operating handle.
- Severe utilisation categories (AC-22 and AC-23).
- High resistance to damp heat (supplied "tropicalised").
- A good centre-to-centre terminal distance (up to 120 mm).
- Connection up to 6x185 mm².
- Connection accessories which facilitate connection, both flat and edgewise connections.

Applications

- Generator manufacturers
- Heating
- Air conditioning
- Ventilation
- Power distribution
- Telecommunications

Load Break Change Over Switch LBS..CO

LBS CO body (no handle included) 3/4 POLES

Type	Code No.	I_n [A]	Number of poles	g	
LBS 160 3P CO	004661550	160	3	3,19	1
LBS 250 3P CO	004661551	250	3	4,68	1
LBS 400 3P CO	004661552	400	3	4,87	1
LBS 630 3P CO	004661553	630	3	10,89	1
LBS 800 3P CO	004661554	800	3	28,20	1
LBS 1000 3P CO	004661555	1000	3	20,00	1
LBS 1250 3P CO	004661556	1250	3	34,25	1
LBS 1600 3P CO	004661557	1600	3	38,80	1
LBS 2000 3P CO	004661558	2000	3	54,30	1
LBS 2500 3P CO	004661559	2500	3	45,00	1
LBS 3200 3P CO	004661560	3200	3	69,00	1
LBS 160 4P CO	004661561	160	4	3,73	1
LBS 250 4P CO	004661562	250	4	5,60	1
LBS 400 4P CO	004661563	400	4	5,87	1
LBS 630 4P CO	004661564	630	4	13,12	1
LBS 800 4P CO	004661565	800	4	36,60	1
LBS 1250 4P CO	004661566	1250	4	38,15	1
LBS 1600 4P CO	004661567	1600	4	43,85	1
LBS 2500 4P CO	004661568	2500	4	66,00	1
LBS 3200 4P CO	004661569	3200	4	82,00	1

In front direct or external front operation

LBS 160A 3P CO

LBS 630A 3P CO

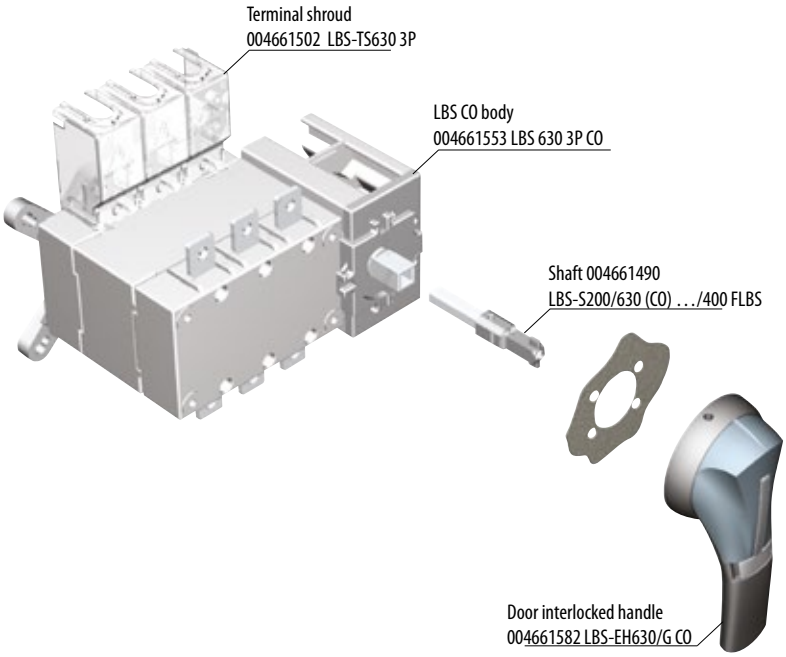
LBS 1600A 3P CO

Characteristics according to IEC 60947-3, IEC 60947-6-1

Type				LBS 160	LBS 250	LBS 400	LBS 630	LBS 800	LBS 1000	LBS 1250	LBS 1600	LBS 2000	LBS 2500	LBS 3200
Current		(In)		160A	250A	400A	630A	800A	1000A	1250A	1600A	2000A	2500A	3200A
Rated insulation voltage		(Ui)	(V)	800	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated impulse withstand voltage		(Uimp)	(kV)	8	12	12	12	12	12	12	12	12	12	12
Thermal current 40°C		(Ith)	(A)	160	250	400	630	800	1000	1250	1600	2000	2500	3200
Rated operational currents (Ie) IEC 60947-3	AC-20 A/B	415V AC	(A)	160	250	400	630	800	1000	1250	1600	2000	2500	3200
	AC-21 A/B	415V AC	(A)											
	AC-22 A/B	415V AC	(A)											
	AC-23 A/B	415V AC	(A)		200						1250	1600	1600	1600
	AC-20 A/B	500V AC	(A)		250						1600	2000	2500	3200
	AC-21 A/B	500V AC	(A)											
	AC-22 A/B	500V AC	(A)		200/250	200/400	500	630	800	1000		-	-	-
	AC-23 A/B	500V AC	(A)	80	200	200	400	400	630	800	1000	-	-	-
	AC-20 A/B	690V AC	(A)	160	250	400	630	800	1000	1250	1600	2000	2500	3200
	AC-21 A/B	690V AC	(A)		200	200	500							
	AC-22 A/B	690V AC	(A)	125	160	160	400	630	800	1000	1000	-	-	-
	AC-23 A/B	690V AC	(A)	63/80	125	125		400	630	800	800	-	-	-
	DC-20 A/B(1)	220V DC	(A)	160	250	400	630	800	1000	1250	1600	-	-	-
	DC-21 A/B(1)	220V DC	(A)			250						-	-	-
	DC-22 A/B(1)	220V DC	(A)								1250	-	-	-
	DC-23 A/B(1)	220V DC	(A)	125	200	200						-	-	-
	DC-20 A/B(1)	440V DC	(A)	160	250	400					1600	-	-	-
	DC-21 A/B(1)	440V DC	(A)	125	200	200					1250	-	-	-
	DC-22 A/B(1)	440V DC	(A)									-	-	-
	DC-23 A/B(1)	440V DC	(A)				500					-	-	-
Rated operational currents (Ie) IEC 60947-6-1	AC-31 A/B	415V AC	(A)	160	250	400	630	800	1000	1250	1600	2000	2500	3200
	AC-32 A/B	415V AC	(A)		200	400	500	800	1000	1250	1600	2000	2000	2000
	AC-33 A/B	415V AC	(A)		200	200	400	800	800	800	1000	1250	1250	1250
Short-circuit capacity Icw, 690 V AC		1 s.(4)	(kA)	7	8	8	10	26	35	35	50	50	50	50
		0,25 s.	(kA)	11,9	22	22	17	48	73,5	73,5	110	110	110	110
Icw, 415 V AC according to IEC 60947-6-1		0,06 s.(5)	(kA)		10	10	12,6	16	20	25	32	40	50	50
Operational power in AC 23(2)		(400V)	(kW)	80	132	280	450	450	560	710	710	710	-	-
		(690V)	(kW)	55/75	90/110	150/185	185/220	185/220	475	475	750	750	-	-
Reactive power		400 V	(kVAr)	75	115	185	290	365	460	575	-	-	-	-
Fuse protected short-circuit withstand (kA rms prospective), 690 V AC														
Associated fuse rating			(A)	160	250	400	630	800	1000	1250	2x800	-	-	-
Prospective short-circuit current			(kA)	100	50	50	50	50	100	100	100	100	100	-
Circuit breaker protected short-circuit withstand with any circuit breaker that ensures tripping in less than 0.3s (3)														
Rated short-time withstand current Icw		0,3 s.	(kA)	12	15	15	17	47	64	64	78	78	78	78
Connection														
Minimum Cu cable cross-section		mm^2		50	95	185	2x150	2x185	2x240	-	-	-	-	-
Maximum Cu cable cross-section		mm^2		95	150	240	2x300	2x300	4x185	4x185	4x185	-	-	-
Minimum Cu busbar cross-section		mm		-	-	-	2x30x5	2x40x5	2x50x5	2x60x5	2x80x5	2x100x10	2x100x10	4x100x10
Maximum Cu busbar width (Cu)		mm		25	32	32	50	63	63	63	100	100	100	100
Tightening torque min/max		Nm		9/13	20/26	20/26	20/26	20/26	20/26	20/26	40/45	40/45	40/45	40/45
Durability (number of operating cycles)		cycles		10 000	8 000	5 000	5 000	4 000	4 000	4 000	3 000	3 000	3 000	3 000
Power dissipation		W/pole		3,2	6	15,5	35	40	52,2	80	95	-	-	-

Category with index A = frequent operation
Category with index B = infrequent operation.
(1) 3-pole device with 2 poles in series for the „+" and 1 pole for the „-", 4-pole device with 2 poles in series per polarity.
(2) The power value is given for information only, the current values vary from one manufacturer to another.
(3) Value for coordination with any circuit breaker that ensures tripping in less than 0.3s.
(4) Data at 415 VAC
(5) Data at 30 ms

Accessories



Direct handle for direct operation

Type	Description	Code No	For use with	g	
LBS-DH630/B (CO)	Direct handle, black	004661580	LBS 160-630A CO	153	1/25
LBS-DH1600/B (CO)	Direct handle, black	004661581	LBS 800-1600A CO	238	1/15
LBS-DH3200/B (CO)	Direct handle, black	004661482	LBS 2000-3200A CO	295	1/20

Type definition: Handle type / color initials

LBS-DH630/B CO

Door interlocked handle IP65 (shaft not included)

Type	Description	Code No	For use with	g	
LBS-EH630/G CO	Door interlocked handle, grey front	004661582	LBS 160-630A CO	250	1/20
LBS-EH1600/G CO	Door interlocked handle, grey front	004661583	LBS 800-1600A CO	340	1/10
LBS-EH3200/BL CO	Door interlocked handle, blue front	004661584	LBS 2000-3200A CO	1.500	1

Type definition: Handle type / color initials

LBS-EH630/G CO LBS-EH1600/G CO LBS-EH3200/BL

Shaft for door interlocked handle

Type	Description	Code No	For use with	g	
LBS-S200/630 (CO).../400 FLBS	Shaft, 200mm, 10x10mm	004661490	LBS-EH630/G CO	160	1/25
LBS-S200/1600 (CO)	Shaft, 200mm, 15x12mm	004661491	LBS-EH1600/G CO	360	1/25
LBS-S200/3200 (CO)	Shaft, 200mm, 15x15mm	004661492	LBS-EH3200/BL CO	350	1/10
LBS-S320/630 (CO).../400 FLBS	Shaft, 320mm, 10x10mm	004661493	LBS-EH630/G CO	250	1/50
LBS-S320/1600 (CO)	Shaft, 320mm, 15x12mm	004661494	LBS-EH1600/G CO	490	1/25
LBS-S320/3200 (CO)	Shaft, 320mm, 15x15mm	004661495	LBS-EH3200/BL CO	376	1/15
LBS-S500/630 (CO).../400 FLBS	Shaft, 500mm, 10x10mm	004661496	LBS-EH630/G CO	390	1/20
LBS-S400/1600(CO)	Shaft, 400mm, 15x12mm	004661497	LBS-EH1600/G CO	580	1/20
LBS-S450/3200(CO)	Shaft, 450mm, 15x15mm	004661498	LBS-EH3200/BL CO	971	1/20

15x12mm: one side with 12x12mm, second side with 15x15mm

LBS-S320/1600 (CO)

Guiding cone

Type	Description	Code No	For use with	g	
LBS-GC (CLBS-EH125/01)	Guiding cone	004661489	LBS-EH630-3200	29	1/25

To guide the shaft extension into the external handle. This accessory enables the handle to engage the extension shaft with a misalignment of up to 15 mm. Required for shaft lengths over 320 mm.

LBS-GC (CLBS-EH80, 125)

Auxiliary contact

Type	I [A]	Description	Code No.	For use with	g	
LBS-PS11 CO	16	Auxiliary contact (CO)	004661585	LBS 160-1600A CO	25	1/30

Pre-break and signalling of positions 0 and I. Connection to the control circuit 6.35 mm fast-on terminal. Electrical characteristics 30 000 operations. One reference code includes 1 set of aux. contacts (one for position 1 + one for position 2), max 2 sets can be mounted in switch body. At LBS2000...3200 CO 2 sets of auxiliary contacts are included 2 pcs for position 1 and 2 pcs for position 2.

LBS-PS11 CO

Terminal shrouds (covers)

Type	Description	Code No	For use with	g	
LBS-TS160 3P (CO)	Terminal shroud	004661500	LBS 160 3P CO	79	1/20
LBS-TS250 3P (CO)	Terminal shroud	004661501	LBS 250-400A 3P CO	121	1/10
LBS-TS630 3P (CO)	Terminal shroud	004661502	LBS 630A 3P CO	242	1/5
LBS-TS4P/160 (CO)	Terminal shroud	004661506	LBS 160A 4P CO	100	1/15
LBS-TS4P/250 (CO)	Terminal shroud	004661507	LBS 250-400A 4P CO	157	1/8
LBS-TS4P/630 (CO)	Terminal shroud	004661508	LBS 630A 4P CO	311	1/4

Perforations allow remote thermographic inspection without the need to remove the shrouds.
The terminal shrouds also provide phase separation for LBS 160...630 CO.Terminal covers assure top and bottom protection against direct contact with terminals or connection parts. One reference includes 3 pcs (3pole)/ 4 pcs (4pole) for top or bottom contacts , to protect all, 2 references shall be ordered.

LBS-TS160 3P (CO)

Terminal screens

Type	Description	Code No	For use with	g	
LBS-TS1250 3P CO	Terminal screen	004661586	LBS 800-1250A CO, MLBS 800 -1250 3P	257	1
LBS-TS1600 3P CO	Terminal screen	004661587	LBS 1600A CO	520	1
LBS-TS1250 4P CO	Terminal screen	004661588	LBS 800-1250A CO, MLBS 800 -1250 4P	328	1
LBS-TS1600 4P CO	Terminal screen	004661589	LBS 1660A CO	632	1

At LBS2000…3200A terminal screens are included

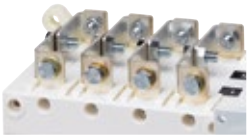
One reference includes 1pc for top or bottom contacts , to protect all, 2 references shall be ordered.

LBS-TS1250 3P CO

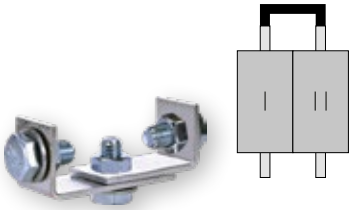
Bridging bars

Type	I_n [A]	Description	Code No.	For use with	Section [mm]	g	
LBS-BR160 1P CO	160A	Bridging bar	004661590	LBS 160 CO 3P/4P	20x2,5	187	1/50
LBS-BR250 1P CO	250A	Bridging bar	004661591	LBS 250 CO 3P/4P	25x25	173	1/25
LBS-BR400 1P CO	400A	Bridging bar	004661592	LBS 400 CO 3P/4P	32x5	296	1/25
LBS-BR630 1P CO	630A	Bridging bar	004661593	LBS 630 CO 3P/4P	50x5	644	1/25
LBS-BR1000 1P CO	800-1000A	Bridging bar	004661594	LBS 800-1000 CO 3P/4P, MLBS 800 3P/4P	50x6	429	1
LBS-BR1250 1P CO	1250A	Bridging bar	004661595	LBS 1250 CO 3P/4P, MLBS 800 3P/4P	60x8	730	1/5
LBS-BR1600 1P CO	1600A	Bridging bar	004661596	LBS 1600 CO 3P/4P	90x10	2.778	1

One reference code includes 1 pc of item, order for each pole separately



LBS-BR160 1P CO

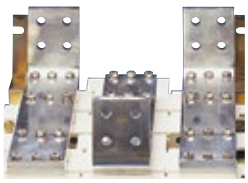


LBS-BR250 1P CO

Bridging bars

Type	Description	Code No	For use with	g	
LBS-BR2000-2500 CO (con. A)	Bridging bar part A	004661597	LBS 2000-2500 CO 3P/4P	863	1
LBS-BRC2000-3200 CO (T-pc C)	T piece - part C	004661599	LBS 2000-3200 CO 3P/4P	2.523	1
LBS-BRD2000-3200 CO (brack. D)	Right angle - part D	004661600	LBS 2000-3200 CO 3P/4P	943	1
LBS-BRE2000-2500 CO (bar E)	Bar - piece E	004661601	LBS 2000-2500A CO	3.500	1
LBS-BRE3200 CO (bar E)	Bar - piece E	004661602	LBS 3200A CO	3.500	1

One reference code includes 1 pc of item, for correct qty see technical data, page 619



LBS-BR1600 1P CO

Use

Enables:

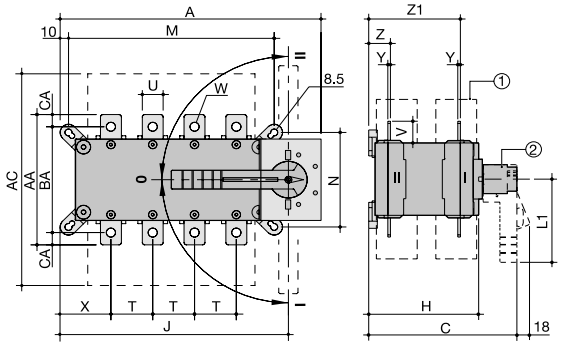
- To allow connection between the two power terminals from a same pole for 2000 to 3200A ratings (Fig. 1 and Fig. 2 on page 619). ;
- Top or bottom bridging connection (Fig. 3 on page 619).

For 3200 A rating, the connection pieces (part A) are delivered bridged from factory. Bolt sets must be ordered separately.

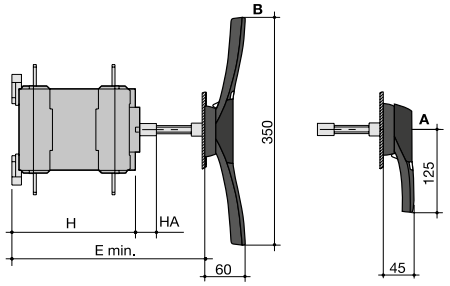
Dimensions

LBS 160 CO - LBS 1600 CO 3/4 p

Direct front operation
Front view



External front operation
Side view



A. Handle type LBS-EH630 CO for external operation: 160 to 630 A

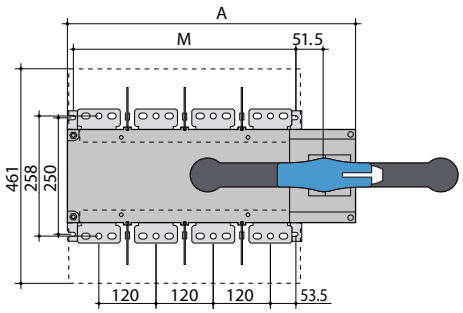
B. Handle type LBS-EH1600 CO for external operation: 800 to 1600 A

I. Terminal shrouds
II. Direct handle operation:
- L1 = 140 mm: 160 to 630 A;
- L1 = 210 mm: 800 to 1600 A;

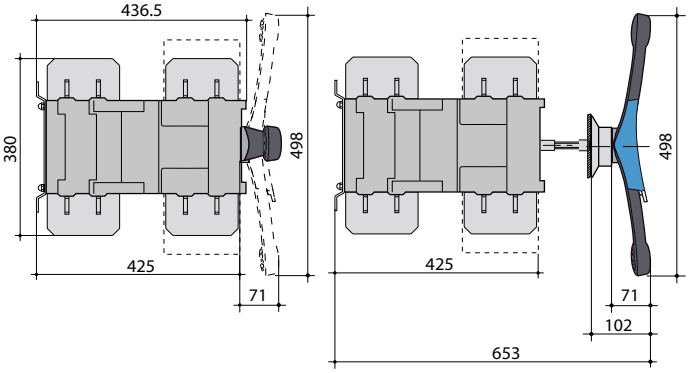
Rating	Overall dimensions, (mm)				Terminal shrouds, (mm)	Switch body, (mm)				Switch mounting, (mm)		Connection, (mm)											
(A)	A (3p)	A (4p)	C	E min	AC	H	HA	J (3p)	J (4p)	M (3p)	M (4p)	N	T	U	V	W	X (3p)	X (4p)	Y	Z	Z1	AA	BA	CA
160	221	251	218	208 - 436	235	148	25	182	212	156	186	101	36	20	25	8.5	56	50	3.5	28	124	135	115	10
250	262	312	218	208 - 436	280	148	25	223	273	196	246	116	50	25	30	11	61	61	3.5	30	124	160	130	15
400	262	312	218	208 - 436	280	148	25	223	273	196	246	116	50	35	35	11	61	61	3.5	30	124	170	140	15
630	319	379	295	285 - 513	400	225	25	272	332	246	306	176	65	45	50	13	70.5	65.5	5	43	180	260	220	20
800	386	466	375	425 - 577	459	298	29	306.5	386.5	255	336	250	80	50	60.5	15	48	48	7	66.5	253.5	321		26.5
1000	386	466	375	425 - 577	459	298	29	306.5	386.5	255	336	250	80	50	60.5	15	48	48	7	66.5	253.5	321		26.5
1250	386	466	375	425 - 577	459	298	29	306.5	386.5	255	336	250	80	60	65	16x11	48	48	7	66.5	255.5	330		29.5
1600	478	598	375	425 - 577	461	298	29	388.5	518.5	347	467	250	120	90	43.5	12.5x5	54	54	8	66.5	255.5	288		15

LBS 2000 CO - LBS 3200 CO 3/4 P

Direct front operation
Front view



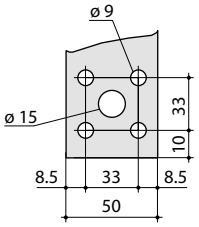
Side view



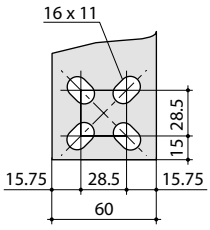
Rating (A)	A (mm) (3p)	A (mm) (4p)	M (mm) (3p)	M (mm) (4p)
2000-3200	478	598	347	467

Connection terminals

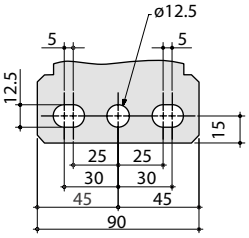
LBS 800 3/4 P CO



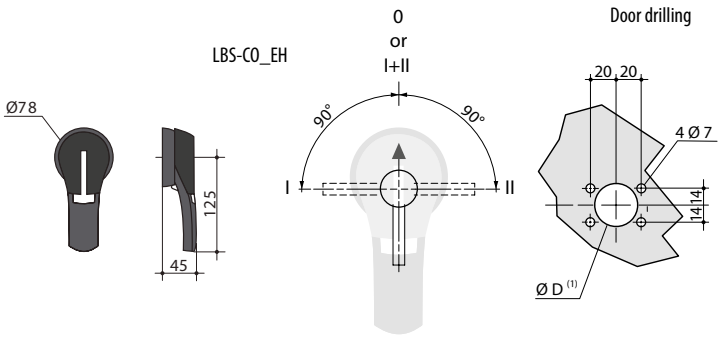
LBS 1250 3/4 P CO



LBS 1600 - 3200 3/4 P CO

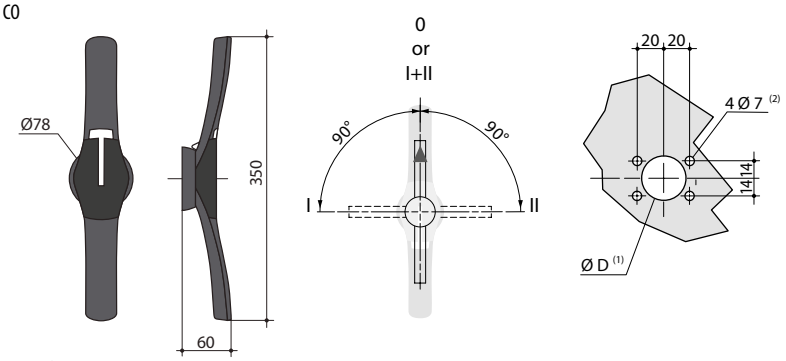


Handle type LBS-EH630 CO
for LBS 160 - 630 3/4P CO



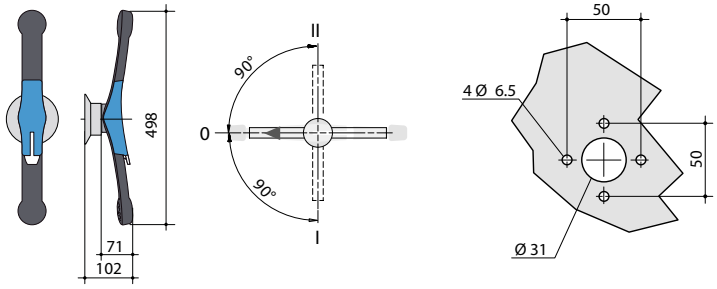
(1) Ø31 to Ø37: rear screw mounting Ø37: front clip mounting

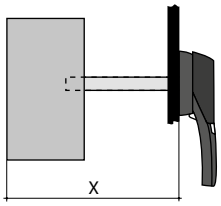
Handle type LBS-EH1600 CO
for LBS 800 - 1600 3/4P CO



(1) Ø31 to Ø37: rear screw mounting Ø37: front clip mounting
(2) Ø6 to Ø7: clip mounting

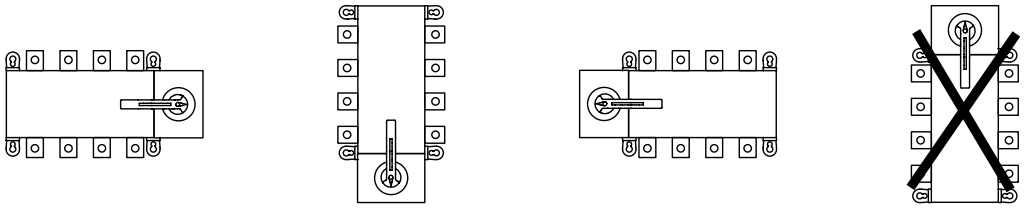
Handle type LBS-EH3200 CO
for LBS 2000 - 3200 3/4P CO



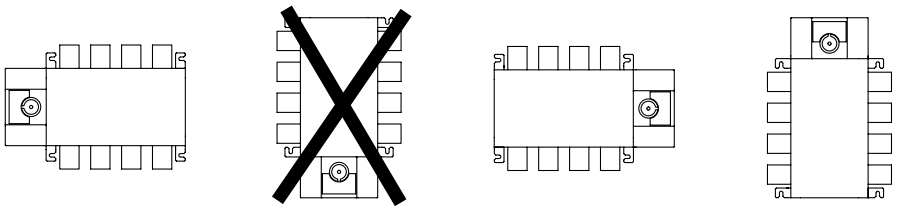


Rating (A)	Dimension X (mm)	Length (mm)
160 - 400	210 - 310	200
	210 - 430	320
500 - 630	280 - 390	200
	280 - 510	320
800 - 1800	425 - 577	200
	425 - 697	320
2000 - 3200	653 - 803	320
	653 - 923	320
	653 - 1053	450

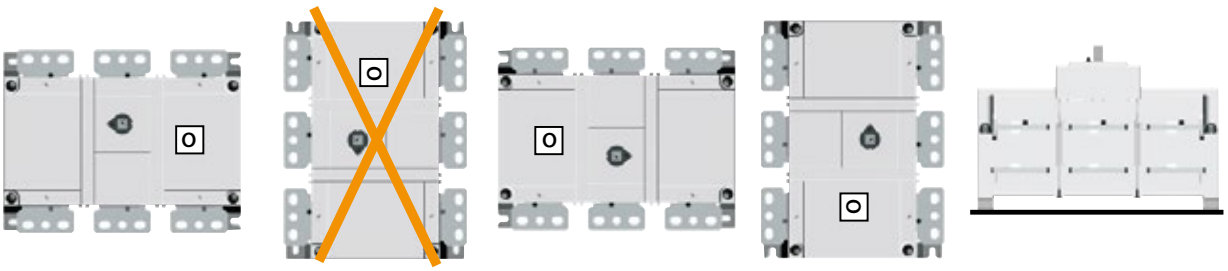
LBS 160…630 CO mounting positions



LBS 800…1600 CO mounting positions



LBS 2000…3200 CO mounting positions



Connection LBS 2000-3200A CO

Enables:

- To allow connection between the two power terminals from a same pole for 2000 to 3200A ratings (Fig. 1 and Fig 2)
- Top or bottom bridging connection (Fig. 3).

For 3200 A rating, the connection pieces (part A) are delivered bridged from factory. Bolt sets must be ordered separately.

Current (A)	Piece	Quantity to order per pole [1]	Code No.
2000 - 2500	Bridging bar part A	2	004661597
3200	Bridging bar part A		included

Current (A)	Piece	Quantity to order per pole [1]	Code No.
2000 - 2500	Bridging bar part A	2	004661597
2000 - 2500	T piece - part C	2	004661599
2000 - 2500	Right angle - part D	2	004661600
3200	Bridging bar part A		included
3200	T piece - part C	2	004661599
3200	Right angle - part D	2	004661600

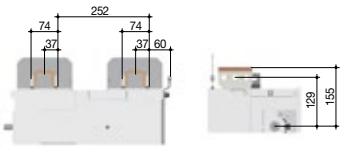
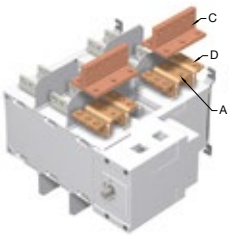


Fig. 1

Current (A)	Piece	Quantity to order per pole [1]	Code No.
2000 - 2500	Bridging bar part A	2	004661597
2000 - 2500	Bar - piece E	1	004661601
2000 - 2500	T piece - part C	1	004661599
3200	Bridging bar part A		included
3200	Bar - piece E	1	004661602
3200	T piece - part C	1	004661599



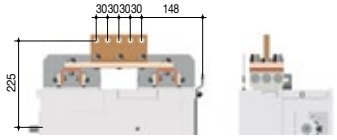
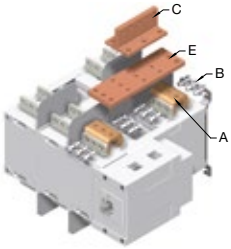


Fig. 3



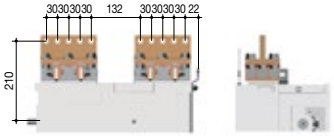


Fig. 2

ETISWITCH Motorised Change Over Load Break Switch MLBS..CO (1-0-2)

Description

MLBS CO is motorised changeover switch with positive break indication in range 63 to 125A (4 pole) and 250 to 630A (3 pole). It enables the on load transfer of two three-phase supplies via remote volt-free contacts, from either an external automatic controller, using pulse logic, or a switch. It is intended for use in low voltage power systems where interruption of the load supply is acceptable during transfer. MLBS CO switches have been designed, qualified and tested according to the criteria defined by standard IEC 60947-3 and IEC 60947-6-1. It can be utilised with a direct front or external operation handle.

Advantages

MLBS CO uses stable position technology, ensuring constant pressure on the contacts and preventing premature faults. In addition, they do not require a power supply to maintain position, thus protecting their loads from voltage fluctuations. The control and motorisation section can be replaced simply by removing 4 screws, with no work required on the installation cabling.Their design and compact size, enables integration within most 200 mm deep enclosures. Maintenance can be carried out easily under load, with manual operation still available. The MLBS CO is available in two supply versions, each with a broad range (+/-30%):

- 230 VAC single power supply
- 12 VDC power supply

Applications

- Generator manufacturers
- Heating
- Air conditioning
- Ventilation
- Telecommunications

Motorised Change Over Load Break Switch MLBS..CO (1-0-2)

4p Motorised Change Over Load Break Switch MLBS..CO 63 A - 125 A

Type	Description	Code No.	I_n [A]	g	
MLBS 63 4P CO 12VDC	1-0-2 (12V DC)	004661650	63	3.240	1
MLBS 100 4P CO 12VDC	1-0-2 (12V DC)	004661651	100	3.250	1
MLBS 125 4P CO 12VDC	1-0-2 (12V DC)	004661652	125	3.250	1
MLBS 63 4P CO 230VAC	1-0-2 (230V AC)	004661653	63	3.340	1
MLBS 100 4P CO 230VAC	1-0-2 (230V AC)	004661654	100	3.350	1
MLBS 125 4P CO 230VAC	1-0-2 (230V AC)	004661655	125	3.350	1
MLBS 250 4P CO 230VAC	1-0-2 (230V AC)	004661919	250	9,720	1
MLBS 400 4P CO 230VAC	1-0-2 (230V AC)	004661920	400	10,200	1
MLBS 630 4P CO 230VAC	1-0-2 (230V AC)	004661921	630	17,980	1
MLBS 800 4P CO 230VAC	1-0-2 (230 VAC)	004661982	800	47,6	1
MLBS 1250 4P CO 230VAC	1-0-2 (230 VAC)	004661983	1250	49,5	1

3p Motorised Change Over Load Break Switch MLBS..CO 250 - 630 A

Type	Description	Code No.	I_n [A]	g	
MLBS 250 3P CO 230VAC	1-0-2 (230 VAC)	004661870	250	8,93	1
MLBS 400 3P CO 230VAC	1-0-2 (230 VAC)	004661871	400	9,16	1
MLBS 630 3P CO 230VAC	1-0-2 (230 VAC)	004661872	630	15,56	1
MLBS 800 3P CO 230VAC	1-0-2 (230 VAC)	004661980	800	43	1
MLBS 1250 3P CO 230VAC	1-0-2 (230 VAC)	004661981	1250	44,5	1

For additional accessories (bridging bars and terminal screens) see page 615

Characteristics according to IEC 60947-3, IEC 60947-6-1

Type				MLBS 63 CO	MLBS 100 CO	MLBS 125 CO
Current		(In)	(A)	63A	100A	125A
Rated insulation voltage (power circuit)		(Ui)	(V)	800	800	800
Rated insulation voltage (operation circuit)		(Ui)	(V)	300	300	300
Rated impulse withstand voltage (power circuit)		(U imp)	(kV)	6	6	6
Rated impulse withstand voltage (operation circuit)		(U imp)	(kV)	4	4	4
Thermal current 40°C		(Ith)	(A)	63	100	125
Rated operational currents (Ie) according to IEC 60947-3	AC-20A/B	415V	(A)	63	100	125
	AC-21A/B	415V	(A)			100/125
	AC-22A/B	415V	(A)			100
	AC-23A/B	415V	(A)	-/63	-/63	-/63
Rated operational currents (Ie) according to IEC 60947-6-1	AC-31B	415V	(A)	63	100	125
	AC-32B	415V	(A)	63	80	80
Short-circuit capacity Icw		1 s.	(kA)	2,5	2,5	2,5
		0,25 s.	(kA)	4,5	4,5	4,5
Fuse protected short-circuit withstand (kA rms prospective)						
Associated fuse rating			(A)	63	100	125
Prospective short-circuit current			(kA)	50	25	15
Circuit breaker protected short-circuit withstand with any circuit breaker that ensures tripping in less than 0.3s(1)						
Rated short-time withstand current Icw		0,3 s.	(kA)	3,5	3,5	3,5
Connection						
Maximum Cu cable cross-section		mm^2		50	50	50
Tightening torque min/max		Nm		1,2/3	1,2/3	1,2/3
Switching time (Standard setting)						
1-0 or 2-0		(ms)		500	500	500
1-2 or 2-1		(ms)		1000	1000	1000
Duration of '"electrical blackout' 1-2 minimum		(ms)		500	500	500
Power supply						
Power supply 12 V DC min/max		(V)		9/15	9/15	9/15
Power supply 230 V AC min/max		(V)		160/310	160/310	160/310
Control supply power demand						
Power supply 12 V DC inrush/nominal		(VA)		200/40	200/40	200/40
Power supply 230 V AC inrush/nominal		(VA)		200/40	200/40	200/40
Durability (number of operating cycles)		cycles		10 000	10 000	10 000
Power dissipation		W/pole		1,7	4,5	6

(1) Value for coordination with any circuit breaker that ensures tripping in less than 0.3s.

Characteristics according to IEC 60947-3, IEC 60947-6-1

Type				MLBS 250 CO	MLBS 400 CO	MLBS 630 CO
Current	(In)	(A)	250	400	630
Rated insulation voltage (power circuit)	(Ui)	(V)	1000		
Rated insulation voltage (operation circuit)	(Ui)	(V)	300		
Rated impulse withstand voltage (power circuit)	(U imp)	(kV)	12		
Rated impulse withstand voltage (operation circuit)	(U imp)	(kV)	4		
Thermal current 40°C	(Ith)	(A)	250	400	630
Rated operational currents (Ie) according to IEC 60947-3	AC-21 A / AC-21 B	415 VAC	(A)	250/250	400/400	630/630
	AC-22 A / AC-22 B	415 VAC	(A)	250/250	400/400	630/630
	AC-23 A / AC-23 B	415 VAC	(A)	200/200	400/400	500 /630
	AC-21 A / AC-21 B	500 VAC	(A)	250/250	400/400	630/630
	AC-22 A / AC-22 B	500 VAC	(A)	200/250	200/400	500/500
	AC-23 A / AC-23 B	500 VAC	(A)	200/200	200/200	400/400
	AC-21 A / AC-21 B	690 VAC(3)	(A)	200/200	200/200	500/500
	AC-22 A / AC-22 B	690 VAC(3)	(A)	160/160	160/160	400/400
	AC-23 A / AC-23 B	690 VAC(3)	(A)	125/125	125/125	400/400
	DC-21 A / DC-21 B	220 VDC	(A)	250/250	250/250	630/630
	DC-22 A / DC-22 B	220 VDC	(A)	250/250	250/250	630/630
	DC-23 A / DC-23 B	220 VDC	(A)	200/200	200/200	630/630
	DC-21 A / DC-21 B	440 VDC (2)	(A)	200/200	200/200	630/630
	DC-22 A / DC-22 B	440 VDC (2)	(A)	200/200	200/200	630/630
	DC-23 A / DC-23 B	440 VDC (2)	(A)	200/200	200/200	630/630
Rated operational currents (Ie) according to IEC 60947-6-1	AC-31 B	415 VAC	(A)	250	400	630
	AC-32 B	415 VAC	(A)	200	400	500
	AC-33 B	415 VAC	(A)	200	200	400
Current rated as conditional short-circuit with fuse gG DIN, according to IEC 60947-3						
Prospective fuse protected short-circuit withstand		415 VAC	(kA)	50		
Prospective fuse protected short-circuit withstand		690 VAC	(kA)	50		
Associated fuse rating			(A)	250	400	630
Short-circuit withstand without protection as per IEC 60947-3						
Rated short-time withstand current Icw at 415 VAC		0,3 s	(kA)	15(4)		17(4)
Rated short-time withstand current Icw at 415 VAC		1s	(kA)	8(4)		10(4)
Rated peak withstand current at 415 VAC			(kA)	30		45
Short-circuit withstand without protection as per IEC 60947-6-1						
Rated short-time withstand current Icw at 415 VAC		30 ms	(kA)	10		
Rated short-time withstand current Icw at 415 VAC		60 ms	(kA)			12,6
Connection						
Minimum Cu cable cross-section as per IEC 60947-1			(mm^2)	95	185	2x120
Recommended Cu busbar cross-section			(mm^2)			2x40x5
Maximum Cu cable cross-section			(mm^2)	150	240	2x300
Maximum Cu busbar width			(mm)	32		50
Min./max. tightening torque			Nm	20/26		40/45
Switching time (rated voltage, after receiving command)						
Transfer time I-II or II-I			(s)	0,9		0,95
I-0 or II-0			(s)	0,5		0,55
Contact transfer time ("black-out" I-II) minimum			(s)	0,4		
Power supply						
Min./max. power		VAC		166/332		
Control supply power demand						
Demand/rated power		(VA)		276/115		276/150
Durability (number of operating cycles)		cycles		8.000		5.000

(1) Category with index A = frequent operation - Category with index B = infrequent operation.
(2) 3-pole device with 2 pole in series for the "+" an 1 pole for the "-".
(3) Interphase barriers must be installed on the products.
(4) Values given at 690 VAC.

Technical data

Type			MLBS 800 CO	MLBS 1250 CO
Thermal current Ith at 40°C			800 A	1250 A
Frame size			B6	B6
Rated insulation voltage Ui (V) (power circuit)			1000	1000
Rated impulse withstand voltage Uimp (kV) (power circuit)			12	12
Rated insulation voltage Ui (V) (control circuit)			300	300
Rated impulse withstand voltage Uimp (kV) (control circuit)			4	4
Rated operational currents Ie (A) according to IEC 60947-6-1				
Rated voltage		Utilisation category		
	415 VAC	AC-31 B	800	1250
	415 VAC	AC-32 B	800	1250
	415 VAC	AC-33 B	800	1000
Rated operational currents Ie (A) according to IEC 60947-3				
Rated voltage		Utilisation category	A/B(1)	A/B(1)
	415 VAC	AC-21 A / AC-21 B	800/800	1250/1250
	415 VAC	AC-22 A / AC-22 B	800/800	1250/1250
	415 VAC	AC-23 A / AC-23 B	800/800	1250/1250
	500 VAC	AC-21 A / AC-21 B	800/800	1250/1250
	500 VAC	AC-22 A / AC-22 B	630/630	1000/1000
	500 VAC	AC-23 A / AC-23 B	630/630	800/800
	690 VAC(3)	AC-21 A / AC-21 B	800/800	1250/1250
	690 VAC(3)	AC-22 A / AC-22 B	630/630	1000/1000
	690 VAC(3)	AC-23 A / AC-23 B	630/630	800/800
	220 VDC	DC-21 A / DC-21 B	800/800	1250/1250
	220 VDC	DC-22 A / DC-22 B	800/800	1250/1250
	220 VDC	DC-23 A / DC-23 B	800/800	1250/1250
	440 VDC (2)	DC-21 A / DC-21 B	800/800	1250/1250
	440 VDC (2)	DC-22 A / DC-22 B	800/800	1250/1250
	440 VDC (2)	DC-23 A / DC-23 B	800/800	1250/1250
Current rated as conditional short-circuit with fuse gG DIN, according to IEC 60947-3				
Prospective fuse protected short-circuit withstand at 415 VAC(kA rms)			50	100
Prospective fuse protected short-circuit withstand at 690 VAC(kA rms)			50	50
Associated fuse rating (A)			800	1250
Short-circuit withstand without protection as per IEC 60947-3				
Rated short-time withstand current 0.3s Icw at 415 VAC (kA rms)			64	64
Rated short-time withstand current 1s Icw at 415 VAC (kA rms)			35	35
Rated peak withstand current at 415 VAC (kA peak)			55	80
Connection				
Minimum Cu cable cross-section as per IEC 60947-1 (mm^2)			2 x 185	
Recommended Cu busbar cross-section (mm^2)			2 x 50 x 5	2 x 60 x7
Maximum Cu cable cross-section (mm^2)			4 x 185	4 x 185
Maximum Cu busbar width (mm)			63	63
Min./max. tightening torque (Nm)			9/13	20/26
Power dissipation (W/pole)			41.7	93.3
Switching time (rated voltage, after receiving command)				
Transfer time I-II or II-I (s)			2.8	2.8
I-0 or II-0 (s)			1.4	1.4
Contact transfer time ("black-out" I-II) minimum (s)			1.4	1.4
Power supply				
Min./max. auxiliary power supply (VAC)			166/332	166/332
Control supply power demand				
Inrush / nominal power (VA) - ATyS r,			460/184	460/184
Inrush / nominal power (VA) - ATyS g , p			482/206	482/206
Mechanical specifications				
Durability (number of operating cycles)			4,000	4,000
Weight ATyS r 3 P / 4 P (kg)			27.9/ 32.2	28.9/ 33.6
Weight ATyS g, p 3 P / 4 P (kg)			29.0/ 33.3	30.0/ 34.7

(1) Category with index A = frequent operation - Category with index B = infrequent operation.
(2) 3-pole device with 2 pole in series for the "+" an 1 pole for the "-". 4-pole device with 2 poles in series by polarity.
(3) Interphase barriers must be installed on the products.
(4) Values given at 690 VAC.

Accessories for 4 pole MLBS..CO 63 - 630A

Bridging bars

Type	Description	Code No.	For use with	g	
MLBS-BR125 4P CO	Bridging bars	004661700	MLBS 63-125A 4P	160	1/100

For bridging power terminals on the top or bottom side of the switch, one reference code includes complete set of 4 pcs

MLBS-BR125 4P CO

Terminal shrouds for source side

Type	Description	Code No.	For use with	g	
MLBS-TSIN 4P CO	Terminal shrouds for source side	004661701	MLBS 63-125A 4P	120	1/50

IP2X protection against direct contact with terminals or connecting parts. Under one reference code 2 pcs are included for source or for load side

Terminal shrouds for load side

Type	Description	Code No.	For use with	g	
MLBS-TSOUT 4P CO	Terminal shrouds for load side	004661702	MLBS 63-125A 4P	140	1/40

IP2X protection against direct contact with terminals or connecting parts. Under one reference code 2 pcs are included for source or for load side

MLBS-TSIN 4P CO

Bridging bars

Type	I [A]	Description	Code No.	For use with	Section [mm]	g	
LBS-BR250 1P CO	250	Bridging bar	004661591	MLBS 250 4P	25x25	173	1/25
LBS-BR400 1P CO	400	Bridging bar	004661592	MLBS 400 4P	32x5	296	1/25
LBS-BR630 1P CO	630	Bridging bar	004661593	MLBS 630 4P	50x5	644	1/25

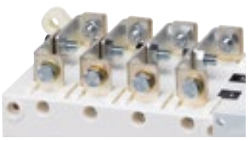
One reference code includes 1 pc of item, order for each pole separately

LBS-TS160 3P (CO)

Terminal shrouds (covers)

Type	Description	Code No.	For use with	g	
LBS-TS4P/250 (CO)	Terminal shroud	004661507	MLBS 250-400 4P	157	1/8
LBS-TS4P/630 (CO)	Terminal shroud	004661508	MLBS 630 4P	311	1/4

Perforations allow remote thermographic inspection without the need to remove the shrouds.
The terminal shrouds also provide phase separation for LBS 160...630 CO.Terminal covers assure top and bottom protection against direct contact with terminals or connection parts. One reference includes 3 pcs (3pole)/ 4 pcs (4pole) for top or bottom contacts , to protect all, 2 references shall be ordered.

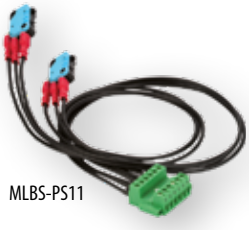


LBS-BR160 1P CO

Auxiliary contacts

Type	I_n [A]	Description	Code No.	For use with	g	
MLBS-PS11	16	Auxiliary contact CO	004661873	MLBS 250…630	120	1/100

*MLBS are already supplied with 1 NO aux contact for all three positions as standard.
** Pre-break and signalling of positions I and II: each reference provides 1 NO/NC auxiliary contact for positions I and II.



MLBS-PS11

Accessories for 3 pole MLBS..CO 250 - 630A

Terminal shrouds

Type	Code No.	For use with	g	
LBS-TS250 3P (CO)	004661501	MLBS 250, 400 3P CO 230VAC	121	1/10
LBS-TS630 3P (CO)	004661502	MLBS 630 3P CO 230VAC	242	1/5

To fully shroud: front, rear, top and bottom, 4 pcs shall be ordered. To shroud front top and bottom, 2 pcs shall be ordered.

LBS-TS250 3P CO

Bridging bars

Type	I [A]	Description	Code No.	For use with	Section [mm]	g	
LBS-BR630 1P CO	630	Bridging bar	004661593	MLBS 250...630	50x5	644	1/25

One reference code includes 1 pc of item, order for each pole separately

LBS-BR630 1P CO

Auxiliary contacts

Type	I_n [A]	Description	Code No.	For use with	g	
MLBS-PS11	16	Auxiliary contact CO	004661873	MLBS 250…630	120	1/100

*MLBS are already supplied with 1 NO aux contact for all three positions as standard.

** Pre-break and signalling of positions I and II: each reference provides 1 NO/NC auxiliary contact for positions I and II.

MLBS-PS11

MLBS accessories for wiring

For use with MLBS the voltage sensing tags allow voltage to be tapped directly off of power terminals to provide a supply to, for example, a control circuit or source presence indicator lamps. Voltage sensing tags are equipped with a Faston connector and can be mounted on the top or bottom side of the transfer switch. With MLBS this accessory allows easy connection to an ATSC25 controller via the ATSC25 cable harness.
With MLBS 800A and above, voltage taps are already integrated!

Voltage taps

Type	Code No.	For use with	g	
MLBS-VT400r	004661985	MLBS 250-400 3P/4P	40	40
MLBS-VT630r	004661986	MLBS 630 3P/4P	100	30

S1L1

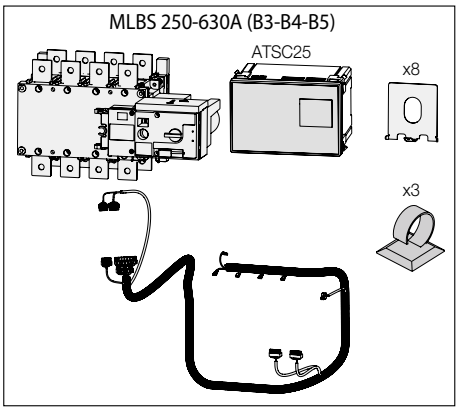
The ATSC25 cable harness is a fast and reliable solution for connecting an MLBS transfer switch to a ATSC25 controller in order to create an Automatic Transfer Switch. It is equipped with Faston voltage tap-offs and provides a safe connection between the controller and changeover switch for:

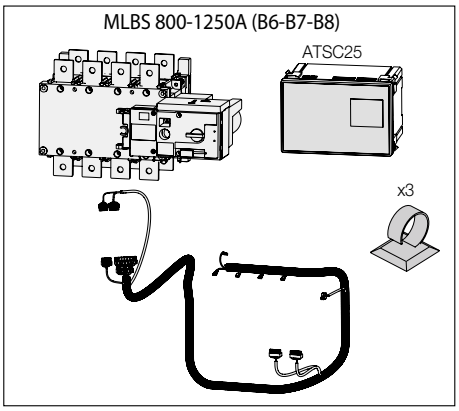
- monitoring availability of the incoming power sources,
- monitoring changeover switch status,
- providing an electrical interlock function,
- automatic control and transfer between power sources.

Provides a DPS auxiliary supply to the MLBS. Cable harness length is approximately 2 metres.
The cable harness is for use with 4 pole MLBS only and requires neutral conductors to be onthe right side of the transfer switch.
For MLBS =< 630A it is necessary to order also Voltage taps!

Wire harness

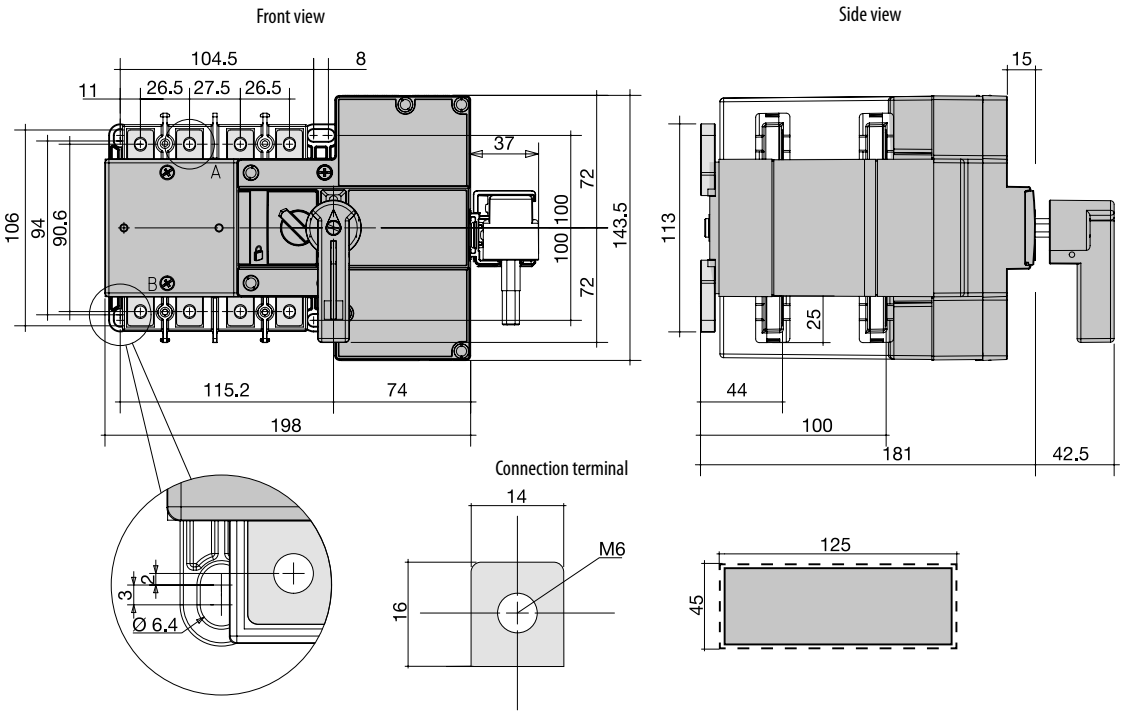
Type	Code No.	For use with	g	
MLBS-WH630r	004661987	MLBS 250-630 4P	800	15
MLBS-WH3250r	004661988	MLBS 800-1250 4P	900	15





Dimensions

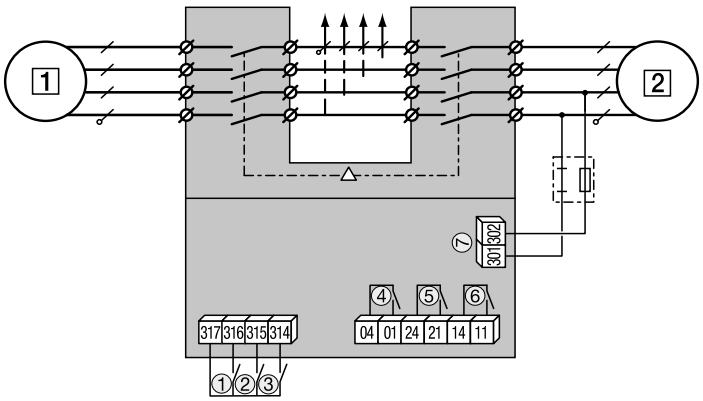
MLBS 63 4P CO - MLBS 125 4P CO



Power supply MLBS 63 - MLBS125 4P CO 230VAC

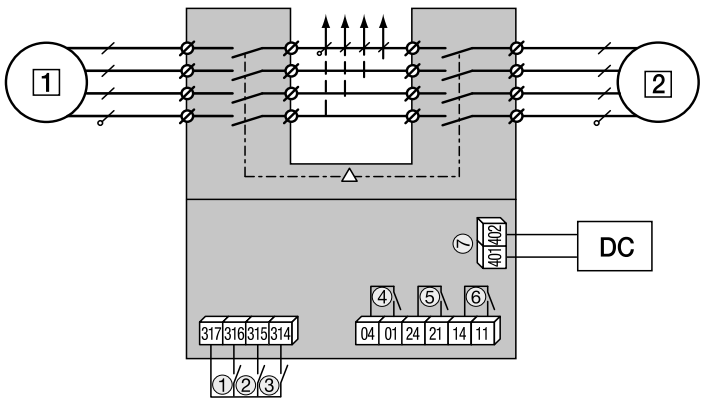
1 - preferred source
2 - alternate source
1 - position 0 control
2 - position I control
3 - position II control
4 - auxiliary contact, closed when the switch is in position 0
5 - auxiliary contact, closed when the switch is in position II
6 - auxiliary contact, closed when the switch is in position I
7 - power supply kit: 230 V AC (160 - 310 V AC)

MLBS 63...125 4P CO 230VAC



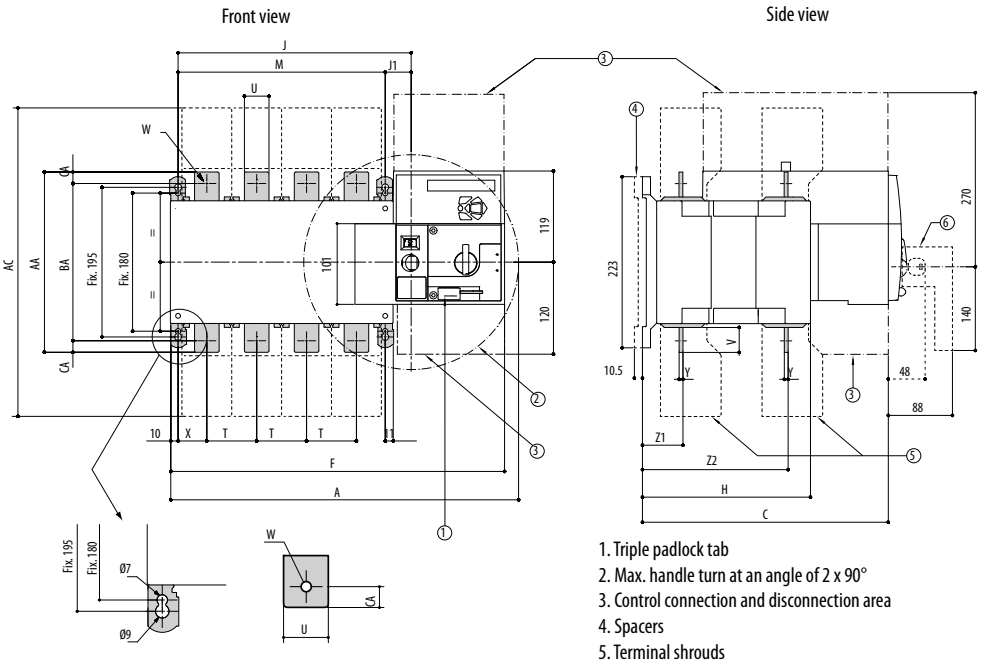
MLBS 63...125 4P CO 12VDC

1 - preferred source
2 - alternate source
1 - position 0 control
2 - position I control
3 - position II control
4 - auxiliary contact, closed when the switch is in position 0
5 - auxiliary contact, closed when the switch is in position II
6 - auxiliary contact, closed when the switch is in position I
7 - power supply kit: 12 V DC (9 - 15 V DC)



Dimensions

MLBS 250 CO - MLBS 630 CO



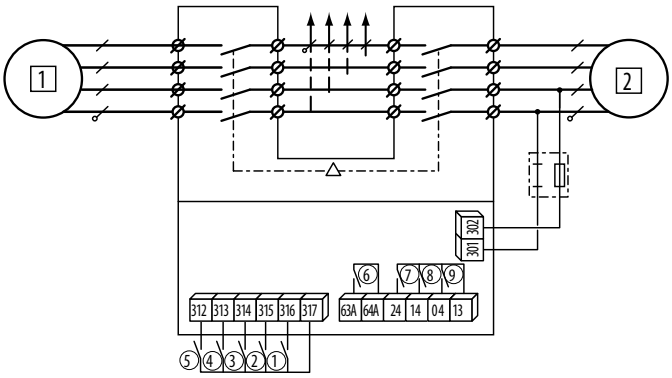
1. Triple padlock tab
2. Max. handle turn at an angle of 2 x 90°
3. Control connection and disconnection area
4. Spacers
5. Terminal shrouds
6. Handle

Rating	Overall dimensions, (mm)			Terminal shrouds, (mm)	Switch body, (mm)						Switch mounting, (mm)		Connection, (mm)											
(A)	A (3p)	A (4p)	C	AC	F (3p)	F (4p)	H	J (3p)	J (4p)	J1	M (3p)	M (4p)	T	U	V	W	X (3p)	X (4p)	Y	Z1	Z2	AA	BA	AC
250	345	395	244	288	328	378	152	195	245	35	160	210	50	25	30	11	33	33	3,5	39,5	133,5	160	130	15
400	345	395	244	288	328	378	152	195	245	35	160	210	50	35	35	11	33	33	3,5	39,5	133,5	170	140	15
630	394	454	320,5	402	377	437	221	244	304	34	210	270	65	45	50	13	42,5	37,5	5	53	190	260	220	20

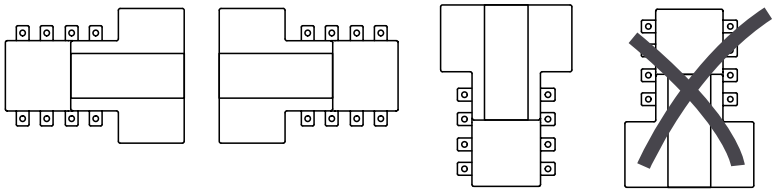
Connections and terminals

1 - primary source (network or genset)
2 - backup source (mains network or genset)
1 - position 0 control (contact or logic if closed)
2 - position I control
3 - position II control
4 - primary control position 0
5 - closing this contact allows position control commands
6 - product availability relay
7 - auxiliary contact - closed when the switch is in position II
8 - auxiliary contact - closed when the switch is in position I
9 - auxiliary contact - closed when the switch is in position 0

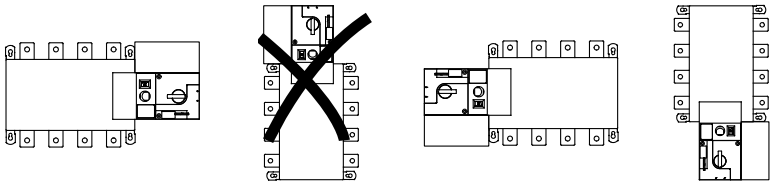
MLBS 250 CO - MLBS 630 CO



MLBS 63…125 CO mounting positions

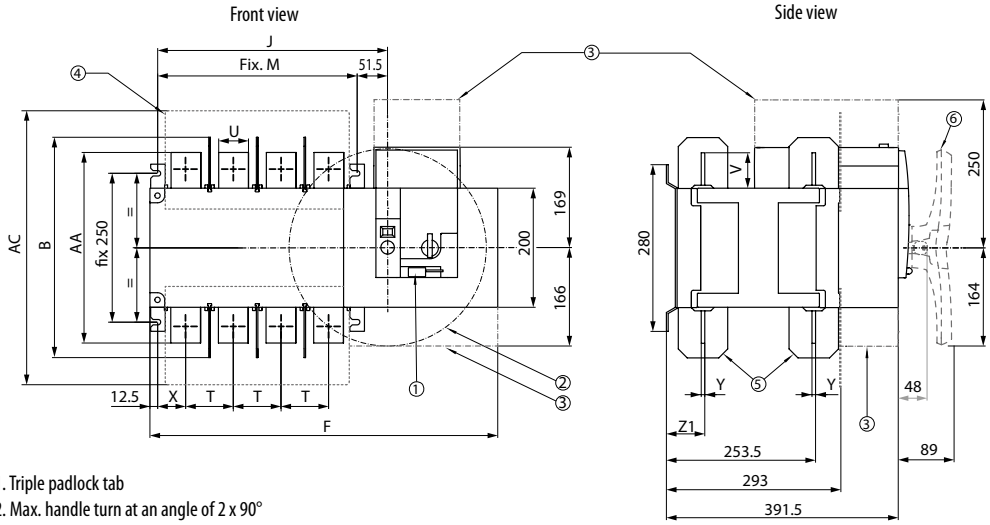


MLBS 250…630 CO mounting positions



Dimensions

MLBS 800 CO - MLBS 1250 CO



1. Triple padlock tab
2. Max. handle turn at an angle of 2 x 90°
3. Control connection and disconnection area
4. Spacers
5. Terminal shrouds
6. Handle

Rating (A) / Frame size	Overall dimensions, (mm)	Terminal shrouds, (mm)	Switch body, (mm)				Switch mounting, (mm)		Connection, (mm)										
	B	AC	F 3p.	F 4p.	J 3p.	J 4p.	M 3p.	M 4p.	T	U	V	X	Y	Z1	AA	Y	Z1	Z2	AA
800	370	584	307	255	335	80	50	60.5	47.5	7	66.5	321	11	33	33	3,5	39,5	133,5	15
1250	370	584	307	255	335	80	60	65	47.5	7	66.5	330	13	42,5	37,5	5	53	190	20

ETISWITCH Fuse Load Break Switch FLBS

Description

FBLS is manually operated 3 pole fuse combination switch in range 125 to 630A. It makes and breaks on load and provides safety isolation and protection against overcurrent for any low voltage electrical circuit. FLBS have been designed, qualified and tested according to the criteria defined by standards: IEC(EN) 60947-3, IEC 60269-1, IEC 60269-2

Advantages

- Complete isolation of the fuse with double breaking per pole (top and bottom of fuse).
- Positive break indication.
- IP2X protection with terminal shrouds front panel.
- High breaking capacity. Protection against overloads and shortcircuits thanks to high breaking capacity fuses (100 kA rms).
- TEST position for testing control circuits without power using auxiliary contacts. In TEST position, the enclosure door can be opened.

Applications

- Motor load break.
- Protection of industrial cabinet.

Fuse Load Break Switch FLBS

FLBS body (no handle included) 3 POLES

Type	Code No.	I_n [A]	Number of poles	Fuse size	g	
FLBS 125 3P	004661800	125	3	NV/NH 00/00C	1.830	1
FLBS 160 3P	004661801	160	3	NV/NH 00/00C	1.830	1
FLBS 250 3P	004661802	250	3	NV/NH 1	3.660	1
FLBS 400 3P	004661803	400	3	NV/NH 2	6.250	1
FLBS 630 3P	004661804	630	3	NV/NH 3	16.760	1

In front direct or external front operation

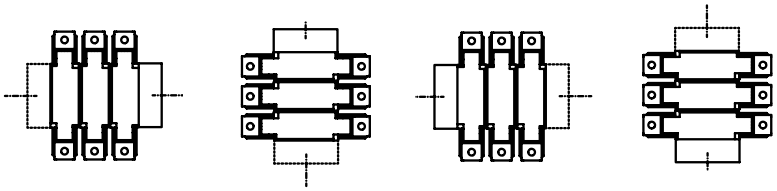
FLBS 160 3P

Characteristics according to IEC 60947-3

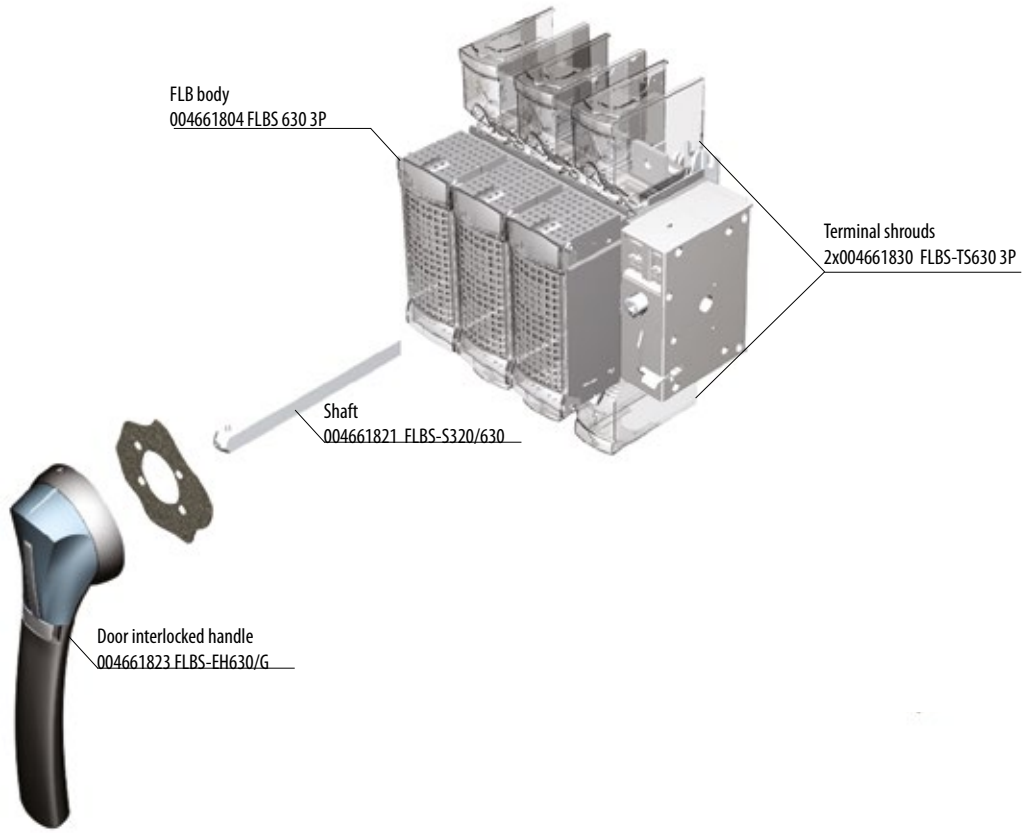
Type				FLBS 125	FLBS 160	FLBS 250	FLBS 400	FLBS 630
Current		(In)	(A)	125A	160A	250A	400A	630A
Rated insulation voltage		(Ui)	(V)	750	750	750	1000	1000
Rated impulse withstand voltage		(U imp)	(kV)	8	8	8	12	12
NFC/DIN fuse size				00/00 C	00/00 C	1	2	3
Thermal current 40°C		(Ith)	(A)	125	160	250	400	630
Rated operational currents (Ie)	AC-22A/B	400V	(A)	125	160	250	400	630
	AC-23A/B	400V	(A)					
	AC-22A/B[1]	690V	(A)					500/630
	AC-23A/B[1]	690V	(A)	100	125		315/400	315/400
	DC-20A/B	220V	(A)	125	160		400	400/630
	DC-21A/B	220V	(A)				315	
	DC-22A/B	220V	(A)					315/630
	DC-23A/B	220V	(A)	100	125	200	200/315	400/630
	DC-20A/B [2] [3]	440V	(A)	125	160	250	400	
	DC-21A/B [2] [3]	440V	(A)				315	
	DC-22A/B [2] [3]	440V	(A)					315/630
	DC-23A/B [2] [3]	440V	(A)	100	125	200	250/315	400/630
Operational power in AC 23(4)		400V AC	kW	63	80	132	220	355
		690V AC	kW	90	110	220	220/295	295/400
Reactive power[4]		400 V AC	(kVAr)	55	75	115	185	290
Fuse protected short-circuit withstand (kA rms prospective)								
Associated fuse rating [5]			(A)	125	160	250	400	630
Prospective short-circuit current[5]			(kA)	100	50	100	100	100
Short-circuit capacity								
Rated peak withstand current		0,3 s.	(kA)	20	20	32,5	40	70
Connection								
Minimum Cu cable cross-section		mm^2		35	35	95	185	2x150
Maximum Cu cable cross-section		mm^2		95	95	240	240	2x300
Maximum Cu busbar width (Cu)		mm		20	20	32	45	63
Tightening torque min/max		Nm		8.3/13	8.3/13	20/26	20/26	40/45
Durability (number of operating cycles)		cycles		10 000	10 000	10 000	10 000	80 000
Power dissipation		W/pole		20,3	21,6	41,1	57,4	122
Frame pitch		(mm)		36	36	60	66	94

Category with index A = frequent operation; Category with index B = infrequent operation.
(1) - With terminal shrouds or terminal screen.
(2) - Poles cannot be juxtaposed.
(3) - 4-pole device with 2 poles in series per polarity.
(4) - The power value is given for information only, the current values vary from one manufacturer to another.
(5) - For a rated operational voltage Ue = 415 VAC.

FLBS 125…630 mounting positions



Accessories



Direct handle for in front direct operation

Type	Description	Code No.	For use with	g	
FLBS-DH400/B	Direct handle, black	004661824	FLBS 125-400A 3P	267	1/25
FLBS-DH630/B	Direct handle, black	004661825	FLBS 630A 3P	471	1

Type definition: Handle type / color initials

FLBS-DH400/B FLBS-DH630-B

Door interlocked handle IP65 (shaft not included).

Type	Description	Code No.	For use with	g	
FLBS-EH630/ G...400/G FLBS	Door interlocked handle, grey front	004661483	FLBS 125 - 400A 3P	253	1/20
FLBS-EH630/G	Door interlocked handle, grey front	004661823	FLBS 630A 3P	280	1/15

Type definition: Handle type / color initials

*With FLBS 124-400A also yellow red external handle »004661486 LBS-EH630/YR« can be used. See page 605 in catalogue.

LBS-EH630/G ...400/G FLBS FLBS-EH630/G

Shaft for door interlocked handle

Type	Description	Code No.	For use with	g	
FLBS-S200/630 (CO)...400 FLBS	Shaft, 200mm, 10x10mm	004661490	FLBS 125 - 400A 3P	160	1/25
FLBS-S320/630 (CO)...400 FLBS	Shaft, 320mm, 10x10mm	004661493	FLBS 125 - 400A 3P	250	1/50
FLBS-S500/630 (CO)...400 FLBS	Shaft, 500mm, 10x10mm	004661496	FLBS 125 - 400A 3P	390	1/20
FLBS-S200/630	Shaft, 200mm, 12x12mm	004661820	FLBS 630A 3P	226	1/25
FLBS-S320/630	Shaft, 320mm, 12x12mm	004661821	FLBS 630A 3P	359	1/50
FLBS-S500/630	Shaft, 500mm, 12x12mm	004661822	FLBS 630A 3P	564	1/20

LBS-S320/630 (CO) .../400 FLBS

Guiding cone

Type	Description	Code No.	For use with	g	
LBS-GC (CLBS-EH125/01)	Guiding cone	004661489	FLBS-EH630	29	1/25

Guiding cone: To guide the shaft extension into the external handle. This accessory enables the handle to engage the extension shaft with a misalignment of up to 15 mm, required for shaft lengths over 320 mm.

LBS-GC (CLBS-EH80, 125)

Shaft holder

Type	Description	Code No.	For use with	g	
FLBS-SH/400	Shaft holder	004661831	shaft > 320mm	293	1

This support maintains shaft position for extension shafts greater than 320 mm in length.

FLBS-SH/400

Auxiliary contact

Type	I_n [A]	Description	Code No.	For use with	g	
FLBS-PS10	16	Auxiliary contact, NO	004661826	FLBS 125-630A	14	1/50
FLBS-PS01	16	Auxiliary contact, NC	004661827	FLBS 125-630A	14	1/50

Compact universal type auxiliary contacts which can be configured for operation in either, or both, ON and TEST positions.
FLBS (125-160A) max. 2 aux. contactcs, FLBS (250-630A) max. 4 aux. contacts can be mounted.
Pre-break and signalling of positions 0, I and TEST. Connection to the control circuit by terminals with max. section 2 x 2.5 mm^2.

FLBS-PS

Terminal shrouds (covers)

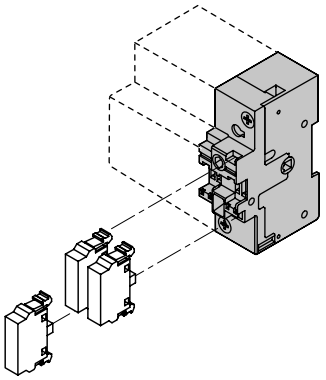
Type	Description	Code No.	For use with	g	
FLBS-TS160 3P	3 pole terminal shroud	004661828	FLBS 125-160A 3P	43	1
FLBS-TS250 3P	3 pole terminal shroud	004661829	FLBS 250 3P	240	1
FLBS-TS400 3P	3 pole terminal shroud	004661832	FLBS 400A 3P	240	1
FLBS-TS630 3P	3 pole terminal shroud	004661830	FLBS 630A 3P	570	1

Top or bottom IP20 protection (on the front) against direct contact with terminals or connection parts.
One reference includes 3 pcs (3pole) for top or bottom contacts , to protect all, 2 references shall be ordered.

FLBS-TS

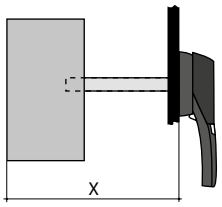
Characteristics FLBS-PS

Rating (A)	Operating current Ie (A) 250 V AC AC-15	400 V AC AC-15	24 V DC DC-13	48 V DC DC-13
125-630	3	1,8	2,8	1,4



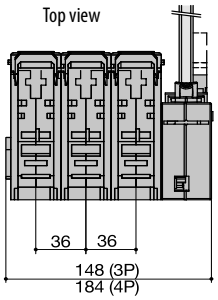
Shaft lenghts

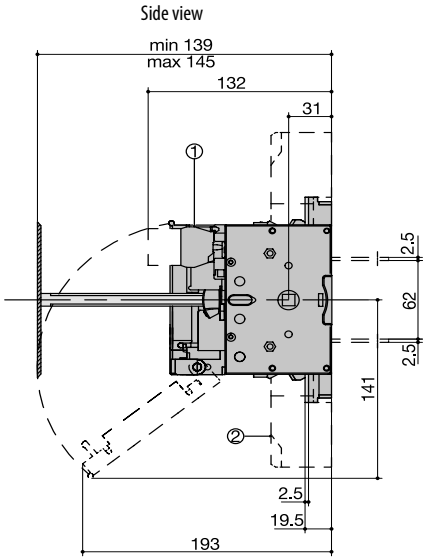
Rating (A)	125-160	250-400	630
Fuse size	00	1/2	3
(mm)	X	X	X
200	135 - 230	160 - 230	270 - 304
320	135 - 350	160 - 350	270 - 424
400	135 - 430	160 - 430	270 - 504
500	135 - 530	160 - 530	270 - 604

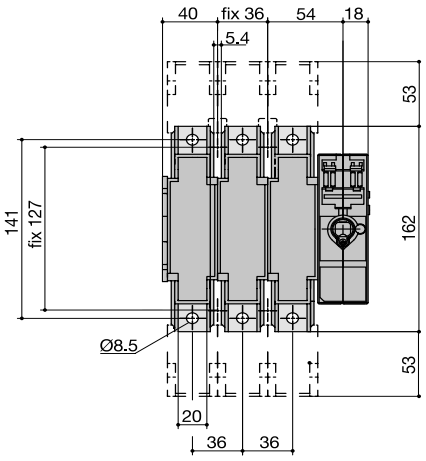


Dimensions

FLBS 125...160 3P



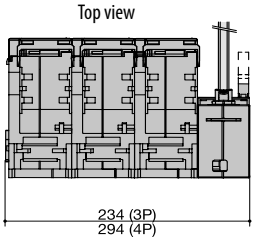




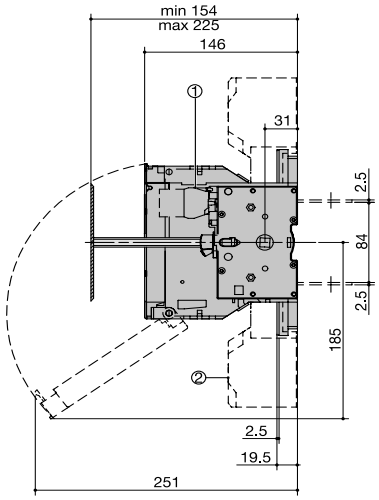
1 - Auxiliary contact
2 - Terminal shrouds

FLBS 250 3P

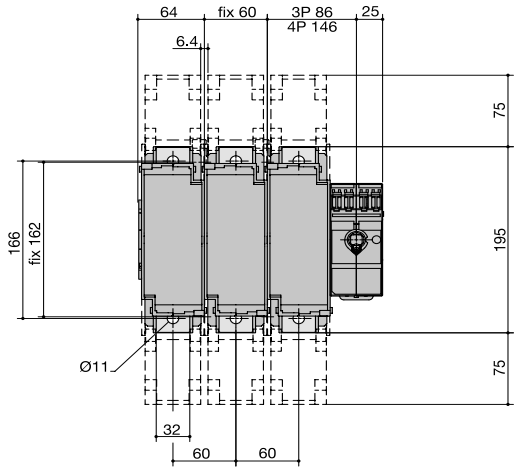
Top view



Side view



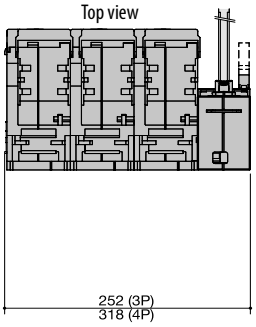
Front view



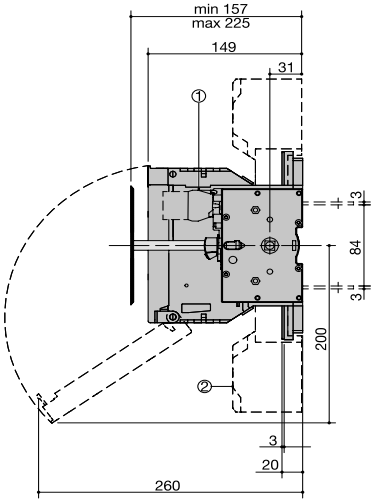
1 - Auxiliary contact
2 - Terminal shrouds

FLBS 400 3P

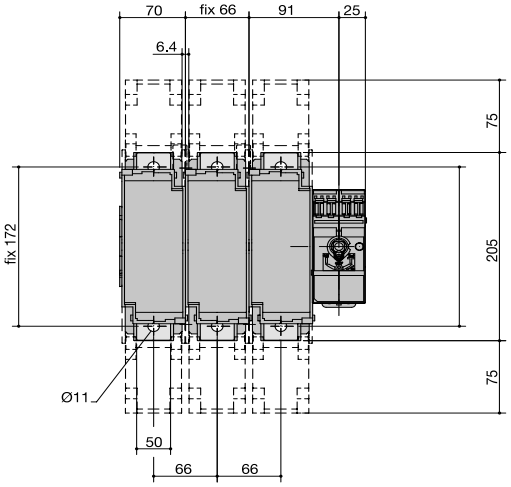
Top view



Side view



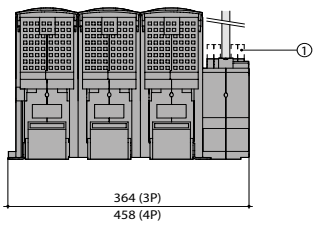
Front view



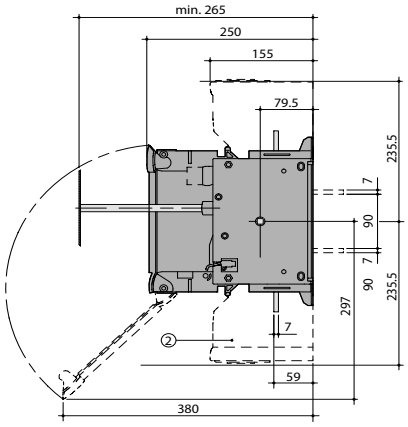
1 - Auxiliary contact
2 - Terminal shrouds

FLBS 630 3P

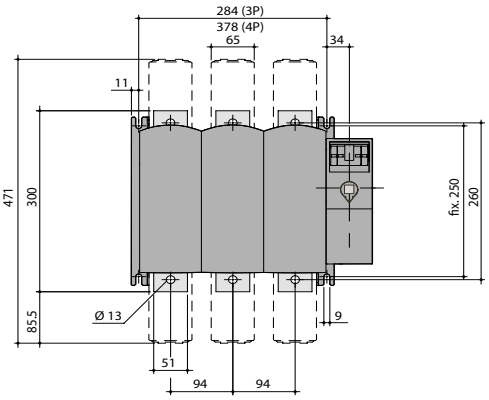
Top view



Side view

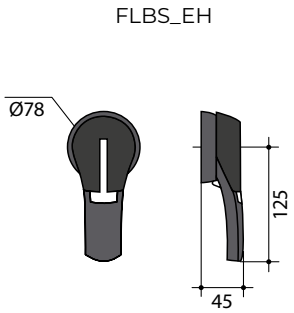


Front view

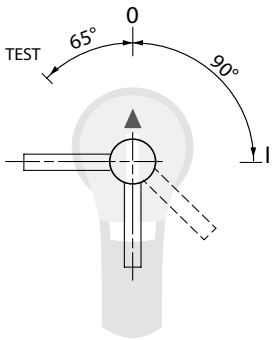


1 -Auxiliary contact
2 - Terminal shrouds

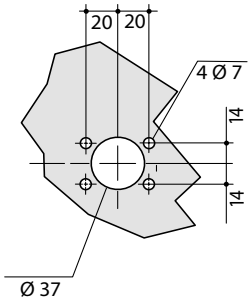
Handle type LBS-EH630/G ...400/G FLBS



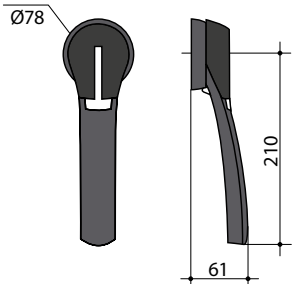
Direct front operation



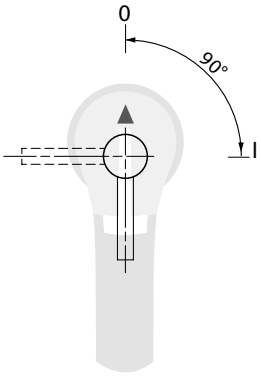
Door drilling



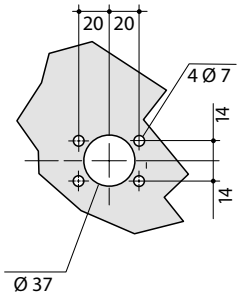
Handle type LBS-EH630/G



Direct front operation



Door drilling



ETISWITCH Rotary Cam Switches

Rotary cam switches series CS are intended for multiple switching operations in main as well as in auxiliary circuits:

- As motor switches they are designed for direct-online starting and stopping of single- phase and three-phase motors. They also come out as star-delta switches, reversing switches, pole-change over motor switches.
- In auxiliary circuits they are assembled in compliance with the switching programme according to preference:
  - switches for control, signalling and measuring circuits.
  - switches, selector switches and step switches e.g. for transformers and welding apparatuses.
  - Group switches e.g. for switching operations of resistors and heaters.
  - Control switch with automatic return

Advantages

- high making and breaking capacities
- electrical and mechanical endurance
- small dimensions.

Rotary cam switches comply with international and national standards such as: IEC/EN 60947-3, VDE 0660,TS EN 60947-3, BS 5419 etc.

Designation

CS XX(Ith[A]) YY(diagram) Z_(design)

Technical data

Type					CS 16	CS 25	CS 32	CS 40	CS 63	CS 80	CS 100
Rated insulation voltage			Ui	V	690	690	690	690	690	690	690
Rated impulse withstand voltage			Uimp	kV	4	6	6	6	6	6	6
Rated thermal current			Ith	A	20	25	32	50	70	85	100
Main switch IEC 60947 (III/3)	Max. value of rated operational voltage			V	400	480	480	480	480	480	480
	Rated impulse withstand voltage			kV	4	4	4	4	4	4	4
Max. fuse size for short-circuit protection gL 10kA				A	20	25	32	40	63	80	100
Rated short-time withstand current Icw	1 sec			A	250	400	600	800	800	1000	1800
	3 sec			A	10	250	400	530	700	800	900
	10 sec			A	80	140	240	290	350	400	450
	30 sec			A	50	90	150	200	250	250	300
	60 sec			A	40	70	120	150	150	160	200
Rated operational current Ie AC1/AC21				A	16	25	32	40	63	80	85
Rated operational current Ie AC15	110/120 V			A	10	20	25	40	50		
	220/230 V			A	8	20	25	30	40		
	380/400 V			A	6	16	20	25	40		
	660/690 V			A		8	8,5	8,5	10		
Motor switch in utilisation category AC3/AC23	3 phase	220/230 V		kW	3/5	5,6/6,5	7,6/8	9/9	11/15	12/18,5	19/22
		380/400 V		kW	5/7,5	7,5/11	11/15	15/18,5	18,5/22	22/32	32/37
		500/690 V		kW		11/11	15/18,5	19/22	22/30	28/45	42/55
	1 phase 2 poles	110/120 V		kW	0,8/0,8	1,5/1,5	2,5/2,5	2,5/3	3/3,5		
		220/230 V		kW	2,2/2,5	3/3,7	4,8/5	5,5/6	6/9		
		380/400 V		kW	3/3,7	5,5/5,5	6,5/7,5	7,5/9	11/15		
Motor switch in utilisation category AC4	3 phase	220/230 V		kW	1,5	2,5	3	5	6	7	9,5
		380/400 V		kW	3	4	5,5	8	11	12	16
		500/690 V		kW		4	7,5	8	11	12	16
Mechanical endurance	switching cycles			106	3	3	3	3	2	2	2
Terminal screw					M3.5	M35	M4	M5	M5	2xM5	2xM5
Screw head					(+,-) PZ2					(-)	
Tightening torque					0,8	0,8	1,2	1,8	2	2	2
Cable cross-section	Rigid			mm^2	2x(1-2,5)	2x(1-4)	2x(2,5-6)	2x(2,5-10)	2x(4-16)	10-25	
	Flexible			mm^2	2x(1-2,5)	2x(1-4)	2x(2,5-6)	2x(2,5-6)	2x(4-16)	6-25, 2x(6-10)	
Protection degree of terminals					IP20					IP00	
Permissible ambient temperature				°C	-25 ... +55						
Standards					IEC 60947-3, VDE 0660, EN 60947 - 3						

ON-OFF switches with 60° switching angle

Thermal current
16 -100 A

1-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 90 U	16A	004773001	0-1	75	
CS 25 90 U	25A	004773002		90	
CS 32 90 U	32A	004773003		115	
CS 40 90 U	40A	004773004		180	1
CS 63 90 U	63A	004773005		290	
CS 80 90 U	80A	004773006		405	
CS 100 90 U	100A	004773007		470	

2-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 91 U	16A	004773009	0-1	80	
CS 25 91 U	25A	004773010		90	
CS 32 91 U	32A	004773011		115	
CS 40 91 U	40A	004773012		180	1
CS 63 91 U	63A	004773013		290	
CS 80 91 U	80A	004773014		405	
CS 100 91 U	100A	004773015		470	

3-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 10 U	16A	004773017	0-1	95	
CS 25 10 U	25A	004773018		115	
CS 32 10 U	32A	004773019		160	
CS 40 10 U	40A	004773020		260	1
CS 63 10 U	63A	004773021		415	
CS 80 10 U	80A	004773022		590	
CS 100 10 U	100A	004773023		685	

4-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 92 U	16A	004773025	0-1	100	
CS 25 92 U	25A	004773026		120	
CS 32 92 U	32A	004773027		175	
CS 40 92 U	40A	004773028		275	1
CS 63 92 U	63A	004773029		435	
CS 80 92 U	80A	004773030		600	
CS 100 92 U	100A	004773031		690	

Multistep Switches With 60° Switching Angle

Thermal current
16 -100 A

1-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 107 U	16A	004773033	0-1-2	80	1
CS 25 107 U	25A	004773034		90	
CS 32 107 U	32A	004773035		115	
CS 40 107 U	40A	004773036		180	
CS 63 107 U	63A	004773037		290	
CS 80 107 U	80A	004773038		405	
CS 100 107 U	100A	004773039		470	

2-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 123 U	16A	004773041	0-1-2	120	1
CS 25 123 U	25A	004773042		150	
CS 32 123 U	32A	004773043		180	
CS 40 123 U	40A	004773044		270	
CS 63 123 U	63A	004773045		430	
CS 80 123 U	80A	004773046		590	
CS 100 123 U	100A	004773047		680	

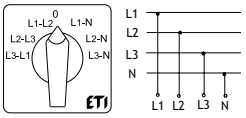
3-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 135 U	16A	004773049	0-1-2	125	1
CS 25 135 U	25A	004773050		155	
CS 32 135 U	32A	004773051		220	
CS 40 135 U	40A	004773052		375	
CS 63 135 U	63A	004773053		500	
CS 80 135 U	80A	004773054		840	
CS 100 135 U	100A	004773055		845	

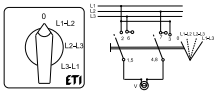
Voltmeter Switches

Thermal current
16 -32 A

3 line and 3 phase

Type	Thermal current I_{th} [A]	Code No.	Type, layout and symbol		
CS 16 66 U	16A	004773089		140	1
CS 25 66 U	25A	004773090		160	
CS 32 66 U	32A	004773091		220	

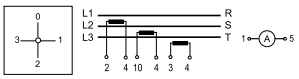
3 line

Type	Thermal current I_{th} [A]	Code No.	Type, layout and symbol		
CS 16 67 U	16A	004773093		120	1
CS 25 67 U	25A	004773094		150	

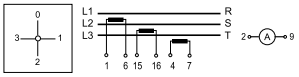
Ammeter Switches

Thermal current
16 - 40 A

1 pole 3 current with transformer

Type	Thermal current I_{th} [A]	Code No.	Type, layout and symbol		
CS 16 98 U	16A	004773095		165	1
CS 25 98 U	25A	004773096		185	
CS 32 98 U	32A	004773097		260	
CS 40 98 U	40A	004773098		455	

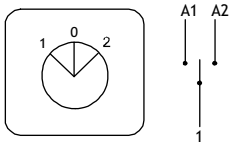
2 pole 3 current with transformer

Type	Thermal current I_{th} [A]	Code No.	Type, layout and symbol		
CS 16 97 U	16A	004773099		200	1
CS 25 97 U	25A	004773100		220	
CS 32 97 U	32A	004773101		295	
CS 40 97 U	40A	004773102		490	

Changeover Switches with 60º Switching Angle

Thermal current
16 -100 A

1-pole

Type	Thermal current I_{th} [A]	Code No.	Type, layout and symbol		
CS 16 51 U	16A	004773104	1-0-2 	80	1
CS 25 51 U	25A	004773105		105	
CS 32 51 U	32A	004773106		140	
CS 40 51 U	40A	004773107		205	
CS 63 51 U	63A	004773108		315	
CS 80 51 U	80A	004773109		430	
CS 100 51 U	100A	004773110		495	

2-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 52 U	16A	004773112	1-0-2	100	
CS 25 52 U	25A	004773113		120	
CS 32 52 U	32A	004773114		180	
CS 40 52 U	40A	004773115		275	1
CS 63 52 U	63A	004773116		435	
CS 80 52 U	80A	004773117		600	
CS 100 52 U	100A	004773118		690	

3-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 53 U	16A	004773120	1-0-2	140	
CS 25 53 U	25A	004773121		160	
CS 32 53 U	32A	004773122		220	
CS 40 53 U	40A	004773123		375	1
CS 63 53 U	63A	004773124		500	
CS 80 53 U	80A	004773125		840	
CS 100 53 U	100A	004773126		845	

Start and Run Switches - One Phase Motor

Thermal current
16 - 63 A

0-start-1

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 15 U	16A	004773127		95	
CS 25 15 U	25A	004773128		110	
CS 32 15 U	32A	004773129		160	1
CS 40 15 U	40A	004773130		260	
CS 63 15 U	63A	004773131		415	

Star - Delta Switches

Thermal current
16 -100 A

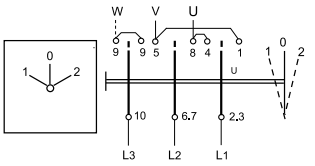
0-star-delta

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 12 U	16A	004773132		175	
CS 25 12 U	25A	004773133		190	
CS 32 12 U	32A	004773134		300	
CS 40 12 U	40A	004773135		465	1
CS 63 12 U	63A	004773136		650	
CS 80 12 U	80A	004773137		1140	
CS 100 12 U	100A	004773138		1180	

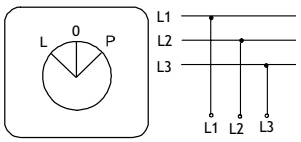
Motor Reversing Switches

Thermal current
16 -100 A

1-0-2

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 11 U	16A	004773139		140	1
CS 25 11 U	25A	004773140		160	
CS 32 11 U	32A	004773141		220	
CS 40 11 U	40A	004773142		375	
CS 63 11 U	63A	004773143		500	
CS 80 11 U	80A	004773144		840	
CS 100 11 U	100A	004773145		845	

L-0-P

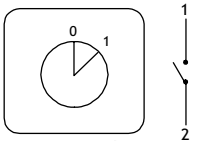
Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 11 U L0P	16A	004773146		145	1
CS 25 11 U L0P	25A	004773147		165	
CS 32 11 U L0P	32A	004773148		225	
CS 40 11 U L0P	40A	004773149		380	
CS 63 11 U L0P	63A	004773150		505	
CS 80 11 U L0P	80A	004773151		845	
CS 100 11 U L0P	100A	004773152		850	

General Emergency ON-OFF switches version LK with padlocking in "0"

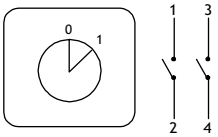
Thermal current
25 -100 A

- Emergency switch makes an electrical separation between electrical supply and electrical equipment
- Control handle is red according to standards, and the plate behind is yellow
- Emergency switch can be locked in open position "0" with up to three padlocks.

1-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 25 90 U LK	25A	004773056	0-1	130	1
CS 32 90 U LK	32A	004773057		155	
CS 40 90 U LK	40A	004773058		220	
CS 63 90 U LK	63A	004773059		340	
CS 80 90 U LK	80A	004773060		455	
CS 100 90 U LK	100A	004773061		520	

2-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 25 91 U LK	25A	004773062	0-1	130	1
CS 32 91 U LK	32A	004773063		155	
CS 40 91 U LK	40A	004773064		220	
CS 63 91 U LK	63A	004773065		340	
CS 80 91 U LK	80A	004773066		455	
CS 100 91 U LK	100A	004773067		520	

3-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 32 10 U LK	32A	004773069	0-1	200	
CS 40 10 U LK	40A	004773070		300	1
CS 63 10 U LK	63A	004773071		465	
CS 80 10 U LK	80A	004773072		640	
CS 100 10 U LK	100A	004773073		735	

4-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 25 92 U LK	25A	004773074	0-1	160	
CS 32 92 U LK	32A	004773075		205	
CS 40 92 U LK	40A	004773076		305	1
CS 63 92 U LK	63A	004773077		470	
CS 80 92 U LK	80A	004773078		650	
CS 100 92 U LK	100A	004773079		740	

General Emergency On-Off Switch

Thermal current
16 -100 A

3-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 10 U ES	16A	004773081	0-1	95	
CS 25 10 U ES	25A	004773082		115	
CS 32 10 U ES	32A	004773083		160	
CS 40 10 U ES	40A	004773084		260	1
CS 63 10 U ES	63A	004773085		415	
CS 80 10 U ES	80A	004773086		590	
CS 100 10 U ES	100A	004773087		685	

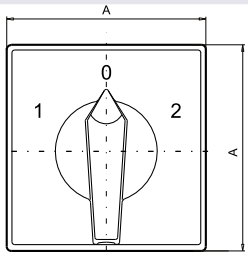
Rotary cam switches for DIN rail mounting

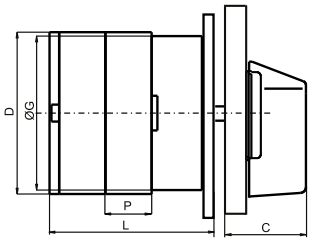
Thermal current
16 A

Rotary cam switches for DIN rail mounting

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 51 L	16	004773250	1-0-2	65	1
CS 16 90 L	16	004773251	0-1		

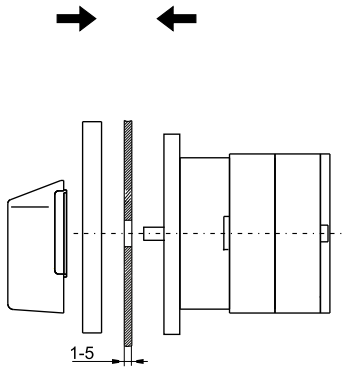
Dimensions

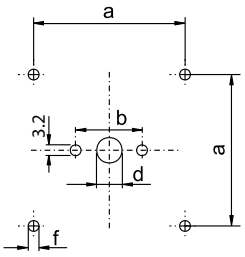




Type	Marking		Number of elements (L/mm)														
	A	C	D	ØG	P	1	2	3	4	5	6	7	8	9	10	11	12
CS 16	48	26	45,2	38,6	12,8	32,5	45,3	58,1	70,9	83,7	96,5	109,3	122,1	134,9	147,7	160,5	173,3
CS 25	48	26	45,2	38,6	12,8	32,5	45,3	58,1	70,9	83,7	96,5	109,3	122,1	134,9	147,7	160,5	173,3
CS 32	65	33	53	38,6	12,8	37	49.8	62.6	75,4	88,2	101	113,8	126,6	139,4	152,2	165	177,8
CS 40	65	33	61	56,4	17,5	50,6	68,1	85,6	103,1	120,6	138,1	155,6	173,1	190,6	208,1	225,6	243,1
CS 63	65	33	61	56,4	17,5	50,6	68,1	85,6	103,1	120,6	138,1	155,6	173,1	190,6	208,1	225,6	243,1
CS 80	90	41	84	80	25	67,5	92,5	117,5	142,5	167,5	192,5	217,5	242,5	267,5	292,5	317,5	342,5
CS 100	90	41	84	80	25	67,5	92,5	117,5	142,5	167,5	192,5	217,5	242,5	267,5	292,5	317,5	342,5

Drilling plan

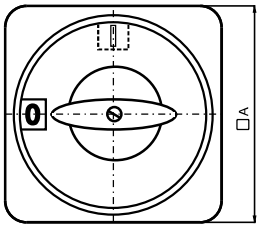


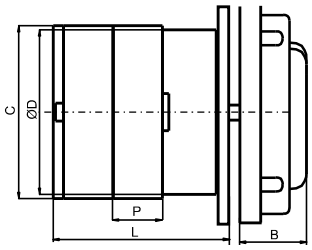


TYPE	a*	b**	d	f
CS 16 CS 25 CS 32	36	30	10	4.2
CS 40 CS 63	48	45	10	4.2
CS 80 CS 100	72	40	14	5.3

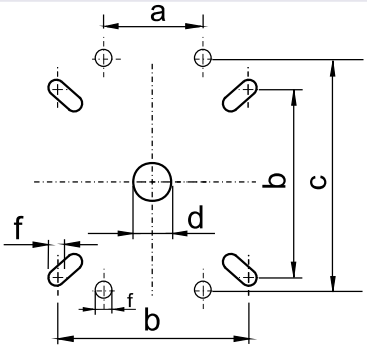
a*- *for 5 and more then 5 elements*
b**- *up to 4 elements*

Dimensions LK (General Emergency)

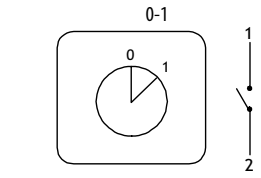
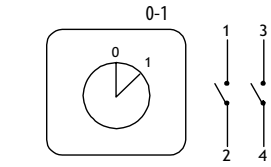
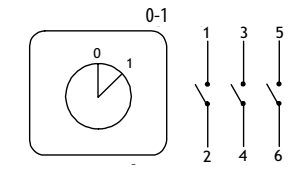
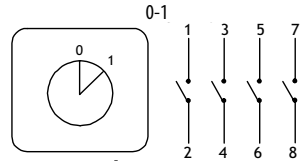
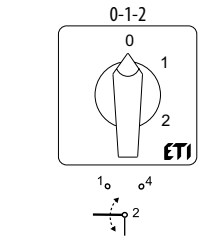
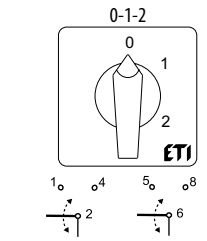
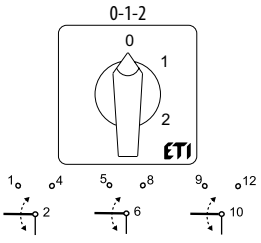


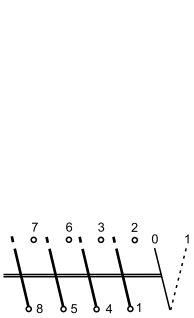


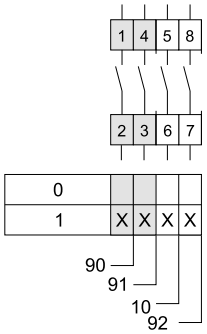
Drilling plan LK (General Emergency)

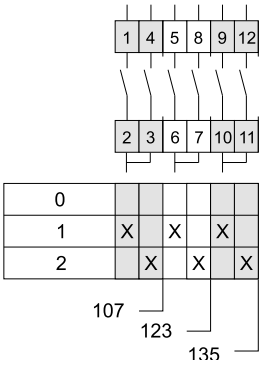


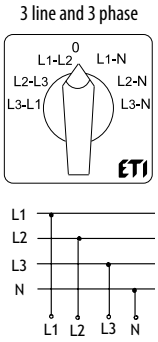
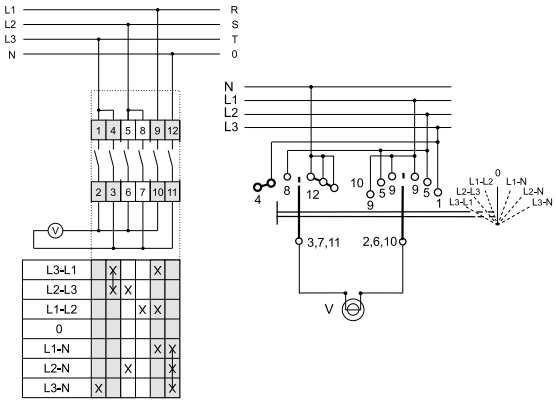
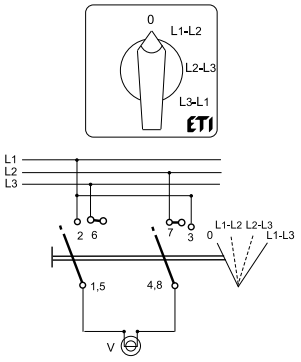
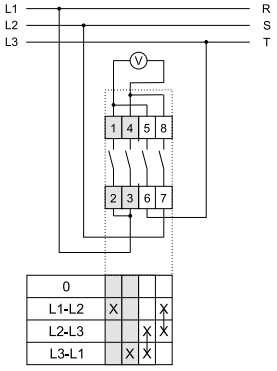
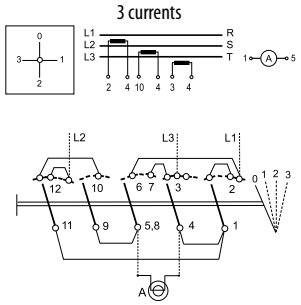
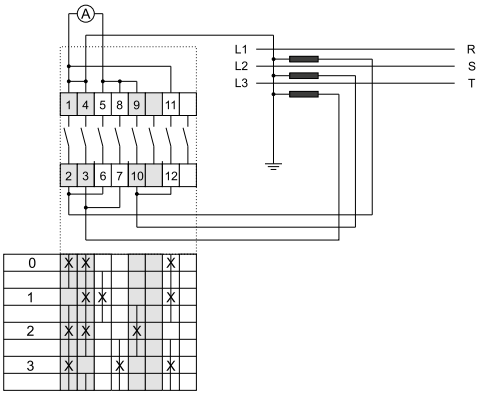
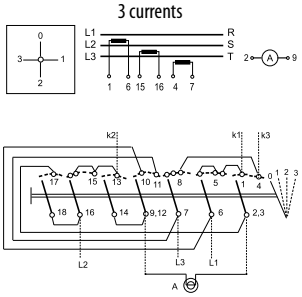
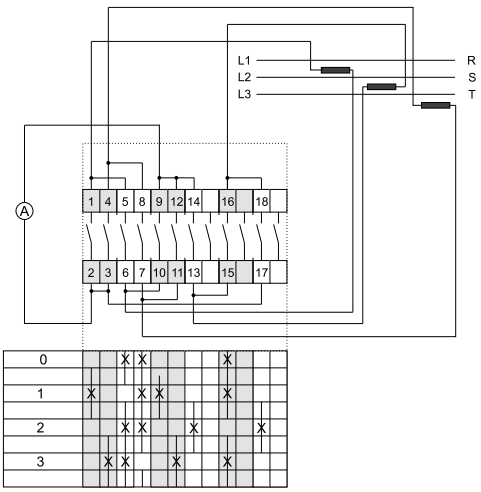
/(mm)	□A	C	ØD	P	B	L/2	b	d	f	a	c
CS 25 LK	49	45,2	38,6	12,8	35	45,3	36	10	3,2		
CS 32 LK	72	53	38,6	12,8	32	49,8	58	10	4,2		
CS 40 LK	72	61	56,4	17,5	32	68,1	58	10	4,2		
CS 50 LK CS 63 LK	72	68,6	56,4	20,5	32	63	58	10	4,2		
CS 80 LK	105	84	80	25	44	92,5	85	14	5,3		
CS 100KLK											
CS 125LK CS 200 LK	130		110	39	62	100		18	5,3	30	90

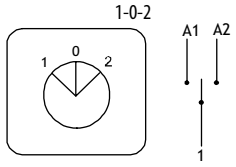
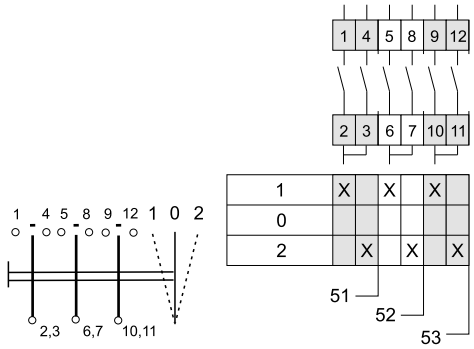
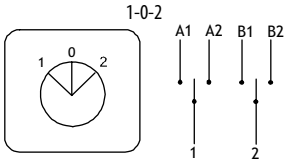
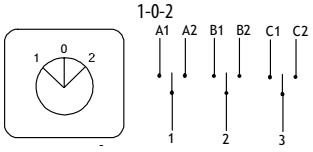
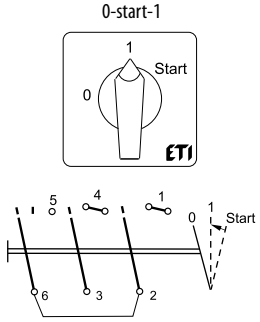
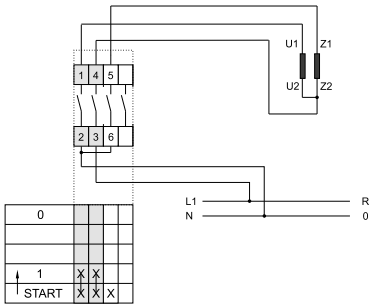
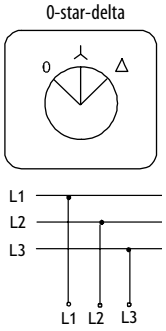
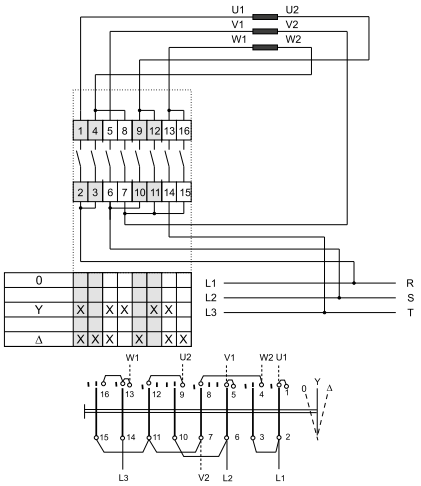
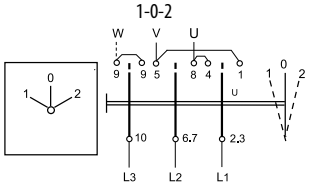
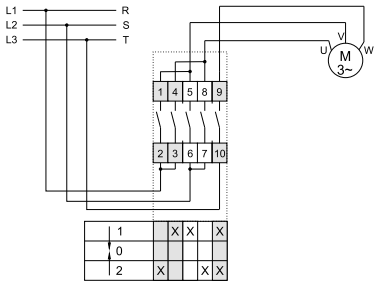
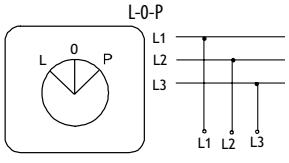
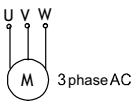
	Type, layout and symbol	Nr of poles / elements	
ON-OFF switches with 60° switching angle		1 / 1	90
		2 / 1	91
		3 / 2	10
		4 / 2	92
Multistep Switches With 60° Switching Angle		1 / 1	107
		2 / 2	123
		3 / 3	135

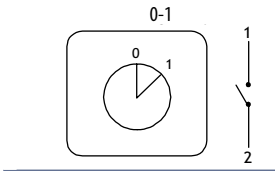
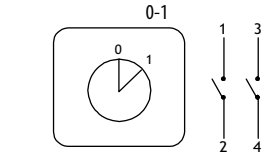
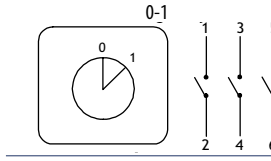
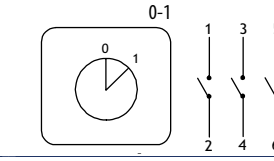
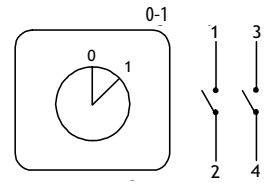


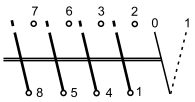


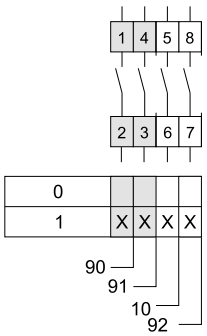


	Type, layout and symbol	Nr of poles / elements		Connection diagram
Voltmeter Switches	3 line and 3 phase 	3 LINE AND 3 PHASE / 3	66	
	3 line 	3 LINE / 2	67	
Ammeter Switches	3 currents 	1 POLE 3 CURRENT WITH TRANSFORMER / 4	98	
	3 currents 	2 POLE 3 CURRENT WITH TRANSFORMER / 6	97	

	Type, layout and symbol	Nr of poles / elements		Connection diagram
Changeover Switches with 60° Switching Angle	1-0-2 	1 / 1	51	
	1-0-2 	2 / 2	52	
	1-0-2 	3 / 3	53	
Start and Run Switches	0-start-1 	2 / 2	15	
Star - Delta Switches	0-star-delta 	4 / 4	12	
Motor Reversing Switches	1-0-2 	3 / 3	11	
	L-0-P 	3 / 3	11	

	Type, layout and symbol	Nr of poles / elements	
General Emergency ON-OFF switches version LK		1	10
		2	91
		3	10
		4	92
General Emergency On-Off Switch		3	10





ETISWITCH Rotary Cam Switches in Insulated Enclosures

Rotary cam switches in insulated enclosures with:
- IP65 degree of protection (PN, PNG and PNG LK housing)
- IP55 degree of protection (PN1 and PN2 housing)
- IP54 degree of protection (PN3 and PN4 housing)

Color of enclosures is grey (RAL 7035)

ON-OFF switches in housing with 60° switching angle

Thermal current
16 -40 A

1-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 90 PN	16A	004773154	0-1 1	175	1
CS 25 90 PN	25A	004773155		190	
CS 32 90 PNG	32A	004773156		305	
CS 40 90 PNG	40A	004773157		370	

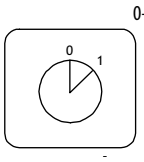
2-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 91 PN	16A	004773159	0-1	180	1
CS 25 91 PN	25A	004773160		190	
CS 32 91 PNG	32A	004773161		210	
CS 40 91 PNG	40A	004773162		370	

3-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 10 PN	16A	004773164	0-1	195	1
CS 25 10 PN	25A	004773165		215	
CS 32 10 PNG	32A	004773166		350	
CS 40 10 PNG	40A	004773167		450	

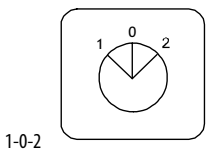
4-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol	[A]		
CS 16 92 PN	16A	004773169		200		
CS 25 92 PN	25A	004773170		220	1	
CS 32 92 PNG	32A	004773171		355		
CS 40 92 PNG	40A	004773172		455		

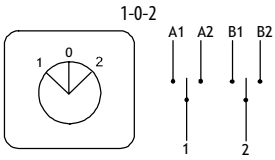
Changeover Switches in Housing with 60° Switching Angle

Thermal current
16 -40 A

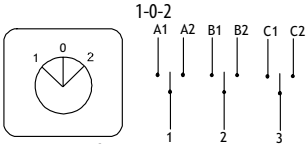
1-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol	[A]		
CS 16 51 PN	16A	004773186		185		
CS 25 51 PN	25A	004773187		235	1	
CS 32 51 PNG	32A	004773188		330		
CS 40 51 PNG	40A	004773189		395		

2-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol	[A]		
CS 16 52 PN	16A	004773191		200		
CS 25 52 PN	25A	004773192		220	1	
CS 32 52 PNG	32A	004773193		375		
CS 40 52 PNG	40A	004773194		455		

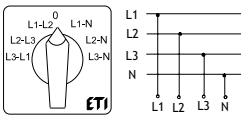
3-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol	[A]		
CS 16 53 PN	16A	004773196		240		
CS 25 53 PN	25A	004773197		260	1	
CS 32 53 PNG	32A	004773198		400		
CS 40 53 PN2	40A	004773199		875		

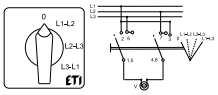
Voltmeter Switches in Housing

Thermal current
16 -32 A

3 line and 3 phase

Type	Thermal current I_{th}	Code No.	Type, layout and symbol	[A]	
CS 16 66 PN	16A	004773201		240	1
CS 25 66 PN	25A	004773202		260	
CS 32 66 PNG	32A	004773203		400	

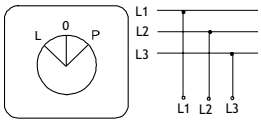
3 line

Type	Thermal current I_{th}	Code No.	Type, layout and symbol	[A]	
CS 16 67 PN	16A	004773205		220	1
CS 25 67 PN	25A	004773206		250	

Motor Reversing Switches in Housing

Thermal current
16 -100 A

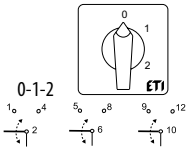
L-0-P

Type	Thermal current I_{th}	Code No.	Type, layout and symbol	[A]	
CS 16 11 U LOPPN	16A	004773207		245	1
CS 25 11 U LOPPN	25A	004773208		265	
CS 32 11 U LOPPNG	32A	004773209		405	
CS 40 11 U LPOPN2	40A	004773210		560	

Multistep Switches in Housing with 60º Switching Angle

Thermal current
16 -40 A

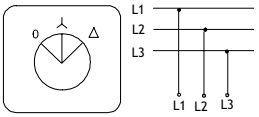
3-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol	[A]	
CS 16 135 PN	16A	004773212		225	1
CS 25 135 PN	25A	004773213		255	
CS 32 135 PNG	32A	004773214		400	
CS 40 135 PN2	40A	004773215		555	

Star - Delta Switches in Housing

Thermal current
16 -40 A

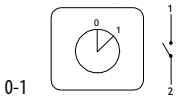
0-star-delta

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 16 12 PN1	16A	004773216		275	1
CS 25 12 PN1	25A	004773217		290	
CS 32 12 PN2	32A	004773218		480	
CS 40 12 PN2	40A	004773219		645	

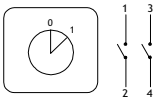
General Emergency ON-OFF switches version LK in housing

Thermal current
25 - 40 A

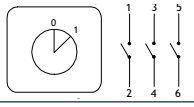
1-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 25 90 PNGLK	25A	004773173		230	1
CS 32 90 PNGLK	32A	004773174		345	
CS 40 90 PNGLK	40A	004773175		410	

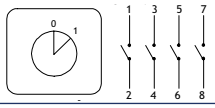
2-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 25 91 PNGLK	25A	004773176		230	1
CS 32 91 PNGLK	32A	004773177		345	
CS 40 91 PNGLK	40A	004773178		410	

3-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 25 10 PNGLK	25A	004773179		255	1
CS 32 10 PNGLK	32A	004773180		390	
CS 40 10 PNGLK	40A	004773181		490	

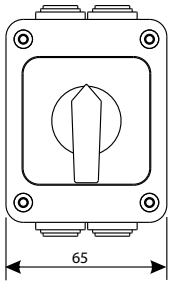
4-pole

Type	Thermal current I_{th}	Code No.	Type, layout and symbol [A]		
CS 25 92 PNGLK	25A	004773182		260	1
CS 32 92 PNGLK	32A	004773183		395	
CS 40 92 PNGLK	40A	004773184		495	

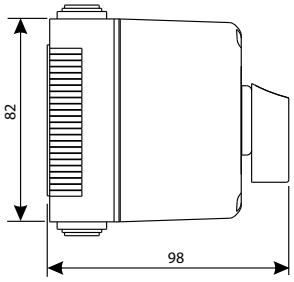
Technical data and connection diagrams for switches in insulated enclosures are the same as for those without enclosures.

Dimensions

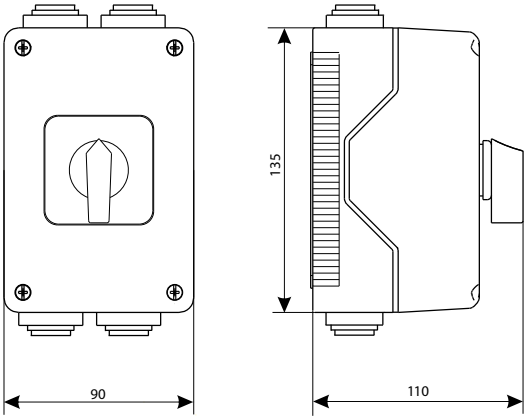
PN



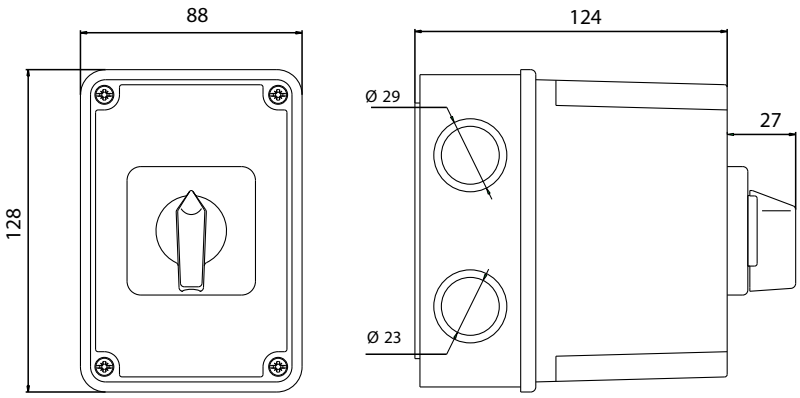
CS PN



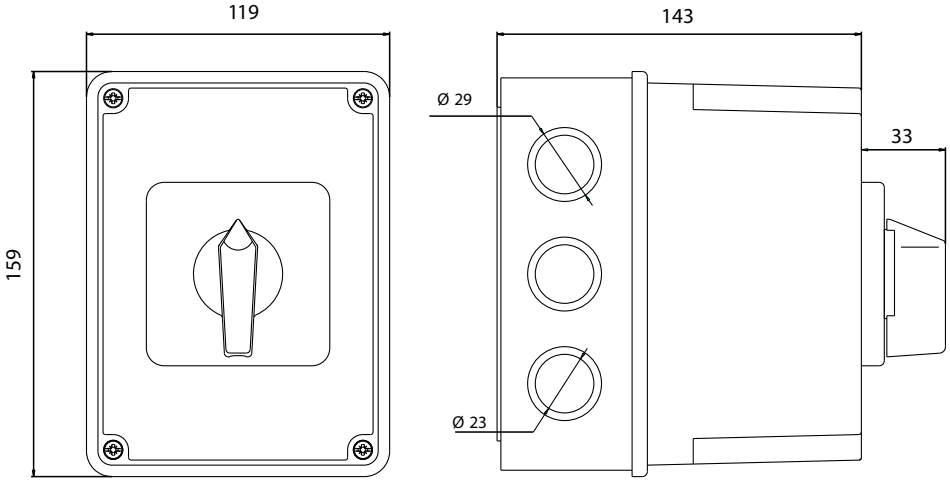
PNG



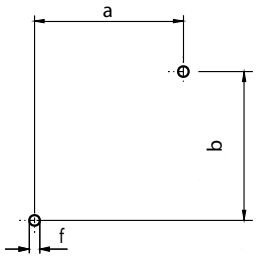
PN1



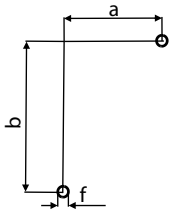
PN2



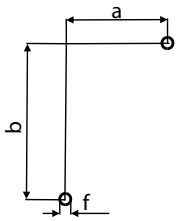
Drilling plan



	a	b	f
PN	44	48	4,3
PNG	48	100	4,3



	a	b	f
PN1	42	82	4,3



	a	b	f
PN2 32	72	112	4,5

ETISWITCH Modular Rotary Cam Switches

ModLBS IP40(front) switches for mounting in modular enclosures with DIN rail. Easy manipulation - low force switching, designed for AC23 category of use.

Modular Rotary Cam Switches ModLBS

Modular rotary cam switch 0-1

Type	Code No.	I_n [A]	Number of poles	g	
ModLBS 16 1p	004664250	16	1	130	1/30
ModLBS 16 3p	004664251	16	3	141	

Modular emergency switch 0-1 with padlocking possibility

Type	Code No.	I_n [A]	Number of poles	g	
ModLBS 40 3p ES	004664252	40	3	173	1/36

Data according to IEC 947-3, IEC 947-5-1, VDE 0660, EN 60947-3, EN 60947-5-1

Type				ModLBS 16 1p / ModLBS 16 3p
Rated thermal current Ith open			A	20
Rated thermal current Ithe enclosed			A	20
Rated operational voltage Ue			V	690*
Disconnection property ** acc. to VDE, IEC up to			V	440
Breaking capacity	3x220-240V		A	160
	3x500V		A	100
	3x660-690V		A	120
Utilization categ. AC21A, AC21B	Switching of resistive loads including moderate overloads			
	Rated operational current Ie		A	20
Utilization categ. AC23A, AC23B	Switching of motor loads or other highly inductive loads			
	Rated current Ie	400V	A	16
	Power rating 3-phase 3-pole	220-240V	kW	4
		380-440V	kW	7,5
		500V	kW	7,5
		660-690V	kW	7,5
Star-Delta-Switches	for squirrel cage motors			
	Power rating 3-phase 3-pole	220-240V	kW	3,7
		380-415V	kW	7,5
Utilization category AC3	Switching of three-phase motors			
	Rated current Ie	400V	A	12
	Power rating 3-phase 3-pole	220-240V	kW	3
		380-440V	kW	5,5
		500V	kW	5,5
		660-690V	kW	5,5
Utilization category AC4	squirrel cage motors, inching			
	Power rating 3-phase 3-pole	220-240V	kW	0,55
		380-440V	kW	1,5
		500V	kW	1,5
		660-690V	kW	1,5
Utilization category AC15	Control of electromagnetic loads, contactors			
	Rated current Ie	≤ 240V	A	6
		380 -440V	A	4
	2-pole in series	500V	A	5
Utilization categ. DC21A, DC21B	Switching of resistive loads Time constant L/R≤1ms			
	Rated current Ie 1-pole	30V	A	20
		60V	A	4
		110V	A	0,6
		220V	A	0,3
		440V	A	-
Utilization category DC3 - DC5	Switching of shunt motors and series motors Time constant L/R≤15ms			
	Rated current Ie 1-pole	30V	A	8
		60V	A	1
		110V	A	0,3
Protection class ot terminals				IP20

* suitable for: earthed-neutral systems, overvoltage category I to III, pollution degree 3 (standard-industry): Uimp = 6kV. Data for other conditions on request

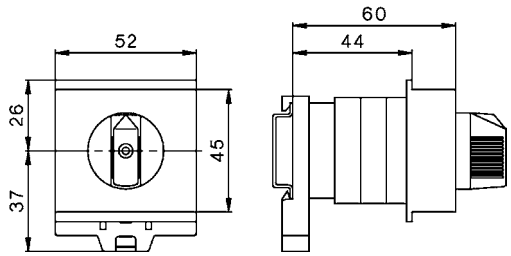
** valid for lines with grounded common neutral termination, overvoltage category III , pollution degree 3.

Data according to IEC 947-3, IEC 947-5-1, VDE 0660, EN 60947-3, EN 60947-5-1

Type				ModLBS 16 1p / ModLBS 16 3p
Cable cross sections	solid or stranded		mm^2	1-2,5*
	flexible		mm^2	0,75-2,5*
	flexible (+ multicore cable end)		mm^2	0,75-1,5
	Conductors to clamp per pole			2
	Size of terminal screw			M3,5
	Tightening torque		Nm	0,8-1,4
			lb.inch	7-12
Short circuit protection	Max. fuse size gL (gG)		A	20
	Rated short-time withstand current (1sec. current)		A	250
	Rated conditional short-circuit current		kAeff	10
Short-time capacity	Load duration Note: Ratings applies to contacts already closed	3s	A	100
		10s	A	60
		30s	A	35
		60s	A	25
Power loss at AC21A per pole			A	20
			W	0,5
Switching of capacitive loads	maximum making capacity up to 500V		A	140

* Maximum cable cross-section with prepared conductor

Dimensions



Data according to IEC 947-3, IEC 947-5-1, VDE 0660, EN 60947-3, EN 60947-5-1

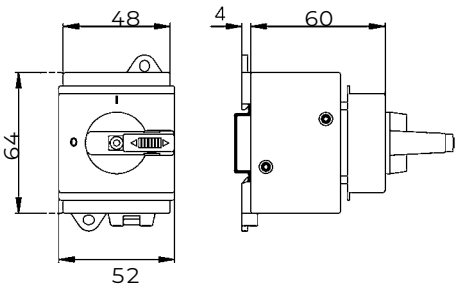
Type					ModLBS 40 3p ES
Main contacts			Rated thermal current Ith open	A	40
			Rated thermal current Ithe enclosed	A	40
Rated insulation voltage Ui *				V	690
Rated operational current Ie			AC21A	A	40
Rated operational voltage Ue max.			AC21A	V	690
Making capacity Ieff			3x380-440V	A	300
Breaking capacity			3x220-240V	A	250
			3x380-440V	A	250
			3x660-690V	A	170
Disconnection property performed up to				V	690
Motor Switch	AC3		3x400V	A	30
Motor Switch	AC3		3x220-240V	kW	7,5
Direct switching of single motors			3x380-440V	kW	15
			3x660-690V	kW	15
Main Switch	AC23		3x400V	A	32
Motor Switch	AC23A		3x220-240V	kW	9
Main Switch	AC23B		3x380-440V	kW	16
Safety Switch			3x660-690V	kW	15
Rated conditional short-circuit current			400V	kAeff	10
Max. fuse size gL (gG)			400V	A	40
Rated conditional short-circuit current			690V	kAeff	1
Max. fuse size gL (gG)			690V	A	40
A Mechanical life				x103	200
Rated short-time withstand current (1sec. current)				A	500
Power loss per pole AC21 = Ith	P/pole		E, Z	W	1,288
			V, SMA, PF	W	1,458
	R/pole		E, Z	mOhm	0,805
			V, SMA, PF	mOhm	0,911
Maximum ambient temperature	Operation		open		-40°C ... +60°C (90°C)**
			enclosed		-40°C ... +40°C
	Storage				-50°C ... +90°C
Cable cross sections	solid or stranded			mm^2	0,5 - 10
				AWG	20 - 8 (10)
	flexible			mm^2	0,5 - 6
				AWG	20 - 10
	flexible (+ multicore cable end)			mm^2	0,5 - 6
				AWG	20 - 10
	Size of terminal screw				M3,5
	Tightening torque			Nm	1,7 - 2,3
Auxiliary contacts	Rated insulation voltage Ui *			V	690
	Rated thermal current Ith , Ithe			A	10
	Switching capacity	AC15	380-450V	A	2,5/1,5
		DC13	60-110V	A	2/0,4
	Rated conditional short-circuit current			kAeff	3
	Max. short circuit protection gL (gG)			A	10
Cable cross sections	solid or stranded			mm^2	0,75 - 2,5
				AWG	14 - 12
	flexible (+ multicore cable end)			mm^2	0,75 - 2,5 (1,5)
				AWG	18 - 14

* suitable for: earthed-neutral systems, overvoltage category I to III, pollution degree 3 (standard-industry): Uimp = 6kV.
** Derating acc. to cable cross sections

Data according to UL and cUL

Type			ModLBS 40 3p ES
Rated voltage		V	600
Ampere-Rating "General use"		A	40
DOL-Rating 3-phase	110-120V	HP	2
	220-240V	HP	5
	440-480V	HP	10
	550-600V	HP	15
DOL-Rating 1-phase	110-120V	HP	1
	200-208V	HP	2
	220-240V	HP	3
Fuse size (RK5)	Manual Motor Controller	A	70
5kA / 600V	Motor Disconnect	A	50
Tightening torque		Nm	1,7-2,3
		lb.inch	15-20

Dimensions



ETISIG

Pushbutton Actuators and LED Indicators

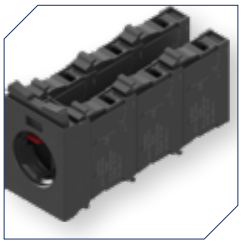
Pushbuttons, Selector Switches,
Lights and Control Station Enclosures **662**

/etigroup

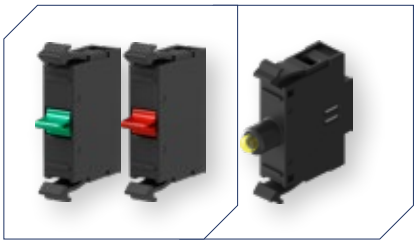
ETI
SWITCH TO
A SAFE FUTURE

ETISIG Pushbuttons, Selector Switches, Lights and Control Station Enclosures

Standard device includes: the module itself, rubber seal, nut



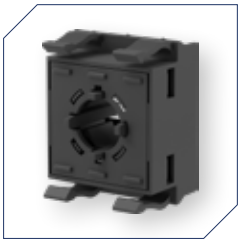
Cascade installation option for up to three levels



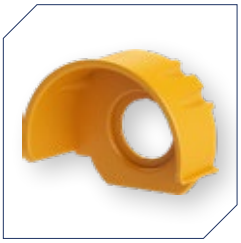
Possibility to mount contact blocks as well as LED module

Emergency STOP pushbutton with monitoring contact block

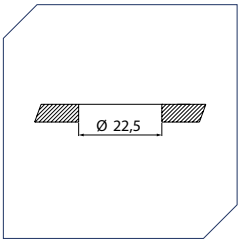
Latch module for set-reset function. Changes the position of the contacts of contact block by pressing once - latch function



Protection against accidental emergency pushbutton

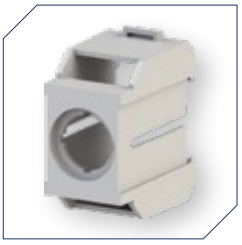


Standard mounting diameter Ø22.5mm



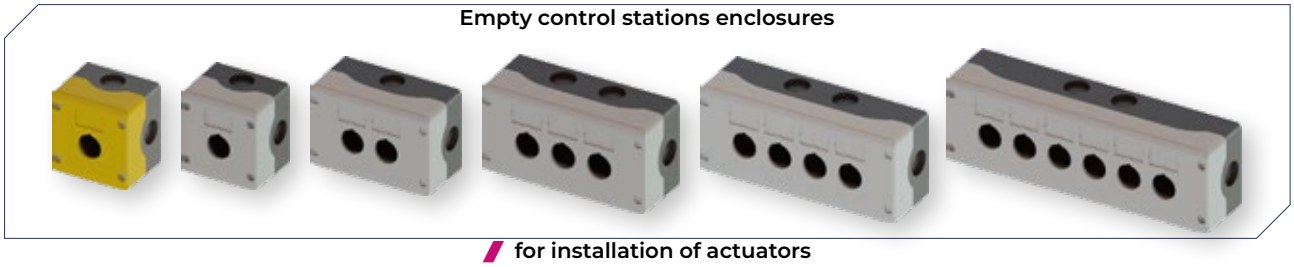
Protective silicone cap for extra protection against dust and moisture

Adaptor for mounting actuators on the DIN rail



Label plates

Empty control stations enclosures



for installation of actuators

Actuators and enclosures

Features:
- modular design,
- standard mounting diameter Ø22.5mm,
- snap fastening system,
- cascade installation possibility,
- IP66 degree of protection,
- silicone antidust covers.

Pushbuttons, switches and signal lamps

Standards	IEC 60947-5-1, ISO 13850 (EN 418), IEC 60947-5-5
Certificates	CE
Base material	Polyamide (PA66) or polycarbonate (PC)
Degree of protection IP	IP66 and IP52 (PB2I-F/RG) according to IEC 60529
Mechanical life	
Pushbuttons	3 x 106 cycles
Twin pushbuttons	2 x 106 cycles
Mushroom pushbuttons	3 x 105 cycles
Emergency STOP pushbuttons	1 x 105 cycles
Switch selectors	1 x 106 cycles
Applications	Outside or inside

LED module

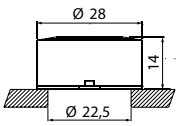
Standards	IEC 60947-5-1
Operating voltage range	0,85...1,10 x Ue
Degree of protection IP (IEC 60529)	IP20
Consumption (V AC/V DC)	10 mA
Rated insulation voltage Ui (IEC 60947-1)	2,5 kV
Operational temperature range	-25°C ... 70°C
Lifetime	at least 100,000 hours
The power of light	Red 70 mcd
	Yellow 115 mcd
	White 275 mcd
	Blue 64 mcd
	Green 150 mcd
Cross-section of conductors to be connected	1 x 0,5 mm^2 ... 2 x 2,5 mm^2
Terminal torque	0,8 Nm

Contact blocks

Rated insulation voltage Ui	690 V			
Rated insulation voltage pulse Uimp	4 kV			
IP degree of protection (IEC 60529)	IP20			
Conventional thermal current Ith	10 A			
Conformity to standards	IEC 60947-5-1, ISO 13850 (EN 418), IEC 60947-5-5			
Certifications	CE			
Electrical characteristics according to IEC 60947-5-1				
	BC...CS-NO/NC		BC-NC-PBM	
Application Category AC-15	Ue (V AC)	Ie (A)	Ue (V AC)	Ie (A)
	24	10	24	6
	48	10	48	6
	60	10	60	6
	110	6	110	6
	220	3	220	3
	380	2	380	2
	500	1,5	500	1,5
	600	1,2	600	1,2
Category of DC-13 application	Ue (V DC)	Ie (A)	Ue (V DC)	Ie (A)
	24	2,5	24	2,5
	48	1,4	48	1,4
	60	1	60	1
	110	0,55	110	0,55
	220	0,27	220	0,27
	300	0,2	300	0,2
	600	0,1	600	0,1
UL and CSA compliant design	AC/Heavy duty mode (A600) and DC/Standard mode (Q600)		-	
Contact resistance (IEC 60255)	≤ 25m Ω			
Protection against electric shock (IEC 60536)	Class II			
Cross-section of connectable conductors	1 x 0,5 mm^2 ... 2 x 2,5 mm^2			
Terminal torque	0,8 Nm			
Operational temperature	-25°C ... 70°C			
Vibration resistance (IEC 60068-2-6)	16 g for a frequency range of 40 to 500 Hz. Maximum gap of 0.75 mm (peak to peak)			
Mechanical life	1 x 106 cycles			

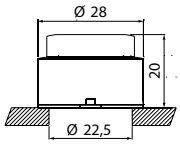
Non-illuminated actuators

Flush head pushbutton (spring return, non-illuminated)

Type	Colour	Code no	Dimensions	kg	
NSE-PBF-W	White	004774000		0,021	1/10
NSE-PBF-R	Red	004774001		0,021	1/10
NSE-PBF-G	Green	004774002		0,021	1/10
NSE-PBF-Y	Yellow	004774003		0,021	1/10
NSE-PBF-B	Blue	004774004		0,021	1/10
NSE-PBF-C	Black	004774005		0,021	1/10

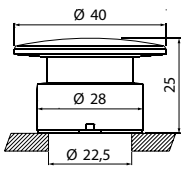
* Important: The holder and contact block are not included

Extended head pushbutton (spring return, non-illuminated)

Type	Colour	Code no	Dimensions	kg	
NSE-PBP-W	White	004774010		0,021	1/10
NSE-PBP-R	Red	004774011		0,021	1/10
NSE-PBP-G	Green	004774012		0,021	1/10
NSE-PBP-Y	Yellow	004774013		0,021	1/10
NSE-PBP-B	Blue	004774014		0,021	1/10
NSE-PBP-C	Black	004774015		0,021	1/10

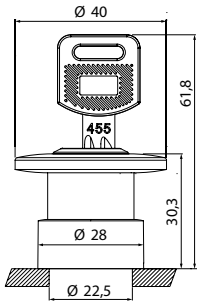
* Important: The holder and contact block are not included

Mushroom pushbutton Ø 40 mm (spring return, non-illuminated)

Type	Colour	Code no	Dimensions	kg	
NSE-PBM-R	Red	004774020		0,024	1/10
NSE-PBM-G	Green	004774021		0,024	1/10
NSE-PBM-C	Black	004774022		0,024	1/10

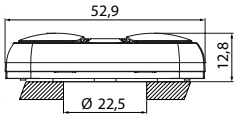
* Important: The holder and contact block are not included

Mushroom pushbutton Ø 40 mm (latch, with key to release, non-illuminated)

Type	Colour / description	Code no	Dimensions	kg	
NSE-PBM-R-K	Red mushroom pushbutton (latch, with key to release)	004774023		0,09	1/10

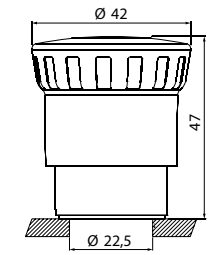
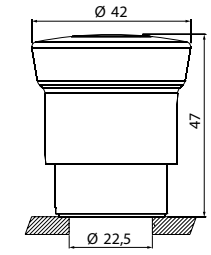
* Important: The holder and contact block are not included

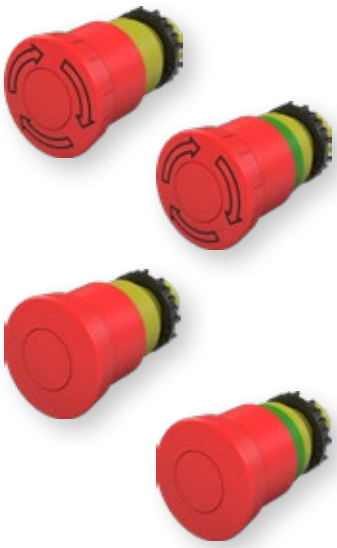
Twin pushbutton (spring return, non-illuminated)

Type	Colour / description	Code no	Dimensions	kg	
NSE-PB2/RG-IO	Green/Red (I/O)	004774030		0,025	1/25
NSE-PB2/RG-STSP	Green/Red (START/STOP)	004774031		0,025	1/25
NSE-PB2/RG	Green/Red	004774032		0,025	1/25
NSE-PB2/WC-IO	White/Black (I/O)	004774033		0,025	1/25
NSE-PB2/WC-STSP	White/Black (START/STOP)	004774034		0,025	1/25
NSE-PB2/WC	White/Black	004774035		0,025	1/25
NSE-PB2/CC-PN	Black/Black (+/-)	004774036		0,025	1/25
NSE-PB2/CC-FR	Black/Black (↑/↓)	004774037		0,025	1/25

* Important: The holder and contact block are not included

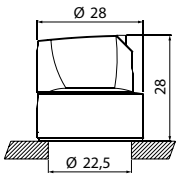
Emergency STOP mushroom pushbutton Ø 42 mm (latch, non-illuminated)

Type	Colour / description	Code no	Dimensions	kg	
NSE-PBM-T-R	Red (turn to release)	004774040		0,049	1/10
NSE-PBM-T-RG	Red (turn to release,with indication)	004774042			
NSE-PBM-P-R	Red (pull to release)	004774041		0,049	1/10
NSE-PBM-P-RG	Red (pull to release, with indication)	004774043			



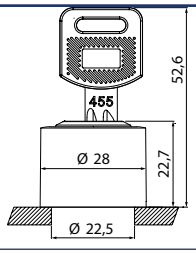
* Important: The holder and contact block are not included

Two-position switch selector "0-1" (non-illuminated)

Type	Colour / description	Scheme	Code no	Dimensions	kg	
NSE-S2-F45	Black 45° (latch)		004774080		0,025	1/10
NSE-S2-F90	Black 90° (latch)		004774081		0,025	
NSE-S2-R45	Black 45°(spring return)		004774082		0,025	
NSE-S2-R90	Black 90°(spring return)		004774083		0,025	

* Important: The holder and contact block are not included

Switch key selector "0-1" (latch, non-illuminated)

Type	Colour / description	Scheme	Code no	Dimensions	kg	
NSE-S2K-F45	Black 45° (latch)		004774088		0,087	1

* Important: The holder and contact block are not included

Three-position switch selector "1-0-2" (non-illuminated)

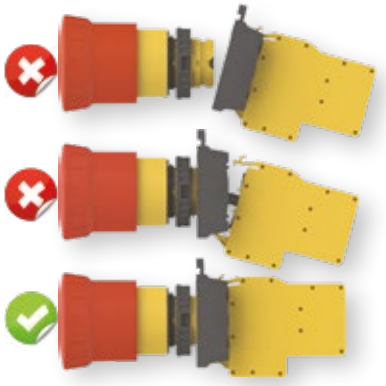
Type	Colour / description	Scheme	Code no	Dimensions	kg	
NSE-S3-F45	Black 45° (latch)	1 0 2	004774084	Ø 28, 28, Ø 22,5	0,025	1/10
NSE-S3-R45	Black 45°(spring return)	1 0 2	004774085		0,025	
NSE-S3-RL45	Black, 45° (spring return left side)	1 0 2	004774086		0,025	
NSE-S3-RR45	Black, 45°(spring return right side)	1 0 2	004774087		0,025	

* Important: The holder and contact block are not included

Mushroom pushbuttons for emergency STOP with monitoring function

Application - metering and signalling panels, control panels.
Emergency Mushroom pushbuttons are one of the most common and important devices for emergency shutdown and indication in case of emergency situations arising in electrical equipment circuits and control panels.
Warning: if the components are not installed correctly, the function of the appliance may be impaired. This can result in an emergency shutdown blockage, exposing users to additional risks.

The NSE-BC-NC-PBM self-monitoring contact block is designed to provide a higher level of installation safety and control. Its use with the NSE-PBM-T-RGM/NSE-PBM-P-RGM range of Emergency STOP pushbuttons provides electrical interlocking in the event of incomplete or incorrectly assembled Emergency Stop button components.
Developed in accordance with international standards IEC 60947-5-5 and UL 508

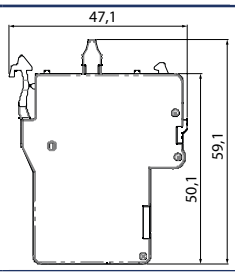


Emergency STOP mushroom pushbutton Ø 42 mm, self-monitoring function (latch, non-illuminated)

Type	Colour / description	Code no	Dimensions	kg	
NSE-PBM-T-RGM	Red (turn to release,with indication, self monitoring option)	004774044	Ø 42, 47, Ø 22,5	0,058	1/10
NSE-PBM-P-RGM	Red (pull to release, with indication, self monitoring option)	004774045	Ø 42, 47, Ø 22,5	0,058	1/10

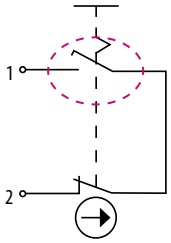
* Important: The holder and contact block are not included

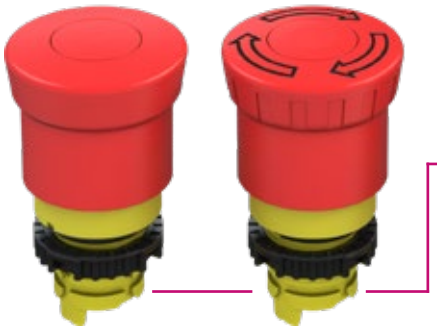
Contact block with self-monitoring function

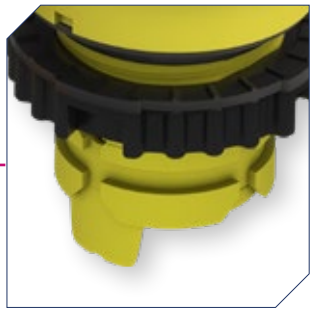
Type	Description	Code no	Dimensions	kg	
NSE-BC-NC-PBM	1NC contact block	004774114		0,023	1/10

Circuit diagram

NO contact closes when the mechanical connection is made correctly





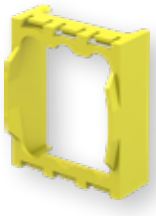


Protection, provides selfmonitoring of the mechanical assembly.

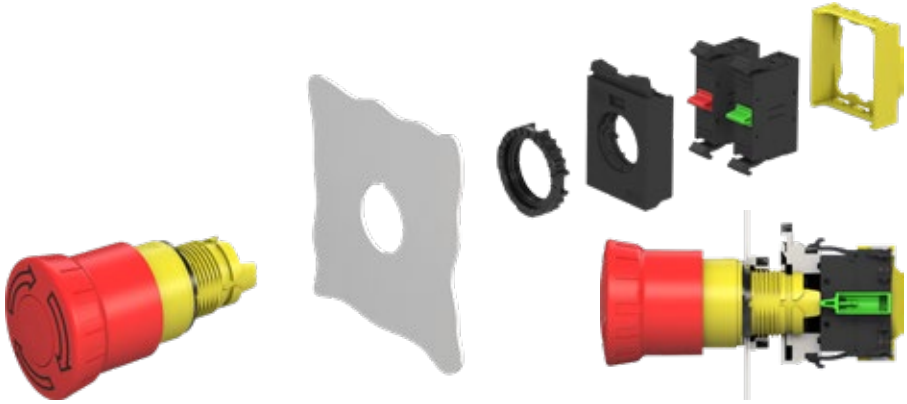
When using standard contact blocks, the NSE-PBMH retainer must be used. The contact block retainer allows all elements to be assembled into a single unit, provides greater safety and reduces the possibility of operating errors.

Contact block retainer

Type	Description	Code no	Compatibility	kg	
NSE-PBMH	Contact block retainer for checking the mechanical assembly.	004774046	Max number of contact blocks: 3 NSE-BC/CS-NO/NC blocks. Note: Does not allow overlapping of contacts	0,002	1/1

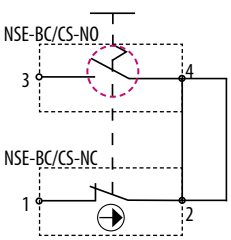


Installation of standard contact blocks for panel mounting



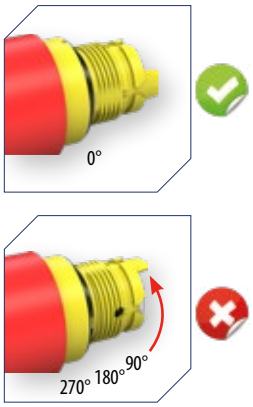
Wiring diagram for mounting standard contact blocks to ensure correct installation

NO contact closes when the mechanical connection is made correctly



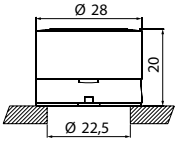
Installation of standard contact blocks for enclosure mounting

When installing the emergency STOP pushbuttons, this installation makes it possible to check the correct assembly



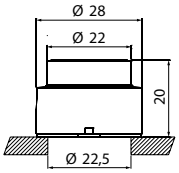
Illuminated actuators

Flush head pushbutton (spring return, non-illuminated)

Type	Colour	Code no	Dimensions	kg	
NSE-PBFI-W	White	004774050		0,021	1/10
NSE-PBFI-R	Red	004774051		0,022	1/10
NSE-PBFI-G	Green	004774052		0,022	1/10
NSE-PBFI-Y	Yellow	004774053		0,022	1/10
NSE-PBFI-B	Blue	004774054		0,022	1/10

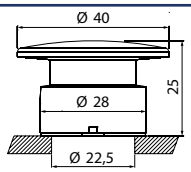
* Important: The holder and contact block are not included

Extended head pushbutton (spring return, non-illuminated)

Type	Colour	Code no	Dimensions	kg	
NSE-PBPI-R	Red	004774060		0,021	1/10
NSE-PBPI-G	Green	004774061		0,021	1/10

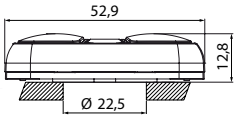
* Important: The holder and contact block are not included

Mushroom pushbutton Ø 40 mm (spring return, non-illuminated)

Type	Colour	Code no	Dimensions	kg	
NSE-PBMI-R	Red	004774062		0,026	1/10

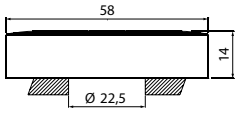
* Important: The holder and contact block are not included

Twin pushbutton (spring return, non-illuminated)

Type	Colour / description	Code no	Dimensions	kg	
NSE-PB2I/RG-IO	Green/Red (I/O)	004774070		0,025	1/25
NSE-PB2I/RG-STSP	Green/Red (START/STOP)	004774071		0,025	1/25
NSE-PB2I/RG	Green/Red	004774072		0,025	1/25
NSE-PB2I/WC-IO	White/Black (I/O)	004774073		0,025	1/25
NSE-PB2I/WC-STSP	White/Black (START/STOP)	004774074		0,025	1/25
NSE-PB2I/WC	White/Black	004774075		0,025	1/25
NSE-PB2I/CC-PN	Black/Black (+/-)	004774076		0,025	1/25
NSE-PB2I/CC-FR	Black/Black (↑/↓)	004774077		0,025	1/25

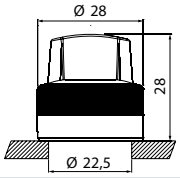
* Important: The holder and contact block are not included

IP52 twin pushbutton (spring return, non-illuminated)

Type	Colour / description	Code no	Dimensions	kg	
NSE-PB2I-F/ RG-IO	Green/Red (I/O)	004774078		0,025	1/10

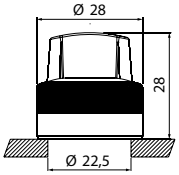
* Important: The holder and contact block are not included

Two-position switch selector "0-1" (illuminated)

Type	Colour / description	Scheme	Code no	Dimensions	kg	
NSE-S2I-F90-R	Red 90° (latch)		004774090		0,02	1/10
NSE-S2I-F90-G	Green 90° (latch)		004774091		0,02	

* Important: The holder and contact block are not included

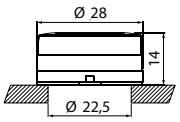
Three-position switch selector "1-0-2" (illuminated)

Type	Colour / description	Scheme	Code no	Dimensions	kg	
NSE-S3I-F45-R	Red 45° (latch)		004774092		0,02	1/10
NSE-S3I-F45-G	Green 45° (latch)		004774093		0,02	
NSE-S3I-F45-Y	Yellow 45° (latch)		004774094		0,02	

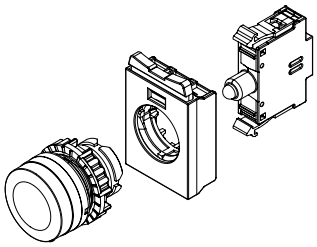
* Important: The holder and contact block are not included

Caps for LED module

Caps for LED module

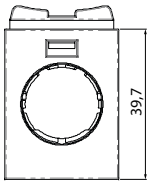
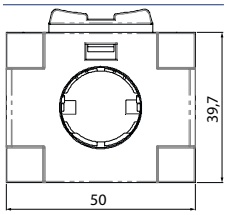
Type	Colour	Code no	Dimensions	kg	
NSE-ILM-HD-W	White	004774130		0,016	1/10
NSE-ILM-HD-R	Red	004774131		0,016	1/10
NSE-ILM-HD-G	Green	004774132		0,016	1/10
NSE-ILM-HD-Y	Yellow	004774133		0,016	1/10
NSE-ILM-HD-B	Blue	004774134		0,016	1/10
NSE-ILM-HD-O	Orange**	004774135		0,016	1/10

* Important: The holder and LED module are not included.
** for a better performance, use a yellow LED module

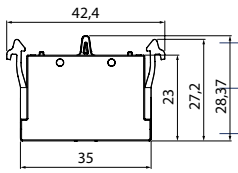


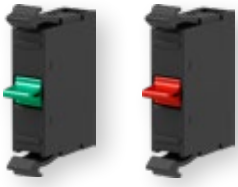
Accessories

Holder for contact blocks and LED modules

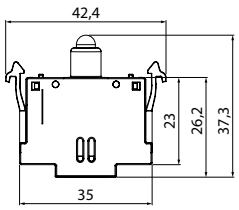
Type	Description	Code no	Dimensions	kg	
NSE-FL3/10	3 module holder (10 pcs)	004774100		0,013	10
NSE-FL3	3 module holder (1 pc)	004774101		0,013	1/25
NSE-FL5/5	5 module holder (5 pcs)	004774102		0,02	5
NSE-FL5	5 module holder (1 pc)	004774103		0,02	1

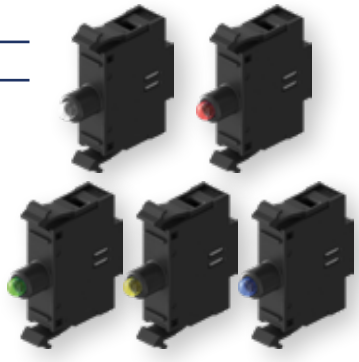
Contact block

Type	Description	Code no	Dimensions	kg	
NSE-BC-NO/10	1NO contact block (10 pcs)	004774110		0,015	10
NSE-BC-NO	1NO contact block (1 pc)	004774111		0,015	1/25
NSE-BC-NC/10	1NC contact block (10 pcs)	004774112		0,015	10
NSE-BC-NC	1NC contact block (1 pc)	004774113		0,015	1/25

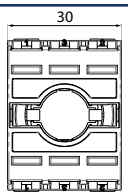


LED module

Type	Colour	Voltage	Code no	Dimensions	kg	
NSE-ILM-024U-W	White	24V AC/DC	004774120		0,016	1/10
NSE-ILM-024U-R	Red	24V AC/DC	004774121			
NSE-ILM-024U-G	Green	24V AC/DC	004774122			
NSE-ILM-024U-Y	Yellow	24V AC/DC	004774123			
NSE-ILM-024U-B	Blue	24V AC/DC	004774124			
NSE-ILM-240V-W	White	240 V AC	004774125			
NSE-ILM-240V-R	Red	240 V AC	004774126			
NSE-ILM-240V-G	Green	240 V AC	004774127			
NSE-ILM-240V-Y	Yellow	240 V AC	004774128			
NSE-ILM-240V-B	Blue	240 V AC	004774129			

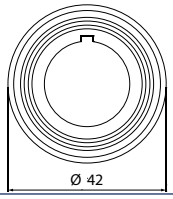


Latch module

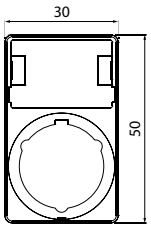
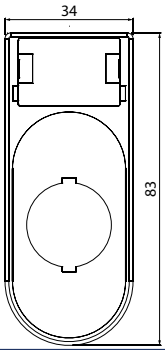
Type	Description	Code no	Dimensions	kg	
NSE-BC-LF	For set-reset function. Changes the position of the contacts of contact block by pressing once - latch funkcion	004774115		0,019	1

* Important:
Mechanical push-on/push-off block for contact blocks mounted on buttons: CSW-BF, CSW-BFI, CSW-BS, CSW-BSI, CSW-BGA, CSW-BC, CSW-BCI
Note: use ONLY with contact block NSE-BC-NC (1NC) and NOT with NO contact block!!!

Adaptor ring

Type	Description	Code no	Dimensions	kg	
NSE-RR-30/22	Ø 30 mm ... Ø 22,5 mm	004774140		0,006	1

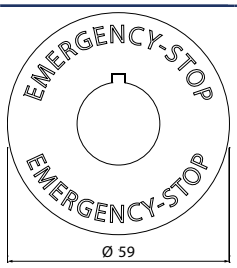
Label plates

Type	Description / Compatibility	Code no	Dimensions	kg	
NSE-PH-SB+MP	Label plate for marking plate (27 x 18 mm) with transparent cover	004774141		0,004	5
NSE-PH-SB	Label plate for marking plate (27 x 18 mm) without transparent cover	004774143			
NSE-PH-DB+MP	Label plate for marking plate (27 x 18 mm) with transparent cover, for IP52 twin pushbutton module	004774142		0,004	5
NSE-PH-DB	Label plate for marking plate (27 x 18 mm) with transparent cover, for IP52 twin pushbutton module without transparent cover	004774144			

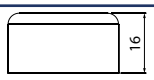
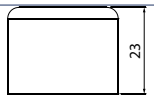
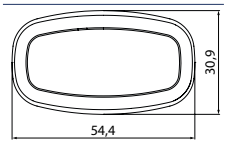
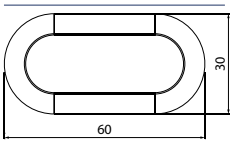
NSE-PH-SB+MP NSE-PH-SB

NSE-PH-DB+MP NSE-PH-DB

Nameplate ring

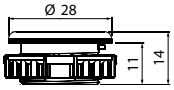
Type	Colour / Description	Code no	Dimensions	kg	
NSE-PL-EMG	Emergency STOP	004774145		0,009	5

Protective silicone cap

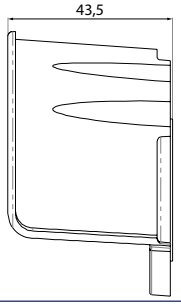
Type	Compatibility	Code no	Dimensions	kg	
NSE-SPC-PBF	Flush head non-illuminated pushbuttons and caps for LED module	004774170		0,005	5
NSE-SPC-PBP	Extended head and non-illuminated flush head pushbuttons	004774171		0,005	5
NSE-SPC-PB2*	Twin pushbuttons	004774172		0,005	5
NSE-SPC-PB2-F*	IP52 twin pushbutton, to ensure IP66 degree of protection	004774173		0,006	5

** Important: Not compatible with pushbutton in control station enclosures

Plug

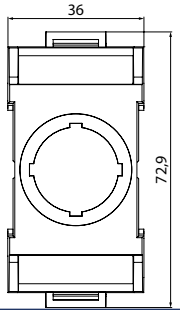
Type	Description	Code no	Dimensions	kg	
NSE-HP	Plug Ø 22,5 mm	004774174		0,008	5

ES protection

Type	Description	Code no	Dimensions	kg	
NSE-PC-PBM	Protection against accidental pressing of the emergency STOP pushbutton	004774175		0,027	1

* Important: Only applicable for NSE-CS1-Y. You could install this accessory with other control stations models but you will need to disenable one hole closer this accessory

Adaptor for mounting actuators on DIN rail

Type	Description	Code no	Dimensions	kg	
NSE-ADR-1M	Allows the pushbutton/signal lamp/switch to be mounted on a 35mm DIN rail. Note: Does not allow the following accessories to be used: - Self-monitoring contact block (BCM01F-CSW); - 5-module contact block holder.	004774176		0,033	1

*Important: Not compatible with self-monitoring contact block NSE-BC-NC-PBM
*Important: Not compatible with the 5 module holder NSE-FL5

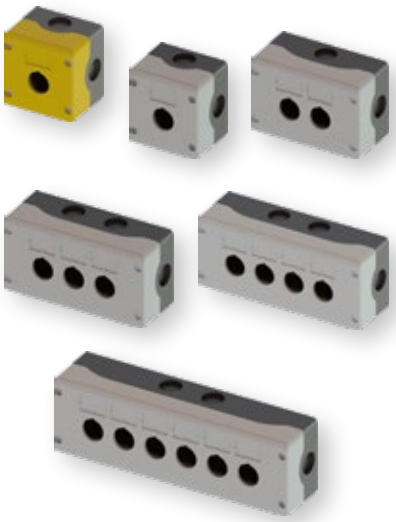
Assembly tool

Type	Description	Code no	kg	
NSE-FRT	Assembly tool for ring	004774177	0,025	1

Empty control station enclosures

Control station enclosures

Standards	IEC 60947-5-1, IEC 50102, IEC 60529, UL 508, UL 50
Certificates	CE
Degree of protection IP (IEC 60529)	IP66 (NEMA 4X)
Operating temperature	-25°C ... 70°C
Material	Polycarbonate (cover and base)
Colour	Grey (RAL 7035) or yellow (RAL 1003)
Base colour	Black (RAL 9005)
Cable entry	ØM20 / PG13,5 / 1/2" e ØM16 / 3/8"
Application	External/internal

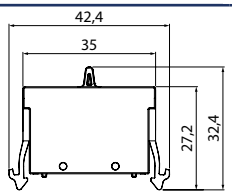


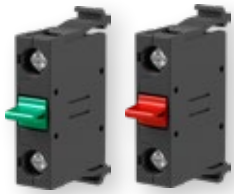
Empty control station enclosures

Type	Description	Colour	Code no	kg	
NSE-CS1-Y	Housing with 1 hole, emergency	Yellow-black	004774150	0,13	1
NSE-CS1-GR	1-hole housing	Grey-black	004774151	0,13	1
NSE-CS2-GR	2-hole housing	Grey-black	004774152	0,17	1
NSE-CS3-GR	3-hole housing	Grey-black	004774153	0,2	1
NSE-CS4-GR	4-hole housing	Grey-black	004774154	0,25	1
NSE-CS6-GR	6-hole housing	Grey-black	004774155	0,32	1

Accessories for enclosures

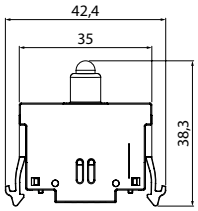
Contact block for enclosure mounting

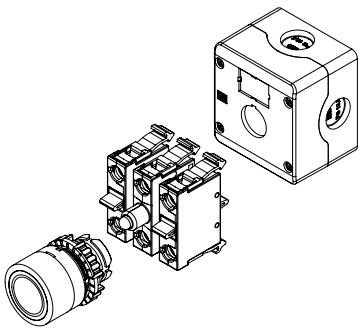
Type	Description	Code no	Dimensions	kg	
NSE-BC/CS-NO	1NO contact module	004774156		0,15	1
NSE-BC/CS-NC	1NC contact module	004774157		0,15	1



* Important: The contact blocks do not require a contact block holder to be mounted in the enclosure.
The contact blocks are fixed into the base of the enclosure.

LED module for enclosure mounting

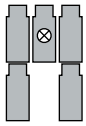
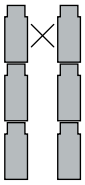
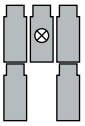
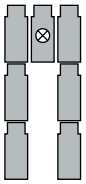
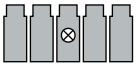
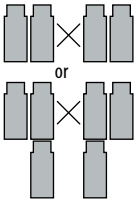
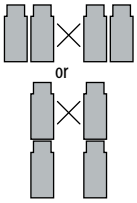
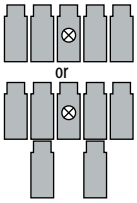
Type		Colour	Voltage	Code no	Dimensions	kg	
NSE-ILM-CS-024U-W		White	24V AC/DC	004774158		0,016	1/10
NSE-ILM-CS-024U-R		Red	24V AC/DC	004774159			
NSE-ILM-CS-024U-G		Green	24V AC/DC	004774160			
NSE-ILM-CS-024U-Y		Yellow	24V AC/DC	004774161			
NSE-ILM-CS-024U-B		Blue	24V AC/DC	004774162			
NSE-ILM-CS-240V-W		White	240 V AC	004774163			
NSE-ILM-CS-240V-R		Red	240 V AC	004774164			
NSE-ILM-CS-240V-G		Green	240 V AC	004774165			
NSE-ILM-CS-240V-Y		Yellow	240 V AC	004774166			
NSE-ILM-CS-240V-B		Blue	240 V AC	004774167			

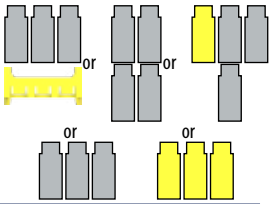
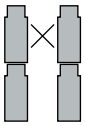
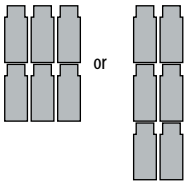
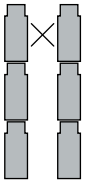
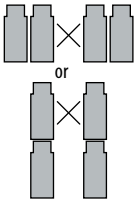
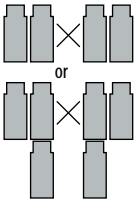
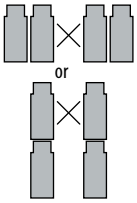


* Important: The module holder is not required for fitting the LED modules into the enclosure. The modules are fixed into the base of the enclosure.

Assembly configurations

Assembly configurations

Type	Illuminated switch selectors NSE-S2I / S3I	Non-illuminated switch selectors NSE-S2 / S3 / S2K	Illuminated pushbuttons NSE-PB2I	Illuminated pushbuttons NSE-PBMI, NSE-PB2I-F, NSE-PBFI, NSE-PBPI
Max. number of contacts	Max. 4	Max. 6	Max. 4	Max. 6
3-module holder NSE-FL3				
Max. number of contacts	Max. 4	Max. 6	Max. 4	Max. 6
5-module holder1 NSE-FL5				

Type	Non-illuminated pushbuttons NSE-PBM-T/P	Non-illuminated pushbuttons NSE-PB2	Non-illuminated pushbuttons NSE-PBF	Non-illuminated pushbuttons NSE-PBM, NSE-PBP
Max. number of contacts	Max. 4	Max. 4	Max. 6	Max. 6
3-module holder NSE-FL3				
Max. number of contacts	-	Max. 4	Max. 6	Max. 6
5-module holder2 NSE-FL5	-			

1 LED modules for illumination can only be used in the middle position of the NSE-FL5 holder
2 Do not use self-controlling contact blocks with the NSE-FL5 holder;
2 Do not use emergency buttons with the NSE-FL5 flange

NSE-BC contact blocks

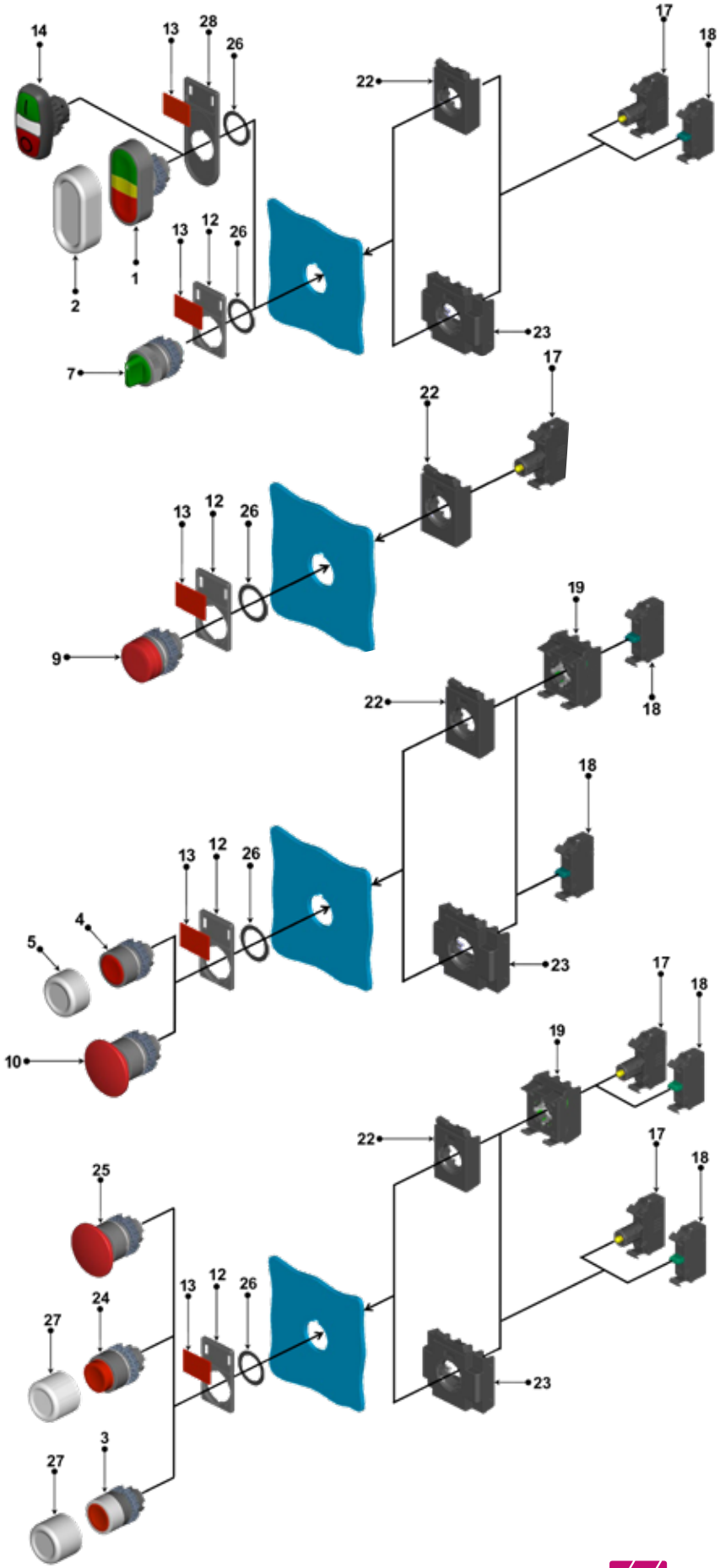
Mushroom button contact block with self-monitoring function NSE-BC-NC-PBM

LED module NSE-ILM

Pin block retainer

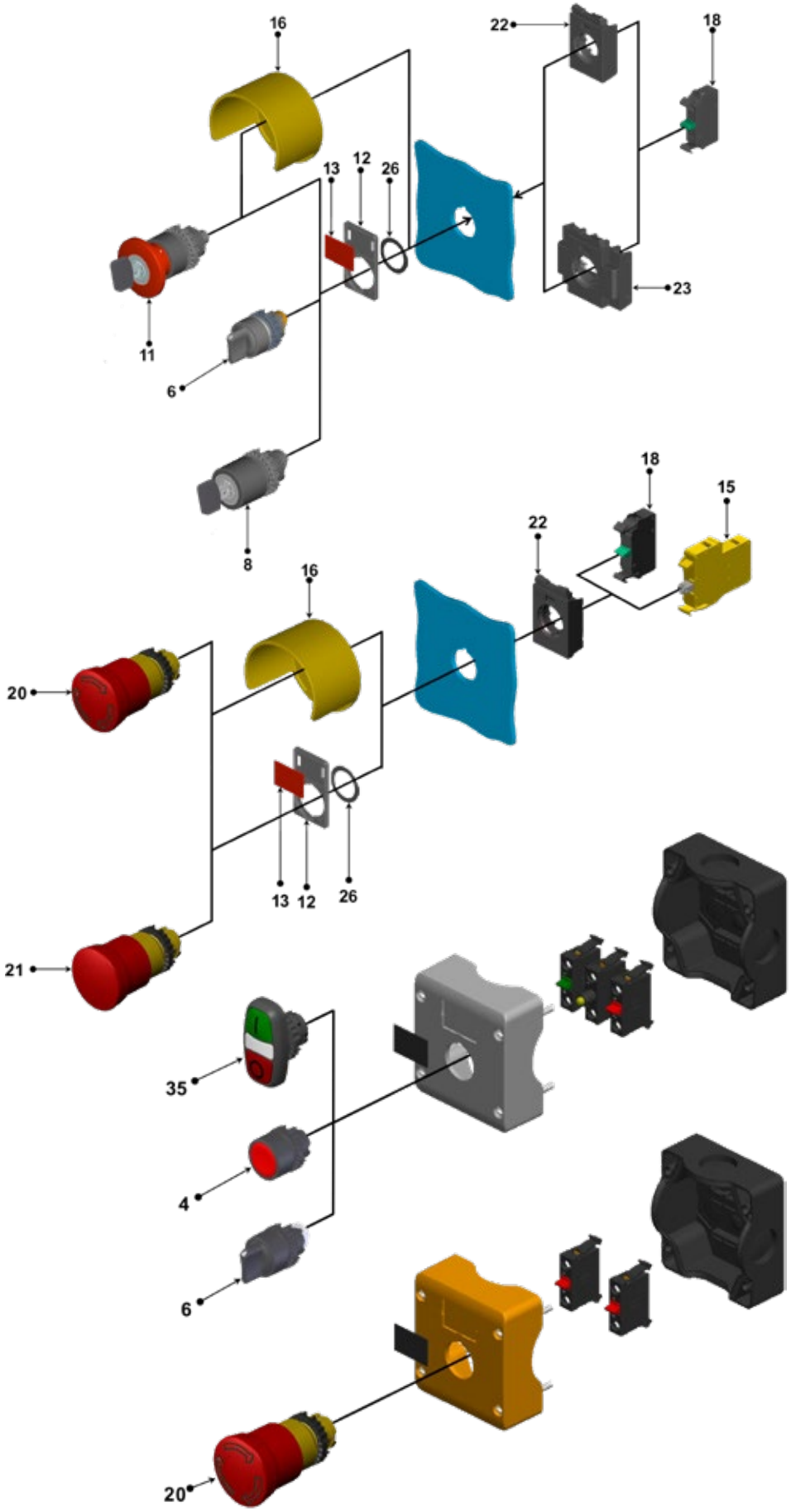
 Installation is not allowed

Mounting



Legend

№	Description
1	IP52 twin pushbutton
2	Protective silicone cap for twin pushbutton
3	Illuminated pushbutton
4	Flush head pushbutton
5	Protective silicone cap for flush head pushbutton
6	Switch/switch selector
7	Illuminated switch/switch selector
8	Switch key selector
9	Cap for LED module
10	Mushroom pushbutton
11	Mushroom pushbutton with key
12	Label plate
13	Marking plate (27 x 18 mm)
14	IP52 twin pushbutton
15	Mushroom pushbutton contact block with self-monitoring function
16	Protection against accidental pressing of the emergency STOP pushbutton
17	LED module
18	Contact block
19	Latch module
20	Emergency STOP mushroom pushbutton (turn to release)
21	Emergency STOP mushroom pushbutton (pull to release)
22	3-module holder for contact blocks and LED modules
23	5-module holder for contact blocks and LED modules
24	Extended head pushbutton, illuminated
25	Mushroom pushbutton, illuminated
26	Adaptor ring
27	Protective silicone cap for illuminated flush head and extended head pushbutton
28	Label plate for IP52 twin pushbutton


16
22
18
13
12
26
23
11
6
8
18
15
22
16
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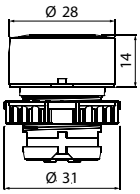
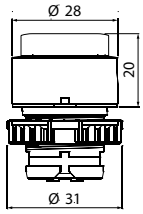
13
12
26
21
35
4
6
20

Dimensions, mounting

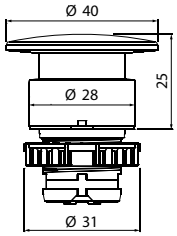
Non-illumitated flush head pushbutton



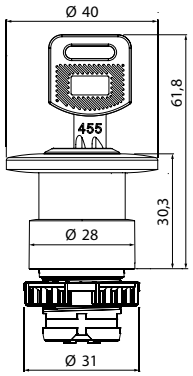
Non-illumitated extended head pushbutton



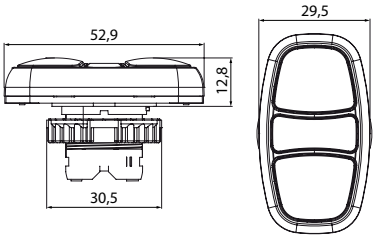
Mushroom pushbutton Ø 40 mm (illuminated)



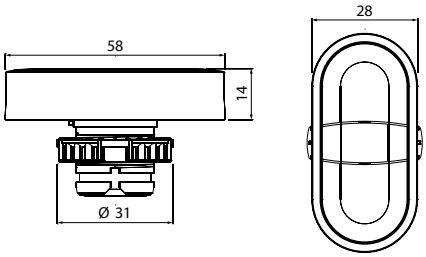
Mushroom pushbutton Ø 40 mm (with key)



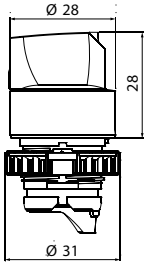
Twin pushbutton



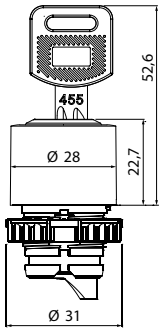
IP52 twin pushbutton



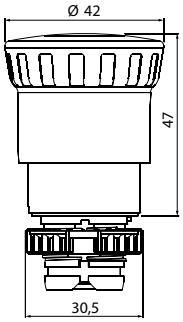
Non-illuminated two-position „0-1" and three-position „1-0-2" switch selector



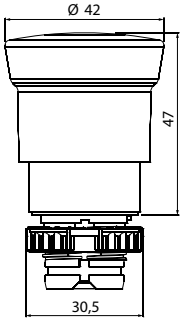
Two-position switch key selector „0-1"



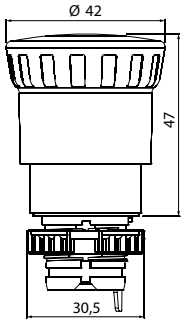
Emergency STOP mushroom pushbutton Ø 42 mm (turn to release)



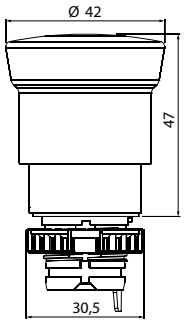
Emergency STOP mushroom pushbutton Ø 42 mm (pull to release)



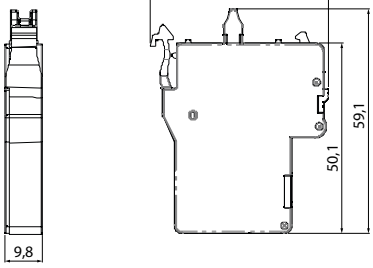
Emergency STOP mushroom pushbutton Ø 42 mm, self-monitoring function (turn to release)



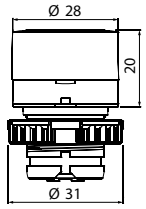
Emergency STOP mushroom pushbutton Ø 42 mm, self-monitoring function (pull to release)



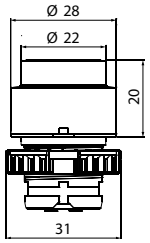
Contact block for Mushroom pushbutton with self-monitoring function



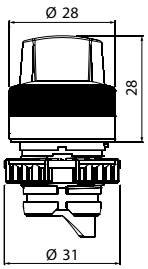
Illuminated flush head pushbutton



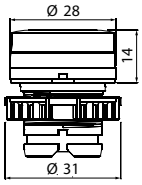
Illuminated extended head pushbutton



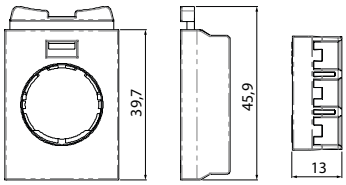
Illuminated two-position „0-1" and three-position „1-0-2" switch selector



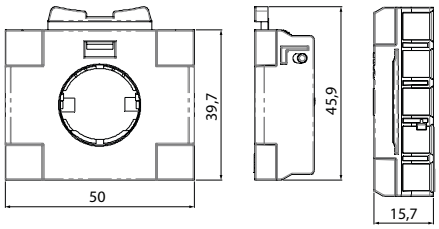
Cap for LED module



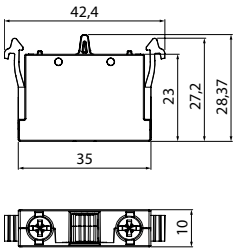
3-module holder for contact blocks and LED modules



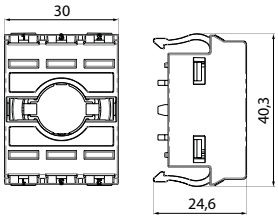
5-module holder for contact blocks and LED modules



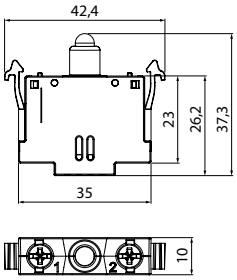
Contact block with screw terminals



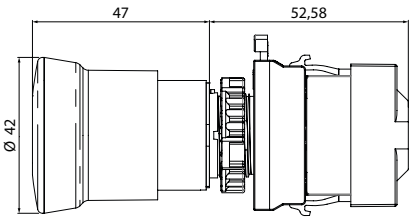
Latch module



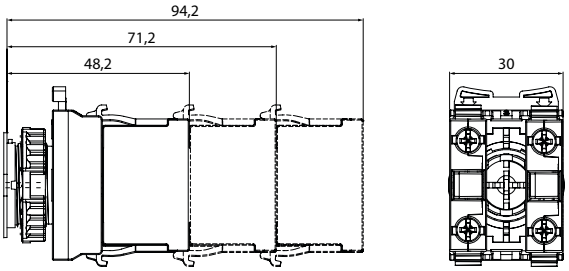
LED module

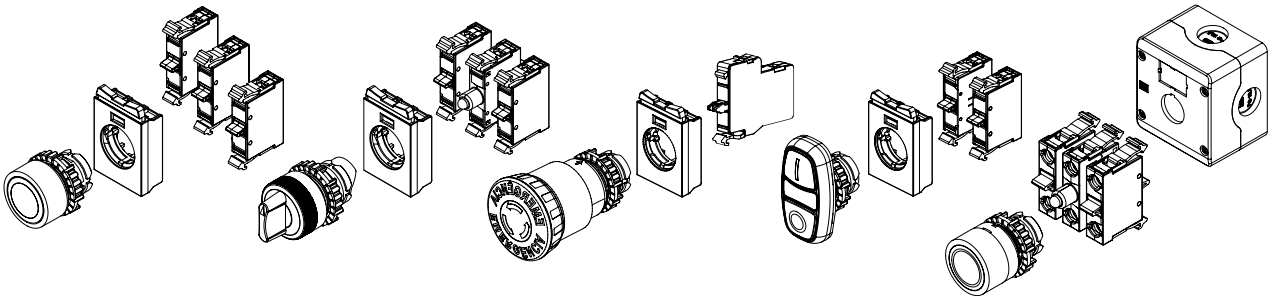


Mushroom emergency pushbutton kit:
- Emergency STOP mushroom pushbutton
- 3 modular contact block holder
- Contact blocks
- Module retainer

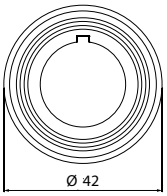


Installation of contact blocks 1, 2, 3 level

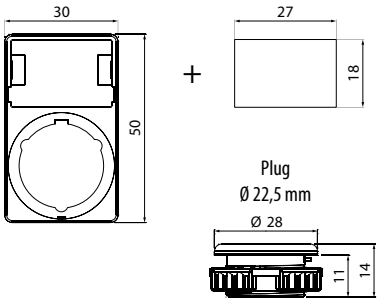




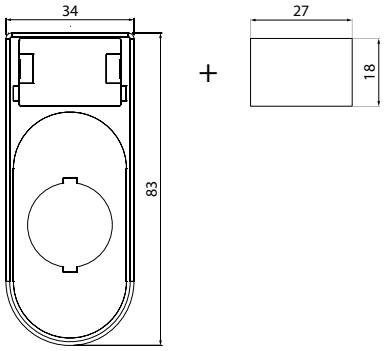
Adaptor ring



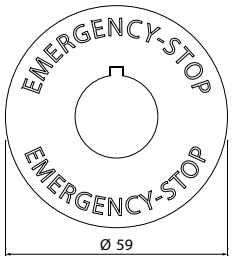
Label plate + marking plate (27 x 18 mm)



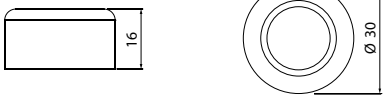
Label plate + marking plate (27 x 18 mm) for IP52 twin pushbutton module



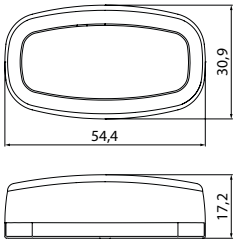
Name plate ring



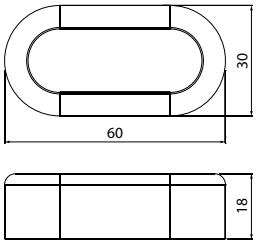
Protective silicone cap
NSE-SPC-PBF



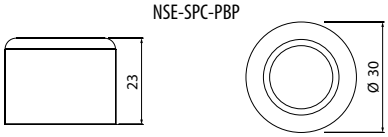
Protective silicone cap
NSE-SPC-PB2



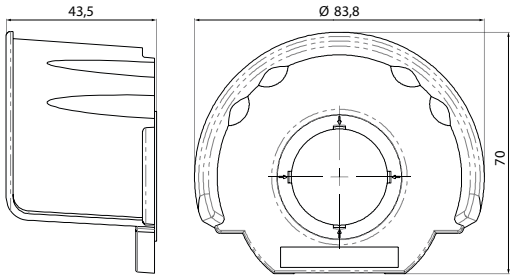
Protective silicone cap
NSE-SPC-PB2-F



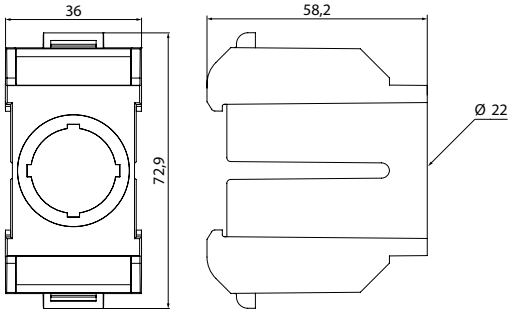
Protective silicone cap
NSE-SPC-PBP

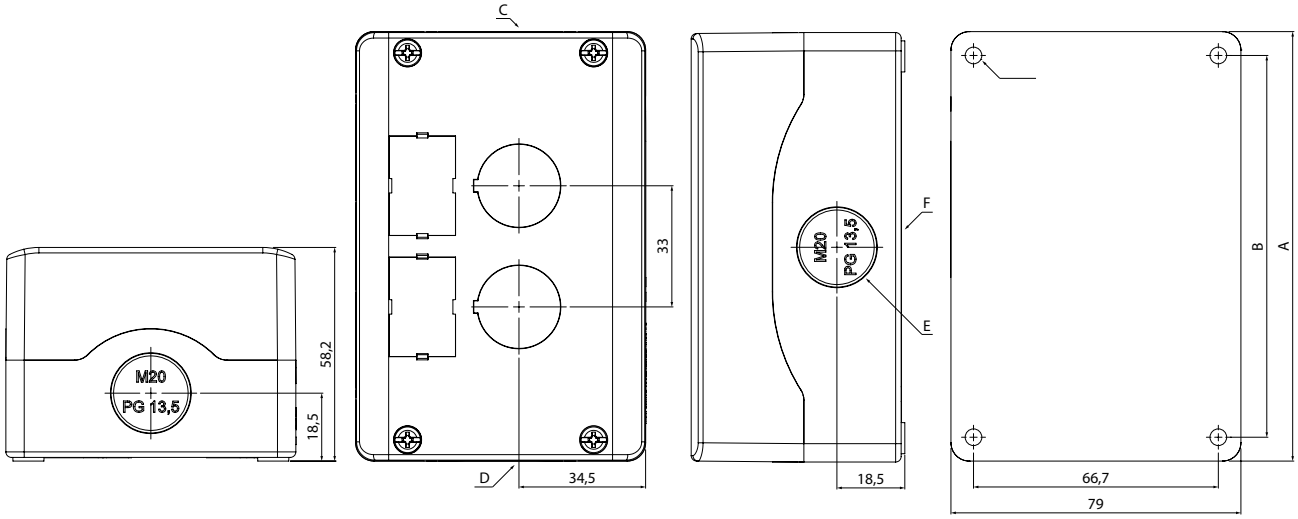


Protection against accidental pressing of the emergency STOP pushbutton



Adaptor for mounting on DIN rail





Enclosures

No. of holes	A	B	Cable entry			
			C (bottom)	D (above)	E (sideways)	F (with base)
1	74	66,7	1x ØM20/PG13,5	1x ØM20/PG13,5	1x ØM20/PG13,5	2x ØM16
2	117	104	1x ØM20/PG13,5	1x ØM20/PG13,5	1x ØM20/PG13,5	2x ØM16
3	150	137	1x ØM20/PG13,5	1x ØM20/PG13,5	2x ØM20/PG13,5	2x ØM16
4	183	170	1x ØM20/PG13,5	1x ØM20/PG13,5	2x ØM20/PG13,5	2x ØM16
6	249	236	1x ØM20/PG13,5	1x ØM20/PG13,5	2x ØM20/PG13,5	2x ØM16

ETITEC

Surge Arresters

Surge arresters ETITEC V **683**
Surge arresters ETITEC **701**
Surge arresters ETITEC M60 **721**

/etigroup

SWITCH TO
A SAFE FUTURE

Comparison table of protection parameters according to IEC/EN 61643-11

Technical specifications

Type			ETITEC ML T123 300/12,5		ETITEC V T12 280/12,5	ETITEC V T12 440/12,5
			1+0, 2+0, 3+0	1+1, 3+1	1+0, 2+0, 3+0, 4+0, 1+1, 3+1	
Class (IEC/EN/VDE)			T1, T2, T3 / I, II, III / B+C+D		T1, T2 / I, II / B+C	
Continuous operating voltage		Uc (AC)	300 V (L-N)	300 V (L-N) / 305 (N-PE)	280 V	440 V
Temporary overvoltage (TOV)	UT (AC)	5s	337 (L-N) withstand		335 V withstand	335 V withstand
		120 min	442 V Safe disconnect. (L-N) / 1200V 200 ms (N-PE) withstand		440 V Safe disconnect.	770 V Safe disconnect.
Max impulse current		limp (10/350)	12,5 kA	12,5 kA/50 kA	12,5 kA	
Nominal discharge current		In (8/20)	20 kA	20 kA (L-N)/50 kA(N-PE)	20 kA	
Max discharge current		Imax (8/20)	40 kA	40 kA (L-N)/100 kA(N-PE)	50 kA	
Voltage protection level		Up	1,5 kV	1,5 kV (L-N)/(N-PE)	1,3 kV	1,7 kV
Follow current		Ifi	N/A	100 ARMS (N-PE)	N/A	
Leakage current (IPE) at Uref		IPE at Uref	-		< 1 mA	
Permissible short-circuit current		ISCCR	50 kA		25 kA	
Dimensions (DIN)		-	1...4 DIN-modules		1...4 DIN-modules	
Fault indication		-	Yes (version with RC contact)			
Installation in panels/cabinets			ECM, ECT, ECG, ERP, ECH, ACT, WRP, EPC, GT, GSX, HXS			ECH, EPC, GT, SOLID GSX, HXS
Catalogue pages		-	706		686	
Type according to IEC/EN 61643-11		-	Type T1, T2 , T3		Type T1, T2	

Technical specifications

Type			ETITEC C T2 275/20	T2 440/20	T2 255/20 G	ETITEC V T2 255/20	V T2 440/20	ETITEC V 2T2 255/20	2T2 440/20	2T2 255/20
			1+0, 2+0, 3+0, 4+0, 1+1, 3+1					2+0, 4+0		1+1; 3+1
Class (IEC/EN/VDE)			T2 / II / C					T2/ II /C		
Continuous operating voltage		Uc (AC)	275 V	440 V	255 V	255 V	440 V	255 V	440 V	255 V
Temporary overvoltage (TOV)	UT (AC)	5s	335 V/5s withstand		1200V	335 V withstand	580 V withstand	335 V витимує	580 V withstand	335 V withstand
		120 min	440 V Safe disc.	440 V Safe disc.	-	440 V Safe disc.	770V Safe disc.	440 V Safe disc..	770 V Safe disc	440 V Safe disc
Nominal discharge current		In (8/20)	20 kA			20 kA		20 kA		
Max discharge current		Imax (8/20)	40 kA			40 kA		40 kA		
Voltage protection level		Up	<1,5 kV	<2,0 kV	<1,5 kV	1,25 kV	1,8 kV	1,8 kV	1,25 kV	<1,5/1,25 kV
Follow current		Ifi	N/A		>100 A	N/A		-		-
Leakage current (IPE) at Uref		IPE at Uref	< 0,2 mA		-	< 1 mA		<1mA		-
Permissible short-circuit current		ISCCR	25 kA		-	25 kA		10 kA		
Dimensions (DIN)		-	1...4 DIN-modules					1...2 DIN-modules		
Fault indication		-	Yes (version with RC contact)							
Installation in panels/cabinets			ECM, ECT, ECG, ERP, ECH, ACT, WRP, EPC, GT, GSX, HXS							
Catalogue pages		-	710			688		690		
Type according to IEC/EN 61643-11		-	Type T2					Type T2		

Technical specifications

Type		ETITEC T WENT 320/25
		1+0, 2+0, 3+0, 4+0, 1+1, 3+1
Class		T1, T2 / I, II / B+C
Uc (AC)		320 V
UT (AC)	5s	334 V withstand
	120 min	440 V safe disconnection
Iimp (10/350)		25 kA
In (8/20)		25 kA
Imax (8/20)		100 kA
Up		<1,5 kV
Ifi		100 ARMS
IPE at Uref		< 0,3 mA
ISCCR		50 kA
DIN		2...8 DIN-modules
RC		Yes (version with RC contact)
Installation		ECM, ECT, ECG, ERP, ECH, ACT, WRP, EPC, GT, GSX, HXS
Page		701
Type (IEC/EN)		Type T1,T2

Technical specifications

Type		ETITEC CM T23 275/20		ETITEC V 2T3 255/5	ETITEC V 2T3 440/5	ETITEC V 2T3 255/5	ETITEC D T3	
		2+0, 4+0	1+1; 3+1	2+0, 4+0		1+1; 3+1	1+0	
Class		T2, T3 / II,III / C+D		T3/III/D			T3/III/D	
Uc (AC)		275 V (L-N)	275 V(L-N)/255 (N-PE)	255 V	440 V	255 V	275 V	440 V
UT (AC)	5s	335 V withstand		335 V withstand	580V withstand	335 V withstand	335 V withstand	
	120 min	440 V Safe disconnect.	440 V Safe disconnect.	440 V Safe disconnect.	770 V Safe disconnect.	440 V Safe disconnect.	440 V Safe disconnect.	440 V withstand
In (8/20)		20 kA	20 kA (L-N)/(N-PE)	5 kA			3 kA	
Imax (8/20)		40 kA	40 kA (L-N)/(N-PE)	15 kA			10 kA	
Up		1,5 kV	1,5 kV (L-N)/(N-PE)	0,9 kV	1,3 kV	1,5/0,9 kV	<1,4 kV	<1,6 kV
Ifi		-	100 ARMS (N-PE)	N/A			N/A	
IPE at Uref		-	-	< 1 mA		-	< 0,3 mA	
ISCCR		25 kA		10 kA			25 kA	
DIN		1...2 DIN-modules		1...2 DIN-modules			1 DIN-modules	
RC		Yes (version with RC contact)						
Installation		ECM, ECT, ECG, ERP, ECH, ACT, WRP, EPC, GT, GSX, HXS						
Crop.		714		683			717	
Type (IEC/EN)		Type T2, T3		Type T3				

ETITEC Surge arresters ETITEC V

Surge arrester ETITEC V T12

EN/IEC/VDE: T1,T2/I,II/B,C

Description
- Type 1 + 2 AC power surge protector
- In : 20 kA
- Iimp : 12,5 kA
- Pluggable module for each phase
- Remote signaling (option)
- EN 61643-11 and IEC 61643-11 compliant

Type designation:
ETITEC V T12 xxx/12,5 p+c RC

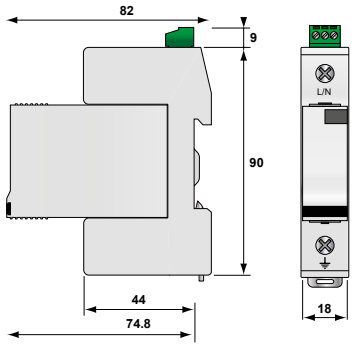
xxx - Uc voltage (max. AC operating voltage), must be above network voltage.
12.5 - 12,5kA(Iimp at 10/350µs)
p - number of poles with MOV
c - 0 for MOV at NPE pole, 1 for GDT (TT systems)
RC - remote contact (change over contact) for fault signalisation

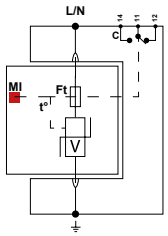
ETITEC V T12 I_{imp}=12,5kA

Type		ETITEC V T12 280	ETITEC V T12 400
Description		1+2 AC surge protector - 1-pole	
Rated. AC voltage	U_o	230/400	230/400 V
Max. AC operating voltage	U_c	280 VAC	440 VAC
Temporary Over Voltage (TOV) Characteristics - 5 sec.	U_T	335 Vac withstand	580 Vac withstand
Temporary Over Voltage (TOV) Characteristics -120 min	U_T	440 Vac disconnection	770 Vac disconnection
Residual current - Leakage current at Uc	I_{pe}	< 1 mA	< 1 mA
Follow current	I_f	x	x
Nominal discharge current - 15 x 8/20 µs impulses	I_n	20 kA	20 kA
Max. discharge current -max. withstand @ 8/20 µs by pole	I_{max}	50 kA	50 kA
Impulse current by pole - max. withstand 10/350µs	I_{imp}	12,5 kA	12,5 kA
Specific energy by pole	W/R	40 kJ/ohm	40 kJ/ohm
Protection level	U_p	1,3 kV	1,7 kV
Admissible short-circuit current	I_{sccr}	25000 A	25000 A
Current Source generator		1mA	
Un min (MOV)		387 V AC	
Un max (MOV)		473 V AC	
Associated disconnectors			
Thermal disconnector		internal	
Fuses		Fuses Type gG - 125 A	
Installation ground fault breaker		Type "S" or delayed	
Mechnical characteristics			
Dimensions		see diagram	
Connection to Network		By screw terminals: 2,5-25 mm² / by bus	
Disconnection indicator		1 mechanical indicator	
Remote signaling of disconnection		output on changeover contact	
Mounting		Symmetrical rail 35 mm (EN60715)	
Operating temperature		-40 ... +85°C	
Protection rating		IP20	
Housing material		Thermoplast UL94-V0	
Standards compliance		IEC 61643-11 / EN 61643-11	

Dimensions

1+1, 3+1: 82mm
1+0, 2+0, 3+0, 4+0: 67mm





V: High energy MOV
Mi: Disconnection indicator
Ft: Thermal fuse
t°: Thermal disconnection mechanism
C: contact for remote signal

ETITEC V T12

Type	Code No.	I_{imp} (10/350) [kA]	I_n/I_{max} (8/20) [kA]	Uc [V AC]	Network	g	
ETITEC V T12 280/12,5 1+0	002442900	12,5	20/50	280	TNC	129	1/72
ETITEC V T12 440/12,5 1+0	002442901	12,5	20/50	440	IT	129	1/72
ETITEC V T12 280/12,5 2+0	002442902	12,5	20/50	280	TNC-S	260	1/36
ETITEC V T12 280/12,5 1+1	002442903	12,5	20/50	280	TT	235	1/36
ETITEC V T12 440/12,5 2+0	002442904	12,5	20/50	440	IT	260	1/36
ETITEC V T12 280/12,5 3+0	002442905	12,5	20/50	280	TNC	390	1/24
ETITEC V T12 440/12,5 3+0	002442906	12,5	20/50	440	IT	390	1/24
ETITEC V T12 280/12,5 4+0	002442907	12,5	20/50	280	TNC-S	490	1/18
ETITEC V T12 280/12,5 3+1	002442908	12,5	20/50	280	TT	492	1/18
ETITEC V T12 440/12,5 4+0	002442909	12,5	20/50	440	IT	490	1/18
ETITEC V T12 280/12,5 1+0 RC	002442910	12,5	20/50	280	TNC	129	1/72
ETITEC V T12 440/12,5 1+0 RC	002442911	12,5	20/50	440	IT	129	1/72
ETITEC V T12 280/12,5 2+0 RC	002442912	12,5	20/50	280	TNC-S	260	1/36
ETITEC V T12 280/12,5 1+1 RC	002442913	12,5	20/50	280	TT	235	1/36
ETITEC V T12 440/12,5 2+0 RC	002442914	12,5	20/50	440	IT	260	1/36
ETITEC V T12 280/12,5 3+0 RC	002442915	12,5	20/50	280	TNC	390	1/24
ETITEC V T12 440/12,5 3+0 RC	002442916	12,5	20/50	440	IT	390	1/24
ETITEC V T12 280/12,5 4+0 RC	002442917	12,5	20/50	280	TNC-S	490	1/18
ETITEC V T12 280/12,5 3+1 RC	002442918	12,5	20/50	280	TT	492	1/18
ETITEC V T12 440/12,5 4+0 RC	002442919	12,5	20/50	440	IT	490	1/18

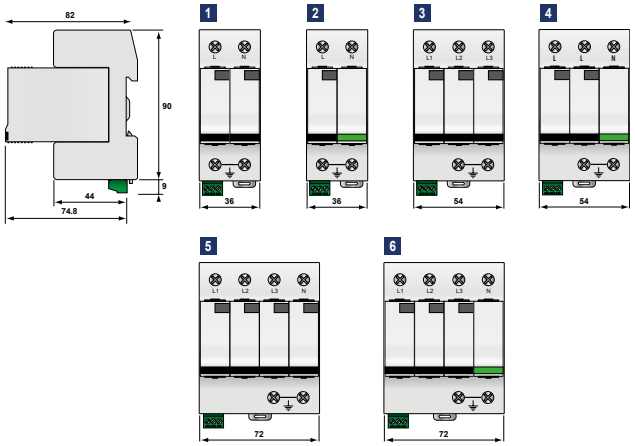
ETITEC V T12 440/12,5 3+1

TT configurations: 1+1 and 3+1 housing size (height=82mm)...
Housing size (height=82mm) not compatible with all modular enclosures. It complies only to ECH series and SOLID GSX.

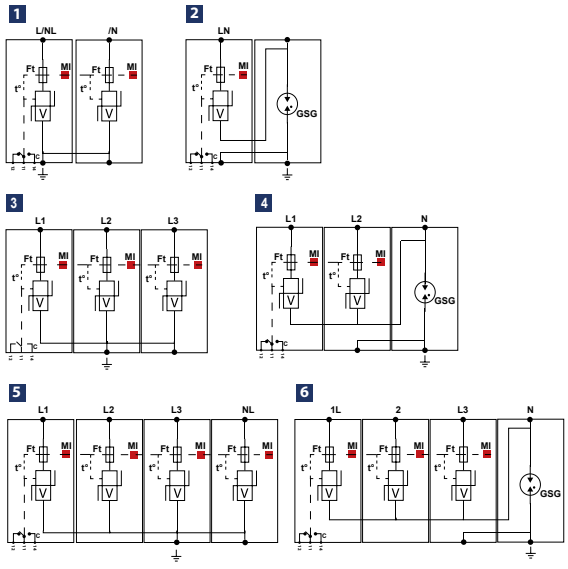
NOT COMPATIBLE WITH ECG, ECM, ACT and ECT series!

Dimensions

1+1, 3+1: 82mm
1+0, 2+0, 3+0, 4+0: 67mm



Internal Configuration



V: High energy MOV
GSG: Specific gas tube
Mi: Disconnection indicator
Ft: Thermal fuse
t°: Thermal disconnection mechanism
C: Contact for remote signal

Surge arrester ETITEC V T2

EN/IEC/VDE: T2/II/C

Description
- Type 2 AC surge protector
- In : 20 kA
- Imax : 40 kA
- Pluggable module for each phase
- Remote signaling option
- IEC 61643-11 and EN 61643-11 compliance
- UL1449 ed.4

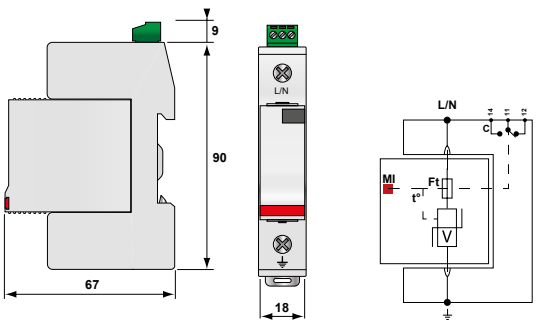
Type designation:
ETITEC V T2 xxx/20 p+c RC

xxx - Uc voltage (max. AC operating voltage), must be above network voltage.
20 - 20kA(In at 8/20µs)
p - number of poles with MOV
c - 0 for MOV at NPE pole, 1 for GDT (TT systems)
RC - remote contact (Change over contact) for fault signalisation

ETITEC V T2

Type		ETITEC V T2 255	ETITEC V T2 440
Description		Type 2 AC surge protector - one-phase - pluggable	
Network	U_o	230/400 V	230/400 V
Max. AC operating voltage	U_c	255 VAC	440 VAC
Temporary Over Voltage (TOV) Characteristics - 5 sec.	U_T	335 Vac withstand	580 Vac withstand
Temporary Over Voltage (TOV) Characteristics - 120 min	U_T	440 Vac disconnection	770 Vac disconnection
Residual current - Leakage current at Uc	I_{pe}	< 1 mA	< 1 mA
Follow current	I_f	x	x
Nominal discharge current - 15 x 8/20 µs impulses	I_n	20 kA	20 kA
Max. discharge current -max. withstand @ 8/20 µs by pole	I_{max}	40 kA	40 kA
Protection level	U_p	1,25 kV	1,8 kV
Admissible short-circuit current	I_{sccr}	25000 A	25000 A
Current Source generator		1mA	
Un min (MOV)		387 V AC	
Un max (MOV)		473 V AC	
Associated disconnectors			
Thermal disconnector		internal	
Fuses		gG 125 A	
Installation ground fault breaker		Type "S" or delayed	
Mechnical characteristics			
Dimensions		see diagram	
Connection to Network		By screw terminals: 2,5-25 mm² / by bus	
Disconnection indicator		1 mechanical indicator	
Remote signaling of disconnection		output on changeover contact	
Mounting		Symmetrical rail 35 mm (EN60715)	
Operating temperature		-40 ... +85°C	
Protection rating		IP20	
Housing material		Thermoplast UL94-V0	
Standards compliance		IEC 61643-11 / EN 61643-11	

Dimensions



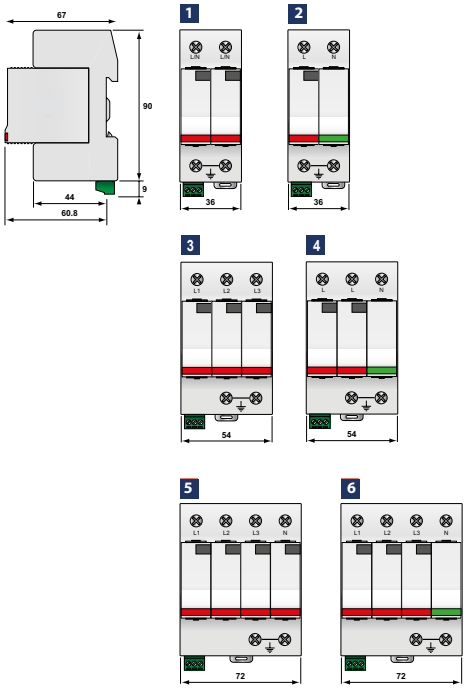
V: High-energy varistor
Ft: Thermal fuse
C: Remote signaling contact
t°: Thermal disconnection system
Mi : Disconnection indicator

ETITEC V T2

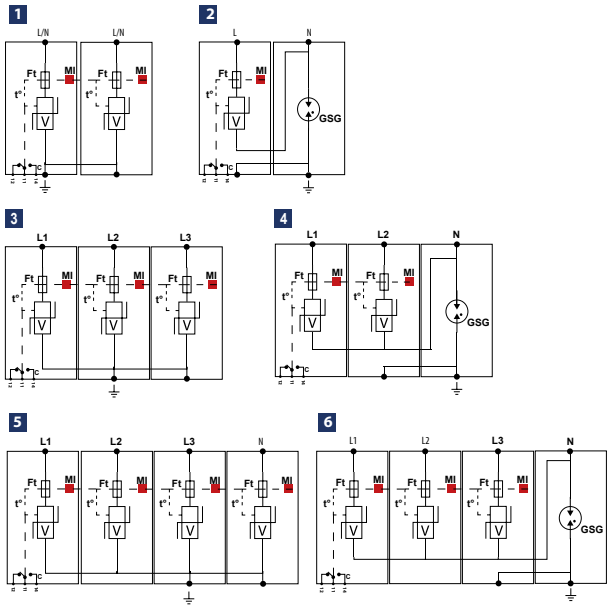
Type	Code No.	I_n/I_{max} (8/20) [kA]	U_c [V AC]	Network	g	
ETITEC V T2 255/20 1+0	002442952	20/40	255	TNC	107	1/72
ETITEC V T2 255/20 2+0	002442953	20/40	255	TNC-S	263	1/36
ETITEC V T2 255/20 1+1	002442954	20/40	255	TT	216	1/36
ETITEC V T2 255/20 3+0	002442955	20/40	255	TNC	319	1/24
ETITEC V T2 255/20 4+0	002442956	20/40	255	TNC-S	420	1/18
ETITEC V T2 255/20 3+1	002442957	20/40	255	TT	431	1/18
ETITEC V T2 255/20 1+0 RC	002442958	20/40	255	TNC	107	1/72
ETITEC V T2 255/20 2+0 RC	002442959	20/40	255	TNC-S	263	1/36
ETITEC V T2 255/20 1+1 RC	002442960	20/40	255	TT	216	1/36
ETITEC V T2 255/20 3+0 RC	002442961	20/40	255	TNC	319	1/24
ETITEC V T2 255/20 4+0 RC	002442962	20/40	255	TNC-S	420	1/18
ETITEC V T2 255/20 3+1 RC	002442963	20/40	255	TT	431	1/18
ETITEC V T2 440/20 1+0 RC	002442964	20/40	440	TNC	107	1/72
ETITEC V T2 440/20 2+0 RC	002442965	20/40	440	TNC-S	263	1/36
ETITEC V T2 440/20 3+0 RC	002442966	20/40	440	TNC	319	1/24
ETITEC V T2 440/20 4+0 RC	002442967	20/40	440	TNC-S	420	1/18

ETITEC V T2 255/20 3+0

Dimensions



Internal Configuration



V: High-energy varistor
GSG: Specific gas tube
Ft: Thermal fuse
C: Remote signaling contact
t°: Thermal disconnection system
Mi: Disconnection indicator

Type 2 multipole SPDs

Description
- Compact single-phase Type 2 / Compact 3-phase Type 2
- In : 20 kA
- Imax : 40 kA
- Pluggable module
- Remote signaling contact (option)
- EN 61643-11 and IEC 61643-11 compliant

Type designation:
ETITEC V 2T2 xxx/20 p+c RC

xxx - Uc voltage (max. AC operating voltage), must be above network voltage.
20 - 20kA(In at 8/20µs)
p - number of poles with MOV
c - 0 for MOV at NPE pole, 1 for GDT (TT systems)
RC - remote contact (Change over contact) for fault signalisation

ETITEC V 2T2

Description		Compact 1-phase Type 2 Surge Protector - 230 V - Pluggable			Compact 3-phase+N Type 2 surge protector - 230/400 V - Pluggable		
Network	U_o	230 V 1-ph	230 V 1-ph	230 V 1-ph	230/400 V 3-ph	230/400 V 3-ph	230/400 V 3-ph
Connection mode		L/PE & N/PE	L/PE & N/PE	L/N & N/PE	L/PE & N/PE	L/PE & N/PE	L/N & N/PE
AC system		IT	TN	TT-TN	IT	TN	TT-TN
Max. AC operating voltage	U_c	440 VAC	255 VAC	255 VAC	440 VAC	255 VAC	255 VAC
Temporary Over Voltage (TOV) Characteristics - 5 sec.	U_T	580 Vac withstand	335 Vac withstand	335 Vac withstand	580 Vac withstand	335 Vac withstand	335 Vac withstand
Temporary Over Voltage (TOV) Characteristics - 120 min	U_T	770 Vac disconnection	440 Vac disconnection	440 Vac disconnection	770 Vac disconnection	440 Vac disconnection	440 Vac disconnection
Temporary Over Voltage N/PE (TOV HT)	U_T	-	-	1200 V/300A/200 ms withstand	-	-	1200 V/300A/200 ms withstand
Residual current - Leakage current at Uc	I_{pe}	< 1 mA	< 1 mA	x	< 1 mA	< 1 mA	x
Max. Load current (if connection serie)	I_L	20 A	20 A	20 A	-	-	-
Nominal discharge current - 15 x 8/20 µs impulses	I_n	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Max. discharge current -max. withstand @ 8/20 µs by pole	I_{max}	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA
Protection level CM/DM* @In (8/20µs) and @ 6kV (1.2/50µs)	U_p	1,8 kV	1,25 kV	1,5/1,25 kV	1,8 kV	1,25 kV	1,5/1,25 kV
Admissible short-circuit current	I_{scr}	10000 A	10000 A	10000 A	10000 A	10000 A	10000 A
Current Source generator		1mA	1mA	1mA	1mA	1mA	1mA
Un min (MOV)		387 V AC	387 V AC	387 V AC	387 V AC	387 V AC	387 V AC
Un max (MOV)		473 V AC	473 V AC	473 V AC	473 V AC	473 V AC	473 V AC
Associated disconnectors							
Thermal disconnector		internal					
Fuses		Fuses Type gG - 50 A					
Installation ground fault breaker		Type "S" or delayed					
Mechnical characteristics							
Dimensions		see diagram					
Connection to Network		by screw terminals: 1,5-10mm^2 (L/N) or 2,5-25mm^2 (PE)					
Disconnection indicator		2 mechanical indicators					
Remote signaling of disconnection		output on changeover contact					
Mounting		Symmetrical rail 35 mm (EN60715)					
Operating temperature		-40 ... +85°C					
Protection rating		IP20					
Housing material		Thermoplast UL94-V0					
Standards compliance		IEC 61643-11 / EN 61643-11					

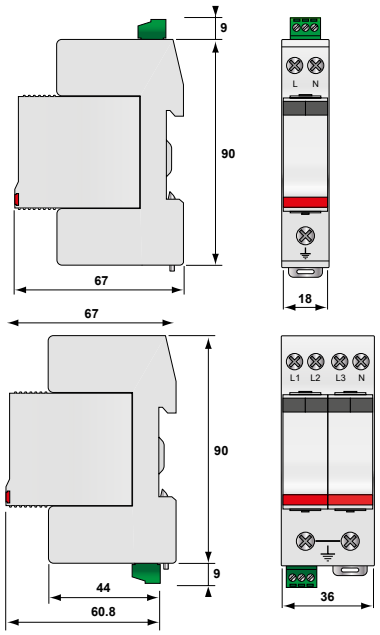
ETITEC V 2T2

Type	Code No.	I_n/I_{max} (8/20) [kA]	U_c [V AC]	Network	g	
ETITEC V 2T2 255/20 2+0	002442940	20/40	255	TNC-S	131	1/72
ETITEC V 2T2 440/20 2+0	002442941	20/40	440	TNC-S	131	1/72
ETITEC V 2T2 255/20 1+1	002442942	20/40	255	TT	140	1/72
ETITEC V 2T2 255/20 4+0	002442943	20/40	255	TNC-S	380	1/36
ETITEC V 2T2 440/20 4+0	002442944	20/40	440	TNC-S	380	1/36
ETITEC V 2T2 255/20 3+1	002442945	20/40	255	TT	240	1/36
ETITEC V 2T2 255/20 2+0 RC	002442946	20/40	255	TNC-S	131	1/72
ETITEC V 2T2 440/20 2+0 RC	002442947	20/40	440	TNC-S	131	1/72
ETITEC V 2T2 255/20 1+1 RC	002442948	20/40	255	TT	140	1/72
ETITEC V 2T2 255/20 4+0 RC	002442949	20/40	255	TNC-S	380	1/36
ETITEC V 2T2 440/20 4+0 RC	002442950	20/40	440	TNC-S	380	1/36
ETITEC V 2T2 255/20 3+1 RC	002442951	20/40	255	TT	240	1/36

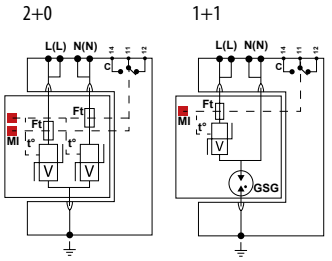
ETITEC V 2T2 255/20 2+0 RC

ETITEC V 2T2 255/20 4+0

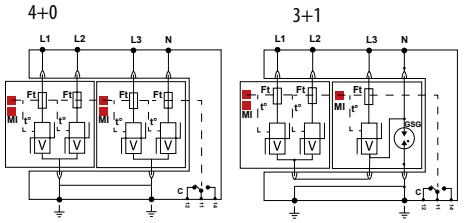
Dimensions



Internal Configuration



V : High energy varistor
GSG : Specific GDT
Ft : Thermal fuse
C : Remote signaling contact
t° : Thermal disconnection system
MI: Disconnection indicator



V : High energy varistor
GSG : Specific GDT
Ft : Thermal fuse
C : Remote signaling contact
t° : Thermal disconnection system
MI : Disconnection indicator

Type 3 (weak type2) multipole SPDs

Description
- Compact single-phase SPD / Compact 3-phase SPD
- In : 5 kA
- Imax : 15 kA
- Pluggable module
- Remote signaling contact (option)
- IEC 61643-11 and EN 61643-11 compliant

Type designation:
ETITEC V 2T3 xxx/5 p+c RC

xxx - Uc voltage (max. AC operating voltage), must be above network voltage.
5 - 5kA(In at 8/20µs)
p - number of poles with MOV
c - 0 for MOV at NPE pole, 1 for GDT (TT systems)
RC - remote contact (Change over contact) for fault signalisation

Hard-wired AC Surge Protectors

Description - ETITEC L3 255/3/6
- Ultra Compact Type 3 surge protectors for 230 Vac networks
- Mounting on plate or terminal
- Disconnection signaling by buzzer or Led system
- 24 V AC or DC version available
- EN 61643-11, IEC 61643-11 and UL1449 4ed. compliant

ETITEC L3 255/3/6

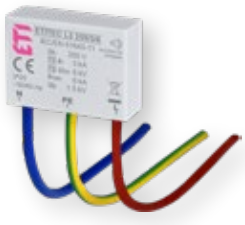
These very compact surge protectors can be integrated in the very small volumes of certain lights (linear LEDs). The surge protection circuit is equipped with an end of life indicator buzzer in order to indicate the disconnection of the surge protector.

Description - ETITEC L3 255/3/10
Compact Type 2 and 3 surge protectors
Wall mounting and hard wired connection
UL1449 4ed. and IP 66
Status indicators
EN 61643-11, IEC 61643-11 and UL1449 4ed. compliant

ETITEC V 2T3

Type	Code No.	I_n/I_{max} (8/20) [kA]	U_{oc} [kV]	U_c [V AC]	Network	g	
ETITEC V 2T3 255/5 2+0	002442968	5/15	10	255	TNC-S	104	1/72
ETITEC V 2T3 440/5 2+0	002442969	5/15	10	440	TNC-S	104	1/72
ETITEC V 2T3 255/5 1+1	002442970	5/15	10	255	TT	111	1/72
ETITEC V 2T3 255/5 4+0	002442971	5/15	10	255	TNC-S	218	1/36
ETITEC V 2T3 440/5 4+0	002442972	5/15	10	440	TNC-S	218	1/36
ETITEC V 2T3 255/5 3+1	002442973	5/15	10	255	TT	218	1/36
ETITEC V 2T3 255/5 2+0 RC	002442974	5/15	10	255	TNC-S	104	1/72
ETITEC V 2T3 440/5 2+0 RC	002442975	5/15	10	440	TNC-S	104	1/72
ETITEC V 2T3 255/5 1+1 RC	002442976	5/15	10	255	TT	111	1/72
ETITEC V 2T3 255/5 4+0 RC	002442977	5/15	10	255	TNC-S	218	1/36
ETITEC V 2T3 440/5 4+0 RC	002442978	5/15	10	440	TNC-S	218	1/36
ETITEC V 2T3 255/5 3+1 RC	002442979	5/15	10	255	TT	218	1/36
ETITEC L3 255/3/6	002442987	3/6	6	255	TNC-S 1ph.	20	1/72

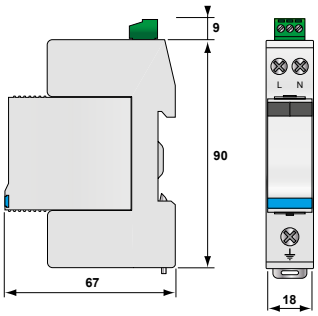
ETITEC V 2T3 255/5 3+1

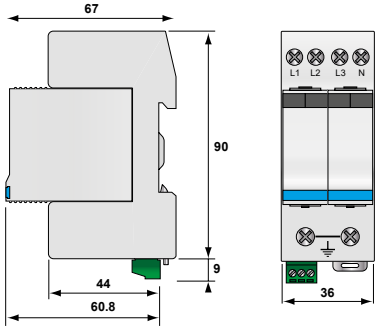

ETITEC L3 255/3/6

ETITEC V 2T3

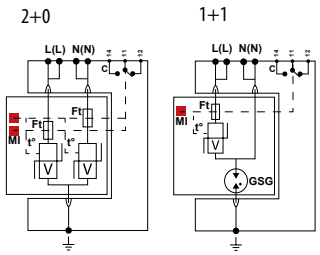
Description		Compact 1-phase Type 2 (and 3) surge protector - 230 V -Pluggable			Compact 3-phase+N Type 2 (and 3) surge protector - 230/400 V - Pluggable		
Network	U_o	230 V 1-ph	230 V 1-ph	230 V 1-ph	230/400 V 3-ph	230/400 V 3-ph	230/400 V 3-ph
Connection mode		L/PE & N/PE	L/PE & N/PE	L/N & N/PE	L/N & N/PE	L/N & N/PE	L/N & N/PE
AC system		IT	TN	TT-TN	IT	TN	TT-TN
Max. AC operating voltage	U_c	440 VAC	255 VAC	255 VAC	440 VAC	255 VAC	255 VAC
Temporary Over Voltage (TOV) Characteristics - 5 sec.	U_T	580 Vac withstand	335 Vac withstand	335 Vac withstand	580 Vac withstand	335 Vac withstand	335 Vac withstand
Temporary Over Voltage (TOV) Characteristics - 120 min	U_T	770 Vac disconnection	440 Vac disconnection	440 Vac disconnection	770 Vac disconnection	440 Vac disconnection	440 Vac disconnection
Temporary Over Voltage N/PE (TOV HT)	U_T	-	-	1200 V/300A/200 ms withstand	-	-	1200 V/300A/200 ms withstand
Residual current - Leakage current at Uc	I_{pe}	< 1 mA	< 1 mA	x	< 1 mA	< 1 mA	x
Max. Load current (if connection serie)	I_L	20 A	20 A	20 A	-	-	-
Nominal discharge current - 15 x 8/20 µs impulses	I_n	5 kA	5 kA	5 kA	5 kA	5 kA	5 kA
Max. discharge current -max. withstand @ 8/20 µs by pole	I_{max}	15 kA	15 kA	15 kA	15 kA	15 kA	15 kA
Withstand on overvoltages IEEE C62.41.1	U_{oc}	10 kV	10 kV	10 kV	10 kV	10 kV	10 kV
Protection level CM/DM* @In (8/20µs) and @ 6kV (1.2/50µs)	U_p	1.3 kV	0.9 kV	1.5/0.9 kV	1.3 kV	0.9 kV	1.5/0.9 kV
Admissible short-circuit current	I_{scr}	10000 A	10000 A	10000 A	10000 A	10000 A	10000 A
Associated disconnectors							
Thermal disconnector		internal					
Fuses		Fuses Type gG - 20 A					
Installation ground fault breaker		Type "S" or delayed					
Mechnical characteristics							
Dimensions		see diagram					
Connection to Network		by screw terminals: 1,5-10mm² (L/N) or 2,5-25mm² (PE)					
Disconnection indicator		4 mechanical indicators					
Remote signaling of disconnection		output on changeover contact					
Mounting		Symmetrical rail 35 mm (EN60715)					
Operating temperature		-40 ... +85°C					
Protection rating		IP20					
Housing material		Thermoplast UL94-V0					
Standards compliance		IEC 61643-11 / EN 61643-11					

Dimensions

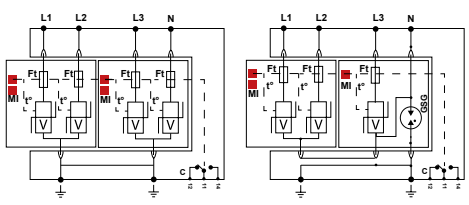




Internal Configuration



V : High energy varistor
Ft : Thermal fuse
C : Remote signaling contact
t° : Thermal disconnection system
GSG: Specific GDT
MI : Disconnection indicator



V : High energy varistor
Ft : Thermal fuse
C : Remote signaling contact
t° : Thermal disconnection system
GSG: Specific GDT
MI : Disconnection indicator

LED lighting protection

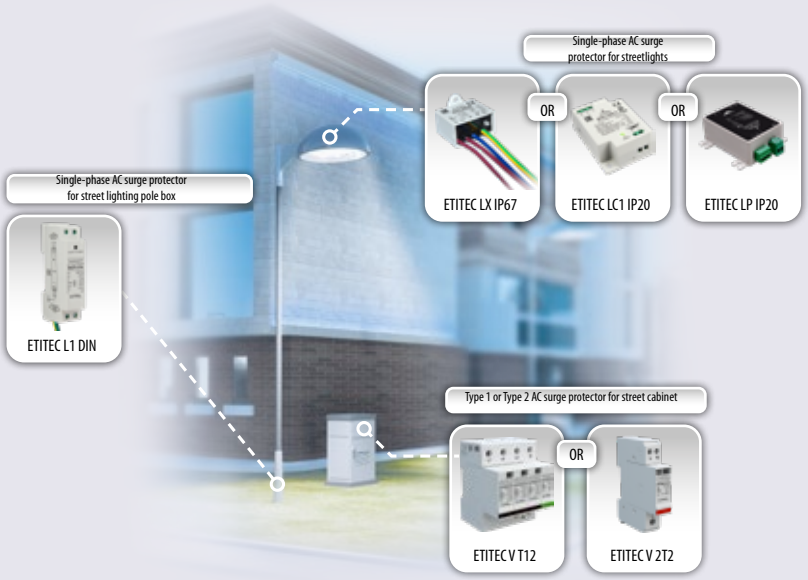
ETITEC LC1 IP20 range is a compact solution surge protectors to be installed in small spaces. These devices are available in 2 types of connectors (screw terminal or spring) and in two orientations wiring (input / output opposite or input / output on the same side) in order to adapt to the installation as much as possible. In cases of extreme aggression, lightning LC1 will be in a state of safe end of life: the indication of failure (disconnection) of the surge protector is performed by the extinction of an indicator and switching off the AC (extinction street luminaire) inform the user of the need for maintenance.

ETITEC LX range is an ultra compact surge protection solution for installation in extremely tight spaces. These surge protectors are available with an output by drivers and fixing bracket. In the end of life of security the LX indicates its failure (disconnection) by the extinction of an indicator and AC power supply switching off (extinction of the candelabra) inform the user of the need for maintenance. They are available in IP67.

ETITEC LP range is a complete range of AC surge protectors specifically designed for the protection of LED lighting systems at the lantern. Many versions have been proposed to meet the various existing configurations: surge protection devices are available in different isolation classes (Class 1, Class 2) and connection type (wire or screw terminal). Some versions are equipped with additional protection for data line option (RS485,DALI, 0-10V) to provide a complete solution for LED systems with control lines. In cases of extreme aggression, the surge protector will be in a state of retirement security: according to the different versions available, an indication of the failure of the surge protector is performed by the extinction of an indicator, a AC power supply failure and / or through a remote signalisation.

ETITEC L1 DIN device is installed inside the bottom of the lighting pole: its very compact dimension allows a easy integration with the connection box, on DIN rail . L1 is based on a powerful association of MOV and GDT components, secured by thermal disconnector and connection light indicator.

Type		Description	Characteristics	Properties	Network
ETITEC L1 DIN		DIN surge protector type 2 or 3	Compact. Montage DIN	Type 2+3, CM/DM, mounted in connection box on DIN rail.	Supply 230 V AC
ETITEC LP1 IP20		Hard-wired surge protector type 2 or 3	Remote signaling and data in option	Type 2 + 3, protection class I (GDT to earth), screw terminal.	
ETITEC LP2 IP20				Type 2 + 3, protection class II, screw terminal for double insulated fixtures.	
ETITEC LC1 IP20		Compact, hard-wired surge protector type 2 and type 3	Compact. Many configurations	Type 2 + 3, protection class I (GDT to earth), screw terminal, very compact	
ETITEC LX1 IP67		Ultra-compact hard-wired surge protector type 2+3	Ultra compact IP67 VG Technology	Type 2 + 3, protection class I (GDT to earth), connection cable, IP67.	
ETITEC LX2 IP67				Type 2 + 3, protection class II for double insulated fixtures, connection cable, IP67.	



ETITEC LC1 IP20
- Type 2 (or 3) surge protectors for LED lighting
- Very compact
- Plate mounting
- Screw terminal or spring terminal connection
- Status indicator
- End of life AC Disconnection
- IEC 61643-11 and EN 61643-11 compliance

ETITEC LX
- Ultra compact Type 2 + 3 surge protector for 230 Vac networks
- For Classe I and Classe II
- Wall mounting and hard wired connection
- Breakable mounting bracket
- Protection rating : IP67
- Disconnection signaling by indicator
- AC disconnection in case of end of life

ETITEC LP1 and LP2
- Type 2 (or 3) surge protector
- Class I or Class II configurations
- Comprehensive range for all configurations
- Compact dimensions
- IP65 version
- Combined AC/Dataline version
- Wire connection
- Max. discharge current 10 kA
- IEC 61643-11 and EN 61643-11 compliant

ETITEC L1 DIN
- Type 2 (or 3) surge protectors for Led
- Very compact (low profile)
- DIN rail mounting
- Screw terminal connection
- Status indicator
- Disconnection AC end of life
- IEC 61643-11 and EN 61643-11 compliance

LED lighting protection

Type	Code No.	I_n/I_{max} (8/20) [kA]	U_{oc} [kV]	U_c [V AC]	I_L [A]	g	
ETITEC LC1 IP20	002442980	5/10	10	320	5	35	1/36
ETITEC LP1 IP20	002442981	5/10	10	305	2,5	79	1/36
ETITEC LP2 IP20	002442982	5/10	10	305	2,5	79	1/36
ETITEC LX1 IP67	002442983	5/10	10	320	10	52	1/36
ETITEC LX2 IP67	002442984	5/10	10	320	10	52	1/36
ETITEC L1 DIN	002442985	5/10	10	320	10	107	1/72

ETITEC LC1 IP20

ETITEC LP2 IP20

ETITEC LX1 IP67

ETITEC LP1 IP20

ETITEC L1 DIN

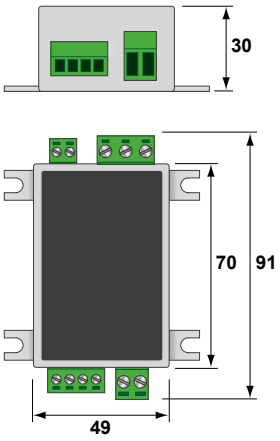
ETITEC LX1 IP67

ETITEC LP

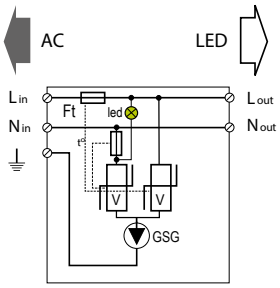
Type	ETITEC LP1 IP20	ETITEC LP2 IP20
Network	220-240 V single phase	
Protection mode(s)	CM/DM	
Max. AC operating voltage	305 VAC	
Max. Load current	2,5 A	
Residual current - Leakage current at Uc	x	
Nominal discharge current - 15 x 8/20 µs impulses	5 kA	
Max. discharge current -max. withstand @ 8/20 µs by pole	10 kA	
Total lightning current - max. total withstand @ 8/20 µs	20 kA	
Withstand on Combination waveform - Class III test	10 kV/5 kA	
Withstand on overvoltages IEEE C62.41.1	10 kV/10 kA	
Protection level CM/DM @In (8/20µs) and @ 6kV (1.2/50µs)	1.5 kV/ 1.5 kV	
Admissible short-circuit current	10000 A	
Mechnical characteristics		
Connection to Network	Screw terminal - 1.5 mm² max	
Voltage/operating indicator	Green Led ON	
Failsafe behavior	Led green OFF and AC network cut-off	
Disconnection indicator	Led green OFF and AC network cut-off or remote signal (option)	
Remote signaling of disconnection	Option	
Standards compliance	IEC 61643-11 / EN 61643-11 / UL1449 ed.4	
Description	Surge protector for LED lighting system Class 1	Surge protector for LED lighting system Class 2
AC voltage specifications		
Description	220-240 V single phase	220-240 V single phase
AC system	TT-TN	TT-TN
Protection mode(s)	CM/DM	DM
Max. AC operating voltage	305 Vac	305 Vac
Max. Load current	2,5 A	2,5 A
Residual current - Leakage current at Uc	x	x
Temporary Over Voltage (TOV) Characteristics - 5 sec.	335 Vac withstand	335 Vac withstand
Temporary Over Voltage (TOV) Characteristics - 120 min	440 Vac disconnection	440 Vac disconnection
Nominal discharge current - 15 x 8/20 µs impulses	5 kA	5 kA
Max. discharge current -max. withstand @ 8/20 µs by pole	10 kA	10 kA
Total lightning current - max. total withstand @ 8/20 µs	20 kA	20 kA
Withstand on Combination waveform - Class III test	10 kV/5 kA	10 kV/5 kA
Withstand on overvoltages IEEE C62.41.1	10 kV/10 kA	10 kV/10 kA
Protection level CM/DM @In (8/20µs) and @ 6kV (1.2/50µs)	1.5 kV/ 1.5 kV	1.5 kV
Admissible short-circuit current	10000 A	10000 A
Connection to Network	screw 1.5mm² max	screw 1.5mm² max
Voltage/operating indicator	Green Led ON	Green Led ON
Failsafe behavior	Disconnection from AC line	Disconnection from AC line
Disconnection indicator	Green Led OFF and AC line cut-off	Green Led OFF and AC line cut-off
Remote signaling of disconnection	none	yes : output on contact NO
Associated disconnectors		
Thermal disconnector	internal	internal
Installation ground fault breaker	Type "S" or delayed	Type "S" or delayed
Mechnical characteristics		
Dimensions	see diagram	see diagram
Mounting	on plate	on plate
Operating temperature	-40/+85°C	-40/+85°C
Protection rating	IP65	IP20
Housing material	Thermoplastic UL94-V0	Thermoplastic UL94-V0
Standards compliance	IEC 61643-11 / EN 61643-11	

Dimensions

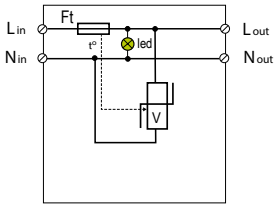
ETITEC LP1 IP20
ETITEC LP2 IP20



Internal Configuration



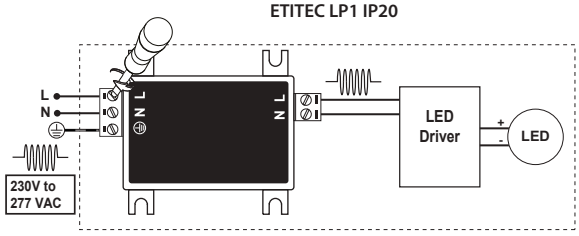
ETITEC LP1 IP20



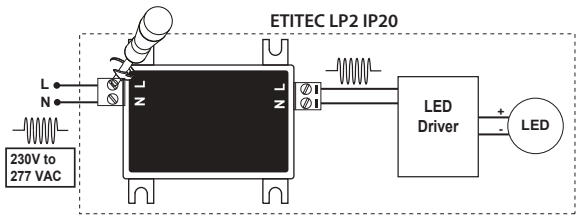
ETITEC LP2 IP20

Ft : Thermal fuse
Led : Status indicator
V : MOV
GSG : Specific Gas Tube
t° : Thermal disconnection system

ETITEC LP1 IP20

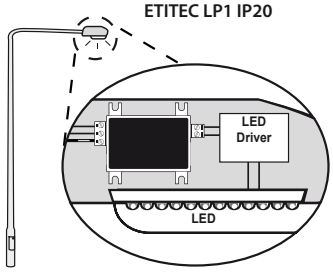


ETITEC LP2 IP20

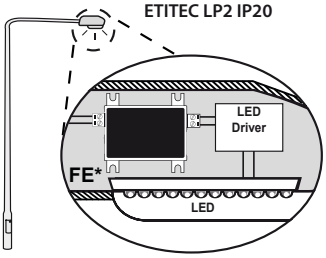


Індикатор стану LED ON = OK
Індикатор стану LED OFF + LED AC OFF= ПОШКОДЖЕННЯ

ETITEC LP1 IP20



ETITEC LP2 IP20

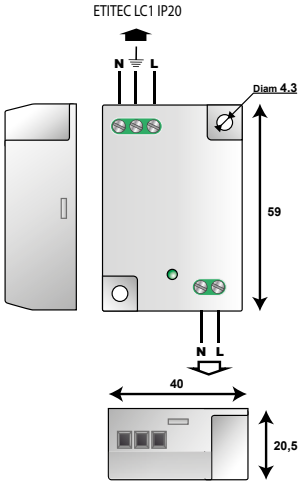


*FE - Робоче (функціональне) заземлення

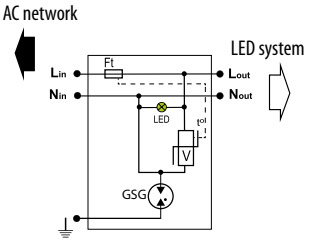
ETITEC LC1 IP20

Description		Surge protectors for LED lighting system Class 1
Network	U_o	220-240 V single phase
AC system		TT/TN
Protection mode(s)		CM/DM
Max. AC operating voltage	U_c	320 VAC
Max. Load current	I_L	5 A
Residual current - Leakage current at Uc	I_{pe}	x
Temporary Over Voltage (TOV) Characteristics - 5 sec.	U_t	335 Vac withstand
Temporary Over Voltage (TOV) Characteristics - 120 min	U_T	440 Vac disconnection
Temporary Over Voltage N/PE (TOV HT)	U_T	1200 V/300A/200 ms disconnection
Nominal discharge current - 15 x 8/20 µs impulses	I_n	5 kA
Max. discharge current -max. withstand @ 8/20 µs by pole	I_{max}	10 kA
Total lightning current - max. total withstand @ 8/20 µs	I_{total}	20 kA
Withstand on Combination waveform - Class III test	U_{oc}	10 kV/5 kA
Withstand on overvoltages IEEE C62.41.1		10 kV/10 kA
Protection level CM/DM @In (8/20µs) and @ 6kV (1.2/50µs)	U_p	1.5 kV/ 1.5 kV
Admissible short-circuit current	I_{sccr}	10000 A
Associated disconnectors		
Thermal disconnector		internal
Installation ground fault breaker		Type "S" or delayed
Mechnical characteristics		
Dimensions		see diagram
Connection to Network		Screw (2.5 mm² max) contact terminal
Voltage/operating indicator		Green Led ON
Disconnection indicator		Disconnection
Failsafe behavior		Led green OFF and AC network cut-off
Remote signaling of disconnection		x
Mounting		on plate
Operating temperature		-40 ... +85°C
Protection rating		IP20
Housing material		Thermoplast UL94-V0
Standards compliance		EN 61643-11 / IEC 61643-11

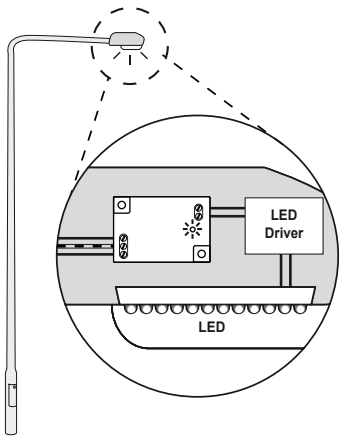
Dimensions

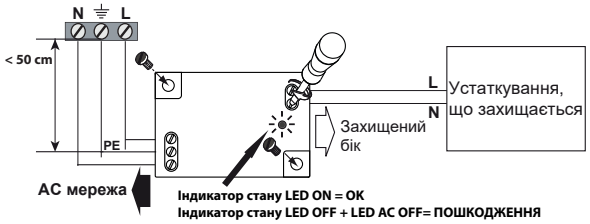


Internal Configuration



Ft: Thermal fuse
Led: Status indicator
V: MOV
GSG: Specific Gas Tube
t°: Thermal system disconnection

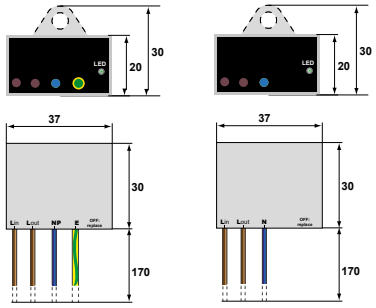




ETITEC LX

Type	ETITEC LX1 IP67	ETITEC LX2 IP67
Description	Compact Type 2 +3 hard-wired surge protector	
Application (Classe)	I	II
Network	230-277 V single phase	230-277 V single phase
AC system	TT/TN	TT/TN
Protection mode(s)	CM/DM	DM
Max. AC operating voltage	320 VAC	320 VAC
Max. Load current	10A	10A
Temporary Over Voltage (TOV) Characteristics - 5 sec.	335 Vac withstand	335 Vac withstand
Temporary Over Voltage (TOV) Characteristics - 120 min	440 Vac disconnection	440 Vac disconnection
Temporary Over Voltage N/PE (TOV HT)	1200 V/300A/200 ms disconnection	x
Nominal discharge current - 15 x 8/20 µs impulses	5 kA	5 kA
Max. discharge current -max. withstand @ 8/20 µs by pole	10 kA	10 kA
Total max. discharge current - max. total withstand @ 8/20 µs	20 kA	NA
Withstand on Combination waveform - Class III test	10 kV	10 kV
Withstand on overvoltages IEEE C62.41.1	10 kV/10 kA	10 kV/10 kA
Protection level CM/DM @In (8/20µs) and @ 6kV (1.2/50µs)	1.5 kV/1.5 kV	1.5 kV
Admissible short-circuit current	10000 A	10000 A
Associated disconnectors		
Thermal disconnector	internal	
Installation ground fault breaker	Type "S" or delayed	
Mechnical characteristics		
Dimensions	see diagram	
Connection to Network	by wires :1.5 mm² (L/N) & 2.5 mm² (PE)	by wires :1.5 mm² (L/N)
Voltage/operating indicator	Green Led ON	
Disconnection indicator	Disconnection	
Failsafe behavior	Led green OFF and AC network cut-off	
Remote signaling of disconnection	x	
Mounting	wall or plate	
Operating temperature	-40/+85°C	
Protection rating	IP67	
Housing material	Thermoplastic UL94-V0	
Standards compliance	EN 61643-11 / IEC 61643-11	

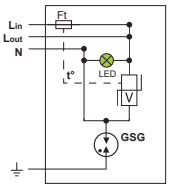
Dimensions



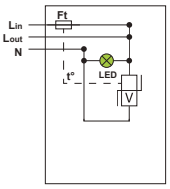
ETITEC LX1 IP67 ETITEC LX2 IP67

Internal Configuration

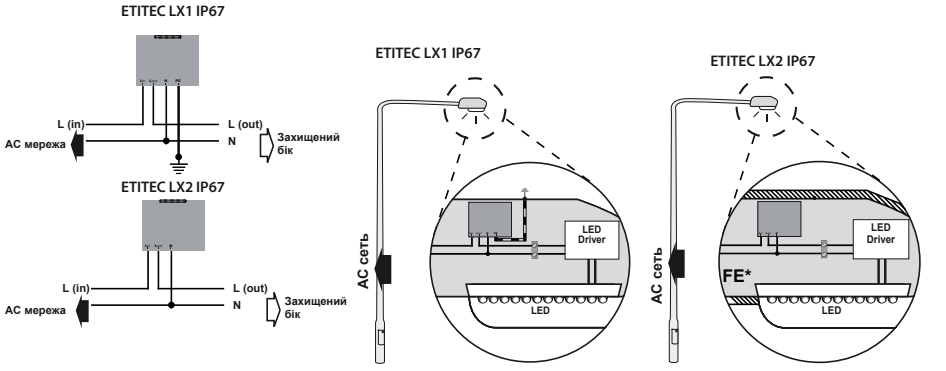
ETITEC LX1 IP67



ETITEC LX2 IP67



V : Varistor
GSG: Specific gas tube
Ft : Thermal fuse
LED : Disconnection indicator
t° : Thermal system disconnection



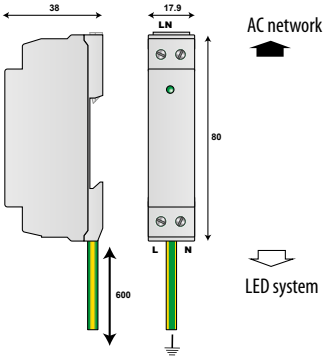
*FE - Робоче (функціональне) заземлення

Індикатор стану LED ON = OK
Індикатор стану LED OFF + LED AC OFF= ПОШКОДЖЕННЯ

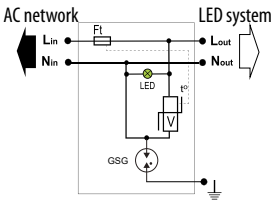
ETITEC L1 DIN

Description	Surge protectors for LED lighting system Class 1
Network	220-240 V single phase
AC system	TT/TN
Protection mode(s)	CM/DM
Max. AC operating voltage	320 VAC
Max. Load current	10A
Residual current - Leakage current at Uc	x
Temporary Over Voltage (TOV) Characteristics - 5 sec.	335 Vac withstand
Temporary Over Voltage (TOV) Characteristics - 120 min	440 Vac disconnection
Temporary Over Voltage N/PE (TOV HT)	1200 V/300A/200 ms disconnection
Nominal discharge current - 15 x 8/20 µs impulses	5 kA
Max. discharge current -max. withstand @ 8/20 µs by pole	10 kA
Total lightning current - max. total withstand @ 8/20 µs	20 kA
Withstand on Combination waveform - Class III test	10 kV / 5 kA
Withstand on overvoltages IEEE C62.41.1	10 kV/10 kA
Protection level CM/DM @In (8/20µs) and @ 6kV (1.2/50µs)	1.5 kV/ 1.5 kV
Admissible short-circuit current	10000 A
Associated disconnectors	
Thermal disconnector	internal
Installation ground fault breaker	Type «S» or delayed
Mechnical characteristics	
Dimensions	see diagram
Connection to Network	Screw terminal 2.5 mm^2 max., Earthing conductor 2 mm^2 - length 60 cm
Voltage/operating indicator	Led green ON
Disconnection indicator	Disconnection and AC line cut-off
Failsafe behavior	Led green OFF and AC network cut-off
Remote signaling of disconnection	x
Mounting	Symmetrical rail 35mm (EN60715)
Operating temperature	-40 ... +85°C
Protection rating	IP20
Housing material	Thermoplastic UL94-V0
Standards compliance	EN 61643-11 / IEC 61643-11

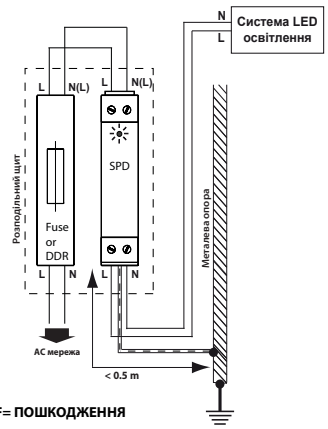
Dimensions

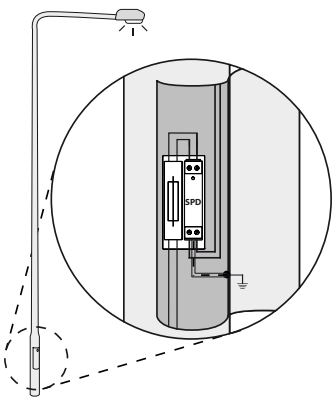


Internal Configuration



V: Varistor
Ft: Thermal fuse
LED: Disconnection indicator
MI: Mechanical disconnection indicator
t°: Thermal system disconnection
GSG: Specific Gas Tube





Індикатор стану LED ON = OK
Індикатор стану LED OFF + LED AC OFF= ПОШКОДЖЕННЯ

ETITEC Surge arresters ETITEC

Surge arrester ETITEC T WENT group B, EN/IEC/VDE: T1, T2/I,II/B+C

Description

ETITEC T WENT is surge arrester for indoor installation, internal protection of electrical system. Group WENT surge protection is in accordance with VDE class B, C. This protection corresponds to IEC category I, II. The protection is made on the main distribution box, as the first level of protection against lightning strikes and partial direct or indirect strikes. It's compact design demands small requirement for space for a complete 3-phase protection . It can be used in single or three phase network systems: TT, TNC, TNC-S. In case of permanent arrestor damage, thermal protection is activated which signalizes faulty arrester.

*Note: First number of designation 1+0, 2+0, 3+1 etc. indicates the number of varistors. Second one means the following: number 0 indicates there is no gas discharge tube (GDT), number 1 indicates there is. GDT element is required in TT systems.

ETITEC T WENT

Type	320/25
In accordance with	IEC/EN 61643-11
Category IEC/EN/VDE	I, II/ T1, T2 / B+C
Max. continuous operating voltage (AC) Uc	320 V
Nominal AC voltage Uo	230V 50-60 Hz
TOV immunity UT (AC)	334 V/5s withstand 438 V/120 min safe failure
Impulse current (10/350) Iimp	25 kA
Nominal discharge current (8/20) In	25 kA
Max. discharge current (8/20) Imax	100 kA
Protection level Up - at In	<1,5 kV
Follow current Ifi	100 ARMS
Response time tA	< 25 ns
Residual current Ipe at Uref	< 0,3 mA
Current source generator	1 mA
Un min (MOV)	459
Un max (MOV)	561 V
Voltage step generator	100 V/s
Un min (GDT)	480 V
Un max (GDT)	720 V
Thermal decoupler	✓
Torque	3,0 Nm
Back-up fuse (if mains > 160A)	250 A gG
Short-circuit current rating ISCCR	50 kA / 50 Hz
Temperature range	- 40oC ...+70oC
Cross-section of connection wire	min. 6mm^2; max. solid, rigid strended 35mm^2; flexible 25mm^2
Mounting	indoors on top hat fixing rail 35 mm (EN 60715)
Degree of protection	IP 20
Casing material	PA
Dimensions	2 TE ... 8 TE
Indication of disconnector operation	
Permissible humidity	5% - 95%
Additional data for ETITEC T WENT-RC	
Remote signalisation (RC)	✓
Switching capability (RC)	AC: 250V/0,5A; DC:125V/0,2A
Cross-section of connection wire (RC)	max. 1.5 mm2
Torque (RC)	0,25 Nm

Advantages:
- remote signalisation - auxiliary contact (only RC type)
- mounting on DIN rail
- connection up to 35mm2
- high discharge currents
- high degree of protection
- varistor is the protective element
- IEC/EN 61643-11
- RoHS compliant

ETITEC T WENT I_{imp}=25kA

Type	Code No.	I_{imp} (10/350) [kA]	I_n/I_{max} (8/20) [kA]	U_c [V AC]	Network	g	
ETITEC T WENT 320/25 1+0	002440364	25	25/100	320	TNC	295	1/7
ETITEC T WENT 320/25 2+0	002440366	25	25/100	320	TNC-S	560	1/3
ETITEC T WENT 320/25 1+1	002440367	25	25/100	320	TT	490	1/3
ETITEC T WENT 320/25 3+0	002440368	25	25/100	320	TNC	840	1/3
ETITEC T WENT 320/25 3+1	002440369	25	25/100	320	TT	1050	1/2
ETITEC T WENT 320/25 4+0	002440370	25	25/100	320	TNC-S	1120	1/2
ETITEC T WENT 320/25 1+0 RC	002440365	25	25/100	320	TNC	300	1/7
ETITEC T WENT 320/25 2+0 RC	002440371	25	25/100	320	TNC-S	570	1/3
ETITEC T WENT 320/25 1+1 RC	002440372	25	25/100	320	TT	490	1/3
ETITEC T WENT 320/25 3+0 RC	002440373	25	25/100	320	TNC	860	1/3
ETITEC T WENT 320/25 3+1 RC	002440374	25	25/100	320	TT	1060	1/2
ETITEC T WENT 320/25 4+0 RC	002440375	25	25/100	320	TNC-S	1140	1/2

* RC -> remote signalisation

ETITEC T WENT 320/25 3+1 RC

Type of network and nr. of SPD poles

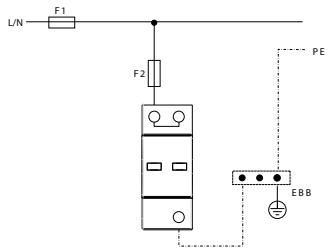
Network	Nr of poles (SPD configuration)
TNC 1 phase	1+0
TNC 3 phase	3+0
TNS 1 phase	2+0 / 1+1
TNS 3 phase	4+0 / 3+1
TT 1 phase	1+1
TT 3 phase	3+1

At TNC, TNS, TT systems with U_n=230V, recommended U_c value of SPD is 275V.

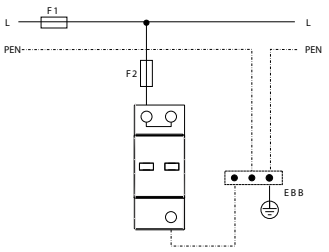
Protection configurations for various power systems

ETITEC T WENT I_{imp}=25 kA

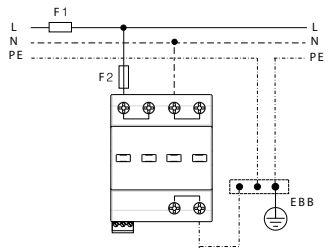
TN-S Network - Single-phase, 1+0 (T-connection)



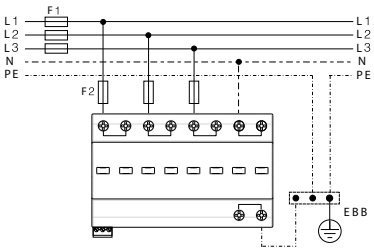
TN-C Network - Single-phase, 1+0 (T-connection)



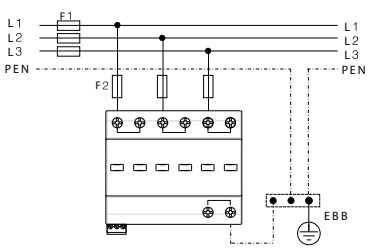
TN-S Network - Single-phase, 2+0 (T-connection)



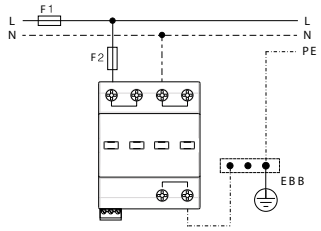
TN-S Network - Three-phase, 1+0 (T-connection)



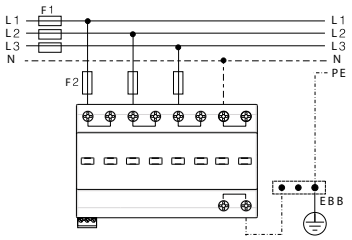
TN-C Network - Three-phase, 1+0 (T-connection)



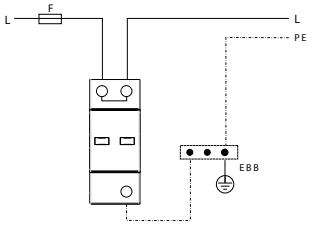
TT Network - Single-phase, 1+0 (T-connection)



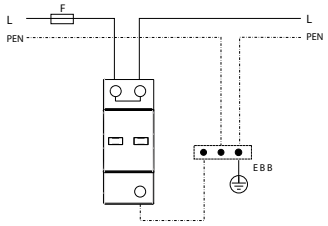
TT Network - Three-phase, 1+0 (T-connection)



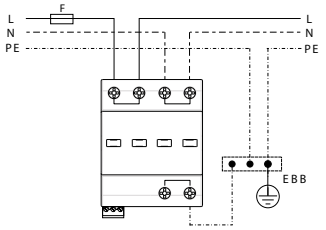
TN-S Network - Single-phase, 1+0 (V-connection)



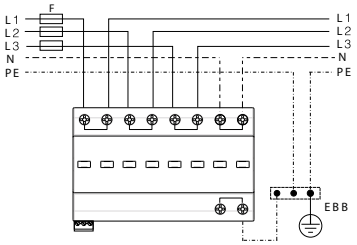
TN-C Network - Single-phase, 1+0 (V-connection)



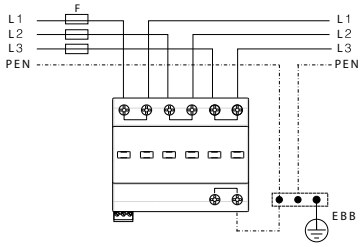
TN-S Network - Single-phase, 2+0 (V-connection)



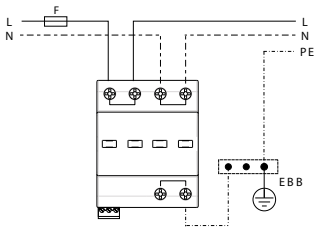
TN-S Network - Three-phase, 4+0 (V-connection)



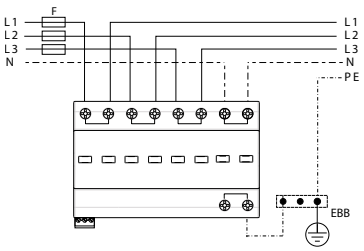
TN-C Network - Three-phase, 3+0 (V-connection)



TT Network - Single-phase, 1+1 (V-connection)



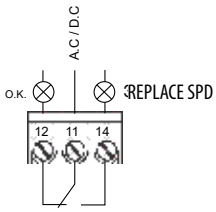
TT Network - Three-phase, 3+1 (V-connection)



Remote signalization connection / Back-up fuse

Back-up fuse
F1 > 250 A gG → F2 = 250 A gG
F1 ≤ 250 A gG → F2 = not needed
F ≤ 100 A gG

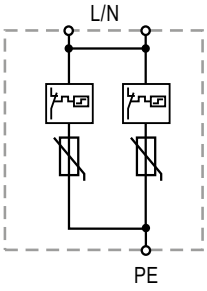
A.C.	250V / 0.5A
D.C.	250V / 0.1A
	125V / 0.2A
	75V / 0.5A



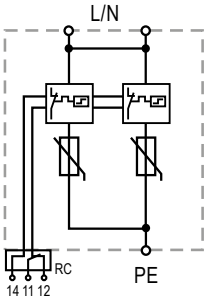
Internal Configuration

ETITEC T WENT I_{imp}=25 kA

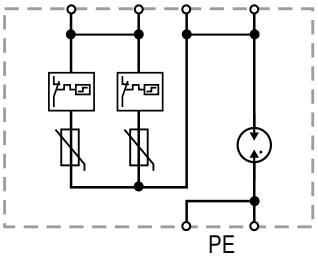
ETITEC T WENT 320/25 1+0



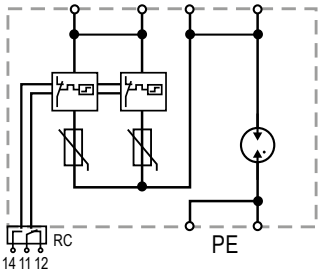
ETITEC T WENT 320/25 1+0 RC



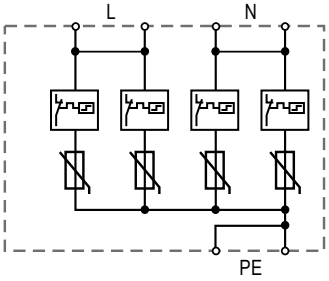
ETITEC T WENT 320/25 1+1 RC



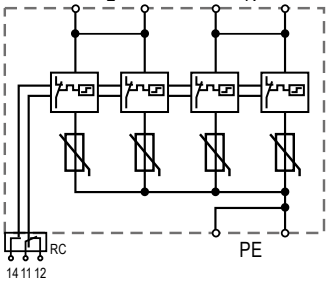
ETITEC T WENT 320/25 1+1 RC



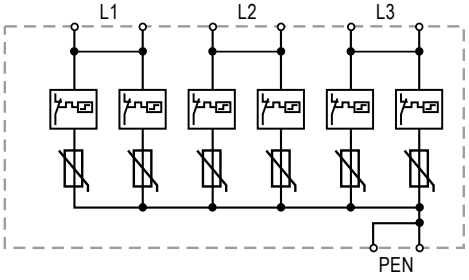
ETITEC T WENT 320/25 2+0 RC



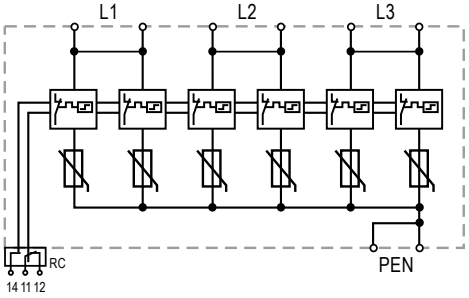
ETITEC T WENT 320/25 2+0 RC



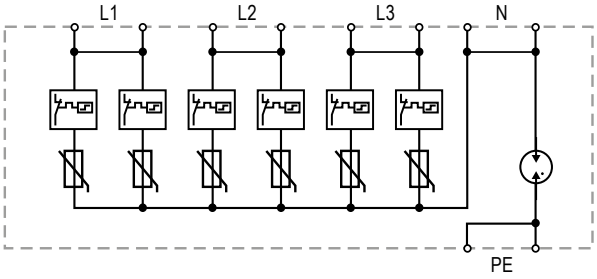
ETITEC T WENT 320/25 3+0



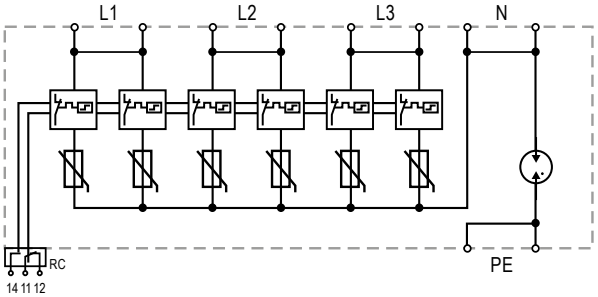
ETITEC T WENT 320/25 3+0 RC



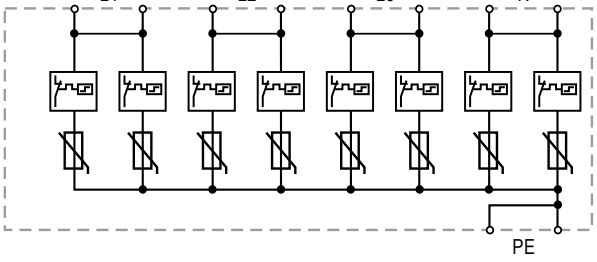
ETITEC T WENT 320/25 3+1



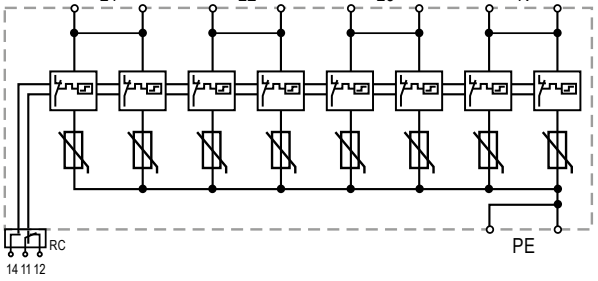
ETITEC T WENT 320/25 3+1 RC



ETITEC T WENT 320/25 4+0

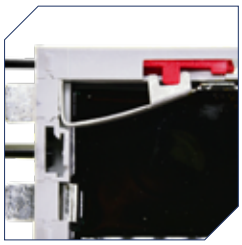


ETITEC T WENT 320/25 4+0 RC

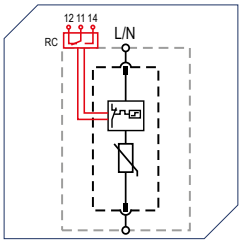


Surge arrester ETITEC ML T123 EN/IEC/VDE: T1, T2, T3/I, II,III/B+C+D

- Each surge arrester includes thermal protection that disconnects it from the network if the current exceeds the maximum allowable value (I_{max}).



- Made with high-quality varistors.



- The marking provides key technical parameters and connection details, including maximum conductor cross-sections: 35 mm² (solid) and 25 mm² (stranded).

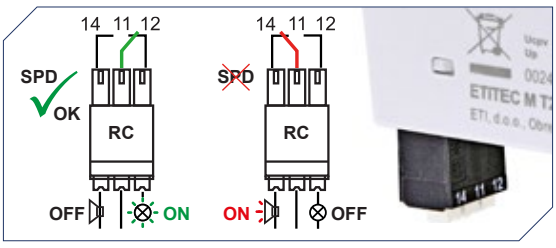
- Visual indicator for varistor status: red for fault, green for OK.

- All surge arresters feature alignment elements to prevent incorrect installation of modules from other groups.

- All surge arresters allow for quick module replacement. A locking latch prevents accidental removal and improves vibration resistance.

- The dual grounding terminal enables an additional connection for the grounding conductor.

- Snapper for quick DIN rail mounting



- Removable self-locking contacts for remote fault signaling (RC).

- When using multiple single-pole surge arresters, busbars and conductors can be connected simultaneously at the top and bottom.

ETITEC ML T123 is a surge arrester for complete overvoltage protection in standard modular housing. Protection corresponds to all categories of overvoltage protections: IEC categories I, II, III and EN Type 1, Type 2, Type 3. Groups B, C, D by VDE. It's intended for installation in main distribution board or in power distribution enclosure in front of energy meter, as the first level of protection against lightning strikes, partial direct, indirect atmospheric discharges and induced surges. Due to the housing of standard modular size, it can be installed also in any sub-distribution board. In case of permanent arrestor damage, thermal protection is activated which signalizes faulty arrester. Consequently only the SPD module has to be replaced, while base unit remains fixed on DIN rail.
Compliance: IEC 61643-11:2011, EN 61643-11:2012+A11:2018

Advantages:

- remote signalisation (RC version only)
- DIN rail mounting (EN 60715)
- spring-loaded fixing for easy mounting on DIN rail
- latching mechanism for extra reliable module holding
- High performance MOV inside
- The earth connection terminal allows additional connection 2nd earth conductor (V connection type)
- Coding system prevents wrong module insertion
- Each module is equipped with a thermal disconnection system which disconnects faulty device from power supply in case of MOV overload due to high energy surge, TOV or ageing
- connection up to 35mm^2

ETITEC ML T123

Type	ETITEC ML T123 300/12,5 (1+0), (2+0), (3+0)	ETITEC ML T123 300/12,5 (1+1), (3+1)
In accordance with	IEC 61643-11:2011, EN 61643-11:2012+A11:2018	
Category IEC/EN/VDE	T1, T2, T3/I, II, III/B+C+D	
Nominal AC voltage (50/60Hz) Uo	240V	
Max. continuous operating voltage (AC) Uc	300 V (L-N)	300 V (L-N) / 305 (N-PE)
Impulse discharge current per pole (10/350) Iimp	12,5 kA	12,5 kA/50 kA
Nominal discharge current (8/20) In	20 kA	20 kA (L-N)/50 kA(N-PE)
Max. discharge current (8/20) Imax	40 kA	40 kA (L-N)/100 kA(N-PE)
TOV immunity UT (AC)	337 V (L-N)/5s withstand 442V/120 min (L-N) safe fail	442V/120 min (L-N) Safe fail, 1200V (N-PE) withstand 200ms
Charge	1500 V / 900V	1500 V / 900V (L-N)/(N-PE)
Voltage Protection level for Type2 / for Type 3 Up	6 kV	
Open circuit voltage Type 3 test Uoc	-	100 A_{RMS} (N-PE)
Follow current Ifi	< 25 ns	<25 ns (L-N) / < 100 ns (N-PE)
Response time tA	< 0,3 mA	
Residual current Ipe at Uref	✓	
Thermal decoupler	4,5 Nm	
Torque	160 A gG	
Back-up fuse (if mains > 160A)	25 kA / 50 Hz	
Short-circuit current rating ISCCR	- 40°C ...+85°C	
Temperature range		
Cross-section of connection wire	35 mm^2 (solid, stranded) / 25 mm^2 (flexible)	
Mounting	IP 20 indoors on top hat fixing rail 35 mm (EN 60715)	
Degree of protection		
Casing material	1 TE ... 4 TE thermoplastic; extinguishing degree UL 94 V-0	
Dimensions		
Fault indication (visual)	OK - green indicator / faulty - RED indicator	
Fault indication (remote contacts)	✓ (version with RC contact)	
Additional data for ETITEC B-RC	✓	
Remote signalisation (RC)	AC: 250V/1A; DC: 48V/0,5A; 24V/0,5A	
Switching capability (RC)	max. 1.5 mm2 (single-core)	
Cross-section of connection wire (RC)		

ETITEC ML T123

Type	Code No.	I_{imp} (10/350) [kA]	I_n/I_{max} L-N/N-PE (8/20) [kA]	U_c [V AC]	Network	g	
ETITEC ML T123 300/12,5 1+0	002440661	12,5	20/40	300	TNC	161	1/12
ETITEC ML T123 300/12,5 1+0 RC	002440662	12,5	20/40	300	TNC	182	1/12
ETITEC ML T123 300/12,5 2+0	002440663	12,5	20/40	300	TNC-S	344	1/7
ETITEC ML T123 300/12,5 2+0 RC	002440664	12,5	20/40	300	TNC-S	353	1/7
ETITEC ML T123 300/12,5 3+0	002440665	12,5	20/40	300	TNC	553	1/5
ETITEC ML T123 300/12,5 3+0 RC	002440666	12,5	20/40	300	TNC	562	1/5
ETITEC ML T123 300/12,5 4+0	002440667	12,5	20/40	300	TNC-S	680	1/4
ETITEC ML T123 300/12,5 4+0 RC	002440668	12,5	20/40	300	TNC-S	689	1/4
ETITEC ML T123 300/12,5 1+1	002440669	12,5	20/40+50/100	300	TN, TT	332	1/7
ETITEC ML T123 300/12,5 1+1 RC	002440670	12,5	20/40+50/100	300	TN, TT	338	1/7
ETITEC ML T123 300/12,5 3+1	002440671	12,5	20/40+50/100	300	TN, TT	667	1/4
ETITEC ML T123 300/12,5 3+1 RC	002440672	12,5	20/40+50/100	300	TN, TT	676	1/4

* RC -> remote signalisation.
**The first digit of the value (1+0), (1+1), (2+0), (3+0), (3+1), (4+0) indicates the number of varistors (MOVs); the second digit of the value (1+0), (1+1), (2+0), (3+0), (3+1), (4+0) shows the presence (1) or absence (0) of the GDT element (TT network systems);
note: the values of Iimp and In/Imax - indicated per one pole

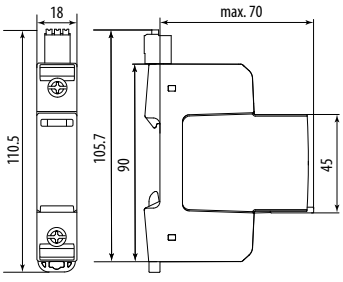
ETITEC ML T123 300/12,5 2+0

ETITEC ML T123 300/12,5 3+0

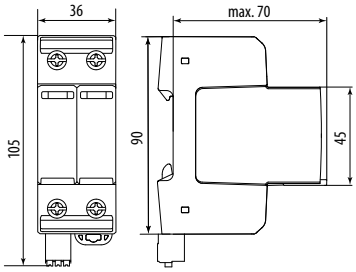
ETITEC ML T123 300/12,5 3+1

Dimensions

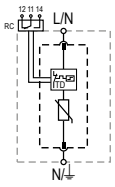
ETITEC ML T123
300/12,5 (1+0) RC



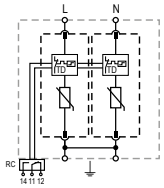
ETITEC ML T123
300/12,5 (2+0) RC/ ...(1+1) RC



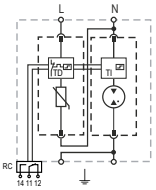
Internal Configuration



ETITEC ML T123
300/12,5 (2+0) RC

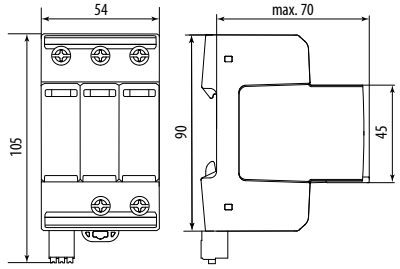


ETITEC ML T123
300/12,5 (1+1) RC

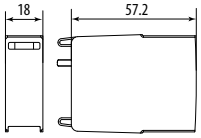


Dimensions

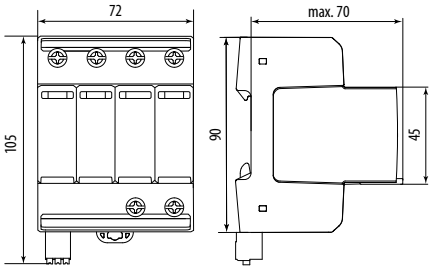
ETITEC ML T123
300/12,5 (3+0) RC



Modification module
ETITEC ML T123
300/12,5

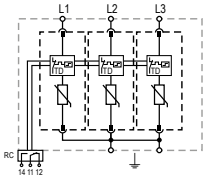


ETITEC ML T123
300/12,5 (4+0) RC/ ...(3+1) RC

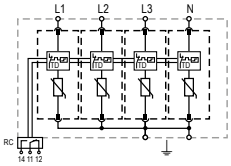


Internal Configuration

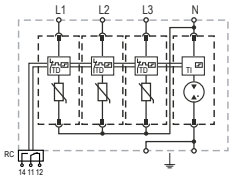
ETITEC ML T123
300/12,5 (3+0) RC



ETITEC ML T123
300/12,5 (4+0) RC



ETITEC ML T123
300/12,5 (3+1) RC



Surge arrester ETITEC group C T2

EN/IEC/VDE: T2/II/C

Description

ETITEC C T2 is surge arrester for indoor application. Group C surge protection is in accordance with VDE class C. This protection corresponds to IEC class II. The protection is made at the subdistribution board, as the second level of protection against overvoltage indirect lightning strikes. In case of permanent arrester damage, thermal protection is activated which signalize faulty arrester. ETITEC C T2 255/20 G is an overvoltage arrester with gas discharge tube for protection against indirect lightning strikes. It is used as a galvanic separation between N-PE conductor in TT network systems.

*Note: First number of designation 1+0, 2+0, 3+1 etc. indicates the number of varistors. Second one means the following: number 0 indicates there is no gas discharge tube, number 1 indicates there is.

Advantages:

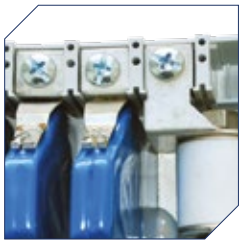
- optical indication of faulty device (green ok, red false)
- remote signalisation (RC version only)
- DIN rail mounting (EN 60715)
- high discharge currents
- high degree of protection
- varistor is the protective element
- metal snapper, new way of mounting on DIN rail (easier, quicker)
- round-off shape compatible with ETIMAT
- modular design
- IEC/EN 61643-11
- RoHS compliant
- connection up to 35mm^2

- Alignment elements to prevent incorrect installation of modules from other groups.

- Removable contacts for remote fault signaling (RC).

- Metal snapper for quick DIN rail mounting.

- A spark gap is used as a galvanic isolation between N and PE conductors in TT grounding systems.



- Each surge arrester is equipped with thermal protection that disconnects it from the electrical network if the current exceeds the allowable Imax value.

- Visual indicator for varistor status: red = fault, green = OK.

- Special busbars for single pole SPD into multipole connection can be used.

- The markings on product provide key technical parameters and connection details.

- Mechanical indicator for visual and remote fault signaling (visible = OK, hidden = fault).

ETITEC C T2

Type	275/20	440/20	255/20 G
In accordance with		IEC/EN 61643-11	
Category IEC/EN/VDE		II/T2/C	
Max. continuous operating voltage (AC) Uc	275	440	255
Nominal AC voltage Uo		230 V 50-60 Hz	
TOV immunity UT (AC)	335 V/5s withstand	335 V/5s withstand	1200 V
	440 V/120 min safe disconnection	440 V/120 min withstand	-
Nominal discharge current (8/20) In		20 kA	
Max. discharge current (8/20) Imax		40 kA	
Charge			
Protection level Up - at In (8/20)	<1,5 kV	<2,0 kV	<1,5 kV
Follow current Ifi		x	>100 A
Response time tA		< 25 ns	< 100 ns
Residual current Ipe at Uref		< 0,2 mA	-
Current source generator		1mA	
Un min (MOV)		459V	
Un max (MOV)		561V	
Voltage step generator		100V/s	
Un min(GDT)		480V	
Un max (GDT)		720V	
Thermal decoupler		✓	-
Torque		3,0 Nm	
Back-up fuse (if mains > 125A)		125 A gG	-
Short-circuit current rating ISCCR		25 kA / 50 Hz	-
Temperature range		- 40oC ...+70oC	
Cross-section of connection wire		min. 6mm^2, max. single strand 35mm^2, multi-strand 25mm^2	
Mounting		indoors on top hat fixing rail 35 mm (EN 60715)	
Degree of protection		IP 20	
Casing material		thermoplastic; extinguishing degree UL 94 V-0	
Dimensions		1 TE ... 4 TE	
Indication of disconnector operation		red flag	
Permissible humidity		5% - 95%	
Additional data for ETITEC C-RC			
Remote signalisation (RC)		✓	-
Switching capability (RC)		AC: 250V/0.5A; 125V/3A	-
Cross-section of connection wire (RC)		max. 1.5 mm2	-
Torque (RC)		0,25 Nm	-

Type of network and nr. of SPD poles

Network	Nr of poles (SPD configuration)
TNC 1phase	1+0
TNC 3 phase	3+0
TNS 1 phase	2+0 / 1+1
TNS 3 phase	4+0 / 3+1
TT 1 phase	1+1
TT 3 phase	3+1
IT 1 phase	2+0
IT 3 phase	4+0

At TNC, TNS, TT systems with U_n=230V, recommended U_c value of SPD is 275V.
At IT system, recommended U_c value of SPD is 440V.

ETITEC C T2

Type	Code No.	I_n/I_{max} (8/20) [kA]	U_c [V AC]	Network	g	
ETITEC C T2 275/20 1+0	002440393	20/40	275 VAC	TNC	128	1/12
ETITEC C T2 275/20 1+0 RC	002440394	20/40	275 VAC	TNC	133	1/12
ETITEC C T2 275/20 4+0	002440395	20/40	275 VAC	TNC-S	456	1/3
ETITEC C T2 275/20 4+0 RC	002440396	20/40	275 VAC	TNC-S	471	1/3
ETITEC C T2 275/20 2+0	002440397	20/40	275 VAC	TNC-S	244	1/7
ETITEC C T2 275/20 2+0 RC	002440398	20/40	275 VAC	TNC-S	249	1/7
ETITEC C T2 275/20 3+0	002440399	20/40	275 VAC	TNC	352	1/5
ETITEC C T2 275/20 3+0 RC	002440400	20/40	275 VAC	TNC	357	1/5
ETITEC C T2 275/20 1+1	002440401	20/40	275 VAC	TT	225	1/7
ETITEC C T2 275/20 1+1 RC	002440402	20/40	275 VAC	TT	230	1/7
ETITEC C T2 275/20 3+1	002440403	20/40	275 VAC	TT	441	1/3
ETITEC C T2 275/20 3+1 RC	002440404	20/40	275 VAC	TT	446	1/3
ETITEC C T2 440/20 1+0	002440405	20/40	440 VAC	IT	130	1/12
ETITEC C T2 440/20 1+0 RC	002440406	20/40	440 VAC	IT	145	1/12
ETITEC C T2 440/20 4+0	002440407	20/40	440 VAC	IT	466	1/3
ETITEC C T2 440/20 4+0 RC	002440408	20/40	440 VAC	IT	471	1/3
ETITEC C T2 440/20 2+0	002440409	20/40	440 VAC	IT	247	1/7
ETITEC C T2 440/20 2+0 RC	002440410	20/40	440 VAC	IT	252	1/7
ETITEC C T2 440/20 3+0	002440411	20/40	440 VAC	IT	356	1/5
ETITEC C T2 440/20 3+0 RC	002440412	20/40	440 VAC	IT	,361	1/5
ETITEC C T2 255/20 G	002440413	20/40	255 VAC		118	1/12
MODUL ETITEC C T2 275/20	002440414	20/40	275 VAC		56	12/12
MODUL ETITEC C T2 440/20	002440415	20/40	440 VAC		58	12/12
MODUL ETITEC C T2 255/20 G	002440416	20/40	255 VAC		36	12/12

* RC -> remote signalisation Note: In - defined per single pole

ETITEC C T2 275/20 1+0 ETITEC C T2 275/20 1+0 RC

ETITEC C T2 275/20 4+0

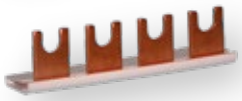
MODUL ETITEC C T2 275/20

Connection terminals

Type	code No.	g		Connection terminals for
IZ16/1F/2/ETITEC	002921081	9	50/600	2 modules connection
IZ16/1F/3/ETITEC	002921082	15	50/600	3 modules connection
IZ16/1F/4/ETITEC	002921083	20	50/600	4 modules connection

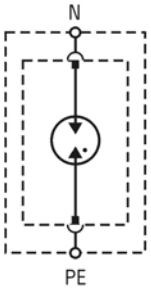
For module width 17,8 mm.

IZ16/1F/2/ETITEC IZ16/1F/3/ETITEC

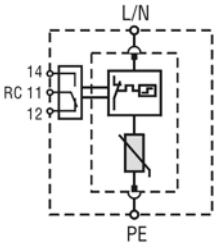


IZ16/1F/3/ETITEC

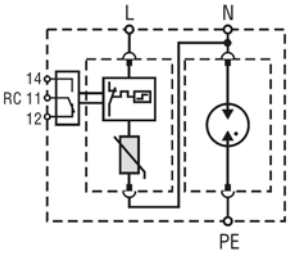
Internal Configuration



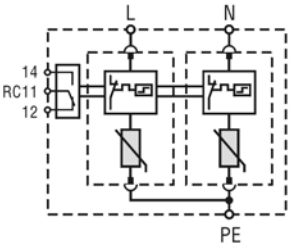
ETITEC C T2 G



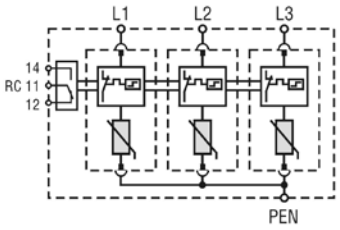
ETITEC C T2 1+0 RC



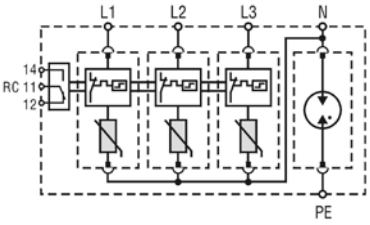
ETITEC C T2 1+1 RC



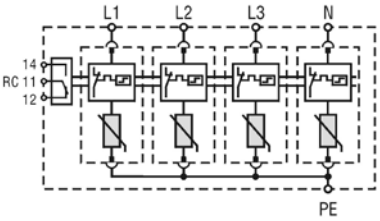
ETITEC C T2 2+0 RC



ETITEC C T2 3+0 RC



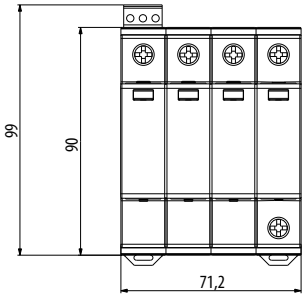
ETITEC C T2 3+1 RC

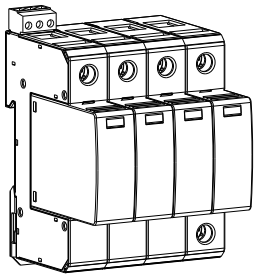


ETITEC C T2 4+0 RC

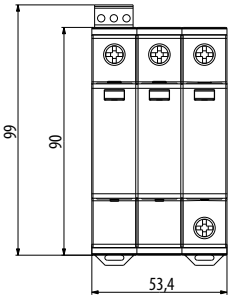
Dimensions

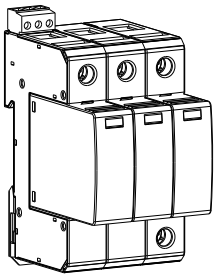
ETITEC C T2 275/20 4+0 RC
ETITEC C T2 275/20 3+1 RC



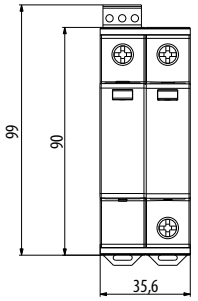


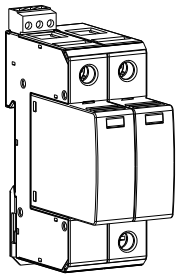
ETITEC C T2 275/20 3+0 RC



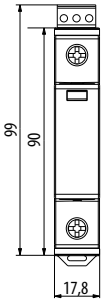


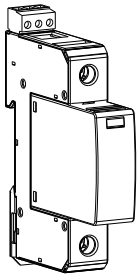
ETITEC C T2 275/20 2+0 RC
ETITEC C T2 275/20 1+1 RC

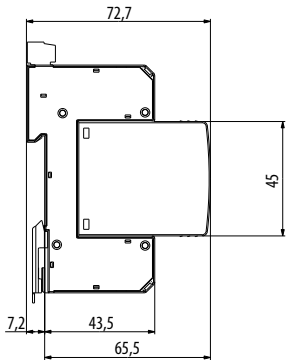




ETITEC C T2 275/20 1+0 RC

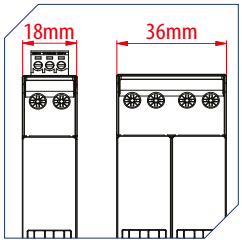




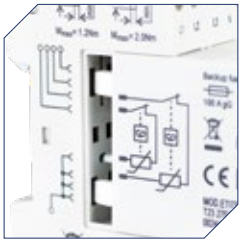


Surge arrester ETITEC group CM T2+T3

EN/IEC/VDE: T2,T3/II,III/C,D



ETITEC CM T23 features a compact design, allowing 2+0 and 1+1 surge arresters in a 1-module device, and 4+0 and 3+1 configurations in a 2-module device.



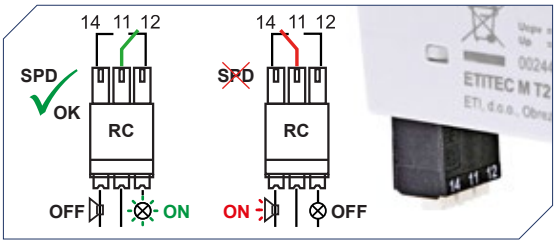
Alignment elements to prevent incorrect installation of modules from other groups.

The product marking provides key technical parameters and connection details, including maximum conductor cross-sections:
PE: 35 mm² (solid) / 25 mm² (stranded)
L, N: 10 mm² (solid) / 6 mm² (stranded).

Each surge arrester is equipped with thermal protection that disconnects it from the electrical network if the current exceeds the permissible I_{max} value.

Visual indicator for varistor status: red = fault, green = OK.

Quick module replacement



Remote fault signaling (RC)

Snapper for quick DIN rail mounting.

Description

- Compact single-phase Type 2 / Compact 3-phase Type 2
- In : 20 kA
- Imax : 40 kA
- Location of Use: Sub-distribution Boards
- Mode of Protection: L-PE, N-PE
- IEC/EN Category: Class II+III / Type 2+3
- Housing: Modular Design, Pluggable module (possible to replace)
- Mounting: 35mm DIN rail
- Compliance: IEC 61643-11:2011 EN 61643-11:2012+A11:2018
- Fault indication: visual - red flag (false)
- Remote signaling contact as an option (RC)

Type designation:
ETITEC CM T23 xxx/20 p+c RC
xxx - Uc voltage (max. AC operating voltage), must be above network voltage.
20 - 20kA (In at 8/20us)
p - number of poles with MOV
c - 0 for MOV at NPE pole, 1 for GDT (TT systems)
RC - remote contact (Change over contact) for fault signalisation

Advantages:

- space saving (reduces required space in distribution board by 50%)
- remote signalisation (RC version only)
- DIN rail mounting (EN 60715)
- varistor is the protective element
- metal snapper, new way of mounting on DIN rail (easier, quicker)
- modular design
- IEC/EN 61643-11
- RoHS compliant
- connection up to 35mm^2

ETITEC CM T2+T3

Type	ETITEC CM T23 275/20 2+0 (RC), 4+0 (RC)	ETITEC CM T23 275/20 1+1 (RC), 3+1 (RC)
In accordance with	IEC/EN 61643-11	
Category IEC/EN/VDE	II,III/T2,T3/C,D	
Max. continuous operating voltage (AC) Uc	275	L-N: 275; N-PE: 255V
Nominal AC voltage Uo	230 V 50-60 Hz	
TOV immunity Ut (AC)	335 V/5s withstand	335 V/5s withstand
	440 V/120 min safe disconnection	440 V/120 min safe disconnection
Nominal discharge current (8/20) In	20 kA	
Max. discharge current (8/20) Imax	40 kA	
Charge		
Protection level UP T2+T3	1,5 kV	1,5 kV
Protection level UP T3 only	1,0 kV	L-N: 1,0 kV; N-PE: 0,3 kV
Open Circuit Voltage of Combination Wawe Generator (1.2/50 µs) Uoc	6 kV	
Short Circuit Current of Combination Wawe Generator (8/20 µs) Icw	3 kA	
Response time tA	< 25 ns	L-N: < 25 ns; N-PE: < 100 ns
Number of ports	1	
Thermal decoupler	✓	
Torque	L, N: 1,2 Nm, PE: 2,0 Nm	
Back-up fuse	100 A gG	
Short-circuit current rating ISCCR	25 kA	
Temperature range	- 40°C ...+85°C	
Cross-section of connection wire	L, N: 10 mm^2 (Solid, Stranded) / 6 mm^2 (Flexible); PE: 35 mm^2 (Solid,Stranded) / 25 mm^2 (Flexible)	
Mounting	indoors on top hat fixing rail 35 mm (EN 60715)	
Degree of protection	IP 20B (built-in)	
Dimensions	1 TE ... 2 TE	
Indication of disconnector operation	red flag	
Permissible humidity	5% - 95%	
Additional data for ETITEC CM-RC		
Remote signalisation (RC)	✓	
Switching capability (RC)	AC: 250V/0.5A; DC: 250V/0.5A, 125V/0,2A, 75V/0,5A	
Cross-section of connection wire (RC)	max. 1.5 mm^2	
Torque (RC)	0,4 Nm	

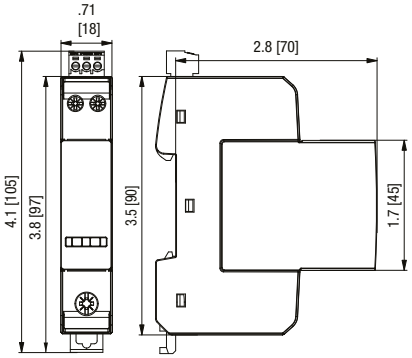
ETITEC CM

Type	Code No.	I_n/I_{max} (8/20) [kA]	U_{oc} [kV]	U_c [V AC]	Network	g	
ETITEC CM T23 275/20 2+0	002440650	20/40	6	275	TNS	152	1/15
ETITEC CM T23 275/20 2+0 RC	002440651	20/40	6	275	TNS	157	1/15
ETITEC CM T23 275/20 4+0	002440652	20/40	6	275	TNS	281	1/8
ETITEC CM T23 275/20 4+0 RC	002440653	20/40	6	275	TNS	287	1/8
ETITEC CM T23 275/20 1+1	002440654	20/40	6	275	TT/TNS	207	1/15
ETITEC CM T23 275/20 1+1 RC	002440655	20/40	6	275	TT/TNS	212	1/15
ETITEC CM T23 275/20 3+1	002440656	20/40	6	275	TT/TNS	413	1/8
ETITEC CM T23 275/20 3+1 RC	002440657	20/40	6	275	TT/TNS	419	1/8
MOD.ETITEC CM T23 275/20	002440658	20/40	6	275	-	78,5	1/24
MOD.ETITEC CM T23 275/20 G	002440659	20/40	6	255	-	65,5	1/24

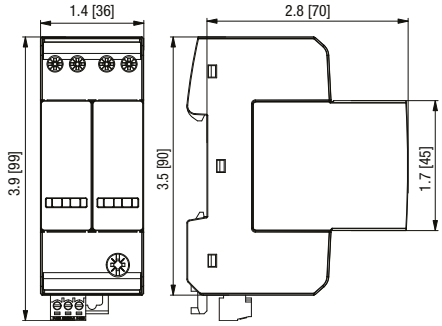
* RC -> remote signalisation. Note: I_n/I_{max} - defined per single pole

ETITEC CM T23 275 20 (4+0, 2p, TNC-S)

Dimensions



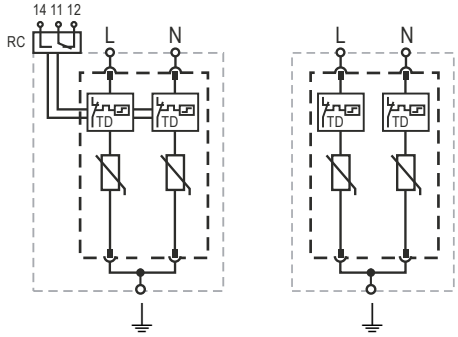
ETITEC CM T23 275/20 2+0 (RC), ETITEC CM T23 275/20 1+1 (RC)



ETITEC CM T23 275/20 4+0 (RC), ETITEC CM T23 275/20 3+1 (RC)

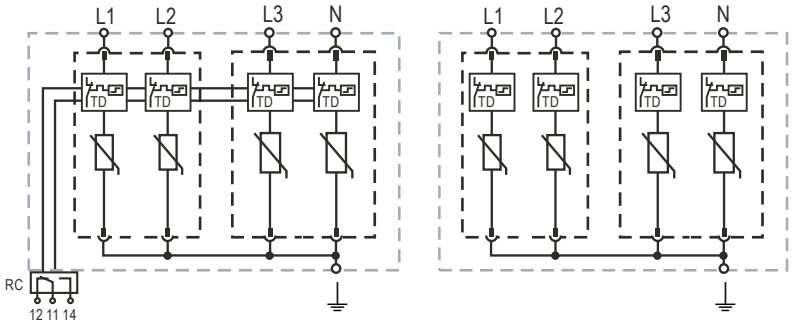
Internal Configuration

ETITEC CM T23 275/20 2+0 (RC)



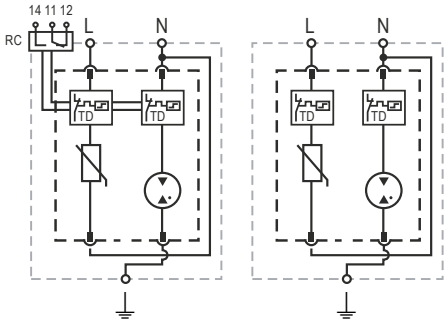
	Legend
L	Line Conductor Terminal
N	Neutral Conductor Terminal
z	PE Conductor Terminal
RC	Remote Contacts Terminal
TD	Thermal Disconnector

ETITEC CM T23 275/20 4+0 (RC)



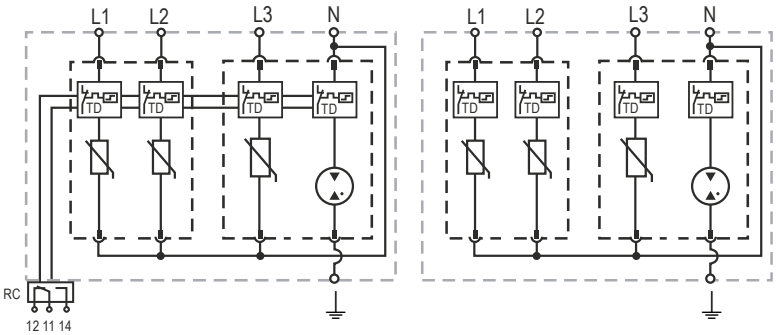
	Legend
L	Line Conductor Terminal
N	Neutral Conductor Terminal
z	PE Conductor Terminal
RC	Remote Contacts Terminal
TD	Thermal Disconnector

ETITEC CM T23 275/20 1+1 (RC)



	Legend
L	Line Conductor Terminal
N	Neutral Conductor Terminal
z	PE Conductor Terminal
RC	Remote Contacts Terminal
TD	Thermal Disconnector

ETITEC CM T23 275/20 3+1 (RC)



	Legend
L	Line Conductor Terminal
N	Neutral Conductor Terminal
z	PE Conductor Terminal
RC	Remote Contacts Terminal
TD	Thermal Disconnector

Surge arrester ETITEC group D T3

EN/IEC/VDE: T3/III/D

Description

ETITEC D T3 is a surge arrester for indoor application. Group D surge protection is in accordance with VDE class D. This protection corresponds to IEC category III, EN Type 3 . The protection should be installed immediately before the protected load. This is protection against indirect lightning strikes. In case of permanent arrester damage, thermal protection is activated, which signalizes faulty arrester. Consequently only the SPD module has to be replaced, while base unit remains fixed on DIN rail.

Advantages:

- optical indication of faulty device (green ok, red false)
- remote signalisation (RC version only)
- DIN rail mounting (EN 60715)
- high discharge currents
- high degree of protection
- varistor is the protective element
- metal snapper, new way of mounting on DIN rail (easier, quicker)
- round-off shape compatible with ETIMAT
- modular design
- IEC/EN 61643-11
- RoHS compliant
- connection up to 35mm^2

ETITEC D T3

Type	275/3	440/3
In accordance with	IEC/EN 61643-11	
Category IEC/EN/VDE	III/T3/D	
Max. continuous operating voltage (AC) Uc	275	440
Nominal AC voltage Uo	230 V 50-60 Hz	
TOV immunity UT (AC)	335 V/5s withstand	335 V/5s withstand
	440 V/120 min safe disconnection	440 V/120 min withstand
Uoc	10 kV	
Max. discharge current (8/20) Imax	10 kA	
Charge		
Protection level Up - at In (8/20)	<1,4 kV	<1,6 kV
Follow current Ifi	x	
Response time tA	< 25 ns	
Residual current Ipe at Uref	< 0,3 mA	
Thermal decoupler	✓	
Torque	3,0 Nm	
Back-up fuse (if mains > 63A)	125 A gG	
Short-circuit current rating ISCCR	25 kA / 50 Hz	
Temperature range	- 40°C ...+70°C	
Cross-section of connection wire	min. 6mm^2, max. single strand 35mm^2, multi-strand 25mm^2	
Mounting	indoors on top hat fixing rail 35 mm (EN 60715)	
Degree of protection	IP 20	
Casing material	thermoplastic; extinguishing degree UL 94 V-0	
Dimensions	1 TE	
Indication of disconnector operation	red flag	
Permissible humidity	5% - 95%	
Additional data for ETITEC D-RC		
Remote signalisation (RC)	✓	
Switching capability (RC)	AC: 250V/0.5A; 125V/3A	
Cross-section of connection wire (RC)	max. 1.5 mm^2	
Torque (RC)	0,25 Nm	

ETITEC D T3

Type	Code No.	U_{oc}/I_n (8/20) [kA]	U_c [V AC]	g	
ETITEC D T3 275/3 1+0	002440417	10kV/3kA	275	130	1/12
ETITEC D T3 275/3 1+0 RC	002440418	10kV/3kA	275	135	1/12
ETITEC D T3 440/3 1+0	002440419	10kV/3kA	440	132	1/12
ETITEC D T3 440/3 1+0 RC	002440420	10kV/3kA	440	137	1/12
MODUL ETITEC D T3 275/3	002440421	10kV/3kA	275	58	12
MODUL ETITEC D T3 440/3	002440422	10kV/3kA	440	60	12

* RC -> remote signalisation

Note: I_n - defined per single pole

ETITEC D T3 275/3 1+0 RC

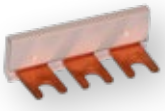
MODUL ETITEC D T3 275/3

Connection terminals

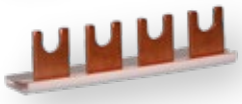
Type	code No.	g		Connection terminals for
IZ16/1F/2/ETITEC	002921081	9	50/600	2 modules connection
IZ16/1F/3/ETITEC	002921082	15	50/600	3 modules connection
IZ16/1F/4/ETITEC	002921083	20	50/600	4 modules connection

For module width 17,8 mm.

IZ16/1F/2/ETITEC



IZ16/1F/3/ETITEC

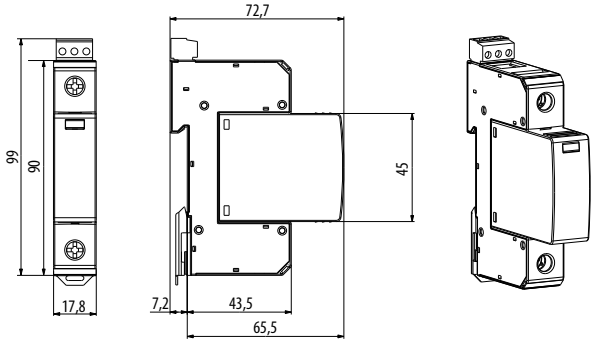


IZ16/1F/3/ETITEC

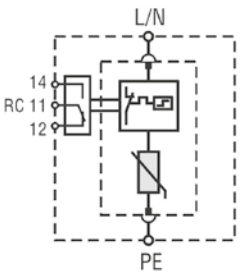
Application: Connection terminals are designed to connect modular surge ETITEC for multi-module assemblies (multi). Connections are made at the terminals ground - PE

Dimensions

ETITEC D T3 275/3 1+0 RC



Internal Configuration



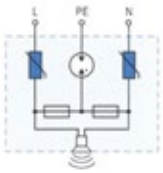
ETITEC D 255/3 MINI

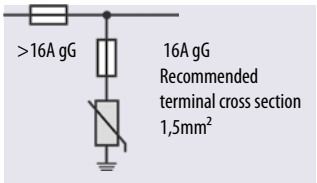
Electrical	
Nominal AC voltage Uo	230V
Max. continuous operating voltage (AC) Uc	275V
Open Circuit Voltage of the Combination Wave Generator (1,2/50 µs) Uoc	Uoc=6kV
	(L+N-PE) Uoc total=10kV
Short-Circuit Current of the Combination Wave Generator (8/20 µs) Icw	3kA
Protection level Up - at In (8/20)	(L-N) Up=1,5kV
	(L-PE)/(N-PE) Up=1,7kV
Response time tA	<100ns
Back-up fuse (if mains > 16A)	B 16 A
Short-circuit current rating ISCCR	1 kA
TOV immunity UT (AC)	337 V/5s withstand
Mechanical and Environmental	
Temperature range	-40°C ... +85°C
Permissible humidity	5% ... 95%
Cross-section of connection wire	1 mm^2(stranded)
Mounting	cable ducts
Degree of protection	IP 20
Housing material	thermoplastic; extinguishing degree UL 94 V-0
Thermal decoupler	✓
Fault Indication	Buzzer

ETITEC D 255/3 MINI

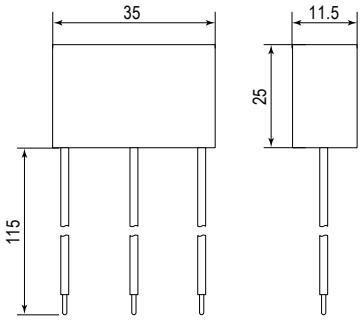
Type	Code No.	g	
ETITEC D 255/3 MINI	002441632	25	1

Internal Configuration





Dimensions

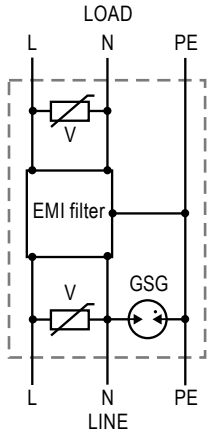


ETITEC FILT D 20/275F 8A G is an electromagnetic interference (EMI) and overvoltage protective device of class III. It is designed for complete protection and is installed directly in front of protected devices on DIN rail. Protected electrical device is safe against effects of overvoltage, electrostatic voltage and electromagnetic interferences. These disturbances, which are present in all electrical systems, are caused by other electrical devices, by switching manoeuvres, by defects in electrical network and by other activities, such as welding.
Applications: Protecting devices such as: TV, PC, Server, Control and regulation devices,..

Technical data ETITEC FILT D

In accordance with	IEC-61643-1
Category IEC / VDE	III / D
Connection:	TN-S, TT
Protecting:	L/N-PE
Protective elements:	GDT, MOV and EMI filter
Max. continuous operating voltage (AC/DC) Uc	275/50 Hz
Combination wave(1.2/50-8/20)Uoc/Isc	6kV/3kA
Max. Load current IL	8A
Protection level Up	≥800V
Asymetrical attenuation	<70 dB @ 5MHz
Terminal cross section	1,5 mm^2(stranded)
Indication	Light
Housing	Thermoplastic
Dimensions (w*h*d)	33 x 90 x 57 mm

Internal Configuration



V : Varistor
GSG: Specific gas tube

ETITEC FILT D

Type	Code No.	g	
ETITEC FILT D 20/275F 8A G	002441712	94	1

ETITEC Surge arresters M60 series

Combined Lightning Current and Surge Arrester T12 or T23 for direct mounting on 60 mm busbar systems (5 or 10mm thickness). Can be used in industry or other applications where 60mm busbar system is used. No additional adapters or accessories needed. T2 available also with integrated fuse (see M60F), no additional prefuse needed for SPD overcurrent protection. Pluggable design enables also simple module replacement.

Features:
- optical indication of faulty device (green ok, red false)
- remote signalisation (RC version only)
- MOV (metal oxide varistor) technology, no coprdination needed

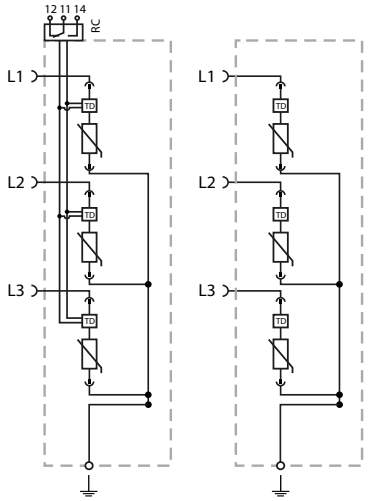
Surge arrester ETITEC M60

EN/IEC/VDE: T1,T2/I,II/B,C

Technical Data

		ETITEC M60 T12 300/12,5 3+0 (RC)
IEC Electrical		
Nominal AC Voltage (50/60Hz)	U_o / U_n	240 V
Maximum Continuous Operating Voltage (AC)	U_c	300 V
Nominal Discharge Current (8/20 µs)	I_n	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	50 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	12.5 kA
Specific Energy	W/R	39 kJ / Ω
Charge	Q	6.25 As
Voltage Protection Level	U_p	1500V
Response Time	t_A	< 25ns
Overcurrent Protection (max)		160 A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	25 kA
TOV Withstand 5s	U_T	337 V
TOV Safe Fail 120min	U_T	442 V
Number of Ports		1
Additional Electrical Parameters (Tests performed within internal laboratory)		
Residual Voltage 5 kA (8/20 µs)	U_{res}	1100 V
Overcurrent Protection (min)		160 A gG
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °C to +85 °C
Permissible Operating Humidity	RH	5%...95%
Altitude (max)		4000 m
Terminal Screw Torque	M_{max}	PH2 / 4.5 Nm
Conductor Cross Section (max)		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		60 mm Busbar Systems
Degree Of Protection		IP 20 / IP 40 in combination with cover
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/ 1A, 125V/ 1A; DC: 48V/0.5A, 24V/0.5 A, 12V/0.5A
RC Conductor Cross Section (max)		1.5 mm² (Solid)

Internal Configuration



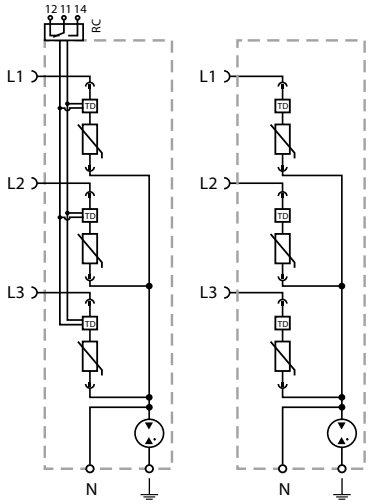
Legend

L	Line Busbar Terminal
Z	PEN Conductor Terminal
RC	Remote Contacts Terminal (Optional)
TD	Thermal Disconnector

Technical Data

			ETITEC M60 T12 300/12,5 3+1 (RC)
IEC Electrical			
Nominal AC Voltage (50/60Hz)		U_o / U_n	240 V
Maximum Continuous Operating Voltage (AC)	(L-N)	U_c	300 V
	(N-PE)	U_c	305 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_n	20 kA / 80 kA
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	50 kA / 100 kA
Impulse Discharge Current (10/350 µs)	(L-N)/(N-PE)	I_{imp}	12.5 kA / 50 kA
Specific Energy	(L-N)/(N-PE)	W/R	39 kJ / Ω / 625 kJ / Ω
Charge	(L-N)/(N-PE)	Q	6.25 As / 25As
Voltage Protection Level	(L-N)/(N-PE)	U_p	1500V / 1500V
Follow Current Interrupt Rating	(N-PE)	I_{fi}	100A
Response Time	(L-N)/(N-PE)	t_A	< 25ns / < 100ns
Overcurrent Protection (max)			160 A gG
Short-Circuit Current Rating (AC)		I_{SCCR}	25 kA
TOV Withstand 5s	(L-N)	U_T	337 V
TOV Safe Fail 120min	(L-N)	U_T	442 V
TOV Withstand 200ms	(N-PE)	U_T	1200 V
Number of Ports			1
Additional Electrical Parameters (Tests performed within internal laboratory)			
Residual Voltage 5 kA (8/20 µs)		U_{res}	1100 V / 305 V
Overcurrent Protection (min)			160 A gG
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °C to +85 °C
Permissible Operating Humidity		RH	5%...95%
Altitude (max)			4000 m
Terminal Screw Torque		M_{max}	PH2 / 4.5 Nm
Conductor Cross Section (max)			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			60 mm Busbar Systems
Degree Of Protection			IP 20 / IP 40 in combination with cover
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250V/ 1A, 125V/ 1A; DC: 48V/0.5A, 24V/0.5 A, 12V/0.5A
RC Conductor Cross Section (max)			1.5 mm² (Solid)

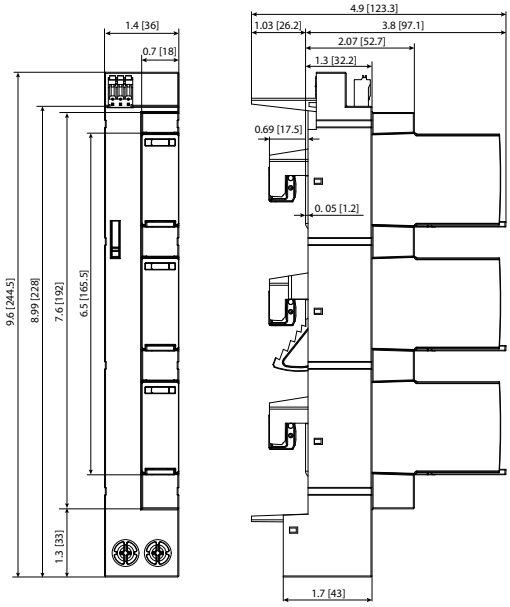
Internal Configuration



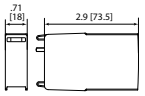
Legend

L	Line Busbar Terminal
Z	PE Conductor Terminal
N	Neutral Conductor Terminal
RC	Remote Contacts Terminal (Optional)
TD	Ther mal Disconnector

Dimensions



inches
[mm]



ETITEC M60 T12

Type	Code No.	I_{imp} (10/350) [kA]	I_n/I_{max} (8/20) [kA]	U_c [V AC]	Network	g	
ETITEC M60 T12 300/12,5 3+0	002440850	12,5	20/50	300	TN-C	569	1/20
ETITEC M60 T12 300/12,5 3+0 RC	002440851	12,5	20/50	300	TN-C	577	1/20
ETITEC M60 T12 300/12,5 3+1	002440852	12,5	20/50	300	TT, TN-S	610	1/20
ETITEC M60 T12 300/12,5 3+1 RC	002440853	12,5	20/50	300	TT, TN-S	617	1/20

Replacement module

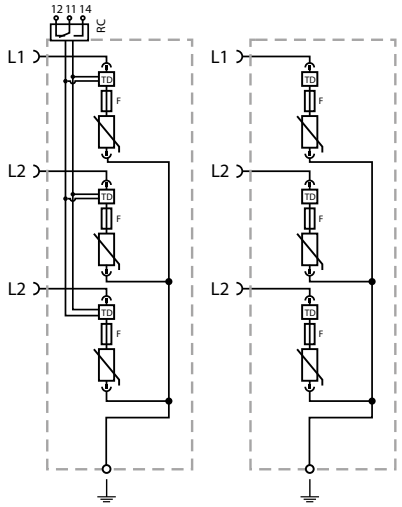
Type	Code No.	For use with	g	
MOD.ETITEC M60 T12 300/12,5	002440862	ETITEC M60 T12 300/12,5	104	1/28

Surge arrester ETITEC M60F with Integrated Fuse EN/IEC/VDE: T2,T3/II,III/C,D

Technical Data

		ETITEC M60F T23 300/20 3+0 (RC)
IEC Electrical		
Nominal AC Voltage (50/60Hz)	U_o / U_n	240 V
Maximum Continuous Operating Voltage (AC)	U_c	300 V
Nominal Discharge Current (8/20 µs)	I_n	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	40 kA
Voltage Protection Level	U_p	1500V
Open Circuit Voltage of Combination Wave Generator (1.2/50 µs)	U_{oc}	6 kV
Short Circuit Current of Combination Wave Generator (8/20 µs)	I_{cw}	3 kV
Response Time	t_A	< 25ns
Overcurrent Protection (max)		not required
Short-Circuit Current Rating (AC)	I_{SCCR}	
TOV Withstand 5s	U_T	337 V
TOV Safe Fail 120min	U_T	442 V
Number of Ports		1
Additional Electrical Parameters (Tests performed within internal laboratory)		
Residual Voltage 5 kA (8/20 µs)	U_{res}	1150 V
Overcurrent Protection (min)		not required
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °C to +85 °C
Permissible Operating Humidity	RH	5%...95%
Altitude (max)		4000 m
Terminal Screw Torque	M_{max}	PH2 / 4.5 Nm
Conductor Cross Section (max)		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		60 mm Busbar Systems
Degree Of Protection		IP 20 / IP 40 in combination with cover
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/ 1A, 125V/ 1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		1.5 mm² (Solid)

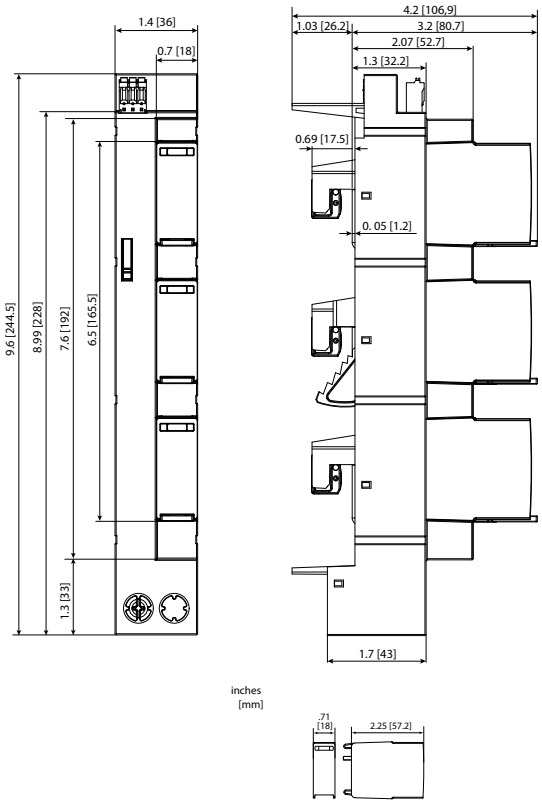
Internal Configuration



Legend

L	Line Busbar Terminal
Z	PEN Conductor Terminal
RC	Remote Contacts Terminal (Optional)
TD	Ther mal Disconnector
F	Integrated Surge Adapted Backup Fuse

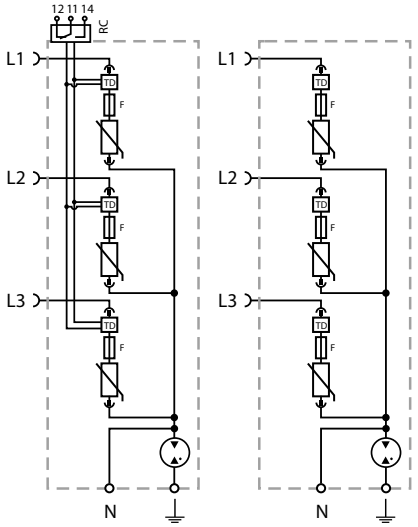
Dimensions



Technical Data

			ETITEC M60F T23 300/20 3+1 RC
IEC Electrical			
Nominal AC Voltage (50/60Hz)		U_o / U_n	240 V
Maximum Continuous Operating Voltage (AC)	(L-N)	U_c	300 V
	(N-PE)	U_c	305 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_n	20 kA / 40 kA
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	40 kA / 65 kA
Voltage Protection Level	(L-N)/(N-PE)	U_p	1500V / 1500V
Open Circuit Voltage of Combination Wave Generator (1.2/50 µs)	(L-N)/(N-PE)	U_{oc}	6 kA / 6 kA
Short Circuit Current of Combination Wave Generator (8/20 µs)	(L-N)/(N-PE)	I_{cw}	3 kA / 3 kA
Follow Current Interrupt Rating	(N-PE)	I_{fi}	100A
Response Time	(L-N)/(N-PE)	t_A	< 25ns / < 100ns
Overcurrent Protection (max)			not required
Short-Circuit Current Rating (AC)		I_{SCCR}	
TOV Withstand 5s	(L-N)	U_T	337 V
TOV Safe Fail 120min	(L-N)	U_T	442 V
TOV Withstand 200ms	(N-PE)	U_T	1200 V
Number of Ports			1
Additional Electrical Parameters (Tests performed within internal laboratory)			
Residual Voltage 5 kA (8/20 µs)		U_{res}	1150 V
Overcurrent Protection (min)			not required
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °C to +85 °C
Permissible Operating Humidity		RH	5%...95%
Altitude (max)			4000 m
Terminal Screw Torque		M_{max}	PH2 / 4.5 Nm
Conductor Cross Section (max)			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			60 mm Busbar Systems
Degree Of Protection			IP 20 / IP 40 in combination with cover
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250V/ 1A, 125V/ 1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)			1.5 mm² (Solid)

Internal Configuration



Legend

L	Line Busbar Terminal
N	Neutral Conductor Terminal
Z	PE Conductor Terminal
RC	Remote Contacts Terminal (Optional)
TD	Thermal Disconnector
F	Integrated Surge Adapted Backup Fuse

ETITEC M60F T23 with integrated fuse

Type	Code No.	I_n/I_{max} (8/20) [kA]	U_{oc}/I_n	U_c [V AC]	Network	g	
ETITEC M60F T23 300/20 3+0	002440858	20/40	6kV/3kA	300	TN-C	463	1/20
ETITEC M60F T23 300/20 3+0 RC	002440859	20/40	6kV/3kA	300	TN-C	471	1/20
ETITEC M60F T23 300/20 3+1	002440860	20/40	6kV/3kA	300	TT, TN-S	499	1/20
ETITEC M60F T23 300/20 3+1 RC	002440861	20/40	6kV/3kA	300	TT, TN-S	507	1/20

Replacement module

Type	Code No.	For use with	g	
MOD.ETITEC M60F T23 300/20	002440864	ETITEC M60F T2 300/20	69	1/28

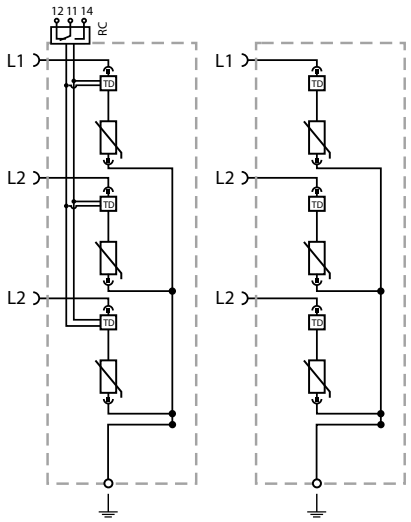
Surge arrester ETITEC M60

EN/IEC/VDE: T2,T3/II,III/C,D

Technical Data

		ETITEC M60 T23 300/20 3+0 (RC)
IEC Electrical		
Nominal AC Voltage (50/60Hz)	U_o / U_n	240 V
Maximum Continuous Operating Voltage (AC)	U_c	300 V
Nominal Discharge Current (8/20 µs)	I_n	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	50 kA
Voltage Protection Level	U_p	1500V
Response Time	t_A	< 25ns
Overcurrent Protection (max)		160 A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	25 kA
TOV Withstand 5s	U_T	337 V
TOV Safe Fail 120min	U_T	442 V
Number of Ports		1
Additional Electrical Parameters (Tests performed within internal laboratory)		
Residual Voltage 5 kA (8/20 µs)	U_{res}	1000 V
Overcurrent Protection (min)		80 A gG
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °C to +85 °C
Permissible Operating Humidity	RH	5%...95%
Altitude (max)		4000 m
Terminal Screw Torque	M_{max}	PH2 / 4.5 Nm
Conductor Cross Section (max)		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		60 mm Busbar Systems
Degree Of Protection		IP 20 / IP 40 in combination with cover
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/ 1A, 125V/ 1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		1.5 mm² (Solid)

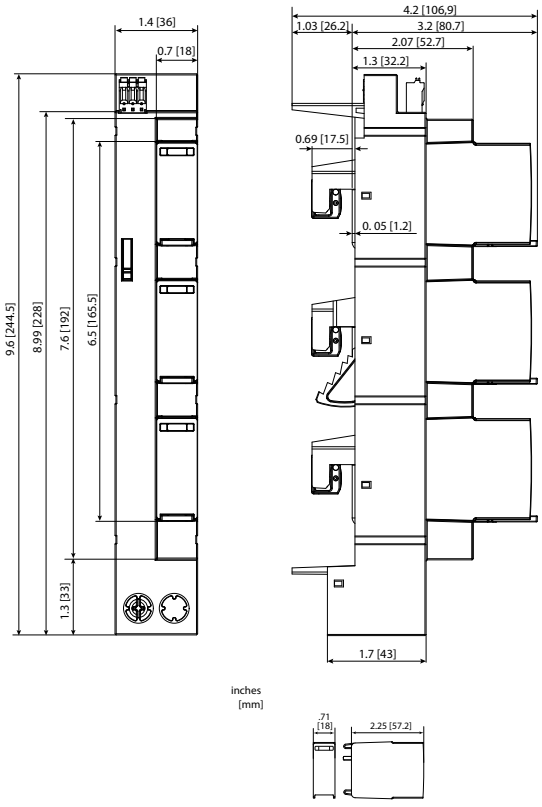
Internal Configuration



Legend

L	Line Busbar Terminal
Z	PEN Conductor Terminal
RC	Remote Contacts Terminal (Optional)
TD	Thermal Disconnector

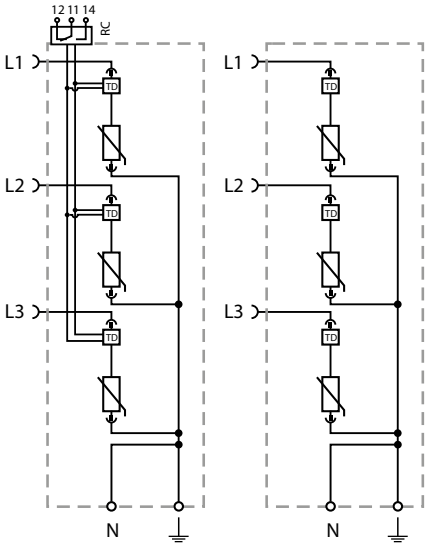
Dimensions



Technical Data

			ETITEC M60 T23 300/20 3+1 RC
IEC Electrical			
Nominal AC Voltage (50/60Hz)		U_o / U_n	240 V
Maximum Continuous Operating Voltage (AC)	(L-N)	U_c	300 V
	(N-PE)	U_c	305 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_n	20 kA / 40 kA
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	40 kA / 65 kA
Voltage Protection Level	(L-N)/(N-PE)	U_p	1500V / 1500V
Follow Current Interrupt Rating	(N-PE)	I_{fi}	100A
Response Time	(L-N)/(N-PE)	t_A	< 25ns / < 100ns
Overcurrent Protection (max)			160 A gG
Short-Circuit Current Rating (AC)		I_{SCCR}	25 kA
TOV Withstand 5s	(L-N)	U_T	337 V
TOV Safe Fail 120min	(L-N)	U_T	442 V
TOV Withstand 200ms	(N-PE)	U_T	1200 V
Number of Ports			1
Additional Electrical Parameters (Tests performed within internal laboratory)			
Residual Voltage 5 kA (8/20 µs)		U_{res}	1000 V / 305 V
Overcurrent Protection (min)			80 A gG
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °C to +85 °C
Permissible Operating Humidity		RH	5%...95%
Altitude (max)			4000 m
Terminal Screw Torque		M_{max}	PH2 / 4.5 Nm
Conductor Cross Section (max)			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			60 mm Busbar Systems
Degree Of Protection			IP 20 / IP 40 in combination with cover
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250V/ 1A, 125V/ 1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)			1.5 mm² (Solid)

Internal Configuration



Legend

L	Line Busbar Terminal
N	Neutral Conductor Terminal
Z	PE Conductor Terminal
RC	Remote Contacts Terminal (Optional)
TD	Ther mal Disconnector

ETITEC M60 T23

Type	Code No.	I_n/I_{max} (8/20) [kA]	U_{oc}/I_n	U_c [V AC]	Network	g	
ETITEC M60 T23 300/20 3+0	002440854	20/40	6kV/3kA	300	TN-C	527	1/20
ETITEC M60 T23 300/20 3+0 RC	002440855	20/40	6kV/3kA	300	TN-C	535	1/20
ETITEC M60 T23 300/20 3+1	002440856	20/40	6kV/3kA	300	TT, TN-S	563	1/20
ETITEC M60 T23 300/20 3+1 RC	002440857	20/40	6kV/3kA	300	TT, TN-S	571	1/20

Replacement module

Type	Code No.	For use with	g	
MOD.ETITEC M60 T23 300/20	002440863	ETITEC M60 T2 300/20	66	1/28

ETITRAFO

Transformers and power supplies

Single phase safety and insulating transformers **728**

AC/DC power supplies **740**

/etigroup

SWITCH TO A SAFE FUTURE

ETITRAFO Single phase safety and insulating transformers

Safety transformer:
It is an insulating transformer designed to supply circuit at a maximum of 50V (safety extra-low voltage).
Insulating transformer:
It is a transformer in which the primary and secondary windings are separated by a double or reinforced insulation, in order to limit, in the circuit supplied by the secondary winding, any risk due to accidental contacts with active parts or parts that can become active in case of an insulation fault.

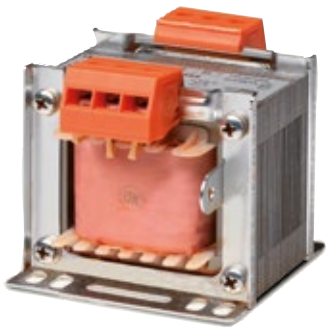
Impregnation:
The transformers are completely impregnated with a inorganic resin. This operation improves the characteristics of the used materials, prevents the penetration of humidity inside the core and the windings, reduces greatly the noises caused by the vibration.

Single phase safety and insulating transformers IP00

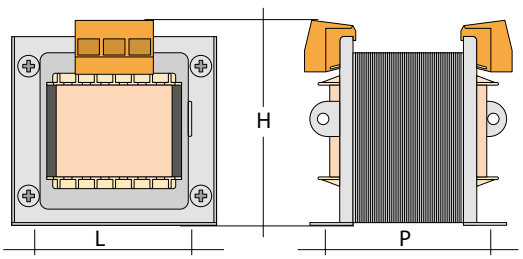
Technical data

Frequency	50 Hz
Thermal class	B & F
Losses in the core sheets	1,3 - 1,5 W/kg
Insulation voltage	4000V between coils 2000V between coils and ground
Primary voltage	230 V/50 Hz 230 V +/- 15V 50 Hz - type EURO
Standard	EN 61558-2-4
Service type	Continuous
Protection index	IP00

Features:
- Electrolytic copper: Class F/H
- Impregnated with insulating resin
- Admissible voltage tolerance +/- 15%



Dimensions



Technical features chart of single phase safety and insulating transformers. Thermal class B

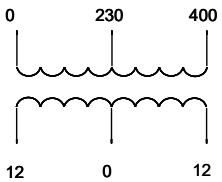
Fall secondary windigs power (VA)	No-load losse s Δ P (W)	Losses (short circuit) Δ P (W)	Ucc (cos φ=1) (%)	Efficiency (cos φ=1) (%)
30	2,4	3,9	9,9	79%
40	3	5,7	10	79%
50	2,9	7,1	10,6	80%
63	3,8	7,1	9,6	82%
75	4,3	9,4	9,2	82%
100	4,6	10,1	9,1	85%
150	5,7	16,2	7,5	85%
200	7,2	22	7,3	86%
250	8,9	23,7	6,5	87%
300	9,8	24	5,6	89%
400	11	27	5,3	90%
500	16,2	28,2	4,2	91%
630	18,9	43	4,3	90%
800	20	46	4,1	92%
1000	28	45	3,2	93%
1600	35	65	3,1	94%
2000	30	88	2,7	94%
2500	60	67	2,1	95%
3000	70	85	3	95%
4000	50	158	3,2	95%
5000	50	250	2,8	94%
6000	60	280	2,8	94%
8000	100	240	2,9	96%
10000	137	200	1,6	97%

Technical features chart of single phase safety and insulating transformers. Thermal class F

Fall secondary windigs power (VA)	No-load losse s Δ P (W)	Losses (short circuit) Δ P (W)	Ucc (cos φ=1) (%)	Efficiency (cos φ=1) (%)
40	3	7	12	75%
63	3,9	8	10,5	81%
100	4,9	11	9,5	84%
160	6,1	16,8	8,5	86%
200	7,7	23	8	85%
250	9,1	25	6,5	86%
300	10	25,4	6	88%
400	12,8	32,5	5,5	89%
500	16,5	35,5	4,8	90%
630	19,1	44,2	4,6	90%
1000	28,5	48	4,5	93%
1600	38	70	3,5	93%
2000	36	76	3,5	94%
2500	65	75	2,5	94%

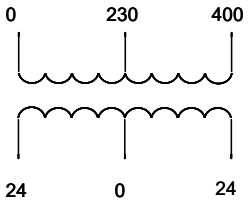
Single phase safety transformers
Primary voltage 230, 400V. Secondary voltage 24V (12V-0-12V). Thermal class B

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF 1f B 12-0-12V 30VA	Single phase safety transf. 12-0-12V 30VA	003801001	30	77x77x78	1,00	1
TRANSF 1f B 12-0-12V 50VA	Single phase safety transf. 12-0-12V 50VA	003801002	50	77x77x83	1,45	1
TRANSF 1f B 12-0-12V 75VA	Single phase safety transf. 12-0-12V 75VA	003801003	75	77x77x93	1,65	1
TRANSF 1f B 12-0-12V 100VA	Single phase safety transf. 12-0-12V 100VA	003801004	100	85x85x93	1,88	1
TRANSF 1f B 12-0-12V 150VA	Single phase safety transf. 12-0-12V 150VA	003801005	150	98x95x93	2,40	1
TRANSF 1f B 12-0-12V 200VA	Single phase safety transf. 12-0-12V 200VA	003801006	200	98x95x103	2,93	1
TRANSF 1f B 12-0-12V 250VA	Single phase safety transf. 12-0-12V 250VA	003801007	250	123x108x91	3,90	1
TRANSF 1f B 12-0-12V 300VA	Single phase safety transf. 12-0-12V 300VA	003801008	300	123x108x95	4,00	1
TRANSF 1f B 12-0-12V 400VA	Single phase safety transf. 12-0-12V 400VA	003801009	400	123x108x108	5,10	1
TRANSF 1f B 12-0-12V 500VA	Single phase safety transf. 12-0-12V 500VA	003801010	500	123x130x120	7,20	1
TRANSF 1f B 12-0-12V 630VA	Single phase safety transf. 12-0-12V 630VA	003801011	630	153x130x135	8,90	1
TRANSF 1f B 12-0-12V 800VA	Single phase safety transf. 12-0-12V 800VA	003801012	800	153x130x145	11,70	1
TRANSF 1f B 12-0-12V 1000VA	Single phase safety transf. 12-0-12V 1000VA	003801013	1000	153x130x160	12,50	1
TRANSF 1f B 12-0-12V 1600VA	Single phase safety transf. 12-0-12V 1600VA	003801014	1600	195x187x150	17,00	1
TRANSF 1f B 12-0-12V 2000VA	Single phase safety transf. 12-0-12V 2000VA	003801015	2000	195x187x160	19,10	1
TRANSF 1f B 12-0-12V 2500VA	Single phase safety transf. 12-0-12V 2500VA	003801016	2500	195x187x190	23,00	1
TRANSF 1f B 12-0-12V 3000VA	Single phase safety transf. 12-0-12V 3000VA	003801017	3000	195x187x210	30,00	1
TRANSF 1f B 12-0-12V 4000VA	Single phase safety transf. 12-0-12V 4000VA	003801018	4000	240x270x270	40,00	1
TRANSF 1f B 12-0-12V 5000VA	Single phase safety transf. 12-0-12V 5000VA	003801019	5000	240x270x280	44,00	1
TRANSF 1f B 12-0-12V 6000VA	Single phase safety transf. 12-0-12V 6000VA	003801020	6000	240x270x290	46,00	1
TRANSF 1f B 12-0-12V 8000VA	Single phase safety transf. 12-0-12V 8000VA	003801021	8000	320x430x270	60,00	1
TRANSF 1f B 12-0-12V 10000VA	Single phase safety transf. 12-0-12V 10000VA	003801022	10000	320x430x280	75,00	1



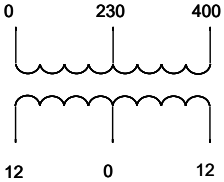
Single phase safety transformers
Primary voltage 230, 400V. Secondary voltage 48V (24V-0-24V). Thermal class B

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF 1f B 24-0-24V 30VA	Single phase safety transf. 24-0-24V 30VA	003801031	30	77x77x78	1,00	1
TRANSF 1f B 24-0-24V 50VA	Single phase safety transf. 24-0-24V 50VA	003801032	50	77x77x83	1,45	1
TRANSF 1f B 24-0-24V 75VA	Single phase safety transf. 24-0-24V 75VA	003801033	75	77x77x93	1,65	1
TRANSF 1f B 24-0-24V 100VA	Single phase safety transf. 24-0-24V 100VA	003801034	100	85x85x93	1,88	1
TRANSF 1f B 24-0-24V 150VA	Single phase safety transf. 24-0-24V 150VA	003801035	150	98x95x93	2,40	1
TRANSF 1f B 24-0-24V 200VA	Single phase safety transf. 24-0-24V 200VA	003801036	200	98x95x103	2,93	1
TRANSF 1f B 24-0-24V 250VA	Single phase safety transf. 24-0-24V 250VA	003801037	250	123x108x91	3,90	1
TRANSF 1f B 24-0-24V 300VA	Single phase safety transf. 24-0-24V 300VA	003801038	300	123x108x95	4,00	1
TRANSF 1f B 24-0-24V 400VA	Single phase safety transf. 24-0-24V 400VA	003801039	400	123x108x108	5,10	1
TRANSF 1f B 24-0-24V 500VA	Single phase safety transf. 24-0-24V 500VA	003801040	500	123x130x120	7,20	1
TRANSF 1f B 24-0-24V 630VA	Single phase safety transf. 24-0-24V 630VA	003801041	630	153x130x135	8,90	1
TRANSF 1f B 24-0-24V 800VA	Single phase safety transf. 24-0-24V 800VA	003801042	800	153x130x145	11,70	1
TRANSF 1f B 24-0-24V 1000VA	Single phase safety transf. 24-0-24V 1000VA	003801043	1000	153x130x160	12,50	1
TRANSF 1f B 24-0-24V 1600VA	Single phase safety transf. 24-0-24V 1600VA	003801044	1600	195x187x150	17,00	1
TRANSF 1f B 24-0-24V 2000VA	Single phase safety transf. 24-0-24V 2000VA	003801045	2000	195x187x160	19,10	1
TRANSF 1f B 24-0-24V 2500VA	Single phase safety transf. 24-0-24V 2500VA	003801046	2500	195x187x190	23,00	1
TRANSF 1f B 24-0-24V 3000VA	Single phase safety transf. 24-0-24V 3000VA	003801047	3000	195x187x210	30,00	1
TRANSF 1f B 24-0-24V 4000VA	Single phase safety transf. 24-0-24V 4000VA	003801048	4000	240x270x270	40,00	1
TRANSF 1f B 24-0-24V 5000VA	Single phase safety transf. 24-0-24V 5000VA	003801049	5000	240x270x280	44,00	1
TRANSF 1f B 24-0-24V 6000VA	Single phase safety transf. 24-0-24V 6000VA	003801050	6000	240x270x290	46,00	1
TRANSF 1f B 24-0-24V 8000VA	Single phase safety transf. 24-0-24V 8000VA	003801051	8000	320x430x270	60,00	1
TRANSF 1f B 24-0-24V 10000VA	Single phase safety transf. 24-0-24V 10000VA	003801052	10000	320x430x280	75,00	1



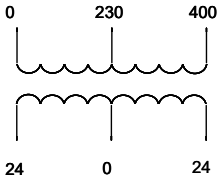
Single phase safety transformers
Primary voltage 230, 400V. Secondary voltage 24V (12V-0-12V). Thermal class F

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF 1f 12-0-12V 40VA	Single phase safety transf. 12-0-12V 40VA	003801121	40	77x77x78	1,00	1
TRANSF 1f 12-0-12V 63VA	Single phase safety transf. 12-0-12V 63VA	003801123	63	77x77x83	1,45	1
TRANSF 1f 12-0-12V 75VA	Single phase safety transf. 12-0-12V 75VA	003801124	75	77x77x83	1,45	1
TRANSF 1f 12-0-12V 100VA	Single phase safety transf. 12-0-12V 100VA	003801125	100	85x85x93	1,88	1
TRANSF 1f 12-0-12V 150VA	Single phase safety transf. 12-0-12V 160VA	003801126	160	98x95x93	2,44	1
TRANSF 1f 12-0-12V 200VA	Single phase safety transf. 12-0-12V 200VA	003801127	200	98x95x103	2,93	1
TRANSF 1f 12-0-12V 250VA	Single phase safety transf. 12-0-12V 250VA	003801128	250	123x108x91	3,90	1
TRANSF 1f 12-0-12V 300VA	Single phase safety transf. 12-0-12V 300VA	003801129	300	123x108x95	4,00	1
TRANSF 1f 12-0-12V 400VA	Single phase safety transf. 12-0-12V 400VA	003801130	400	123x108x108	5,10	1
TRANSF 1f 12-0-12V 500VA	Single phase safety transf. 12-0-12V 500VA	003801131	500	123x130x120	7,20	1
TRANSF 1f 12-0-12V 630VA	Single phase safety transf. 12-0-12V 630VA	003801132	630	153x130x135	8,90	1
TRANSF 1f 12-0-12V 800VA	Single phase safety transf. 12-0-12V 800VA	003801133	800	153x130x135	10,00	1
TRANSF 1f 12-0-12V 1000VA	Single phase safety transf. 12-0-12V 1000VA	003801134	1000	153x130x160	12,50	1
TRANSF 1f 12-0-12V 1600VA	Single phase safety transf. 12-0-12V 1600VA	003801135	1600	195x187x150	17,00	1
TRANSF 1f 12-0-12V 2000VA	Single phase safety transf. 12-0-12V 2000VA	003801136	2000	195x187x160	19,10	1
TRANSF 1f 12-0-12V 2500VA	Single phase safety transf. 12-0-12V 2500VA	003801137	2500	195x187x190	23,00	1



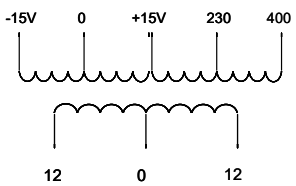
Single phase safety transformers
Primary voltage 230, 400V. Secondary voltage 48V (24V-0-24V). Thermal class F

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF 1f 24-0-24V 40VA	Single phase safety transf. 24-0-24V 40V	003801141	40	77x77x78	1,00	1
TRANSF 1f 24-0-24V 63VA	Single phase safety transf. 24-0-24V 63V	003801142	63	77x77x83	1,45	1
TRANSF 1f 24-0-24V 75VA	Single phase safety transf. 24-0-24V 75V	003801143	75	77x77x83	1,45	1
TRANSF 1f 24-0-24V 100VA	Single phase safety transf. 24-0-24V 100V	003801144	100	85x85x93	1,88	1
TRANSF 1f 24-0-24V 160VA	Single phase safety transf. 24-0-24V 160V	003801145	160	98x95x93	2,44	1
TRANSF 1f 24-0-24V 200VA	Single phase safety transf. 24-0-24V 200V	003801146	200	98x95 x103	2,93	1
TRANSF 1f 24-0-24V 250VA	Single phase safety transf. 24-0-24V 250V	003801147	250	123x108x91	3,90	1
TRANSF 1f 24-0-24V 300VA	Single phase safety transf. 24-0-24V 300V	003801148	300	123x108x95	4,00	1
TRANSF 1f 24-0-24V 400VA	Single phase safety transf. 24-0-24V 400V	003801149	400	123x108x108	5,10	1
TRANSF 1f 24-0-24V 500VA	Single phase safety transf. 24-0-24V 500V	003801150	500	123x130x120	7,20	1
TRANSF 1f 24-0-24V 630VA	Single phase safety transf. 24-0-24V 630V	003801151	630	153x130x135	8,90	1
TRANSF 1f 24-0-24V 1000VA	Single phase safety transf. 24-0-24V 1000V	003801152	1000	153x130x160	12,50	1
TRANSF 1f 24-0-24V 1600VA	Single phase safety transf. 24-0-24V 1600V	003801153	1600	195x187x160	17,00	1
TRANSF 1f 24-0-24V 2500VA	Single phase safety transf. 24-0-24V 2500V	003801154	2500	195x187x190	23,00	1



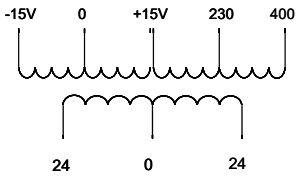
Single phase safety transformers
Primary voltage 230, 400V: +/- 15V. Secondary voltage 24V (12-0-12V). Thermal class F. Type EURO

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF EU 1f 12-0-12V 50VA	Single phase safety trans. +/-15V 12-0-12V 50VA	003801341	50	77x77x83	1,45	1
TRANSF EU 1f 12-0-12V 100VA	Single phase safety trans. +/-15V 12-0-12V 100VA	003801342	100	85x85x93	1,88	1
TRANSF EU 1f 12-0-12V 160VA	Single phase safety trans. +/-15V 12-0-12V 160VA	003801343	160	98x95x93	2,44	1
TRANSF EU 1f 12-0-12V 200VA	Single phase safety trans. +/-15V 12-0-12V 200VA	003801344	200	98x95x103	2,93	1
TRANSF EU 1f 12-0-12V 250VA	Single phase safety trans. +/-15V 12-0-12V 250VA	003801345	250	123x108x91	3,90	1
TRANSF EU 1f 12-0-12V 300VA	Single phase safety trans. +/-15V 12-0-12V 300VA	003801346	300	123x108x95	4,00	1
TRANSF EU 1f 12-0-12V 400VA	Single phase safety trans. +/-15V 12-0-12V 400VA	003801347	400	123x108x108	5,10	1
TRANSF EU 1f 12-0-12V 630VA	Single phase safety trans. +/-15V 12-0-12V 630VA	003801348	630	153x130x135	8,90	1
TRANSF EU 1f 12-0-12V 1000VA	Single phase safety trans. +/-15V 12-0-12V 1000VA	003801349	1000	153x130x160	12,50	1
TRANSF EU 1f 12-0-12V 1600VA	Single phase safety trans. +/-15V 12-0-12V 1600VA	003801350	1600	195x187x150	17,00	1
TRANSF EU 1f 12-0-12V 2500VA	Single phase safety trans. +/-15V 12-0-12V 2500VA	003801351	2500	195x187x190	23,00	1



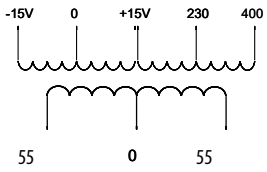
Single phase safety transformers
Primary voltage 230, 400V: +/- 15V. Secondary voltage 48V (24-0-24V). Thermal class F. Type EURO

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF EU 1f 24-0-24V 50VA	Single phase safety trans. +/-15V 24-0-24V 50VA	003801361	50	77x77x83	1,45	1
TRANSF EU 1f 24-0-24V 100VA	Single phase safety trans. +/-15V 24-0-24V 100VA	003801362	100	85x85x93	1,88	1
TRANSF EU 1f 24-0-24V 160VA	Single phase safety trans. +/-15V 24-0-24V 160VA	003801363	160	98x95x93	2,44	1
TRANSF EU 1f 24-0-24V 200VA	Single phase safety trans. +/-15V 24-0-24V 200VA	003801364	200	98x95x103	2,93	1
TRANSF EU 1f 24-0-24V 250VA	Single phase safety trans. +/-15V 24-0-24V 250VA	003801365	250	123x108x91	3,90	1
TRANSF EU 1f 24-0-24V 300VA	Single phase safety trans. +/-15V 24-0-24V 300VA	003801366	300	123x108x95	4,00	1
TRANSF EU 1f 24-0-24V 400VA	Single phase safety trans. +/-15V 24-0-24V 400VA	003801367	400	123x108x108	5,10	1
TRANSF EU 1f 24-0-24V 630VA	Single phase safety trans. +/-15V 24-0-24V 630VA	003801368	630	153x130x135	8,90	1
TRANSF EU 1f 24-0-24V 1000VA	Single phase safety trans. +/-15V 24-0-24V 1000VA	003801369	1000	153x130x160	12,50	1
TRANSF EU 1f 24-0-24V 1600VA	Single phase safety trans. +/-15V 24-0-24V 1600VA	003801370	1600	195x187x150	17,00	1
TRANSF EU 1f 24-0-24V 2500VA	Single phase safety trans. +/-15V 24-0-24V 2500VA	003801371	2500	195x187x190	23,00	1



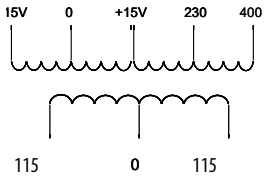
Single phase insulating transformers
Primary voltage 230, 400V: +/- 15V. Secondary voltage 110V (55-0-55V). Thermal class F. Type EURO

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF EU 1f 55-0-55V 50VA	Single phase insulating trans. +/-15V 55-0-55V 50VA	003801381	50	77x77x83	1,45	1
TRANSF EU 1f 55-0-55V 100VA	Single phase insulating trans. +/-15V 55-0-55V 100VA	003801382	100	85x85x93	1,88	1
TRANSF EU 1f 55-0-55V 160VA	Single phase insulating trans. +/-15V 55-0-55V 160VA	003801383	160	98x95x93	2,44	1
TRANSF EU 1f 55-0-55V 200VA	Single phase insulating trans. +/-15V 55-0-55V 200VA	003801384	200	98x95x103	2,93	1
TRANSF EU 1f 55-0-55V 250VA	Single phase insulating trans. +/-15V 55-0-55V 250VA	003801385	250	123x108x91	3,90	1
TRANSF EU 1f 55-0-55V 300VA	Single phase insulating trans. +/-15V 55-0-55V 300VA	003801386	300	123x108x95	4,00	1
TRANSF EU 1f 55-0-55V 400VA	Single phase insulating trans. +/-15V 55-0-55V 400VA	003801387	400	123x108x108	5,10	1
TRANSF EU 1f 55-0-55V 630VA	Single phase insulating trans. +/-15V 55-0-55V 630VA	003801388	630	153x130x135	8,90	1
TRANSF EU 1f 55-0-55V 1000VA	Single phase insulating trans. +/-15V 55-0-55V 1000VA	003801389	1000	153x130x160	12,50	1
TRANSF EU 1f 55-0-55V 1600VA	Single phase insulating trans. +/-15V 55-0-55V 1600VA	003801390	1600	195x187x150	17,00	1
TRANSF EU 1f 55-0-55V 2500VA	Single phase insulating trans. +/-15V 55-0-55V 2500VA	003801391	2500	195x187x190	23,00	1



Single phase insulating transformers
Primary voltage 230, 400V: +/- 15V. Secondary voltage 230V (115-0-115V). Thermal class F. Type EURO

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF EU 1f 115-0-115V 50VA	Single phase insulating trans. +/-15V 115-0-115V 50VA	003801401	50	77x77x83	1,45	1
TRANSF EU 1f 115-0-115V 100VA	Single phase insulating trans. +/-15V 115-0-115V 100VA	003801402	100	85x85x93	1,88	1
TRANSF EU 1f 115-0-115V 160VA	Single phase insulating trans. +/-15V 115-0-115V 160VA	003801403	160	98x95x93	2,44	1
TRANSF EU 1f 115-0-115V 200VA	Single phase insulating trans. +/-15V 115-0-115V 200VA	003801404	200	98x95x103	2,93	1
TRANSF EU 1f 115-0-115V 250VA	Single phase insulating trans. +/-15V 115-0-115V 250VA	003801405	250	123x108x91	3,90	1
TRANSF EU 1f 115-0-115V 300VA	Single phase insulating trans. +/-15V 115-0-115V 300VA	003801406	300	123x108x95	4,00	1
TRANSF EU 1f 115-0-115V 400VA	Single phase insulating trans. +/-15V 115-0-115V 400VA	003801407	400	123x108x108	5,10	1
TRANSF EU 1f 115-0-115V 630VA	Single phase insulating trans. +/-15V 115-0-115V 630VA	003801408	630	153x130x135	8,90	1
TRANSF EU 1f 115-0-115V 1000VA	Single phase insulating trans. +/-15V 115-0-115V 1000VA	003801409	1000	153x130x160	12,50	1
TRANSF EU 1f 115-0-115V 1600VA	Single phase insulating trans. +/-15V 115-0-115V 1600VA	003801410	1600	195x187x150	17,00	1
TRANSF EU 1f 115-0-115V 2500VA	Single phase insulating trans. +/-15V 115-0-115V 2500VA	003801411	2500	195x187x190	23,00	1

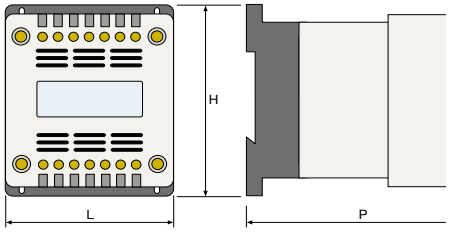


Single phase safety and insulating transformers IP20 DIN rail mounted

Technical data

Primary voltage	0 - 230V - 400V +/- 15V (50-60 Hz)
Thermal class	F
Cable section	10 mm^2
Protection	IP20
Fixing	on DIN rail
Standard	EN 61558-1
Service type	Continuous

Dimensions



Generally about transformers

The transformers must be protected against possible overloads and short circuits. Our transformers belong to the non-short-circuitproof type and so they must be protected using external fuses. Rated current of the suggested fuse is always indicated on our labels. However the protection can be also obtained using Miniature Circuit Breakers - ETIMAT. Selected protection of the input winding of the transformer must be chosen taking into account that at the starting phase of the transfomer, a high value of inrush current is generated, a value that can reach 25 times the value of the input rated current, for about 10 milliseconds. Hence, time delay fuses (T or aM type) or MCB - ETIMAT having D or K characteristic must be used for a correct protection. The protection of the secondary side can be realized using fuses of F or gG type, or MCB - ETIMAT having B or C characteristic. Here below there is a table with all the suggested protection fuses for the input and output windings (all the values are in Ampere):

Technical parameters for insulating transformers. Thermal class F. Fixed on DIN rail.

Fall secondary windigs power (VA)	No-load losse s Δ P (W)	Losses (short circuit) Δ P (W)	Ucc (cos φ=1) (%)	Efficiency (cos φ=1) (%)
30	7,6	4,2	11,0	0,89
40	7,8	5,0	9,0	0,88
50	8,0	6,0	8,0	0,88
63	8,0	7,0	7,8	0,86
75	8,2	7,2	7,5	0,85
100	8,3	9,1	7,2	0,83
160	8,2	14,8	6	0,92
200	8,3	15,2	5,7	0,92
250	9,3	17	5,3	0,92
300	9,4	18,3	5,0	0,91

General rules for choosing a transformers protection

Fall secondary windigs power (VA)	Rated value of aM or T fuse for secondary side protection (A)				Rated value of aM or T fuse for primary side protection (A)	
	Voltage U_2 24V	Voltage U_2 48V	Voltage U_2 110V	Voltage U_2 220V	Voltage U_1 230V	Voltage U_1 400V
30	1,25	0,63	0,315	0,16	0,5	0,5
50	2,0	1,0	0,4	0,2	1,0	0,5
75	3,15	1,6	0,63	0,315	1,0	1,0
100	4,0	2,0	1,0	0,5	1,0	1,0
150	6,0	3,15	1,25	0,63	1,0	1,0
200	8,0	4,0	2,0	1,0	1,0	1,0
250	10,0	6,0	2,0	1,0	2,0	1,0
300	12,0	6,0	2,5	1,25	2,0	1,0
400	16,0	8,0	4,0	2,0	4,0	2,0
500	20,0	10,0	4,0	2,0	4,0	2,0
630	25,0	12,0	6,0	3,15	4,0	2,0
800	32,0	16,0	6,3	4,0	4,0	4,0
1000	40,0	20,0	10,0	5,0	10,0	6,0
1600	63,0	32,0	12,0	6,0	10,0	10,0
2500	100,0	50,0	20,0	10,0	16,0	10,0

Transformer thermal class

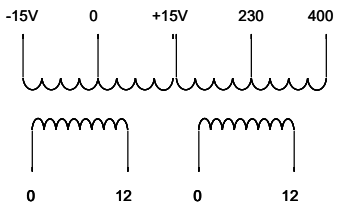
Thermal class	Over temperature °C
A	75
E	90
B	95
F	115
H	140

The above over temperature values are referred to an ambient temperature of 25°C

Thermal class: The transformers have some level of power loss that causes a rising in the temperature of the metallic parts and of the windings. High temperatures cause deterioration of the materials and shorten the "average life" of the transformer itself. For this reason the international standards define some thermal classes, with a maximum over temperature value for each one. The thermal classes established by EN 61558 standard are.
Rated power:
It is the value resulting from the rated secondary winding voltage multiplied by the rated secondary current. In case of a n-phases transformers, it is the value corresponding to n times the result of rated secondary voltage multiplied by rated secondary current. If a transformer is used in a non-continuous work cycle, its power can be lower.

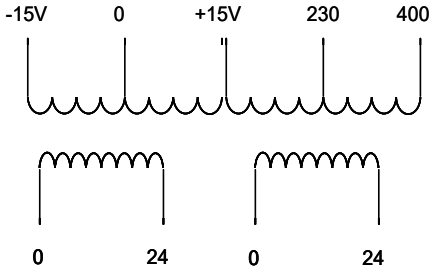
Single phase safety transformers
Primary voltage 230, 400V: +/- 15V. Secondary voltage 0-12 0-12V. Thermal class B. Type EURO. DIN rail

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF 1f EU 0-12 0-12V 30VA TH	Single phase safety trans. +/-15V 0-12 0-12V 30VA	003801811	30	90 x 96 x106	1,55	1
TRANSF 1f EU 0-12 0-12V 40VA TH	Single phase safety trans. +/-15V 0-12 0-12V 40VA	003801812	40	90 x 96 x106	1,55	1
TRANSF 1f EU 0-12 0-12V 50VA TH	Single phase safety trans. +/-15V 0-12 0-12V 50VA	003801813	50	90 x 96 x106	1,60	1
TRANSF 1f EU 0-12 0-12V 63VA TH	Single phase safety trans. +/-15V 0-12 0-12V 63VA	003801814	63	90 x106 x106	1,90	1
TRANSF 1f EU 0-12 0-12V 75VA TH	Single phase safety trans. +/-15V 0-12 0-12V 75VA	003801815	75	90 x106 x106	2,00	1
TRANSF 1f EU 0-12 0-12V 100VA TH	Single phase safety trans. +/-15V 0-12 0-12V 100VA	003801816	100	90 x116 x106	2,45	1
TRANSF 1f EU 0-12 0-12V 160VA TH	Single phase safety trans. +/-15V 0-12 0-12V 160VA	003801817	160	126 x113 x135	2,85	1
TRANSF 1f EU 0-12 0-12V 200VA TH	Single phase safety trans. +/-15V 0-12 0-12V 200VA	003801818	200	126 x113 x135	4,00	1
TRANSF 1f EU 0-12 0-12V 250VA TH	Single phase safety trans. +/-15V 0-12 0-12V 250VA	003801819	250	126 x123 x135	5,00	1
TRANSF 1f EU 0-12 0-12V 300VA TH	Single phase safety trans. +/-15V 0-12 0-12V 300VA	003801820	300	126 x123 x135	5,20	1



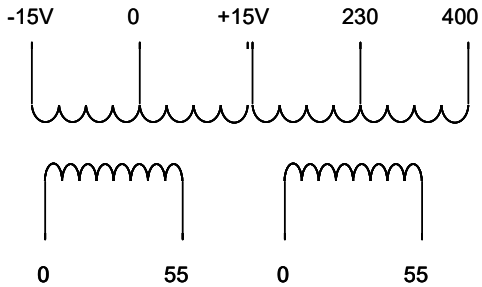
Single phase safety transformers
Primary voltage 230, 400V: +/- 15V. Secondary voltage 0-24 0-24V. Thermal class B. Type EURO. DIN rail

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF 1f EU 0-24 0-24V 30VA TH	Single phase safety trans. +/-15V 0-24 0-24V 30VA	003801821	30	90 x 96 x106	1,55	1
TRANSF 1f EU 0-24 0-24V 40VA TH	Single phase safety trans. +/-15V 0-24 0-24V 40VA	003801822	40	90 x 96 x106	1,55	1
TRANSF 1f EU 0-24 0-24V 50VA TH	Single phase safety trans. +/-15V 0-24 0-24V 50VA	003801823	50	90 x 96 x106	1,60	1
TRANSF 1f EU 0-24 0-24V 63VA TH	Single phase safety trans. +/-15V 0-24 0-24V 63VA	003801824	63	90 x106 x106	1,90	1
TRANSF 1f EU 0-24 0-24V 75VA TH	Single phase safety trans. +/-15V 0-24 0-24V 75VA	003801825	75	90 x106 x106	2,00	1
TRANSF 1f EU 0-24 0-24V 100VA TH	Single phase safety trans. +/-15V 0-24 0-24V 100VA	003801826	100	90 x116 x106	2,45	1
TRANSF 1f EU 0-24 0-24V 160VA TH	Single phase safety trans. +/-15V 0-24 0-24V 160VA	003801827	160	126 x113 x135	2,85	1
TRANSF 1f EU 0-24 0-24V 200VA TH	Single phase safety trans. +/-15V 0-24 0-24V 200VA	003801828	200	126 x113 x135	4,00	1
TRANSF 1f EU 0-24 0-24V 250VA TH	Single phase safety trans. +/-15V 0-24 0-24V 250VA	003801829	250	126 x123 x135	5,00	1
TRANSF 1f EU 0-24 0-24V 300VA TH	Single phase safety trans. +/-15V 0-24 0-24V 300VA	003801830	300	126 x123 x135	5,20	1



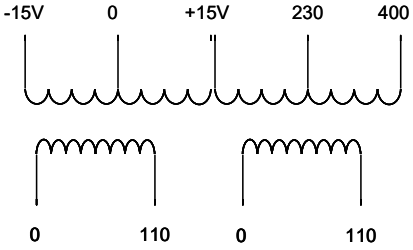
Single phase insulating transformers
Primary voltage 230, 400V: +/- 15V. Secondary voltage 0-55 0-55V. Thermal class B. Type EURO. DIN rail

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF 1f EU 0-55 0-55V 30VA TH	Single phase insulating trans. +/-15V 0-55 0-55V 30VA	003801831	30	90 x 96 x106	1,55	1
TRANSF 1f EU 0-55 0-55V 40VA TH	Single phase insulating trans. +/-15V 0-55 0-55V 40VA	003801832	40	90 x 96 x106	1,55	1
TRANSF 1f EU 0-55 0-55V 50VA TH	Single phase insulating trans. +/-15V 0-55 0-55V 50VA	003801833	50	90 x 96 x106	1,60	1
TRANSF 1f EU 0-55 0-55V 63VA TH	Single phase insulating trans. +/-15V 0-55 0-55V 63VA	003801834	63	90 x106 x106	1,90	1
TRANSF 1f EU 0-55 0-55V 75VA TH	Single phase insulating trans. +/-15V 0-55 0-55V 75VA	003801835	75	90 x106 x106	2,00	1
TRANSF 1f EU 0-55 0-55V 100VA TH	Single phase insulating trans. +/-15V 0-55 0-55V 100VA	003801836	100	90 x116 x106	2,45	1
TRANSF 1f EU 0-55 0-55V 160VA TH	Single phase insulating trans. +/-15V 0-55 0-55V 160VA	003801837	160	126 x113 x135	2,85	1
TRANSF 1f EU 0-55 0-55V 200VA TH	Single phase insulating trans. +/-15V 0-55 0-55V 200VA	003801838	200	126 x113 x135	4,00	1
TRANSF 1f EU 0-55 0-55V 250VA TH	Single phase insulating trans. +/-15V 0-55 0-55V 250VA	003801839	250	126 x123 x135	5,00	1
TRANSF 1f EU 0-55 0-55V 300VA TH	Single phase insulating trans. +/-15V 0-55 0-55V 300VA	003801840	300	126 x123 x135	5,20	1



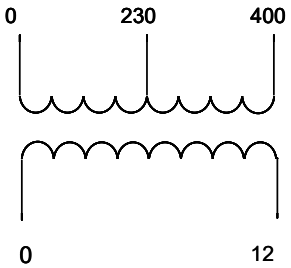
Single phase insulating transformers
Primary voltage 230, 400V: +/- 15V. Secondary voltage 0-110 0-110V. Thermal class B. Type EURO. DIN rail

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF 1f EU 0-110 0-110V 30VA TH	Single phase insulating trans. +/-15V 0-110 0-110V 30VA	003801841	30	90 x 96 x106	1,55	1
TRANSF 1f EU 0-110 0-110V 40VA TH	Single phase insulating trans. +/-15V 0-110 0-110V 40VA	003801842	40	90 x 96 x106	1,55	1
TRANSF 1f EU 0-110 0-110V 50VA TH	Single phase insulating trans. +/-15V 0-110 0-110V 50VA	003801843	50	90 x 96 x106	1,60	1
TRANSF 1f EU 0-110 0-110V 63VA TH	Single phase insulating trans. +/-15V 0-110 0-110V 63VA	003801844	63	90 x106 x106	1,90	1
TRANSF 1f EU 0-110 0-110V 75VA TH	Single phase insulating trans. +/-15V 0-110 0-110V 75VA	003801845	75	90 x106 x106	2,00	1
TRANSF 1f EU 0-110 0-110V 100VA TH	Single phase insulating trans. +/-15V 0-110 0-110V 100VA	003801846	100	90 x116 x106	2,45	1
TRANSF 1f EU 0-110 0-110V 160VA TH	Single phase insulating trans. +/-15V 0-110 0-110V 160VA	003801847	160	126 x113 x135	2,85	1
TRANSF 1f EU 0-110 0-110V 200VA TH	Single phase insulating trans. +/-15V 0-110 0-110V 200VA	003801848	200	126 x113 x135	4,00	1
TRANSF 1f EU 0-110 0-110V 250VA TH	Single phase insulating trans. +/-15V 0-110 0-110V 250VA	003801849	250	126 x123 x135	5,00	1
TRANSF 1f EU 0-110 0-110V 300VA TH	Single phase insulating trans. +/-15V 0-110 0-110V 300VA	003801850	300	126 x123 x135	5,20	1



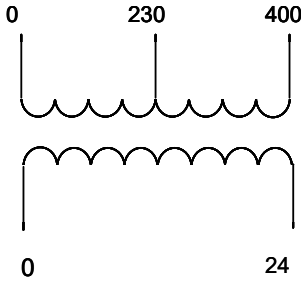
Single phase safety transformers
Primary voltage 230, 400V. Secondary voltage 0-12V. Thermal class B. DIN rail

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF 1f 0-12V 30VA TH	Single phase safety trans. 0-12V 30VA	003801851	30	90 x 96 x106	1,35	1
TRANSF 1f 0-12V 40VA TH	Single phase safety trans. 0-12V 40VA	003801852	40	90 x 96 x106	1,35	1
TRANSF 1f 0-12V 50VA TH	Single phase safety trans. 0-12V 50VA	003801853	50	90 x 96 x106	1,40	1
TRANSF 1f 0-12V 63VA TH	Single phase safety trans. 0-12V 63VA	003801854	63	90 x106 x106	1,70	1
TRANSF 1f 0-12V 75VA TH	Single phase safety trans. 0-12V 75VA	003801855	75	90 x106 x106	1,80	1
TRANSF 1f 0-12V 100VA TH	Single phase safety trans. 0-12V 100VA	003801856	100	90 x116 x106	2,25	1
TRANSF 1f 0-12V 160VA TH	Single phase safety trans. 0-12V 160VA	003801857	160	126 x113 x135	3,65	1
TRANSF 1f 0-12V 200VA TH	Single phase safety trans. 0-12V 200VA	003801858	200	126 x113 x135	3,80	1
TRANSF 1f 0-12V 250VA TH	Single phase safety trans. 0-12V 250VA	003801859	250	126 x123 x135	4,80	1
TRANSF 1f 0-12V 300VA	Single phase safety trans. 0-12V 300VA	003801860	300	126 x123 x135	5,00	1



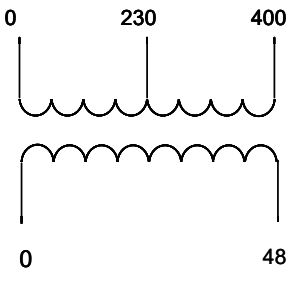
Single phase safety transformers
Primary voltage 230, 400V. Secondary voltage 0-24V. Thermal class B. DIN rail

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF 1f 0-24V 30VA TH	Single phase safety trans. 0-24V 30VA	003801861	30	90 x 96 x106	1,35	1
TRANSF 1f 0-24V 40VA TH	Single phase safety trans. 0-24V 40VA	003801862	40	90 x 96 x106	1,35	1
TRANSF 1f 0-24V 50VA TH	Single phase safety trans. 0-24V 50VA	003801863	50	90 x 96 x106	1,40	1
TRANSF 1f 0-24V 63VA TH	Single phase safety trans. 0-24V 63VA	003801864	63	90 x106 x106	1,70	1
TRANSF 1f 0-24V 75VA TH	Single phase safety trans. 0-24V 75VA	003801865	75	90 x106 x106	1,80	1
TRANSF 1f 0-24V 100VA TH	Single phase safety trans. 0-24V 100VA	003801866	100	90 x116 x106	2,25	1
TRANSF 1f 0-24V 160VA TH	Single phase safety trans. 0-24V 160VA	003801867	160	126 x113 x135	3,65	1
TRANSF 1f 0-24V 200VA TH	Single phase safety trans. 0-24V 200VA	003801868	200	126 x113 x135	3,80	1
TRANSF 1f 0-24V 250VA TH	Single phase safety trans. 0-24V 250VA	003801869	250	126 x123 x135	4,80	1
TRANSF 1f 0-24V 300VA	Single phase safety trans. 0-24V 300VA	003801870	300	126 x123 x135	5,00	1



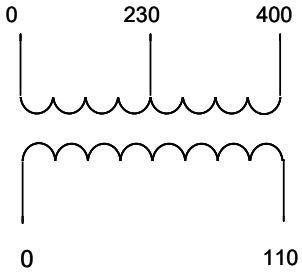
Single phase safety transformers
Primary voltage 230, 400V. Secondary voltage 0-48V. Thermal class B. DIN rail

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF 1f 0-48V 30VA TH	Single phase safety trans. 0-48V 30VA	003801871	30	90 x 96 x106	1,35	1
TRANSF 1f 0-48V 40VA TH	Single phase safety trans. 0-48V 40VA	003801872	40	90 x 96 x106	1,35	1
TRANSF 1f 0-48V 50VA TH	Single phase safety trans. 0-48V 50VA	003801873	50	90 x 96 x106	1,40	1
TRANSF 1f 0-48V 63VA TH	Single phase safety trans. 0-48V 63VA	003801874	63	90 x106 x106	1,70	1
TRANSF 1f 0-48V 75VA TH	Single phase safety trans. 0-48V 75VA	003801875	75	90 x106 x106	1,80	1
TRANSF 1f 0-48V 100VA TH	Single phase safety trans. 0-48V 100VA	003801876	100	90 x116 x106	2,25	1
TRANSF 1f 0-48V 160VA TH	Single phase safety trans. 0-48V 160VA	003801877	160	126 x113 x135	3,65	1
TRANSF 1f 0-48V 200VA TH	Single phase safety trans. 0-48V 200VA	003801878	200	126 x113 x135	3,80	1
TRANSF 1f 0-48V 250VA TH	Single phase safety trans. 0-48V 250VA	003801879	250	126 x123 x135	4,80	1
TRANSF 1f 0-48V 300VA TH	Single phase safety trans. 0-48V 300VA	003801880	300	126 x123 x135	5,00	1



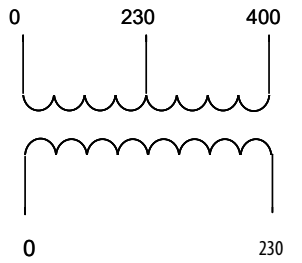
Single phase insulating transformers
Primary voltage 230, 400V. Secondary voltage 0-110V. Thermal class B. DIN rail

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF 1f 0-110V 30VA TH	Single phase insulating trans. 0-110V 30VA	003801881	30	90 x 96 x106	1,35	1
TRANSF 1f 0-110V 40VA TH	Single phase insulating trans. 0-110V 40VA	003801882	40	90 x 96 x106	1,35	1
TRANSF 1f 0-110V 50VA TH	Single phase insulating trans. 0-110V 50VA	003801883	50	90 x 96 x106	1,40	1
TRANSF 1f 0-110V 63VA TH	Single phase insulating trans. 0-110V 63VA	003801884	63	90 x106 x106	1,70	1
TRANSF 1f 0-110V 75VA TH	Single phase insulating trans. 0-110V 75VA	003801885	75	90 x106 x106	1,80	1
TRANSF 1f 0-110V 100VA TH	Single phase insulating trans. 0-110V 100VA	003801886	100	90 x116 x106	2,25	1
TRANSF 1f 0-110V 160VA TH	Single phase insulating trans. 0-110V 160VA	003801887	160	126 x113 x135	3,65	1
TRANSF 1f 0-110V 200VA TH	Single phase insulating trans. 0-110V 200VA	003801888	200	126 x113 x135	3,80	1
TRANSF 1f 0-110V 250VA TH	Single phase insulating trans. 0-110V 250VA	003801889	250	126 x123 x135	4,80	1
TRANSF 1f 0-110V 300VA TH	Single phase insulating trans. 0-110V 300VA	003801890	300	126 x123 x135	5,00	1



Single phase insulating transformers
Primary voltage 230, 400V. Secondary voltage 0-230V. Thermal class B. DIN rail

Type	Description	Code No.	Power (VA)	Dimensions LxHxP (mm)	kg	
TRANSF 1f 0-230V 30VA TH	Single phase insulating trans. 0-230V 30VA	003801891	30	90 x 96 x106	1,35	1
TRANSF 1f 0-230V 40VA TH	Single phase insulating trans. 0-230V 40VA	003801892	40	90 x 96 x106	1,35	1
TRANSF 1f 0-230V 50VA TH	Single phase insulating trans. 0-230V 50VA	003801893	50	90 x 96 x106	1,40	1
TRANSF 1f 0-230V 63VA TH	Single phase insulating trans. 0-230V 63VA	003801894	63	90 x106 x106	1,70	1
TRANSF 1f 0-230V 75VA TH	Single phase insulating trans. 0-230V 75VA	003801895	75	90 x106 x106	1,80	1
TRANSF 1f 0-230V 100VA TH	Single phase insulating trans. 0-230V 100VA	003801896	100	90 x116 x106	2,25	1
TRANSF 1f 0-230V 160VA TH	Single phase insulating trans. 0-230V 160VA	003801897	160	126 x113 x135	3,65	1
TRANSF 1f 0-230V 200VA TH	Single phase insulating trans. 0-230V 200VA	003801898	200	126 x113 x135	3,80	1
TRANSF 1f 0-230V 250VA TH	Single phase insulating trans. 0-230V 250VA	003801899	250	126 x123 x135	4,80	1
TRANS 1f 0-230V 300VA TH	Single phase insulating trans. 0-230V 300VA	003801900	300	126 x123 x135	5,00	1



ETITRAFO AC/DC power supplies

AC/DC modular power supplies PS-30

Description
- galvanically separated
- AC/DC switching stabilized power supplies, 3-module size, DIN rail mounting
- PS-30-24 - stabilized power supply with fixed output voltage 24 V/30 W (1,25A)

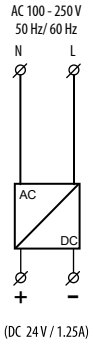
Advantages
Output current is limited by electronic fuse, in case maximal current is exceeded, the device switches off and after a shot time interval it again switches on.
Indication of output voltage by green LED on front panel
Temperature protection – if temperature is exceeded, the device switches off and after cooled down, it switches on again.

Technical data

	PS-30-24
Input	
Voltage range	AC 100-250V / 50 - 60Hz
Burden without load (max)	10VA/1.5W
Burden with full load (max)	70VA / 37W
Protection	fuse T2A
Output	
Output voltage DC / max. current	24.2V/1.25A
Tolerance of output voltage	± 2%
Output indication	green LED
Wave of off-load output voltage	30mV
Wave of output voltage with max load	80mV
Time delay after connection	max. 5s
Time delay after over-load	max. 1s
Efficiency	>82%
Electronic fuse	electronic protections short-circuit, over load, over voltage (from 120% of rated output)
Other information	
Working humidity	20 .. 90% RH
Operating temperature	-20 °C ... +40 °C
Storage temperature	-25 °C ... +70 °C
Electrical strength input- output	4kV
Protection degree	IP40 device/ IP20 in-built in distribution board
Overvoltage category	II.
Pollution degree	2
Max. cable size (mm^2)	solid wire max.1x2.5 or 2x1.5/ with sleeve max.1x1.5
Dimensions	90 x 52 x 65 mm
Weight	158 g
Standards	EN 61204-1, EN 61204-3, EN 61204-7

PS-30: switching stabilized power supplies, version 3-module
PS-30-24 - stabilized power supply with fixed output voltage 24 V/30 W

Connection



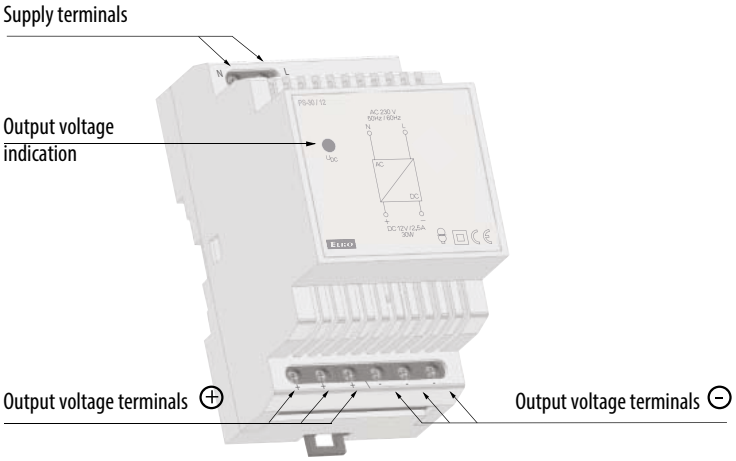
(DC 24 V / 1.25A)

Switching power supply PS 30W

Type	I_{out} [A]	U_{out} [V]	Code No.	g	
PS-30-24	1,25	24	002470133	160	1

Description

PS-30-24



AC/DC DIN rail power supplies

Description
- High efficiency up to 90%
- 150% Peak load capability
- 105°C long life capacitors
- Metal housing, IP20
- DIN rail mounting (en50.022)

Protection:
- Short circuit
- Overload
- Overvoltage
- Overtemperature (PS-240-24 & PS-480-24)

EU Directives - CE Marking:
> 2014/30/UE - EMC
> 2014/35/UE - LVD

Technical data

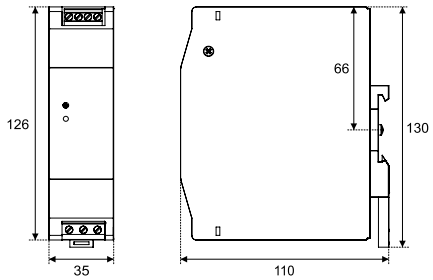
		PS-72-24	PS-120-24	PS-240-24	PS-480-24
Input					
Supply voltage AC	V AC	100 - 240			
Nominal frequency	Hz	50 - 60 (range: 47 - 63)			
Supply voltage DC	V DC	140 - 340			
Input current at 230VAC	A	0,97	0,6	1,4	2,4
In-rush current at 230VAC	A	20	25	30	50
Input overload protection T-type fuse (internal)	A	3,15	5	5	6,3
Power Factor at 230VAC	-	0,5	0,96	0,92	0,97
Output					
Output adjustable voltage DC	V DC	24 - 28 (±2%)			
Max. continuos output current	A	3	5	10	20
Max. continuos output power	W	75	120	240	480
Ripple BW 20MHz at max. load	mV	120	80	100	150
Hold-up time at rated V AC and max. load	ms	20			
Rise time at rated V AC	ms	200	60		
Parallel connection	-		×		✓
Output overvoltage protection min. % of Vout	%	120 - 135	110 - 140	120 - 150	110 - 140
Output overload protection % of max. load	%	110 - 150			
Power good relay	%	×	×	×	✓
General					
Efficiency at rated V AC	%	89,5	92	93	93
Working temperature - free convection	°C	-25 ... +70			
De-rating 2,5% In/°C	°C	> 55			
Storage temperature	°C	-40 ... +85			
Electrical Insulation	kV	3 (IN/OUT) 1,5 (IN/⏚) 0,5 (OUT/⏚)			
Over-temperature protection	-	✓			
Protection degree	IP	20			
Relative Humidity w/o cond.	RH%	90			
Altitude up to	m	2000			
Dimensions	mm	130x35x110	130x40x120	130x62x125	138x86x125

Switching power supply

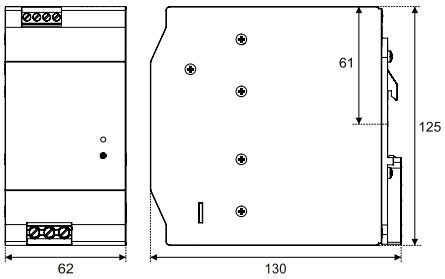
Type	Iout[A]	Uout[V]	Code No.	g	
PS-72-24	3	24-28	004656681	360	1
PS-120-24	5	24-28	004656682	540	1
PS-240-24	10	24-28	004656683	810	1
PS-480-24	20	24-28	004656684	1600	1

Dimensions

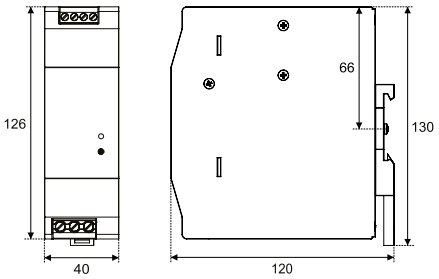
PS-72-24



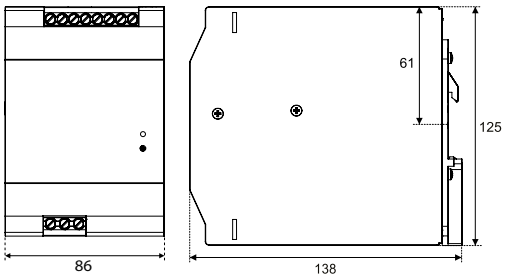
PS-240-24



PS-120-24

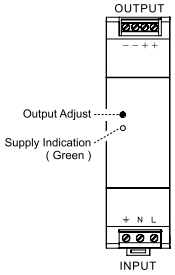


PS-480-24

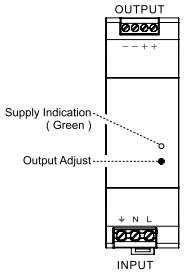


Description

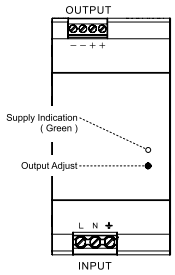
PS-72-24



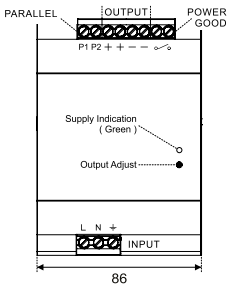
PS-120-24



PS-240-24

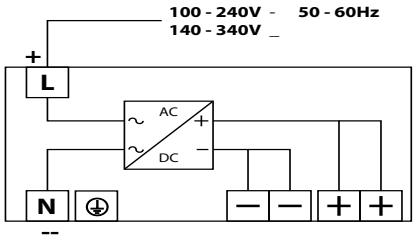


PS-480-24

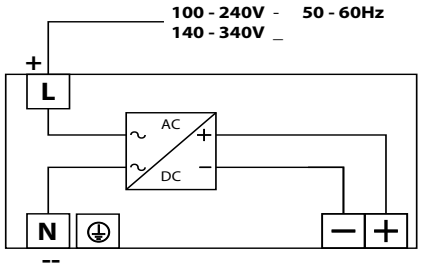


Connection

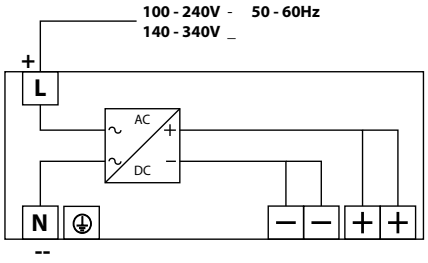
PS-72-24



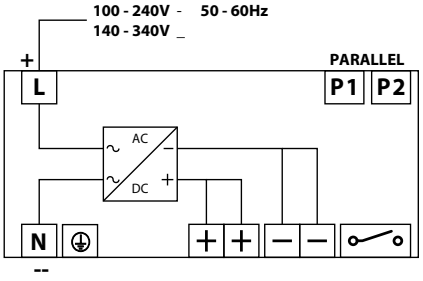
PS-120-24

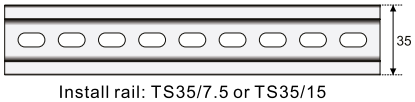


PS-240-24



PS-480-24





Install rail: TS35/7.5 or TS35/15

POWER GOOD:
Relay closed: power supply (Output) is stable and within the tolerance limits.
Relay opened: power supply (Output) out of tolerance limits. Power cut off – to prevent damages on sensitive loads.

PARALLEL P1 P2:
Parallel connection of up to 10 power supplies. Connect P1s with P1s, P2s with P2s of each power supply wired in parallel (+ and – outputs in parallel). Each power supply unit must have connection to supply (Input)

D

Low Voltage Fuses

Low Voltage Fuse-Links **746**

Fuse Bases **755**

Accessories **760**

/etigroup

ETI
SWITCH TO
A SAFE FUTURE

D Low Voltage Fuse-Links

Fuse-Link D

Rated current	Fusing characteristics
2 - 200 A	**gG, TDZ, DZ**

D fuse-links for use by unskilled persons for domestic and similar applications are used as the most reliable protection of electrical installation, control and signal circuits against overload and short-circuit currents.
The whole system D contains a complete range of five physical sizes DI, DII, DIII, DIV and DV fuse-links, standard ceramic and new plastic fuse bases and all necessary accessories. It is dimensioned for rated voltages 500 V, 690 V, 750 V and 1200 V a.c. resp. 500 V or 600 V d.c. with AC 50 kA and DC 8 kA rated breaking capacity.
The system D is intended to be used in residential, business and similar buildings. When it is used in industrial installations, it is necessary to take into account the requirements of the standard IEC 60664-1 concerning the insulation coordination for equipment within low-voltage systems .
All fuse-links have blown-fuse indicators which are visible through the Screw cap when mounted. Fuse-links, fuse bases, caps and fuse-disconnectors are tested and certified according to IEC 60269-3-1, DIN EN 60269-3, DIN VDE 0636-301, HD 630.3.1 and DIN EN 60269-1.

Technical data

Rated voltage Un	500 V AC, 600 V AC, 750 V AC, 1200 V AC, 400 V DC	
Rated current In	DI, DII 2 - 25 A, DIII 32 - 63 A DIV 80 - 100 A, DV 125 - 200 A	
Breaking capacity at 1,1 Un	50 kA AC 8 kA DC	cosφ =0,2 T=15 ms
Fusing characteristics	gG, TDZ, DZ	
Insulating class	C - VDE 0110	
Standards	DIN EN 60269-1, IEC 60269-1:2005-04 (VDE 0636 Teil 10): 1999-11	
	DIN EN 60269-3, IEC 60269-3:2003 (VDE 0636 Teil 30): 1995-12	
	DIN EN 60269-3-1, IEC 60269-3-1: 2004-07	
	(VDE 0636 Teil 301): 1998-01	
	DIN VDE 0635/02.84	

DI for fuse base E 16

I_n [A]	Colour	Code No. DZ*	Code No. gG, TDZ*	g	
2	pink	002311101	002311401	12	10/500
4	brown	002311102	002311402	12	10/500
6	green	002311103	002311403	12	10/500
10	red	002311104	002311404	13	10/500
16	grey	002311105	002311405	14	10/500
20	blue	002311106	002311406	15	10/500
25	yellow	002311107	002311407	16	10/500

DII for fuse base E 27

I_n [A]	Colour	Code No. DZ*	Code No. gG, TDZ*	g	
2	pink	002312101	002312401	27	5/500
4	brown	002312102	002312402	27	5/500
6	green	002312103	002312403	27	5/500
10	red	002312104	002312404	27	5/500
13	black		002312409	27	5/500
16	grey	002312105	002312405	28	5/500
20	blue	002312106	002312406	29	5/500
25	yellow	002312107	002312407	30	5/500

DIII for fuse base E 33

I_n [A]	Colour	Code No. DZ*	Code No. gG, TDZ*	g	
32	violet		002313404	48	5/250
35	black	002313101	002313401	48	5/250
40	black		002313405	48	5/250
50	white	002313102	002313402	49	5/250
63	copper	002313103	002313403	52	5/250

* DZ and TDZ time-current characteristics correspond to standard CEE16 from 1970 as date of issue. DZ refers to a "fast" or in German "flink" fuse, in the meantime TDZ refers to a "slow" or in German "Traege" fuse.
In accordance with the development of standards, TDZ time-current characteristics were uniformed with gG time-current characteristic according to IEC 60269-2 and VDE 0636-301, so now both characteristics are unified and their meaning stays the same - "slow" means TDZ and gG at the same time.
DZ time-current characteristics remain unchanged. It is faster than TDZ, but in any case DZ characteristics should not be compared with gR or aR time-current characteristis which are designed for power semiconductor protection.

DIII AC 690V, DC 600V

I_n [A]	Colour	Code No. gG	g	
2	pink	002313501	68	5/200
4	brown	002313502	68	5/200
6	green	002313503	68	5/200
10	red	002313504	69	5/200
16	grey	002313505	69	5/200
20	blue	002313506	71	5/200
25	yellow	002313507	72	5/200
35	black	002313508	78	5/200
50	white	002313509	80	5/200
63	copper	002313510	80	5/200

These fuse links require fuse carriers with special dimensions. Please contact support for more information.

DIII 750V gF

I_n [A]	Colour	Code No. gF	g	
2	pink	002313601	68	5/200
4	brown	002313602	68	5/200
6	green	002313603	68	5/200
10	red	002313604	69	5/200
16	grey	002313605	69	5/200
20	blue	002313606	71	5/200
25	yellow	002313607	72	5/200
35	black	002313608	78	5/200
50	white	002313609	80	5/200
63	copper	002313610	80	5/200

These fuse links require fuse carriers with special dimensions. Please contact support for more information.

DIII AC 1200V 3-channel gF

I_n [A]	Colour	Code No. gF	g	
2	pink	002313620	68	5/200
4	brown	002313621	68	5/200
6	green	002313622	68	5/200
10	red	002313623	69	5/200
16	grey	002313624	69	5/200
20	blue	002313625	71	5/200
25	yellow	002313626	72	5/200
35	black	002313627	78	5/200

These fuse links require fuse carriers with special dimensions and special fuse bases.
Please contact support for more information.

DIV for fuse base R1 1/4"

I_n [A]	Colour	Code No. DZ*	Code No. gG, TDZ*	g	
80	silver	002314101	002314401	105	3/48
100	red	002314102	002314402	110	3/48

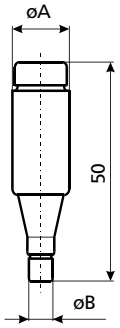
DV for fuse base R 2"

I_n [A]	Colour	Code No. DZ*	Code No. gG, TDZ*	g	
125	yellow	002315101	002315401	185	10/60
160	copper	002315102	002315402	210	10/60
200	blue	002315103	002315403	215	10/60

Dimensions

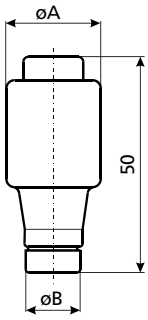
DI for fuse base E 16

I_n [A]	dimension ØA	ØB
2	13,2	6
4	13,2	6
6	13,2	6
10	13,2	8
16	13,2	10
20	13,2	12
25	13,2	14



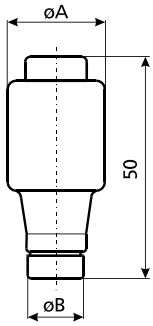
DII for fuse base E 27

I_n [A]	dimension ØA	ØB
2	21,5	6
4	21,5	6
6	21,5	6
10	21,5	8
13	21,5	8
16	21,5	10
20	21,5	12
25	21,5	14



DIII for fuse base E 33

I_n [A]	dimension ØA	ØB
32	27	16
35	27	16
40	27	16
50	27	18
63	27	20

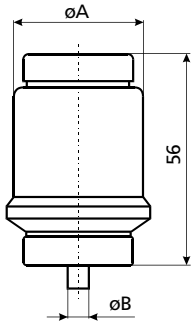


DIV for fuse base R1 1/4"

I_n [A]	dimension ØA	ØB
80	33	5
100	33	7

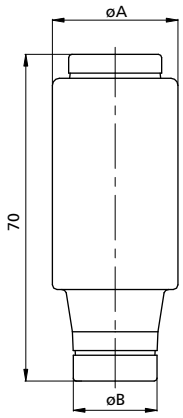
DV for fuse base R 2"

I_n [A]	dimension ØA	ØB
125	46	5
160	46	7
200	46	9



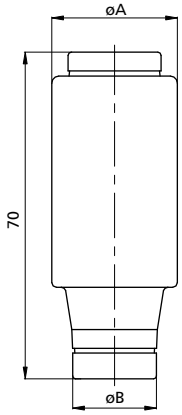
DIII gG, 690 V a.c., 600 V d.c.

I_n [A]	dimension ØA	ØB
2	27	6
4	27	6
6	27	6
10	27	8
16	27	10
20	27	12
25	27	14
35	27	16
50	27	18
63	27	20



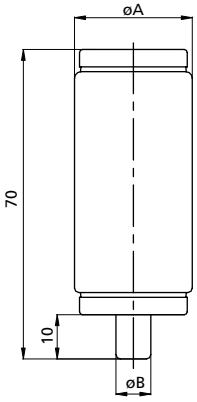
DIII gF, 750V a.c.

I_n [A]	dimension ØA	ØB
2	27	6
4	27	6
6	27	6
10	27	8
16	27	10
20	27	12
25	27	14
35	27	16

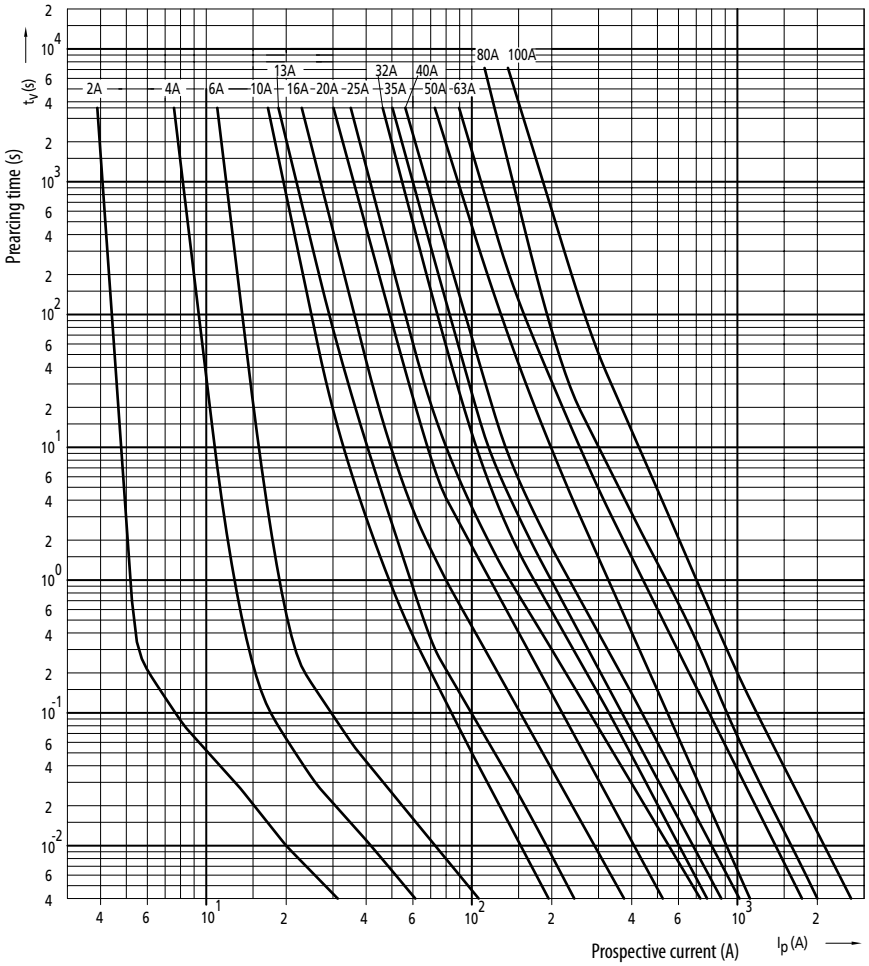


DIII gF, 1200 V a.c.

I_n [A]	dimension ØA	ØB
2	27	6
4	27	6
6	27	6
10	27	8
16	27	10
20	27	12
25	27	14
35	27	16



Time current characteristics I/t gG



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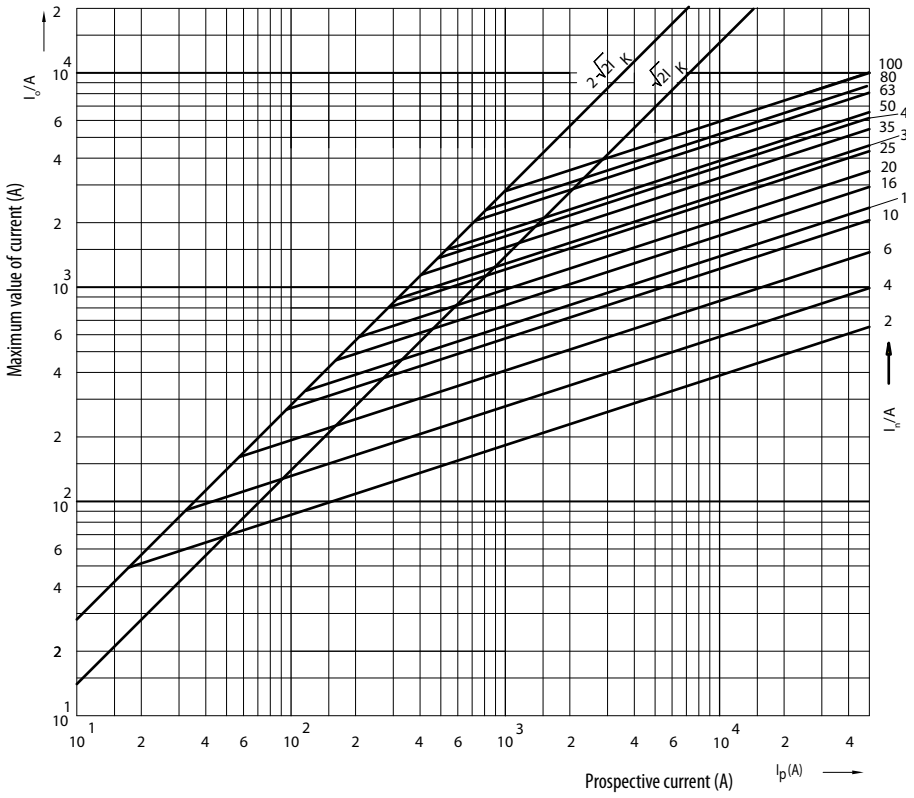
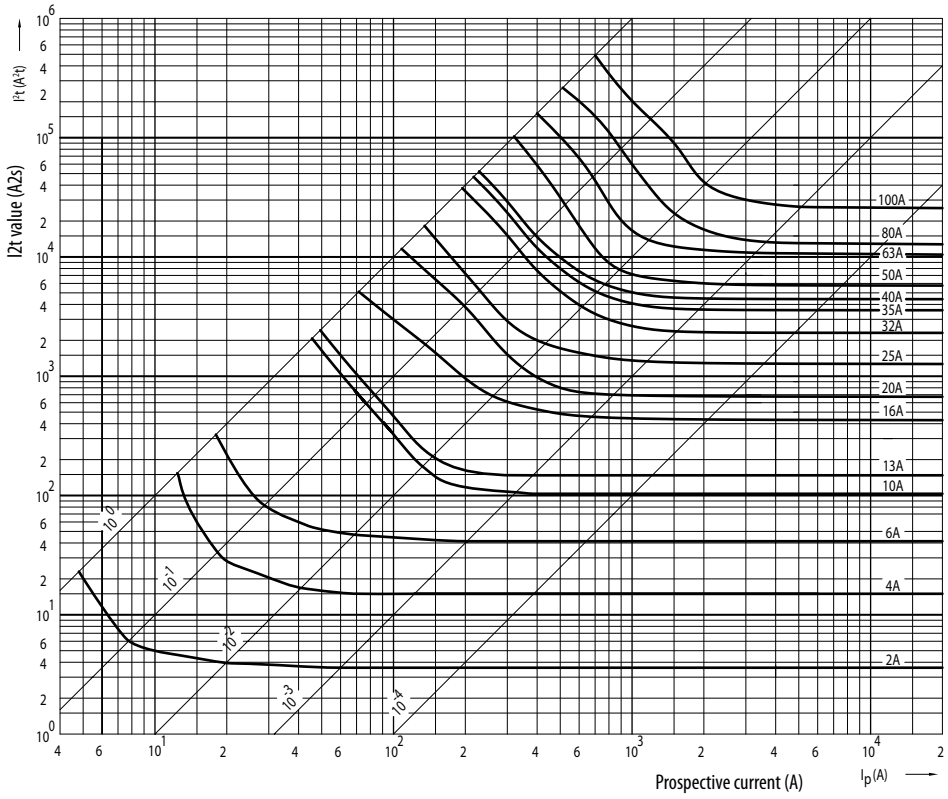
ETIFUSE: Streamline Your Fuse Selection - Interactive Online Tool

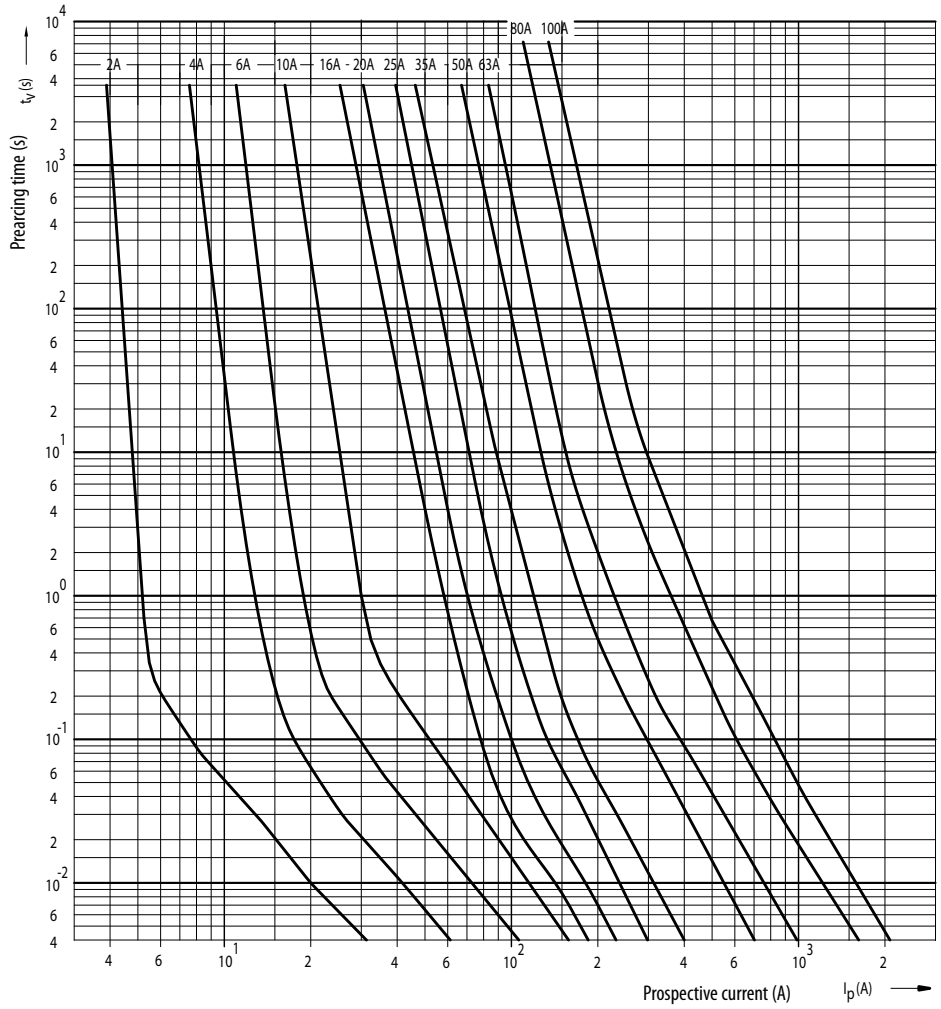
Cut-off current characteristics



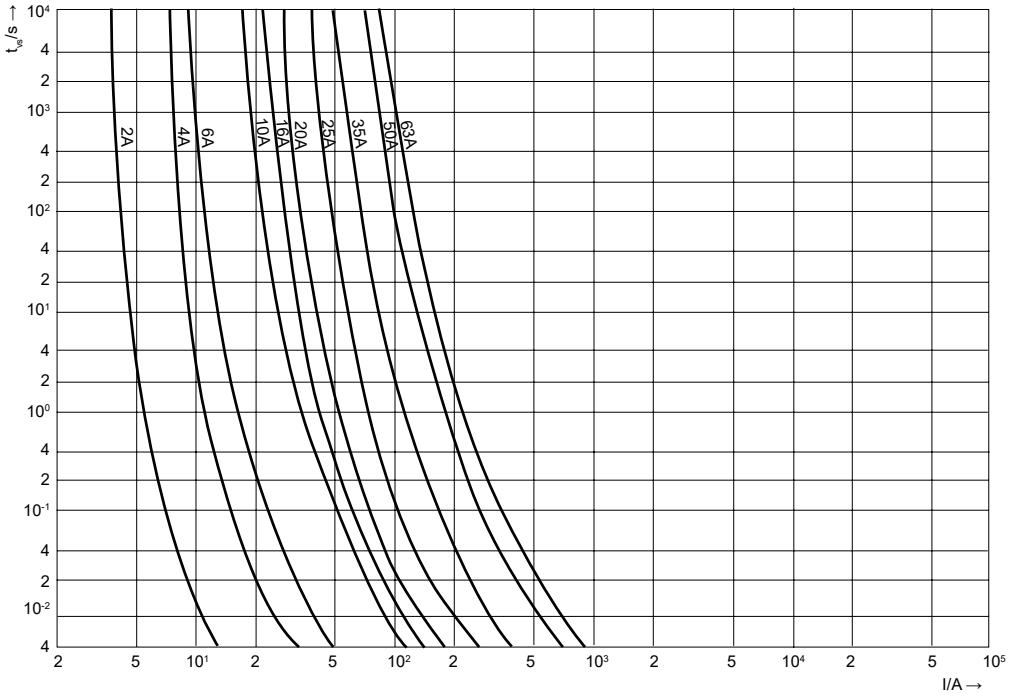
Melting energy characteristics I^2t



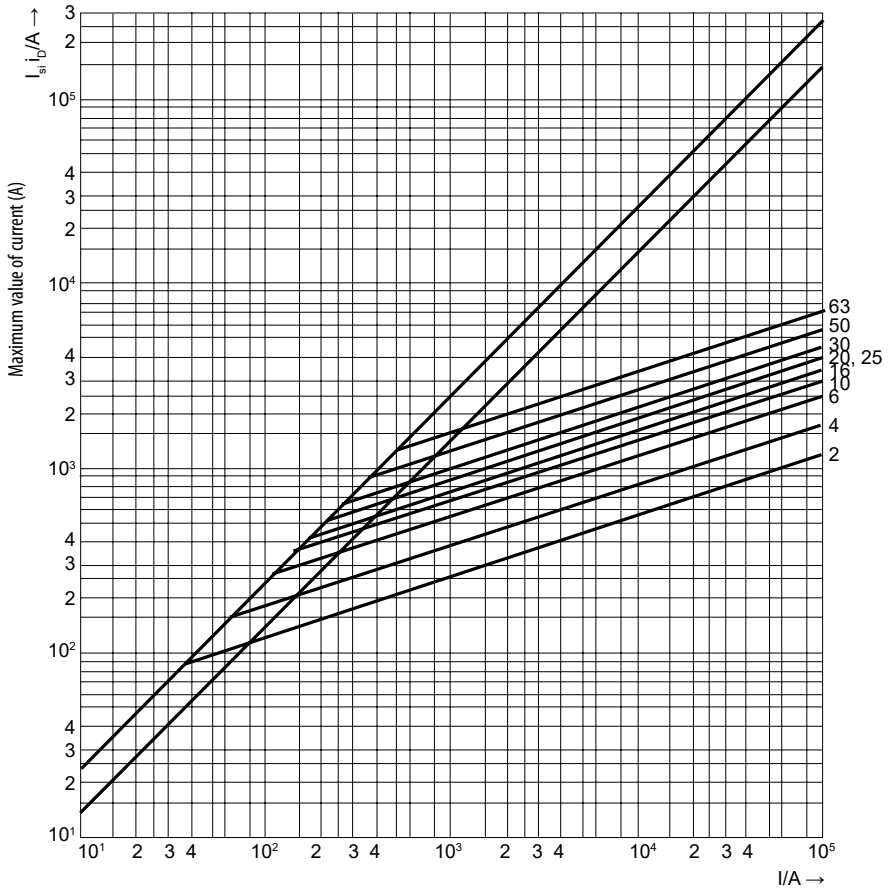
Time current characteristics I/t DZ



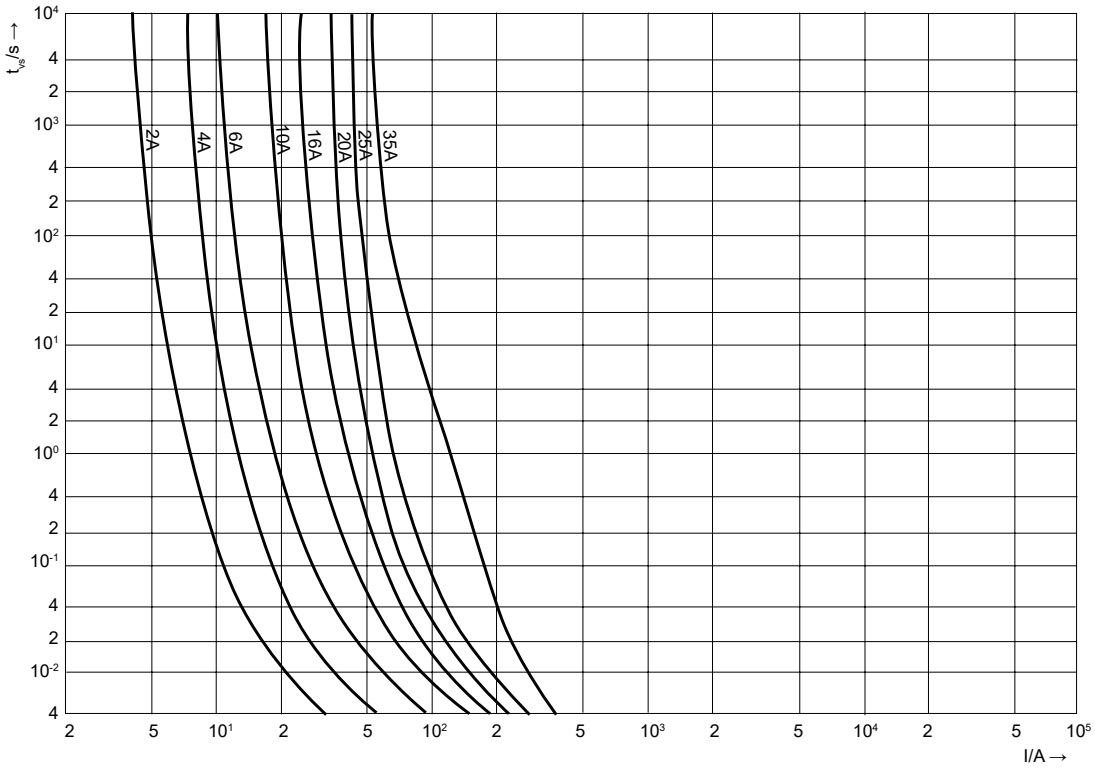
Time current characteristics I/t, gF, 750V



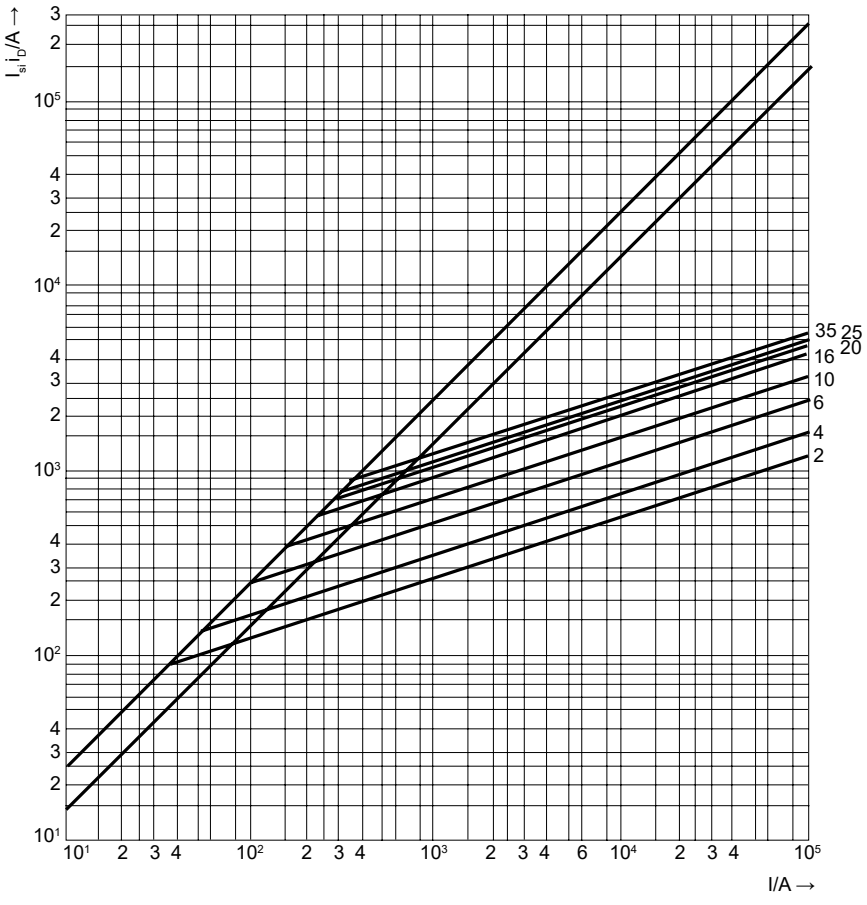
Cut-off current characteristics gF, 750V



Time current characteristics I/t, gF, 1200V



Cut-off current characteristics gF, 1200V



D Fuse Bases

1-pole fuse base

Rated current
25, 63 A

Technical data

Rated voltage Un	500 V, 690 V
Rated current In	DII 25 A, DIII 63 A
Insulating class	according to IEC 60664-1
Cross-section of connecting lead	DII 1 to 10 mm^2 DIII 2,5 to 25 mm^2
Standards, publications	IEC 60269, EN 60269, DIN VDE 0636

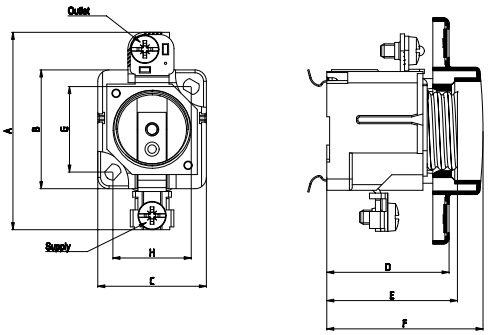
Fuse base EZN, EZV

Type	I_n [A]	Code No.	Screw	g	
EZN 25®	25	002322009	E27	104	15/120
EZV 25	25	002322011	E27	102	15/105
EZN 25-ZP*	25	002322016	E27	120	10/70
EZV 25-ZP*	25	002322017	E27	112	10/60
EZN 63®	63	002323008	E33	148	15/90
EZV 63	63	002323010	E33	146	15/90
EZN 63-ZP*	63	002323028	E33	163	10/60
EZV 63-ZP*	63	002323029	E33	153	10/60
EZN 63-M6®	63	002323013	E33	148	15/90
EZV 63-M6	63	002323020	E33	146	15/90

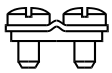
* EZV - for mounting with Screws
* EZN - for mounting on rail
* ZP - base with protection cover

At request, vibration-tested EZN 25, 63, 63-M6 fuse bases are available according to the LRS-Loyd's register of Shipping 1961 Vibration Test 2.

Dimensions



Fuse base EZN, EZV

Type	I_n [A]	Connection Supply	Connection Outlet	dimension A	B	C	D	E	F	G	H
EZN 25	25	M5	M5	70	42	39	44	47	56	30	27
EZV 25	25			70	42	39	44	47	56	30	27
EZN 25-ZP	25			70	42	39	44	47	56	30	27
EZV 25-ZP	25			70	42	39	44	47	56	30	27
EZN 63	63	 2x M5	2x M5	80	46	46	44	47	56	35	35
EZV 63	63			80	46	46	44	47	56	35	35
EZN 63-ZP	63			80	46	46	44	47	56	35	35
EZV 63-ZP	63			80	46	46	44	47	56	35	35
EZN 63-M6	63	M6	2x M5	80	46	46	44	47	56	35	35
EZV 63-M6	63			80	46	46	44	47	56	35	35

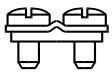
3-pole fuse base

Rated current
25, 63 A

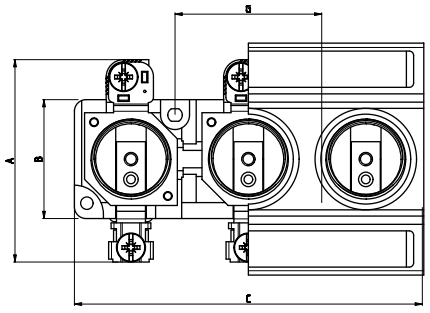
Fuse base EZN/3, EZV/3 - LINEAR

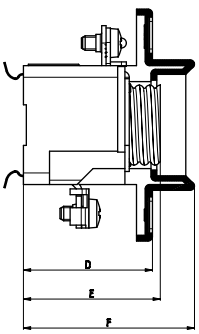
Type	I_n [A]	Code No.	Screw	g	
EZN 25/3	25	002322025	E 27	352	4/60
EZV 25/3	25	002322026	E 27	346	4/60
EZN 63/3	63	002323016	E33	488	6/24
EZV 63/3	63	002323017	E33	484	6/24

Fuse base EZN/3, EZV/3 - LINEAR

Type	I_n [A]	Connection Supply	Connection Outlet	dimension A	B	C	D	E	F	G
EZN 25/3	25	M5	M5	70	41	121	44	47	59	50
EZN 25/3-ZP	25			70	41	121	44	47	59	50
EZN 63/3	63	 2x M5	2x M5	80	43	148	44	47	56	62
EZN 63/3-ZP	63			80	43	148	44	47	56	62

Dimensions





D fuse base - new generation

Fuse base EZR

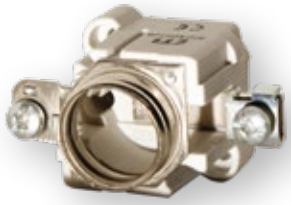
Type	I_n [A]	Code No.	Screw	
EZR 25	25	002322027	E27	15/105
EZR 63	63	002323031	E33	15/90

Set EZR 25

Type	I_n [A]	Code No.	Screw	
SET EZR 25 2p-GEG 25.2	25	002322100	E27	-/112
SET EZR 25 3p-GEG 25.3	25	002322101	E27	-/80
SET EZR 25 4p-GEG 25.4	25	002322102	E27	-/56
SET EZR 25 5p-GEG 25.5	25	002322103	E27	-/50
SET EZR 25 6p-GEG 25.6	25	002322104	E27	-/40
SET EZR 25 7p-GEG 25.7	25	002322105	E27	-/32
SET EZR 25 8p-GEG 25.8	25	002322106	E27	-/28
SET EZR 25 9p-GEG 25.9	25	002322107	E27	-/24
SET EZR 25 10p-GEG 25.10	25	002322108	E27	-/25

Set EZR 63

Type	I_n [A]	Code No.	Screw	
SET EZR 63 2p-GEG 63.2	63	002323110	E33	-/81
SET EZR 63 3p-GEG 63.3	63	002323111	E33	-/54
SET EZR 63 4p-GEG 63.4	63	002323112	E33	-/36
SET EZR 63 5p-GEG 63.5	63	002323113	E33	-/31
SET EZR 63 6p-GEG 63.6	63	002323114	E33	-/27



Fuse base EZV GS

Type	I_n [A]	Code No.	Screw	
EZV 25 GS	25	002322028	E27	15/105
EZV 63 GS	63	002323032	E33	15/90

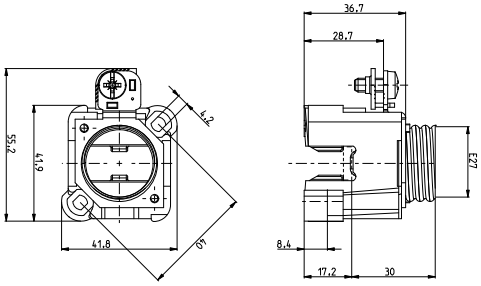
Accessories

Type	Code No.	
Protective cover GB 25.1	002352005	100/500
Protective cover GB 25.3	002352006	50/200
Protective cover GB 63-52	002353005	100/400
Protective cover GB 63-60	002353006	100/400
Plastic mounting plate GSA 25	002352007	100/500
Plastic mounting plate GSA 63	002353007	100/400

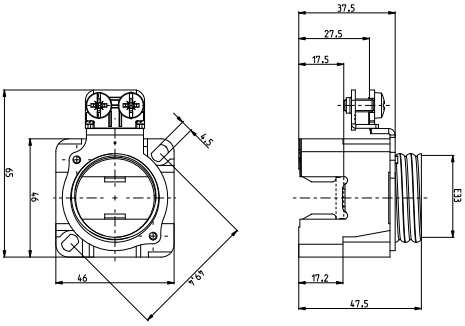
Fuse base EZR

Type	Connection		Cross-section of connecting lead	
	Supply	Outlet	Supply [mm²]	Outlet [mm²]
EZR 25	M9	M5	35	1 - 10
EZR 63	2x M5	2x M5	35	2.5 - 25

Fuse base EZR 25



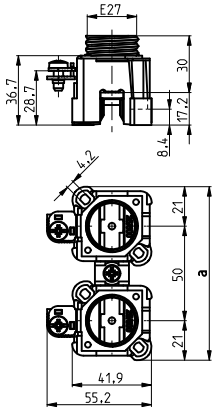
Fuse base EZR 63



SET EZR 25 2p - 10p

Fuse base EZR 25

Type	Connection		Cross-section of connecting lead		Dimension
	Supply	Outlet	Supply [mm²]	Outlet [mm²]	a
SET EZR 25 2p-GEG 25.2	M9	M5	35	1 - 10	92
SET EZR 25 3p-GEG 25.3			35	1 - 10	142
SET EZR 25 4p-GEG 25.4			35	1 - 10	192
SET EZR 25 5p-GEG 25.5			35	1 - 10	242
SET EZR 25 6p-GEG 25.6			35	1 - 10	292
SET EZR 25 7p-GEG 25.7			35	1 - 10	342
SET EZR 25 8p-GEG 25.8			35	1 - 10	392
SET EZR 25 9p-GEG 25.9			35	1 - 10	442
SET EZR 25 10p-GEG 25.10			35	1 - 10	491

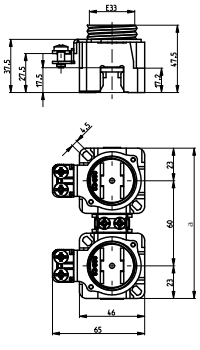


SET EZR 25 2p

SET EZR 63 2p - 6p

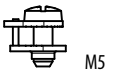
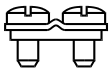
Fuse base EZR 63

Type	Connection		Cross-section of connecting lead		Dimension
	Supply	Outlet	Supply [mm²]	Outlet [mm²]	a
SET EZR 63 2p-GEG 63.2	2x M5	2x M5	35	2.5 - 25	106
SET EZR 63 3p-GEG 63.3			35	2.5 - 25	166
SET EZR 63 4p-GEG 63.4			35	2.5 - 25	226
SET EZR 63 5p-GEG 63.5			35	2.5 - 25	286
SET EZR 63 6p-GEG 63.6			35	2.5 - 25	346

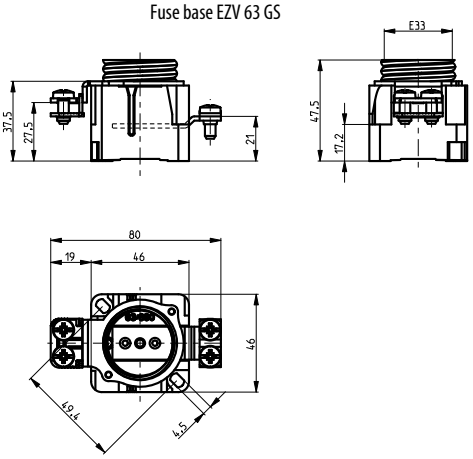


SET EZR 63 2p

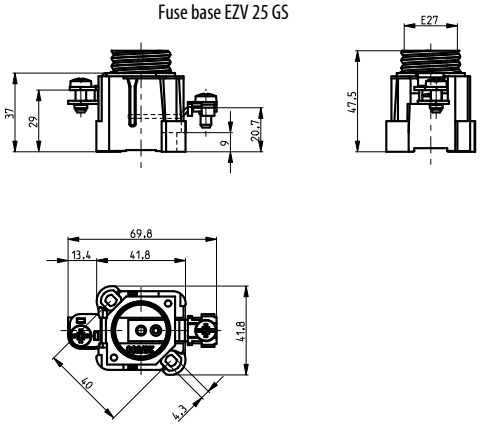
Fuse base EZV

Type	Connection		Cross-section of connecting lead	
	Supply	Outlet	Supply [mm²]	Outlet [mm²]
EZV 25 GS	M5	 M5	1 - 10	1 - 10
EZV 63 GS	 2x M5	2x M5	2.5 - 25	2.5 - 25

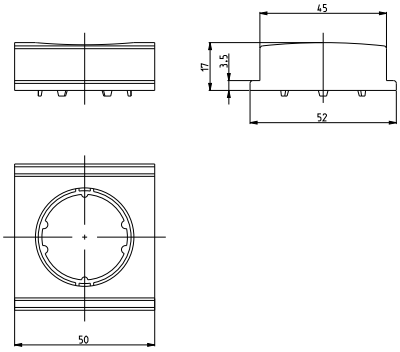
Fuse base EZV 63 GS



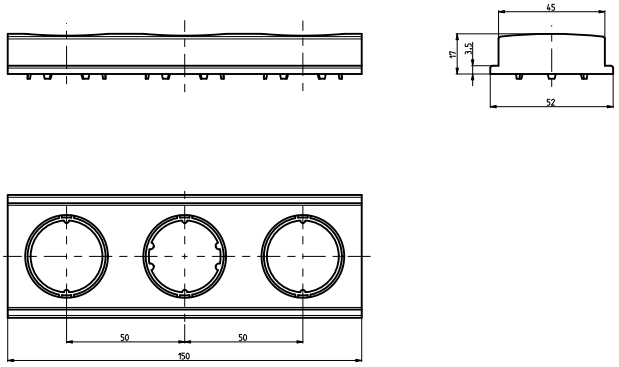
Fuse base EZV 25 GS



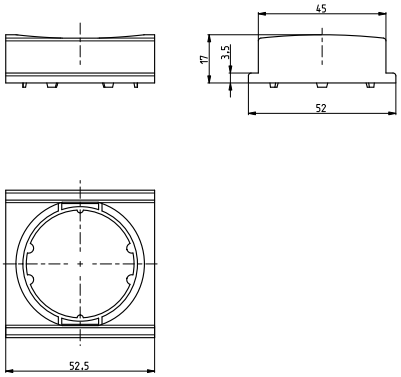
Protective cover GB 25.1



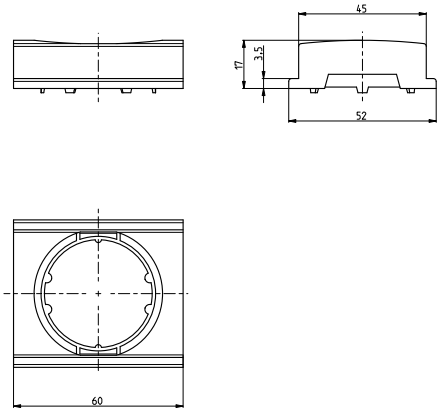
Protective cover GB 25.3



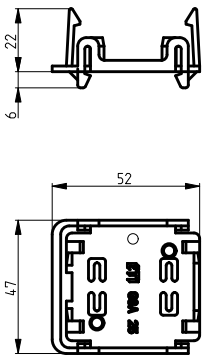
Protective cover GB 63-52



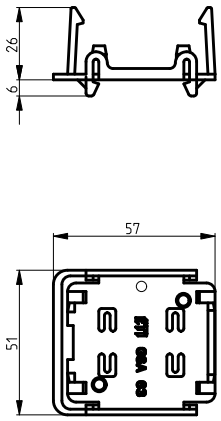
Protective cover GB 63-60



Plastic mounting plate GSA 25



Plastic mounting plate GSA 63



D Accessories

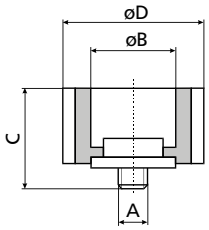
Gauge piece

VD II for fuse base E 27

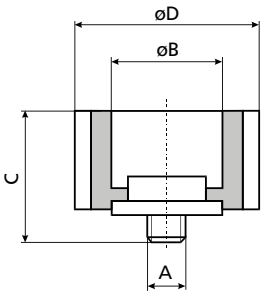
I_n [A]	Colour	Code No.	g	
2	pink	002342001	13	25/450
4	brown	002342002	13	25/450
6	green	002342003	13	25/450
10	red	002342004	11	25/450
16	grey	002342005	11	25/450
20	blue	002342006	11	25/450
25	yellow	002342007	11	25/450

VD III for fuse base E33

I_n [A]	Colour	Code No.	g	
35	black	002343001	19	25/300
50	white	002343002	18	25/300
63	copper	002343003	16	25/300



VD II for fuse base E 27



VD III for fuse base E33

VD II for fuse base E 27

I_n [A]	dimension A	B	C	D
2	3/16″	6,5	17	24
4	3/16″	6,5	17	24
6	3/16″	6,5	17	24
10	3/16″	8,5	17	24
16	3/16″	10,5	17	24
20	3/16″	12,5	17	24
25	3/16″	14,5	17	24

VD III for fuse base E 33

I_n [A]	dimension A	B	C	D
35	3/16″	16,5	17	30
50	3/16″	18,5	17	30
63	3/16″	20,5	17	30

Fuse carrier D

Fuse carrier K DII

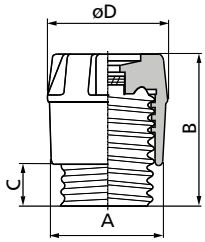
Type	I_n [A]	Code No.	Screw	g	
K DII	25	002332003	E 27	35	50/600

Fuse carrier K DIII

Type	I_n [A]	Code No.	Screw	g	
K DIII	63	002333002	E 33	59	30/360

Fuse carrier

type	dimension A	B	C	D
K DII	34	44	12	35
K DIII	43	44	12	43



Protection cover

1-pole protection cover for fuse base

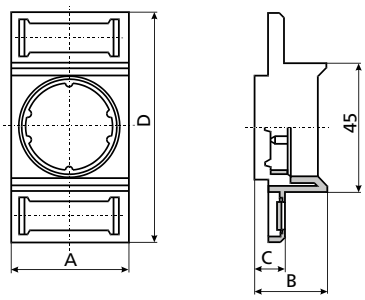
Type	I_n [A]	Code No.	Screw	g	
EZN, EZV	25	002352001	E 27	16	30/390
EZN, EZV	63	002353002	E 33	12	30/360

3-pole protection cover for fuse base

Type	Code No.	g	
EZN, EZV 25/3	002352003	40	12/120
EZN, EZV 63/3	002353004	40	12/120

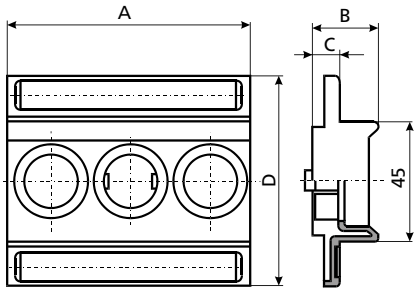
1-pole protection for fuse base

type	I_n	dimension			
	[A]	A	B	C	D
EZN, EZV	25	40	24	10,8	80
EZN, EZV	63	49	21	9	80



3-pole protection cover for fuse base

type	dimension			
	A	B	C	D
EZN, EZV 25/3	121	24	10,8	80
EZN, EZV 63/3	148	21	9	80



Busbar system for 1-pole fuse base EZR

Busbar for fuse base EZR

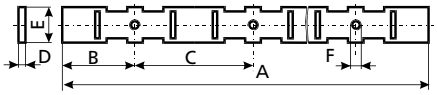
Type	I_n [A]	Code No.	Screw	g	
EZR	25	002923032	E 27	380	50
EZR	63	002923033	E 33	380	50

Terminal for neutral terminal and busbar EZR

Code No.	For cross section [mm²]	g	
002923040	16	9	100/2200
002923041	35	21	100/2200

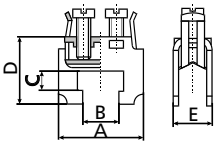
Busbar for fuse base EZR

type	I_n	dimension					
	[A]	A	B	C	D	E	F
EZR	25	1000	32	52	3	16	3/16"
EZR	63	1000	38	62	3	16	3/16"



Terminals for neutral terminals and busbars EZR

for cross section	dimension				
[mm²]	A	B	C	D	E
16	25	12,5	3,5	17	7,3
35	28	12,5	6,5	21,5	12,6



D0

Low Voltage Fuses

Low voltage fuse–links **766**

Fuse bases **770**

Accessories **775**

Fuse–disconnection units **778**

/etigroup

SWITCH TO
A SAFE FUTURE

D0 Low Voltage Fuse-Links

Fuse-Link D0

Rated current	Fusing characteristics
2 - 100 A	**gG**

D0 fuse-links are used as the most reliable protection of electrical installation, control and signal circuits against overload and short-circuit currents.
The whole system D0 contains a complete range of three physical sizes D01, D02 and D03 fuse-links, standard ceramic and new plastic bases, fuse disconnectors and all necessary accessories. It is dimensioned for rated voltages 400 V a.c. resp. 250 V d.c. with AC 50kA and DC 8kA rated breaking capacity.
The system D0 is intended to be used in residential, business and similar buildings. When it is used in industrial installations, it is necessary to take into account the requirements of the standard IEC 60664-1 concerning the insulation coordination for equipment within low-voltage systems .
All fuse-links have blown-fuse indicators which are visible through the screw cap when mounted. Fuse-links, fuse-bases, caps and fuse-disconnectors are tested and certified according to IEC 60269-3-1, DIN EN 60269-3, DIN VDE 0636-301, HD 630.3.1, DIN EN 60269-1, EN 60947-1 and EN 60947-3.

Technical data

Rated voltage Un	400 V AC, 250 V DC
Rated current In	D01 2 - 16 A, D02 20 - 63 A, D03 80 - 100 A
Breaking capacity at 1,1 Un	50 kA AC cos f = 0,1
	8 kA DC T = 15 ms
Fusing characteristics	gG
Standards	DIN EN 60269-1, IEC 60269-1:2005-04 (VDE 0636 Teil 10): 1999-11
	DIN EN 60269-3, IEC 60269-3:2003 (VDE 0636 Teil 30): 1995-12
	DIN EN 60269-3-1, IEC 60269-3-1: 2004-07
	(VDE 0636 Teil 301): 1998-01
	DIN VDE 0635/02.84

D01 for fuse base E 14

I_n [A]	Colour	Code No. gG	g	
2	pink	002211001	6	10/500
4	brown	002211002	6	10/500
6	green	002211003	6	10/500
10	red	002211004	6	10/500
13	black	002211006	6	10/500
16	grey	002211005	6	10/500

D02 for fuse base E 18

I_n [A]	Colour	Code No. gG	g	
20	blue	002212001	11	10/500
25	yellow	002212002	12	10/500
32	violet	002212006	13	10/500
35	black	002212003	13	10/500
40	black	002212007	13	10/500
50	white	002212004	13	10/500
63	copper	002212005	15	10/500

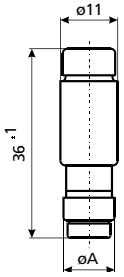
D03 for fuse base M 30 x 2

I_n [A]	Colour	Code No. gG	g	
80	silver	002213001	35	10/400
100	red	002213002	35	10/400

Dimensions

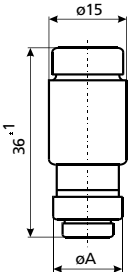
D01 gG for fuse base E 14

I_n [A]	dimension ØA
2	7,3
4	7,3
6	7,3
10	8,5
13	8,5
16	9,7



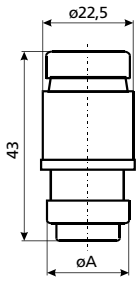
D02 gG for fuse base E 18

I_n [A]	dimension ØA
20	10,9
25	12,1
32	13,3
35	13,3
40	13,3
50	14,5
63	15,9

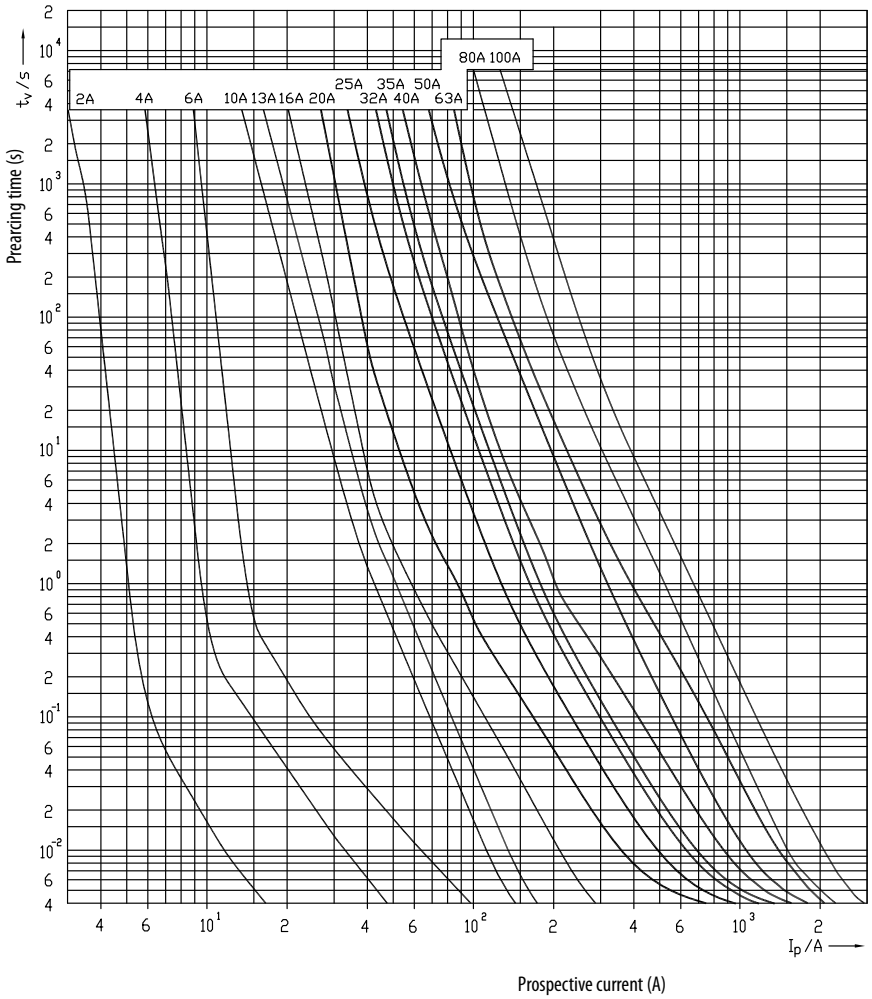


D03 gG for fuse base M 30 x 2

I_n [A]	dimension ØA
80	21,4
100	21,4



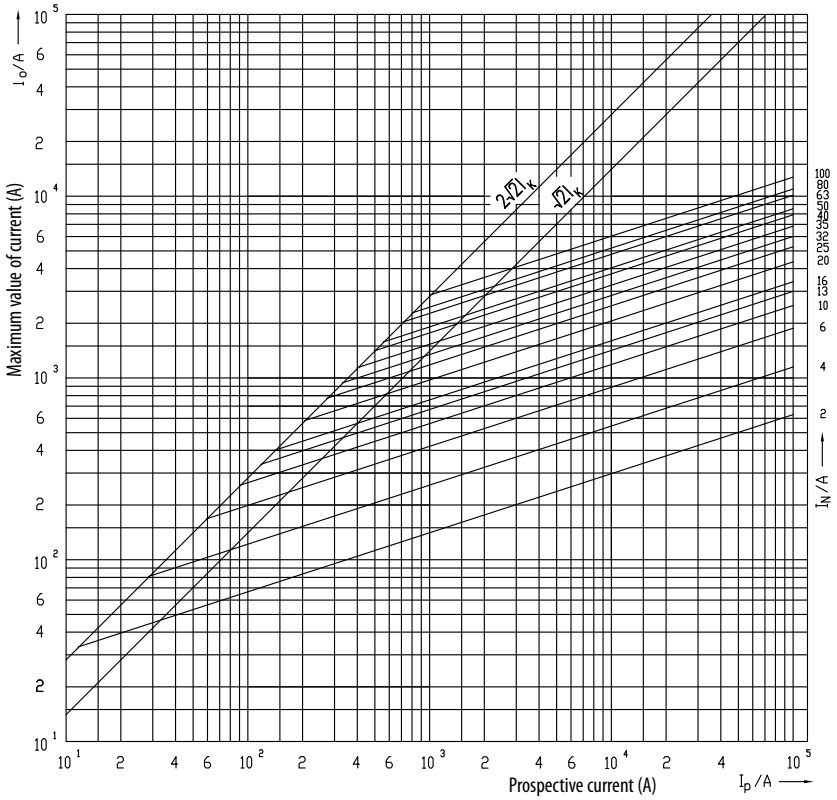
Time current characteristics I/t gG



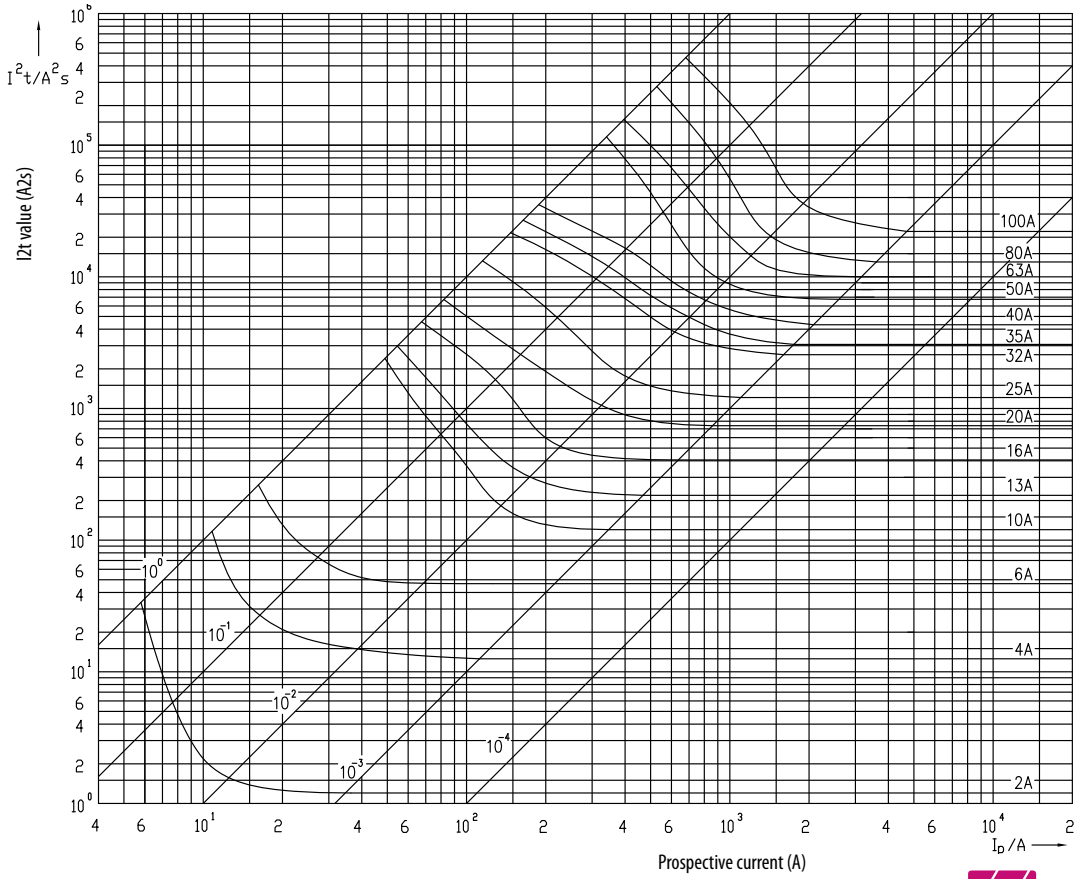
WATCH THE VIDEO

ETIFUSE: Streamline Your Fuse Selection - Interactive Online Tool

Cut-off current characteristics



Melting energy characteristics I² t



D0 Fuse Bases

Plastic Fuse Base PFB D0

- Double input terminal - availability of connecting wire and busbars

- Modular design - availability of assembling multi-pole versions on construction site

- Two position snapper - enables easy replacement

- Front print – product data visible after installation in the cabinet
- All parts are made of firestop material (GW 960°C)
- Compact housing design without additional covers – IP 20 protection class, faster assembling

- More grip area for screwing caps
- LED indication when fuse link operates - working also in case of open circuit at minimal wire capacitance
- LED indication flashes when a fuse is blown
- Contact material Cu - lower temperature rise, lower power dissipation

Technical data

	PFB D01	PFB D02
Fuse type	D01	D02
Versions	w/o indicator, LED indicator version	
Number of poles	1p, 3p	
Thread	E14	E18
Rated operational voltage Ue	400V a.c. / 250V d.c.	
Rated operational current Ie	16A	63A
Rated frequency	45-62Hz	
Rated conditional short-circuit current	50kA a.c. / 8kA d.c.	
Max power dissipation of the fuse-link (W)	2,5W	5,5W
LED indicator operating range	50V-400V a.c./ 50V-250V d.c.	
Glow wire test (GWFI)	960°C	
Terminals		
Screw	PZ2 M5	
Torque	2Nm	2,5Nm
Input terminal	1 ... 35mm^2 + Busbar 16mm^2	
Output terminal	1 ... 25mm^2	
Humidity	90% / 20°C	
Operating ambient temperature	-5°C ... +40°C	
Store ambient temperature	-25°C ... +55°C	
Degree of protection (IEC 60529) with fuse - carrier	IP 20	
Mounting on EN 60715 rail	35mm	
Standards	IEC 60269-3, VDE0636-3	
Approvals	VDE, OVE	

Fuse base PFB D01

Type	I_n [A]	Code No.	Number of poles	g	
PFB D01 1p	16	002510011	1	58	15/180
PFB D01 1p LED	16	002510012	1	58,5	15/180
PFB D01 3p	16	002510013	3	178	5/60
PFB D01 3p LED	16	002510014	3	179,5	5/60

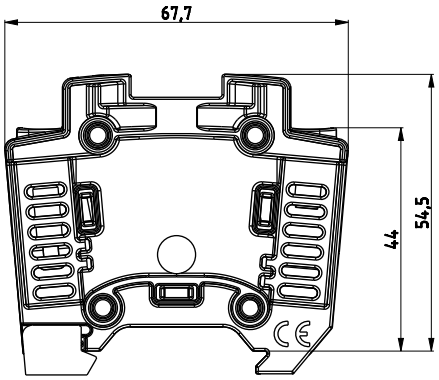
Fuse base PFB D02

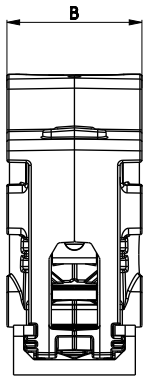
Type	I_n [A]	Code No.	Number of poles	g	
PFB D02 1p	63	002510021	1	64	15/180
PFB D02 1p LED	63	002510022	1	64,5	15/180
PFB D02 3p	63	002510023	3	194	5/60
PFB D02 3p LED	63	002510024	3	195,5	5/60

Connection kit

Type	Code No.	g	
Connection kit	002510001	30	300

Dimensions





type	B [mm]
1p	26,8
3p	80,4

Ceramic Fuse Base

Rated current
16, 63 A

The fuse bases D0 are planned to be built into distribution boxes in domestic and public installations. Total security against parts under voltage is achieved by installing D0 fuse bases into domestic or industrial distribution boards. Ceramic fuse-bases are tested and certified according to IEC 60269-3-1, DIN EN 60269-1, DIN EN 60269-3 and DIN VDE 0636-301.

Advantages

- modular construction
- smaller weight and smaller height (66 mm) provide installation into the flush-mounting distribution boxes, the depth of which is 80 mm only
- by the use of gauge-piece key it is possible to change the gauge rings under voltage
- the possibility of simple substitution of base D0 1 with D0 2

Technical data

Rated voltage Un	400 V AC
Rated current In	D01 16 A, D02 63 A
Cross-section of connecting lead	D01 1 - 4 mm^2 D02 1,5 - 25 mm^2
Connection clamp	with screw +- PZ
Standards	IEC 60269, EN 60269,
	DIN VDE 0636, SIST EN 60269

1-pole fuse base D0

Type	I_n [A]	Code No.	Screw	With protection cover	Without protection cover	Click-on mounting	Screw mounting	g	
D01N - K	16	002221011	E14	0		X		68	15/300
D01V - K	16	002221012	E14	0			X	66	15/300
D02N - K	63	002222011	E18	0		X		87	15/120
D02V - K	63	002222012	E18	0			X	80	15/120
D02N M5 - K	63	002222016	E18	0		X		82	15/120
D02V M5 - K	63	002222015	E18	0			X	80	15/120
D01N	16	002221001	E14		0	X		56	15/150
D01V	16	002221002	E14		0		X	59	15/150
D02N	63	002222001	E18		0	X		80	60/180
D02V	63	002222002	E18		0		X	77	60/180
D02N M5	63	002222006	E18		0	X		75	60/180
D02V M5	63	002222005	E18		0		X	72	60/180

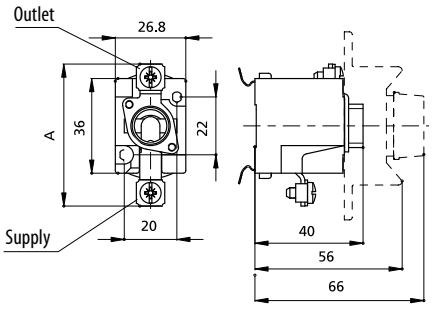
3-pole fuse base D0

Type	I_n [A]	Code No.	Screw	With protection cover	Without protection cover	Click-on mounting	Screw mounting	g	
D01N/3 - K	16	002221021	E14	0		X		216	5/100
D01V/3 - K	16	002221020	E14	0			X	187	5/100
D02N/3 - K	63	002222021	E18	0		X		252	5/40
D02V/3 - K	63	002222020	E18	0			X	246	5/40
D02N/3 M5 - K	63	002222023	E18	0		X		237	5/40
D02V/3 M5 - K	63	002222022	E18	0			X	231	5/40
D01N/3	16	002221031	E14		0	X		176	5/50
D01V/3	16	002221030	E14		0		X	170	5/50
D02N/3	63	002222031	E18		0	X		235	5/50
D02V/3	63	002222030	E18		0		X	229	5/50
D02N/3 M5	63	002222033	E18		0	X		220	5/50
D02V/3 M5	63	002222032	E18		0		X	214	5/50

Dimensions

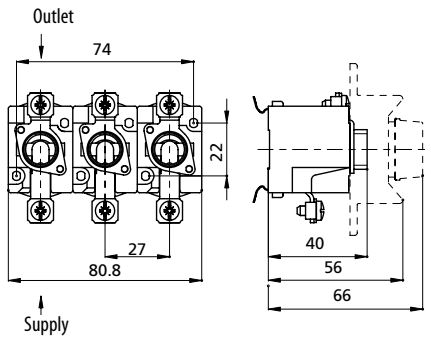
1-pole fuse base D0

Type	connections		cross-section of connecting lead	dimension
	outlet	supply	[mm²]	A [mm]
D01N - K	M4	M4	1,5 - 4	53
D01V - K			1,5 - 4	53
D02N - K	2xM5	2xM5	2,5 - 25	57
D02V - K			2,5 - 25	57
D02N M5 - K	2xM5	M5	2,5 - 25	57
D02V M5 - K			2,5 - 25	57
D01N	M4	M4	1,5 - 4	53
D01V			1,5 - 4	53
D02N	2xM5	2xM5	2,5 - 25	57
D02V			2,5 - 25	57
D02N M5	2xM5	M5	2,5 - 25	57
D02V M5			2,5 - 25	57



3-pole fuse base D0

Type	connections		cross-section of connecting lead	dimension
	outlet	supply	[mm²]	A [mm]
D01N/3 - K	M4	M4	1,5 - 4	53
D01V/3 - K			1,5 - 4	53
D02N/3 - K	2xM5	2xM5	2,5 - 25	57
D02V/3 - K			2,5 - 25	57
D02N/3 M5 - K	2xM5	M5	2,5 - 25	57
D02V/3 M5 - K			2,5 - 25	57
D01N/3	M4	M4	1,5 - 4	53
D01V/3			1,5 - 4	53
D02N/3	2xM5	2xM5	2,5 - 25	57
D02V/3			2,5 - 25	57
D02N/3 M5	2xM5	M5	2,5 - 25	57
D02V/3 M5			2,5 - 25	57



D0 Accessories

Protection Cover

1-pole protection cover for fuse base

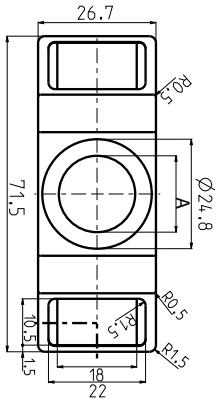
Type	Code No.	g	
D01V, D01N	002251006	8	50/700
D02V, D02N	002251005	8	50/700

3-pole protection cover for fuse base

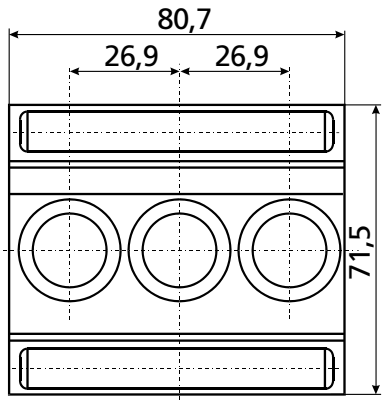
Type	Code No.	g	
D01V/3, D01N/3	002251004	17	14/280
D02V/3, D02N/3	002251002	16	14/280

Dimensions

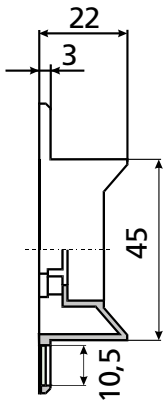
	A [mm]
ZP D01	17,3
ZP D02	21,1



D01, D02



D01/3, D02/3



Gauge Piece

I_n [A]	Colour	Code No.	g	
2	pink	002241001	1	50/500
4	brown	002241002	1	50/500
6	green	002241003	1	50/500
10	red	002241004	1	50/500

V D02 for fuse base E 18

I_n [A]	Colour	Code No.	g	
2*	pink	002243001	1	50/500
4*	brown	002243002	1	50/500
6*	green	002243003	1	50/500
10*	red	002243004	1	50/500
16*	grey	002243005	1	50/500
20	blue	002242001	1	50/500
25	yellow	002242002	1	50/500
35	black	002242003	1	50/500
50	white	002242004	1	50/500

* For using fuse-links D01 and fuse bases D02.

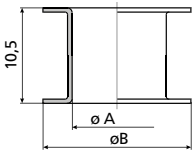
Gauge piece key

Code No.	g	
002241000	17	20/120

Dimensions

V D01 for fuse base E 14

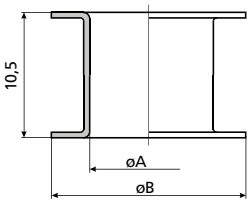
I_n [A]	dimension ØA	ØB
2	7,9	12
4	7,9	12
6	7,9	12
10	9,1	12



V D02 for fuse base E 18

I_n [A]	dimension ØA	ØB
2*	7,9	16,6
4*	7,9	16,6
6*	7,9	16,6
10*	9,1	16,6
16*	10,3	16,6
20	11,5	16,6
25	12,7	16,6
35	13,9	16,6
50	15,1	16,6

*For using fuse-links D01 and fuse bases D02.



Technical data on page 350

Fuse Carrier D0

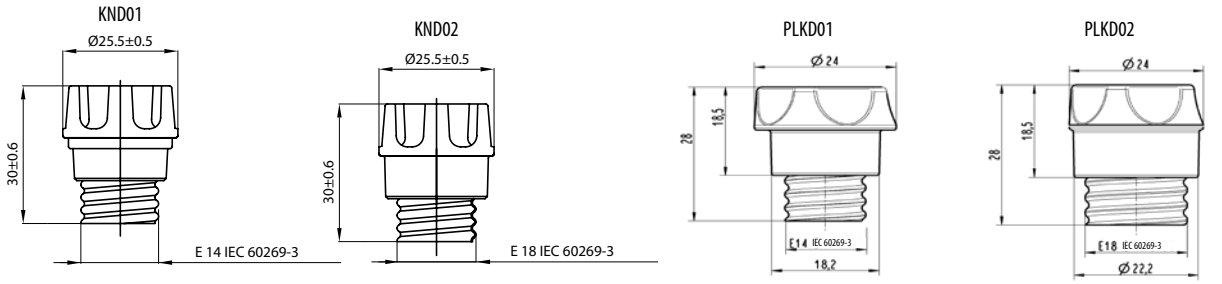
Fuse carrier D0

Type	Code No.	Screw	g	
KN D01	002231003	E 14	14	20/500
KN D02	002232003	E 18	17	20/500

Fuse carrier D0 - plastic

Type	Code No.	Screw	g	
PLK D01	002231010	E 14	9	10/500
PLK D02	002232008	E 18	11	10/500

Dimensions



Special Holder

Special holder

Code No.	g	
002231000	1	25/300

D0 Fuse–Disconnection Units

Fuse–Switch Disconnector VLD01

Rated current	Utilization category
2 - 6, 10, 16 A	**AC22**

Fuse-switch disconnector is a protection device with an exchangeable for D01 fuse link. This system enables the following protecting advantages, concerning the D0 fuse:

- Replacement of the fuse-link can be done with a movable holder, without danger of direct contact to the parts under voltage.
- The device can be switched on without screwing, contact pressure is applied automatically by a spring.
- Complete protection against touch by VBG 4.
- In position 1 and 0, the fuse-link operation indicator is visible through a transparent window.

Technical data

Rated voltage Un	230 V, 230/400 V, 400 V a.c.
Rated current In	2-6 A, 10 A, 13 A, 16 A
Rated frequency fn	45-62 Hz
Utilization category	AC-22 A
Mechanical life	10.000 cycles
Electrical life	1500 cycles
Poles	1p, 1p+N, 2p, 3p, 3p+N
Standards	IEC/EN 60947-1 IEC/EN 60947-3 DIN EN 60947-1 VDE 0660-100 DIN EN 60947-3 VDE 0660-107 IEC 60269-1 Ed. 4.1 2009-07 IEC 60269-3 Ed. 4.0 2010-05
Terminal capacity	1,5 -25mm^2

1-pole

I_n [A]	U_n [V]	Code No.	g	
6	230/400	002261001	67	12/108
10	230/400	002261002	67	12/108
13	230/400	002261004	67	12/108
16	230/400	002261003	67	12/108

1-pole + N

I_n [A]	U_n [V]	Code No.	g	
6	230	002261016	135	6/54
10	230	002261017	135	6/54
13	230	002261019	135	6/54
16	230	002261018	135	6/54

2-pole

I_n [A]	U_n [V]	Code No.	g	
6	400	002261006	135	6/54
10	400	002261007	135	6/54
13	400	002261009	135	6/54
16	400	002261008	135	6/54

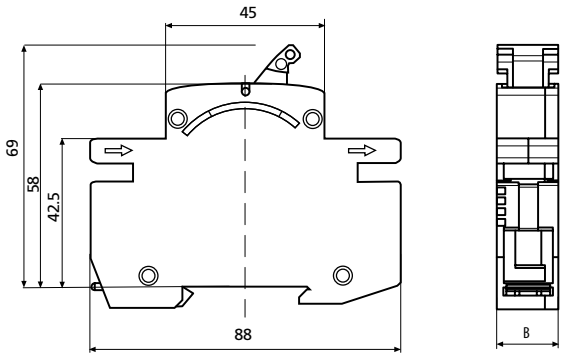
3-pole

I_n [A]	U_n [V]	Code No.	g	
6	400	002261011	203	4/36
10	400	002261012	203	4/36
13	400	002261014	203	4/36
16	400	002261013	203	4/36

3-pole + N

I_n [A]	U_n [V]	Code No.	g	
6	400	002261021	270	3/27
10	400	002261022	270	3/27
13	400	002261024	270	3/27
16	400	002261023	270	3/27

Dimensions



type	B [mm]
1p	17,5
1p+N	35
2p	35
3p	52,5
3p+N	70

Accessories for fuse-switch disconnector VLD01

Holder

Accessories	Code No.	g	
holder/2-6A	002261028	6	15/600
holder/10A	002261029	6	15/600
holder/13A	002261027	6	15/600
holder/16A	002261030	6	15/600

Switch–disconnector–fuse STVD02

Rated current	Utilization category
63 A	**AC 22**

Switch-disconnector-fuse is a device which combines the functions of the switch and of the fuse D0. The system enables the following advantages of protection in comparison with the fuse D0:

- The changing of the fuse-link without danger of direct touch of parts under voltage.
- Snap-on mounting on rail according to EN 60715.
- The complete protection against touch according to VBG 4.
- The possibility of connecting supply from the upper or from the lower side.
- It can be used as a main switch and tariff fuse in a single device.
- Possibility of sealing in ON or OFF positions with or without fuse-link.

Technical data

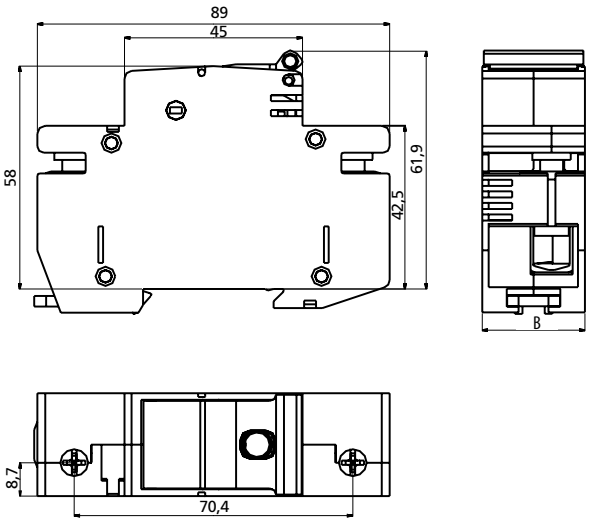
Number of poles	1p, 1p+N, 2p, 3p, 3p+N
Rated voltage	230/400 V a.c., 110 V (2p) d.c.
Rated current	63 A
Rated breaking capacity	50 kA
Rated insulation voltage	400 V
Rated impulse resistance voltage	6000 V
Category of use according to DIN VDE 0638	AC 22(63 A), AC 23(35 A), DC 22 (63 A)
Category of use according to DIN E 60 947-3	AC-22A (63A/400V AC), AC-23A (35A/400V AC), DC-22B (63A/110V DC)
Mechanical life	8.500 cycles
Electrical life	1.500 cycles
Temperature of environment	-5°C ... +40°C
Air humidity	90%
Degree of protection	IP 00 according to DIN 40 050 IP 20 when mounted in distribution board
Standards	IEC/EN 60947-1 IEC/EN 60947-3 DIN EN 60947-1 VDE 0660-100 DIN EN 60947-3 VDE 0660-107 IEC 60269-1 Ed. 4.1 2009-07 IEC 60269-3 Ed. 4.0 2010-05
Terminal capacity	1,5 - 35mm^2
Possibility of sealing	in ON or OFF position

WATCH THE VIDEO

STVD02

Type	I_n [A]	Code No.	g	
STV D02-1	63	002271001	119	12/96
STV D02-1N	63	002271002	238	6/48
STV D02-2	63	002271003	238	6/48
STV D02-3	63	002271004	357	4/32
STV D02-3N	63	002271005	476	3/24

Dimensions



type	B [mm]
1p	26,8
1p+N	53,6
2p	53,6
3p	80,4
3p+N	107,2

Accessories for switch - disconnector - fuse STVD02

Auxiliary switch PS STV

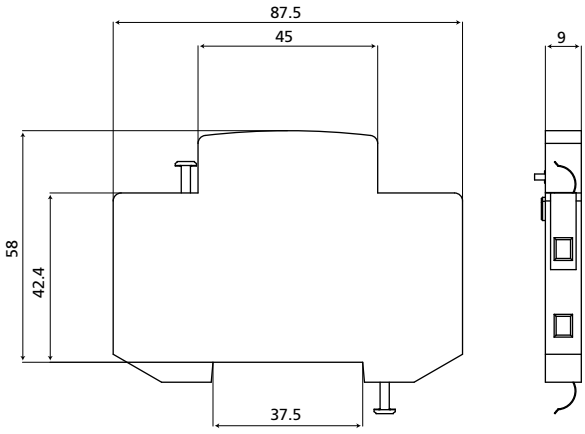
Type	Code No.	Contacts	g
PS STV - MD	002279001	1 x b, 1 x a	50
PS STV - 2M	002279002	2 x b	50
PS STV - 2D	002279003	2 x a	50

a... make contact
b... breake contact

Auxiliary switch PS STV is intended to be mounted with switches of series STV D02. The width of apparatus is 9 mm, other dimensions comply with STV D02 series switches.
Auxiliary switch PS STV D02 serves for distant signalization of the state of contacts (on/off) of STV D02 switch, or for circuit control.

Technical data

Rated current In	AC12 (6A/230V AC)
	DC12 (1A/110V DC)
Rated conditional short circuit current	1 kA at 20 A fuse link
Standards	EN 62019



Gauge piece

I_n [A]	Colour	Code No.	g	
20	blue	002243010	0,8	15/300
25	yellow	002243011	0,6	15/300
35	black	002243012	0,5	15/300
50	white	002243013	0,4	15/300

Their function is to limit the use of D0 fuse-links to user prescribed rated currents. The gauge piece can be inserted into the holder, when the fuse holder is extracted from the housing.

Adapter

I_n [A]	Colour	Code No.	g	
6	green	002243018	2,5	20/200
10	red	002243019	2,5	20/200
16	grey	002243020	2,5	20/200

Its function is to allow the use of D01 fuse-links (2-16A) with the fuse-switch-disconnector STV D02.

STVD02 set

STVD02 set includes a switch-disconnector-fuse, gauge pieces of all sizes and adapters of all sizes.

STVD02 set

title	Code No.	
STV D02 1p set	002271101	12/96
STV D02 1p+N set	002271102	6/48
STV D02 2p set	002271103	6/48
STV D02 3p set	002271104	4/32
STV D02 3p+N set	002271105	3/24

C

Low voltage cylindrical fuses

Cylindrical fuse–links **784**

Fuse-switch disconnectors for cylindrical fuse–links **800**

*DC and PV fuses are in Special Purpose Fuses and Green Protect catalogues

/etigroup

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SWITCH TO A SAFE FUTURE

C Cylindrical fuse-links

Cylindrical fuse-link CH

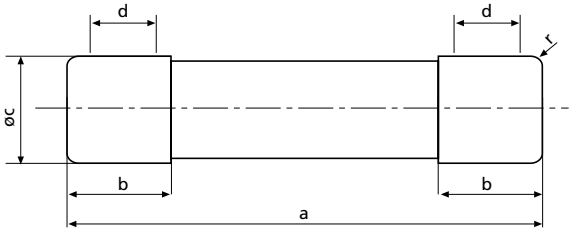
Rated current	Fusing characteristic
0,16-125 A	**gG, aM**

Application: Cylindrical fuse-links are used as the most secure protection of electrical installations, control, and signal circuits against overloads and short circuit currents. Their dimensions comply with IEC 60269-1 and IEC 60269-2. They are used mainly in industrial areas, since their dimensions allow voltages of up to 690 V. The most common sizes are the following four: 8x32, 10x38, 14x51 and 22x58.

Technical data

Rated voltage	400 V AC, 500 V AC, 690 V AC	
Rated current	CH 8	0,5-25 A/400 V
	CH 10	0,16-20 A/500 V(25 A/500 V gG), 25-32 A/400 V
	CH 14	0,25-25 A/690 V, 32-50 A/500 V
	CH 22	1-80 A/690 V, 100-125 A/500 V
Rated frequency	50 Hz	
Rated breaking capacity	CH 8	20 kA
	CH 10	120 kA
	CH 14	120 kA
	CH 22	120 kA
Characteristics	gG, aM	
Body material	ceramic	
Material of contact parts	Cu, gal.Ag	

The consequence of using low-quality CH fuse links



size	a	$b_{max.}$	c	$d_{min.}$	r
8 x 32	31,5±0,5	6,7	8,5±0,1	4	1±0,5
10 x 38	38,0±0,6	10,5	10,3±0,1	6	1,5±0,5
14 x 51	51,0+0,6/-1	13,8	14,3±0,1	7,5	±1
22 x 58	58,0+0,1/-2	16,2	22,2±0,1	11	±1

CH 8x32 / 20kA

	Rated voltage / Rated current	Code No. gG	Power dissipation (In) Pd [W]	Code No. aM	Power dissipation (In) Pd [W]	g	
400V	0,5A	002651000	0,55			4,4	10/2500
	1A	002651001	0,35	002652000	0,09		
	2A	002651002	0,45	002652001	0,15		
	4A	002651003	0,65	002652002	0,26		
	6A	002651004	0,83	002652003	0,35		
	8A	002651005	1,0	002652004	0,47		
	10A	002651006	1,2	002652005	0,55		
	12A	002651007	1,3	002652006	0,7		
	16A	002651008	1,7				
	20A	002651009	2,0				
	25A	002651010	2,4				

CH 10x38 / 120kA

	Rated voltage / Rated current	Code No. gG	Power dissipation (In) Pd [W]	Code No. aM	Power dissipation (In) Pd [W]	g	
500V	0,16A			002652007	0,07	8,3	10/1800
	0,25A			002652008	0,08		
	0,5A	002651011	0,07	002652009	0,07		
	1A	002651012	0,45	002652010	0,1		
	2A	002651013	0,5	002652011	0,14		
	4A	002651014	0,85	002652012	0,28		
	6A	002651015	0,95	002652013	0,38		
	8A	002651016	1,15	002652014	0,55		
	10A	002651017	1,3	002652015	0,62		
	12A	002651018	1,4	002652016	0,82		
	16A	002651019	1,9	002652017	0,87		
	20A	002651020	2,4	002652018	1,05		
400V	25A	002651021*	2,7	002652019	1,2		
	32A	002651022	2,8	002652020	1,8		

* 500V

CH 14x51 / 120kA

	Rated voltage / Rated current	Code No. gG	Power dissipation (In) Pd [W]	Code No. aM	Power dissipation (In) Pd [W]	g	
690V	0,25A			002652021	0,1	21	10/700
	0,5A			002652022	0,9		
	1A	002651023	0,6	002652023	0,13		
	2A	002651024	0,75	002652024	0,18		
	4A	002651025	1,1	002652025	0,28		
	6A	002651026	1,25	002652026	0,42		
	8A	002651027	1,45	002652027	0,55		
	10A	002651028	1,65	002652028	0,65		
	12A	002651029	1,8	002652029	0,75		
	16A	002651030	2,35	002652030	1,05		
	20A	002651031	2,75	002652031	1,3		
	25A	002651032	3,1	002652032	1,55		
500V	32A	002651033	3,6	002652033	2,05		
	40A	002651034	4	002652034	2,65		
	45A			002652035	2,85		
	50A	002651035	4,8	002652036	2,95		

CH 14x51 with striker pin

Rated voltage / Rated current		Code No. gG	Power dissipation (In) Pd [W]	Code No. aM	Power dissipation (In) Pd [W]	g	
500V	2A	006711015	0,9	006711029	0,2	18,6	10/500
	4A	006711005	1	006711030	0,5		
	6A	006711016	1,2	006711031	0,4		
	8A	006711017	1	006711032	0,7		
	10A	006711018	1,3	006711033	0,7		
	12A	006711006	1,7	006711034	0,9		
	16A	006711001	2	006711035	1,2		
	20A	006711002	2,5	006711036	1,2		
	25A	006711003	3,3	006711037	1,5		
	32A	006711019	2,5	006711038	2		
	40A	006711004	4,8	006711039	2,6		
400V	50A	006711020	4,8	006711040	2,9		

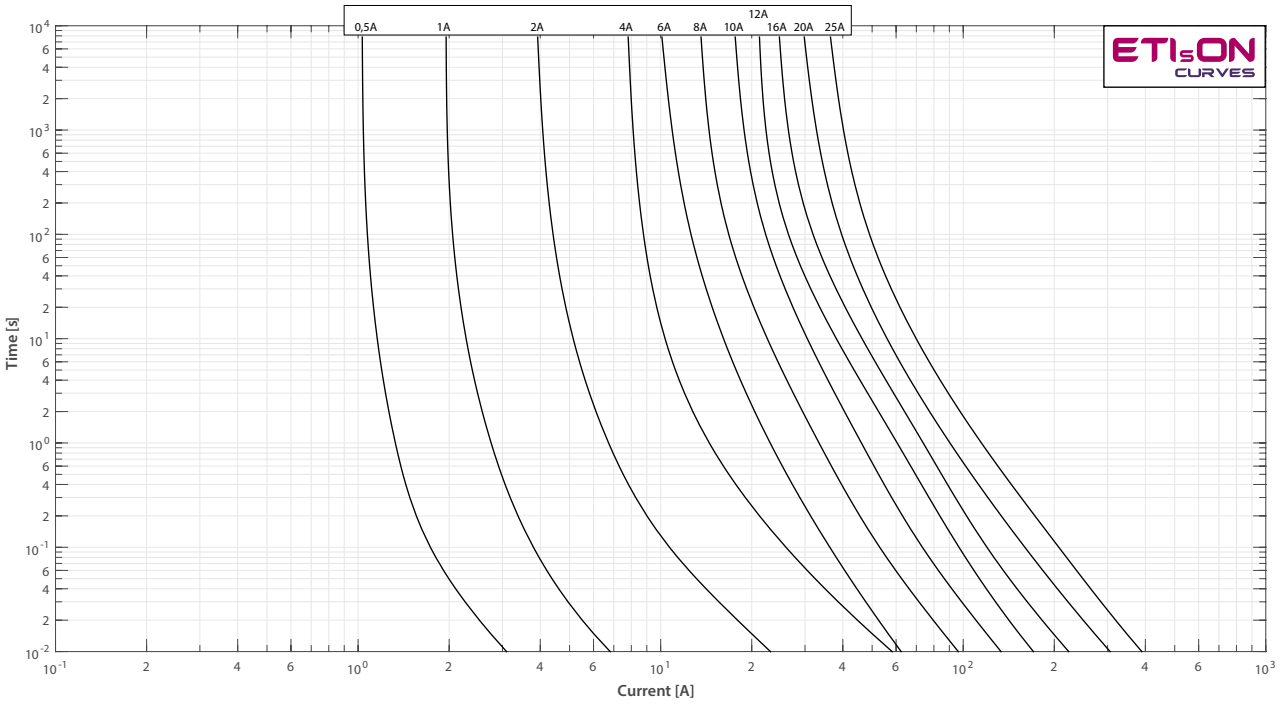
CH 22x58 / 120kA

Rated voltage / Rated current		Code No. gG	Power dissipation (In) Pd [W]	Code No. aM	Power dissipation (In) Pd [W]	g	
690V	1A			002652037	0,2	54	10/250
	2A	002651036	0,9	002652038	0,25		
	4A	002651037	1,25	002652039	0,35		
	6A	002651038	1,4	002652040	0,45		
	8A	002651039	1,6	002652041	0,6		
	10A	002651040	1,9	002652042	0,75		
	12A	002651041	2	002652043	0,85		
	16A	002651042	2,5	002652044	1,15		
	20A	002651043	3,4	002652045	1,35		
	25A	002651044	3,5	002652046	1,7		
	32A	002651045	3,7	002652047	2,2		
	40A	002651046	4,3	002652048	2,7		
	50A	002651047	5,3	002652049	3,6		
	63A	002651048	6,3	002652050	4,8		
	80A	002651049	7,4	002652051	6,2		
500V	100A	002651050	8,3	002652052	6,65		
	125A	002651051	11,3	002652053	9,9		

CH 22x58 with striker pin

	Rated voltage / Rated current	Code No. gG	Power dissipation (In) Pd [W]	Code No. aM	Power dissipation (In) Pd [W]	g	
690V	4A	006711008	1,1			51	10/500
	6A	006711009	1,3	006711041	0,5		
	8A	006711021	1,1	006711042	0,7		
	10A	006711010	1,5	006711043	0,7		
	12A	006711022	1,8	006711044	0,8		
	16A	006711023	2,1	006711045	1,2		
	20A	006711024	2,7	006711046	1,3		
	25A	006711025	3,3	006711047	1,5		
	32A	006711011	3,5	006711048	2,1		
	40A	006711026	4	006711049	3,4		
	50A	006711027	5,5	006711050	3,5		
	63A	006711012	6,9	006711051	4,5		
500V	80A	006711013	7,8	006711052	5,9		
	100A	006711014	9	006711053	6,6		

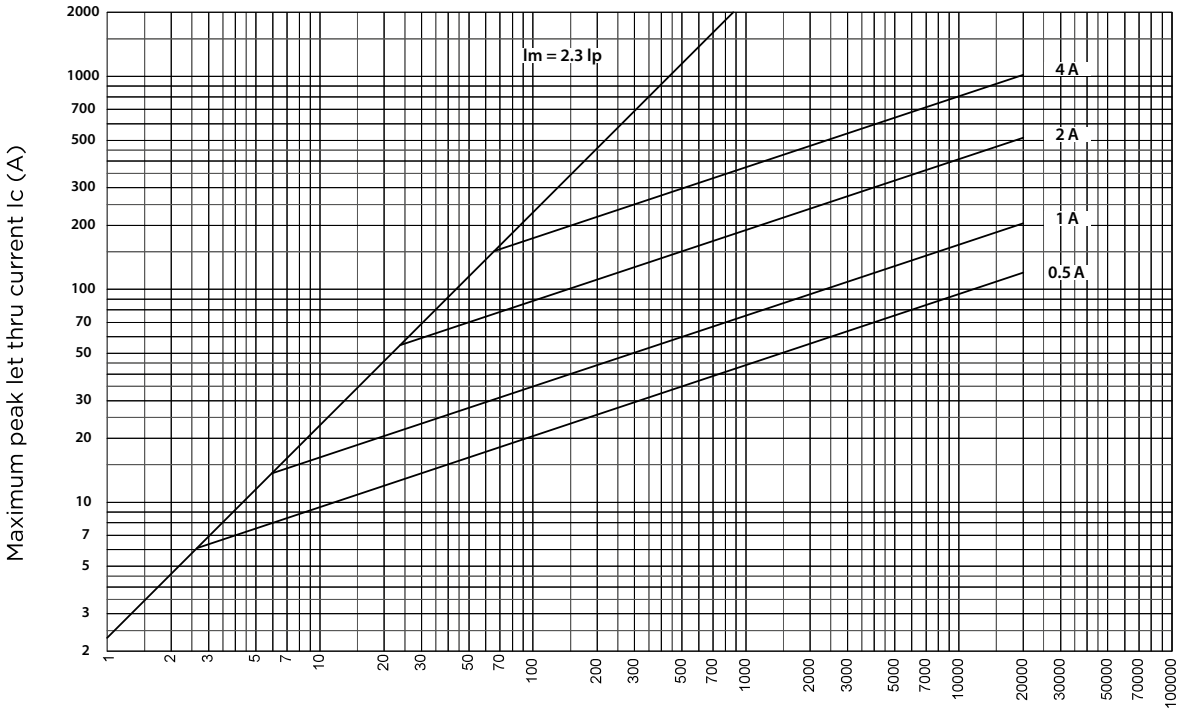
Time current characteristics I/t, CH8 gG



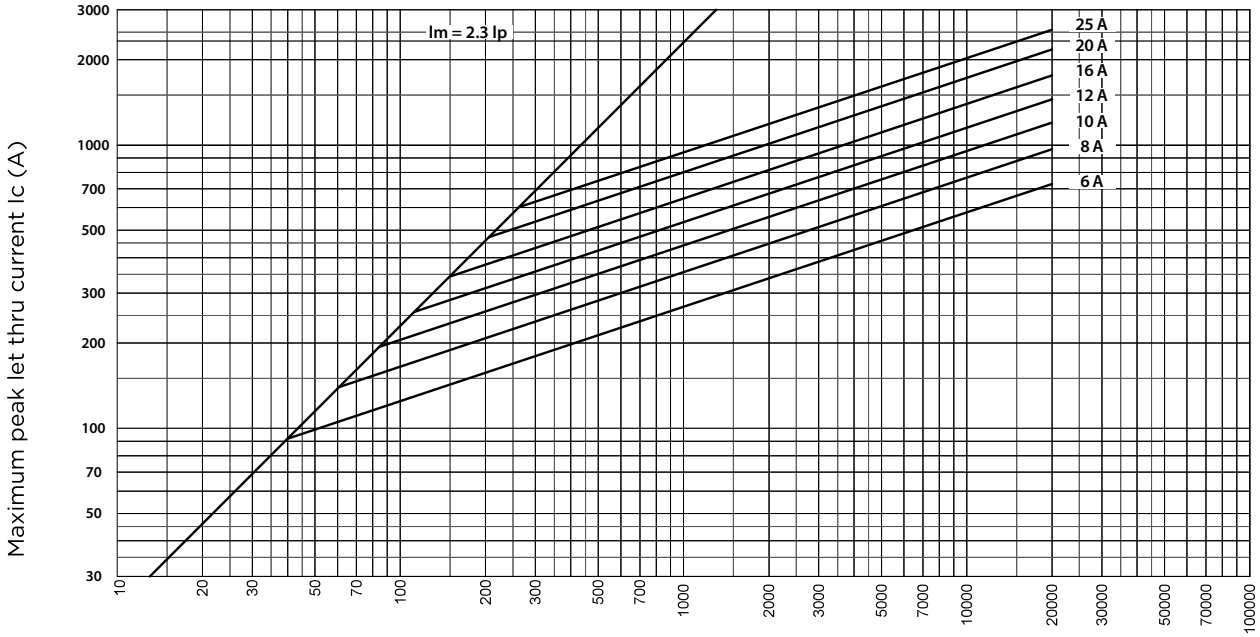
WATCH THE VIDEO

ETIFUSE: Streamline Your Fuse Selection - Interactive Online Tool

Cut-off current characteristics, CH8 gG

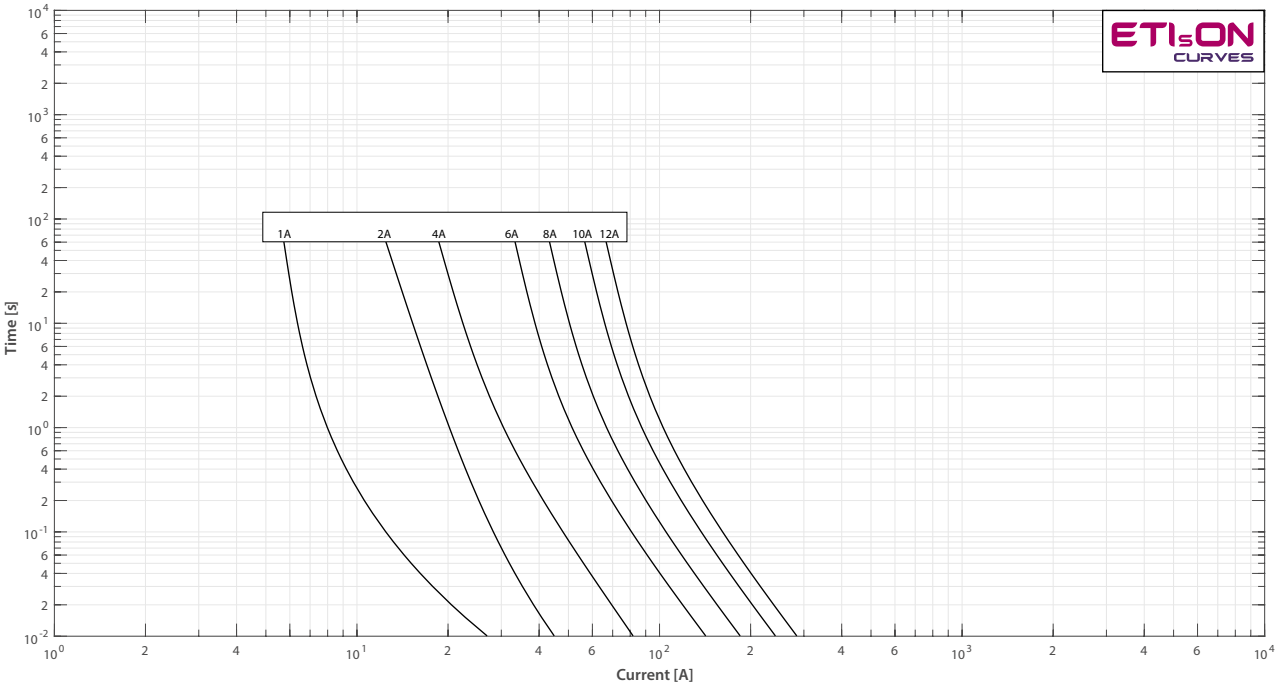


50 Hz RMS symmetrical prospective current Ip (A)

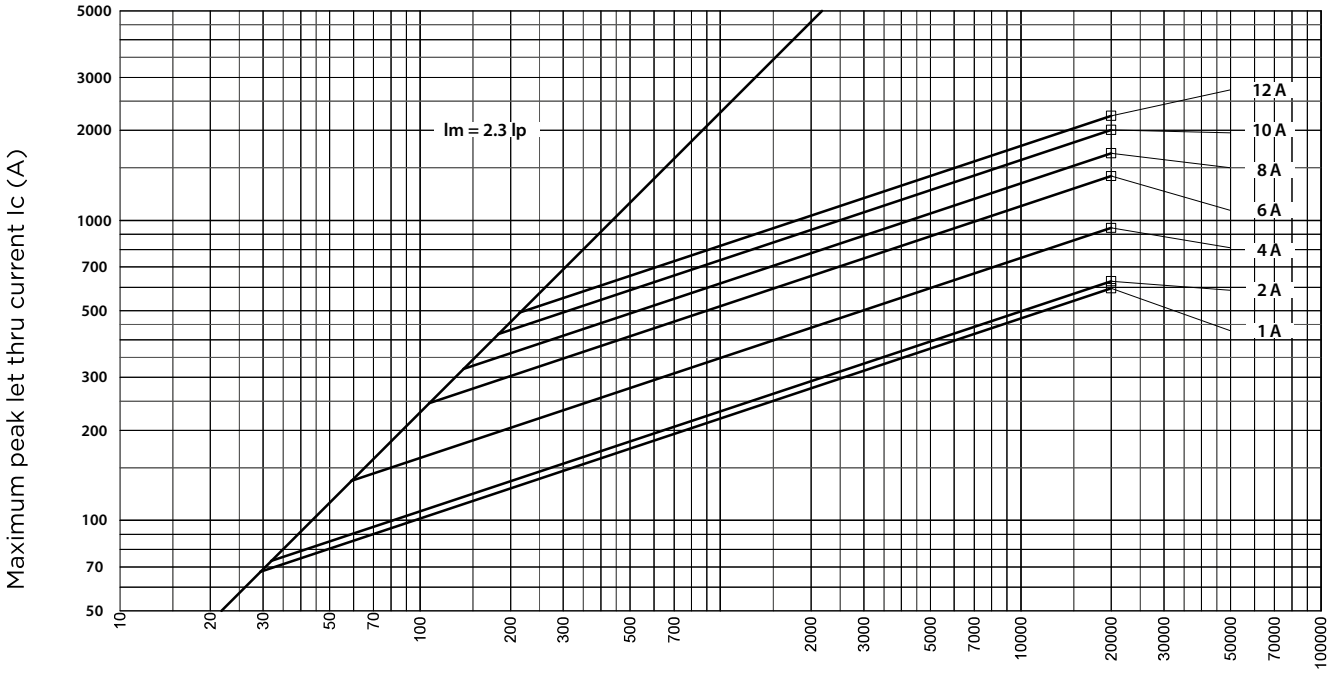


50 Hz RMS symmetrical prospective current Ip (A)

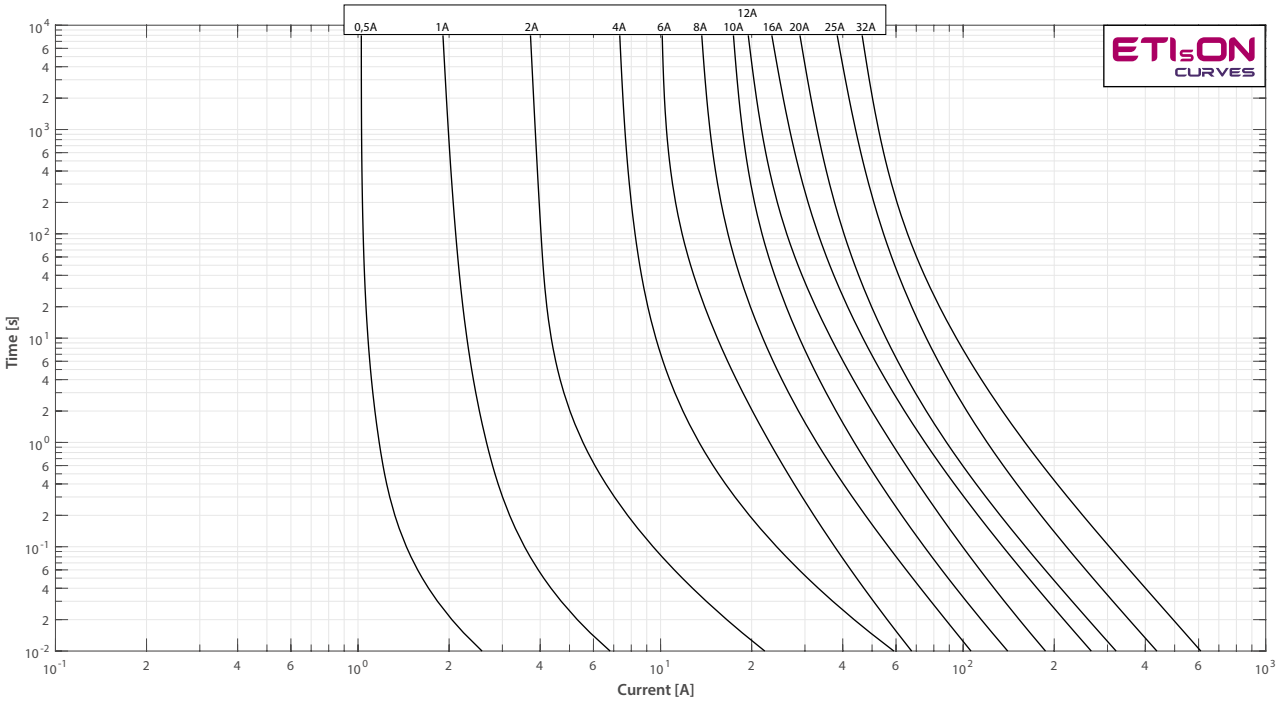
Time current characteristics I/t, CH8 aM



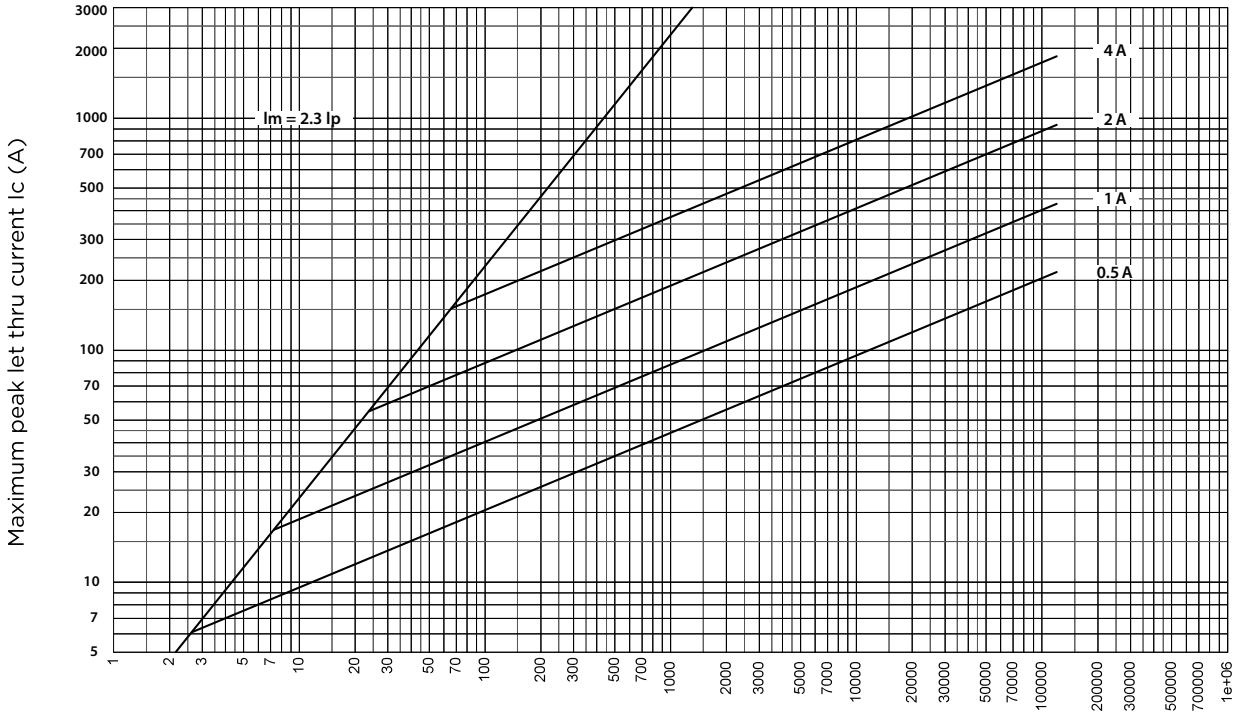
Cut-off current characteristics, CH8 aM

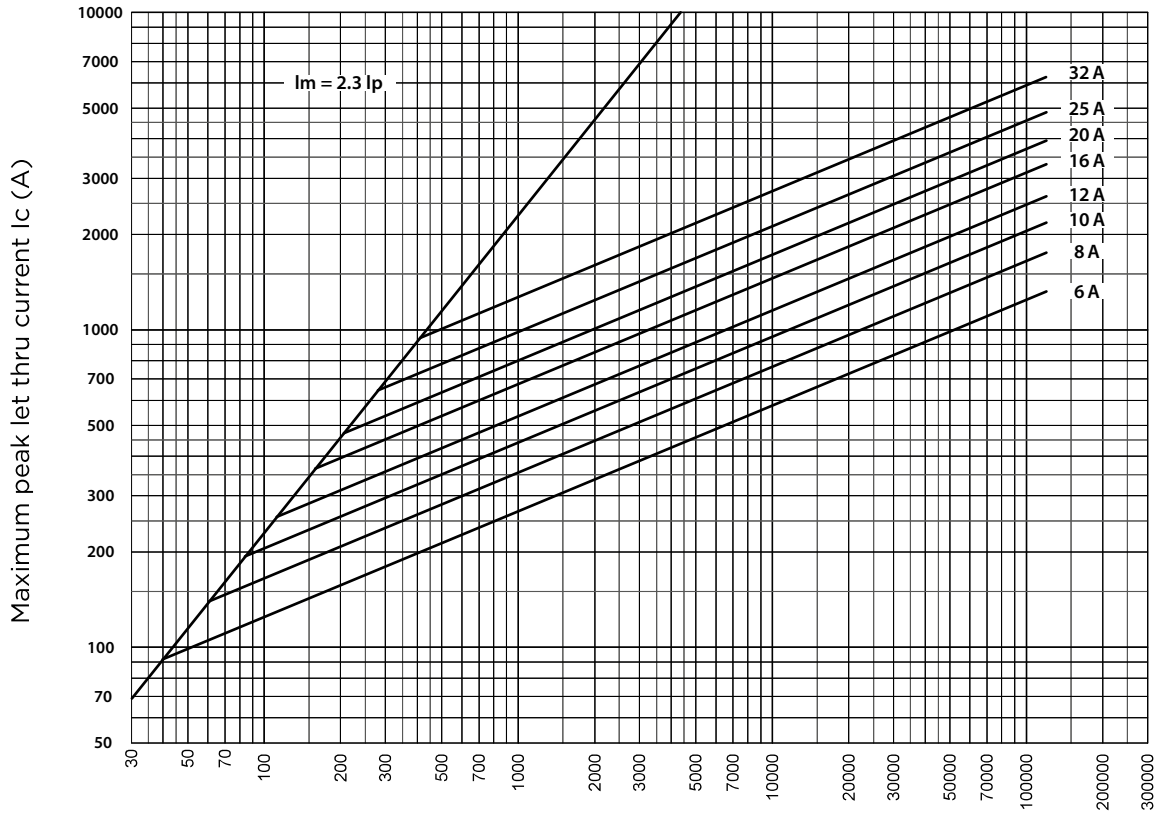


Time current characteristics I/t, CH10 gG

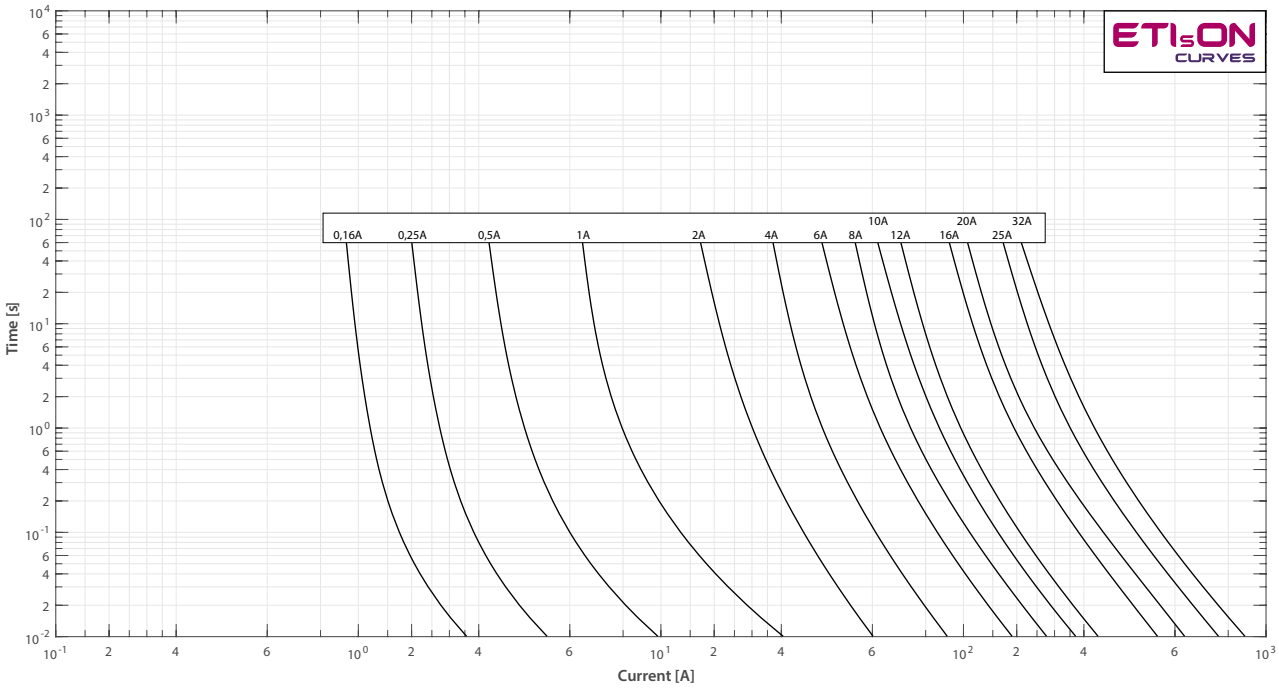


Cut-off current characteristics, CH10 gG

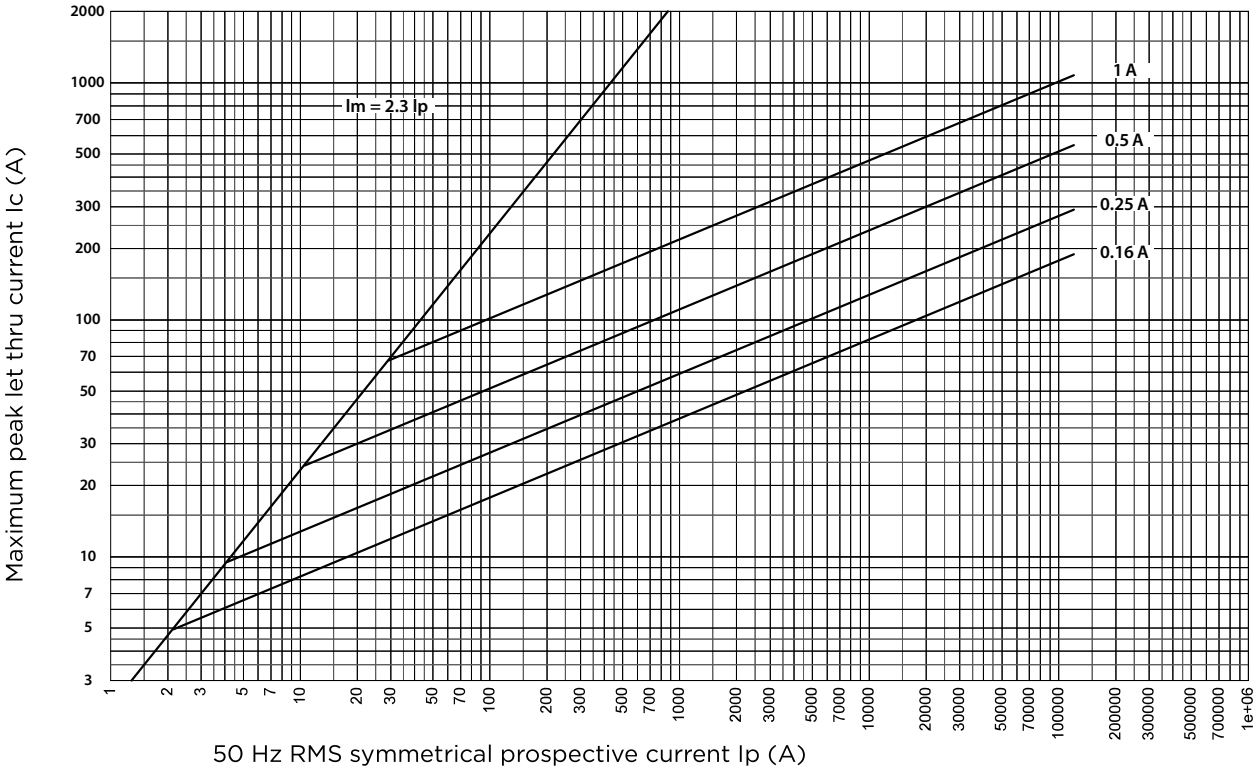


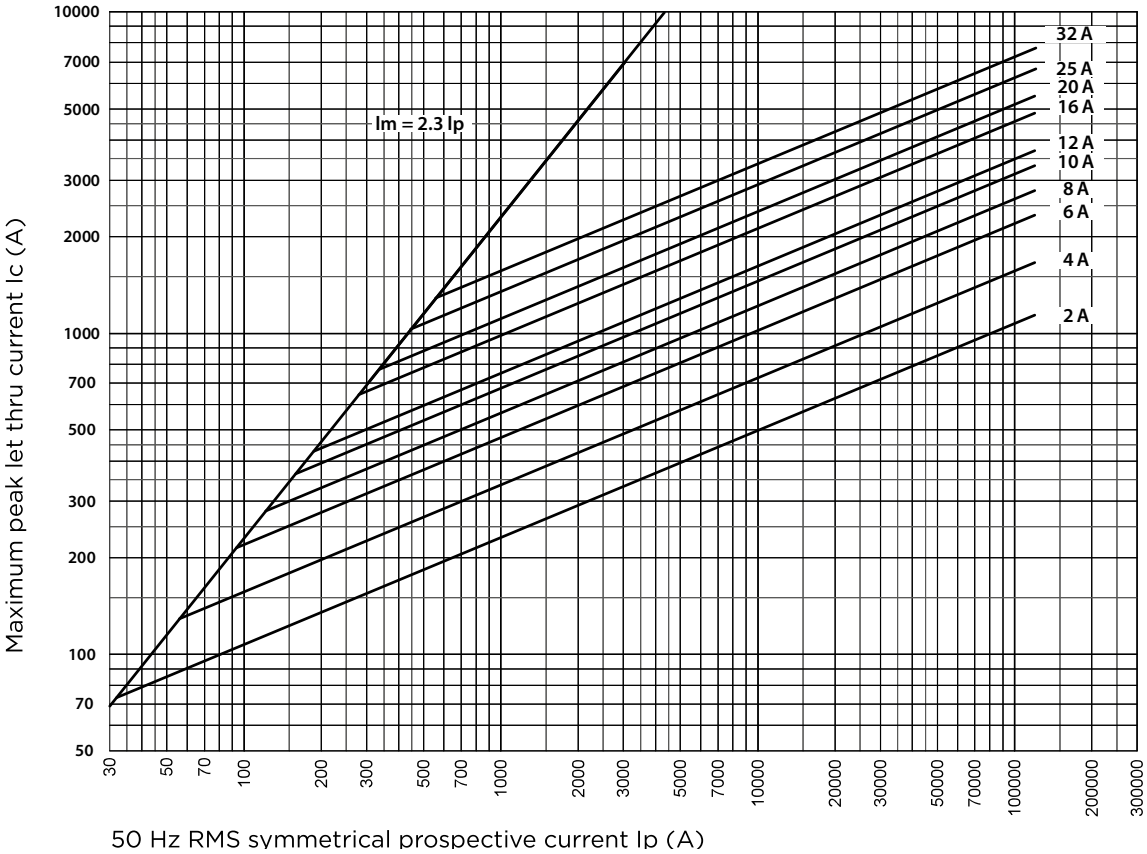


Time current characteristics I/t, CH10 aM

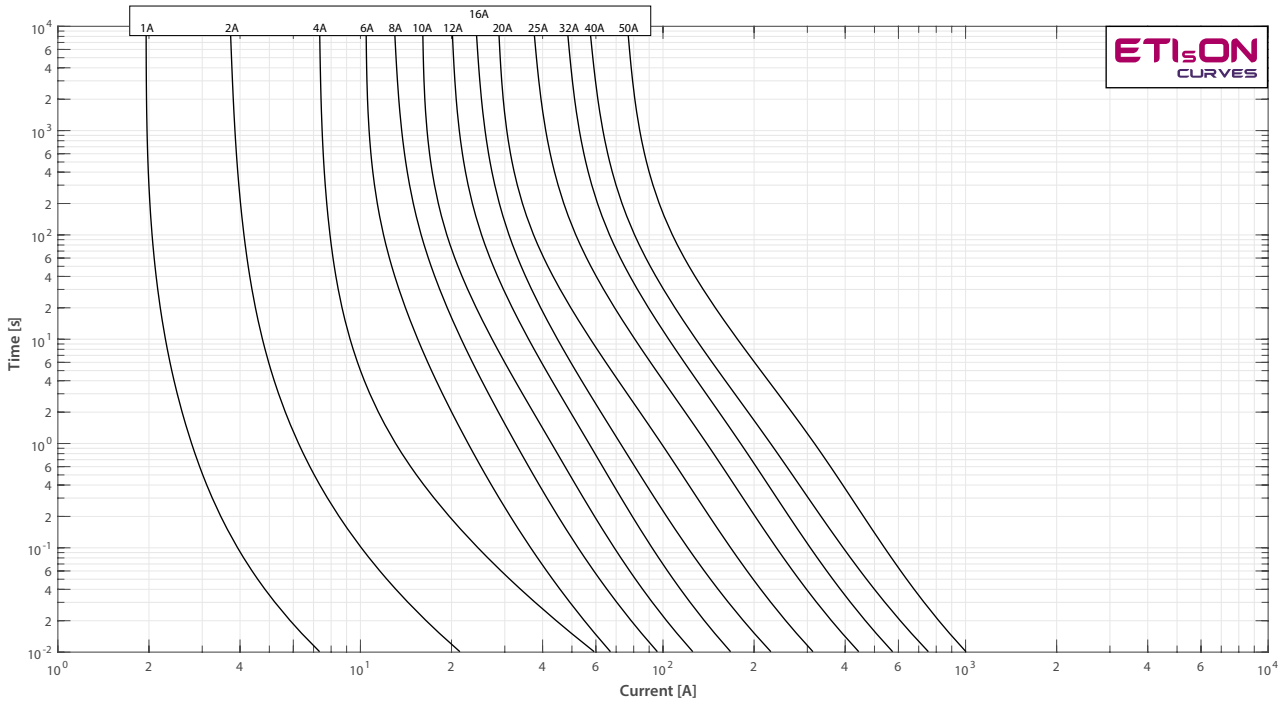


Cut-off current characteristics, CH10 aM

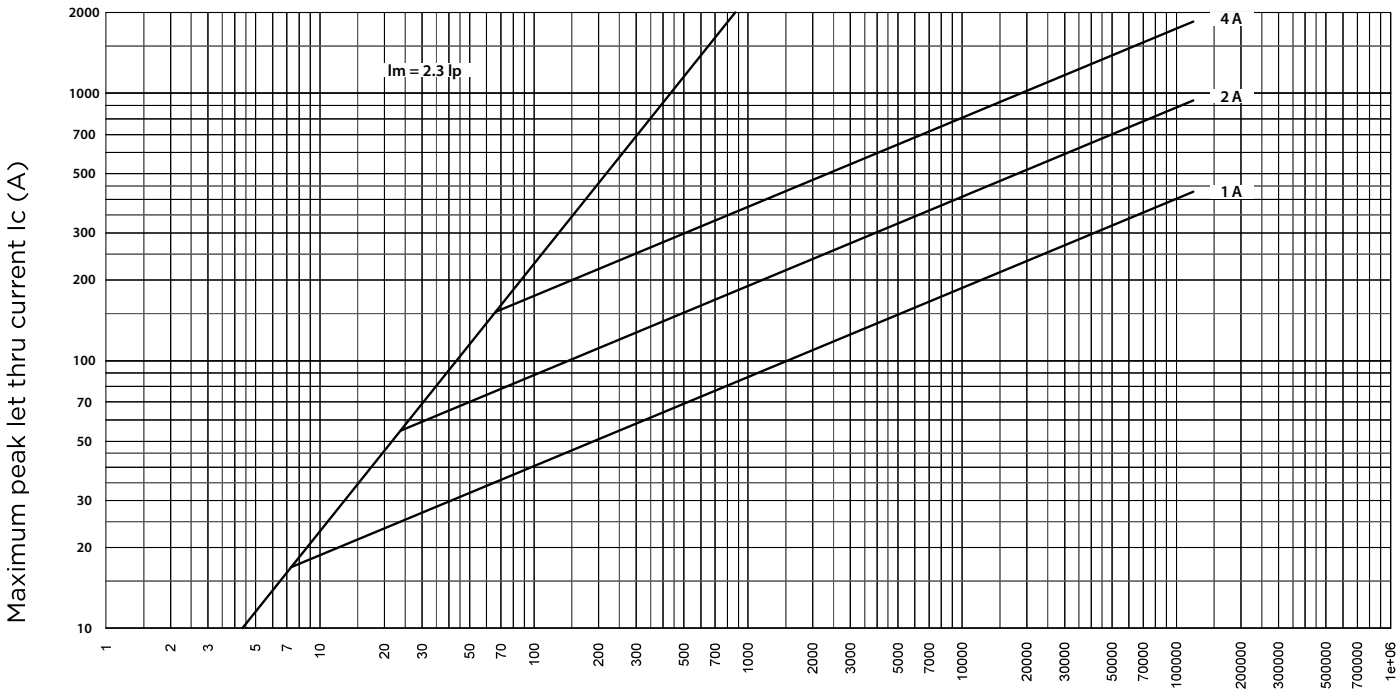


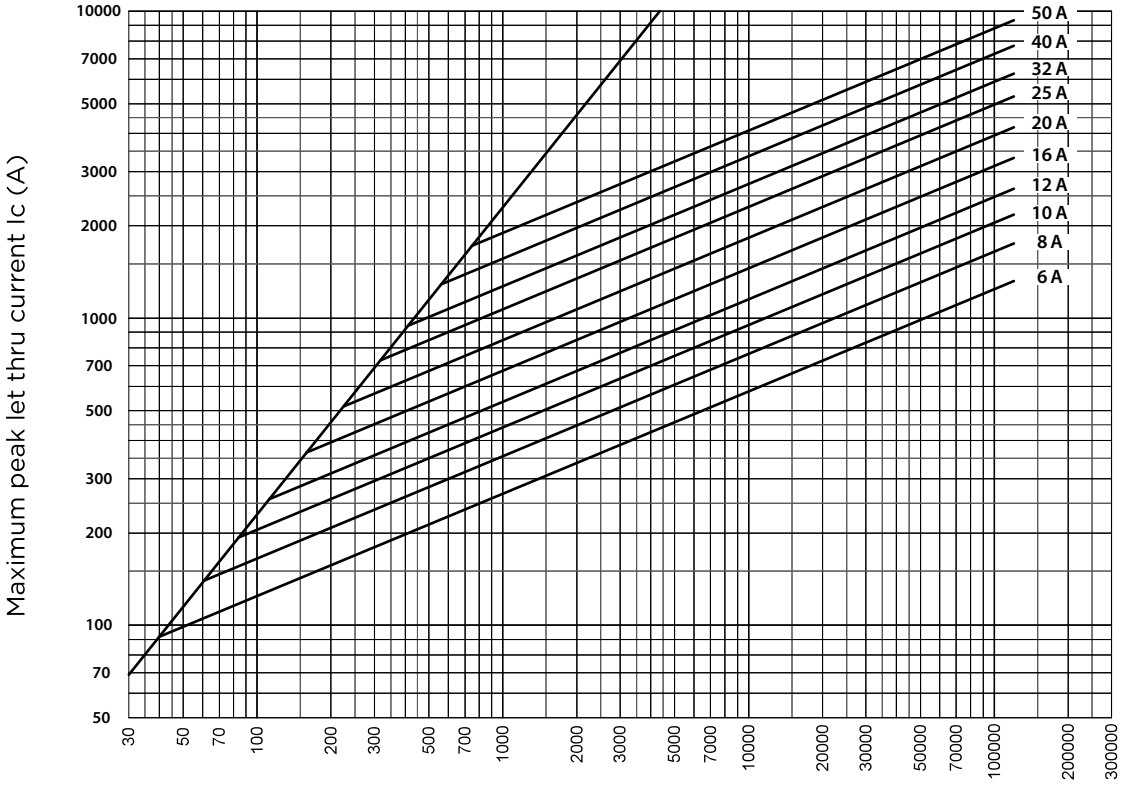


Time current characteristics I/t, CH14 gG

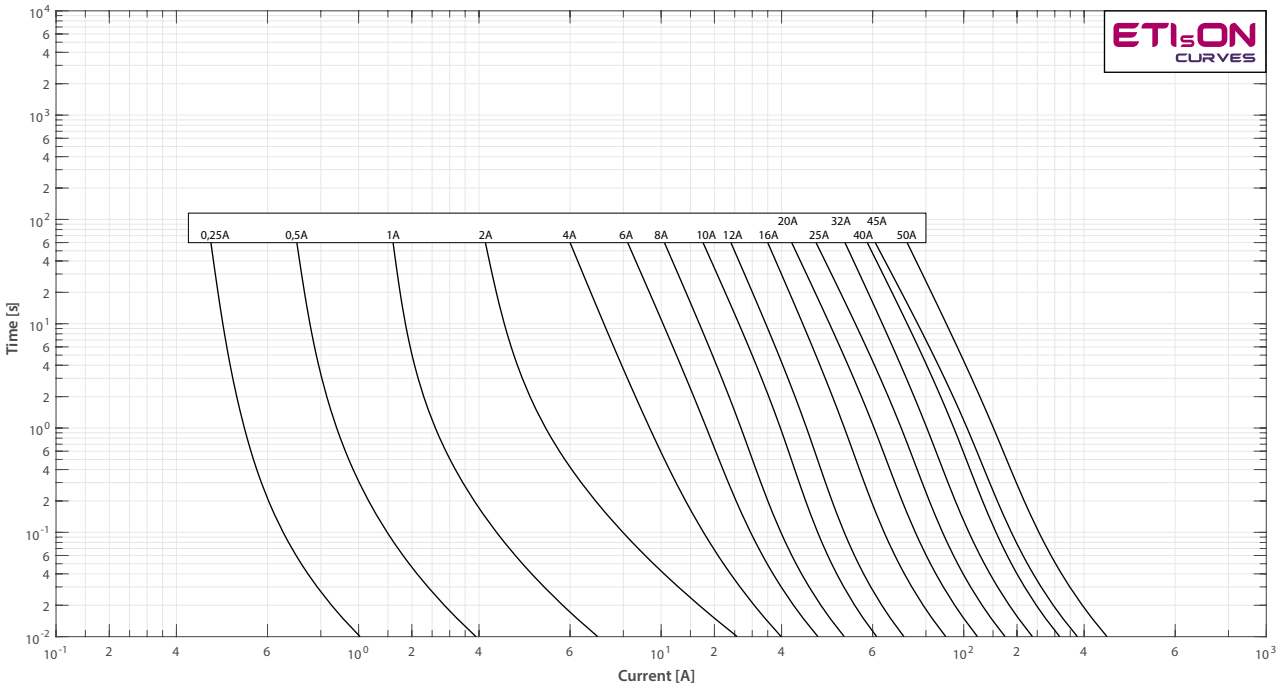


Cut-off current characteristics, CH14 gG

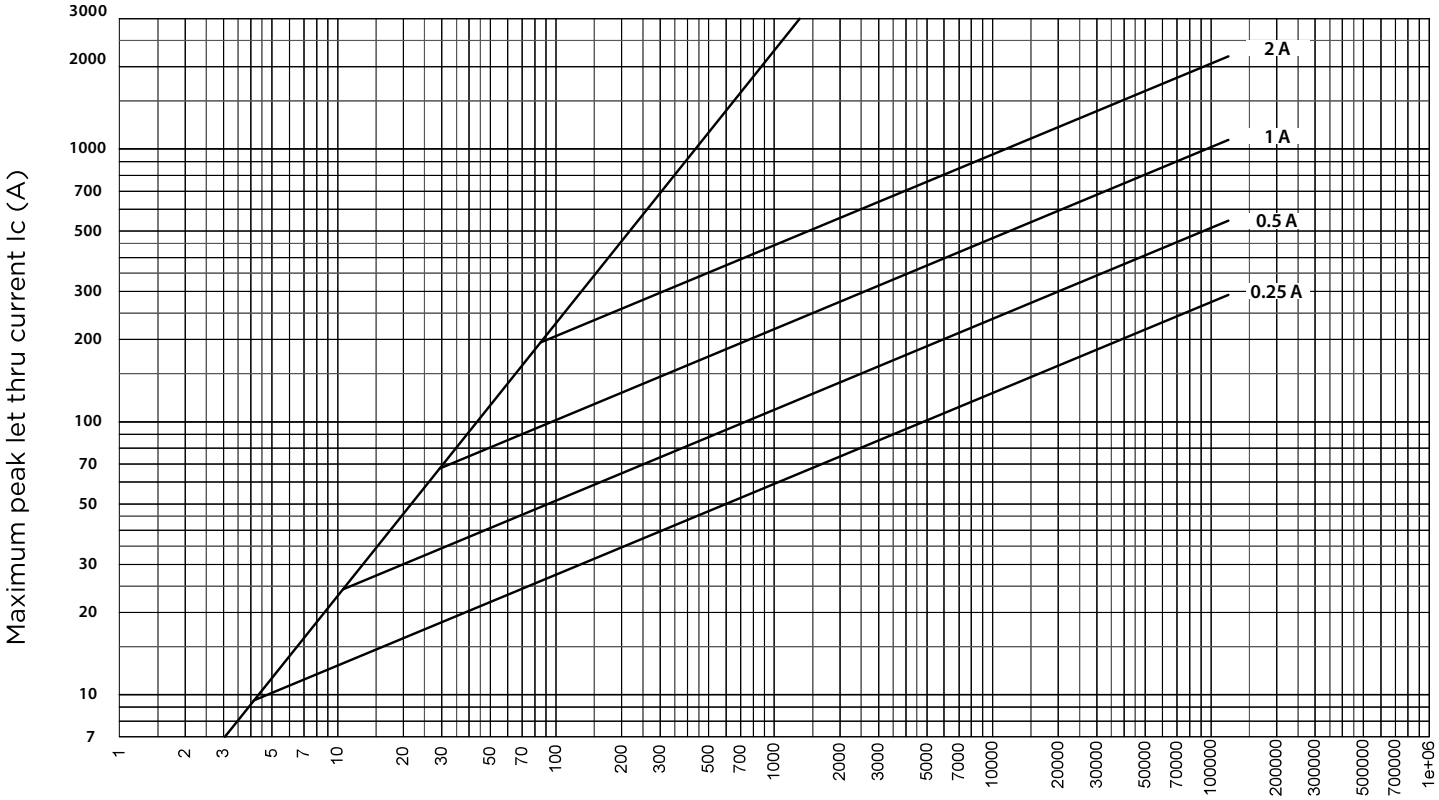


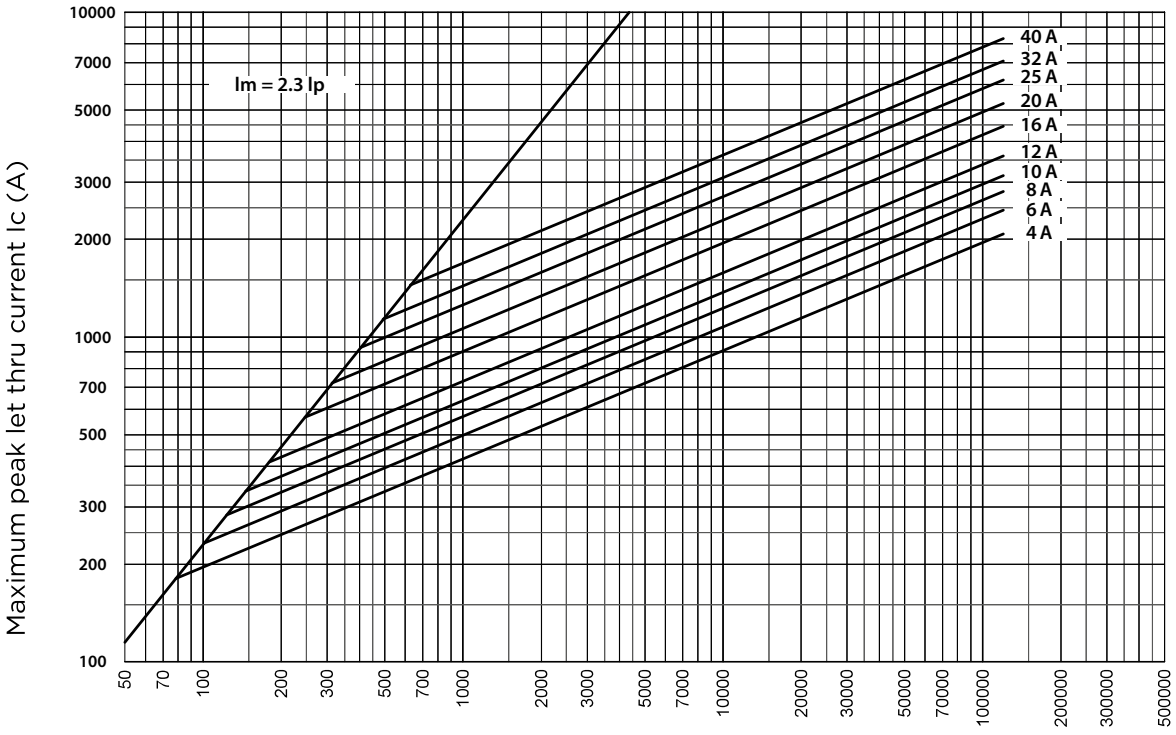


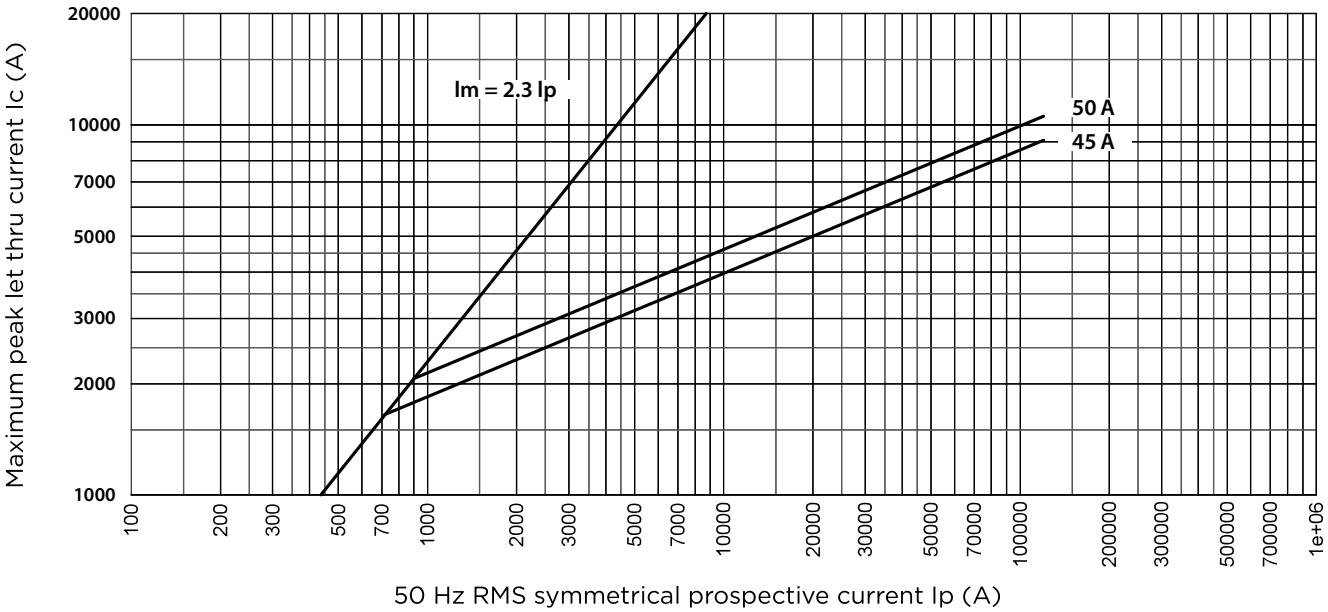
Time current characteristics I/t, CH14 aM



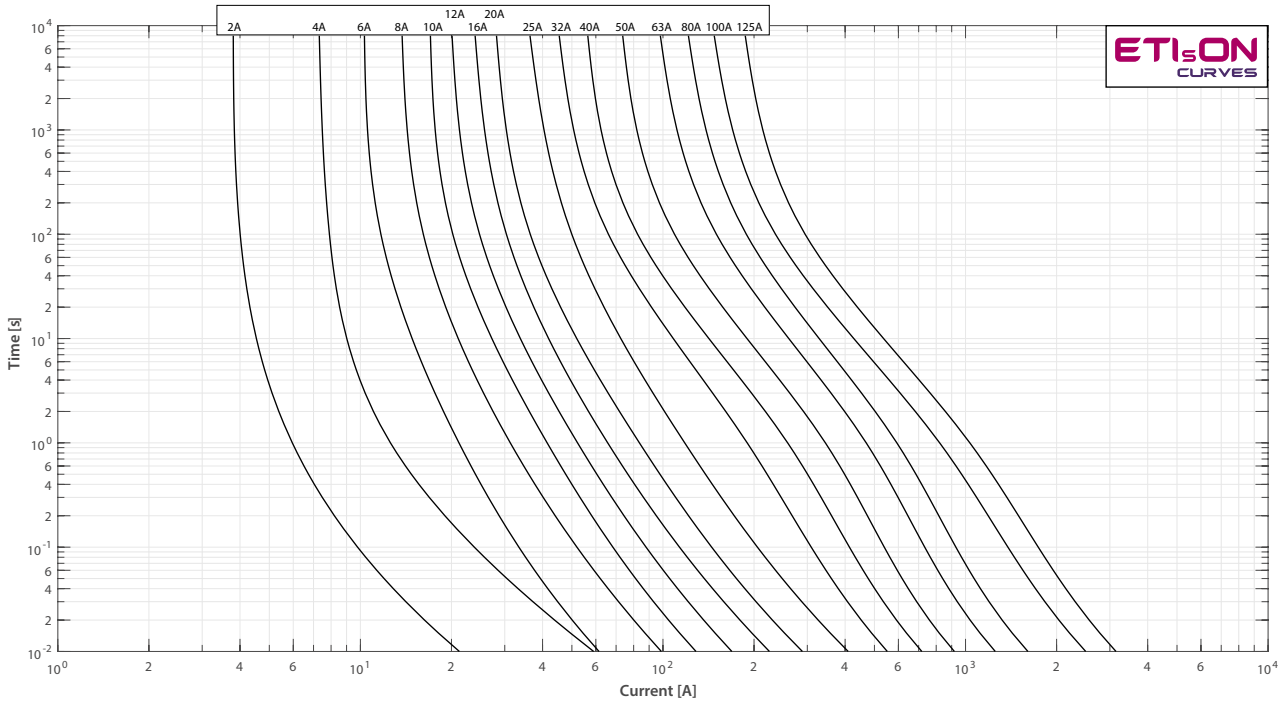
Cut-off current characteristics, CH14 aM



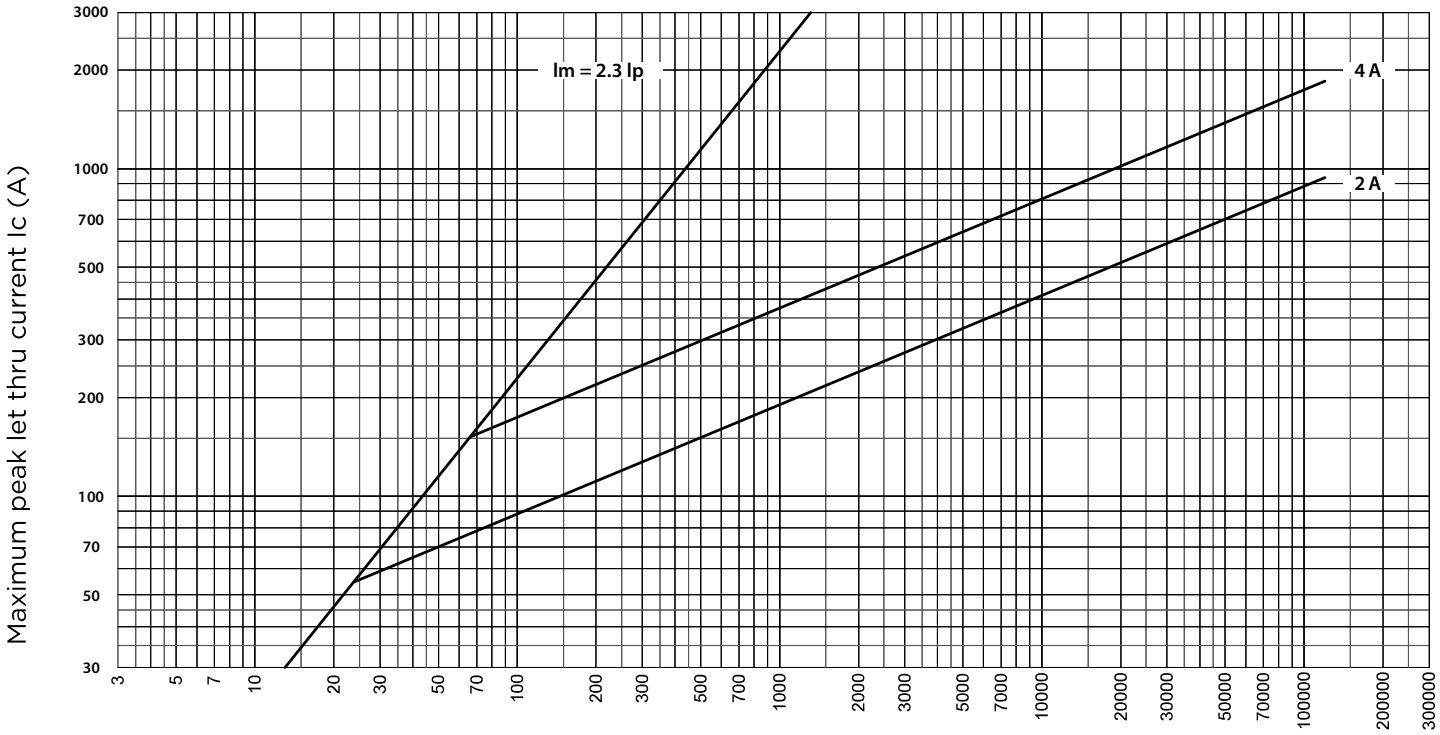


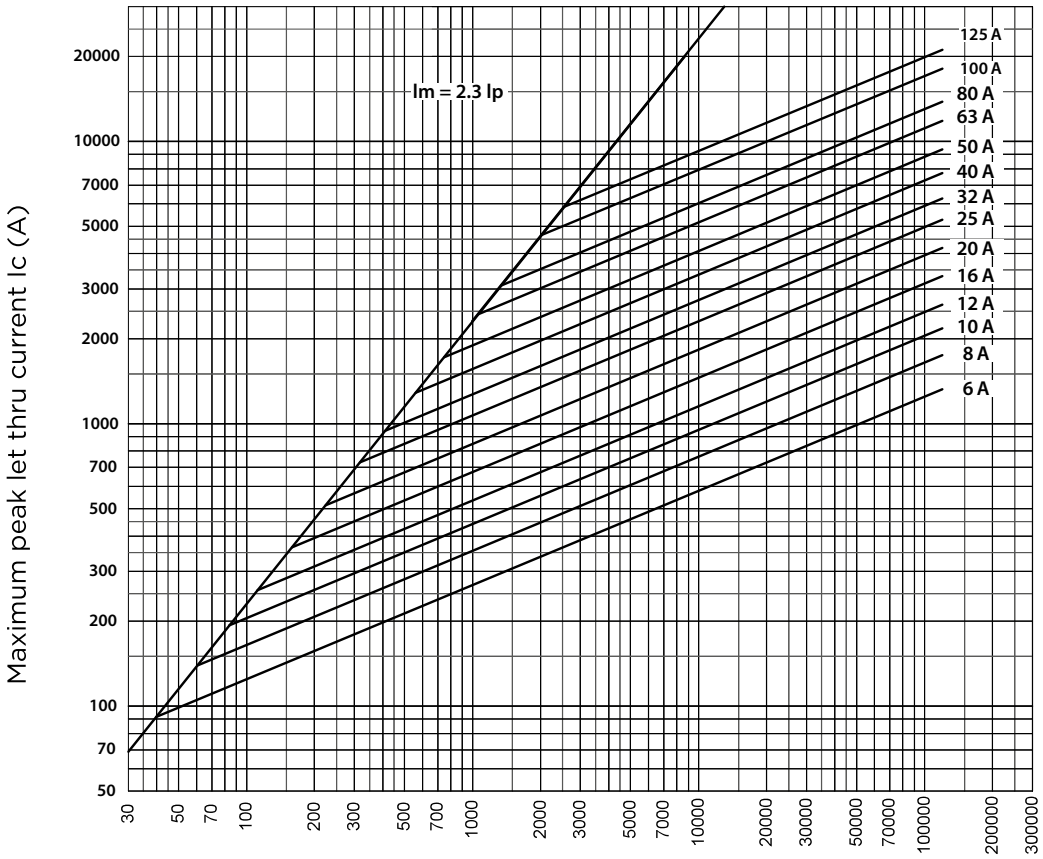


Time current characteristics I/t, CH22 gG

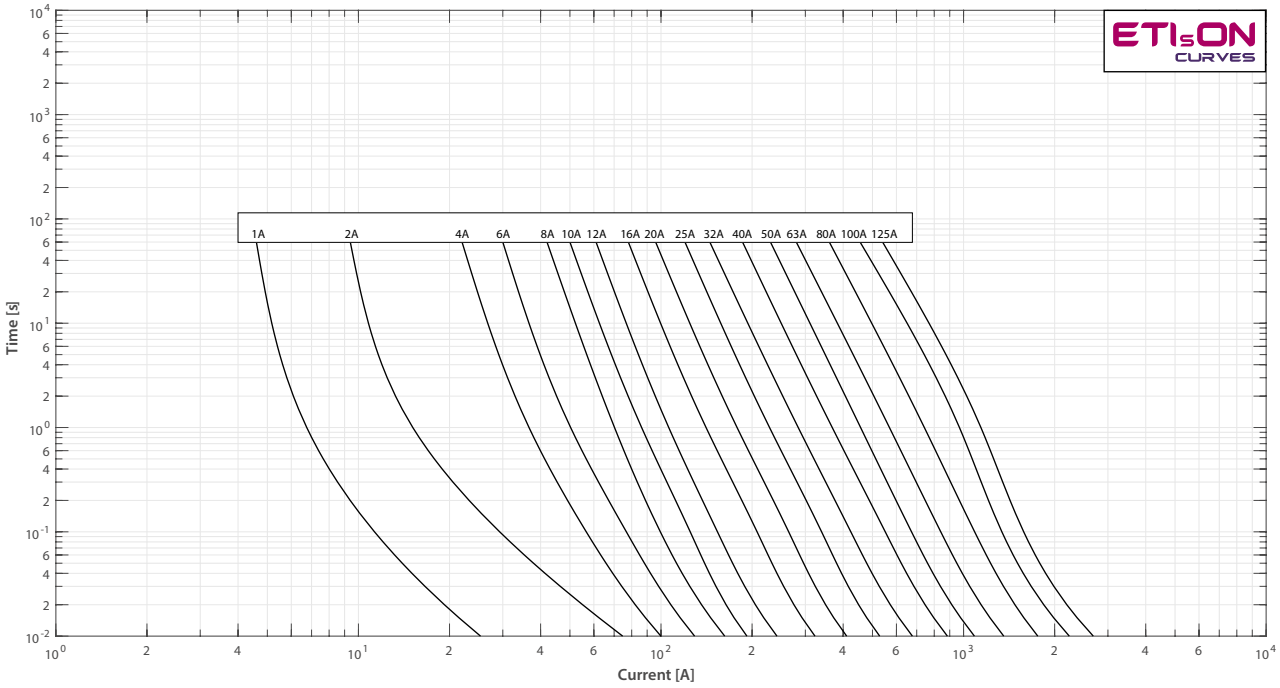


Cut-off current characteristics, CH22 gG

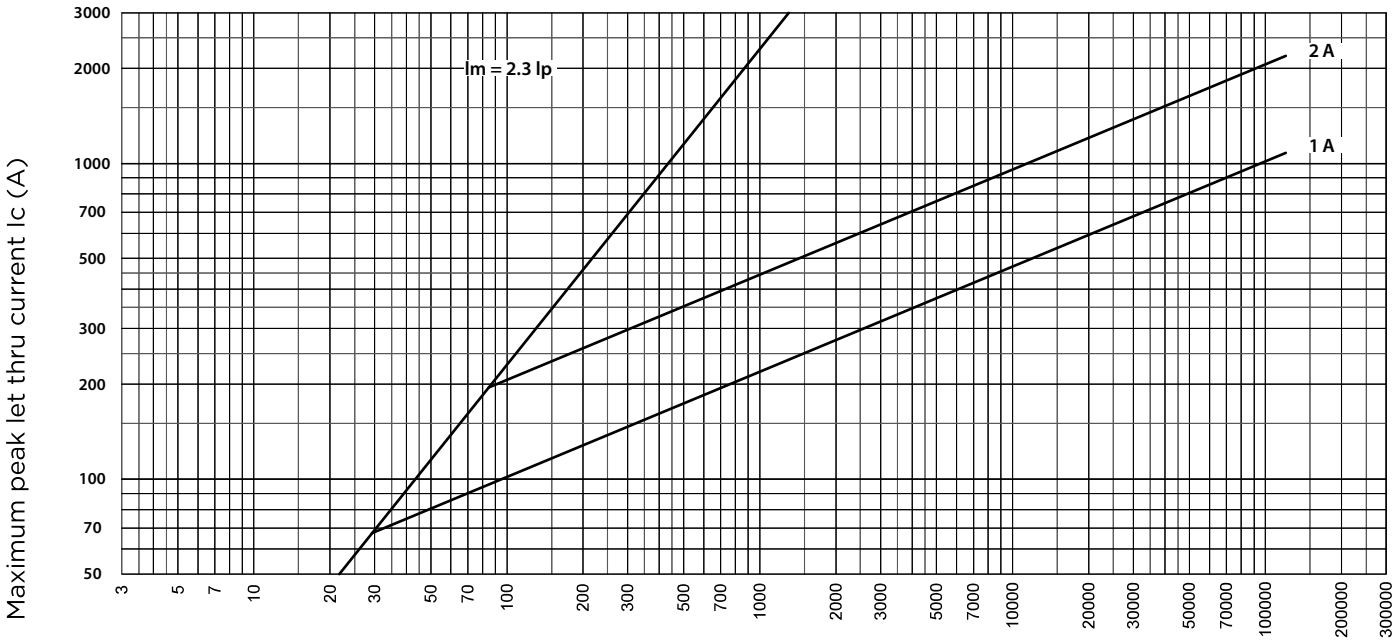


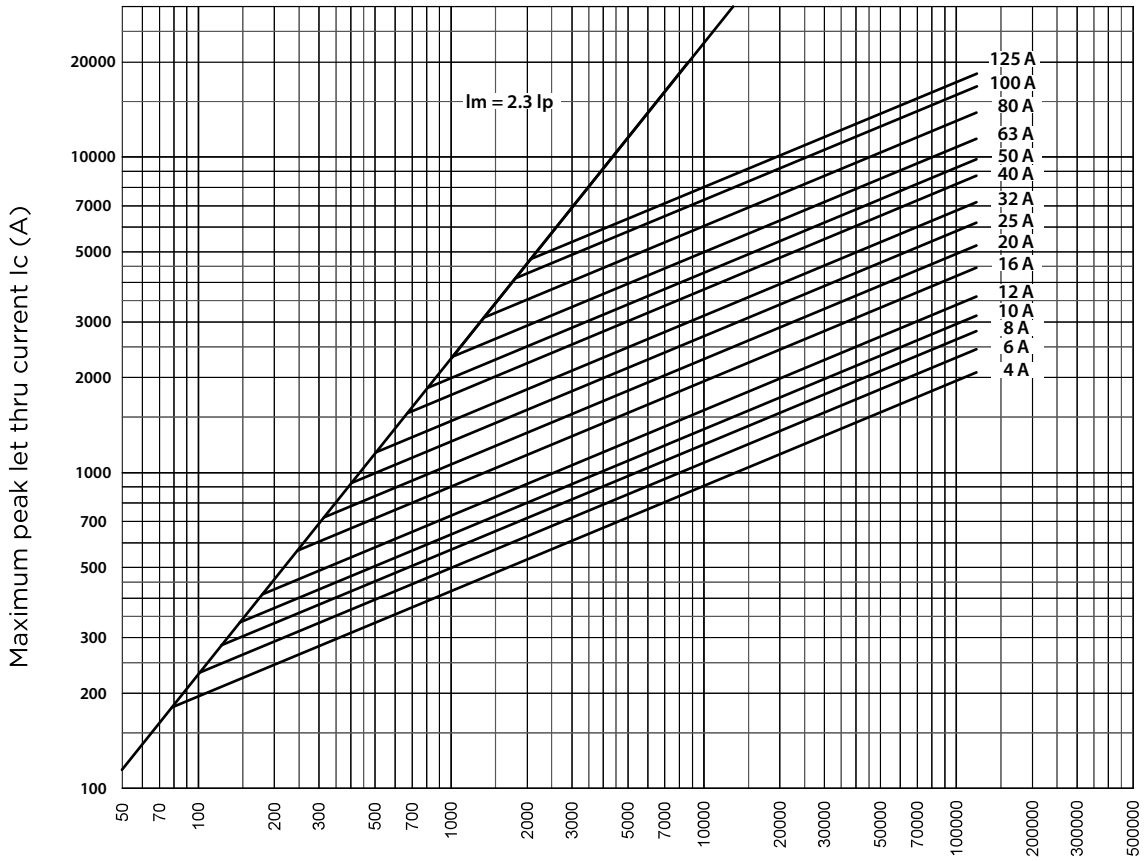


Time current characteristics I/t, CH22 aM



Cut-off current characteristics, CH22 aM




Maximum peak let thru current Ic (A)
20000
10000
7000
5000
3000
2000
1000
700
500
300
200
100
Im = 2.3 Ip
125 A
100 A
80 A
63 A
50 A
40 A
32 A
25 A
20 A
16 A
12 A
10 A
8 A
6 A
4 A
50
70
100
200
300
500
700
1000
2000
3000
5000
7000
10000
20000
30000
50000
70000
100000
200000
300000
500000
50 Hz RMS symmetrical prospective current Ip (A)

C Fuse-switch disconnectors for cylindrical fuse-links

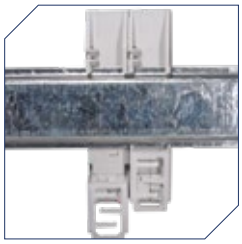
Fuse-switch disconnector PCF

- Extraction of entire fuse-link when changing
- Chamber for spare fuse-link

- 1-pole + N in one module

- LED indicator version

- New method of mounting on the DIN rail and simple replacement



- Double connection clamps

- Sealing possibility

Technical data PCF

		PCF 8	PCF 10	
Fuse type		CH 8x32	CH 10x38	
VLC		IEC	IEC	UL
Versions		Without indicator / LED indicator		
Number of poles		1p, 1p+N, 2p, 3p, 3p+N		1p, 2p, 3p
Rated operational voltage Ue		400V a.c.	690V a.c.	600V a.c./d.c.
Rated operational current Ie		20A	32A	30A
Maximum rated current of fuselinks	690V		10A gG	
	500V		25A gG, 16A aM	
	400V	20A gG, 10A aM	32A gG	
Rated frequency		50Hz	50Hz	60Hz
Rated short-time withstand current Icw		240A	300A	
Rated conditional short-circuit current		50kA	100kA	200kA
Rated insulation voltage Ui		400V	690V	
Rated imp. withstand voltage Uimp		4kV	4kV	
Overvoltage category		III	III	
Max power dissipation of the fuse-link (W)		gG: 2,5W / aM: 0,9W	gG: 3W / aM: 1,2W	
LED indicator operating range		50V-690V a.c.		50V-600V a.c., 80V-600V d.c.
Utilization category		AC-22B	AC-22B	Do not operate under load
Operational performance (cycles with current)		300	300	
Operational performance (cycles without current)		1700	1700	
Humidity		90% at 20°C		
Operating ambient temperature		-5°C ... +40°C		
Store ambient temperature		-25°C ... +55°C		
Degree of protection (IEC 60529)		IP 20	IP 20	
Terminal capacity		0,5-10mm^2, Double connection		20-10 stranded, Cu only
Screw		PZ M4	PZ M4	PZ M4
Torque		1,2Nm	1,2Nm	1,2Nm
Mounting on EN 60715 rail		35mm rail		
Sealing posibility		ON and OFF		
Standards - fuse links		IEC/EN 60269-2		
Standards - fuse disconnectors/ fuse holders		IEC 60947-1, IEC 60947-3		UL 4248-1
Test reports		Int.	CCA/CB	UL
Certificates				$_{C}UR_{US}$

Technical data PCF

		PCF 8	PCF 10	
Fuse type		CH 8x32	CH 10x38	
		IEC	IEC	UL
Derating factor of current I_n for different ambient temperatures	20°	1		
	30°	0,95		
	40°	0,9		
	50°	0,8		
	60°	0,7		
	70°	0,5		
Derating factor of current I_n for side by side mounting fuse holders (nr. of poles)	1-4	1		
	5-6	0,8		
	7-9	0,7		
	≥10	0,6		

Fuse-switch disconnector PCF 8

Rated current	Rated operational voltage	Utilization category
max. 20 A	**400V**	**AC 22B**

1-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
400	20	002530001	-	58	12/108
		002530011	LED		
		*002531001	-	58	12/108
		*002531011	LED		

*Connection clamp on the right side "French version"

1-pole + N

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
400	20	002530002	-	70	12/108
		002530012	LED		
		*002531002	-	70	12/108
		*002531012	LED		

*Connection clamp on the right side, N pole on the left "French version"

2-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
400	20	002530003	-	120	6/54
		002530013	LED		
		*002531003	-	120	6/54
		*002531013	LED		

*Connection clamp on the right side "French version"

3-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
400	20	002530004	-	180	4/36
		002530014	LED		
		*002531004	-	180	4/36
		*002531014	LED		

*Connection clamp on the right side "French version"

3-pole + N

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
400	20	002530005	-	195	4/36
		002530015	LED		
		*002531005	-	195	4/36
		*002531015	LED		

*Connection clamp on the right side, N pole on the left "French version"

Fuse-switch disconnector PCF 10

Rated current	Rated operational voltage	Utilization category
max. 32 A	**690V**	**AC 22B**

1-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
690	32	002550001	-	58	12/108
		002550011	LED		
		*002551001	-	58	12/108
		*002551011	LED		

*Connection clamp on the right side "French version"

1-pole + N

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
400/690	32	002550002	-	70	12/108
		002550012	LED		
		*002551002	-	70	12/108
		*002551012	LED		

*Connection clamp on the right side, N pole on the left "French version"

2-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
690	32	002550003	-	120	6/54
		002550013	LED		
		*002551003	-	120	6/54
		*002551013	LED		

*Connection clamp on the right side "French version"

3-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
690	32	002550004	-	180	4/36
		002550014	LED		
		*002551004	-	180	4/36
		*002551014	LED		

*Connection clamp on the right side "French version"

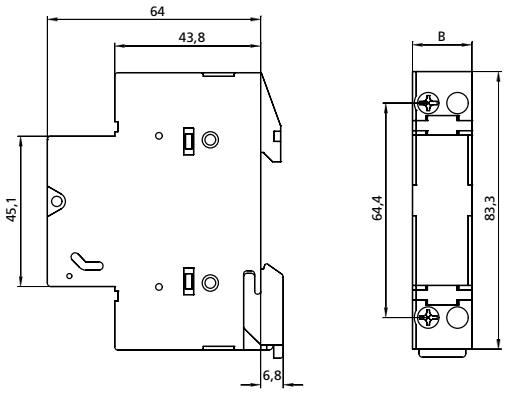
3-pole + N

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
690	32	002550005	-	195	4/36
		002550015	LED		
		*002551005	-	195	4/36
		*002551015	LED		

*Connection clamp on the right side, N pole on the left "French version"

Fuse-switch disconnector PCF 8, PCF 10

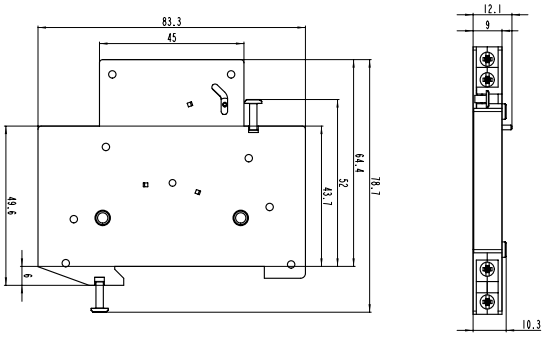
type	dimension B [mm]
PCF 8, 10 1p	17,8
PCF 8, 10 1p+N	17,8
PCF 8, 10 2p	35,6
PCF 8, 10 3p	53,4
PCF 8, 10 3p+N	53,4



Accessories

Auxiliary switch PS PCF

U_n [V]	I_n [A]	Code No. PCF8	Code No. PCF10	g		Contact
230	6	002559001	002559001	35	1/10	1 x b 1 x a/b



Fuse-switch disconnector EFD

- Modular design – it is possible to assemble multi-pole versions at the building site for EFD 8, EFD 10, EFD 14 and EFD 22

- All plastic parts are made of material resistant to extremely high temperatures. Fuse carrier assures that a fuse link is not in touch with a housing

- All contact surfaces are silver plated

- For all sizes a version with electronic indicator is available. L (LED) with built–in LED diode which blinks after the fuse-link operates. The indicator is capable of operating in conditions of open circuit with minimum capacitance between connection cables. Operating voltage range from 50V to 690V.

- Complete protection against touch according to IP20
- Changing of a fuse-link without danger of direct touch of parts under voltage

- More space for finger to open fuse carrier

- Possibility of sealing in ON or OFF positions

- Compliance with IEC 60947-1, IEC 60947-3, UL 4248-1, UL 4248-4, UL 4248-8 and UL 486E

- Mounting on standard DIN 35 mm rail (DIN EN60715). The sizes 22x58 can be also fixed with screws on a flat base

Technical data EFD

		EFD 8	EFD 10	EFD CC		EFD 14		EFD 22		EFD J30
Fuse type		CH 8x32	CH 10x38	Class CC		CH 14x51		CH 22x58		Class J, size J30
		IEC	IEC	UL	UL	IEC	UL	IEC	UL	UL
Versions		Without indicator/LED indicator	Without indicator / LED indicator							
Number of poles		1p, 1p+N, 2p, 3p, 3p+N	1p, 2p, 3p			1p, 1p+N, 2p, 3p, 3p+N	1p, 2p, 3p	1p, 1p+N, 2p, 3p, 3p+N	1p, 2p, 3p	
Rated operational voltage Ue		400V a.c.	690V a.c.	600V a.c./d.c.	600V a.c./d.c.	690V a.c.	600V a.c./d.c.	690V a.c.	600V a.c./d.c.	600V a.c./d.c.
Rated operational current Ie		20A	32A	30A	30A	50A	50A	100A	100A	30A
Maximum rated current of fuselinks	690V		10A gG			25A gG 25A aM		50A gG 50A aM		
	500V		25A gG 16A aM			50A gG		100A gG		
	400V	20A gG 10A aM	32A gG			50A aM		100A aM		
Rated frequency		50Hz	50Hz	60Hz	60Hz	50Hz	60Hz	50Hz	60Hz	60Hz
Rated short-time withstand current Icw		240A	300A/1s			600A/1s		1200A/1s		
Conventional free air thermal current Ith						50A		100A		
Rated conditional short-circuit current		50kA	100kA/400V	100kA	200kA	gG: 120kA/500V (50A gG) aM: 50kA/400V (50A aM)	100kA	gG: 120kA/500V (100A gG) aM: 50kA/400V (100A aM)	100kA	200kA
Rated insulation voltage Ui		400V	690V			690V		690V		
Rated imp. withstand voltage Uimp		8kV	8kV			8kV		8kV		
Overvoltage category (according to Table H.1 in IEC 60947-1 and according to IEC 60099-1)		III	III			III		III		
Max power dissipation of the fuse-link (W)		gG: 2,5W aM: 0,9W	gG: 3W aM: 1,2W		3W	gG: 5W aM: 3W		gG: 9,5W aM: 7W		6W
LED indicator operating range		50V-690V a.c.		50V - 600V a.c. 80V - 600V d.c.		50V-690V a.c.	50V - 600V a.c. 80V - 600V d.c.	50V-690V a.c.	50V - 600V a.c. 80V - 600V d.c.	
NEON indicator operating range		100V-750V a.c.	100V-750V a.c.							
Utilization category		AC-22B	AC-22B	Do not operate under load		AC-22B at 690V/50A	Do not operate under load	AC-21B at 690V/100A	Do not operate under load	
Operational performance (cycles with current)		300	300			300		300		
Operational performance (cycles without current)		1700	1700			1700		1700		
Humidity		90% at 20°C				90% at 20°C		90% at 20°C		
Operating ambient temperature		-5°C ... +40°C				-5°C ... +40°C		-5°C ... +40°C		
Store ambient temperature		-25°C ... +55°C				-25°C ... +55°C		-25°C ... +55°C		
Degree of protection (IEC 60529)		IP 20	IP 20			IP 20		IP 20		
Terminal capacity		1-25mm^2	1-25mm^2	AWG 18-8 solid&stranded Cu only		1,5-35mm^2 rigid or flexible	AWG 16-6 solid&stranded Cu only	4-50mm^2 rigid or flexible	AWG 12-2 solid&stranded Cu only	
Screw		PZ M5	PZ M5	PZ M5	PZ M5	PZ M5	PZ M5	PZ M6	PZ M6	PZ M6
Torque		2Nm	2Nm	2Nm; 17,7 lb-in		2,5-3Nm	2Nm; 17,7 lb-in	3Nm	3Nm; 26,6 lb-in	
Mounting on EN 60715 rail		35mm rail								
Sealing posibility		ON and OFF								
Standards - fuse links		IEC/EN 60269-2	IEC/EN 60269-2	IEC/EN 60269-2	UL 248-4 IEC/EN 60269-2	IEC/EN 60269-2	IEC/EN 60269-2	IEC/EN 60269-2	IEC/EN 60269-2	UL 248-8 IEC/EN 60269-2
Standards - Fuse-switch disconnectors/fuse holders		IEC 60947-1 IEC 60947-3		UL 4248-1 UL 4248-4 UL 486E		IEC 60947-1 IEC 60947-3	UL 4248-1 UL 486E	IEC 60947-1 IEC 60947-3	UL 4248-1 UL 486E	UL 4248-1 UL 4248-8 UL 486E
Test reports		CCA/CB	CCA/CB	UL	UL	CCA/CB	UL	CCA/CB	UL	UL
Certificates				$_{c}UR_{us}$	$_{c}UL_{us}$		$_{c}UR_{us}$		$_{c}UR_{us}$	$_{c}UL_{us}$

Technical data EFD

		EFD 8	EFD 10		EFD CC	EFD 14		EFD 22		EFD J30
Fuse type		CH 8x32	CH 10x38		Class CC	CH 14x51		CH 22x58		Class J, size J30
		IEC	IEC	UL	UL	IEC	UL	IEC	UL	UL
Derating factor of current I_n for different ambient temperatures	20^0	1								
	30^0	0,95								
	40^0	0,9								
	50^0	0,8								
	60^0	0,7								
	70^0	0,5								
Derating factor of current I_n for side by side mounting fuse holders (nr. of poles)	1-4	1								
	5-6	0,8								
	7-9	0,7								
	≥10	0,6								

Fuse-switch disconnector EFD 8

Rated current	Rated operational voltage	Utilization category	For fuse-links size
max. 20 A	**400 V**	**AC 22B**	**8x32**

1-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	Adapter	g	
400	20	002520001	-		63	12/108
		002520011	L-LED		64	
		002520301	-	✓	68	
		002520311	L-LED	✓	69	

1-pole + N

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	Adapter	g	
400	20	002520002	-		128	6/54
		002520012	L-LED		129	
		002520302	-	✓	138	
		002520312	L-LED	✓	139	
		*002520007	-		128	
		*002520017	L-LED		129	
		*002520307	-	✓	138	
		*002520317	L-LED	✓	139	

*N pole on left "French version"

2-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	Adapter	g	
400	20	002520003	-		123	6/54
		002520013	L-LED		125	
		002520303	-	✓	134	
		002520313	L-LED	✓	135	

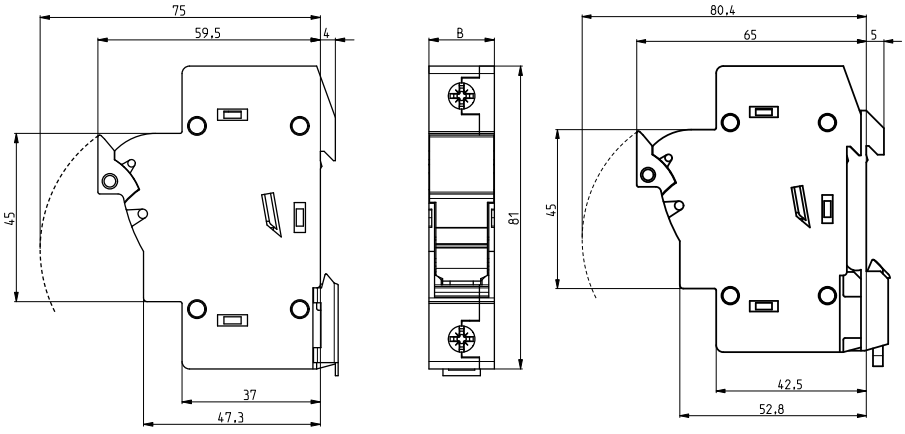
3-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	Adapter	g	
400	20	002520004	-		184	4/36
		002520014	L-LED		186	
		002520304	-	✓	200	
		002520314	L-LED	✓	201	

3-pole + N

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	Adapter	g	
400	20	002520005	-		252	3/27
		002520015	L-LED		254	
		002520305	-	✓	273	
		002520315	L-LED	✓	274	
		*002520008	-		252	
		*002520018	L-LED		254	
		*002520308	-	✓	273	
		*002520318	L-LED	✓	274	

*N pole on left "French version"



Version with adapter

Fuse-switch disconnector EFD 8

type	dimension B
EFD 8 1p	17,5
EFD 8 1p+N	35
EFD 8 2p	35
EFD 8 3p	52,5
EFD 8 3p+N	70

Fuse-switch disconnector EFD 10

Rated current	Rated operational voltage	Utilization category	For fuse-links size
max. 32 A	**690 V**	**AC 22B**	**10x38**

1-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	Adapter	g	
690	32	002540001	-		63	12/108
		002540011	L-LED		64	
		002540301	-	✓	68	
		002540311	L-LED	✓	69	

1-pole + N

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	Adapter	g	
400/690	32	002540002	-		128	6/54
		002540012	L-LED		129	
		002540302	-	✓	138	
		002540312	L-LED	✓	139	
		*002540007	-		128	
		*002540017	L-LED		129	
		*002540307	-	✓	138	
		*002540317	L-LED	✓	139	

*N pole on left "French version"

2-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	Adapter	g	
690	32	002540003	-		123	6/54
		002540013	L-LED		125	
		002540303	-	✓	134	
		002540313	L-LED	✓	135	

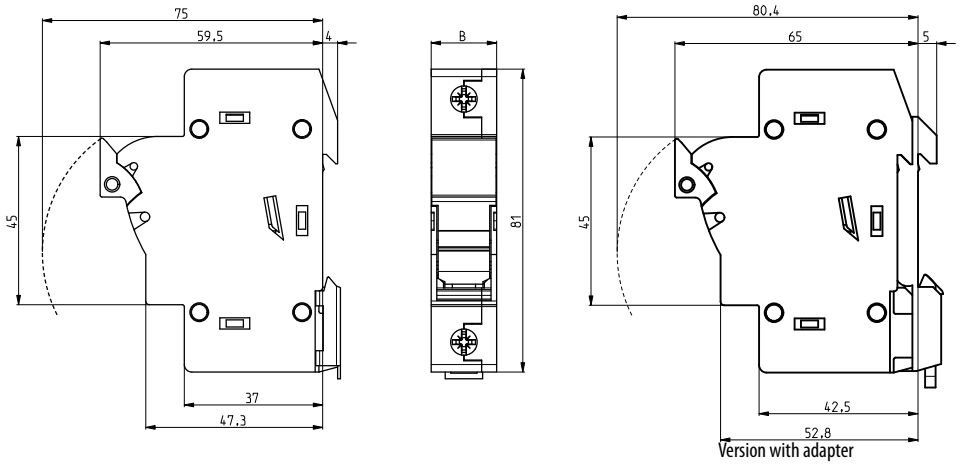
3-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	Adapter	g	
690	32	002540004	-		184	4/36
		002540014	L-LED		186	
		002540304	-	✓	200	
		002540314	L-LED	✓	201	

3-pole + N

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	Adapter	g	
690	32	002540005	-		252	3/27
		002540015	L-LED		254	
		002540305	-	✓	273	
		002540315	L-LED	✓	274	
		*002540008	-		252	
		*002540018	L-LED		254	
		*002540308	-	✓	273	
		*002540318	L-LED	✓	274	

*N pole on left "French version"



Version with adapter

Fuse-switch disconnector EFD 10

type	dimension B
EFD 10 1p	17,5
EFD 10 1p+N	35
EFD 10 2p	35
EFD 10 3p	52,5
EFD 10 3p+N	70

Fuse-switch disconnector EFD CC

Rated current	Rated operational voltage	For fuse-links
max. 30 A	**600 V**	**Class CC acc to UL4248-4**

1-pole

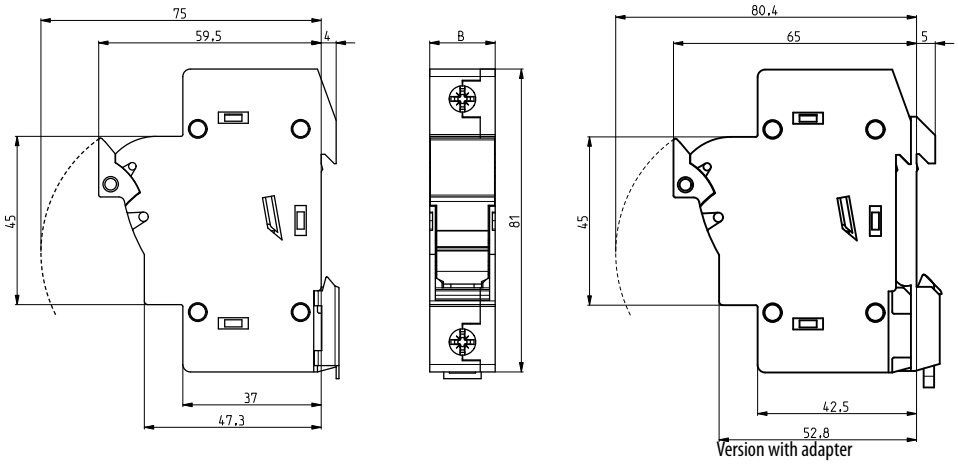
U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	Adapter	g	
600	30	002540101	-		63	12/108
		002540111	L-LED		64	
		002540401	-	✓	68	
		002540411	L-LED	✓	69	

2-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	Adapter	g	
600	30	002540103	-		123	6/54
		002540113	L-LED		125	
		002540403	-	✓	134	
		002540413	L-LED	✓	135	

3-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	Adapter	g	
600	30	002540104	-		184	4/36
		002540114	L-LED		186	
		002540404	-	✓	199	
		002540414	L-LED	✓	201	



Fuse-switch disconnector EFD CC

type	dimension
	B
EFD CC 1p	17,5
EFD CC 2p	35
EFD CC 3p	52,5

Fuse-switch disconnector EFD 14

Rated current	Rated operational voltage	Utilization category	For fuse-links size
max. 50 A	**690 V**	**AC 22B**	**14x51**

1-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
690	50	002560001	-	102	12/96
		002560011	L-LED	103	

1-pole + N

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
690	50	002560002	-	226	6/48
		002560012	L-LED	227	
		*002560007	-	226	
		*002560017	L-LED	227	

*N pole on left "French version"

2-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
690	50	002560003	-	206	6/48
		002560013	L-LED	208	

3-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
690	50	002560004	-	310	4/32
		002560014	L-LED	313	

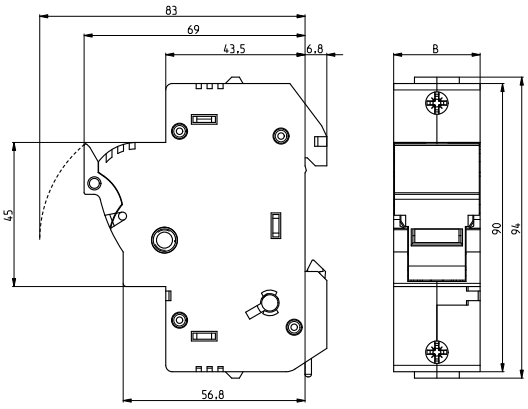
3-pole + N

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
690	50	002560005	-	434	3/24
		002560015	L-LED	437	
		*002560008	-	434	
		*002560018	L-LED	437	

*N pole on left "French version"

Fuse-switch disconnector EFD 14

type	dimension B
EFD 14 1p	27
EFD 14 1p+N	54
EFD 14 2p	54
EFD 14 3p	81
EFD 14 3p+N	108



Fuse-switch disconnector EFD 22

For fuse-links size	Rated current	Rated operational voltage	Utilization category
22x58	**max. 100 A**	**690 V**	**AC 21B**

1-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
690	100	002570001	-	156	3/105
		002570011	L-LED	158	

1-pole + N

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
690	100	002570002	-	351	2/48
		002570012	L-LED	353	
		*002570007	-	351	
		*002570017	L-LED	353	

*N pole on left "French version"

2-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
690	100	002570003	-	317	2/48
		002570013	L-LED	321	

3-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
690	100	002570004	-	476	1/35
		002570014	L-LED	485	

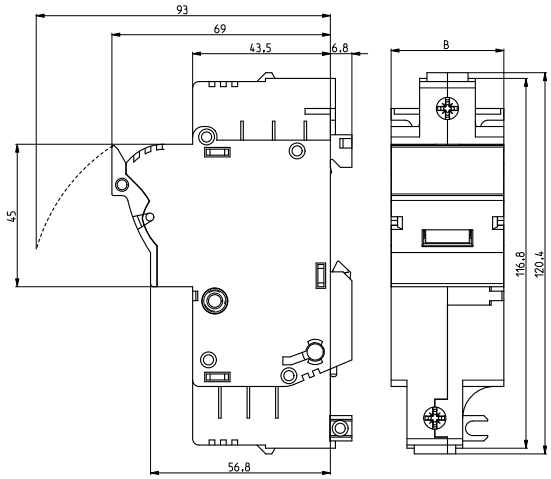
3-pole + N

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	Weight g [g]	Packaging [pcs]
690	100	002570005	-	671	1/24
		002570015	L-LED	677	
		*002570008	-	671	
		*002570018	L-LED	677	

*N pole on left "French version"

Fuse-switch disconnector EFD 22 & EFD J30

type	dimension B
EFD 22, J30 1p	35,6
EFD 22 1p+N	71,2
EFD 22, J30 2p	71,2
EFD 22, J30 3p	106,8
EFD 22 3p+N	142,4



Fuse-switch disconnector EFD J30

Rated current **max. 30 A** | Rated operational voltage **600 V** | For fuse-links **Class J acc to UL4248-8**

1-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
600	30	002570101	-	156	3/105
		002570111	L-LED	158	

2-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
600	30	002570103	-	317	2/48
		002570113	L-LED	321	

3-pole

U_e/U_i [V]	I_{max} [A]	Code No.	Indicator	g	
600	30	002570104	-	476	1/35
		002570114	L-LED	485	

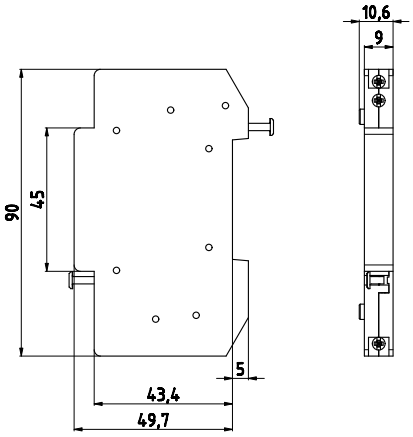
Accessories

Auxiliary switch PS EFD is intended to be mounted with disconnectors EFD 14 and EFD 22 for all versions (1p, 2p, 1p+N, 3p, 3p+N). The width of apparatus is 9 mm, other dimensions comply with EFD 14 and EFD 22 series switches. Auxiliary switch PS EFD signals the operation of CH14 or CH 22 fuse-links only in the case a fuse-link is fitted with striking pin - see IEC 60 269-2 Figure 1a (III).

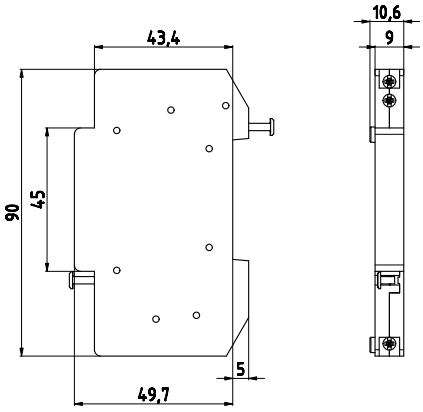
Auxiliary switch PS EFD

U_n [V]	I_n [A]	Code No. EFD14	Code No. EFD22	g		Contact
250	5	002569001	002579001	50	1/10	1 x make 1 x break

PS EFD 14



PS EFD 22



Connection kit

Description	Code No.	For use with	g	
Connection kit 2p	002540948	EFD 8, EFD 10, EFH 10, PCF 8, PCF 10	96	1*/20
Connection kit 3p	002540949	EFD 8, EFD 10, PCF 8, PCF 10	162	1*/20
Connection kit 2p	002560948	EFD 14, EFH 14	144	1*/20
Connection kit 3p	002560949	EFD 14	217	1*/20
Connection kit 2p	002570948	EFD 22, EFD J30	191	1*/20
Connection kit 3p	002570949	EFD 22, EFD J30	300	1*/20

*Note: 1 kit suffices for the assembly of 50 sets

NV/NH

Low Voltage NH Knife-Blade Fuses

Low Voltage Knife-Blade Fuse-Links **818**

Fuse Bases **864**

Accessories **883**

Low Voltage Fuse-Rails **886**

Strip Type Fuse-Switch-Disconnectors **896**

NV/NH Disconnectors With Fuses **908**

HR

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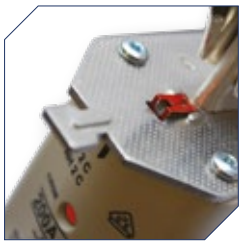
SWITCH TO
A SAFE FUTURE

NV/NH Low Voltage NH Knife-Blade Fuse-Links



Two trip indicators: a red front window (KOMBI series) and a spring-loaded mechanism for use with a microswitch.

Microswitch: A mechanism equipped with a changeover contact, designed for remote signaling of the fuse status.

ETIsON software enables analysis of protective devices' time-current curves, considering selectivity.

The fuse body is made of steatite, a thermally resistant material. Blade contacts are crafted from brass or copper with silver plating. End cover plates are aluminum, ensuring long-term corrosion resistance. The body is filled with specially graded quartz sand, providing high breaking capacity and stable protection parameters.

Fuse blades are silver-plated and cone-shaped, allowing for easier installation in the fuse base with reduced force.

NH4 fuses feature specially designed contact blades for secure fixation with a bolted connection.

Fuses with insulated covers provide additional protection against contact with live parts.

Fuses with striker pin are used in KVL and HVL disconnectors equipped with a microswitch for remote fuse status monitoring.

The removable handle is designed for installing or replacing fuses.

NV/NH KOMBI advantages

ETI is offering compleate range of low-voltage fuse-links from size NV00C up to NV3 with new, dual indication of fuse-link operation, called KOMBI. The indicator is easily visible on the top and centre of the fuse-link, whether it is situated in a standard fuse base or vertical fuse rail or in fuse-switch disconnector.

The most important advantages of NV/NH KOMBI fuse-links:

- High breaking capacity up to 120 kA
- Rated voltages: 400 V a.c., 500 V a.c., 690 V a.c.
- Two versions of covers: aluminium, when the gripping lug is under voltage and plastic, when insulated metal gripping lug is incorporated into the plastic cover
- VDE certificates and CCA/CB test reports
- Visual trip indicator: red window on the front of the housing (KOMBI series) with red window indicating OK and white window indicating a fault.
- NH000 and NH C fuses have reduced dimensions while maintaining all technical and electrical characteristics.
- Low power loss.
- High current-limiting capability.
- Stable time-current and selectivity characteristics.
- Support selective protection schemes with circuit breakers.

General about NV/NH fuse-links

Their dimensions correspond with IEC 60269 and DIN 43620, other technical characteristics correspond with the requirements of the following standards:

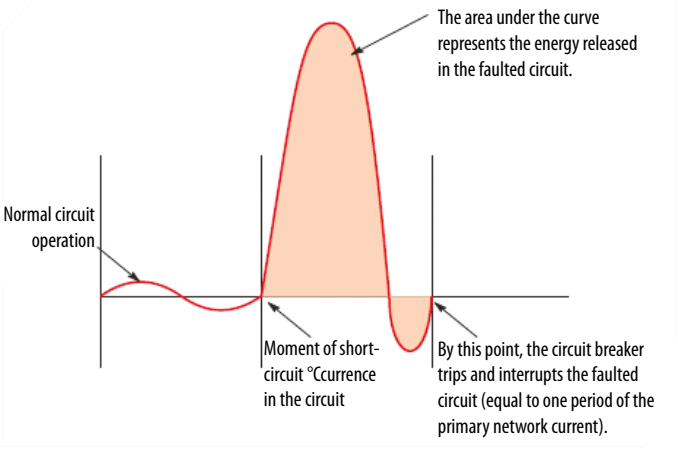
- Rated voltage 400V/500V/ 690V/gG: IEC 60269-1, IEC 60269-2
- Rated voltage 690V/aM: IEC 60269-2
- Rated voltage 400V/gF: PN-IEC 60269-2
- Rated voltage 400V/gTr: VDE 0636-21

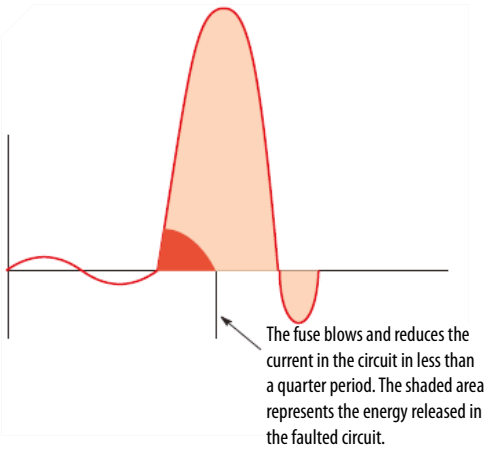
Short description of constituent parts for NV/NH fuse-links

The body of the fuse-link is made of quality steatite which is highly resistant against temperature overloads and pressure at high short circuit currents.

In the inner part of the steatite body there is a copper melting element which is welded on a specially shaped fastener of the contact knife by spot welding. By careful shaping of fastener we achieved that during assembly the melting element is placed exactly into the middle of the inner place. The remaining inside place of the ceramic body is filled up with precisely determined granulation and chemical structure quartz sand. All contact knives are additionally protected with a layer of silver or on special order of nickel. On the base of cyclic tests we have proved that the fusing characteristics are very stable and the tolerance on the current axis can be up to ± 10%.

Time-current diagram of a short-circuit in a circuit protected by a circuit breaker and a fuse.





Fuse-link NV/NH gG

Rated current	Breaking capacity	Rated voltage
2-1600 A	**120 kA / 100 kA**	**400, 500, 690 V**

WATCH THE VIDEO

NH fuse-link installation guide with the use of a replacement handle.

Electrical characteristics

Rated voltage Un	400 V AC, 500 V AC, 690 V AC
Rated current In	2 - 1600 A
Breaking capacity Un	120 kA, 100 kA, 50 kA
Melting characteristic	gG, aM, gF, gTr
Certified	DIN VDE0636-201 (1998-06)
In accordance with	IEC 60269-1, IEC60269-2
Dimensions according to	IEC 60269, DIN43620
Two versions of covers	aluminium and plastic

NV/NH 00C KOMBI gG

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	Korrosionsfest ~ 400V 100 kA	g	
2	004181101	004181201	004181301	004181118	120	3/120
4	004181102	004181202	004181302	004181119	120	3/120
6	004181103	004181203	004181303	004181120	120	3/120
10	004181104	004181204	004181304	004181121	120	3/120
16	004181105	004181205	004181305	004181122	120	3/120
20	004181106	004181206	004181306	004181123	120	3/120
25	004181107	004181207	004181307	004181138	120	3/120
32	004181108	004181208	004181308	004181139	120	3/120
35	004181109	004181209	004181309	004181140	120	3/120
40	004181110	004181210	004181310	004181141	120	3/120
50	004181111	004181211	004181311	004181142	120	3/120
63	004181112	004181212	004181312	004181143	120	3/120
80	004181113	004181213		004181130	120	3/120
100	004181114	004181214		004181131	120	3/120
125	004181217	004181215			120	3/120
160	004181216				120	3/120

NV/NH 00 CI KOMBI gG*

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	g	
2	004191101	004191201	004191301	120	3/120
4	004191102	004191202	004191302	120	3/120
6	004191103	004191203	004191303	120	3/120
10	004191104	004191204	004191304	120	3/120
16	004191105	004191205	004191305	120	3/120
20	004191106	004191206	004191306	120	3/120
25	004191107	004191207	004191307	120	3/120
32	004191108	004191208	004191308	120	3/120
35	004191109	004191209	004191309	120	3/120
40	004191110	004191210	004191310	120	3/120
50	004191111	004191211	004191311	120	3/120
63	004191112	004191212	004191312	120	3/120
80	004191113	004191213		120	3/120
100	004191114	004191214		120	3/120
125				120	3/120
160				120	3/120

* INSULATED

NV/NH 00 C gG with striker pin

Rated current [A]	Code No. ~ 690 V 100 kA	g	
2	004111172	130	3
4	004111173	130	3
6	004111174	130	3
10	004111175	130	3
16	004111176	130	3
20	004111177	130	3
25	004111178	130	3
32	004111179	130	3
35	004111180	130	3
40	004111181	130	3

NV/NH 00 KOMBI gG

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	Korrosionsfest ~ 400V 120 kA	g	
6		004182203			170	3/90
10		004182204			170	3/90
16		004182205			170	3/90
20		004182206			170	3/90
25		004182207			170	3/90
32		004182208			170	3/90
35		004182209			170	3/90
40		004182210			170	3/90
50		004182211	004182311		170	3/90
63		004182212	004182312		170	3/90
80	004182113	004182213	004182313		170	3/90
100	004182114	004182214	004182314		170	3/90
125	004182115	004182215	004182315	004182118	170	3/90
160	004182116	004182216		004182119	170	3/90

NV/NH 00 I KOMBI gG*

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	g	
6		004192203		170	3/90
10		004192204		170	3/90
16		004192205		170	3/90
20		004192206		170	3/90
25		004192207		170	3/90
32		004192208		170	3/90
35		004192209		170	3/90
40		004192210		170	3/90
50		004192211	004192311	170	3/90
63		004192212	004192312	170	3/90
80		004192213	004192313	170	3/90
100		004192214	004192314	170	3/90
125	004192115	004192215	004192315	170	3/90
160	004192116	004192216		170	3/90

* INSULATED

NV/NH 00 gG with striker pin

Rated current [A]	Code No. ~ 500 V 120 kA~	Code No. ~ 690 V 100 kA~	g	
50		004111182	200	3
63		004111183	200	3
80		004111184	200	3
100		004111185	200	3
125		004111186	200	3
160	004111187		200	3

NV/NH 0 KOMBI gG

Rated current [A]	Code No. ~ 500 V 120 kA	Code No. ~690 V 100 kA	g	
6	004183203	004183303	235	3/45
10	004183204	004183304	235	3/45
16	004183205	004183305	235	3/45
20	004183206	004183306	235	3/45
25	004183207	004183307	235	3/45
32	004183208	004183308	235	3/45
35	004183209	004183309	235	3/45
40	004183210	004183310	235	3/45
50	004183211	004183311	235	3/45
63	004183212	004183312	235	3/45
80	004183213	004183313	235	3/45
100	004183214	004183314	235	3/45
125	004183215	004183315	235	3/45
160	004183216		235	3/45

NV/NH 1C KOMBI gG

Rated current [A]	Code No. ~ 400V 120 kA	Code No. ~ 500V 120 kA	Code No. ~ 690V 100 kA	Korrosionsfest ~ 400V 120 kA	g	
6	004184103	004184203	004184303		245	3/45
10	004184104	004184204	004184304		245	3/45
16	004184105	004184205	004184305		245	3/45
20	004184106	004184206	004184306		245	3/45
25	004184107	004184207	004184307	004184131	245	3/45
32	004184108	004184208	004184308	004184130	245	3/45
35	004184109	004184209	004184309	004184129	245	3/45
40	004184110	004184210	004184310	004184128	245	3/45
50	004184111	004184211	004184311	004184127	245	3/45
63	004184112	004184212	004184312	004184138	245	3/45
80	004184113	004184213	004184313	004184139	245	3/45
100	004184114	004184214	004184314	004184132	245	3/45
125	004184115	004184215	004184315	004184133	245	3/45
160	004184116	004184216		004184134	245	3/45

NV/NH 1C I KOMBI gG*

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	g	
6	004194103	004194203	004194303	245	3/45
10	004194104	004194204	004194304	245	3/45
16	004194105	004194205	004194305	245	3/45
20	004194106	004194206	004194306	245	3/45
25	004194107	004194207	004194307	245	3/45
32	004194108	004194208	004194308	245	3/45
35	004194109	004194209	004194309	245	3/45
40	004194110	004194210	004194310	245	3/45
50	004194111	004194211	004194311	245	3/45
63	004194112	004194212	004194312	245	3/45
80	004194113	004194213	004194313	245	3/45
100	004194114	004194214	004194314	245	3/45
125	004194115	004194215	004194315	245	3/45
160	004194116	004194216		245	3/45

* INSULATED

NV/NH 1 KOMBI gG

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	Korrosionsfest ~ 400V 120 kA	g	
6		004184233			420	3/24
10		004184225			420	3/24
16		004184226			420	3/24
20		004184227			420	3/24
25		004184228			420	3/24
32		004184232			420	3/24
35		004184229			420	3/24
40		004184230			420	3/24
50		004184231	004184331		420	3/24
63	004184120	004184220	004184320		420	3/24
80	004184121	004184221	004184321		420	3/24
100	004184122	004184222	004184322		420	3/24
125	004184123	004184223	004184323		420	3/24
160	004184124	004184224	004184324		420	3/24
200	004184117	004184217	004184317	004184135	420	3/24
224	004184118	004184218	004184318	004184136	420	3/24
250	004184119	004184219	004184319	004184137	420	3/24

NV/NH 1 I KOMBI gG*

Rated current [A]	Code No. ~ 400 V 120 KA	~ 500 V 120 kA	~ 690 V 120 kA	g	
6		004194233		420	3/24
10		004194225		420	3/24
16		004194226		420	3/24
20		004194227		420	3/24
25		004194228		420	3/24
32		004194232		420	3/24
35		004194229		420	3/24
40		004194230		420	3/24
50		004194231	004194331	420	3/24
63	004194120	004194220	004194320	420	3/24
80	004194121	004194221	004194321	420	3/24
100	004194122	004194222	004194322	420	3/24
125	004194123	004194223	004194323	420	3/24
160	004194124	004194224	004194324	420	3/24
200	004194117	004194217	004194317	420	3/24
224	004194118	004194218	004194318	420	3/24
250	004194119	004194219	004194319	420	3/24

* INSULATED

NV/NH 1 gG with striker pin

Rated current [A]	Code No. ~ 690 V 100 kA	g	
63	004113340	450	3
80	004113341	450	3
100	004113342	450	3
125	004113343	450	3
160	004113344	450	3
200	004113345	450	3
224	004113346	450	3
250	004113347	450	3

NV/NH 2 C KOMBI gG

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	Korrosionsfest ~ 400V 120 kA	g	
20	004185127				435	3/15
25	004185128	004185228			435	3/15
32	004185132	004185242			435	3/15
35	004185129	004185229			435	3/15
40	004185130	004185230			435	3/15
50	004185131	004185231	004185331		435	3/15
63	004185112	004185212	004185312	004185144	435	3/15
80	004185113	004185213	004185313	004185145	435	3/15
100	004185114	004185214	004185314	004185146	435	3/15
125	004185115	004185215	004185315	004185147	435	3/15
160	004185116	004185216	004185316	004185133	435	3/15
200	004185117	004185217	004185317	004185134	435	3/15
224	004185118	004185218	004185318	004185135	435	3/15
250	004185119	004185219	004185319	004185136	435	3/15

NV/NH 2 CI KOMBI gG*

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 120 kA	g	
25		004195228		435	3/15
32		004195242		435	3/15
35	004195109	004195229		435	3/15
40	004195110	004195230		435	3/15
50	004195111	004195231	004195331	435	3/15
63	004195112	004195212	004195312	435	3/15
80	004195113	004195213	004195313	435	3/15
100	004195114	004195214	004195314	435	3/15
125	004195115	004195215	004195315	435	3/15
160	004195116	004195216	004195316	435	3/15
200	004195117	004195217	004195317	435	3/15
224	004195118	004195218	004195318	435	3/15
250	004195119	004195219	004195319	435	3/15

* INSULATED

NV/NH 2 KOMBI gG

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 120 kA	Korrosionsfest ~ 400V 120 kA	g	
32		004185234			580	3/15
35		004185235			580	3/15
40		004185236			580	3/15
50		004185237			580	3/15
63		004185238			580	3/15
80		004185239			580	3/15
100		004185240			580	3/15
125		004185241			580	3/15
160		004185225	004185325		580	3/15
200		004185226	004185326		580	3/15
224		004185227	004185327		580	3/15
250		004185232	004185328		580	3/15
280	004185120	004185220	004185320	004185137	580	3/15
300	004185121	004185221	004185321	004185138	580	3/15
315	004185122	004185222	004185322	004185139	580	3/15
355	004185123	004185223		004185140	580	3/15
400	004185124	004185224		004185141	580	3/15

NV/NH 2 I KOMBI gG*

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 120 kA	g	
32		004195234		580	3/15
35		004195235		580	3/15
40		004195236		580	3/15
50		004195237		580	3/15
63		004195238		580	3/15
80		004195239		580	3/15
100		004195240		580	3/15
125		004195241		580	3/15
160		004195225		580	3/15
200		004195226		580	3/15
224		004195227		580	3/15
250		004195232		580	3/15
280	004195120	004195220	004195320	580	3/15
300	004195121	004195221	004195321	580	3/15
315	004195122	004195222	004195322	580	3/15
355	004195123	004195223		580	3/15
400	004195124	004195224		580	3/15

* INSULATED

NV/NH 2 gG with striker pin

Rated current [A]	Code No. ~ 690 V 100 kA	g	
160	004114345	620	3
200	004114346	620	3
224	004114347	620	3
250	004114348	620	3
300	004114349	620	3
315	004114350	620	3

NV/NH 3 C KOMBI gG

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	Korrosionsfest ~ 400V 120 kA	g	
63	004186112	004186212			585	3/12
80	004186113	004186213			585	3/12
100	004186114	004186214			585	3/12
125	004186115	004186215			585	3/12
160	004186116	004186216			585	3/12
200	004186117	004186217			585	3/12
224	004186118	004186218			585	3/12
250	004186119	004186219	004186319	004186150	585	3/12
280	004186120	004186220	004186320		585	3/12
300	004186121	004186221	004186321	004186140	585	3/12
315	004186122	004186222	004186322	004186141	585	3/12
355	004186123	004186223		004186142	585	3/12
400	004186124	004186224		004186143	585	3/12

NV/NH 3 KOMBI gG

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	Korrosionsfest ~ 400V 120 kA	g	
355			004186328		800	3/12
400			004186329		800	3/12
425	004186130	004186230	004186330	004186144	800	3/12
450	004186129	004186229			800	3/12
500	004186131	004186231	004186331	004186145	800	3/12
560	004186132	004186232			800	3/12
630	004186133	004186233		004186147	800	3/12

NV/NH 3 I KOMBI gG*

Rated current [A]	Code No. ~ 400V 120 kA	~ 500V 120 kA	~ 690V 100 kA	g	
200	004196123	004196223	004196323	800	3/12
224	004196124	004196224	004196324	800	3/12
250	004196125	004196225	004196325	800	3/12
300	004196126	004196226	004196326	800	3/12
315	004196127	004196227	004196327	800	3/12
355	004196128	004196228	004196328	800	3/12
400	004196129	004196229	004196329	800	3/12
425	004196130	004196230	004196330	800	3/12
500	004196131	004196231	004196331	800	3/12
560	004196132	004196232		800	3/12
630	004196133	004196233		800	3/12

* INSULATED

NV/NH 3 gG with striker pin

Rated current [A]	Code No. ~ 690 V 100 kA	g	
250	004115120	980	3
300	004115121	980	3
315	004115122	980	3
400	004115123	980	3
425	004115124	980	3
500	004115125	980	3

NV/NH 4 gG

Rated current [A]	Code No. ~ 500 V 120 kA	g	
630	004116101	2150	1/4
710	004116102	2150	1/4
800	004116103	2150	1/4
900	004116105	2150	1/4
1000	004116104	2150	1/4
1250	004116106	2150	1/4

NV/NH 4a gG

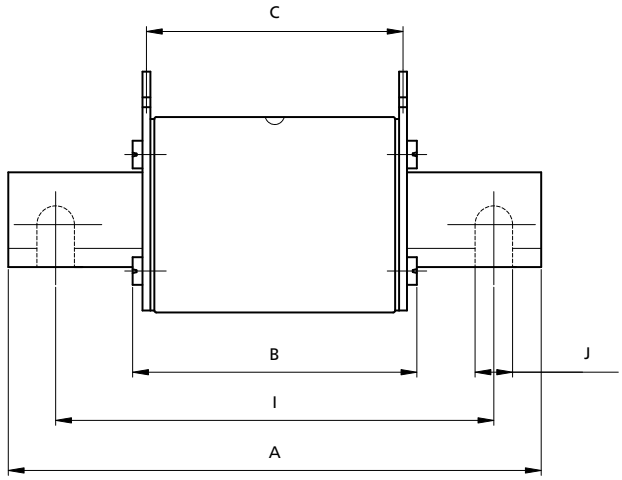
Rated current [A]	Code No. ~ 500 V, 120 kA			~ 690 V 100 kA	g	
		MI	AL			
250			004187200		2810	1/12
315			004187201		2810	1/12
355			004187202		2810	1/12
400			004187203		2810	1/12
500			004187204		2810	1/12
630	004116108	004176026	004187205	004176105	2810	1/12
710	004116109	004176027	004187206	004176106	2810	1/12
800	004116110	004176028	004187207	004176107	2810	1/12
900	004116111	004176029	004187208	004176108	2810	1/12
1000	004116112	004176030	004187209	004176109	2810	1/12
1250	004116113	004176031	004187210	004176110	2810	1/12
1500	004116119	004176032			2810	1/12
1600	004116120	004176033			2810	1/12

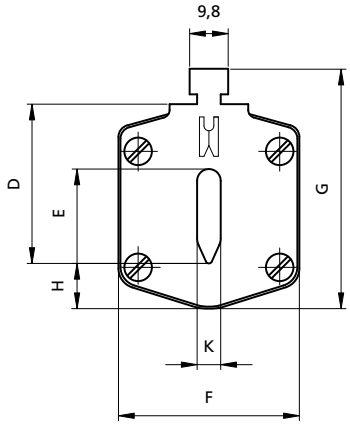
NV/NH 4a gG with striker pin

Rated current [A]	Code No. ~ 690 V 100 kA	g	
500	004116186	2810	1
630	004116187	2810	1
800	004116188	2810	1
1000	004116189	2810	1
1250	004116190	2810	1

Fuse Links NV/NH gG Dimensions

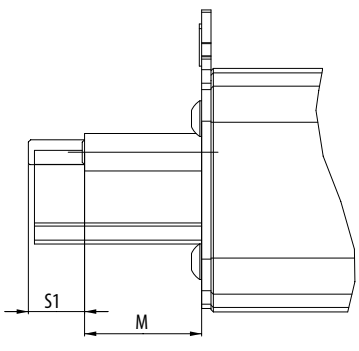
Type	Dimensions											
	A	B	C	D	E	F	G	H	I	J	K	
NV00C	79	53	47	35	15	21	52	7,5			6	KOMBI
NV00C I	79	53	47	35	15	21	52	7,5			6	KOMBI
NV00	79	53	47	35	15	28	56	12			6	KOMBI
NV00 I	79	53	47	35	15	28	56	12			6	KOMBI
NV0	125	68	65	35	15	28	56	12			6	KOMBI
NV1C	135	68	65	40	15	28	61	12			6	KOMBI
NV1C I	135	68	65	40	15	28	61	12			6	KOMBI
NV1	135	72	65	40	20	46	65	14			6	KOMBI
NV1 I	135	72	65	40	20	46	65	14			6	KOMBI
NV2C	150	72	65	48	20	46	73	14			6	KOMBI
NV2C I	150	72	65	48	20	46	73	14			6	KOMBI
NV2	150	72	65	48	26	54	73	14			6	KOMBI
NV2 I	150	72	65	48	26	54	73	14			6	KOMBI
NV3C	150	72	65	60	26	54	84	14			6	KOMBI
NV3	150	72	65	60	33	65	84	14			6	KOMBI
NV4	200	75	66	87	50	100	121	24	150	16	8	
NV4a	200	99	87	85	50	95	121	27			6	
NV4a MI*	200	99	87	85	50	95	121	27			6	

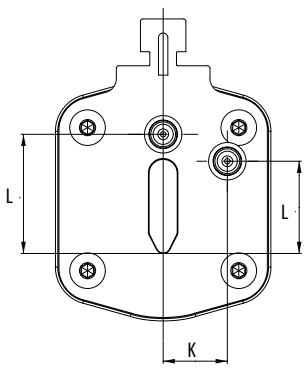




Fuse Links NV/NH gG with Striker Pin Dimensions

Type	Dimensions			
	K	L	M	S1
00C	0	20.7	16.7	7.5
00	0	20.7	16.7	7.5
1	13.7	19.7	25	12
2	16.2	27.4	25	12
3	17	35.6	25	12
4a	24	49	25	12

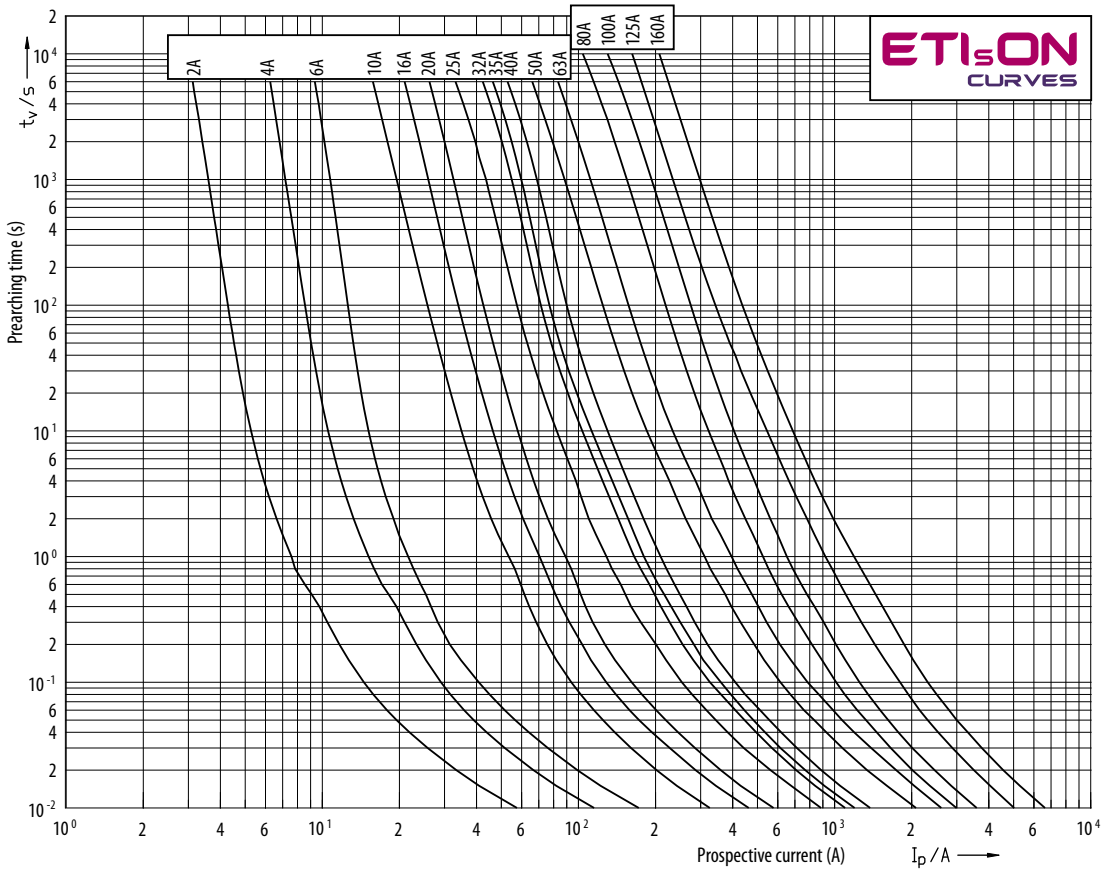




Characteristics gG

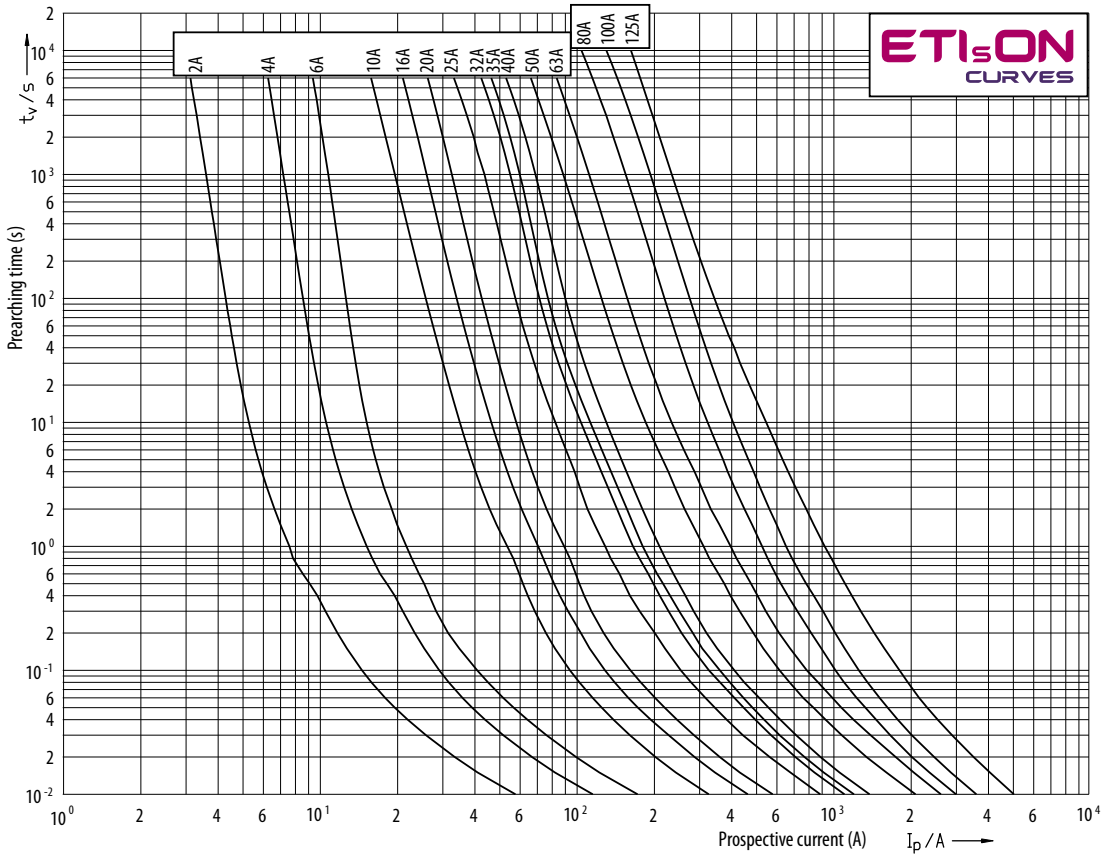
NH000 400V

Time current characteristics I/t, gG



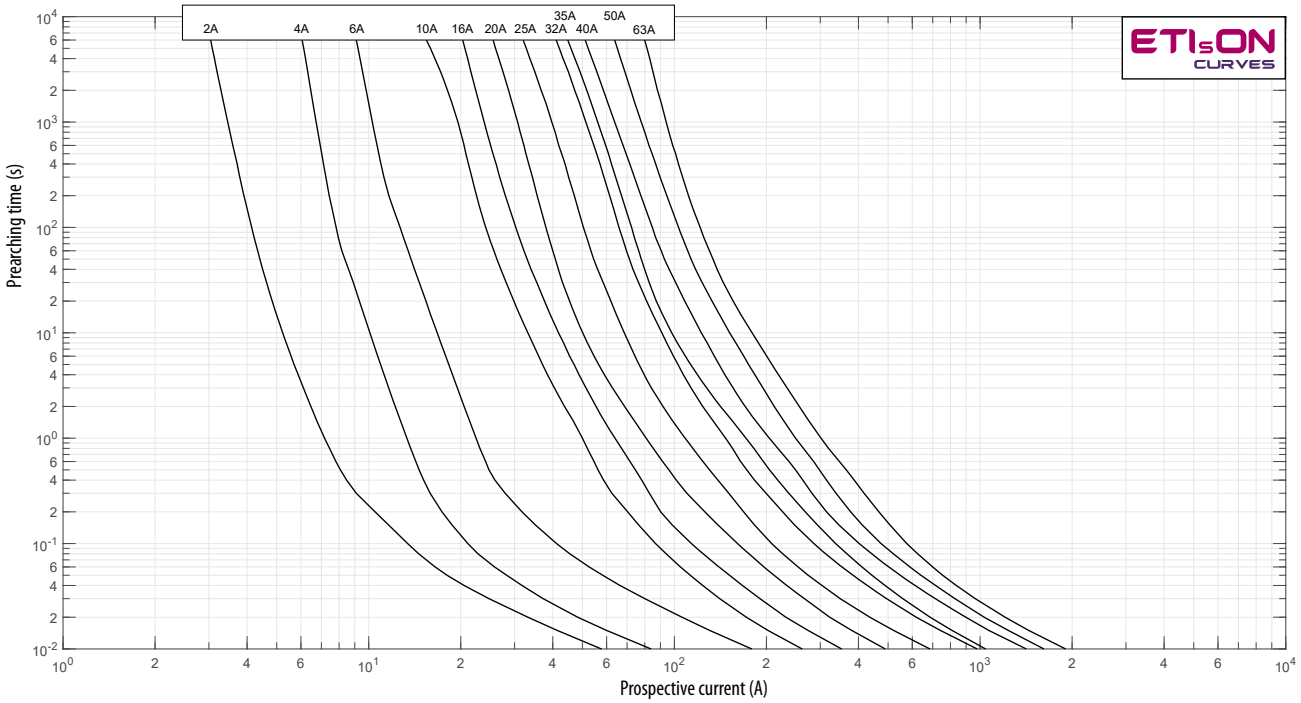
NH000 500V

Time current characteristics I/t, gG



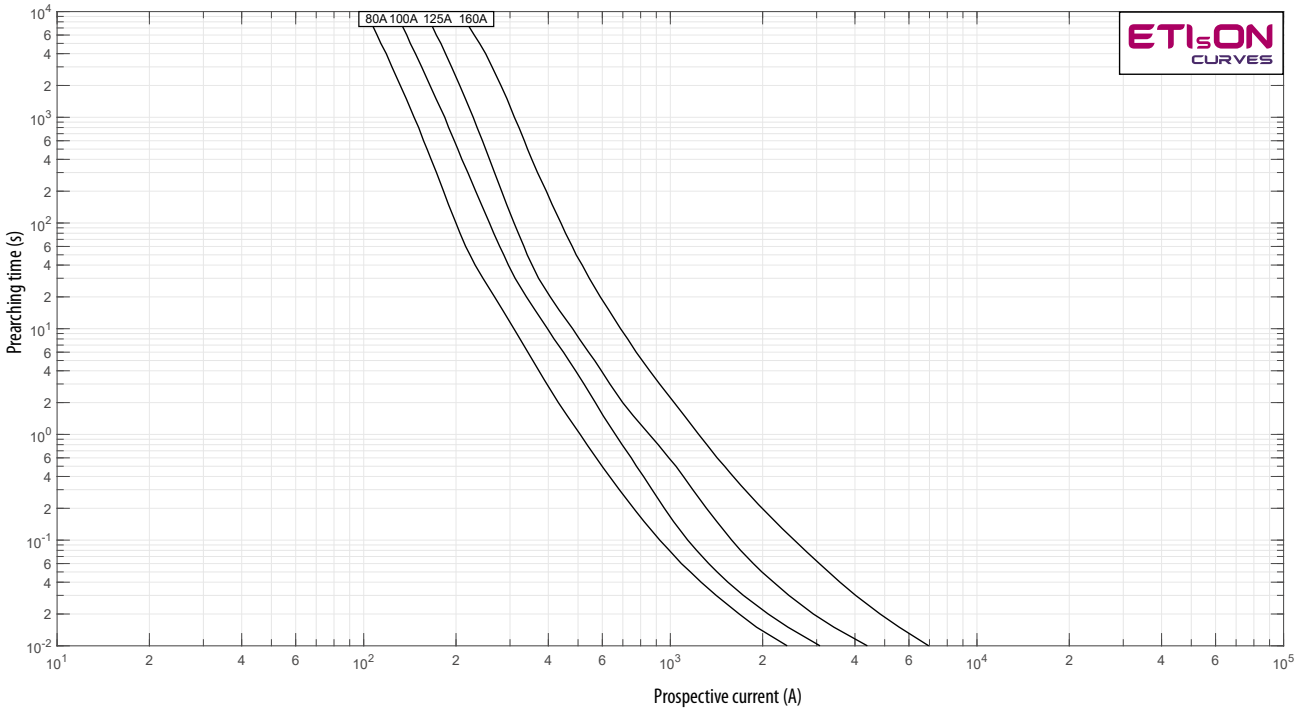
NH000 690V

Time current characteristics
I/t, gG



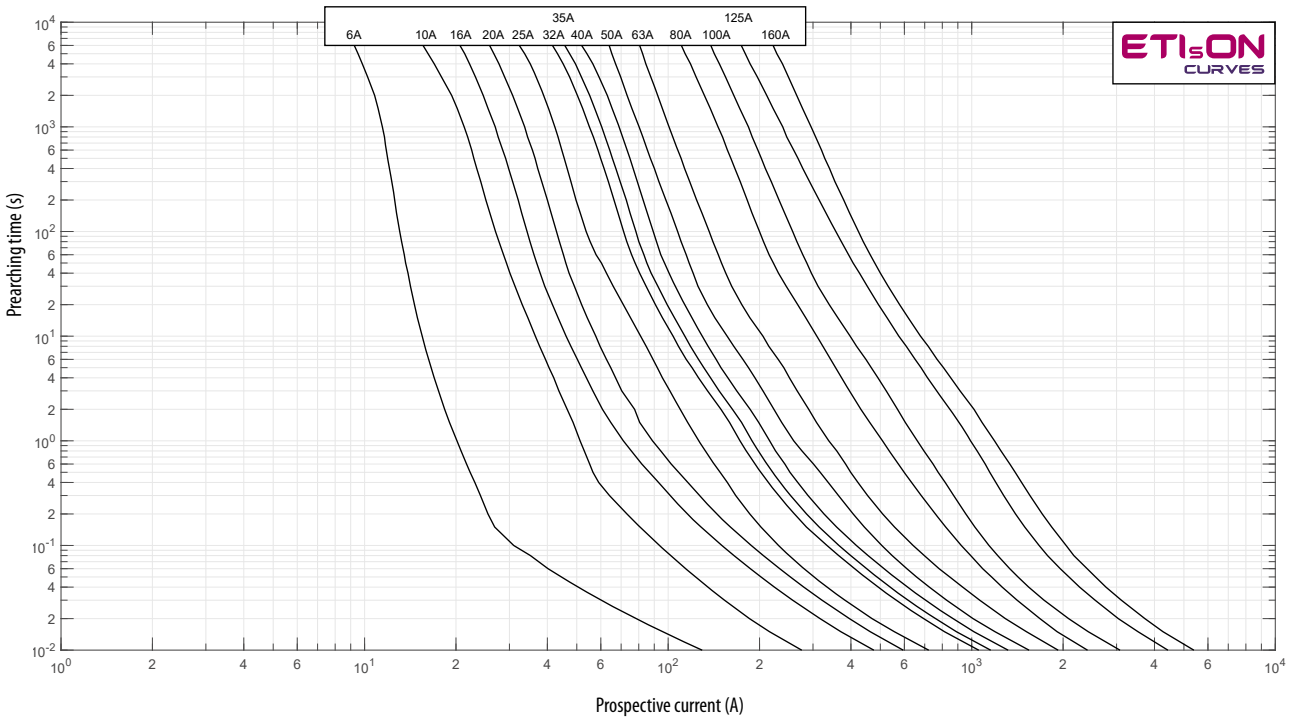
NH00 400V

Time current characteristics
I/t, gG



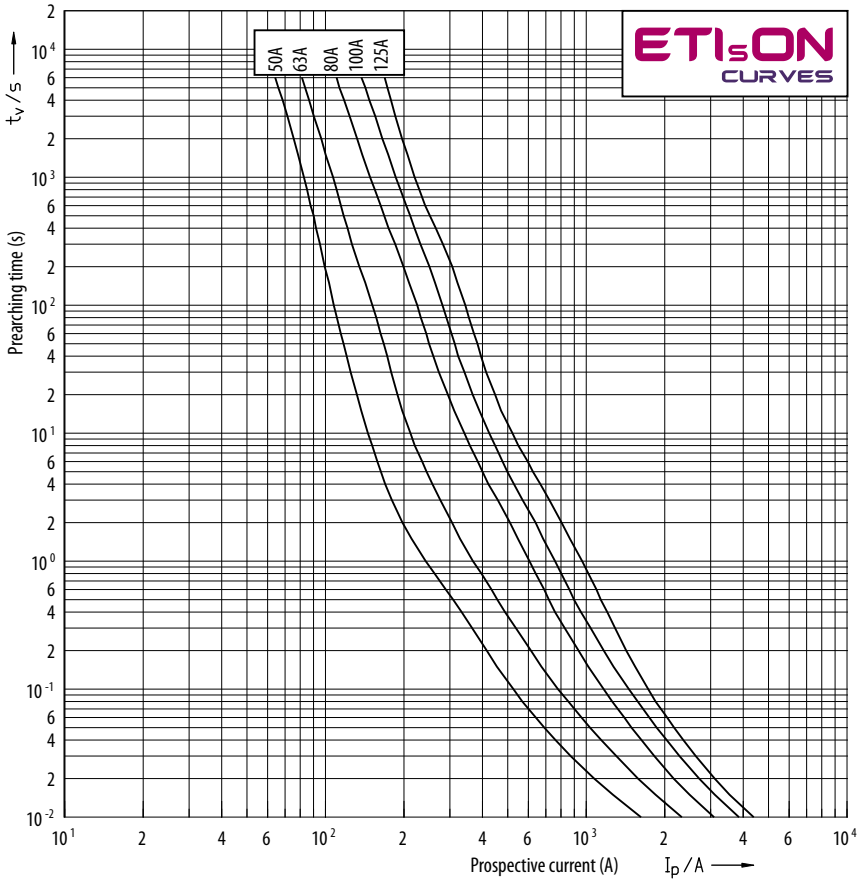
NH00 500V

Time current characteristics
I/t, gG



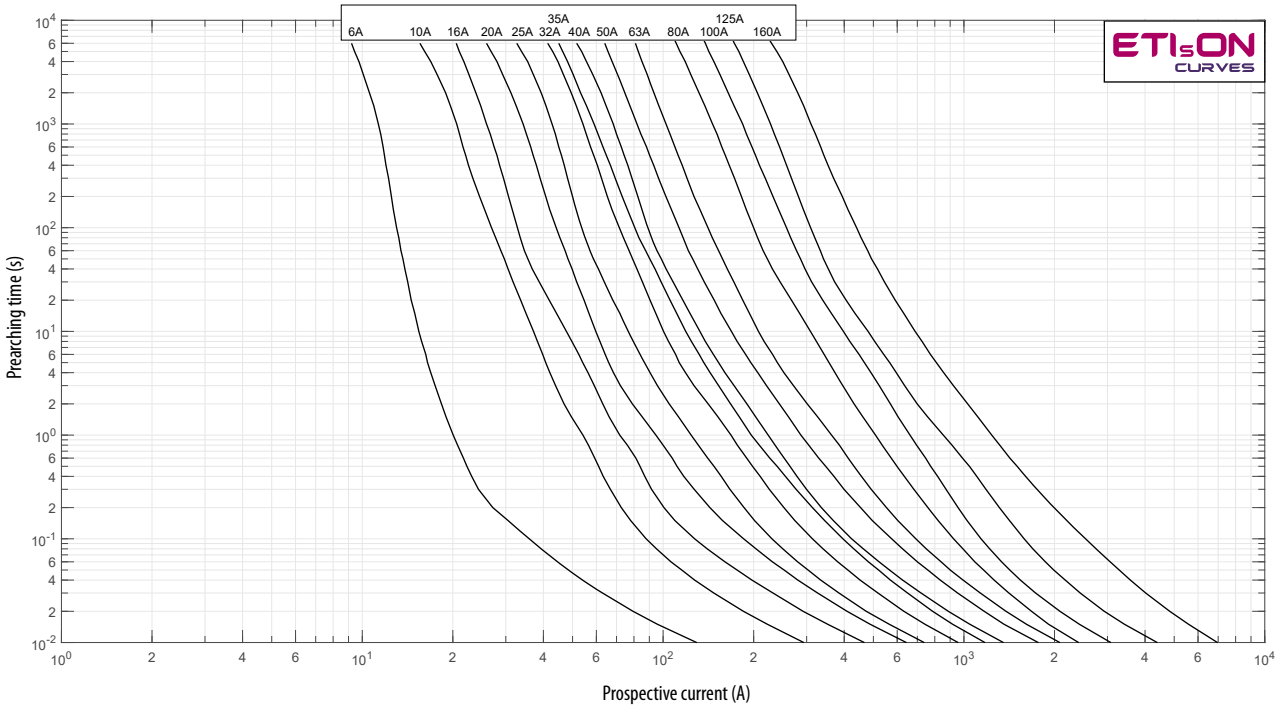
NH00 690V

Time current characteristics
I/t, gG



NH0, NH1C
400V

Time current characteristics
I/t, gG

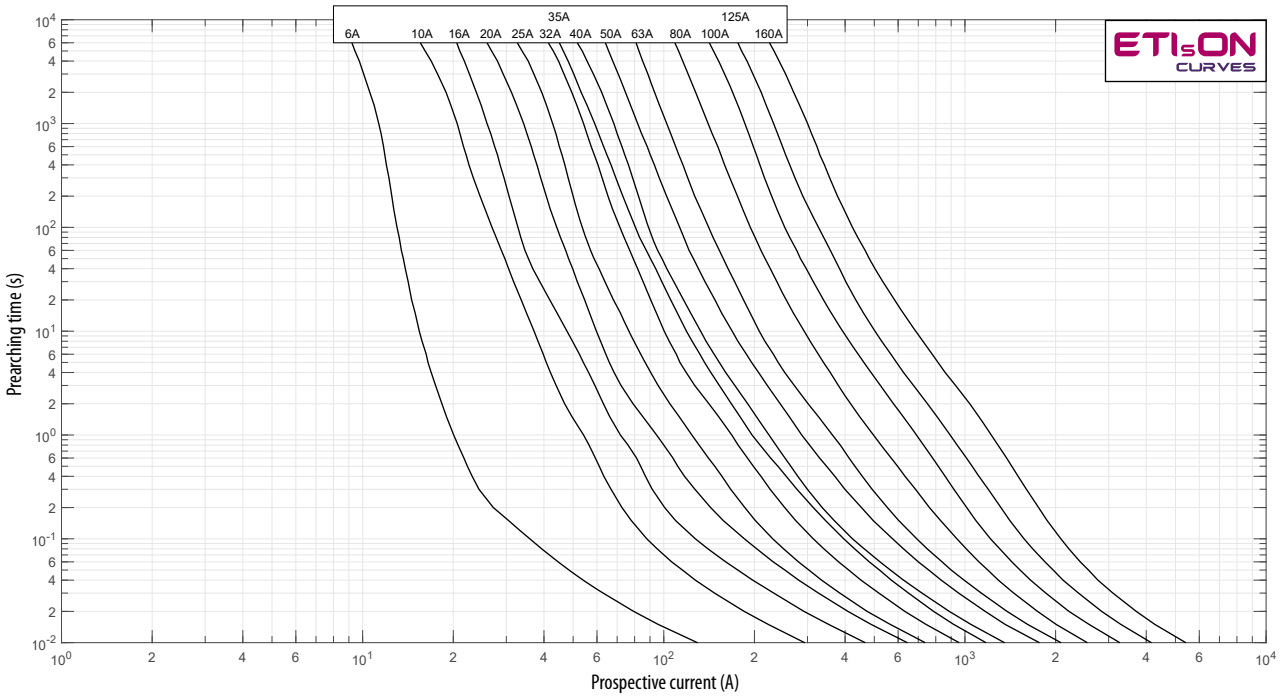


WATCH THE VIDEO

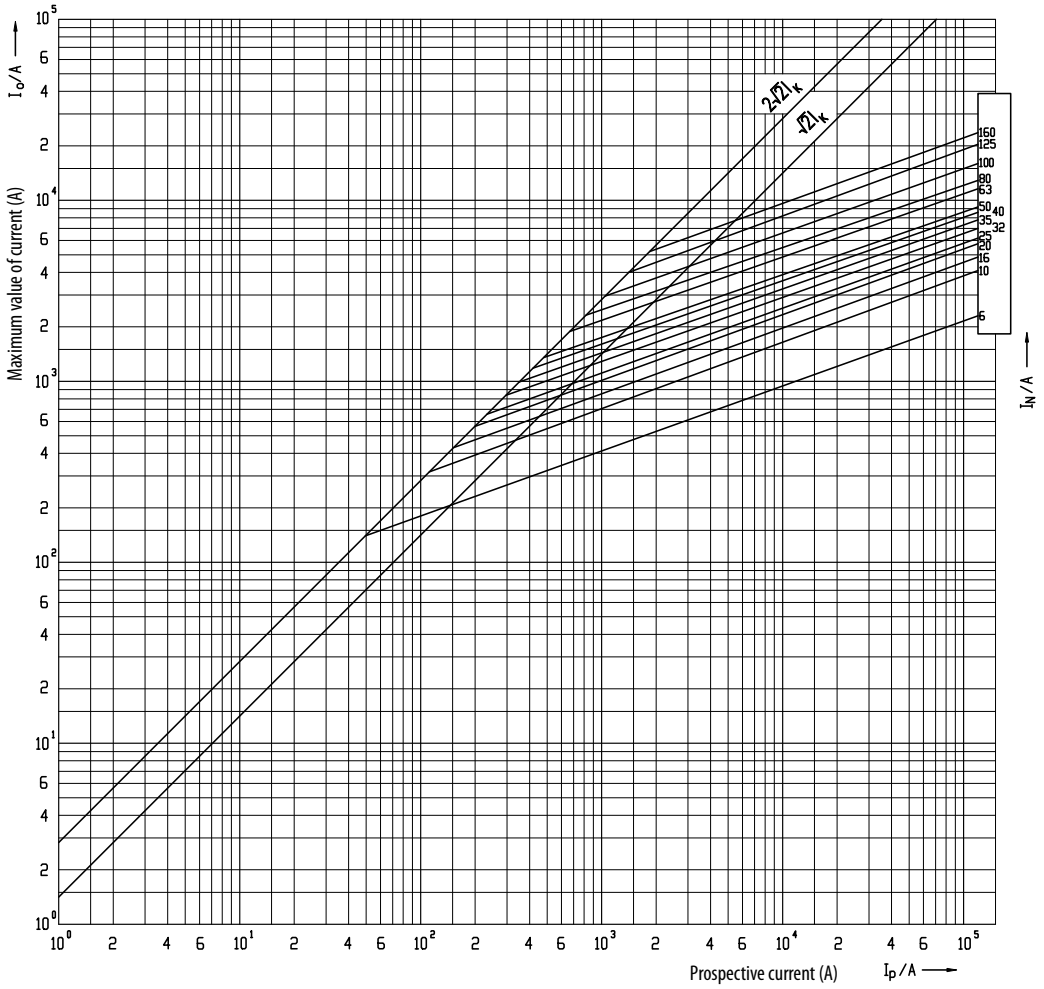
ETIFUSE: Streamline Your Fuse Selection - Interactive Online Tool

NH0, NH1C
500V

Time current characteristics
I/t, gG

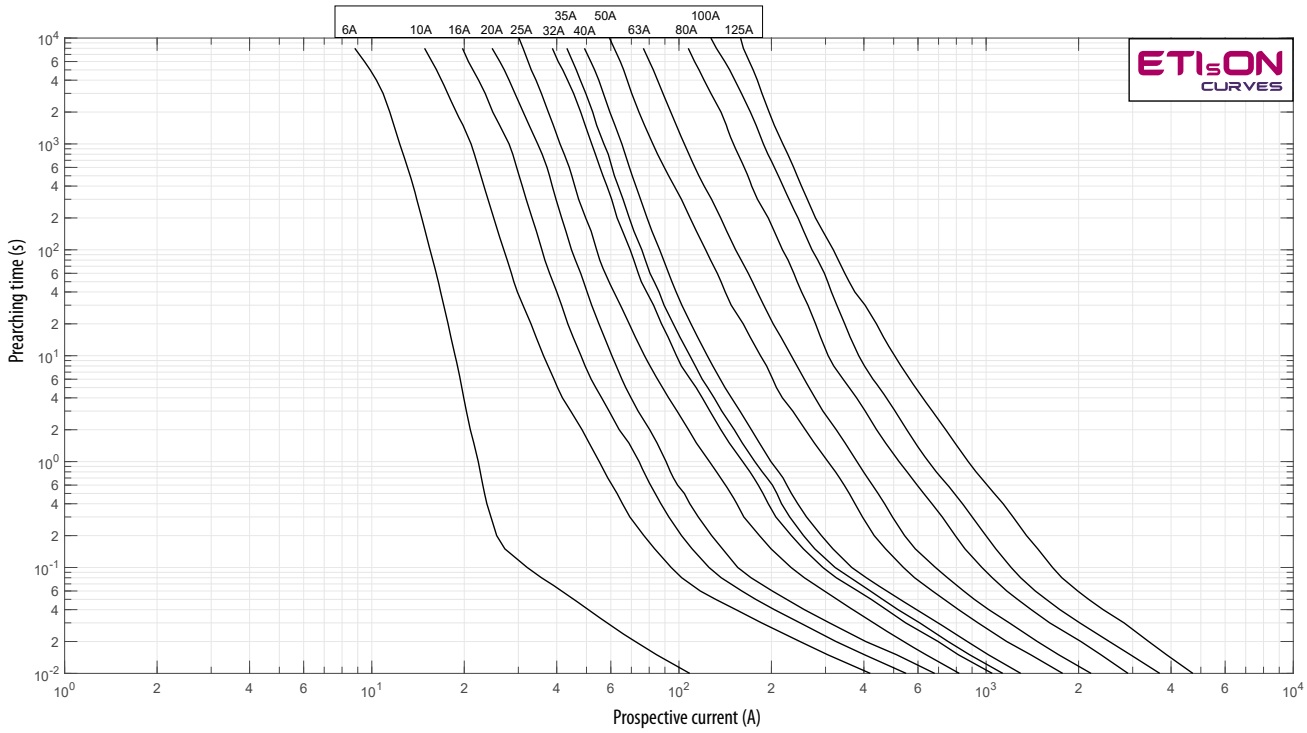


Cut-off current characteristics



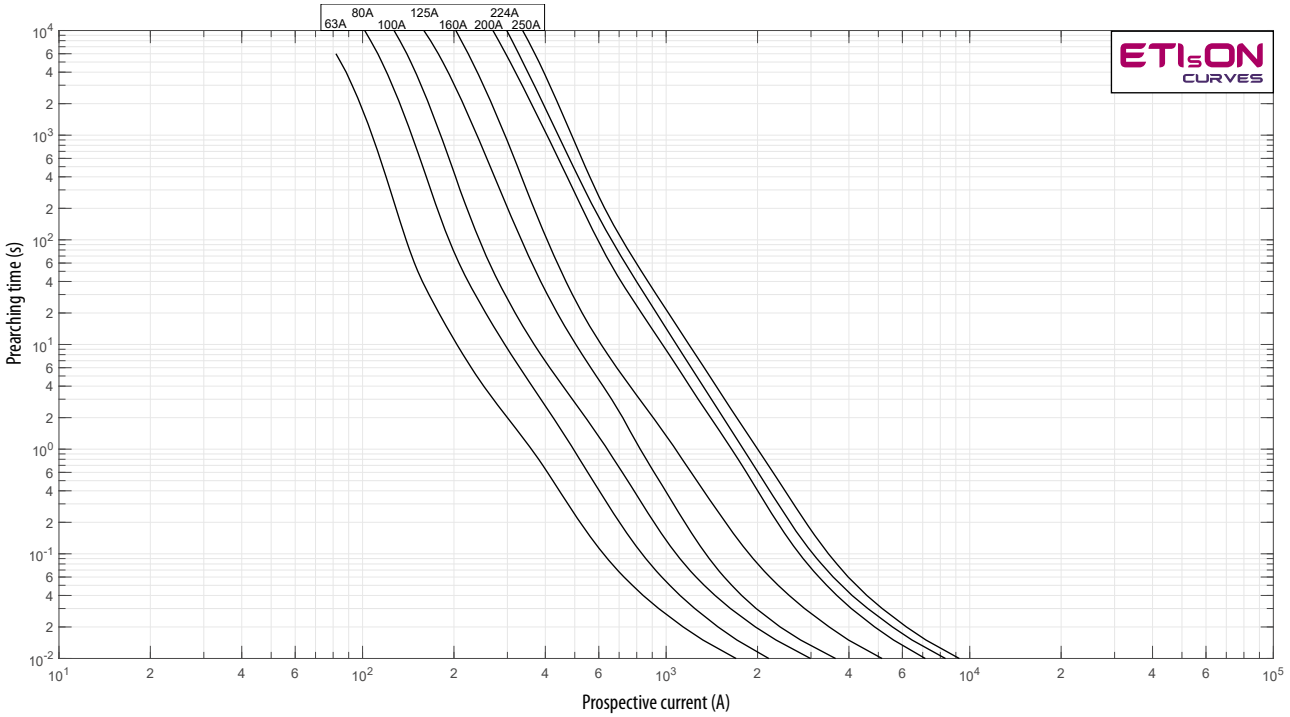
NH0, NH1C
690V

Time current characteristics
I/t, gG

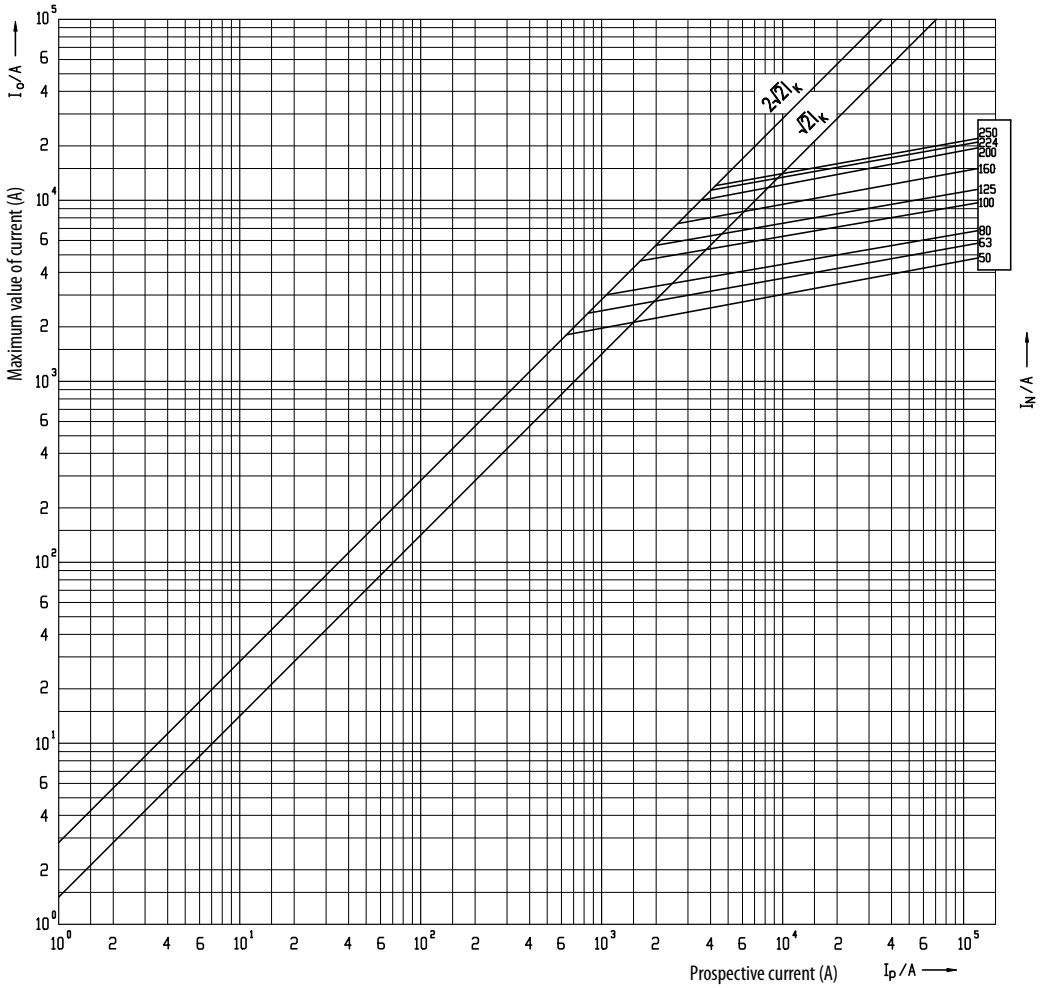


NH1 400V

Time current characteristics
I/t, gG

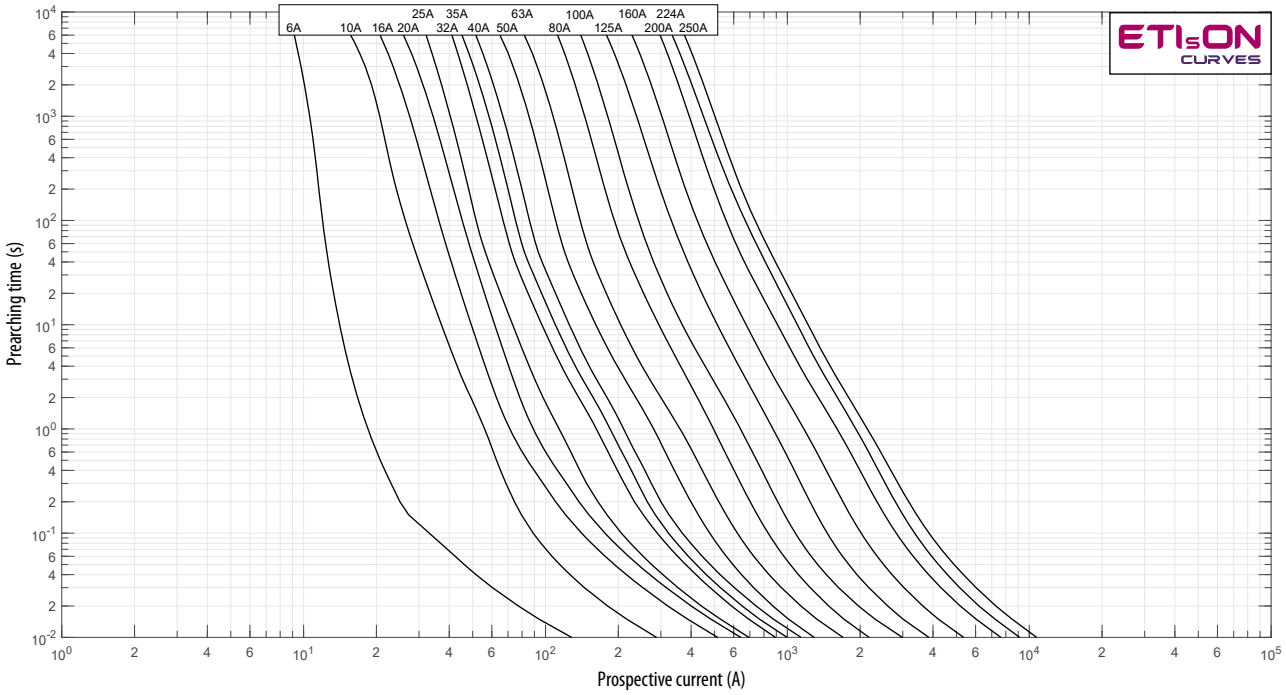


Cut-off current characteristics

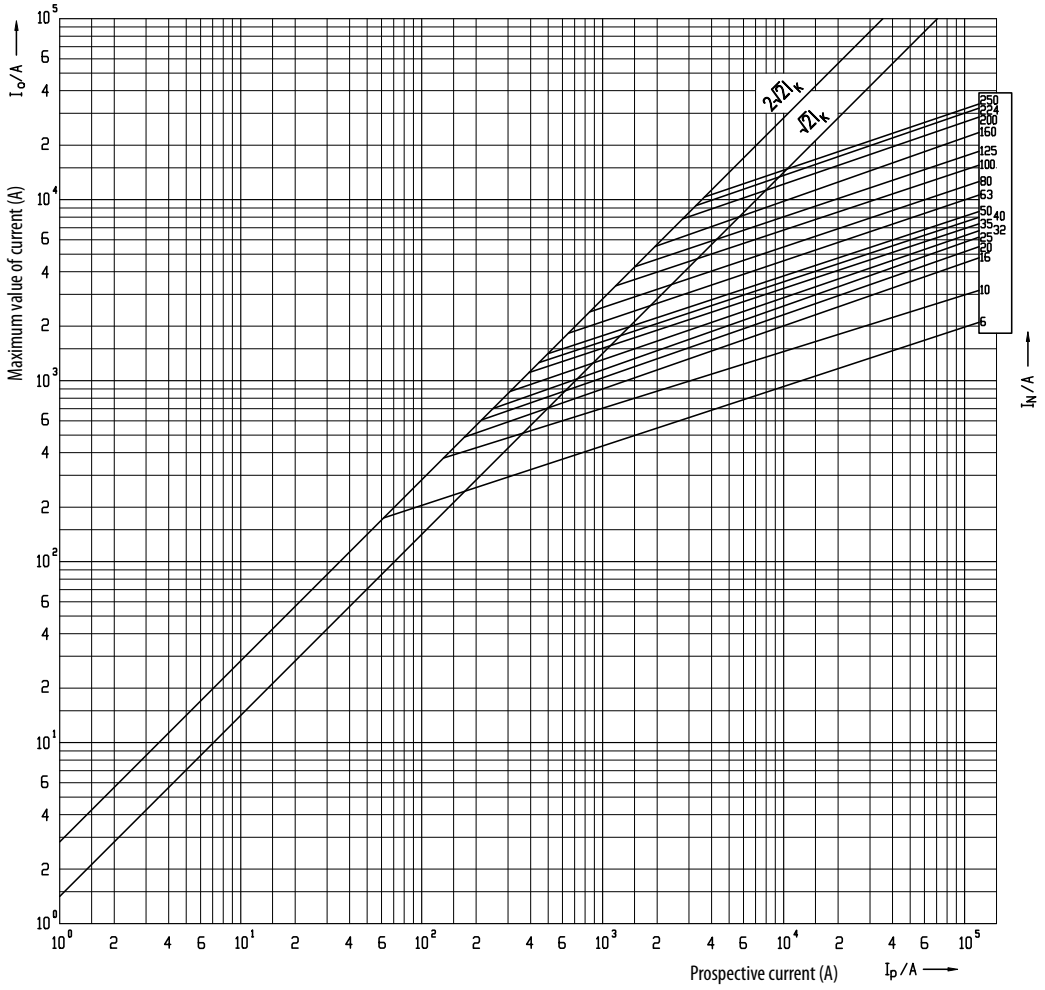


NH1 500V

Time current characteristics I/t, gG

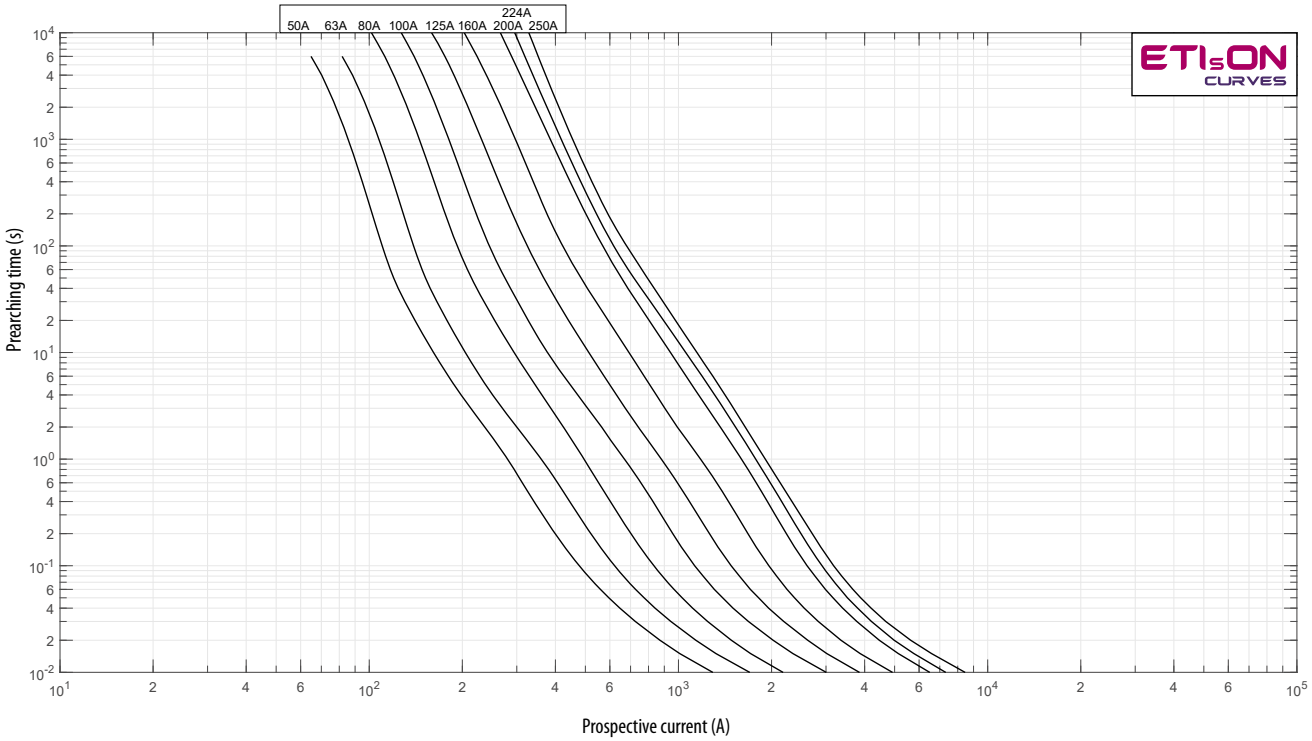


Cut-off current characteristics

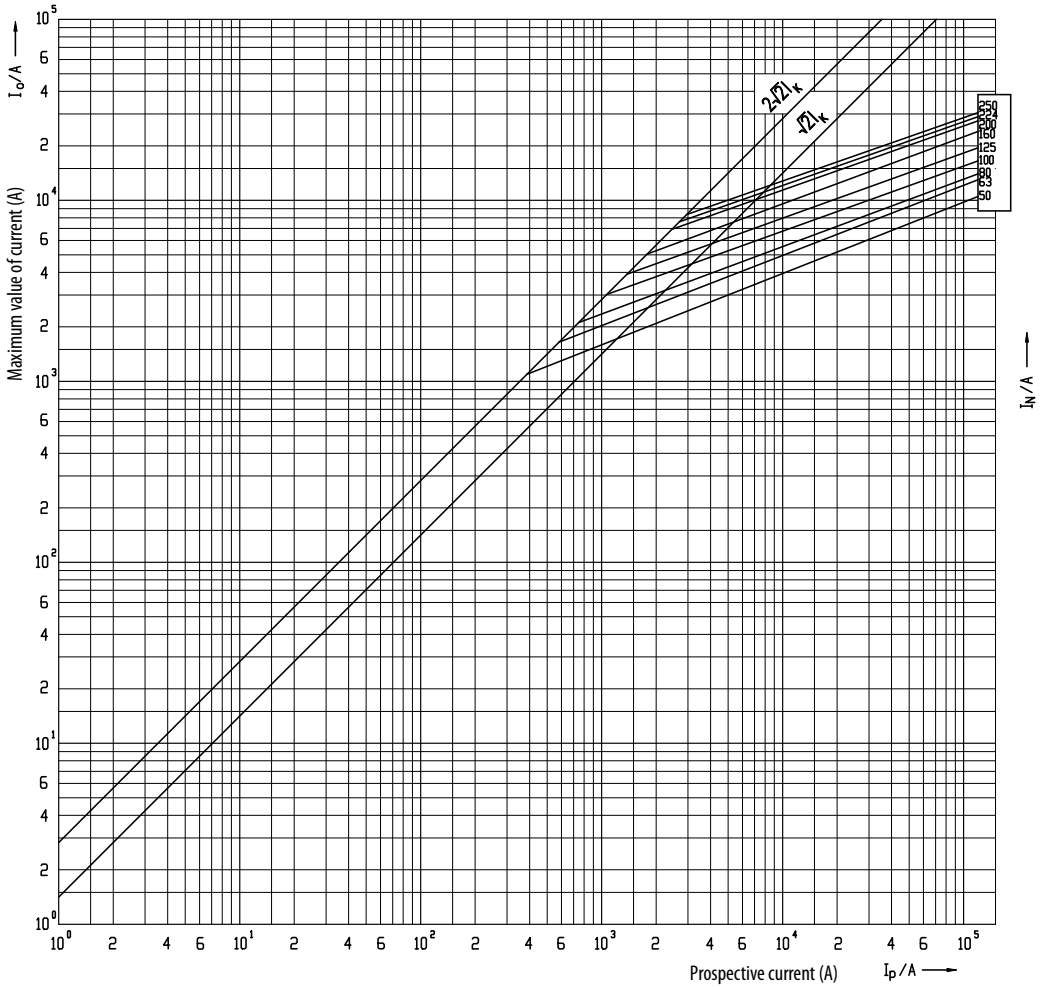


NH1 690V

Time current characteristics
I/t, gG

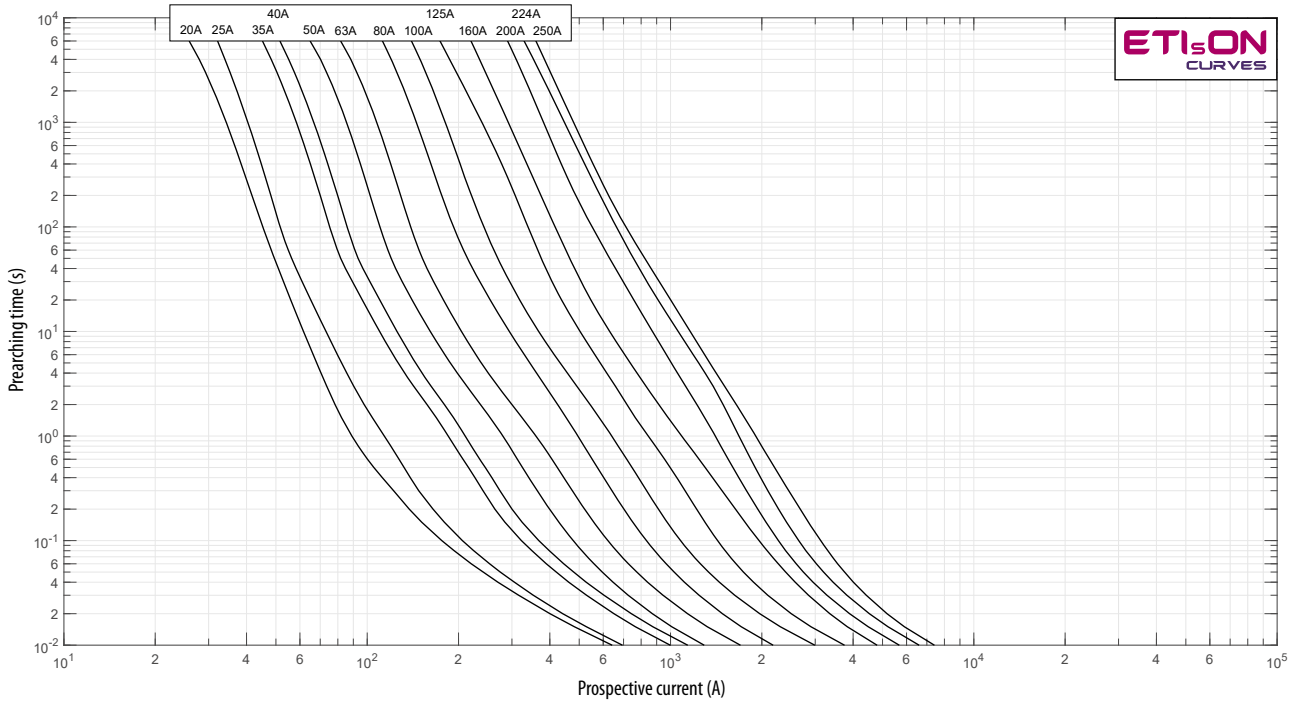


Cut-off current characteristics

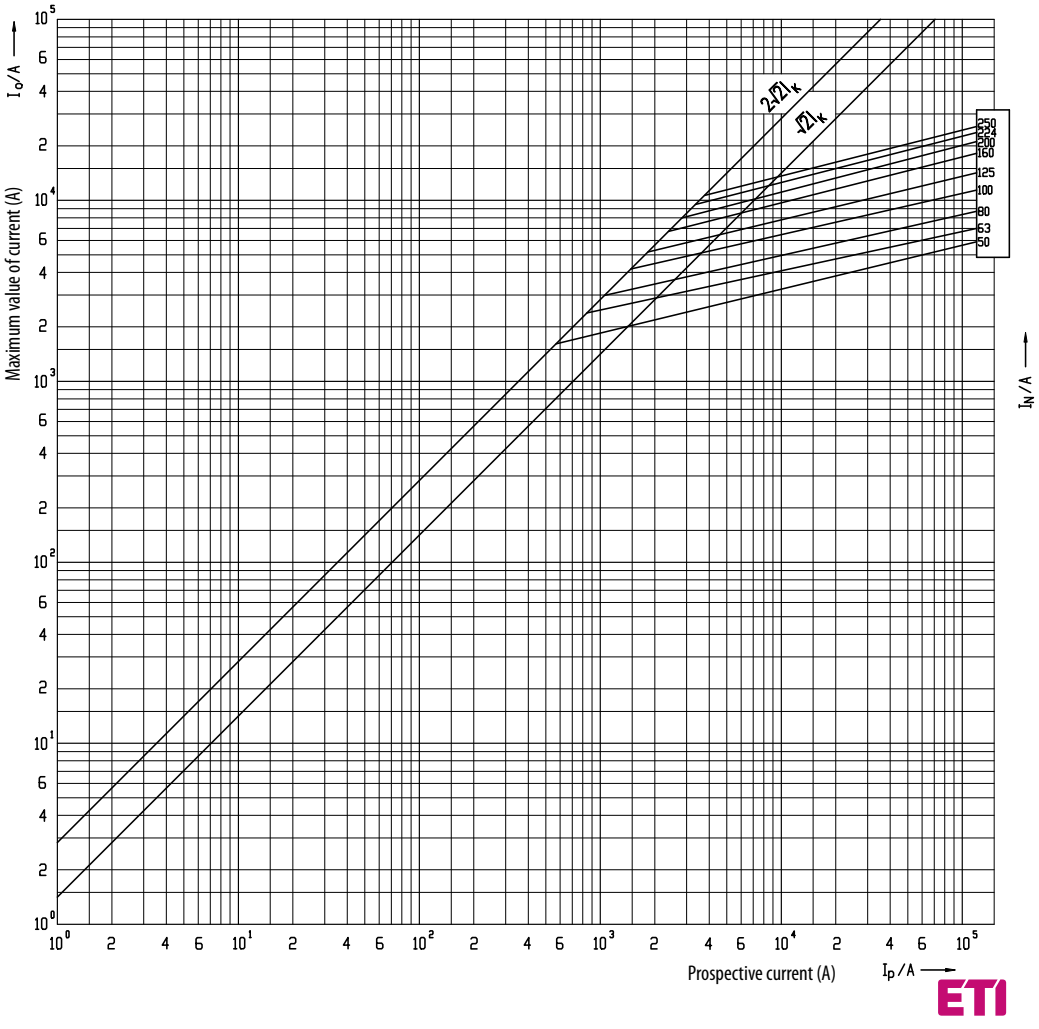


NH2C 400V

Time current characteristics I/t, gG

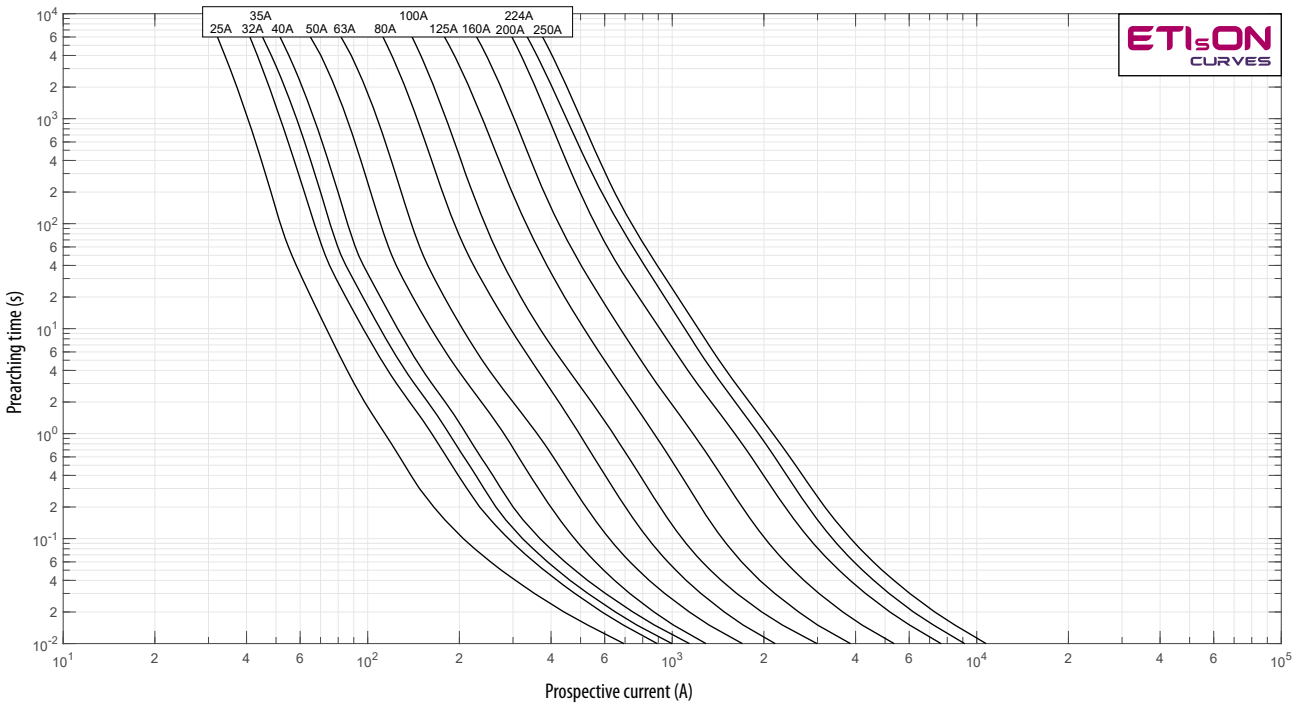


Cut-off current characteristics

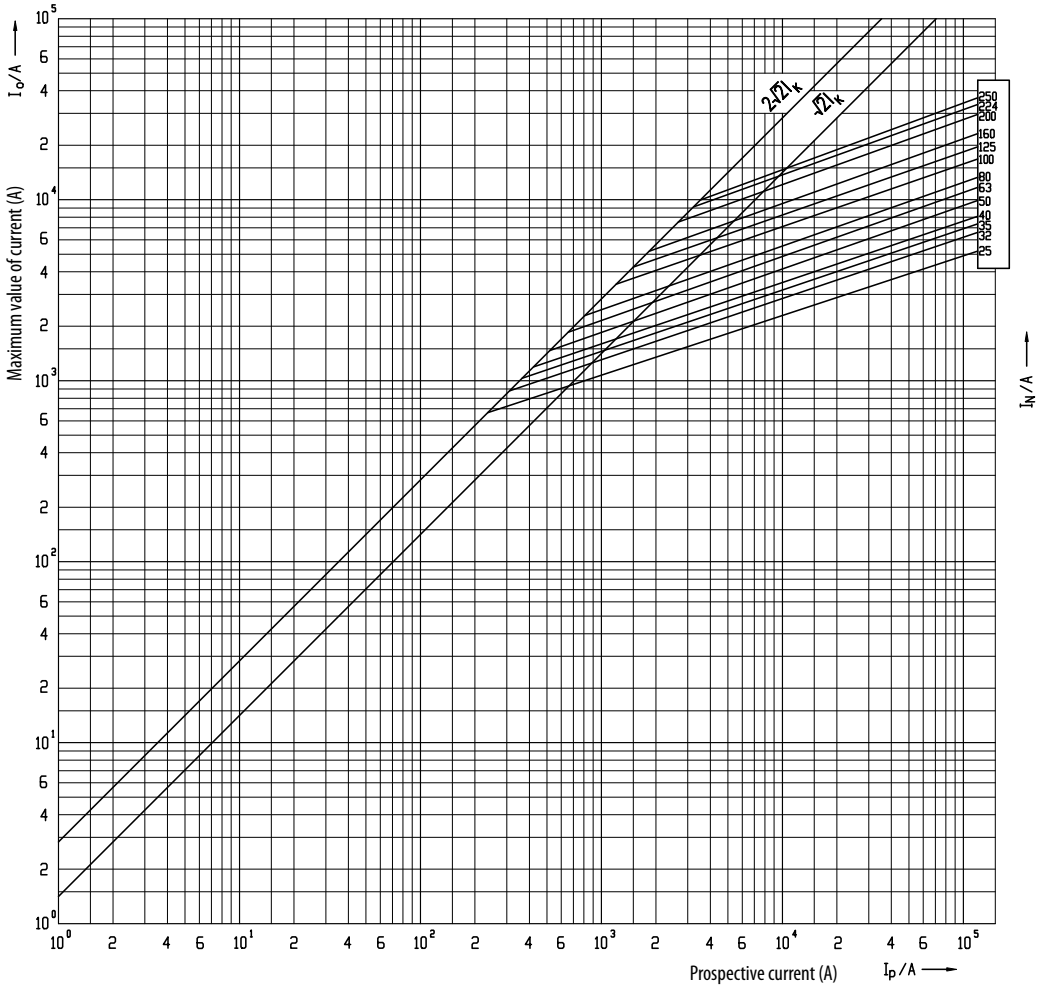


NH2C 500V

Time current characteristics I/t, gG

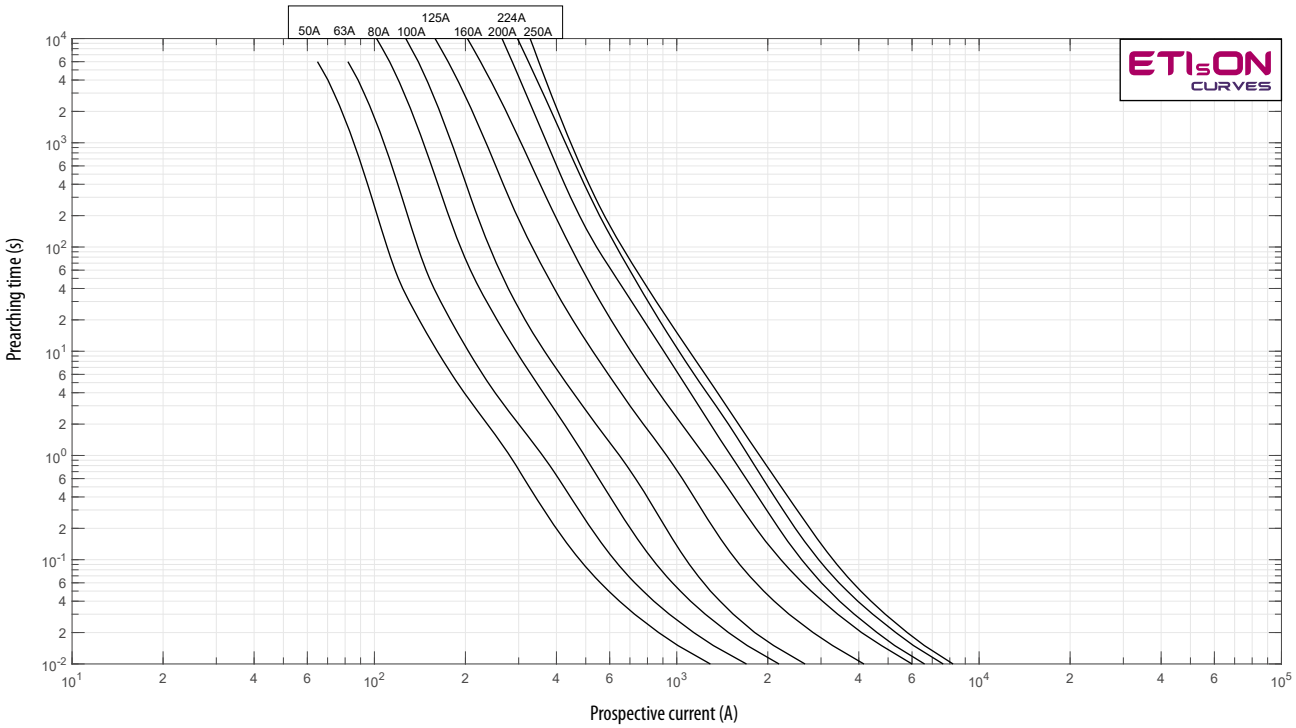


Cut-off current characteristics

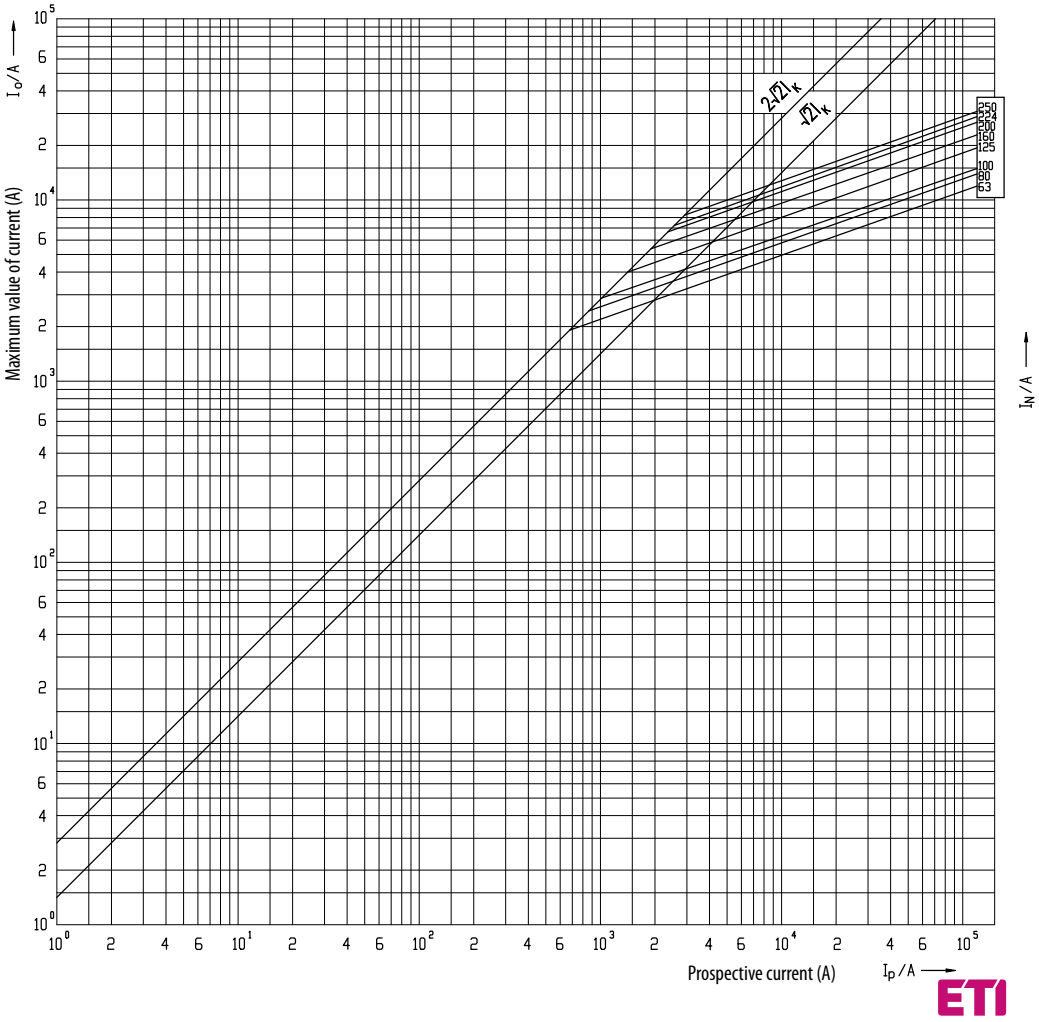


NH2C 690V

Time current characteristics
I/t, gG

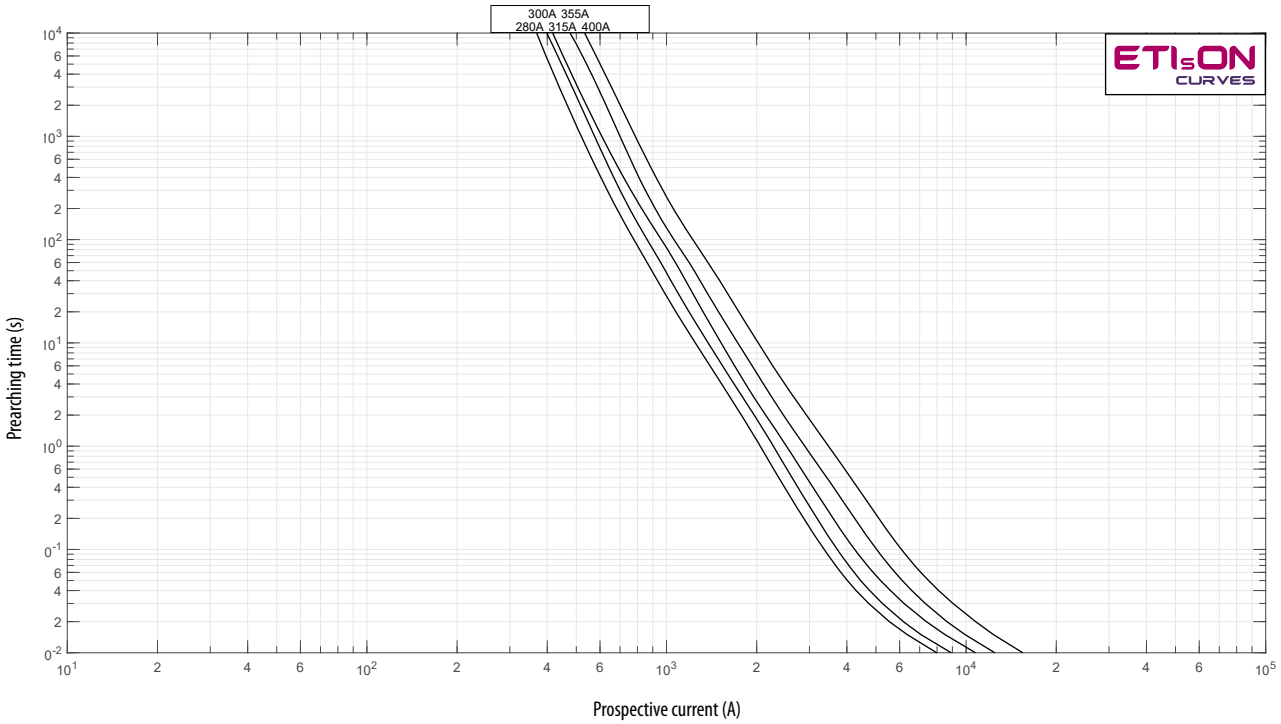


Cut-off current characteristics

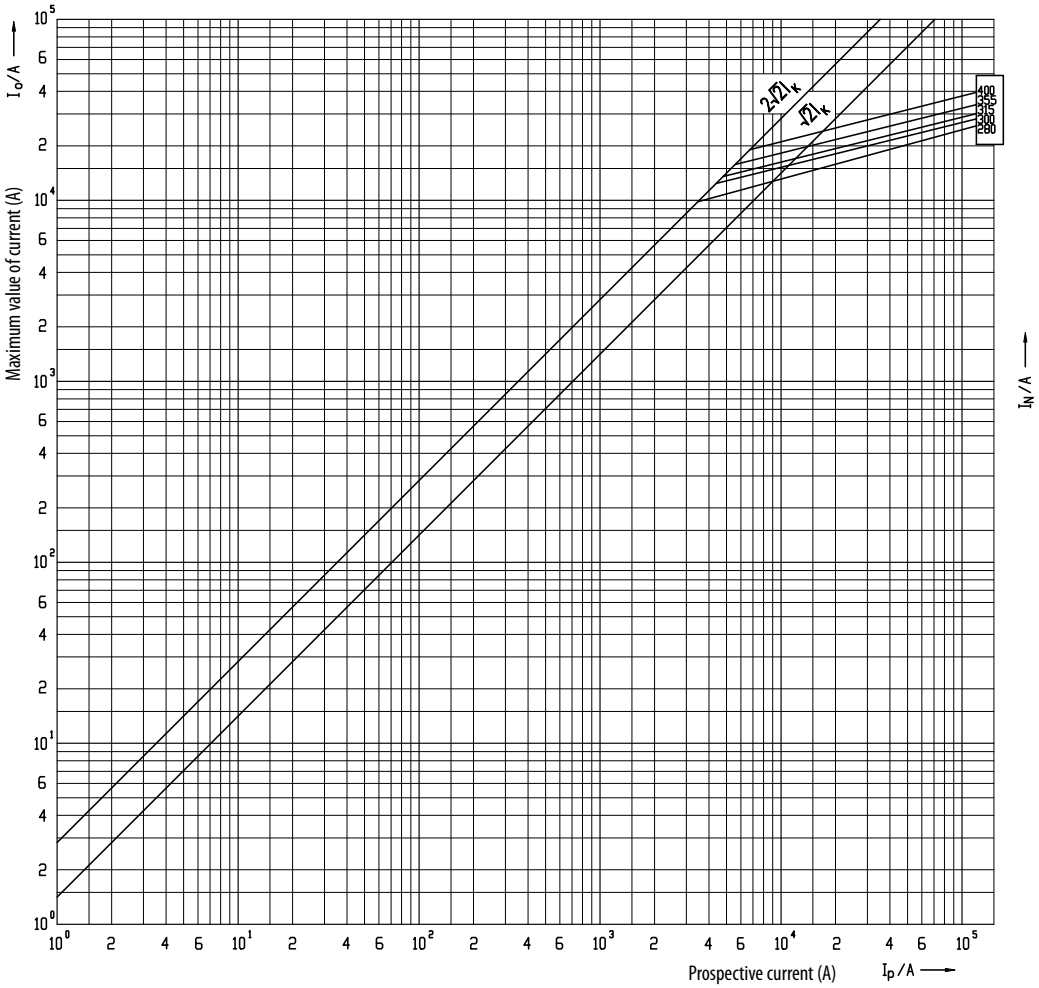


NH2 400V

Time current characteristics I/t, gG

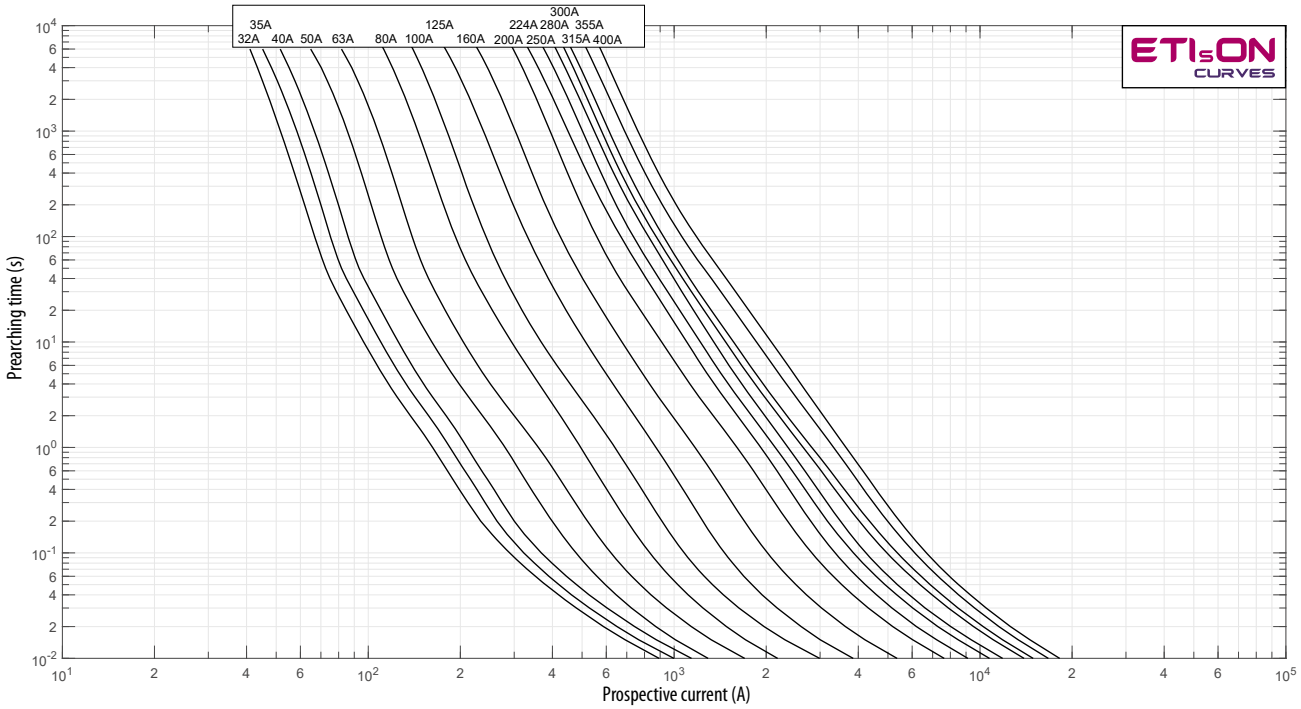


Cut-off current characteristics

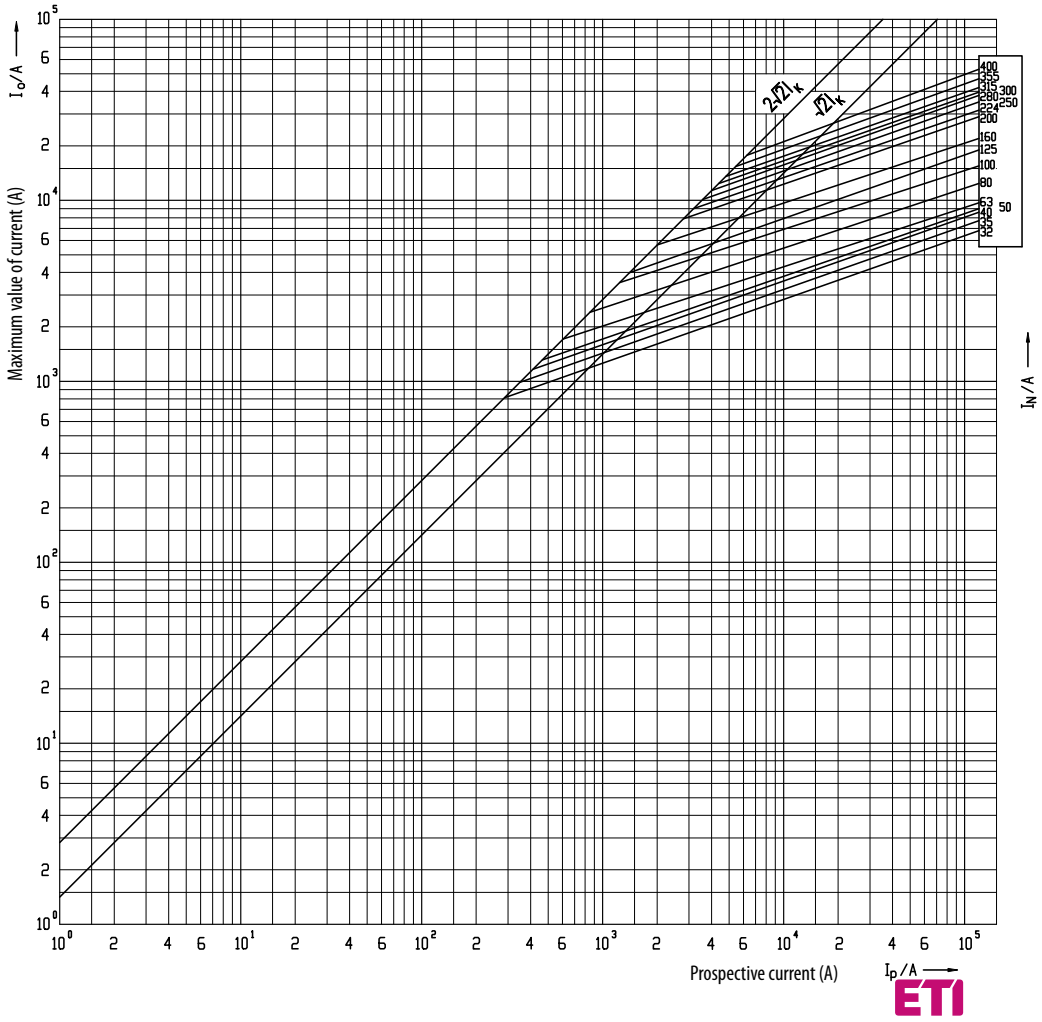


NH2 500V

Time current characteristics I/t, gG

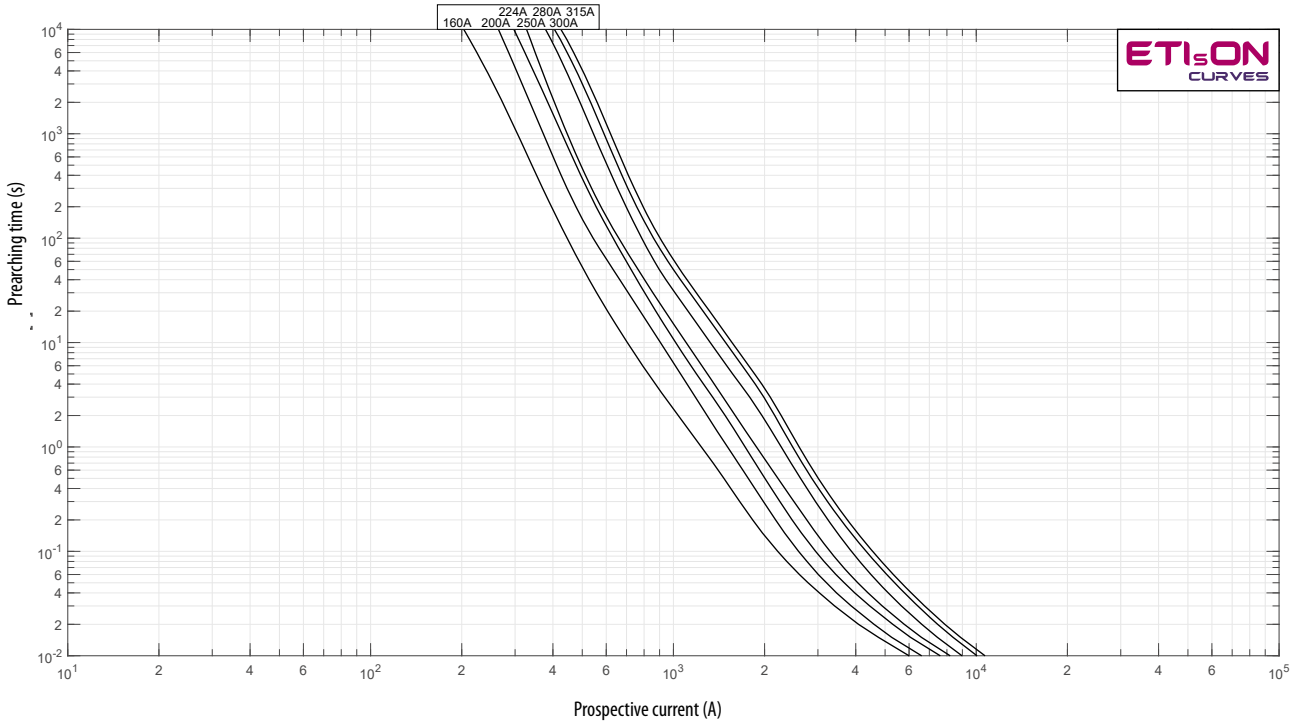


Cut-off current characteristics

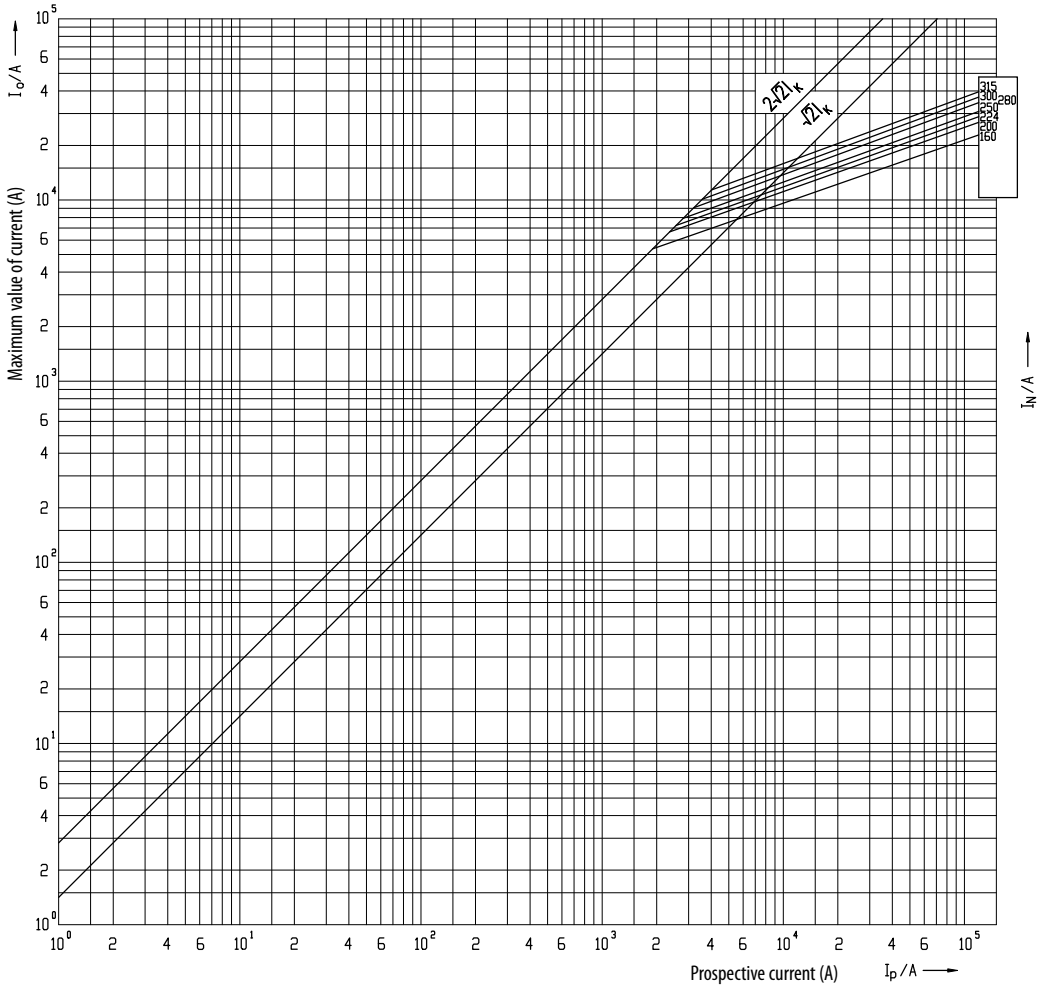


NH2 690V

Time current characteristics I/t, gG

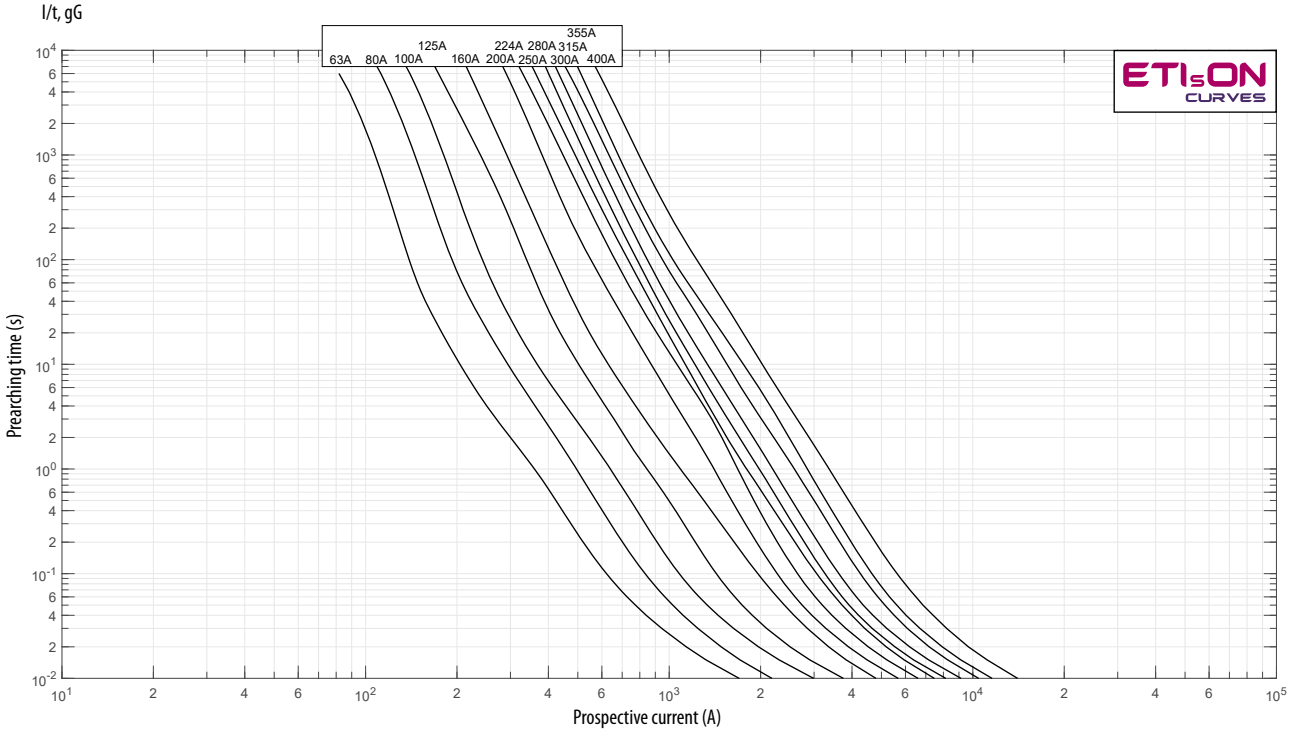


Cut-off current characteristics

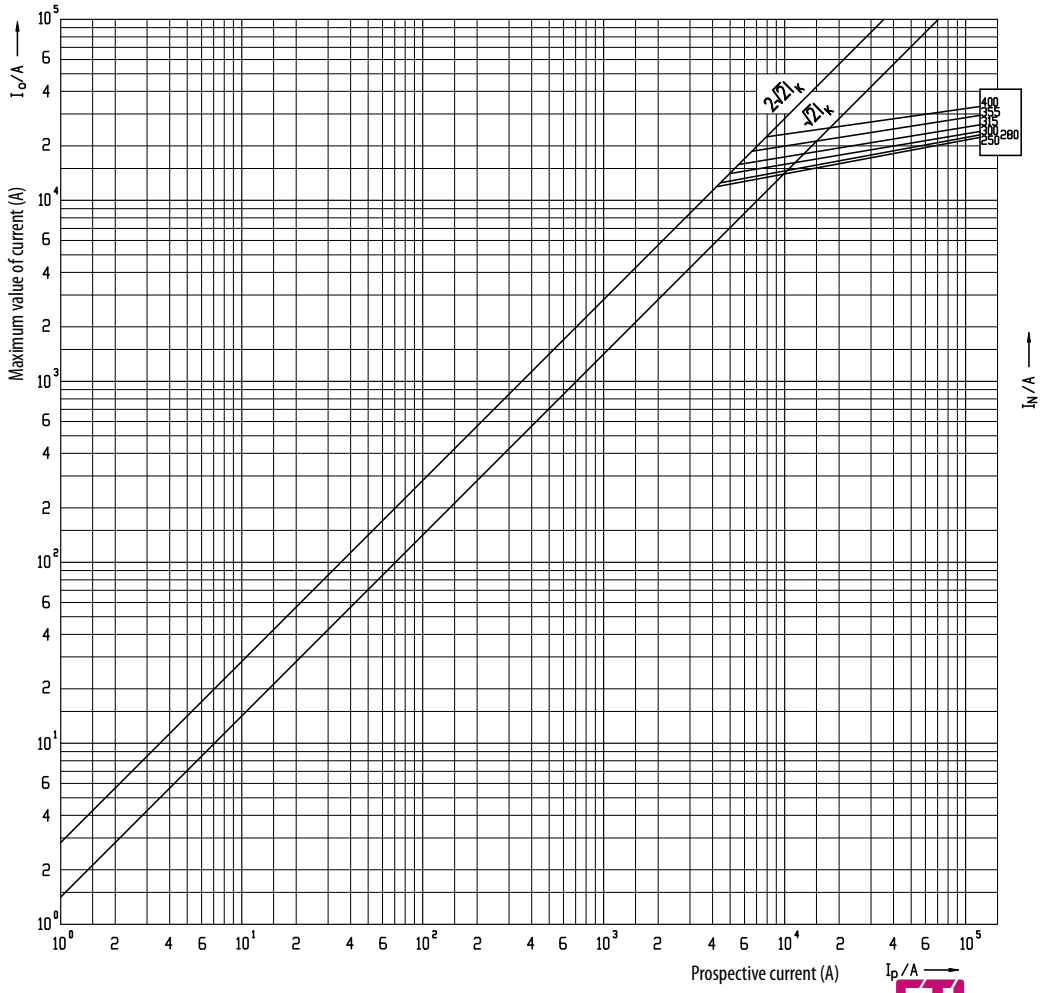


NH3C 400V

Time current characteristics
I/t, gG

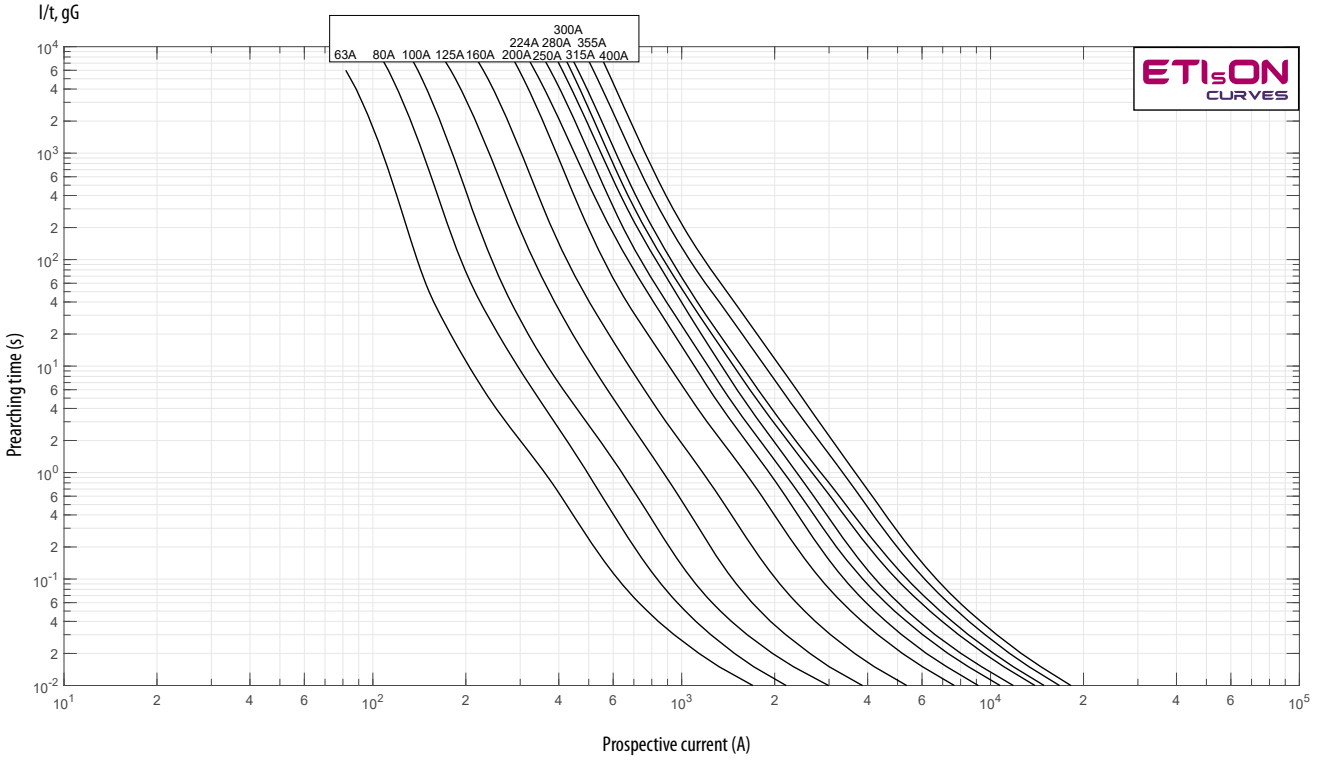


Cut-off current characteristics

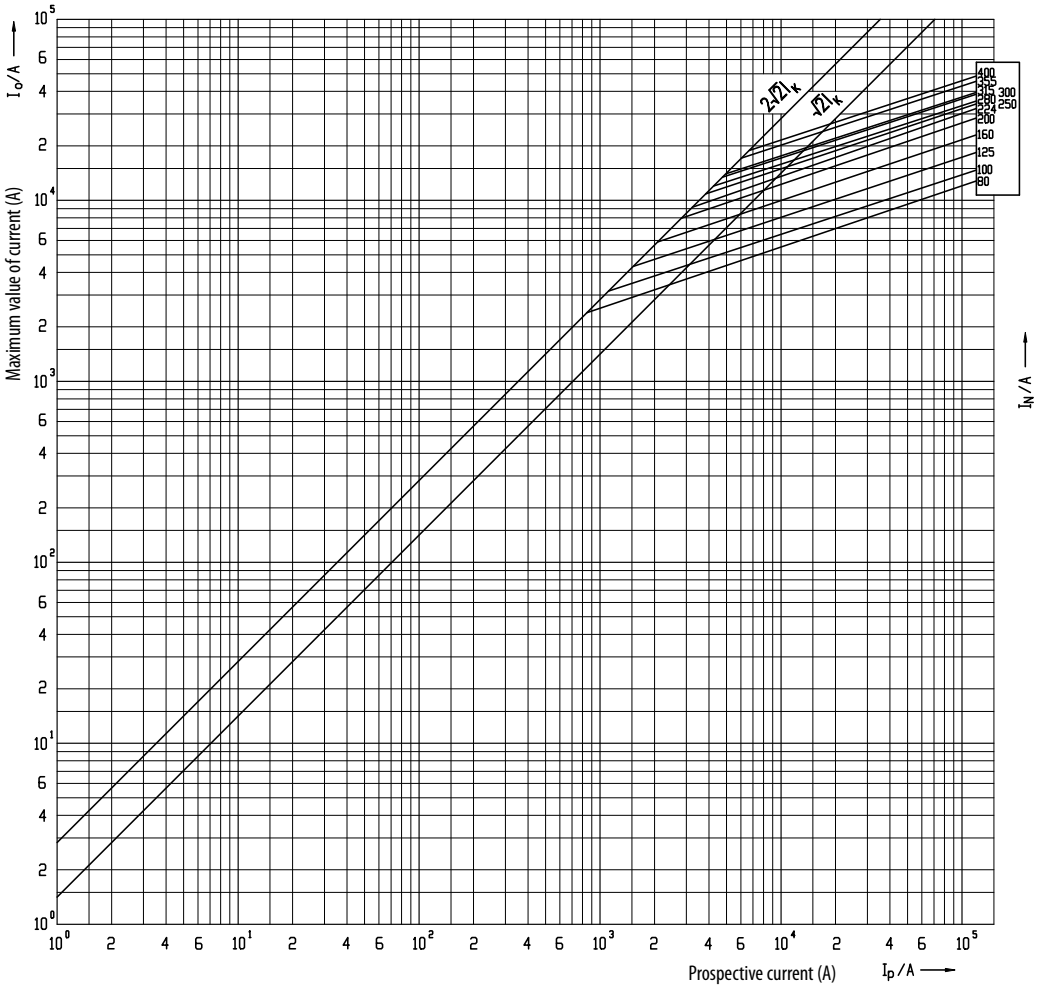


NH3C 500V

Time current characteristics
I/t, gG

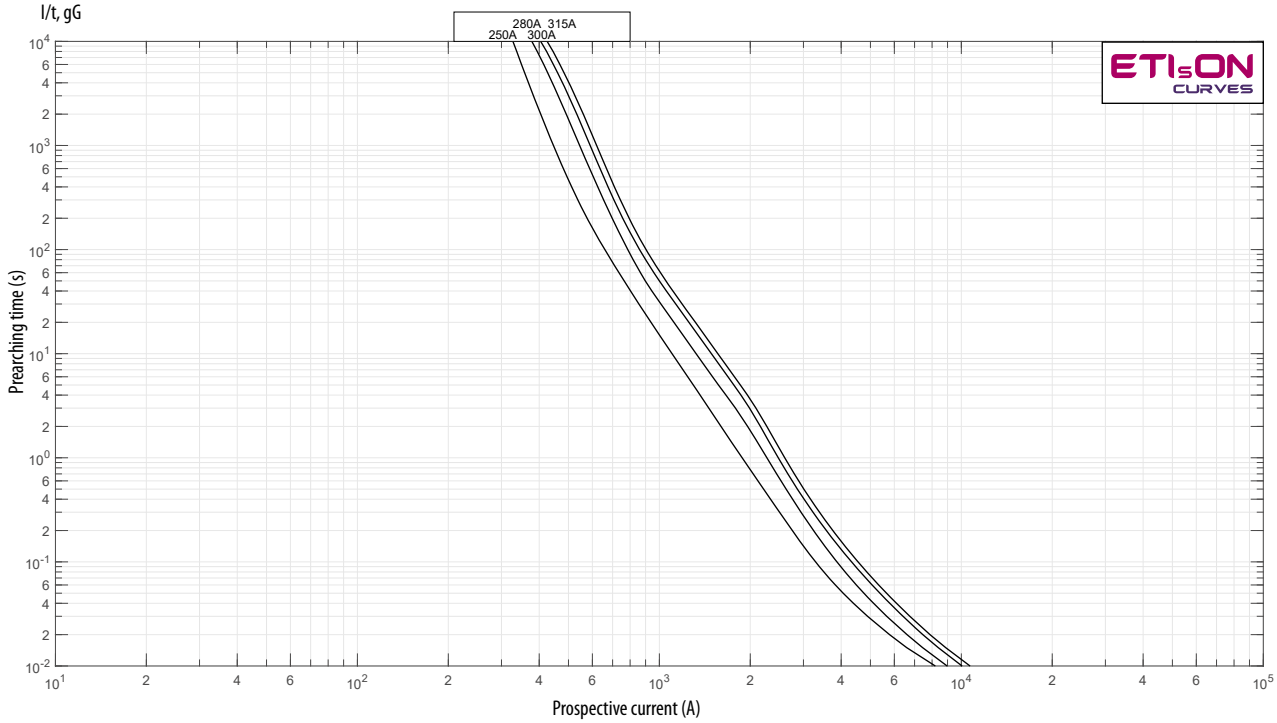


Cut-off current characteristics



NH3C 690V

Time current characteristics
I/t, gG



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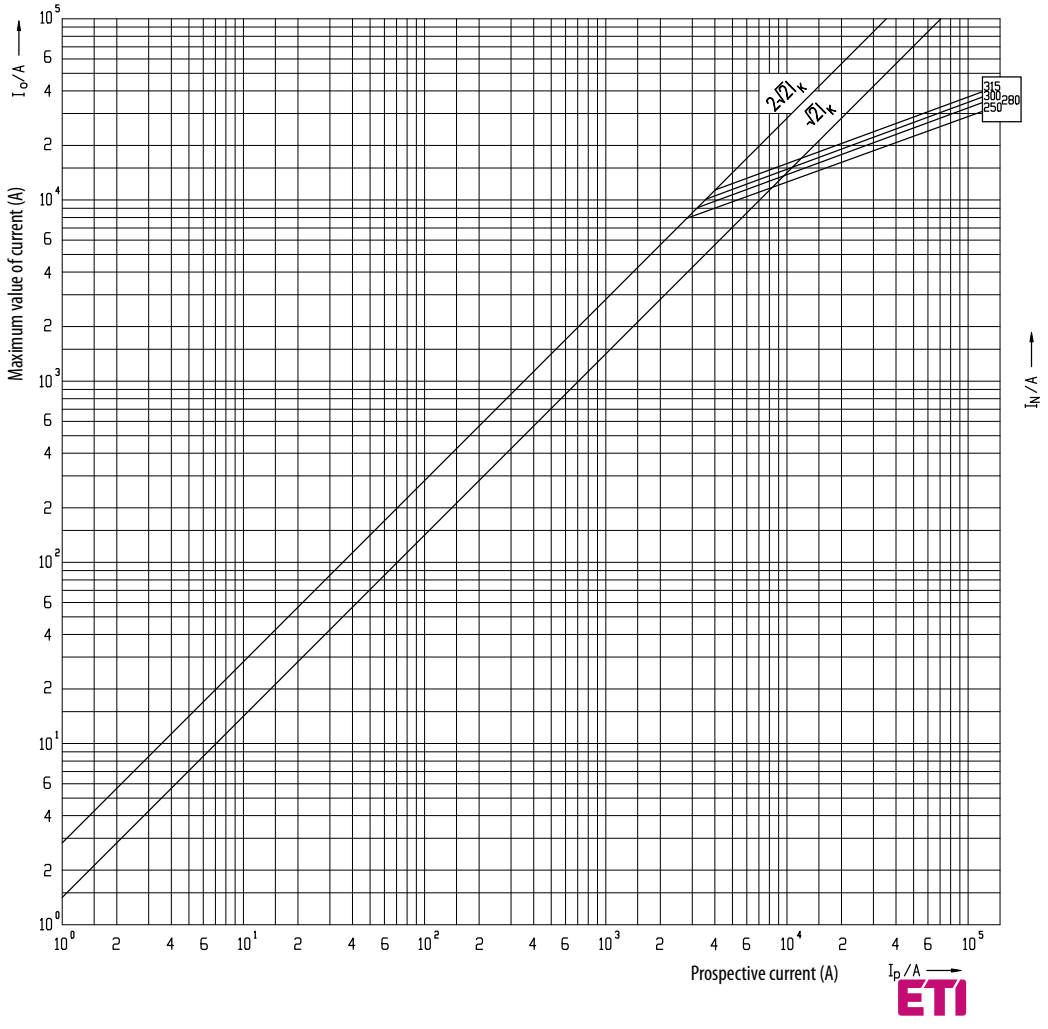
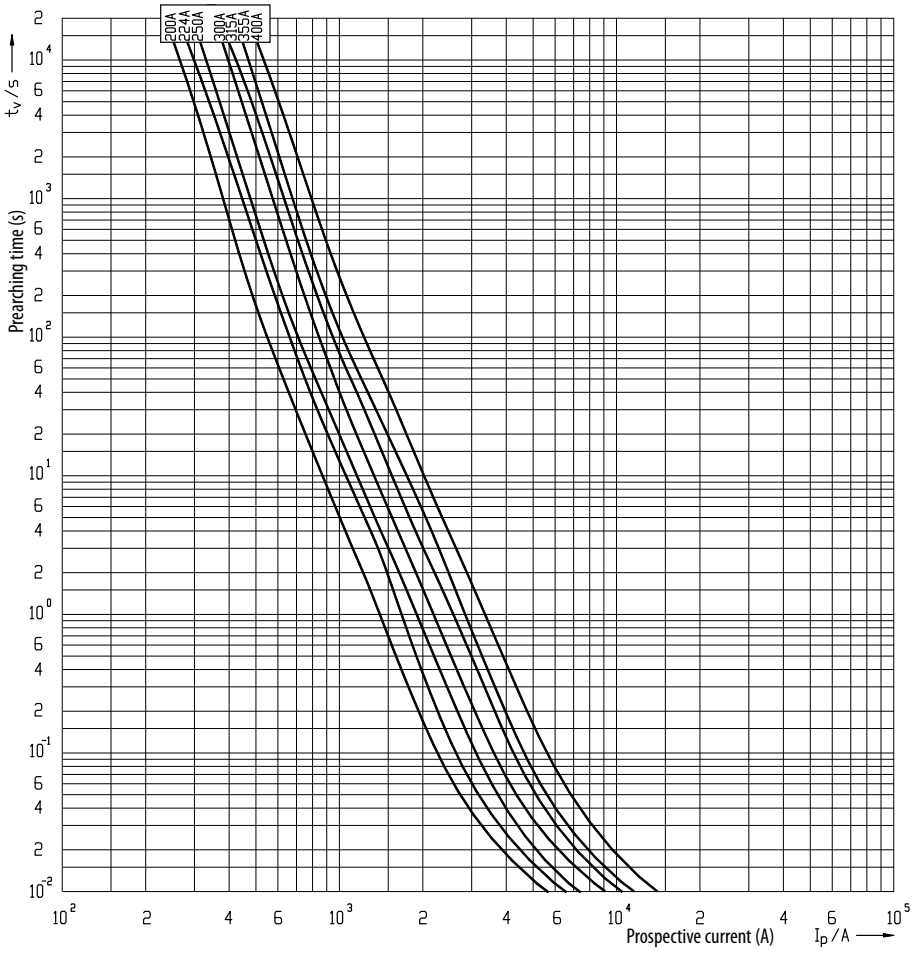
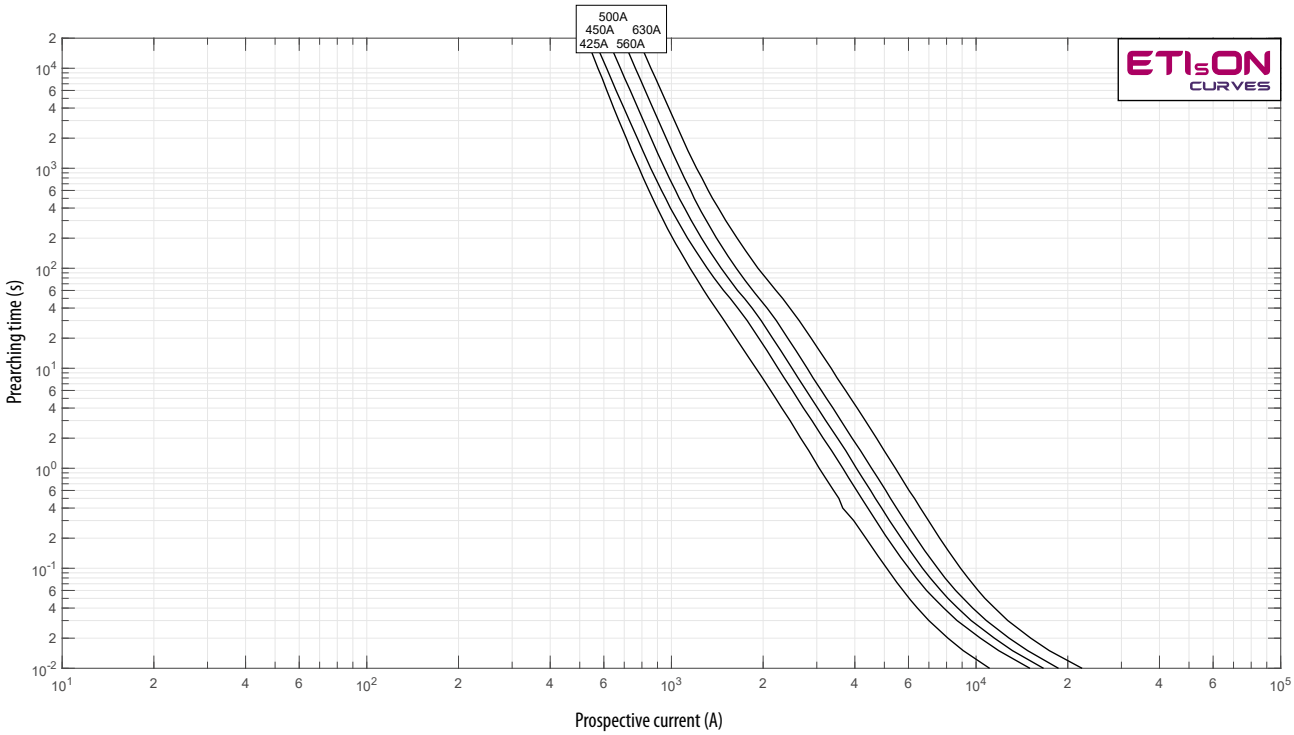


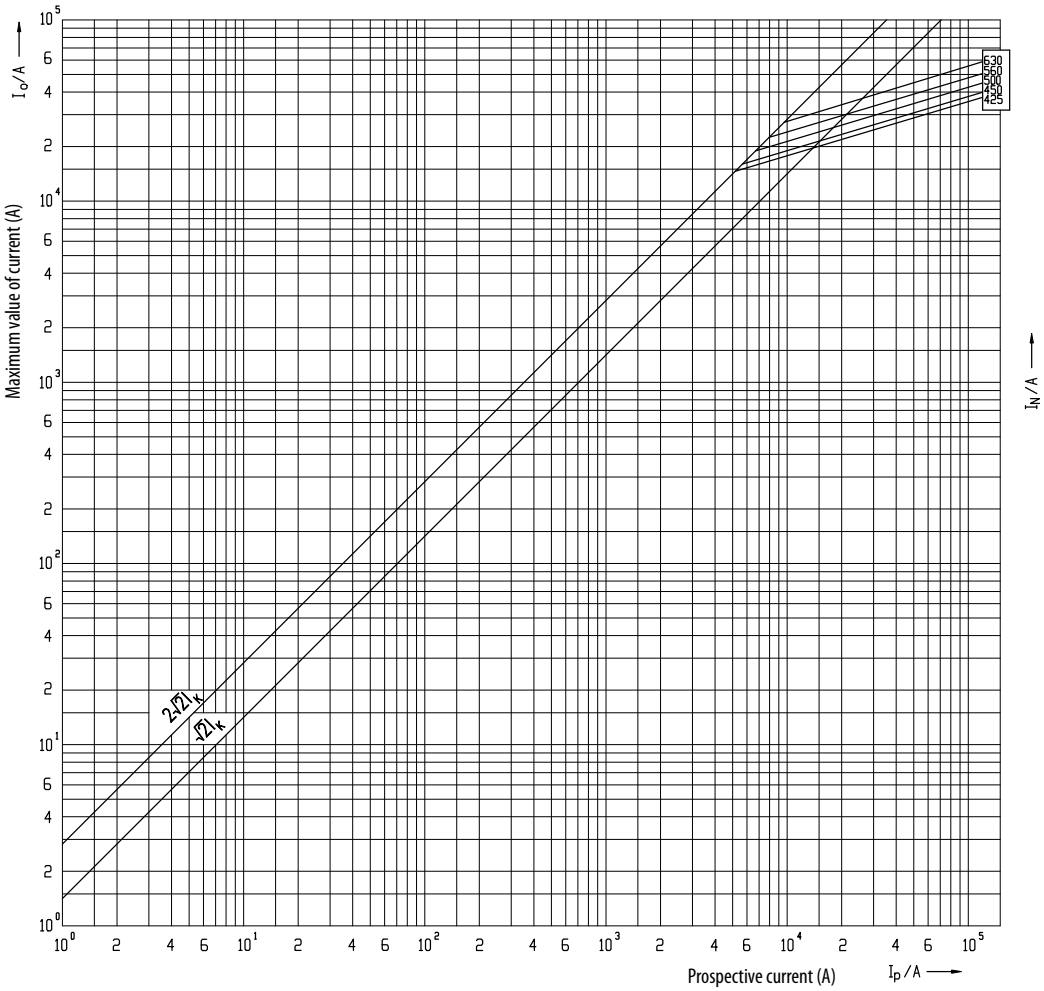
NH3 400V

Time current characteristics I/t, gG



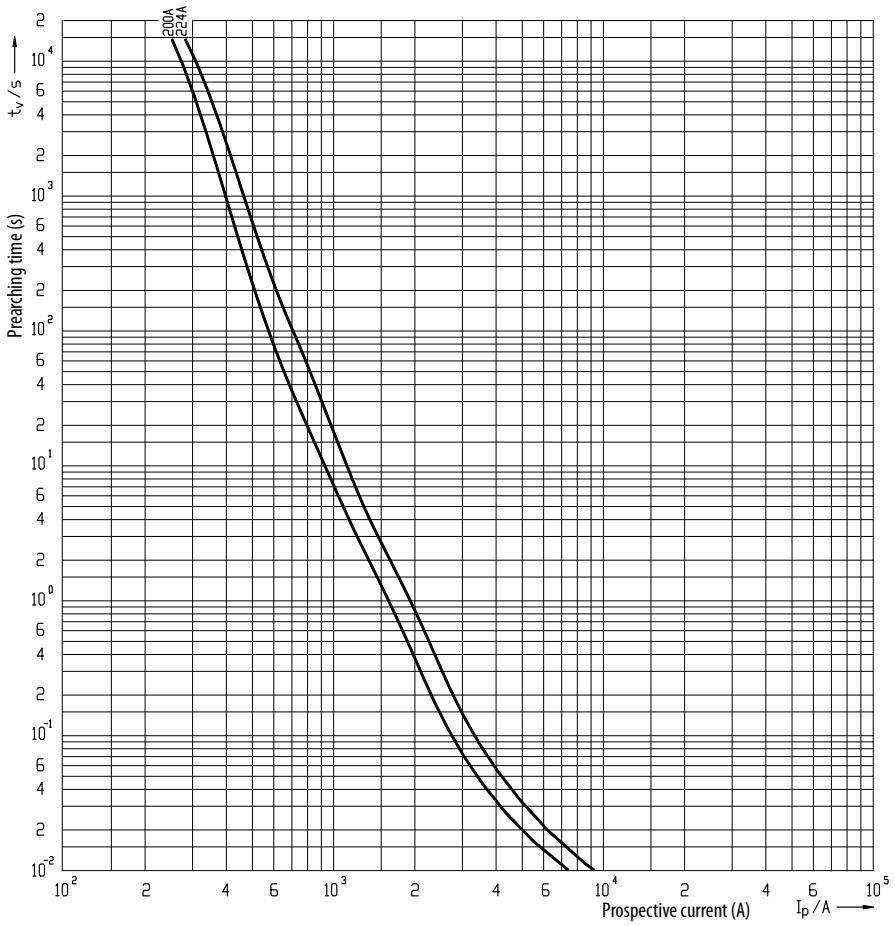


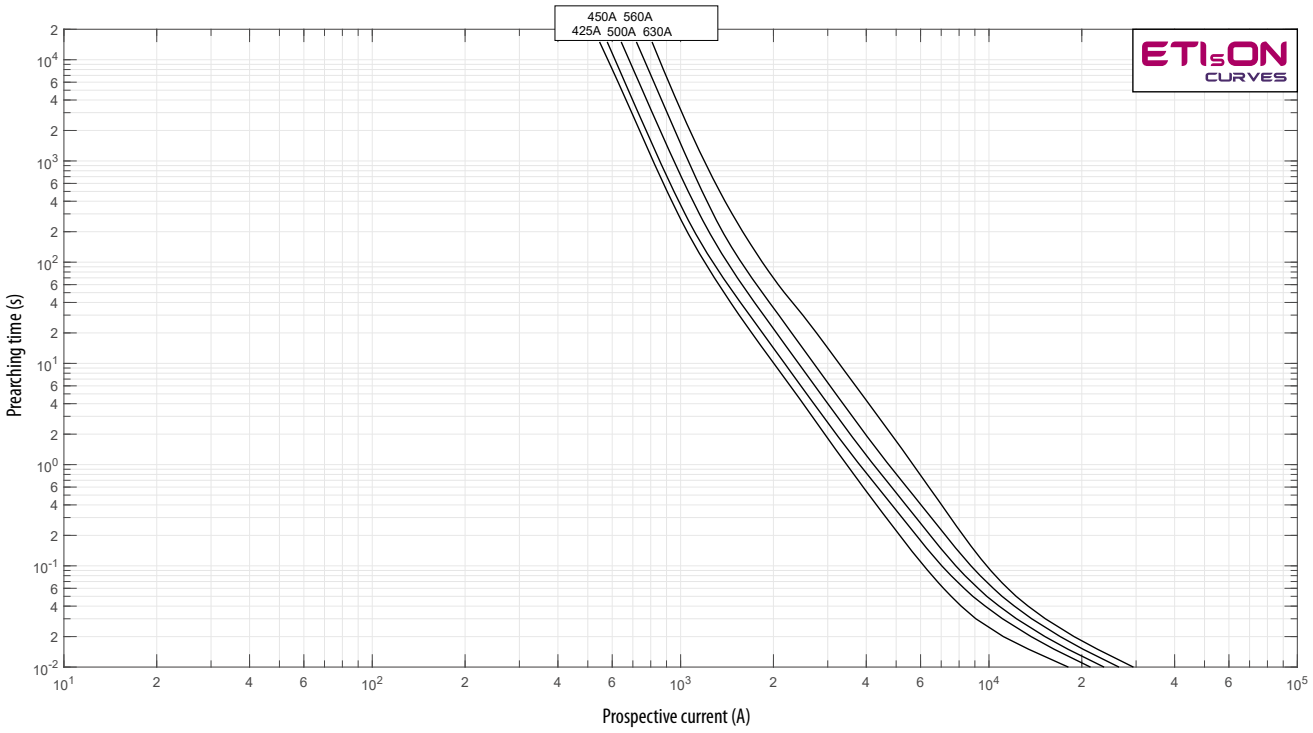
Cut-off current characteristics



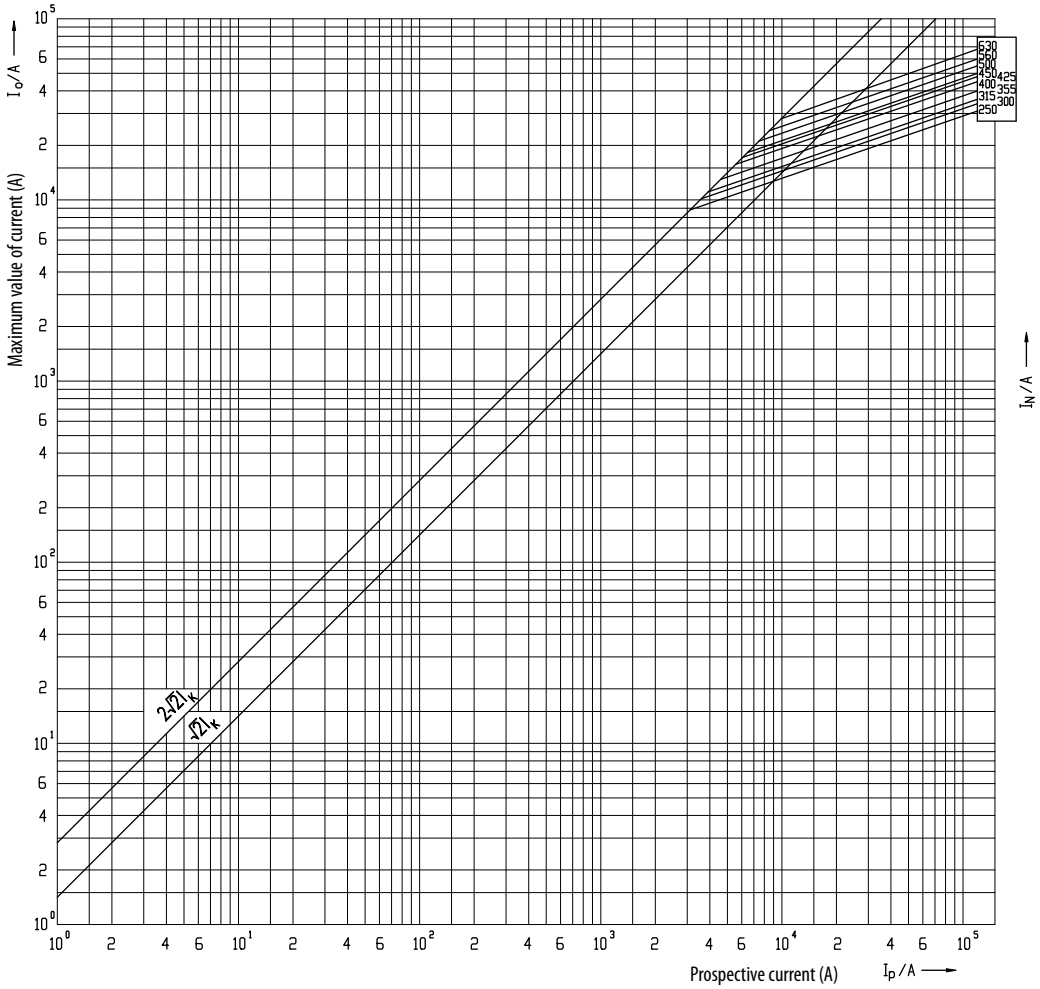
NH3 500V

Time current characteristics I/t, gG



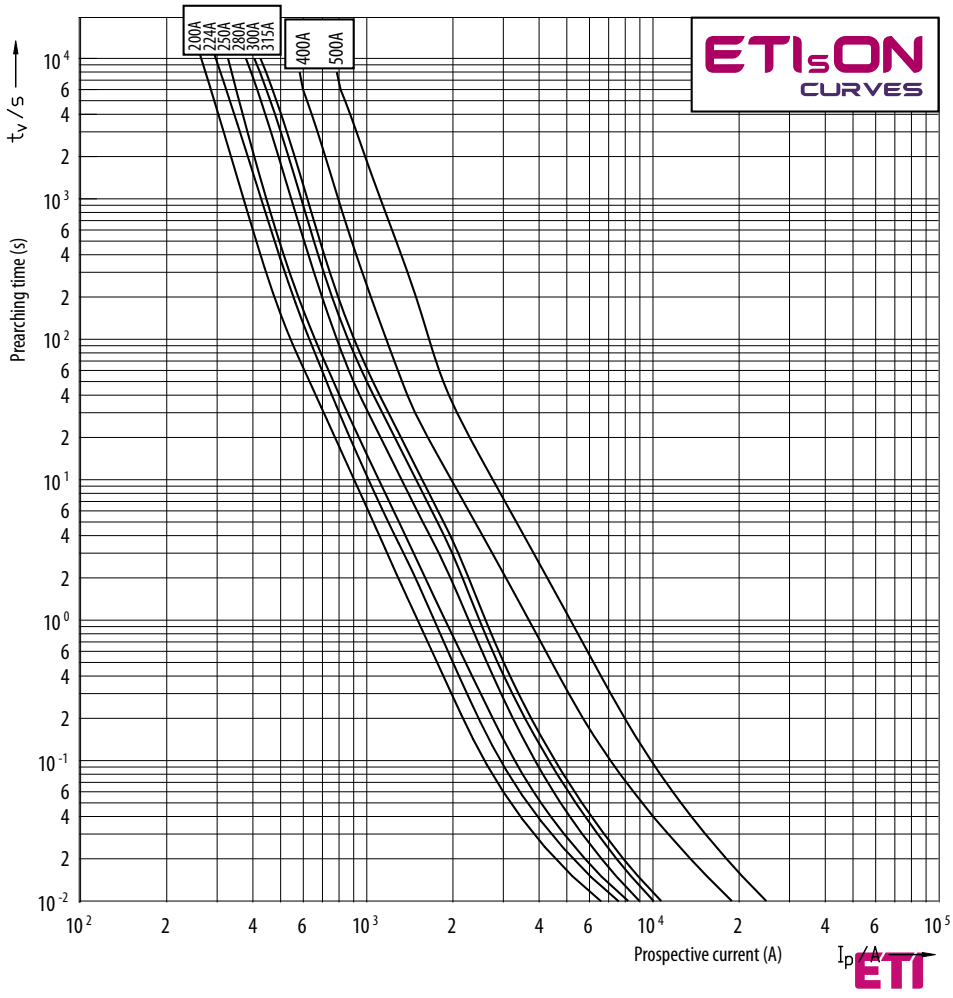


Cut-off current characteristics



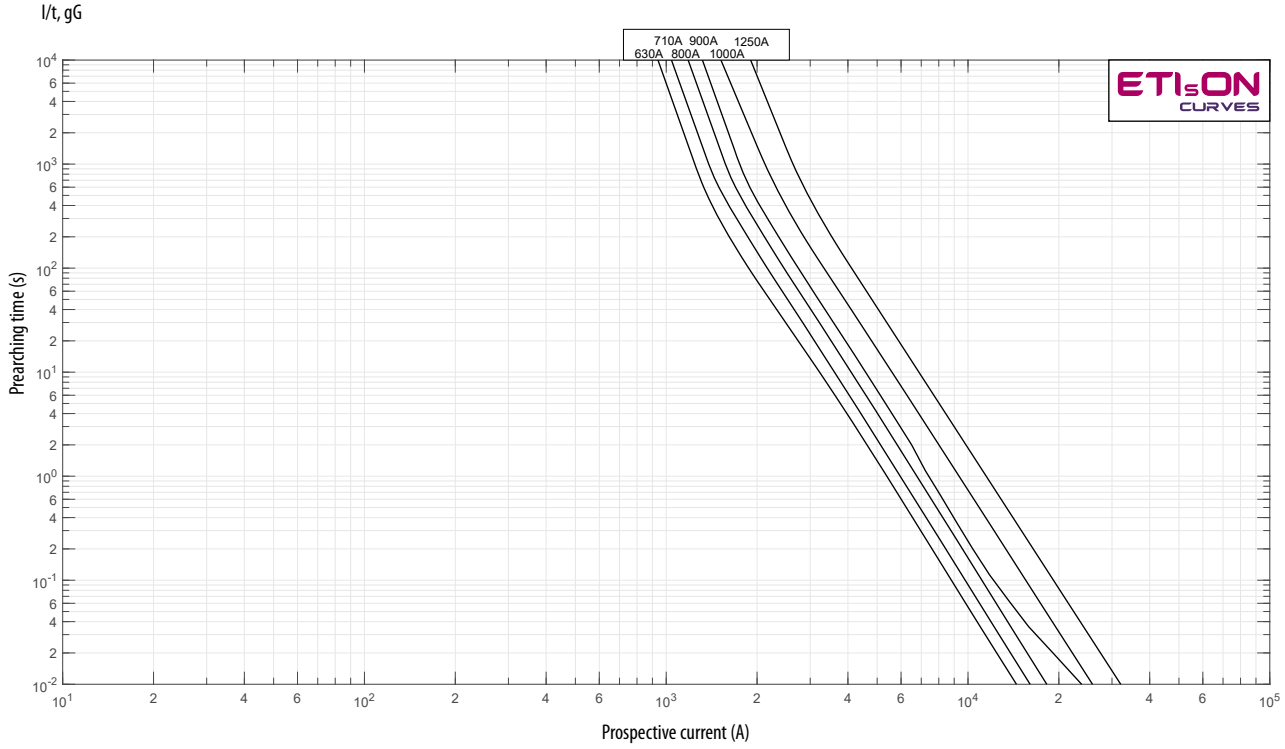
NH3 690V

Time current characteristics I/t, gG



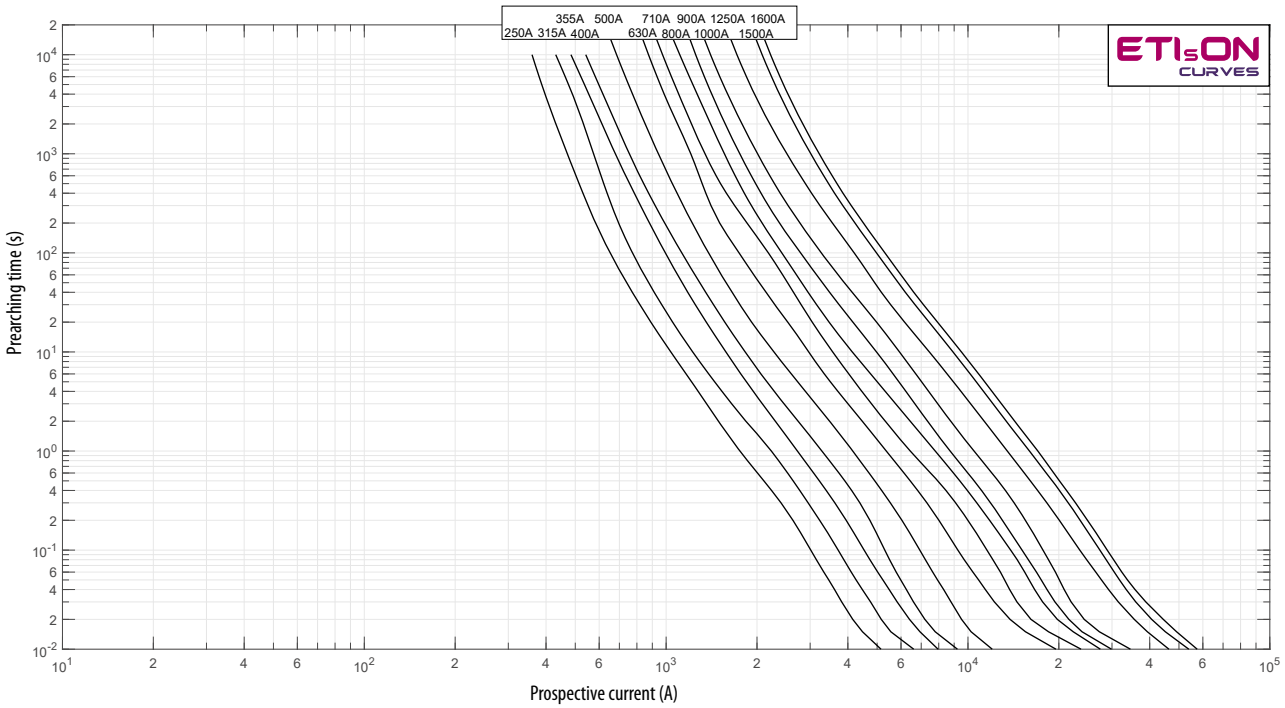
NH4

Time current characteristics I/t, gG



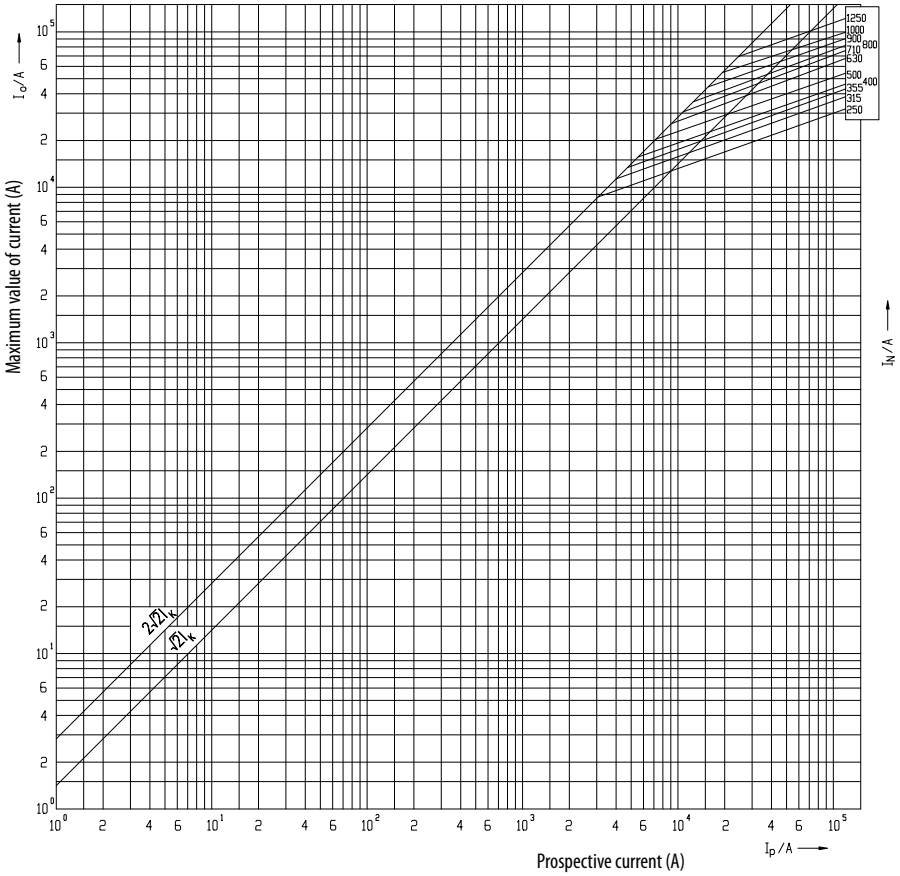
NH4a

Time current characteristics I/t, gG (nonstandard rated currents)



NH4
NH4a

Cut-off current characteristics



Joule integral I²t values and power losses ΔPV of NH knife blade fuses with gG characteristic

NH000 gG 400V, 500V

I_n	PV	I^2t 1ms	I^2tc ~254V	I^2tc ~440V	I^2tc ~550V
A	W	A^2s	A^2s	A^2s	A^2s
2	0,7	7,3	12	17	21
4	0,9	38	61	87	107
6	1,3	121	161	199	266
10	1,3	90	208	383	550
16	2,4	220	440	721	970
20	2,7	400	760	1210	1600
25	2,6	1200	2900	5470	8000
32	3	1760	3850	6838	9600
35	3,3	2500	5580	10033	14200
40	3,4	3300	6840	11670	16000
50	4,9	8200	15400	24370	32000
63	5,8	11100	22250	37000	50000
80	5,1	14500	31900	56850	80000
100	6,6	25000	55580	99700	141000
125	8,8	30000	66100	117900	166000
160	9,8	65800	-	-	170600

NH00 gG 400V, 500V

I_n	PV	I^2t 1ms	I^2tc ~254V	I^2tc ~440V	I^2tc ~550V
A	W	A^2s	A^2s	A^2s	A^2s
6	1,9	70	116	169	210
10	1,3	100	192	310	410
16	2,4	250	425	630	790
20	2,6	580	900	1240	1500
25	2,7	1000	1660	2400	3200
32	3,4	1340	2530	4030	5300
35	3,1	2300	3770	5410	6700
40	3,8	3200	4700	6200	7350
50	5	5000	8200	11800	14600
63	6	6600	13200	21900	32500
80	5,6	11200	21700	35160	46800
100	6,8	26400	44630	65560	82300
125	9	46100	76160	110000	136700
160	11,2	73600	135290	211300	275000

NH1C gG 400V, 500V

I_n	PV	I^2t 1ms	I^2tc ~254V	I^2tc ~440V	I^2tc ~550V
A	W	A^2s	A^2s	A^2s	A^2s
6	2,2	67	93	118	136
10	1,6	200	400	660	890
16	2,9	550	930	1360	1700
20	3,1	980	1600	2270	2800
25	3,3	1210	1980	2830	3500
32	3,8	1600	2930	4900	6500
35	3,6	2300	4350	6900	9100
40	4,1	2900	6100	10500	14500
50	5,3	4100	7930	13400	18000
63	6,5	4600	10600	21700	32000
80	6,3	14350	22030	40000	51700
100	7,3	23900	39200	63500	81000
125	9,7	39600	74500	130000	175000
160	12,9	72900	136410	223050	295000

NH1 gG 400V, 500V

I_n	PV	I^2t 1ms	I^2tc ~254V	I^2tc ~440V	I^2tc ~550V
A	W	A^2s	A^2s	A^2s	A^2s
6	2,5	20	53	107	162
10	1,5	140	282	420	640
16	2,8	500	920	1430	1850
20	2,4	760	1620	2810	3900
25	3,1	760	1960	3900	5900
32	3,6	800	2140	4380	6700
35	3,2	1300	3260	6400	9500
40	3,9	2020	6212	14140	23000
50	4,5	3000	7990	16360	25000
63	5,4	4500	14060	32400	53000
80	6,5	8000	24000	53000	85000
100	7,6	20000	51600	103300	155700
125	9,5	34000	75700	132700	186500
160	12,2	51000	120900	227400	330400
200	13,5	116000	224000	362520	482000
224	14,5	164000	318000	516470	688000
250	17	191000	372650	607930	812000

NH2C gG 400V, 500V

I_n	PV	I^2t 1ms	I^2tc ~254V	I^2tc ~440V	I^2tc ~550V
A	W	A^2s	A^2s	A^2s	A^2s
25	3,1	760	1960	3900	5900
32	3,6	800	2140	4380	6700
35	3,2	1300	3260	6400	9500
40	3,9	2020	6212	14140	23000
50	4,5	3000	7990	16360	25000
63	5,4	4500	14060	32400	53000
80	6,5	8000	24000	53000	85000
100	7,6	20000	51600	103300	155700
125	9,5	34000	75700	132700	186500
160	12,2	51000	120900	227400	330400
200	13,5	116000	224000	362520	482000
224	14,5	164000	318000	516470	688000
250	17	191000	372650	607930	812000

NH2 gG 400V, 500V

I_n	PV	I^2t 1ms	I^2tc ~254V	I^2tc ~440V	I^2tc ~550V
A	W	A^2s	A^2s	A^2s	A^2s
32	3,6	800	2140	4380	6700
35	3,2	1300	3260	6400	9500
40	3,9	2020	6212	14140	23000
50	4,5	3000	7990	16360	25000
63	5,4	4500	14060	32400	53000
80	6,5	8000	24000	53000	85000
100	7,6	20000	51600	103300	155700
125	9,5	34000	75700	132700	186500
160	12,2	51000	120900	227400	330400
200	13,5	116000	224000	362520	482000
224	14,5	164000	318000	516470	688000
250	17,0	191000	372650	607930	812000
280	19,4	217150	432500	716100	965000
300	20	260000	523250	873150	1182000
315	22,5	299900	595600	985000	1325000
355	23,5	558000	971300	1457600	1853000
400	29	740500	1400150	2232400	2941500

NH3C gG 400V, 500V

I_n	PV	I^2t 1ms	I^2tc ~254V	I^2tc ~440V	I^2tc ~550V
A	W	A^2s	A^2s	A^2s	A^2s
80	6,5	8000	24000	53000	85000
100	7,5	20000	51600	103300	155700
125	9,2	34000	75700	132700	186500
160	11,9	51000	120900	227400	330400
200	13,1	116000	224000	362520	482000
250	16,8	191000	372650	607930	812000
280	19,4	217150	432500	716100	965000
300	20	260000	523250	873150	1182000
315	22,5	299900	595600	985000	1325000
355	23,5	558000	971300	1457600	1853000
400	29	740500	1400150	2232400	2941500

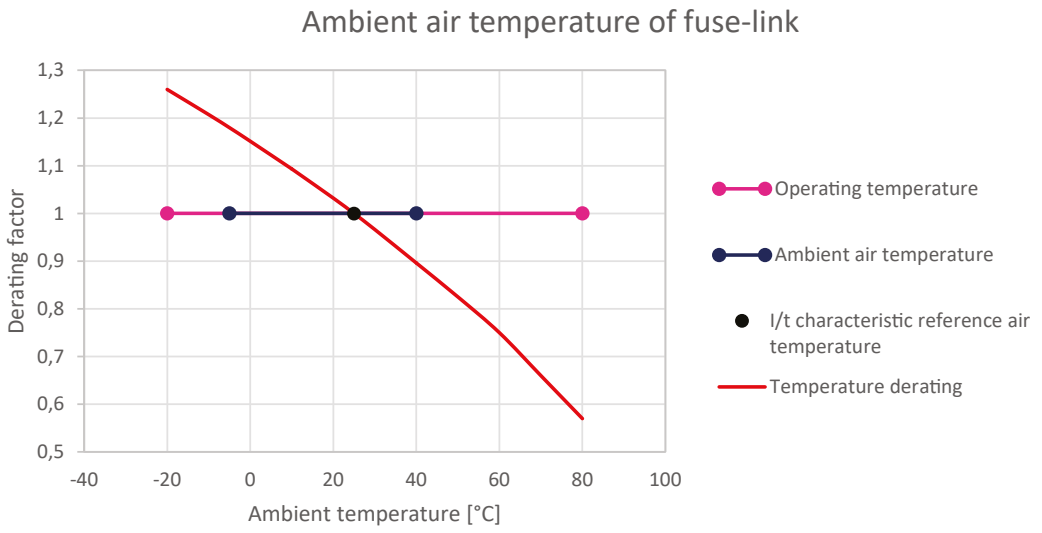
NH3 gG 500V

I_n	PV	I^2t 1ms	I^2tc ~254V	I^2tc ~440V	I^2tc ~550V
A	W	A^2s	A^2s	A^2s	A^2s
425	28,7	600800	1119900	1677850	2131000
500	33,5	776500	1404100	2166500	2800000
560	37,6	1155000	2044640	3106350	3978000
630	40,2	1619000	2902100	4449520	5729000

NH4a gG 500V

I_n	PV	I^2t 1ms	I^2tc ~220V	I^2tc ~400V	I^2tc ~550V
A	W	A^2s	A^2s	A^2s	A^2s
630	43,5	2150000	-	-	10000000
800	59,5	3900000	-	-	13000000
1000	84	6250000	-	-	20000000
1250	104	8000000	-	-	35000000
1500	145	-	-	-	-
1600	153	12000000	-	-	45000000

Effect of ambient temperature on the rated current of fuses



Fuse-link NV/NH aM

Rated current	Breaking capacity	Rated voltage
2-1250 A	**100 kA**	**500V, 690 V**

Fuse-links with aM characteristics are intended for protection of switchgears and controlgears as well as motors in motor drives where gG characteristics do not comply with all requirements of succesful protection of these devices. They are made in all standard NV sizes from 00 to 4a for all standard rated currents and for voltages to 690 V. Their main duty is to enable a full usage of switchgears and controlgears in the region of starting currents and to prevent sparking or destruction of protective contacts in case of short-circuit currents. It should be noted that these fuse-links are intended only for protection in the limited region (in the region of short-circuit currents).

Technical data:

Rated voltage Un	500V, 690V AC
Rated current In	2-1250 A
Dimensions	DIN 43620, IEC 60269, EN 60269
Fusing characteristics	IEC 60269
Breaking capacity	100 kA

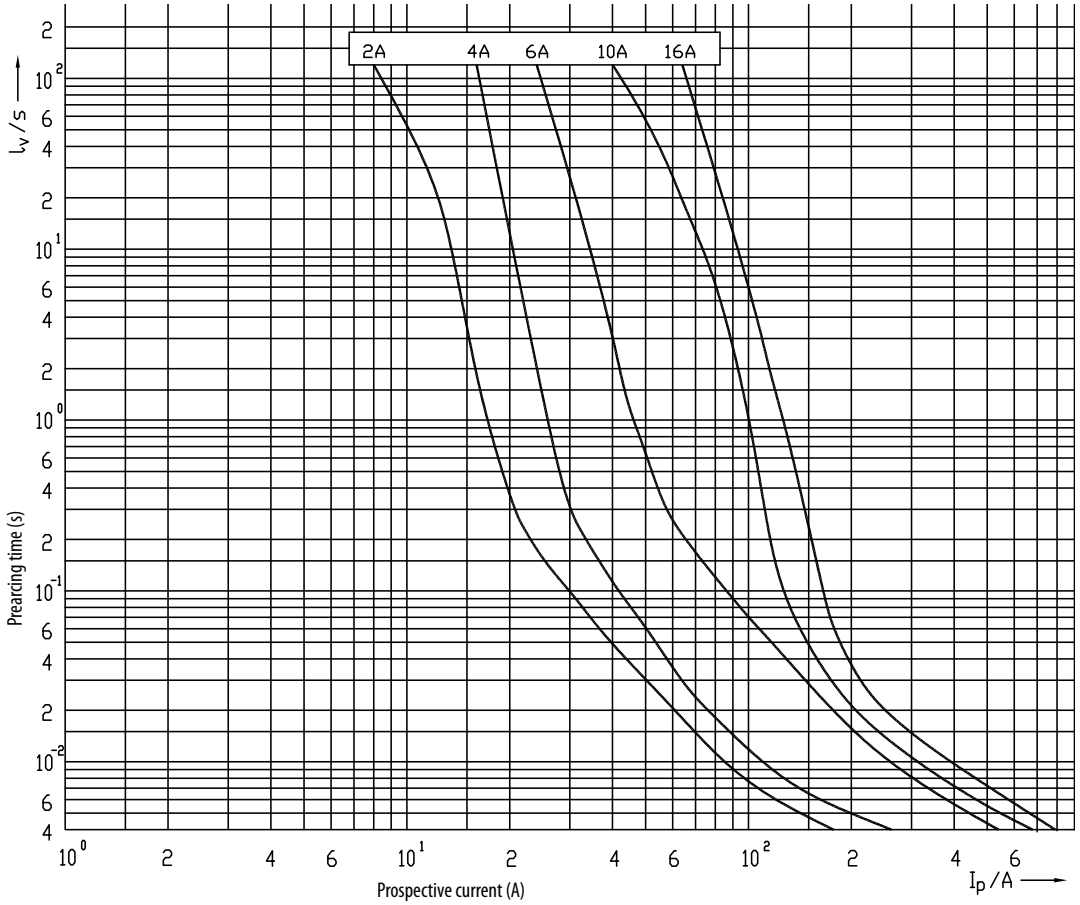
NV/NH fuse-link aM

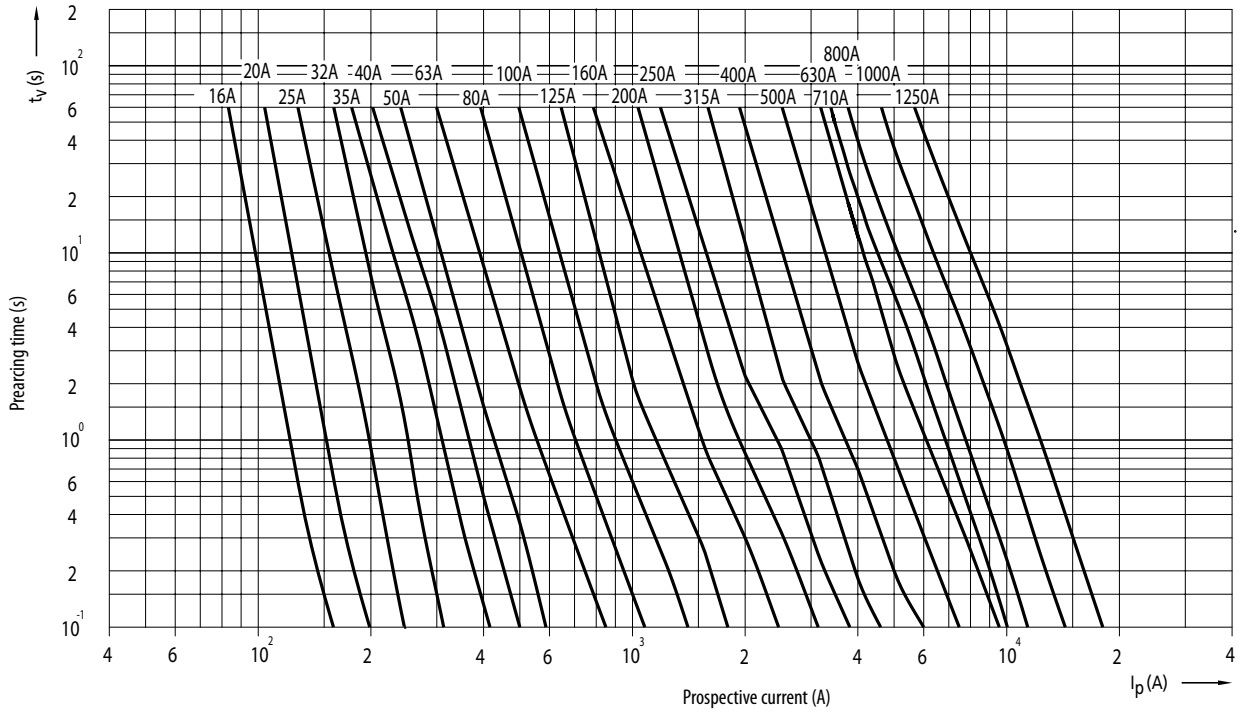
Rated current [A]	Code No. ~ 690 V, 100 kA							
	NV 00 C KOMBI	NV 00 KOMBI	NV 0	NV 1 kombi	NV 2 C kombi	NV 2 kombi	NV3 kombi	NV4a
2	004181401							
4	004181402							
6	004181403							
10	004181404			004184425				
16	004181405		004112125**	004184426				
20	004181406		004112126**	004184427				
25	004181407		004112127**	004184428				
32	004181408		004112128**					
35	004181409		004112129**	004184429	004185429			
40	004181410		004112130**	004184430	004185430			
50	004181411	004182411	004112131**	004184431	004185431			
63	004181412	004182412	004112132**	004184420	004185412			
80	004181413*	004182413	004112133**	004184421	004185413			
100	004181414*	004182414	004112134**	004184422	004185414			
125		004111735**	004112135**	004184423	004185415			
160		004111736**	004112136**	004184424	004185416	004185425		
200				004184417	004185417	004185426		
224				004184418	004185418	004185427		
250				004184419	004185419	004185428		
280						004185420		
300						004185421		
315						004185422		
355						004185423	004186428	
400						004185424	004186429	
425							004186430	
500							004186431	
630							004186432**	004187432**
710								004187433**
800								004187434**
900								004187435**
1000								004187436**
1250								004187437**

Weight and Packaging the same as for gG fuse-links.
*500V, 120 kA
** NOT in KOMBI version

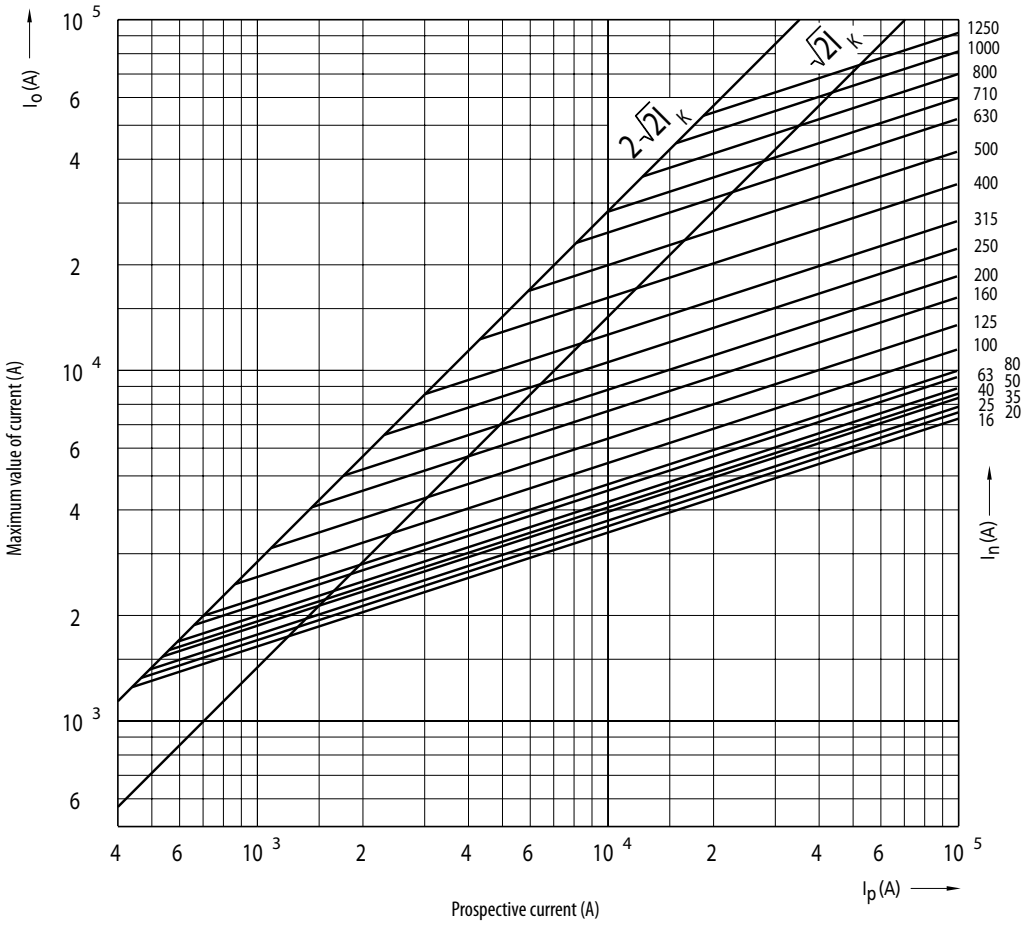
Characteristics aM

Time current characteristics I/t, aM





Cut-off current characteristics



Power dissipation of fuse-links NV aM 690 V a.c.

size	the highest rated current at according to VDE 0636-2011	the maximal power dissipation	real power dissipation of fuse-links
	690 V AC (A)	690 V AC (W)	690 V AC (W)
NV 00	160	12	9
NV 1	250	32	28
NV 2	400	45	41
NV 3	630	60	58
NV 4a	1250	110	105

Fuse-link NV/NH gF

Rated current	Breaking capacity	Rated voltage
20-250 A	**100 kA**	**400/500 V**

Fuse-links with gF current characteristics are intended for protection of low voltage installations and energy lines, where expected short circuit currents are low. We offer all standard rated currents in sizes NH00C, NH00, NH1C, NH2C and NV2 for voltages of up to 500V.

Technical data

Rated voltage Un	400/500 V AC
Rated current In	20 - 400 A
Dimensions	DIN 43620, IEC 60269, EN 60269
Fusing characteristics	gF -> PN 91/E-06160/10 PN 91/E-06160/21
Breaking capacity In	100kA

NV/NH fuse-link gF

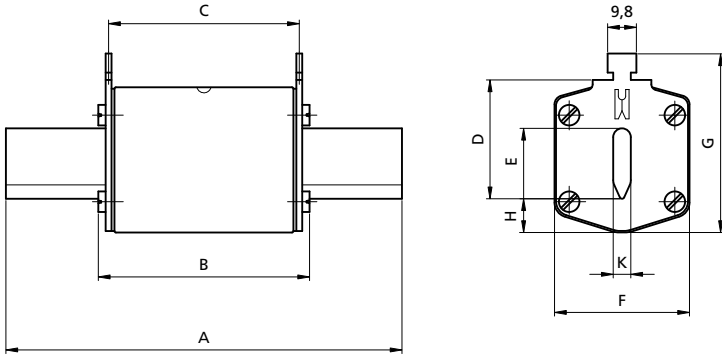
Rated current [A]	Code No. NH000 /00C	Code No. NH00		Code No. NH1C	Code No. NH1		Code No. NH2C	Code No. NH2
	400V	400V	500V	400V	400V	500V	500V	500V
20	004119200		004114341	004139200		004139110	004139388	
25	004119201		004114333	004139201		004139111	004139389	
32	004119202		004114334	004139202		004139112	004139390	
40	004119203		004114335	004139203		004139113	004139391	
50	004119204		004114336	004139204		004139114	004139392	
63		004119100	004114337	004139205		004139115	004139393	
80		004119101	004114338	004139206		004139116	004139394	
100		004119102	004114339	004139207		004139117	004139395	
125		004119103	004114340	004139208		004139118	004139396	
160		004119104		004139209		004139119	004139397	
200					004139100	004139120	004139398	
250					004139101	004139121	004139399	
315								004139412
355								004139413
400								004139414

Weight and Packaging the same as for gG fuse-links.

Power dissipation of fuse-links gF 400 V a.c.

size	the highest rated current at according to PN-IEC 60269-2	the maximal power dissipation	real power dissipation of fuse-links
	690 V AC (A)	690 V AC (W)	690 V AC (W)
NV 00C	100	12	7,2
NV 00	160	16	15,1
NV 1C	160	23	21,9
NV 1	250	32	31,3

Fuse Links NV/NH gF Dimensions

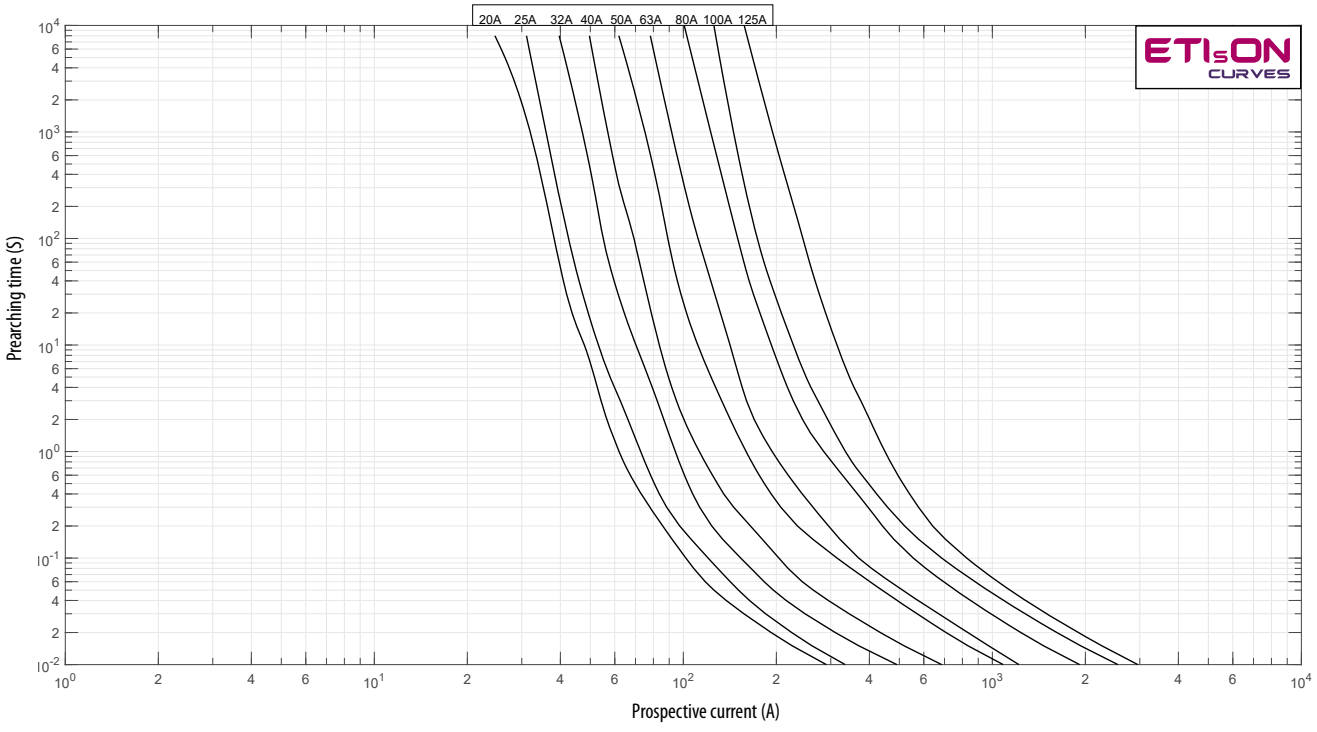


type	dimensions										
	A	B	C	D	E	F	G	H	I	J	K
NV00C	79	53	47	35	15	21	52	7,5			6
NV00	79	53	47	35	15	28	56	12			6
NV1C	135	68	65	40	15	28	61	12			6
NV1	135	72	65	40	20	46	65	14			6

Characteristics gF

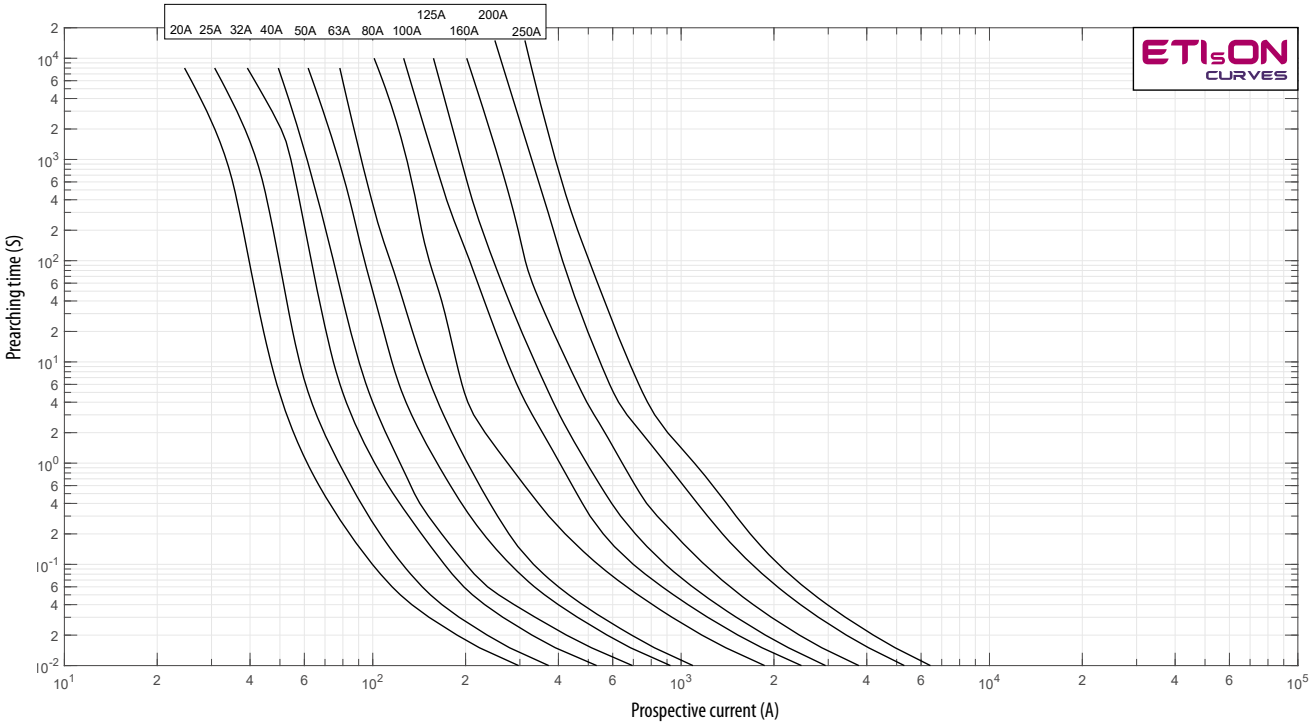
NH00 500V

Time current characteristics I/t, gF



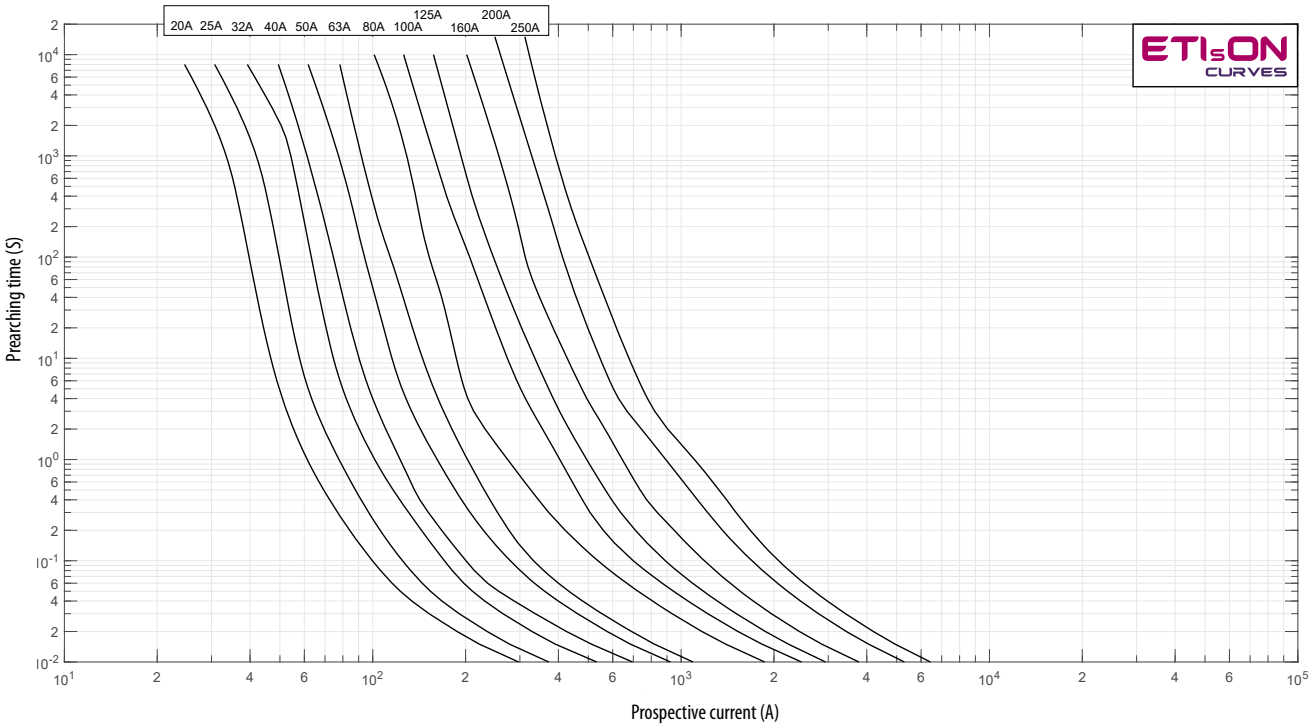
NH1 500V

Time current characteristics I/t, gF



NH2C 500V

Time current characteristics I/t, gF



Fuse-link NV/NH gTr

Rated transformer power	Breaking capacity	Rated voltage
50-1000 kVA	**100 kA**	**400 V**

Technical data

Rated voltage	400 V AC
Rated transformer power	50-1000 kVA
Breaking capacity	100 kA

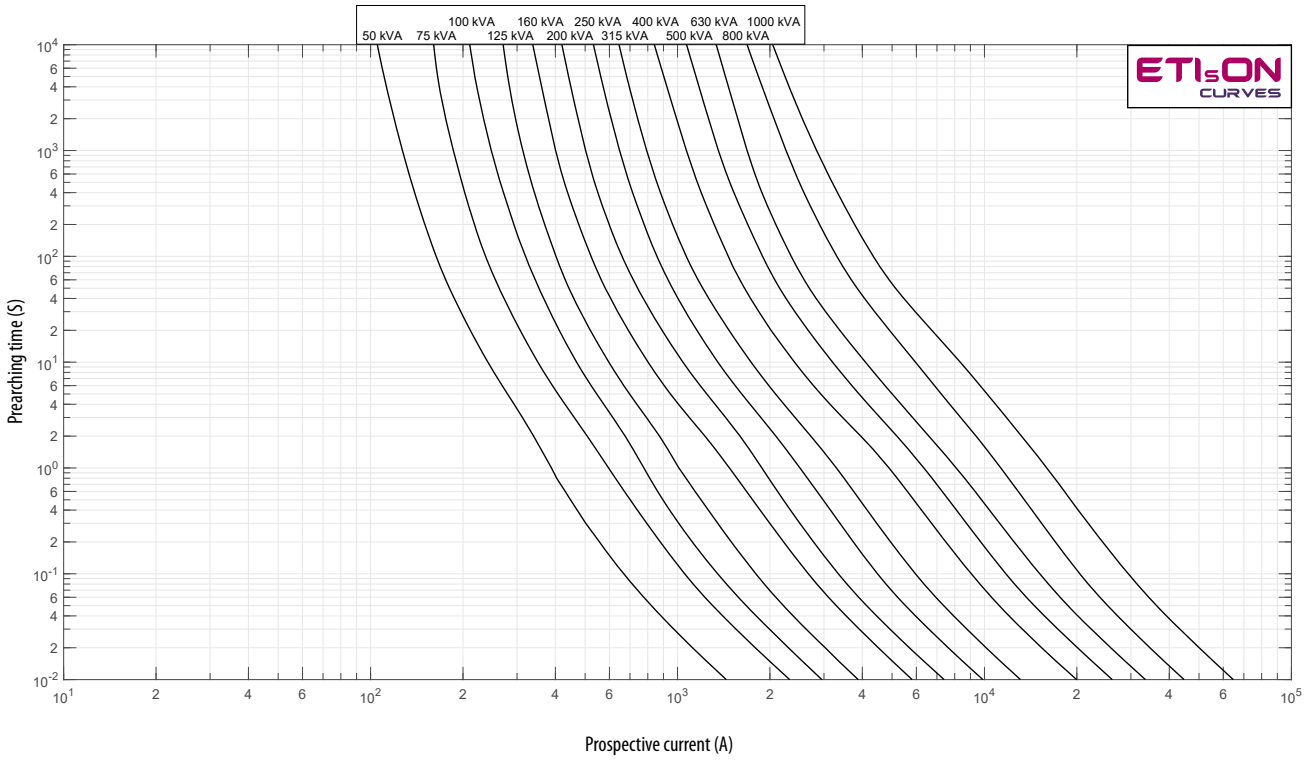
NV/NH fuse-link gTr

Rated transformer power [kVA]	Code No. NV/NH 2	NV/NH 2 INSULATED	NV/NH 3C	NV/NH 3	NV/NH 3 MI	NV/NH 3 INSULATED	NV/NH 4a	g	
50	004114400*	004114407*	004115400*			004115430*	004116400		
63	004114399*		004115399*						
75	004114401*	004114413*	004115401*			004115431*	004116401		
100	004114402*	004114412*	004115402*			004115432*	004116402		
125	004114403*	004114408*	004115403*			004115433*	004116403		
160	004114404*	004114409*	004115404*			004115434*	004116404	the same as for gG fuse-links	the same as for gG fuse-links
200	004114405*	004114410*	004115405*			004115435*	004116405		
250	004114406*	004114411*	004115406*			004115436*	004116406		
315				004115407*		004115437*	004116407		
400				004115408*		004115438*	004116408		
500				004115409	004115422		004116409		
630				004115410	004115423		004116410		
800							004116411		
1000							004116412		

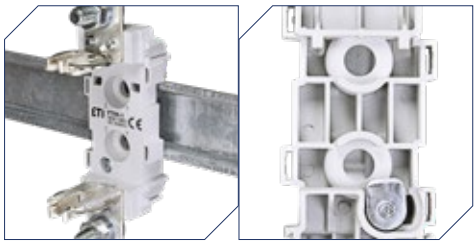
* KOMBI version

Characteristics gTr

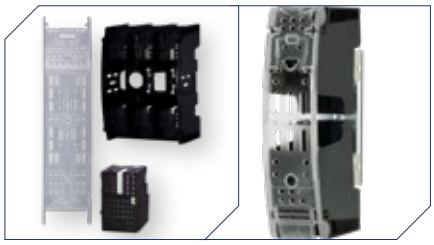
Time current characteristics I/t, gTr



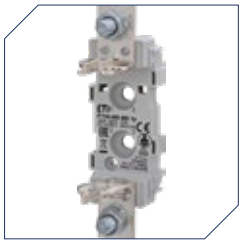
NV/NH Fuse Bases



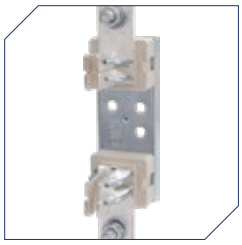
PT fuse bases can be mounted on a TH-35 rail



Protection against accidental contact ensured by insulating contact covers and protective covers, IP20

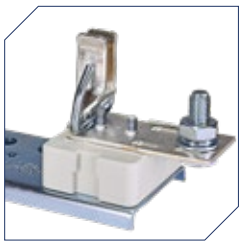


Characteristics of PT fuse bases:
In =160A - 630A;
Un =690V a.c.;
Icu =120kA



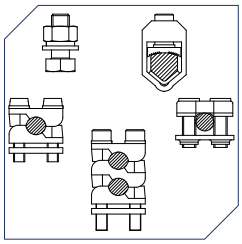
Characteristics of PK fuse bases:
In =160A - 1250A;
Un =690V a.c.;
Icu=200kA

Dual contact system for NH3 fuse bases

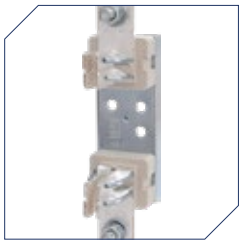


Galvanically silver plated contacts ensure reliable electrical connections

Possibility to build multipole systems by linking PT fuse bases together, using dividing partitions



We offer one- and two-cable terminals with a broad range of available connections:
- flat terminals - prism clamps
- clip terminals -V clamps



PK fuse bases with ceramic insulators are resistant to temperature fluctuations and dynamic impacts.

PK Fuse Bases with Ceramic Insulation sizes 00 to 3

Rated voltage
690 V

PK fuse bases with ceramic insulation for NH fuses are suitable for surface mounting on mounting plates and can be used in combination with NH fuse-links according to DIN VDE 0636-2/IEC 60269-2 as well as solid links.

They offer a compact and simple solution for application of fuses as protective elements in low voltage distribution boards and are characterized by silver plated contacts, in-house developed technical ceramic materials with high thermal resistance and a broad range of connections.

PK fuse bases are available in sizes 00 to 3, in 1-pole and 3-pole version. The range comes with accessories including protection barriers, IP20 finger safe protection kits and neutral links, which, along with the possibility of attaching additional poles, provides an optimal solution for every application.

Technical data

Size			00	1	2	3
Electrical characteristics						
Rated voltage	Un	V a.c.	690			
Rated current	In	A	160	250	400	630
Conv. free air thermal current with fuse links	Ith	A	160	250	400	630
Conv. free air thermal current with solid links	Ith	A	200	320	500	800
Rated frequency		Hz	40-60			
Max. permis. power dissipation per fuse link	Pa	W	12	32	45	60
Max. breaking capacity per fuse link	Icu	kA	200			
Derating temperature factors for max. current	≤ 35	0C	1			
	40	0C	0,95			
	50	0C	0,85			
Mechanical characteristics						
Ambient temperature range	Tamb	0C	-25...+55			
Rated operating mode			uninterrupted			
Mounting position			vertical, horizontal			
Pollution degree			3			
Overvoltage category			III			
Degree of protection			IP00 without covers; IP20 with covers fitted			
Standards			IEC 60269-2, DIN VDE 0636, DIN 43620			

1-pole fuse base size 00

Type	I_n [A]	Code No.	g	
PK 00 M8-M8 1p S	160	004123000	173	3
PK 00 2M6-2M6 1p S	160	004123001	173	3
PK 00 M8-2M6 1p S	160	004123002	173	3
PK 00 M8-P00 1p S	160	004123003	190	3
PK 00 M8-2P00 1p S	160	004123004	205	3
PK 00 P00-P00 1p S	160	004123005	205	3
PK 00 P00-2P00 1p S	160	004123006	219	3
PK 00 2P00-2P00 1p S	160	004123007	233	3
PKI 00 M8-M8 1p S	160	004123011	213	3
PKI 00 2M6-2M6 1p S	160	004123012	213	3
PKI 00 M8-2M6 1p S	160	004123013	213	3
PKI 00 M8-P00 1p S	160	004123014	230	3
PKI 00 M8-2P00 1p S	160	004123015	245	3
PKI 00 P00-P00 1p S	160	004123016	245	3
PKI 00 P00-2P00 1p S	160	004123017	259	3
PKI 00 2P00-2P00 1p S	160	004123018	273	3
PKIP 00 M8-M8 1p S	160	004123021	223	3
PKIP 00 2M6-2M6 1p S	160	004123022	223	3
PKIP 00 M8-2M6 1p S	160	004123023	223	3
PKIP 00 M8-P00 1p S	160	004123024	240	3
PKIP 00 M8-2P00 1p S	160	004123025	255	3
PKIP 00 P00-P00 1p S	160	004123026	255	3
PKIP 00 P00-2P00 1p S	160	004123027	269	3
PKIP 00 2P00-2P00 1p S	160	004123028	283	3

PK basic version
PKI fuse base with terminal covers
PKIP fuse base with terminal covers and fuse cover

3-pole fuse base size 00

Type	I_n [A]	Code No.	g	
PK 00 M8-M8 3p S	160	004132100	558	1
PK 00 2M6-2M6 3p S	160	004132101	563	1
PK 00 M8-2M6 3p S	160	004132102	560	1
PK 00 M8-P00 3p S	160	004132103	608	1
PK 00 M8-2P00 3p S	160	004132104	651	1
PK 00 P00-P00 3p S	160	004132105	658	1
PK 00 P00-2P00 3p S	160	004132106	700	1
PK 00 2P00-2P00 3p S	160	004132107	743	1
PKI 00 M8-M8 3p S	160	004132111	675	1
PKI 00 2M6-2M6 3p S	160	004132112	680	1
PKI 00 M8-2M6 3p S	160	004132113	677	1
PKI 00 M8-P00 3p S	160	004132114	725	1
PKI 00 M8-2P00 3p S	160	004132115	768	1
PKI 00 P00-P00 3p S	160	004132116	775	1
PKI 00 P00-2P00 3p S	160	004132117	817	1
PKI 00 2P00-2P00 3p S	160	004132118	860	1
PKIP 00 M8-M8 3p S	160	004132121	704	1
PKIP 00 2M6-2M6 3p S	160	004132122	709	1
PKIP 00 M8-2M6 3p S	160	004132123	706	1
PKIP 00 M8-P00 3p S	160	004132124	754	1
PKIP 00 M8-2P00 3p S	160	004132125	797	1
PKIP 00 P00-P00 3p S	160	004132126	804	1
PKIP 00 P00-2P00 3p S	160	004132127	846	1
PKIP 00 2P00-2P00 3p S	160	004132128	889	1

PK basic version with protective barriers
PKI fuse base with terminal covers
PKIP fuse base with terminal covers and fuse covers

1-pole fuse base PK 1, 2, 3

Type	I_n [A]	Code No.	g	
PK 1 M10-M10 1p S	250	004123100	603	3
PK 1 M10-S12 1p S	250	004123101	595	3
PK 1 S12-S12 1p S	250	004123102	587	3
PK 1 M10-P1 1p S	250	004123103	665	3
PK 1 M10-2P1 1p S	250	004123104	715	3
PK 1 P1-P1 1p S	250	004123105	727	3
PK 1 P1-2P1 1p S	250	004123106	777	3
PK 1 2P1-2P1 1p S	250	004123107	827	3
PK 2 M10-M10 1p S	400	004123200	840	3
PK 2 M10-S12 1p S	400	004123201	833	3
PK 2 S12-S12 1p S	400	004123202	825	3
PK 2 M10-P2 1p S	400	004123203	963	3
PK 2 M10-2P2 1p S	400	004123204	1029	3
PK 2 P2-P2 1p S	400	004123205	1085	3
PK 2 P2-2P2 1p S	400	004123206	1151	3
PK 2 2P2-2P2 1p S	400	004123207	1217	3
PK 3 M12-M12 1p S	630	004123300	1106	3
PK 3 M12-P3 1p S	630	004123301	1265	3
PK 3 M12-2P3 1p S	630	004123302	1360	3
PK 3 P3-P3 1p S	630	004123303	1424	3
PK 3 P3-2P3 1p S	630	004123304	1519	3
PK 3 2P3-2P3 1p S	630	004123305	1614	3

*Terminal covers and fuse covers sold separately

3-pole fuse base PK 1, 2, 3

Type	I_n [A]	Code No.	g	
PK 1 M10-M10 3p S	250	004132200	1922	1
PK 1 M10-S12 3p S	250	004132201	1785	1
PK 1 S12-S12 3p S	250	004132202	1761	1
PK 1 M10-P1 3p S	250	004132203	1995	1
PK 1 M10-2P1 3p S	250	004132204	2145	1
PK 1 P1-P1 3p S	250	004132205	2181	1
PK 1 P1-2P1 3p S	250	004132206	2331	1
PK 1 2P1-2P1 3p S	250	004132207	2481	1
PK 2 M10-M10 3p S	400	004132300	2520	1
PK 2 M10-S12 3p S	400	004132301	2499	1
PK 2 S12-S12 3p S	400	004132302	2475	1
PK 2 M10-P2 3p S	400	004132303	2889	1
PK 2 M10-2P2 3p S	400	004132304	3087	1
PK 2 P2-P2 3p S	400	004132305	3255	1
PK 2 P2-2P2 3p S	400	004132306	3453	1
PK 2 2P2-2P2 3p S	400	004132307	3651	1
PK 3 M12-M12 3p S	630	004132400	3318	1
PK 3 M12-P3 3p S	630	004132401	3795	1
PK 3 M12-2P3 3p S	630	004132402	4080	1
PK 3 P3-P3 3p S	630	004132403	4272	1
PK 3 P3-2P3 3p S	630	004132404	4557	1
PK 3 2P3-2P3 3p S	630	004132405	4824	1

PK basic version with protective barriers

*Terminal covers and fuse covers sold separately

Accessories

Type	Code No.	g	
Terminal covers			
ZP PT 00-1	004129010	20	6
ZP PT 1-1	004129012	47,5	6
ZP PT 2-1	004129013	62	6
ZP PT 3-1	004129014	73,5	6
Fuse covers			
PZP PT 00-1	004129020	9,5	6
PZP PT 1-1	004129022	25	6
PZP PT 2-1	004129023	36,5	6
PZP PT 3-1	004129024	45	6
Protective barriers			
PR PK00 S	004941320	17	20
PR PK1 S	004941321	47	20
PR PK2 S	004941322	56	20
PR PK3 S	004941323	62	20

Technical data for Neutral Terminal Base / Earth Clamp

Size			00	1	2	3
Electrical characteristics						
Rated voltage	Un	V a.c.	690			
Rated current	In	A	160	250	400	630
Cable terminal						
Connection			M8-2M5	M10-M10		M12-M12
Tightening torque		Nm	10-2,6	32		

Neutral terminal base / Earth clamp

Type	I_n [A]	Code No.	g	
PK 00/0 M8-2M5 S	160	004941410	187	3
PK 1/0 M10-M10 S	250	004941411	590	3
PK 2/0 M10-M10 S	400	004941412	940	3
PK 3/0 M12-M12 S	630	004941413	1066	3

1-pole fuse base PK 0, 4

Type	I_n [A]	Code No.	g	
PK 0 M8 - 2 x M6	160	004122009	258	3/90
PK 0 M8 - M8	160	004122002	258	3/90
PK 02 x M6 - 2 x M6	160	004122008	258	3/90
PK 4	1250	004122006	3030	1/7

3-pole fuse base PK 0

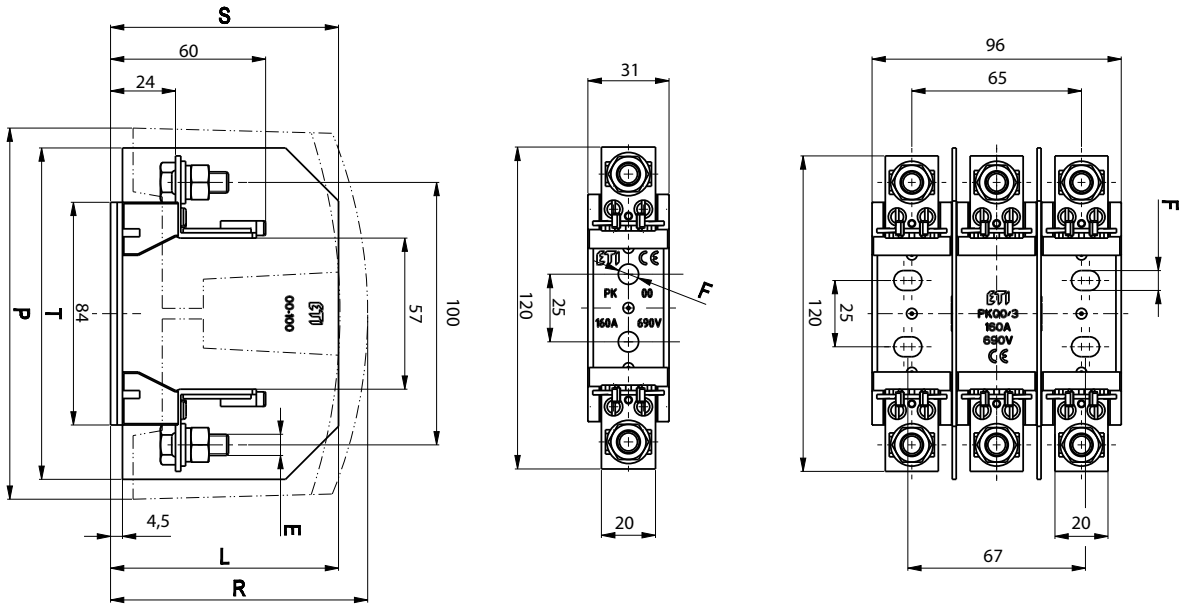
Type	I_n [A]	Code No.	g	
PK 0/3 M8 - 2 x M6	160	004132007	650	1/18
PK 0/3 M8 - M8	160	004132002	650	1/18
PK 0/3 2xM6 - 2xM6	160	004132016	650	1/18

PK Fuse Bases Dimensions

Dimensions for size 00

1p	3p	E	F	L	P	R	S*	T*
PK 00 M8-M8 1p S	PK 00 M8-M8 3p S	M8-M8	Ø 7,5	\	\	\	88	126
PK 00 2M6-2M6 1p S	PK 00 2M6-2M6 3p S	2M6-2M6	Ø 7,5	\	\	\	88	126
PK 00 M8-2M6 1p S	PK 00 M8-2M6 3p S	M8-2M6	Ø 7,5	\	\	\	88	126
PK 00 M8-P00 1p S	PK 00 M8-P00 3p S	M8-P00	Ø 7,5	\	\	\	88	126
PK 00 M8-2P00 1p S	PK 00 M8-2P00 3p S	M8-2P00	Ø 7,5	\	\	\	88	126
PK 00 P00-P00 1p S	PK 00 P00-P00 3p S	P00-P00	Ø 7,5	\	\	\	88	126
PK 00 P00-2P00 1p S	PK 00 P00-2P00 3p S	P00-2P00	Ø 7,5	\	\	\	88	126
PK 00 2P00-2P00 1p S	PK 00 2P00-2P00 3p S	2P00-2P00	Ø 7,5	\	\	\	88	126
PKI 00 M8-M8 1p S	PKI 00 M8-M8 3p S	M8-M8	Ø 7,5	87	140	\	\	\
PKI 00 2M6-2M6 1p S	PKI 00 2M6-2M6 3p S	2M6-2M6	Ø 7,5	87	140	\	\	\
PKI 00 M8-2M6 1p S	PKI 00 M8-2M6 3p S	M8-2M6	Ø 7,5	87	140	\	\	\
PKI 00 M8-P00 1p S	PKI 00 M8-P00 3p S	M8-P00	Ø 7,5	87	140	\	\	\
PKI 00 M8-2P00 1p S	PKI 00 M8-2P00 3p S	M8-2P00	Ø 7,5	87	140	\	\	\
PKI 00 P00-P00 1p S	PKI 00 P00-P00 3p S	P00-P00	Ø 7,5	87	140	\	\	\
PKI 00 P00-2P00 1p S	PKI 00 P00-2P00 3p S	P00-2P00	Ø 7,5	87	140	\	\	\
PKI 00 2P00-2P00 1p S	PKI 00 2P00-2P00 3p S	2P00-2P00	Ø 7,5	87	140	\	\	\
PKIP 00 M8-M8 1p S	PKIP 00 M8-M8 3p S	M8-M8	Ø 7,5	87	140	95	\	\
PKIP 00 2M6-2M6 1p S	PKIP 00 2M6-2M6 3p S	2M6-2M6	Ø 7,5	87	140	95	\	\
PKIP 00 M8-2M6 1p S	PKIP 00 M8-2M6 3p S	M8-2M6	Ø 7,5	87	140	95	\	\
PKIP 00 M8-P00 1p S	PKIP 00 M8-P00 3p S	M8-P00	Ø 7,5	87	140	95	\	\
PKIP 00 M8-2P00 1p S	PKIP 00 M8-2P00 3p S	M8-2P00	Ø 7,5	87	140	95	\	\
PKIP 00 P00-P00 1p S	PKIP 00 P00-P00 3p S	P00-P00	Ø 7,5	87	140	95	\	\
PKIP 00 P00-2P00 1p S	PKIP 00 P00-2P00 3p S	P00-2P00	Ø 7,5	87	140	95	\	\
PKIP 00 2P00-2P00 1p S	PKIP 00 2P00-2P00 3p S	2P00-2P00	Ø 7,5	87	140	95	\	\

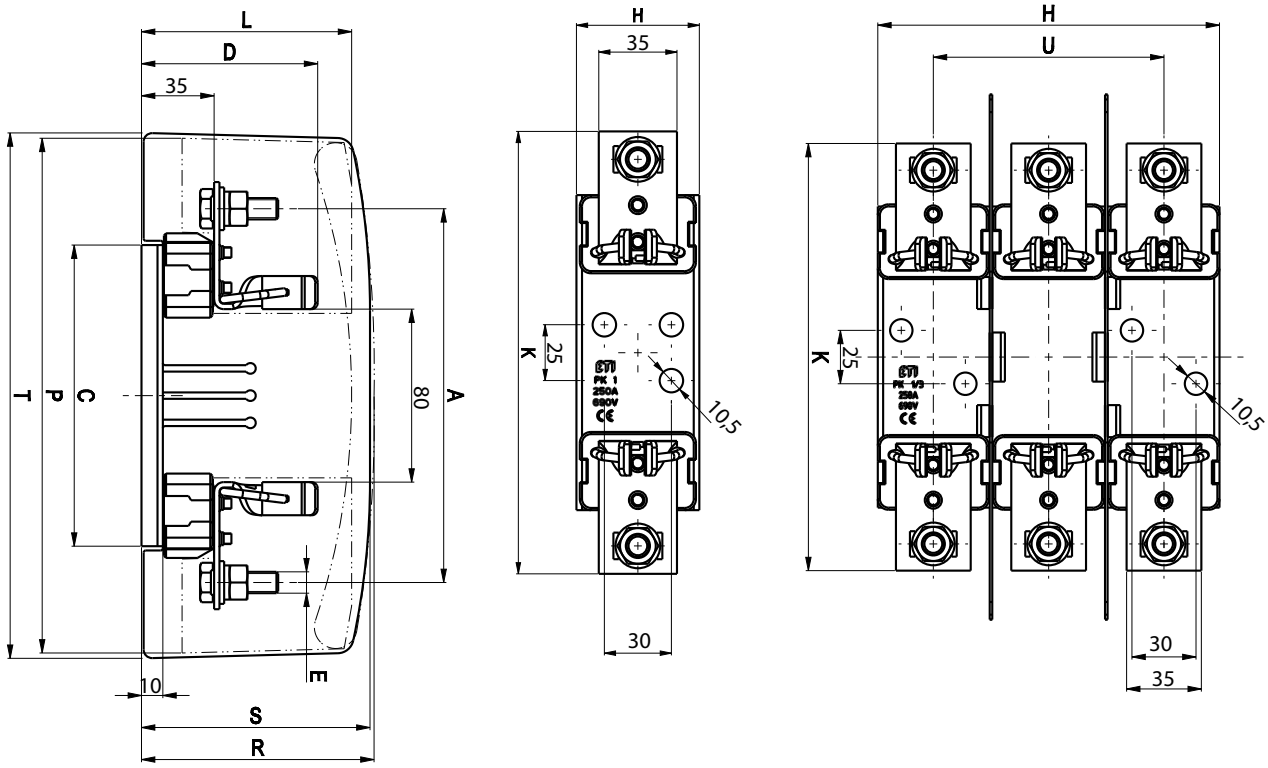
*Protective barriers; included with PK 00 3p fuse bases or sold separately



Dimensions for sizes 1, 2, 3

1p	3p	A	C	D	E	H - 1p	H - 3p	K	L**	P**	R**	S*	T*	U
PK 1 M10-M10 1p S	PK 1 M10-M10 3p S	175	141	82	M10-M10	55,5	160	200	108	245	113	108	245	106
PK 1 M10-S12 1p S	PK 1 M10-S12 3p S	175	141	82	M10-S12	55,5	160	200	108	245	113	108	245	106
PK 1 S12-S12 1p S	PK 1 S12-S12 3p S	175	141	82	S12-S12	55,5	160	200	108	245	113	108	245	106
PK 1 M10-P1 1p S	PK 1 M10-P1 3p S	175	141	82	M10-P1	55,5	160	200	108	245	113	108	245	106
PK 1 M10-2P1 1p S	PK 1 M10-2P1 3p S	175	141	82	M10-2P1	55,5	160	200	108	245	113	108	245	106
PK 1 P1-P1 1p S	PK 1 P1-P1 3p S	175	141	82	P1-P1	55,5	160	200	108	245	113	108	245	106
PK 1 P1-2P1 1p S	PK 1 P1-2P1 3p S	175	141	82	P1-2P1	55,5	160	200	108	245	113	108	245	106
PK 1 2P1-2P1 1p S	PK 1 2P1-2P1 3p S	175	141	82	2P1-2P1	55,5	160	200	108	245	113	108	245	106
PK 2 M10-M10 1p S	PK 2 M10-M10 3p S	200	166	87	M10-M10	65	185	225	115	266	125	117	266	125
PK 2 M10-S12 1p S	PK 2 M10-S12 3p S	200	166	87	M10-S12	65	185	225	115	266	125	117	266	125
PK 2 S12-S12 1p S	PK 2 S12-S12 3p S	200	166	87	S12-S12	65	185	225	115	266	125	117	266	125
PK 2 M10-P2 1p S	PK 2 M10-P2 3p S	200	166	87	M10-P2	65	185	225	115	266	125	117	266	125
PK 2 M10-2P2 1p S	PK 2 M10-2P2 3p S	200	166	87	M10-2P2	65	185	225	115	266	125	117	266	125
PK 2 P2-P2 1p S	PK 2 P2-P2 3p S	200	166	87	P2-P2	65	185	225	115	266	125	117	266	125
PK 2 P2-2P2 1p S	PK 2 P2-2P2 3p S	200	166	87	P2-2P2	65	185	225	115	266	125	117	266	125
PK 2 2P2-2P2 1p S	PK 2 2P2-2P2 3p S	200	166	87	2P2-2P2	65	185	225	115	266	125	117	266	125
PK 3 M12-M12 1p S	PK 3 M12-M12 3p S	210	166	99	M12-M12	65	208	240	127	266	135	130	266	148
PK 3 M12-P3 1p S	PK 3 M12-P3 3p S	210	166	99	M12-P3	65	208	240	127	266	135	130	266	148
PK 3 M12-2P3 1p S	PK 3 M12-2P3 3p S	210	166	99	M12-2P3	65	208	240	127	266	135	130	266	148
PK 3 P3-P3 1p S	PK 3 P3-P3 3p S	210	166	99	P3-P3	65	208	240	127	266	135	130	266	148
PK 3 P3-2P3 1p S	PK 3 P3-2P3 3p S	210	166	99	P3-2P3	65	208	240	127	266	135	130	266	148
PK 3 2P3-2P3 1p S	PK 3 2P3-2P3 3p S	210	166	99	2P3-2P3	65	208	240	127	266	135	130	266	148

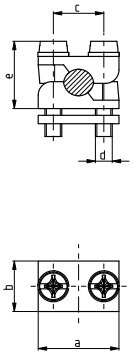
*Protective barriers; included with 3p fuse bases or sold separately
**Terminal covers and fuse covers; sold separately



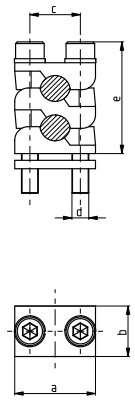
Type of connections

	a	b	c	d	emax	Tightening torque [Nm]	Connections [mm²]
P00	24	15	15	M5	25	2,6	10-70 Cu/Al
2P00	24	15	15	M5	35	2,6	2x(10-50) Cu/Al
P1	37	20	25	M6	30	4,5	70-150 Cu/Al
2P1	37	20	25	M6	42	4,5	2x(70-95) Cu/Al
P2	42	22	28	M8	40	11	120-240 Cu/Al
2P2	42	22	28	M8	55	11	2x(120-150) Cu/Al
P3	50	25	30	M8	44	11	120-300 Cu/Al
2P3	50	25	30	M8	66	11	2x(120-240) Cu/Al
2xM6	26	15	14	M6	16	4	6-70 Cu
S12	36	16	25	M6	25	9,5	25-150Cu
M8				M8	20	10	
MI0				M10	30	32	
M12				M12	30	32	
V shaped clamp	35	23	58		45	22	SM: 50-240 Cu/Al SE: 300 Cu/Al RM: 37-70 Cu/Al RE: 25-50 Cu/Al

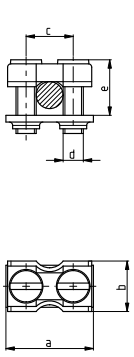
P00, P1, P2, P3



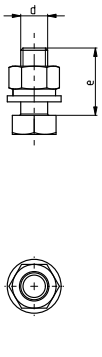
2P00, 2P1, 2P2, 2P3



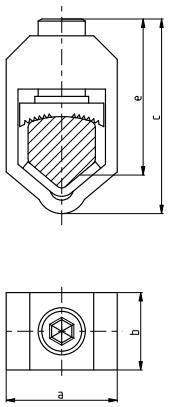
2xM6, S12



M8, M10, M12

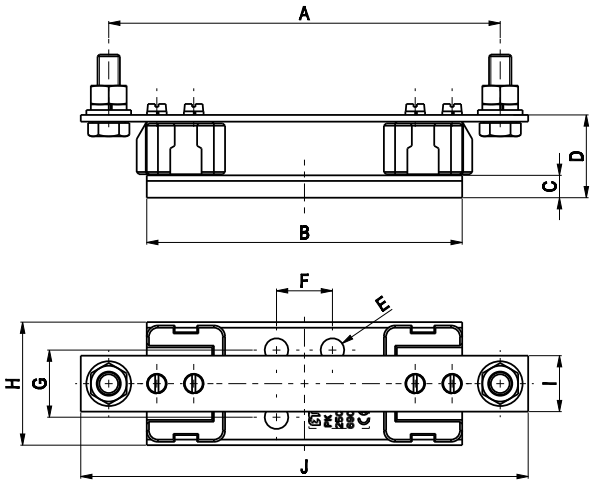


V shaped clamp



Dimensions for Neutral Terminal Base / Earth Clamp

[mm]	A	B	C	D	E	F	G	H	I	J
PK 00/0 M8-2M5 S	100	84	4,5	26,5	Ø 7,5	25	\	31	20	115
PK 1 M10-M10 S	175	141	10	38	Ø 10,5	25	30	55,5	26	200
PK 2 M10-M10 S	200	166	10	40	Ø 10,5	25	30	65	30	225
PK 3 M12-M12 S	210	166	10	40	Ø 10,5	25	30	65	30	240



Plastic fuse bases type PT size 00 to 3

Rated voltage
690 V

Plastic fuse bases PT for NH fuses are suitable for screw mounting / surface mounting on mounting plates or mounting on DIN-rails, and can be used in combination with NH fuse-links according to DIN VDE 0636-2/IEC 60269-2 as well as solid links.

They offer a compact and simple solution for application of fuses as protective elements in low voltage distribution boards and are characterized by silver plated contacts and a broad range of connections.

PT fuse bases are available in sizes 00 to 3, in 1-pole and 3-pole version. The range comes with accessories including protection barriers, IP20 finger safe protection kits and neutral links, which, along with the possibility of attaching additional poles, provides an optimal solution for every application.

Technical data

Size			00	1	2	3
Electrical characteristics						
Rated voltage	Un	V a.c.	690			
Rated current	In	A	160	250	400	630
Conv. free air thermal current with fuse links	Ith	A	160	250	400	630
Conv. free air thermal current with solid links	Ith	A	200	320	500	800
Rated frequency		Hz	40-60			
Max. permis. power dissipation per fuse link	Pa	W	12	32	45	60
Max. breaking capacity per fuse link	Icu	kA	120			
Derating temperature factors for max. current	≤ 35	0C	1			
	40	0C	0,95			
	50	0C	0,85			
Mechanical characteristics						
Ambient temperature range	Tamb	0C	-25...+55			
Rated operating mode			uninterrupted			
Mounting position			vertical, horizontal			
Pollution degree			3			
Overvoltage category			III			
Degree of protection			IP00 without covers; IP20 with covers fitted			
Standards			IEC 60269-2, DIN VDE 0636, DIN 43620			

1-pole fuse base size 00

Type	I_n [A]	Code No.	g	
PT 00 M8-M8 1p	160	004121300	110	3
PT 00 2M6-2M6 1p	160	004121301	114	3
PT 00 M8-2M6 1p	160	004121302	112	3
PT 00 M8-P00 1p	160	004121303	126	3
PT 00 M8-2P00 1p	160	004121304	140	3
PT 00 P00-P00 1p	160	004121305	143	3
PT 00 P00-2P00 1p	160	004121306	157	3
PT 00 2P00-2P00 1p	160	004121307	172	3
PTI 00 M8-M8 1p	160	004121311	150	3
PTI 00 2M6-2M6 1p	160	004121312	154	3
PTI 00 M8-2M6 1p	160	004121313	152	3
PTI 00 M8-P00 1p	160	004121314	166	3
PTI 00 M8-2P00 1p	160	004121315	180	3
PTI 00 P00-P00 1p	160	004121316	183	3
PTI 00 P00-2P00 1p	160	004121317	197	3
PTI 00 2P00-2P00 1p	160	004121318	212	3
PTIP 00 M8-M8 1p	160	004121321	160	3
PTIP 00 2M6-2M6 1p	160	004121322	164	3
PTIP 00 M8-2M6 1p	160	004121323	162	3
PTIP 00 M8-P00 1p	160	004121324	176	3
PTIP 00 M8-2P00 1p	160	004121325	190	3
PTIP 00 P00-P00 1p	160	004121326	193	3
PTIP 00 P00-2P00 1p	160	004121327	207	3
PTIP 00 2P00-2P00 1p	160	004121328	222	3

PT basic version
PTI fuse base with terminal covers
PTIP fuse base with terminal covers and fuse cover

3-pole fuse base size 00

Type	I_n [A]	Code No.	g	
PT 00 M8-M8 3p	160	004131200	360	1
PT 00 2M6-2M6 3p	160	004131201	374	1
PT 00 M8-2M6 3p	160	004131202	367	1
PT 00 M8-P00 3p	160	004131203	410	1
PT 00 M8-2P00 3p	160	004131204	453	1
PT 00 P00-P00 3p	160	004131205	460	1
PT 00 P00-2P00 3p	160	004131206	502	1
PT 00 2P00-2P00 3p	160	004131207	545	1
PTI 00 M8-M8 3p	160	004131211	425	1
PTI 00 2M6-2M6 3p	160	004131212	438	1
PTI 00 M8-2M6 3p	160	004131213	431	1
PTI 00 M8-P00 3p	160	004131214	475	1
PTI 00 M8-2P00 3p	160	004131215	518	1
PTI 00 P00-P00 3p	160	004131216	525	1
PTI 00 P00-2P00 3p	160	004131217	567	1
PTI 00 2P00-2P00 3p	160	004131218	610	1
PTIP 00 M8-M8 3p	160	004131221	450	1
PTIP 00 2M6-2M6 3p	160	004131222	463	1
PTIP 00 M8-2M6 3p	160	004131223	456	1
PTIP 00 M8-P00 3p	160	004131224	500	1
PTIP 00 M8-2P00 3p	160	004131225	543	1
PTIP 00 P00-P00 3p	160	004131226	550	1
PTIP 00 P00-2P00 3p	160	004131227	592	1
PTIP 00 2P00-2P00 3p	160	004131228	635	1

PT basic version
PTI fuse base with terminal covers
PTIP fuse base with terminal covers and fuse cover

1-pole fuse base PT 1, 2, 3

Type	I_n [A]	Code No.	g	
PT 1 M10-M10 1p	250	004121400	364	3
PT 1 M10-S12 1p	250	004121401	357	3
PT 1 S12-S12 1p	250	004121402	349	3
PT 1 M10-P1 1p	250	004121403	427	3
PT 1 M10-2P1 1p	250	004121404	477	3
PT 1 P1-P1 1p	250	004121405	489	3
PT 1 P1-2P1 1p	250	004121406	539	3
PT 1 2P1-2P1 1p	250	004121407	589	3
PT 2 M10-M10 1p	400	004121500	394	3
PT 2 M10-S12 1p	400	004121501	387	3
PT 2 S12-S12 1p	400	004121502	379	3
PT 2 M10-P2 1p	400	004121503	517	3
PT 2 M10-2P2 1p	400	004121504	583	3
PT 2 P2-P2 1p	400	004121505	639	3
PT 2 P2-2P2 1p	400	004121506	705	3
PT 2 2P2-2P2 1p	400	004121507	771	3
PT 3 M12-M12 1p	630	004121600	649	3
PT 3 M12-P3 1p	630	004121601	810	3
PT 3 M12-2P3 1p	630	004121602	905	3
PT 3 P3-P3 1p	630	004121603	966	3
PT 3 P3-2P3 1p	630	004121604	1061	3
PT 3 2P3-2P3 1p	630	004121605	1156	3

*Terminal covers and fuse covers sold separately

3-pole fuse base PT 1, 2, 3

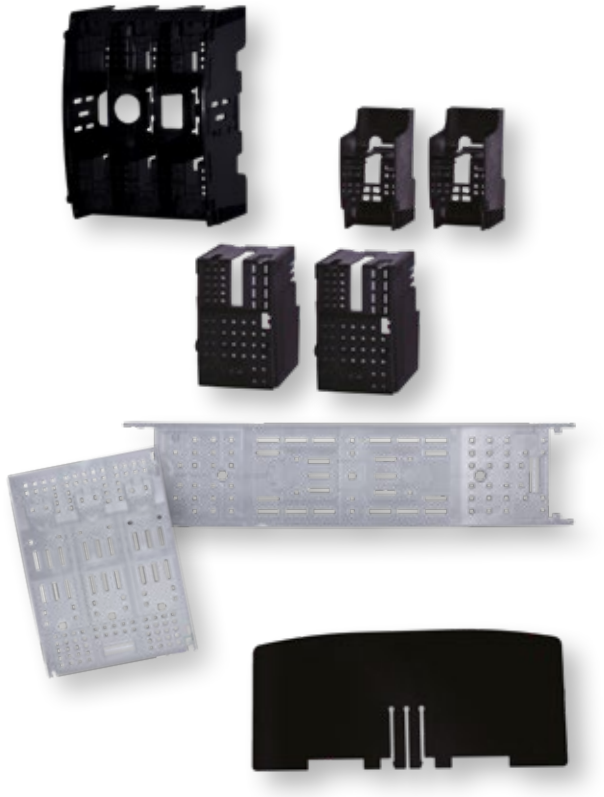
Type	I_n [A]	Code No.	g	
PT 1 M10-M10 3p	250	004131300	1204	1
PT 1 M10-S12 3p	250	004131301	1183	1
PT 1 S12-S12 3p	250	004131302	1159	1
PT 1 M10-P1 3p	250	004131303	1393	1
PT 1 M10-2P1 3p	250	004131304	1543	1
PT 1 P1-P1 3p	250	004131305	1579	1
PT 1 P1-2P1 3p	250	004131306	1729	1
PT 1 2P1-2P1 3p	250	004131307	1879	1
PT 2 M10-M10 3p	400	004131400	1312	1
PT 2 M10-S12 3p	400	004131401	1291	1
PT 2 S12-S12 3p	400	004131402	1267	1
PT 2 M10-P2 3p	400	004131403	1681	1
PT 2 M10-2P2 3p	400	004131404	1879	1
PT 2 P2-P2 3p	400	004131405	2047	1
PT 2 P2-2P2 3p	400	004131406	2245	1
PT 2 2P2-2P2 3p	400	004131407	2443	1
PT 3 M12-M12 3p	630	004131500	2105	1
PT 3 M12-P3 3p	630	004131501	2588	1
PT 3 M12-2P3 3p	630	004131502	2873	1
PT 3 P3-P3 3p	630	004131503	3056	1
PT 3 P3-2P3 3p	630	004131504	3341	1
PT 3 2P3-2P3 3p	630	004131505	3626	1

PT basic version with protective barriers

*Terminal covers and fuse covers sold separately

Accessories

Type	Code No.	g	
Terminal covers			
ZP PT 00-1	004129010	20	6
ZP PT 00-3	004129011	106,7	1
ZP PT 1-1	004129012	47,5	6
ZP PT 2-1	004129013	62	6
ZP PT 3-1	004129014	73,5	6
Fuse covers			
PZP PT 00-1	004129020	9,5	6
PZP PT 00-3	004129021	24,7	6
PZP PT 1-1	004129022	36,2	6
PZP PT 2-1	004129023	44,75	6
PZP PT 3-1	004129024	50,7	6
Protective barriers			
PR PT00-1	004941330	18,1	20
PR PT00-3	004941331	17,5	20
PR PT1	004941332	38	20
PR PT2	004941333	45,7	20
PR PT3	004941334	52,4	20



Technical data for Neutral Terminal Base / Earth Clamp

Size			00	1	2	3
Electrical characteristics						
Rated voltage	Un	V a.c./d.c.	690			
Rated current	In	A	160	250	400	630
Cable terminal						
Connection			M8-2M5	M10-M10		M12-M12
Tightening torque		Nm	10-2,6	32		

Neutral terminal base / Earth clamp

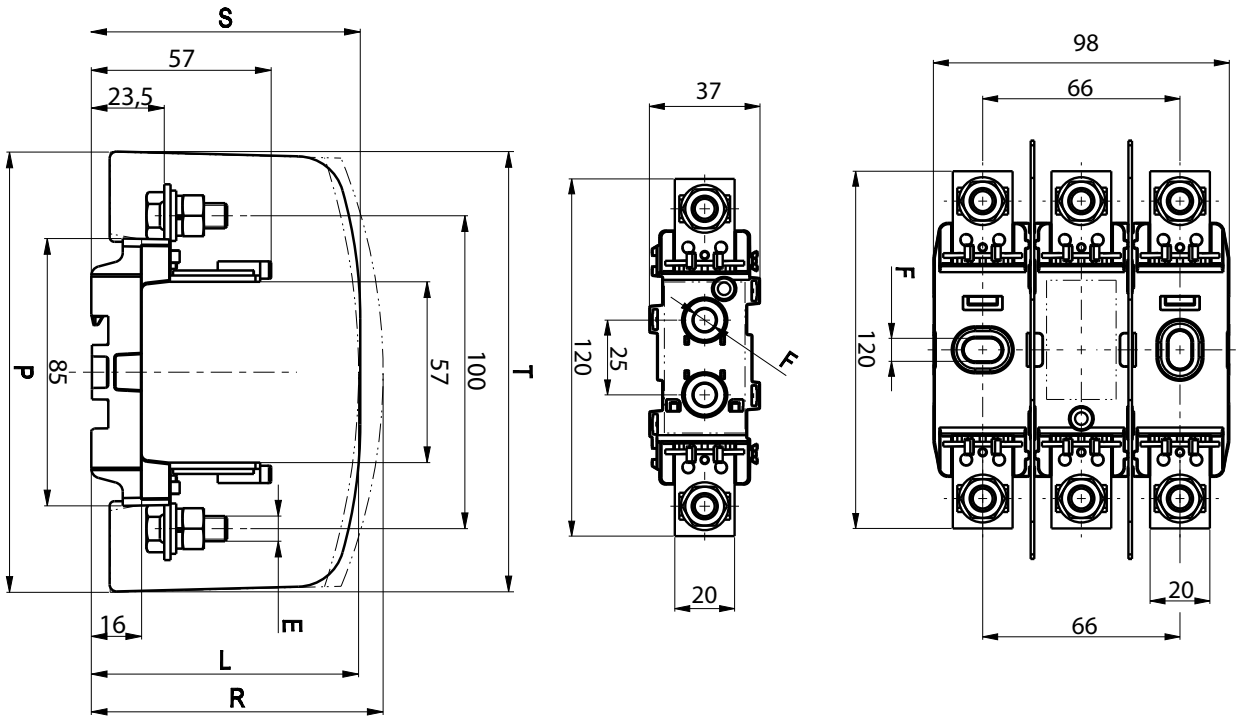
Type	I_n [A]	Code No.	g	
PT 00/0 M8-2M5	160	004941502	103	3
PT 1/0 M10-M10	250	004941503	396	3
PT 2/0 M10-M10	400	004941504	570	3
PT 3/0 M12-M12	630	004941505	609	3

Fuse Bases PT Dimensions

Dimensions for size 00

1p	3p	E	F	L	P	R	S*	T*
PT 00 M8-M8 1p	PT 00 M8-M8 3p	M8-M8	Ø 7,5	\	\	\	86	140
PT 00 2M6-2M6 1p	PT 00 2M6-2M6 3p	2M6-2M6	Ø 7,5	\	\	\	86	140
PT 00 M8-2M6 1p	PT 00 M8-2M6 3p	M8-2M6	Ø 7,5	\	\	\	86	140
PT 00 M8-P00 1p	PT 00 M8-P00 3p	M8-P00	Ø 7,5	\	\	\	86	140
PT 00 M8-2P00 1p	PT 00 M8-2P00 3p	M8-2P00	Ø 7,5	\	\	\	86	140
PT 00 P00-P00 1p	PT 00 P00-P00 3p	P00-P00	Ø 7,5	\	\	\	86	140
PT 00 P00-2P00 1p	PT 00 P00-2P00 3p	P00-2P00	Ø 7,5	\	\	\	86	140
PT 00 2P00-2P00 1p	PT 00 2P00-2P00 3p	2P00-2P00	Ø 7,5	\	\	\	86	140
PTI 00 M8-M8 1p	PTI 00 M8-M8 3p	M8-M8	Ø 7,5	87	140	\	\	\
PTI 00 2M6-2M6 1p	PTI 00 2M6-2M6 3p	2M6-2M6	Ø 7,5	87	140	\	\	\
PTI 00 M8-2M6 1p	PTI 00 M8-2M6 3p	M8-2M6	Ø 7,5	87	140	\	\	\
PTI 00 M8-P00 1p	PTI 00 M8-P00 3p	M8-P00	Ø 7,5	87	140	\	\	\
PTI 00 M8-2P00 1p	PTI 00 M8-2P00 3p	M8-2P00	Ø 7,5	87	140	\	\	\
PTI 00 P00-P00 1p	PTI 00 P00-P00 3p	P00-P00	Ø 7,5	87	140	\	\	\
PTI 00 P00-2P00 1p	PTI 00 P00-2P00 3p	P00-2P00	Ø 7,5	87	140	\	\	\
PTI 00 2P00-2P00 1p	PTI 00 2P00-2P00 3p	2P00-2P00	Ø 7,5	87	140	\	\	\
PTIP 00 M8-M8 1p	PTIP 00 M8-M8 3p	M8-M8	Ø 7,5	87	140	95	\	\
PTIP 00 2M6-2M6 1p	PTIP 00 2M6-2M6 3p	2M6-2M6	Ø 7,5	87	140	95	\	\
PTIP 00 M8-2M6 1p	PTIP 00 M8-2M6 3p	M8-2M6	Ø 7,5	87	140	95	\	\
PTIP 00 M8-P00 1p	PTIP 00 M8-P00 3p	M8-P00	Ø 7,5	87	140	95	\	\
PTIP 00 M8-2P00 1p	PTIP 00 M8-2P00 3p	M8-2P00	Ø 7,5	87	140	95	\	\
PTIP 00 P00-P00 1p	PTIP 00 P00-P00 3p	P00-P00	Ø 7,5	87	140	95	\	\
PTIP 00 P00-2P00 1p	PTIP 00 P00-2P00 3p	P00-2P00	Ø 7,5	87	140	95	\	\
PTIP 00 2P00-2P00 1p	PTIP 00 2P00-2P00 3p	2P00-2P00	Ø 7,5	87	140	95	\	\

*Protective barriers

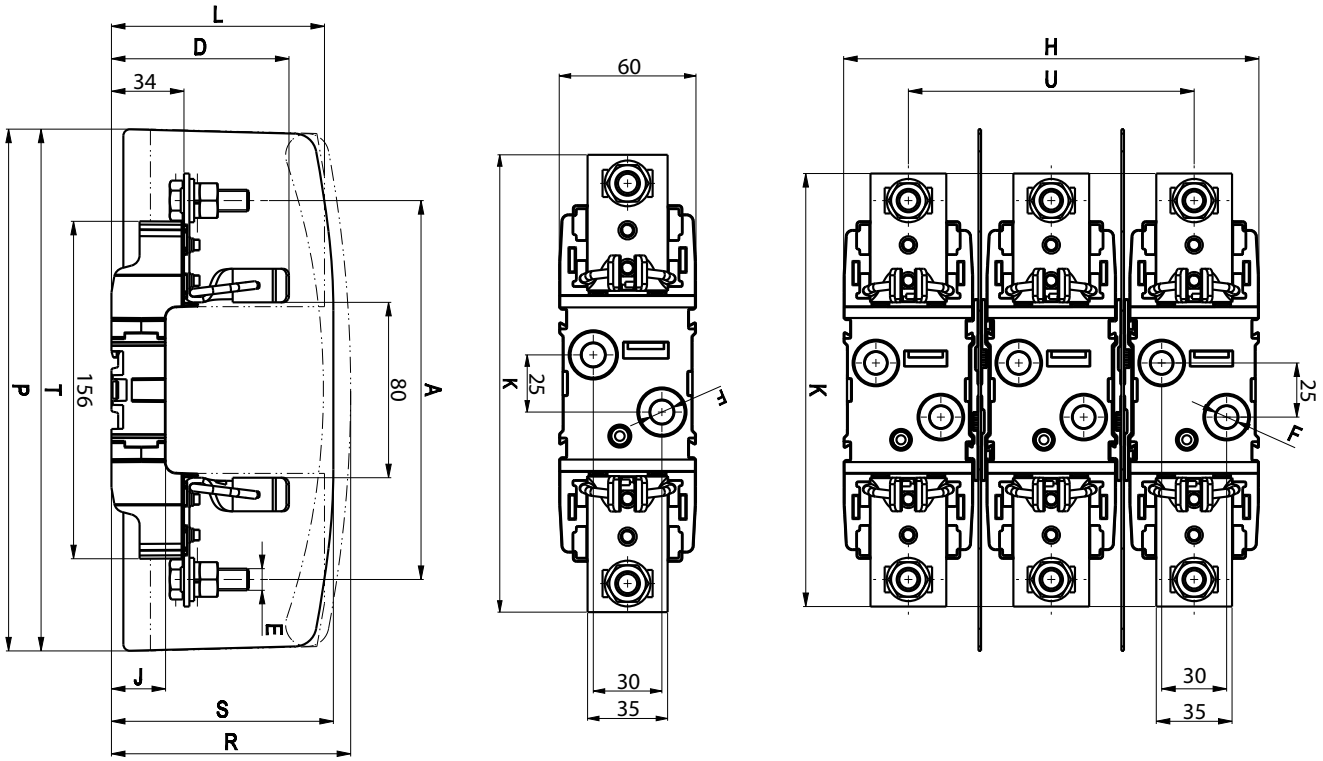


Dimensions for sizes 1, 2, 3

1p	3p	A	D	E	F	H	J	K	L**	P**	R**	S*	T*	U
PT 1 M10-M10 1p	PT 1 M10-M10 3p	175	81	M10-M10	10,5	190	25	200	103	244	110	108	241	130
PT 1 M10-S12 1p	PT 1 M10-S12 3p	175	81	M10-S12	10,5	190	25	200	103	244	110	108	241	130
PT 1 S12-S12 1p	PT 1 S12-S12 3p	175	81	S12-S12	10,5	190	25	200	103	244	110	108	241	130
PT 1 M10-P1 1p	PT 1 M10-P1 3p	175	81	M10-P1	10,5	190	25	200	103	244	110	108	241	130
PT 1 M10-2P1 1p	PT 1 M10-2P1 3p	175	81	M10-2P1	10,5	190	25	200	103	244	110	108	241	130
PT 1 P1-P1 1p	PT 1 P1-P1 3p	175	81	P1-P1	10,5	190	25	200	103	244	110	108	241	130
PT 1 P1-2P1 1p	PT 1 P1-2P1 3p	175	81	P1-2P1	10,5	190	25	200	103	244	110	108	241	130
PT 1 2P1-2P1 1p	PT 1 2P1-2P1 3p	175	81	2P1-2P1	10,5	190	25	200	103	244	110	108	241	130
PT 2 M10-M10 1p	PT 2 M10-M10 3p	200	87	M10-M10	10,5	190	25	225	112	268	120	115,5	266	130
PT 2 M10-S12 1p	PT 2 M10-S12 3p	200	87	M10-S12	10,5	190	25	225	112	268	120	115,5	266	130
PT 2 S12-S12 1p	PT 2 S12-S12 3p	200	87	S12-S12	10,5	190	25	225	112	268	120	115,5	266	130
PT 2 M10-P2 1p	PT 2 M10-P2 3p	200	87	M10-P2	10,5	190	25	225	112	268	120	115,5	266	130
PT 2 M10-2P2 1p	PT 2 M10-2P2 3p	200	87	M10-2P2	10,5	190	25	225	112	268	120	115,5	266	130
PT 2 P2-P2 1p	PT 2 P2-P2 3p	200	87	P2-P2	10,5	190	25	225	112	268	120	115,5	266	130
PT 2 P2-2P2 1p	PT 2 P2-2P2 3p	200	87	P2-2P2	10,5	190	25	225	112	268	120	115,5	266	130
PT 2 2P2-2P2 1p	PT 2 2P2-2P2 3p	200	87	2P2-2P2	10,5	190	25	225	112	268	120	115,5	266	130
PT 3 M12-M12 1p	PT 3 M12-M12 3p	210	98	M12-M12	10,5	222	10	240	126	268	133	130	267	166
PT 3 M12-P3 1p	PT 3 M12-P3 3p	210	98	M12-P3	10,5	222	10	240	126	268	133	130	267	166
PT 3 M12-2P3 1p	PT 3 M12-2P3 3p	210	98	M12-2P3	10,5	222	10	240	126	268	133	130	267	166
PT 3 P3-P3 1p	PT 3 P3-P3 3p	210	98	P3-P3	10,5	222	10	240	126	268	133	130	267	166
PT 3 P3-2P3 1p	PT 3 P3-2P3 3p	210	98	P3-2P3	10,5	222	10	240	126	268	133	130	267	166
PT 3 2P3-2P3 1p	PT 3 2P3-2P3 3p	210	98	2P3-2P3	10,5	222	10	240	126	268	133	130	267	166

*Protective barriers; included with 3p fuse bases or sold separately

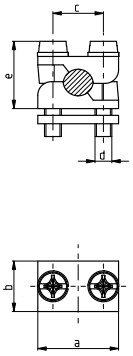
**Terminal covers and fuse covers; sold separately



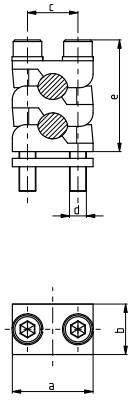
Type of connections

	a	b	c	d	emax	Tightening torque [Nm]	Connections [mm²]
P00	24	15	15	M5	25	2,6	10-70 Cu/Al
2P00	24	15	15	M5	35	2,6	2x(10-50) Cu/Al
P1	37	20	25	M6	30	4,5	70-150 Cu/Al
2P1	37	20	25	M6	42	4,5	2x(70-95) Cu/Al
P2	42	22	28	M8	40	11	120-240 Cu/Al
2P2	42	22	28	M8	55	11	2x(120-150) Cu/Al
P3	50	25	30	M8	44	11	120-300 Cu/Al
2P3	50	25	30	M8	66	11	2x(120-240) Cu/Al
2xM6	26	15	14	M6	16	4	6-70 Cu
S12	36	16	25	M6	25	9,5	25-150Cu
M8				M8	20	10	
MI0				M10	30	32	
M12				M12	30	32	
V shaped clamp	35	23	58		45	22	SM: 50-240 Cu/Al SE: 300 Cu/Al RM: 37-70 Cu/Al RE: 25-50 Cu/Al

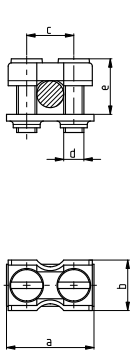
P00, P1, P2, P3



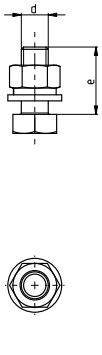
2P00, 2P1, 2P2, 2P3



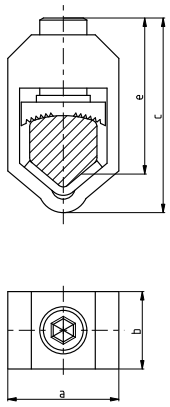
2xM6, S12



M8, M10, M12

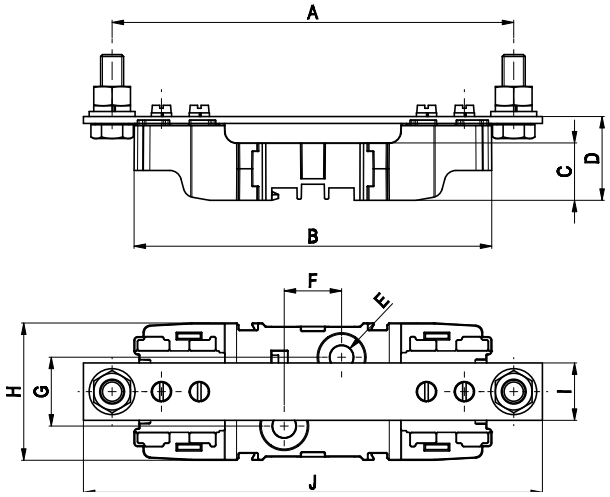


V shaped clamp



Dimensions for Neutral Terminal Base / Earth Clamp

[mm]	A	B	C	D	E	F	G	H	I	J
PT 00/0 M8-2M5 S	100	85	4,5	26,5	Ø 7,5	25	\	37	20	115
PT 1 M10-M10 S	175	156	10	38	Ø 10,5	25	30	60	26	200
PT 2 M10-M10 S	200	156	10	40	Ø 10,5	25	30	60	30	225
PT 3 M12-M12 S	210	156	10	40	Ø 10,5	25	30	60	30	240



Plastic fuse bases type PLNVV 000 and 00 (fuses with screw connection - S)

Rated voltage
690 V

1-pole PLNVV 000 and 00 (fuses with screw connection - S)

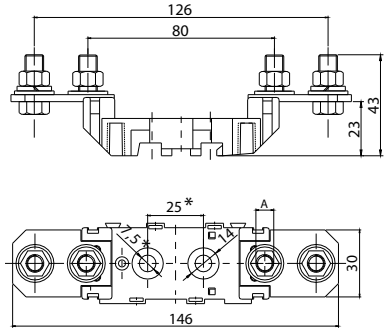
Type	I_n [A]	Code No.	kg	
PLNVV – 00/1 A	160	001701020	0,58	3

* fuse bases PLNVV have no special accessories but only protective barriers Type ZP
** all bases are ready for mounting on mounting plate
*** with use of TS NP-00 is possible to mount fuse bases size 00 on the 35mm mounting rail

Technical data:

Rated voltage Un	690 V AC
Rated current In	NH00C, 00, 0: 160 A NH1: 250 A NH2: 400 A NH3: 630 A
Degree of pollution	3 -> IEC 60947, DIN EN 60947, DIN VDE 0110
Standards	IEC 60269, DIN EN 60269, DIN VDE 0636, HRN EN 60269

Dimensions



	A
PLNVV -000	M8
PLNVV -00	M10

Neutral terminal base PLNS

Rated voltage
690 V

Neutral terminal bases PLNS 00, 1, 2

Type	I_n [A]	Code No.	kg	
PLNS - 00N A	160	001701150	0,61	5
PLNS - 00N B	160	001701151	0,56	5
PLNS - 00N C	160	001701152	0,62	5
PLNS - 00N D	160	001701153	0,63	5
PLNS - 00N E	160	001701154	0,64	5
PLNS - 00N F	160	001701155	0,64	5
PLNS - 00N G	160	001701156	0,65	5
PLNS - 00N H	160	001701157	0,66	5
2PLNS - 1N A	250	001701158	0,60	5
2PLNS - 1N B	250	001701159	0,59	5
2PLNS - 1N C	250	001701160	0,60	5
2PLNS - 1N D	250	001701161	0,61	5
2PLNS - 1N E	250	001701162	0,62	5
2PLNS - 1N F	250	001701163	0,63	5
2PLNS - 1N G	250	001701164	0,64	5
2PLNS - 1N H	250	001701165	0,64	5
2PLNS - 1N K	250	001701180	0,66	5
2PLNS - 2N A	400	001701166	0,81	5
2PLNS - 2N B	400	001701167	0,76	5
2PLNS - 2N C	400	001701168	0,84	5
2PLNS - 2N D	400	001701169	0,86	5
2PLNS - 2N E	400	001701170	0,88	5
2PLNS - 2N F	400	001701171	0,89	5
2PLNS - 2N G	400	001701172	0,89	5
2PLNS - 2N H	400	001701173	0,90	5
2PLNS - 2N K	400	001701181	0,91	5

* basic Type is 1-pole and can be composed to multipole
** for connector description A, B, ... K see table of connections PLNV
*** C-PLNS-00 is used to equalize potential between N and PE terminal through M8 screw Type connection (see table of accessories)

PLNS - 00

2PLNS – 1,2,3

C-PLNS-00 + 2x PLNS-00N A

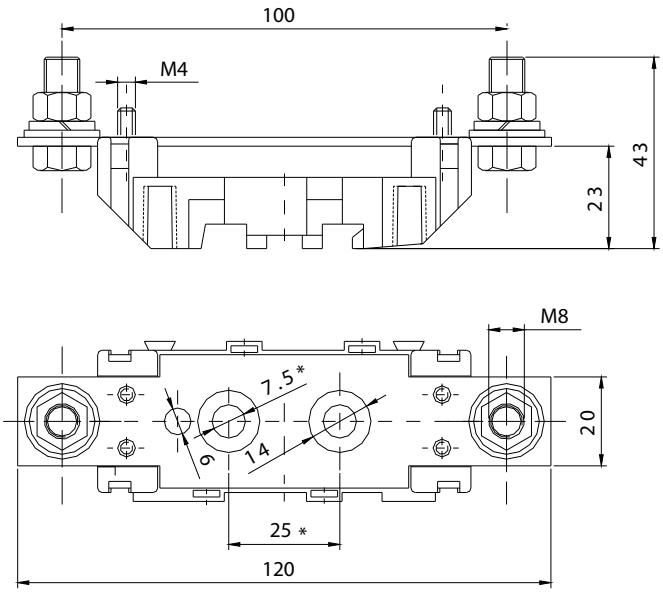
Neutral terminal base with separation function PLNSR 00

Type	Code No.	kg	
PLNSR-00 A	001701182	0,13	5
PLNSR-00 B	001701175	0,12	5
PLNSR-00 C	001701183	0,13	5
PLNSR-00 D	001701184	0,14	5
PLNSR-00 E	001701185	0,14	5
PLNSR-00 F	001701186	0,15	5
PLNSR-00 G	001701187	0,15	5
PLNSR-00 H	001701188	0,16	5

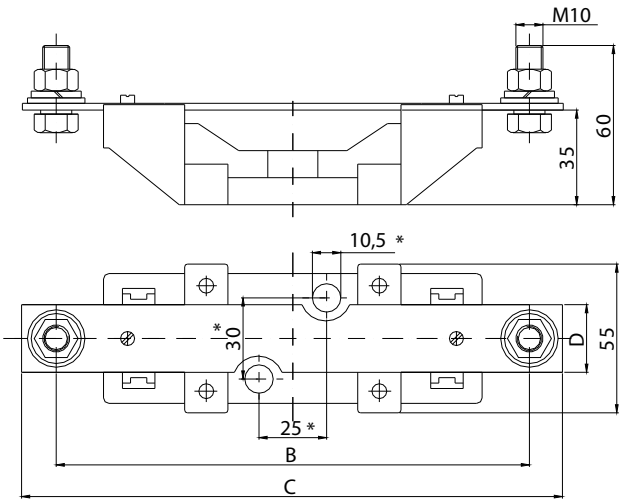
* supplied standard variant is 1-pole, 3-pole shall be made by instalments
** for connector description A, B, ... K see table of connections PLNV

PLNS Dimensions

PLNS - 00 N

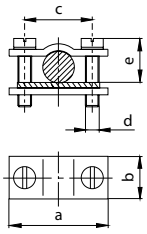


2PLNS - 1,2 N

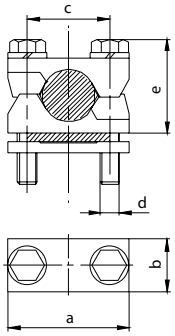


	2PLNS - 1N	2PLNS - 2N
B	175,6	200
C	200	230
D	25	30

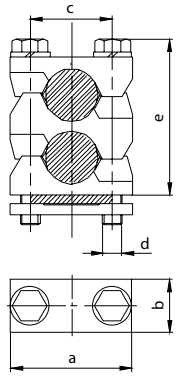
OS 00, OS 12



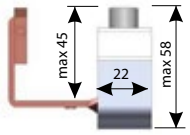
P00, P1, P2, P3



P002, P12, P22, P32



"V" shaped clamp

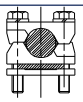
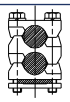
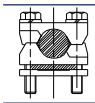
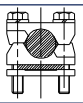
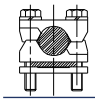
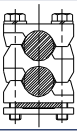
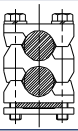


Technical data

Type	a	b	c	d	e_{ma}
OS00	24	15	15	M5	15
OS12	36	16	25	M6	25
P00	24	15	15	M5	25
P002	24	15	15	M5	35
P1	37	20	25	M6	30
P12	37	20	25	M6	42
P2	42	22	28	M8	40
P22	42	22	28	M8	55
P3	50	25	30	M8	44
P32	50	25	30	M8	66

Type of connections PLNVV and PLNS

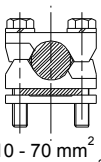
Type of connection for fuse bases PLNV and PLNS

Connection	Size	One side of fuse base			Other side of fuse base		
		Description	Type	Drawing	Description	Type	Drawing
A	00 1 2 3	screw	M8 M10 M10 M12		screw	M8 M10 M10 M12	
B	00 1 2	clip terminal	OS00 OS12 OS12		clip terminal	OS00 OS12 OS12	
C	00 1 2	clip terminal	OS00 OS12 OS12		screw	M8 M10 M10	
D	00 1 2 3	screw	M8 M10 M10 M12		prism clamp	P00 P1 P2 P3	
E	00 1 2 3	screw	M8 M10 M10 M12		prism clamp	P002* P12 P22 P32	
F	00 1 2 3	prism clamp	P00 P1 P2 P3		prismclamp	P00 P1 P2 P3	
G	00 1 2 3	prism clamp	P00 P1 P2 P3		prism clamp	P002* P12 P22 P32	
H	00 1 2 3	prism clamp	P002* P12 P22 P32		prism clamp	P002* P12 P22 P32	
K	1 2	»V« shaped clamp			»V« shaped clamp		

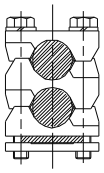
* IK00 protective cover is only as high as the terminals 2x (10-25mm^2 = height of approx. 25mm)
** interchangeability of the terminals is only possible between type OS... and P... within the same base size. Replacing the terminal with screw M... with the terminal OS... or with terminal P... is not possible.
*** »V« shaped clamp is not interchangeable.

Connections:

OS00 .... 6 - 50 mm^2 - Cu
OS12 .. 25 - 150 mm^2 - Cu



P00 ... 10 - 70 mm^2 - Cu / Al
P1 ..... 70 - 150 mm^2 - Cu / Al
P2 ... 120 - 240 mm^2 - Cu / Al
P3 ... 120 - 300 mm^2 - Cu / Al

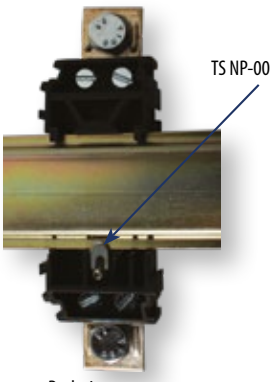


P002 ... 2 x (10 - 50 mm^2) - Cu / Al
P12 ..... 2 x (70 - 95 mm^2) - Cu / Al
P22 ... 2 x (120 - 150 mm^2) - Cu / Al
P32 ... 2 x (120 - 240 mm^2) - Cu / Al

Accessories for PLNVV, PLNS

Type	Description	Code No.	Used in combination with	kg	
TS NP-00	Mounting set (mounting on 35mm mounting rail)	001701221	PLNV 00, PLNVV - 000, 00	0,01	3
C-PLNS-00	Linking element to equalize potential between N and PE terminal	001701222	PLNS-00N	0,02	5

* for mounting 1-pole PLNVV, PLNS on 35mm mounting rail one set of TS NP-00 is needed.
** C-PLNS-00 is used to equalize potential between N and PE terminal through M8 screw Type connection on PLNS-00N base.



Back view

TS NP-00

C-PLNS-00

NV/NH Accessories

NV/NH separator uninsulated

Type	I_N [A]	Code No. (Ni)	Code No. (Ag)	g	
NVL 00	160	004941230	004941235	75,5	20
NVL 0	160	004941231	004941236	120	20
NVL 1	250	004941232	004941237	145,5	20
NVL 2	400	004941233	004941238	210	20
NVL 3	630	004941234	004941239	275	6/48
NVL 4	1250	004941208		692	5
NVL 4a	1600	004941209		553	5

*size NVL 00, 0,1,2,3….drawing A in technical data
size NVL 4, 4a…..drawing B in technical data

NV/NH separator insulated

Type	I_N [A]	Code No.	g	
NVLI 00 Ag*	160	004941220	70	5/60
NVLI 0 Ag*	160	004941221	120	5/40
NVLI 1 Ag*	250	004941222	145	5/40
NVLI 2 Ag*	400	004941223	215	5/40
NVLI 3 Ag*	630	004941224	315	5/40

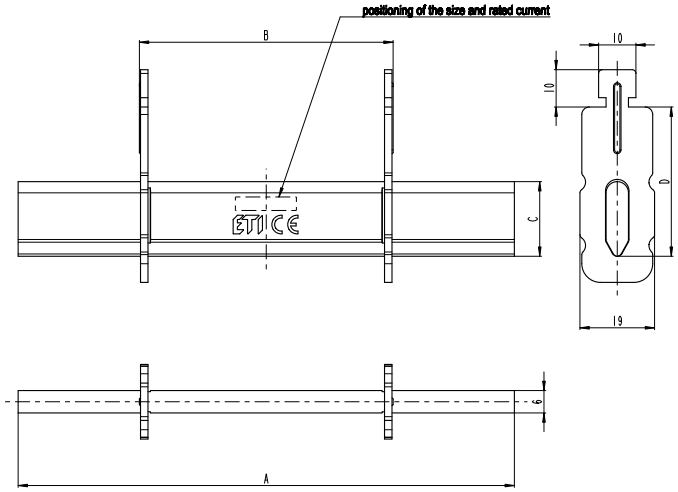
*silver plated

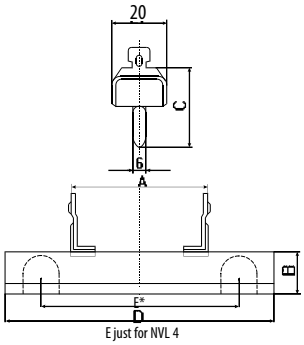
NV separator - Drawing A

Type	dimension				
	I_N(A)	A	B	C	D
NV L 00	160	77,5	49	15	35
NV L 0	160	125	68	15	35
NV L 1	250	133	68	20	40
NV L 2	400	148	68	26	48
NV L 3	630	148	68	33	60

NV separator - Drawing B

Type	dimension				
	A	B	C	D	E
NV L 4	68	51	87	200	150
NV L 4a	89	50	86	200	-



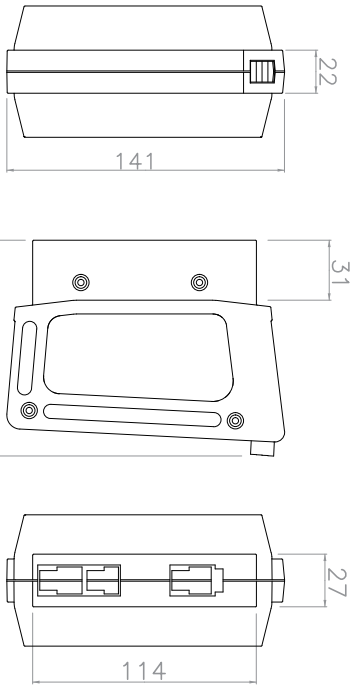


Handle

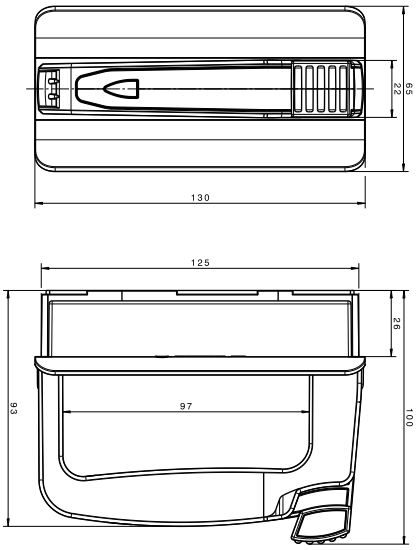
Type	I_N [A]	Code No.	g	
R 00-3	2-630	004941111	276	10
VRRN 00-3*	2-630	001691061	320	1
VRRL 85	25-160	001691064	550	1

*handle with sleeve

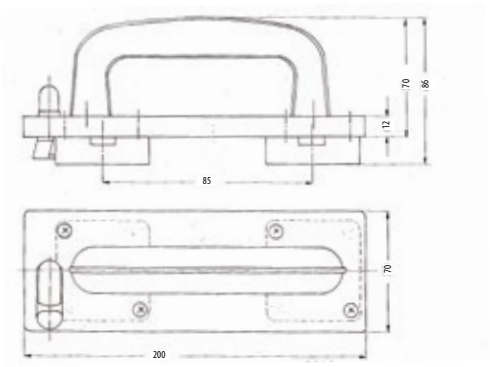
R 00-3 dimension

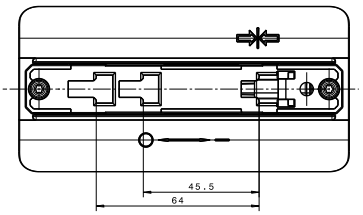


VRRN 00-3 dimension



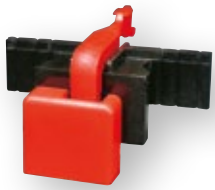
VRRL 85 dimension





Signal Switch NVS 5

Type	Code No.	g	
NVS 5	004117001	11,5	10/340



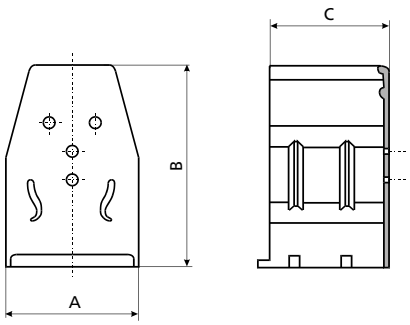
NVS 5 is used for signalling of interruption of fuse-links of the Type NV/NH of the size NV/NH 00 C to NV/NH 3 (except NV/NH 1 ultra with knives for fastening with screws). NVS is activated through the indicator spring. We also offer Electronic Fuse Monitors - see page 196.

Protection link

Type	Code No.	g	
NVL00	004941206	30	10
NVL 1-3	004941207	78	10

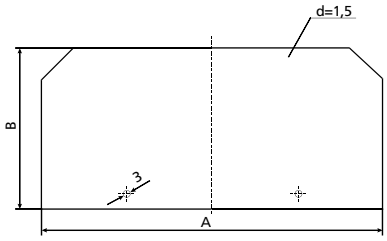
Base separating elements

Type	Code No.	g	
PP 00, PK 00	004941301	50	20/100
PK 0	004941302	50	20/100
PK 1	004941303	50	20/100
PK 2	004941304	50	20/100
PK 3	004941305	50	20/100



Insulating sleeve of contact spring PK and PP

type	dimension		
	A	B	C
PP 00	32	68	41
PK 1	40	52	33
PK 2	44	63	40
PK 3	44	67	40



Base separating element

type	dimension	
	A	B
PP 00, PK 00	125	83
PK 0	175	82
PK 1	210	100
PK 2	240	110
PK 3	250	110

NV/NH Low Voltage Fuse-Rails

NV/NH fuse-rail sizes 00, 1, 2, 3

Characteristics of LV NV fuse-rails
The LV NV/NH fuse-rails are 3-pole bases of LV fuse-links, intended for busbar mounting. The LV NV/NH fuse-rails comprises three single-pole connections in one unit. Each contact at an individual phase is connected to the phase on the busbar system. The other contacts are fitted with cable connecting terminals or intended for attachment of the following busbar system.

Use
The LV NV/NH fuse-rails are mainly used for cable distribution and power supply systems. Principle of operation The LV NV/NH fuse-rails are intended for insertion of LV fuse-links that are inserted and removed from the LV NV/NH fuse-rails by means of a special handle (refer to Catalogue ETI - LV fuse-links, Code No. number 4941111 and 4941100). Design of LV NV/NH fuse-rails The insulated supporting body is made of one piece, the material is polyester reinforced with glass fibres. A silver-plated contact system, fitted with tinned extinction chambers, ensures a low power dissipation, optimum thermal characteristics, and a high breaking capacity. The contact derived parts are intended for cable connections or for attachment of the next busbar system. All the live parts are protected against accidental contacts - in conformity with BVG A2. A special form of the contact part cover provides for safe insertion and removal of the LV fuse-links.

Short description
The LV NV/NH fuse-rails are manufactured in compliance with the DIN 43623 standard, and are mostly used for installation into cable distribution cabinets and power supply systems.
They are available in sizes of 00/160 A to 3/630 A. Covers provide insulation protection for all live parts. All the LV NV/NH fuse-rails are fitted with new, modern Delta contact systems allowing optimum pressure contact between the fuse cartridge and the LV NV/NH fuse-rails, resulting in extremely low level of power dissipation and heating-up.
All standard insulated LV NV/NH fuse-rails shown in the Catalogue are intended for general usage.
Upon request appropriate individual configurations can be designed - in such cases please contact our sales engineers, or call us to the factory.

Advantages
- upper or lower cable connection - as required
- optimum pull contact
- simple installation
- modular design

Technical data of insulated fuse-rails (in accordance with VDE 0636, part 201, IEC 60269-2-1)

Technical Specifications			VL00/100	VL00/185	VL1	VL1H
Electrical Characteristics						
Rated operational voltage	Ue	V	690 AC	690 AC	690 AC	690 AC
Rated operational current	Ie	A	160	160	250	250
Rated frequency	-	Hz	40-60	40-60	40-60	40-60
Rated insulation voltage	Ui	V	800 AC		1000 AC	
Total power loss at Ith (without fuse)	Pv	W	18	23	23	29
Fuse links						
Size - DIN 43 620, IEC 60269-2	-	-	000/00		1	
Max. rated current (gG)	In	A	160	160	250	250
Max. permissible power loss per fuse link	Pv	W	12		32	23
Dimensions						
Mass	-	kg	100 mm = 0,8	185mm=1,5	3,5	
Busbars (distance)	-	mm	100	185	185	
Cable connection						
Screw	-	-	M8		M10	
Torque	Ma	Nm	12-15		30-35	
V-clip	-	mm^2	10-95		25-300	25-240 / 25-300
Torque	Ma	Nm	10		32	
Protection						
Operational state	-	-	IP10			
Operating conditions						
Ambient temperature	Tu	°C	-25 ... +55			
Operating condition	-	-	Continuous operation			
Mounting	-	-	vertical, horizontal			
Altitude	-	m	≤ 2000			
Pollution degree	-	-	3			
Overvoltage category	-	-	III		IV	

Technical data of insulated fuse-rails (in accordance with VDE 0636, part 201, IEC 60269-2-1)

Technical Specifications			VL2	VL2H	VL3
Electrical Characteristics					
Rated operational voltage	Ue	V	690 AC	690 AC	690 AC
Rated operational current	Ie	A	400	400	630
Rated frequency	-	Hz	40-60	40-60	40-60
Rated insulation voltage	Ui	V		1000 AC	
Total power loss at Ith (without fuse)	Pv	W	54	73	115
Fuse links					
Size - DIN 43 620, IEC 60269-2	-	-	2		3
Max. rated current (gG)	In	A	400	400	630
Max. permissible power loss per fuse link	Pv	W	45	34	48
Dimensions					
Mass	-	kg	3,8		4,3
Busbars (distance)	-	mm	185		
Cable connection					
Screw	-	-	M12	M12	M12
Torque	Ma	Nm	35-40	35-40	35-40
V-clip	-	mm^2	25-300	25-240 / 25-300	25-300
Torque	Ma	Nm	32	32	32
Protection					
Operational state	-	-	IP10		
Operating conditions					
Ambient temperature	Tu	°C	-25 ... +55		
Operating condition	-	-	Continuous operation		
Mounting	-	-	vertical, horizontal		
Altitude	-	m	≤ 2000		
Pollution degree	-	-	3		
Overvoltage category	-	-	IV		

General LV NV/NH fuse-rail table

Size	Code No.	Busbar system	Product designation	Connection description	Protection cover	kg	
00	001691015	100	VL00/100 M8-2	flat connection – screw M8	/	0,8	1/1
00	001691016	100	VL00/100 SP.95-2	prism 35 - 95 mm^2	/	0,8	1/1
00	001691020	185	VL00 M8	flat connection – screw M8	/	1,5	1/1
00	001691021	185	VL00 SP.95	V-clip 10-95 mm^2	/	1,5	1/1
1	001691024	185	VL1 M10	screw M10	terminal compartment cover	3,5	1/1
1	001695280	185	VL1H M10*	screw M10	terminal compartment cover	3,5	1/1
1	001691025	185	VL1 SP.300	V-clip 25-300 mm^2	terminal compartment cover	3,5	1/1
2	001691022	185	VL2 M12	screw M12	terminal compartment cover	3,8	1/1
2	001695290	185	VL2H M12*	screw M12	terminal compartment cover	3,8	1/1
2	001691029	185	VL2 M12x35	screw M12x35	terminal compartment cover	3,8	1/1
2	001691030	185	VL2 SP.240 P	V-clip 25-240 mm^2	terminal cover	3,8	1/1
2	001691031	185	VL2 SP.300	V-clip 25-300 mm^2	terminal compartment cover	3,8	1/1
3	001691027	185	VL3 M12	screw M12	terminal compartment cover	4,3	1/1
3	001691028	185	VL3 SP.300	V-clip 25-300 mm^2	terminal compartment cover	4,3	1/1

* H - "Omega" contact (make short - circuit current 80 kA)

Table of accessories for LV NV/NH fuse-rails

Type	Code No.	Description	
busbar connection KS 00/5-10	001691040	busbar thickness 5-10mm	1/3
busbar connection KS 123/10	001692460	busbar thickness 10mm	1/1
protection covering of contact connections ZPL 123/10HA	001691045	for sizes 1,2,3	1/1
busbar covering PZ 00/185	001691046	mounting thread M8	1/1
busbar covering PZ 00/100	001691047	mounting thread M8	1/1
busbar covering PZ 123/185	001691048	mounting thread M12	1/1
busbar support POP 100/185	001691055	for busbar system 100 mm and 185 mm	1/1
protection covering of POP busbar support ZP POP 100	001691056	Lateral cover for busbar support 100 mm	1/1
protection covering of POP busbar support ZP POP 185	001691057	Lateral cover for busbar support 185 mm	1/1

busbar support

busbar connection

busbar covering

Busbar connection
Busbar connections are used for drill-free direct contacting of the strip-fuseways on the busbars.

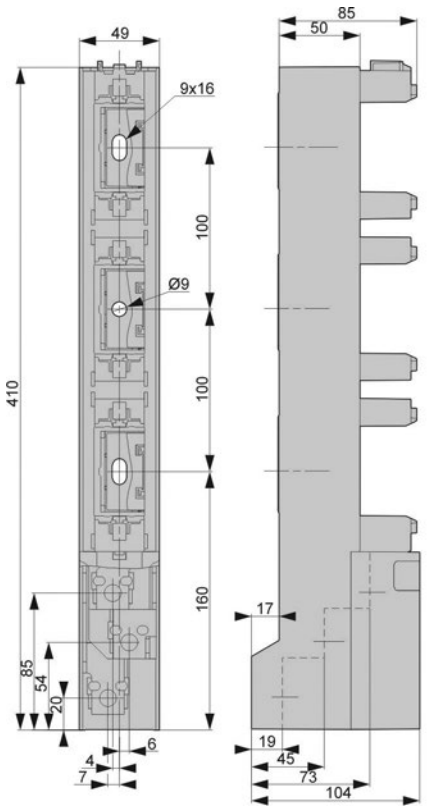
Protection cover
The terminal compartment and terminal covers provide probe-safe frontal protective covering of the terminal compartment.

Busbar cover, screw-Type
The screw-Type covers of 100 mm width are fixed at busbars with M12 thread or stud. The covers of 50 mm width are fixed on busbars or adapters with M8 thread.

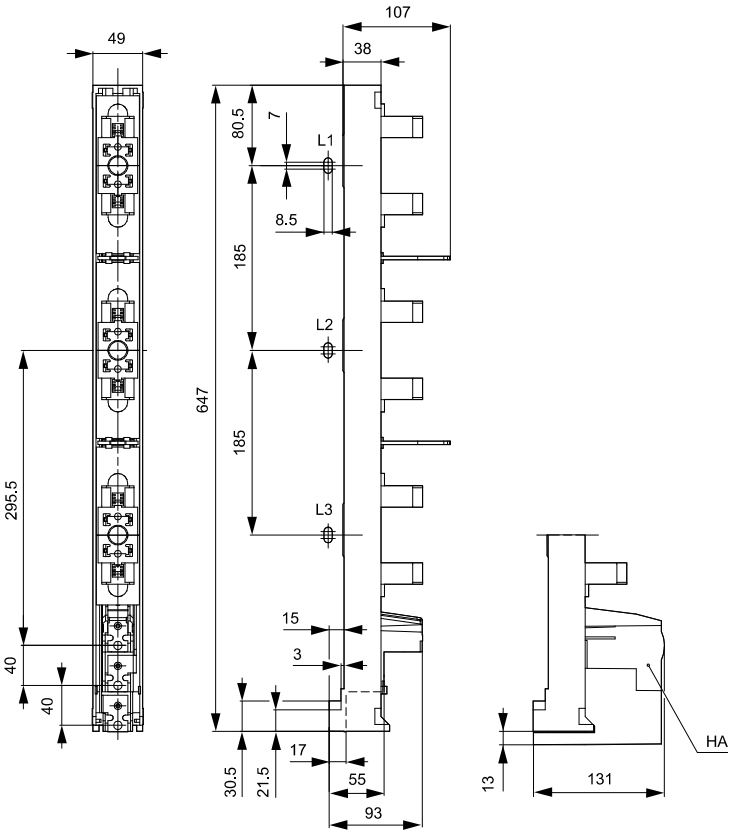
Busbar support
The 3-pole busbar support is used for the fixing of flat bars at 100 mm and 185 mm distances.

protection covering of contact connections

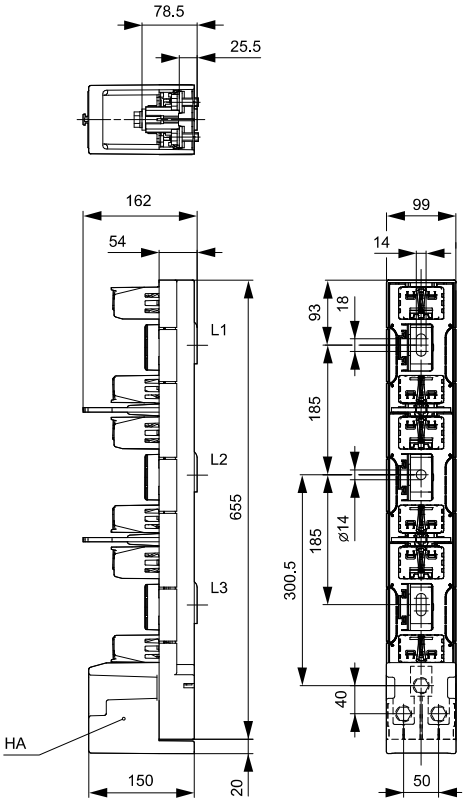
Dimensional overview of VL NV fuse-rails



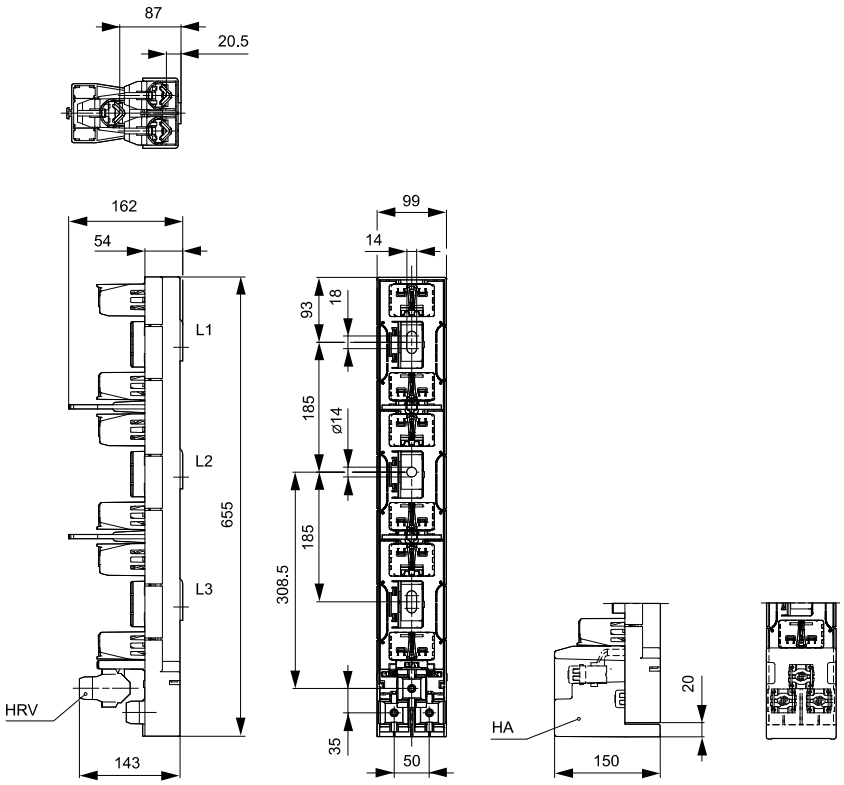
size 00/100



size 00/185

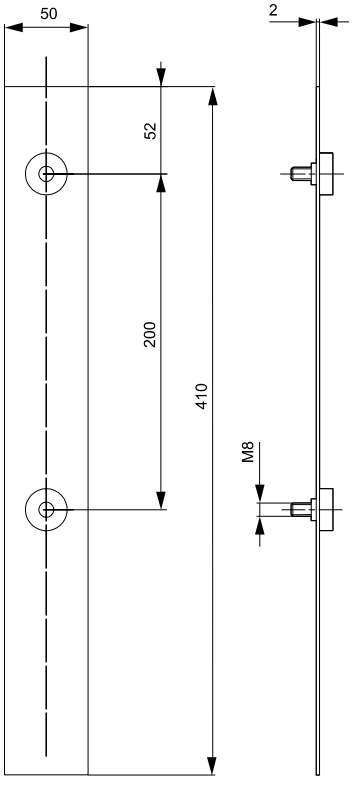


size 1, 2, 3 (M terminal)

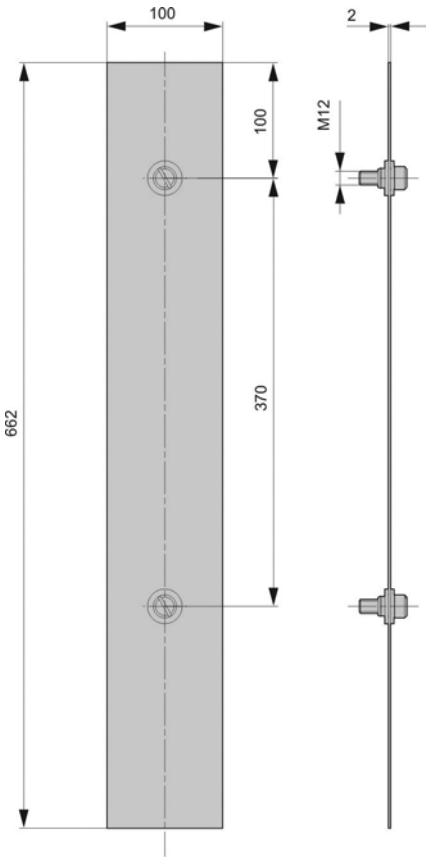


size 1, 2, 3 (SP terminal)

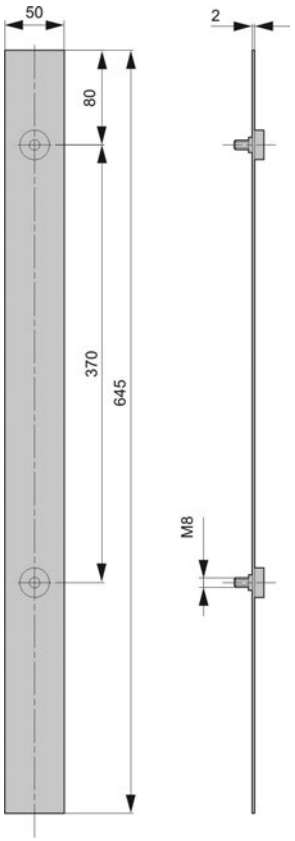
Dimensional overview of accessories for VL NV fuse-rails



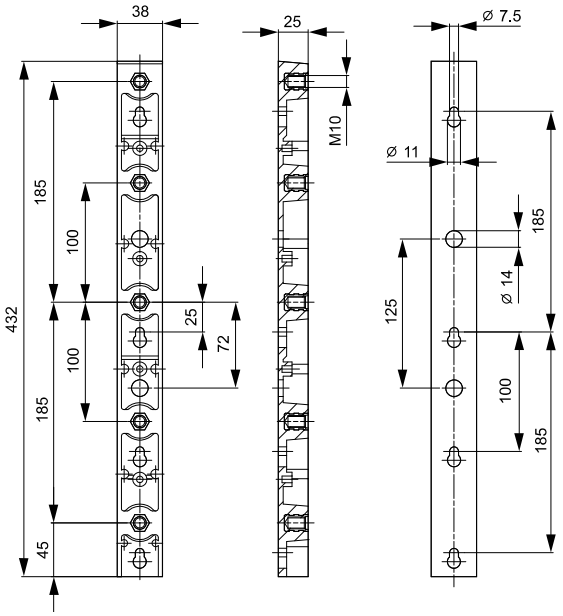
busbar covering PZ 00/100



busbar covering PZ 123/185, busbar covering PZ 00/185



busbar covering PZ 00/185

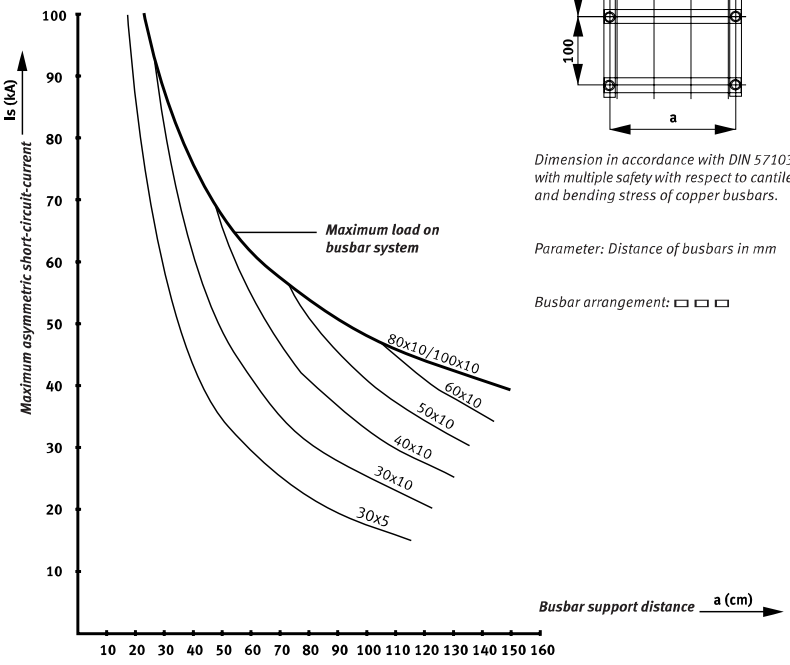


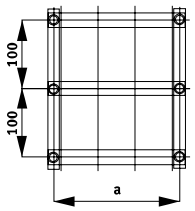
busbar support POP 100/185

Busbar support

POP 100

Short-circuit resistance as a function of the support distance (busbar system: 100mm)





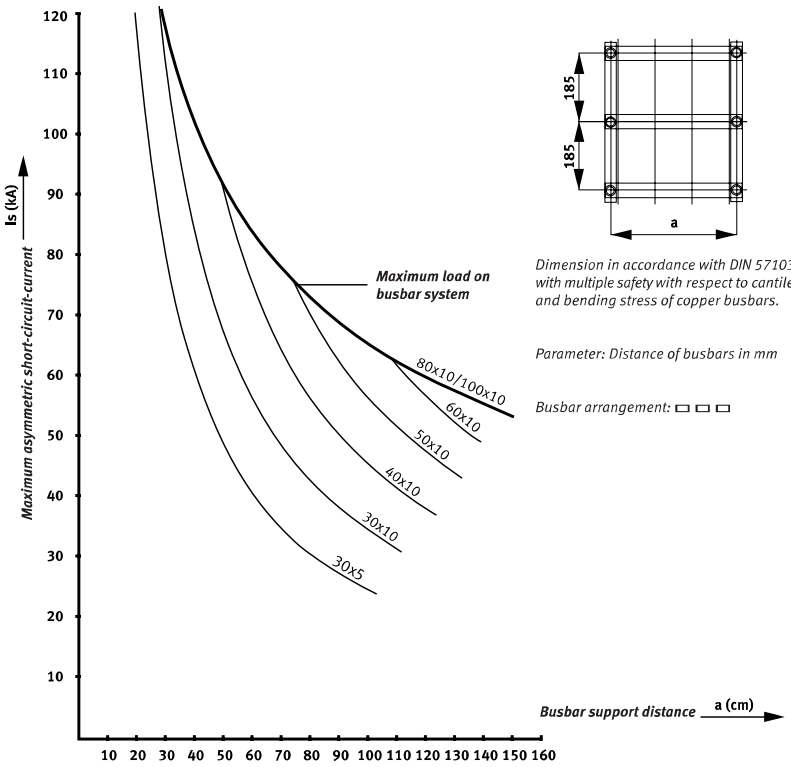
Dimension in accordance with DIN 57103/VDE 0103 with multiple safety with respect to cantilever strength and bending stress of copper busbars.

Parameter: Distance of busbars in mm

Busbar arrangement: ▭ ▭ ▭

POP 185

Short-circuit resistance
as a function of the distance between supports (busbar system: 185mm)



Dimension in accordance with DIN 57103/VDE 0103 with multiple safety with respect to cantilever strength and bending stress of copper busbars.

Parameter: Distance of busbars in mm

Busbar arrangement: ▭ ▭ ▭

NV/NH fuse-rail type VL00 EK

Description
Fuse-rail type VL00/100 EK is a three-pole fuse-base in vertical design for mounting on busbar system. Intended for use with fuse-links size 000 (00C), 00 fuse-rail protects equipment in electrical circuits from overload and short circuit. Special designed contact cover enables safe manipulation with fuse-links (insertion / pull out) with special handle.
Application
- transformer substation
- distribution boards, distribution panels
- public lightening cabinets
- cable distribution cabinets
- industry

Mounting
Rails can be mounted on 100mm busbar system directly, with additional adapters can be mounted also to 185mm busbar system. Mounting in vertical and horizontal position.
Standards
VL00/100 EK are in accordance with the following standards:
- IEC 60947-1
- IEC 60947-3
- IEC 60269-1
- IEC 60269-2.

Technical data

Type		VL00/100 EK
Conventional free air thermal current (Ith)	A	160
Rated insulation voltage	V	AC690
Rated withstand impulse voltage	Kv	6
Rated frequency	Hz	50 (40-60)
Power dissipation (without fuse-links)	W	16,6
Degree of protection (cover closed)		IP20
Degree of protection (cover opened)		IP20
Pollution degree		3
Permissible ambient temperature**	°C	-25°C ... +55°C
Storage temperature	°C	-30°C ... +70°C
Weight (without fuse-links)	kg	0,86
Package	pcs	1

** with ambient temperature between 40-45°C, reduce Ith by 5%; with ambient temperature above 45°C, reduce Ith by 10%

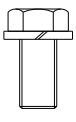
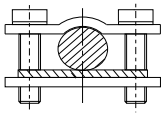
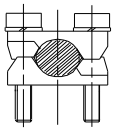
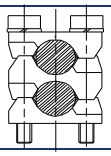
VL00/100 EK M8

Fuse-rail type VL00/100 EK

Type	Code No.	kg	
VL00/100 EK M8	001701600	0,95	1
VL00/100 EK BT00 10-70	001701601	0,95	1
VL00/100 EK OS00 6-50	001701602	0,94	1
VL00/100 EK P00 10-70	001701603	0,94	1
VL00/100 EK P002 50	001701605	0,96	1

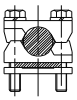
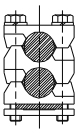
*VL00/100 EK fuse-rails are used only for 100mm busbar system
** VL00/100 EK is possible to mount on 185mm busbar using special adapters
*** for Type of terminals see table of terminal for SL00/100 EK and VL00/100 EK
**** busbar connection for drill-free direct contacting of the fuse-rail is not at disposal

Table of connections for SL00/100 EK and VL00/100 EK

Cable terminal drawing					
Cable terminal type	M8	BT00 10-70*	OS00 6-50	P00 10-70	P002 50
Clamping cross-section	70 mm^2	10-70 mm^2 Al/Cu	(6-50) mm^2 Cu	(10-70) mm^2 Al/Cu	2x50 mm^2 Al/Cu
Screw type	M8x12	M6	2x(M5x14)	2x(M5x25)	2x(M5x40)
Tightening torque	12-15 Nm	4,5 Nm	2,6 Nm	4,5 Nm	4,5 Nm
Package	3	3	3	3	3

* connection type BT00 10-70 have to be ordered with the product, latter excahange is not possible

Additional connections for VL00/100 EK

Type	Code No.	Connector drawing	Suitability	
0S00 6-50	001701480	Cu*	SL00/100 EK VL00/100 EK	set = 3
P00 10-70	001701481	 Al/Cu*	SL00/100 EK VL00/100 EK	set = 3
P002 50	001701467	 Al/Cu*	SL00/100 EK VL00/100 EK	set = 3

* cable type for direct connection is indicated on the connector drawing
** exchange between connection Type is possible

RA-1 100/185

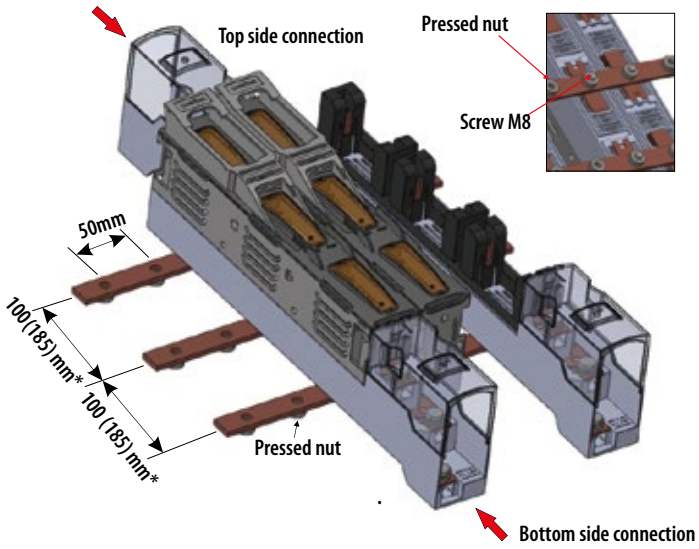
PRS-SL/VL EK

Accesories for VL00/100 EK

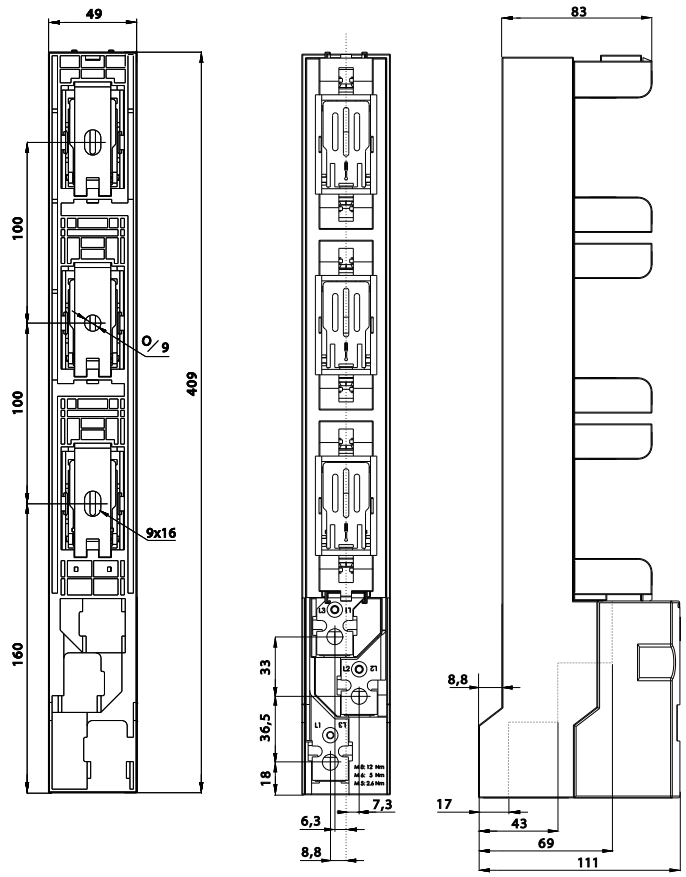
Type	Code No.	Description	kg	
PRS-SL/VL EK	001701470	Protection cover for connection terminals	0,05	1
RA-1 100/185	001701471	Mounting adapter for 185mm busbar, single	0,25	1
RA-2 100/185	001701472	Mounting adapter for 185mm busbar, double	0,60	1

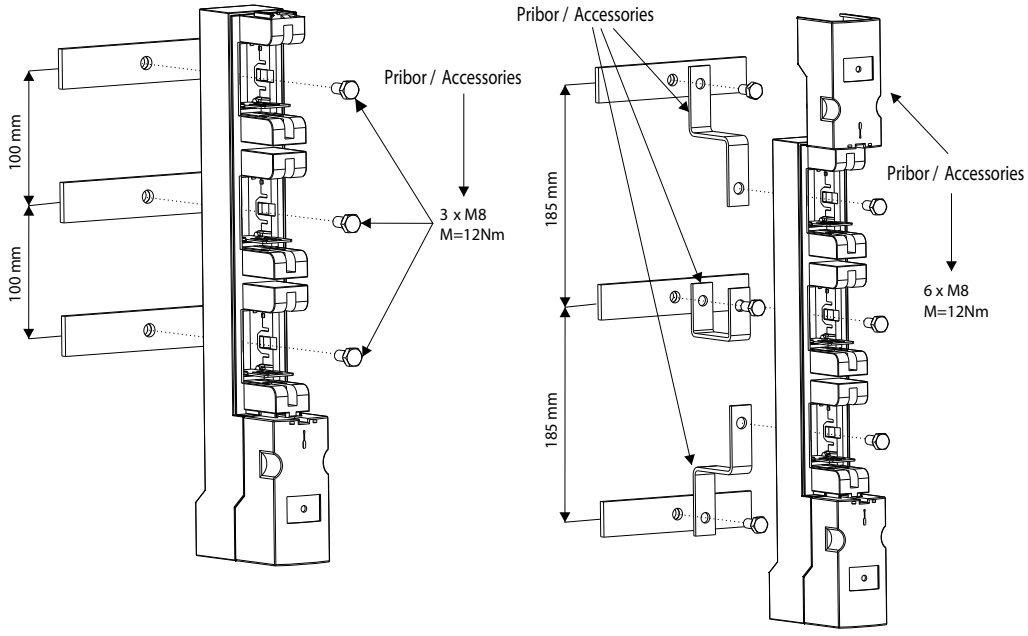
* PRS-SL/VL EK is needed for additional protection covering when using mountin adapter RA-…
** RA-1 100/185 is adapter that is needed if one SL00/100 EK or VL00/100 EK have to be mounted on 185mm busbar. With adapter RA-2 100/185 two SL00/100 EK or VL00/100 EK can be mounted on 185mm busbar same time.

RA-2 100/185



Dimensions


49
83
100
100
160
409
Ø9
9x16
33
36,5
18
7,3
6,3
8,8
8,8
17
43
69
111


Pribor / Accessories
Pribor / Accessories
100 mm
100 mm
3 x M8
M=12Nm
185 mm
185 mm
Pribor / Accessories
6 x M8
M=12Nm

NV/NH Strip Type Fuse-Switch-Disconnectors

NV/NH Strip type fuse-switch-disconnector sizes 00, 1, 2, 3

Characteristics of the NV/NH Strip type fuse-switch-disconnectors
The NV/NH Strip type fuse-switch-disconnectors are 3-pole bases of NV/NH fuse cartridges, intended for busbar mounting. An NV/NH Strip type fuse-switch-disconnectors comprises three single-pole connections in one unit. Each contact at an individual phase is connected to the phase on the busbar system. The other contacts are fitted with cable connecting terminals or intended for attachment of the following busbar system.

Use
The NV/NH Strip type fuse-switch-disconnectors are mainly used for cable distribution and power supply systems, transformer systems, where they are connected when electric energy transmission is required. The following rated currents are available: 160 A, 250 A, 400 A, 630 A.

Principle of operation
The NV/NH Strip type fuse-switch-disconnectors are used in combination with NV/NH fuse cartridges protecting the circuit against shorts. The upper part of the NV/NH Strip type fuse-switch-disconnectors with insulation class IP3X is provided with a separate test opening through which the live state can be tested according to DIN VDE 0680, part 5.
Design of the NV/NH Strip type fuse-switch-disconnectors
The insulated supporting body is made of one piece, the material is polyester reinforced with glass fibres. A silver-plated contact system, fitted with tinned extinction chambers, ensures a low power dissipation, optimum thermal characteristics and a high breaking capacity. The contact derived parts are intended for cable connections or for attachment of the next busbar system. All the live parts are protected against accidental contacts - in conformity with BVG A2. A special form of the contact part cover ensures a safe insertion and removal of the NV/NH fuse cartridges.

Short description
The NV/NH Strip type fuse-switch-disconnectors are mostly used for installation into cable distribution cabinets and power supply systems - in accordance with IEC/EN 61439-1. The NV/NH Strip type fuse-switch-disconnectors have been tested in accordance with IEC/EN 60947-3. They are available for the sizes of fuse cartridges from 00 to 3, with both single-pole and 3-pole switching-on.

Advantages
- upper or lower cable connection - as required
- optimum pull contact
- direct connection
- double strip connection up to 1250 A
- universal cover
- high breaking capacity
- low power disipation
- use of standard earthing connections
- modular conctruction

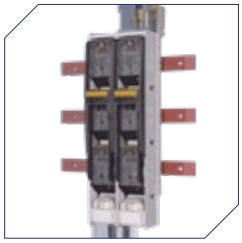
Main types of the NV/NH Strip type fuse-switch-disconnectors - characteristics
Basically, as shown, there are several types of the NV/NH Strip type fuse-switch-disconnectors:
- for a 3-pole switching-in
- for a single-pole switching-in
- for attachment directly to a busbar system
- with side contacts for a busbar system

All the NV/NH Strip type fuse-switch-disconnectors are fitted with new, modern Delta contact systems allowing optimum pressure contact between the fuse cartridge and the NV/NH Strip type fuse-switch-disconnectors, resulting in extremely low level of power dissipation and heating-up. All the standard NV/NH Strip type fuse-switch-disconnectors shown in the catalogue are intended for general usage. Upon request appropriate individual configurations can be designed - in such cases please contact our sales engineers, or call us to the factory.

- Option to lock the disconnector handle in both ON and OFF positions

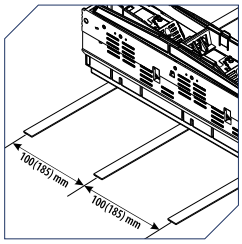
- Capability to measure current and voltage in each phase

- Supports top or bottom connection



- Frame Sizes
  NH 00 (160A) / NH 1 (250A)
  NH 2 (400A) / NH 3 (630A)

- Mounting on a 100mm (185mm) busbar system



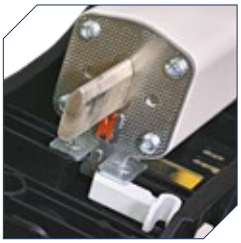
- Universal grounding kit for NV/NH 00 – NV/NH 3

- Front-side protection degree: IP30

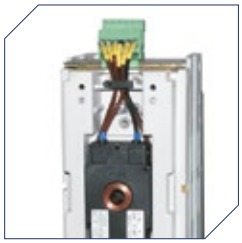
- Three-phase switching

- High-quality, non-flammable, halogen-free plastic

- Phase-by-phase switching



- Reliable fuse locking mechanism



- Capability to install current transformers

- Handle position indication via microswitch

- Connection via screw-mounted cable lugs, with options for solid cables up to 240 mm² and flexible conductors up to 300 mm²

- Protection against accidental contact, IP1X (removable covers)

Technical data of NV strip type fuse-switch-disconnectors (in accordance with IEC/EN 60947-3)

Technical Specifications			SL00/100			SL00/185			SL1		
Rated operational voltage	Ue	V	500 AC	690 AC	400 AC	500 AC	690 AC	400 AC	500 AC	690 AC	400 AC
Rated operational current	Ie	A	160	100	160	160	160	160	250	250	250
Rated frequency	-	Hz	40-60	40-60	40-60	40-60	40-60	40-60	40-60	40-60	40-60
Rated insulation voltage	Ui	V	AC 800						AC 1000		
Total power loss at Ith (without fuse)	Pv	W	18			23					
Rated impulse withstand voltage	Uimp	kV	8						12		
Utilization category	-	-	AC22B	AC22B	AC22B	AC23B	AC22B	AC23B	AC22B	AC22B	AC23B
Fuse links											
Size - DIN 43 620, IEC 60269-2	-	-	000/00						1		
Max. rated current (gG)	In	A	160	100	160	160	160	160	250	250	250
Max. permissible power loss per fuse link	Pv	W	12						32		
Dimensions											
Mass	-	kg	100 mm = 1,40			185mm=2,4			4,9		
Busbars (distance)	-	mm	100			185			185		
Cable connection											
Screw	-	-	M8						M10		
Torque	Ma	Nm	12-15						30-35		
V-clip	-	mm^2	10-95						25-300		
Torque	Ma	Nm	15						32		
Protection											
Operational state	-	-	IP30						IP30		
Cover open	-	-	IP10						IP10		
Operating conditions											
Ambient temperature	Tu	°C	-25 ... +55						-25 ... +55		
Operating condition	-	-	Continuous operation								
Mounting	-	-	vertical, horizontal								
Altitude	-	m	≤ 2000								
Pollution degree	-	-	3								
Overvoltage category	-	-	III			IV					

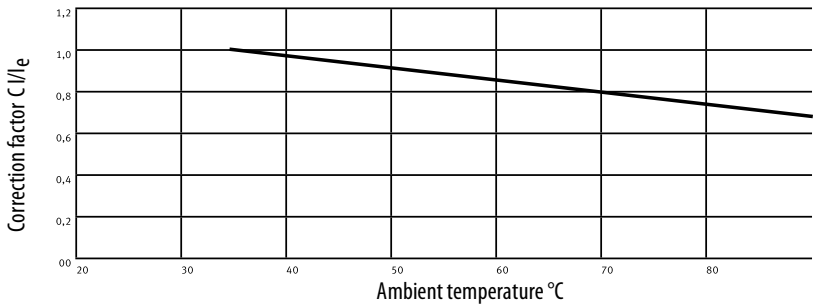
Technical data of NV strip type fuse-switch-disconnectors (in accordance with IEC/EN 60947-3)

Technical Specifications			SL1H			SL2		
Rated operational voltage	Ue	V	500 AC	690 AC	400 AC	500 AC	690 AC	400 AC
Rated operational current	Ie	A	250			400	400	400
Rated frequency	-	Hz	40-60			40-60	40-60	40-60
Rated insulation voltage	Ui	V	AC 1000					
Total power loss at Ith (without fuse)	Pv	W	29			54		
Rated impulse withstand voltage	Uimp	kV	12			12		
Utilization category	-	-	AC22B	AC21B	AC23B	AC22B	AC21B	AC23B
Fuse links								
Size - DIN 43 620, IEC 60269-2	-	-	1			2		
Max. rated current (gG)	In	A	250			400	400	400
Max. permissible power loss per fuse link	Pv	W	23			45		
Dimensions								
Mass	-	kg	4,9					
Busbars (distance)	-	mm	185					
Cable connection								
Screw	-	-	M10			M12		
Torque	Ma	Nm	30-35			35-40		
V-clip	-	mm^2	25-240 / 25-300			25-300		
Torque	Ma	Nm	32					
Protection								
Operational state	-	-	IP30					
Front cover open	-	-	IP10					
Operating conditions								
Ambient temperature	Tu	°C	-25 ... +55					
Operating condition	-	-	Continuous operation					
Mounting	-	-	vertical, horizontal					
Altitude	-	m	≤ 2000					
Pollution degree	-	-	3					
Overvoltage category	-	-	IV					

Technical data of NV strip type fuse-switch-disconnectors (in accordance with IEC/EN 60947-3)

Technical Specifications			SL2H			SL3		
Electrical Characteristics								
Rated operational voltage	Ue	V	500 AC	690 AC	400 AC	500 AC	690 AC	400 AC
Rated operational current	Ie	A	400			630	630	630
Rated frequency	-	Hz	40-60			40-60	40-60	40-60
Rated insulation voltage	Ui	V	AC 1000					
Total power loss at Ith (without fuse)	Pv	W	73			115		
Rated impulse withstand voltage	Uimp	kV	12			12		
Utilization category	-	-	AC22B	AC21B	AC23B	AC22B	AC21B	AC23B
Fuse links								
Size - DIN 43 620, IEC 60269-2	-	-	2			3		
Max. rated current (gG)	In	A	400			630	630	630
Max. permissible power loss per fuse link	Pv	W	34			48		
Dimensions								
Mass	-	kg	4,9			5,6		
Busbars (distance)	-	mm	185					
Cable connection								
Screw	-	-	M12			M12		
Torque	Ma	Nm	35-40			35-40		
V-clip	-	mm^2	25-240 / 25-300			25-300		
Torque	Ma	Nm	32					
Protection								
Operational state	-	-	IP30					
Front cover open	-	-	IP10					
Operating conditions								
Ambient temperature	Tu	°C	-25 ... +55					
Operating condition	-	-	Continuous operation					
Mounting	-	-	vertical, horizontal					
Altitude	-	m	≤ 2000					
Pollution degree	-	-	3					
Overvoltage category	-	-	IV					

Influence of ambient temperature on rated current of NH strip-type fuse-switch-disconnectors



Rated diversity factor acc to IEC EN 61439-2:2012-06 table 101

No. of main circuits	Rated diversity factor
2 & 3	0,9
4 & 5	0,8
6 ... 9	0,7
10 ≤	0,6

General table of NV/NH strip type-fuse-switch-disconnector-single-pole switching-in

Size	Code No.	Busbar system	Product designation	Product designation	Switch lever	kg	
00	001692010	185	SL00 1P M8	flat connection - screw M8	standard	2,4	1/1
00	001692012	185	SL00 1P SP.95	V-clip 10-95 mm^2	standard	2,4	1/1
1	001692110	185	SL1 1P M10	screw M10	standard	4,9	1/1
1	001695200	185	SL1H 1P M10*	screw M10	standard	4,9	1/1
1	001692111	185	SL1 1P SP.300	V-clip 25-300 mm^2	standard	4,9	1/1
1	001695201	185	SL1H 1P SP.300*	V-clip 25-300 mm^2	standard	4,9	1/1
1	001692112	185	SL1 1P SP.240	V-clip 25-240 mm^2	standard	4,9	1/1
1	001695202	185	SL1H 1P SP.240*	V-clip 25-240 mm^2	standard	4,9	1/1
2	001692210	185	SL2 1P M12	screw M12	standard	4,9	1/1
2	001695220	185	SL2H 1P M12*	screw M12	standard	4,9	1/1
2	001692211	185	SL2 1P SP.300	V-clip 25-300 mm^2	standard	4,9	1/1
2	001695221	185	SL2H 1P SP.300*	V-clip 25-300 mm^2	standard	4,9	1/1
2	001692212	185	SL2 1P SP.240	V-clip 25-240 mm^2	standard	4,9	1/1
2	001695222	185	SL2H 1P SP.240*	v-clip 25-240 mm^2	standard	4,9	1/1
3	001692310	185	SL3 1P M12	screw M12	standard	5,6	1/1
3	001692311	185	SL3 1P SP.300	V-clip 25-300 mm^2	standard	5,6	1/1
3	001692312	185	SL3 1P SP.240	V-clip 25-240 mm^2	standard	5,6	1/1

* H - "Omega" contact (make short - circuit current 80 kA)

General tabel of NV/NH Strip type fuse-switch-disconnector-three-pole switching-in

Size	Code No.	Busbar system	Product designation	Connection description	kg	
00	001692034	100	SL00/100 3P M8-2	flat connection – screw M8	1	1/1
00	001692035	100	SL00/100 3P SP.70-2	V-clip 10-70 mm^2	1	1/1
00	001692032	185	SL00 3P M8	flat connection – screw M8	2,4	1/1
00	001692033	185	SL00 3P SP.95	V-clip 10-95 mm^2	2,4	1/1
1	001692130	185	SL1 3P M10	screw M10	4,9	1/1
1	001695210	185	SL1H 3P M10 *	screw M10	4,9	1/1
1	001692131	185	SL1 3P SP.300	V-clip 25-300 mm^2	4,9	1/1
1	001695211	185	SL1H 3P SP.300*	V-clip 25-300 mm^2	4,9	1/1
1	001692132	185	SL1 3P SP.240	V-clip 25-240 mm^2	4,9	1/1
1	001695212	185	SL1H 3P SP.240*	V-clip 25-240 mm^2	4,9	1/
2	001692000	185	SL2 3P SP.300	V-clip 25-300 mm^2	4,9	1/1
2	001695231	185	SL2H 3P SP.300*	V-clip 25-300 mm^2	4,9	1/1
2	001692230	185	SL2 3P M12	screw M12	4,9	1/1
2	001695230	185	SL2H 3P M12*	screw M12	4,9	1/1
2	001692231	185	SL2 3P SP.240	V-clip 25-240 mm^2	4,9	1/1
2	001695232	185	SL2H 3P SP.240*	V-clip 25-240 mm^2	4,9	1/1
3	001692330	185	SL3 3P M12	screw M12	5,6	1/1
3	001692331	185	SL3 3P SP.300	V-clip 25-300 mm^2	5,6	1/1
3	001692332	185	SL3 3P SP.240	V-clip 25-240 mm^2	5,6	1/1

* H - "Omega" contact (make short - circuit current 80 kA)

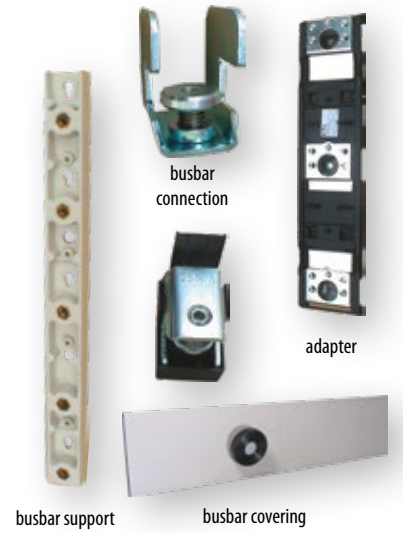
NV/NH Strip type fuse-switch-disconnector with current transformer

Size	Code No.	Busbar system	Product designation	Connection description	Current transformer	kg	
00	001693000	100	SL00/100 3P M8 150/5 Kl.1	flat connection, M8	150/5 class 1	1,7	1/1
1	001693010	185	SL1 3P M10 250/5 Kl.1	screw M10	250/5 class 1	3,1	1/1
2	001693020	185	SL2 3P M12 400/5 Kl.1	screw M12	400/5 class 1	4,6	1/1
3	001693030	185	SL3 3P M12 600/5 Kl.1	screw M12	600/5 class 1	4,6	1/1
00	001693040	100	SL00/100 3P SP.70 150/5 Kl.1	V-clip 10-70mm^2	150/5 class 1	1,7	1/1
1	001693050	185	SL1 3P SP.300 250/5 Kl.1	V-clip 25-300mm^2	250/5 class 1	3,1	1/1
2	001693060	185	SL2 3P SP.300 400/5 Kl.1	V-clip 25-300mm^2	400/5 class 1	4,6	1/1
3	001693070	185	SL3 3P SP.300 600/5 Kl.1	V-clip 25-300mm^2	600/5 class 1	4,6	1/1

Table of accessories for NV Strip type fuse-switch-disconnector

Type	Code No.	Description	
busbar connection KS 00/5-10	001691040	busbar thickness 5-10mm	3
busbar connection KS 123/10	001692460	for size 1,2,3	1/1
adapter DA 185/185 42	001692411	for system 185 mm height 42 mm	1/1
adapter DA 185/100 52	001692412	for system 185/100mm, height 52 mm, for 2 x SL00	1/1
protection covering of contact connections ZP 00 HA BOTTOM	001692420	for size 00; used when cable connects from the bottom	1/1
protection covering of contact connections ZP 00 HA TOP	001692424	for size 00; used when cable connects from the top	1/1
protection covering of contact connections ZP 123/10HA	001692421	for size 1,2,3; universal - for top / bottom cable connections	1/1
busbar covering PZ 00/185	001691046	mounting thread M8	1/1
busbar covering PZ 00/100	001691047	mounting thread M8	1/1
busbar covering PZ 123/185	001691048	mounting thread M12	1/1
nameplate NP 123	001692431	for size 1,2,3	1/1
busbar support POP 100/185	001691055	for systems 100 mm and 185 mm	1/1
Deriv. connection OP L	001692440	for size 1,2,3	1/1
double connection DP 3x2 (6)*	001692450	for size 1,2,3	1/1
double protection cover ZP 3x2/10HA*	001692422	for size 1,2,3	1/1
double terminal connections SPD 2x3 3x300*	001692423	for size 1,2,3	1/1
micro switch MST SL00/100 3p**	001691050	open/close position of SL	1/1
micro switch MST SL00 3p**	001691051	open/close position of SL	1/1
micro switch MST SL123 3p**	001691052	open/close position of SL	1/1
protection covering of POP busbar support ZP POP 100	001691056	Lateral cover for busbar support 100 mm	1/1
protection covering of POP busbar support ZP POP 185	001691057	Lateral cover for busbar support 185 mm	1/1
SP SL123 M/2x95-150	001692452	Retrofit kit for 2 conductors	1/1
SP SL123 M/2x240	001692453	Retrofit kit for 2 conductors	1/1
SP SL123 V/2x95-150	001692454	Retrofit kit for 2 conductors	1/1
SP SL123 V/2x150-240	001692455	Retrofit kit for 2 conductors	1/1

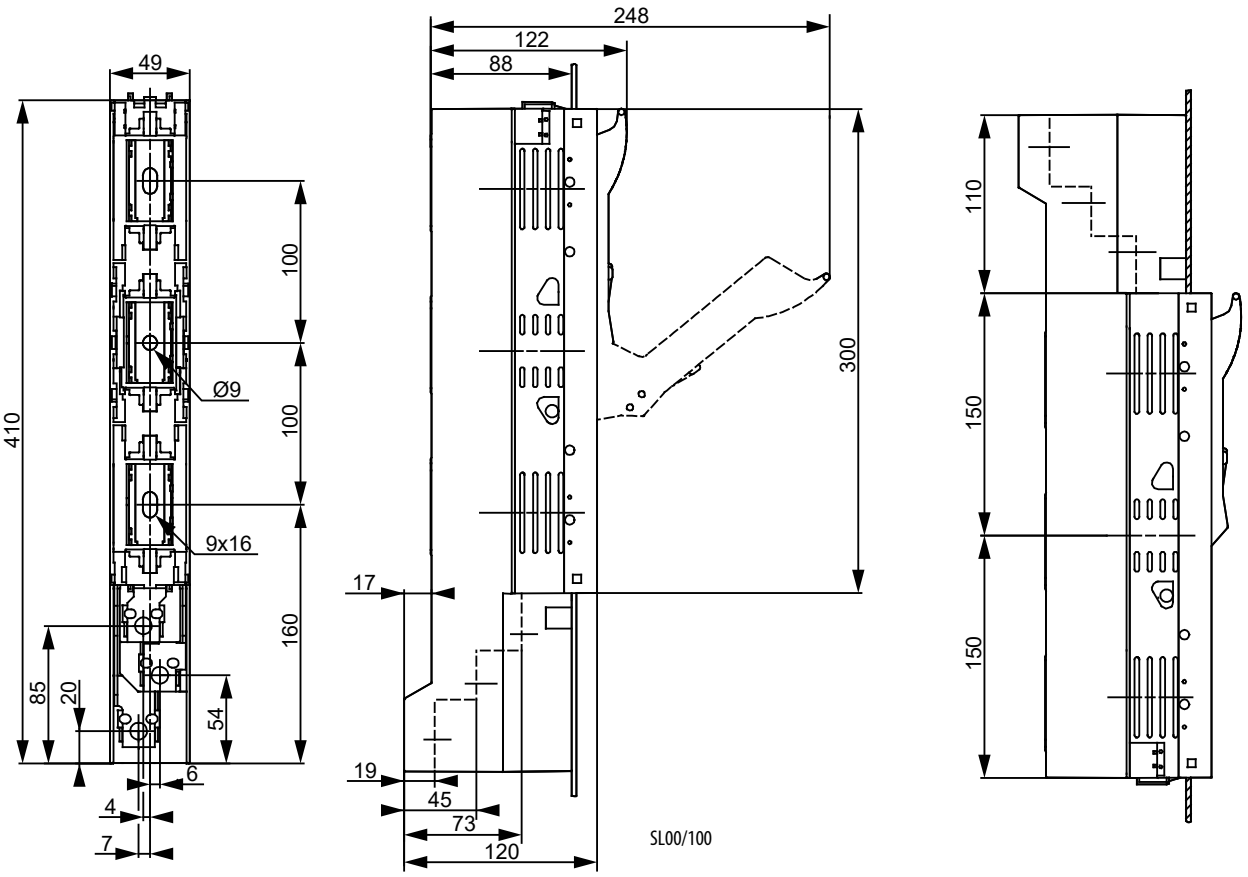
* accessories for assembling: SL 1250 (2 parallel connected fuse-switch-disconnectors)
** one MST can be installed inside SL

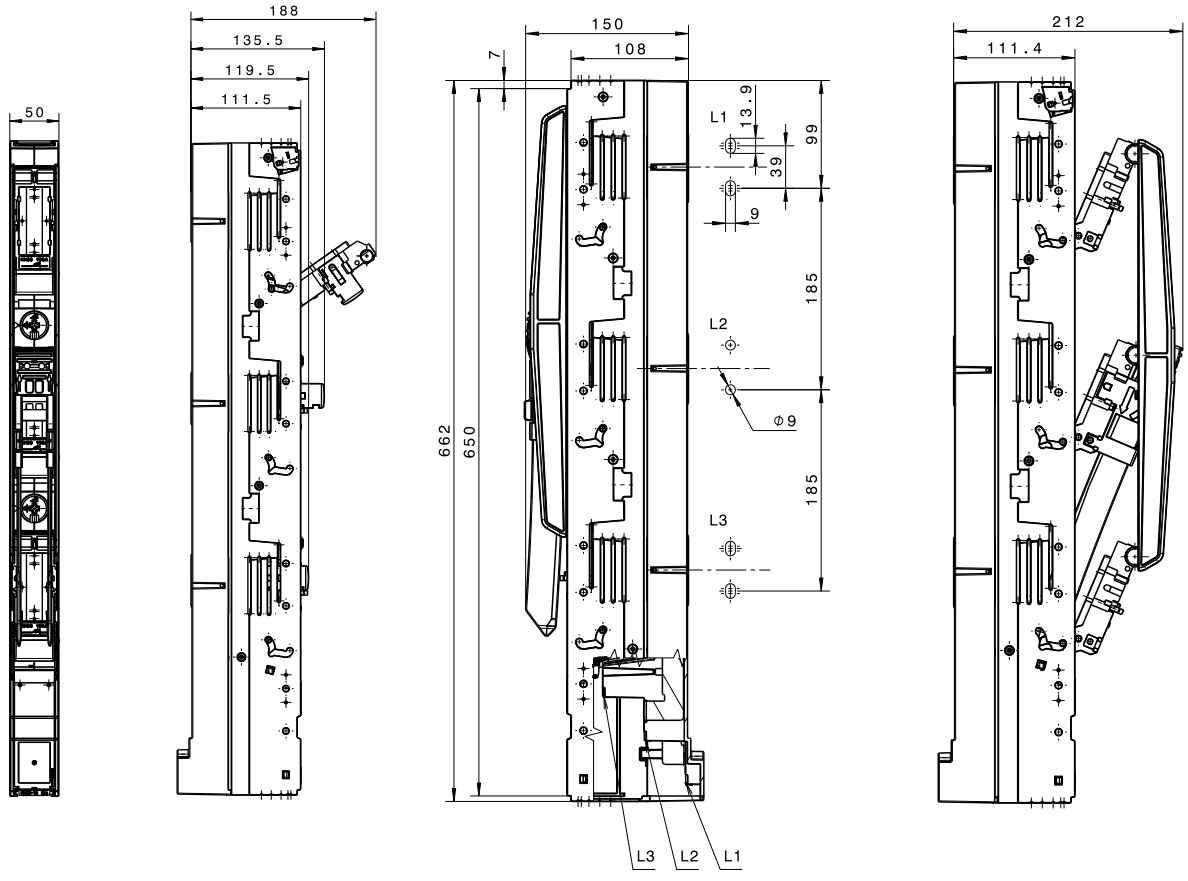


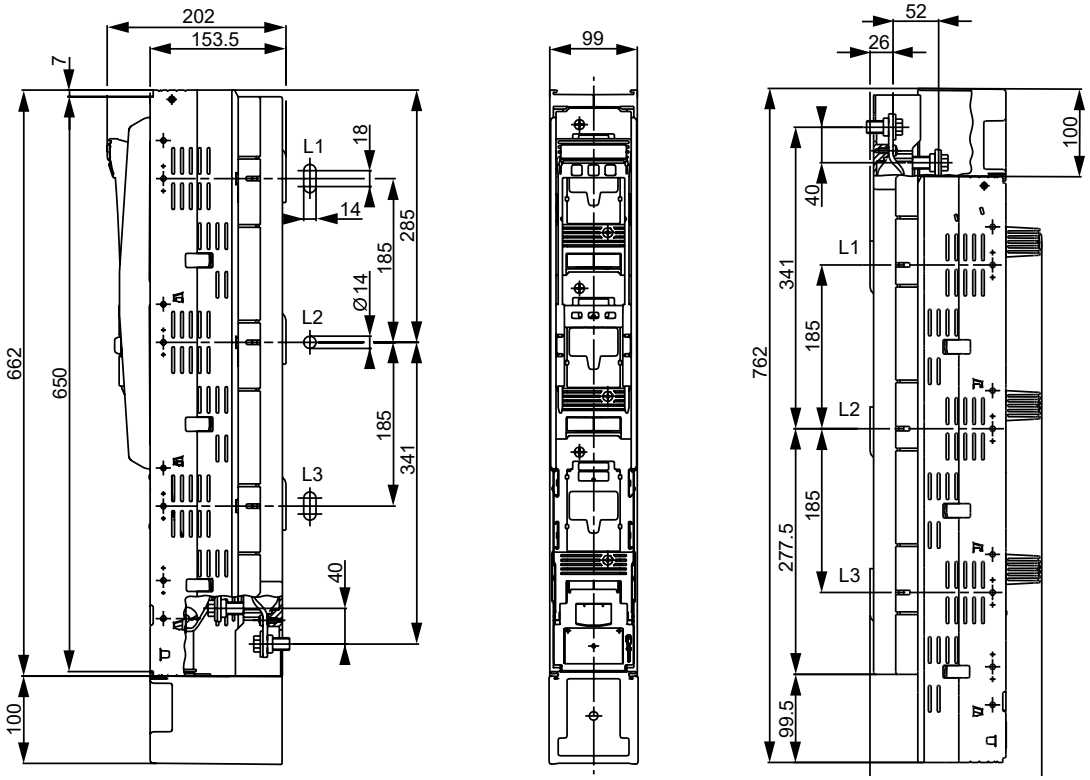
protection covering of contact connections sizes 1,2,3

BUSBAR CONNECTION
Busbar connections are used for drill-free direct contacting of the strip-fuseways on the busbars.
PROTECTION COVER
The terminal compartment and terminal covers provide probe-safe frontal protecive covering of the terminal compartment.
BUSBARCOVER, SCREW-TYPE
The screw-type covers of 100 mm width are fixed at busbars with M12 thread or stud. The covers of 50 mm width are fixed on busbars or adapters with M8 thread.
BUSBAR SUPPORT
The 3-pole busbar support is used for the fixing of flat bars at 100 mm and 185 mm distances.
DOUBLE CONNECTOR
The connector kits are used for parallel switching of 2 strips.
DOUBLE TERMINAL CONNECTION
The kit for 1250 A allows 2 strips to be connected at the terminal and 3 or 4 cables per phase to be connected.
NAMEPLATE
The designation plate mount is plugged on the strips at the end face. It allows fitting of an additional designation plate. When fitted in switch boards, it can also be used as support for a system cover.
BUSBAR ADAPTERS
The adapters are required for combining different strip sizes, e.g. size 00 with sizes 1 to3.
DERIVED CONNECTION
The derived connection enables fuse-protected temporary connections (worksite electrical supply) to size 1 to 3 LV NV strip-fuseways.

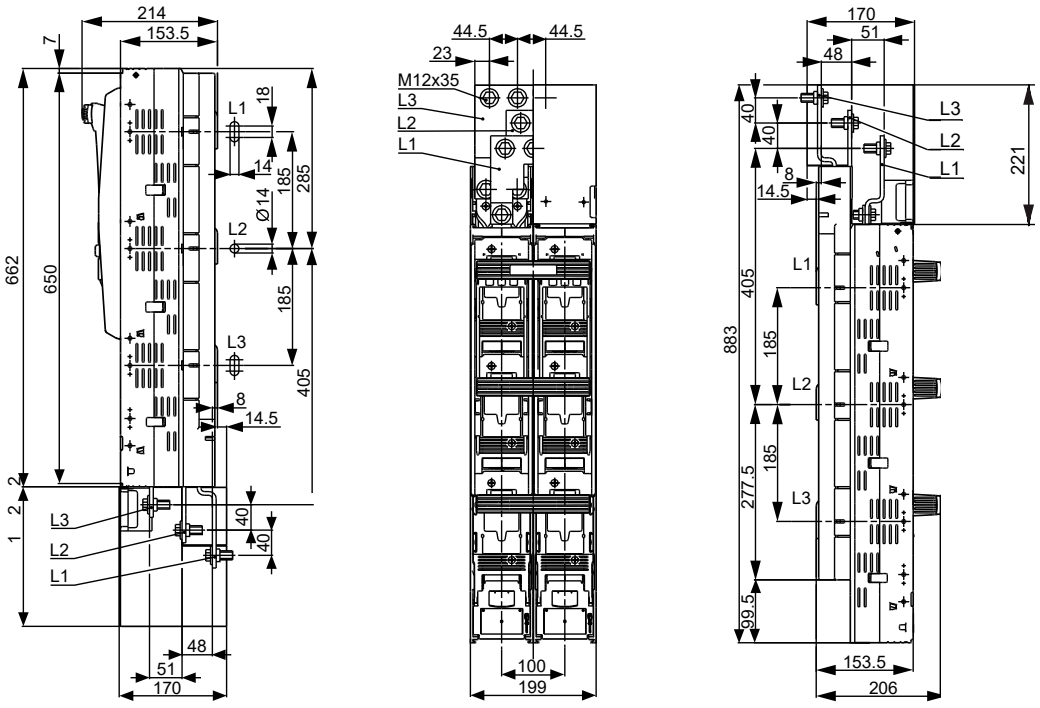
Dimensional overview of NV strip type fuse-switch-disconnectors





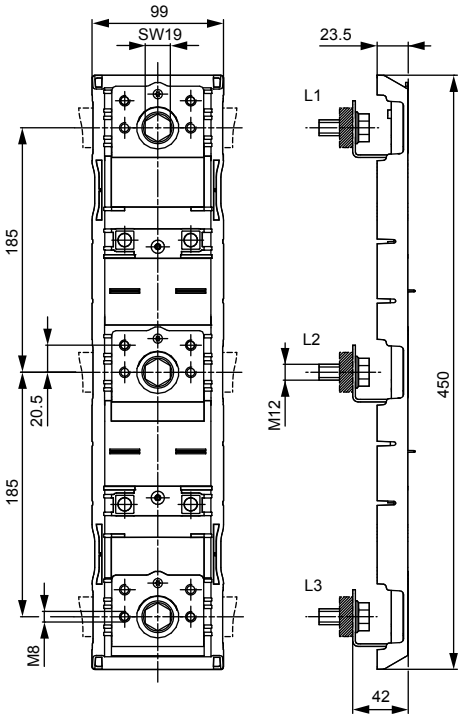


SL1(H), SL2(H), SL3

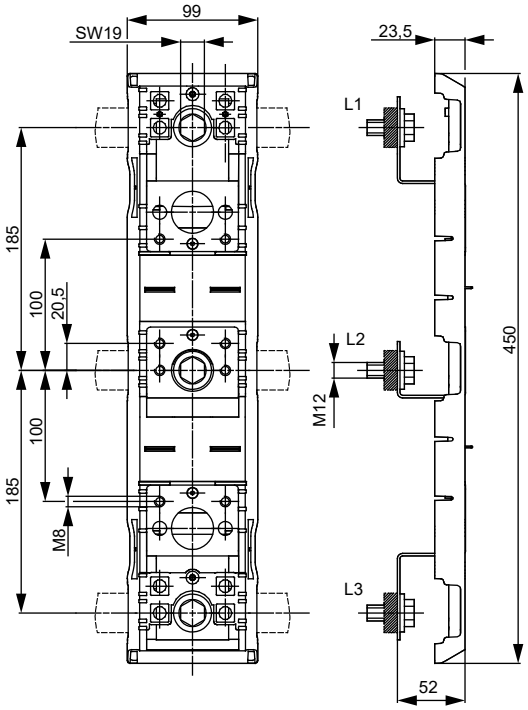


SL3 DOUBLE

Dimensional overview of accessories for NV strip type fuse-switch-disconnectors



adapter DA 185-185/42



adapter DA 185-100/52

Strip type fuse-switch disconnectors type SL00 EK

Characteristics of the NV/NH Strip type fuse-switch-disconnectors

Strip type fuse-switch disconnector SL00/100 EK is a three-pole low-voltage switching device which enables safely manual connecting and disconnecting electrical circuits under load, depending on voltage and utilization category. It`s purpose is protection of low voltage electrical equipment against specified overload currents and short circuit currents using fuse-links size 000 (00C), 00. SL00/100 EK are three-pole switching.

Application

Strip type fuse-switch disconnectors are intended for:

- transformer substation
- distribution boards, distribution panels
- public lightening cabinets
- cable distribution cabinets
- industry

Mounting

Strip type fuse-switch disconnectors can be mounted on 100mm busbar system directly and with additional adapters can be mounted also to 185mm busbar system. Mounting in vertical and horizontal position.

Standards

SL00/100 EK are in accordance with the following standards:

- IEC 60947-1
- IEC 60947-3
- IEC 60269-1
- IEC 60269-2

Technical data

Type		SL00/100 EK		
Conventional free air thermal current (Ith)	A	160		
Rated insulation voltage	V	AC690		
Rated withstand impulse voltage	Kv	6		
Rated frequency	Hz	50 (40-60)		
Rated operational (making and breaking) voltage	V	400V	500V	690 V
Utilization category/Rated operational (making and breaking) current	AC21-B	160A	160A	125A
Utilization category/Rated operational (making and breaking) current	AC22-B	160A	160A	100A
Rated conditional short-circuit current	kAeff	63		
Mechanical durability (operating cycles)		1400		
Electrical durability (operating cycles)		200		
Power dissipation (without fuse-links)	W	19,5		
Degree of protection (cover closed)		IP30		
Degree of protection (cover opened)		IP20		
Pollution degree		3		
Permissible ambient temperature**	°C	-25°C ... +55°C		
Storage temperature	°C	-30°C ... +70°C		
Weight (without fuse-links)	kg	1,2		
Package	pcs	1		

** with ambient temperature between 40-45°C, reduce Ith by 5%; with ambient temperature above 45°C, reduce Ith by 10%

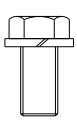
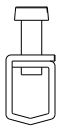
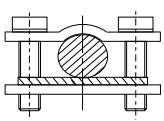
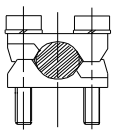
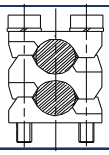
Fuse-switch disconnector strip type SL00/100 EK, three pole switching

Type	Code No.	kg	
SL00/100 EK 3p M8	001701500	1,20	1
SL00/100 EK 3p BT00 10-70	001701501	1,20	1
SL00/100 EK 3p OS00 6-50	001701502	1,10	1
SL00/100 EK 3p P00 10-70	001701503	1,10	1
SL00/100 EK 3p P002 50	001701505	1,30	1

* SL00/100 EK strip type fuse-switch disconnectors are used only for 100mm busbar system
** SL00/100 EK is possible to mount on 185mm busbar using special adapters
*** for Type of terminals see table of terminal for SL00/100 EK and VL00/100 EK
**** busbar connection for drill-free direct contacting of the strip type fuse-switch disconnector is not at disposal

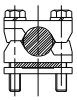
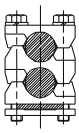
SL00/100 EK

Table of connections for SL00/100 EK and VL00/100 EK

Cable terminal drawing					
Cable terminal type	M8	BT00 10-70*	OS00 6-50	P00 10-70	P002 50
Clamping cross-section	70 mm^2	10-70 mm^2 Al/Cu	(6-50) mm^2 Cu	(10-70) mm^2 Al/Cu	2x50 mm^2 Al/Cu
Screw type	M8x12	M6	2x(M5x14)	2x(M5x25)	2x(M5x40)
Tightening torque	12-15 Nm	4,5 Nm	2,6 Nm	4,5 Nm	4,5 Nm
Package	3	3	3	3	3

* connection type BT00 10-70 have to be ordered with the product, latter excahange is not possible

Additional connections for SL00/100 EK

Type	Code No.	Connector drawing	Suitability	
OS00 6-50	001701211	Cu*	SL00/100 EK VL00/100 EK	set = 3
P00 10-70	001701213	 Al/Cu*	SL00/100 EK VL00/100 EK	set = 3
P002 50	001701467	 Al/Cu*	SL00/100 EK VL00/100 EK	set = 3

* cable Type for direct connection is indicated on the connection drawing
** exchange between connection Type is possible

RA-1 100/185

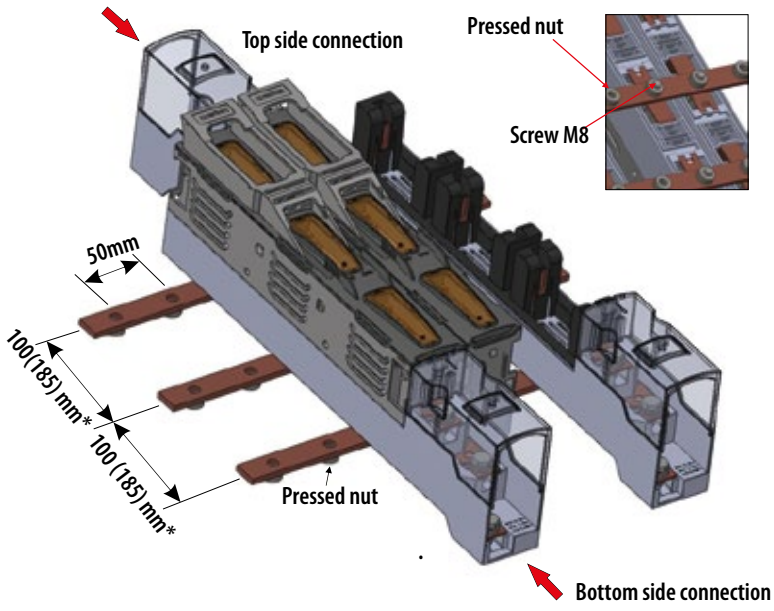
PRS-SL/VL EK

Accesories for SL00/100 EK

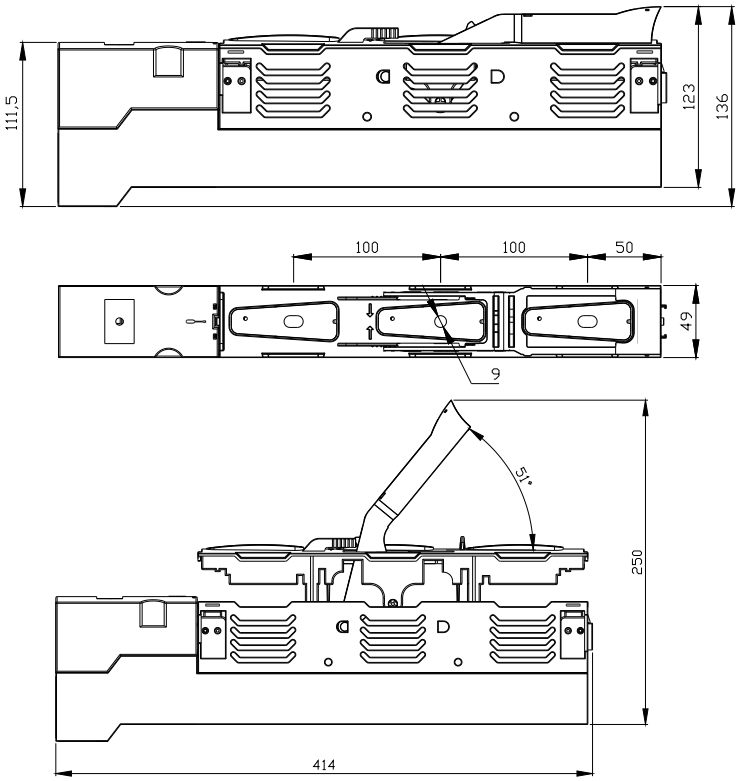
Type	Code No.	Description	kg	
PRS-SL/VL EK	001701470	Protection cover for connection terminals	0,05	1
RA-1 100/185	001701471	Mounting adapter for 185mm busbar, single	0,25	1
RA-2 100/185	001701472	Mounting adapter for 185mm busbar, double	0,60	1

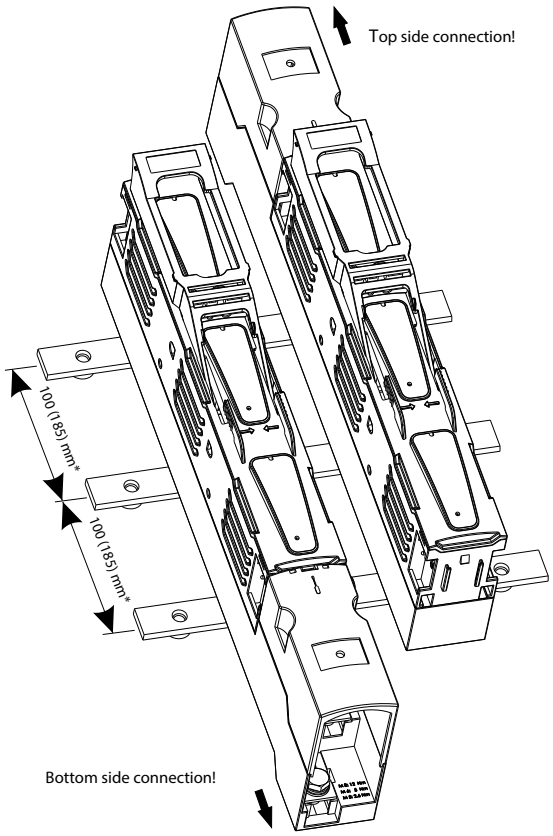
* PRS-SL/VL EK is needed for additional protection covering when using mountin adapter RA-...
** RA-1 100/185 is adapter that is needed if one SL00/100 EK or VL00/100 EK have to be mounted on 185mm busbar. With adapter RA-2 100/185 two SL00/100 EK or VL00/100 EK can be mounted on 185mm busbar same time.

RA-2 100/185



Dimensions


111.5
123
136
100
100
50
49
9
51°
250
414


Top side connection!
100 (185) mm*
100 (185) mm*
Bottom side connection!

NV/NH Disconnectors with Fuses

NV/NH horizontal fuse-switch disconnectors KVL

Uniform cover cutout

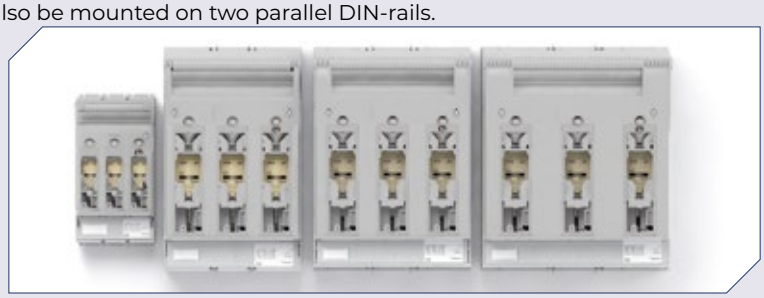
KVL - horizontal fuse-switch disconnectors with different sizes can be combined together and form uniform cover cutout. The new assortment contains four cover support levels at 32, 60, 70 and 90 mm above the uper of busbar. KVL fuse-switch disconnectors can be mounted on baseplates and DIN rails (for busbars see chapter ETIBUSBAR).

- Available with 1-, 2-, 3-, 4- pole versions
- Four sizes: size 00, size 1, size 2, size 3
- Use with NV/NH Fuse-links 000, 00, 1, 2, 3

Baseplate and DIN-rail mounting

KVL disconnectors have multiple mounting holes for variability of installations.

KVL-00 and KVL-1 can also be mounted on two parallel DIN-rails.



KVL size 00	KVL size 1	KVL size 2	KVL size 3
Ie = 160A	Ie = 250A	Ie = 400A	Ie = 630A
Overall width: 106mm	Overall width: 184mm	Overall width: 210mm	Overall width: 250mm
System size: 195mm	System size: 300mm	System size: 300mm	System size: 300mm

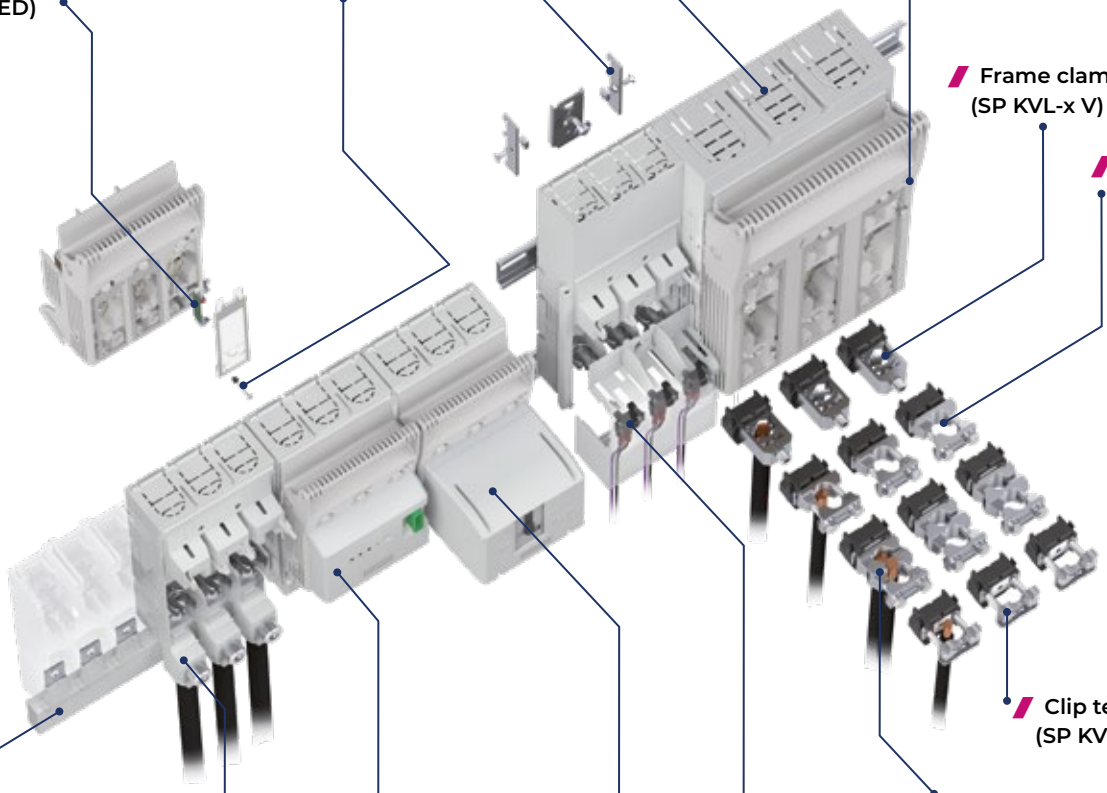
Easy voltage measurements
- Easy access with standard voltage testers.
- Window in the handle is movable.
- Protection degree IP2XC in normal operating condition

Safety lock
- Prevents unauthorized operation
- Can be used for all sizes

Simple and practical parking position
- Safe parking position of the handle
- Accidental reclosing not possible

WATCH THE VIDEO

Montage on DIN rails
- Time saving installation
- KVL-00 and KVL-1 can fit on the same TH rails



DIN-rail fixing kit
for mounting on DIN-rails
- Used for KVL-00 and KVL-1 (DIN KVL-x 100-150)

Terminal cover
- extendable
-cable entry adjustable (PRS KVL-x 3p)

For sealing disconnector
- For all sizes
- It is integrated in disconnector

Fuse-monitoring ESlight
- Fault indication
- Red LED per phase
(KVL-xx 3p x LED)

Power theft protection
- Tamper-proof locking of the windows

Frame clamp
(SP KVL-x V)

Prism clamp
(SP KVLx P1)

Clip terminal
(SP KVLx)

Prism clamp for 2-conductors connection (SP KVLx P2)

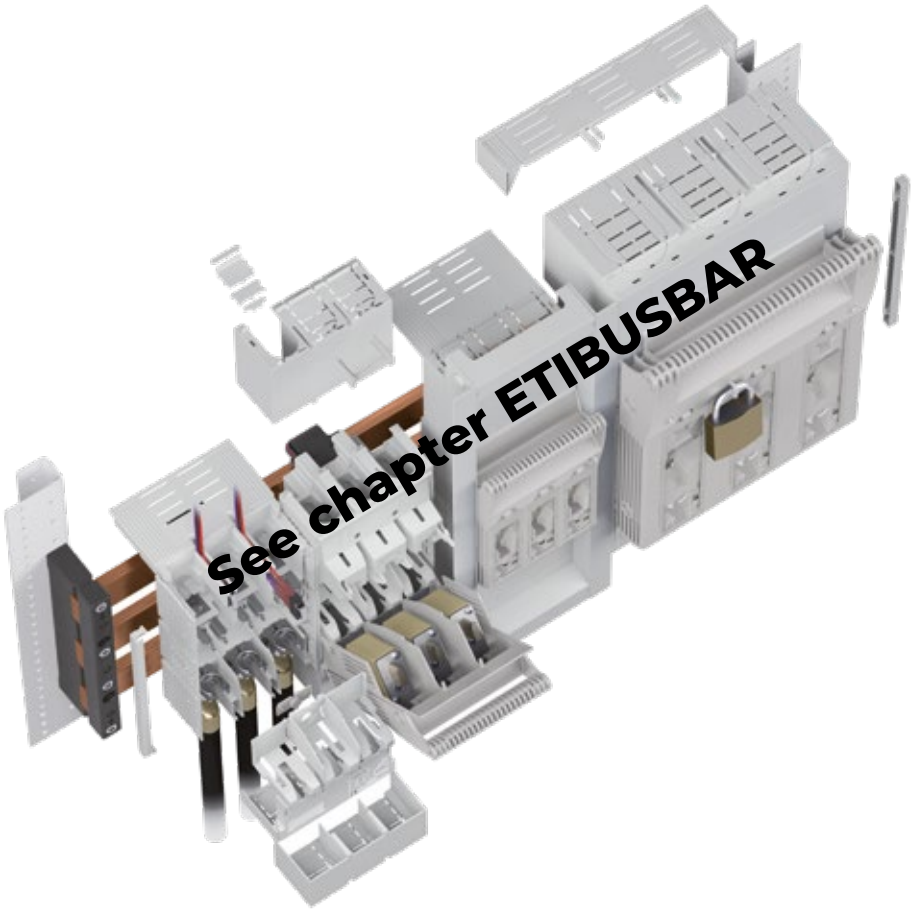
3-phase busbar
Feeding system is touch-protected
- Can feed up to to five KVL-00
(IZx KVL-00 3p)

Electronic fuse-monitoring unit (ES10)
The universal-solution for AC400-500V
- with stand-by indicator
- fault simulation
- selective fault indicator for fuse failure
(EFMU KVL-x 3p)

Mechanical fuse-monitoring unit
For use with NV/NH-fuse-links with striker (MFM KVL-x 1p/2p/3p)

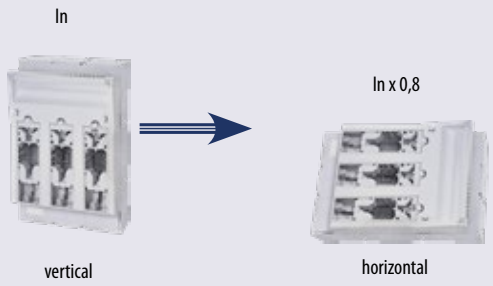
Feeding clamp
(25-95mm²), touch-protected
- Used with KVL-00, terminal M8
(SP KVL-00 FC95)

Electromechanical fuse-monitoring unit AM
Monitoring with motor-protection switch
- For special applications AC690V/DC150V
(MPFMU KVL-x 3p)

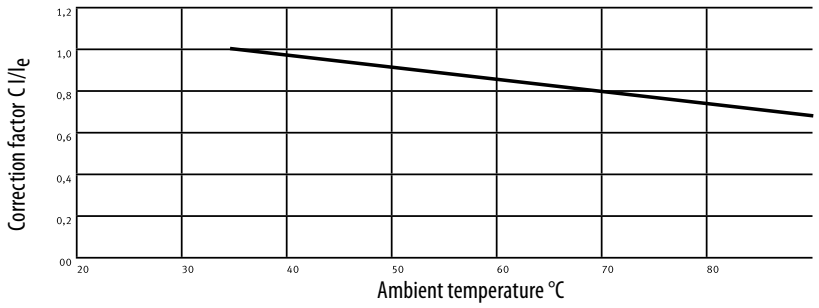


Derating factor: to operate the fuse switch disconnector in horizontal mounted position

The fuse switch disconnectors are designed to operate in both horizontal as well as vertical mounted positions. However the main field of application is for vertical mounting because the heat dissipation on this type of mounting is considerably low. To operate them on horizontal mounted position a derating factor has to be taken in to consideration.



Influence of ambient temperature on rated current of NH strip-type fuse-switch-disconnectors



Rated diversity factor acc to IEC EN 61439-2:2012-06 table 101

No. of main circuits	Rated diversity factor
2 & 3	0,9
4 & 5	0,8
6 ... 9	0,7
10 ≤	0,6

3-pole, Baseplate mounting

Size	Code No.	Type	kg	
00	001690870	KVL-00 3p M8-M8	0,63	1
	001690871	KVL-00 3p BC95-BC95	0,67	1
1	001690872	KVL-1 3p M10-M10	2,03	1
2	001690873	KVL-2 3p M10-M10	3,42	1
3	001690874	KVL-3 3p M10-M10	3,95	1
4a	001692620	HVL4a 3P M16 1250	15,7	1
4a	001692630	HVL4a 3P 2xM12 1600	15,7	1

BC95-BC95

3-pole, Baseplate mounting, LED indication

Size	Code No.	Type	kg	
00	001690880	KVL-00 3p M8-M8 LED	0,66	1
	001690881	KVL-00 3p BC95-BC95 LED	0,7	1
1	001690882	KVL-1 3p M10-M10 LED	2,06	1
2	001690883	KVL-2 3p M10-M10 LED	3,45	1
3	001690884	KVL-3 3p M10-M10 LED	3,92	1

! Only used for 400 V AC
! Not used for DC

1-pole, Baseplate mounting

Size	Code No.	Type	kg	
00	001690890	KVL-00 1p M8-M8	0,31	2
1	001690891	KVL-1 1p M10-M10	0,93	1
2-3	001690892	KVL-3 1p M10-M10	1,57	1
4a	001692498	HVL4a 1P M16 1250A	5,3	1
4a	001692499	HVL4a 1P 2xM12 1600A	5,3	1

2-pole, Baseplate mounting

Size	Code No.	Type	kg	
00	001690895	KVL-00 2p M8-M8	0,72	1
1	001690896	KVL-1 2p M10-M10	1,88	1
2-3	001690897	KVL-3 2p M10-M10	3,19	1

4-pole, Baseplate mounting

Size	Code No.	Type	kg	
00	001690900	KVL-00 4p M8-M8	1,19	1
1	001690901	KVL-1 4p M10-M10	2,91	1
2-3	001690902	KVL-3 4p M10-M10	5,76	1

Accessories for KVL

Type		Description	(1)
SP KVL00	001692701	Clip terminal, 1,5 – 50 mm² Cu	3
SP KVL1	001692702	Clip terminal, 25– 150 mm² Cu	3
SP KVL2	001692703	Clip terminal, 25– 240 mm² Cu	3
SP KVL3	001692704	Clip terminal, 11x21 mm² Cu	3
SP KVL00 P1	001692760	Prism clamp, 10 – 70 mm² Al/Cu	3
SP KVL1 P1	001692761	Prism clamp, 70 – 150 mm² Al/Cu	3
SP KVL2 P1	001692762	Prism clamp, 120 – 240 mm² Al/Cu	3
SP KVL3 P1	001692763	Prism clamp, 120 – 300 mm² Al/Cu	3
SP KVL1 P2	001692764	Prism clamp for 2-conductors connection, 2x70 – 95 mm² Al/Cu	3
SP KVL2 P2	001692765	Prism clamp for 2-conductors connection, 2x120 – 150 mm² Al/Cu	3
SP KVL3 P2	001692766	Prism clamp for 2-conductors connection, 2x120 – 240 mm² Al/Cu	3
SP HVL 4a D2	001692767	Direct terminal clamp for 2-conductors connection, 2x120– 300mm² Al/Cu	1
SP HVL 4a D3	001692768	Direct terminal clamp for 3-conductors connection, 3x95 – 150 mm² Al/Cu	1
SP HVL 4a D4	001692769	Direct terminal clamp for 4-conductors connection, 4x95 – 150 mm² Al/Cu	1
SP KVL-1 V	001690940	Frame clamp, 35-150mm² Al/Cu	3
SP KVL-23 V	001690941	Frame clamp, 95-300mm² Al/Cu	3
SP KVL-00 FC95	001690942	Feeding clamp, 25-95mm² Cu/Al, isolated, terminal M8,*	3
MTB KVL00 2x25/1x16/M8	001690978	Terminal block with multiple wire connections	3
MTB KVL00 4x10/M8	001690979	Terminal block with multiple wire connections	3
IZ2 KVL-00 3p	001690943	Phase busbars, 2 x 3pole KVL-00 50mm²	5
IZ3 KVL-00 3p	001690944	Phase busbars, 3 x 3pole KVL-00 50mm²	5
IZ4 KVL-00 3p	001690945	Phase busbars, 4 x 3pole KVL-00 50mm²	3
IZ5 KVL-00 3p	001690946	Phase busbars, 5 x 3pole KVL-00 50mm²	3
MST KVL-00 1p	001690947	Switch position indicator, 1-pole, size 00, **	1
MST KVL-00 3p	001690948	Switch position indicator, 3-pole, size 00, **	1
MST KVL-123 1p/2p/3p	001690949	Switch position indicator, 1/2/3 -pole, size 1, 2, 3, **	1
MST 4a 1p+3p	001692714	Switch position indicator + mechanical fuse monitor, size 4a, 1p/3p	1
MFM KVL-00 1p/2p/3p	001690950	Mechanical fuse monitor, size 00, **	3
MFM KVL-123 1p/2p/3p	001690951	Mechanical fuse monitor, size 1, 2, 3, **, ***	3
PRS KVL-00 3p L	001690952	Terminal cover, 3-pole, variable to open, Length 66mm, size 00	2
PRS KVL-00 3p S	001690953	Terminal cover, 3-pole, variable to open, Length 36mm, size 00	2
PRS KVL-1 3p	001690954	Terminal cover, 3-pole, variable to open, Length 42mm, size 1	2
PRS KVL-2 3p	001690955	Terminal cover, 3-pole, variable to open, Length 42mm, size 2	2
PRS KVL-3 3p	001690956	Terminal cover, 3-pole, variable to open, Length 42mm, size 3	2
PRS KVL-00 1p L	001690957	Terminal cover, 1-pole, variable to open, Length 66mm, size 00	2
PRS KVL-00 1p S	001690958	Terminal cover, 1-pole, variable to open, Length 36mm, size 00	2
PRS KVL-1 1p	001690959	Terminal cover, 1-pole, variable to open, Length 42mm, size 1	2
PRS KVL-3 1p	001690960	Terminal cover, 1-pole, variable to open, Length 42mm, size 3	2
DIN KVL-00 100-150	001690964	DIN rail fixing parts, For mounting on DIN rails, size 00	3
DIN KVL-1 100-150	001690965	DIN rail fixing parts, For mounting on DIN rails, size 1	3
EFMU KVL-00 3p	001690966	Electronic fuse monitoring unit, 3-pole, size 00, ****	1
EFMU KVL-1 3p	001690967	Electronic fuse monitoring unit, 3-pole, size 1, ****	1
EFMU KVL-2 3p	001690968	Electronic fuse monitoring unit, 3-pole, size 2, ****	1
EFMU KVL-3 3p	001690969	Electronic fuse monitoring unit, 3-pole, size 3, ****	1
MPFMU KVL-00 3p	001690974	Elektromechanical fuse monitoring unit (AM), 3-pole, size 00, ****	1
MPFMU KVL-1 3p	001690975	Elektromechanical fuse monitoring unit (AM), 3-pole, size 1, ****	1
MPFMU KVL-2 3p	001690976	Elektromechanical fuse monitoring unit (AM), 3-pole, size 2, ****	1
MPFMU KVL-3 3p	001690977	Elektromechanical fuse monitoring unit (AM), 3-pole, size 3, ****	1
CK KVL-00 2p/4p	001690970	Connecting kit 2- and 4-pole, For making of 2- and 4-pole disconnectors, size 00	1
CK KVL-123 2p/4p	001690971	Connecting kit 2- and 4-pole, For making of 2- and 4-pole disconnectors, size 1, 2, 3	1
LP KVL-00123	001690972	Interlock device, locking with padlock, diameter 6mm max., size 00, 1, 2, 3	10
IC KVL-00123	001690973	Contact cover interlock, only be operated by tool, size 00-3	10

PRS KVL-00 1p

PRS KVL-00 1p S

SP KVL

SP KVL...P1

DIN KVL-00 100-150

SP KVL-1 V

SP KVL-23 V

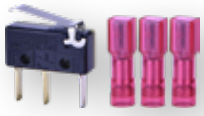
SP KVL-00 FC95

MTB KVL00 2x25/1x16/M8

MTB KVL00 4x10/M8

IZ2 KVL-00 3p

MST KVL- ...


MFM KVL-123 1p 2p 3p

PRS KVL-... 3p

CK KVL-00 2p/4p

(1) min order in pcs

* Feeding clamp, AC690V/DC1000V-250A

** 1 Changeover, AC250V, 10/3A (ohmic/ind.)

*** Only in combination with ETI fuse-links with striker-pin; not in combination with frame-clamp or 2-wire-prism clamp.

**** For monitoring of fuse-links with live gripping lugs

! For other pictures of Accessories, see chapter ETIBUSBAR

Technical data (in accordance with IEC/EN 60947-3)

Size			00					1				
Technical Characteristics												
Rated operational voltage	Ue	V	400 AC	500 AC	690 AC	250 DC	440 DC	400 AC	500 AC	690 AC	250 DC	440 DC
Rated operational current*	Ie	A	160	160	160	160	160	250	250	250	250	250
Conv. free air thermal current with fuse-links*	Ith	A	160					250				
Conv. free air thermal current with solid-links*	Ith	A	210					325				
Rated frequency	f	Hz	40-60	40-60	40-60	/	/	40-60	40-60	40-60	/	/
Rated insulation voltage	Ui	V	1000 AC					1000 AC				
Total power loss (without fuse)	Pv	W	1P - 3W, 3P - 9W					1P - 5W, 3P - 15W				
Power loss at 80% Ith (without fuse-links), **	Pv	W	1P - 1,9 W, 3P - 5,8 W					1P - 3,2 W, 3P - 9,6 W				
Rated impulse withstand voltage	Uimp	kV	8					8				
Utilisation category***			AC-23B	AC-22B	AC-21B	DC-22B	DC-21B	AC-23B	AC-22B	AC-21B	DC-22B	DC-21B
Rated conditional short-circuit current, ***, ****		kA	120 (500V), 100 (690V)					120 (500V), 100 (690V)				
Rated short-time withstand current	Icw	kA	5/1s					8,6/1s				
Fuse links												
Size - DIN VDE 0636-2	-	-	000/00					1				
Max. rated current (gG)	In	A	160	160	160	160	160	250	250	250	250	250
Max. permissible power loss per fuse link	Pa	W	12					23				
Cable terminal												
Flat terminal-Screw			M8					M10				
Tightening torque	Ma	Nm	12-15					30-35				
Clip terminal, Clamping cross-section		mm^2	Round conductor: 1,5-70 Cu , Laminated copper bar: 6 x 9 x 0,8 Cu					Round conductor: 2,5-150 Cu , Laminated copper bar: 6 x 16 x 0,8 Cu				
Tightening torque	Ma	Nm	2,6					9,5				
Prism Clamp, Clamping cross-section		mm^2	(SP KVL00 P1); 10-70 Al/Cu , 35-95 Al/Cu					(SP KVL1 P1); 10-150 Al/Cu				
Tightening torque	Ma	Nm	(SP KVL00 P1); 2,6					(SP KVL1 P1); 4,5				
Prism Clamp, Clamping cross-section		mm^2						(SP KVL1 P2); 2 x (10-150) Al/Cu				
Tightening torque	Ma	Nm						(SP KVL1 P2); 4,5				
Frame clamp, Clamping cross-section		mm^2	1,5-95 Al/Cu , (Al 95: max. 125A), ******					35-150 Al/Cu				
Torque	Ma	Nm	4,5					12				
Degree of Protection, front side device												
Front cover close	-	-	IP20					IP20				
Front cover open	-	-	IP10					IP10				
With clamp- and lateral cover	-	-	IP2XC					IP2XC				
Operating condition												
Ambient temperature *****	Tamb	°C	-25 ... +55					-25 ... +55				
Operating condition	-	-	Continuous operation									
Mounting position	-	-	vertical, horizontal									
Altitude	-	m	≤ 2000									
Pollution degree	-	-	3									
Overvoltage category	-	-	III					III				

* Mounting of several units in low voltage switchgear-combinations, please think about rated diversity factors acc. to DIN EN 61439.
** Reference value for replacement of devices acc. to DIN EN 61439-1 clause 10.10.4.2.
*** minimum distance to earthed, conductive parts: Lateral: 20mm/Above: 50mm
*** a) Lateral: 50mm/Above: 100mm
**** Type tested with NH fuse-links characteristic gG
***** 35°C Normal temperature, at 55°C with reduced operating current

Technical data (in accordance with IEC/EN 60947-3)

Size			2					3				
Technical Characteristics												
Rated operational voltage	Ue	V	400 AC	500 AC	690 AC	250 DC	440 DC	400 AC	500 AC	690 AC	250 DC	440 DC
Rated operational current*	Ie	A	400	400	400	400	400	630	630	630	630	630
Conv. free air thermal current with fuse-links*	Ith	A	400					630				
Conv. free air thermal current with solid-links*	Ith	A	520					910				
Rated frequency	f	Hz	40-60	40-60	40-60	/	/	40-60	40-60	40-60	/	/
Rated insulation voltage	Ui	V	1000 AC					1000 AC				
Total power loss (without fuse)	Pv	W	1P - 9W, 3P - 28W					1P - 17W, 3P - 51W				
Power loss at 80% Ith (without fuse-links), **	Pv	W	1P - 6 W, 3P - 17,9 W					1P - 10,9 W, 3P - 32,6 W				
Rated impulse withstand voltage	Uimp	kV	8					8				
Utilisation category***			AC-23B	AC-22B	AC-21B	DC-22B	DC-21B	AC-23B	AC-22B	AC-21B	DC-22B	DC-21B
Rated conditional short-circuit current, ***, ****		kA	120 (500V), 100 (690V)					120 (500V), 100 (690V)				
Rated short-time withstand current	Icw	kA	15/1s					15/1s				
Fuse links												
Size - DIN VDE 0636-2	-	-	2					3				
Max. rated current (gG)	In	A	400	400	400	400	400	630	630	630	630	630
Max. permissible power loss per fuse link	Pa	W	34					48				
Cable terminal												
Flat terminal-Screw			M10					M10 / M12				
Tightening torque	Ma	Nm	30-35					30-35				
Clip terminal, Clamping cross-section		mm^2	Round conductor: 25-150 Cu, Laminated copper bar: 10 x 16 x 0,8 Cu					Laminated copper bar: 11 x 21 x 1 Cu				
Tightening torque	Ma	Nm	23					23				
Prism Clamp, Clamping cross-section		mm^2	(SP KVL2 P1); 120-240 Al/Cu					(SP KVL3 P1); 120-300 Al/Cu				
Tightening torque	Ma	Nm	(SP KVL2 P1); 11					(SP KVL3 P1); 11				
Prism Clamp, Clamping cross-section		mm^2	(SP KVL2 P2); 2 x (120-150) Al/Cu					(SP KVL3 P2); 2 x (120-240) Al/Cu				
Tightening torque	Ma	Nm	(SP KVL2 P2); 11					(SP KVL3 P2); 11				
Frame clamp, Clamping cross-section		mm^2	95 -300 Al/Cu					95-300 Al/Cu				
Torque	Ma	Nm	20					20				
Degree of Protection, front side device												
Front cover close	-	-	IP20					IP20				
Front cover open	-	-	IP10					IP10				
With clamp- and lateral cover	-	-	IP2XC					IP2XC				
Operating condition												
Ambient temperature *****	Tamb	°C	-25 ... +55					-25 ... +55				
Operating condition	-	-	Continuous operation									
Mounting position	-	-	vertical, horizontal									
Altitude	-	m	≤ 2000									
Pollution degree	-	-	3									
Overvoltage category	-	-	III					III				

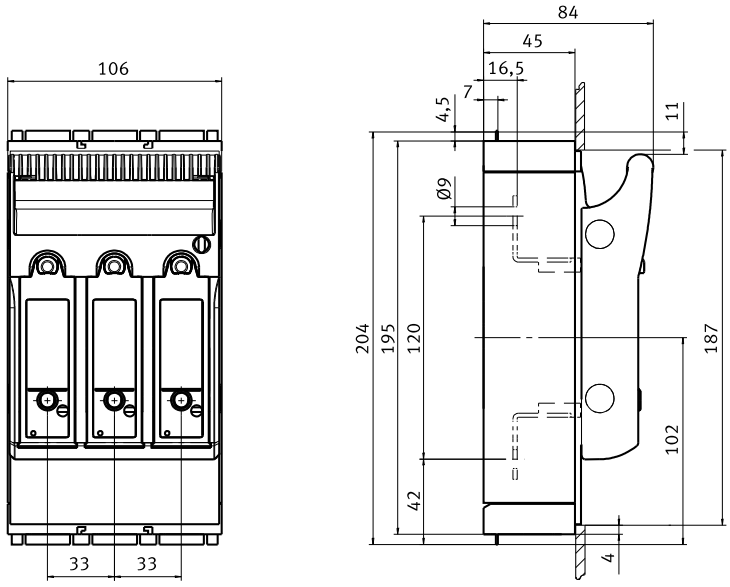
* Mounting of several units in low voltage switchgear-combinations, please think about rated diversity factors acc. to DIN EN 61439.
** Reference value for replacement of devices acc. to DIN EN 61439-1 clause 10.10.4.2.
*** minimum distance to earthed, conductive parts: Lateral: 20mm/Above: 50mm
*** a) Lateral: 50mm/Above: 100mm
**** Type tested with NH fuse-links characteristic gG
***** 35°C Normal temperature, at 55°C with reduced operating current

Technical data (in accordance with IEC/EN 60947-3)

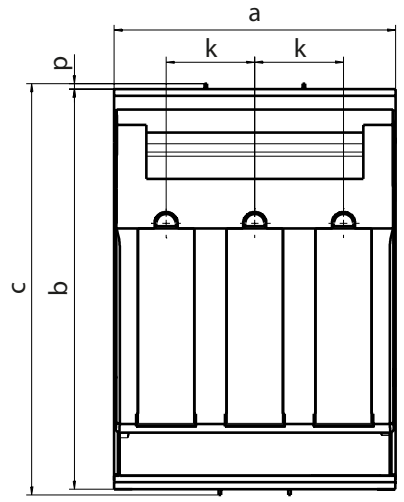
Size			4a			4a		
Technical Characteristics								
Rated operational voltage	Ue	V	500 AC	690 AC	220 DC	500 AC	690 AC	220 DC
Rated operational current	Ie	A	1250			1600		
Conv. free air thermal current with fuse-links	Ith	A	1250			1600		
Conv. free air thermal current with solid-links	Ith	A	1250			1600		
Rated frequency	f	Hz	40-60	40-60	/	40-60	40-60	/
Rated insulation voltage	Ui	V	800			800		
Total power loss (without fuse)	Pv	W	32			52		
Rated impulse withstand voltage	Uimp	kV	8			8		
Utilisation category			AC-23B	AC-21B	DC-21B	AC-22B	AC-21B	DC-21B
Rated conditional short-circuit current		kA	80 (500V), 50 (690V)					
Rated short-time withstand current	Icw	kA	35					
Fuse links								
Size - DIN VDE 0636-2	-	-	4a					
Max. rated current (gG)	In	A	1250			1600		
Max. permissible power loss per fuse link	Pa	W	110			164		
Cable terminal								
Flat terminal-Screw			M16			2x M12		
Tightening torque	Ma	Nm	50-60			35-40		
Cable lug Flat bar		mm^2 mm						
Degree of Protection front side device								
Front cover close	-	-	IP20			IP20		
Front cover open	-	-	IP10			IP10		
Operating condition								
Ambient temperature *	Tamb	°C	-25 ... +55			-25 ... +55		
Operating condition	-	-	Continuous operation					
Mounting position	-	-	vertical, horizontal					
Altitude	-	m	≤ 2000					
Pollution degree	-	-	3					
Overvoltage category	-	-	III			III		

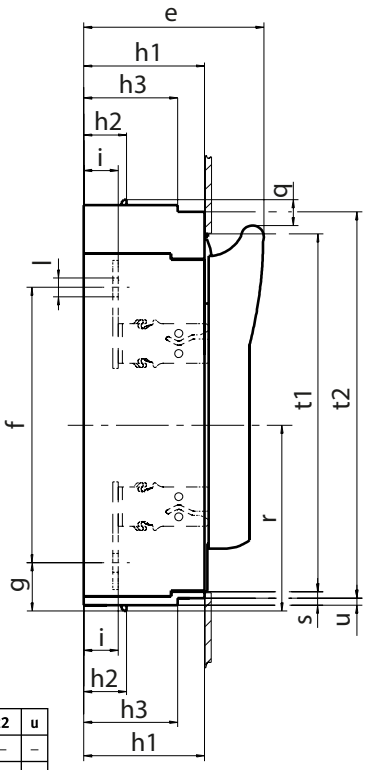
* 35°C Normal temperature, at 55°C with reduced operating current

Dimensions

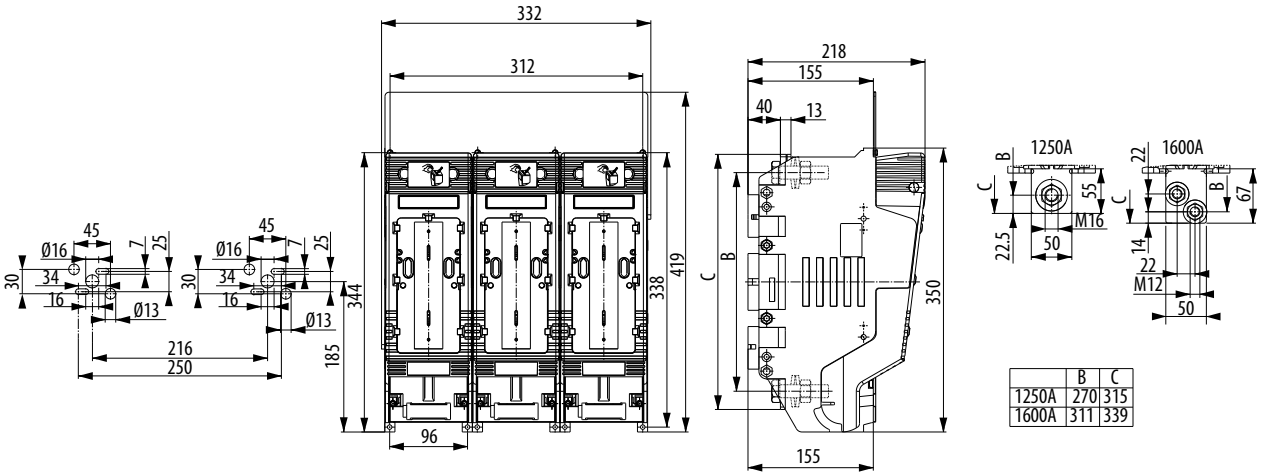


KVL-00 3p M8-M8
KVL-00 3p BC95-BC95
KVL-00 3p M8-M8 LED
KVL-00 3p BC95-BC95 LED





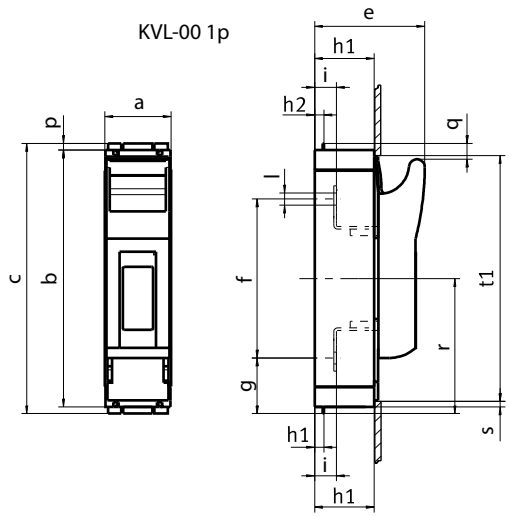
	a	b	c	e	f	g	h1	h2	h3	i	k	l	p	q	r	s	t1	t2	u
KVL-1 3p M10-M10 (LED)	184	298	306	117	185	46	70	32	–	25	58	Ø10,5	4	19	138	5	272	–	–
KVL-2 3p M10-M10 (LED)	210	298	306	134	205	36	90	32	70	26	66	Ø14	4	19	138	10	268	288	5
KVL-3 3p M10-M10 (LED)	250	298	306	143	205	36	90	32	70	26	82	Ø14	4	19	138	10	268	288	5



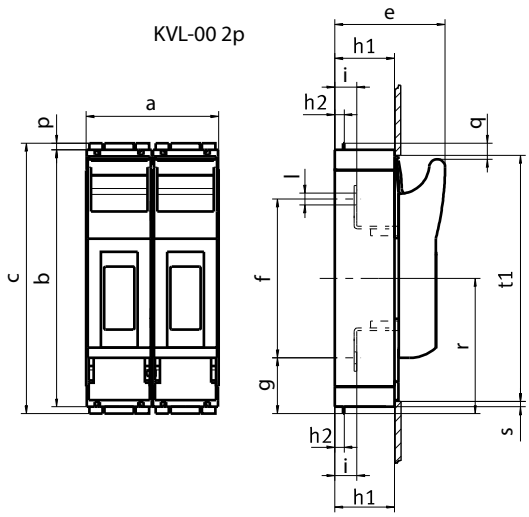
	B	C
1250A	270	315
1600A	311	339

HVL 4a 3p

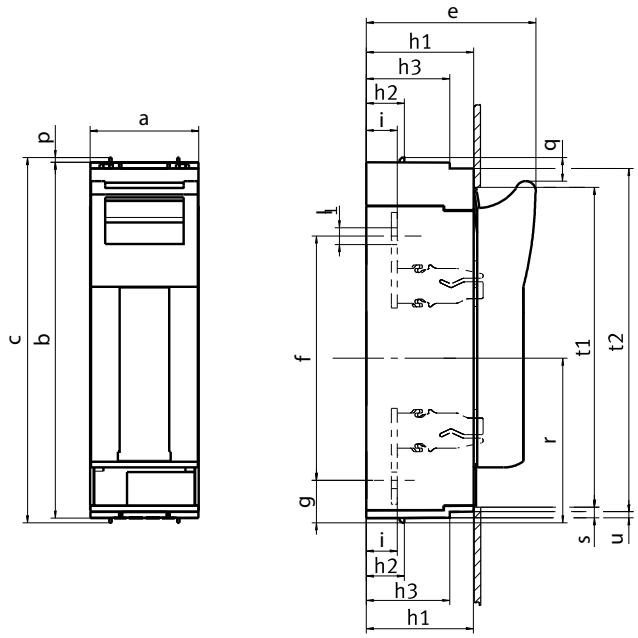
KVL-00 1p



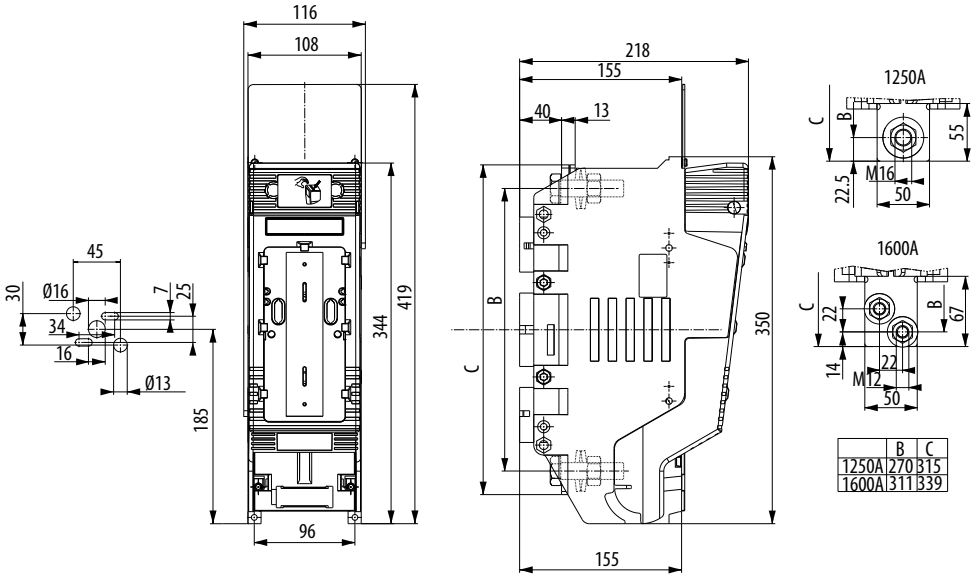
KVL-00 2p



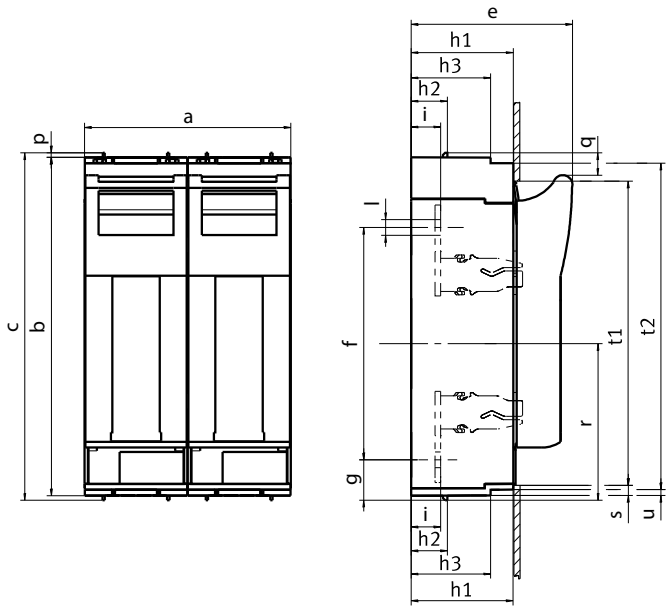
	a	b	c	e	f	g	h1	h2	h3	i	l	p	q	r	s	t1
KVL-00 1p M8-M8	50	195	204	84	120	42	45	7	–	16,5	Ø9	4,5	12	102	5	187
KVL-00 2p M8-M8	100	195	204	84	120	42	45	7	–	16,5	Ø9	4,5	12	102	5	187



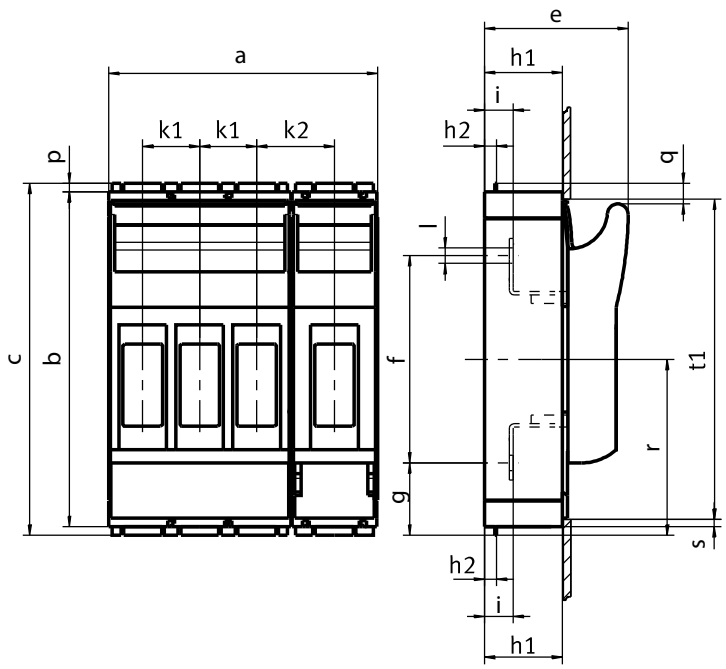
	a	b	c	e	f	g	h1	h2	h3	i	l	p	q	r	s	t1	t2	u
KVL-1 1p M10-M10	69	298	306	117	185	46	70	32	–	25	Ø10,5	4	19	138	5	272	–	–
KVL-3 1p M10-M10	91	298	306	143	205	36	90	32	70	26	Ø14	4	19	138	10	268	288	5



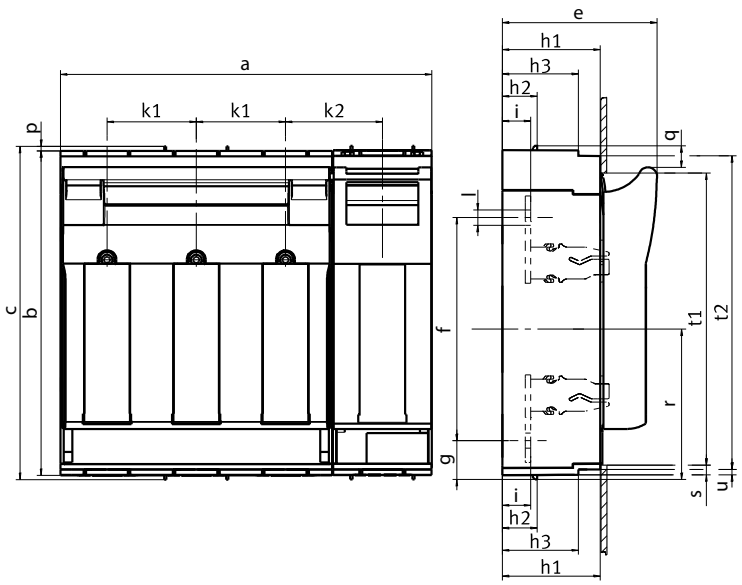
HVL 4a 1p



	a	b	c	e	f	g	h1	h2	h3	i	l	p	q	r	s	t1	t2	u
KVL-1 2p M10-M10	138	298	306	117	185	46	70	32	–	25	Ø10,5	4	19	138	5	272	–	–
KVL-3 2p M10-M10	182	298	306	143	205	36	90	32	70	26	Ø14	4	19	138	10	268	288	5



	a	b	c	e	f	g	h1	h2	h3	k1	k2	i	l	p	q	r	s	t1	t2	u
KVL-00 4p M8-M8	156	195	204	84	120	42	45	7	–	33	45	16,5	Ø9	4,5	12	102	5	187	–	–



	a	b	c	e	f	g	h1	h2	h3	k1	k2	i	l	p	q	r	s	t1	t2	u
KVL-1 4p	254	298	306	117	185	46	70	32	–	58	69	25	Ø10,5	4	19	138	5	272	–	–
KVL-3 4p	341,5	298	306	143	205	36	90	32	70	82	89	26	Ø14	4	19	138	10	268	288	5

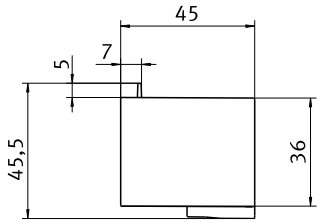
Technical data - Feeding clamps

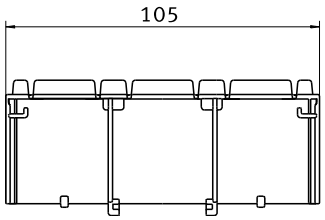
Technical Characteristics			
Max. electrical load			AC690V/DC1000V-250A
Heat deflection temp.			125°C UL94: V0
Comparative tracking index			600
Cross sections			
Conductor - Max. Diameter Ø14 mm			
single wire		mm^2	25 - 95
multi wire		mm^2	25 - 95
fine wire (with end sleeve)		mm^2	25 - 70
Torque	Ma	Nm	13
Degree of protection			IP20
Regulations			EN 60998-1:2004; EN 60998-2:2004; EN 60999-1:2000; EN 60999-2:2003

Important
This Terminal is suitable for Al and Cu conductors. Please pay attention to the common handling guidelines
when connecting the Aluminium conductors. Clean and brush the contact surfaces and lubricate them with an appropriate grease.

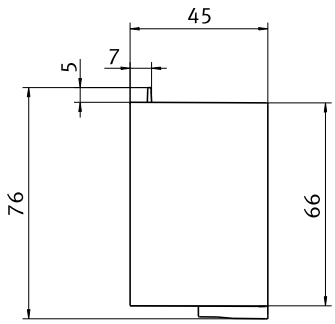
Technical data - Phase busbars

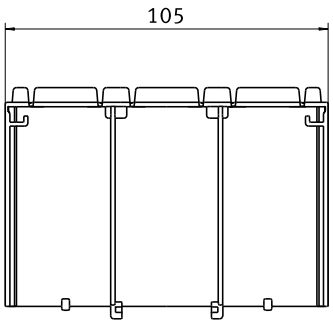
Technical Characteristics			
Rated cross section of the conductor		mm^2	50
Impulse voltage strenght		kV	≥8,5
Min. air distance		mm	>8
Min. creeping distance		mm	>9
Max. operating voltage		V	AC690
Protection class			IP20
Short circuit rating			IPK=25kA/0,1s, Surge energy capacity IPK, ICC 100kA - NH3 355A gL 500V
Dielectric strenght	kV/mm		≥32
Capacity at 35°C ambient temperature depending of feeding point cross section			
Busbar lenght		mm	max. 300
Feeding at beginning/ending			
Max. current Is /Phase		A	250
Connection cross current		mm^2	95
Other feedings			
Max. feeding current Ie /Phase		A	250
Connection cross current		mm^2	95
Overvoltage category / degree of pollution			III / 2
Regulations			IEC 60947-1:2007

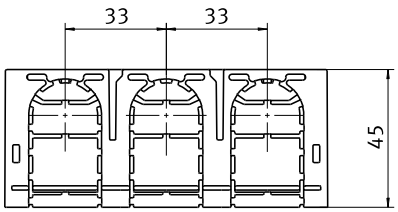


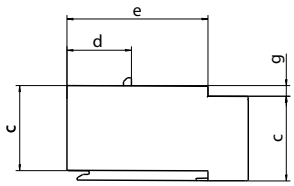


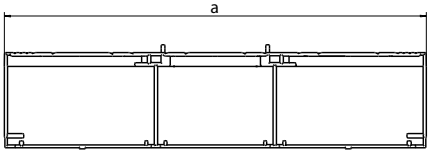
PRS KVL-00 3p S
PRS KVL-00 3p L



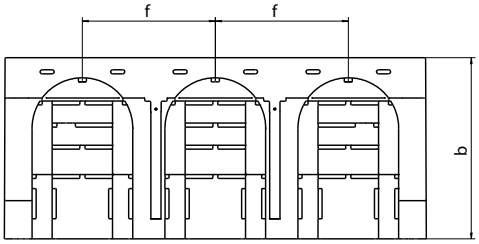




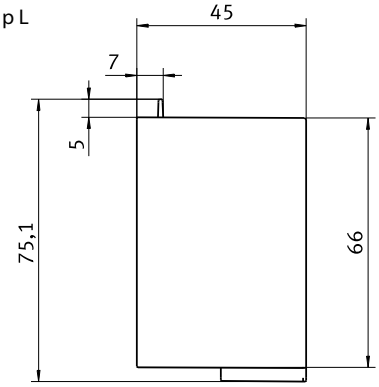


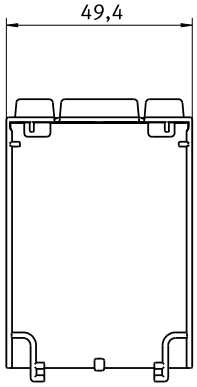


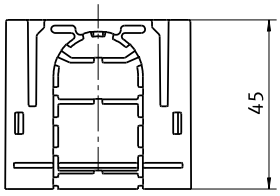
	a	b	c	d	e	f	g
PRS KVL-1 3p	184	70	42	32	–	58	–
PRS KVL-2 3p	210	90	42	32	70	66	5
PRS KVL-3 3p	250	90	42	32	70	82	5



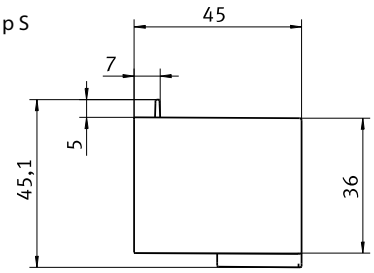
PRS KVL-00 1p L

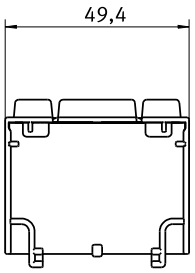


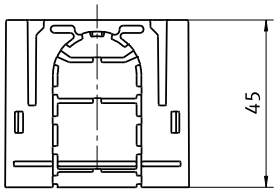




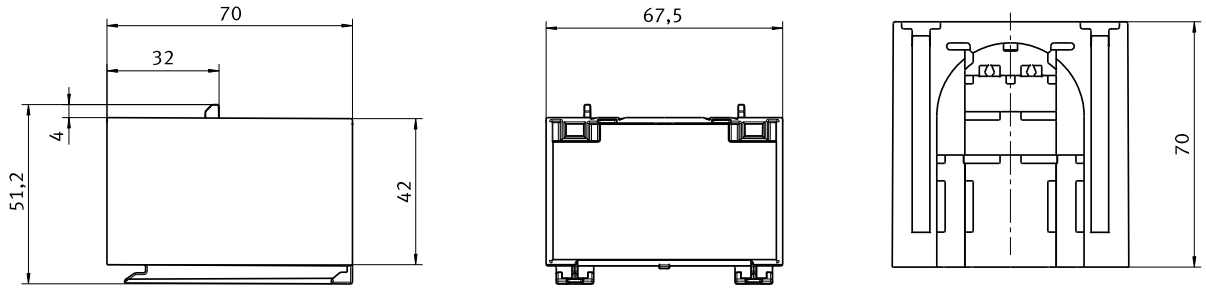
PRS KVL-00 1p S



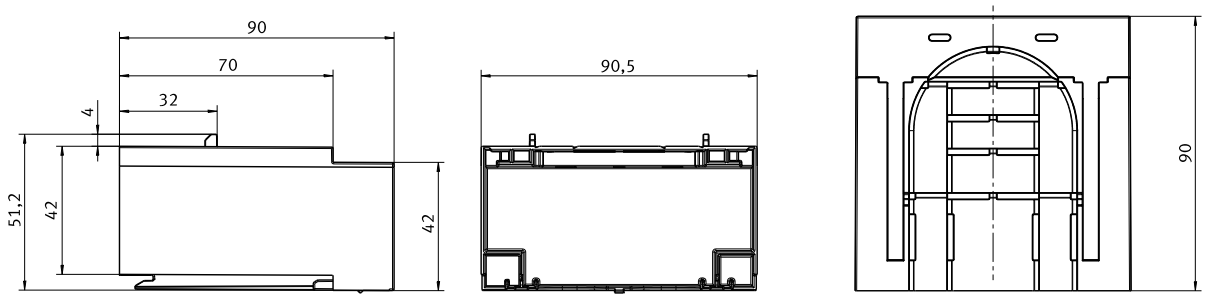




PRS KVL-1 1p



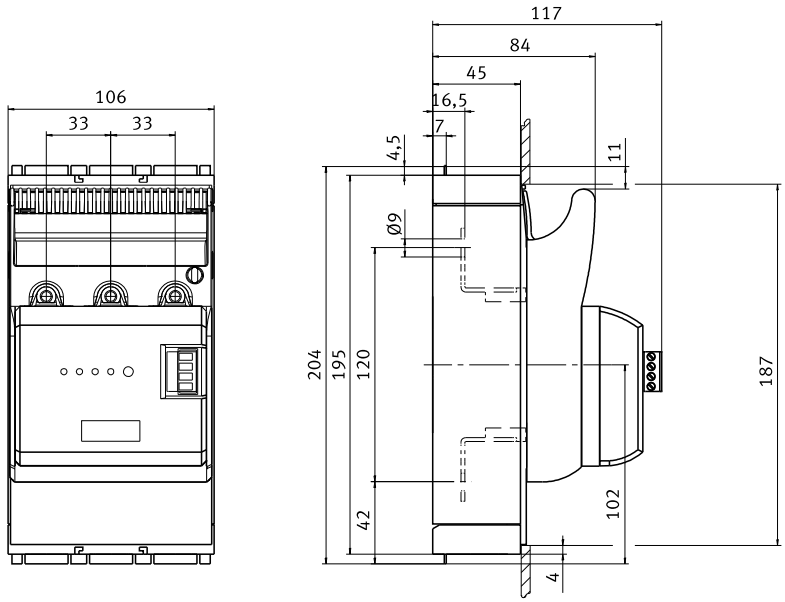
PRS KVL-3 1p



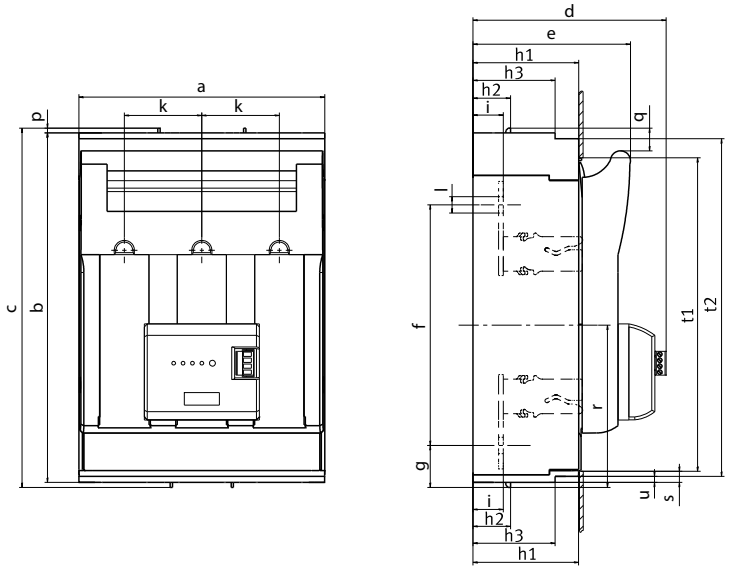
Technical data - Electronic fuse monitoring unit EFMU KVL

Technical Characteristics			
Rated operational voltage	Ue	V	AC400-500 (+/-10%)
Power supply			Self-powered
Input power		VA	1,5
Overvoltage category			230/400 V : III , (4kV) 500 V : II , (4kV)
Rated frequency	f	Hz	50-60
Input resistance			>1k Ohm/V
Output channels			
Relay output			1NC/1NO
Maximum voltage		V	AC250/DC24
Maximum switching current		A	1
General data			
Operation indicator			1 LED green
Alarm indicator			3 LED (F1, F2, F3) red
Functional test			Test key for relay + LEDs
EMC			IEC 61000-4-5/IEC 61000-4-4
Degree of protection			IP 3X
Operating conditions			
Ambient temperature	Tamb	°C	-5 ... +55

No single detection of parallel connected fuses!



KVL-00 3p M8-M8 + EFMU KVL-00 3p
KVL-00 3p BC95-BC95 + EFMU KVL-00 3p



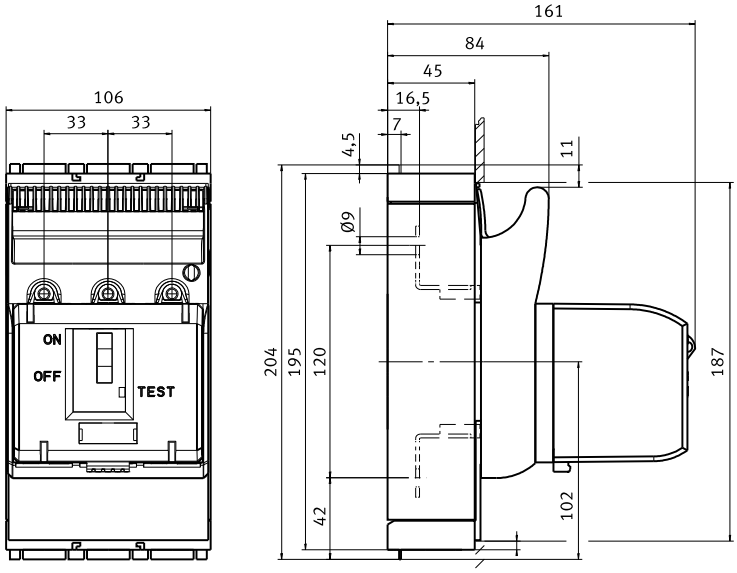
	a	b	c	d	e	f	g	h1	h2	h3	i	k	l	p	q	r	s	t1	t2	u
KVL-1 3p M10-M10 + EFMU KVL-1 3p	184	298	306	148	117	185	46	70	32	–	25	58	Ø10,5	4	19	138	5	272	–	–
KVL-2 3p M10-M10 + EFMU KVL-2 3p	210	298	306	165	134	205	36	90	32	70	26	66	Ø14	4	19	138	10	268	288	5
KVL-3 3p M10-M10 + EFMU KVL-3 3p	250	298	306	173	143	205	36	90	32	70	26	82	Ø14	4	19	138	10	268	288	5

Technical data - Electromechanical fuse monitoring unit MPFMU KVL

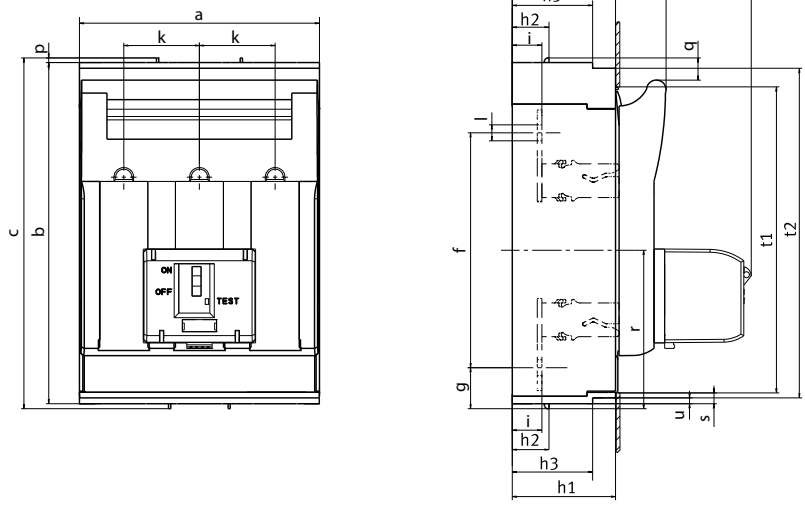
Technical Characteristics			
Rated operational voltage	Ue	V	AC24…690 DC24…250
Rated short-circuit breaking capacity	Icn	kA	100
Overvoltage category			230/400V : III (4kV) 500V : II (4kV)
Output channels			
Relay output			1NC/1NO
Maximum voltage		V	AC230/DC24
Maximum switching current			2,5A...AC-12 / 1A...DC-13

No single detection of parallel connected fuses!

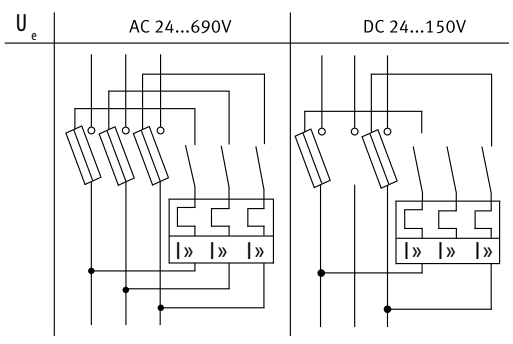
Safety notes
May not be used for safety monitoring in feeders with power control units where, in the event of a fault, it is possible for a DC feedback of >300V (or >600V where 3 current paths are connected in parallel) to occur.
If equipment has to be disconnected on the load side of the fuses to be monitored, make sure that no parasitic voltages can arise in the circuit-breaker that is connected in parallel with the fuse-monitoring device.



KVL-00 3p M8-M8 + MPFMU KVL-00 3p
KVL-00 3p BC95-BC95 + MPFMU KVL-00 3p



	a	b	c	d	e	f	g	h1	h2	h3	i	k	l	p	q	r	s	t1	t2	u
KVL-1 3p M10-M10 + MPFMU KVL-1 3p	184	298	306	192	117	185	46	70	32	–	25	58	Ø10,5	4	19	138	5	272	–	–
KVL-2 3p M10-M10 + MPFMU KVL-2 3p	210	298	306	209	134	205	36	90	32	70	26	66	Ø14	4	19	138	10	268	288	5
KVL-3 3p M10-M10 + MPFMU KVL-3 3p	250	298	306	217	143	205	36	90	32	70	26	82	Ø14	4	19	138	10	268	288	5



Horizontal fuse-switch disconnector type HVL EK size 000 and 00

Description

Horizontal fuse-switch disconnector type HVL EK is a low voltage device that provides switching of the circuits, depending on the voltage and use categories. The main purpose of HVL EK is installation of the NH fuses size 000 and 00, and protection of equipment from the harmful effects of short circuit and overload. If instead of NH fuses NH separators are installed, HVL EK provides disconnection function and meets all regulatory requirements in the open position.

Fields of use and features

Horizontal fuse-switch disconnectors are designed for use in a number of applications that require disconnection function. They are suitable for challenging the scope of the external electrical junction boxes, and public lighting, security cable branches in industrial applications and for the separation of distribution metering cabinets.
The program of horizontal fuse-switch disconnectors type HVL EK includes sizes 000 and 00 and is intended for mounting on a mounting plate, DIN rails and 60 mm busbar system. The standard offer includes 1-pole, 3-pole and 4-pole versions. Available is a wide range of different connections allowing great flexibility in use. Horizontal fuse-switch disconnectors HVL EK meet the requirements of the following standards:
IEC 60947-1,
IEC 60947-3,
IEC 60269-1,
IEC 60269-2-1

In horizontal fuse-switch disconnector type HVL EK 000 only NH knife-blade fuse links size 000 (00C) could be used while in horizontal fuse-switch disconnector type HVL EK 00 sizes 00 and 000 (00C) could be used. About additional warnings on products see technical part of the catalogue.

Technical data

Technical Specifications			HVL EK 000 1p		HVL EK 000 3p			HVL EK 00 1p		HVL EK 00 3p		
Conventional free air thermal current*	Ith	A	160									
Rated insulation voltage	Ui	V	AC 690									
Rated withstand voltage	Uimp	kV	6									
Rated frequency		Hz	50 (40-60)									
Utilisation category			AC-21B	AC-22B	AC-21B	AC-22B		AC-21B	AC-22B	AC-21B	AC-22B	
Rated operational current	Ie	A	160		125	160	100	160		125	160	125
Rated operational voltage	Ue	V	230 AC		690 AC	400 AC	500 AC	230 AC		690 AC	400 AC	500 AC
Rated conditional short-circuit current		kAeff	63									
Mechanical durability (operating cycles)			1600									
Electrical durability (operating cycles)			200									
Power dissipation (without fuse)		W	3,74		10,2			3,74		10,2		
Degree of protection (cover closed)			IP20									
Degree of protection (cover open)			IP10									
Pollution degree			3									
Permissible ambient temperature**		°C	-25 ÷ +55									
Storage temperature		°C	-30 ÷ +70									

* In case of mounting of the fuse-switch disconnector in cabinet, the thermal current should be corrected (Ith x derating factor), depending on the number of built apparatuses (see table 1)
** In case of using the fuse-switch disconnector at temperatures +450C to +550C, the thermal current Ith should be reduced for 5%-10%

Table 1

Number of built apparatuses	2 - 3	4 - 5	6 - 9	>9
Derating factor	0,9	0,8	0,7	0,6

3-pole horizontal fuse-switch disconnector HVL EK 000

Type	Code No.	kg	
HVL EK 000 3p M8	001701000	0,58	1
HVL EK 000 3p OS00 6-16	001701001	0,52	1
HVL EK 000 3p OS00 25-50	001701002	0,58	1
HVL EK 000 3p P00 10-35	001701003	0,62	1
HVL EK 000 3p P00 50-70	001701004	0,63	1
HVL EK 000 3p P002 10-16	001701005	0,66	1
HVL EK 000 3p P002 25-35	001701006	0,67	1

* HVL EK 000 are ready for mounting on mounting plate or mounting on 35mm mounting rail without accessories
** connections are described in table of connections for HVL EK 000
*** given Type connector for the HVL EK means same connectors on both sides of HVL EK
**** different combinations of connections on both sides of the separator can be made with terminals that are available as accessories
***** highest clamp that can be placed on top side is P002 25-35, and on bottom side P002 50

1-pole horizontal fuse-switch disconnector HVL EK 000

Type	Code No.	kg	
HVL EK 000 1p M8	001701400	0,23	3
HVL EK 000 1p OS00 6-16	001701401	0,22	3
HVL EK 000 1p OS00 25-50	001701402	0,22	3
HVL EK 000 1p P00 10-35	001701403	0,24	3
HVL EK 000 1p P00 50-70	001701404	0,24	3
HVL EK 000 1p P002 10-16	001701405	0,25	3
HVL EK 000 1p P002 25-35	001701406	0,25	3

* HVL EK 000 are ready for mounting on mounting plate or mounting on 35mm mounting rail without accessories
** connections are described in table of connections for HVL EK 000
*** two-pole design can be done using two single-pole
**** highest clamp that can be placed on top side is P002 25-35, and on bottom side P002 50

4-pole horizontal fuse-switch disconnector HVL EK 000

Type	Code No.	kg	
HVL EK 000 4p M8	001701420	0,82	1

* HVL EK 000 are ready for mounting on mounting plate or mounting on 35mm mounting rail without accessories
** connections are described in table of connections for HVL EK 000
*** switching off neutral pole (N) same time as switching phase polarity
**** highest clamp that can be placed on top side is P002 25-35, and on bottom side P002 50

3-pole horizontal fuse-switch disconnector HVL-B EK 000 (5-10mm Busbar)

Type	Code No.	kg	
HVL-B EK 000 3p M8	001701011	0,85	1
HVL-B EK 000 3p BT00 10-70	001701012	0,88	1

* HVL-B EK 000 are ready for mounting on 60mm busbar system, 5-10 mm thick
** connections are described in table of connections for HVL EK 000
*** connector BT00 10-70 in combination with HVL-B EK have clamping cross-section up to 50mm^2.
**** connecting from top/bottom (read installation manual carefully to avoid wrong connection!)
***** for additional remarks on product see technical part of the catalogue.
****** highest clamp that can be placed on top side is P002 25-35, and on bottom side P002 50

3-pole horizontal fuse-switch disconnector HVL-P EK 000 (flat bar connection)

Type	Code No.	kg	
HVL-P EK 000 3p M8	001701013	0,59	1
HVL-P EK 000 3p OS00 6-50	001701014	0,53	1
HVL-P EK 000 3p P00 10-70	001701015	0,59	1

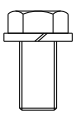
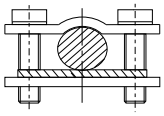
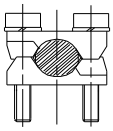
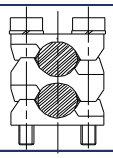
* HVL-P EK 000 are ready for mounting on mounting plate or mounting on 35mm mounting rail without accessories
** HVL-P EK 00 are supplied with extra protective covering of connectors on the bottom side (PRS EK 000/3)
*** connections are described in table of connections for HVL EK 000
**** highest clamp that can be placed on top side is P002 25-35, and on bottom side P002 50

Accessories for HVL EK 000

Type	Code No.	Description	kg		Min order [pcs]
PRS EK 000/1	001701450	Protecting cover, 1p	0,02	set = 2	1 set
PRS EK 000/3	001701451	Protecting cover, 3p	0,03	set = 2	1 set
PRS-B EK 000/3	001701452	Protecting cover, 3p	0,03	set = 2	1 set

* PRS EK 000… to be used for HVL EK 000, supplied in pairs covering the TOP and BOTTOM side
** PRS-B EK 000 to be used for HVL-B EK 000, supplied in pairs covering the TOP and BOTTOM side

Table of connections for HVL EK 000

Cable terminal drawing									
Cable terminal type	M8	BT00 10-70	OS00 6-16	OS00 25-50	P00 10-35	P00 50-70	P002 10-16	P002 25-35	P002 50
Clamping cross-section	70 mm^2	10-50 mm^2 Al/Cu	(6-16) mm^2 Cu	(25-50) mm^2 Cu	(10-35) mm^2 Al/Cu	(50-70) mm^2 Al/Cu	2x(10-16) mm^2 Al/Cu	2x(25-35) mm^2 Al/Cu	2x50 mm^2 Al/Cu
Screw type	M8x12	M6	2x(M5x12)	2x(M5x14)	2x(M5x20)	2x(M5x25)	2x(M5x25)	2x(M5x30)	2x(M5x35)
Tightening torque	12-15 Nm	4,5 Nm	2,6 Nm	2,6 Nm	4,5 Nm	4,5 Nm	4,5 Nm	4,5 Nm	4,5 Nm
Package	3	3	3	3	3	3	3	3	3

* basic type of HVL EK 000 is screw connection M8
** connector BT00 10-70 at disposal only in combination with HVL-B EK for busbar (HVL-B EK 000 3p BT00 10-70)
*** HVL EK 00 allows an easy change of mutual connections (except BT00 10-70)

3-pole horizontal fuse-switch disconnector HVL EK 00

Type	Code No.	kg	
HVL EK 00 3p M8	001701250	0,65	1
HVL EK 00 3p OS00 6-50	001701251	0,63	1
HVL EK 00 3p P00 10-70	001701252	0,69	1
HVL EK 00 3p P00 35-95	001701255	0,72	1
HVL EK 00 3p BT00 10-70	001701256	0,66	1

* HVL EK 00 are ready for mounting on mounting plate
** basic Type of HVL EK 000 is screw connection M8
*** connections are described in table of connection s for HVL EK 00
**** clamps that can be placed on top side are OS00 and P00 , while on bottom side there is no limitation (see table range of connections for HVL EK 000/00)
***** For clamp limitation, see table of accessories

1-pole horizontal fuse-switch disconnector HVL EK 00

Type	Code No.	kg	
HVL EK 00 1p M8	001701410	0,28	3
HVL EK 00 1p OS00 6-50	001701411	0,26	3
HVL EK 00 1p P00 10-70	001701412	0,28	3
HVL EK 00 1p P00 35-95	001701415	0,30	3
HVL EK 00 1p BT00 10-70	001701416	0,28	3

* HVL EK 00 are ready for mounting on mounting plate
** basic Type of HVL EK 000 is screw connection M8
*** connections are described in table of connections for HVL EK 00
**** two-pole design can be made using two single-pole
***** For clamp limitation, see table of accessories

4-pole horizontal fuse-switch disconnector HVL EK 00

Type	Code No.	kg	
HVL EK 00 4p M8	001701430	0,92	1
HVL EK 00 4p BT00 10-70	001701431	0,92	1

* HVL EK 00 are ready for mounting on mounting plate
** basic Type of HVL EK 000 is screw connection M8
*** connections are described in table of connection s for HVL EK 00
*** switching off neutral pole (N) same time as switching phase polarity
***** For clamp limitation, see table of accessories

3-pole horizontal fuse-switch disconnector HVL-P EK 00 (additional flat bar connection)

Type	Code No.	kg	
HVL-P EK 00 3p M8	001701260	0,67	1
HVL-P EK 00 3p OS00 6-50	001701261	0,65	1
HVL-P EK 00 3p P00 10-70	001701262	0,71	1

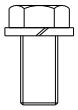
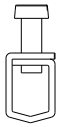
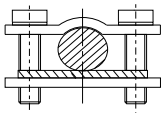
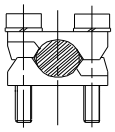
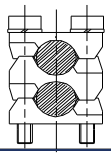
* HVL-P EK 00 are ready for mounting on mounting plate
** HVL-P EK 00 are supplied without any extra protective covering of connectors
*** connections are described in table of connection s for HVL EK 00
***** For clamp limitation, see table of accessories

Accesories for HVL EK 00

Type	Code No.	kg	
DIN EK 00 125-150	001701453	Mounting brackets for mounting on two rails 35mm	1 set

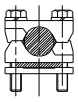
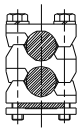
* DIN EK 00 125-150 set allows to mount HVL EK 00 on two mounting rails in distance of 125mm or 150mm.

Table of connections for HVL EK 00

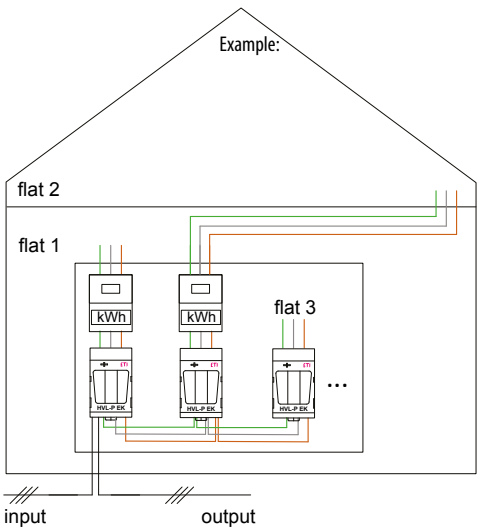
Cable terminal drawing							
Cable terminal type	M8	BT00 10-70*	OS00 6-50	P00 10-70	P00 35-95*	P002 10-35	P002 50
Clamping cross-section	70 mm^2	10-70 mm^2 Al/Cu	(6-50) mm^2 Cu	(10-70) mm^2 Al/Cu	(35-95) mm^2 Al/Cu	2x(10-35) mm^2 Al/Cu	2x50 mm^2 Al/Cu
Screw type	M8x12	M6	2x(M5x14)	2x(M5x25)	2x(M5x30)	2x(M5x30)	2x(M5x40)
Tightening torque	12-15 Nm	4,5 Nm	2,6 Nm	4,5 Nm	4,5 Nm	4,5 Nm	4,5 Nm
Package	3	3	3	3	3	3	3

* connections P00 35-95 and BT00 10-70 should be orderd with fuse-switch disconnector while latter exchange is not possible
** basic type of HVL EK 00 is screw connection M8
*** HVL EK 00 allows an easy change of mutual connections (except BT00 10-70 and P00 35-95)

Accessories for HVL EK 000/00 (connectors)

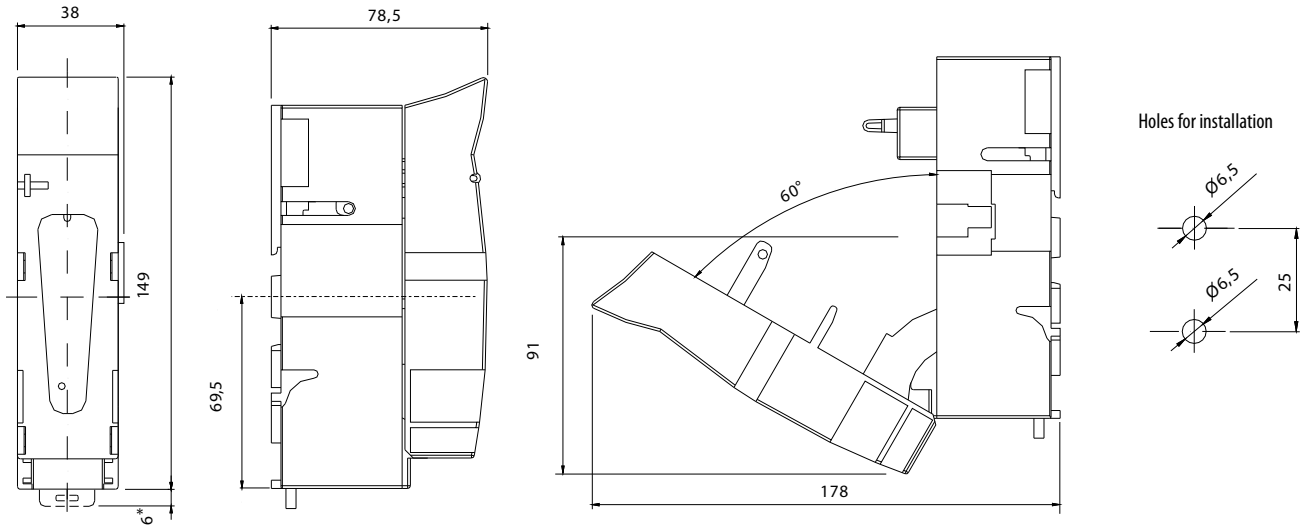
Type	Code No.	Connector drawing	Suitability	
OS00 6-16	001701460		HVL EK 000	set = 3
OS00 25-50	001701461		HVL EK 000	set = 3
OS00 6-50	001701480	Cu**	HVL EK 00	set = 3
P00 10-35	001701462		HVL EK 000	set = 3
P00 50-70	001701463		HVL EK 000	set = 3
P00 10-70	001701481		HVL EK 00	set = 3
P00 35-95*	001701464	Cu/Al**	HVL EK 00	set = 3
P002 10-16	001701465		HVL EK 000	set = 3
P002 25-35	001701466		HVL EK 000	set = 3
P002 10-35	001701482		HVL EK 00***	set = 3
P002 50	001701467		HVL EK 000, 00 ***	set = 3
P002 35-70*	001701468	Cu/Al**	HVL EK 00***	set = 3

* because of wider screw distance change is only possible between these two Types of connections (however always possible to change connections OS with P00 and P002 and vice versa only the exceptions are marked with '*')
** Type of cable for direct connection is given on connector drawing
*** Double prism clamp (P002) can be used only on bottom side of HVL EK 00, while on top side clamps (OS00 and P00) remain

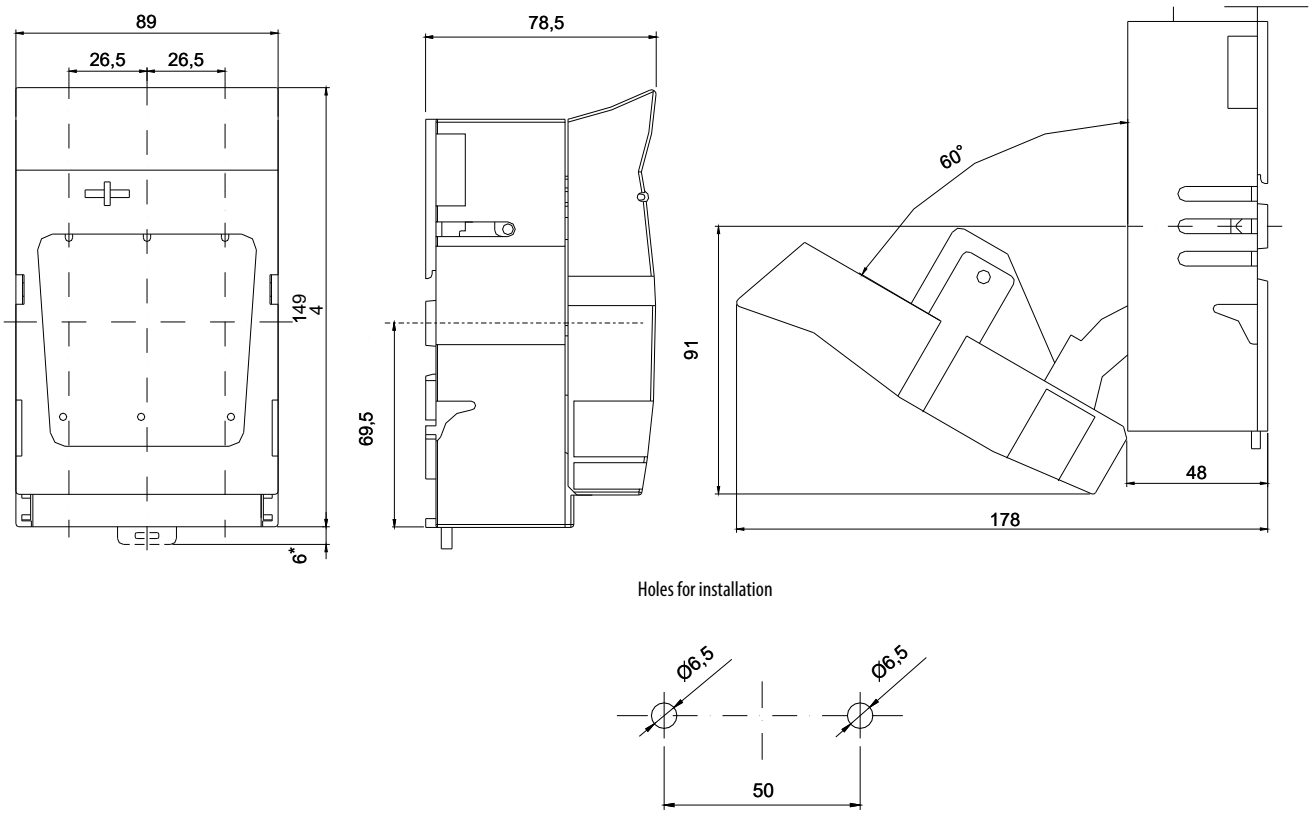


Dimensions

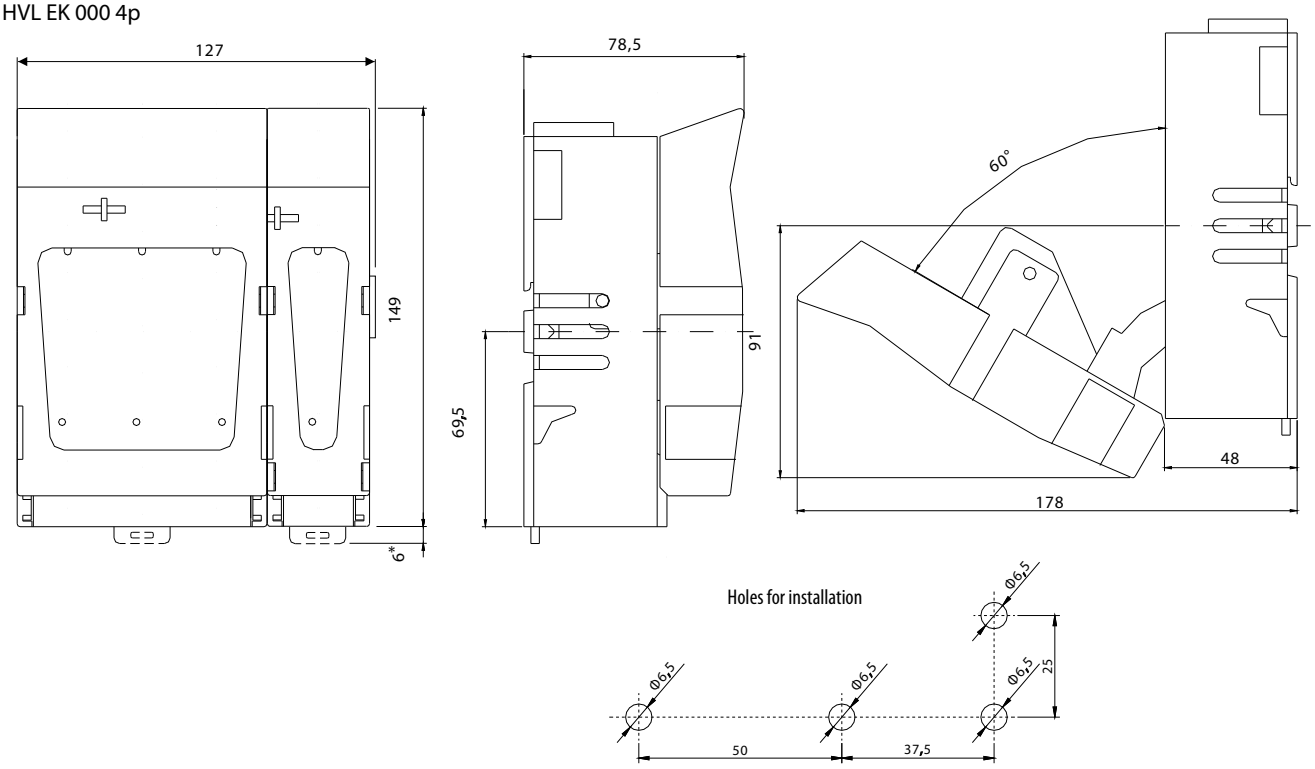
HVL EK 000 1p



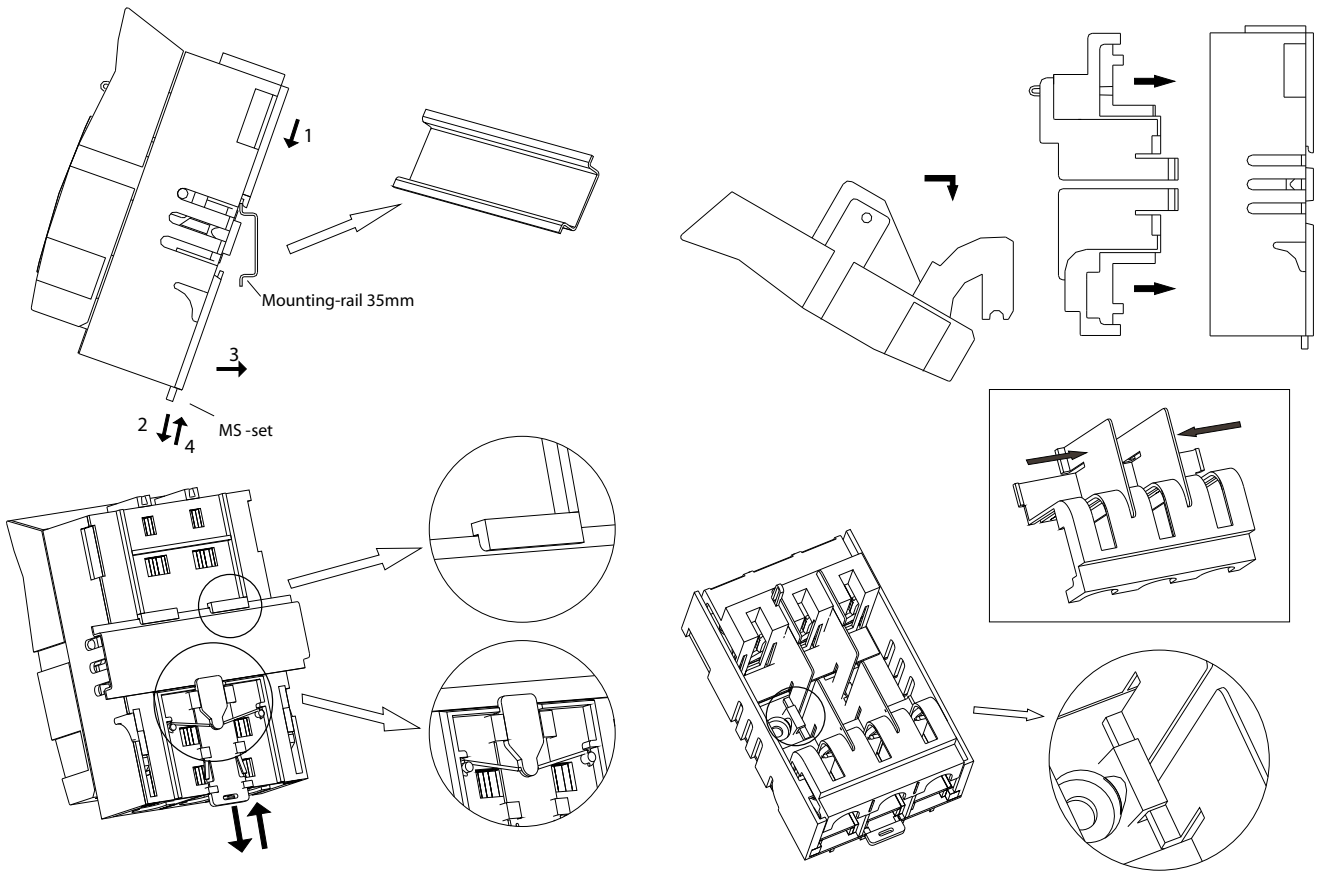
HVL EK 000 3p



HVL EK 000 4p

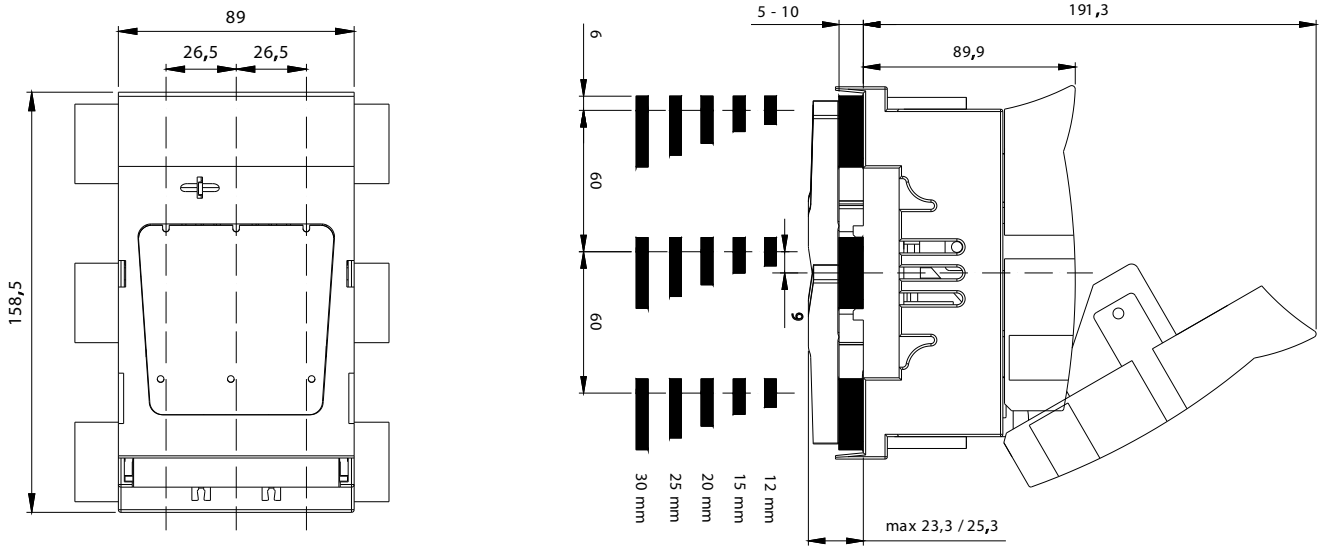


HVL EK 000 – options and Installation guide

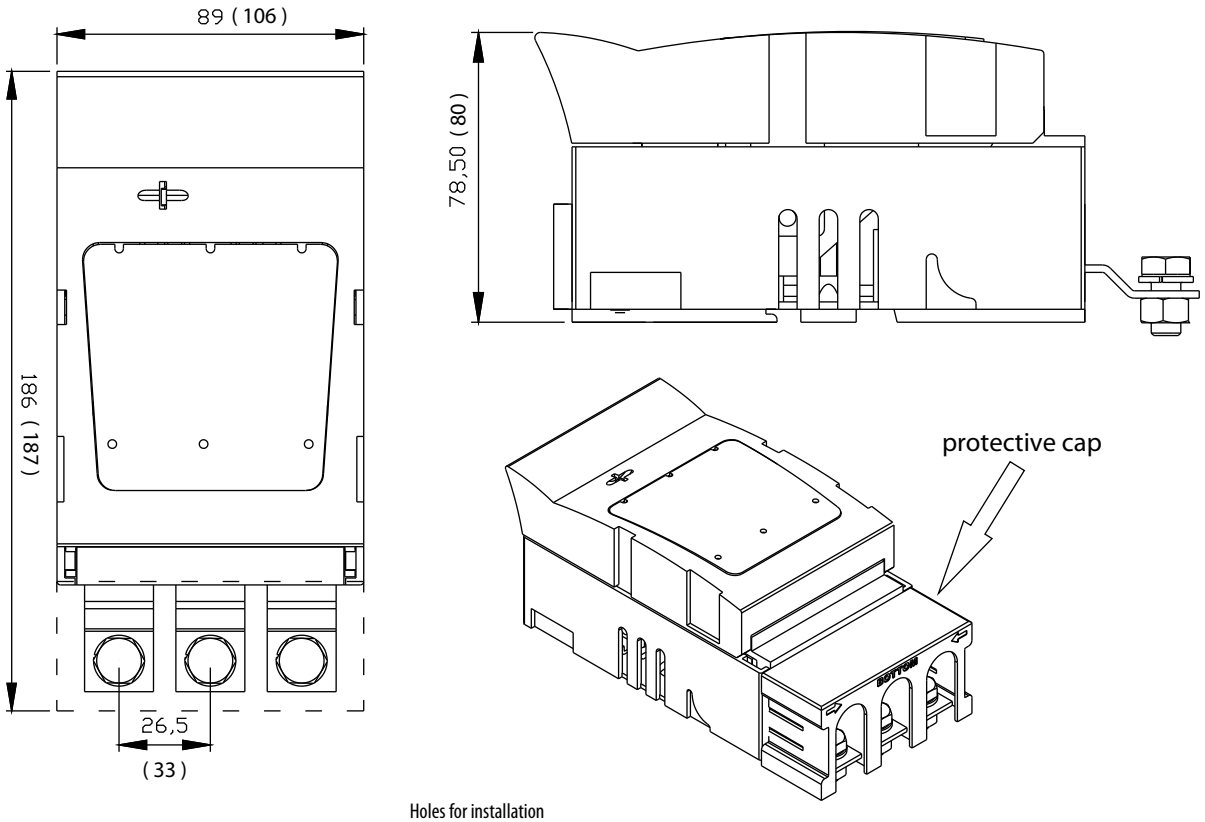


Dimensions

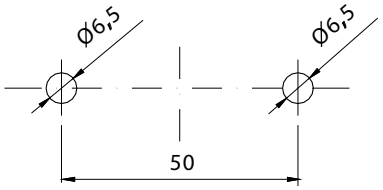
HVL-B EK 000 3p



HVL-P EK 000 3P

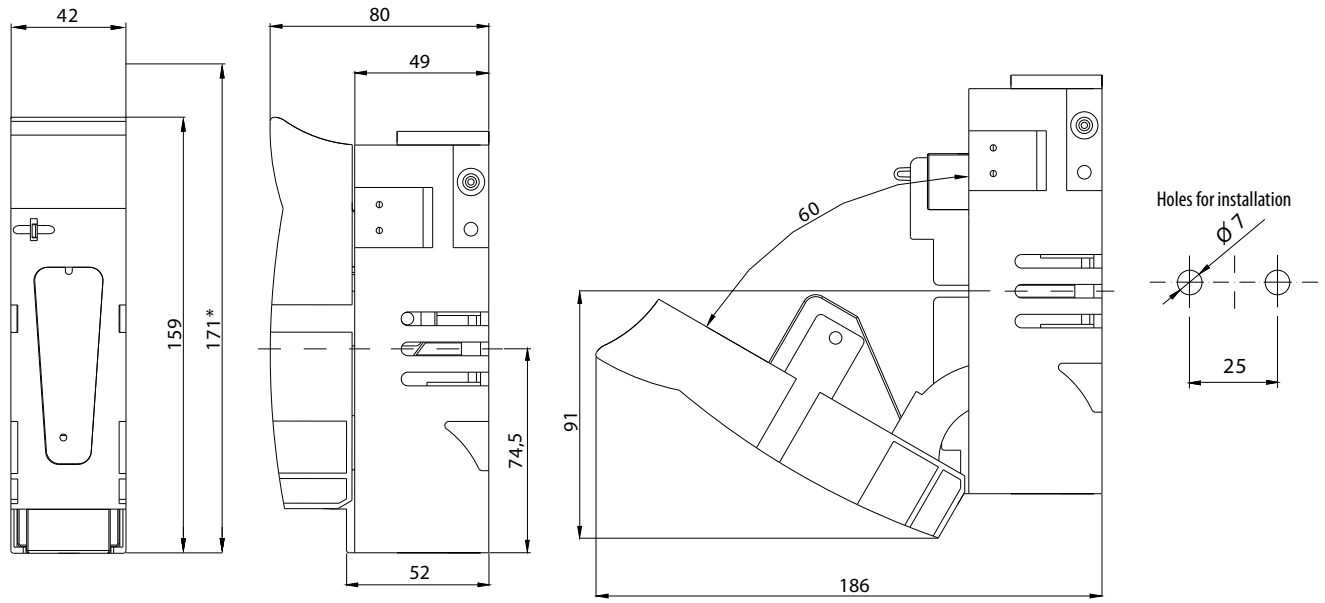


Holes for installation

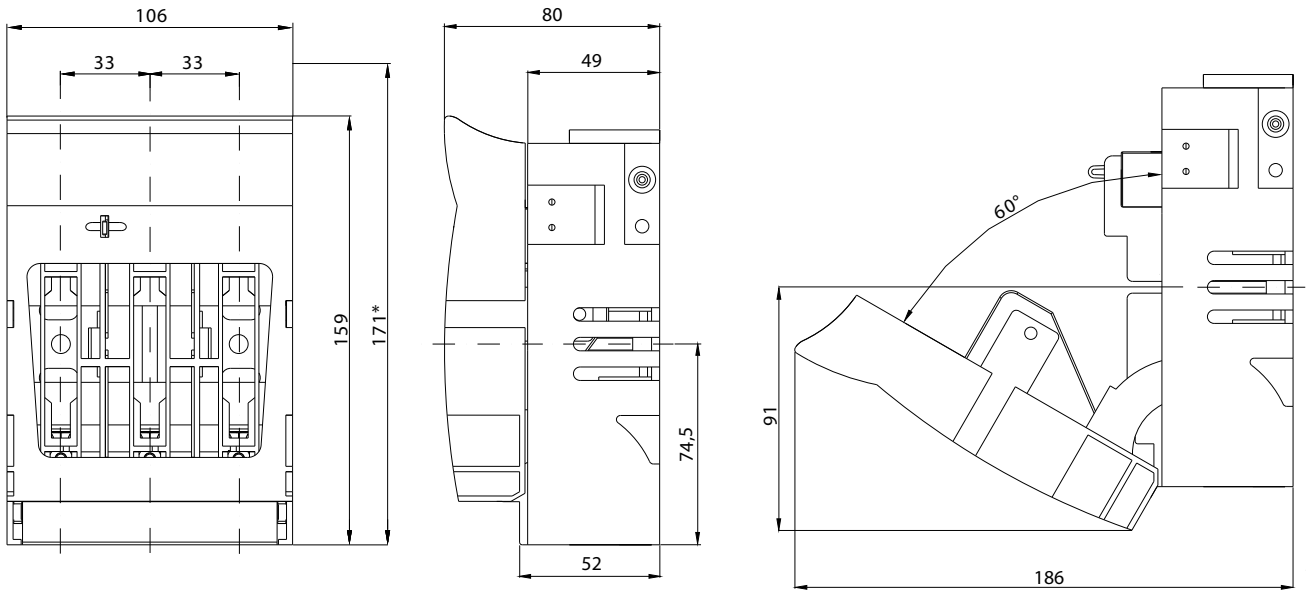


HVL-P EK 000 3p is supplied complete with a bottom covering protection. HVL-P EK 00 3p is supplied without protective coatings.

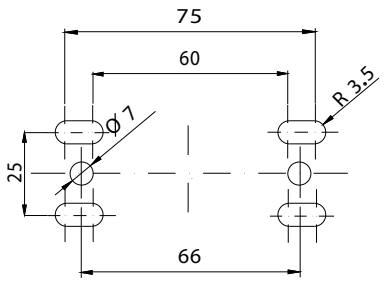
HVL EK 00 1p



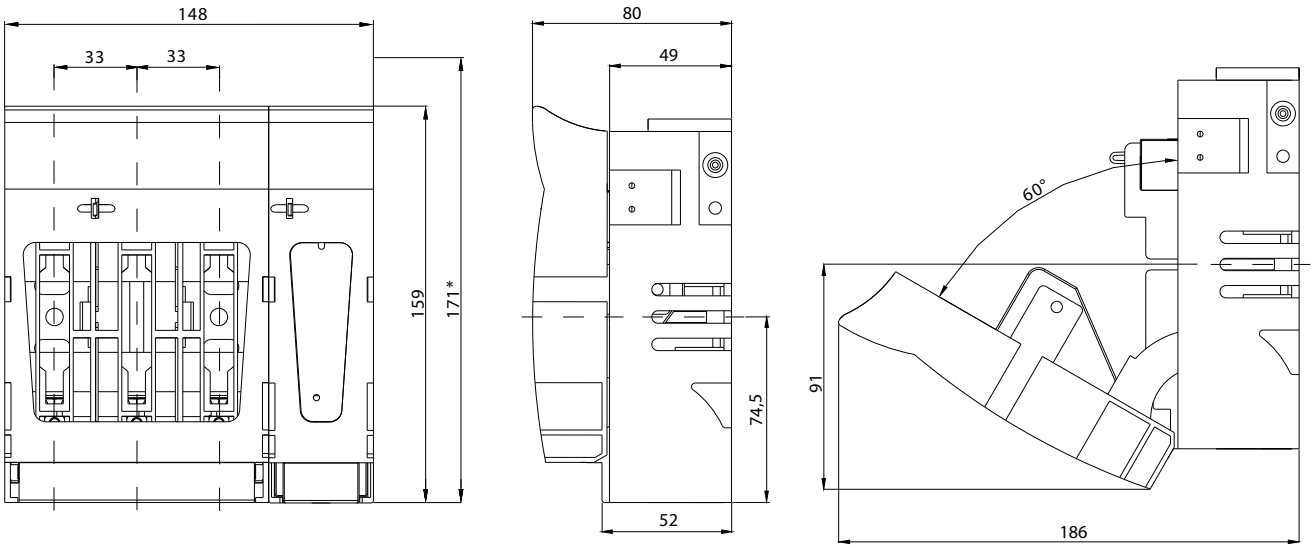
HVL EK 00 3p



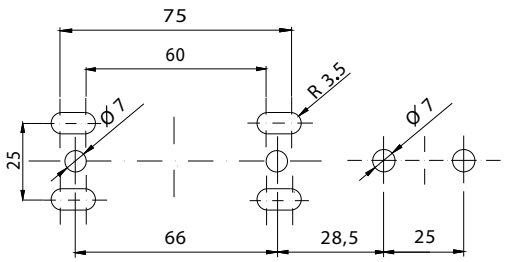
Holes for installation



HVL EK 00 4p



Holes for installation



* with set for mounting on two mounting rails in distance (125mm, 150mm)

ETIBUSBAR

60 mm Busbar System

Supports And Connections **938**
NH Fuse-Switch Disconnectors And Fuse Bases **943**
D Fuse-Switch Disconnectors And Fuse Bases **947**
Device Adapters **947**

HR

/etigroup

SWITCH TO A SAFE FUTURE

ETIBUSBAR 60 mm Busbar System

60 mm busbar system

Description

With busbar system (Busbar) can be achieved faster assembly and connecting electrical components and higher density of electrical components per unit area. In this way saves time, which is required for assembly and also saving the space required for installation. The main feature of the busbar system is that all components are installed on the busbars, which provide solidness to the components while installing the components in place already provide junction inlet electrical connections. For complete wiring of electrical components is to be performed only wiring branches to consumers. Busbar system is simple in case of need for subsequent extension because the only condition is to extend the copper busbars. ETI's busbar system offers a wide range of items for direct mounting on busbar system, the offer also includes special adapters through which they can connect to other components, which shall be affixed to the mounting plate.

Fields of use and features

Busbar systems are used wherever we want to achieve high visibility and compact inside electrical cabinets without undue additional wiring. Busbar system can be used in cases of alteration or extension of existing electrical cabinets because the more compact system saves space, or the only way to ensure enough. As a rule, the busbar systems are used in industrial environments, where the structure of electrical cabinets made by functional block and where it should be ensured high visibility electrical components for ease and speed of servicing in the event of failures and downtime.

ETI 60mm busbar system offers:

- Short installation time
- Less wiring
- Standardized dimensions
- Easy to install
- Flexibility

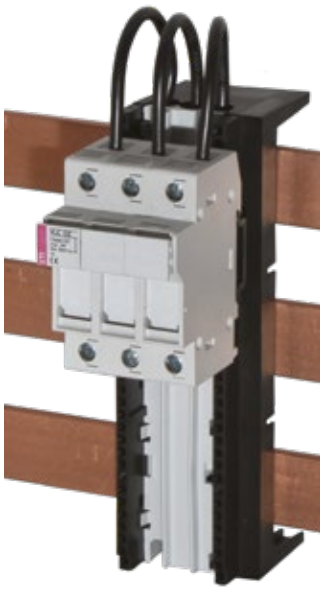
Convincing advantages

- Wide range of application
- Small number of system components
- No customized components demand
- High flexibility
- Innovative and sophisticated solutions
- Easy to fit
- According to standards IEC 60439-1, VDE 0660 part 500

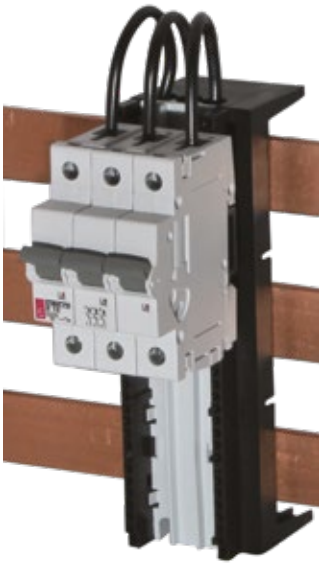
Applications

- Industry and energetics
- Main and Sub-distribution boards
- Cable and Wire protection
- Motor protection

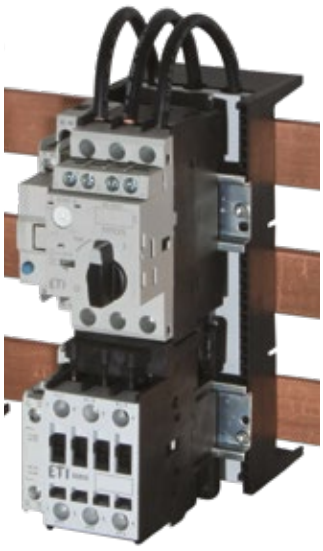
Examples:



1x DA-60/32/54/1
1x VLC 10, 3-pole



1x DA-60/32/54/1
1x ETIMAT P10, 32A



1x DA-60/32/72/2
1x MPE 25 + UVT + ECCMPE25
1x CEM 25 + BXCMLE

Example 1

Type	Code No.	Number of Components [pcs]
DVL-60/183	001696050	2
CHVL-60/183	001696152	2
DA-60/250/3/FE-5	001696162	1
EB2S 250/3LF 250A 3p	004671813	1

Example 2

Type	Code No.	Number of Components [pcs]
DA-60/32/54/1	001696081	3
ETIMAT P10, C 32A, 3p	273231109	3
DA-60/250/3/FE-5	001696162	1
EB2S 250/3LF 250A 3p	004671813	1

Busbar support

Supports and connections (60mm busbar)

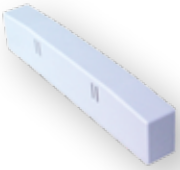
Type	Code No.	Description	
BBS-60/1	001696000	1-pole busbar support for busbars 5-10mm and 20mm or 30mm width	10
BBS-60/3	001696001	3-pole busbar support for busbars 5-10mm and 20mm or 30mm width	10
BBS-60/4	001696002	4-pole busbar support for busbars 5-10mm and 20mm or 30mm width	10
BBS-60/3-A25	001696003	3-pole busbar support for busbars 5-10mm and 20mm or 30mm width with 25mm² terminals	5
H5-BBS	001696005	Insertion for busbar height compensation, 5mm	100
L-BBS-60/3	001696006	Lateral cover for busbar holder, 3p	10
L-BBS-60/4	001696007	Lateral cover for busbar holder, 4p	10
S-BBS-60/3	001696008	Side cover for busbar holder (BBS-60/3-A), 3p	10
BBC-60/3	001696009	Busbar cover (3-pole), covering range 27-50mm/piece	50
BBC-60/4	001696010	Busbar cover (4-pole), covering range 27-50mm/piece	50
BBC-1/20	001696011	Busbar cover (1-pole) for single busbar 5-10mm thick and 20mm wide, length 1m	20
BBC-1/30	001696012	Busbar cover (1-pole) for single busbar 5-10mm thick and 30mm wide, length 1m	20
CM-60/250/3	001696013	Connecting module 250A, 3-pole, terminal 1,5 - 70mm² connection	1
CM-60/250/4	001696014	Connecting module 250A, 4-pole, terminal 1,5 - 70mm² connection	1
CM-60/250/3/120-5	001696015	Connecting module 250A, 3-pole, terminal 16 - 120mm² connection using Cu cable or flat Cu busbar 5mm	1
CM-60/250/3/120-10	001696016	Connecting module 250A, 3-pole, terminal 16 - 120mm² connection using Cu cable or flat Cu busbar 10mm	1
CM-60/630/3	001696017	Connecting module 630A, 3-pole, terminal 70 - 300mm² connection	1
CM-60/630/F/3	001696018	Connecting module 630A, 3-pole, terminal clamping range 11x21mm using flat Cu busbar	1
CT-5/16	001696019	Conductor terminal with clamping range 1,5-16mm² for busbar thickness 5mm	50
CT-5/35	001696020	Conductor terminal with clamping range 1,5-35mm² for busbar thickness 5mm	15
CT-5/50	001696021	Conductor terminal with clamping range 1,5-50mm² for busbar thickness 5mm	15
CT-5/70	001696022	Conductor terminal with clamping range 16-70mm² for busbar thickness 5mm	15
CT-5/120	001696023	Conductor terminal with clamping range 16-120mm² for busbar thickness 5mm	15
CT-5/185	001696024	Conductor terminal with clamping range 16-185mm² for busbar thickness 5mm	15
CT-10/16	001696025	Conductor terminal with clamping range 1,5-16mm² for busbar thickness 10mm	50
CT-10/35	001696026	Conductor terminal with clamping range 1,5-35mm² for busbar thickness 10mm	15
CT-10/50	001696027	Conductor terminal with clamping range 1,5-50mm² for busbar thickness 10mm	15
CT-10/70	001696028	Conductor terminal with clamping range 16-70mm² for busbar thickness 10mm	15
CT-10/120	001696029	Conductor terminal with clamping range 16-120mm² for busbar thickness 10mm	15
CT-10/185	001696030	Conductor terminal with clamping range 16-185mm² for busbar thickness 10mm	15
PT-30/34x10	001696031	Plate terminal for busbars up to 30mm width, clamping range 34x34x10mm	3
PT-40/34x10	001696150	Plate terminal for busbars up to 40mm width, clamping range 34x34x10mm	3
PT-50/34x10	001696151	Plate terminal for busbars up to 50mm width, clamping range 34x34x10mm	3
BBCH-60/144	001696032	Universal cover of 3-pole busbars 5-10mm, covering width 144mm (ex. cover for conductor terminals type CT- ...)	1
BBCH-60/84	001696033	Universal cover of 3-pole busbars 5-10mm, covering width 84mm (ex. cover for conductor terminals type CT- ...)	1

BBS-60/... can be adjusted to 20m or 30mm busbar width and 5-10 mm thickness.
CT terminals can accept only Cu conductors.

BBS-60/3

BBS-60/3-A25

H5-BBS


L-BBS

S-BBS-60-3

BBC-60/3

BBC-1/30

CM-60/250

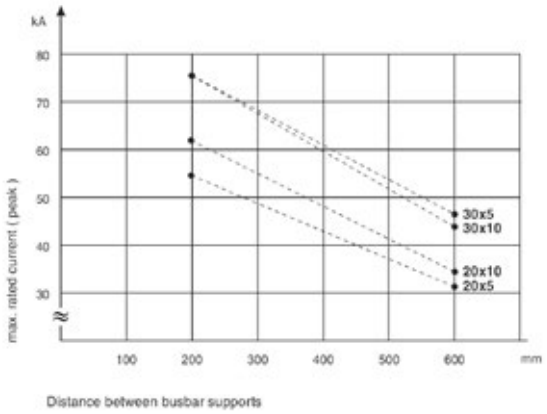
CM-60/630

CT-5, 10/...

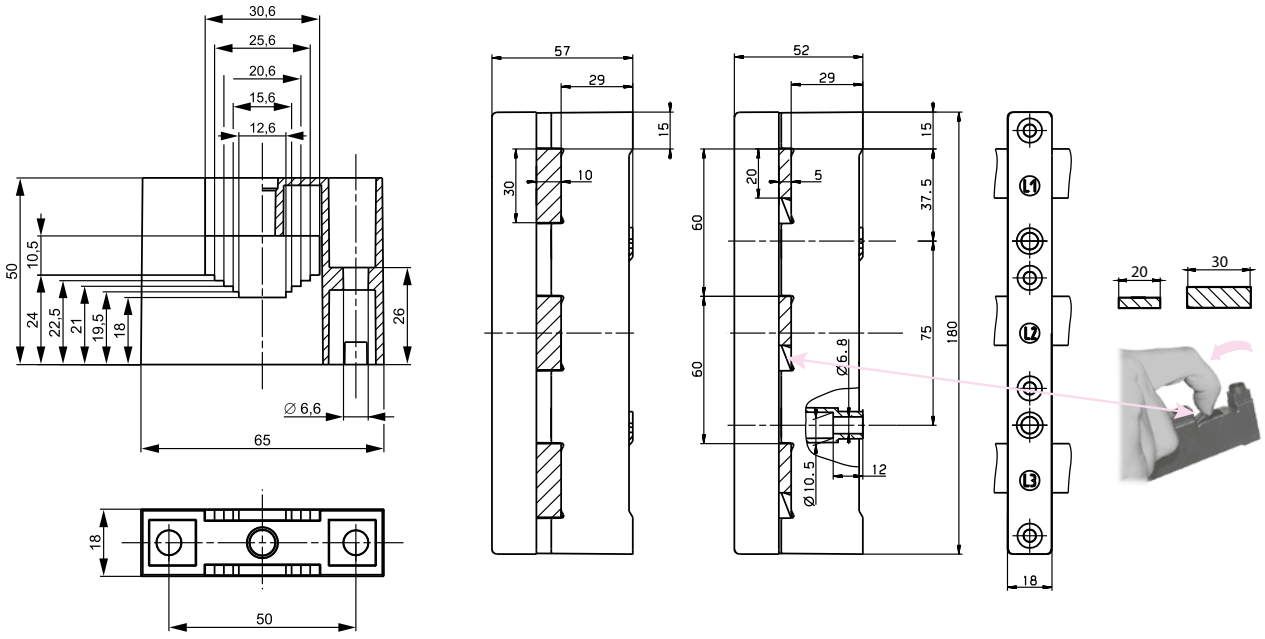
PT-30/34x10

BBCH-60/144

BC-20x5-30x10

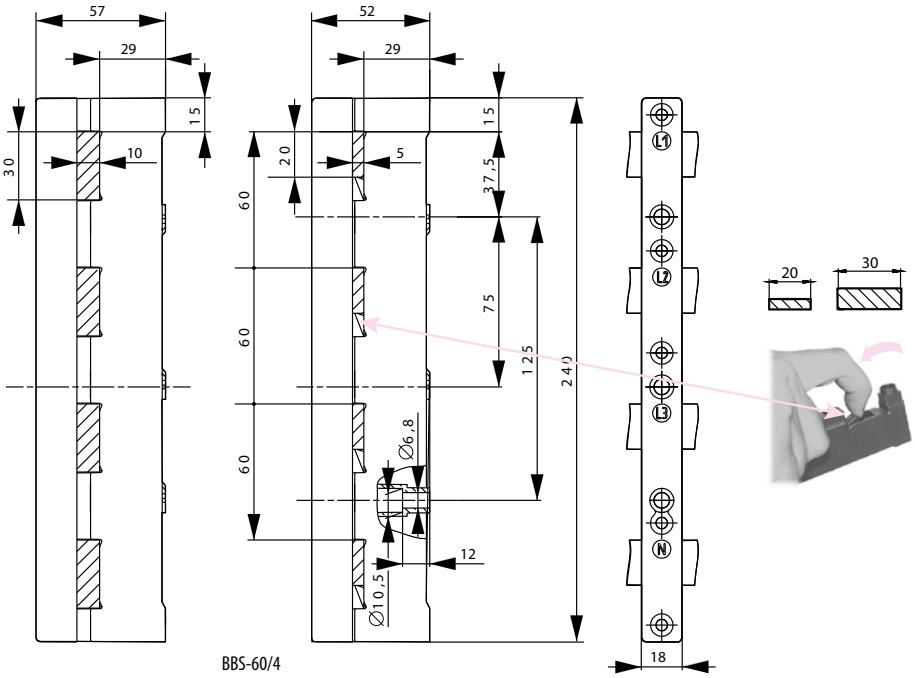


Dimensions



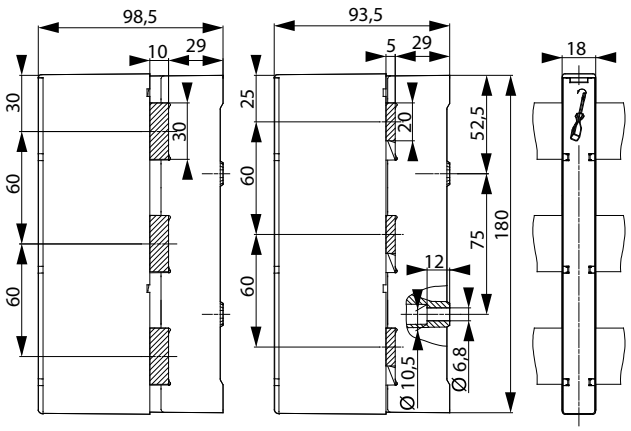
BBS-60/1

BBS-60/3

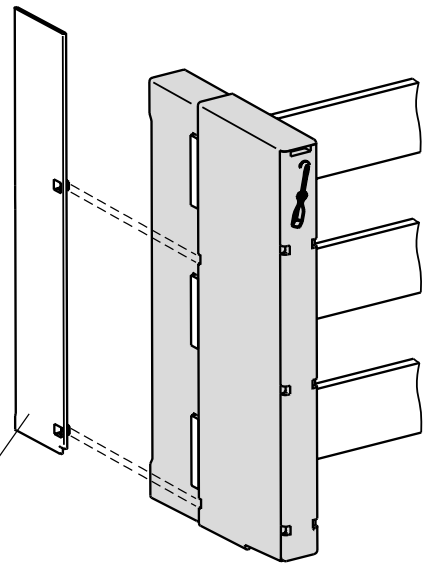


BBS-60/4

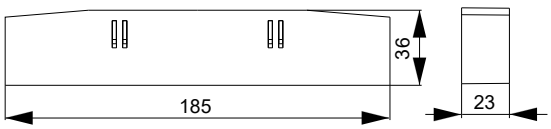
ETIBUSBAR / 60 mm Busbar System



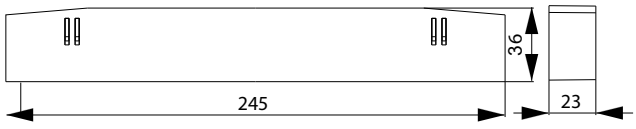
BBS-60/3-A16 (A25)



S-BBS-60/3

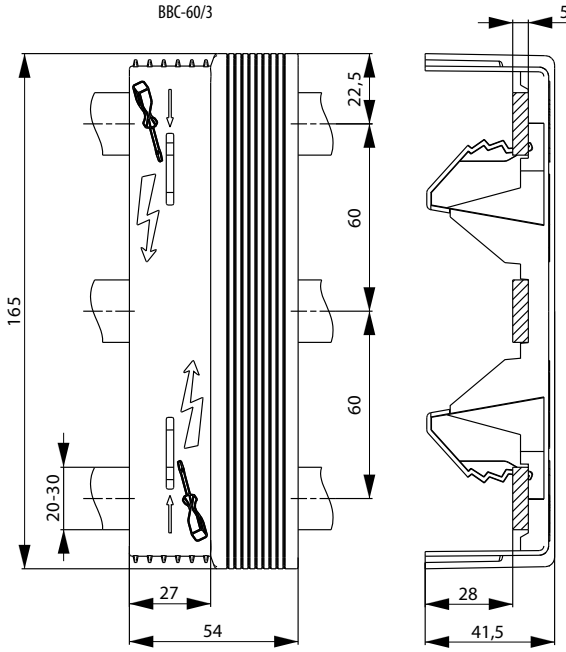


L-BBS-60/3

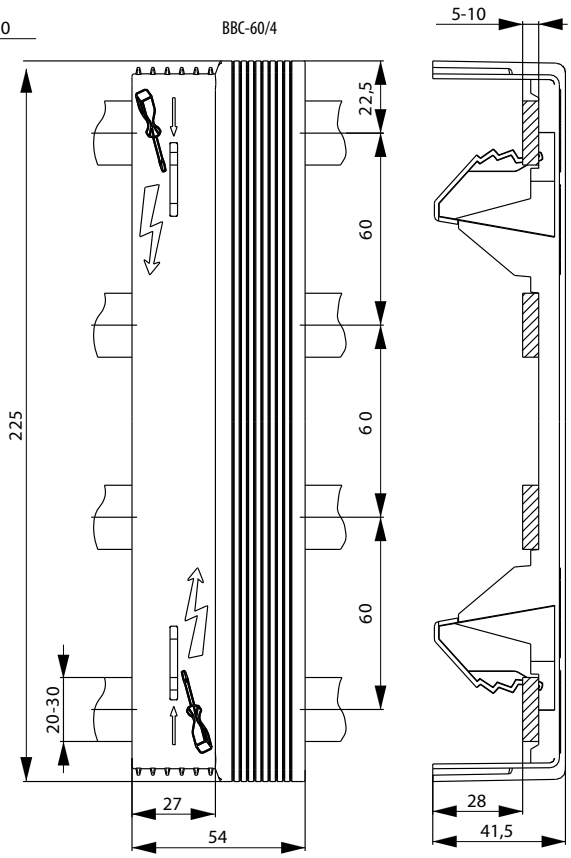


L-BBS-60/4

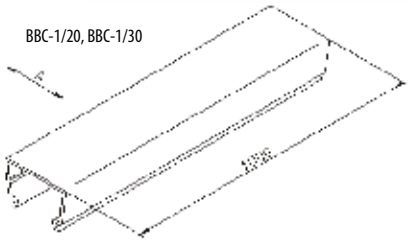
BBC-60/3



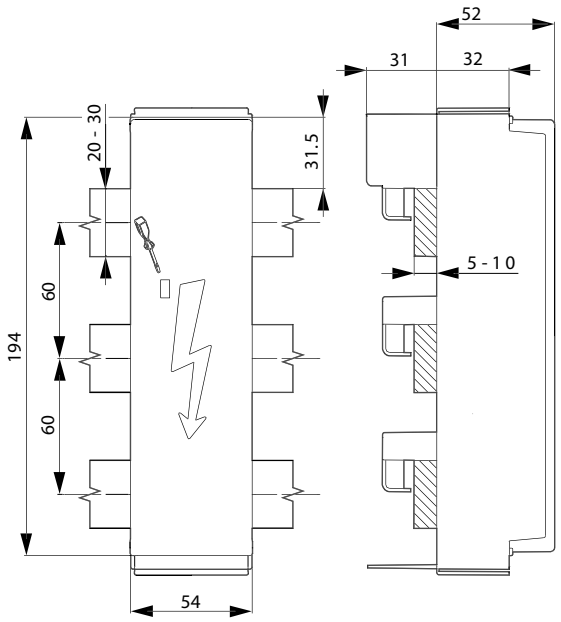
BBC-60/4



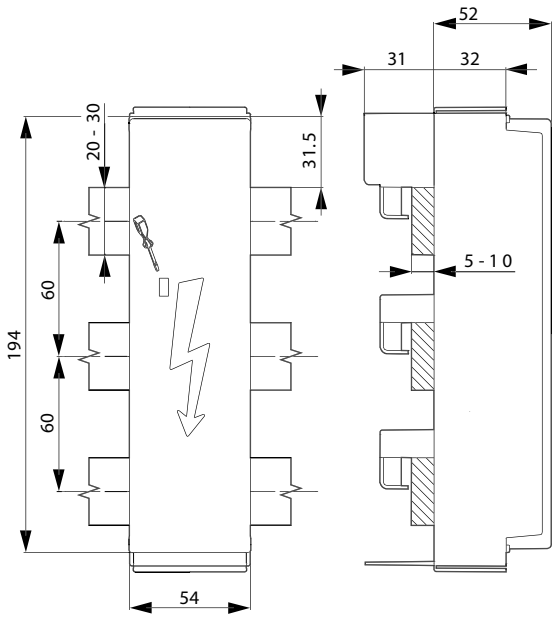
BBC-1/20, BBC-1/30



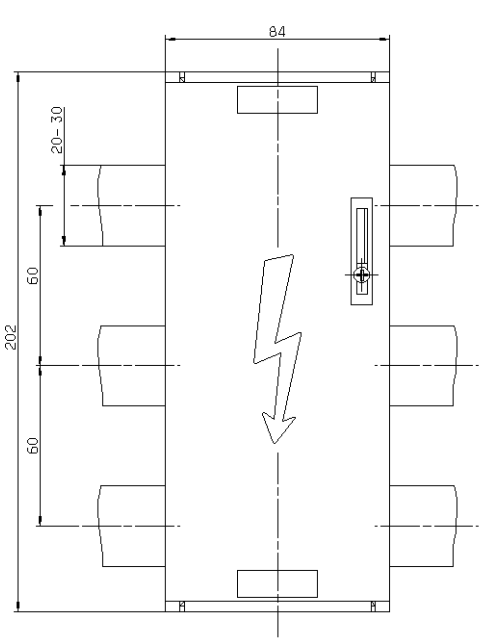
BBC-1/20	21	20x5 / 20x10
BBC-1/30	31	30x5 / 30x10

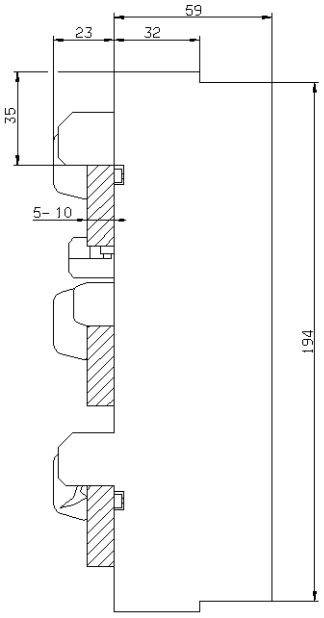


CM-60/250/3

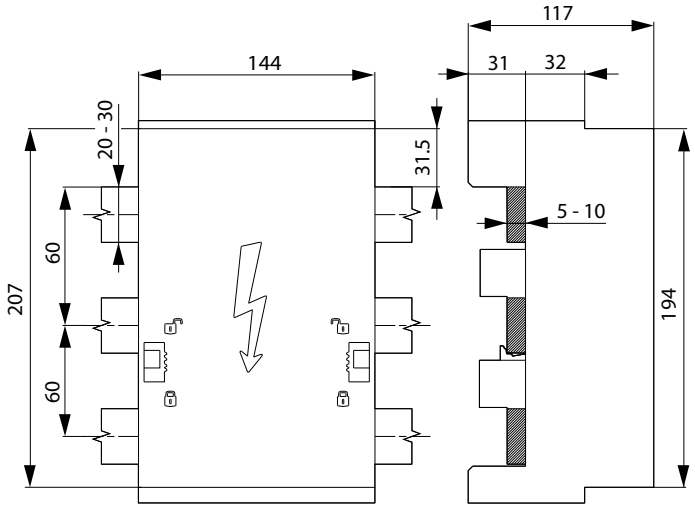


CM-60/250/4

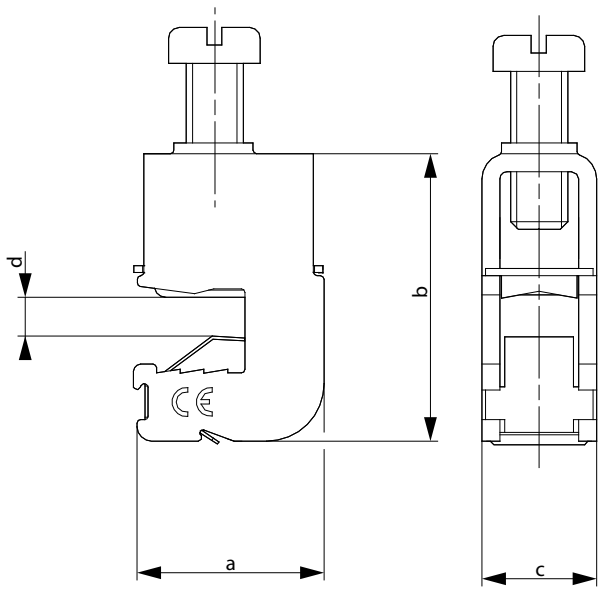




CM-60/250/3/120-5/10

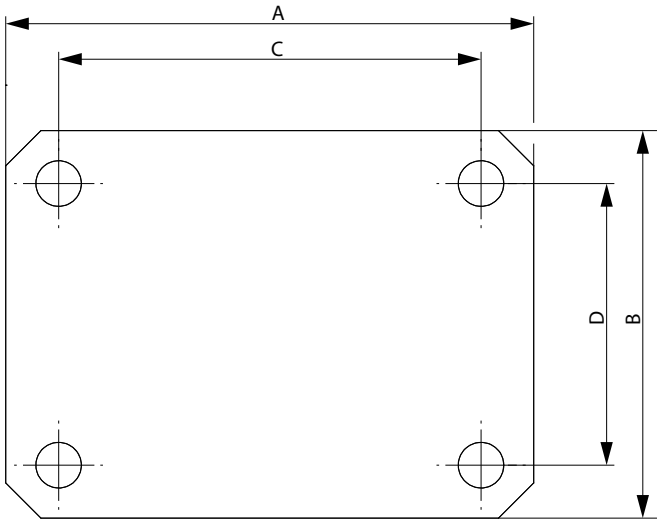


CM-60/630/3



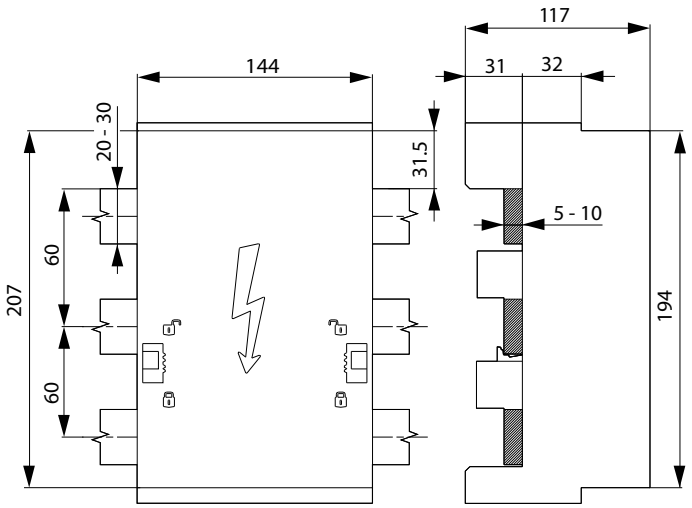
CT- ...

	d (Busbar thickness)	a	b	c
CT-5/16	5	25,5	26,5	12
CT-5/35		26,5	31,5	16
CT-5/50		26,5	35	16
CT-5/70		28	39	20,5
CT-5/120		29	46	23
CT-5/185		29	49	28,5
CT-10/16	10	25,5	31,5	12
CT-10/35		26,5	36	16
CT-10/50		26,5	40	16
CT-10/70		28	39	20,5
CT-10/120		29	51	23
CT-10/185		29	53	28,5

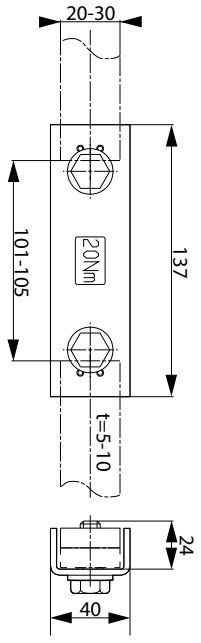


PT-30/34x10

	A	B	C	D
00169031	55	55	40	40
00169150	65	55	50	40
00169151	75	55	60	40



BBCH-60/144



BC-20x5-30x10

NV/NH horizontal fuse-switch disconnectors KVL for busbar mounting

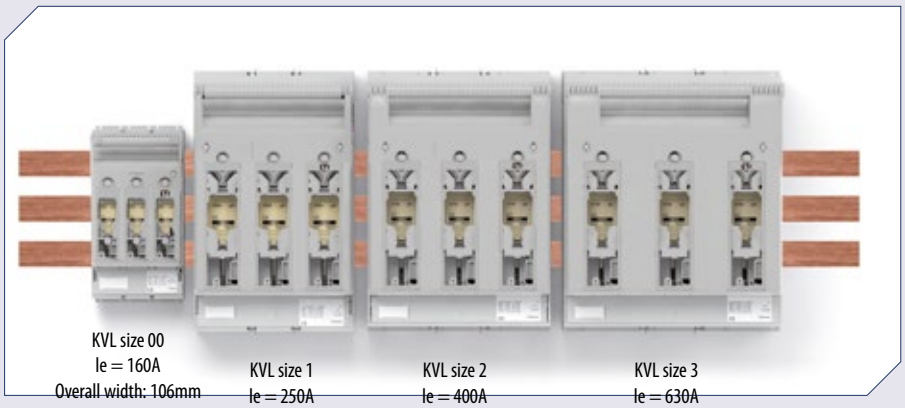
Uniform cover cutout

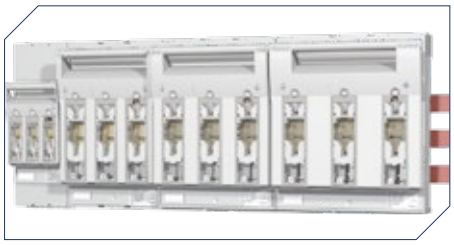
KVL - horizontal fuse-switch disconnectors with different sizes can be combined together and form uniform cover cutout. The new assortment contains four cover support levels at 32, 60, 70 and 90 mm above the uper of busbar. KVL fuse-switch disconnectors can be mounted on busbars (for baseplates and DIN rails see chapter NV/NH).

- Available with 1- and 3-pole versions
- Four sizes: size 00, size 1, size 2, size 3
- Use with NV/NH Fuse-links 000, 00, 1, 2, 3

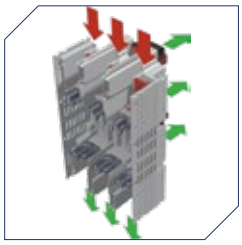
Busbar mounting

KVL-00 to KVL-3 can be mounted onto 60mm busbar systems - no drilling required

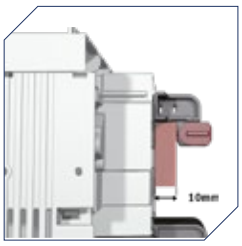




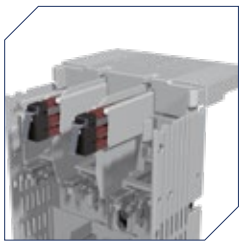
Uniform cover cutout for all sizes disconnectors
Changeable installation depth by 4 differenet field supporting surfaces (32mm, 60mm, 70mm, 90mm)



Area-saving:
- integrated feeding terminal
- Busbar supply and safe outgoing cable outlet
- Busbar supports up to 20mm width, 19mm height max.

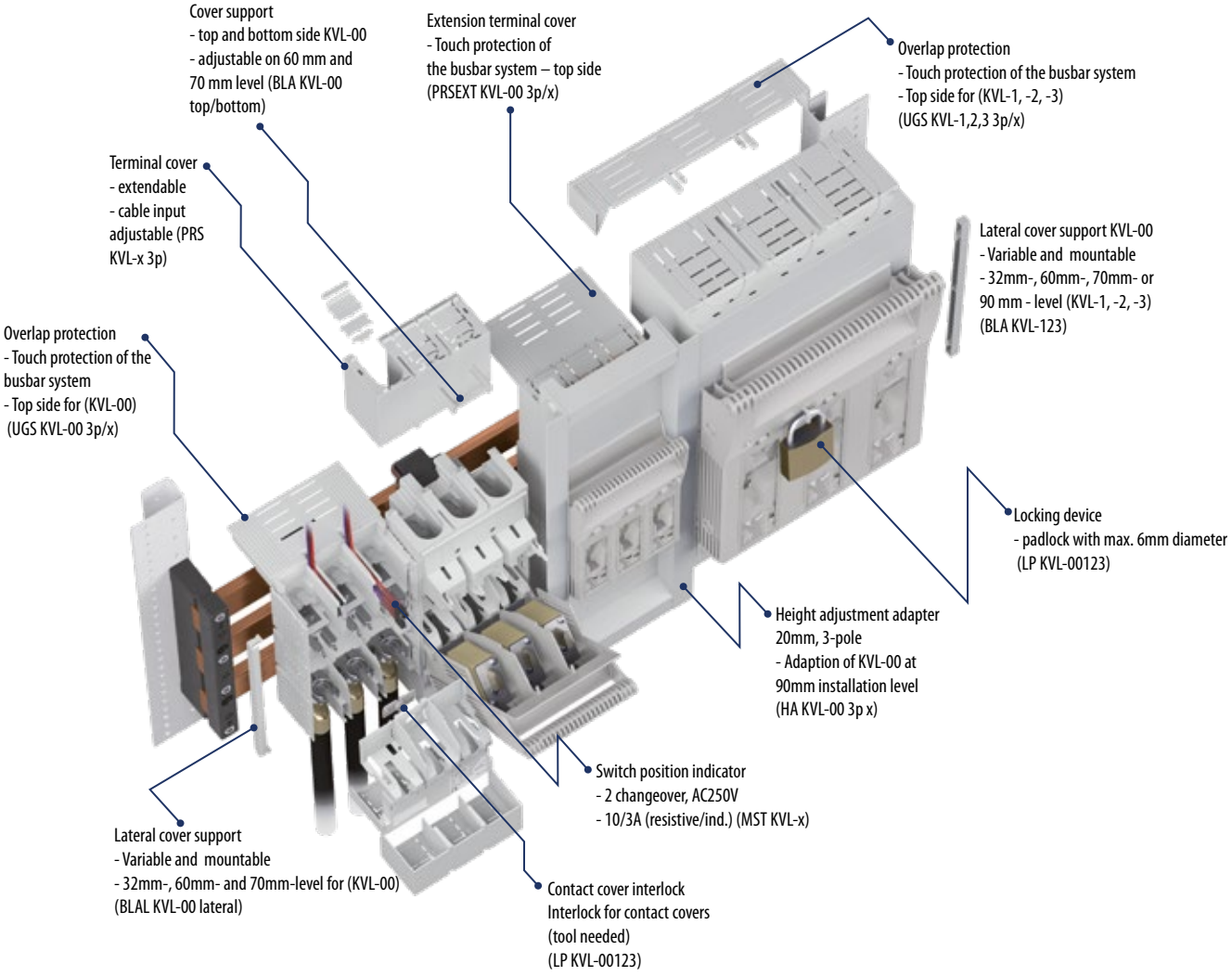


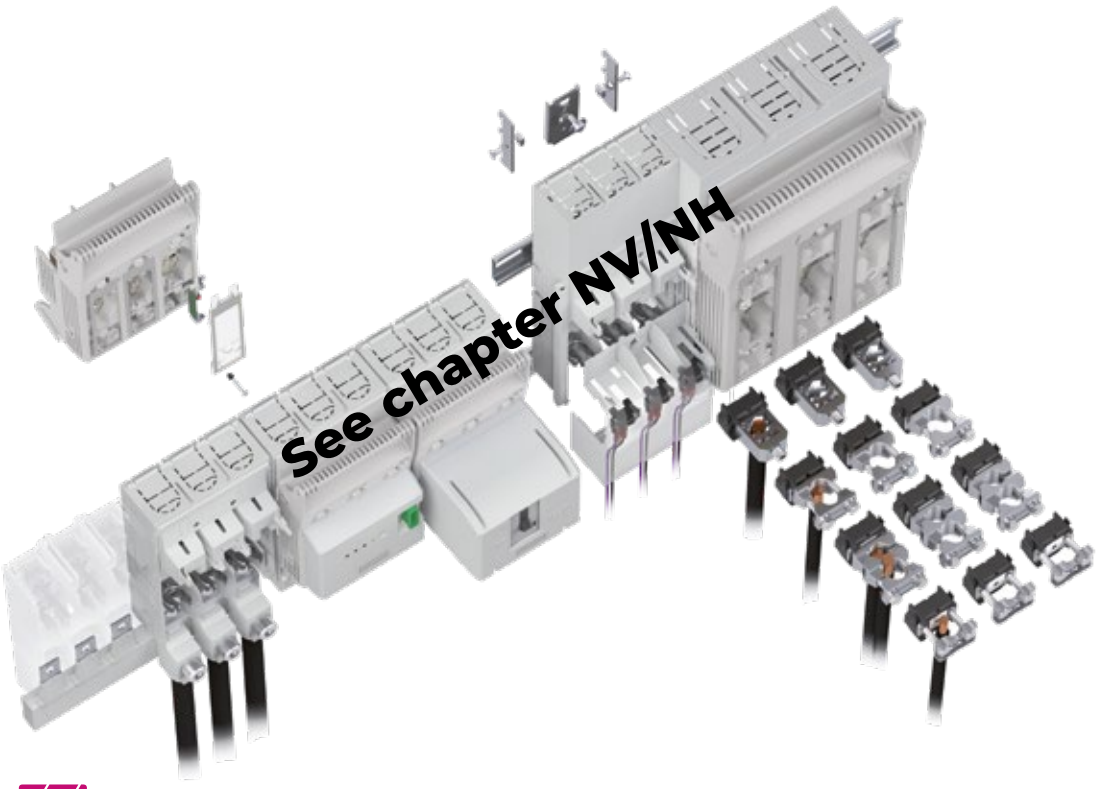
WATCH THE VIDEO



Easy adjustments
- adjustment to 5mm or 10mm thick bars
- simple modification of cable terminal from bottom side to top side

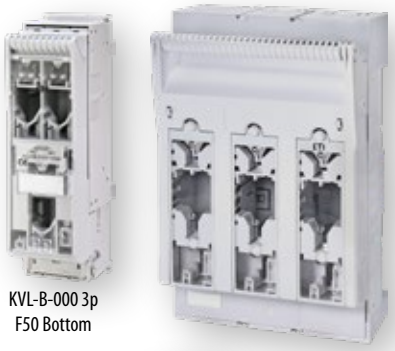
Retrofittable switch position indicator
-Dual monitoring in each unit
- Separate circuits function
- Wide range of applications due to high switching capacity 10/3A (resistive/ind.) AC250V


Cover support
- top and bottom side KVL-00
- adjustable on 60 mm and 70 mm level (BLA KVL-00 top/bottom)
Extension terminal cover
- Touch protection of the busbar system – top side (PRSEXT KVL-00 3p/x)
Overlap protection
- Touch protection of the busbar system
- Top side for (KVL-1, -2, -3) (UGS KVL-1,2,3 3p/x)
Terminal cover
- extendable
- cable input adjustable (PRS KVL-x 3p)
Lateral cover support KVL-00
- Variable and mountable
- 32mm-, 60mm-, 70mm- or 90 mm - level (KVL-1, -2, -3)
(BLA KVL-123)
Overlap protection
- Touch protection of the busbar system
- Top side for (KVL-00) (UGS KVL-00 3p/x)
Locking device
- padlock with max. 6mm diameter
(LP KVL-00123)
Height adjustment adapter
20mm, 3-pole
- Adaption of KVL-00 at 90mm installation level
(HA KVL-00 3p x)
Switch position indicator
- 2 changeover, AC250V
- 10/3A (resistive/ind.) (MST KVL-x)
Lateral cover support
- Variable and mountable
- 32mm-, 60mm- and 70mm-level for (KVL-00)
(BLAL KVL-00 lateral)
Contact cover interlock
Interlock for contact covers
(tool needed)
(LP KVL-00123)


See chapter NV/NH

3-pole, 60mm busbar, thickness 5 mm or 10 mm

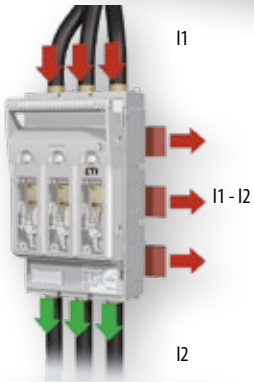
Size	Code No.	Type	kg	
000	001690915	KVL-B-000 3p F50 Bottom	0,58	1
	001690916	KVL-B-000 3p F50 Top	0,58	1
00	001690910	KVL-B-00 3p M8-M8	0,9	1
	001690911	KVL-B-00 3p BC95-BC95	0,92	1
1	001690912	KVL-B-1 3p M10-M10	2,14	1
2	001690913	KVL-B-2 3p M10-M10	3,53	1
3	001690914	KVL-B-3 3p M10-M10	4,13	1



KVL-B-000 3p F50 Bottom

3-pole, 60mm busbar, Integrated Feeding Terminal

Size	Code No.	Type	Feeding side - Line - I1	Load side I2	I1	I2	kg	
00	001690920	KVL-B/FT-00 3p M8-M8	top/bottom	top/bottom	400	160	1,05	1
1	001690922	KVL-B/FT-1 3p M10-M10	top/bottom	top/bottom	500	250	2,39	1
2	001690923	KVL-B/FT-2 3p M10-M10 TOP	bottom	top	800	400	3,9	1
	001690924	KVL-B/FT-2 3p M10-M10 BOTTOM	top	bottom			3,9	1
3	001690926	KVL-B/FT-3 3p M10-M10 TOP	top/bottom	top/bottom	1000	630	4,45	1



1-pole busbar

Size	Code No.	Type	Fixation	kg	
00	001690930	KVL-B/SF-00 1p M8-M8	screw fixation	0,35	2
	001690931	KVL-B/CF-00 1p M8-M8	clamp fixation	0,39	2
1	001690932	KVL-B/SF-1 1p M10-M10	screw fixation	0,98	1
2-3	001690933	KVL-B/SF-3 1p M10-M10	screw fixation	1,59	1

DO NOT USE WITH 3-pole 60 mm busbar system !!!

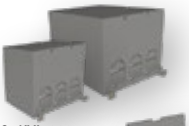
!!! ONLY FOR 1-POLE BUSBAR

Accessories for KVL busbar 60 mm

Type	Code No.	Description	*
HA KVL-00 3p T/B 340-370	001690980	Height adjusting adapter, 70 to 90mm, 3-pole, System size 340-370mm, top + bottom, size 00	1
HA KVL-00 3p T/B 300	001690981	Height adjusting adapter, 70 to 90mm, 3-pole, System size 300mm, top + bottom, size 00	1
HA KVL-00 3p L/R 340-370	001690982	Height adjusting adapter, 70 to 90mm, 3-pole, System size 340-370mm, right + left, size 00	1
HA KVL-00 3p L/R 300	001690983	Height adjusting adapter, 70 to 90mm, 3-pole, System size 300mm, right + left, size 00	1
PRS KVL-000 3p TOP	001691071	Terminal cover for top side	2
PRS KVL-000 3p BOTTOM	001691072	Terminal cover for bottom side	2
PRSEXT KVL-00 3p/34-39	001690984	Terminal cover extension, 3-pole, h1 = 39 or 34mm, size 00, *	2
PRSEXT KVL-00 3p/32	001690985	Terminal cover extension, 3-pole, h1 = 32mm, size 00, *	2
UGS KVL-000 3p/34-39	001691073	Overlap protector for busbar systems, 39 or 34mm,	10
UGS KVL-00 3p/34-39	001690986	Overlap protector for busbar systems, h1 = 39 or 34mm, for terminal F, S00, P00, R95, size 00	2
UGS KVL-00 3p/32	001690987	Overlap protector for busbar systems, h1 = 32mm, for terminal F, S00, P00, R95, size 00	2
UGS KVL-00 3p/R95T/34-39	001690988	Overlap protector for busbar systems, h1 = 39 or 34mm, for terminal R95T, size 00	2
UGS KVL-00 3p/R95T/32	001690989	Overlap protector for busbar systems, h1 = 32mm, for terminal R95T, size 00	2
UGS KVL-1 3p/34-39	001690990	Overlap protector for busbar systems, h1 = 39 or 34mm, size 1	2
UGS KVL-1 3p/32	001690991	Overlap protector for busbar systems, h1 = 32mm, size 1	2
UGS KVL-2 3p/39-34	001690992	Overlap protector for busbar systems, h1 = 39 or 34mm, size 2	2
UGS KVL-2 3p/32	001690993	Overlap protector for busbar systems, h1 = 32mm, size 2	2
UGS KVL-3 3p/39-34	001690994	Overlap protector for busbar systems, h1 = 39 or 34mm, size 3	2
UGS KVL-3 3p/32	001690995	Overlap protector for busbar systems, h1 = 32mm, size 3	2
BLAL KVL-000 lateral	001691074	Cover support	10
BLA KVL-00 top/bottom	001690961	Cover support, top or bottom side, level 60mm, 70mm, size 00	10
BLAL KVL-00 lateral	001690962	Cover support, lateral, level 32mm, 60mm, 70mm, size 00	10
BLA KVL-123	001690963	Cover support, top or bottom side, lateral, level 32mm, 60mm, 70mm, size 1, 2, 3	10

* min order [pcs]

h1 = Distance top edge busbar to base plate



PRS_KVL-000_top-bottom

UGS KVL-000 3p/34-39

BLAL KVL-000 lateral

BLA_KVL-00_top-bottom

BLAL_KVL

HA KVL-00 3p T/B 300

Accessories for KVL

Type	Code No.	Description	*
SP KVL00	001692701	Clip terminal, 1,5 – 70 mm² Cu	3
SP KVL1	001692702	Clip terminal, 25– 150 mm² Cu	3
SP KVL2	001692703	Clip terminal, 25– 240 mm² Cu	3
SP KVL3	001692704	Clip terminal, 11x21 mm² Cu	3
SP KVL00 P1	001692760	Prism clamp, 10 – 70 mm² Al/Cu	3
SP KVL1 P1	001692761	Prism clamp, 70 – 150 mm² Al/Cu	3
SP KVL2 P1	001692762	Prism clamp, 120 – 240 mm² Al/Cu	3
SP KVL3 P1	001692763	Prism clamp, 120 – 300 mm² Al/Cu	3
SP KVL1 P2	001692764	Prism clamp for 2-conductors connection, 2x70 – 95 mm² Al/Cu	3
SP KVL2 P2	001692765	Prism clamp for 2-conductors connection, 2x120 – 150 mm² Al/Cu	3
SP KVL3 P2	001692766	Prism clamp for 2-conductors connection, 2x120 – 240 mm² Al/Cu	3
SP HVL 4a D2	001692767	Direct terminal clamp for 2-conductors connection, 2x120– 300mm² Al/Cu	1
SP HVL 4a D3	001692768	Direct terminal clamp for 3-conductors connection, 3x95 – 150 mm² Al/Cu	1
SP HVL 4a D4	001692769	Direct terminal clamp for 4-conductors connection, 4x95 – 150 mm² Al/Cu	1
SP KVL-1 V	001690940	Frame clamp, 35-150mm² Al/Cu	3
SP KVL-23 V	001690941	Frame clamp, 95-300mm² Al/Cu	3
MTB KVL00 2x25/1x16/M8	001690978	Terminal block with multiple wire connections	3
MTB KVL00 4x10/M8	001690979	Terminal block with multiple wire connections	3
MST KVL-000 3p	001691070	Switch position indicator	1
MST KVL-00 1p	001690947	Switch position indicator, 1-pole, size 00, **	1
MST KVL-00 3p	001690948	Switch position indicator, 3-pole, size 00, **	1
MST KVL-123 1p/2p/3p	001690949	Switch position indicator, 1/2/3 -pole, size 1, 2, 3, **	1
MFM KVL-00 1p/2p/3p	001690950	Mechanical fuse monitor, size 00, **	3
MFM KVL-123 1p/2p/3p	001690951	Mechanical fuse monitor, size 1, 2, 3, **, ***	3
PRS KVL-00 3p L	001690952	Terminal cover, 3-pole, variable to open, Length 66mm, size 00	2
PRS KVL-00 3p S	001690953	Terminal cover, 3-pole, variable to open, Length 36mm, size 00	2
PRS KVL-1 3p	001690954	Terminal cover, 3-pole, variable to open, Length 42mm, size 1	2
PRS KVL-2 3p	001690955	Terminal cover, 3-pole, variable to open, Length 42mm, size 2	2
PRS KVL-3 3p	001690956	Terminal cover, 3-pole, variable to open, Length 42mm, size 3	2
PRS KVL-00 1p L	001690957	Terminal cover, 1-pole, variable to open, Length 66mm, size 00	2
PRS KVL-00 1p S	001690958	Terminal cover, 1-pole, variable to open, Length 36mm, size 00	2
PRS KVL-1 1p	001690959	Terminal cover, 1-pole, variable to open, Length 42mm, size 1	2
PRS KVL-3 1p	001690960	Terminal cover, 1-pole, variable to open, Length 42mm, size 3	2
EFMU KVL-00 3p	001690966	Electronic fuse monitoring unit, 3-pole, size 00, ****	1
EFMU KVL-1 3p	001690967	Electronic fuse monitoring unit, 3-pole, size 1, ****	1
EFMU KVL-2 3p	001690968	Electronic fuse monitoring unit, 3-pole, size 2, ****	1
EFMU KVL-3 3p	001690969	Electronic fuse monitoring unit, 3-pole, size 3, ****	1
MPFMU KVL-00 3p	001690974	Elektromechanical fuse monitoring unit (AM), 3-pole, size 00, ****	1
MPFMU KVL-1 3p	001690975	Elektromechanical fuse monitoring unit (AM), 3-pole, size 1, ****	1
MPFMU KVL-2 3p	001690976	Elektromechanical fuse monitoring unit (AM), 3-pole, size 2, ****	1
MPFMU KVL-3 3p	001690977	Elektromechanical fuse monitoring unit (AM), 3-pole, size 3, ****	1
LP KVL-00123	001690972	Interlock device, locking with padlock, diameter 6mm max., size 00, 1, 2, 3	10
IC KVL-00123	001690973	Contact cover interlock, only be operated by tool, size 00-3	10

PRS KVL-00 1p

PRS KVL-00 1p S

SP KVL... P2

SP KVL-1 V

MST KVL-000 3p

CK KVL-00 2p/4p

IC KVL-00123

LP KVL-00123

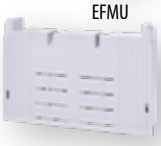
MPFMU

EFMU

PRS KVL-00 3p L

PRSEXT KVL-00 3p/34-39

UGS KVL-(1 or 2 or 3) 3p/x


UGS KVL-00 3p/34-39

* min order [pcs]
** 1 Changeover, AC250V, 10/3A (ohmic/ind.)
*** Only in combination with ETI fuse-links with striker-pin; not in combination with frame-clamp or 2-wire-prism clamp.
**** For monitoring of fuse-links with live gripping lugs

Device adapters for 60 mm busbar

Type	Code No.	Description	
DA-60/250/3/FE-5	001696162	Adapter for MCCB - ETIBREAK EB2 250 and EB2S 250	1
DA-60/250/4/FE-5	001696163	Adapter for MCCB - ETIBREAK EB2 250 and EB2S 250	1

MCCB adapter

Note:
When ordering D-type fuse-bases and fuse-switch disconnectors, please also order fuse carriers and gauge pieces additionally. See D (page 745) and D0 (page 765) chapters of the catalogue.

D fuse-switch disconnector and fuse bases for 60mm busbar

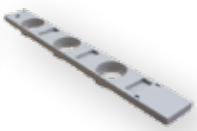
Type	Code No.	Description	
DVL-60/183	001696050	Fuse-switch disconnector for fuses D02	1
CHVL-60/183	001696152	CH-type fuse-switch disconnector	1
PTV-B D02-27/183-5	001696051	D02-type-fuse-bases 3-pole for push-in gauge ring, width 27mm	10
PTV-B DII-45/273-5	001696052	DII-type-fuse-bases 3-pole for push-in gauge ring, width 45mm	1
PTV-B DIII-54/333-5	001696053	DIII-type-fuse-bases 3-pole for push-in gauge ring, width 54mm	10
PTV-B DII-45/273S-5	001696054	DII type-fuse-bases 3-pole for push-in gauge ring, width 45mm	10
PTV-B DIII-54/333S-5	001696055	DIII type-fuse-bases 3-pole for push-in gauge ring, width 54mm	10
C-PTV-B D02-27/183/195	001696056	Protection cover width 27mm, height 195mm	10
C-PTV-B D02-36/183/195	001696057	Protection cover width 36mm, height 195mm	10
C-PTV-B DII-45/273/195	001696058	Protection cover width 45mm, height 195mm	10
C-PTV-B DIII-54/333/195	001696059	Protection cover width 54mm, height 195mm	10
C-PTV-B D02-27/183/230	001696060	Protection cover width 27mm, height 230mm	10
C-PTV-B D02-36/183/230	001696061	Protection cover width 36mm, height 230mm	10
C-PTV-B DII-45/273/230	001696062	Protection cover width 45mm, height 230mm	10
C-PTV-B DIII-54/333/230	001696063	Protection cover width 54mm, height 230mm	10
CL-PTV-B D/195	001696064	Side protection cover width 195 (for C-PTV-B … /195)	1
CL-PTV-B D/230	001696065	Side protection cover width 230 (za C-PTV-B … /230)	10
RPH-195	001696066	Protection cover	15
HP-DVL	001696067	Protection cover for DVL and CHVL, TOP/BOTTOM	2
RTP-D02-27/183	001696068	Reach-through protection, face top and bottom , 27mm width	20
RTP-D02-36/183	001696069	Reach-through protection, face top and bottom , 36mm width	20
RTP-DII-45/273	001696070	Reach-through protection, face top and bottom , 45mm width	10
RTP-DIII-54/333	001696071	Reach-through protection, face top and bottom , 54mm width	10
PRS-D02-27/183	001696072	Overreaching protection, face top and bottom, 27mm width	20
PRS-D02-36/183	001696073	Overreaching protection, face top and bottom, 36mm width	20
PRS-DII-45/273	001696074	Overreaching protection, face top and bottom, 45mm width	10
PRS-DIII-54/333	001696075	Overreaching protection, face top and bottom, 54mm width	10
RTP-RL/230	001696076	Reach-through protection lateral right and left	20
PRS-DVL	001696077	D-strips spacer module	10
HA5	001696111	Compensation piece for busbar thickness (to adapt busbar components to fit 10mm or 5mm busbar thickness)	100

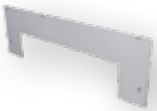
*HA5 is compensation piece which is intent to use for adaptation for example fuse-bases or fuse-switch disconnector from 10mm busbar thickness to 5mm busbar thickness. Each phase pole needs one compensation piece.

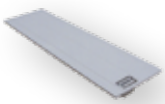
DVL-60/183
CHVL-60/183

PTV-B …

C-PTV-B … /195

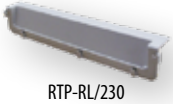

C-PTV-B … /230


CL-PTV-B D/195


RPH-195

RTP-D …

PRS-D …


RTP-RL/230

PSR_DVL

PRS-D …

HA5

Horizontal fuse-switch disconnector type KVL size 000, 00, 1, 2, 3 (60mm busbar)

Technical data (in accordance with IEC/EN 60947-3)

Size			000		00						
Technical Characteristics											
Rated operational voltage	Ue	V	500 a.c.	690 a.c.	400 a.c.	500 a.c.	690 a.c.	800 a.c.	1000 a.c.	250 d.c.	1000 d.c.
Rated operational current	Ie	A	125	80	160	160	160	63	160	160	160
Conv. free air thermal current with fuse-links, *	Ith	A	125		160						
Conv. free air thermal current with solid-links, *	Ith	A	250		210						
Rated frequency	f	Hz	40-60								
Rated insulation voltage	Ui	V	800 a.c.								
Total power loss (without fuse)	Pv	W	12		1P - 3 W, 3P - 9 W						
Power loss at 80% Ith (without fuse-links), **	Pv	W	8		1P - 1,9 W, 3P - 5,8 W						
Rated impulse withstand voltage	Uimp	kV	6		8						
Utilisation category***			AC-22B	AC-21B	AC-23B	AC-22B	AC-21B	AC-21B	AC-20B	DC-22B	DC-20B
Rated conditional short-circuit current, ***, ****		kA	80 (500 a.c.)		120 (500 a.c.), 100 (690 a.c.), 10 (800 a.c.), 35 (250 d.c.)						
Rated short-time withstand current	Icw	kA	5/1s								
Fuse links											
Size - DIN VDE 0636-2	-	-	000		000/00						
Max. rated current (gG)	In	A	125	80	160	160	160	63	160	160	160
Max. permissible power loss per fuse link	Pa	W	12								
Cable terminal											
Flat terminal-Screw					M8						
Tightening torque	Ma	Nm			12-15						
Clip terminal, Clamping cross-section		mm^2			(SP KVL00) Round conductor: 1,5-70 Cu , Strip conductor: 6 x 9 x 0,8 Cu						
Tightening torque	Ma	Nm			2,6						
Prism Clamp, Clamping cross-section		mm^2			(SP KVL00 P1); 10-70 Al/Cu , 35-95 Al/Cu						
Tightening torque	Ma	Nm			2,6						
Prism Clamp, Clamping cross-section		mm^2									
Tightening torque	Ma	Nm									
Frame clamp, Clamping cross-section		mm^2	1,5-50 Cu		1,5-95 Al/Cu , (Al 95: max. 125A)******						
Torque	Ma	Nm	4,5								
Degree of Protection, front side device											
Front cover close	-	-	IP20								
Front cover open	-	-	IP10								
With clamp- and lateral cover	-	-	IP30		IP2XC						
Operating condition											
Ambient temperature *****	Tamb	°C	-25 ... +55								
Operating condition	-	-	Continuous operation								
Mounting	-	-	vertical, horizontal								
Altitude	-	m	≤ 2000								
Pollution degree	-	-	2		3						
Overvoltage category	-	-	III		IV						
Endurance											
Mechanical cycles			1400		1600						
Electrical cycles			200								

* Mounting of several units in low voltage switchgear-combinations, please think about rated diversity factors acc. to DIN EN 61439.
** Reference value for replacement of devices acc. to DIN EN 61439-1 clause 10.10.4.2.
*** minimum distance to earthed, conductive parts: Lateral: 20mm/Above: 50mm
*** a) Lateral: 50mm/Above: 100mm
**** Type tested with NH fuse-links characteristic gG
***** 35°C Normal temperature, at 55°C with reduced operating current

Technical data (in accordance with IEC/EN 60947-3)

Size				0				1				
Technical Characteristics												
Rated operational voltage	Ue	V	400 AC	500 AC	690 AC	250 DC	400 AC	500 AC	690 AC	250 DC	440 DC#
Rated operational current	Ie	A	160	160	160	160	250	250	250	250	250
Conv. free air thermal current with fuse-links, *	Ith	A	160				250				
Conv. free air thermal current with solid-links, *	Ith	A	On request				On request				
Rated frequency	f	Hz	40-60	40-60	40-60	/	40-60	40-60	40-60	/	/
Rated insulation voltage	Ui	V	800 AC				800 AC				
Total power loss (without fuse)	Pv	W	1P - 5 W, 3P - 14 W				1P - 7 W, 3P - 22 W				
Power loss at 80% Ith (without fuse-links), **	Pv	W	1P - 3 W, 3P - 9 W				1P - 4,7 W, 3P - 14,1 W				
Rated impulse withstand voltage	Uimp	kV	8				8				
Utilisation category***			AC-23B	AC-22B	AC-21B	DC-22B	AC-23B	AC-22B	AC-21B	DC-22B	DC-21B
Rated conditional short-circuit current, ***, ****		kA	120 (500V), 100 (690V)				120 (500V), 100 (690V)				
Rated short-time withstand current	Icw	kA	5/1s				8,6/1s				
Fuse links											
Size - DIN VDE 0636-2	-	-	000/00				1				
Max. rated current (gG)	In	A	160	160	160	160	250	250	250	250	250
Max. permissible power loss per fuse link	Pa	W	12				23				
Cable terminal											
Flat terminal-Screw			M8				M10				
Tightening torque	Ma	Nm	12-15				30-35				
Clip terminal, Clamping cross-section		mm^2	Round conductor: 1,5-70 Cu, Laminated copper bar: 6 x 9 x 0,8 Cu				Round conductor: 2,5-150 Cu, Laminated copper bar: 6 x 16 x 0,8 Cu				
Tightening torque	Ma	Nm	2,6				9,5				
Prism Clamp, Clamping cross-section		mm^2	(SP KVL00 P1); 10-70 Al/Cu , 35-95 Al/Cu				(SP KVL1 P1); 10-150 Al/Cu				
Tightening torque	Ma	Nm	(SP KVL00 P1); 2,6				(SP KVL1 P1); 4,5				
Prism Clamp, Clamping cross-section		mm^2					(SP KVL1 P2); 2 x (10-150) Al/Cu				
Tightening torque	Ma	Nm					(SP KVL1 P2); 4,5				
Frame clamp, Clamping cross-section		mm^2	1,5-95 Al/Cu , (Al 95: max. 125A)				35-150 Al/Cu				
Torque	Ma	Nm	4,5				12				
Degree of Protection, front side device											
Front cover close	-	-	IP20				IP20				
Front cover open	-	-	IP10				IP10				
With clamp- and lateral cover	-	-	IP2XC				IP2XC				
Operating condition											
Ambient temperature *****	Tamb	°C	-25 ... +55				-25 ... +55				
Operating condition	-	-	Continuous operation								
Mounting	-	-	vertical, horizontal								
Altitude	-	m	≤ 2000								
Pollution degree	-	-	3								
Overvoltage category	-	-	III				III				

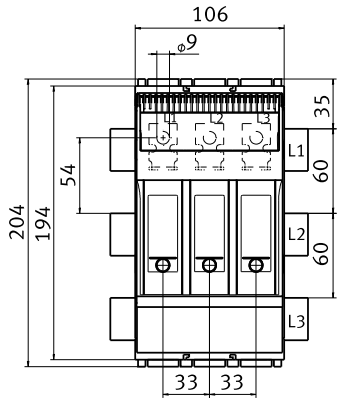
* Mounting of several units in low voltage switchgear-combinations, please think about rated diversity factors acc. to DIN EN 61439.
** Reference value for replacement of devices acc. to DIN EN 61439-1 clause 10.10.4.2.
*** minimum distance to earthed, conductive parts: Lateral: 20mm/Above: 50mm
*** a) Lateral: 50mm/Above: 100mm
**** Type tested with NH fuse-links characteristic gG
***** 35°C Normal temperature, at 55°C with reduced operating current
# 3p version only

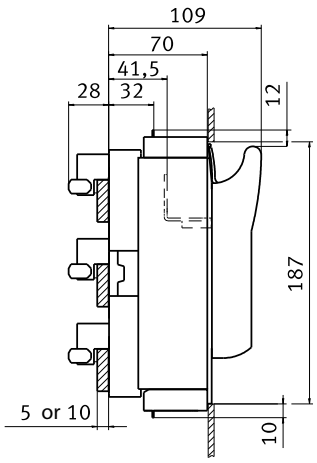
Technical data (in accordance with IEC/EN 60947-3)

Size			2					3				
Technical Characteristics												
Rated operational voltage	Ue	V	400 AC	500 AC	690 AC	250 DC	440 DC	400 AC	500 AC	690 AC	250 DC	440 DC#
Rated operational current	Ie	A	400	400	400	400	400	630	630	630	630	630
Conv. free air thermal current with fuse-links, *	Ith	A	400					630				
Conv. free air thermal current with solid-links, *	Ith	A	On request					On request				
Rated frequency	f	Hz	40-60	40-60	40-60	/	/	40-60	40-60	40-60	/	/
Rated insulation voltage	Ui	V	1000 AC					1000 AC				
Total power loss (without fuse)	Pv	W	1P - 12 W, 3P - 36 W					1P - 29 W, 3P - 86 W				
Power loss at 80% Ith (without fuse-links), **	Pv	W	1P - 7,7 W, 3P - 23 W					1P - 18,3 W, 3P - 55 W				
Rated impulse withstand voltage	Uimp	kV	8					8				
Utilisation category***			AC-23B	AC-22B	AC-21B	DC-22B	DC-22B	AC-23B	AC-22B	AC-21B	DC-22B	DC-22B
Rated conditional short-circuit current, ***, ****		kA	120 (500V), 100 (690V)					120 (500V), 100 (690V)				
Rated short-time withstand current	Icw	kA	15/1s					15/1s				
Fuse links												
Size - DIN VDE 0636-2	-	-	2					3				
Max. rated current (gG)	In	A	400	400	400	400	400	630	630	630	630	630
Max. permissible power loss per fuse link	Pa	W	34					48				
Cable terminal												
Flat terminal-Screw			M10					M10 / M12				
Tightening torque	Ma	Nm	30-35					30-35				
Clip terminal, Clamping cross-section		mm^2	Round conductor: 25-150 Cu, Laminated copper bar: 10 x 16 x 0,8 Cu					Laminated copper bar: 11 x 21 x 1 Cu				
Tightening torque	Ma	Nm	23					23				
Prism Clamp, Clamping cross-section		mm^2	(SP KVL2 P1); 120-240 Al/Cu					(SP KVL3 P1); 120-300 Al/Cu				
Tightening torque	Ma	Nm	(SP KVL2 P1); 11					(SP KVL3 P1); 11				
Prism Clamp, Clamping cross-section		mm^2	(SP KVL2 P2); 2 x (120-150) Al/Cu					(SP KVL3 P2); 2 x (120-240) Al/Cu				
Tightening torque	Ma	Nm	(SP KVL2 P2); 11					(SP KVL3 P2); 11				
Frame clamp, Clamping cross-section		mm^2	95 -300 Al/Cu					95-300 Al/Cu				
Torque	Ma	Nm	20					20				
Degree of Protection, front side device												
Front cover close	-	-	IP20					IP20				
Front cover open	-	-	IP10					IP10				
With clamp- and lateral cover	-	-	IP2XC					IP2XC				
Operating condition												
Ambient temperature *****	Tamb	°C	-25 ... +55					-25 ... +55				
Operating condition	-	-	Continuous operation									
Mounting	-	-	vertical, horizontal									
Altitude	-	m	≤ 2000									
Pollution degree	-	-	3									
Overvoltage category	-	-	III					III				

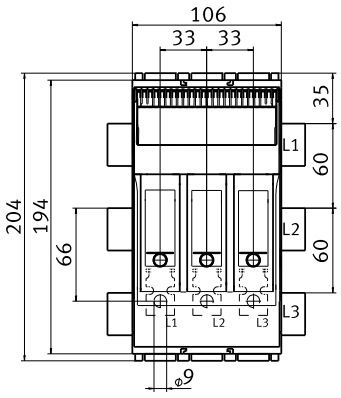
* Mounting of several units in low voltage switchgear-combinations, please think about rated diversity factors acc. to DIN EN 61439.
** Reference value for replacement of devices acc. to DIN EN 61439-1 clause 10.10.4.2.
*** minimum distance to earthed, conductive parts: Lateral: 20mm/Above: 50mm
*** a) Lateral: 50mm/Above: 100mm
**** Type tested with NH fuse-links characteristic gG
***** 35°C Normal temperature, at 55°C with reduced operating current
# 3p version only

Load cable terminal at topside



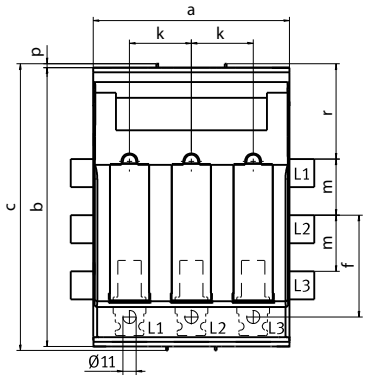


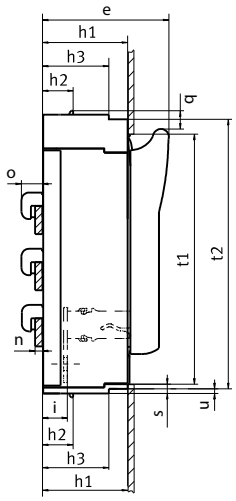
Load cable terminal at bottom side



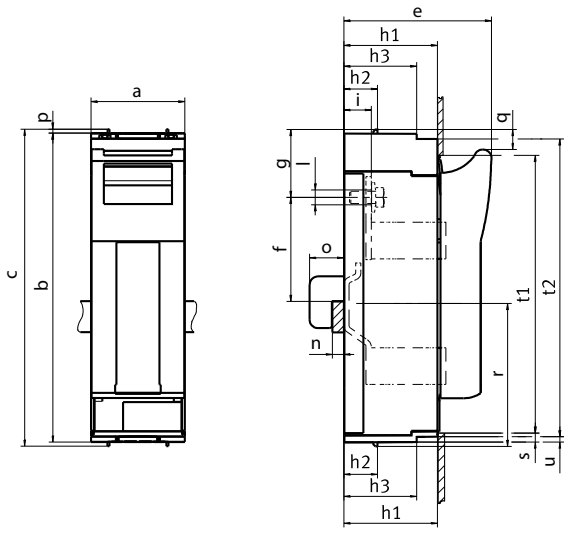
KVL-B-00 3p M8-M8
KVL-B-00 3p BC95-BC95
KVL-B/FT-00 3p M8-M8

Load cable terminal at bottom side

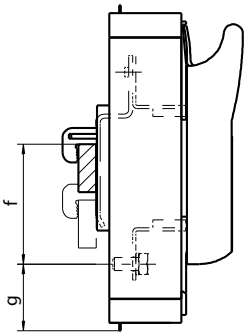




	a	b	c	e	f	h1	h2	h3	i	k	l	m	n	o	p	q	r	s	t1	t2	u
KVL-B-1 3p M10-M10 KVL-B/FT-1 3p M10-M10 TOP KVL-B/FT-1 3p M10-M10 BOTTOM	184	298	306	117	98	70	32	–	25,5	58	Ø10,5	60	4-10	25	4	19	102	5	272	–	–
KVL-B-2 3p M10-M10 KVL-B/FT-2 3p M10-M10 TOP KVL-B/FT-2 3p M10-M10 BOTTOM	210	298	306	135	109	90	32	70	26,5	66	Ø14	60	4-10	25	4	19	102	10	268	289	5
KVL-B-3 3p M10-M10	250	298	306	143	109	90	32	70	26,5	82	Ø14	60	4-10	25	4	19	102	10	268	289	5



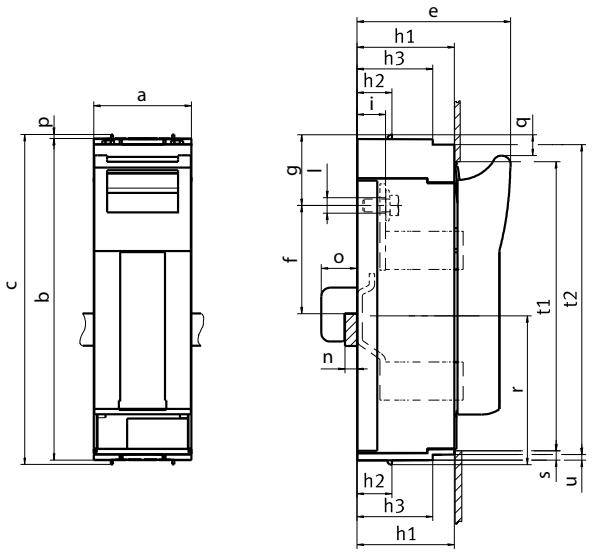
Load cable terminal at topside (Ao)



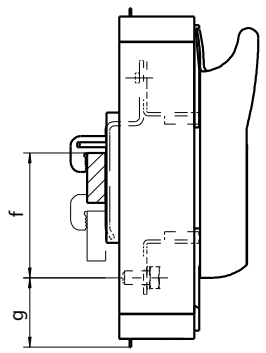
Load cable terminal at bottom side (Au)

	a	b	c	e	f-Ao	f-Au	g-Ao	g-Au	h1	h2	i	l	n	o	p	q	r	s	t1
KVL-B/SF-00 1p M8-M8 KVL-B/CF-00 1p M8-M8	50	195	204	92	45,50,55 ... 75	75,70,65 ... 45	42	42	53	15	24,5	Ø9	4-10	22	4,5	12	102	5	187

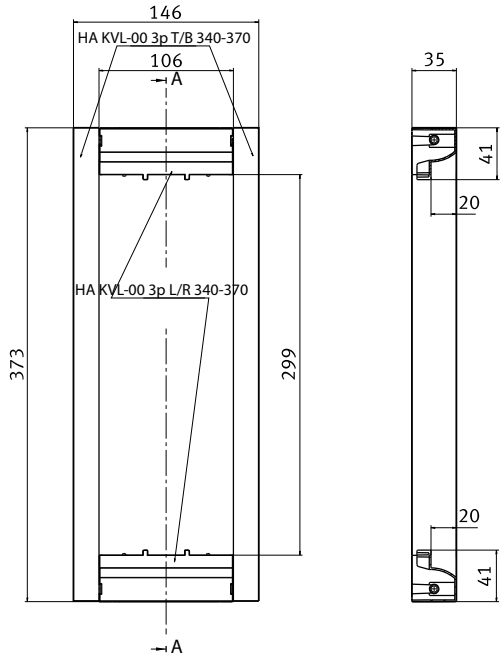
Load cable terminal at topside (Ao)

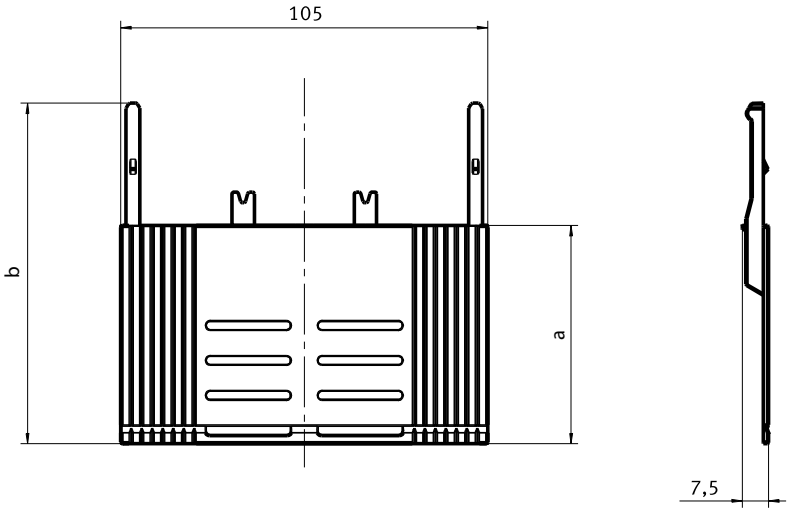


Load cable terminal at bottom side (Au)

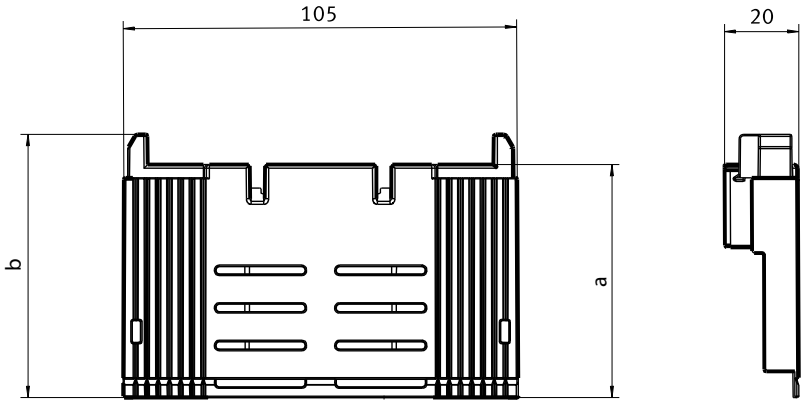


	a	b	c	e	f-Ao	f-Au	g-Ao	g-Au	h1	h2	h3	i	l	n	o	p	q	r	s	t1	t2	u
KVL-B/SF-1 1p M10-M10	69	298	306	117	93	93	76	44	70	32	–	25,5	Ø10,5	5-10	33	4	19	138	5	272	–	–
KVL-B/SF-3 1p M10-M10	91	298	306	143	100	104	66	36	90	32	70	26,5	Ø14	5-10	33	4	19	138	10	268	289	5

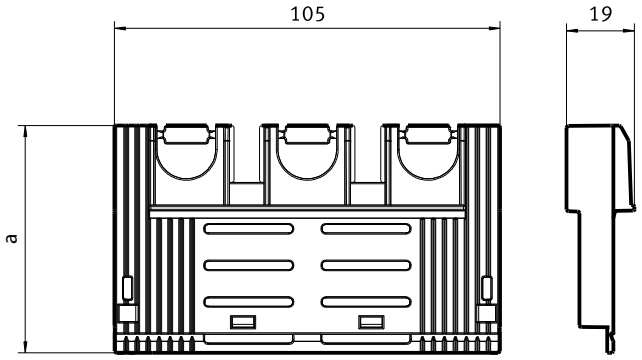




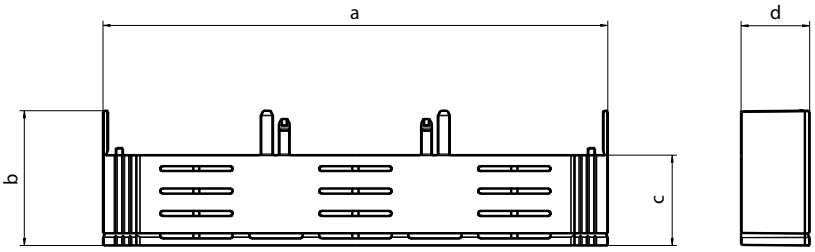
	a	b
PRSEXT KVL-00 3p/34-39	62,5	97,5
PRSEXT KVL-00 3p/32	55,5	90,5



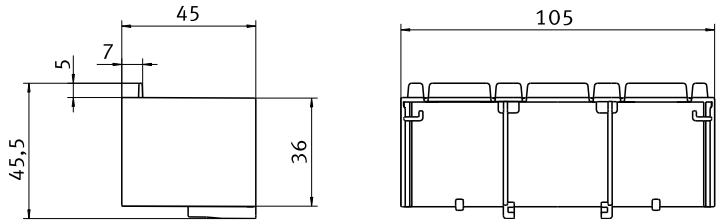
	a	b
UGS KVL-00 3p/34-39	62	70
UGS KVL-00 3p/32	55	63



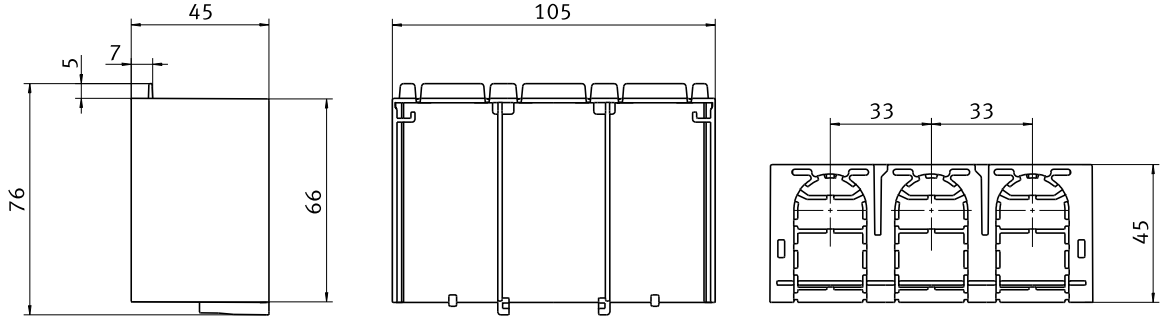
	a
UGS KVL-00 3p/R95T/34-39	62
UGS KVL-00 3p/R95T/32	55

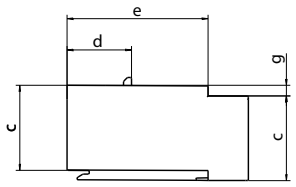


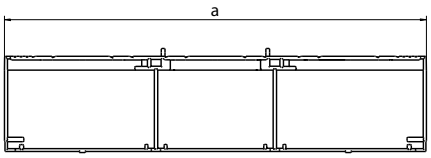
	a	b	c	d
UGS KVL-1 3p/32	184	51,5	30,5	16
UGS KVL-1 3p/34-39	184	58,5	37,5	16
UGS KVL-2 3p/32	210	49	30,5	28,5
UGS KVL-2 3p/39-34	210	56	37,5	28,5
UGS KVL-3 3p/32	250	49	30,5	28,5
UGS KVL-3 3p/39-34	250	56	37,5	28,5



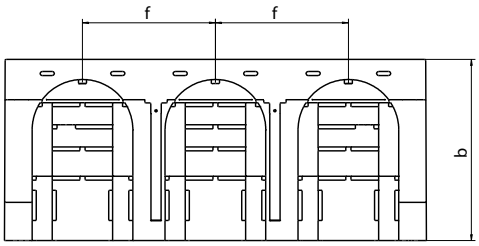
PRS KVL-00 3p S
PRS KVL-00 3p L



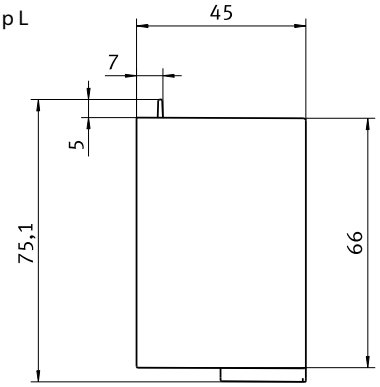


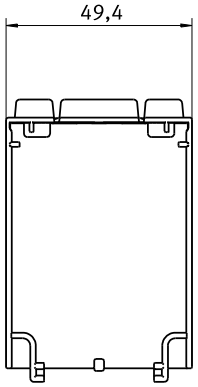


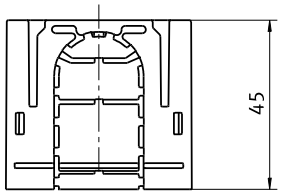
	a	b	c	d	e	f	g
PRS KVL-1 3p	184	70	42	32	–	58	–
PRS KVL-2 3p	210	90	42	32	70	66	5
PRS KVL-3 3p	250	90	42	32	70	82	5



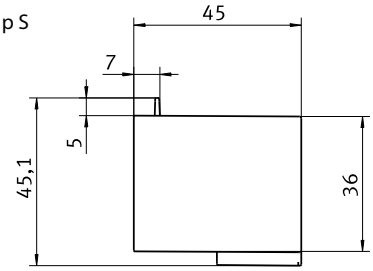
PRS KVL-00 1p L

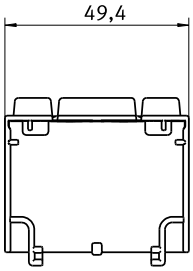


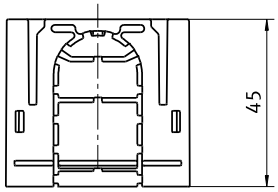




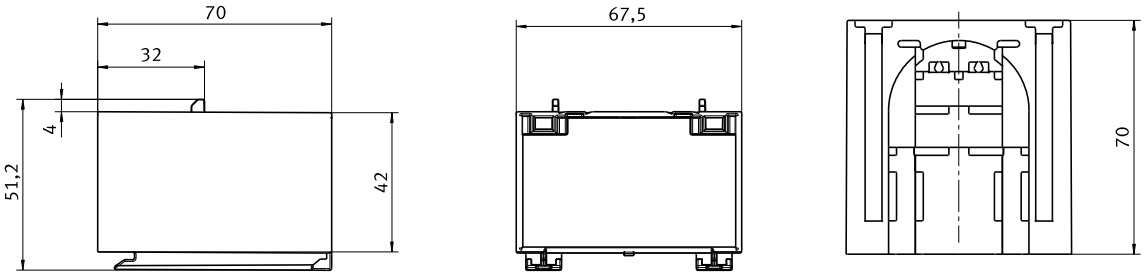
PRS KVL-00 1p S



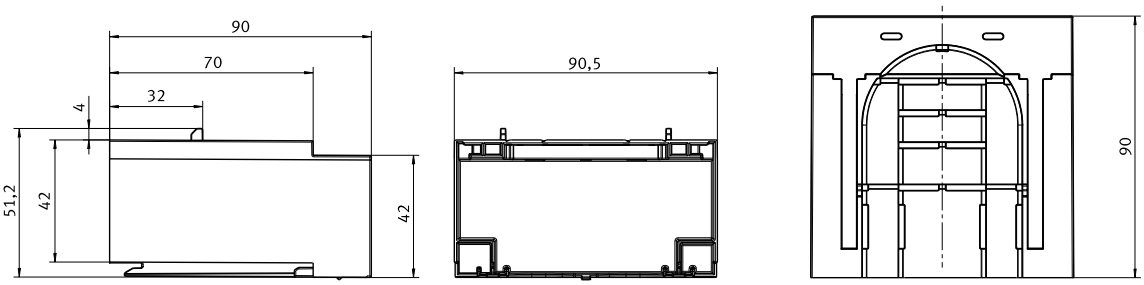


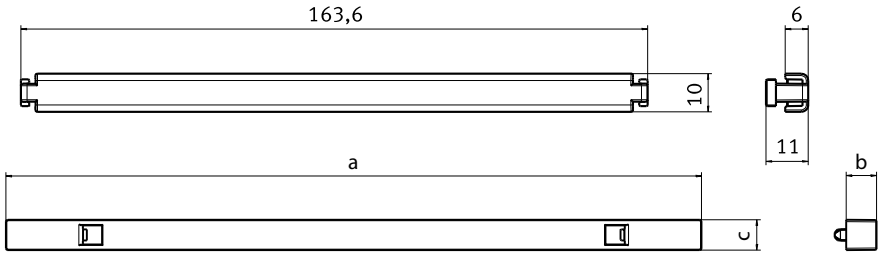


PRS KVL-1 1p

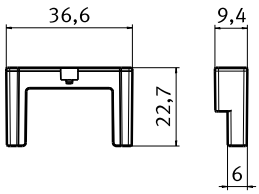


PRS KVL-3 1p





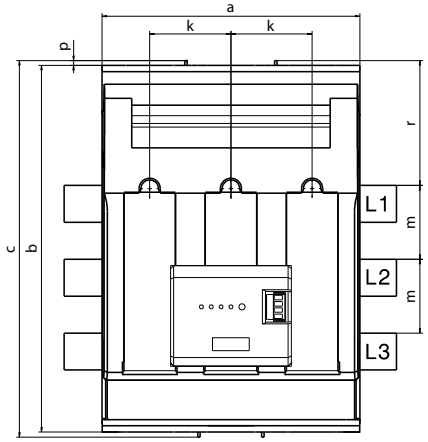
	a	b	c	d	d	d	d	e
BLA KVL-00 top/bottom	183	8	8	32	60	70	–	60
BLAL KVL-00 lateral	183	8	8	32	60	70	90	60
BLA KVL-123	183	8	8	32	60	70	90	60

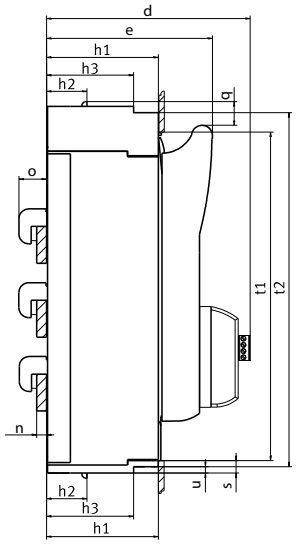


Technical data - Electronic fuse monitoring unit EFMU KVL

Technical Characteristics			
Rated operational voltage	Ue	V	AC400-500 (+/-10%)
Power supply			Self-powered
Input power		VA	1,5
Overvoltage category			230/400 V : III , (4kV) 500 V : II , (4kV)
Rated frequency	f	Hz	50-60
Input resistance			>1k Ohm/V
Output channels			
Relay output			1NC/1NO
Maximum voltage		V	AC250/DC24
Maximum switching current		A	1
General data			
Operation indicator			1 LED green
Alarm indicator			3 LED (F1, F2, F3) red
Functional test			Test key for relay + LEDs
EMC			IEC 61000-4-5/IEC 61000-4-4
Degree of protection			IP 3X
Operating conditions			
Ambient temperature	Tamb	°C	-5 ... +55

No single detection of parallel connected fuses!





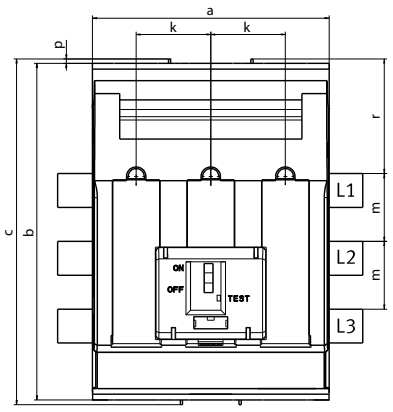
	a	b	c	d	e	h1	h2	h3	k	m	n	o	p	q	r	s	t1	t2	u
KVL-B-1 3p M10-M10 + EFMU KVL-1 3p KVL-B/FT-1 3p M10-M10 TOP + EFMU KVL-1 3p KVL-B/FT-1 3p M10-M10 BOTTOM + EFMU KVL-1 3p	184	298	306	148	117	70	32	–	58	60	4-10	25	4	19	102	5	272	–	–
KVL-B-2 3p M10-M10 + EFMU KVL-2 3p KVL-B/FT-2 3p M10-M10 TOP + EFMU KVL-2 3p KVL-B/FT-2 3p M10-M10 BOTTOM + EFMU KVL-2 3p	210	298	306	165	135	90	32	70	66	60	4-10	25	4	19	102	10	268	289	5
KVL-B-3 3p M10-M10 + EFMU KVL-3 3p	250	298	306	173	143	90	32	70	82	60	4-10	25	4	19	102	10	268	289	5

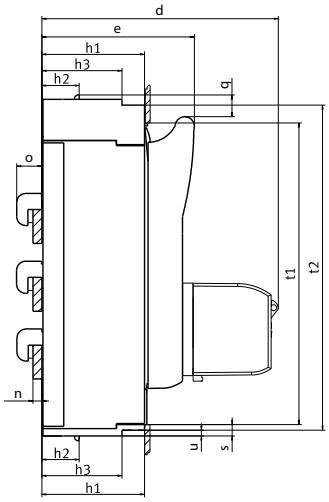
Technical data - Electromechanical fuse monitoring unit MPFMU KVL

Technical Characteristics			
Rated operational voltage	Ue	V	AC24…690 DC24…250
Rated short-circuit breaking capacity	Icn	kA	100
Overvoltage category			230/400V : III (4kV) 500V : II (4kV)
Output channels			
Relay output			1NC/1NO
Maximium voltage		V	AC230/DC24
Maximum switching current		A	2,5A...AC-12 / 1A...DC-13

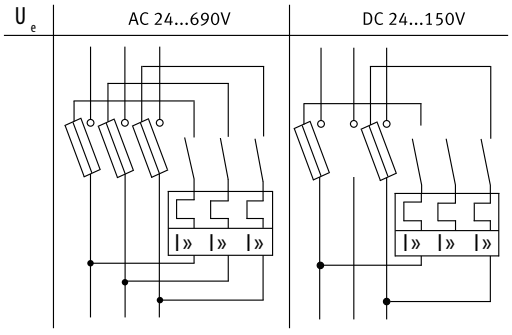
No single detection of parallel connected fuses!

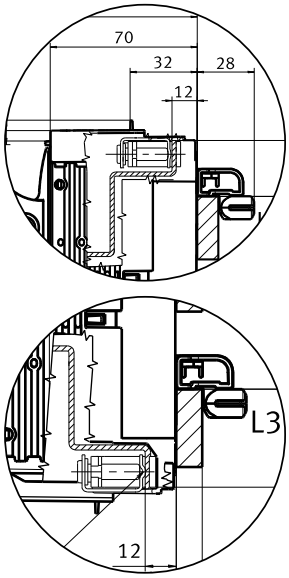
Safety notes
May not be used for safety monitoring in feeders with power control units where, in the event of a fault, it is possible for a DC feedback of >300V (or >600V where 3 current paths are connected in parallel) to occur.
If equipment has to be disconnected on the load side of the fuses to be monitored, make sure that no parasitic voltages can arise in the circuit-breaker that is connected in parallel with the fuse-monitoring device.

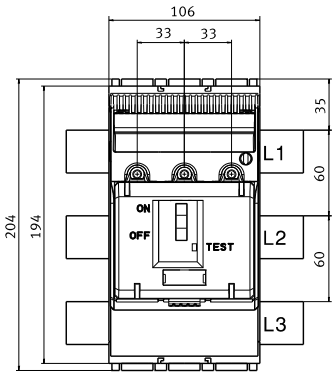


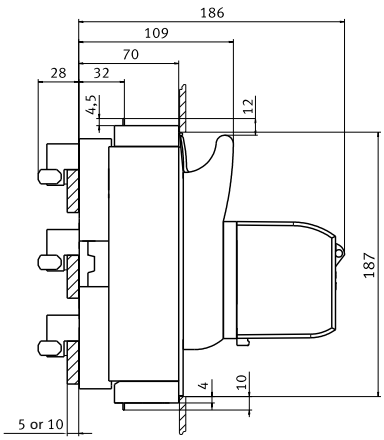


	a	b	c	d	e	h1	h2	h3	k	m	n	o	p	q	r	s
KVL-B-1 3p M10-M10 + MPFMU KVL-1 3p KVL-B/FT-1 3p M10-M10 TOP + MPFMU KVL-1 3p KVL-B/FT-1 3p M10-M10 BOTTOM + MPFMU KVL-1 3p	184	298	306	192	117	70	32	–	58	60	4-10	25	4	19	102	5
KVL-B-2 3p M10-M10 + MPFMU KVL-2 3p KVL-B/FT-2 3p M10-M10 TOP + MPFMU KVL-2 3p KVL-B/FT-2 3p M10-M10 BOTTOM + EFMU KVL-2 3p	210	298	306	209	135	90	32	70	66	60	4-10	25	4	19	102	10
KVL-B-3 3p M10-M10 + MPFMU KVL-3 3p	250	298	306	217	143	90	32	70	82	60	4-10	25	4	19	102	10







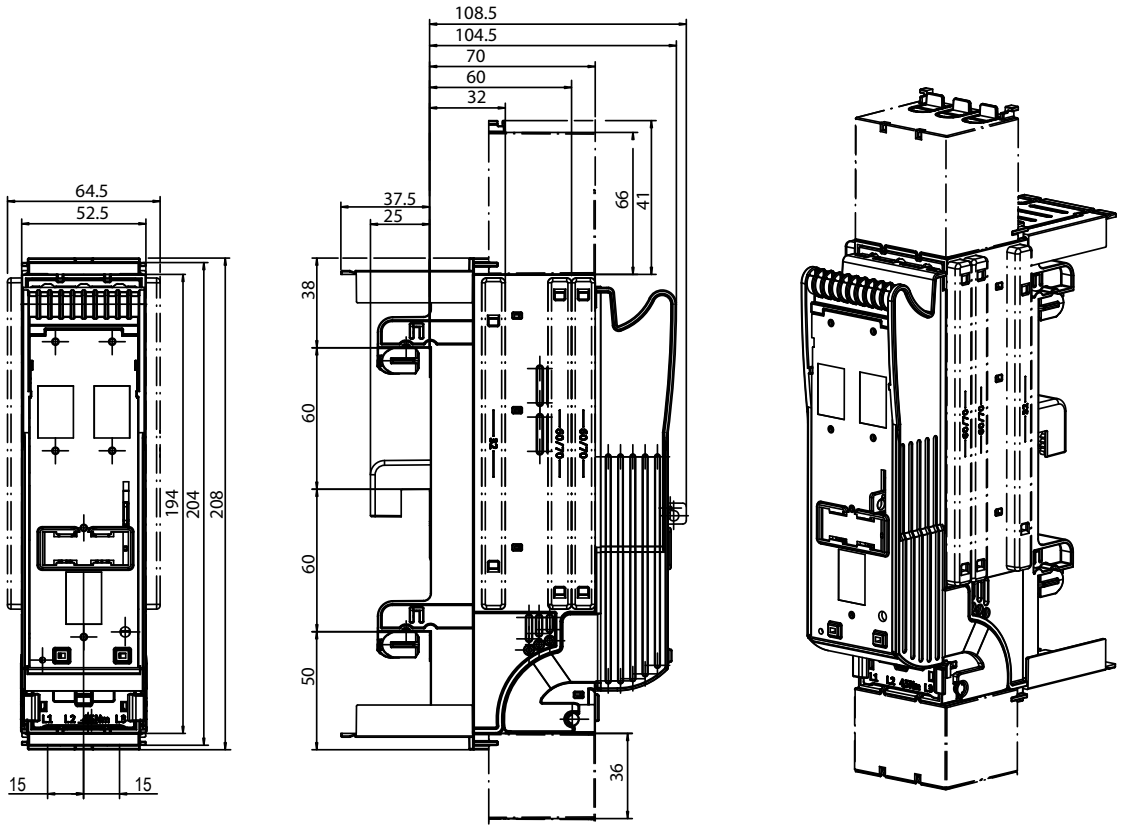


KVL-B-00 3p M8-M8 + MPFMU KVL-00 3p
KVL-B-00 3p BC95-BC95 + MPFMU KVL-00 3p
KVL-B/FT-00 3p M8-M8 + MPFMU KVL-00 3p

Technical data (in accordance with IEC/EN 60947-3)

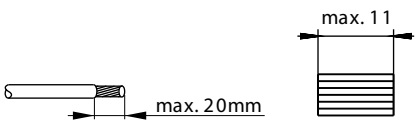
Size			000		
Technical Characteristics					
Rated operational voltage	Ue	V	400 AC	500 AC	690 AC
Rated operational current	Ie	A	125	125	80
Conv. free air thermal current with fuse-links, *	Ith	A	125		
Rated frequency	f	Hz	50	50	50
Rated insulation voltage	Ui	V	800 AC		
Total power loss (without fuse)	Pv	W	12 W		
Power loss at 80% Ith (without fuse-links), **	Pv	W	8 W		
Rated impulse withstand voltage	Uimp	kV	6		
Utilisation category***			AC-22B	AC-22B	AC-21B
Rated conditional short-circuit current, ***, ****		kA	80 (500V), 80 (690V)		
Rated short-time withstand current	Icw	kA	5/1s		
Fuse links					
Size - DIN VDE 0636-2	-	-	000		
Max. rated current (gG)	In	A	125	125	125
Max. permissible power loss per fuse link	Pa	W	9		
Cable terminal					
Clamping cross-section		mm^2	1,5 - 50 Cu		
Tightening torque	Ma	Nm	4,5		
Degree of Protection, front side device					
Front cover close	-	-	IP30		
Front cover open	-	-	IP10		
Operating condition					
Ambient temperature *****	Tamb	°C	-25 ... +55		
Operating condition	-	-	Continuous operation		
Mounting	-	-	vertical, horizontal		
Altitude	-	m	≤ 2000		
Pollution degree	-	-	2		
Overvoltage category	-	-	III		

* Mounting of several units in low voltage switchgear-combinations, please think about rated diversity factors acc. to DIN EN 61439.
** Reference value for replacement of devices acc. to DIN EN 61439-1 clause 10.10.4.2.
*** minimum distance to earthed, conductive parts: Lateral: 20mm/Above: 50mm
*** a) Lateral: 50mm/Above: 100mm
**** Type tested with NH fuse-links characteristic gG
***** 35°C Normal temperature, at 55°C with reduced operating current



KVL-B-000 3p F50 Bottom / Top

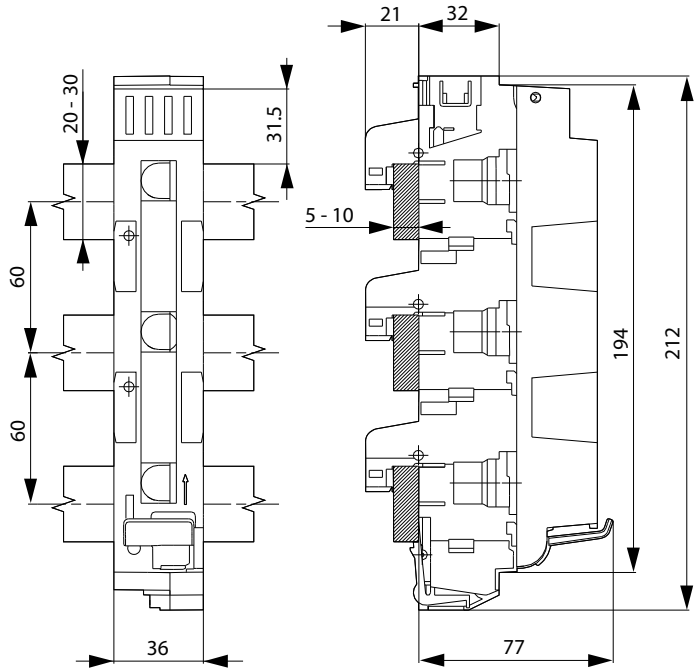
Terminal type	Type	Tightening torque	Clamping range	Size flat strip
Screw terminal M8	F-M8x16	12 - 15 Nm	Cable lugs acc. to DIN 46234 and 46235	
Clip terminal	S00	2,6 Nm	1,5 - 70 mm^2 Cu	Busbars max. 9x8 flexible flat strip max. 6x9x0,8
Prism clamp	P0070	2,6 Nm	10 - 70 mm^2 Al/Cu	
Elevator terminal	F57	2,6 Nm	1,5 - 70 mm^2 Cu	



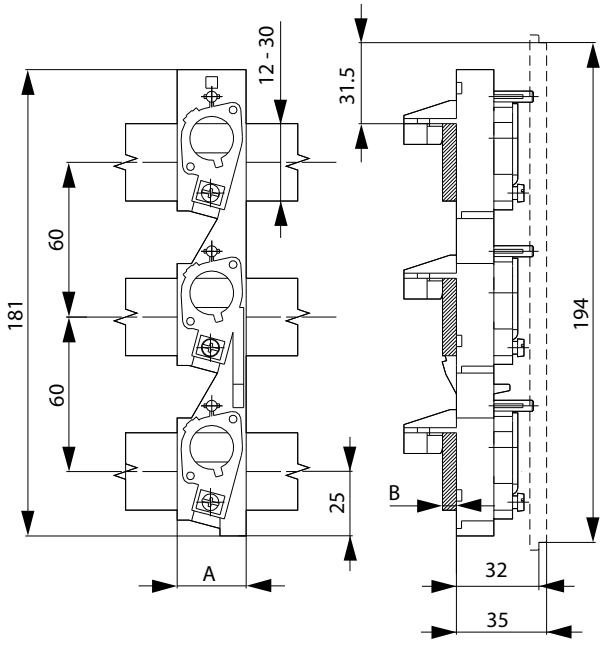
Technical data (in accordance with IEC/EN 60947-3, VDE 0636 part 301)

Technical Specifications			DVL-60/183
Electrical characteristics			
Rated operating voltage	Ue	V	400 AC
Rated operating current	Ie	A	63
Conv. Thermal current with fuse links	Ith	A	63
Rated frequency	–	Hz	40-60
Rated insulating voltage	Ui	V	400 AC
Rated conditional short-circuit current	–	kAeff	50
Utilisation category	–	–	AC-23B
Rated making capacity	–	A	630
Rated breaking capacity	–	A	630
Rated impulse voltage	Uimp	kV	8
Electrical lifetime (switching cycles)	–	–	300
Total power dissipation (without fuse)	Pv	W	8
Fuselinks			
Size in according to DIN 49522, 49515	–	–	D01, D02
Max. rated current (gI/gG)	In	A	63
Max. permissible power dissipation (without fuse)	Pv	W	55
Mehanical parameters			
Mechanical lifetime (switching cycles)	–	–	1700
Busbar spacing (only 3-pole)	–	mm	60
Busbar thickness	–	mm	5 & 10
Busbar width	–	mm	20 & 30
Cable terminal			
Terminal, clamping range	–	mm^2	0,75-25
Degree of protection			
Frontside, operating state	–	–	IP20
Front cover open	–	–	IP10
Operating condition			
Ambient temperature [1]	Tu	°C	-25 ... 55
Operating condition	–	–	**Uninterrupted duty**
Mounting	–	–	**Vertical, horizontal**
Altitude	–	m	< 2000
Pollution degree	–	–	3
Overvoltage category	–	–	III

[1] 35°C Normal temperature, 55°C with reduced current

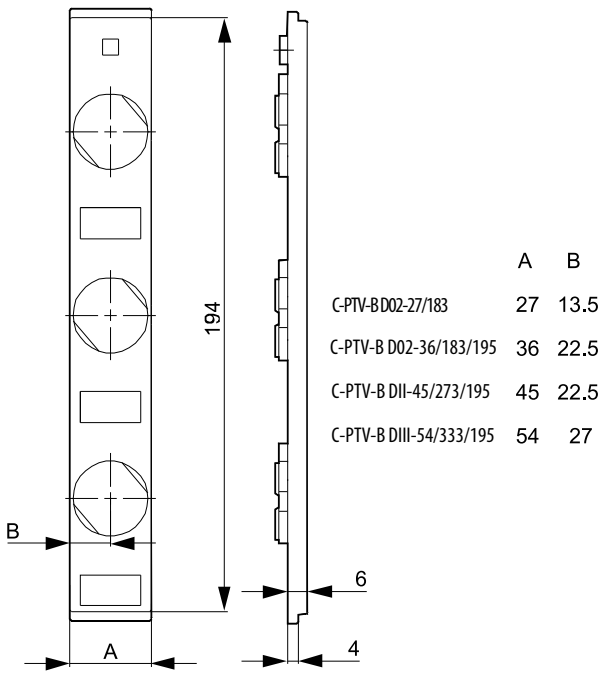


DVL-60/183



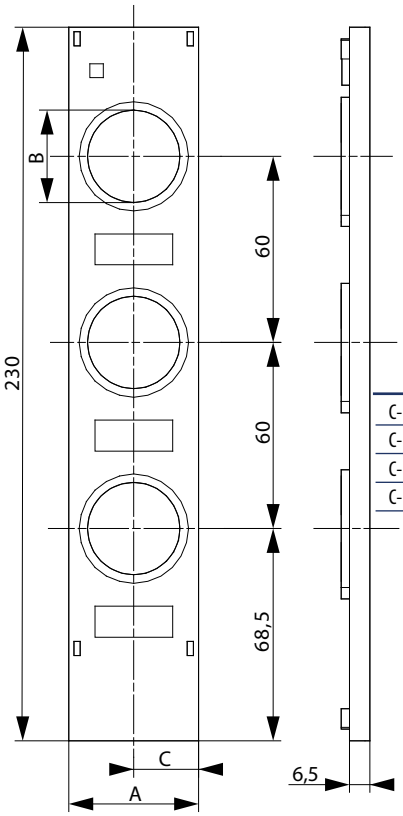
PTV-B D02-27/183-5	27	5
PTV-B DII-45/273-5	45	5
PTV-B DIII-54/333-5	54	5

PTV-B D



	A	B
C-PTV-B D02-27/183	27	13.5
C-PTV-B D02-36/183/195	36	22.5
C-PTV-B DII-45/273/195	45	22.5
C-PTV-B DIII-54/333/195	54	27

C-PTV-B D…195



C-PTV-B D02-27/183/230	27	21	13,5
C-PTV-B D02-36/183/230	36	21	13,5
C-PTV-B DII-45/273/230	45	30	22,5
C-PTV-B DIII-54/333/230	54	36	27

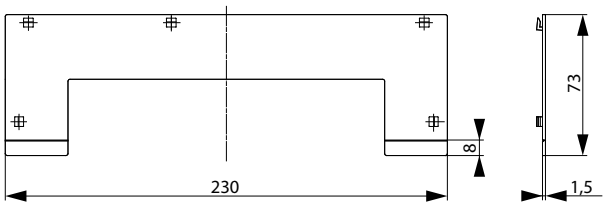
C-PTV-B D…230

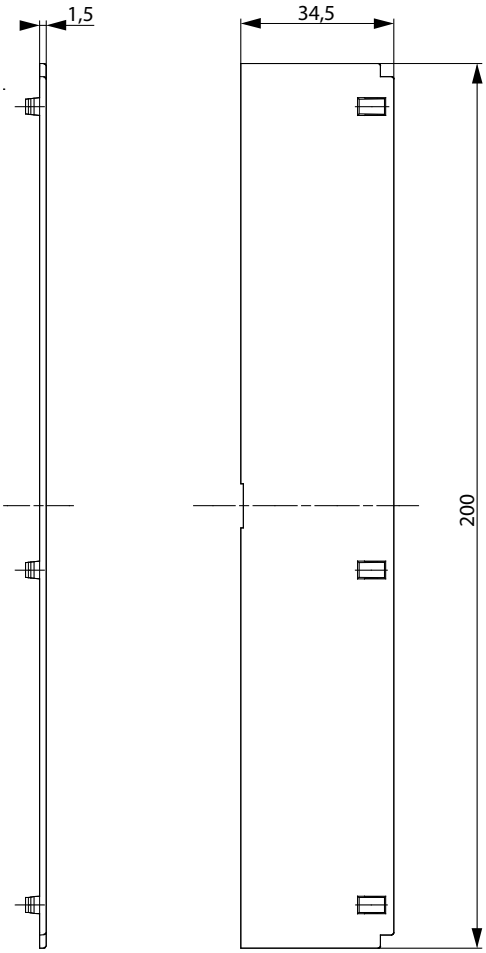
Technical data of strip-type D-fuse bases (in according to IEC/EN 60269-1, VDE 0636 part 301)

Technical Specifications			PTV-B D02	PTV-B DII	PTV-B DIII
Electrical characteristics					
Rated operating voltage	Ue	V	AC400	AC500	AC690
Rated operating current	Ie	A	63	25	63
Thermal current with fuse links	Ith	A	63	25	63
Rated frequency	–	Hz	40-60	40-60	40-60
Rated insulating voltage	Ui	V	AC400	AC500	AC690
Rated conditional short-circuit current	–	kAe	50	50	50
Fuselinks					
Size in according to DIN 49522, 49515	–	–	D02	DII	DIII
Max. rated current (gI/gG)	In	A	63	25	63
Max. permissible power dissipation (without fuse)	Pv	W	5,5	4	7
Mehanical parameters					
Busbar spacing (only 3-pole)	–	mm	60	60	60
Busbar thickness	–	mm	5 & 10	5 & 10	5 & 10
Busbar width	–	mm	12, 20, 30	12, 20, 30	12, 20, 30
Cable terminal					
Terminal, clamping range	–	mm^2	0,75-25	0,75-25	0,75-25
Degree of protection					
Frontside, operating state	–	–	IP20	IP20	IP20
Operating conditions					
Ambient temperature [1]	Tu	°C	-25 ... +55		
Operating condition	–	–	Uninterrupted duty		
Mounting	–	–	Vertical, horizontal		
Altitude	–	m	< 2000		
Pollution degree	–	–	3		
Overvoltage categorie	–	–	III		

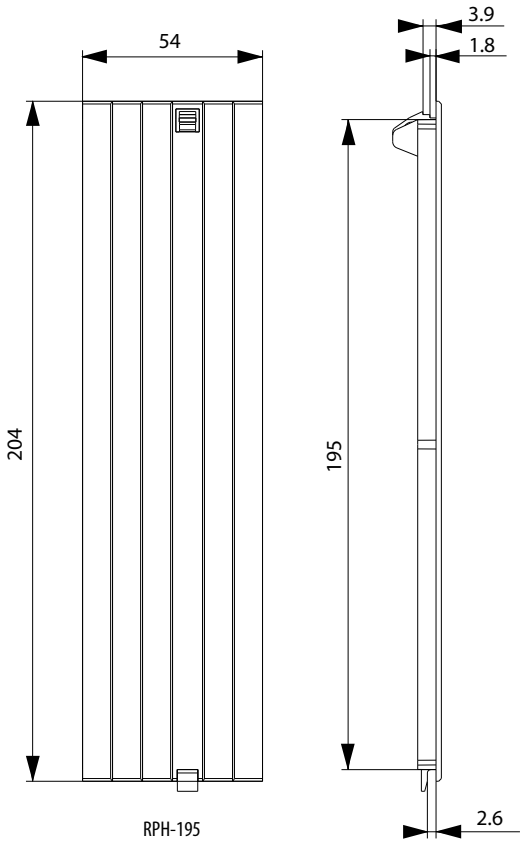
[1] 35°C Normal temperature, 55°C with reduced current

CL-PTV-B D/230

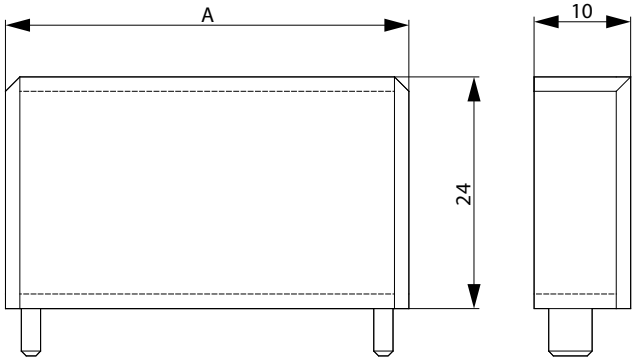




CL-PTV-B D/195

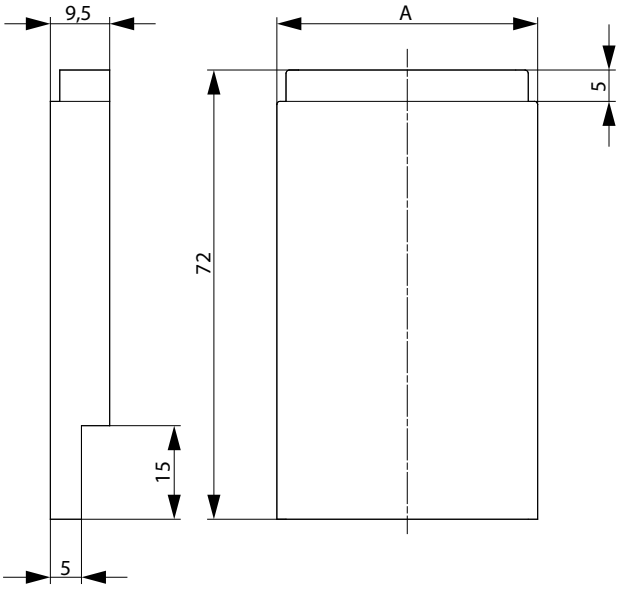


RPH-195



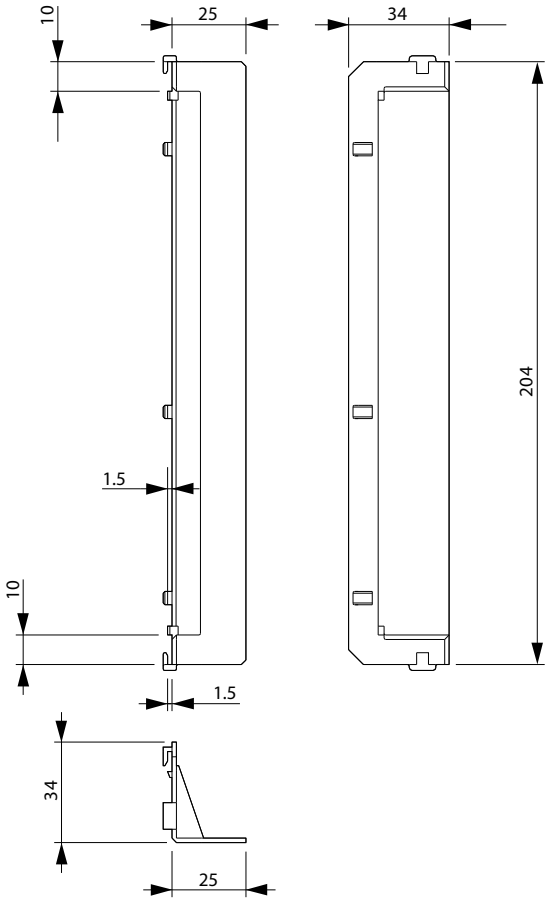
RTP-D02-27/183	27
RTP-D02-36/183	36
RTP-DII-45/273	45
RTP-DIII-54/333	54

RTP-RL/

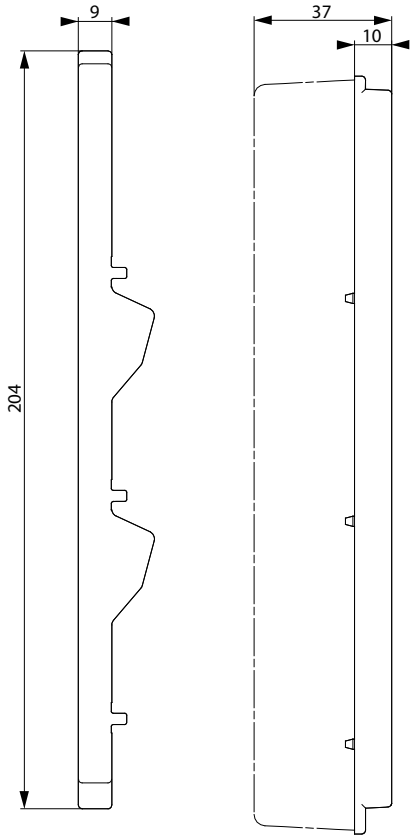


RTP-D02-27/183	27
RTP-D02-36/183	36
RTP-DII-45/273	45
RTP-DIII-54/333	54

PRS-D . . . /183



RTP-RL/230



PRS-DVL

DA

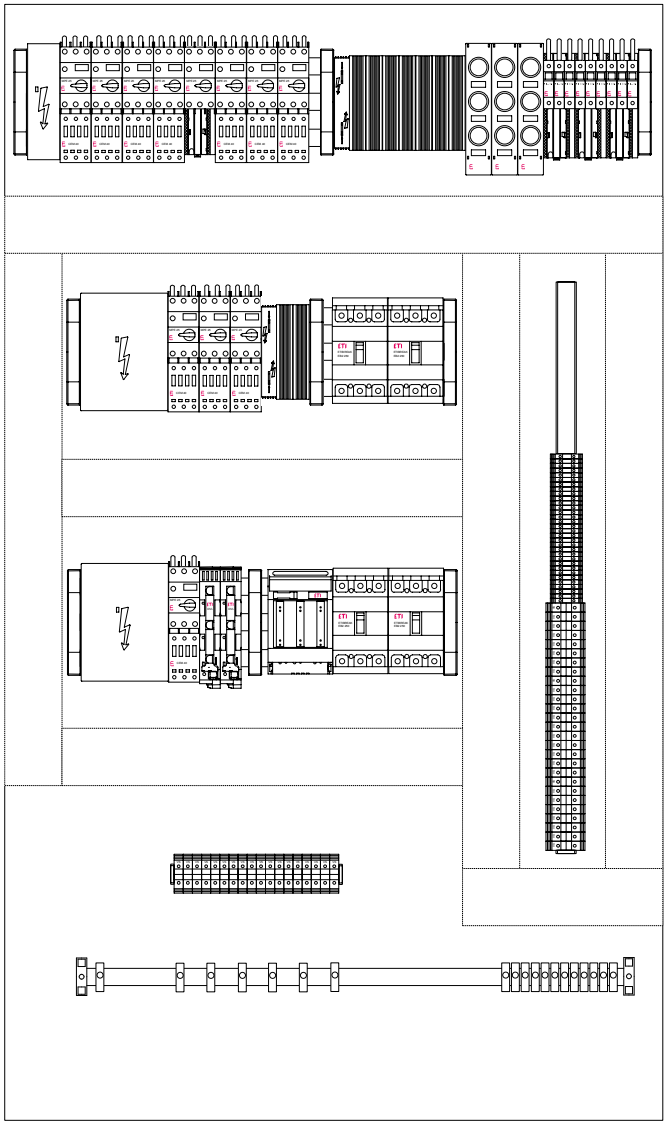
Benefits using ETI busbar 60mm

Poor visibility of connections without orderliness links.

Reduced number of connections (less power supply terminals)

Low integration of elements

Implementation with the busbar system provides several benefits



ETIBOX

Free-Standing Cable Distribution Cabinets

Distribution Boards DIDO **968**

SB (S Box) Double Insulation Enclosures IP66, IK10 **991**

Polyester Enclosures EPC (IP66) **994**

Metal Enclosures GT Type, IP66 **1003**

Free-Standing Cable Distribution Cabinets KVR **1010**

Accessories **1016**

*Metal modular enclosures system Solid GSX is in a separate catalogue

/etigroup

SWITCH TO A SAFE FUTURE

ETIBOX Distribution Boards DIDO

Home distribution board DIDO-E

Rated current	Rated voltage	Degree of protection
63 A	**400 V**	**IP 40**

- **Included special marking stickers with symbols most common for home installations**

- **N/PE terminals assure fast and simple wiring.**

- **Possibility to add key lock to prevent unauthorized access.**

- **Standard set includes:**
  - **metal DIN rail TH35 mounted in enclosure**
  - **PE/N terminals**
  - **mounting set with screws**
  - **marking stickers with symbols**
  - **cover for empty modular spaces**

- **Easy mounting system**

Home distribution boards DIDO-E are available in two types: surface mounted and flush mounted boards, in one, two or three row design. Available with transparent or white doors. With lock set installation the board can be locked. Home distribution boards can easily be built in and already have a DIN rail installed for easier and quicker mounting of module devices.
Terminal blocks for PE and N conductors are attached as standard for all distribution boards. Distribution boards correspond to condition of insulation protection and are in accordance with standard IEC60670-24.

Technical data

Degree of protection	IP 40*
Colour	white
Double insulation	⧈
Standard	IEC 62208, IEC 60670-1, IEC 60670-24
Installation temperature	-25° / +60°C
Glow wire test	650°C

*IP 30 for EC 1+1, 3+1, 3+2, ECGxxMEDIA

Number of N - PE terminals (1,5...16mm²):

ECT/ECM4PT/PO	2x4	4 PE / 4 N
ECT/M8PT/PO	2x8	8 PE / 8 N
ECT/M12PT/PO	2x10	10 PE / 10 N
ECT/M18PT/PO	2x13	13 PE / 13 N
ECT/M24PT/PO	2x13	13 PE / 13 N
ECT/M36PT/PO	2x15	15 PE / 15 N
ECT/M48PT/PO	2x20	20 PE / 20 N
ECT/M 2x18PT/PO	2x15	15 PE / 15 N
ECT/M 3x18PT/PO	2x25	25 PE / 25 N
ECT 4x18PT/PO	2x30	30 PE / 30 N
ECT/M1x24PT/PO	2x13	13 PE / 13 N
EC 1+1	-	
EC 3+1	-	
EC 3+2	2x4	4 PE / 4 N

- ECG14, ECG28, ECG42 have 1 additional free space to build in an extra PST-UNI terminal.
- ECG56 and ECG70 have no extra space for PST-UNI terminals.
- Double insulation not valid for ECG MEDIA

Surface mounted distribution board - IP30

Type	Code No.	Number of modules	g		Rows
EC 1+1	001101044	1+1	64	1/10	1
EC 3+1	001101045	3+1	86	1/10	1
EC 3+2	001101046	3+2	170	1/5	1

Surface mounted distribution board - IP30

Type	Dimensions	Number of modules
EC 1+1	137 x 51 x 57	1 (+1)
EC 3+1	137 x 87 x 57	3 (+1)
EC 3+2	97 x 155 x 57	3 (+2)

Surface mounted distribution board - transparent door

Type	Code No.	Number of modules	g		Rows
ECT4PT transparent door	001100140	4	491	1/5	1
ECT8PT transparent door	001101000	4(+4)	598	1/5	1
ECT12PT transparent door	001101001	12	952	1/5	1
ECT18PT transparent door	001101002	18	1207	1/5	1
ECT24PT transparent door	001101003	24	1444	1/5	2
ECT36PT transparent door	001101004	36	1965	1/5	3
ECT48PT transparent door	001101020	48	2200	1/5	4

ECT 8 PT

ECT 12 PT

Surface mounted distribution board - white door

Type	Code No.	Number of modules	g		Rows
ECT4PO white door	001100141	4	491	1/5	1
ECT8PO white door	001101005	4(+4)	598	1/5	1
ECT12PO white door	001101006	12	952	1/5	1
ECT18PO white door	001101007	18	1207	1/5	1
ECT24PO white door	001101008	24	1444	1/5	2
ECT36PO white door	001101009	36	1965	1/5	3
ECT48PO white door	001101021	48	2200	1/5	4

ECT 48 PO

Surface mounted distribution board 2x18 modules

Type	Code No.	Number of modules	g		Rows
ECT 2x18PT transparent door	001101081	2x18	2414	1/5	2
ECT 2x18PO white door	001101082	2x18		1/5	

ECT 2x18 PT

Surface mounted distribution board 3x18 modules

Type	Code No.	Number of modules	g		Rows
ECT 3x18PT transparent door	001101040	3x18	2620	1/5	3
ECT 3x18PO white door	001101041	3x18		1/5	

Surface mounted distribution board 4x18 modules

Type	Code No.	Number of modules	g		Rows
ECT 4x18PT transparent door	001100270	4x18	3200	1/5	4
ECT 4x18PO white door	001100271	4x18		1/5	

ECT 3x18 PT

Surface mounted distribution board 1x24 modules

Type	Code No.	Number of modules	g		Rows
ECT 1x24PT transparent door	001100280	1x24	950	1/5	1
ECT 1x24PO white door	001100281	1x24		1/5	

Flush mounted distribution board 1x24 modules

Type	Code No.	Number of modules	g		Rows
ECM 1x24PT transparent door	001100401	1x24	952	1/5	1
ECM 1x24PO white door	001100403	1x24		1/5	

Flush mounted distribution board - transparent door

Type	Code No.	Number of modules	g		Rows
ECM4PT transparent door	001100142	4	491	1/5	1
ECM8PT transparent door	001101010	4(+4)	681	1/5	1
ECM12PT transparent door	001101011	12	922	1/5	1
ECM18PT transparent door	001101018	18	1200	1/5	1
ECM24PT transparent door	001101012	24	1338	1/5	2
ECM36PT transparent door	001101013	36	1785	1/5	3
ECM48PT transparent door	001100400	48	2320	1/5	4

ECM 12 PT

Flush mounted distribution board - white door

Type	Code No.	Number of modules	g		Rows
ECM4PO white door	001100143	4	491	1/5	1
ECM8PO white door	001101014	4(+4)	681	1/5	1
ECM12PO white door	001101015	12	922	1/5	1
ECM18PO white door	001101019	18	1200	1/5	1
ECM24PO white door	001101016	24	1338	1/5	2
ECM36PO white door	001101017	36	1785	1/5	3
ECM48PO white door	001100402	48	2320	1/5	4

ECM 36 PO

Flush mounted distribution board 2x18 modules

Type	Code No.	Number of modules	g		Rows
ECM 2x18PT transparent door	001101083	2x18	2414	1/5	2
ECM 2x18PO white door	001101084	2x18		1/5	

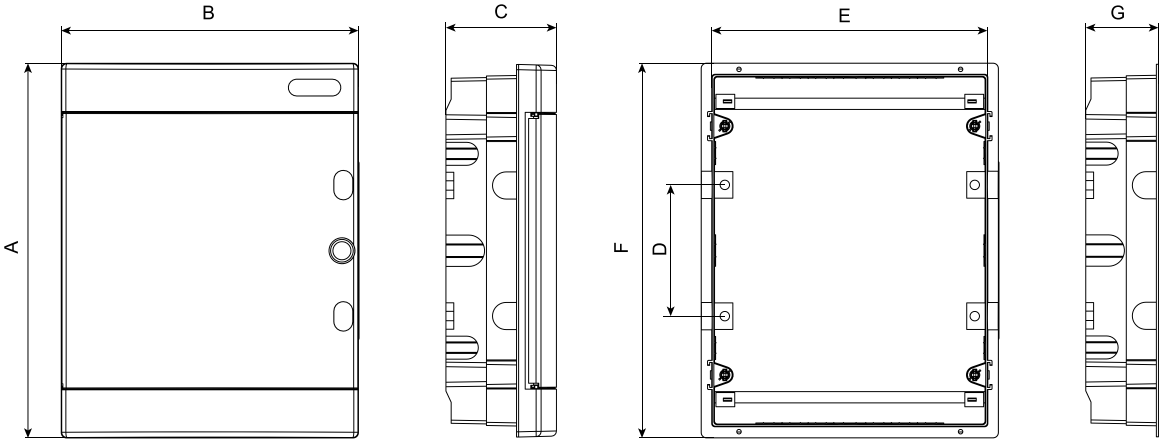
ECM 3x18 PO

Flush mounted distribution board 3x18 modules

Type	Code No.	Number of modules	g		Rows
ECM 3x18PT transparent door	001101047	3x18	2620	1/5	3
ECM 3x18PO white door	001101048	3x18		1/5	

Flush mounted distribution board

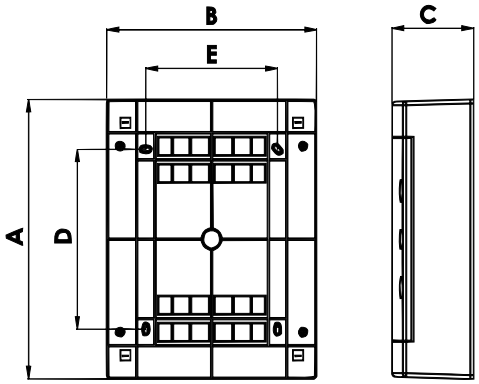
Type	Dimensions							Max. allowed power losses when Max. number of devices are installed	Static load
	A	B	C	D	E	F	G	Pde	
ECM4PT/ECM4P0	232 mm	139 mm	99 mm	-	123 mm	216 mm	69 mm	10 W	520 g
ECM8PT/ECM8P0	232 mm	211 mm	99 mm	-	201 mm	212mm	68 mm	16 W	1040 g
ECM12PT/ECM12P0	232 mm	283 mm	106 mm	-	273 mm	212 mm	68 mm	25 W	1560 g
ECM18PT/ECM18P0	232 mm	392 mm	106 mm	-	382 mm	212 mm	68 mm	25 W	2340 g
ECM24PT/ECM24P0	357 mm	283 mm	106 mm	125 mm	273 mm	336 mm	68 mm	30 W	1560 g
ECM36PT/ECM36P0	482 mm	283 mm	106 mm	125 mm	273 mm	462 mm	68 mm	30 W	1560 g
ECM48PT/ECM48P0	676 mm	283mm	106 mm	125 mm	273 mm	656 mm	68 mm	30W	1560 g
ECM2x18PT/ECM2x18P0	357 mm	392 mm	106 mm	125 mm	382 mm	336 mm	68 mm	30 W	2340 g
ECM3x18PT/ECM3x18P0	522 mm	392 mm	106 mm	125 mm	382 mm	502 mm	68 mm	35 W	2340 g
ECM 1x24PT/ ECM 1x24P0	500 mm	255 mm	106 mm	125 mm	489 mm	235 mm	68 mm	30W	2340g



Surface mounted distribution board

type	Dimensions*					Pde	Static load
	A	B	C	D	E		
ECT4PT/ECT4P0	235 mm	143 mm	98 mm	127 mm	46 mm	10 W	520 g
ECT8PT/ECT8P0	236 mm	287 mm	102 mm	107 mm	180 mm	16 W	1040 g
ECT12PT/ECT12P0	236 mm	287 mm	112 mm	107 mm	180 mm	25 W	1560 g
ECT18PT/ECT18P0	236 mm	396 mm	112 mm	107 mm	289 mm	25 W	2340 g
ECT24PT/ECT24P0	361 mm	287 mm	112 mm	232 mm	180 mm	30 W	1560 g
ECT36PT/ECT36P0	485 mm	287 mm	112 mm	357 mm	180 mm	30 W	1560 g
ECT48PT/ECT48P0	652 mm	287 mm	112 mm	482 mm	180 mm	35 W	1560 g
ECT2x18PT/ ECT2x18P0	361 mm	396 mm	112 mm	232 mm	289 mm	30 W	2340 g
ECT3x18PT/ ECT3x18P0	526 mm	396 mm	112 mm	357 mm	289 mm	35 W	2340 g
ECT4x18PT/ ECT4x18P0	651 mm	396 mm	112 mm	482 mm	289 mm	40 W	2340 g
ECT1x24PT/ ECT1x24P0	236 mm	503 mm	112 mm	107 mm	396 mm	30 W	2340 g

*Sizes are also valid for IT distribution boards DIDO-E MEDIA: ECT…MEDIA



IT Distribution Boards DIDO-E MEDIA

Surface mounted, white door, perforated metal plate included

Type	Code No.	Frame size	g	
ECT 2x18MEDIAPO	001100210	2x18	2414	1/5
ECT 3x18MEDIAPO	001100211	3x18	2600	1/5
ECT4x18MEDIAPO	001100272	4x18	3200	1/5
ECT24MEDIAPO	001100212	24	1444	1/5
ECT36MEDIAPO	001100213	36	1965	1/5
ECT48MEDIAPO	001100214	48	2200	1/5

Accessories (Schuko socket, holder, RJ45 holder) must be ordered separetely

Flush mounted, white door, perforated metal plate included

Type	Code No.	Frame size	g	
ECM 2x18MEDIAPO	001100219	2x18	2400	1/5
ECM24MEDIAPO	001100237	24	1440	1/5
ECM36MEDIAPO	001100238	36	1965	1/5

Accessories (Schuko socket, holder, RJ45 holder) must be ordered separetely

Accessories DIDO-E

Accessories DIDO ECT & ECM

Type	Description	Code No.	g	
ECMECT-L2K	Metal lock with 2 keys	001100203	50	1
PST-UNI	2x15 add-on terminal	001101051	100	1/25
MP-E	Modular cover - white (12 modules)	001101052	26	10/500
M20	Rubber gland M20	001101054	10	50/3000
M25	Rubber gland M25	001101055	12	50/2000
M32	Rubber gland M32	001101056	16	25/1000
M40	Rubber gland M40	001101057	20	25/600
ECMEDIA-2xSCH	Double schuko socket with holder	001100201	50	1
ECMEDIA-RHOLD	Device(router or modem) holder	001100202	50	1
ECMEDIA-RJ	RJ45 connector holder, 12 ports	001100206	100	1

* PST-UNI is an extra insulating terminal (2 x 15) that can be mounted into 12, 24, 28, 36, 42, 48 and 56 module distribution boards

Replacement door for ECT/ECT MEDIA and ECM/ECM MEDIA

Number of modules	Compatibility	Code No.	Code No. (white door)	g	
8	ECT/ECM 8	001101100	001101105	90	1/50
12	ECT/ECM 12	001101101	001101106	100	1/50
18	ECT/ECM 18	001101102	001101107	150	1/50
24	ECT/ECM 24	001101103	001101108	230	1/50
36	ECT/ECM 36	001101104	001101109	350	1/40
36	ECT/ECM 2x18	001101141	001101140	360	1/40
48	ECT/ECM 48	001101120	001101121	460	1/30
54	ECT/ECM 3x18	001101148	001101147	600	1/20

Flush mounted enclosures with super thin design (metal or plastic door) DIDO ECG

- Included mounting set for all kind of walls.

- Front mask sealing possibility

- Special hinge system provides left or right door opening.

- Standard set includes:
  - metal DIN rail TH35
  - PE/N terminals
  - mounting set with screws for all kinds of walls (concrete, hollow, wooden...)
  - marking stickers with symbols
  - cover for empty modular spaces

- Possible to add key lock

- N/PE terminals included

- Marking sticker with symbols

- Possible to mechanically connect two ECG enclosures side by side with special metal bracket.

Description
DIDO ECG are flush-mounted compact distribution boxes. They are suitable for installation in homes, schools and commercial buildings.
Main characteristics:
- Class II, double insulated
- Cable entrance from top or bottom
- Device cover with opening for 12 modules per row + 2 blended(can be removed). Can be sealed
- Thin design, 88mm depth in wall and 7mm outside the wall.
- Color: White RAL 9003 with allowed difference ΔE = 2,15

WATCH THE VIDEO

Enclosures are completely assembled with all necessary parts, such as:
- DIN rail
- Insulated terminals, neutral and ground
- Covers for free space
- Needed installation accessories for concrete and hollow walls
- Instruction manual

Technical data

Degree of protection	IP 40*
Colour	white
Double insulation	⧈
Standard	IEC 62208, IEC 60670-1, IEC 60670-24
Installation temperature	-25° / +60°C
Glow wire test	650°C

*IP 30 for EC 1+1, 3+1, 3+2, ECGxxMEDIA

Number of N - PE terminals (1,5...16mm²):

ECG14	2x10 10 PE / 10 N
ECG28	2x13 13 PE / 13 N
ECG42	2x15 15 PE / 15 N
ECG56	2x20 20 PE / 20 N
ECG70	2x30 30 PE / 30 N

- ECG14, ECG28, ECG42 have 1 additional free space to build in an extra PST-UNI terminal.
- ECG56 and ECG70 have no extra space for PST-UNI terminals.
- Double insulation not valid for ECG MEDIA

Flush mounted distribution board - metal door, white

Type	Code No.	Number of modules	g		Rows
ECG14	001101025	12+2	2000	1/1	1
ECG28	001101026	24+4	2500	1/1	2
ECG42	001101027	36+6	3000	1/1	3
ECG56	001101028	48+8	3500	1/1	4
ECG70	001101029	60+10	5000	1/1	5

*Rear side plastics conforms 650°C glow wire test; enclosures conforming 850°C glow wire test according to 60670-24, demand for hollow wall installation are on page 978

Flush mounted distribution board - plastic door - transparent

Type	Code No.	Number of modules	g		Rows
ECG14PT	001101180	12+2	1900	1/1	1
ECG28PT	001101181	24+4	2400	1/1	2
ECG42PT	001101182	36+6	2900	1/1	3
ECG56PT	001100412	48+8	3650	1/1	4

*Rear side plastics conforms 650°C glow wire test (not appropriate for wooden or hollow walls - IEC 60670-24)

Flush mounted distribution board - plastic door - white

Type	Code No.	Number of modules	g		Rows
ECG14PO	001101183	12+2	1900	1/1	1
ECG28PO	001101184	24+4	2400	1/1	2
ECG42PO	001101185	36+6	2900	1/1	3
ECG56PO	001100413	48+8	3650	1/1	4

*Rear side plastics conforms 650°C glow wire test (not appropriate for wooden or hollow walls - IEC 60670-24)

Enclosures for multimedia and communication device DIDO ECG MEDIA

ENCLOSURE FOR MULTIMEDIA AND COMMUNICATION DEVICES
- Telephone connection
- Modems and routers (for wireless use plastic door!)
- Antenna, cable or satellite TV connection
- Included perforated mounting plate (zinc plated steel),
- Included installation accessories for concrete and hollow walls

Flush mounted multimedia distribution board - perforated metal door, white

Type	Code No.	Number of mounting plates	g	
ECG14MEDIA-I	001101156	1	2000	1
ECG28MEDIA-I	001101157	2	2500	1
ECG42MEDIA-I	001101158	3	3000	1
ECG56MEDIA-I	001101159	4	3500	1
ECG70MEDIA-I	001101179	5	5000	1

*Rear side plastics conforms 650°C glow wire test (not appropriate for wooden or hollow walls - IEC 60670-24)

Flush mounted multimedia distribution board - plastic door - transparent

Type	Code No.	Number of mounting plates	g	
ECG14MEDIAPT	001101186	1	2000	1/1
ECG28MEDIAPT	001101187	2	2500	1/1
ECG42MEDIAPT	001101188	3	3000	1/15
ECG56MEDIAPT	001100415	4	3300	1/1

*Rear side plastics conforms 650°C glow wire test (not appropriate for wooden or hollow walls - IEC 60670-24)

Flush mounted multimedia distribution board - plastic door - white

Type	Code No.	Number of mounting plates	g	
ECG14MEDIAPO	001101189	1	2000	1/1
ECG28MEDIAPO	001101190	2	2500	1/1
ECG42MEDIAPO	001101191	3	3000	1/1

*Rear side plastics conforms 650°C glow wire test (not appropriate for wooden or hollow walls - IEC 60670-24)

Flush mounted multimedia distribution board - perforated metal door, white

Type	Code No.	Description	Number of modules	g	
ECG42COMB02/1-I	001100220	2 Media + 1 Modular row	14	3400	1
ECG56COMB03/1-I	001100221	3 Media + 1 Modular row	14	4100	1
ECG56COMB02/2-I	001100222	2 Media + 2 Modular rows	28	4100	1
ECG7°COMB04/1-I	001100223	4 Media + 1 Modular row	14	4900	1
ECG7°COMB03/2-I	001100224	3 Media + 2 Modular rows	28	4900	1
ECG7°COMB02/3-I	001100225	2 Media + 3 Modular rows	42	5000	1

*Rear side plastics conforms 650°C glow wire test (not appropriate for wooden or hollow walls - IEC 60670-24)
** 1x Schuko socket already included

Flush mounted multimedia distribution board - perforated metal door, white

Type	Code No.	Description	Number of modules	g	
ECG42HCOMB02/1-I	001100226	2 Media + 1 Modular row	14	3400	1
ECG56HCOMB03/1-I	001100227	3 Media + 1 Modular row	14	4100	1
ECG56HCOMB02/2-I	001100228	2 Media + 2 Modular rows	28	4100	1
ECG70HCOMB04/1-I	001100229	4 Media + 1 Modular row	14	4900	1
ECG70HCOMB03/2-I	001100230	3 Media + 2 Modular rows	28	4900	1
ECG70HCOMB02/3-I	001100231	2 Media + 3 Modular rows	42	5000	1

* Conforms 850°C glow wire test according to IEC60670-24 for hollow wall installation
** 1x Schuko socket already included

Distribution boards for installation in hollow walls by IEC 60670-24 DIDO-E ECG_H

Description
DIDO ECG are flush-mounted compact distribution boxes. They are suitable for installation in homes, schools and commercial buildings.

Main characteristics:
- Class II, double insulated
- Cable entrance from top or bottom
- Device cover with opening for 12 modules per row + 2 blended (can be removed). Can be sealed
- Thin design, 88mm depth in wall and 7mm outside the wall.
- Color: White RAL 9003 with allowed difference ΔE = 2,15

Enclosures are completely assembled with all necessary parts, such as:
- DIN rail
- Insulated terminals, neutral and ground
- Covers for free space
- Needed installation accessories for concrete and hollow walls
- Instruction manual

Flush mounted distribution board with metal door

Type	Code No.	Number of modules	g		Rows
ECG14H	001101160	12+2	2000	1/1	1
ECG28H	001101161	24+4	2500	1/1	2
ECG42H	001101162	36+6	3000	1/1	3
ECG56H	001101163	48+8	3500	1/1	4
ECG70H	001101169	60+10	5000	1/1	5

Conforms 850°C glow wire test according to IEC60670-24 for hollow wall installation

Enclosures for multimedia and communication device DIDO ECG_H MEDIA

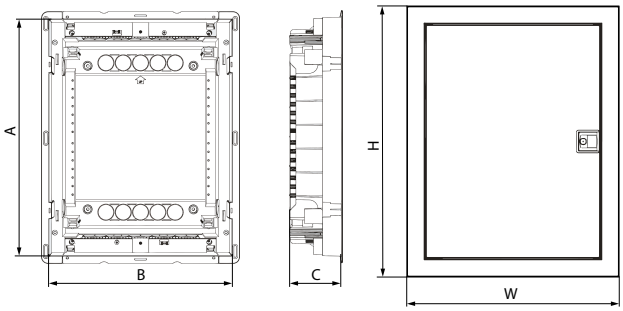
Flush mounted multimedia distribution board - perforated metal door, white

Type	Code No.	Number of mounting plates	g	
ECG14HMEDIA-I	001100130	1	2000	1
ECG28HMEDIA-I	001100131	2	2500	1
ECG42HMEDIA-I	001100132	3	3000	1
ECG56HMEDIA-I	001100133	4	3500	1
ECG70HMEDIA-I	001100134	5	5000	1

Conforms 850°C glow wire test according to IEC60670-24 for hollow wall installation

Flush mounted distribution board

Type	Dimensions					Max. allowed power losses when Max. number of devices are installed
	A	B	C	H	W	Pde
ECG14	274 mm	306 mm	87 mm	317 mm	346 mm	31 W
ECG28	399 mm	306 mm	87 mm	442 mm	346 mm	40 W
ECG42	549 mm	306 mm	87 mm	592 mm	346 mm	50 W
ECG56	673 mm	306 mm	87 mm	717 mm	346 mm	60 W
ECG70	799 mm	306 mm	87 mm	842 mm	346 mm	70 W

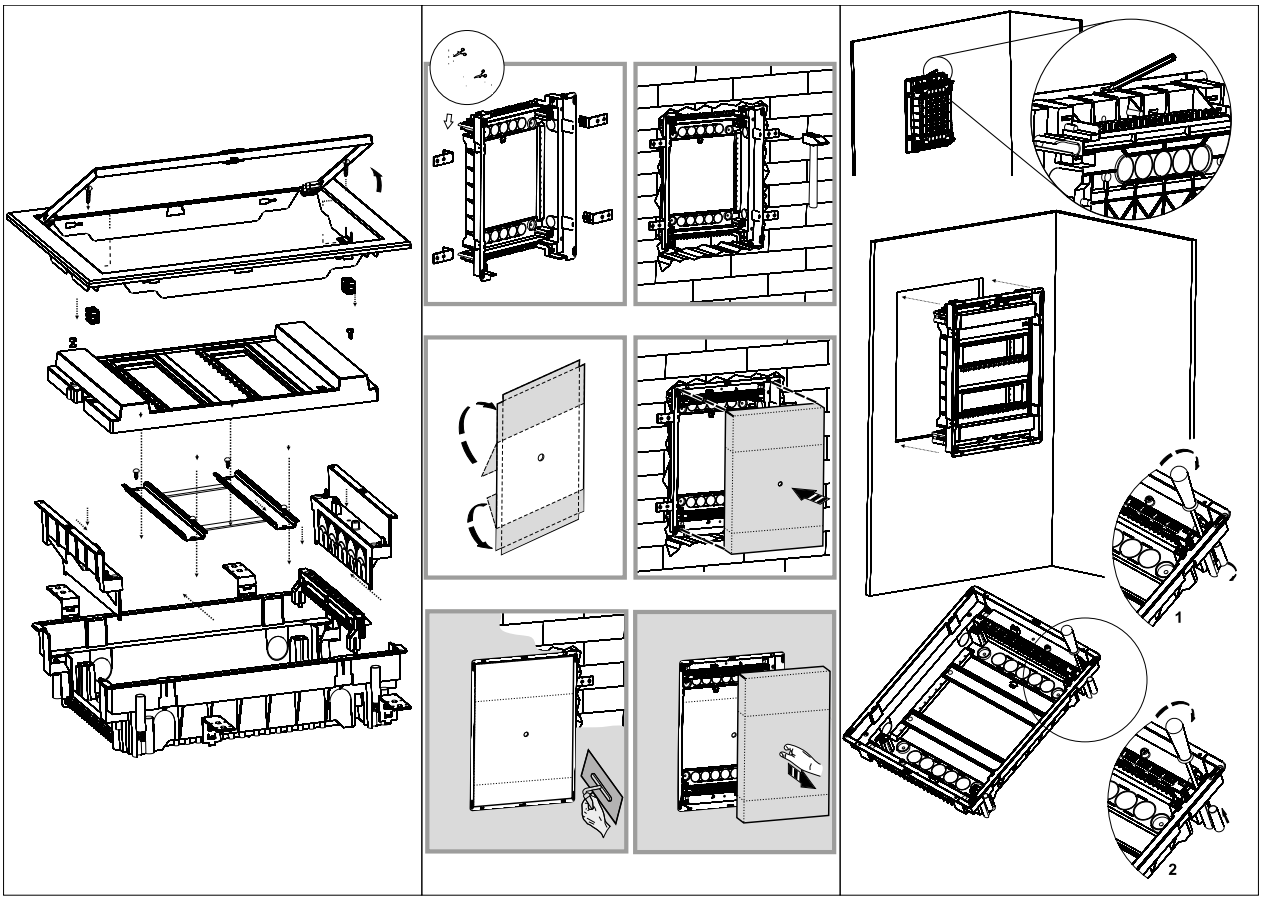


ECG

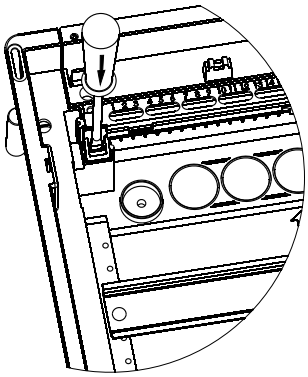
Material	Acrylonitrile butadiene styrene
Color	RAL9003
Door	Acrylonitrile butadiene styrene
Color	Transparent & white
Glow wire test	650°C
Terminal holder	Self extinguish material (Glow wire test: 960°C)
Temperature	-25°C ... +60°C
Rated voltage	AC400V
Standard	IEC 62208, IEC 60670-1, IEC 60670-24
Halogen free	✓

ECG_H

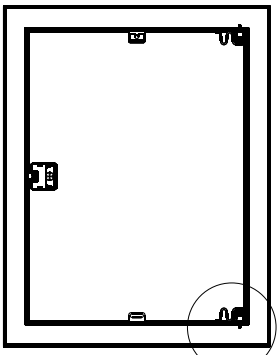
Material	Acrylonitrile butadiene styrene
Color	RAL9003
Door	Metal
Color	white
Glow wire test	850°C
Terminal holder	Self extinguish material (Glow wire test: 960°C)
Temperature	-25°C ... +60°C
Rated voltage	AC400V
Standard	IEC 62208, IEC 60670-1, IEC 60670-24
Halogen free	✓



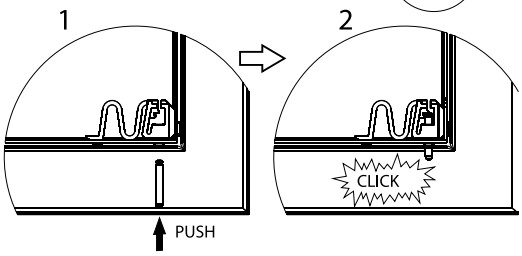
Advantages

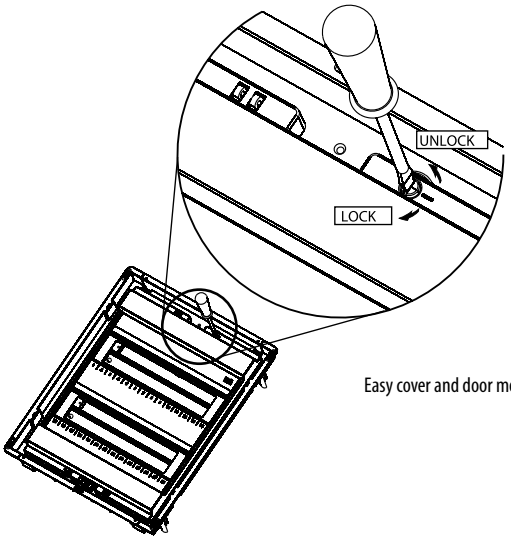


Easy terminal mounting

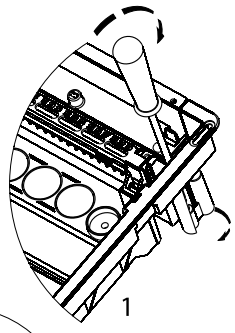


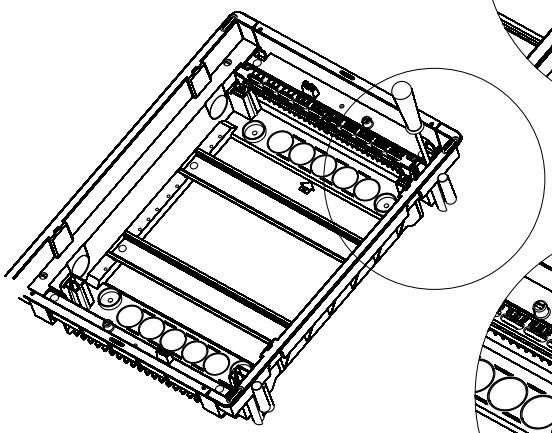
Left or right door mounting

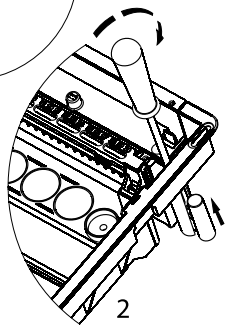




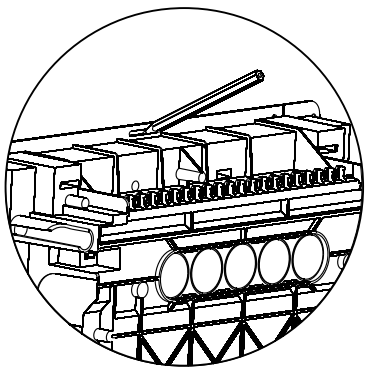
Easy cover and door mounting







Holders for secure hollow wall installation



Installation marking slots for hollow walls

Accessories DIDO-E ECG

Accessories DIDO ECG

Type	Description	Code No.	g	
PST-UNI	2x15 add -on terminal	001101051	100	1/25
MP-E	Modular cover -white (12 modules)	001101052	26	10/500
ECGBRHP*	Connecting brackets - horizontal, plastic	001100274	100	1
ECGBRV*	Connecting brackets - vertical	001100200	50	1
ECMEDIA-2xSCH	Double schuko socket with holder	001100201	50	1
ECMEDIA-RHOLD	Device (router or modem) holder	001100202	50	1
ECG-L2K	Metal lock, including 2 keys	001100205	50	1
ECMEDIA-RJ	RJ45 connector holder, 12 ports	001100206	100	1
ECMEDIA-PART**	Partition with 1x integrated socket	001100250	100	1
ECMEDIA-SCH	Extra (2nd) socket 16A, 250V for Partition	001100251	50	1

*1 set includes 1 pair of brackets needed to mechanically connect two distribution boards
**In one partition can be mounted 2 schuko sockets, one is already included, second can be ordered separetely.
Partition with 1x schuko socket is already included in ECG_COMBO distribution board

Flush mounted distribution boards with metal doors (IP40) DIDO ERP

Rated current	Rated voltage	Degree of protection
63 A	**400 V**	**IP 40**

- Flush mounted enclosure metal door (white)
- Colour white (RAL9016)
- IP protection IP40
- Equiped with TH rails, PE/N terminals, mounting brackets
- possibility to assemble with lock with key

Enclosures are equipped with:
- DIN rails
- Insulated terminals, neutral and ground
- Modular covering mask
- Instruction manual

Technical data

Protection against mechanical impacts	IK08
Rated voltage	500V
Protection class	II
Standard	PN-EN 62208:2011

Not for hollow or wooden walls, flush mounted material conforms 650'C glow wire test only!

Type designation:

ERPxx-A

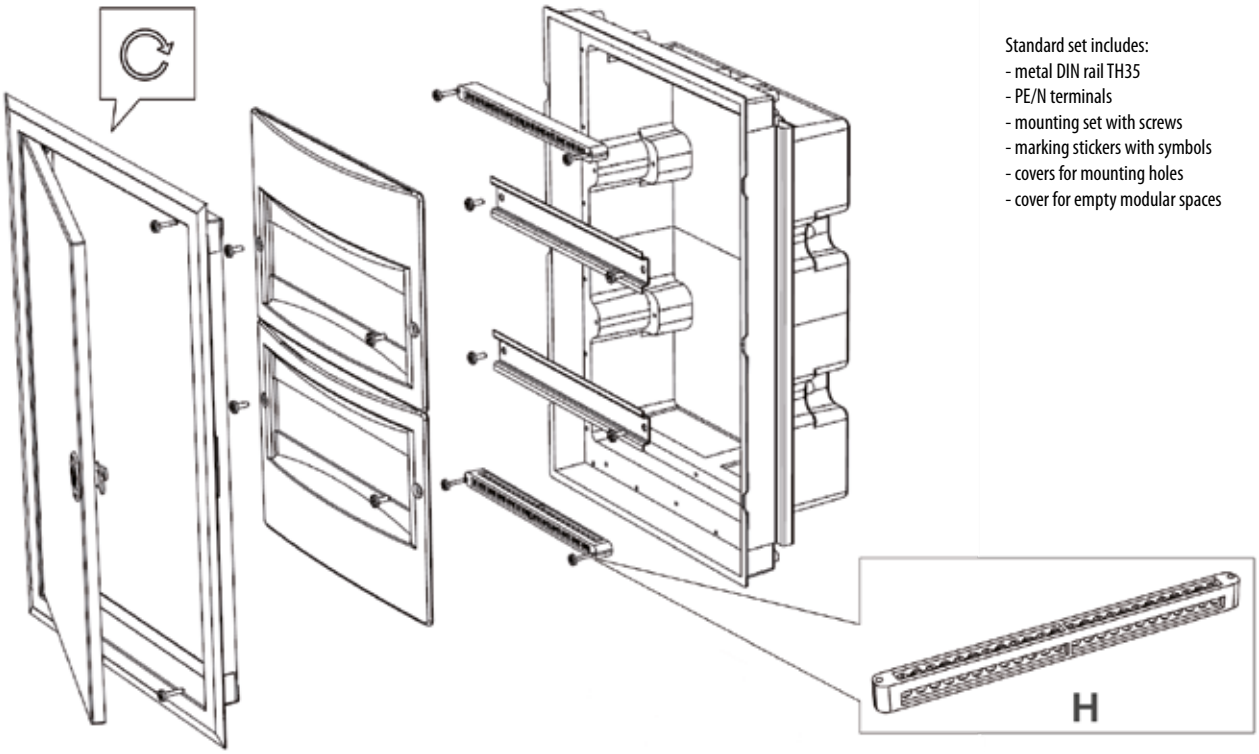
Number of modules in one row

Number of rows

Flush mounted distribution board with metal doors

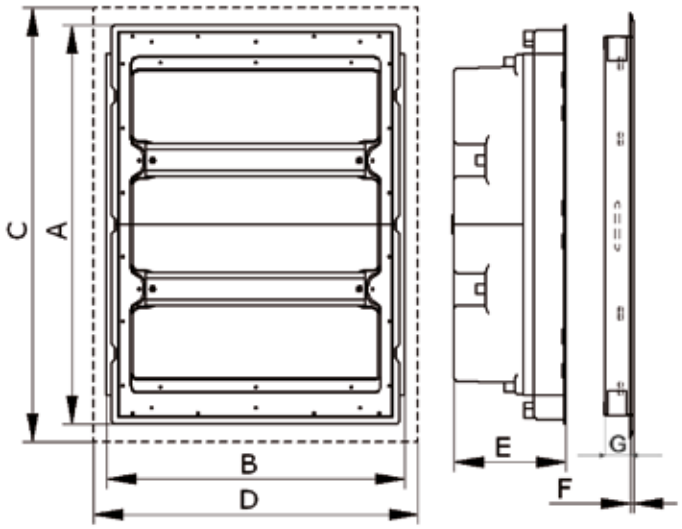
Type	Description	Code No.	Number of rows	Number of modules	Terminals PE/N	kg	
ERP12-1	12 modules p/r	001101200	1	12	11/11	2,1	1
ERP12-2	12 modules p/r	001101202	2	24	1x24/2x11	3,3	1
ERP12-3	12 modules p/r	001101204	3	36	1x24/3x11	4,3	1
ERP12-4	12 modules p/r	001101206	4	48	1x24/4x11	5,2	1
ERP12-5	12 modules p/r	001101298	5	60	1x24/6x11	5,75	1
ERP12-6	12 modules p/r	001101299	6	72	1x24/6x11	6,65	1
ERP18-1	18 modules p/r	001101208	1	18	11/11	4	1
ERP18-2	18 modules p/r	001101210	2	36	1x24/2x11	5,5	1
ERP18-3	18 modules p/r	001101212	3	54	1x24/3x11	6,8	1
ERP18-4	18 modules p/r	001101214	4	72	1x24/4x11	8,2	1
ERP18-5	18 modules p/r	001101216	5	90	2x24/5x11	9,6	1
ERP18-6	18 modules p/r	001101218	6	108	2x24/6x11	11	1
ERP24-2	24 modules p/r	001101293	2	48	1x24/2x11	5,4	1
ERP24-3	24 modules p/r	001101294	3	72	1x24/3x11	7,1	1
ERP24-4	24 modules p/r	001101295	4	96	2x24/4x11	8,8	1
ERP24-5	24 modules p/r	001101296	5	120	3x24/4x11	10,4	1
ERP24-6	24 modules p/r	001101297	6	144	3x24/4x11	12,0	1

Assembly



Standard set includes:
- metal DIN rail TH35
- PE/N terminals
- mounting set with screws
- marking stickers with symbols
- covers for mounting holes
- cover for empty modular spaces

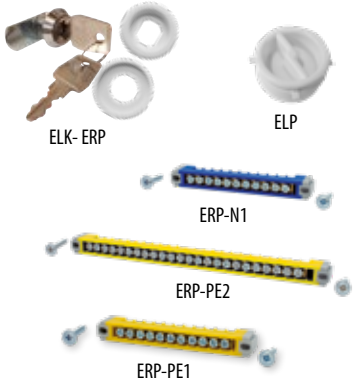
Dimensions



	A	B	C	D	E	F	G	H	Pde
ERP12-1	27 0 mm	288 mm	306 mm	326 mm	113 mm	4 mm	25 mm	2 x 5	27,5 W
ERP12-2	412 mm	288 mm	448 mm	326 mm	120 mm	4 mm	25 mm	2x11	36,1 W
ERP12-3	548 mm	288 mm	584 mm	326 mm	120 mm	4 mm	25 mm	4x11	44,7 W
ERP12-4	684 mm	288 mm	720 mm	326 mm	120 mm	4 mm	25 mm	4x11	53,3 W
ERP12-5	809 mm	288 mm	845 mm	326 mm	120 mm	4 mm	25 mm	6x12, 1x24	61,9 W
ERP12-6	943 mm	288 mm	980 mm	326 mm	120 mm	4 mm	25 mm	6x12, 1x24	70,5 W
ERP18-1	275 mm	418 mm	306 mm	451 mm	120 mm	6 mm	25 mm	2x11	48,3 W
ERP18-2	407 mm	418 mm	447 mm	451 mm	120 mm	6 mm	25 mm	3x11	57,94 W
ERP18-3	541 mm	418 mm	581 mm	451 mm	120 mm	6 mm	25 mm	3x11, 1x24	67,58 W
ERP18-4	675 mm	418 mm	715 mm	451 mm	120 mm	6 mm	25 mm	4x11, 1x24	77,22 W
ERP18-5	809 mm	418 mm	849 mm	451 mm	120 mm	6 mm	25 mm	5x11, 2x24	86,86 W
ERP18-6	943 mm	418 mm	983 mm	451 mm	120 mm	6 mm	25 mm	6x11, 2x24	96,5 W
ERP24-2	465 mm	542 mm	507 mm	575 mm	120 mm	6 mm	25 mm	1x24,2x11	79,78 W
ERP24-3	600 mm	542 mm	642 mm	575 mm	120 mm	6 mm	25 mm	1x24,3x11	90,46 W
ERP24-4	735 mm	542 mm	777 mm	575 mm	120 mm	6 mm	25 mm	2x24,4x11	101,14 W
ERP24-5	870 mm	542 mm	912 mm	575 mm	120 mm	6 mm	25 mm	3x24,4x11	111,82 W
ERP24-6	1005 mm	542 mm	1047 mm	575 mm	120 mm	6 mm	25 mm	3x24,4x11	122,5 W

Accessories

Type	Description	Code No.	g	
EPLMB	Cup for sealing screw	001101278	7	100
ELK-ERP	Lock with key	001101279	56	1/10
ELP	Latch	001101280	12	1/10
ERP-N1	N terminal 11 mod.(blue)	001101281	44	1/10
ERP-N2	N terminal 24 mod.(blue)	001101282	90	1/10
ERP-PE1	PE terminal 11 mod.(yellow)	001101283	44	1/10
ERP-PE2	PE terminal 24 mod.(yellow)	001101284	90	1/10
ERP12-PM	Mounting plate EB2S/ED2S 160 3p for ERP 12	001101285	220	1
ERP18-PM	Mounting plate EB2S/ED2S 160 3p for ERP 18	001101286	250	1
ERP24-PM	Mounting plate EB2S/ED2S 160 3p for ERP 24	001101287	345	1



Distribution Boards DIDO ACT

ACT distribution boards can be used in applications with wall mounted electrical installations, like containers, wooden houses. Blended cuttings on top and bottom of enclosure for entrance of various dimensions of installation channel.

Enclosures are completely assembled with all necessary parts, such as:
- DIN rail
- Insulated terminals, neutral and ground
- Covers for free space
- Needed installation accessories
- Instruction manual

DIDO ACT

Material	ABS
Color	RAL9003
Door	styrene acrylonitrile
Color	Transparent & white
Glow wire test	650°C
Terminal holder	Self extinguish material (Glow wire test: 960°C)
Temperature	-25°C ... +60°C
Rated voltage	AC400V
Standard	IEC 62208, IEC 60670-1, IEC60670-24
Halogen free	✓

Surface mounted distribution board - plastic door - transparent

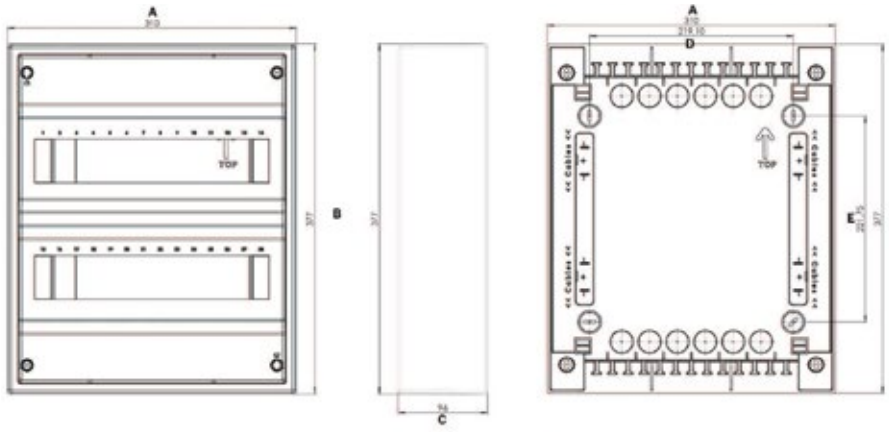
Type	Code No.	Number of modules	g		Rows
ACT12PT	001100240	12+2	1300	1/5	1
ACT24PT	001100241	24+4	1700	1/5	2
ACT36PT	001100242	36+6	2100	1/5	3
ACT48PT	001100410	48+8	2500	1/5	4

Surface mounted distribution board - plastic door - white

Type	Code No.	Number of modules	g		Rows
ACT12PO	001100243	12+2	1300	1/5	1
ACT24PO	001100244	24+4	1700	1/5	2
ACT36PO	001100245	36+6	2100	1/5	3
ACT48PO	001100411	48+8	2500	1/5	4

Dimensions

	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Max. allowed power losses when Max. number of devices are installed
ACT12	310	251	96	96	219	30W
ACT24	310	377	96	219	222	40W
ACT36	310	502	96	219	347	60W
ACT48	310	650	96	219	472	60W

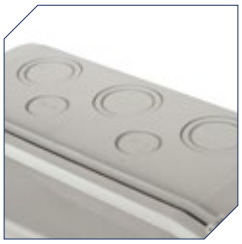


Modular Distribution Boards For Use Outside DIDO-ECH

Rated current	Rated voltage	Degree of protection
63 A	**400V AC/ 1500V DC**	**IP 65**

- Left or right door opening

- Prepaired points for glands (cable entry)



- Possible to seal enclosure, to prevent unauthorized access.

- Standard set includes:
  - metal DIN rail TH35
  - PE/N terminals
  - mounting set with screws
  - marking stickers with symbols
  - covers for mounting holes
  - cover for empty modular spaces

- Tight closing with rubber between door and housing provide IP65. Also possible to install key lock

Watertight wall-mounted distribution boards apply in domestic and industry architecture for mounting modular equipment for protection (IP65) against wet, dust and another dirtiness. Enclosure is made of high thermal stability material - ASA (Acrylonitrile-Acrylic-Styrene), plastic with good dielectrical and mechanical attributes, UV resistant (colour stability). Easy and quick montage.

Main elements:

- Bottom cover with DIN rail, PE and N bars and holes for PG cable inlets properly marked
- Top cover with seal of the door
- Transparent door made of polycarbonate (PC) with plastic lock (in standard) or metal lock with key (in option)

Technical data

Degree of protection	IP 65
Insulation class	II
Colour	RAL 7035
Double insulation	⧈
Standard	IEC 60670-1, IEC 60670-24
Installation temperature	-20° / +60°C
Glow wire test	650°C

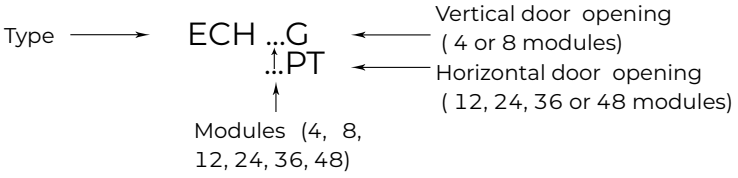
Number of N - PE terminals:

ECH-4G	2x4 4 PE / 4 N
ECH-6G	2x6 6 PE / 6 N
ECH-8G	2x8 8 PE / 8 N
ECH-12PT	2x10 10 PE / 10 N
ECH-18PT	2x13 13 PE / 13 N
ECH-24PT	2x15 15 PE / 15 N
ECH-36PT	2x15 15 PE / 15 N
ECH-48PT	2x20 20 PE / 20 N

Wall mounted distribution board - ECH

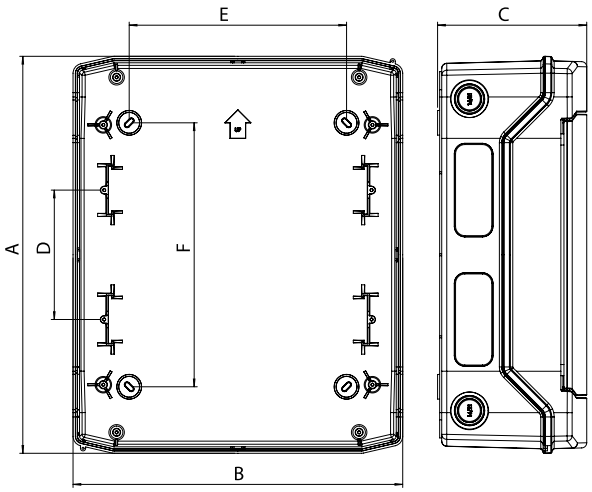
Type	Code No.	Number of modules	g		Rows
ECH-4G	001101060	4	460	1/5	1
ECH-6G	001101176	6	460	1/5	1
ECH-8G	001101061	8	680	1/5	1
ECH-12PT	001101062	12	1240	1/5	1
ECH-18PT	001100350	18	1700	1/5	1
ECH-24PT	001101063	24	1700	1/5	2
ECH-36PT	001101064	36	2310	1/5	3
ECH-48PT	001100304	48	3220	1/5	4

Enclosure designation



Dimensions

Type	Dimensions						Max. allowed power losses when Max. number of devices are installed
	A	B	C	D	E	F	Pde
ECH-4G	201 mm	128 mm	120 mm	-	-	140 mm	10 W
ECH-6G	201 mm	165 mm	118 mm	-	63 mm	140 mm	10 W
ECH-8G	201 mm	202 mm	120 mm	-	100 mm	140 mm	13 W
ECH-12PT	259 mm	319 mm	144 mm	-	210 mm	130 mm	16 W
ECH-18PT	259 mm	319 mm	144 mm	-	259 mm	130 mm	20 W
ECH-24PT	384 mm	319 mm	144 mm	125 mm	210 mm	255 mm	24 W
ECH-36PT	508 mm	319 mm	144 mm	125 mm	210 mm	380 mm	26 W
ECH-48PT	664 mm	319 mm	144 mm	125 mm	210 mm	505 mm	28 W



Accessories

Type	Description	Code No.	g	
ECH-L2K	Metal lock with 2 keys	001100204	50	1
PST-UNI	2x15 add-on terminal	001101051	100	1/25
MP-ECH	Modular cover - grey (12modules)	001101053	26	10/500

* PST-UNI is an extra insulating terminal (2 x 15) that can be mounted into 12, 24, 28, 36, 42, 48 and 56 module distribution boards

terminal

lock with key
ECH-L2k

Metal Distribution Board DIDO MB

The DIDO MB series metal distribution boxes are designed to provide reliable and safe electrical distribution in residential and commercial installations. They are suitable for in-wall mounting (brick and hollow walls).

Included in the package:
- DIN rail for circuit breaker installation
- Insulated connectors for earthing and neutral connections, with a 960°C glow wire test

Additional accessories:
- Lock with key (optional) for added security
- Reversible door opening – switch between left or right-hand opening without dismantling the frame

Technical data

Degree of protection	IP30
Insulation class	I
Rated voltage	400V~
Colour	RAL 9003
Standard	IEC 60670-1, IEC 60670-24
Installation temperature	-25° / +60°C
Impact Protection	IK08

Flush mounted metal distribution board DIDO MBF 18 modules/row

Type	Code No.	Number of modules	kg		Rows
MBF18-1	001108100	18	5,55	1	1
MBF18-2	001108101	36	7,76	1	2
MBF18-3	001108102	54	9,7	1	3
MBF18-4	001108103	72	11,56	1	4
MBF18-5	001108104	90	13,5	1	5
MBF18-6	001108105	108	15,38	1	6
MBF18-7	001108112	126	17,4	1	7
MBF18-8	001108113	144	19,4	1	8

Wall mounted metal distribution board DIDO MBW 18 modules/row

Type	Code No.	Number of modules	kg		Rows
MBW18-1	001108106	18	5,82	1	1
MBW18-2	001108107	36	7,85	1	2
MBW18-3	001108108	54	9,88	1	3
MBW18-4	001108109	72	11,58	1	4
MBW18-5	001108110	90	13,58	1	5
MBW18-6	001108111	108	15,38	1	6
MBW18-7	001108114	126	17,6	1	7
MBW18-8	001108115	144	19,6	1	8

Flush mounted metal distribution board DIDO MBF 2x12 modules/row

Type	Code No.	Number of modules	kg		Rows
MBF24-2	001108120	48	11,39	1	2
MBF24-3	001108121	72	14,31	1	3
MBF24-4	001108122	96	16,91	1	4
MBF24-5	001108123	120	19,50	1	5
MBF24-6	001108124	144	22,08	1	6
MBF24-7	001108130	168	25	1	7
MBF24-8	001108131	192	27,4	1	8

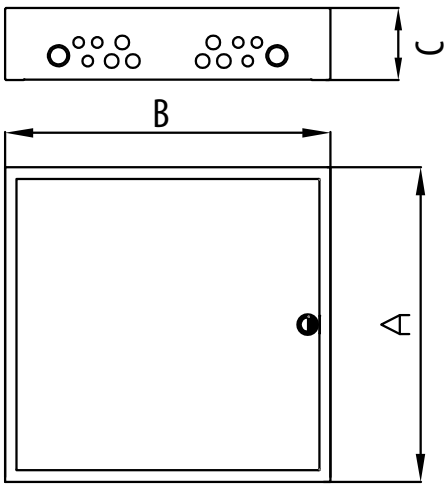
Wall mounted metal distribution board DIDO MBW 2x12 modules/row

Type	Code No.	Number of modules	kg		Rows
MBW24-2	001108125	48	11,46	1	2
MBW24-3	001108126	72	14,46	1	3
MBW24-4	001108127	96	16,96	1	4
MBW24-5	001108128	120	19,56	1	5
MBW24-6	001108129	144	22,05	1	6
MBW24-7	001108132	168	26	1	7
MBW24-8	001108133	192	29	1	8

Accessories

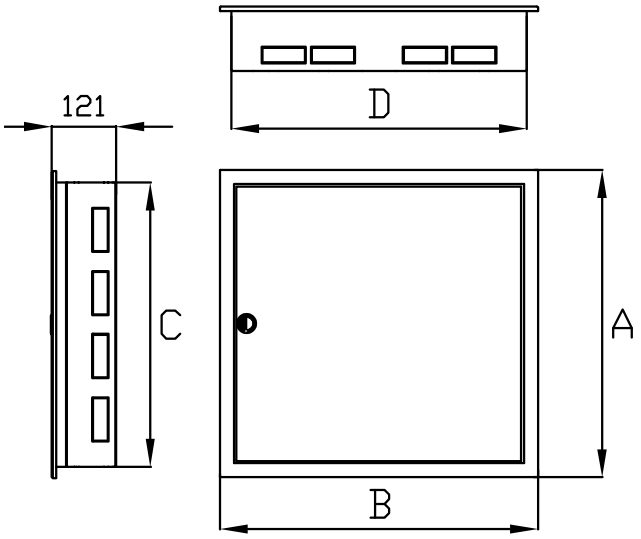
Type	Description	Code No.	g		
MB-NPE12	N-PETERMINAL 12 DIN (2x16)+(14x10), (2x16)+(14x10)	001108200	0,122	1	
MB-NPE18	N-PE TERMINAL STRIP 18 DIN (2x16)+(14x10), (2x16)+(14x10)	001108201	0,133	1	
MB-NPE18L	N-PE TERMINAL STRIP 18 DIN (15x25), (15x25)	001108202	0,203	1	
MB-NPEH1	SET FOR INSTALLATION OF TERMINALS MODULAR SINGLE	001108203	0,0536	1	
MB-NPEH2	SET FOR INSTALLATION OF TERMINALS MODULAR DOUBLE	001108204	0,0834	1	
MB-PLATE12	MOUNTING PLATE MODULAR 12 DIN	001108205	0,341	1	
MB-PLATE18	MOUNTING PLATE MODULAR 18 DIN	001108206	0,450	1	
MB-FRONT12TB	TOP/BOTTOM FRONT PANEL 1X12 DIN MODULAR	001108207	0,425	1	
MB-FRONT12M	FRONT PANEL 1X12 DIN MODULAR	001108208	0,231	1	
MB-FRONT18TB	TOP/BOTTOM FRONT PANEL 1X18 DIN MODULAR	001108209	0,536	1	
MB-FRONT18M	FRONT PANEL 1X18 DIN MODULAR	001108210	0,328	1	
MB-FRONT18-1	FRONT PANEL 1X18 DIN FOR ONE ROW ENCLOSURE MODULAR	001108214	0,537	1	
MB-COVER9	BLIND ELEMENT FOR DISTRIBUTION BOX 9DIN	001108211	0,018	1	
MB-LOCK2KEY	LOCK WITH KEY FOR DISTRIBUTION BOX	001108212	0,024	1	
MB-LATCH	LOCK FOR METALIS DISTRIBUTION BOX	001108213	0,005	1	

Dimensions



Dimensions

Type	Dimensions			Max. allowed power losses when Max. number of devices are installed
	A [mm]	B [mm]	C [mm]	Pde
MBW24-2	466	613	130	68
MBW24-3	591	613	130	98
MBW24-4	716	613	130	113
MBW24-5	841	613	130	173
MBW24-6	966	613	130	183
MBW24-7	1091	613	130	188
MBW24-8	1216	613	130	218
MBW18-1	300	450	130	43
MBW18-2	425	450	130	63
MBW18-3	550	450	130	68
MBW18-4	675	450	130	83
MBW18-5	800	450	130	108
MBW18-6	925	450	130	133
MBW18-7	1050	450	130	143
MBW18-8	1175	450	130	158



Dimensions

Type	Dimensions				Max. allowed power losses when Max. number of devices are installed
	A [mm]	B [mm]	C [mm]	D [mm]	Pde
MBF24-2	502	649	442	590	58
MBF24-3	627	649	567	590	78
MBF24-4	752	649	692	590	108
MBF24-5	877	649	817	590	158
MBF24-6	1002	649	942	590	168
MBF24-7	1127	649	1067	590	188
MBF24-8	1252	649	1192	590	203
MBF18-1	336	486	278	428	38
MBF18-2	461	486	403	428	58
MBF18-3	586	486	528	428	63
MBF18-4	711	486	653	428	68
MBF18-5	836	486	778	428	98
MBF18-6	961	486	903	428	118
MBF18-7	1086	486	1028	428	128
MBF18-8	1211	486	1153	428	143

ETIBOX SB (S Box) Double insulation enclosures IP66, IK10

Enclosures made of fiberglass-reinforced polyester RAL 7035

- Removable mounting plate fixed by 4 screws and pressed nuts

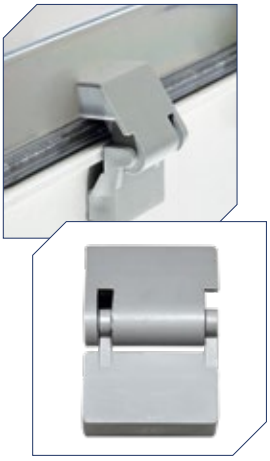
- One enclosure includes polyester mounting plate. If necessary it is possible to order additional plate separetely (as replacement)

- Fixing enclusures directly on wall (surface mounted) through premade holes

- Top cover sealed for high IP degree (IP66)

- Attaching the top cover by four screws using a flat screwdriver

(Max. 2,1 Nm)



- Door hinges as an option, must be ordered separately (Accessories). Recommended use of the silicone to keep IP protection degree (screw holes)

Description

Enclosures made of fiberglass-reinforced polyester RAL 7035, designed for extreme conditions:

- self extinguishing 960°C , does not lead flames
- waterproof, IP66
- double insulation
- halogen free
- UV stable polycarbonate cover with gasket
- wide temperature range -30°C / + 60 °C
- protection against external mechanical impacts: IK10
- easy handling & user friendly
- suitable for PV applications, nominal voltage 1000 V DC
- nominal current 1000A

Technical data

IP protection degree	IP 66
IK protection degree	IK10 (≤ 20 kJ)
Double insulation	⧈
Insulation class	II
Nominal voltage	1500V DC / 1000V AC
Installation temperature	-30°C ... +60°C
Colour	Base - grey (RAL 7035) / Lid - transparent
Flame resistance (UL 94)	Base - V0 / Lid - V2
Thermal resistance	Base - 960°C / Lid - 750°C
Standard	IEC 62208

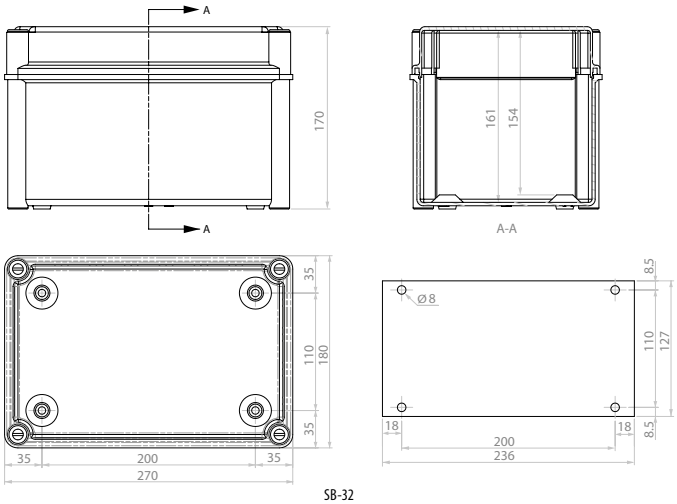
Enclosures - transparent lid, grey base RAL 7035

Type	Code No.	Number of modules	Weight [kg]	Packaging [pcs]
SB-32	001102500	270x180x170	1,25	1
SB-44	001102501	360x360x170	2,90	1
SB-64	001102502	540x360x170	5,05	1

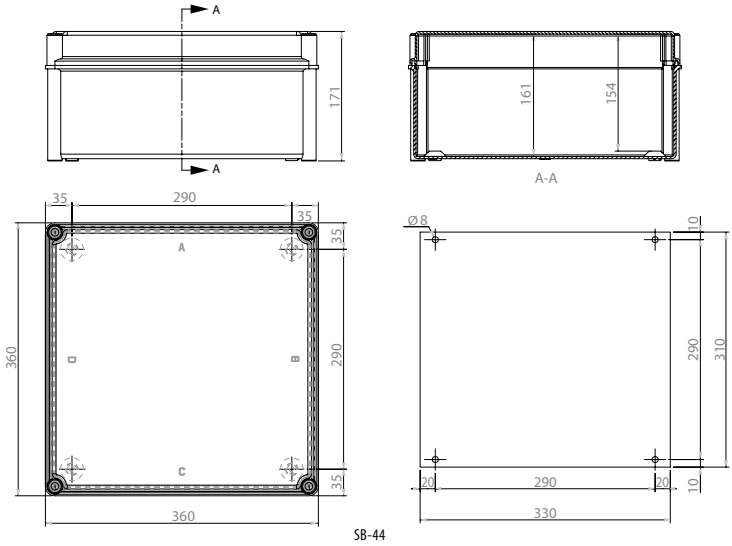
*polyester mounting plate already included and mounted in the box

They are exceptionally durable, corrosion resistant, can withstand exposure to chemicals, water and extreme condition

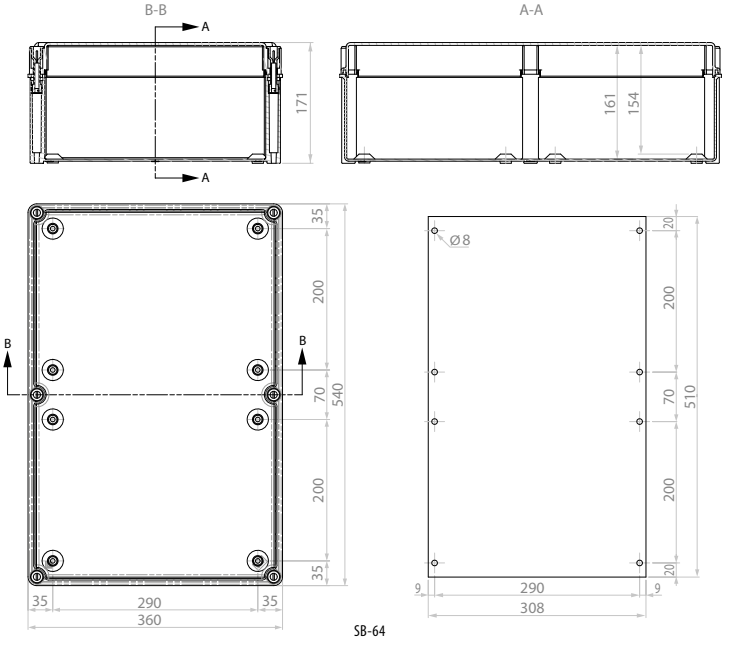
Dimensions



SB-32



SB-44



SB-64

Accessories, spare parts

Type	Code No.	Description	kg	
SB-MP32	001102503	Mounting plate for SB-32	0,16	5
SB-MP44	001102504	Mounting plate for SB-44	0,71	5
SB-MP64	001102505	Mounting plate for SB-64	0,88	5
SB-HIN	001102507	Door Hinges	0,01	1

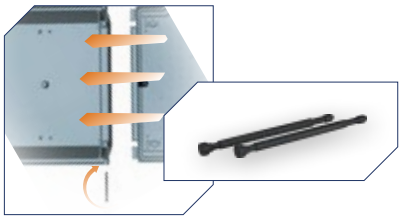
SB-MP..

SB-HIN

ETIBOX Polyester enclosures EPC (IP66)

- Anti blow system. With up to 3 or 4 points of pressure.The “wedges” press the rubber gasket at the door against the interior of the enclosure to assure IP66 protection.

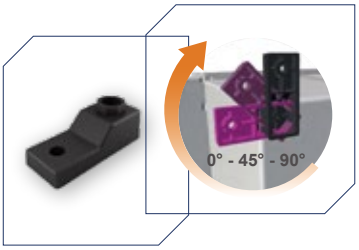
- NON-METALLIC hinge pins that will prevent any kind of corrosion and rust.



- Mounting plates are not included in the package. Can be ordered additionaly: polyester or metal.

- 90° locking mechanism. The standard lock can be replaced by lock with key.

- Enclosure can be directly mounted on wall or additional wall fixing lugs can be used.



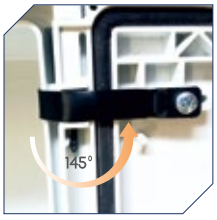
- Possible to connect 2 or more enclosures together (grouping) by using additional connecting flanges.

- Manual installation of the hinge pins, without the need for tools. Hinge bolts allow the door to open up to 180°

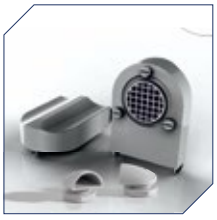
- Closets are designed with a Shade or Cover which protects the closet from getting water inside.

- Included mounting set for installation of enclosures directly on the wall (4 screws with inserts). Due to separated installation hole, IP66 is obtained.

- Accessory EPC-DH-145 allows limit and lock door opening angle from 180 ° to 145 °



- 2 types of passive ventilation (natural air convection) systems: EPC-VDS / VDL modules



- For visual control are available cabinets with window EPC-W series.

- Metric or PG cable glands can be used for IP66 cable entry.

Fiberglass Reinforced Polyester EPC Cabinets (IP66)

Description
Polyester reinforced with fiber glass enclosures provide double insulation class in IP66 protection. Can be used outside (PV systems, up to 1500VDC) or in industry applications.

- Double insulated enclosure, protection class II. Rated operational voltage 1000Vac - 1500Vdc
- Manufactured entirely without any metallic parts. WILL NOT RUST
- IP66 grade protection against water and dust; non-hygroscopic materials.
- Thermosetting materials do NOT vary in structure or get deformed with climate changes. However, plastic materials WILL get deformed.
- Possible grouping of enclosures by using IP66 connection flanges.
- Excellent cabinets for outside installation and withstanding extreme climate conditions. Rain, frost, dirt... even chemical agents. They have a much higher lifespan than metallic closets.
- All components made with recyclable materials and reduced waste. Abides by the European restrictions of hazardous residue RoHS
- High mechanical resistance IK-10
- UV stable material
- Color RAL7035
- Fire resistant at 960°, self-extinguishing material and halogen free.

Technical data

Protection degree	IP66
Degree of protection against external mechanical impacts	IK10, IK07 (with window)
Protection class	II
Rated operational voltage	1000 V AC, 1500 V DC
Material body/seal	fiberglass reinforced polyester / polyurethane
UV resistance	✓
Operating temparature	-30 °C ... +120 °C
Color	RAL 7035
Resistance to fire and heat	960 °C
Compliance with standards	IEC 62208

Polyester enclosures IP66 (solid door)

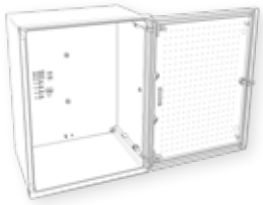
Type	Code No.	Description	Dimensions [mm]			kg	
			Height	Width	Depth		
EPC 30-25-14	001102600	Polyester enclosure IP66	300	250	140	1,93	1
EPC 40-30-20	001102601	Polyester enclosure IP66	400	300	200	3,60	1
EPC 40-40-20	001102602	Polyester enclosure IP66	400	400	200	4,35	1
EPC 50-40-20	001102603	Polyester enclosure IP66	500	400	200	5,25	1
EPC 60-40-23	001102604	Polyester enclosure IP66	600	400	230	7,13	1
EPC 60-50-23	001102605	Polyester enclosure IP66	600	500	230	7,93	1
EPC 80-30-23	001102606	Polyester enclosure IP66	800	300	230	6,40	1
EPC 80-60-30	001102607	Polyester enclosure IP66	800	600	300	12,65	1

Mounting plate not included!

Polyester enclosures IP66 (door with window)

Type	Code No.	Description	Dimensions [mm]			kg	
			Height	Width	Depth		
EPC-W 30-25-14	001102608	Polyester enclosure IP66 (with window)	300	250	140	2,00	1
EPC-W 40-30-20	001102609	Polyester enclosure IP66 (with window)	400	300	200	3,57	1
EPC-W 40-40-20	001102610	Polyester enclosure IP66 (with window)	400	400	200	4,30	1
EPC-W 50-40-20	001102611	Polyester enclosure IP66 (with window)	500	400	200	5,21	1
EPC-W 60-40-23	001102612	Polyester enclosure IP66 (with window)	600	400	230	7,05	1
EPC-W 60-50-23	001102613	Polyester enclosure IP66 (with window)	600	500	230	7,56	1
EPC-W 80-30-23	001102614	Polyester enclosure IP66 (with window)	800	300	230	6,40	1
EPC-W 80-60-30	001102615	Polyester enclosure IP66 (with window)	800	600	300	12,15	1

Mounting plate not included!

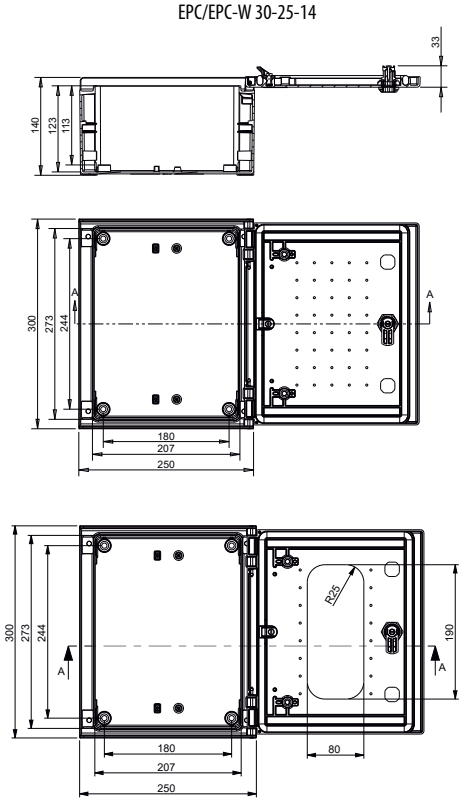


Included:
- enclosure with doors
- hinges
- wall mounting set (4pcs.)
- Standard two-leaf lock with key

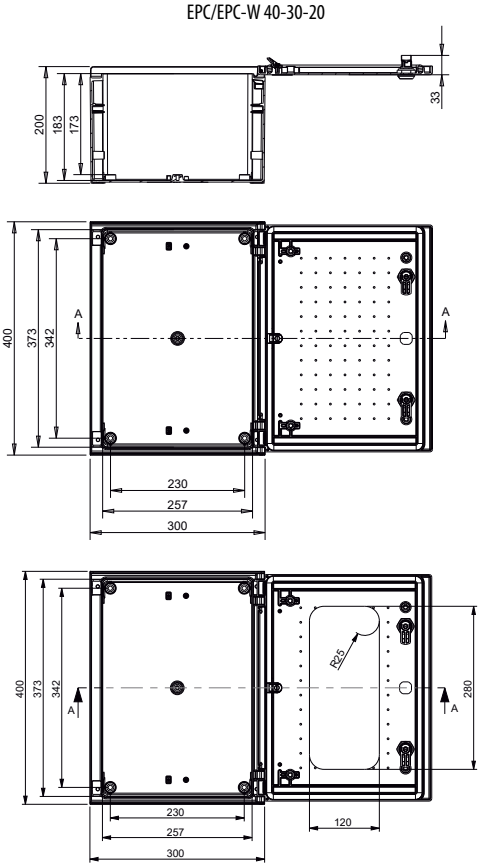
Properties	EPC/-W 30-25-14	EPC/-W 40-30-20	EPC/-W 40-40-20	EPC/-W 50-40-20	EPC/-W 60-40-23	EPC/-W 60-50-23	EPC/-W 80-30-23	EPC/-W 80-60-30
External dimensions								
Height (mm)	300	400	400	500	600	600	800	800
Width (mm)	250	300	400	400	400	500	300	600
Depth (mm)	140	200	200	200	230	230	230	300
Internal dimensions								
Height (mm)	273	373	373	473	573	573	773	773
Width (mm)	207	257	357	357	357	457	257	557
Depth (mm)	123	183	183	183	213	213	213	283
Other characteristics								
Number of locks	1	2	2	2	2	2	2	2
Number of wedges (anti-blow system)	1	1	2	2	2	2	2	2
Number of fixing points - mounting plate	4	5	5	6	6	6	4	7
Power dissipation Pde@T=40 ° C	36,2	58,8	72,6	82,9	99,4	117	103	185
Weight (kg)	1,93	3,6	4,35	5,25	7,13	7,93	6,4	12,65
Mounting plate (polyester)	EPC-PMP 30-25	EPC-PMP 40-30	EPC-PMP 40-40	EPC-PMP 50-40	EPC-PMP 60-40	EPC-PMP 60-50	EPC-PMP 80-30	EPC-PMP 80-60
Height (mm)	262	360	360	460	558	558	756	756
Width (mm)	198	248	348	348	348	448	248	548
Thickness (mm)	3	3	3	3	3	3	3	4
Weight (kg)	0,38	0,59	0,87	1,09	1,3	1,75	1,46	2,78
Mounting plate (metal)	EPC-MPP 30-25	EPC-MPP 40-30	EPC-MPP 40-40	EPC-MPP 50-40	EPC-MPP 60-40	EPC-MPP 60-50	EPC-MPP 80-30	EPC-MPP 80-60
Height (mm)	262	360	360	460	558	558	756	756
Width (mm)	198	248	348	348	348	448	248	548
Thickness (mm)	2	2	2	2	2	2	2	2
Weight (kg)	0,79	1,3	1,9	2,2	3	3,6	3,26	6,4

Dimensions

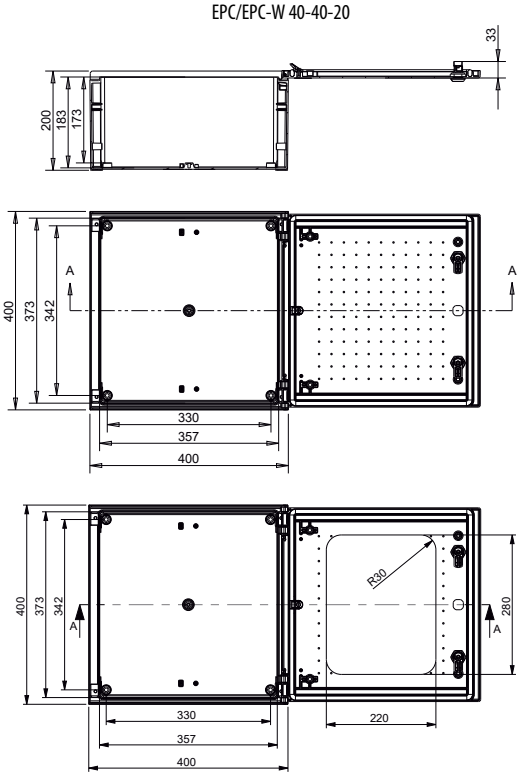
EPC/EPC-W 30-25-14



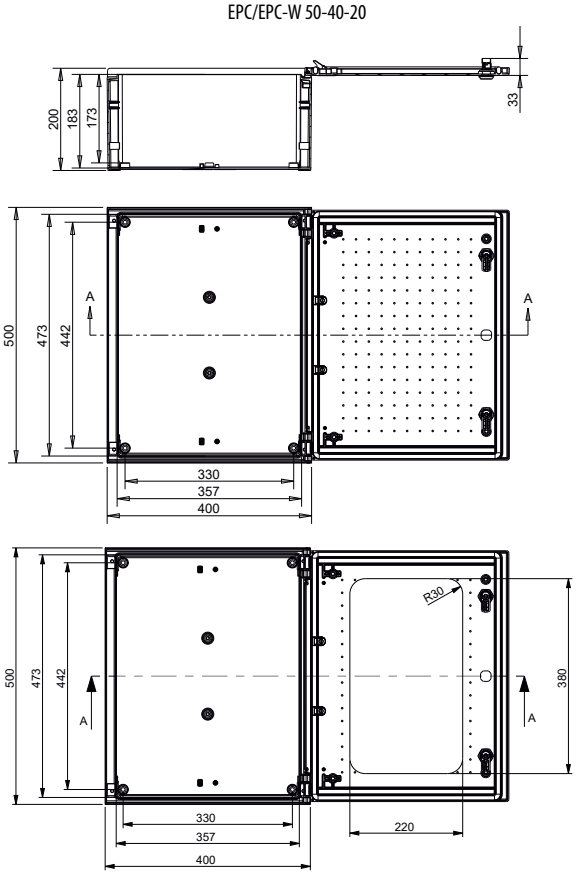
EPC/EPC-W 40-30-20



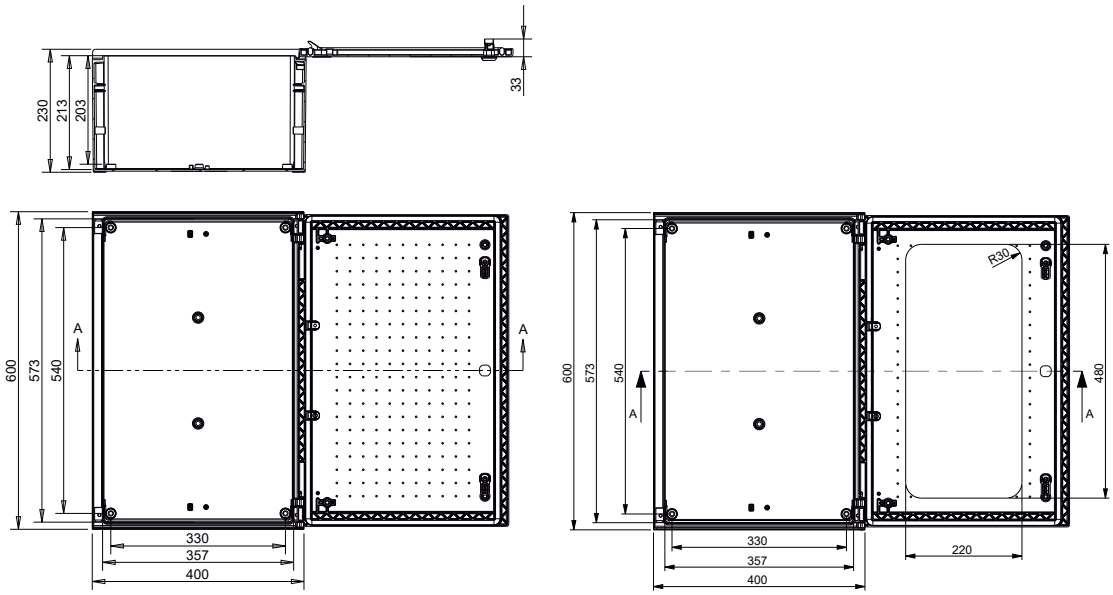
EPC/EPC-W 40-40-20



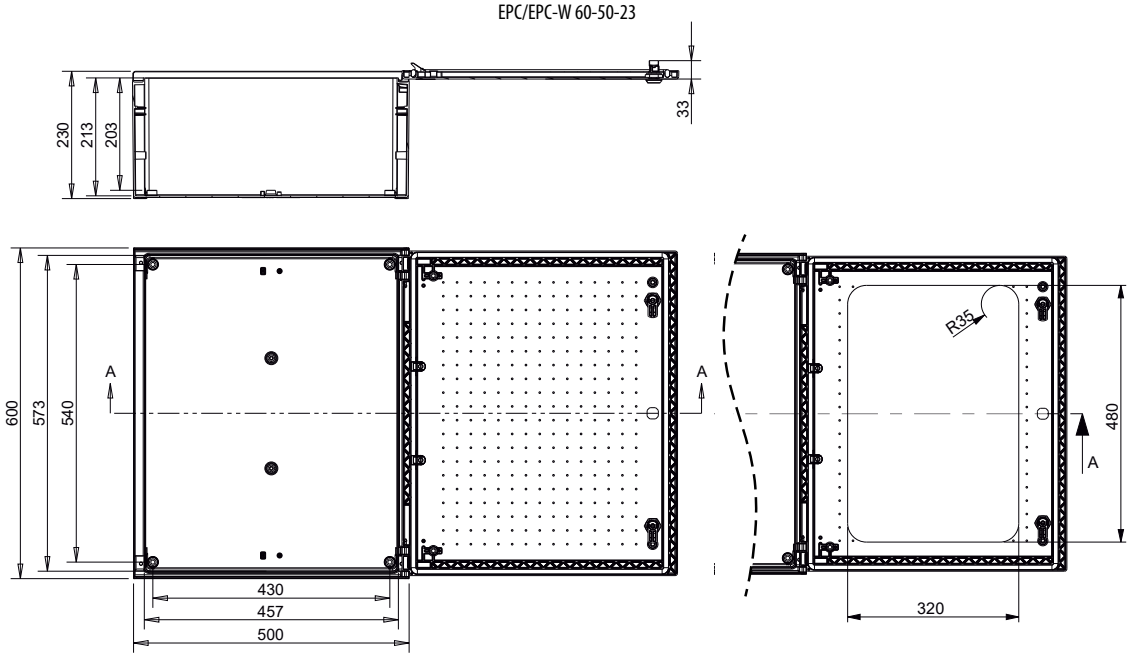
EPC/EPC-W 50-40-20



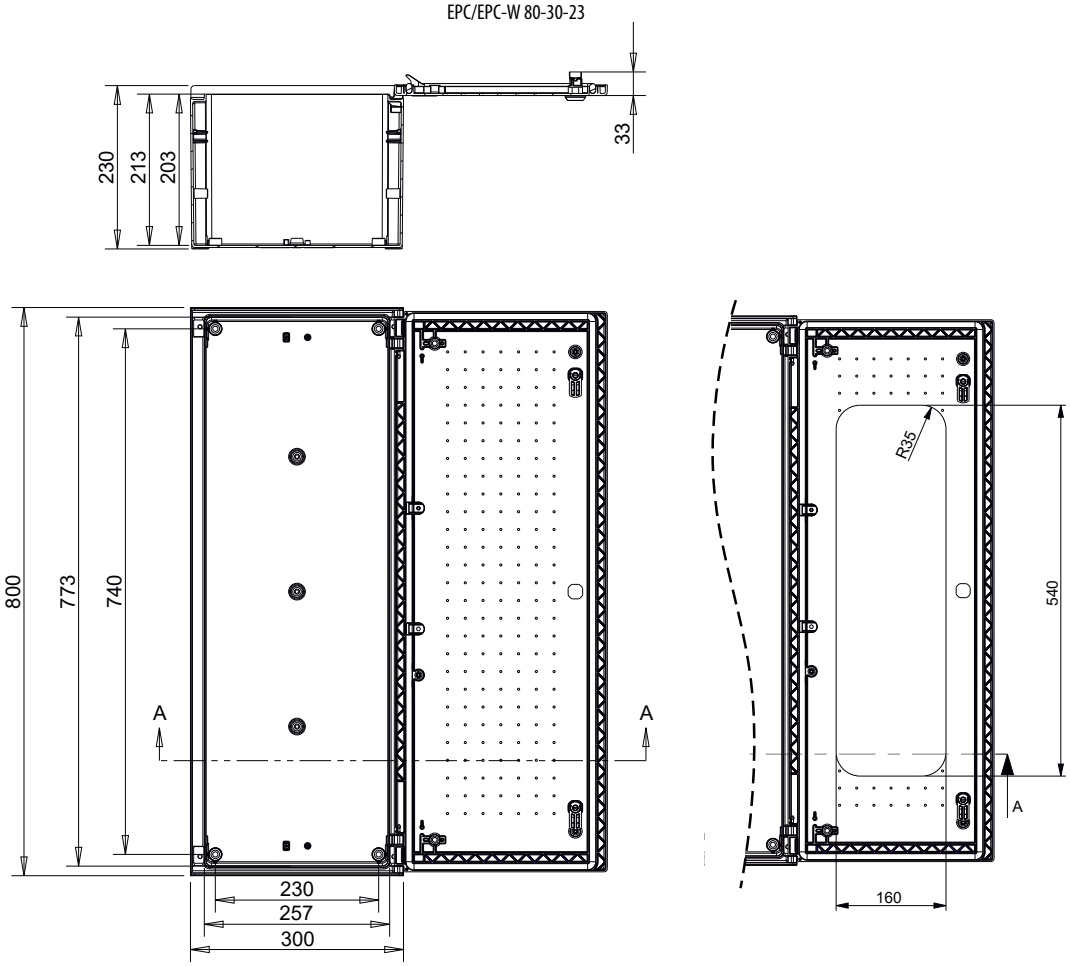
EPC/EPC-W 60-40-23



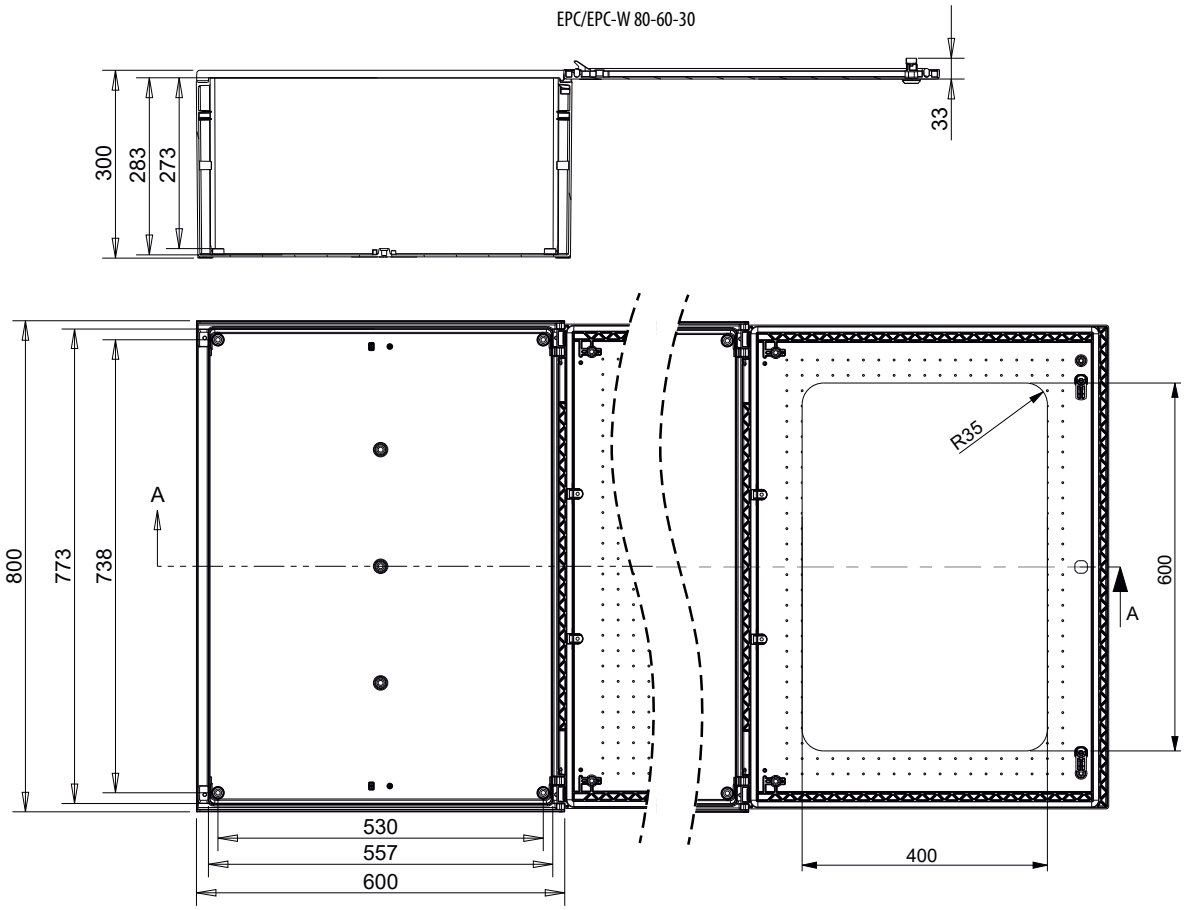
EPC/EPC-W 60-50-23



EPC/EPC-W 80-30-23



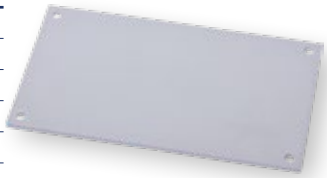
EPC/EPC-W 80-60-30



Accessories

Mounting plate EPC-PMP (polyester)

Type	Code No.	Description	Overall dimensions [mm]			g	
			Height	Width	Thickness		
EPC-PMP 30-25	001102616	Polyester plate	262	198	3	380	1
EPC-PMP 40-30	001102617	Polyester plate	360	248	3	590	1
EPC-PMP 40-40	001102618	Polyester plate	360	348	3	870	1
EPC-PMP 50-40	001102619	Polyester plate	460	348	3	1090	1
EPC-PMP 60-40	001102620	Polyester plate	558	348	3	1300	1
EPC-PMP 60-50	001102621	Polyester plate	558	448	3	1750	1
EPC-PMP 80-30	001102622	Polyester plate	756	248	3	1460	1
EPC-PMP 80-60	001102623	Polyester plate	756	548	4	2780	1



Mounting plate EPC-MMP (metal)

Type	Code No.	Description	Overall dimensions [mm]			g	
			Height	Width	Thickness		
EPC-MMP 30-25	001102624	Metal plate	262	198	2	790	1
EPC-MMP 40-30	001102625	Metal plate	360	248	2	1300	1
EPC-MMP 40-40	001102626	Metal plate	360	348	2	1900	1
EPC-MMP 50-40	001102627	Metal plate	460	348	2	2200	1
EPC-MMP 60-40	001102628	Metal plate	558	348	2	3000	1
EPC-MMP 60-50	001102629	Metal plate	558	448	2	3600	1
EPC-MMP 80-30	001102630	Metal plate	756	248	2	3260	1
EPC-MMP 80-60	001102631	Metal plate	756	548	2	6400	1

Accessories

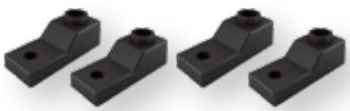
Type	Code No.	Description	Overall dimensions [mm]			g	
			Height	Width	Thickness		
EPC-DL10	001102632	Lock with universal key	50	20	20	40	1
EPC-LK	001102633	Lock with key	50	40	20	70	1
EPC-VDS	001102634	IP54 ventilation module (mini)	28	25	20	10	1
EPC-VDL	001102635	IP54 ventilation module (large)	68	50	23	30	1
EPC-WM	001102636	Wall mounting fixing lugs	67	28	25	90	1
EPC-DH-145	001102637	Door stop (145°)	6	1	1	10	1

EPC-DL10

EPC-LK

EPC-VDS

EPC-VDL



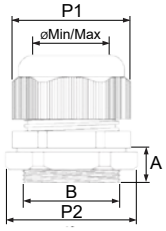
EPC-WM

EPC-DH-145

Cable glands PG IP68

IP68 cable glands for cable entry in EPC enclosure, included nut and rubber.

Cable glands PG IP68

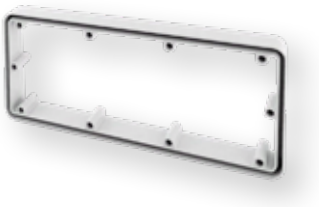
Type	Code No.	Thread	Cross-section		Overall dimensions [mm]					g	
			min.	max.		A	B	P1	P2		
PG-7	001102641	M-12	2,5	6,5		9	12,5	16	19	10	1
PG-9	001102642	M-16	4,5	8		9	15,5	19	22	10	1
PG-11	001102643	M-20	5	10		9	18,6	22	24	10	1
PG-13.5	001102644	M-20	6	12		10	20,4	24	26	20	1
PG-16	001102645	M-25	7	14		10	22,5	27	30	20	1
PG-21	001102646	M-32	11	18		12	28,3	33	36	20	1
PG-29	001102647	M-32	17	25		13	37	42	46	30	1
PG-36	001102648	M-40	22	32		16	47	52	56	30	1
PG-42	001102649	M-50	26	39		17	54	60	65	30	1
PG-48	001102650	M-63	30	44		18	59,3	64	70	40	1

Connection flanges EPC-CF

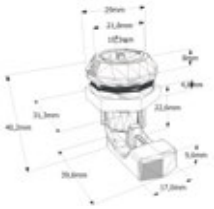
For connecting 2 or more EPC enclosures (grouping).

Connection flanges EPC-CF

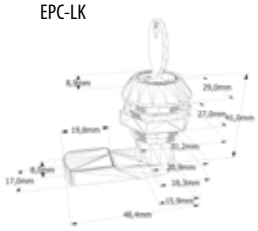
Type	Code No.	Description	Overall dimensions [mm]			g	
			Height	Width	Depth		
EPC-CF-A 23x10	001102638	Connection flange	230	100	20	150	1
EPC-CF-B 35x15	001102639	Connection flange	350	150	20	190	1
EPC-CF-C 35x15	001102640	Connection flange	350	150	20	240	1



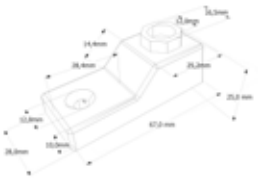
EPC-DL10



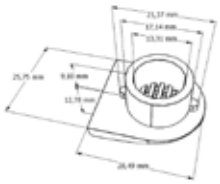
EPC-LK



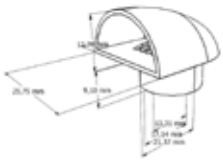
EPC-WM



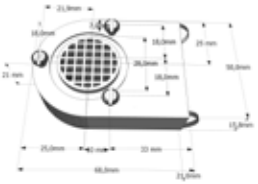
EPC-VDS (1)



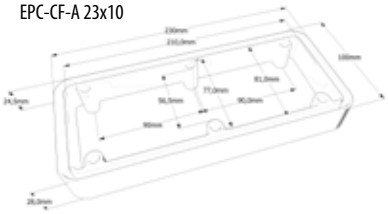
EPC-VDS (2)



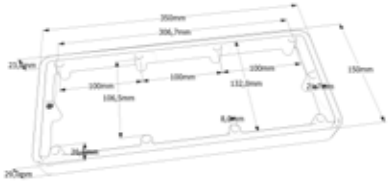
EPC-VDL



EPC-CF-A 23x10

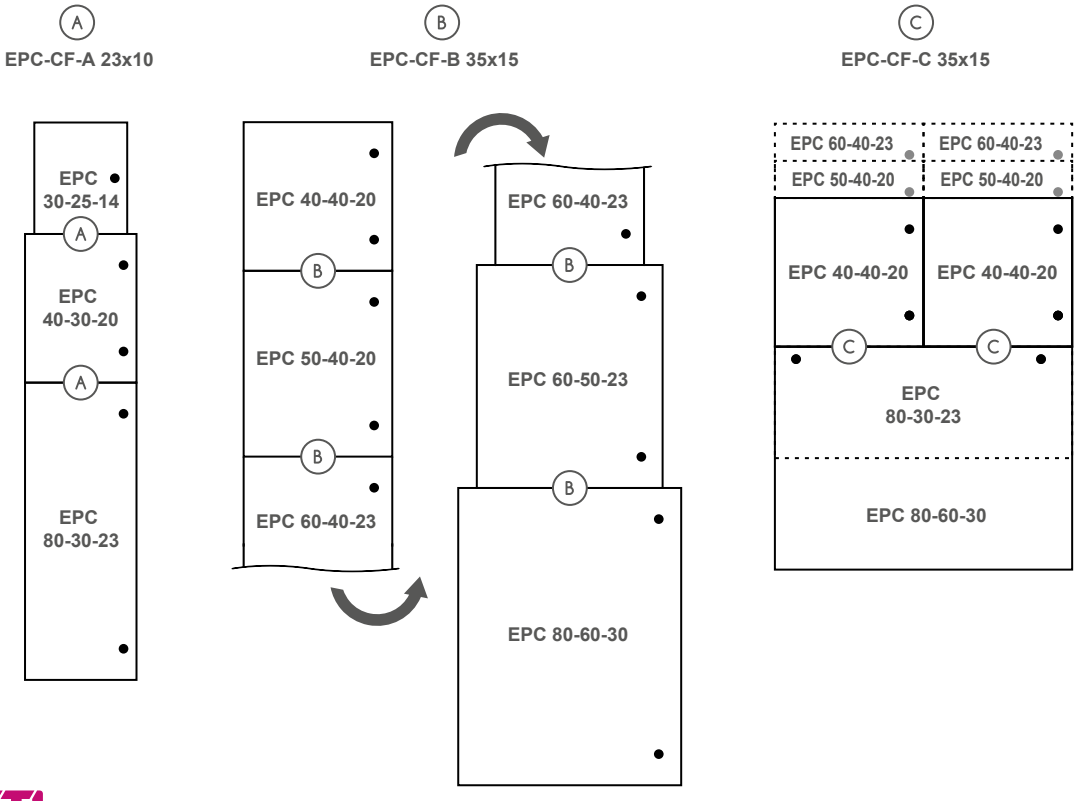


EPC-CF-B 35x15



EPC-CF-C 35x15

Possibilities to connect EPC-CF



ETIBOX Metal enclosures GT Type, IP66

Application :
GT-Type metal enclosures cover a wide range of applications both for industrial and civil buildings. Due to its design they provide high IP protection level, mechanical strength and functionality. They are used in places where electrical equipment is exposed to adverse effect of factors such as water, dust, mechanical impact..
Main advantages:

- Enclosures made of high quality sheet steel thicknesses from 1.2 mm to 2 mm, resistant to external mechanical factors - IK10.
- Specially profiled edges of the housing ensure stiffness and excellent protection against water. Poured polyurethane gasket on the door providing IP66 protection.
- Door opening in the contour of the outer casing, which allows direct linking of several enclosures in series - a special structure hinges. The door mounting on the left or right side.

Not for external use.

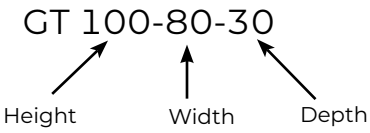
Compliance with standards and directives:

- EN 62208 Empty enclosures for low voltage switchgear and controlgear
- EN 60529 Degrees of protection provided by enclosures (IP Code)
- EN 62262 Degrees of protection against external mechanical impacts provided by enclosures of electrical equipment (IK code)
- Meet the requirements of the RoHS Directive
- Marked CE

The enclosures are supplied with:

- Cable entry cover with mounting kit
- Mounting plate with mounting kit
- Door lock with, double-bit insert and key
- Cover holes
- Earthing set of grounding (without cable)

Enclosure designation



Metal enclosures GT Type

Type	Code	Lock quantity	Hinges quantity	kg	
GT 25-20-15	001102100	1	2	3,61	1
GT 30-20-15	001102101	1	2	4,14	1
GT 30-30-15	001102102	1	2	5,65	1
GT 30-30-20	001102103	1	2	6,38	1
GT 30-30-25	001102104	1	2	7,13	1
GT 40-30-15	001102105	1	2	7,07	1
GT 40-30-20	001102106	1	2	7,90	1
GT 40-30-25	001102107	1	2	8,74	1
GT 40-40-15	001102108	1	2	8,92	1
GT 40-40-20	001102109	1	2	9,90	1
GT 40-40-25	001102110	1	2	10,89	1
GT 40-60-20	001102111	1	2	14,57	1
GT 40-60-25	001102112	1	2	15,87	1
GT 40-60-30	001102113	1	2	17,17	1
GT 50-40-15	001102114	2	2	10,69	1
GT 50-40-20	001102115	2	2	11,17	1
GT 50-40-25	001102116	2	2	12,86	1
GT 50-55-20	001102117	2	2	15,30	1
GT 50-55-25	001102118	2	2	16,62	1
GT 60-40-15	001102119	2	2	12,47	1
GT 60-40-20	001102120	2	2	13,64	1
GT 60-40-25	001102121	2	2	14,82	1
GT 60-60-20	001102122	2	2	20,02	1
GT 60-60-25	001102123	2	2	21,51	1
GT 60-60-30	001102124	2	2	22,99	1
GT 60-80-30	001102125	2	2	32,65	1
GT 65-55-20	001102126	2	2	19,86	1
GT 65-55-25	001102127	2	2	21,32	1
GT 80-40-20	001102128	2	3	19,45	1
GT 80-40-25	001102129	2	3	21,11	1
GT 80-55-20	001102130	2	3	26,17	1
GT 80-55-25	001102131	2	3	28,11	1
GT 80-60-20	001102132	2	3	28,13	1
GT 80-60-25	001102133	2	3	30,14	1
GT 80-60-30	001102134	2	3	32,17	1
GT 80-60-40	001102135	2	3	36,20	1
GT 80-80-20	001102136	2	3	35,93	1
GT 80-80-25	001102137	2	3	38,31	1
GT 80-80-30	001102138	2	3	40,68	1
GT 80-80-40	001102139	2	3	45,44	1
GT 80-100-30	001102140	2	3	49,20	1
GT 80-100-40	001102141	2	3	54,67	1
GT 100-60-25	001102142	1*	3	36,35	1
GT 100-60-30	001102143	1*	3	38,60	1
GT 100-60-40	001102144	1*	3	43,10	1
GT 100-80-25	001102145	1*	3	46,11	1
GT 100-80-30	001102146	1*	3	48,72	1
GT 100-80-40	001102147	1*	3	53,94	1
GT 100-100-25	001102148	1*	3	55,87	1
GT 100-100-30	001102149	1*	3	58,83	1
GT 100-100-40	001102150	1*	3	64,78	1
GT 120-60-25	001102151	1*	3	42,55	1
GT 120-80-25	001102152	1*	3	53,90	1
GT 120-80-30	001102153	1*	3	56,76	1
GT 120-80-40	001102154	1*	3	62,45	1
GT 120-100-30	001102155	1*	3	68,47	1
GT 120-100-40	001102156	1*	3	74,88	1

*One lock with 3 point locking system (top, center, bottom)

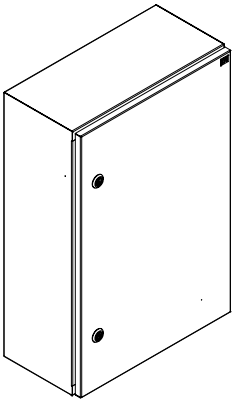
WATCH THE VIDEO

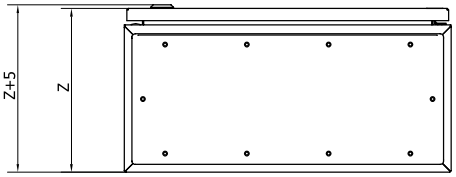
ETI distribution board assembly

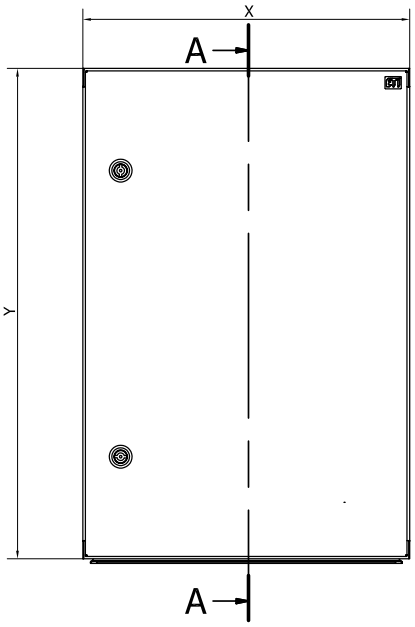
Type	Height Y (mm)	Width X (mm)	Depth Z (mm)	Lock quantity	Hinges quantity	Cable entry depth B1 (mm)	Cable entry width A1 (mm)	Cover cable entry depth B (mm)	Cover cable entry width A (mm)
GT 25-20-15	250	200	150	1	2	70	140	110	180
GT 30-20-15	300	200	150	1	2	70	140	110	180
GT 30-30-15	300	300	150	1	2	70	240	110	280
GT 30-30-20	300	300	200	1	2	120	240	160	280
GT 30-30-25	300	300	250	1	2	170	240	210	280
GT 40-30-15	400	300	150	1	2	70	240	110	280
GT 40-30-20	400	300	200	1	2	120	240	160	280
GT 40-30-25	400	300	250	1	2	170	240	210	280
GT 40-40-15	400	400	150	1	2	70	340	110	380
GT 40-40-20	400	400	200	1	2	120	340	160	380
GT 40-40-25	400	400	250	1	2	170	340	210	380
GT 40-60-20	400	600	200	1	2	120	540	160	580
GT 40-60-25	400	600	250	1	2	170	540	210	580
GT 40-60-30	400	600	300	1	2	170	540	210	580
GT 50-40-15	500	400	150	2	2	70	340	110	380
GT 50-40-20	500	400	200	2	2	120	340	160	380
GT 50-40-25	500	400	250	2	2	170	340	210	380
GT 50-55-20	500	550	200	2	2	120	490	160	530
GT 50-55-25	500	550	250	2	2	170	490	210	530
GT 60-40-15	600	400	150	2	2	70	340	110	380
GT 60-40-20	600	400	200	2	2	120	340	160	380
GT 60-40-25	600	400	250	2	2	170	340	210	380
GT 60-60-20	600	600	200	2	2	120	540	160	580
GT 60-60-25	600	600	250	2	2	170	540	210	580
GT 60-60-30	600	600	300	2	2	170	540	210	580
GT 60-80-30	600	800	300	2	2	170	740	210	780
GT 65-55-20	650	550	200	2	2	120	490	160	530
GT 65-55-25	650	550	250	2	2	170	490	210	530
GT 80-40-20	800	400	200	2	3	120	340	160	380
GT 80-40-25	800	400	250	2	3	170	340	210	380
GT 80-55-20	800	550	200	2	3	120	490	160	530
GT 80-55-25	800	550	250	2	3	170	490	210	530
GT 80-60-20	800	600	200	2	3	120	540	160	580
GT 80-60-25	800	600	250	2	3	170	540	210	580
GT 80-60-30	800	600	300	2	3	170	540	210	580
GT 80-60-40	800	600	400	2	3	170	540	210	580
GT 80-80-20	800	800	200	2	3	120	740	160	780
GT 80-80-25	800	800	250	2	3	170	740	210	780
GT 80-80-30	800	800	300	2	3	170	740	210	780
GT 80-80-40	800	800	400	2	3	170	740	210	780
GT 80-100-30	800	1000	300	2	3	170	940	210	980
GT 80-100-40	800	1000	400	2	3	170	940	210	980
GT 100-60-25	1000	600	250	3p*	3	170	540	210	580
GT 100-60-30	1000	600	300	3p*	3	170	540	210	580
GT 100-60-40	1000	600	400	3p*	3	170	540	210	580
GT 100-80-25	1000	800	250	3p*	3	170	740	210	780
GT 100-80-30	1000	800	300	3p*	3	170	740	210	780
GT 100-80-40	1000	800	400	3p*	3	170	740	210	780
GT 100-100-25	1000	1000	250	3p*	3	170	940	210	980
GT 100-100-30	1000	1000	300	3p*	3	170	940	210	980
GT 100-100-40	1000	1000	400	3p*	3	170	940	210	980
GT 120-60-25	1200	600	250	3p*	3	170	540	210	580
GT 120-80-25	1200	800	250	3p*	3	170	740	210	780
GT 120-80-30	1200	800	300	3p*	3	170	740	210	780
GT 120-80-40	1200	800	400	3p*	3	170	740	210	780
GT 120-100-30	1200	1000	300	3p*	3	170	940	210	980
GT 120-100-40	1200	1000	400	3p*	3	170	940	210	980

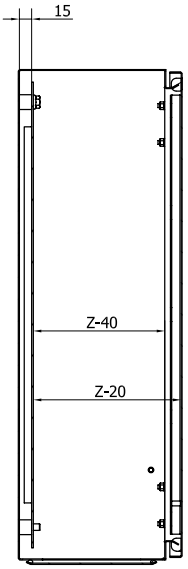
*One lock with 3 point locking system (top, center, bottom)

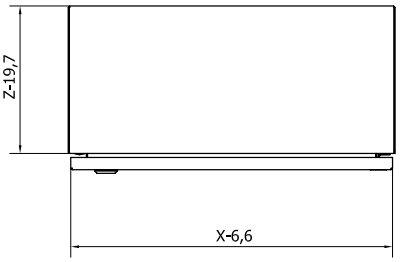
Dimensions

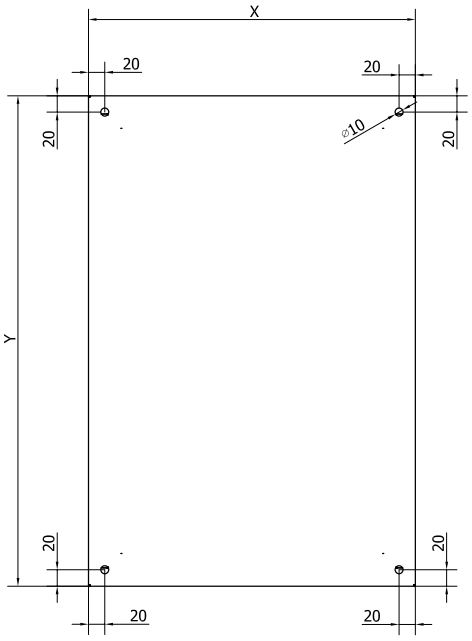


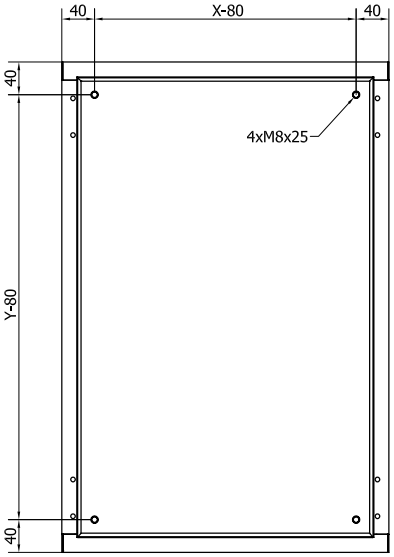




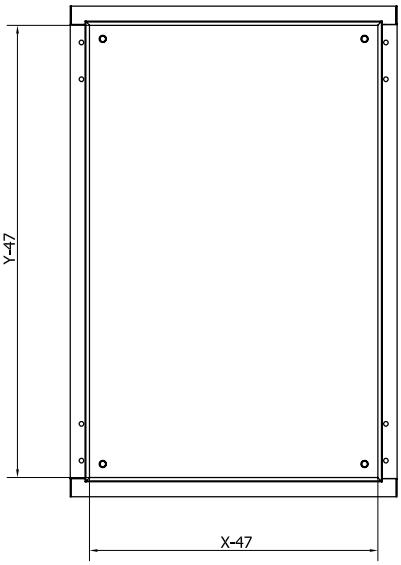


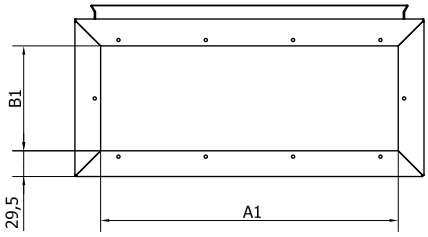


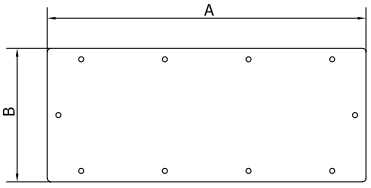




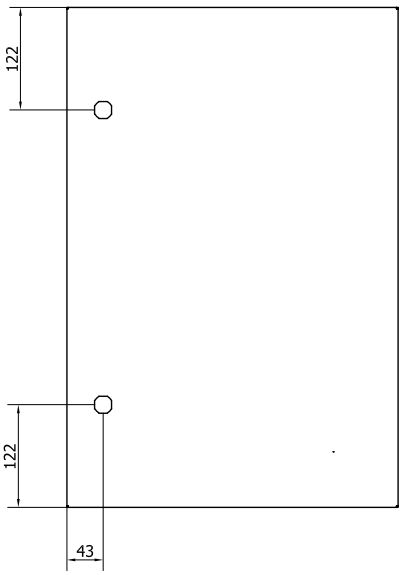
The door

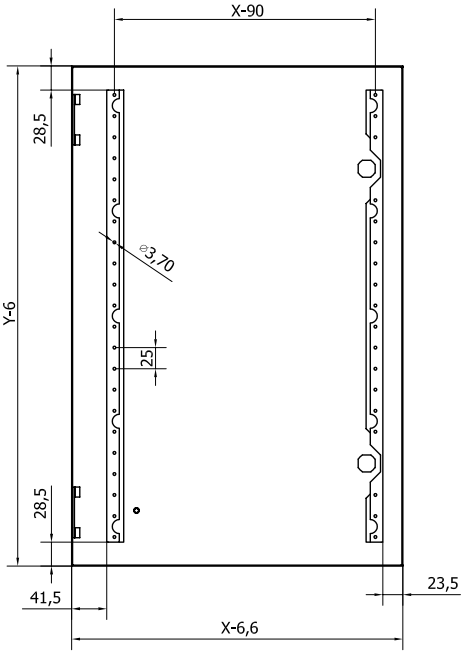




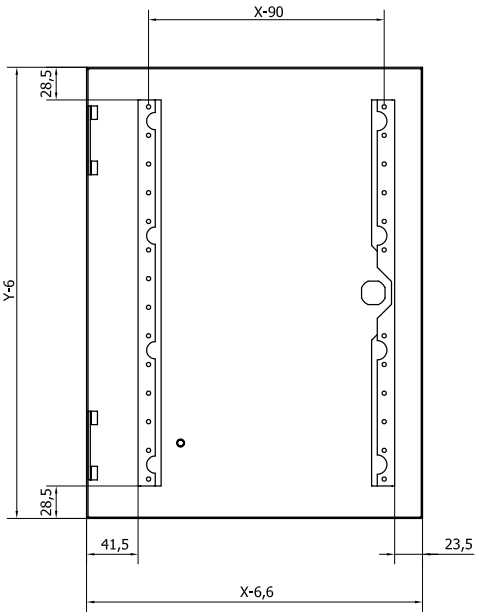


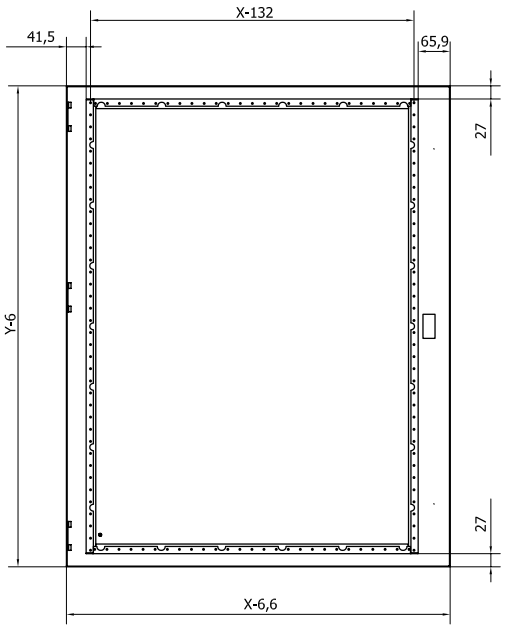
The cover of cable entry



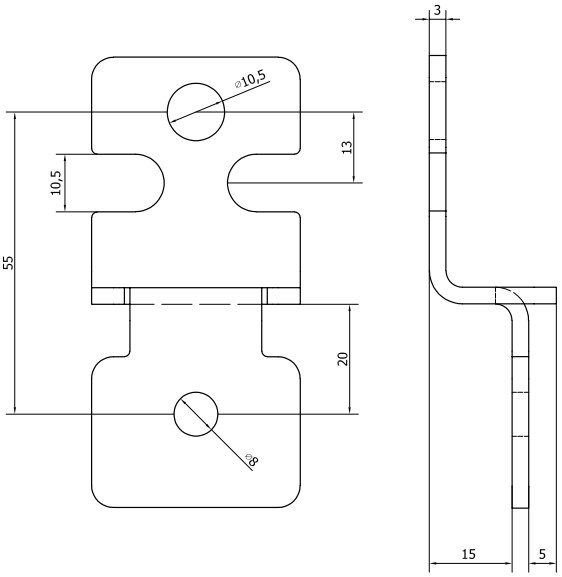


The door

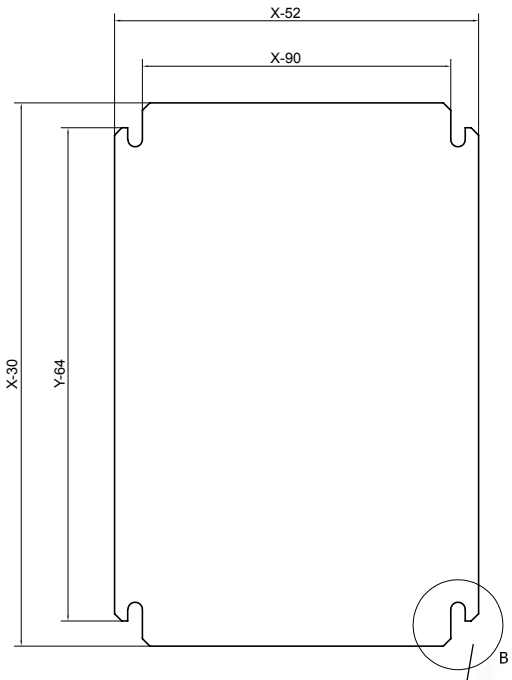




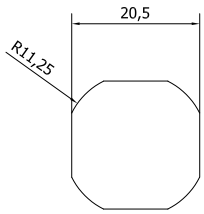
Wall holder

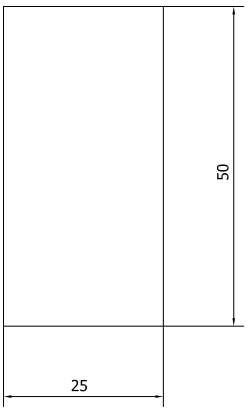


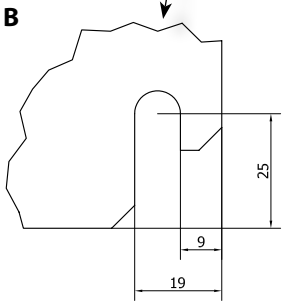
Mounting plate



Door driling







Accessories

Type	Code	Description	g	
U400	001102166	Wall holders (set 4 pcs)	370	1
LK-D3-M22	001102167	Lock D3	70	1
LK-D5-M22	001102168	Lock D5	70	1
LK-KW8-M22	001102169	Lock DW	70	1
LK-T9-M22	001102170	Lock T9	70	1
LK-1333-M22	001102171	Patent lock 1333	90	1
LK-B1333-M22	001102172	Patent lock 1333 with knob	120	1
KEY-D5-M	001102173	Key D5 metal	40	1
KEY-T9-M	001102174	Key T9 metal	40	1
KEY-KW8-M	001102175	Key quadrat 8mm	40	1
KEY-UNI-M	001102176	Universal key	70	1
LPE-6	001102177	PE set 6mm^2	20	1
K-A4	001102178	Documentation A4 pocket	160	1

LK-1333-M22

LK-T9-M22

LK-D5-M22

LK-KW8-M22

LK-B1333-M22

KEY-T9-M

KEY-D5-M

KEY-KW8-M

K-A4

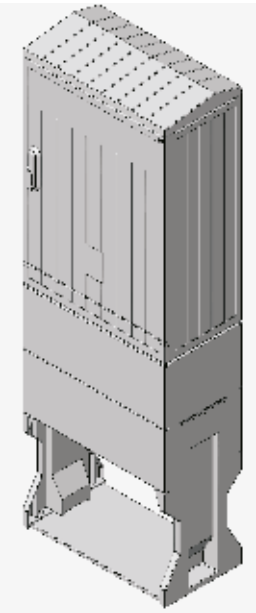
KEY-UNI-M

U400

LPE6

ETIBOX Free-standing cable distribution cabinets

Free-standing cable distribution cabinets KVR



The KVR are DIN size stand-alone thermosetting enclosures with a depth of 320 mm comply with a range of requirements for electrical switchgear. They are made of thermosetting glass fibre reinforced polyester which has insulating, sloaw-burning and self-extingushing properties and its typical features is high resistance to weather conditions (UV). These enclosures due to its multifunctional structure can be used in power electro distribution or telecom facilities as well as general public or industry purposes.
The module design allows to connect the enclosure with the pedestal or cable base. The external surface of these enclosures is ribbed which gives them additional strength and mechanical resilience and also prevents from covering with posters. Doors and segments can be dismounted by hands without any tools. The ventialtion system used in the enclosures minimises accumulation of humidity.

- Enclosures are made of glass fibre reinforced plastic (SMC)
- Available frames sizes 00, 0, 1, 2
- Depth 320 mm
- Modular construction: enclosure, base, pedestal
- Inclinated roof
- Three-point door closing with a revolving handle and the possibility of incorporating a half-cylinder insert
- Three-point busbar holder adjustment
- Standard protection class IP44
- Material resistant to UV radiation, acids, strokes, atmospheric influences
- Colour RAL 7035
- Accessories
- Standards: IEC 62208:2011, IEC 61439-5:2010

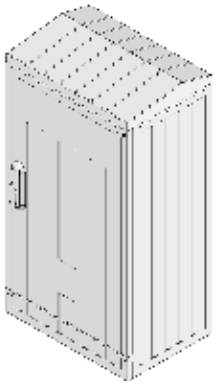
Electrical parameters

Rated operational voltage Un	400V
Rated insulation voltage Ui	690V
Flamability category	V0
Degree of protection against external mechanical impacts	IK 10
Protection degree	IP44
Protection class	II
Operating temparature	-25°C ... 40°C

Enclosure - regular size (874mm)

Type	Code No.	Description	kg	
KVR 00	001601600	Single doors	14,20	1/1
KVR 0	001601601	Single doors	16,20	1/1
KVR 1	001601602	Two doors (split)	20,60	1/1
KVR 2	001601603	Two doors (split)	26,00	1/1

With possibility to use padlock



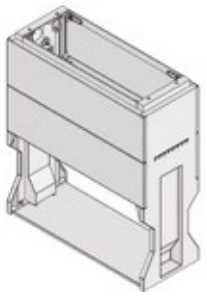
Enclosure - 1m size (1144mm)

Type	Code No.	Description	kg	
KVR 01	001601604	Single doors	21	1/1
KVR 11	001601605	Two doors (split)	26,5	1/1
KVR 21	001601606	Two doors (split)	33,5	1/1

With possibility to use padlock

Pedestal

Type	Code No.	For use with	kg	
KVR-P 00	001601610	KVR 00	11,60	1
KVR-P 0	001601611	KVR 0, KVR 01	13,20	1
KVR-P 1	001601612	KVR 1, KVR 11	15,20	1
KVR-P 2	001601613	KVR 2, KVR 21	17,80	1

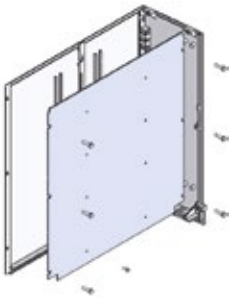


Pedestal extender

Type	Code No.	For use with	kg	
KVR-PE 00	001601620	KVR 00	4,60	1
KVR-PE 0	001601621	KVR 0, KVR 01	5,20	1
KVR-PE 1	001601622	KVR 1, KVR 11	6,00	1
KVR-PE 2	001601623	KVR 2, KVR 21	7,40	1

Mounting plate metal Zn for regular size (874mm) enclosure

Type	Code No.	For use with	kg	
KVR-MP 00	001601630	KVR 00	5,20	4
KVR-MP 0	001601631	KVR 0	6,80	4
KVR-MP 1	001601632	KVR 1	9,20	4
KVR-MP 2	001601633	KVR 2	13,00	4

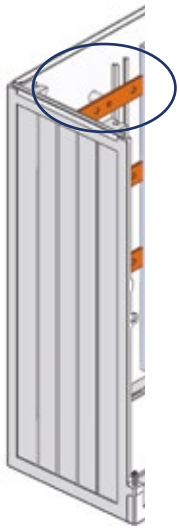


Mounting plate metal Zn for 1m size enclosure

Type	Code No.	For use with	kg	
KVR-MP 01	001601634	KVR 01	6,3	4
KVR-MP 11	001601635	KVR 11	8,75	4
KVR-MP 21	001601636	KVR 21	17	4
KVR-MP 2	001601633	KVR 2	13,00	4

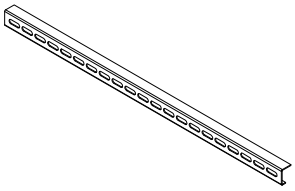
Copper bars without pressed nuts - available upon request

Type	Dimension, for use with	kg	
KVR-CB 00 30x5	30x5x444, KVR 00	0,60	4
KVR-CB 00 40x5	40x5x444, KVR 00	0,78	4
KVR-CB 0 30x5	30x5x580, KVR 0, KVR 01	0,78	4
KVR-CB 0 40x5	40x5x580, KVR 0, KVR 01	1,05	4
KVR-CB 1 40x5	40x5x774, KVR 1, KVR 11	1,35	4
KVR-CB 1 40x10	40x10x774, KVR 1, KVR 11	2,70	4
KVR-CB 1 60x10	60x10x774, KVR 1, KVR 11	4,10	4
KVR-CB 2 40x5	40x5x1104, KVR 2, KVR 21	1,90	4
KVR-CB 2 40x10	40x10x1104, KVR 2, KVR 21	3,80	4
KVR-CB 2 60x10	60x10x1104, KVR 2, KVR 21	5,80	4



Angle bar for cable fixation

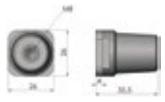
Type	Code No.	Dimension, for use with	kg	
KVR-FB 00	001601640	450mm, KVR 00	0,42	4
KVR-FB 0	001601641	585mm, KVR 0, KVR 01	0,58	4
KVR-FB 1	001601642	784mm, KVR 1, KVR 11	0,76	4
KVR-FB 2	001601643	1110mm, KVR 2, KVR 21	1,00	4



Common accessories

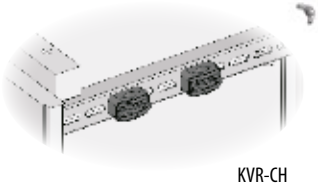
Type	Code No.	Description	kg	
KVR-AI	001601650	Support insulator	0,025	20
KVR-OC	001601651	Cable culvert	0,35	10
KVR-CH 120	001601652	Cable holder	0,14	10
KVR-CH 240	001601653	Cable holder	0,20	10

Examples of use for KVR-AI and KVR-OC on page 1015



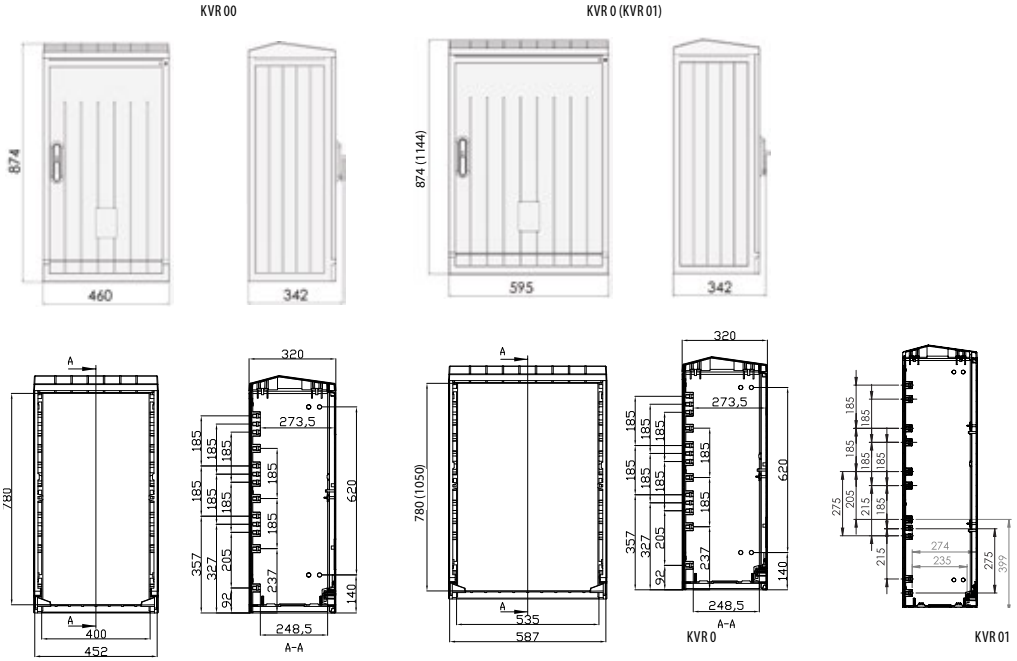
KVR-AI

KVR-OC

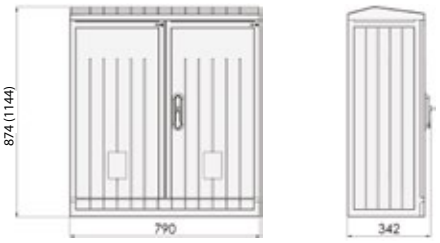


KVR-CH

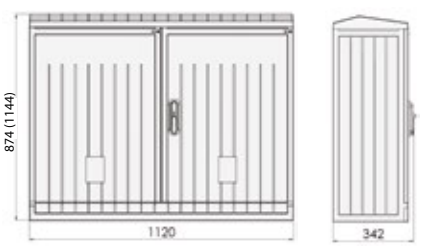
Dimensions

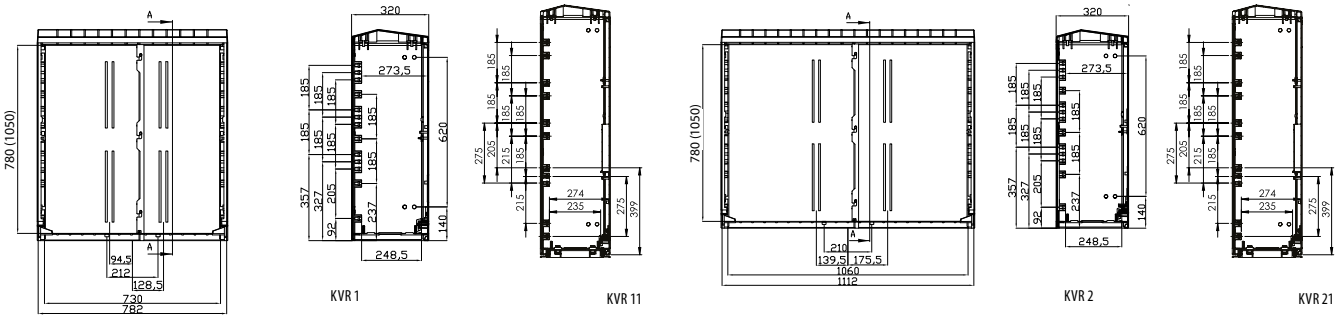


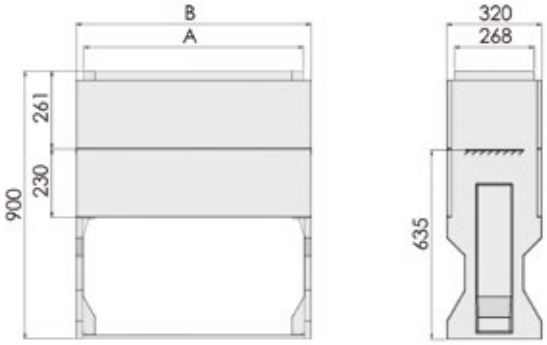
KVR 1 (KVR 11)



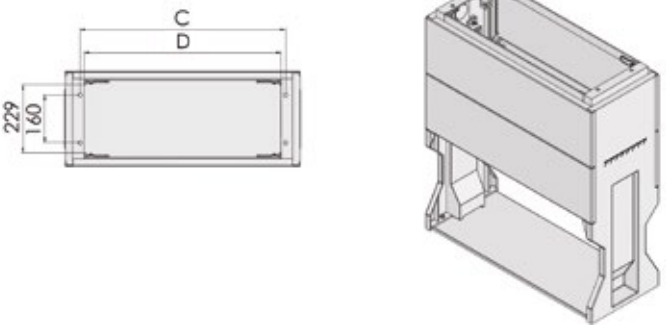
KVR 2 (KVR 21)

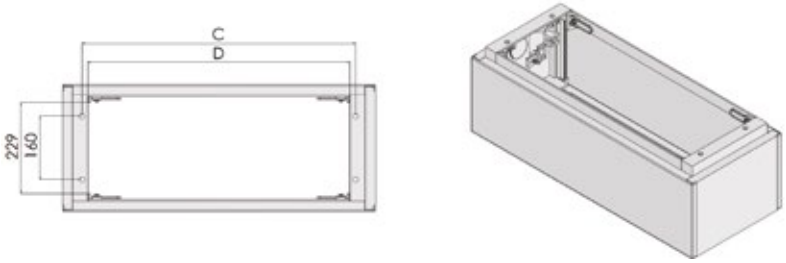




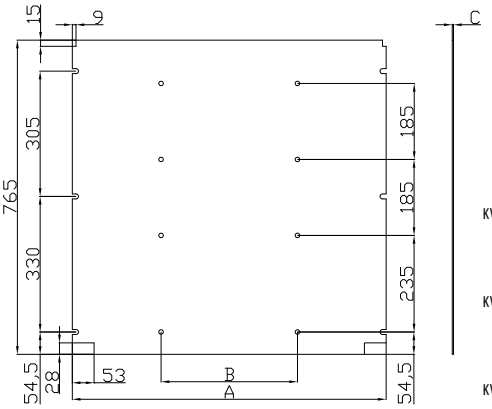


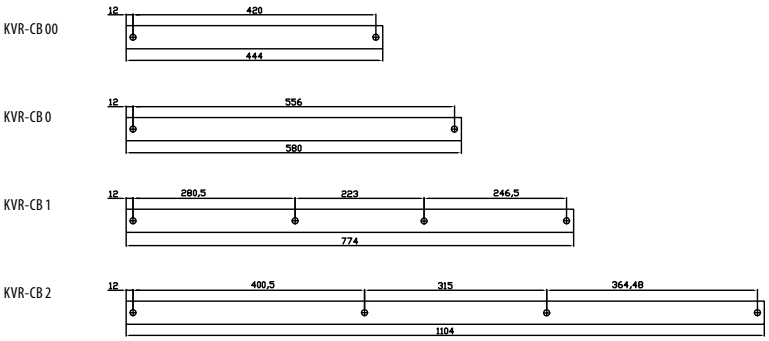
[mm]	A	B	C	D
KVR-P 00	408	460	360	332
KVR-P 0	543	595	495	467
KVR-P 1	738	790	690	662
KVR-P 2	1068	1120	1020	992



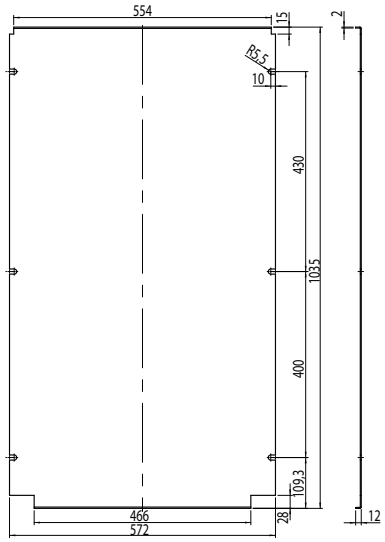


[mm]	A	B	C	D
KVR-PE 00	460	408	360	332
KVR-PE 0	595	543	495	467
KVR-PE 1	790	738	690	662
KVR-PE 2	1120	1068	1020	992

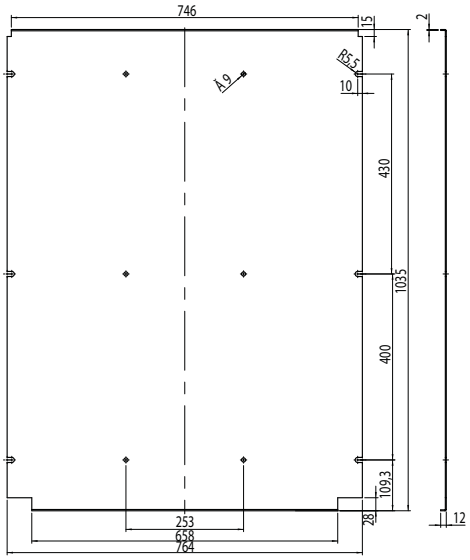




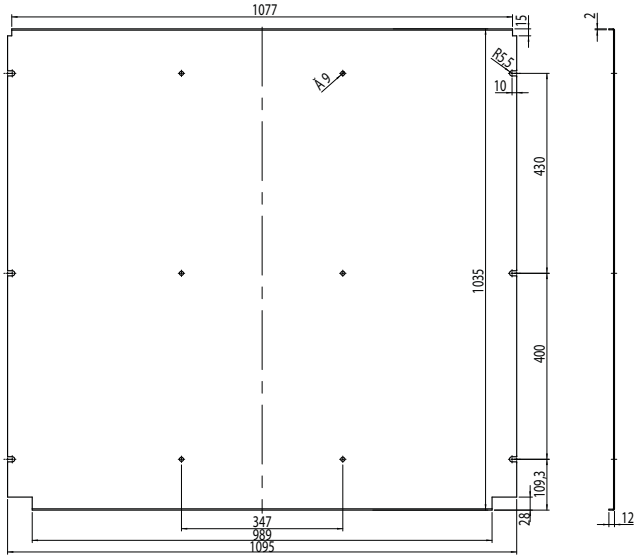
[mm]	A	B	C
KVR-MP 00	435	-	2
KVR-MP 0	572	-	2
KVR-MP 1	764	300	2
KVR-MP 2	1095	400	2



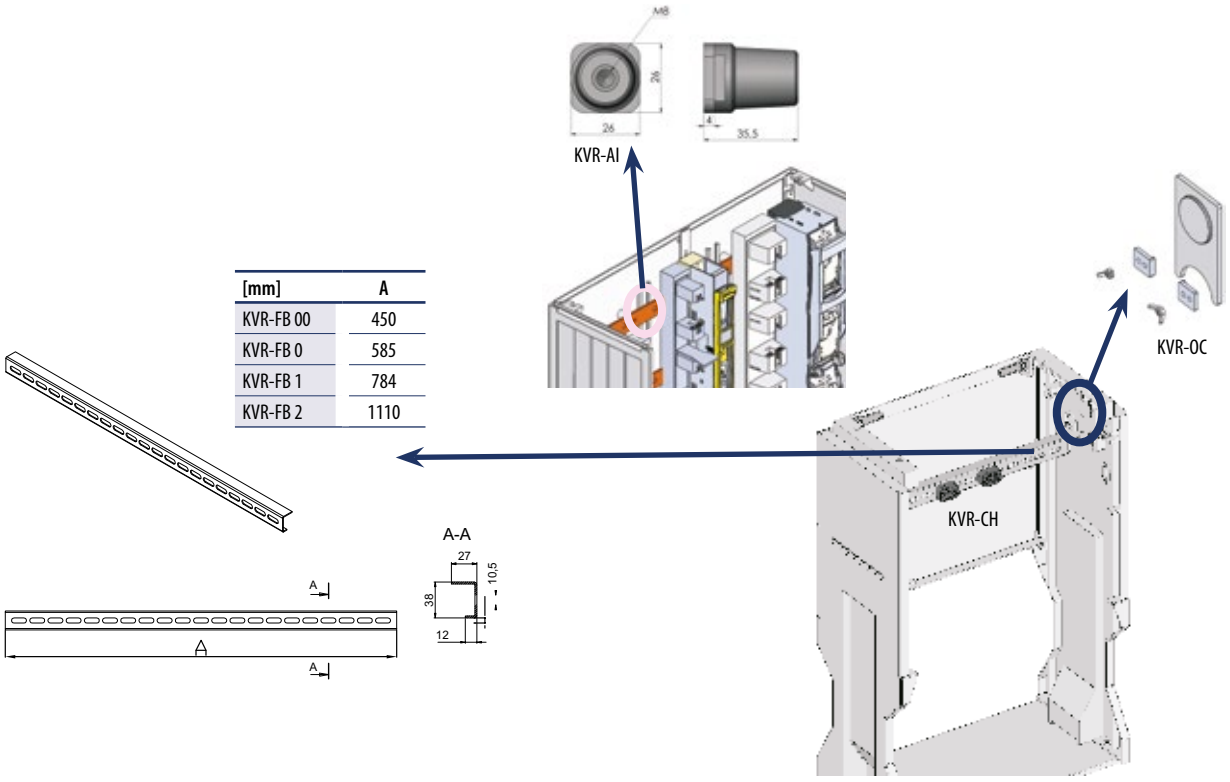
MP01



MP11

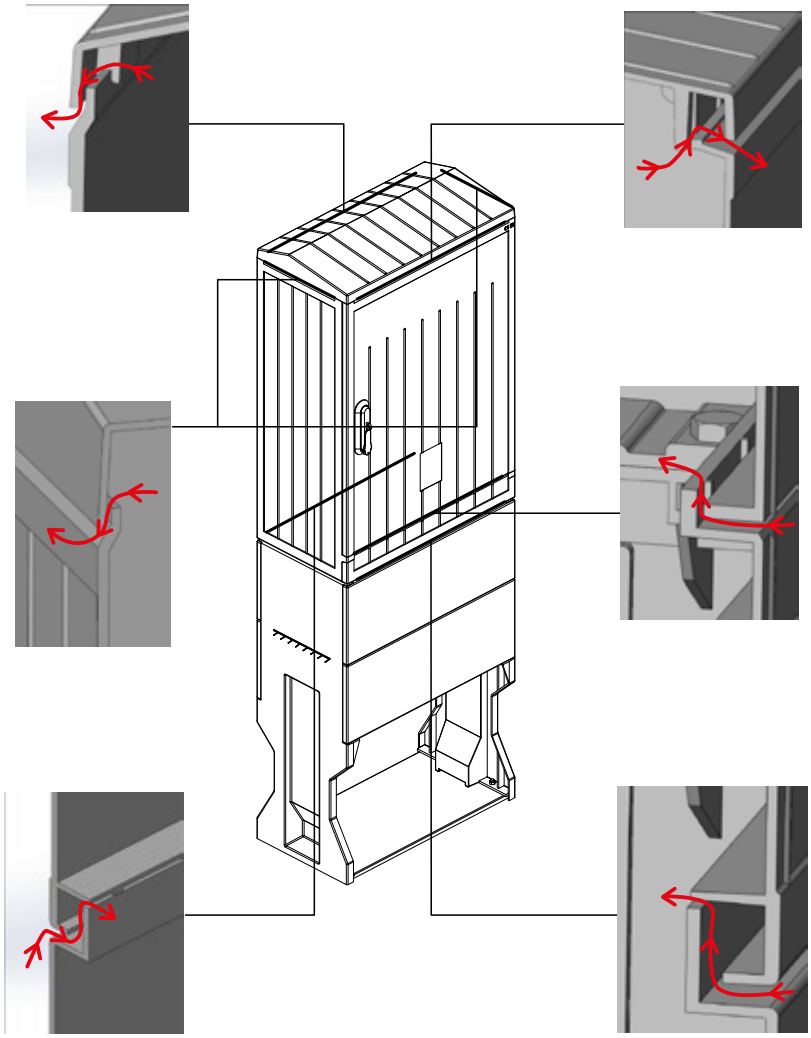


MP21



[mm]	A
KVR-FB 00	450
KVR-FB 0	585
KVR-FB 1	784
KVR-FB 2	1110

Enclosure ventilation



ETIBOX Accessories

Phase busbars

Terminal for protective conductor

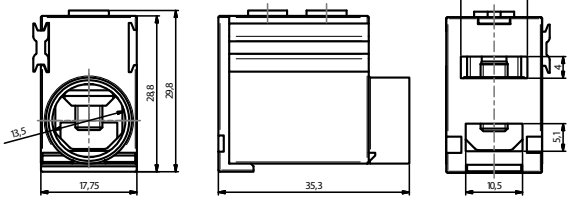
Type	Code No.	Dimensions [mm]	g	
2/6	002911101	6x9x56	23,3	100
2/8	002911102	6x9x86	28,5	100
2/12	002911103	6x9x92	39,3	100
2/18	002911104	6x9x128	53,8	100
EFB50*	002921278	50	29	10

*To connect cable up to 50mm² on Cu busbar(phase busbars) fork or pin type

EFB50

Terminal for protective conductors

type	length [m]	supply [mm²]	outlet [mm²]
2/6	0,056	2 x 22	6 x 14
2/8	0,086	2 x 22	8 x 14
2/12	0,092	2 x 22	12 x 14
2/18	0,128	2 x 22	18 x 14



Input Terminals EFB

EFB - 25 - F T -15

1 2 3 4

1 - busbar cross-section (mm²): 25, 50.
2 - connection type:
F - fork type,
P - PIN type.
3 - cable entry: T - top; S - side
4 - output length 15...29mm

EFB-25FT-15

EFB-25FS-15

EFB-25PT-15

EFB-25PS-15

EFB-25FT-28

EFB-25FS-28

EFB-25PT-29

EFB-25PS-29

Feeding terminals EFB-25 (80A, AC 690/DC 1500V)

Type	Code No.	Cross-section [mm²]	Type	Length [mm]	Entering	g	
EFB-25FT-15	002921280	6-25 mm²	Fork	15	top	11	25
EFB-25FS-15	002921282		Fork	15	side	11	25
EFB-25PT-15	002921283		Pin	15	top	11	25
EFB-25PS-15	002921285		Pin	15	side	11	25
EFB-25FT-28	002921286		Fork	28	top	13	25
EFB-25FS-28	002921287		Fork	28	side	13	25
EFB-25PT-29	002921288		Pin	29	top	13	25
EFB-25PS-29	002921289		Pin	29	side	13	25

Feeding terminals EFB-50 (125A, AC 690/DC 1500V)

Type	Code No.	Cross-section [mm²]	Type	Length [mm]	Entering	g	
EFB-50FT-15	002921281	6-50 mm²	Fork	15	top	20	25
EFB-50PT-15	002921284		Pin	15	top	20	25

Input terminal for insulated conductor rails EFB-50 (160A, AC/DC 1000V)

Type	Code No.	Cross-section [mm²]	Compatibility	Length [mm]	g	
EFB-50	002921278	6-50 mm²	IZ (IZS) 17,8 mm	50	29	10

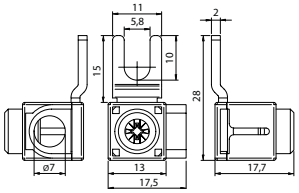
EFB-50FT-15

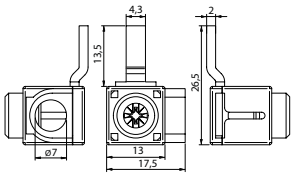
EFB-50PT-15

EFB50

3xEFB50

Dimensions


EFB-25FS-15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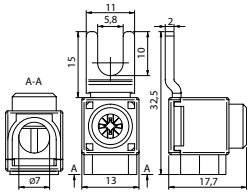
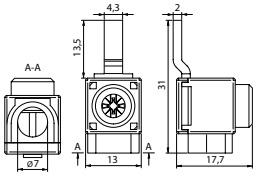

EFB-25FT-15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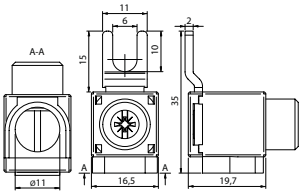
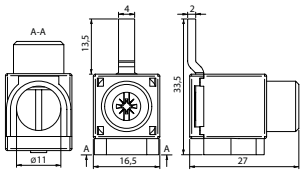
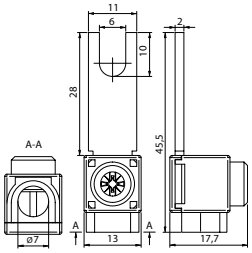

EFB-50FT-15


EFB-50PT-15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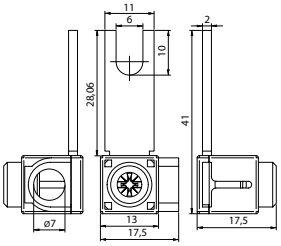
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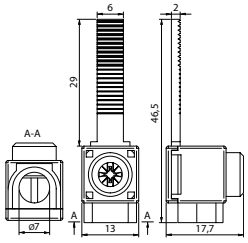
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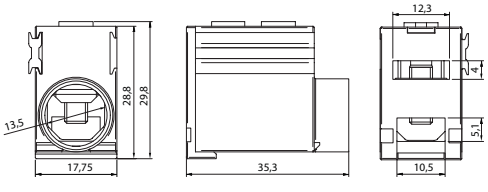
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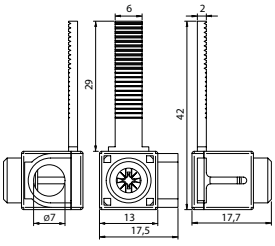
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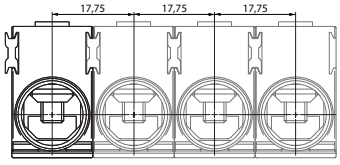
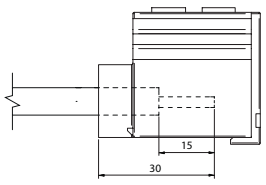

EFB-50

x N



PZ2

Fork type

Technical data - Section rails for ETIMAT P10

Cross section	10 mm²	16 mm²	25 mm²
Feeding at beginning/ending			
Max. current Is/Phase	63	80	100
Cross section of connection, mm²	10	16	25
Feeding in the middle			
Max. current Ie/Phase	100	130	170
Cross section of connection, mm²	25	35	2x25
Heat deflection temperature PVC	80°C flame resistant		
Comparative tracking index PVC	300V		
Standards	EN 60947-1:2007/ IEC 60947-1:2007		
Climate stability	DIN EN 60068		
Insulation coordination	Degree of pollution 2		
Electrical data			
Impulse voltage strength	≥4,5 kV		
Min. air distance	> 5,5 mm		
Min. creeping distance	> 5 mm		
Max. operating voltage	690 V AC/DC		
Protection class	IP20		
Short circuit rating	ICC 15kA NH 250A gL 500V		
Dielectric strenght	≥ 32 kV/mm		
Material			
	Material	Surface	
Busbar	Copper	plain	
Insulation	PVC lead-free	grey RAL 7035	
Endcover	moulded		

Ampacity at 35 °C ambient temperature depending of feeding point

Phase busbars 16mm² 80A(side connection)/130A (middle connection), fork type

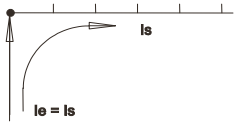
Type	Additional description	Code No.	Length [mm]	g		For use with
IZ16/2F/56 18mm	2 pole terminal, 56 module width	002921230	1012	525	10	ETIMAT P10 1P+N, 2P
IZ16/3F/57 18mm	3 pole terminal, 57 module width	002921231	1027	840	10	ETIMAT P10 3P
IZ16/4F/56 18mm	4 pole terminal, 56 module width	002921232	1010	1205	10	ETIMAT P10 3P+N

Phase busbars 16mm² 80A(side connection)/130A (middle connection),fork type

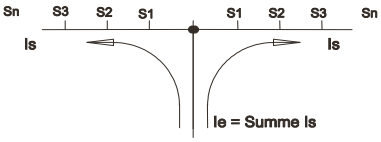
Type	Additional description	Code No.	Length [mm]	g		For use with
IZ16/2F/44 18+9mm	2 pole terminal with extra space	002921233	990	525	10	ETIMAT 2P, DC + aux. contact

Phase busbars 10mm² for AFDD

Type	Additional description	Code No.	Cross section [mm²]	Length [m]	kg		For use with
IZ10/2F/19	10mm², 2 p, 19 KZS AFDDs	002921294	10	1,012	0,378	10	KZS AFDD
IZ10/4F/18	10mm², 4 p, 18 KZS AFDDs	002921295	10	0,965	0,589	10	KZS AFDD



Feeding at beginning / ending



Feeding in the middle

In case of center-feeding, please note that the sum of junction currents S1...Sn per rail branch may not be bigger than the above named max. currents Is/Phase.

End covers

Type	Code No.	g		For use with
Z-16/2F/3F 18mm	002921240	3	50	IZ16/2F/56 18mm (002921230), IZ16/3F/57 18mm (002921231), IZ16/2F/44 27mm (002921232), IZ10/2F/19 (002921294)
Z-16/4F 18mm	002921241	2	50	IZ16/4F/56 18mm (002921232), IZ10/L1NL2NL3N (002921279), IZ10/4F/18 (002921295)

Phase busbars 10 mm² 63A

Type	Additional description	Code No.	Cross section [mm²]	Length [m]	g		For use with
IZ10/1F/54*	10mm², 1-phase, 54 mod.	002921142	10	1,00	260	40	ETIMAT6, ETIMAT P10, ETITEC,SV, VLD01
IZ10/3F/12	10mm², 3-phase, 12 mod.	002921140	10	0,21	115	20/240	
IZ10/3F/54*	10mm², 3-phase, 54 mod.	002921141	10	1,00	560	20	
IZ10/1F/12	10mm², 1-phase, 12 mod.	002921143	10	0,21	50	40/240	
IZ10/L1NL2NL3N/12	10mm², 4-pole, 12 mod.	002921268	10	0,21	228	10	ETIMAT6 1P+N, ETIMAT P10 1P+N, KZS-2M
IZ10/L1NL2NL3N/54	10mm², 4-pole, 1m / 53 mod.	002921279	10	0,965	536	10	ETIMAT6 1P+N, ETIMAT P10 1P+N, KZS-2M
IZ10/ L1L2L3NL1NL2NL3N	10mm², 4-pole, 12 mod.	002921275	10	0,21	131	10	EFI4 + ETIMAT 6 1P+N, ETIMAT P10 1P+N
IZ10/L1L2L3NL1/ NL2/NL3/N	10mm², 4-pole, 12 mod.	002921276	10	0,21	255	50	EFI4+ETIMAT1N, KZS1M
IZ10/L1L2L3_ L1L2L3	10mm², 3-pole, 12 mod.	002921277	10	0,21	120	10	EFI4 + ETIMAT 6, ETIMAT P10

IZ10/L1L2L3_L1L2L3

*Not for ETIMAT P10 MULTIPOLE (2P, 3P, 1P+N, 3P+N) with length more than 12 modules.

Phase busbars 12 mm² 80A

Type	Additional description	Code No.	Cross section [mm²]	Length [m]	g		For use with
IZ12/1F/12	12mm², 1-phase, 12 modul	002921018	12	0,21	57	40/480	ETIMAT6, ETIMAT P10, ETITEC,SV, VLD01
IZ12/1F/54*	12mm², 1-phase, 54 mod.	002921026	12	1,00	260	40	
IZ12/3F/9	12mm², 3-phase, 9 mod.	002921017	12	0,16	81	20/240	
IZ12/3F/12	12mm², 3-phase, 12 mod.	002921020	12	0,21	115	20/240	
IZ12/3F/18*	12mm², 3-phase, 18 mod.	002921022	12	0,32	180	20/120	
IZ12/3F/54*	12mm², 3-phase, 54 mod.	002921024	12	1,00	560	20	

*Not for ETIMAT P10 MULTIPOLE(2P, 3P, 1P+N, 3P+N) with length more than 12 modules.

Phase busbars 16 mm² (normal) 100A

Type	Additional description	Code No.	Cross section [mm²]	Length [m]	g		For use with
IZ16/1F/12P	16mm², 1-phase, 12 modul	002921091	16	0,21	70	40/360	ETIMAT6, ETIMAT P10, ETITEC,SV, VLD01
IZ16/1F/54P*	16mm², 1-phase, 54 mod.	002921092	16	1,00	320	40	
IZ16/3F/12	16mm², 3-phase, 12 mod.	002921061	16	0,21	155	20/180	
IZ16/3F/54*	16mm², 3-phase, 54 mod.	002921063	16	1,00	700	20	

*Not for ETIMAT P10 MULTIPOLE(2P, 3P, 1P+N, 3P+N) with length more than 12 modules.

Phase busbars 16mm² (2 pole and 4 pole) 100A

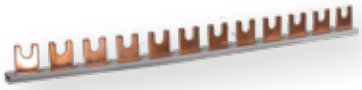
Type	Additional description	Code No.	Cross section [mm²]	Length [m]	g		For use with
IZ16/2F/12	16mm², 2-pole, 12 mod.	002921066	16	0,21	120	10/120	EFI-2, EFI-4, KZS-2M, KZS-4M ETIMAT6, P10, SV, ETITEC, VLD01
IZ16/2F/54*	16mm², 2-pole, 54 mod.	002921067	16	1	550	10	
IZ16/4F/12	16mm², 4-pole, 12 mod.	002921068	16	0,21	230	10/80	
IZ16/4F/56*	16mm², 4-pole, 56 mod.	002921070	16	1	1020	10	

*Not for ETIMAT P10 MULTIPOLE(2P, 3P, 1P+N, 3P+N) with length more than 12 modules.

Phase busbars 16 mm² (L shape) 100A

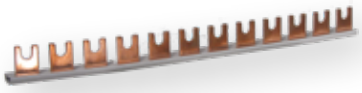
Type	Additional description	Code No.	Cross section [mm²]	Length [m]	g		For use with
IZ16/1F/2/L	16mm², 1-phase, 2 modul	002921081	16	0,03	11	50/600	ETIMAT6, ETIMAT P10, ETITEC,SV, VLD01
IZ16/1F/3/L	16mm², 1-phase, 3 mod.	002921082	16	0,05	16	50/600	
IZ16/1F/4/L	16mm², 1-phase, 4 mod.	002921083	16	0,07	21	50/600	
IZ16/1F/12/L	16mm², 1-phase, 12 mod.	002921060	16	0,21	65	40/360	
IZ16/1F/54/L*	16mm², 1-phase, 54 mod.	002921062	16	1,00	290	40	

*Not for ETIMAT P10 MULTIPOLE(2P, 3P, 1P+N, 3P+N) with length more than 12 modules.



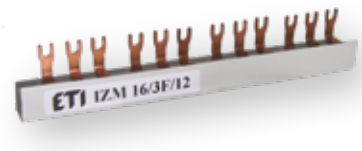
Phase busbars 16 mm² (STV) 100A

Type	Additional description	Code No.	Cross section [mm²]	Length [m]	g		For use with
IZ16/1F/12/STV	16mm², 1-phase, 12 mod.	002921071	16	0,32	95	40/240	STVD02
IZ16/1F/36/STV	16mm², 1-phase, 36 mod.	002921073	16	1,00	280	40	
IZ16/3F/12/STV	16mm², 3-phase, 12 mod.	002921072	16	0,32	230	20/120	
IZ16/3F/36/STV	16mm², 3-phase, 36 mod.	002921074	16	1,00	700	20	



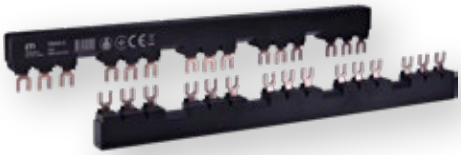
Phase busbars for Motor switches - IZM (16 mm²) 100A

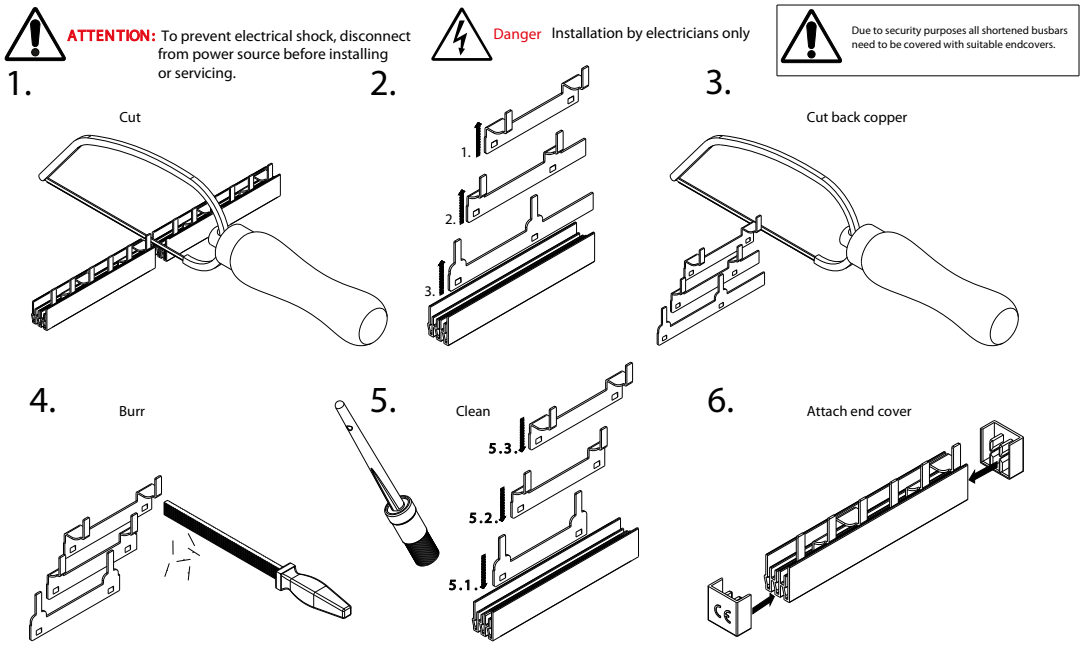
Type	Additional description	Code No.	Cross section [mm²]	Length [m]	g		For use with
IZM16/3F/4	16mm², 3-phase, 12 mod.	002921132	10	0,20	155	20	MPE 25 (no side accessories)
IZM16/3F/20	16mm², 3-phase, 54 mod.	002921133	10	1,00	700	20	



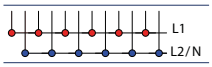
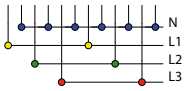
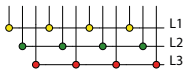
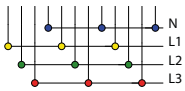
Busbars for motor protective circuit breakers - MPCB: MPE25, MSP0, MS25, 10mm² 63 A/690 VAC

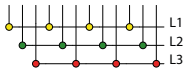
Type	Additional description	Code No.	Cross section [mm²]	Length [m]	g		For use with
IZM-L3-25	Feed-in terminal, 3 pole, 6-25mm²	002921297	10	44	40	10	MPE25, MSP0, MS25
IZM45-2	3-phase, 45 mm, 14 mm pitch	002921298	10	86,5	35	10	2 x MPCB
IZM45-3	3-phase, 45 mm, 14 mm pitch	002921299	10	131,5	57	10	3 x MPCB
IZM45-4	3-phase, 45 mm, 14 mm pitch	002921300	10	176,5	80	10	4 x MPCB
IZM45-5	3-phase, 45 mm, 14 mm pitch	002921301	10	221,5	100	10	5 x MPCB
IZM54-2	3-phase, 54 mm, 14 mm pitch	002921302	10	95,5	38	10	2 x (MPCB + auxiliary contact)
IZM54-3	3-phase, 54 mm, 14 mm pitch	002921303	10	149,5	61	10	3 x (MPCB + auxiliary contact)
IZM54-4	3-phase, 54 mm, 14 mm pitch	002921304	10	203,5	88	10	4 x (MPCB + auxiliary contact)
IZM54-5	3-phase, 54 mm, 14 mm pitch	002921305	10	257,5	109	10	5 x (MPCB + auxiliary contact)
IZM63-2	3-phase, Fork, 53 mm, 14 mm pitch	002921307	10	104,5	41	10	2 x MPS+ 2x Auxiliary switch or 1x release
IZM63-3	3-phase, Fork, 53 mm, 14 mm pitch	002921308	10	167,5	69	10	3 x MPS+ 2x Auxiliary switch or 1x release
IZM63-4	3-phase, Fork, 53 mm, 14 mm pitch	002921309	10	230,5	97	10	4 x MPS+ 2x Auxiliary switch or 1x release
IZM63-5	3-phase, Fork, 53mm, 14 mm pitch	002921310	10	293,5	125	10	5 x MPS+ 2x Auxiliary switch or 1x release



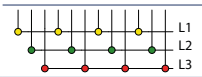


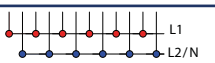
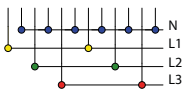
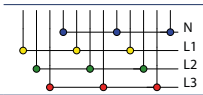
Selection of wiring harness depending on the equipment type

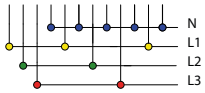
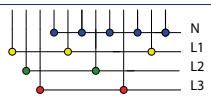
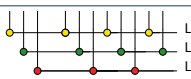
Type of equipment	Wiring diagram	Type	No. of modules	Length [m]	Fork (FORK type) 10mm² (63A)	12mm² (80A)	16mm² (100A)
MCBs and modular devices (17,8 mm wide): - ST-68 (6-63A), - ETIMAT 6 (0,5-63A), - ETIMAT 10 (0,5-63A), - SV (16-125).		1P	**2**	0,03			**002921081** IZ16/1F/2L
			3	0,05			**002921082** IZ16/1F/3L
			4	0,07			**002921083** IZ16/1F/4L (angle)
			12	0,21	**002921143** IZ10/1F/12	**002921018** IZ12/1F/12	**002921091** IZ16/1F/12 **002921060** IZ16/1F/12L
			54	1,00	**002921142** IZ10/1F/54	**002921026** IZ12/1F/54	**002921092** IZ16/1F/54 **002921062** IZ16/1F/54L
		1P+N	**12**	0,21			**002921066** IZ16/2F/12
			54	1,00			**002921067** IZ16/2F/54
		3P+N	**12**	0,21	**002921268, 002921212** IZ10/L1NL2NL3N/12 (E)		**002921215** IZ16/L1NL2NL3N/12
			18	0,32	**002921213** IZ10/L1NL2NL3N/18		**002921216** IZ16/L1NL2NL3N/18
			54	1,00	**002921279, 002921214** IZ10/L1NL2NL3N/54 (E)		**002921217** IZ16/L1NL2NL3N/54
		3P	**9**	1,00		**002921017** IZ12/3F/9	
			12	0,21	**002921140** IZ10/3F/12	**002921020** IZ12/3F/12	**002921061** IZ16/3F/12
			18	0,32		**002921022** IZ12/3F/18	
			54	1,00	**002921141** IZ10/3F/54	**002921024** IZ12/3F/54	**002921063** IZ16/3F/54
		3P+N	**12**	0,21			**002921068** IZ16/4F/12
			56	1,00			**002921070** IZ16/4F/54

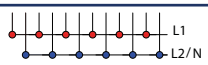
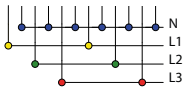
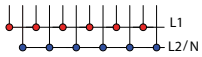
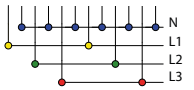
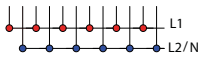
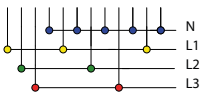
Type of equipment	Wiring diagram	Type	No. of modules	Length [m]	Pin (PIN type) 10mm² (63A)	16mm² (100A)
MCBs and modular devices (17,8 mm wide): - ST-68 (6-63A), - ETIMAT 6 (0,5-63A), - ETIMAT 10 (0,5-63A), - SV (16-125).		1P	**12**	0,21	**002921100** IZS10/1F/12	**002921110** IZS16/1F/12
			54	1,00	**002921101** IZS10/1F/54	**002921111** IZS16/1F/54
		3P	**12**	0,21	**002921102** IZS10/3F/12	**002921112** IZS16/3F/12
			18	0,32		**002921113** IZS16/3F/18
			54	1,00	**002921103** IZS10/3F/54	**002921114** IZS16/3F/54

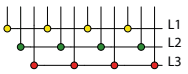
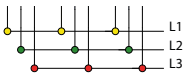
Type of equipment	Wiring diagram	Type	No. of modules	Length [m]	Pin (PIN type) 25mm² (100A)	35mm² (125A)
MCBs and modular devices (17,8 mm wide): - ST-68 (6-63A), - ETIMAT 6 (0,5-63A), - ETIMAT 10 (0,5-63A), - ETIMAT 10 DC (0,5-63A), - SV (16-125).		1P	**57**	1,01	**002921290** IZS25/1F/57 (angle 600V AC/1000V DC)	**002921291** IZS35/1F/57 (angle 600V AC/1500V DC)

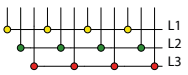
Type of equipment	Wiring diagram	Type	No. of modules	Length [m]	Pin (PIN type) 16mm² (80A/130A)	50mm² (160A/250A)
MCBs (27 mm wide): - ETIMAT 10 (80-125A).		1P	**37**	0,98	**002921250** IZ16/1F/37 (angle)	**002921251** IZ50/1F/37 (angle)
		3P	**39**	1,05	**002921254** IZ16/3F/39	**002921255** IZ50/3F/39

Type of equipment	Wiring diagram	Type	No. of modules	Length [m]	Fork (FORK type) 10mm² (63A)	16mm² (100A)
RCCBs (17,8 mm wide): - EFI-P2, - EFI-P4. RCBOs (17,8 mm wide): - KZS-2M, - KZS-4M.		1P+N	**12**	0,21		**002921066** IZ16/2F/12
			54	1,00		**002921067** IZ16/2F/54
		1P+N	**12**	0,21	**002921268, 002921212** IZ10/L1NL2NL3N/12 (E)	**002921215** IZ16/L1NL2NL3N/12
			18	0,32	**002921213** IZ10/L1NL2NL3N/18	**002921216** IZ16/L1NL2NL3N/18
			54	1,00	**002921279, 002921214** IZ10/L1NL2NL3N/54 (E)	**002921217** IZ16/L1NL2NL3N/54
		3P+N	**12**	0,21		**002921068** IZ16/4F/12
			56	1,00		**002921070** IZ16/4F/54

Type of equipment	Wiring diagram	Type	No. of modules	Length [m]	Fork (FORK type) 10mm² (63A)
Combination EFI-P4 - 1 pc + ETIMAT 6 1P+N-4 pcs (or KZS-2M- 4 pcs).		3P+N	**12**	0,21	**002921275** IZ10/L1L2L3N-L1NL2NL3N
Combination EFI-P4 - 1 pc + KZS-1M - 8 pcs (bottom connection).		3P+N	**12**	0,21	**002921276** IZ10/L1L2L3N-L1/NL2/NL3/N
Combination EFI-P4 - 1 pc + ETIMAT 6, 10 1P - 8 pcs.		3P+N	**12**	0,21	**002921277** IZ10/L1L2L3_L1L2L3

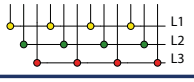
Type of equipment	Wiring diagram	Type	No. of modules	Length [m]	Pin (PIN type) **10**mm² (**63**A)
RCBOs (17,8 mm wide): - KZS-1M SUP (top connection).		1P+N	**12**	0,22	**002921148** SKN0022/10 (1p+N)
		3P+N	**12**	0,22	**002921149** SKN0030/10 (3p+N)
RCBOs (17,8 mm wide): - KZS-1M (bottom connection).		1P+N	**12**	0,22	**002921150** SKN0021/10 (1p+N)
		3P+N	**12**	0,22	**002921154** SKN0029/10 (3p+N)
Combination EFI-P2 - 1 pc + KZS-1M - 10 pcs (bottom connection).		1P+N	**12**	0,22	**002921155** SKN0032/10 (1p+N)
Combination EFI-P4 - 1 pc + KZS-1M - 10 pcs (bottom connection).		3P+N	**12**	0,25	**002921156** SKN0034/10 (3p+N)

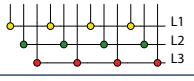
Type of equipment	Wiring diagram	Type	No. of modules	Length [m]	Fork (FORK type) **10**mm² (**63**A)	**16**mm² (**100**A)
Motor protective circuit breakers: - MS25, - MPE25 (up to 40A).		3P	**6**	0,09	**002921298** IZM 45-2	
			9	0,13	**002921299** IZM 45-3	
			12	0,18	**002921300** IZM 45-4 **002921130** IZM10/3F/4xMPE	**002921132** IZM16/3F/4xMPE
			15	0,22	**002921301** IZM 45-5	
			60	1,00	**002921131** IZM10/3F/20xMPE	**002921133** IZM16/3F/20xMPE
Motor protective circuit breakers: - MS25 + BC, - MPE25 (up to 40A) + BC, - MSP0 (up to 25A, (without accessories).		3P	**6**	0,10	**002921302** IZM 54-2	
			9	0,15	**002921303** IZM 54-3	
			12	0,21	**002921304** IZM 54-4	
			15	0,22	**002921305** IZM 54-5	

Type of equipment	Wiring diagram	Type	No. of modules	Length [m]	Pin (PIN type) **10**mm² (**63**A)	**16**mm² (**100**A)
Fuse-switch disconnectors (17,8 mm wide): - EFD8, PCF 8, - EFD10, PCF 10.		1P	**12**	0,21	**002921100** IZS10/1F/12	**002921110** IZS16/1F/12
			54	1,00	**002921101** IZS10/1F/54	**002921111** IZS16/1F/54
		3P	**12**	0,21	**002921102** IZS10/3F/12	**002921112** IZS16/3F/12
			54	1,00	**002921103** IZS10/3F/54	**002921113** IZS16/3F/54

Type of equipment	Wiring diagram	Type	No. of modules	Length [m]	Pin (PIN type) **25**mm² (**100**A)	**35**mm² (**125**A)
Fuse-switch disconnectors, fuse holders (17,8 mm wide): - EFD8, PCF 8, - EFD10, EFH 10 1000V DC.		1P	**57**	1,01	**002921290** IZS25/1F/57 (angle 600V AC/1000V DC)	**002921291** IZS35/1F/57 (angle 600V AC/1500V DC)

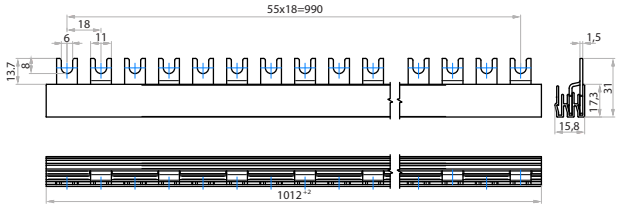
Type of equipment	Wiring diagram	Type	No. of modules	Length [m]	Pin (PIN type) **35**mm² (**125**A)
Fuse holders: - EFH 10/14 1500V DC.		1P	**46**	1,02	**002921292** IZS 35/1F/16 (angle 600V AC/1500V DC)

Type of equipment	Wiring diagram	Type	No. of modules	Length [m]	Pin (PIN type) **16**mm² (**80**A/**130**A)	**50**mm² (**160**A/**250**A)
Fuse-switch disconnectors, fuse holders (27 mm wide): - EFD 14, EFH 14 1000V DC, - PFB D01, PFB D02.		1P	**37**	0,98	**002921250** IZ16/1F/37 (angle) **002921121** IZ16/1F/36V (angle 1000V DC)	**002921251** IZ50/1F/37 (angle)
		3P	**39**	1,05	**002921254** IZ16/3F/39	**002921255** IZ50/3F/39

Type of equipment	Wiring diagram	Type	No. of modules	Length [m]	Pin (PIN type) **16**mm² (**80**A/**130**A)	**50**mm² (**160**A/**250**A)
Fuse-switch disconnectors (35,6 mm wide): - EFD 22.		1P	**28**	0,98	**002921260** IZ16/1F/28 (angle)	**002921261** IZ50/1F/28 (angle)
		3P	**30**	1,05	**002921264** IZ16/3F/30	**002921265** IZ50/3F/30

Dimensions

IZ16/2F/56



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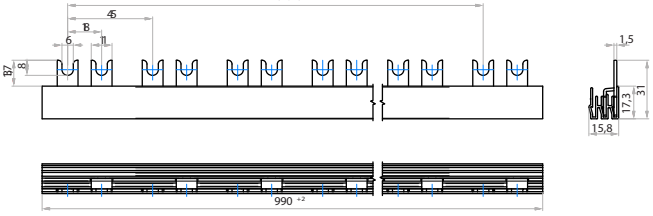

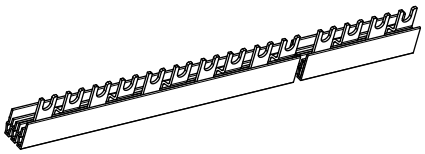

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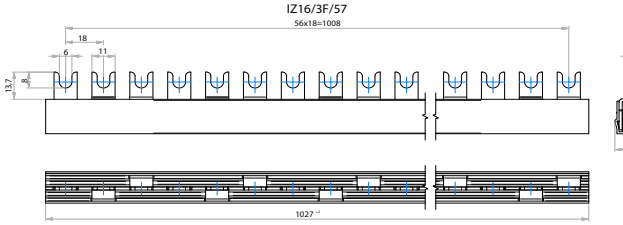

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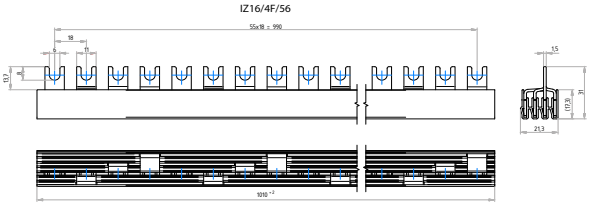

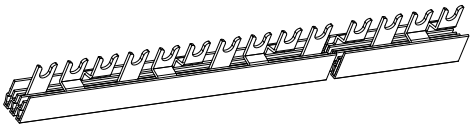

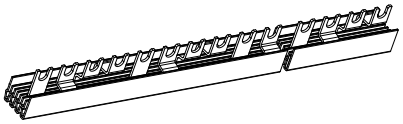

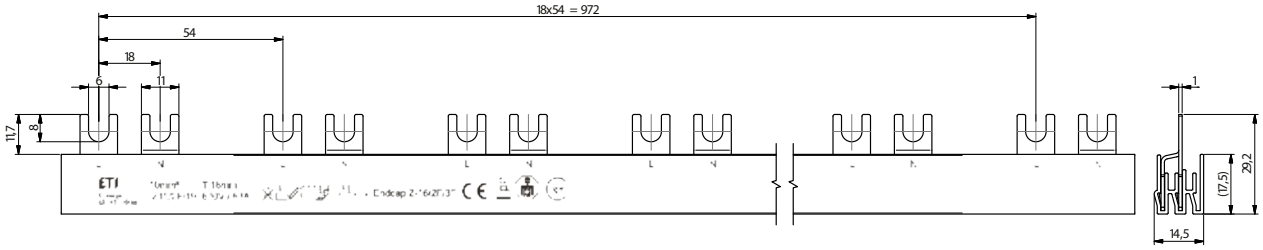

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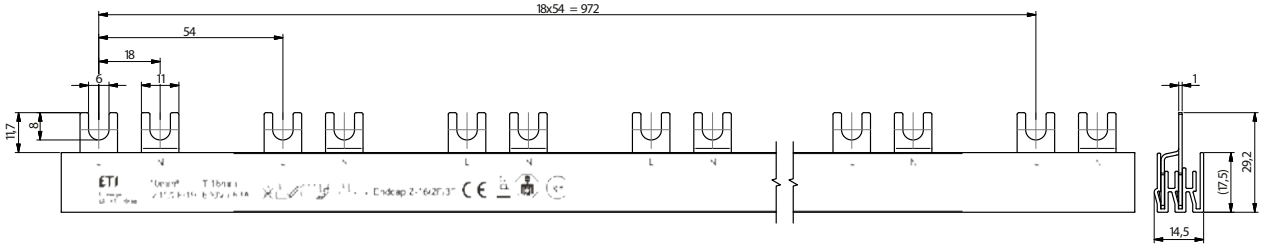

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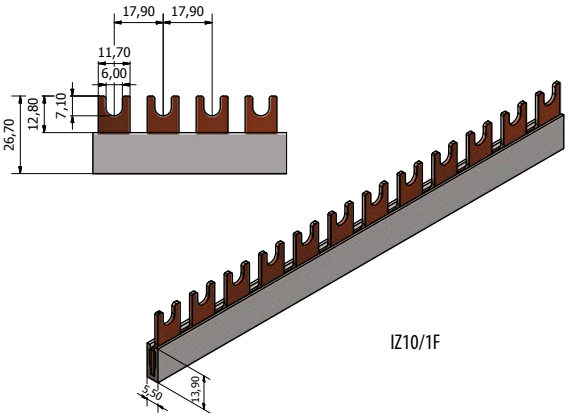

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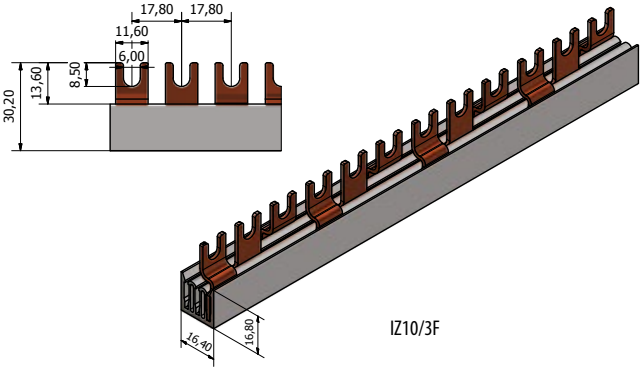

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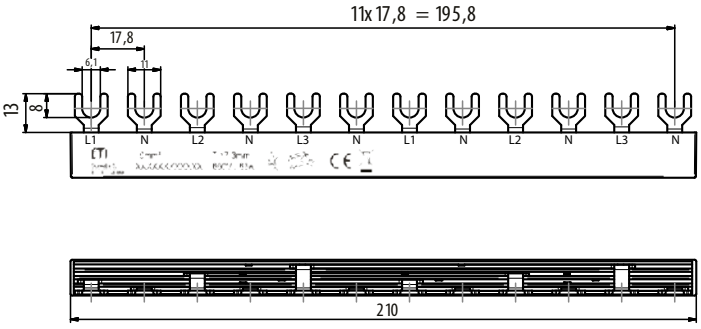

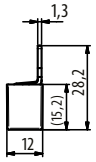

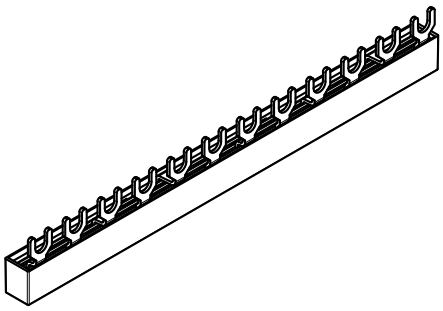

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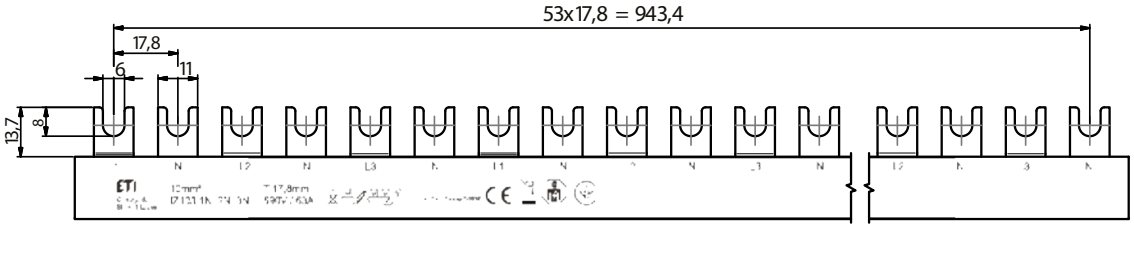

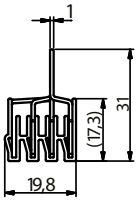

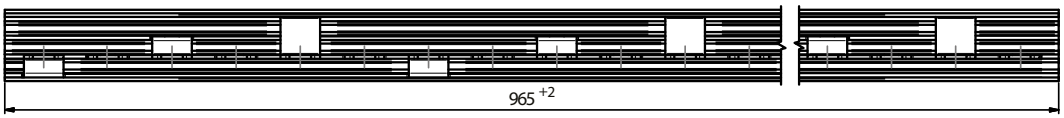

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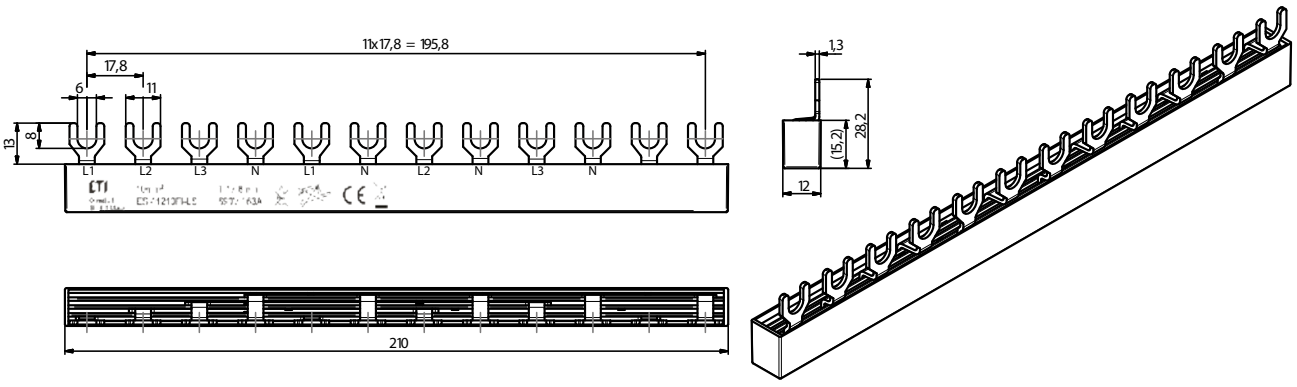

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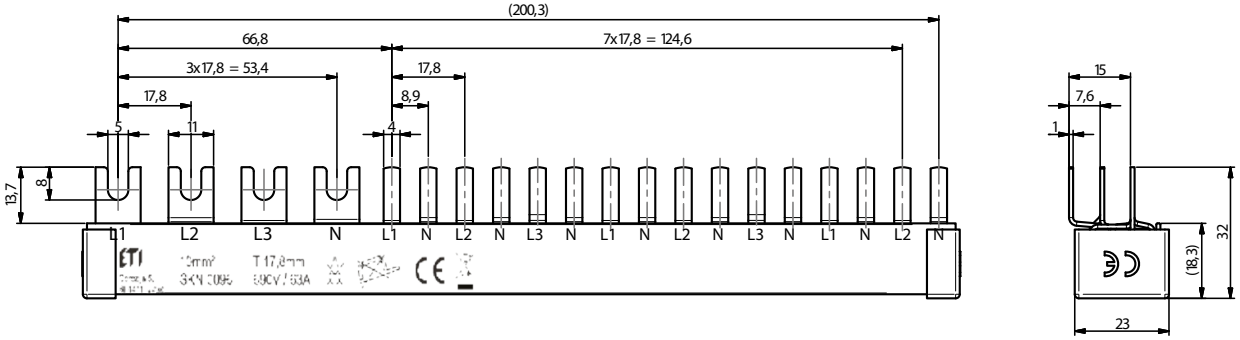

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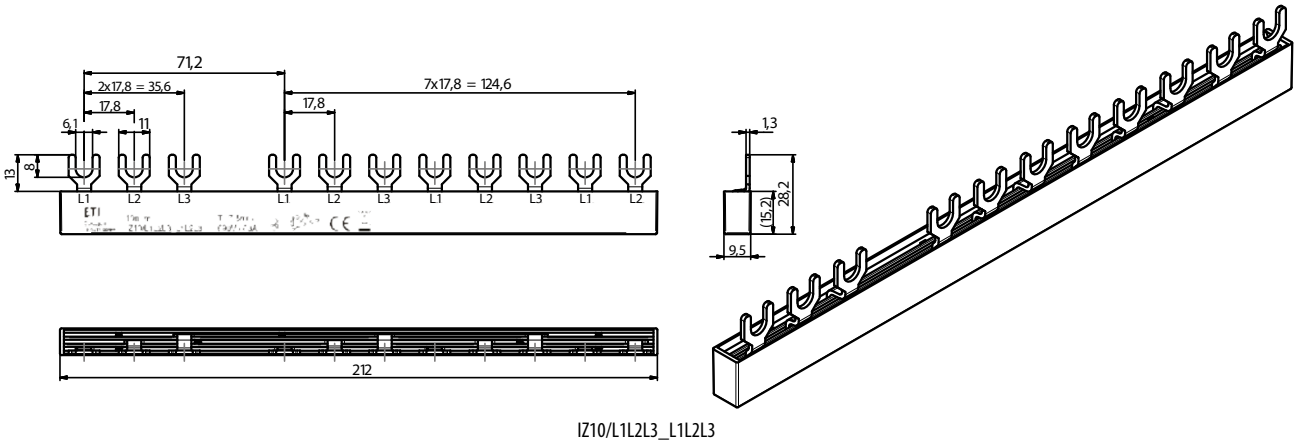

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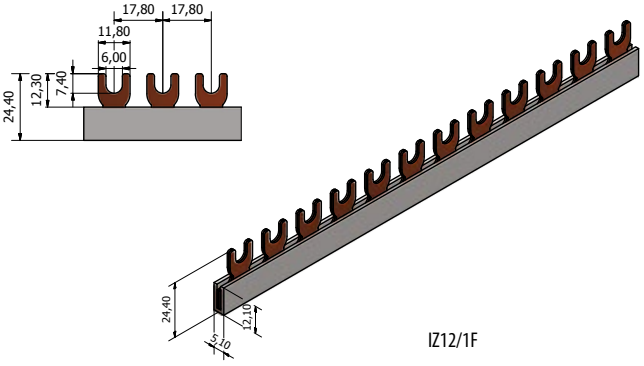

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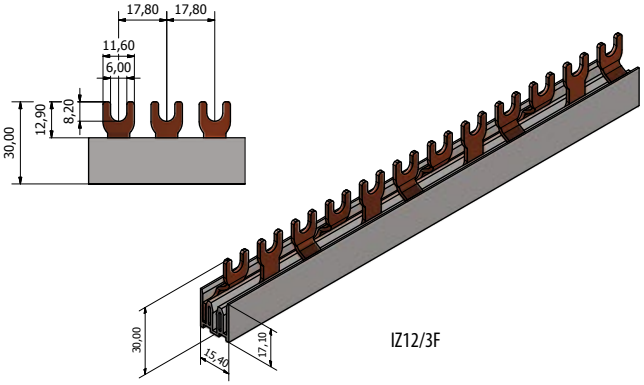

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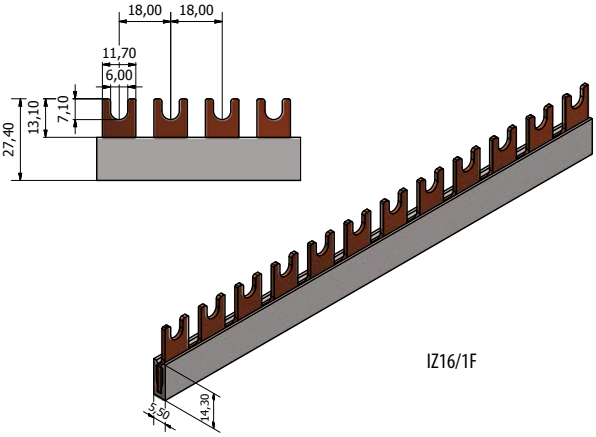

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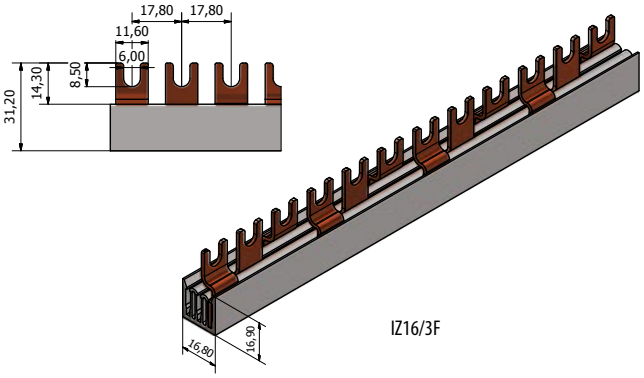

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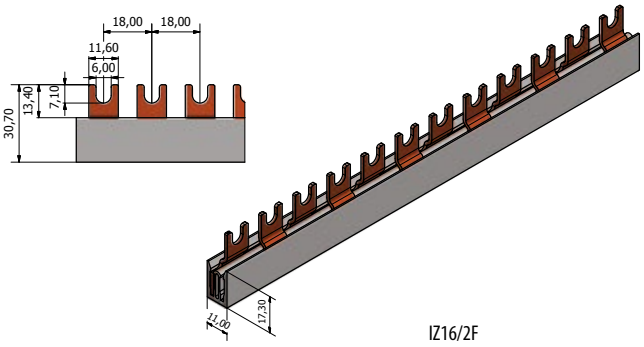

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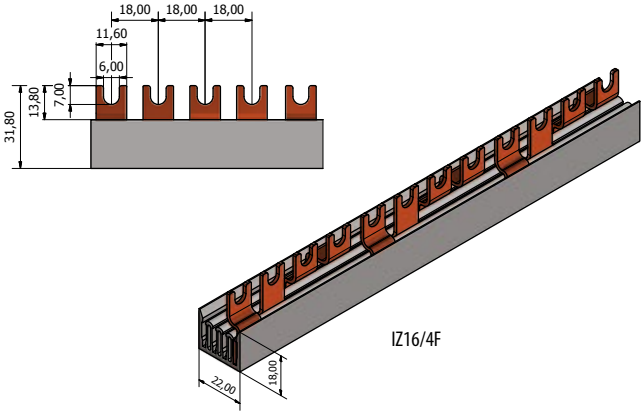

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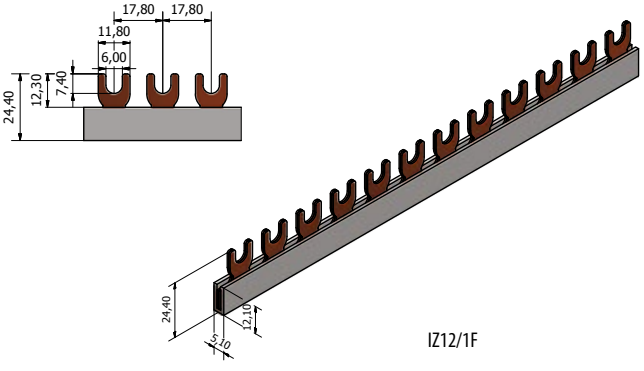

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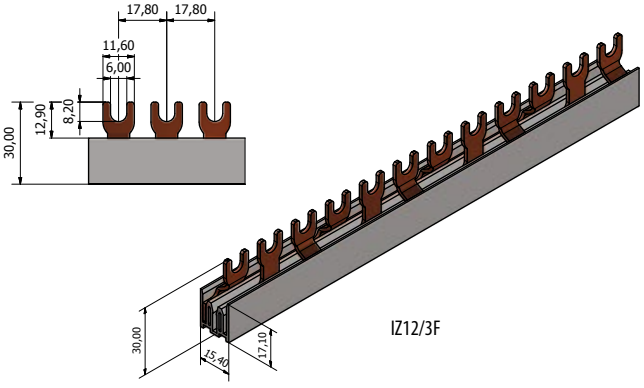

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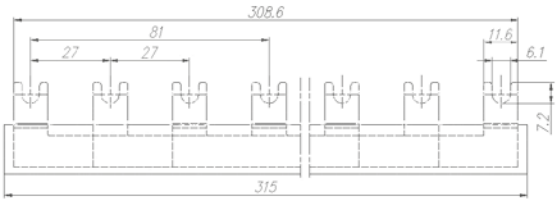

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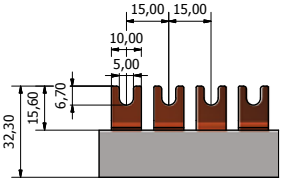

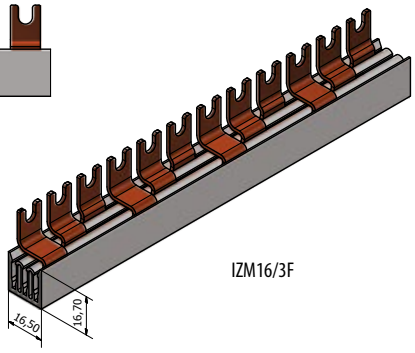

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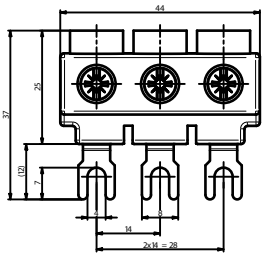
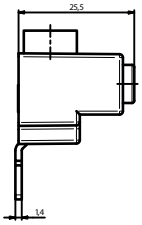
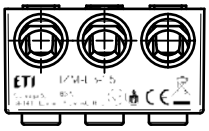
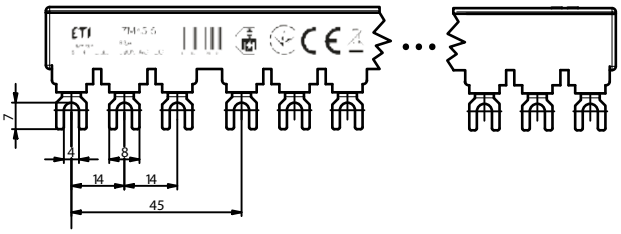
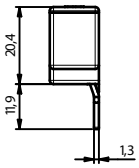


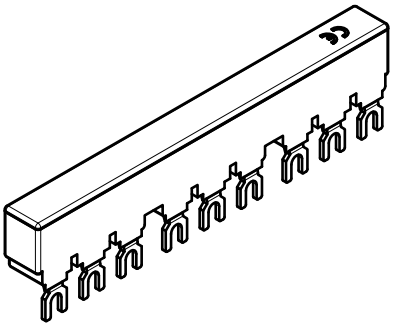




IZM-L3-25







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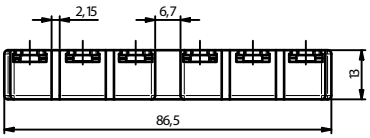

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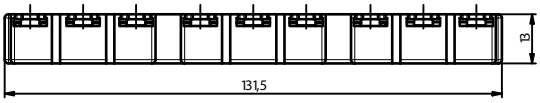

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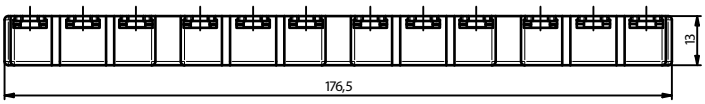

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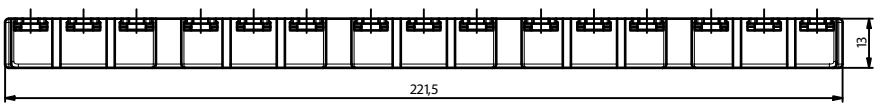

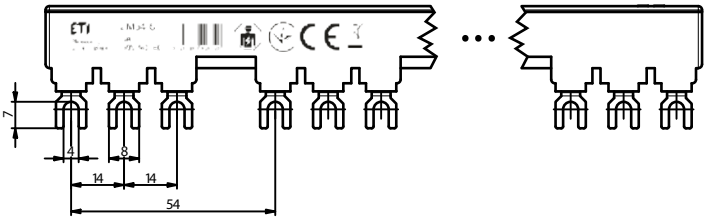

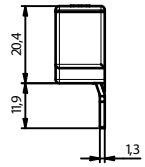

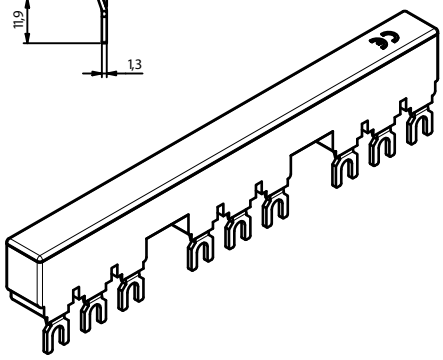

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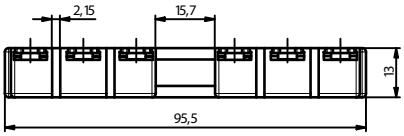

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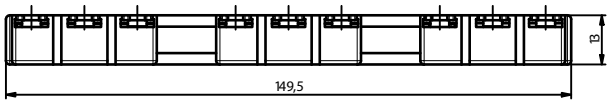

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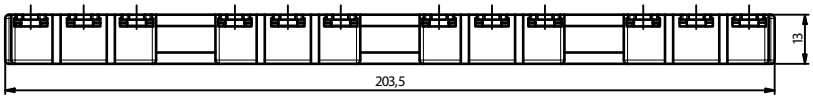

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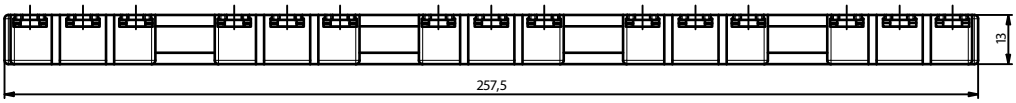
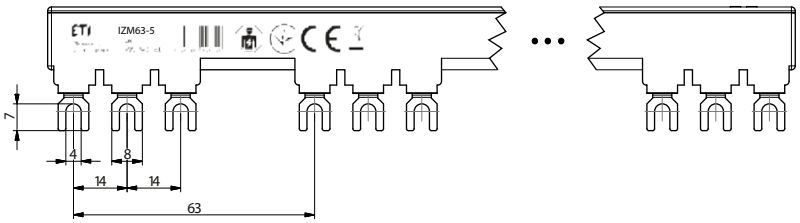
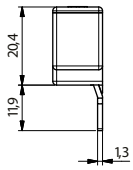
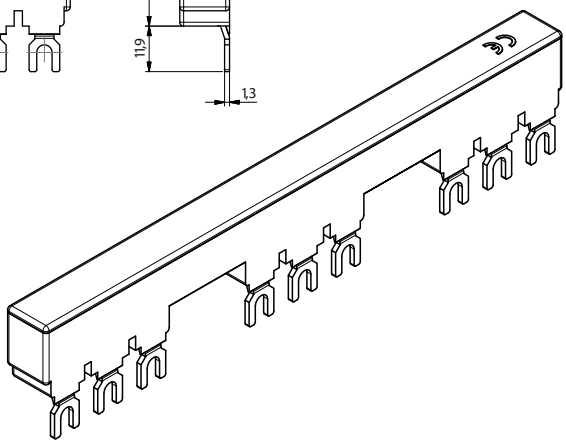
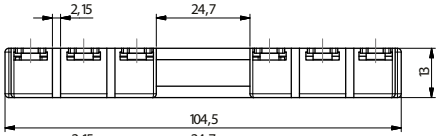








IZM63-2



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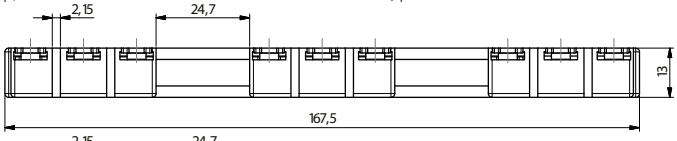

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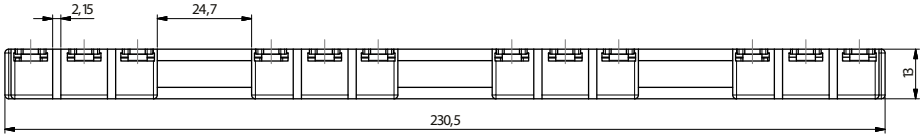


IZM63-5

Pin type

IZ-S rails

Nominal voltage	max. 500V
Dielectric strength	2,5 kV
Insulating resistance	> 5 MΩ (DIN 53482)
Temperature range	-20°C ... + 50°C
Glow wire test	850°C (IEC 695-2-1)
Self-extinguishing	V-0
Standards	EN 60947-7-1

cross section	Rated current (A)
10 mm^2	63
12 mm^2	80
16 mm^2	100

Phase busbars 10 mm^2 (normal) 63A

Type	Additional description	Code No.	Cross section [mm^2]	Length [m]	g		For use with
IZS10/1F/12	10mm^2, 1-phase, 12 mod.	002921100	10	0,21	40	40/480	ETIMAT6, ETIMAT P10, ETITEC,SV,VLD01, PCF8, PCF10, EFD8, EFD10
IZS10/1F/54*	10mm^2, 1-phase, 54 mod.	002921101	10	1,00	150	40	
IZS10/3F/12	10mm^2, 3-phase, 12 mod.	002921102	10	0,21	100	20/240	
IZS10/3F/54*	10mm^2, 3-phase, 54 mod.	002921103	10	1,00	450	20	

*Not for ETIMAT P10 MULTIPOLE(2P, 3P, 1P+N, 3P+N) with length more than 12 modules.

Phase busbars 16 mm^2 (normal) 100A

Type	Additional description	Code No.	Cross section [mm^2]	Length [m]	g		For use with
IZS16/1F/12	16mm^2, 1-phase, 12 mod.	002921110	16	0,21	50	40/480	ETIMAT6, ETIMAT P10, ETITEC,SV,VLD01, PCF8, PCF10, EFD8, EFD10
IZS16/1F/54*	16mm^2, 1-phase, 54 mod.	002921111	16	1,00	220	40	
IZS16/3F/12	16mm^2, 3-phase, 12 mod.	002921112	16	0,21	130	20/180	
IZS16/3F/18*	16mm^2, 3-phase, 18 mod.	002921113	16	0,32	230	20/120	
IZS16/3F/54*	16mm^2, 3-phase, 54 mod.	002921114	16	1,00	700	20	

*Not for ETIMAT P10 MULTIPOLE(2P, 3P, 1P+N, 3P+N) with length more than 12 modules.

Technical data - Section rails for EFD

Cross section	16 mm^2	50 mm^2
Feeding at beginning/ending		
Max. current Is/Phase	80	160
Cross section of connection, mm^2	16	50
Feeding in the middle		
Max. current Ie/Phase	130	250
Cross section of connection, mm^2	35	2x50
Heat deflection temperature PVC	80°C flame resistant	
Comparative tracking index PVC	300V	
Standards	EN 60947-1:2007/ IEC 60947-1:2007	
Climate stability	DIN EN 60068	
Insulation coordination	Degree of pollution 2	
Electrical data		
Impulse voltage strength	≥4,5 kV	
Min. air distance	> 5,5 mm	
Min. creeping distance	> 5 mm	
Max. operating voltage	690 V AC/DC	
Protection class	IP20	
Short circuit rating	ICC 15kA NH 250A gL 500V	
Dielectric strenght	≥ 32 kV/mm	
Material		
	Material	Surface
Busbar	Copper	plain
Insulation	PVC lead-free	grey RAL 7035
Endcover	moulded	

Phase busbars 16mm² 80A(side connection)/130A (middle connection)

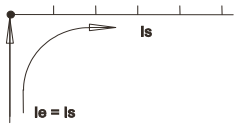
Type	Additional description	Code No.	Cross section [mm²]	Length [m]	g		For use with
IZS16/1F/37	1 p, 37 mod.	002921250	16	0,981	320	10	EFD14, EFH14, PFB D02/D01
IZS16/3F/39	3 p, 39 mod.	002921254	16	1,045	760	10	
IZS16/1F/28	1 p, 28 mod.	002921260	16	0,976	320	10	EFD22
IZS16/3F/30	3 p, 30 mod.	002921264	16	1,05	1050	10	

Phase busbars 25mm² 100A(side connection)/200A (middle connection)

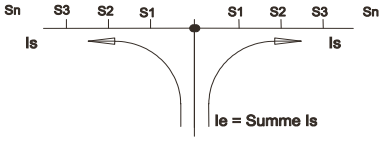
Type	Additional description	Code No.	Cross section [mm²]	Length [m]	g		For use with
IZS 25/1F/57	1 p, 57 mod.	002921290	25	1,012	365	10	ETIMAT, SV, ETITEC, EFD8/10, EFH10

Phase busbars 35mm² 125A(side connection)/200A (middle connection)

Type	Additional description	Code No.	Cross section [mm²]	Length [m]	g		For use with
IZS 35/1F/57	1 p, 57 mod.	002921291	35	1,016	400	25	ETIMAT, SV, ETITEC, EFD8/10, EFH10
IZS 35/1F/46	1 p, 46 mod.	002921292	35	1,016	400	10	EFH 10/14



Feeding at beginning / ending



Feeding in the middle

In case of center-feeding, please note that the sum of junction currents S1...Sn per rail branch may not be bigger than the above named max. currents Is/Phase.

Phase busbars 50mm² 160A(side connection)/250A (middle connection)

Type	Additional description	Code No.	Cross section [mm²]	Length [m]	g		For use with
IZS50/1F/37	1 p, 37 mod.	002921251	50	0,981	750	10	EFD14, EFH14, PFB D02/D01
IZS50/3F/39	3 p, 39 mod.	002921255	50	1,045	2190	10	
IZS50/1F/28	1 p, 28 mod.	002921261	50	0,976	770	10	EFD22
IZS50/3F/30	3 p, 30 mod.	002921265	50	1,05	2320	10	

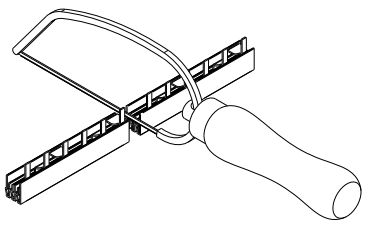
ATTENTION: To prevent electrical shock, disconnect from power source before installing or servicing.

Danger Installation by electricians only

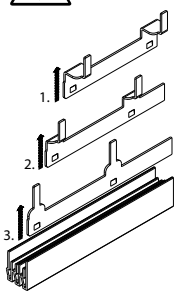
Due to security purposes all shortened busbars need to be covered with suitable endcovers.

1.

Cut

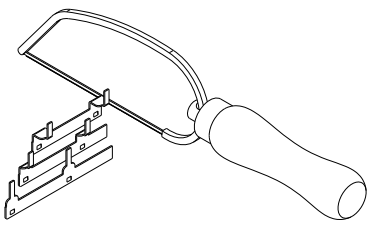


2.



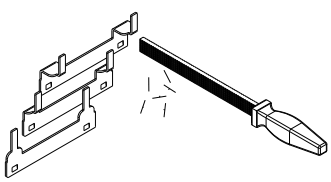
3.

Cut back copper



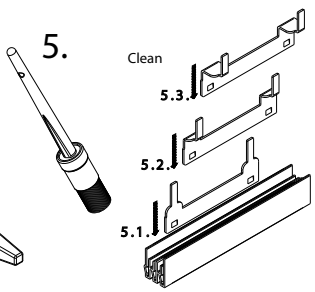
4.

Burr



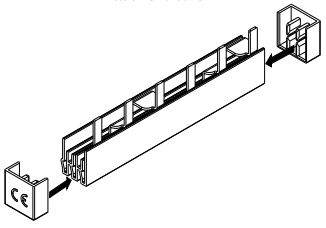
5.

Clean

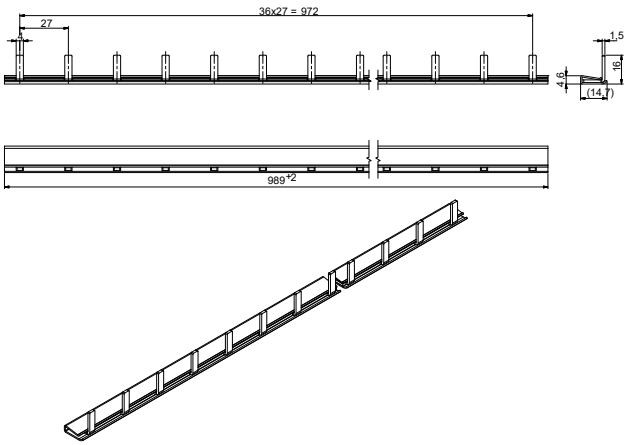


6.

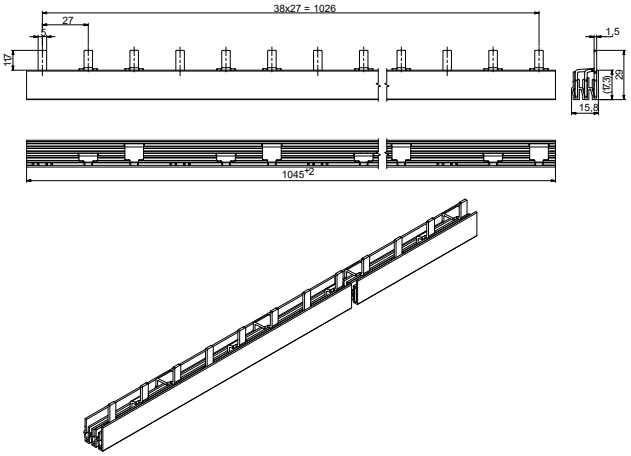
Attach end cover



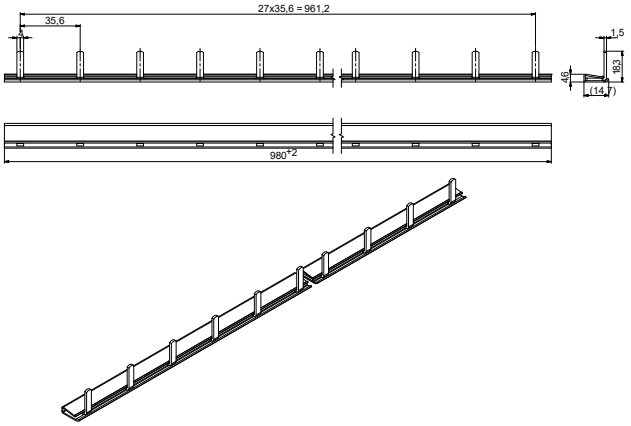
IZ16/1F/37



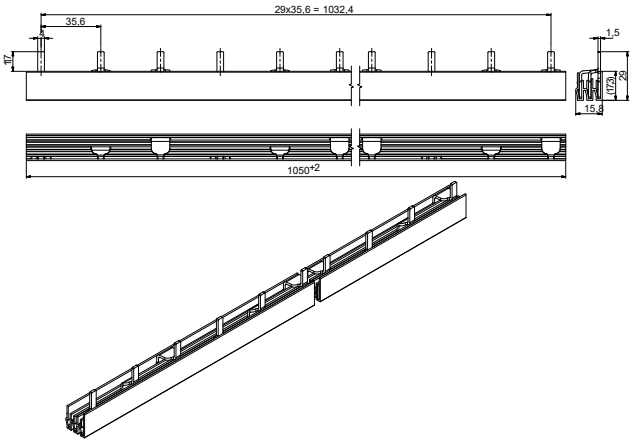
IZ16/3F/37



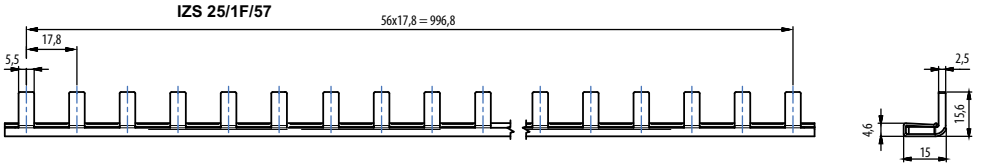
IZ16/1F/28



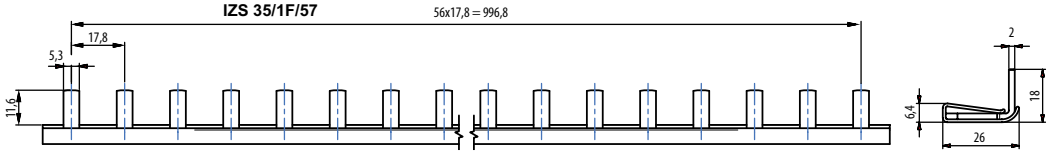
IZ16/3F/28



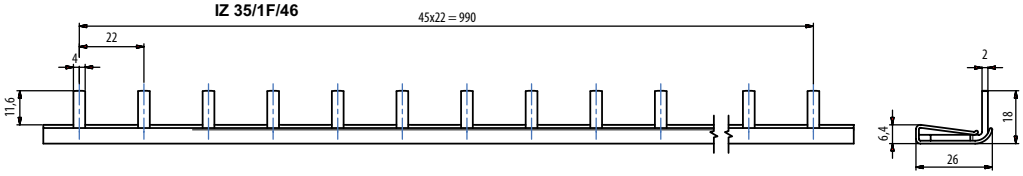
IZS 25/1F/57



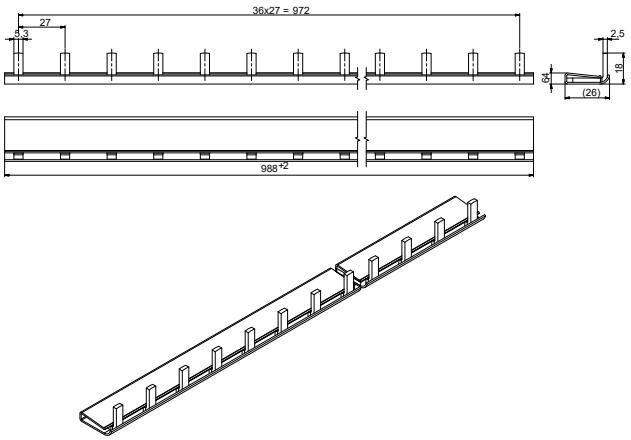
IZS 35/1F/57



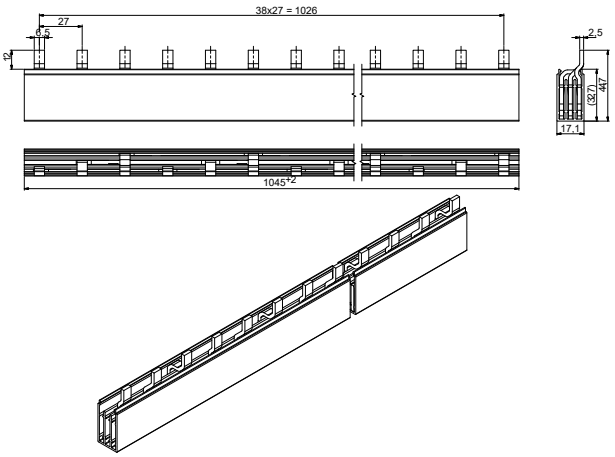
IZ 35/1F/46



IZ50/1F/37



IZ50/3F/37



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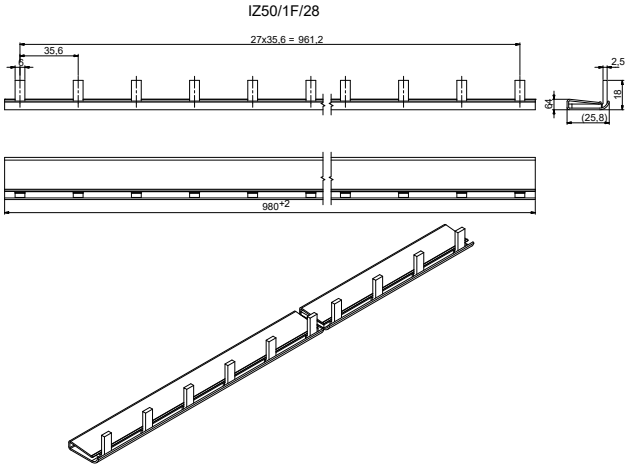

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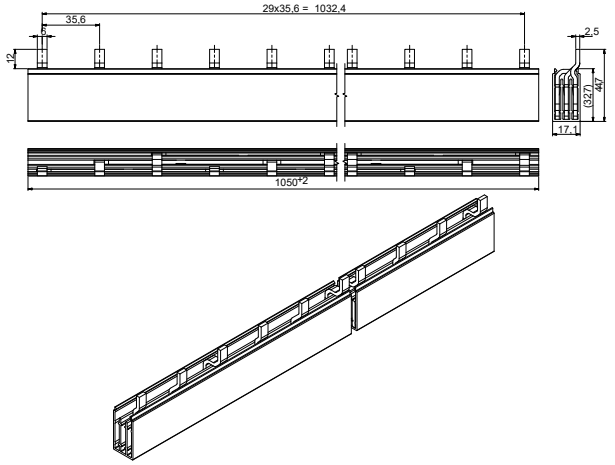
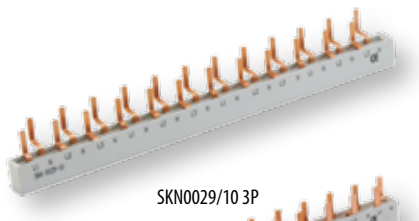


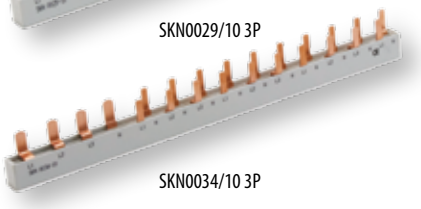
SKN type

Phase busbars 10 mm² (normal) 63A

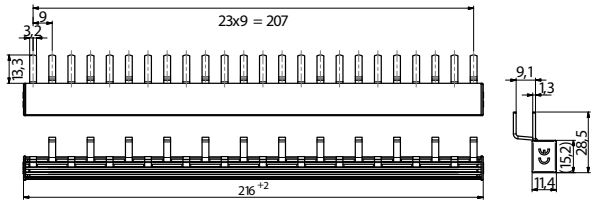
Type	Additional description	Code No.	Cross section [mm²]	Length [m]	g		For use with
SKN0021/10	10 mm², 1-phase, 12 mod.	002921150	10	0,216	203	10	ETIMAT1N, KZS1M
SKN0029/10 3P	10 mm², 3-phase, 54 mod.	002921154	10	0,216	292	10	
SKN0032/10	10 mm², 3-phase, 12 mod.	002921155	10	0,21	160	10	EFI2+10xETIMAT1N
SKN0034/10 3P	10 mm², 3-phase, 54 mod.	002921156	10	0,252	378	10	EFI4+10xETIMAT1N

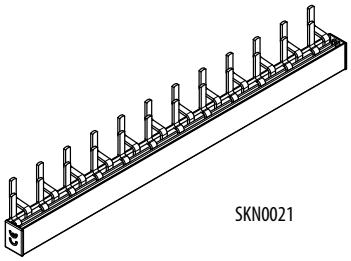


SKN0029/10 3P

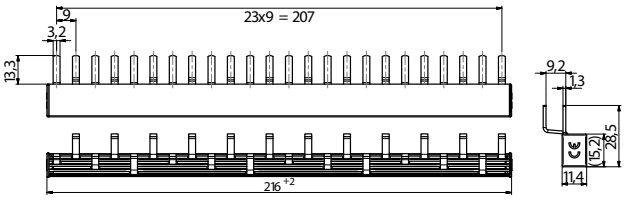


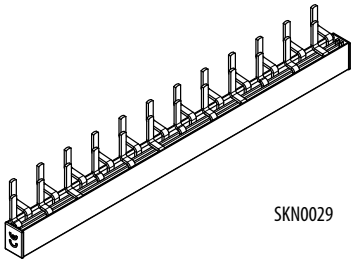
SKN0034/10 3P



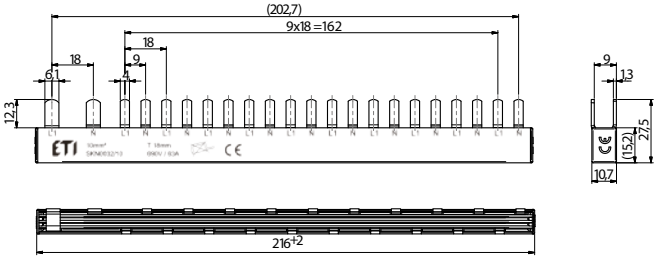


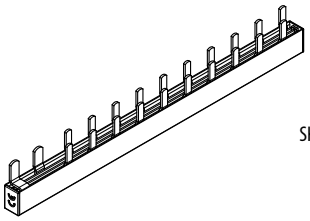
SKN0021



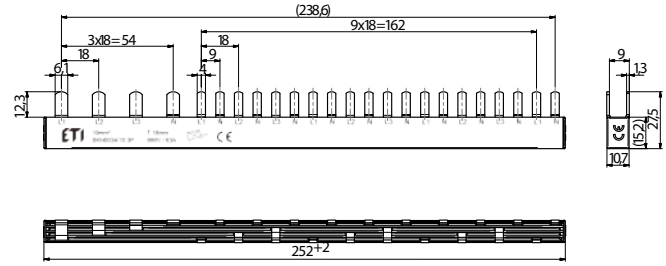


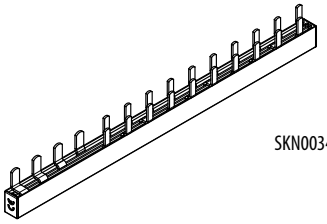
SKN0029





SKN0032



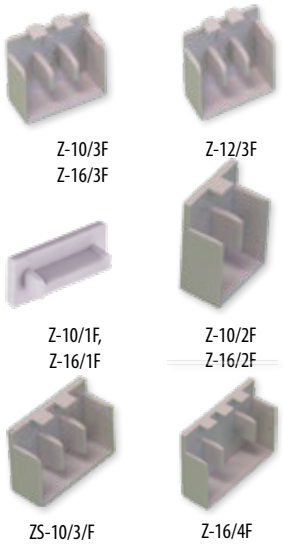


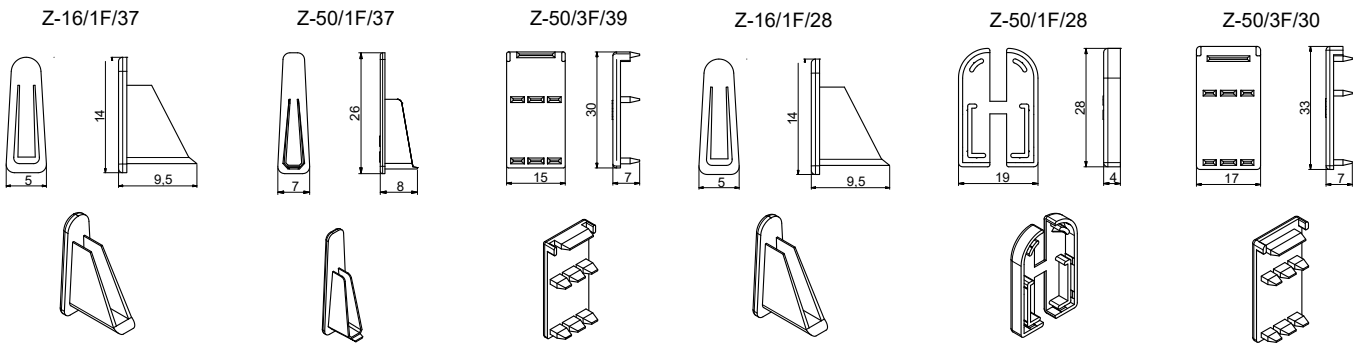
SKN0034 3P

End cover cap

Type	Code No.	g		For use with
Z-10/1F	002921220	0,15	25/250	IZ10/1F (002921143, 002921142), IZ10/3F/D (002921160, 002921161), IZM10/3F/D (002921190, 002921191)
Z-10/3F	002921227	0,8	25/250	IZ10/3F (002921140,002921141), IZM10/3F (002921130, 002921131)
ZS-10/3F	002921226	0,8	25/250	IZS10/3F (002921102, 002921103)
Z-12/1F	002921221	0,15	25/250	IZ12/1F (002921018, 002921026), IZ12/3F/D (002921162, 002921163, 002921164)
Z-12/3F	002921019	0,7	25/250	IZ12/3F (002921017, 002921020, 002921022, 002921024)
Z-16/1F	002921222	0,15	25/250	IZ16/1F (002921091, 002921092), IZ16/3F/D (002921064, 002921065), IZ16/2F/D (002921200, 002921201), IZ16/4F/D (002921210, 002921211), IZM16/3F/D (002921192, 002921193), IZ16/1F/STV (002921071, 002921073)
Z-16/1F	002921252	1,6	50	IZS16/1F/37 (002921250), IZS16/1F/28 (002921260)
Z-16/1F/L	002921205	1,0	25	IZ16/1F/...L (002921081, 002921082, 002921083, 002921060, 002921062)
Z-16/2F	002921224	0,5	25/250	IZ16/2F (002921066, 002921067)
Z-16/2F/3F (18)	002921240	3,0	50	IZ10/2F/19 (002921294), IZ16/2F/56 (002921230), IZ16/3F/57 (002921231), IZ16/2F/44 (002921233), IZS16/3F/30 (002921264), IZS16/3F/39 (002921254)
Z-16/3F	002921228	0,8	25/250	IZ16/3F (002921061, 002921063), IZM16/3F (002921132, 002921133), IZ16/3F/STV (002921072, 002921074)
ZS-16/3F	002921204	0,8	25/250	IZ16/3F (002921061, 002921063), IZM16/3F (002921132, 002921133), IZ16/3F/STV (002921072, 002921074)
Z-16/4F	002921225	1	25/250	IZ16/4F (002921068, 002921070)
Z-16/4F (18)	002921241	2,0	50	IZ10/4F/18 (002921295), IZ16/4F/56 (002921232), IZ10/L1NL2NL3N/54 (002921279)
ZS-16/4F	002921229	1	25/250	IZS16/4F (002921177, 002921178)
Z-25/1F	002921293	1	25	IZS 25/1F/57 (002921290)
Z-50/1F	002921253	3,2	50	IZS50/1F/37 (002921251), IZS35/1F/57 (002921291)
*Z-50/1F/28	002921263	5,6	25	IZS50/1F/28 (002921261), IZS35/1F/46 (002921292)
Z-50/3F	002921267	4,4	50	IZS50/3F/30 (002921265), IZS50/3F/39 (002921255)

*Under 1 reference code, 1 pair is included (left and right side cover)





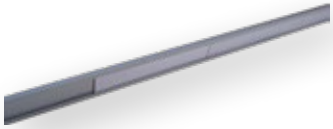
DIN rails

Type	Code No.	Length [m]	g		For use with
TH35/L - 1m	002911022	1,00	312	10/50	All modular products
TH35/L - 2m	002911023	2,00	624	10/30	
TH35/A - 1m	002911024	1,00	312	10/50	
TH35/A - 2m	002911025	2,00	624	10/30	

L - Normal quality of galvanic cover – mat
A - Better quality of galvanic cover – shinning

Marking lath

Code No.	Length [m]	width [mm]	g	
002911007	1	12	40,7	50



Cover lath

Code No.	Length [m]	opening [mm]	g	
002911003	0,217	46+0,5	24,4	500

DIN rail distribution blocks EDB

Construction
- Brass screw terminal blocks double-deck
- Housing made of self extinguishing material
- Cover and separating made of polycarbonate

Application
Proper and transparent connecting cables in low voltage distribution boards

Advantages
- TH35 din rail mounted or on a flat surface
- Safe and easy installation
- Transparent cover
- 2 or 4 pole model
- Self extinguishing material
- Possibility of connecting wires with ferrules or without

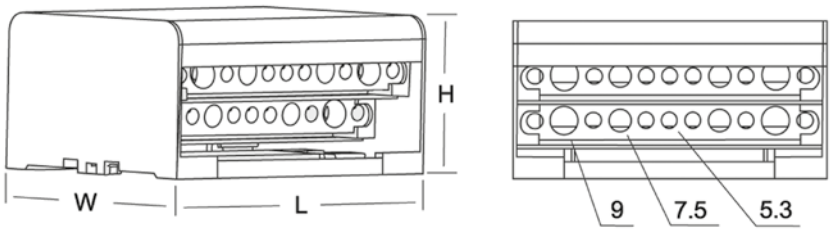
EDB-407

Technical data:

Degree of protection	IP20 (with closed cover)
Short circuit withstand capability Icc	20kA
Rated current	125A
In accordance with	EN 60947-1, EN 60947-7-1

Wire cross section by terminal size

Wire with ferrule	Wire without ferrule	Terminal size [mm]
1,5 - 6 mm²	2,5 - 6 mm²	Ø 5,3
6 - 16 mm²	10 - 25 mm²	Ø 7,5
10 - 16 mm²	10 - 35 mm²	Ø 9



Distribution blocks EDB

Type	Code No.	Number of terminals	In [A]	Dimensions L x W x H [mm]	kg	
2 - poles						
EDB-207	001102300	2 x (5 x Ø 5,3 + 2 x Ø 7,5)	125A	65 x 42 x 50	0,14	1/100
EDB-211	001102301	2 x (7x Ø 5,3 + 2 x Ø 7,5+ 2xØ 9)	125A	100 x 42 x 50	0,18	1/100
EDB-215	001102302	2 x (11x Ø 5,3 + 2 x Ø 7,5+ 2 x Ø 9)	125A	133 x 42 x 50	0,22	1/50
4 - poles						
EDB-407	001102303	4 x (5 x Ø 5,3 + 2 x Ø 7,5)	125A	65 x 88 x 50	0,24	1/100
EDB-411	001102304	4 x (7 x Ø 5,3 + 2 x Ø 7,5+ 2 x Ø 9)	125A	100 x 88 x 50	0,34	1/50
EDB-415	001102305	4 x (11 x Ø 5,3 + 2 x Ø 7,5+ 2 x Ø 9)	125A	133 x 88 x 50	0,46	1/50

EDB-411

EDB-215

Ordering:

EDB - xyy

No. of Poles

Number of terminals per pole

DIN rail distribution blocks EDBM, EDBS

Build
- Brass or aluminum terminals
- Wires screwed by hex key (Allen key)
- Housing made of flame retardant material PA6 GF25

Application
- For connecting the phase and neutral conductors in LV switchboards for proper and lucid distribution of electric energy

Advantages
- Mounted on a TH rail or on a flat surface with screws with low head
- Strong and simple mounting
- Terminal material:
  EDBM – MO-58 brass
  EDBS – 6060 aluminum
- Housing: PA6 GF25 fire retardant

General Specifications:
- Rated impulse voltage withstand 6 kV
- Rated insulation voltage 690 V
- Number of poles 1
- The CTI factor 600 V
- Compliance with IEC 60947-7-1

EDBM-1, EDBM-1/N, EDBM-1/PE - 50 mm²

Cables cross section					
Input	Output	Rigid	Flexible	L	Tightening torque
1	1	4-50 mm²	6-50 mm²	21 mm	14 Nm
	3	2,5-25 mm²	4-25 mm²	17 mm	6 Nm
	4	2,5-16 mm²	2,5-16 mm²	9 mm	3 Nm

Type	Code No	9	
EDBM-1	001102400	225	1/5/100
EDBM-1/N	001102410	225	1/5/100
EDBM-1/PE	001102411	225	1/5/100

Parameters:
Rated cross section 50 mm², Rated current 160 A, Allen keys 3 mm, 4 mm, 6 mm

EDBM-2, EDBM-2/N, EDBM-2/PE - 50 mm²

Cables cross section					
Input	Output	Rigid	Flexible	L	Tightening torque
1	1	4-50 mm²	6-50 mm²	21 mm	14 Nm
	2	4-35 mm²	6-25 mm²	25 mm	10 Nm
	3	2,5-25 mm²	2,5-16 mm²	12 mm	3 Nm

Type	Code No	9	
EDBM-2	001102401	225	1/5/100
EDBM-2/N	001102412	225	1/5/100
EDBM-2/PE	001102413	225	1/5/100

Parameters:
Rated cross section 50 mm², Rated current 160 A, Allen keys 3 mm, 5 mm, 6 mm

EDBM-4, EDBM-4/N, EDBM-4/PE - 70 mm²

Cables cross section					
Input	Output	Rigid	Flexible	L	Tightening torque
1	3	4-70 mm²	6-50 mm²	20 mm	14 Nm

Type	Code No	9	
EDBM-4	001102402	215	1/5/100
EDBM-4/N	001102414	215	1/5/100
EDBM-4/PE	001102415	215	1/5/100

Parameters:
Rated cross section 70 mm², Rated current 192 A, Allen keys 6 mm

EDBM-6, EDBM-6/N, EDBM-6/PE - 70 mm²

Cables cross section					
Input	Output	Rigid	Flexible	L	Tightening torque
1	1	4-70 mm²	6-50 mm²	24 mm	14 Nm
	2	4-50 mm²	6-35 mm²	20 mm	10 Nm
	1	4-25 mm²	6-25 mm²	20 mm	6 Nm

Type	Code No	9	
EDBM-6	001102403	215	1/5/100
EDBM-6/N	001102416	215	1/5/100
EDBM-6/PE	001102417	215	1/5/100

Parameters:
Rated cross section 70 mm² , Rated current 192 A, Allen keys 4 mm, 5 mm, 6 mm

EDBM-7, EDBM-7/N, EDBM-7/PE - 70 mm²

Cables cross section					
Input	Output	Rigid	Flexible		Tightening torque
1	1	4-70 mm²	6-50 mm²	21 mm	14 Nm
	3	2,5-25 mm²	4-25 mm²	17 mm	6 Nm
	4	2,5-16 mm²	2,5-16 mm²	9 mm	3 Nm

Type	Code No		
EDBM-7	001102422	225	1/5/100
EDBM-7/N	001102423	225	1/5/100
EDBM-7/PE	001102424	225	1/5/100

Parameters:
Rated cross section 70 mm², Rated current 192 A, Allen keys 3 mm, 4 mm, 6 mm

EDBM-8, EDBM-8/N, EDBM-8/PE - 70 mm²

Cables cross section					
Input	Output	Rigid	Flexible		Tightening torque
1	1	4-70 mm²	6-50 mm²	21 mm	14 Nm
	2	4-35 mm²	6-25 mm²	25 mm	10 Nm
	3	2,5-25 mm²	2,5-16 mm²	12 mm	3 Nm

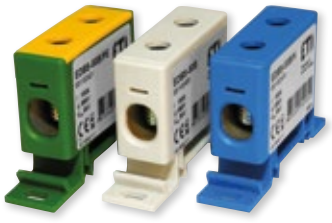
Type	Code No		
EDBM-8	001102425	225	1/5/100
EDBM-8/N	001102426	225	1/5/100
EDBM-8/PE	001102427	225	1/5/100

Parameters:
Rated cross section 70 mm², Rated current 192 A, Allen keys 3 mm, 5 mm, 6 mm

EDBS-50A, EDBS-50A/N, EDBS-50A/PE, EDBS-50B, EDBS-50B/N, EDBS-50B/PE

Cables cross section					
Input	Output	Rigid	Flexible		Tightening torque
1	1	16-70 mm²	25-50 mm²	20 mm	10 Nm

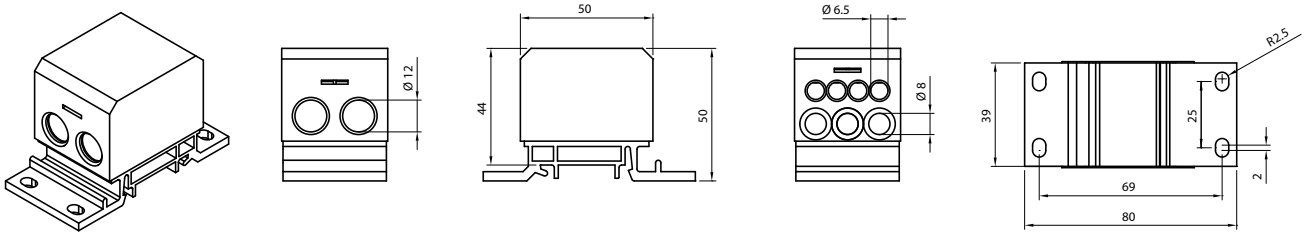
Type	Code No		
EDBS-50A	001102404	225	1/5/100
EDBS-50A/N	001102418	225	1/5/100
EDBS-50A/PE	001102419	225	1/5/100
Type	**Code No**		
EDBS-50B	001102405	225	1/5/100
EDBS-50B/N	001102420	225	1/5/100
EDBS-50B/PE	001102421	225	1/5/100



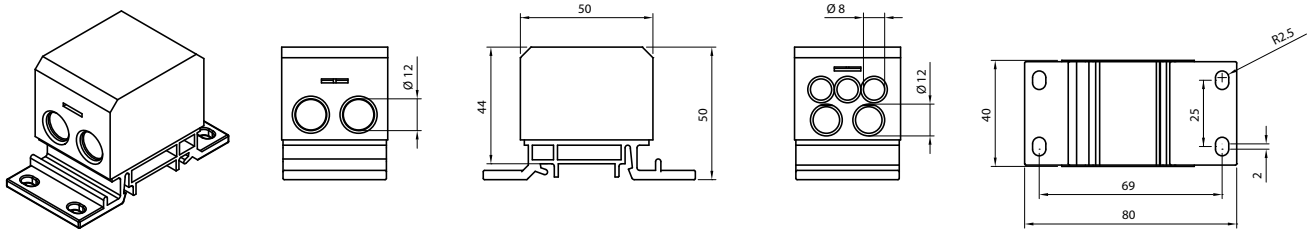
Parameters:
Rated cross section 50 mm², Rated current 150 A, Allen key 5 mm
Input - 6060 Aluminum (EDBS-50A version ...), with a protective coat (version EDBS-50B ...)
For Al and Cu cables

Dimensions

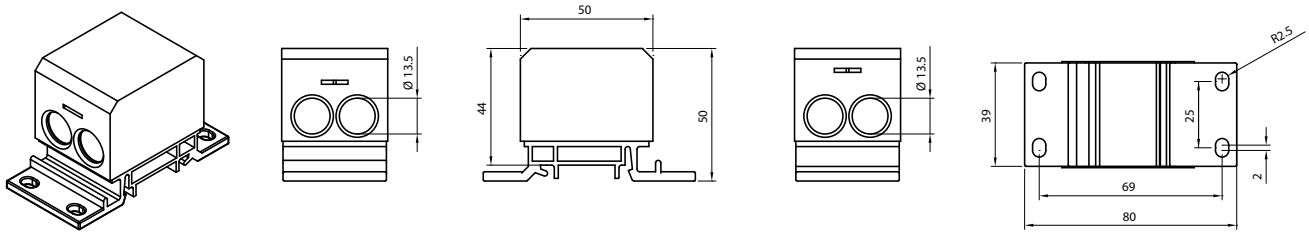
EDBM-1, EDBM-1/N, EDBM-1/PE - 50 mm²



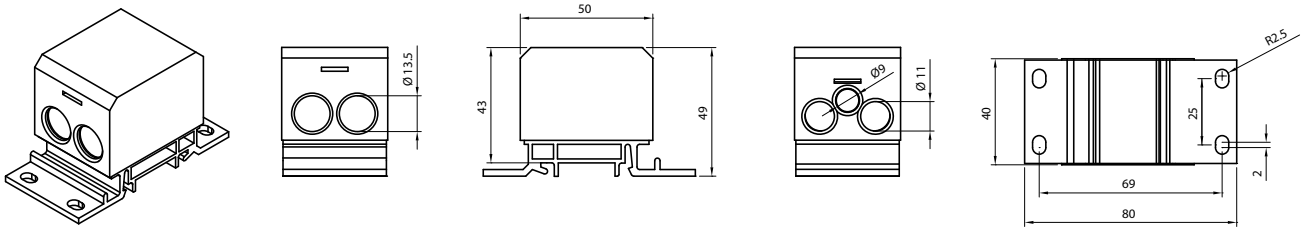
EDBM-2, EDBM-2/N, EDBM-2/PE - 50 mm²



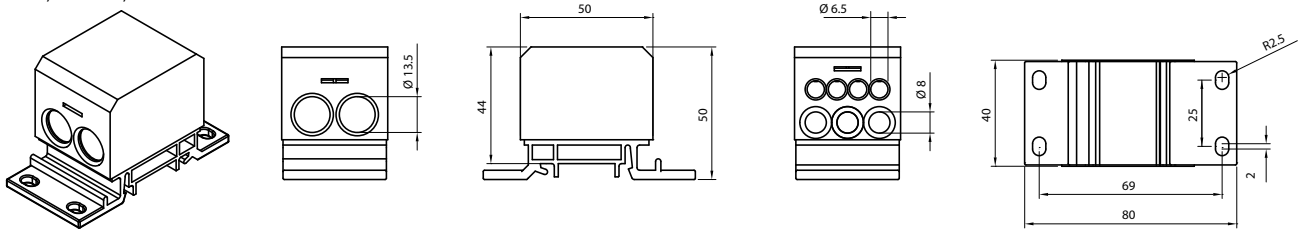
EDBM-4, EDBM-4/N, EDBM-4/PE - 70 mm²



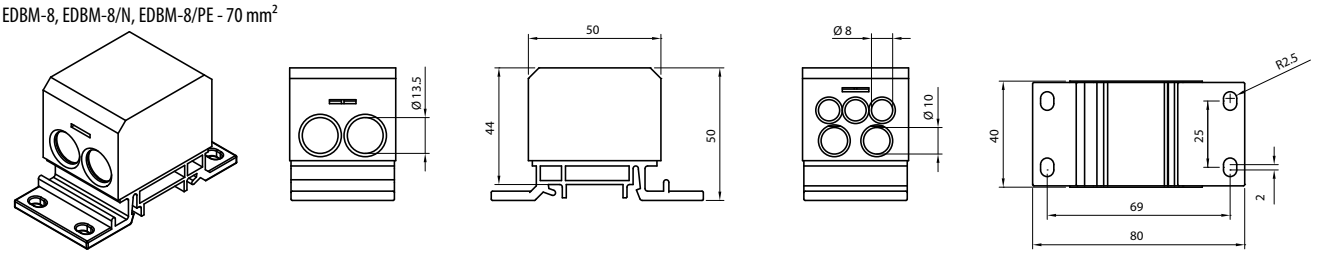
EDBM-6, EDBM-6/N, EDBM-6/PE - 70 mm²



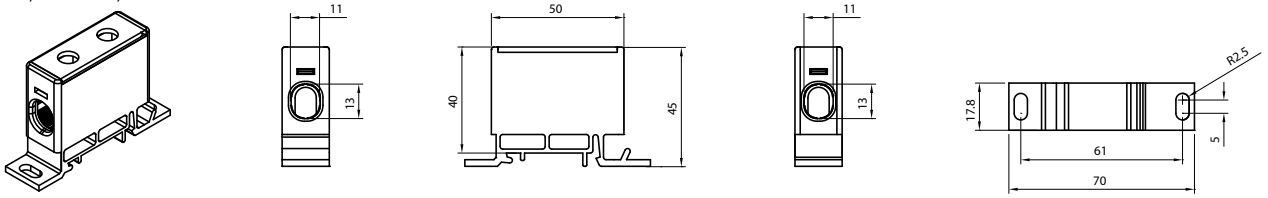
EDBM-7, EDBM-7/N, EDBM-7/PE - 70 mm²



EDBM-8, EDBM-8/N, EDBM-8/PE - 70 mm²



EDBS-50.., EDBS-50../N, EDBS-50../PE



Equipotential terminal boards ESC-QBLOK

Equipotential terminal boards

Partition rail assemblies are used as supplementary rail assemblies for phase or neutral expansion inside electrical panels. They are also known as equipotential rail assemblies because they are used as equipotential nodes in distribution control units to collect the earth system.

General features

- Available in 7 and 12 hole versions
- Mounted onto PR/3 profiles conforming to IEC 60715 standards, TH/35 type
- Inherent protection against accidental contact
- IPXXB level according to IEC 60529
- Possible to label with a CNU/8 tag
- Available in green and blue
- Conformance to EN 60998-1:2004 and EN 60998-2-1:2004 regulations
- Insulating body made of 6.6 UL94V-0 polyamide

Technical data for ESC-QBLOK Series

		ESC-QBLOK7001	ESC-QBLOK7002	ESC-QBLOK1201	ESC-QBLOK1202
TECHNICAL CHARACTERISTICS					
function / type		Distribution rail assembly			
rated cross-section	(mm^2)	10			
connecting capacity:					
flexible(mm^2)		1,5 ÷ 10			
rigid(mm^2)		1,5 ÷ 16			
max. flexible with ferrule (mm^2)-ferrule type		10 - WP100/21			
rated voltage / rated current / gauge conf. to IEC 60947-7-1		500 V / 63 A / B5			
rated impulse withstand voltage / pollution degree		-			
insulation stripping length	(mm)	6			
tightening torque value (test / max)	(Nm)	2 / 2,5			
height / width / thickness	TH/35 7,5 mm	33 - 53 - 16		33 - 85 - 16	
height / width / thickness	TH/35 15 mm	41 - 53 - 16		41 - 85 - 16	
Color		blue	green	blue	green

Equipotential distribution terminal boards

Type	Code No.	Description	g	
ESC-QBLOK7001	003903204	for Conductor Flexible/Rigid (10/16)mm^2, 7 holes, Blue	45	10
ESC-QBLOK7002	003903205	for Conductor Flexible/Rigid (10/16)mm^2, 7 holes, Green	45	10
ESC-QBLOK1201	003903206	for Conductor Flexible/Rigid (10/16)mm^2, 12 holes, Blue	28	10
ESC-QBLOK1202	003903207	for Conductor Flexible/Rigid (10/16)mm^2, 12 holes, Green	28	10

ESC-QBLOK7001

ESC-QBLOK7002

ESC-QBLOK1201

ESC-QBLOK1202

DIN rail distribution blocks EDBJ

Build
- The blocks consist of an insert / clamp made of brass or aluminum and a housing made of plastic.
- The terminals are equipped with screws with a hex key (Allen key)

Advantages
- mounted on a TH rail
- easy to assemble
- 1 module width !!
- strong connection

Application
- For connecting the phase and neutral conductors in LV switchboards for proper and lucid distribution of electric energy

General Specifications
- Rated impulse withstand voltage 6 kV (EDBJ-4x25-4x25, EDBJ-1x70-4x25), 12kV (EDBJ-1x35-1x35)
- Rated insulation voltage 1000 V
- Number of poles - 1
- Rated voltage 240/415 V
- Terminal material:
  - brass MO-58 (EDBJ-4x25-4x25, EDBJ-1x70-4x25)
  - aluminum 6060 zinc plated (EDBJ-1x35-1x35)
- Housing material:
  - PC / ABS plastic (for EDBJ-4x25-4x25, EDBJ-1x70-4x25)
  - PA6.6 plastic (for EDBJ-1x35-1x35)
- Flammability class V0
- possibility of sealing (for EDBJ-4x25-4x25, EDBJ-1x70-4x25)
- Working temperature -30°C to +80°C
- Compliance with IEC 60947-7-1

EDBJ-4x25-4x25

Cables cross section					
Upper	Bottom	Rigid	Flexible	L	Tightening torque
4	4	25 mm²	16 mm²	16 mm	6 Nm

Type	Code No		
EDBJ-4x25-4x25	001102428	125	1/12/240
EDBJ-4x25-4x25N	001102429	125	1/12/240
EDBJ-4x25-4x25PE	001102430	125	1/12/240

Parameters:
Rated cross section 25mm², Rated current 100 A, Allen keys 3 mm

EDBJ-4x25-4x25

EDBJ-4x25-4x25N

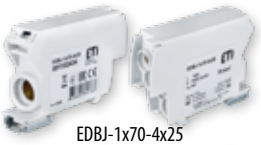
EDBJ-4x25-4x25PE

EDBJ-1x70-4x25

Cables cross section					
Upper	Bottom	Rigid	Flexible	L	Tightening torque
1		4-70 mm²	6-50 mm²	25 mm	10 Nm
	4	2,5-25 mm²	2,5-16 mm²	16 mm	6 Nm

Type	Code No		
EDBJ-1x70-4x25	001102434	117	1/12/240
EDBJ-1x70-4x25N	001102435	117	1/12/240
EDBJ-1x70-4x25PE	001102436	117	1/12/240

Parameters:
Rated cross section 70 mm², Rated current 192 A, Allen keys 3 mm, 5 mm


EDBJ-1x70-4x25

EDBJ-1x70-4x25N

EDBJ-1x70-4x25PE

EDBJ-1x35-1x35

Cables cross section					
Upper	Bottom	Rigid	Flexible	L	Tightening torque
1	1	2,5-35 mm²	2,5 - 25 mm²	21 mm	6 Nm

Type	Code No		
EDBJ-1x35-1x35	001102431	27	1/12/300
EDBJ-1x35-1x35N	001102432	27	1/12/300
EDBJ-1x35-1x35PE	001102433	27	1/12/300

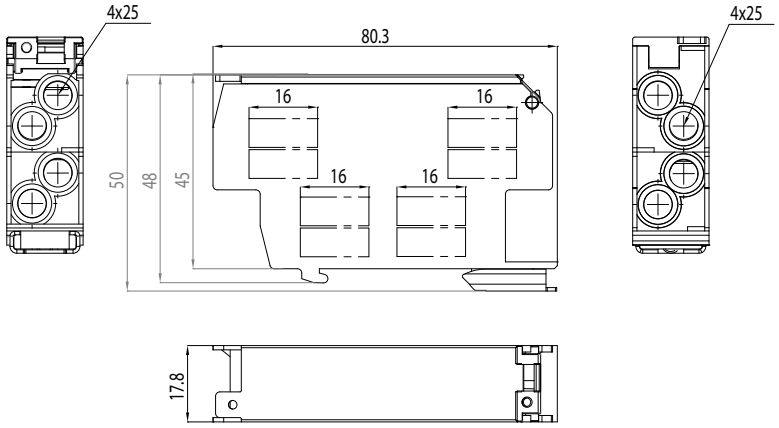
Parameters:
Rated cross section 35 mm², Rated current 125 A, Allen keys 3 mm,
The galvanic coating of the insert enables the connection of both Al and Cu conductors

EDBJ-1x35-1x35

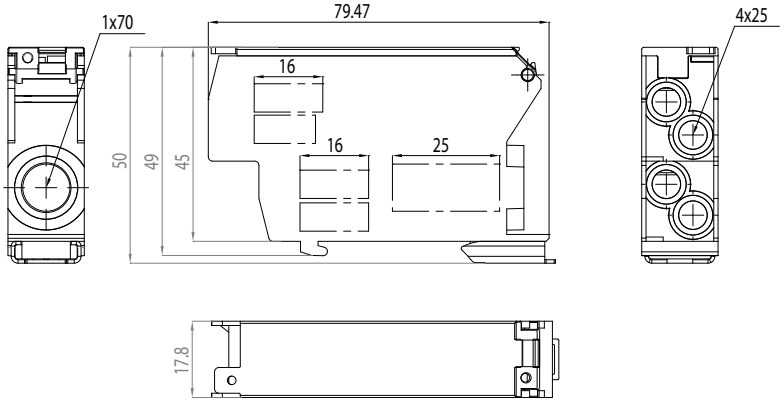
EDBJ-1x35-1x35N

EDBJ-1x35-1x35PE

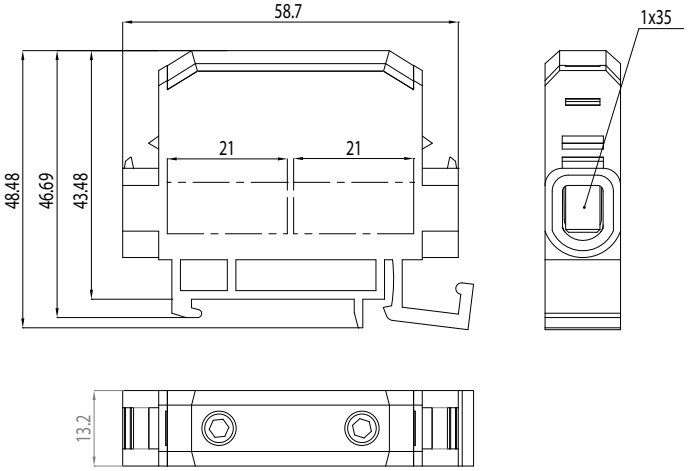
Dimensions



EDBJ-4x25-4x25..



EDBJ-1x70-4x25...



EDBJ-1x35-1x35

Meter board

Instructions for mounting a meter board
- Fasten the frame of the meter board using four screws and plastic wall inserts. While drilling holes, take care not to damage electrical wires.
- When the board is fixed, attach a meter using bolts with sliding nuts.
- Fasten the wires in the terminals and position the protective cover.

Meter board

Type	Code No.	g	
MPO	001117001	508	1/25
VPO	001117002	690	1/16
MP	001117004	276	1/25
VP	001117005	453	1/16
ENB2	001101197	350	15

MPO - small meter board
VPO - large meter board
MP - small meter board without frame
VP - large meter board without frame

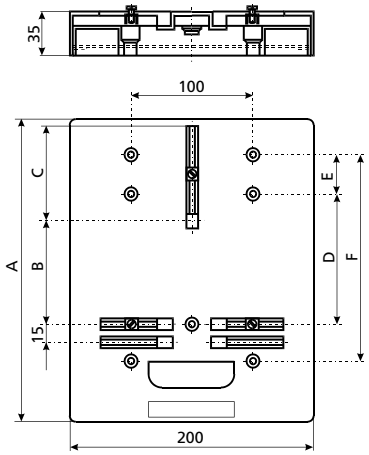
VPO

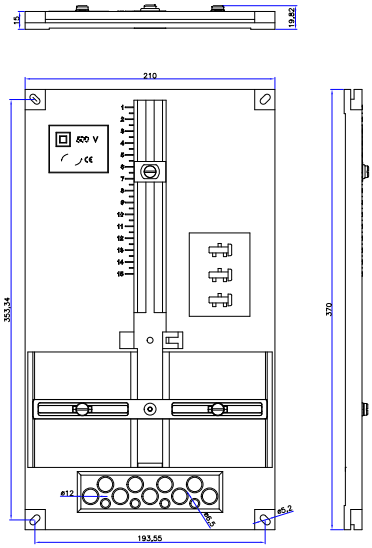
ENB2

VP

METER board

type	dimension					
	A	B	C	D	E	F
MPO	250	80	85	47	63	170
VPO	370	75	170	136	50	241
MP	250	80	85	47	63	270
VP	370	75	170	136	50	241





Universal board covering UPO

Standard lenght of profile
1 m

The covering UPO is the improved form for covering the space between rows of built-in elements in distribution boards. The built-in elements are installed on the mounting rails with width of 35 mm which shall be mounted in the distance of 125 mm.
Description - UPO covering consists of terminal plates that should be fixed on mounting rails, and flat and corner profiles, which are click-on mounted on the terminal plates. The space between rows of apparatuses is covered by a flat profile. Upper and lower rows of devices should be covered by corner profile.

Technical data:

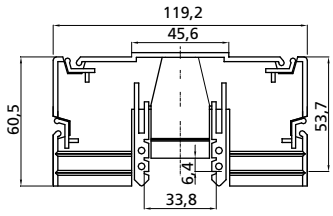
Standard length of profile	1 m
Number of carriers per 1 m of profile	4 pcs
Distance between mounting rails	125 mm
Width of distance for built-in elements	46 + 0,5 mm

Universal board covering UPO

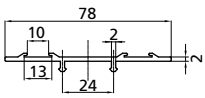
Type	Code No.	g	
Terminal plate	001214011	50	18
Flat profile	001214012	15	322
Corner profile	001214013	10	306

Dimensions

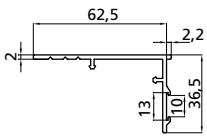
terminal plate



flat profile



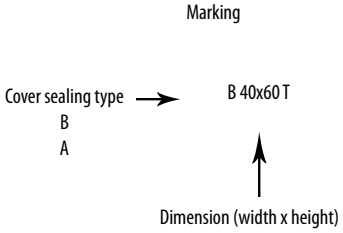
corner profile

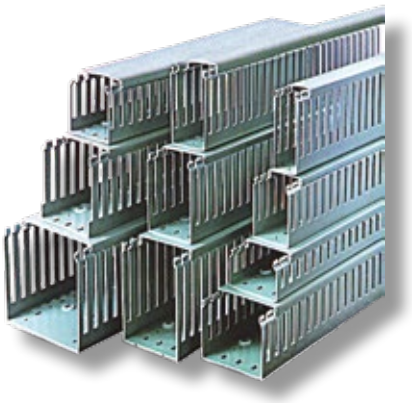


Installation channels

Technical data

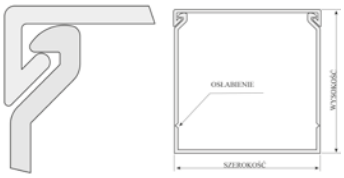
Material		PVC, halogen free
Dimensions	Height	15, 25, 30, 40, 60, 80, 100, 125, 150
	Width	15, 25, 40, 60, 80, 100
Length		2 m
Colour		RAL 7030
Tensile strength		390 kg/cm^2
Dielectric strength		36 kV/ mm
Installation temperature		< 70 °C
Electrical resistance		6,1 x 1014 Ω/cm
Flammability		UL 94 V0
Halogen free		IEC 60754-2
Directive		RoHS
Marking		CE

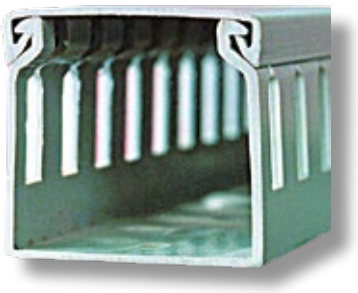




Type B cover sealing

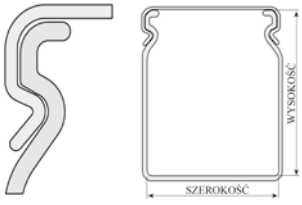
Type	Code No.	g	
B 25x40 T	003911034	520	36
B 25x60 T	003911035	620	18
B 25x80 T	003911036	980	18
B 40x40 T	003911037	700	18
B 40x60 T	003911038	840	18
B 40x80 T	003911039	980	18
B 40x100 T	003911040	1225	12
B 48x100 T	003911041	6030	4
B 55x100 T	003911042	3020	4
B 60x40 T	003911043	613	18
B 60x60 T	003911044	1040	12
B 60x80 T	003911045	1480	12
B 60x100 T	003911046	1720	8
B 75x100 T	003911047	1706	8
B 80x40 T	003911048	1160	12
B 80x60 T	003911049	1420	12
B 80x80 T	003911050	1720	12
B 80x100 T	003911051	1790	8
B 100x60 T	003911052	1760	8
B 100x80 T	003911053	1860	8
B 100x100 T	003911054	2120	8
B 150x100 T	003911055	3200	4



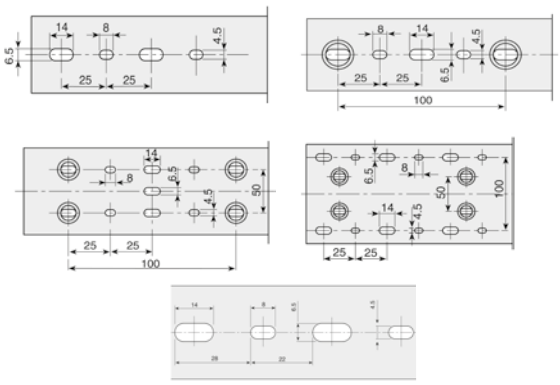


Type A cover sealing

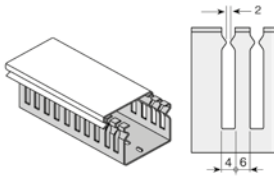
Type	Code No.	g	
A 25x25 T	003911003	540	48
A 25x30 T	003911004	600	48

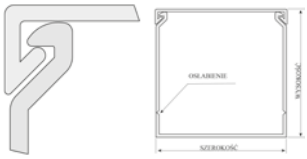


Dimensions

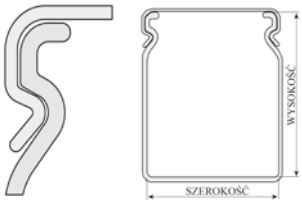


Side perforation





Type B cover sealing



Type A cover sealing

Mounting insulators

Rated voltage	Rated impulse voltage
250-3600 V	**8-50kV**

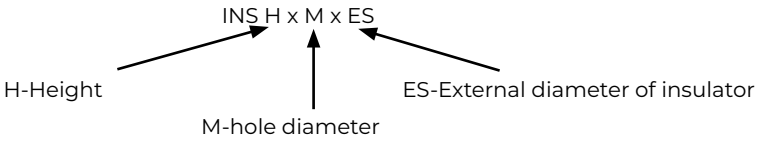
Application

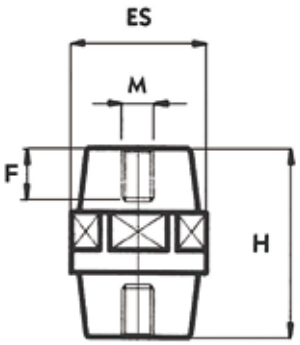
Support insulators are intended for installation in el. enclosures for supporting busbars and/or other current leading parts. They provide electrical insulation. They are made of red fiber-reinforced polyester glass, which guarantees high resistance and mechanical strength. On both sides, the insulator has threaded sleeves made of galvanized steel.

Technical data

Installation temperature	-20°C ... +120°C
Material	BMC polyester halogen free
Flammability	V0 (UL94)

Marking:





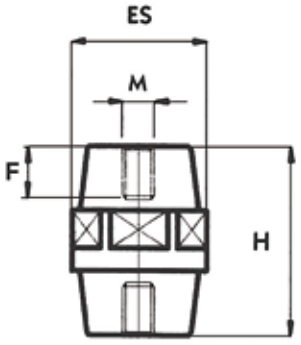
F-sleeve thread depth

Mounting insulators

Type	Code No.	Dimensions (mm)				Mechanical parameters			Electrical characteristics			
		H	M	ES	F	Tensile strenght [daN]	Cantilever strenght [daN]	Twisting strenght [Nm]	Operating voltage AC/ DC [V]	Flashover voltage [kV]		g
INS 1238	003810201	12	3	8	3,5	100	20	0,6	250	8	200	18
INS 15414	003810203	15	4	14	4,5	300	60	3	250	8	100	22
INS 15514	003810204	15	5	14	4,5	300	60	4	250	8	100	22
INS 16414	003810202	16	4	14	4,5	300	60	3	250	8	100	20
INS 20417	003810205	20	4	17	5	350	80	3	400	15	100	25
INS 20517	003810206	20	5	17	5	350	80	4	400	15	100	26
INS 20617	003810207	20	6	17	5	350	80	8	400	15	100	27
INS 25419	003810208	25	4	19	8	400	220	3	600	25	50	28
INS 25519	003810209	25	5	19	8	400	220	6	600	25	50	30
INS 25619	003810210	25	6	19	8	400	220	10	600	25	50	32
INS 25819	003810211	25	8	19	8	400	220	10	600	25	50	36
INS 30630	003810212	30	6	30	9	900	450	10	750	30	50	40
INS 30830	003810213	30	8	30	9	900	450	25	750	30	50	40
INS 35632	003810214	35	6	32	11	1100	500	10	750	40	50	44
INS 35832	003810216	35	8	32	11	1100	500	25	750	40	50	44
INS 351032	003810218	35	10	32	11	1100	500	50	750	40	50	44
INS 36641	003810215	36	6	41	11	1400	650	10	1000	40	50	48
INS 36841	003810217	36	8	41	11	1400	650	25	1000	40	50	48
INS 361041	003810219	36	10	41	11	1400	650	50	1000	40	50	48
INS 40632	003810220	40	6	32	15	1100	500	10	1000	40	25	52
INS 40832	003810221	40	8	32	15	1100	500	25	1000	40	25	52

Mounting insulators

Type	Code No.	Dimensions (mm)				Mechanical parameters			Electrical characteristics		Packaging [pcs]	Weight [g]
		H	M	ES	F	Tensile strenght [daN]	Cantilever strenght [daN]	Twisting strenght [Nm]	Operating voltage AC/ DC [V]	Flashover voltage [kV]		
INS 401032	003810222	40	10	32	15	1100	500	50	1000	40	25	52
INS 401232	003810223	40	12	32	15	1100	500	87	1000	40	25	55
INS 45641	003810224	45	6	41	15	1400	740	10	1000	40	25	55
INS 45841	003810225	45	8	41	15	1400	740	25	1000	40	25	55
INS 451041	003810226	45	10	41	15	1400	740	50	1000	40	25	55
INS 45846	003810227	45	8	46	15	1500	750	10	1000	40	25	56
INS 451046	003810228	45	10	46	15	1500	750	25	1000	40	25	56
INS 451246	003810229	45	12	46	15	1500	750	50	1000	40	25	56
INS 50636	003810230	50	6	36	15	1300	650	10	1500	50	25	61
INS 50836	003810231	50	8	36	15	1300	650	25	1500	50	25	61
INS 501036	003810233	50	10	36	15	1300	650	50	1500	50	25	61
INS 50850	003810232	50	8	50	15	1500	750	25	1500	50	10	67
INS 501050	003810234	50	10	50	15	1500	750	50	1500	50	10	75
INS 501250	003810235	50	12	50	15	1500	750	87	1500	50	10	75
INS 55855	003810236	55	8	55	15	1600	780	25	1500	50	10	87
INS 551055	003810237	55	10	55	15	1600	780	50	1500	50	10	87
INS 551255	003810238	55	12	55	15	1600	780	87	1500	50	10	87
INS 60855	003810239	60	8	55	15	2000	800	25	1500	50	10	94
INS 601055	003810240	60	10	55	15	2000	800	50	1500	50	10	91
INS 601255	003810241	60	12	55	15	2000	800	87	1500	50	10	91
INS 63841	003810242	63	8	41	15	1600	700	25	1500	50	10	83
INS 631041	003810243	63	10	41	15	1600	700	50	1500	50	10	83
INS 65856	003810244	65	8	56	15	2000	800	25	2000	50	10	85
INS 651056	003810245	65	10	56	15	2000	800	50	2000	50	10	98
INS 651256	003810246	65	12	56	15	2000	800	87	2000	50	10	98
INS 701065	003810249	70	10	65	25	3000	1200	50	2000	50	5	103
INS 701265	003810247	70	12	65	25	3000	1200	87	2000	50	5	112
INS 701665	003810248	70	16	65	25	3000	1200	210	2000	50	5	115
INS 75850	003810253	75	8	50	15	1800	730	25	2000	50	5	114
INS 751050	003810250	75	10	50	25	1800	730	50	2000	50	5	112
INS 751250	003810255	75	12	50	25	1800	730	87	2000	50	5	114
INS 751065	003810254	75	10	65	25	3000	1200	50	2000	50	5	114
INS 751265	003810251	75	12	65	25	3000	1200	87	2000	50	5	112
INS 801065	003810256	80	10	65	25	3500	1300	50	3600	50	5	125
INS 801265	003810257	80	12	65	25	3500	1300	87	3600	50	5	125
INS 801665	003810258	80	16	65	25	3500	1300	210	3600	50	5	154
INS 1001065	003810259	100	10	65	25	4000	1300	50	3600	50	5	154
INS 1001265	003810260	100	12	65	25	4000	1300	87	3600	50	5	154
INS 1001665	003810261	100	16	65	25	4000	1300	210	3600	50	5	154



F-sleeve thread depth

Metric cable glands IP67

M-12G M-16G M-20G M-25G M-32G
M-40G M-50G M-63G

IP 68 with sealing washer

Metric cable glands

Type	Description	Code No.	g	
M-12G	Metric cable gland M12	004482200	3	50
M-16G	Metric cable gland M16	004482201	5,6	50
M-20G	Metric cable gland M20	004482202	9,4	250
M-25G	Metric cable gland M25	004482203	19	150
M-32G	Metric cable gland M32	004482204	32	100
M-40G	Metric cable gland M40	004482205	58	50
M-50G	Metric cable gland M50	004482206	84	30
M-63G	Metric cable gland M63	004482207	147	16
M-12N	Metric lock nut M12	004482208	1	200
M-16N	Metric lock nut M16	004482209	1	200
M-20N	Metric lock nut M20	004482210	2	250
M-25N	Metric lock nut M25	004482211	3	800
M-32N	Metric lock nut M32	004482212	5	80
M-40N	Metric lock nut M40	004482213	6	50
M-50N	Metric lock nut M50	004482214	9	30
M-63N	Metric lock nut M63	004482215	15	10
M-12S	TP-M12 Metric sealing rubber washer M12	004482216	1,2	500
M-16S	TP-M16 Metric sealing rubber washer M16	004482217	1,5	500
M-20S	TP-M20 Metric sealing rubber washer M20	004482218	1,8	500
M-25S	TP-M25 Metric sealing rubber washer M25	004482219	2,1	300
M-32S	TP-M32 Metric sealing rubber washer M32	004482220	2,3	250
M-40S	TP-M40 Metric sealing rubber washer M40	004482221	2,6	150
M-50S	TP-M50 Metric sealing rubber washer M50	004482222	2,9	60
M-63S	TP-M63 Metric sealing rubber washer M63	004482223	4,1	50

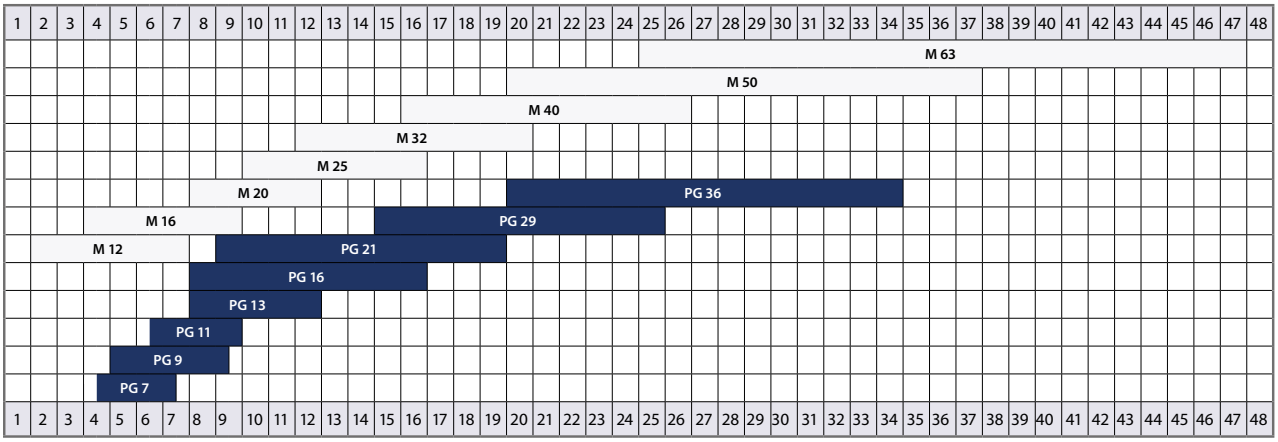
M-xxN

M-xxS

Sealing glands with metric thread

type	sealing range Ømm	assembly spanner	thread	Dimensions L	Lmin	Lmax	ØD	assembly opening	Tightening torque Mk / Nm	Resistance to impact (J)
M-12G	2 ÷ 7	16	M12x1,5	8	17	21	16,5	12,5	2,5	40
M-16G	4 ÷ 9	20	M16x1,5	8	21	25	21	16,5	3,75	40
M-20G	8 ÷12	24	M20x1,5	10	25	30	26,5	20,5	5	40
M-25G	10 ÷16	30	M25x1,5	10	30	37,5	33	25,5	7,5	40
M-32G	12 ÷20	36	M32x1,5	12	35	45	40	32,5	10	40
M-40G	16 ÷26	46	M40x1,5	12	40	50	51	40,5	10	40
M-50G	20 ÷37	55	M50x1,5	14	50	60	61	50,5	10	70
M-63G	25 ÷47	70	M63x1,5	14	55	65	78	63,5	10	70

Using glands for cable with a diameter

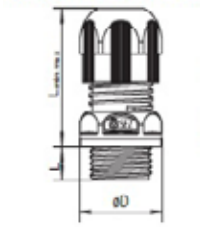


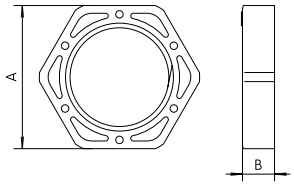
Metric lock nuts

type	thread	dimensions (mm) A	B	Tightening torque
M-12N	M12x1,5	16	4,5	2,5
M-16N	M16x1,5	22		3,75
M-20N	M20x1,5	27	6	5
M-25N	M25x1,5	34		7,5
M-32N	M32x1,5	41	7	10
M-40N	M40x1,5	50		
M-50N	M50x1,5	60	8	10
M-63N	M63x1,5	75		

PA

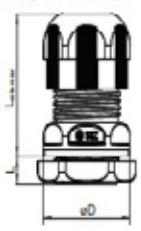
30 sec.

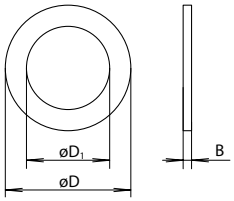




Metric sealing rubber washers

type	dimensions (mm) ØD	ØD1	B
M-12S	16	12	1
M-16S	20,5	16	
M-20S	25	20	1,5
M-25S	31	25	
M-32S	38	32	2
M-40S	48	40	
M-50S	59,4	50,4	
M-63S	76	63	





ETICONNECT

Line-Up Terminals

Screw Clamp Terminal Blocks 1054

Push-In Spring Clamp Terminal Blocks 1076

Spring Clamp Terminal Blocks 1088

Common Screw And Spring Type Accessories 1101

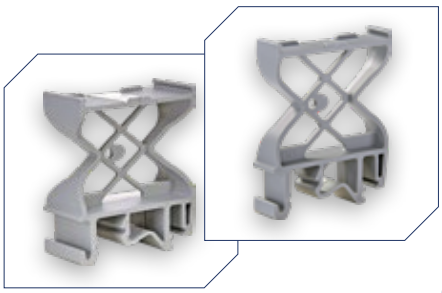
/etigroup

SWITCH TO
A SAFE FUTURE

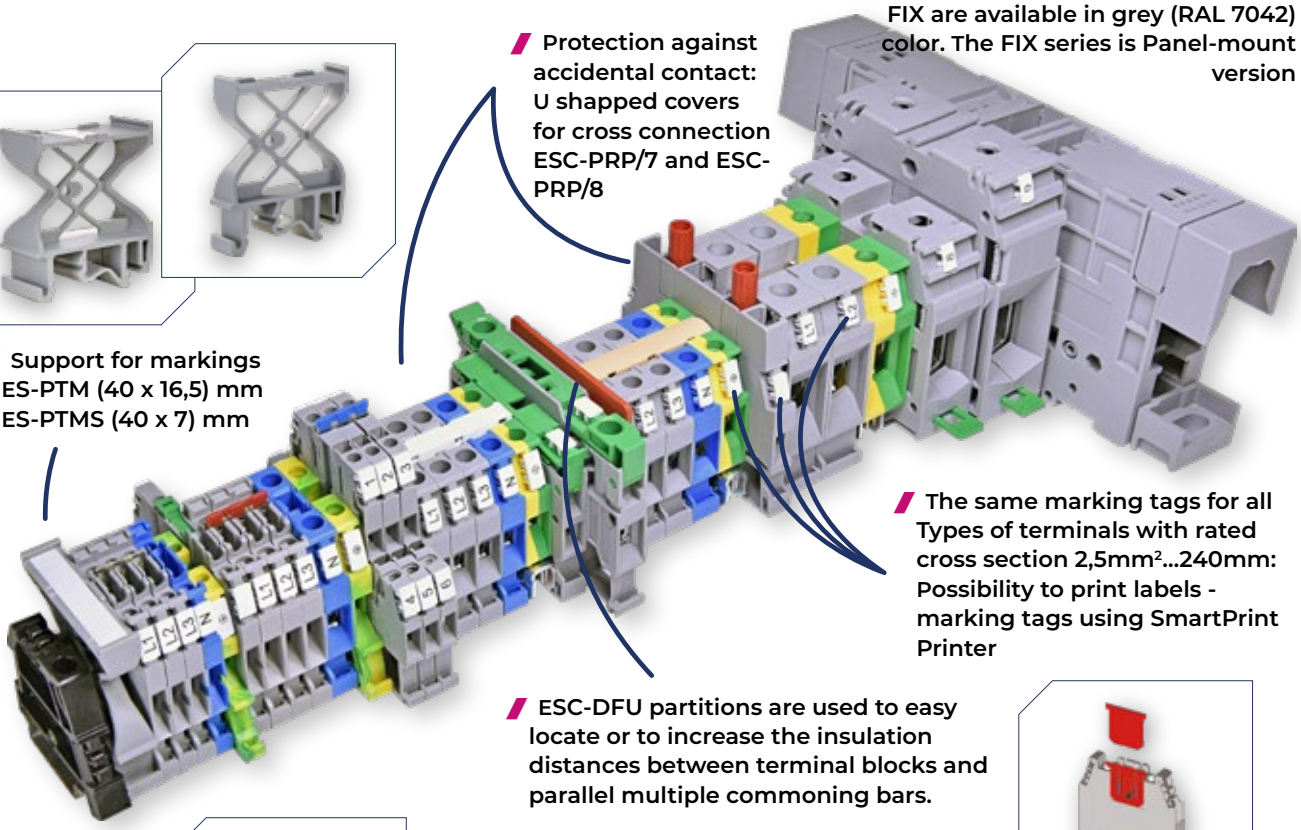
ETICONNECT

Screw Type Terminal Blocks

High current terminal blocks ESC-GPA, ESC-GPA / FIX and ESC-GPM / FIX are available in grey (RAL 7042) color. The FIX series is Panel-mount version



Protection against accidental contact: U shapped covers for cross connection ESC-PRP/7 and ESC-PRP/8

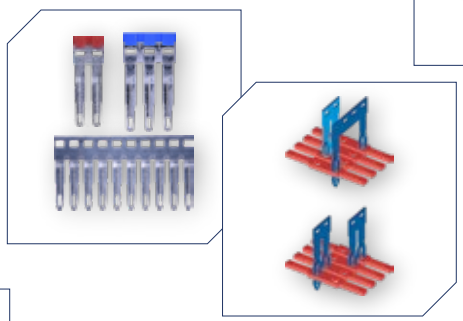


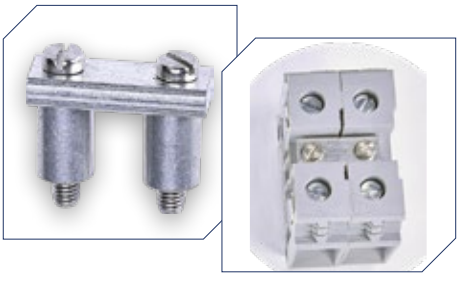
Support for markings
ES-PTM (40 x 16,5) mm
ES-PTMS (40 x 7) mm

The same marking tags for all Types of terminals with rated cross section 2,5mm²...240mm: Possibility to print labels - marking tags using SmartPrint Printer

ESC-DFU partitions are used to easy locate or to increase the insulation distances between terminal blocks and parallel multiple commoning bars.

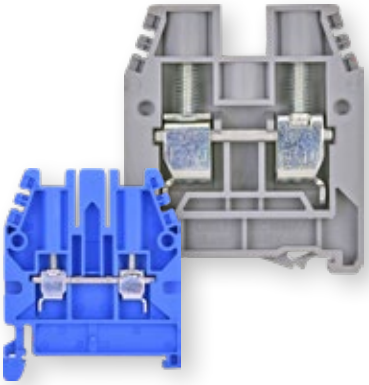
End brackets ES-BTO (spring Type), ES-BT/3 (screw Type) are used to lock terminals on TH35 rails.





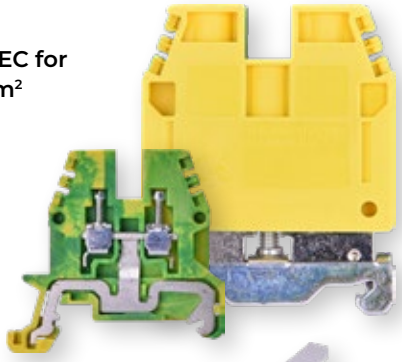
ESC-POF permanent cross connections 2 pole and Commoning bar (16 holes) for 16 mm² and 35 mm²

"Easy bridge" system: double possibility to insert PTC, PTP multi-pole cross-connections, without the need of insulating protection. Cross connections - bridges 2, 3 and 10 pole versions with insulation red or blue, or without isolation.



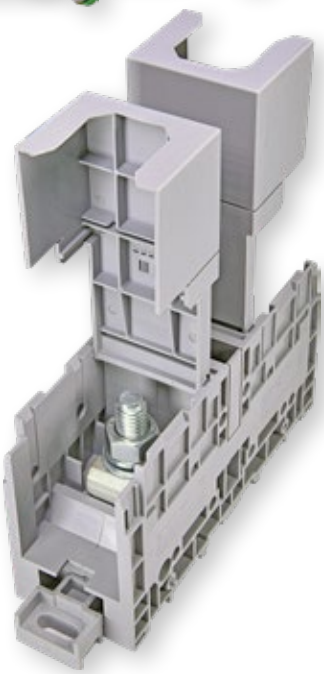
Screw Type terminal blocks ESC-CBC series for conductors with cross sections from 0,2 to 50 mm2 in grey and blue color.

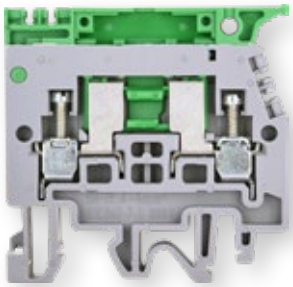
Earth terminal blocks series ESC-TEO and ESC-TEC for conductors with cross sections from 0,2 to 95 mm²

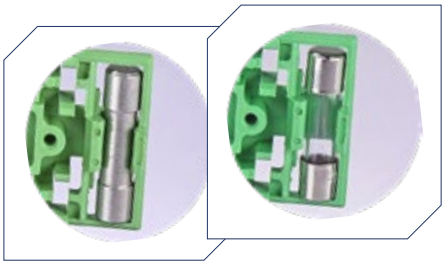


For more reliable fastening and simplified installation of several terminal blocks of the GPA series between them are provided side locks

ESC-GPA series screw terminals for connecting conductors with a cross section of 10 to 300 mm² are closed on both sides to prevent accidental touch to current parts. The ESC-GPA / FIX terminals are provided with installation on the mounting panel.

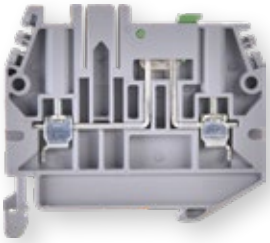




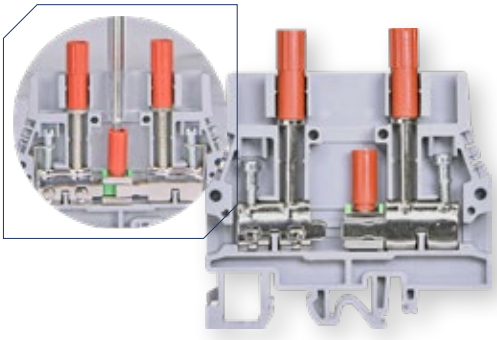


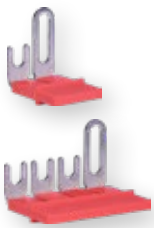
ESC-SFR series terminals for connection conductors with a cross section of 0.2 to 10 mm² are used for protection of circuits control using the installed in holder of a fusible insert. ESC-SFR.4 - for protection 5x20, commuting brass cylinder 5x20 or diode 5x20. ESC-SFR.6 - for 6x32 fuses

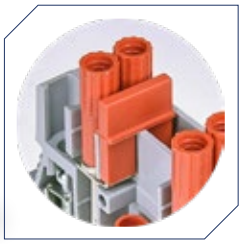
High current terminal blocks series ESC-GPM / FIX are mounted on the mounting panels. Protective covers prevent accidental touch of the conductor.



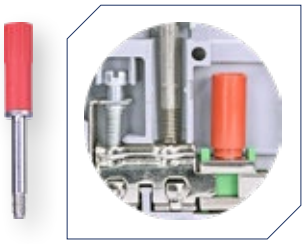
Disconnect terminal block (1-0) - Screw Type is designed to disconnect the electric circuit.







Short circuit plates ESC-SCB.6/PO are used to form special cross-connections with ESC-SCB.6 Disconnect terminal blocks used for test and measurement circuits.



For measurements and checks on circuits which are related to the terminal boards, insulated sockets ESC-PSD screwable onto the conductor body of the terminal blocks can be used.

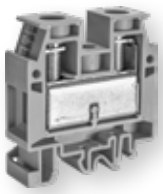
Disconnect terminals blocks for test and measurement circuits ESC-SCB series for connection conductors with a cross section of 0.2 to 10 mm². It allows you to connect or replace measuring transformers, instruments, counters... without disconnecting the supply voltage.

Screw Terminal Blocks ESC-CBC

				ESC-CBC.2			ESC-CBC.4		
1	Height x Width x Thickness * *The size includes the DIN rail			52 x 44 x 5 mm			52 x 44 x 6 mm		
2	Rated cross-section			**2,5 mm²**			**4 mm²**		
3	Connecting capacity	solid		0,2 - 4 mm²			0,2 - 6 mm²		
		stranded		0,2 - 4 mm²			0,2 - 6 mm²		
		with ferrule		2,5 - WP25/14			4 - WP40/16		
	Technical characteristics			**IEC**	**UL**		**IEC**	**UL**	
4	Max voltage AC/DC			**1000 V**	600 V		**1000 V**	600 V	
5	Max current with rated cross-section			**24 A**	20 A		**32 A**	30 A	
6	Max current with max cross-section			**37 A**	-		**45 A**	-	
7	Insulation stripping length / max tightening torque			9 mm / 0,8 Nm			10 mm / 1,2 Nm		
8	Rated impulse withstand voltage / pollution degree			12 kV / 3			12 kV / 3		
				Type	**Code No.**		**Type**	**Code No.**	
9	Feed through terminal block (grey)			ESC-CBC.2	003903000	120	ESC-CBC.4	003903001	120
10	Feed through terminal block (blue)			ESC-CBC.2B	003903044	120	ESC-CBC.4B	003903045	120
	Accessories								
11	End section, thickness 1,5 mm (grey)			ESC-CBC.2-10/PT	003903010	50	ESC-CBC.2-10/PT	003903010	50
12	End section, thickness 1,5 mm (blue)			ESC-CBC.2-10/PTB	003903050	50	ESC-CBC.2-10/PTB	003903050	50
13	Red partition			ESC-DFU/4/R	003903013	50	ESC-DFU/4/R	003903013	50
14	Marking tag			ES-N...	page 1102		ES-N...	page 1102	
15	U shapped cover for cross connection protection			ESC-PRP/7	003903042	10	ESC-PRP/7	003903042	10
16	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075	25
17	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229	25
18	Red insulation partition to be used in case of cross connections - bridges			ESC-DFM/900	003903016	50	ESC-DFM/900	003903016	50
19	Cross connections - bridges (non-insulated)	2 poles		ESC-PTC/2/02	003903018	25	ESC-PTC/4/02	003903020	25
		10 poles		ESC-PTC/2/10	003903019	10	ESC-PTC/4/10	003903021	10
20	Cross connections - bridges (insulated, red)	2 poles		ESC-PTP2/02/R	003903022	25	ESC-PTP4/02/R	003903028	25
		3 poles		ESC-PTP2/03/R	003903023	25	ESC-PTP4/03/R	003903029	25
		10 poles		ESC-PTP2/10/R	003903024	25	ESC-PTP4/10/R	003903030	25
21	Cross connections - bridges (insulated, blue)	2 poles		ESC-PTP2/02/B	003903025	25	ESC-PTP4/02/B	003903031	25
		3 poles		ESC-PTP2/03/B	003903026	25	ESC-PTP4/03/B	003903032	25
		10 poles		ESC-PTP2/10/B	003903027	25	ESC-PTP4/10/B	003903033	25
22	Cross connections - bridges (non-insulated) * Recommended with (15) U shapped cover for cross connection protection	2 poles							
		multipole							

		ESC-CBC.6			ESC-CBC.10			ESC-CBC.16			ESC-CBC.35		
1		52 x 44 x 8 mm			52 x 44 x 10 mm			56 x 47 x 12 mm			63 x 56 x 16 mm		
2		**6 mm²**			**10 mm²**			**16 mm²**			**35 mm²**		
3		0,2 - 10 mm²			1,5 - 16 mm²			1,5 - 25 mm²			2,5 - 50 mm²		
		0,2 - 10 mm²			1,5 - 16 mm²			1,5 - 25 mm²			2,5 - 50 mm²		
		6 - WP60/20			10 - WP100/21			16 - WP160/22			35 - WP350/30		
		IEC	**UL**		**IEC**	**UL**		**IEC**	**UL**		**IEC**	**UL**	
4		**1000 V**	600 V		**1000 V**	600 V		**1000 V**	600 V		**1000 V**	600 V	
5		**41 A**	50 A		**57 A**	65 A		**76 A**	100 A		**101 A**	125 A	
6		**64 A**	-		**85 A**	-		**114 A**	-		**160 A**	-	
7		10 mm / 1,4 Nm			12 mm / 1,9 Nm			15 mm / 3 Nm			18 mm / 5 Nm		
8		8 kV / 3			8 kV / 3			12 kV / 3			12 kV / 3		
		Type	**Code No.**		**Type**	**Code No.**		**Type**	**Code No.**		**Type**	**Code No.**	
9		ESC-CBC.6	003903002	120	ESC-CBC.10	003903003	100	ESC-CBC.16	003903004	50	ESC-CBC.35	003903005	50
10		ESC-CBC.6B	003903046	120	ESC-CBC.10B	003903047	100	ESC-CBC.16 (B)	003903048	25	ESC-CBC.35 (B)	003903049	25
Accessories													
11		ESC-CBC.2-10/PT	003903010	50	ESC-CBC.2-10/PT	003903010	50	ESC-CBC.16/PT	003903011	25	ESC-CBC.35/PT	003903012	25
12		ESC-CBC.2-10/PTB	003903050	50	ESC-CBC.2-10/PTB	003903050	50	ESC-CBC.16/PTB	003903051	25	ESC-CBC.35/PTB	003903052	25
13		ESC-DFU/4/R	003903013	50	ESC-DFU/4/R	003903013	50	ESC-DFU/4/R	003903013	50	ESC-DFU/5/R	003903014	25
14		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102	
15		ESC-PRP/7	003903042	10	ESC-PRP/7	003903042	10	ESC-PRP/8	003903043	10	ESC-PRP/8	003903043	10
16		ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25
17		ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25
18		ESC-DFM/900	003903016	50	ESC-DFM/900	003903016	50	ESC-DFM/700	003903017	50	ESC-DFM/700	003903017	50
19		ESC-PTC/6/02	003903034	25	ESC-PTC/10/02	003903036	25						
		ESC-PTC/6/10	003903035	10	ESC-PTC/10/10	003903037	10						
20													
21													
22								ESC-POF/53	003903038	25	ESC-POF/35	003903039	15
								ESC-CPM/16 +ESC-PMP/05	003903230 003903040	25	ESC-CPM/35 +ESC-PMP/35	003903231 003903041	10

Screw Terminal Blocks ESC-CBD



ESC-CBD.50

ESC-CBD.70B**

				ESC-CBD.50			ESC-CBD.70B**		
1	Height x Width x Thickness * *The size includes the DIN rail			62 x 57 x 18 mm			71 x 62 x 20,5 mm		
2	Rated cross-section			**50 mm²**			**70 mm²**		
3	Connecting capacity	solid		1 - 70 mm²			1 - 95 mm²		
		stranded		1,5 - 50 mm²			1,5 - 95 mm²		
		with ferrule		50 - WP500/40			-		
	Technical characteristics			**IEC**	**UL**		**IEC**	**UL**	
4	Max voltage AC/DC			**1000 V**	600 V		**1000 V**	600 V	
5	Max current with rated cross-section			**150 A**	130 A		**192 A**	220 A	
7	Insulation stripping length / max tightening torque			22 mm / 5 Nm			26 mm / 8 Nm		
8	Rated impulse withstand voltage / pollution degree			12 kV / 3			12 kV / 3		
				Type	**Code No.**		**Type**	**Code No.**	
9	Feed through terminal block (grey)			ESC-CBD.50	003903241	40	-	-	-
10	Feed through terminal block (blue)			ESC-CBD.50B	003903243	40	ESC-CBD.70B	003903245	40
	Accessories								
11	End section, thickness 1,5 mm (grey)			ESC-CBD.50/PT	003903242	10	-	-	-
12	End section, thickness 1,5 mm (blue)			ESC-CBD.50/PTB	003903244	10	ESC-CBD.70/PTB	003903246	50
13	Marking tag			ES-N...	page 1102		ES-N...	page 1102	
14	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075	25
15	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229	25
16	Cross connections - bridges (non-insulated) * Recommended with (15) U shapped cover for cross connection protection	2 poles		ESC-POF/07	003903326	15			

** ESC-CBD.70B available only in blue version

Maximum short-time withstand currents allocated to the rail profile

Rail profile	Material	Equivalent E-cu cross-section mm²	Short-time withstand current 1 s kA	Thermal rated current of a PEN busbar A
"Top hat" rail IEC 60715/TH 15 - 5,5	Steel	10	1,2	-
	Copper	25	3	101
	Aluminium	16	1,92	76
G32-Type rail IEC 60715/G32	Steel	35	4,2	-
	Copper	120	14,4	269
	Aluminium	70	8,4	192
"Top hat" rail IEC 60715/TH 35 - 7,5	Steel	16	1,92	-
	Copper	50	6	150
	Aluminium	35	4,2	125
"Top hat" rail IEC 60715/TH 35 - 15	Steel	50	6	-
	Copper	150	18	309
	Aluminium	95	11,4	232

Taken from CEI EN 60947-7-2 standard

High Current Terminal Blocks ESC-GPA

ESC-GPA.70

ESC-GPA.70/FIX

				ESC-GPA.70	ESC-GPA.70/FIX
1	Height x Width x Thickness * *The size includes the DIN rail			70 x 91 x 20,5 mm	75 x 102 (88)** x 20,5 mm
2	Rated cross-section			**70 mm²**	
3	Connecting capacity	solid		10 - 95 mm²	
		stranded		10 - 95 mm²	
	Technical characteristics			**IEC**	**UL**
4	Max voltage AC/DC			**1000 V**	600 V
5	Max current with rated cross-section			**192 A**	215 A
6	Insulation stripping length / max tightening torque			25 mm / 9 Nm (Allen screw, 4mm wrench)	
7	Rated impulse withstand voltage / pollution degree			12 kV / 3	
				Type	**Code No.**
8	Feed through terminal block (grey)			ESC-GPA.70	003903006
9	Panel - mount feed through terminal block (grey)			ESC-GPA.70/FIX	003903211
	Accessories				
10	Marking tag			ES-N...	page 1102
11	End bracket (spring Type)			ES-BTO	003903075
12	End bracket (screw Type)			ES-BT/3	003903229
13	Cross connections - bridges (non-insulated) * Recommended with (15) U shapped cover for cross connection protection	2 poles		ESC-POF/70	003903325

** Fixing distance between centers

Use of terminals with aluminum conductors
Connection of aluminum conductors:
The aluminum conductor without an insulating sheath starts to oxidize, decreasing the contact quality (Aluminum oxide is not a good conductor) and, consequently, reducing its conductivity.

Steps to follow to ensure a good electrical and mechanical connection of aluminum cables with our terminal blocks:
1) Clean the stripped conductor with a wire brush to remove the oxide layer;
2) Soak the clean conductor in neutral Vaseline and connect it immediately, tightening the clamp to the prescribed torque (do not exceed the suggested tightening torque!). Should you reconnect the same cable this step must be repeated (cleaning and soaking of the conductor in Vaseline);
3) Execute the installation in a free-of-moisture environment and in a non-aggressive atmosphere;
4) Recheck the tightening after a fewdays of settling (this precaution is also suggested for copper cables);
5) If the cable section is greater than 25 mm², the use of ferrules is recommended.

From a technical standpoint the electrical conductivity of the aluminum is lower that copper one:
Electrical resistivity at 20 ° C
- Copper: 0.0178 μΩ m
- Aluminum: 0.0284 μΩ m

As a result of the different resistivity (and, therefore, of the different electrical conductivity) with the same cable section, with the same ambient temperature and allowed ΔT, under the same conditions the current flow rate in an aluminum cable will be lower than the copper cable one. So, from the point of view of the current flow, the aluminum cable cannot stress the connected clamp more than the copper cable: the heating of the clamp is a consequence of the voltage drop which is proportional to the current flow, and, as discussed above, the current flow in an aluminum cable is lower.

High Current Terminal Blocks ESC-GPA

ESC-GPA.95

ESC-GPA.95/FIX

1	Height x Width x Thickness * *The size includes the DIN rail			87 x 98 x 26 mm	91 x 111 (97)** x 26 mm
2	Rated cross-section			**95 mm²**	
3	Connecting capacity	solid		10 - 120 mm²	
		stranded		10 - 95 mm²	
	Technical characteristics			**IEC**	**UL**
4	Max voltage AC/DC			**1000 V**	600 V
5	Max current with rated cross-section			**232 A**	232 A
6	Insulation stripping length / max tightening torque			30 mm / 9 Nm (Allen screw, 4mm wrench)	
7	Rated impulse withstand voltage / pollution degree			12 kV / 3	

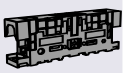
			Type	Code No.	
8	Feed through terminal block (grey)		ESC-GPA.95	003903007	10
9	Panel - mount feed through terminal block (grey)		ESC-GPA.95/FIX	003903212	10
	Accessories				
10	Marking tag		ES-N...	page 1102	
11	End bracket (spring Type)		ES-BTO	003903075	25
12	End bracket (screw Type)		ES-BT/3	003903229	25

** Fixing distance between centers

High current terminal blocks ESC-GPM

ESC-GPM.95/FIX

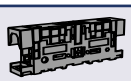
1	Height x Width x Thickness * * The size is given taking into account the installation on the mounting panel	76 x 176 (158)** x 32 mm		
2	Rated cross-section	**95/150 mm²**		
3	Максимальна ширина наконечника, що підключається	22 mm (screw M8)		
	Technical characteristics	**IEC**	**UL**	
4	Max voltage AC/DC	**1000 V**	-	
5	Max current with rated cross-section	**232 A**	-	
6	Max current with max cross-section	**320 A**	-	
7	Rated impulse withstand voltage / pollution degree	12 kV / 3		

			Type	Code No.	
8	Feed through terminal block (grey)		ESC-GPM.95/FIX	003903215	10
	Accessories				
9	Marking tag		ES-N...	page 1102	

** Fixing distance between centers

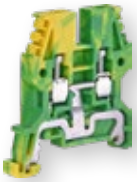
		ESC-GPA.150	ESC-GPA.150/FIX	ESC-GPA.240	ESC-GPA.240/FIX
1		99 x 108 x 31 mm	94 x 122 (106)** x 31 mm	120x 119 x 37 mm	115 x 134 (118)** x 37 mm
2		**150 mm²**		**240 mm²**	
3		50 - 185 mm²		50 - 300 mm²	
		50 - 150 mm²		95 - 240 mm²	
		IEC	**UL**	**IEC**	**UL**
4		**1000 V**	600 V	**1000 V**	600 V
5		**309 A**	309 A	**415 A**	415 A
6		35 mm / 15 Nm (Allen screw, 5 mm wrench)		40 mm / 21 Nm (Allen screw, 6 mm wrench)	
7		12 kV / 3		12 kV / 3	
		Type	**Code No.**	**Type**	**Code No.**
8		ESC-GPA.150	003903008	ESC-GPA.240	003903009
9		ESC-GPA.150/FIX	003903213	ESC-GPA.240/FIX	003903214
	Accessories				
10		ES-N...	page 1102	ES-N...	page 1102
11		ES-BTO	003903075	ES-BTO	003903075
12		ES-BT/3	003903229	ES-BT/3	003903229

** Fixing distance between centers

		ESC-GPM.150/FIX	ESC-GPM.240/FIX
1		76 x 200 (158)** x 42 mm	84 x 250 (172)** x 52 mm
2		**150/240 mm²**	**240/300 mm²**
3		32 mm (screw M10)	40 mm (screw M12)
		IEC **UL**	**IEC** **UL**
4		**1000 V** -	**1000 V** -
5		**309 A** -	**415 A** -
6		**440 A** -	**600 A** -
7		12 kV / 3	12 kV / 3
		Type **Code No.** **Packaging [pcs]**	**Type** **Code No.**
8		ESC-GPM.150/FIX 003903216 6	ESC-GPM.240/FIX 003903217 4
	Accessories		
9		ES-N... page 1102	ES-N... page 1102

** Fixing distance between centers

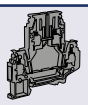
Earth Terminal Blocks ESC-TEO



			ESC-TE0.2			ESC-TE0.4			ESC-TEC.6/0		
1	Height x Width x Thickness * *The size includes the DIN rail		47 x 50 x 5,5 mm			52 x 50 x 6,5 mm			52 x 44 x 8 mm		
2	Rated cross-section		**2,5 mm²**			**4 mm²**			**6 mm²**		
3	Connecting capacity	solid	0,2 - 4 mm²			0,2 - 6 mm²			0,5 - 10 mm²		
		stranded	0,2 - 4 mm²			0,2 - 6 mm²			0,5 - 10 mm²		
		with ferrule	2,5 - WP25/14			4 - WP40/16			6 - WP60/20		
	Technical characteristics		**IEC**	**UL**		**IEC**	**UL**		**IEC**	**UL**	
4	Max voltage AC/DC		**-**	-		**-**	-		**-**	-	
5	Max current with rated cross-section		**24 A**	-		**32 A**	-		**41 A**	-	
6	Insulation stripping length / max tightening torque		12 mm / 0,8 Nm			14 mm / 1,2 Nm			10 mm / 1,4 Nm		
7	Rated impulse withstand voltage / pollution degree		8 kV / 3			8 kV / 3			8 kV / 3		
			Type	**Code No.**		**Type**	**Code No.**		**Type**	**Code No.**	
8	Earth terminal block (yellow-green)		ESC-TE0.2	003903066	75	ESC-TE0.4	003903067	50	ESC-TEC.6/0	003903070	45
	Accessories										
9	End section (green)		ESC-TE0.2/PT	003903068	50	ESC-TE0.4/PT	003903069	25			
10	Marking tag		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102	
11	End bracket (spring Type)		ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25
12	End bracket (screw Type)		ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25

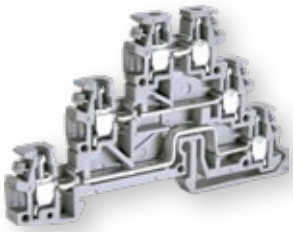
		ESC-TEC.10/0			ESC-TEC.16/0			ESC-TEC.35/0			ESC-TEC.70/0		
1		52 x 44 x 10 mm			56 x 47 x 12 mm			63 x 56 x 16 mm			81,5 x 70 x 20.5 mm		
2		**10 mm²**			**16 mm²**			**35 mm²**			**70 mm²**		
3		1,5 - 16 mm²			1,5 - 25 mm²			2,5 - 50 mm²			10 - 95 mm²		
		1,5 - 16 mm²			1,5 - 25 mm²			2,5 - 50 mm²			10 - 95 mm²		
		10 - WP100/21			16 - WP160/22			-			-		
		IEC	**UL**		**IEC**	**UL**		**IEC**	**UL**		**IEC**	**UL**	
4		**-**	-		**-**	-		**-**	-		**-**	-	
5		**57 A**	-		**76 A**	-		**125 A**	-		**192 A**	-	
6		12 mm / 1,9 Nm			15 mm / 1,2 Nm			18 mm / 5 Nm			25 mm / 9 Nm		
7		8 kV / 3			8 kV / 3			12 kV / 3			8 kV / 3		
		Type	**Code No.**		**Type**	**Code No.**		**Type**	**Code No.**		**Type**	**Code No.**	
8		ESC-TEC.10/0	003903071	35	ESC-TEC.16/0	003903072	30	ESC-TEC.35/0	003903073	15	ESC-TEC.70/0	003903074	25
Accessories													
9													
10		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102	
11		ES-BT0	003903075	25	ES-BT0	003903075	25	ES-BT0	003903075	25	ES-BT0	003903075	25
12		ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25

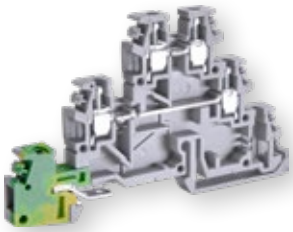
Two-Level Terminal Blocks ESC-DBC

				ESC2-DBC.2			ESC2-DBC.4		
1	Height x Width x Thickness * *The size includes the DIN rail			66 x 70 x 5 mm			66 x 70 x 6 mm		
2	Rated cross-section			**2,5 mm²**			**4 mm²**		
3	Connecting capacity	solid		0,2 - 4 mm²			0,2 - 6 mm²		
		stranded		0,2 - 4 mm²			0,2 - 6 mm²		
		with ferrule		2,5 - WP25/14			4 - WP40/16		
	Technical characteristics			**IEC**	**UL**		**IEC**	**UL**	
4	Max voltage AC/DC			**630 V**	600 V		**630 V**	600 V	
5	Max current with rated cross-section			**24 A**	20 A		**32 A**	30 A	
6	Insulation stripping length / max tightening torque			9 mm / 0,8 Nm			9 mm / 1 Nm		
7	Rated impulse withstand voltage / pollution degree			8 kV / 3			8 kV / 3		
				Type	**Code No.**		**Type**	**Code No.**	
8	Two-level feed through terminal block (grey)			ESC2-DBC.2	003903053	120	ESC2-DBC.4	003903054	100
	Accessories								
9	End section (grey)			ESC2-DBC.2/PT	003903055	25	ESC2-DBC.4/PT	003903056	25
10	Red partition			ESC-DFU/7/R	003903015	25	ESC-DFU/7/R	003903015	25
11	Marking tag			ES-N...	page 1102		ES-N...	page 1102	
12	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075	25
13	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229	25
14	Red insulation partition to be used in case of cross connections - bridges	upper level		ESC-DFM/900	003903016	50	ESC-DFM/900	003903016	50
		lower level**		ESP-DFM/500	003903144	50	ESP-DFM/500	003903144	50
15	Cross connections - bridges (non-insulated)	2 poles		ESC-PTC/2/02	003903018	25	ESC-PTC/4/02	003903020	25
		10 poles		ESC-PTC/2/10	003903019	10	ESC-PTC/4/10	003903021	10

** Additional data under spring Type terminal blocks' accessories

Three-Level Terminal Blocks





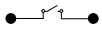
				ESC-TLD.2			ESC-TDE.2		
1	Height x Width x Thickness * *The size includes the DIN rail			52 x 85 x 6,2 mm			52 x 85 x 6,2 mm		
2	Rated cross-section			**2,5 mm²**			**2,5 mm²**		
3	Connecting capacity	solid		0,2 - 4 mm²			0,2 - 4 mm²		
		stranded		0,2 - 4 mm²			0,2 - 4 mm²		
		with ferrule		2,5 - WP25/14			2,5 - WP25/14		
	Technical characteristics			**IEC**	**UL**		**IEC**	**UL**	
4	Max voltage AC/DC			**250 V**	600 V		**250 V**	600 V	
5	Max current with rated cross-section			**24 A**	15 A		**24 A**	20 A	
6	Insulation stripping length / max tightening torque			8 mm / 0,8 Nm			8 mm / 0,8 Nm		
7	Rated impulse withstand voltage / pollution degree			4 kV / 3			4 kV / 3		
				Type	**Code No.**		**Type**	**Code No.**	
8	Three-level feed through terminal block (grey)			ESC-TLD.2	003903247	125			
9	Three-level feed through terminal block (blue)			ESC-TLD.2B	003903249	125			
10	Two feed through levels + earth (grey)						ESC-TDE.2	003903250	25
	Accessories								
11	End section (grey)			ESC-TLD/PT	003903248	25	ESC-TLD/PT	003903248	25
12	Marking tag			ES-N...	page 1102		ES-N...	page 1102	
13	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075	25
14	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229	25
15	Cross connections - bridges (non-insulated) * Recommended with (15) U shapped cover for cross connection protection	2 poles		ESC-PM/20/2	003903327	25	ESC-PM/20/2	003903327	25
		3 poles		ESC-PM/20/3	003903328	25	ESC-PM/20/3	003903328	25
		10 poles		ESC-PM/20/10	003903329	10	ESC-PM/20/10	003903329	10

Fuse Holder Terminal Blocks ESC-SFR

				ESC-SFR.4	ESC-SFR.6
1	Height x Width x Thickness * *The size includes the DIN rail			52 x 52 x 8 mm	59 x 79 x 10 mm
2	Rated cross-section			**4 mm²**	**6 mm²**
3	Connecting capacity	solid		0,2 - 6 mm²	0,2 - 10 mm²
		stranded		0,2 - 6 mm²	0,2 - 10 mm²
		with ferrule		4 - WP40/16	6 - WP60/20
	Technical characteristics			**IEC** / **UL**	**IEC** / **UL**
4	Max voltage AC/DC			**800 V** / 600 V	**630 V** / 600 V
5	Max current with rated cross-section			**6,3 A (20 A with C0/05)** / 6,3 A	**10 A** / 10 A
6	Insulation stripping length / max tightening torque			11 mm / 1,2 Nm	11 mm / 1,4 Nm
7	Rated impulse withstand voltage / pollution degree			6 kV / 3	6 kV / 3
8	Function / Type			fuse holder for ø 5 x 20 mm fuse	fuse holder for ø 6,3 x 32 mm fuses

				Type	Code No.		Type	Code No.	
9	Disconnect terminal block (grey)			ESC-SFR.4	003903057	70	ESC-SFR.6	003903061	50
	Accessories								
10	End section (grey)			ESC-SFR.4/PT	003903060	25	ESC-SFR.6/PT	003903062	25
11	Red partition						ESC-DFU/7/R	003903015	25
12	Marking tag			ES-N...	page 1102		ES-N...	page 1102	
13	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075	25
14	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229	25
15	Conducting element	brass cylinder 5x20		ESC-C0/05	003903059	50			
		diode 255/3A 5x20		ESC-SFR/3A	003903058	70			
16	LED indicator	12-48 V AC/DC		ESC-LED.12-48	003903332	10			
		115-230 V AC/DC		ESC-LED.115-230	003903333	10			

Disconnect Terminal Blocks ESC-CBS



				ESC-CBS.2			ESC-CBS.4		
1	Height x Width x Thickness * *The size includes the DIN rail			52 x 57 x 5 mm			52 x 57 x 6 mm		
2	Rated cross-section			**2 mm²**			**4 mm²**		
3	Connecting capacity	solid		0,2 - 4 mm²			0,2 - 6 mm²		
		stranded		0,2 - 4 mm²			0,2 - 6 mm²		
		with ferrule		2 - WP25/14			4 - WP40/16		
				IEC	**UL**		**IEC**	**UL**	
4	Max voltage AC/DC			**630 V**	600 V		**630 V**	600 V	
5	Max current with rated cross-section			**20 A**	20 A		**25 A**	24 A	
6	Insulation stripping length / max tightening torque			9 mm / 0,6 Nm			10 mm / 0,8 Nm		
7	Rated impulse withstand voltage / pollution degree			6 kV / 3			6 kV / 3		
8	Function / Type			disconnect lever			disconnect lever		
				Type	**Code No.**		**Type**	**Code No.**	
9	Disconnect terminal block (grey)			ESC-CBS.2	003903064	100	ESC-CBS.4	003903380	100
	Accessories								
10	End section (grey)			ESC-CB/PT	003903237	25	ESC-CB/PT	003903237	25
11	Marking tag			ES-N...	page 1102		ES-N...	page 1102	
12	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075	25
13	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229	25
14	Red insulation partition to be used in case of cross connections - bridges			ESC-DFM/900	003903016	50	ESC-DFM/900	003903016	50
15	Cross connections - bridges (non-insulated)	2 poles		ESC-PTC/2/02	003903018	25	ESC-PTC/2/02	003903018	25
		10 poles		ESC-PTC/2/10	003903019	10	ESC-PTC/2/10	003903019	10
16	Cross connections - bridges (insulated, red)	2 poles		ESC-PTP2/02/R	003903022	25	ESC-PTP2/02/R	003903022	25
		3 poles		ESC-PTP2/03/R	003903023	25	ESC-PTP2/03/R	003903023	25
		10 poles		ESC-PTP2/10/R	003903024	10	ESC-PTP2/10/R	003903024	10
17	Cross connections - bridges (insulated, blue)	2 poles		ESC-PTP2/02/B	003903025	25	ESC-PTP2/02/B	003903025	25
		3 poles		ESC-PTP2/03/B	003903026	25	ESC-PTP2/03/B	003903026	25
		10 poles		ESC-PTP2/10/B	003903027	10	ESC-PTP2/10/B	003903027	10

Features
ESC-SFR Series - Fuse-holders
- with UL94V-0 polyamide insulating body
- available in grey RAL 7042 colour
- universal mounting onto rails - according to IEC 60715 Std., “G32” and “TH/35” Types
- ESC-SFR.4: for ø 5 x 20 mm fuses, with possibility to detect the fuse blow-out status, by means of a LED micro-circuit (CIL...)
- ESC-SFR.6: for ø 6.3 x 32 mm fuses, with solder lug.

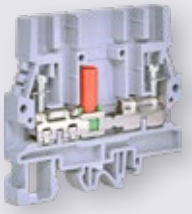
Max. dissipated power – In conf. with IEC 60947-7-3

Terminal block	Voltage [V] (*)	Current [A]	Protection against overload and short circuit (PV) - [W]	Only protection against short circuit (PV) - [W]
ESC-SFR.4	250	6,3	2,5	2,5
ESC-SFR.6	250	10	2,5	4

Disconnect terminal blocks or test and measurement circuits ESC-SCB

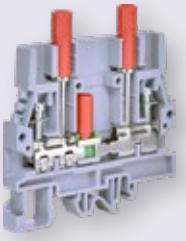
- disconnects by means of conducting element to be inserted in the lever
- slide link disconnect
- possibility to perform parallel connections
- universal mounting for both PR/DIN and PR/3 rails which meet IEC 60715 norms, “G32” and TH/35 Types
- available in grey
- maximum operating temperature 100°C

ESC-SCB.6



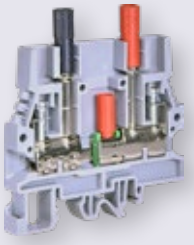
(*) For the simple connection in parallel of two or more adjoining terminal blocks use the parallel skid, with the screws and sleeves, after removing the insulating wall with a simple cutter

ESC-SCB.6/DD



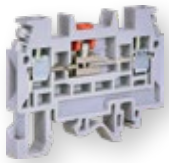
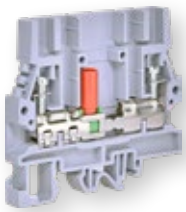
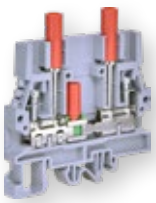
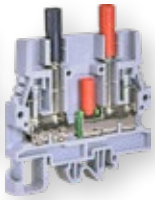
Longitudinal and transversal test switching terminal block. Configuration complete with test plug socket downstream and upstream the slide link, compliant with the ENEL LV 27/3 specifications

ESC-SCB.6/CD



Longitudinal and transversal test switching terminal block. Configuration complete with a test plug socket upstream and a short circuit sleeve ESC-SCB.6/PO-2 or ESC-SCB.6/PO-4 Type, supplied separately, downstream of the slide link, compliant with the ENEL LV 27/2 specifications

Disconnect Terminal Blocks For Test And Measurement Circuits ESC-SCB

			ESC-SCB.4		ESC-SCB.6		ESC-SCB.6DD	ESC-SCB.6CD
1	Height x Width x Thickness * *The size includes the DIN rail	TH/35 7,5mm	44 x 58 x 6,5 mm		65 x 69 x 8 mm		76 x 69 x 8 mm / 77 x 69 x 8 mm	
2	Rated cross-section		**4 mm²**		**6 mm²**		**6 mm²**	
3	Connecting capacity	solid	0,2 - 6 mm²		0,5 - 10 mm²		0,5 - 10 mm²	
		stranded	0,2 - 6 mm²		0,5 - 10 mm²		0,5 - 10 mm²	
		with ferrule	4 - WP40/16		6 - WP60/20		6 - WP60/20	
	Technical characteristics		**IEC**	**UL**	**IEC**	**UL**	**IEC**	**UL**
4	Max voltage AC/DC		**800 V**	600 V	**800 V**	600 V	**800 V**	-
5	Max current with rated cross-section		**32 A**	20 A	**41 A**	47 A	**41 A**	-
6	Insulation stripping length / max tightening torque		9 mm / 1,2 Nm		12 mm / 1,4 Nm		12 mm / 1,4 Nm	
7	Rated impulse withstand voltage / pollution degree		8 kV / 3		8 kV / 3		8 kV / 3	

			Type	Code No.		Type	Code No.		Type	Code No.	
8	disconnect by slide link (grey)		ESC-SCB.4	003903218	75	ESC-SCB.6	003903220	100			
9	disconnect by slide link in special configuration for voltmetric circuits (grey)								ESC-SCB.6/DD	003903221	80
10	disconnect by slide link in special configuration for amperometric circuits (grey)								ESC-SCB.6/CD	003903222	80
	Accessories										
11	End section (grey)		ESC-SCB.4/PT	003903219	25	ESC-SCB.6/PT	003903223	25	ESC-SCB.6/PT	003903223	25
12	Red partition					ESC-DFU/6/R	003903224	25	ESC-DFU/6/R	003903224	25
13	PSD socket - test connector		ESP-PSD/A	003903226	50	ESC-PSD/P	003903225	50	2 pcs included (for measuring voltage or current)		
14	Short circuit plate	2 poles				ESC-SCB.6/PO/2	003903227	40	ESC-SCB.6/PO/2	003903227	40
		4 poles				ESC-SCB.6/PO/4	003903228	20	ESC-SCB.6/PO/4	003903228	20
15	Marking tag		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102	
16	End bracket (spring Type)		ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25
17	End bracket (screw Type)		ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25

Accessories for screw terminal blocks

ESC-PT end sections

For each Type and cross section of terminal block, there is a specific insulating and closing end section to be placed on the open element of each terminal board. This end section may also be used to separate different phases of adjoining terminal blocks linked by cross connections or to increase insulation distances where specific circumstances may require it. The end sections have the same overall dimension as the related terminal block, thicknesses are given in the table below.

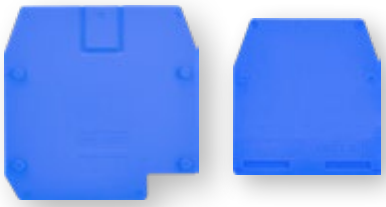
End sections, grey color

Type	Code No.	For use with	g	
ESC-CBC.2-10/PT	003903010	ESC-CBC.2...ESC-CBC.10	3	50
ESC-CBC.16/PT	003903011	ESC-CBC.16	3,8	25
ESC-CBC.35/PT	003903012	ESC-CBC.35	5,5	25
ESC-CBD.50/PT	003903242	ESC-CBD.50	6,23	10

Bigger cross sections (ESC-GPA.70...240mm²) are compact, end sections not needed

End sections, blue color

Type	Code No.	For use with	g	
ESC-CBC.2-10/PTB	003903050	ESC-CBC.2B...ESC-CBC.10B	3,1	50
ESC-CBC.16/PTB	003903051	ESC-CBC.16B	3,8	25
ESC-CBC.35/PTB	003903052	ESC-CBC.35B	5,2	25
ESC-CBD.50/PTB	003903244	ESC-CBD.50B	6,23	10
ESC-CBD.70/PTB	003903246	ESC-CBD.70B	6,8	10



End section for two and three level terminal blocks

Type	Code No.	For use with	g	
ESC2-DBC.2/PT	003903055	ESC2-DBC.2	5,2	25
ESC2-DBC.4/PT	003903056	ESC2-DBC4	5,2	25
ESC-TLD/PT	003903248	ESC-TLD, ESC-TDE	6	25

End sections for earth terminal blocks

Type	Code No.	For use with	g	
ESC-TE0.2/PT	003903068	ESC-TE0.2	2,3	50
ESC-TE0.4/PT	003903069	ESC-TE0.4	3,2	25

*Bigger cross sections (6...70mm²) are compact, end sections not needed

End sections for fuse holder terminal block, disconnect terminal block

Type	Code No.	For use with	g	
ESC-SFR.4/PT	003903060	ESC-SFR.4	3,5	25
ESC-SFR.6/PT	003903062	ESC-SFR.6	5,7	25
ESC-CB/PT	003903237	ESC-CB	3,48	25

End sections for disconnect terminal blocks for test and measurement circuits

Type	Code No.	For use with	g	
ESC-SCB.4/PT	003903219	ESC-SCB.4	3,44	25
SCB/6/PT/GR	003903223	ESC-SCB.6, SCB.6/DD/GR, ESC-SCB.6/CD	8,1	25

Terminal block	End section	
	Type	Thickness [mm]
ESC-CBC.2	ESC-CBC.2-10/PT	1,5
ESC-CBC.4	ESC-CBC.2-10/PT	1,5
ESC-CBC.6	ESC-CBC.2-10/PT	1,5
ESC-CBC.10	ESC-CBC.2-10/PT	1,5
ESC-CBC.16	ESC-CBC.16/PT	1,5
ESC-CBC.35	ESC-CBC.35/PT	1,5
ESC-CBD.50	ESC-CBD.50/PT	1
ESC-CBC.2B	ESC-CBC.2-10/PTB	1,5
ESC-CBC.4B	ESC-CBC.2-10/PTB	1,5
ESC-CBC.6B	ESC-CBC.2-10/PTB	1,5
ESC-CBC.10B	ESC-CBC.2-10/PTB	1,5
ESC-CBC.16B	ESC-CBC.16/PTB	1,5
ESC-CBC.35B	ESC-CBC.35/PTB	1,5
ESC-CBD.50B	ESC-CBD.50/PTB	1
ESC-CBD.70B	ESC-CBD.70/PTB	1
ESC2-DBC.2	ESC2-DBC.2/PT	1,5
ESC2-DBC.4	ESC2-DBC.4/PT	1,5
ESC-TLD, ESC-TDE	ESC-TLD/PT	1
ESC-TEO.2	ESC-TEO.2/PT	1,5
ESC-TEO.4	ESC-TEO.4/PT	1,5
ESC-SFR.4	ESC-SFR.4/PT	1,5
ESC-SFR.6	ESC-SFR.6/PT	1,5
ESC-CBS.2	ESC-MPS.4/PT	1,5

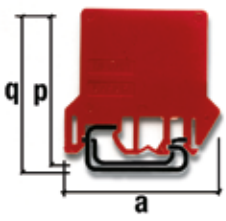
ESC-DFU partitions

In polyamide available in red, colour, 1.5 mm thick, for the separation of elements on the terminal board, in order to make certain circuits easy to locate or to increase the insulation distances between terminal blocks.
The partitions can also be used to increase the insulation distances between adjacent parallel multiple commoning bars. White and green partitions available while stocks last.

Red partitions

Type	Code No.	For use with	g	
ESC-DFU/4/R	003903013	ESC-CBC.2...ESC-CBC.16	4,9	50
ESC-DFU/5/R	003903014	ESC-CBC.35B	6,2	25
ESC-DFU/6/R	003903224	ESC-SCB.6 / DD / CD	9,04	25
ESC-DFU/7/R	003903015	ESC2-DBC.2 & ESC2-DBC4	7,4	25

Terminal block	Partition	Dimensions a x p
ESC-CBC.2	ESC-DFU/4	52 x 62
ESC-CBC.4	ESC-DFU/4	52 x 62
ESC-CBC.6	ESC-DFU/4	52 x 62
ESC-CBC.10	ESC-DFU/4	52 x 62
ESC-CBC.16	ESC-DFU/4	52 x 62
ESC-CBC.35	ESC-DFU/5	62 x 68
ESC2-DBC.2	ESC-DFU/7	80 x 64
ESC2-DBC.4	ESC-DFU/7	80 x 64
ESC-SCB.6 / DD / CD	ESC-DFU/6/R	72 x 74



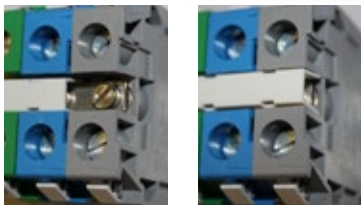
NOTE:
q dimension can be obtained by adding 4 mm to dimension p

ESC-PRP protections

The cross connection, consisting of a multiple commoning bar and screws and sleeves, already placed in a recessed position with respect to the terminal board, can be further protected from accidental contact using a nylon U-shaped cover having a standard length of 10 cm. This white-coloured cover, can also be written upon, to serve as a label or reference point on the terminal board.
On the cover suitable slits are arranged to facilitate its removal by using a screwdriver.

for terminal blocks with a cross section of 4-16 mm^2	ESC-PRP/7
for terminal blocks with a cross section of 25-70 mm^2	ESC-PRP/8

ESC-PRP/7

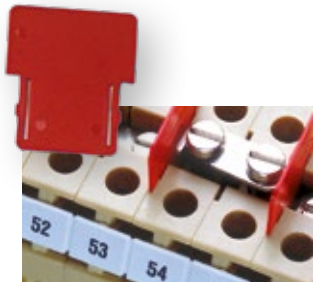


U shapped cover for cross connection protection

Type	Code No.	For use with	g	
ESC-PRP/7	003903042	ESC-POF & ESC-PMP, length 10 cm (for use with ESC-CBC.4...16)	2	10
ESC-PRP/8	003903043	ESC-POF & ESC-PMP, length 10 cm (for use with ESC-CBC.35...ESC-GPA.70)	2,2	10

ESC-DFM partition insulation of cross connections - bridges

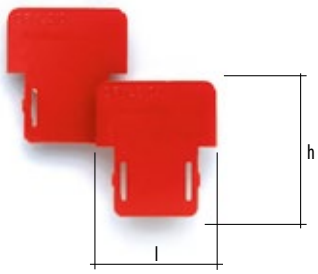
Red coloured in polyamide when it is necessary to guarantee the insulation distance between permanent or switchable cross connections, inserted between adjacent pairs of terminal blocks and, similarly, between multiple commoning bars, inserted between adjacent groups of terminal blocks.



Red insulation partition to be used in case of cross connections - bridges

Type	Code No.	Dimension (for use with)	g	
ESC-DFM/900	003903016	17 x 18mm (ESC-CBC.2…ESC-CBC.10, ESC2-DBC.2M ESC2-DBC.4)	1	50
ESC-DFM/700	003903017	28 x 32mm (ESC-CBC.16, ESC-CBC.35)	0,9	50

Terminal block	Partition	Dimensions l x h [mm]	Thickness [mm]
ESC-CBC.2	ESC-DFM/900	17 x 18	0,5
ESC-CBC.4	ESC-DFM/900	17 x 18	0,5
ESC-CBC.6	ESC-DFM/900	17 x 18	0,5
ESC-CBC.10	ESC-DFM/900	17 x 18	0,5
ESC-CBC.16	ESC-DFM/700	28 x 32	0,5
ESC-CBC.35	ESC-DFM/700	28 x 32	0,5
ESC2-DBC.2	ESC-DFM/900	17 x 18	0,5
ESC2-DBC.4	ESC-DFM/900	17 x 18	0,5

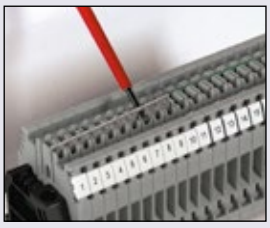


Cross connections
Easy Bridge System

- screwless, snap-in insertion
- transversal and staggered mode connection possibility
- once inserted, intrinsically IPXXB protected resulting installation, without the need for further insulating covers
- patented system

1

2



3

1-2 After having cut the bar according to the number of poles, insert the cross-connection, in the appropriate groove of the terminal block. At this point, by using the blade of a screwdriver, push down the cross-connection until it reaches its blocking point. The cross connection will be fully insulated and intrinsically IPXXB protected.

3 To remove the cross-connection, insert the blade of the screwdriver in the jumper slot, then lift it up and finally extract it.

Terminal block	2-pole jumper	10-pole jumper
ESC-CBC.2	ESC-PTC/2/02	ESC-PTC/2/10
ESC-CBC.4	ESC-PTC/4/02	ESC-PTC/4/10
ESC-CBC.6	ESC-PTC/6/02	ESC-PTC/6/10
ESC-CBC.10	ESC-PTC/10/02	ESC-PTC/10/10
ESC2-DBC.2(*)	ESC-PTC/2/02	ESC-PTC/2/10

Insulated cross connection

Nr. Poles	PTP Series - Blue	PTP Series - Red
2	ESC-PTP/2/02/B	ESC-PTP/2/02/R
3	ESC-PTP/2/03/B	ESC-PTP/2/03/R
10	ESC-PTP/2/10/B	ESC-PTP/2/10/R
2	ESC-PTP/4/02/B	ESC-PTP/4/02/R
3	ESC-PTP/4/03/B	ESC-PTP/4/03/R
10	ESC-PTP/4/10/B	ESC-PTP/4/10/R

ESC-POF permanent cross connections
Allowing the cross connection of two adjacent terminal blocks. Mounted in a suitable position in order to prevent injuries
Each ESC-POF jumper is composed by:

- 2 screws
- 2 sleeves
- 1 plate with 2 holes

All the components are in brass, with nickel plating.

Terminal block	Jumper Type	Screw M x l [mm]	Sleeve Ø x l [mm]	Plate l x s [mm]
ESC-CBC.16	ESC-POF/53	M4 x 21	8 x 15	7 x 1,5
ESC-CBC.35	ESC-POF/35	M4 x 21	8 x 15	8 x 2
ESC-GPA.70, ESC-GPA.70/FIX	ESC-POF/70	M5 x 35	8 x 23,5	10 x 3
ESC-CBD.50, ESC-CBD.50B	ESC-POF/07	M5 x 20	8 x 12	10 x 2,5
ESC-TLD.2, ESC-TDE.2	ESC-PM/20/2	pre-assembled		
	ESC-PM/30/3			
	ESC-PM/30/10			

Terminal block	Screw/sleeve	Commoning bar	Commoning bar (Length, l x s)	Number of poles
ESC-CBC.16 / B	ESC-CPM/16	ESC-PMP/05	25 cm , 7 x 1,5	21
ESC-CBC.35 / B	ESC-CPM/35	ESC-PMP/35	25 cm , 10 x 4	16

Cross connections - bridges

Type	Code No.	CROSS CONNECTIONS: nr. of poles, for use with, color	g		Min order [pcs]
ESC-PTC/2/02	003903018	2 POLE for (ESC-CBC.2, ESC2-DBC.2)	1	25	
ESC-PTC/2/10	003903019	10 POLE for (ESC-CBC.2, ESC2-DBC.2)	5	10	
ESC-PTC/4/02	003903020	2 POLE for (ESC-CBC.4, ESC2-DBC.4)	1	25	
ESC-PTC/4/10	003903021	10 POLE for (ESC-CBC.4, ESC2-DBC.4)	6	10	
ESC-PTP2/02/R	003903022	2 POLE for (ESC-CBC.2) - RED, insulated	0,9	25	
ESC-PTP2/03/R	003903023	3 POLE for (ESC-CBC.2) - RED, insulated	1,4	25	
ESC-PTP2/10/R	003903024	10 POLE for (ESC-CBC.2) - RED, insulated	4,6	10	
ESC-PTP2/02/B	003903025	2 POLE for (ESC-CBC.2) - BLUE, insulated	0,9	25	
ESC-PTP2/03/B	003903026	3 POLE for (ESC-CBC.2) - BLUE, insulated	1,4	25	
ESC-PTP2/10/B	003903027	10 POLE for (ESC-CBC.2) - BLUE, insulated	4,6	10	
ESC-PTP4/02/R	003903028	2 POLE for (ESC-CBC.4) - RED, insulated	1	25	1
ESC-PTP4/03/R	003903029	3 POLE for (ESC-CBC.4) - RED, insulated	1,3	25	
ESC-PTP4/10/R	003903030	10 POLE for (ESC-CBC.4) - RED, insulated	5,4	10	
ESC-PTP4/02/B	003903031	2 POLE for (ESC-CBC.4) - BLUE, insulated	1	25	
ESC-PTP4/03/B	003903032	3 POLE for (ESC-CBC.4) - BLUE, insulated	1,3	25	
ESC-PTP4/10/B	003903033	10 POLE for (ESC-CBC.4) - BLUE, insulated	5,4	10	
ESC-PTC/6/02	003903034	2 POLE for (ESC-CBC.6)	2	25	
ESC-PTC/6/10	003903035	10 POLE for (ESC-CBC.6)	12	10	
ESC-PTC/10/02	003903036	2 POLE for (ESC-CBC.10)	3	25	
ESC-PTC/10/10	003903037	10 POLE for (ESC-CBC.10)	18	10	
ESC-POF/53	003903038	cross connection of several terminal blocks for (ESC-CBC.16, length 2 holes)	13	25	25
ESC-POF/35	003903039	cross connection of several terminal blocks for (ESC-CBC.35, length 2 holes)	13	15	15
ESC-CPM/16	003903230	Screw/sleeve, for ESC-CBC.16 / B	5	25	25
ESC-PMP/05	003903040	Commoning bar (21 holes, length 25 cm) for ESC-CBC.16 / B	15	8	8
ESC-CPM/35	003903231	Screw/sleeve for ESC-CBC.35 / B		20	20
ESC-PMP/35	003903041	Commoning bar (16 holes, length 25 cm) for ESC-CBC.35 / B	10	8	8
ESC-POF/70	003903325	2 POLE for (ESC-GPA.70, ESC-GPA.70/FIX)	23	25	25
ESC-POF/07	003903326	2 POLE for (ESC-CBD.50, ESC-CBD.50B)	19	15	15
ESC-PM/20/2	003903327	2 POLE for (ESC-TLD.2, ESC-TDE.2)	2	25	25
ESC-PM/30/3	003903328	3 POLE for (ESC-TLD.2, ESC-TDE.2)	3	25	25
ESC-PM/30/10	003903329	10 POLE for (ESC-TLD.2, ESC-TDE.2)	9	10	10

ESC-PTP2/03/B

ESC-PTC/2/02

ESC-POF/53

ESC-PTP2/03/R

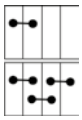
ESC-PTC/6/02

* Connecting bridges can be cut to the desired length

** In connection with connecting bridges we recommend the use of DFM insulation partitions

PTC jumper configurations

PTC / PTP cross-connection schemes



Terminal block	Single or parallel extending	Pole skipping	Adjacent with barrier	Staggered mode	Parallel skipping	I_{max} (A)
	Isolation voltage [V]					
ESC-CBC.2	630 (400)	630 (400)	1000 (400)	500 (320)	500 (320)	24
ESC-CBC.4	630 (320)	500 (320)	800 (320)	500 (320)	500 (320)	32
ESC-CBC.6	630 (320)	630 (320)	800 (320)	630 (250)	630 (250)	41
ESC-CBC.10	800 (250)	630 (320)	800 (250)	800 (250)	630 (250)	57
ESC2-DBC.2	630	500	250* 630**	500	500	24

When connecting groups of terminals of different potential, it is necessary to install jumper separators (ESC-DFM partition insulation of cross connections) to prevent electrical breakthrough and ensure the dielectric distance between plug-in jumpers. When installing the jumpers according to the scheme, the installation of the jumper separator is **mandatory**!

* between lower adjacent cross connections (with barrier)

** between upper adjacent cross connections (with barrier)

Accessories for fuse holder terminal block, rated cross section 4mm²

Type	Code No.	Description	g	
ESC-SFR/3A	003903058	3A DIODE-HOLDER CARTRIDGE	2	70
ESC-C0/5	003903059	Brass conducting cylinder (act like disconnector)	3	50
ESC-LED.12-48	003903332	Signalling circuit	1,22	10
ESC-LED.115-230	003903333	Signalling circuit	1,22	10

ESC-C0/5

Type	Rated voltage [V d.c. - V a.c.]	Current L R.M.S.
ESC-LED.12-48	12 - 48	3,0 mA
ESC-LED.115-230	115 - 230	2,3 mA

Signalling circuit

- For signalling the status of fuse holder ESC-SFR.4
- Suitable for both a.c. and d.c. circuits

Each packet is supplied with:
- two contact blades
- one non-polarized LED microcircuit
- one transparent protection

The components should be inserted inside the terminal block in the above sequence.

PSD sockets - Test conector

For measurements and checks on circuits which are related to the terminal boards, the following special items can be supplied:
- insulated sockets (PSD) screwable onto the conductor body of the terminal blocks

PSD sockets - Test conector, red color

Type	Code No.	Description Internal socket Ø (mm)	For use with	g	
ESC-PSD/P	003903225	4,05	ESC-SCB.6, ESC-SCB.6/	4	50
ESC-PSD/A	003903226	2,35	ESC-SCB.4	2	50

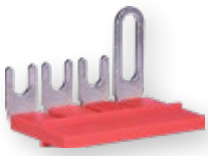
Short circuit plates

These allow simultaneous connection to earth of the current reducers, already connected to the ESC-SCB.4, ESC-SCB.6. They consist of special platelets and sleeves that guarantee the correct sequence of the operation. The platelets, in the open position, block the movements of the cursors, preventing disconnection of the current circuits.

Short circuit plates

Type	Code No.	For use with	g	
ESC-SCB.6/P0-2	003903227	Short circuit plate for two adjacent ESC-SCB.6 terminal blocks	3,15	40
ESC-SCB.6/P0-4	003903228	Short circuit plate for four adjacent ESC-SCB.6 terminal blocks	6	20

ESC-SCB.6/P0-2



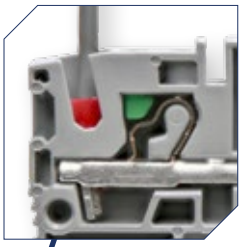
ESC-SCB.6/P0-4

ETICONNECT

»PUSH IN« Terminal Blocks

Advantages

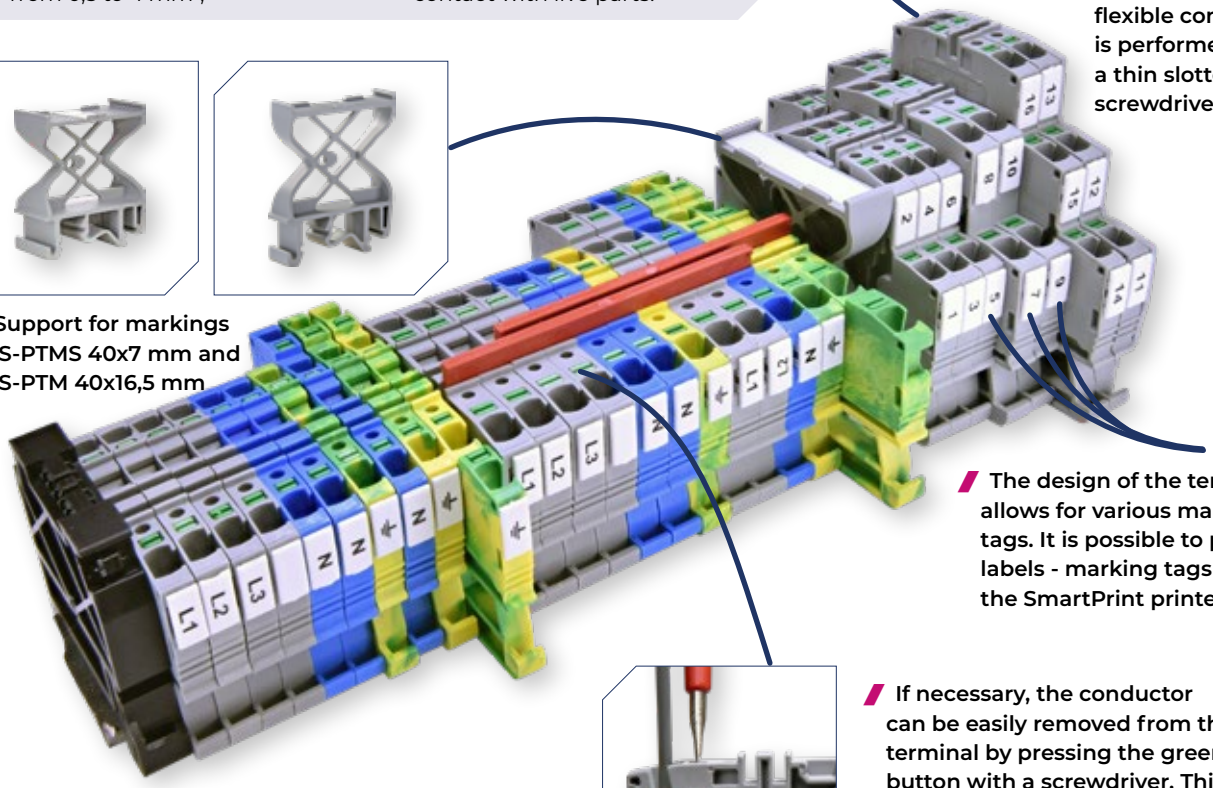
- Up to 75% reduction in installation time compared to screw terminals;
- Increased vibration and shock resistance;
- Terminal housing is made of non-combustible polyamide V-0 (according to UL94);
- Connection of up to four conductors of cross-section from 0,5 to 4 mm^2;
- Rated voltage up to 800 V;
- Operating temperature range from -40 to +110°C;
- The "bridge" connection of the terminals is possible thanks to the "EasyBridge" system;
- Installation on TH 35 busbar according to IEC 60715;
- The design of the clamp excludes the possibility of accidental contact with live parts.



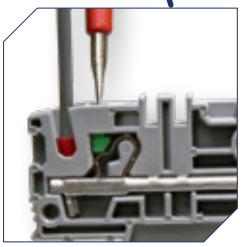
Quick connection of monolithic or flexible lug conductor with direct connection without tools

Assembly and disassembly of the flexible conductor is performed with a thin slotted screwdriver

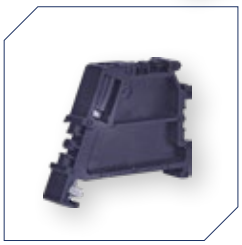
Support for markings ES-PTMS 40x7 mm and ES-PTM 40x16,5 mm



The design of the terminals allows for various marking tags. It is possible to print labels - marking tags using the SmartPrint printer

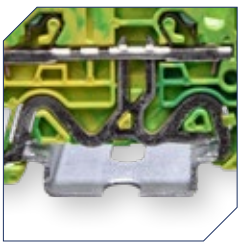


If necessary, the conductor can be easily removed from the terminal by pressing the green button with a screwdriver. This button is isolated from live parts, which is a guarantee of personnel electrical safety

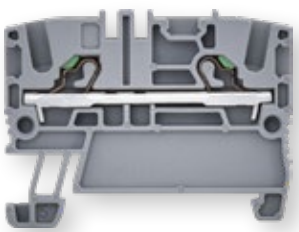


End brackets are used to lock terminals on TH 35 rails

Plug-in insulated 10-pole jumpers in red or blue. Insulated jumpers provide protection against accidental contact



Special triple grounding contact design with DIN-rail ensures reliable mechanical and electrical connection



ESH spring clamps have an increased vibration and shock resistance. Designed for use in rail, road, marine, mining, chemical, agricultural, oil, gas, nuclear, industrial and construction industries

»PUSH IN« terminal blocks ESH-EFC

				ESH-EFC.1			ESH-EFC.2		
1	Height x Width x Thickness * *The size includes the DIN rail			36,5 x 44,9 x 3,5 mm			39,2 x 49,6 x 5,2 mm		
2	Rated cross-section			**1,5 mm²**			**2,5 mm²**		
3	Connecting capacity	solid		0,2 - 2,5 mm²			0,2 - 4 mm²		
		stranded		0,2 - 2,5 mm²			0,2 - 4 mm²		
		with ferrule		1,5-WP15/14			2,5 - WP25/19		
	Technical characteristics			**IEC**	**UL**		**IEC**	**UL**	
4	Max voltage AC/DC			**630 V**	600 V		**800 V**	600 V	
5	Max current with rated cross-section			**17,5 A**	15 A		**24 A**	20 A	
6	Insulation stripping length			8 mm			9 mm		
7	Rated impulse withstand voltage / pollution degree			6 kV / 3			6 kV / 3		
				Type	**Code No.**		**Type**	**Code No.**	
8	PUSH-IN spring clamp terminal block (grey)			ESH-EFC.1	003903340	160	ESH-EFC.2	003903251	160
9	PUSH-IN spring clamp terminal block (blue)			ESH-EFC.1B	003903341	160	ESH-EFC.2B	003903252	160
	Accessories								
10	End section (grey)			ESH-EFC.1PT	003903352	25	ESH-EFC.2/PT	003903259	25
11	End section (blue)			ESH-EFC.1PTB	003903353	25	ESH-EFC.2/PTB	003903260	25
12	Marking tag			ES-N...	page 1102		ES-N...	page 1102	
13	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075	25
14	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229	25
15	Cross connections - bridges (insulated, red)	10 poles		ESH-EFB.1/10/R	003903369	5	ESH-EFB.2/10/R	003903281	5
16	Cross connections - bridges (insulated, blue)	10 poles		ESH-EFB.1/10/B	003903368	5	ESH-EFB.2/10/B	003903282	5

The new products with “Push-in” connection technology offers a fast, reliable and efficient wiring of all cable Types.

REDUCTION OF INSTALLATION TIME, INCREASED PERFORMANCE
The Push-in technology allows cables and hoses to be wired with or without wire clips.
Cables are directly inserted in the terminal, with no tooling required to open the clamp spring: just pressing the wire is sufficient to provide a safe and durable electrical connection.

DIRECT PLUG-IN
Connection is so simple, precise and accurate that a switchboard can be wired with a single hand, without impacting performance. This also improves ergonomics.To connect flexible cables without a wire clip, just push the coloured button to open the spring clip and insert the properly stripped cable.

WIRE RELEASE BUTTONS: SPEED, SIMPLICITY AND SAFETY
To remove the wire from the terminal, just press the release button with any tool to open the spring. Release buttons, highlighted by different colours, prevent operators from making mistakes or coming into contact with potentially live parts, even in settings with a high concentration of links.

»PUSH IN« terminal blocks ESH-EFC

				ESH-EFC.4		ESH-EFC.6	
1	Height x Width x Thickness * *The size includes the DIN rail			39,2 x 55,2 x 6,2 mm		39,2 x 60,4 x 8,2 mm	
2	Rated cross-section			**4 mm²**		**6 mm²**	
3	Connecting capacity	solid		0,2 - 6 mm²		0,2 - 10 mm²	
		stranded		0,2 - 6 mm²		0,2 - 10 mm²	
		with ferrule		4 - WP40/16		6-WP60/20	
	Technical characteristics			**IEC**	**UL**	**IEC**	**UL**
4	Max voltage AC/DC			**800 V**	600 V	**1000 V**	600 V
5	Max current with rated cross-section			**32 A**	30 A	**41 A**	41 A
6	Insulation stripping length			10 mm		12 mm	
7	Rated impulse withstand voltage / pollution degree			6 kV / 3		8 kV / 3	

				Type	Code No.		Type	Code No.	
8	PUSH-IN spring clamp terminal block (grey)			ESH-EFC.4	003903255	120	ESH-EFC.6	003903348	120
9	PUSH-IN spring clamp terminal block (blue)			ESH-EFC.4B	003903256	120	ESH-EFC.6B	003903349	120
	Accessories								
10	End section (grey)			ESH-EFC.4/PT	003903263	25	ESH-EFC.6/PT	003903359	25
11	End section (blue)			ESH-EFC.4/PTB	003903264	25	ESH-EFC.6/PTB	003903360	25
12	Marking tag			ES-N...	page 1102		ES-N...	page 1102	
13	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075	25
14	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229	25
15	Cross connections - bridges (insulated, red)	10 poles		ESH-EFB.4/10/R	003903283	5	ESH-EFB.6/10/R	003903371	5
16	Cross connections - bridges (insulated, blue)	10 poles		ESH-EFB.4/10/B	003903284	5	ESH-EFB.6/10/B	003903370	5

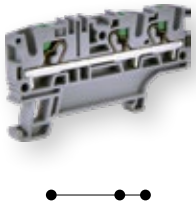
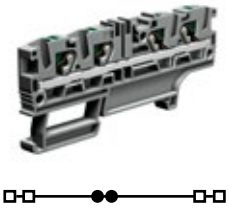
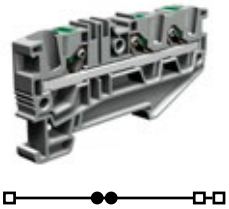
»PUSH IN« terminal blocks
ESH-EFS
1 level with disconnector

				ESH-EFS200GR			ESH-EFS400GR		
1	Height x Width x Thickness * *The size includes the DIN rail			41,2 x 49,6 x 5,2 mm			41,2 x 55,2 x 6,2 mm		
2	Rated cross-section			**2,5 mm²**			**4 mm²**		
3	Connecting capacity	solid		0,2 - 4 mm²			0,2 - 6 mm²		
		stranded		0,2 - 5 mm²			0,2 - 6 mm²		
		with ferrule		2,5-WP25/19			4-WP40/16		
	Technical characteristics			**IEC**	**UL**		**IEC**	**UL**	
4	Max voltage AC/DC			**630 V**	300 V		**630 V**	600 V	
5	Max current with rated cross-section			**13 A**	12 A		**26 A**	18,5 A	
6	Insulation stripping length			9 mm			10 mm		
7	Rated impulse withstand voltage / pollution degree			4 kV / 3			4 kV / 3		
				Type	**Code No.**		**Type**	**Code No.**	
8	PUSH-IN spring clamp terminal block (grey)			ESH-EFS200GR	003903381	120	ESH-EFS400GR	003903382	120
9	PUSH-IN spring clamp terminal block (blue)								
	Accessories								
10	End section (grey)			ESH-EFC.2/PT	003903259	25	ESH-EFC.4/PT	003903263	25
11	End section (blue)			ESH-EFC.2/PTB	003903260	25	ESH-EFC.4/PTB	003903264	25
12	Marking tag			ES-N...	page 1102		ES-N...	page 1102	
13	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075	25
14	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229	25
15	Cross connections - bridges (insulated, red)	10 poles		ESH-EFB.2/10/R	003903281	5	ESH-EFB.4/10/R	003903283	5
16	Cross connections - bridges (insulated, blue)	10 poles		ESH-EFB.2/10/B	003903282	5	ESH-EFB.4/10/B	003903284	5

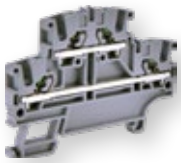
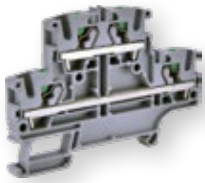
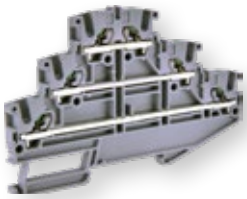
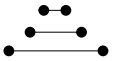
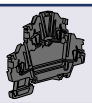
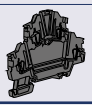
»PUSH IN« Terminal blocks ESH-EFC

				ESH-EFC.1/1+2	ESH-EFC.1/2+2	ESH-EFC.2/1+2
1	Height x Width x Thickness * *The size includes the DIN rail			36,6 x 56,4 x 3,5 mm	36,5 x 68 x 3,5 mm	39,2 x 63,1 x 5,2 mm
2	Rated cross-section			**1,5 mm²**	**1,5 mm²**	**2,5 mm²**
3	Connecting capacity	solid		0,2 - 2,5 mm²	0,2 - 2,5 mm²	0,2 - 4 mm²
		stranded		0,2 - 2,5 mm²	0,2 - 2,5 mm²	0,2 - 4 mm²
		with ferrule		1,5-WP15/14	1,5-WP15/14	2,5 - WP25/19
	Technical characteristics			**IEC** / **UL**	**IEC** / **UL**	**IEC** / **UL**
4	Max voltage AC/DC			**630 V** / 600 V	**630 V** / 600 V	**800 V** / 600 V
5	Max current with rated cross-section			**17,5 A** / 15 A	**17,5 A** / 15 A	**24 A** / 20 A
6	Insulation stripping length			8 mm	8 mm	9 mm
7	Rated impulse withstand voltage / pollution degree			6 kV / 3	6 kV / 3	6 kV / 3

			Type	Code No.		Type	Code No.		Type	Code No.	
8	PUSH-IN spring clamp terminal block (1 input, 2 outputs; grey)		ESH-EFC.1/1+2	003903342	120				ESH-EFC.2/1+2	003903253	110
9	PUSH-IN spring clamp terminal block (1 input, 2 outputs; blue)		ESH-EFC.1/1+2/B	003903343	120				ESH-EFC.2B/1+2	003903254	110
10	PUSH-IN spring clamp terminal block (2 inputs, 2 outputs; grey)					ESH-EFC.1/2+2	003903344	120			
11	PUSH-IN spring clamp terminal block (2 inputs, 2 outputs; blue)					ESH-EFC.1/2+2/B	003903345	120			
	Accessories										
12	End section (grey)		ESH-EFC.1/1+2PT	003903354	25	ESH-EFC.1/2+2PT	003903356	25	ESH-EFC.2/1+2/PT	003903261	25
13	End section (blue)		ESH-EFC.1/1+2PTB	003903355	25	ESH-EFC.1/2+2PTB	003903357	25	ESH-EFC.2/1+2/PTB	003903262	25
14	Marking tag		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102	
15	End bracket (spring Type)		ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25
16	End bracket (screw Type)		ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25
17	Cross connections - bridges (insulated, red) 10 poles		ESH-EFB.1/10/R	003903369	5	ESH-EFB.1/10/R	003903369	5	ESH-EFB.2/10/R	003903281	5
18	Cross connections - bridges (insulated, blue) 10 poles		ESH-EFB.1/10/B	003903368	5	ESH-EFB.1/10/B	003903368	5	ESH-EFB.2/10/B	003903282	5

		ESH-EFC.2/2+2			ESH-EFC.4/1+2			ESH-EFC.4/2+2			ESH-EFC.6/1+2		
													
1		39,2 x 76,6 x 5,2 mm			39,2 x 71,8 x 6,2 mm			39,2 x 88,4 x 6,2 mm			39,2 x 78,3 x 8,2 mm		
2		**2,5 mm²**			**4 mm²**			**4 mm²**			**6 mm²**		
3		0,2 - 4 mm²			0,2 - 6 mm²			0,2 - 6 mm²			0,2 - 10 mm²		
		0,2 - 4 mm²			0,2 - 6 mm²			0,2 - 6 mm²			0,2 - 10 mm²		
		2,5 - WP25/19			4 - WP40/16			4 - WP40/16			6-WP60/20		
		IEC	**UL**		**IEC**	**UL**		**IEC**	**UL**		**IEC**	**UL**	
4		**800 V**	600 V		**800 V**	600 V		**800 V**	600 V		**1000 V**	600 V	
5		**24 A**	20 A		**32 A**	30 A		**32 A**	30 A		**41 A**	41 A	
6		9 mm			10 mm			10 mm			12 mm		
7		6 kV / 3			6 kV / 3			6 kV / 3			8 kV / 3		
		Type	**Code No.**		**Type**	**Code No.**		**Type**	**Code No.**		**Type**	**Code No.**	
8					ESH-EFC.4/1+2	003903257	110				ESH-EFC.6/1+2	003903350	110
9					ESH-EFC.4B/1+2	003903258	110				ESH-EFC.6/1+2/B	003903351	110
10		ESH-EFC.2/2+2	003903285	90				ESH-EFC.4/2+2	003903346	110			
11		ESH-EFC.2B/2+2	003903286	90				ESH-EFC.4/2+2B	003903347	110			
12		ESH-EFC.2/2+2/PT	003903279	25	ESH-EFC.4/1+2/PT	003903265	25				ESH-EFC.6/1+2/PT	003903366	25
13		ESH-EFC.2/2+2/PTB	003903288	25	ESH-EFC.4/1+2/PTB	003903266	25	ESH-EFC.4/2+2/PTB	003903358	25	ESH-EFC.6/1+2/PTB	003903367	25
14		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102	
15		ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25
16		ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25
17		ESH-EFB.4/10/R	003903283	5	ESH-EFB.4/10/R	003903283	5	ESH-EFB.4/10/R	003903283	5	ESH-EFB.6/10/R	003903371	5
18		ESH-EFB.4/10/B	003903284	5	ESH-EFB.4/10/B	003903284	5	ESH-EFB.4/10/B	003903284	5	ESH-EFB.6/10/B	003903370	5

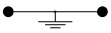
»PUSH IN« terminal blocks two-level ESH-EFD three-level ESH-EFT

				ESH-EFD.2		ESH-EFD.4		ESH-EFT.2	
									
									
1	Height x Width x Thickness * *The size includes the DIN rail			53,8 x 71,6 x 5,2 mm		57,7 x 81,7 x 6,2 mm		68,4 x 106,2 x 5,2 mm mm	
2	Rated cross-section			**2,5 mm²**		**4 mm²**		**2,5 mm²**	
3	Connecting capacity	solid		0,2 - 4 mm²		0,2 - 6 mm²		0,2 - 4 mm²	
		stranded		0,2 - 4 mm²		0,2 - 6 mm²		0,2 - 4 mm²	
		with ferrule		2,5 - WP25/19		4 - WP40/16		2,5 - WP25/19	
	Technical characteristics			**IEC**	**UL**	**IEC**	**UL**	**IEC**	**UL**
5	Max voltage AC/DC			**800 V**	600 V	**800 V**	600 V	**800 V**	600 V
6	Max current with rated cross-section			**22 A**	20 A	**29 A**	30 A	**22 A**	20 A
7	Insulation stripping length			9 mm		10 mm		10 mm	
8	Rated impulse withstand voltage / pollution degree			6 kV / 3		6 kV / 3		6 kV / 3	
				Type	**Code No.**	**Type**	**Code No.**	**Type**	**Code No.**
9	PUSH-IN two-level spring clamp terminal block (grey)			ESH-EFD.2	003903267 130	ESH-EFD.4	003903268 100		
10	PUSH-IN three-level spring clamp terminal block (grey)							ESH-EFT.2	003903271 100
	Accessories								
11	End section (grey)			ESH-EFD.2/PT	003903269 25	ESH-EFD.4/PT	003903270 25	ESH-EFT.2/PT	003903272 25
12	Marking tag			ES-N...	page 1102	ES-N...	page 1102	ES-N...	page 1102
13	End bracket (spring Type)			ES-BTO	003903075 25	ES-BTO	003903075 25	ES-BTO	003903075 25
14	End bracket (screw Type)			ES-BT/3	003903229 25	ES-BT/3	003903229 25	ES-BT/3	003903229 25
15	Cross connections - bridges (insulated, red)	10 poles		ESH-EFB.2/10/R	003903281 5	ESH-EFB.4/10/R	003903283 5	ESH-EFB.2/10/R	003903281 5
16	Cross connections - bridges (insulated, blue)	10 poles		ESH-EFB.2/10/B	003903282 5	ESH-EFB.4/10/B	003903284 5	ESH-EFB.2/10/B	003903282 5

»PUSH IN« earth terminal blocks ESH-EFCE

				ESH-EFCE.1			ESH-EFCE.2		
1	Height x Width x Thickness * *The size includes the DIN rail			36,5 x 48,8 x 3,5 mm			39,2 x 51,1 x 5,2 mm		
2	Rated cross-section			**1,5 mm²**			**2,5 mm²**		
3	Connecting capacity	solid		0,2 - 2,5 mm²			0,2 - 4 mm²		
		stranded		0,2 - 2,5 mm²			0,2 - 4 mm²		
		with ferrule		1,5-WP15/14			2,5 - WP25/19		
	Technical characteristics			**IEC**	**UL**		**IEC**	**UL**	
4	Max voltage AC/DC			-	-		-	-	
5	Max current with rated cross-section			-	-		**20 A**	-	
6	Insulation stripping length			8 mm			9 mm		
7	Rated impulse withstand voltage / pollution degree			6 kV / 3			6 kV / 3		
				Type	**Code No.**		**Type**	**Code No.**	
8	PUSH-IN spring clamp terminal block (yellow-green)			ESH-EFCE.1	003903361	80	ESH-EFCE.2	003903273	80
	Accessories								
9	End section (grey)			ESH-EFC.1PT	003903352	25	ESH-EFC.2/PT	003903259	25
10	Marking tag			ES-N...	page 1102		ES-N...	page 1102	
11	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075	25
12	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229	25
13	Cross connections - bridges (insulated, red)	10 poles		ESH-EFB.1/10/R	003903369	5	ESH-EFB.2/10/R	003903281	5
14	Cross connections - bridges (insulated, blue)	10 poles		ESH-EFB.1/10/B	003903368	5	ESH-EFB.2/10/B	003903282	5

»PUSH IN« earth terminal blocks ESH-EFCE

				ESH-EFCE.4			ESH-EFCE.6		
									
1	Height x Width x Thickness * *The size includes the DIN rail			39,2 x 55,2 x 6,2 mm			39,2 x 60,4 x 8,2 mm		
2	Rated cross-section			**4 mm²**			**6 mm²**		
3	Connecting capacity	solid		0,2 - 6 mm²			0,2 - 10 mm²		
		stranded		0,2 - 6 mm²			0,2 - 10 mm²		
		with ferrule		4 - WP40/16			6-WP60/20		
	Technical characteristics			**IEC**	**UL**		**IEC**	**UL**	
4	Max voltage AC/DC			-	-		-	-	
5	Max current with rated cross-section			**26 A**	-		-	-	
6	Insulation stripping length			10 mm			12 mm		
7	Rated impulse withstand voltage / pollution degree			6 kV / 3			8 kV / 3		
				Type	**Code No.**		**Type**	**Code No.**	
8	PUSH-IN spring clamp terminal block (yellow-green)			ESH-EFCE.4	003903276	70	ESH-EFCE.6	003903364	70
	Accessories								
9	End section (grey)			ESH-EFC.4/PT	003903263	25	ESH-EFC.6/PT	003903359	25
10	Marking tag			ES-N...	page 1102		ES-N...	page 1102	
11	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075	25
12	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229	25
13	Cross connections - bridges (insulated, red)	10 poles		ESH-EFB.4/10/R	003903283	5	ESH-EFB.6/10/R	003903371	5
14	Cross connections - bridges (insulated, blue)	10 poles		ESH-EFB.4/10/B	003903284	5	ESH-EFB.6/10/B	003903370	5

»PUSH IN« earth terminal blocks ESH-EFCE

ESH-EFCE.1/1+2
ESH-EFCE1/2+2

ESH-EFCE.2/1+2
ESH-EFCE.2/2+2

1	Height x Width x Thickness * *The size includes the DIN rail			36,5 x 60 (68*) x 3,5 mm			39,2 x 64,6 (78,1*) x 5,2 mm	
2	Rated cross-section			**1,5 mm²**			**2,5 mm²**	
3	Connecting capacity	solid		0,2 - 2,5 mm²			0,2 - 4 mm²	
		stranded		0,2 - 2,5 mm²			0,2 - 4 mm²	
		with ferrule		1,5-WP15/14			2,5 - WP25/19	
	Technical characteristics			**IEC**	**UL**		**IEC**	**UL**
4	Max voltage AC/DC			-	-		-	-
5	Max current with rated cross-section			-	-		**20 A**	-
6	Insulation stripping length			8 mm			9 mm	
7	Rated impulse withstand voltage / pollution degree			6 kV / 3			6 kV / 3	
				Type	**Code No.**		**Type**	**Code No.**
8	PUSH-IN spring clamp terminal block (1 input, 2 outputs; yellow-green)			ESH-EFCE1/1+2	003903362	50	ESH-EFCE.2/1+2	003903274	50
9	PUSH-IN spring clamp terminal block (2 inputs, 2 outputs; yellow-green)			ESH-EFCE1/2+2	003903363	60	ESH-EFCE.2/2+2	003903275	60
	Accessories							
10	End section (grey) for ESH-EFCE.2/1+2, ESH-EFCE.4/1+2			ESH-EFC.1/1+2PT	003903354	25	ESH-EFC.2/1+2/PT	003903261	25
11	End section (grey) for ESH-EFCE.2/2+2, ESH-EFCE.4/2+2			ESH-EFC.1/2+2PT	003903356	25	ESH-EFC.2/2+2/PT	003903279	25
12	Marking tag			ES-N...	BIE cat.		ES-N...	page 1102	
13	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075	25
14	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229	25
15	Cross connections - bridges (insulated, red)	10 poles		ESH-EFB.1/10/R	003903369	5	ESH-EFB.2/10/R	003903281	5
16	Cross connections - bridges (insulated, blue)	10 poles		ESH-EFB.1/10/B	003903368	5	ESH-EFB.2/10/B	003903282	5

* Length of ESH-EFCE.x/2+2 terminal blocks

»PUSH IN« earth terminal blocks ESH-EFCE

ESH-EFCE.4/1+2
ESH-EFCE.4/2+2

ESH-EFCE.6/1+2

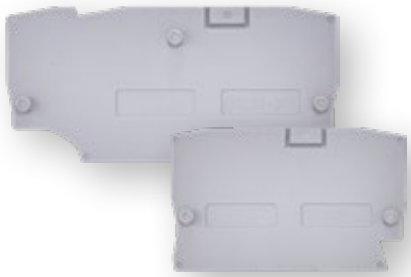
1	Height x Width x Thickness * *The size includes the DIN rail			39,2 x 71,8 (88,4*) x 6,2 mm			39,2 x 78,3 x 8,2 mm	
2	Rated cross-section			**4 mm²**			**6 mm²**	
3	Connecting capacity	solid		0,2 - 6 mm²			0,2 - 10 mm²	
		stranded		0,2 - 6 mm²			0,2 - 10 mm²	
		with ferrule		4 - WP40/16			6-WP60/20	
	Technical characteristics			**IEC**	**UL**		**IEC**	**UL**
4	Max voltage AC/DC			-	-		-	-
5	Max current with rated cross-section			**26 A**	-		-	-
6	Insulation stripping length			10 mm			12 mm	
7	Rated impulse withstand voltage / pollution degree			6 kV / 3			8 kV / 3	
				Type	**Code No.**		**Type**	**Code No.**
8	PUSH-IN spring clamp terminal block (1 input, 2 outputs; yellow-green)			ESH-EFCE.4/1+2	003903277	60	ESH-EFCE.6/1+2	003903365
9	PUSH-IN spring clamp terminal block (2 inputs, 2 outputs; yellow-green)			ESH-EFCE.4/2+2	003903278	90		
	Accessories							
10	End section (grey) for ESH-EFCE.2/1+2, ESH-EFCE.4/1+2			ESH-EFC.4/1+2/PT	003903265	25	ESH-EFC.6/1+2/PT	003903366
11	End section (grey) for ESH-EFCE.2/2+2, ESH-EFCE.4/2+2			ESH-EFC.4/2+2/PT	003903280	25		
12	Marking tag			ES-N...	page 1102		ES-N...	page 1102
13	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075
14	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229
15	Cross connections - bridges (insulated, red)	10 poles		ESH-EFB.4/10/R	003903283	5	ESH-EFB.6/10/R	003903371
16	Cross connections - bridges (insulated, blue)	10 poles		ESH-EFB.4/10/B	003903284	5	ESH-EFB.6/10/B	003903370

* Length of ESH-EFCE.x/2+2 terminal blocks

Accessories for »PUSH IN« terminal blocks

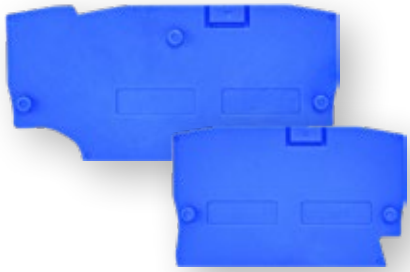
End sections, grey color

Type	Code No.	For use with	g	
ESH-EFC.2/PT	003903259	ESH-EFC.2, ESH-EFCE.2	3,11	25
ESH-EFC.2/1+2/PT	003903261	ESH-EFC.2/1+2, ESH-EFCE.2/1+2	3,00	25
ESH-EFC.2/2+2/PT	003903279	ESH-EFC.2/2+2, ESH-EFCE.2/2+2	3,91	25
ESH-EFC.4/PT	003903263	ESH-EFC.4, ESH-EFCE.4	2,99	25
ESH-EFD.4/1+2/PT	003903265	ESH-EFC.4/1+2, ESH-EFCE.4/1+2	3,00	25
ESH-EFC.4/2+2/PT	003903280	ESH-EFCE.4/2+2	4,00	25



End sections, blue color

Type	Code No.	For use with	g	
ESH-EFC.2/PTB	003903260	ESH-EFC.2B	2,60	25
ESH-EFC.2/1+2/PTB	003903262	ESH-EFC.2B/1+2	3,00	25
ESH-EFC.2/2+2/PTB	003903288	ESH-EFC.2B/2+2	4,06	25
ESH-EFC.4/PTB	003903264	ESH-EFC.4B	2,99	25
ESH-EFD.4/1+2/PTB	003903266	ESH-EFC.4B/1+2	3,00	25



End section for two and three level terminal blocks

Type	Code No.	For use with	g	
ESH-EFD.2/PT	003903269	ESH.EFD.2	4,51	25
ESH-EFD.4/PT	003903270	ESH-EFT.4	5,35	25
ESH-EFT.2/PT	003903272	ESH-EFT.2	8,10	25

"Easy bridge" system: double possibility to insert ESH-EFB.2/10/R, ESH-EFB.2/10/B and ESH-EFB.4/10/R, ESH-EFB.4/10/B multi-pole cross-connections, without the need of insulating protection. Cross connections - bridges 10 pole versions with insulation red or blue, or without isolation.

Cross connections - bridges

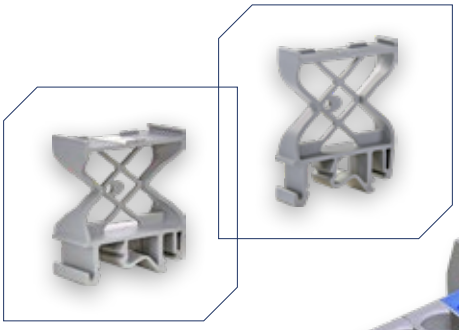
Type	Code No.	CROSS CONNECTIONS: nr. of poles, for use with, color	g	
ESH-EFB.2/10/R	003903281	10 POLE for (ESH-EFC.2, ESH-EFCE.2, ESH-EFD.2, ESH-EFT.2) - RED, insulated	5	5
ESH-EFB.2/10/B	003903282	10 POLE for (ESH-EFC.2, ESH-EFCE.2, ESH-EFD.2, ESH-EFT.2) - BLUE, insulated	5	5
ESH-EFB.4/10/R	003903283	10 POLE for (ESH-EFC.4, ESH-EFCE.4, ESH-EFD., ESH-EFT.4) - RED, insulated	5	5
ESH-EFB.4/10/B	003903284	10 POLE for (ESH-EFC.4, ESH-EFCE.4, ESH-EFD., ESH-EFT.4) - BLUE, insulated	5	5

* Connecting bridges can be cut to the desired length

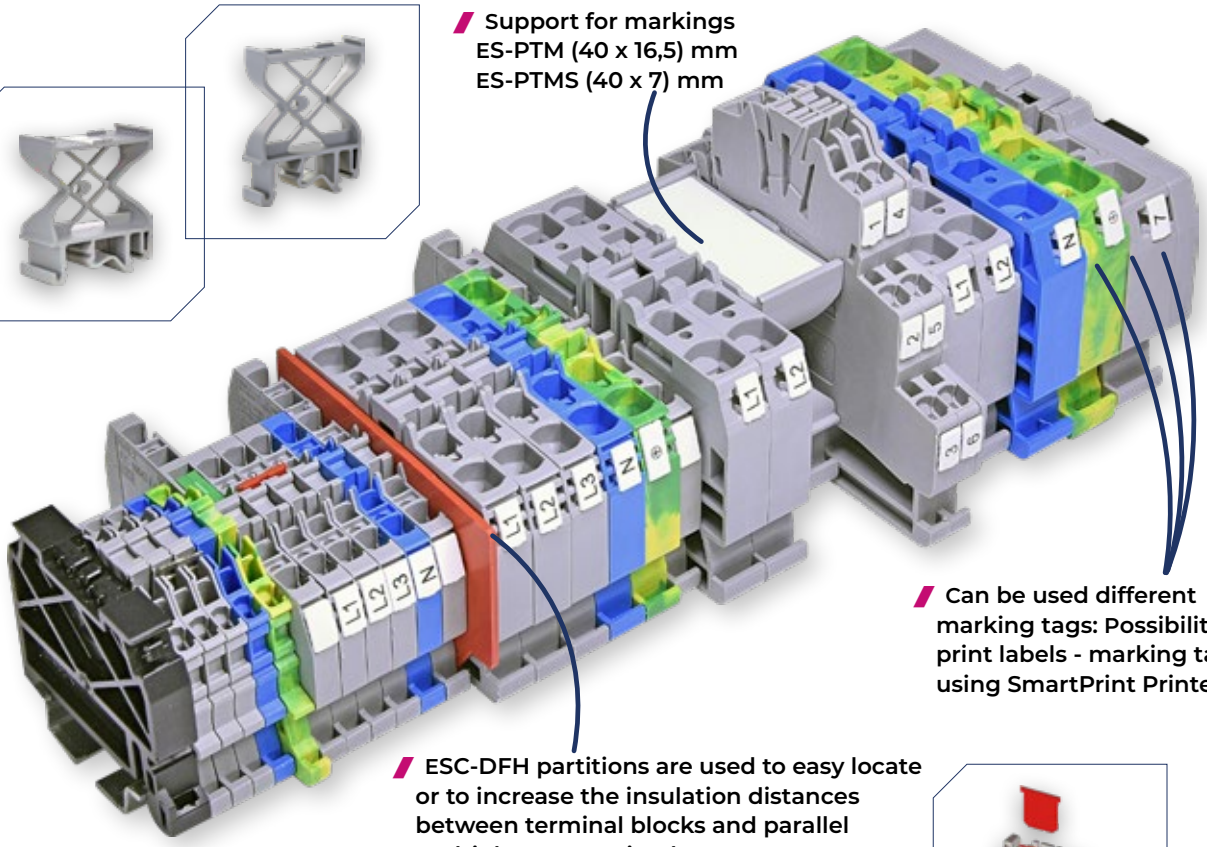
** In connection with connecting bridges we recommend the use of DFM insulation partitions

ETICONNECT

Spring Clamp Terminal Blocks

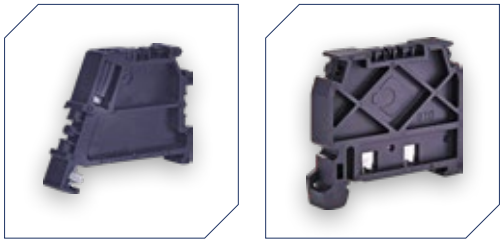


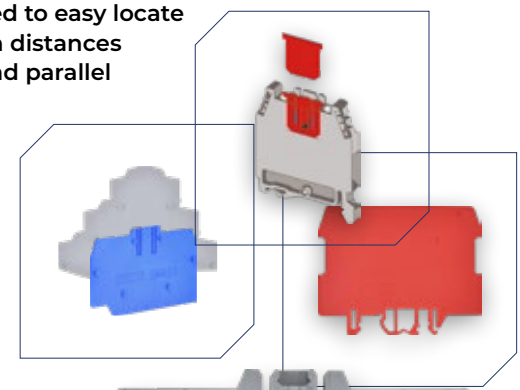
Support for markings
ES-PTM (40 x 16,5) mm
ES-PTMS (40 x 7) mm



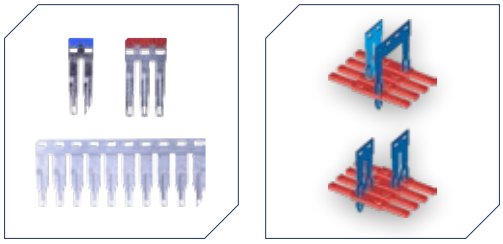
Can be used different marking tags: Possibility to print labels - marking tags using SmartPrint Printer

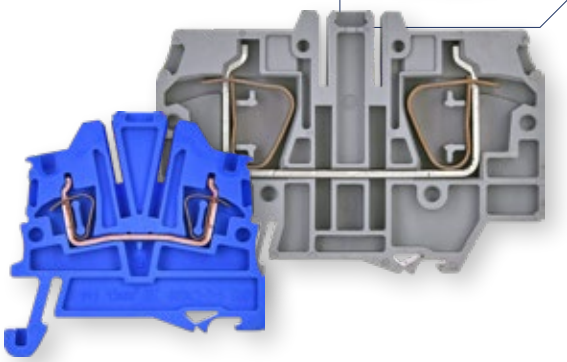
ESC-DFH partitions are used to easy locate or to increase the insulation distances between terminal blocks and parallel multiple commoning bars.





End brackets ES-BTO (spring Type), ES-BT/3 (screw Type) are used to lock terminals on TH35 rails.

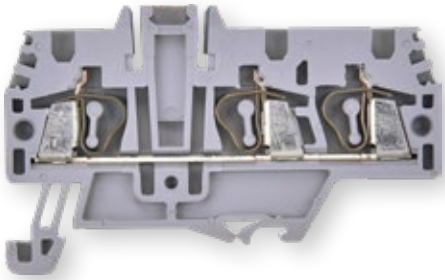


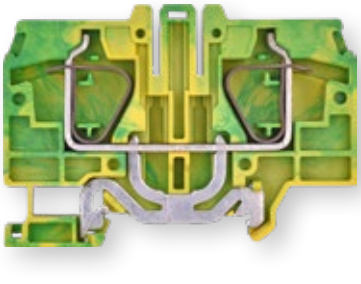


"Easy bridge" system: double possibility to insert PTC, PTP multi-pole cross-connections, without the need of insulating protection. Cross connections - bridges 2, 3 and 10 pole versions with insulation red or blue, or without isolation.

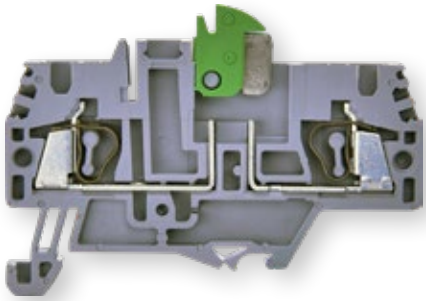
- Spring Type terminal blocks ESP-HMM series for conductors with cross sections from 0,2 to 25 mm² in grey and blue color. Provide constant and permanent clamping pressure to electrical conductor, resistant to vibrations.

Feed through terminal blocks ESP-HMM/1+2, 1 input and 2 outputs, grey color. For conductors with cross sections from 0,2 to 4 mm².



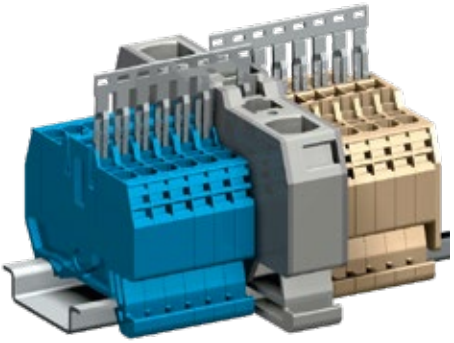


Earth terminal blocks ESP-HTE - Feed through terminal blocks, yellow-green. For conductors with cross sections from 0,2 to 25 mm².

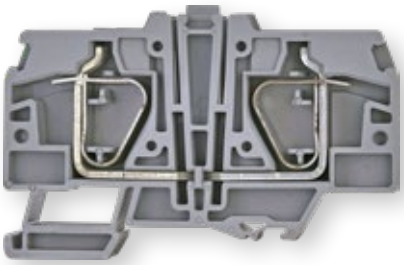


Disconnect terminal block ESP-HMS.2. For conductors with cross sections from 0,2 to 4 mm² in grey color.

Two and three level terminal blocks ESP2-HMD and ESP3-HLD. For conductors with cross sections from 0,2 to 2,5 mm² in grey color.



Example: double power supply version



ESC-HMR.16/D

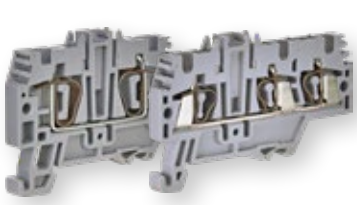
ESC-HMR.16

Potential power distribution, grey color terminal blocks ESP-HMR.16 and ESP-HMR.16/D. For conductors with cross sections from 1,5 to 25 mm². We have single and double power supply version.

You have to remove second pole from Cross connections - bridges in order to use it with ESC-HMR, ESC-HMR/D.

Spring Clamp Terminal Blocks ESP-HMM

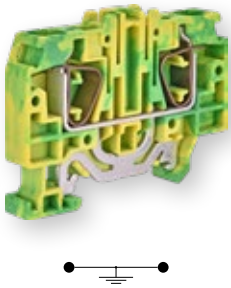
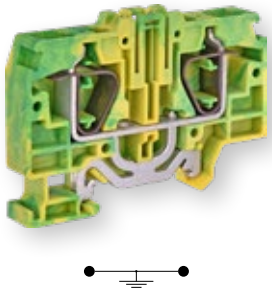
				ESP-HMM.1			ESP-HMM.2		
1	Height x Width x Thickness * *The size includes the DIN rail			43 x 45 x 4,2 mm			41 x 50 x 5,2 mm		41 x 66 x 5,2 mm
2	Rated cross-section			**1,5 mm²**			**2,5 mm²**		
3	Connecting capacity	solid		0,2 - 2,5 mm²			0,2 - 4 mm²		
		stranded		0,2 - 2,5 mm²			0,2 - 4 mm²		
		with ferrule		1,5 - WP15/14			2,5 - WP25/14		
	Technical characteristics			**IEC**	**UL**		**IEC**	**UL**	
4	Max voltage AC/DC			**500 V**	600 V		**800 V**	600 V	
5	Max current with rated cross-section			**17,5 A**	15 A		**24 A**	20 A	
6	Insulation stripping length			10 mm			10 mm		
7	Rated impulse withstand voltage / pollution degree			8 kV / 3			8 kV / 3		
				Type	**Code No.**		**Type**	**Code No.**	
8	Feed through spring clamp terminal block (grey)			ESP-HMM.1	003903130	100	ESP-HMM.2	003903131	80
9	Feed through spring clamp terminal block (blue)			ESP-HMM.1B	003903166	100	ESP-HMM.2B	003903167	100
10	Feed through spring clamp terminal block (1 input, 2 outputs; grey)						ESP-HMM.2/1+2	003903233	100
	Accessories								
11	End section (grey)			ESP-HMT.1/PT	003903136	25	ESP-HMT.2/PT	003903137	25
12	End section (blue)			ESP-HMT.1/PTB	003903172	25	ESP-HMT.2/PTB	003903173	25
13	End section (1 input, 2 outputs; grey)						ESP-HMT.2/1+2/PT	003903189	25
14	Red partition			ESP-DFH/1	003903142	25	ESP-DFH/1 (for ESP-HMM.2)	003903142	25
15	Marking tag			ESP-SH004S	page 1103		ES-N...	page 1102	
16	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075	25
17	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229	25
18	Red insulation partition to be used in case of cross connections - bridges			ESP-DFM/500	003903144	50			
19	Cross connections - bridges (uninsulated)	2 poles		ESP-PTC/1/02	003903145	25			
		3 poles		ESP-PTC/1/03	003903146	25			
		10 poles		ESP-PTC/1/10	003903147	10			
20	Cross connections - bridges (insulated, red)	2 poles					ESP-PTP/3/02/R	003903148	25
		3 poles					ESP-PTP/3/03/R	003903149	25
		10 poles					ESP-PTP/3/10/R	003903150	10
21	Cross connections - bridges (insulated, blue)	2 poles					ESP-PTP/3/02/B	003903151	25
		3 poles					ESP-PTP/3/03/B	003903152	25
		10 poles					ESP-PTP/3/10/B	003903153	10

		ESP-HMM.4	ESP-HMM.4/1+2	ESP-HMM.6	ESP-HMM.10	ESP-HMM.16
						
1		45 x 58 x 6,2 mm	45 x 78 x 6,2 mm	44 x 62 x 8,2 mm	53 x 71 x 10 mm	56 x 80 x 12 mm
2		**4 mm²**		**6 mm²**	**10 mm²**	**16 mm²**
3		0,2 - 6 mm²		0,2 - 10 mm²	1,5 - 16 mm²	1,5 - 25 mm²
		0,2 - 6 mm²		0,2 - 10 mm²	1,5 - 16 mm²	1,5 - 25 mm²
		4 - WP40/16		6 - WP60/20	10 - WP100/21	16 - WP160/22
		IEC	UL	IEC	UL	IEC	UL	IEC	UL
4		**800 V**	600 V	**800 V**	600 V	**1000 V**	600 V	**1000 V**	600 V
5		**32 A**	30	**41 A**	41 A	**57 A**	57 A	**76 A**	85 A
6		12 mm		13 mm		18 mm		18 mm	
7		8 kV / 3		8 kV / 3		12 kV / 3		12 kV / 3	

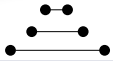
		Type	Code No.		Type	Code No.		Type	Code No.		Type	Code No.	
8		ESP-HMM.4	003903132	60	ESP-HMM.6	003903133	30	ESP-HMM.10	003903134	30	ESP-HMM.16	003903135	30
9		ESP-HMM.4B	003903168	60	ESP-HMM.6B	003903169	30	ESP-HMM.10B	003903170	30	ESP-HMM.16B	003903171	30
10		ESP-HMM.4/1+2	003903234	60									
	Accessories												
11		ESP-HMT.4/PT	003903138	25	ESP-HMT.6/PT	003903139	25	ESP-HMT.10/PT	003903140	25	ESP-HMT.16/PT	003903141	25
12		ESP-HMT.4/PTB	003903174	25	ESP-HMT.6/PTB	003903175	25	ESP-HMT.10/PTB	003903176	25	ESP-HMT.16/PTB	003903177	25
13		ESP-HMT.4/1+2/PT	003903236	25									
14		ESP-DFH/1 (for ESP-HMM.4)	003903142	25	ESP-DFH/1	003903142	25	ESP-DFH/4	003903143	25	ESP-DFH/4	003903143	25
15		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102	
16		ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25
17		ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25
18													
19					ESC-PTC/8/02	003903160	25	ESC-PTC/11/02	003903162	25	ESC-PTC/16/02	003903164	25
					ESC-PTC/8/10	003903161	10	ESC-PTC/11/10	003903163	10	ESC-PTC/16/10	003903165	10
20		ESP-PTP/5/02/R	003903154	25									
		ESP-PTP/5/03/R	003903155	25									
		ESP-PTP/5/10/R	003903156	10									
21		ESP-PTP/5/02/B	003903157	25									
		ESP-PTP/5/03/B	003903158	25									
		ESP-PTP/5/10/B	003903159	10									

Earth Spring Clamp Terminal Blocks ESP-HTE

				ESP-HTE.1			ESP-HTE.2		
1	Height x Width x Thickness * *The size includes the DIN rail			43 x 50 x 4,2 mm			41 x 54 x 5,2 mm		
2	Rated cross-section			**1,5 mm²**			**2,5 mm²**		
3	Connecting capacity	solid		0,2 - 2,5 mm²			0,2 - 4 mm²		
		stranded		0,2 - 2,5 mm²			0,2 - 4 mm²		
		with ferrule		1,5 - WP15/14			2,5 - WP25/14		
	Technical characteristics			**IEC**	**UL**		**IEC**	**UL**	
4	Max voltage AC/DC			-	400 V		-	500 V	
5	Max current with rated cross-section			**17,5 A**	-		**24 A**	-	
6	Insulation stripping length			10 mm			10 mm		
7	Rated impulse withstand voltage / pollution degree			8 kV / 3			8 kV / 3		
				Type	**Code No.**		**Type**	**Code No.**	
8	Feed through spring clamp terminal block (yellow-green)			ESP-HTE.1	003903190	100	ESP-HTE.2	003903191	80
	Accessories								
9	End section (grey)			ESP-HMT.1/PT	003903136	25	ESP-HMT.2/PT	003903137	25
10	Red partition			ESP-DFH/1	003903142	25	ESP-DFH/1	003903142	25
11	Marking tag			ESP-SH004S	page 1103		ES-N...	page 1102	
12	End bracket (spring Type)			ES-BTO	003903075	25	ES-BTO	003903075	25
13	End bracket (screw Type)			ES-BT/3	003903229	25	ES-BT/3	003903229	25
14	Cross connections - bridges (uninsulated)	2 poles		ESP-PTC/1/02	003903145	25			
		3 poles		ESP-PTC/1/03	003903146	25			
		10 poles		ESP-PTC/1/10	003903147	10			
15	Cross connections - bridges (insulated, red)	2 poles					ESP-PTP/3/02/R	003903148	25
		3 poles					ESP-PTP/3/03/R	003903149	25
		10 poles					ESP-PTP/3/10/R	003903150	10
16	Cross connections - bridges (insulated, blue)	2 poles					ESP-PTP/3/02/B	003903151	25
		3 poles					ESP-PTP/3/03/B	003903152	25
		10 poles					ESP-PTP/3/10/B	003903153	10

		ESP-HTE.4			ESP-HTE.6			ESP-HTE.10			ESP-HTE.16		
													
1		45 x 58 x 6,2 mm			44 x 62 x 8,2 mm			53 x 71 x 10 mm			56 x 80 x 12 mm		
2		**4 mm²**			**6 mm²**			**10 mm²**			**16 mm²**		
3		0,2 - 6 mm²			0,2 - 10 mm²			1,5 - 16 mm²			1,5 - 25 mm²		
		0,2 - 6 mm²			0,2 - 10 mm²			1,5 - 16 mm²			1,5 - 25 mm²		
		4 - WP40/16			6 - WP60/20			10 - WP100/21			16 - WP160/22		
		IEC	**UL**		**IEC**	**UL**		**IEC**	**UL**		**IEC**	**UL**	
4		-	500 V		-	500 V		-	500 V		-	630 V	
5		**32 A**	-		**41 A**	-		**57 A**	-		**76 A**	-	
6		12 mm			13 mm			18 mm			18 mm		
7		8 kV / 3			8 kV / 3			12 kV / 3			12 kV / 3		
		Type	**Code No.**		**Type**	**Code No.**		**Type**	**Code No.**		**Type**	**Code No.**	
8		ESP-HTE.4	003903192	60	ESP-HTE.6	003903193	30	ESP-HTE.10	003903194	30	ESP-HTE.16	003903195	30
	Accessories												
9		ESP-HMT.4/PT	003903138	25	ESP-HMT.6/PT	003903139	25	ESP-HMT.10/PT	003903140	25	ESP-HMT.16/PT	003903141	25
10		ESP-DFH/1	003903142	25	ESP-DFH/1	003903142	25	ESP-DFH/4	003903143	25	ESP-DFH/4	003903143	25
11		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102	
12		ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25
13		ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25
14					ESC-PTC/8/02	003903160	25	ESC-PTC/11/02	003903162	25	ESC-PTC/16/02	003903164	25
					ESC-PTC/8/10	003903161	10	ESC-PTC/11/10	003903163	10	ESC-PTC/16/10	003903165	10
15		ESP-PTP/5/02/R	003903154	25									
		ESP-PTP/5/03/R	003903155	25									
		ESP-PTP/5/10/R	003903156	10									
16		ESP-PTP/5/02/B	003903157	25									
		ESP-PTP/5/03/B	003903158	25									
		ESP-PTP/5/10/B	003903159	10									

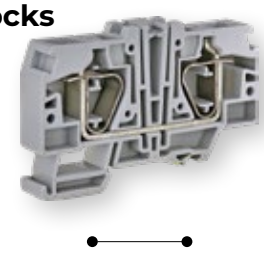
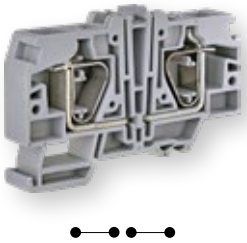
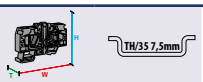
Spring Clamp Terminal Blocks
Two-Level ESP2-HMD, Three-Level ESP3-HLD

			ESP2-HMD.1	ESP2-HMD.2N	ESP3-HLD.2
					
1	Height x Width x Thickness * *The size includes the DIN rail		59 x 73 x 4,2 mm	59 x 73 x 5,2 mm	75 x 95 x 5,2 mm
2	Rated cross-section		**1,5 mm²**	**2,5 mm²**	**2,5 mm²**
3	Connecting capacity	solid	0,2 - 2,5 mm²	0,2 - 2,5 mm²	0,2 - 2,5 mm²
		stranded	0,2 - 2,5 mm²	0,2 - 2,5 mm²	0,2 - 2,5 mm²
		with ferrule	1,5 - WP15/14	1,5 - WP15/14	1,5 - WP15/14

	Technical characteristics	IEC	UL	IEC	UL	IEC	UL
5	Max voltage AC/DC	**500 V**	600 V	**630 V**	600 V	**500 V**	-
6	Max current with rated cross-section	**17,5 A**	15 A	**24 A**	15 A	**24 A**	-
7	Insulation stripping length	10 mm		10 mm		10 mm	
8	Rated impulse withstand voltage / pollution degree	6 kV / 3		8 kV / 3		8 kV / 3	

			Type	Code No.		Type	Code No.		Type	Code No.	
9	Two level feed through spring clamp terminal block (grey)		ESP2-HMD.1	003903183	50	ESP2-HMD.2N	003903184	40			
	Three level feed through spring clamp terminal block (grey)								ESP3-HLD.2	003903186	50
	Accessories										
10	End section (grey)		ESP2-HMD.1/PT	003903185	25	ESP2-HMD.1/PT	003903185	25	ESP3-HLD.2/PT	003903187	25
11	Red partition		ESC-DFU/7/R	003903015	25	ESC-DFU/7/R	003903015	25			
12	Marking tag		ESP-SH004S	page 1103		ES-N...	page 1102		ES-N...	page 1102	
13	End bracket (spring Type)		ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25
14	End bracket (screw Type)		ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25
15	Red insulation partition to be used in case of cross connections - bridges		ESP-DFM/500	003903144	50	ESP-DFM/500	003903144	50	ESP-DFM/500	003903144	50
16	Cross connections - bridges (non-insulated) 2 poles		ESP-PTC/1/02	003903145	25						
	3 poles		ESP-PTC/1/03	003903146	25						
	10 poles		ESP-PTC/1/10	003903147	10						
17	Cross connections - bridges (insulated, red) 2 poles					ESP-PTP/3/02/R	003903148	25	ESP-PTP/3/02/R	003903148	25
	3 poles					ESP-PTP/3/03/R	003903149	25	ESP-PTP/3/03/R	003903149	25
	10 poles					ESP-PTP/3/10/R	003903150	10	ESP-PTP/3/10/R	003903150	10
18	Cross connections - bridges (insulated, blue) 2 poles					ESP-PTP/3/02/B	003903151	25	ESP-PTP/3/02/B	003903151	25
	3 poles					ESP-PTP/3/03/B	003903152	25	ESP-PTP/3/03/B	003903152	25
	10 poles					ESP-PTP/3/10/B	003903153	10	ESP-PTP/3/10/B	003903153	10

Potential Power Distribution Spring Clamp Terminal Blocks ESP-HMR
Disconnect Spring Clamp Terminal Blocks ESP-HMS

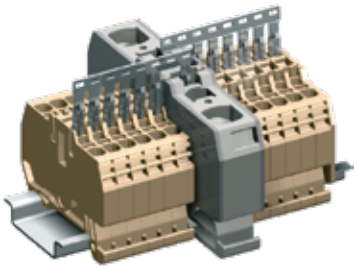
			ESP-HMR.16	ESP-HMR.16/D	ESP-HMS.2
					
1	Height x Width x Thickness * *The size includes the DIN rail		50 x 80 x 12,8 mm	50 x 80 x 12,8 mm	37 x 66 x 5,2 mm
2	Rated cross-section		**16 mm²**	**16 mm²**	**2,5 mm²**
3	Connecting capacity	solid	1,5 - 25 mm²	1,5 - 25 mm²	0,2 - 4 mm²
		stranded	1,5 - 25 mm²	1,5 - 25 mm²	0,2 - 4 mm²
		with ferrule	16 - WP160/22	16 - WP160/22	2,5 - WP25/14

	Technical characteristics	IEC	UL	IEC	UL	IEC	UL
5	Max voltage AC/DC	**800 V**	600 V	**800 V**	600 V	**400 V**	600 V
6	Max current with rated cross-section	**76 A**	30 A	**76 A**	30 A	**16 A**	24A
7	Insulation stripping length	18 mm		18 mm		10 mm	
8	Rated impulse withstand voltage / pollution degree	12 kV / 3		12 kV / 3		6 kV / 3	

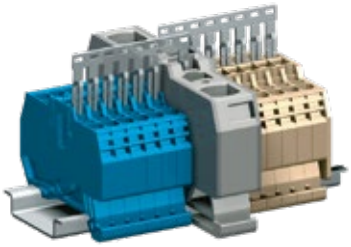
			Type	Code No.		Type	Code No.		Type	Code No.	
9	Potential power distribution spring clamp terminal block (grey) / Disconnect spring clamp terminal block (grey)		ESP-HMR.16 Single power supply version	003903178	15	ESP-HMR.16/D Double supply version	003903179	30	ESP-HMS.2	003903188	80
	Accessories										
10	End section (grey) for ESP-HMM.2, ESP-HMM.2/1+2		ESP-HMR.16-2/PT	003903180	10	ESP-HMR.16-2/PT	003903180	10	ESP-HMT.2/1+2/PT	003903189	25
11	End section (grey) for ESP-HMM.4, ESP-HMM.4/1+2		ESP-HMR.16-4/PT	003903181	10	ESP-HMR.16-4/PT	003903181	10			
12	End section (grey) ESP-HMM.6		ESP-HMR.16-6/PT	003903182	10	ESP-HMR.16-6/PT	003903182	10			
13	Red partition		ESP-DFH/4	003903143	25	ESP-DFH/4	003903143	25			
14	Marking tag		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102	
15	End bracket (spring Type)		ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25
16	End bracket (screw Type)		ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25
17	Cross connections - bridges (non-insulated) to connect ESP-HMM.6	10 poles	ESC-PTC/08/10	003903161	25	ESC-PTC/08/10	003903161	25			
18	Cross connections - bridges (red, blue) to connectESP-HMM.2	2 poles (red)							ESP-PTP/3/02/R	003903148	25
		2 poles (blue)							ESP-PTP/3/02/B	003903151	25
		3 poles (red)	ESP-PTP/3/03/R	003903149	25	ESP-PTP/3/03/R	003903149	25	ESP-PTP/3/03/R	003903149	25
		3 poles (blue)	ESP-PTP/3/03/B	003903152	25	ESP-PTP/3/03/B	003903152	25	ESP-PTP/3/03/B	003903152	25
		10 poles (red)	ESP-PTP/3/10/R	003903150	10	ESP-PTP/3/10/R	003903150	10	ESP-PTP/3/10/R	003903150	10
		10 poles (blue)	ESP-PTP/3/10/B	003903153	10	ESP-PTP/3/10/B	003903153	10	ESP-PTP/3/10/B	003903153	10
19	Cross connections - bridges (red, blue) to connect ESP-HMM.4	3 poles (red)	ESP-PTC/5/03/R	003903155	25	ESP-PTC/5/03/R	003903155	25			
		3 poles (blue)	ESP-PTC/5/03/B	003903158	25	ESP-PTC/5/03/B	003903158	25			
		10 poles (red)	ESP-PTC/5/10/R	003903156	10	ESP-PTC/5/10/R	003903156	10			
		10 poles (blue)	ESP-PTC/5/10/B	003903159	10	ESP-PTC/5/10/B	003903159	10			

Features of potential distribution terminal blocks ESP-HMR

- with UL94V-0 polyamide insulating body
- 16 mm²
- mounting onto rails according to IEC 60715 Std., “TH/35” Type
- available in grey RAL 7042 colour
- can be connected with ESP-HMM.2



Spring clamp potential distribution terminal block, single power supply



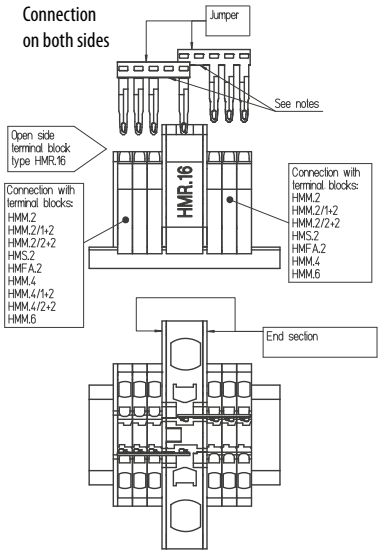
Spring clamp potential distribution terminal block, double power supply

NOTES:
The number of poles to be used shall be equal to the number of terminal blocks to be connected, including the distribution terminal block + 1
To allow the connection to the distribution terminal block the second pin of the PTC jumper shall be trimmed off
*Connectable only on the open side of the distribution terminal block

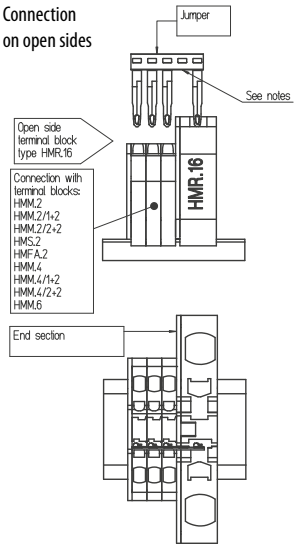
Terminal block connected to supply terminal	End sections	Permanent cross connection (**)	
		Type	Total capacity
ESP-HMM.2	ESP-HMR.16-2/PT	ESP-PTP0303 ESP-PTP0310	24 A
ESP-HMM.4	ESP-HMR.16-4/PT	ESP-PTP0503 ESP-PTP0510	32 A
ESP-HMM.6	ESP-HMR.16-6/PT	ESP-PTC/08/10 poles	41 A

(**) In order to enable the connection to the supply terminal the second pin must be always removed from the strip of the PTC jumper.

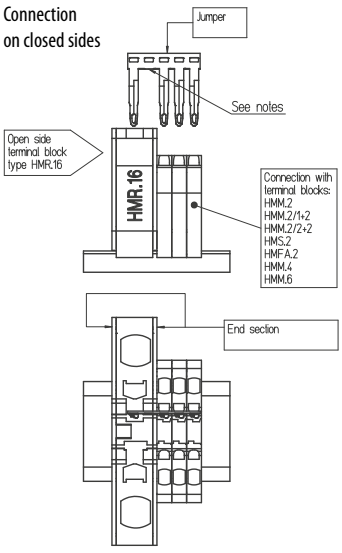
Connection on both sides



Connection on open sides



Connection on closed sides



The number of poles of the PTC jumper must be equal to to the number of terminal blocks to be cross-connected plus 1

Accessories For Spring Clamp Terminal Blocks

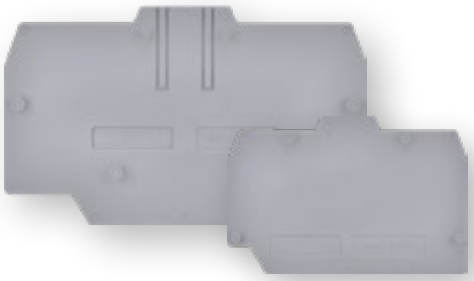
Terminal block	End section	
	Type	Thickness [mm]
ESP3-HLD.2	ESP3-HLD.2/PT	1,5
ESP-HMM.1	ESP-HMT.1/PT	1,5
ESP-HMM.2	ESP-HMT.2/PT	1,5
ESP-HMM.4	ESP-HMT.4/PT	1,5
ESP2-HMD.1	ESP2-HMD.1/PT	1,5
ESP2-HMD.2N	ESP2-HMD.1/PT	1,5
ESP-HMM.6	ESP-HMT.6/PT	1,5
ESP-HTE.1	ESP-HMT.1/PT	1,5
ESP-HTE.2	ESP-HMT.2/PT	1,5
ESP-HTE.4	ESP-HMT.4/PT	1,5
ESP-HTE.6	ESP-HMT.6/PT	1,5
ESP-HTE.10	ESP-HMT.10/PT	1,5
ESP-HTE.16	ESP-HMT.16/PT	1,5
ESP-HMM.1B	ESP-HMT.1/PT B	1,5
ESP-HMM.2B	ESP-HMT.2/PT B	1,5
ESP-HMM.4 B	ESP-HMT.4/PT B	1,5
ESP-HMM.6 B	ESP-HMT.6/PT B	1,5
ESP-HMM.10	ESP-HMT.10/PT	1,5
ESP-HMM.16	ESP-HMT.16/PT	1,5
ESP-HMM.10B	ESP-HMT.10/PTB	1,5
ESP-HMM.16B	ESP-HMT.16/PTB	1,5

ESP-PT end sections

For each Type and cross section of terminal block, there is a specific insulating and closing end section to be placed on the open element of each terminal board. This end section may also be used to separate different phases of adjoining terminal blocks linked by cross connections or to increase insulation distances where specific circumstances may require it. The end sections have the same overall dimension as the related terminal block, thicknesses are given in the table below.

End sections, grey color

Type	Code No.	For use with	g	
ESP-HMT.1/PT	003903136	ESP-HMM.1, ESP-HTE.1	2,7	25
ESP-HMT.2/PT	003903137	ESP-HMM.2, ESP-HTE.2	2,8	25
ESP-HMT.4/PT	003903138	ESP-HMM.4, ESP-HTE.4	3,8	25
ESP-HMT.6/PT	003903139	ESP-HMM.6, ESP-HTE.6	4,2	25
ESP-HMT.10/PT	003903140	ESP-HMM.10, ESP-HTE.10	5	25
ESP-HMT.16/PT	003903141	ESP-HMM.16, ESP-HTE.16	6	25

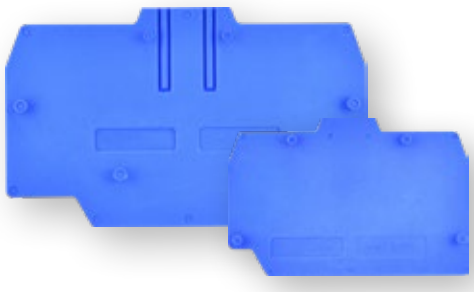


End sections, grey color

Type	Code No.	For use with	g	
ESP-HMT.2/1+2/PT	003903189	ESP-HMM.2/1+2, ESP-HMS.2	3,4	25
ESP-HMT.4/1+2/PT	003903236	ESP-HMM.4/1+2	4,3	25

End sections, blue color

Type	Code No.	For use with	g	
ESP-HMT.1/PTB	003903172	ESP-HMM.1B	2,6	25
ESP-HMT.2/PTB	003903173	ESP-HMM.2B	2,9	25
ESP-HMT.4/PTB	003903174	ESP-HMM.4B	3,4	25
ESP-HMT.6/PTB	003903175	ESP-HMM.6B	4	25
ESP-HMT.10/PTB	003903176	ESP-HMM.10B	10	25
ESP-HMT.16/PTB	003903177	ESP-HMM.16B	6	25



End section for two level terminal blocks

Type	Code No.	For use with	g	
ESP2-HMD.1/PT	003903185	ESP2-HMD.1, ESP2-HMD.2N	4,9	25

End section for three level terminal blocks

Type	Code No.	For use with	g	
ESP3-HLD.2/PT	003903187	ESP3-HLD.2	6	25

End sections for potential power distribution terminal blocks

Type	Code No.	For use with	g	
ESP-HMR.16-2/PT	003903180	Connection to distribution ESP-HMM.2	8	10
ESP-HMR.16-4/PT	003903181	Connection to distribution ESP-HMM.4	8	10
ESP-HMR.16-6/PT	003903182	Connection to distribution ESP-HMM.6	9	10

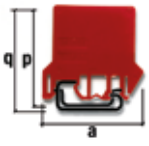
ESP-DFH partitions

In polyamide available in red, colour, 1.5 mm thick, for the separation of elements on the terminal board, in order to make certain circuits easy to locate or to increase the insulation distances between terminal blocks.
The partitions can also be used to increase the insulation distances between adjacent parallel multiple commoning bars. White and green partitions available while stocks last.

Red partitions

Type	Code No.	For use with	g	
ESP-DFH/1	003903142	ESP-HMM.1…ESP-HMM.6	4	25
ESP-DFH/4	003903143	ESP-HMM.10...ESP-HMM.16	6	25

Compatible also with two and three level spring terminal blocks

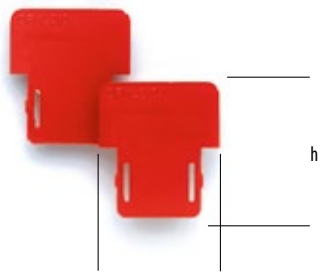


Partition	Dimensions a x p
ESP-DFH/4	97 x 51,5
ESP-DFH/1	64 x 42,5

NOTE:
q dimension can be obtained by adding 4 mm to dimension p

ESP-DFM partition insulation of cross connections - bridges

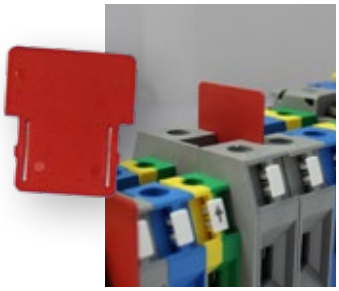
Red coloured in polyamide when it is necessary to guarantee the insulation distance between permanent or switchable cross connections, inserted between adjacent pairs of terminal blocks and, similarly, between multiple commoning bars, inserted between adjacent groups of terminal blocks.



Partition	Dimensions l x h [mm]	Thickness [mm]
ESP-DFM/500	4,6 x 13,5	0,5

Red insulation partition to be used in case of cross connections - bridges

Type	Code No.	Dimension (for use with)	g	
ESP-DFM/500	003903144	4,5 x 13 (ESP-HMM.1)	0,1	50

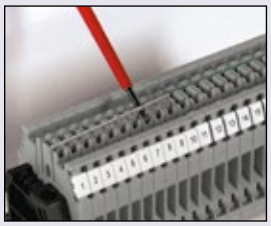


Cross connections
Easy Bridge System

- screwless, snap-in insertion
- transversal and staggered mode connection possibility
- once inserted, intrinsically IPXXB protected resulting installation, without the need for further insulating covers
- patented system

1

2



3

1-2 After having cut the bar according to the number of poles, insert the cross-connection, in the appropriate groove of the terminal block. At this point, by using the blade of a screwdriver, push down the cross-connection until it reaches its blocking point. The cross connection will be fully insulated and intrinsically IPXXB protected.

3 To remove the cross-connection, insert the blade of the screwdriver in the jumper slot, then lift it up and finally extract it.

Terminal block	2-pole jumper	3-pole jumper	10-pole jumper
ESP-HMM.1(**)	ESP-PTC/1/02	ESP-PTC/1/03	ESP-PTC/1/10
ESP2-HMD.1	ESP-PTC/1/02	ESP-PTC/1/03	ESP-PTC/1/10
ESP-HMM.6	ESP-PTC/8/02		ESP-PTC/8/10
ESP-HMM.10	ESP-PTC/11/02		ESP-PTC/11/10
ESP-HMM.16	ESP-PTC/16/02		ESP-PTC/16/10

Insulated cross connection

Nr. Poles	PTP Series - Blue	PTP Series - Red
2	ESP-PTP/3/02/B	ESP-PTP/3/02/R
3	ESP-PTP/3/03/B	ESP-PTP/3/03/R
10	ESP-PTP/3/10/B	ESP-PTP/3/10/R
2	ESP-PTP/5/02/B	ESP-PTP/5/02/R
3	ESP-PTP/5/03/B	ESP-PTP/5/03/R
10	ESP-PTP/5/10/B	ESP-PTP/5/10/R

Cross connections - bridges

Type	Code No.	CROSS CONNECTIONS: nr. of poles, for use with, color	g	
ESP-PTC/1/02	003903145	2 POLE CROSS CONNECTION (ESP-HMM.1,ESP2-HMD.1)	1	25
ESP-PTC/1/03	003903146	3 POLE CROSS CONNECTION (ESP-HMM.1, ESP2-HMD.1)	1	25
ESP-PTC/1/10	003903147	10 POLE CROSS CONNECTION (ESP-HMM.1, ESP2-HMD.1)	3	10
ESP-PTP/3/02/R	003903148	2 POLE CROSS CONNECTION (ESP-HMM.2, ESP2-HMD.2) - RED	0,9	25
ESP-PTP/3/03/R	003903149	3 POLE CROSS CONNECTION (ESP-HMM.2, ESP2-HMD.2) - RED	1,4	25
ESP-PTP/3/10/R	003903150	10 POLE CROSS CONNECTION (ESP-HMM.2, ESP2-HMD.2) - RED	4,8	10
ESP-PTP/3/02/B	003903151	2 POLE CROSS CONNECTION (ESP-HMM.2, ESP2-HMD.2) - BLUE	0,9	25
ESP-PTP/3/03/B	003903152	3 POLE CROSS CONNECTION (ESP-HMM.2, ESP2-HMD.2) - BLUE	1,4	25
ESP-PTP/3/10/B	003903153	10 POLE CROSS CONNECTION (ESP-HMM.2, ESP2-HMD.2) - BLUE	4,8	10
ESP-PTP/5/02/R	003903154	2 POLE CROSS CONNECTION (ESP-HMM.4) - RED	1,3	25
ESP-PTP/5/03/R	003903155	3 POLE CROSS CONNECTION (ESP-HMM.4) - RED	1,9	25
ESP-PTP/5/10/R	003903156	10 POLE CROSS CONNECTION (ESP-HMM.4) - RED	6,4	10
ESP-PTP/5/02/B	003903157	2 POLE CROSS CONNECTION (ESP-HMM.4) - BLUE	1,3	25
ESP-PTP/5/03/B	003903158	3 POLE CROSS CONNECTION (ESP-HMM.4) - BLUE	1,9	25
ESP-PTP/5/10/B	003903159	10 POLE CROSS CONNECTION (ESP-HMM.4) - BLUE	6,4	10
ESP-PTC/8/02	003903160	2 POLE CROSS CONNECTION (ESP-HMM.6)	2	25
ESP-PTC/8/10	003903161	10 POLE CROSS CONNECTION (ESP-HMM.6)	12	10
ESP-PTC/11/02	003903162	2 POLE CROSS CONNECTION (ESP-HMM.10)	5	25
ESP-PTC/11/10	003903163	10 POLE CROSS CONNECTION (ESP-HMM.10)	12	10
ESP-PTC/16/02	003903164	2 POLE CROSS CONNECTION (ESP-HMM.16)	6	25
ESP-PTC/16/10	003903165	10 POLE CROSS CONNECTION (ESP-HMM.16)	12	10

Compatible also with two and three level spring terminal blocks

ESP-PTP3/03/B

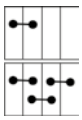
ESP-PTC/1/03

ESP-PTC/08/02

ESP-PTP3/03/R

PTC jumper configurations

PTC / PTP cross-connection schemes



Terminal block	Single or parallel extending	Pole skipping	Adjacent with barrier	Staggered mode	Parallel skipping	I_{max} (A)
	Isolation voltage [V]					
ESP-HMM.1	630	630	320	630	630	17,5
ESP-HMM.2	630	630	320	630	630	24
ESP-HMM.4	500	500	500	500	500	32
ESP-HMM.6	500	500	500	500	500	41
ESP-HMM.10	1000	1000	800	1000	800	57
ESP-HMM.16	1000	1000	800	1000	800	76
ESP2-HMD.1	500	500	320	500	500	17.5
ESP2-HMD.2N	500	500	320	500	500	24
ESP3-HLD.2	500	500	500	500	500	24
ESP-HMS.2	630	500	-	-	-	24

When connecting groups of terminals of different potential, it is necessary to install jumper separators (ESC-DFM partition insulation of cross connections) to prevent electrical breakthrough and ensure the dielectric distance between plug-in jumpers. When installing the jumpers according to the scheme, the installation of the jumper separator is **mandatory**!

* between lower adjacent cross connections (with barrier)
** between upper adjacent cross connections (with barrier)

ETICONNECT

Common Screw And Spring Type Accessories

End bracket

ES-BTO
End bracket suitable for IEC 60715/TH35 rails (our Types PR/3); it is mounted directly in the desired position and does not require screw fixing. Particularly suitable if there are rail fixing screws with high heads:
- in black polyamide
- thickness: 8 mm

ES-BT/3
To be mounted on rails in accordance with the IEC 60715/TH35 standard (our Type PR/3). Requires screw fixing:
- in black polyamide
- thickness: 8 mm

End bracket

Type	Code No.	Description	g	
ES-BTO	003903075	End bracket for DIN rail TH35	8	25
ES-BT/3	003903229		6	25

ES-BTO

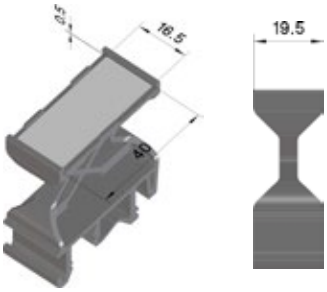
ES-BT/3

Marking tags

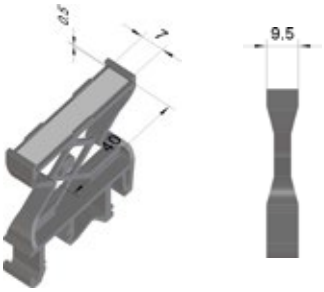
- Marking tags ES-NU0851 suitable for marking all Types of terminal blocks (screw-clamp and spring-clamp) in tables of 100 elements in packs of 500 tags; must be ordered in multiples of 100 pcs
- In white polycarbonate with black printing, to be applied directly into position either before or after preparing the terminal board; tag dimensions: 8 x 5.1 mm
- Marking tags ES-TAP1640AW: must be ordered in multiples of 150 pcs (1 plate).
- Marking tags ES-TAP407AW: must be ordered multiple of 360 pcs (1 plate).

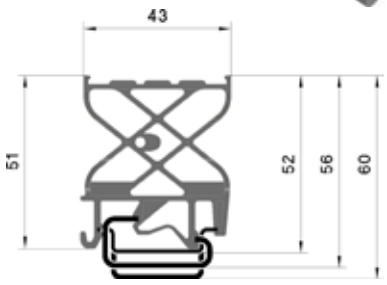
Dimensions

ES-PTM + ES-TA1640AW



ES-PTMS + ES-TA407AW

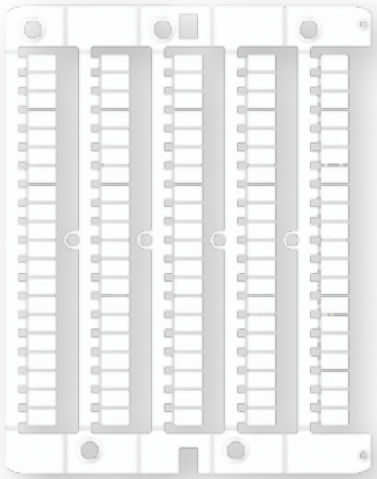


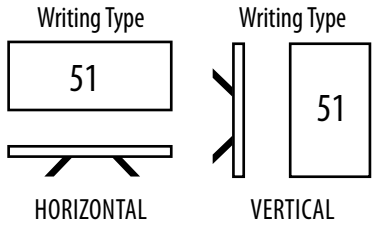


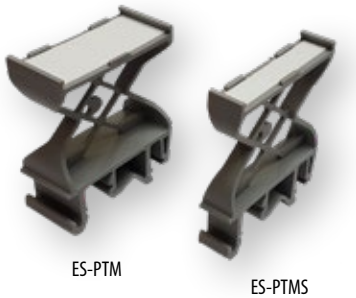
Marking tags for all types of terminals with rated cross section 2,5mm²...240mm²

Type	Code No. / 1 pc	Description	g	
ES-NU0851	003903076	Blank tags	0,2	1500
ES-NU0851001	003903077	Tags no. 1 to 50	0,2	500
ES-NU0851051	003903078	Tags from 51 to 100	0,2	500
ES-NU0851101	003903079	Tags from 101 to 150	0,2	500
ES-NU0851151	003903080	Tags from 151 to 200	0,2	500
ES-NU0851201	003903081	Tags from 201 to 250	0,2	500
ES-NU0851251	003903082	Tags from 251 to 300	0,2	500
ES-NU0851301	003903083	Tags from 301 to 350	0,2	500
ES-NU0851351	003903084	Tags from 351 to 400	0,2	500
ES-NU0851401	003903085	Tags from 401 to 450	0,2	500
ES-NU0851451	003903086	Tags from 451 to 500	0,2	500
ES-NU0851501	003903087	Tags from 501 to 550	0,2	500
ES-NU0851551	003903088	Tags from 551 to 600	0,2	500
ES-NU0851601	003903089	Tags from 601 to 650	0,2	500
ES-NU0851651	003903090	Tags from 651 to 700	0,2	500
ES-NU0851701	003903091	Tags from 701 to 750	0,2	500
ES-NU0851751	003903092	Tags from 751 to 800	0,2	500
ES-NU0851801	003903093	Tags from 801 to 850	0,2	500
ES-NU0851851	003903094	Tags from 851 to 900	0,2	500
ES-NU0851901	003903095	Tags from 901 to 950	0,2	500
ES-NU0851951	003903096	Tags from 951 to 1000	0,2	500
ES-NU0851510	003903097	Tags from 1 to 10	0,2	500
ES-NU0851520	003903098	Tags from 11 to 20	0,2	500
ES-NU0851530	003903099	Tags from 21 to 30	0,2	500
ES-NU0851540	003903100	Tags from 31 to 40	0,2	500
ES-NU0851550	003903101	Tags from 41 to 50	0,2	500
ES-NU0851560	003903102	Tags from 51 to 60	0,2	500
ES-NU0851570	003903103	Tags from 61 to 70	0,2	500
ES-NU0851580	003903104	Tags from 71 to 80	0,2	500
ES-NU0851590	003903105	Tags from 81 to 90	0,2	500
ES-NU0851600	003903106	Tags from 91 to 100	0,2	500
ES-NU0851OL1	003903107	Tags L1	0,2	500
ES-NU0851OL2	003903108	Tags L2	0,2	500
ES-NU0851OL3	003903109	Tags L3	0,2	500
ES-NU0851N	003903110	Tags N	0,2	500
ES-NU0851OPE	003903111	Tags PE	0,2	500
ES-NU085110	003903112	Tags =	0,2	500
ES-NU085111	003903113	Tags +	0,2	500
ES-NU085112	003903114	Tags -	0,2	500
ES-NU085114	003903115	Tags earth	0,2	500
ES-NU0851R	003903116	Tags R	0,2	500
ES-NU0851S	003903117	Tags S	0,2	500
ES-NU0851T	003903118	Tags T	0,2	500
ES-NU0851UV	003903119	Tags U	0,2	500
ES-NU0851V	003903120	Tags V	0,2	500
ES-NU0851W	003903121	Tags W	0,2	500
ES-NU0851X	003903122	Tags X	0,2	500
ES-PTM	003903123	Support for markings (ES-TAP1640AW)	12,5	15
ES-PTMS	003903124	Support for markings (ES-TAP407AW)	6,4	36
ES-TAP1640AW	003903239	Blank marking (40 x 16 x 0,5 mm)	0,89	120
ES-TAP407AW	003903240	Blank marking (40 x 7 x 0,5 mm)	0,89	280
ES-NU1051S	003903232	Blank tags - used with SmartPrint printer	8	1500

Not compatible with HMM.1 (1,5mm² spring terminal blocks), use ESP-SHZ







ES-NU1051S - To be used with SmartPrint

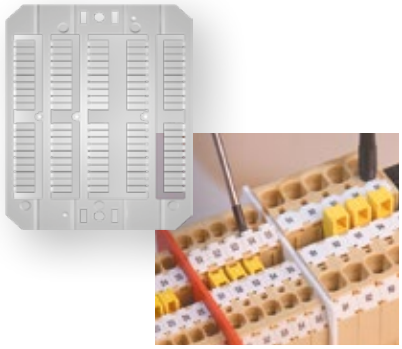
- Tags for terminal blocks CBC-CBD-HMM multiple mounting on CBC.2, single tags on all other sections
- Material: polycarbonate thickness 1.6 mm
- Working temperature: -40°/+80°C
- Rub resistance: CEI 16-7.

Numbering strips ESP-SHZ, ESP-SH004S

ESP-SHZ, ESP-SH004S numbering strips can be mounted on the sides of the terminal block or in the appropriate housings provided in the upper part of the terminal block itself.

Marking tags for spring terminals with rated cross section 1,5mm² (ESP-HMM.1, HTE.1)

Type	Code No.	Description	g		Min order [pcs]
ESP-SHZ/1/1_10	003903196	Tags no. 1 to 10	0,2	500	100
ESP-SHZ/1/1_50	003903197	Tags no. 1 to 50	0,2	500	100
ESP-SHZ/1/51_100	003903198	Tags from 51 to 100	0,2	500	100
ESP-SH004S	003903238	Blank tags for Cabur HMM.1 terminal block - used with SmartPrint printer	8	1500	1500

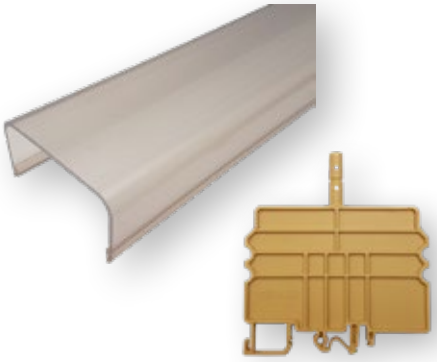


Additional covers for terminals and supports

Terminal blocks having a cross-section up to 70 mm² can be protected against accidental contacts or tampering, by means of a PVC transparent cover, supplied in a standard lenght of 2 m, to be mounted on appropriate polyamide supports and to be inserted on PR/DIN, PR/3, “G32” Type and TH/35 mounting rails. They can be fixed by sealing the support ends.

Features

- ES-PZM.4 cover suitable for terminal blocks with overall dimension up to approximately 58 mm (mounting rail included).
- ES-PZM.6 cover suitable for terminal blocks with overall dimension over 58 mm, (mounting rail included).



Additional covers for terminals and supports

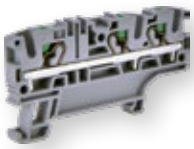
Type	Code No.	For use with	g	
ES-PZM.4	003903200	Protection cover (2m, 66mm x 32 mm), ES-PZD.4/SO	410	2
ES-PZD.4/SO	003903201	Support for ES-PZM.4	14	20
ES-PZM.6	003903202	Protection cover (2m, 87mm x 36 mm), ES-PZD.6/SO	326	2
ES-PZD.6/SO	003903203	Support for ES-PZM.6	8,15	10

Technical data for ES-PZM Series

			ES-PZM.4	ES-PZM.6	ES-PZM.4 + ES-PZD.4/SO	ES-PZM.6 + ES-PZD.6/SO
Technical characteristics						
Dimensions	Type	(mm)	a = 64+2 / b = 32	a = 85+2 / b = 36		
Mounted with support			ES-PZD.4/SO	ES-PZD.6/SO		
Maximum dimension:		(mm)				
on IEC 60715/G32 mounting rail					70 / 82 (*)	82 / 94 (*)
on IEC 60715/TH35 mounting rail					65 / 77 (*)	78 / 90 (*)

(*) depending on the notches used, upper or lower.

»PUSH IN« terminal blocks ESH-EFC

			ESH-EFC.1/1+2	ESH-EFC.2/1+2	ESH-EFC.4/1+2
					
1	Height x Width x Thickness * *The size includes the DIN rail		36,6 x 56,4 x 3,5 mm	39,2 x 63,1 x 5,2 mm	39,2 x 71,8 x 6,2 mm
2	Rated cross-section		**1,5 mm²**	**2,5 mm²**	**4 mm²**
3	Connecting capacity	solid	0,2 - 2,5 mm²	0,2 - 4 mm²	0,2 - 6 mm²
		stranded	0,2 - 2,5 mm²	0,2 - 4 mm²	0,2 - 6 mm²
		with ferrule	1,5-WP15/14	2,5 - WP25/19	4 - WP40/16

	Technical characteristics	IEC	UL	IEC	UL	IEC	UL
4	Max voltage AC/DC	**630 V**	600 V	**800 V**	600 V	**800 V**	600 V
5	Max current with rated cross-section	**17,5 A**	15 A	**24 A**	20 A	**32 A**	30 A
6	Insulation stripping length	8 mm		9 mm		10 mm	
7	Rated impulse withstand voltage / pollution degree	6 kV / 3		6 kV / 3		6 kV / 3	

			Type	Code No.		Type	Code No.		Type	Code No.	
8	PUSH-IN spring clamp terminal block (1 input, 2 outputs; grey)		ESH-EFC.1/1+2	003903342	120	ESH-EFC.2/1+2	003903253	120	ESH-EFC.4/1+2	003903257	110
9	PUSH-IN spring clamp terminal block (1 input, 2 outputs; blue)		ESH-EFC.1/1+2/B	003903343	120	ESH-EFC.2B/1+2	003903254	120	ESH-EFC.4B/1+2	003903258	110
10	PUSH-IN spring clamp terminal block (2 inputs, 2 outputs; grey)										
11	PUSH-IN spring clamp terminal block (2 inputs, 2 outputs; blue)										
	Accessories										
12	End section (grey)		ESH-EFC.1/1+2PT	003903354	25	ESH-EFC.2/1+2/PT	003903261	25	ESH-EFC.4/1+2/PT	003903265	25
13	End section (blue)		ESH-EFC.1/1+2PTB	003903355	25	ESH-EFC.2/1+2/PTB	003903262	25	ESH-EFC.4/1+2/PTB	003903266	25
14	Marking tag		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102	
15	End bracket (spring Type)		ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25
16	End bracket (screw Type)		ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25
17	Cross connections - bridges (insulated, red) 10 poles		ESH-EFB.1/10/R	003903369	5	ESH-EFB.2/10/R	003903281	5	ESH-EFB.4/10/R	003903283	5
18	Cross connections - bridges (insulated, blue) 10 poles		ESH-EFB.1/10/B	003903368	5	ESH-EFB.2/10/B	003903282	5	ESH-EFB.4/10/B	003903284	5

	ESH-EFC.6/1+2		ESH-EFC.1/2+2		ESH-EFC.2/2+2		ESH-EFC.4/2+2	
1	39,2 x 78,3 x 8,2 mm		36,5 x 68 x 3,5 mm		39,2 x 76,6 x 5,2 mm		39,2 x 88,4 x 6,2 mm	
2	**6 mm²**		**1,5 mm²**		**2,5 mm²**		**4 mm²**	
3	0,2 - 10 mm²		0,2 - 2,5 mm²		0,2 - 4 mm²		0,2 - 6 mm²	
	0,2 - 10 mm²		0,2 - 2,5 mm²		0,2 - 4 mm²		0,2 - 6 mm²	
	6-WP60/20		1,5-WP15/14		2,5 - WP25/19		4 - WP40/16	
	IEC	**UL**	**IEC**	**UL**	**IEC**	**UL**	**IEC**	**UL**
4	**1000 V**	600 V	**630 V**	600 V	**800 V**	600 V	**800 V**	600 V
5	**41 A**	41 A	**17,5 A**	15 A	**24 A**	20 A	**32 A**	30 A
6	12 mm		8 mm		9 mm		10 mm	
7	8 kV / 3		6 kV / 3		6 kV / 3		6 kV / 3	

	Type	Code No.		Type	Code No.		Type	Code No.		Type	Code No.	
8	ESH-EFC.6/1+2	003903350	110									
9	ESH-EFC.6/1+2/B	003903351	110									
10				ESH-EFC.1/2+2	003903344	120	ESH-EFC.2/2+2	003903285	90	ESH-EFC.4/2+2	003903346	110
11				ESH-EFC.1/2+2/B	003903345	120	ESH-EFC.2B/2+2	003903286	90	ESH-EFC.4/2+2B	003903347	110
12	ESH-EFC.6/1+2/PT	003903366	25	ESH-EFC.1/2+2PT	003903356	25	ESH-EFC.2/2+2/PT	003903279	25			
13	ESH-EFC.6/1+2/PTB	003903367	25	ESH-EFC.1/2+2PTB	003903357	25	ESH-EFC.2/2+2/PTB	003903288	25	ESH-EFC.4/2+2/PTB	003903358	25
14	ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102		ES-N...	page 1102	
15	ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25	ES-BTO	003903075	25
16	ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25	ES-BT/3	003903229	25
17	ESH-EFB.6/10/R	003903371	5	ESH-EFB.1/10/R	003903369	5	ESH-EFB.4/10/R	003903283	5	ESH-EFB.4/10/R	003903283	5
18	ESH-EFB.6/10/B	003903370	5	ESH-EFB.1/10/B	003903368	5	ESH-EFB.4/10/B	003903284	5	ESH-EFB.4/10/B	003903284	5

ETICEE

Industrial Plug-In Equipment

Distribution Boxes EDS 1108

Industrial Plug-In Equipment 1114

/etigroup

SWITCH TO
A SAFE FUTURE

ETICEE Distribution boxes EDS

Degree of protection - IP 44, IP 54
Nominal current 16 A, 32 A / 5P
Nominal voltage 250 V
Mechanical resistance of boxes IK 07, IK 09, IK 10
Products do not contain substances banned under the RoHS directive.

Ordering:
1 - type
2 – number of modules
3 – 2 x schuko version / 2 x 5 poles
4 – Nominal current 16A, 32A

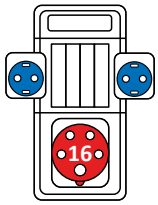
EDS	4	2-2/2-5	16/32
1	2	3	4

Technical data

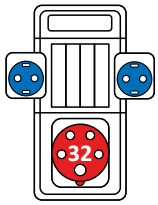
Degree of protection	IP 44, IP 54
Nominal current	16 A, 32 A / 5P
Nominal voltage	250 V
Products do not contain substances banned under Rohs directive	

EDS 4 mini IP44

Type	Code No.	Sockets applied			Circuit breakers			IP degree of protection	kg	
		16A/5P	32A/5P	Schuko 250V	C16/1	C16/3	C32/3			
EDS4m 2-2/1-5 16	004483110	1		2	1	1		44	0,4	1
EDS4m 2-2/1-5 32	004483111		1	2	1		1	44	0,4	1



EDS4m 2-2/1-5 16

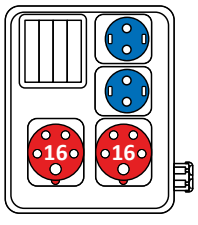


EDS4m 2-2/1-5 32

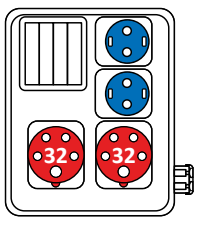
EDS 4 IP44

Type	Code No.	Sockets applied			Circuit breakers			IP degree of protection	kg	
		16A/5P	32A/5P	Schuko 250V	C16/1	C16/3	C32/3			
EDS4 2-2/2-5 16	004483100	2		2	1	1		44	0,5	1
EDS4 2-2/2-5 32	004483101		2	2	1		1	44	0,5	1
EDS4 2-2/2-5 16/32	004483102	1	1*	2	1	1		44	0,5	1

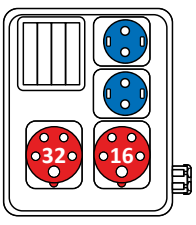
*Socket 32A/5P - protected with 16A MCB!



EDS4 2-2/2-5 16



EDS4 2-2/2-5 32

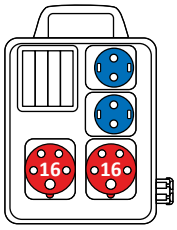


EDS4 2-2/2-5 16/32

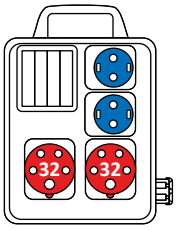
EDS 4 H with handle IP44

Type	Code No.	Sockets applied			Circuit breakers			IP degree of protection	kg	
		16A/5P	32A/5P	Schuko 250V	C16/1	C16/3	C32/3			
EDS4H 2-2/2-5 16	004483120	2		2	1	1		44	0,5	1
EDS4H 2-2/2-5 32	004483121		2	2	1		1	44	0,5	1
EDS4H 2-2/2-5 16/32	004483122	1	1*	2	1	1		44	0,5	1

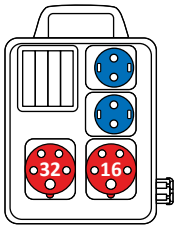
*Socket 32A/5P - protected with 16A MCB!



EDS4H 2-2/2-5 16



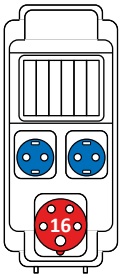
EDS4H 2-2/2-5 32



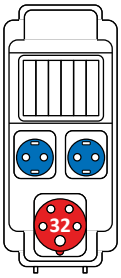
EDS4H 2-2/2-5 16/32

EDS 5 IP54

Type	Code No.	Sockets applied			Circuit breakers			IP degree of protection	kg	
		16A/5P	32A/5P	Schuko 250V	C16/1	C16/3	C32/3			
EDS5 2-2/1-5 16	004483150	1		2	2	1		54	0,7	1
EDS5 2-2/1-5 32	004483151		1	2	2		1	54	0,7	1



EDS5 2-2/1-5 16



EDS5 2-2/1-5 32

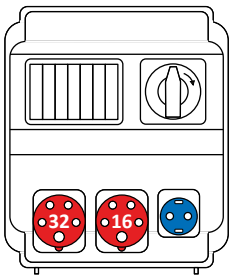
EDS 7 IP54

Type	Code No.	Sockets applied			Circuit breakers			IP degree of protection	kg	
		16A/5P	32A/5P	Schuko 250V	C16/1	C16/3	C32/3			
EDS7 1-2/2-5 16/32	004483200	1	1	1	1	1	1	54	0,9	1

With cam switch

Technical data - cam switches

Current			40A, 50/60Hz
Rated insulation voltage Ui			690V
Rated operational currents Ie	AC-22A	230V	32A
		400V	
	DC-21A	24V	32A
		110V	16A
		220V	12A
Operational power in AC 23	230V		7,5kW
	400V		13kW
Standards			EN60947-3

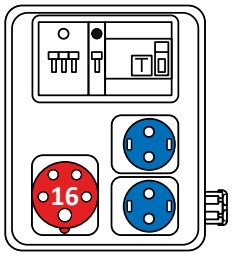


EDS7 1-2/2-5 16/32

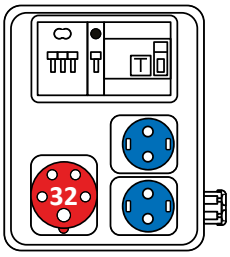
EDS 8 IP44

Type	Code No.	Sockets applied			Circuit breakers			RCD	IP degree of protection	kg	
		16A/5P	32A/5P	Schuko 250V	C16/1	C16/3	C32/3	3 phase			
EDS8 2-2/1-5 16*	004483250	1		2	1	1			44	1	1
EDS8 2-2/1-5 32*	004483251		1	2	1		1		44	1	1
EDS8 6-2/0-5 16*	004483252			6	6				44	1	1
EDS8 RCD 2-2/1-5 16**	004483253	1		2	1	1		1	44	1	1
EDS8 RCD 2-2/1-5 32**	004483254		1	2	1		1	1	44	1	1
EDS8 RCD 3-2/0-0 16**	004483255			6	3			1	44	1	1

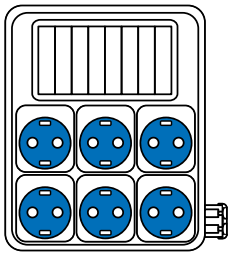
*with switch
**with RCD



EDS8 RCD 2-2/1-5 16



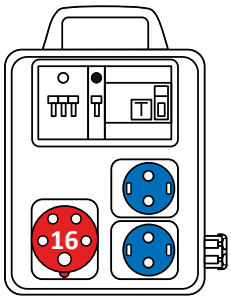
EDS8 RCD 2-2/1-5 32


EDS8 6-2/0-5 16

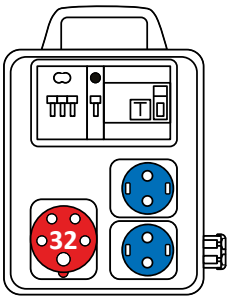
EDS 8H with handle IP44

Type	Code No.	Sockets applied			Circuit breakers			RCD	IP degree of protection	kg	
		16A/5P	32A/5P	Schuko 250V	C16/1	C16/3	C32/3	3 phase			
EDS8H 2-2/1-5 16*	004483280	1		2	1	1			44	1,2	1
EDS8H 2-2/1-5 32*	004483281		1	2	1		1		44	1,2	1
EDS8H 6-2/0-5 16*	004483282			6	6				44	1,2	1
EDS8H RCD 2-2/1-5 16**	004483283	1		2	1	1		1	44	1,2	1
EDS8H RCD 2-2/1-5 32**	004483284		1	2	1		1	1	44	1,2	1
EDS8H RCD 6-2/0-5 16**	004483285			6	3			1	44	1,2	1

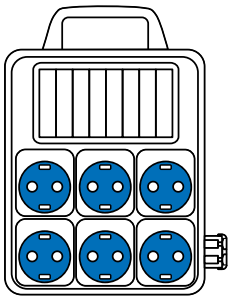
*with switch
**with RCD



EDS8H RCD 2-2/1-5 16



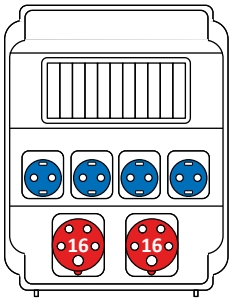
EDS8H RCD 2-2/1-5 32


EDS8H 6-2/0-5 16

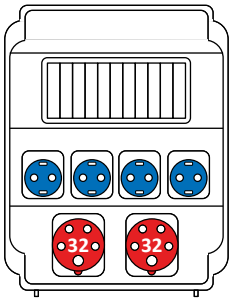
EDS 11 IP54

Type	Code No.	Sockets applied			Circuit breakers			RCD	IP degree of protection	kg	
		16A/5P	32A/5P	Schuko 250V	C16/1	C16/3	C32/3	3 phase			
EDS11 4-2/2-5 16*	004483300	2		4	4	2			54	2	1
EDS11 4-2/2-5 32*	004483301		2	4	4		2		54	2	1
EDS11 4-2/2-5 16/32*	004483302	1	1	4	4	1	1		54	2	1
EDS11 0-2/4-5 16*	004483303	4				3			54	2	1
EDS11 0-2/4-5 32*	004483304		4				3		54	2	1
EDS11 0-2/4-5 16/32*	004483305	2	2			1	2		54	2	1
EDS11 2-2/3-5 16/32	004483306	2	1	2	2	2	1		54	2	1
EDS11 2-2/3-5 32/16	004483307	1	2	2	2	1	2		54	2	1
EDS11 7-2/0-5 16*	004483308			7	7				54	2	1
EDS11 RCD 4-2/2-5 16**	004483309	2		4	4	1		1	54	2	1
EDS11 RCD 4-2/2-5 32**	004483310		2	4	4		1	1	54	2	1
EDS11 RCD 0-2/3-5 16**	004483311	4				2		1	54	2	1
EDS11 RCD 0-2/3-5 32**	004483312		4				2	1	54	2	1
EDS11 RCD 0-2/3-5 16/32**	004483313	2	2			1	1	1	54	2	1
EDS11 RCD 2-2/3-5 16/32 **	004483314	2	1	2	1	1	1	1	54	2	1
EDS11 RCD 2-2/3-5 32/16**	004483315	1	2	2	1	1	1	1	54	2	1
EDS11 RCD 7-2/0-5 16**	004483316			7	7			1	54	2	1

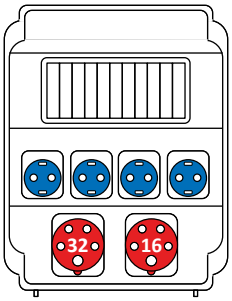
*with switch
**with RCD



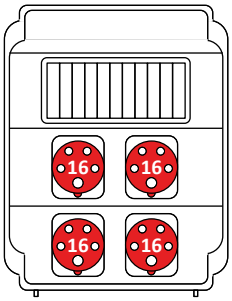
EDS11 4-2/2-5 16



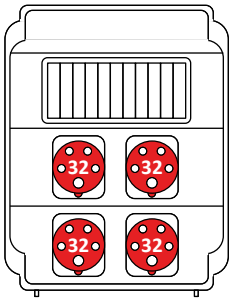
EDS11 4-2/2-5 32



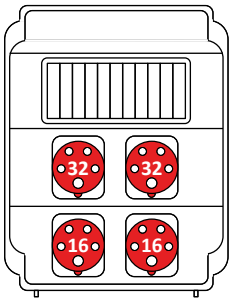
EDS11 4-2/2-5 16/32



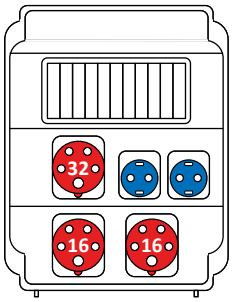
EDS11 0-2/4-5 16



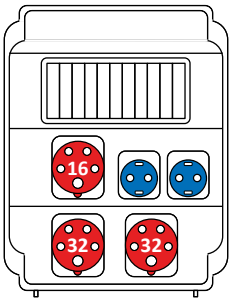
EDS11 0-2/4-5 32



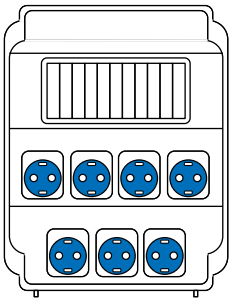
EDS11 0-2/4-5 16/32



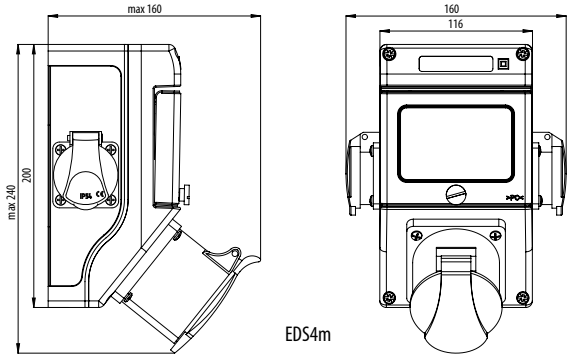
EDS11 2-2/3-5 16/32



EDS11 2-2/3-5 32/16


EDS11 7-2/0-5 16

Dimensions



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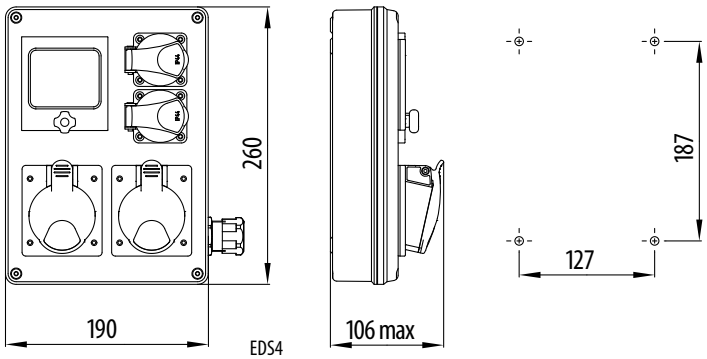

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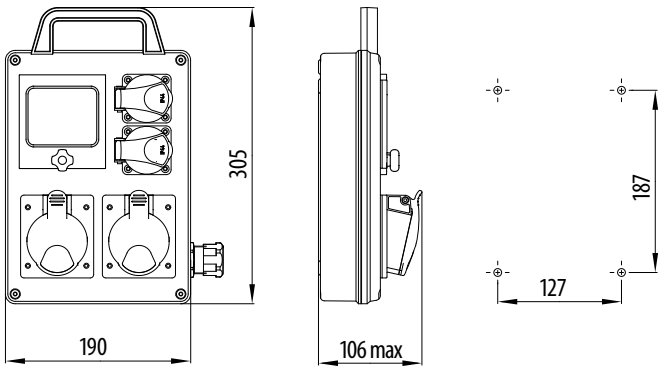

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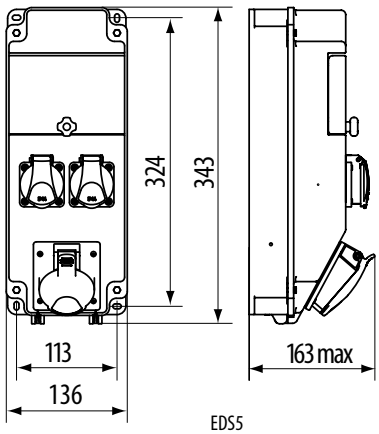

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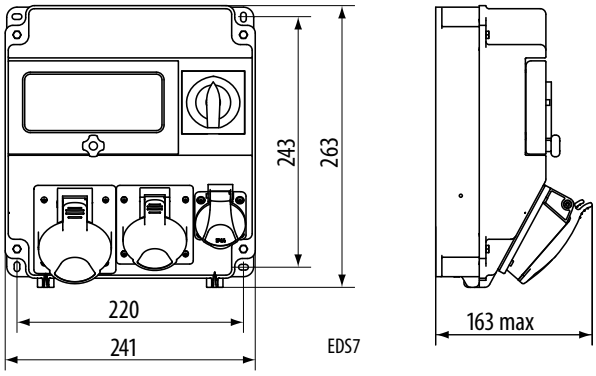

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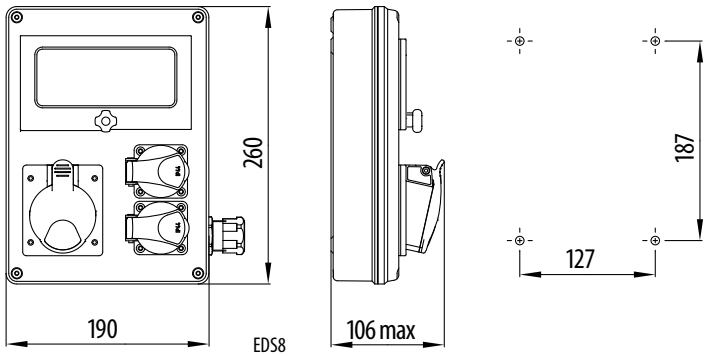

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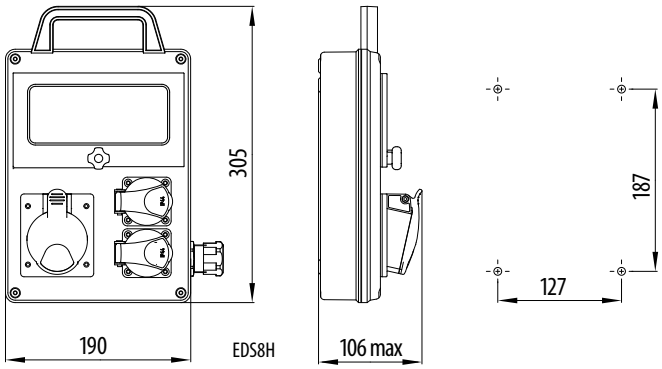
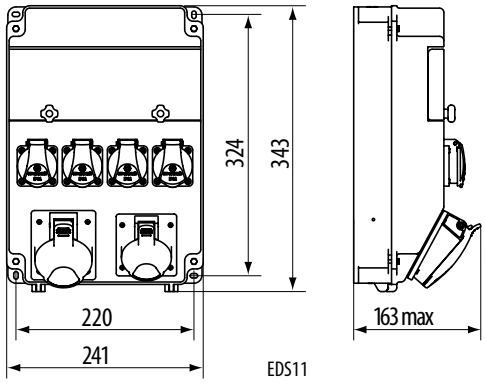


EDS8H



EDS11

ETICEE Industrial Plug-In Equipment

Application - Our industrial plugs and sockets have been designed to connect electrical devices and consumers to low voltage in a broad spectrum of human activities. They are frequently applied in civil engineering,electric assembly sector, engineering industry,chemical and cosmetic industry, pharmaceutical industry and health service, agriculture, food industryand textile industry, as well as in cinemas, theatres,sports facilities, holiday resorts, etc.

Benefits:
- reliable and safe
- ambient temperature -25 °C to +40 °C
- high temperature tolerance up to 125 for "live "parts
- the right colors with the standards

Technical data

Rated voltage Un	230V, 400V
Rated frequency fn	50 - 60Hz
Rated current In	16, 32, 63, 125 A
Ambient temperature	-25°C ... +40°C
Standards	IEC 60309 – 1, 2

IP44 series

Connecting sockets IP44

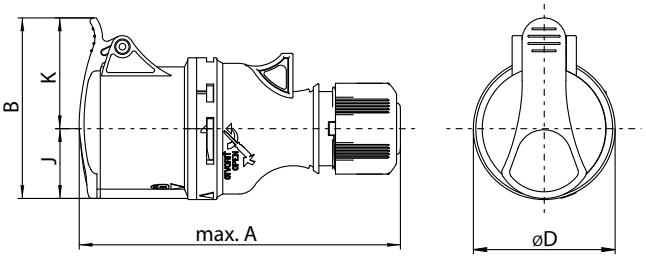
Type	Code No.	Description	kg	
ES 1632	004482000	16A, 230V, 2P+PE	0,17	12
ES 1643	004482001	16A, 400V, 3P+PE	0,18	12
ES 1653	004482002	16A, 400V, 3P+N+PE	0,20	12
ES 3232	004482003	32A, 230V, 2P+PE	0,24	10
ES 3243	004482004	32A, 400V, 3P+PE	0,29	9
ES 3253	004482005	32A, 400V, 3P+N+PE	0,31	9

ES 1643

ES 1632

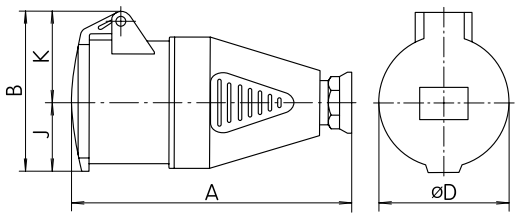
Connecting sockets IP44

Type/(mm)	A	B	øD	J	K
ES1632	145	79	64	29	50
ES 1643	145	81,5	56	31,5	50
ES 1653	145	89	64	35	54
ES 3243	175,5	96	65	38	58
ES 3253	179	103	73	41	62



Connecting sockets IP44

Type/(mm)	A	B	øD	J	K	Pg
ES 3232	165	93	72	42	51	21



Wall sockets IP44

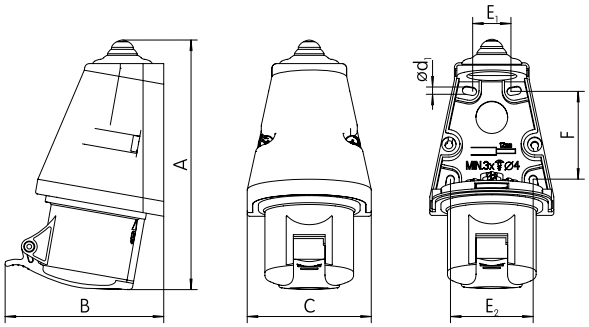
Type	Code No.	Description	kg	
EZ 1632	004482034	16A, 230V, 2P+PE	0,19	9
EZ 1643	004482035	16A, 400V, 3P+PE	0,21	9
EZ 1653	004482036	16A, 400V, 3P+N+PE	0,22	9
EZ 3232	004482037	32A, 230V, 2P+PE	0,26	12
EZ 3243	004482038	32A, 400V, 3P+PE	0,30	6
EZ 3253	004482039	32A, 400V, 3P+N+PE	0,35	6

EZ 1643

EZ 3232

Wall sockets IP44

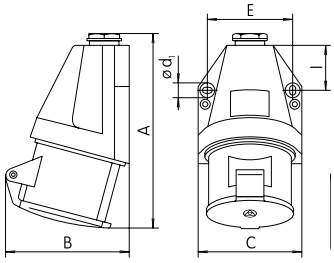
Type/(mm)	A	B	C	ød1	E1	E2	F
EZ 1632	157	90	78	4	30	53	58
EZ 1643	157	99	78	4	30	53	58
EZ 1653	157	104	78	4	30	53	58
EZ 3243	179	118	88	4	35	61	60
EZ 3253	179	121	88	4	35	61	60



Pg

Wall sockets IP44

Type/(mm)	A	B	C	ød1	E	I	Pg	Modification
EZ3232	155	101	82	5,2	67	34	P21	A



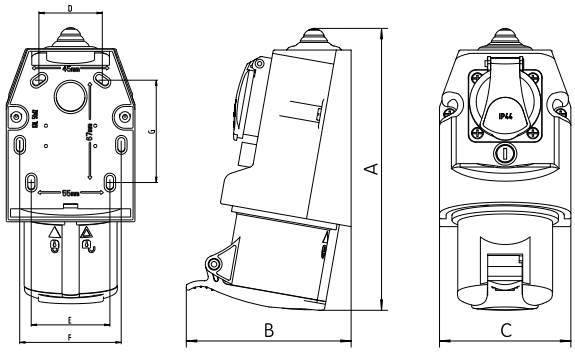
Combinated sockets IP44

Type	Code No.	Description	kg	
EZCZ-S 1643	004482050	16A, 400V/230V, 3P+PE plus EE 16S Schuko IP44	0,34	6
EZCZ-S 1653	004482051	16A, 400V/230V, 3P+N+PE plus EE 16S Schuko IP44	0,36	6
EZCZ-S 3243	004482052	32A, 400V/230V, 3P+PE plus EE 16S Schuko IP44	0,42	4
EZCZ-S 3253	004482053	32A, 400V/230V, 3P+N+PE plus EE 16S Schuko IP44	0,45	4

EZCZ 1653

Combinated sockets IP44

Type/ (mm)	A	B	C	D	E	F	G
EZCZ (EZCZ-S) 16xx	182	113	90	45	55	71	67
EZCZ (EZCZ-S) 32xx	193	118	90	45	55	71	67

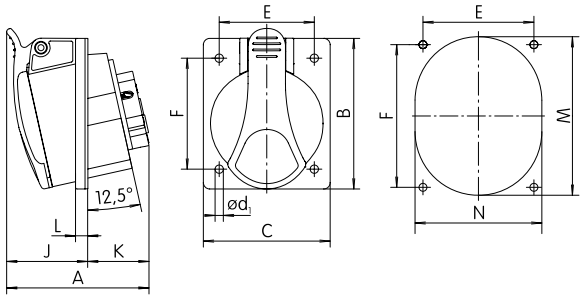


Built-in sockets IP54

Type	Code No.	Description	kg	
EE 1632	004482076	16A, 230V, 2P+PE	0,12	12
EE 1643	004482077	16A, 400V, 3P+PE	0,12	12
EE 1653	004482078	16A, 400V, 3P+N+PE	0,14	12
EE 3232	004482079	32A, 230V, 2P+PE	0,18	12
EE 3243	004482080	32A, 400V, 3P+PE	0,19	12
EE 3253	004482081	32A, 400V, 3P+N+PE	0,21	12

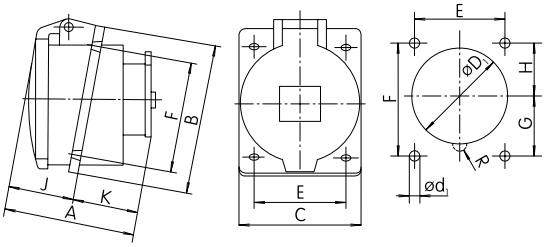
Built-in sockets IP54

Type \ (mm)	A	B	C	ød1	J	E	F	K	L	M	N
EE 1643	73	85	75	5,2	42	60	60	31	7	66	58
EE 1653	75	85	75	5,2	43	60	60	32	7	72	64
EE 3243	90	95	80	5,2	52	60	70	38	8	78	68
EE 3253	92	95	80	5,2	53	60	70	39	8	84	70
EZ 3253	179	121	4	35	4	35	88	4	35	61	60



Built-in sockets IP54

Type \ (mm)	A	B	C	øD1	ød1	E	F	G	H	J	K
EE 1632	61	85	75	56	5,5	60	60	30	30	32	29
EE 3232	84	95	80	68	5,5	60	70	38	32	42	42

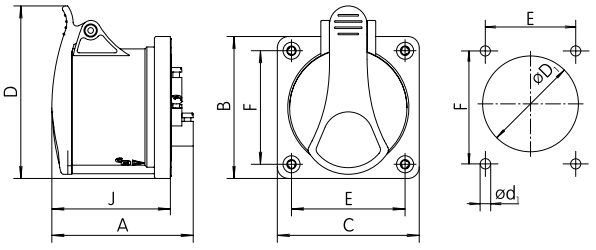


Built-in sockets IP54, STRAIGHT

Type	Code No.	Description	kg	
EER 1632	004482128	16A, 230V, 2P+PE	0,13	6
EER 1643	004482092	16A, 400V, 3P+PE	0,15	6
EER 1653	004482093	16A, 400V, 3P+N+PE	0,16	6
EER 3243	004482094	32A, 400V, 3P+PE	0,21	12
EER 3253	004482095	32A, 400V, 3P+N+PE	0,23	12

Built-in sockets IP54, STRAIGHT

Type\(mm)	A	B	C	øD1	ød1	D	E	F	J
EER 1632	76	75	75	57	4,2	88	60	60	61
EER 1643	76	75	75	57	4,2	88	60	60	61
EER 1653	77	75	75	57	4,2	91	60	60	63
EER 3243	91	75	75	64	4,2	96	60	60	71
EER 3253	93	75	75	64	4,2	103	60	60	75



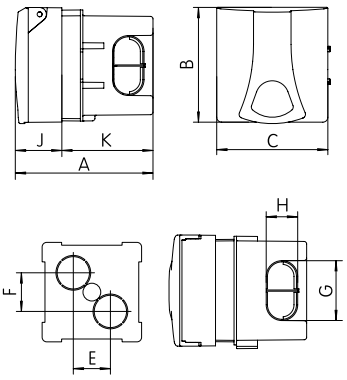
Flush mounted boxes with socket IP44

Type	Code No.	Description	kg	
EZB 16S	004482097	16A, 250V, (Schuko)	0,18	8
EZB 1643	004482098	16A, 400V	0,28	8
EZB 1653	004482099	16A, 400V	0,28	8
EZB 3243	004482100	32A, 400V	0,33	8
EZB 3253	004482101	32A, 400V	0,34	8

EZB 16

Flush mounted boxes with socket IP44

Type \ (mm)	A	B	C	E	F	G	H	J	K
EZB xxxx	115,5	93	90	30	30	48,5	25,5	37,7	73,8



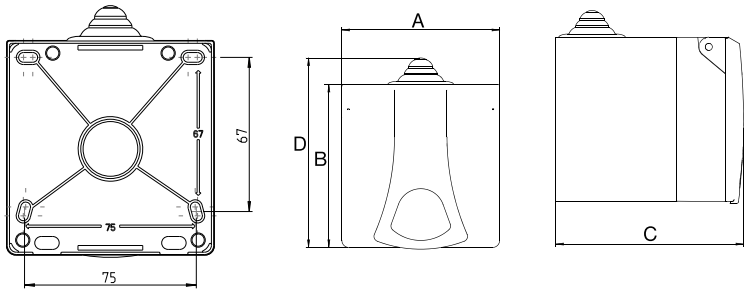
Surface mounted boxes with socket IP44

Type	Code No.	Description	kg	
EZBN 16S	004482103	16A, 250V, (Schuko)	0,221	8
EZBN 1643	004482104	16A, 400V	0,317	8
EZBN 1653	004482105	16A, 400V	0,328	8
EZBN 3243	004482106	32A, 400V	0,37	8
EZBN 3253	004482107	32A, 400V	0,39	8

EZBN 16

Surface mounted boxes with socket IP44

Type \ (mm)	A	B	C	D
EZBN 16S	90	93	106	108
EZBN 1643	90	93	106	108
EZBN 1653	90	93	106	108
EZBN 3243	90	93	106	108
EZBN 3253	90	93	106	108



Plugs IP44

Type	Code No.	Description	kg	
EV 1632	004482016	16A, 230V, 2P+PE	0,128	14
EV 1643	004482017	16A, 400V, 3P+PE	0,145	14
EV 1653	004482018	16A, 400V, 3P+N+PE	0,159	14
EV 3232	004482019	32A, 230V, 2P+PE	0,193	10
EV 3243	004482020	32A, 400V, 3P+PE	0,235	10
EV 3253	004482021	32A, 400V, 3P+N+PE	0,261	10

EV 3253

EV 1632

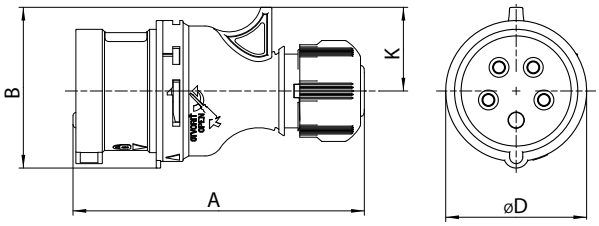
Reversing plugs IP44

Type	Code No.	Description	kg	
EVO 1653	004482022	16A, 400V, 3P+N+PE	0,156	14
EVO 3253	004482023	32A, 400V, 3P+N+PE	0,259	10

EVO 1653

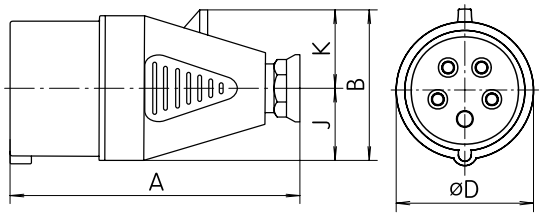
Plugs IP44

Type \ (mm)	A	B	ØD	K
EV 1632	126	64	64	32
EV 1643	132	66	64	34
EV 1653/ EVO 1653	132	73	64	38
EV 3243	162	79	73	41
EV 3253/ EVO 3253	162	86,5	73	45



Plugs IP44

Type \ (mm)	A	B	ØD	J	K	Pg
EV 3232	154	77	72	36	41	P21



Built-in appliance inlets IP44, ANGLED

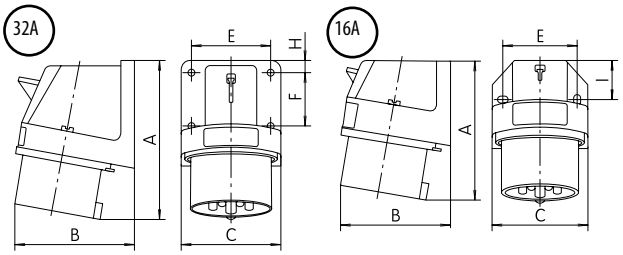
Type	Code No.	Description	kg	
ER 1632	004482129	16A, 230V, 2P+PE	0,122	12
ER 1643	004482130	16A, 400V, 3P+PE	0,144	12
ER 1653	004482131	16A, 400V, 3P+N+PE	0,153	12
ER 3232	004482109	32A, 230V, 2P+PE	0,122	12
ER 3243	004482132	32A, 400V, 3P+PE	0,196	12
ER 3253	004482133	32A, 400V, 3P+N+PE	0,234	12

ER 3253

ER 1632

Built-in appliance inlets IP44, ANGLED

Type \ (mm)	A	B	C	E	F	I
ER 1632	91	68	57,2	45	–	20
ER 164x	97	77	65,2	50	–	27,5
ER 1653	98	79	65,2	50	–	27,5
ER 3232	128	88	72,5	58	40	9
ER 324x	128	88	72.3	58	40	9
ER 3253	129	90	72.3	58	40	9



Built-in appliance inlets IP44, STRAIGHT

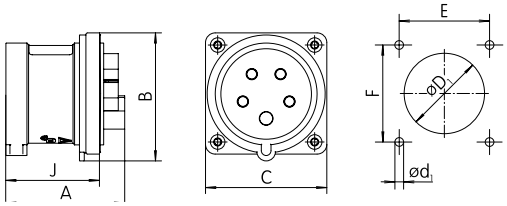
Type	Code No.	Description	kg	
ERR 1632	004482108	16A, 230V, 2P+PE	0,093	6
ERR 1643	004482110	16A, 400V, 3P+PE	0,113	6
ERR 1653	004482111	16A, 400V, 3P+N+PE	0,127	6
ERR 3243	004482112	32A, 400V, 3P+PE	0,156	6
ERR 3253	004482113	32A, 400V, 3P+N+PE	0,179	6
ERRO 1653	004482114	16A, 400V, 3P+N+PE, phase reverse	0,127	6
ERRO 3253	004482115	32A, 400V, 3P+N+PE, phase reverse	0,183	6

ERR 1632

ERR 1643

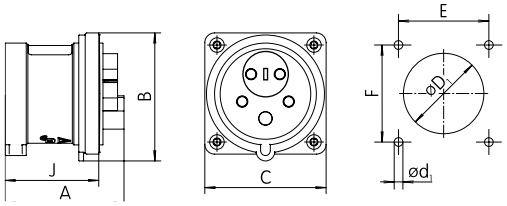
Built-in appliance inlets IP44, STRAIGHT

Type \ (mm)	A	B	C	ød1	øD1	E	F	J
ERR 1632	67	75	75	4,2	57	60	60	48
ERR 1643	66	75	75	4,2	57	60	60	48
ERR 1653	66	75	75	4,2	57	60	60	48
ERR 3243	73	75,3	75	4,2	64	60	60	58
ERR 3253	73	80	75	4,2	64	60	60	58



Built-in appliance inlets IP44, STRAIGHT, phase reverse

Type \ (mm)	A	B	C	ød1	øD1	E	F	J
ERRO 1653	66	75	75	4,2	57	60	60	48
ERRO 3253	73	80	75	4,2	64	60	60	58



Wall plugs IP44

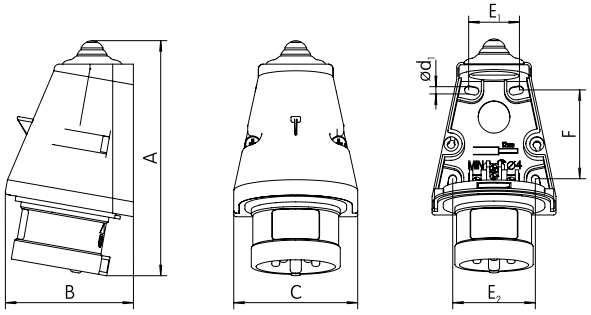
Type	Code No.	Description	kg	
EP 1632	004482058	16A, 230V, 2P+PE	0,156	9
EP 1643	004482059	16A, 400V, 3P+PE	0,17	9
EP 1653	004482060	16A, 400V, 3P+N+PE	0,184	9
EP 3232	004482061	32A, 230V, 2P+PE	0,202	12
EP 3243	004482062	32A, 400V, 3P+PE	0,249	6
EP 3253	004482063	32A, 400V, 3P+N+PE	0,273	6
EPO 1653	004482064	16A, 400V, 3P+N+PE, phase reverse	0,2	9
EPO 3253	004482065	32A, 400V, 3P+N+PE, phase reverse	0,291	6

EP 1643

EPO 1653

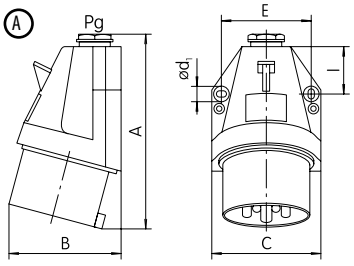
Wall plugs IP44

Type \ (mm)	A	B	C	ød1	E1	E2	F
EP 1632	147	81	78	4	30	53	58
EP 1643	146	81	78	4	30	53	58
EP 1653	146	81	78	4	30	53	58
EP 3243	168	95	88	4	35	61	60
EP 3253	168	95	88	4	35	61	60



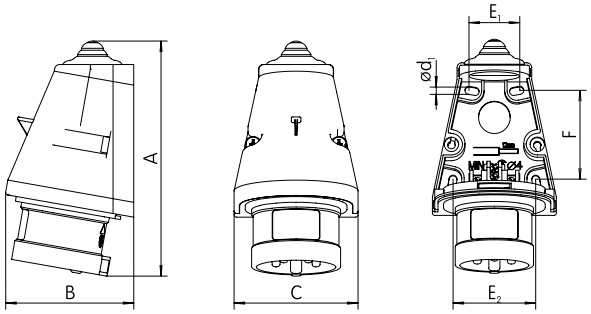
Wall plugs IP44

Type\ (mm)	A	B	C	ød1	E	I	Pg	Modification
EP 3232	147	105	82	5,2	67	34	P21	A



Wall plugs IP44

Type \ (mm)	A	B	C	ød1	E1	E2	F
EPO 1653	146	81	78	4	30	53	58
EPO 3253	168	95	88	4	35	61	60



IP67 series

Connecting sockets IP67

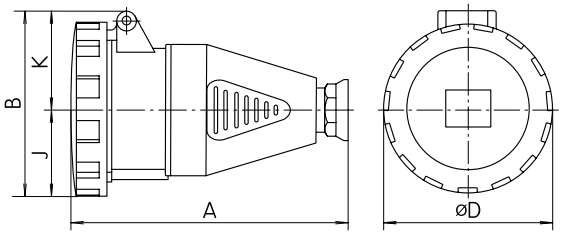
Type	Code No.	Description	kg	
ESH 1632	004482006	16A, 230V, 2P+PE	0,178	10
ESH 1643	004482007	16A, 400V, 3P+PE	0,189	10
ESH 1653	004482008	16A, 400V, 3P+N+PE	0,224	10
ESH 3232	004482009	32A, 230V, 2P+PE	0,298	12
ESH 3243	004482010	32A, 400V, 3P+PE	0,285	12
ESH 3253	004482011	32A, 400V, 3P+N+PE	0,324	12
ESH 6343	004482012	63A, 400V, 3P+PE	0,615	10
ESH 6353	004482013	63A, 400V, 3P+N+PE	0,976	2
ESH 12543	004482014	125A, 400V, 3P+PE	1,16	2
ESH 12553	004482015	125A, 400V, 3P+N+PE	1,25	2

ESH 1643

ESH 12543

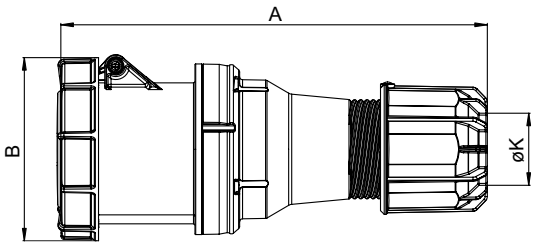
Connecting sockets IP67

Type \ (mm)	A	B	øD	J	K	Pg
ESH 1632	136	78,5	70	35	43,5	16
ESH 1643	142	85,5	78	39	46,5	16
ESH 1653	145	92,5	87	43,5	49	16
ESH 3232	166	101,5	93	46,5	55	21
ESH 3243	166	101,5	93	46,5	55	21
ESH 3253	168	108	100	50	58	21
ESH 6343	224	-	113	196	-	29



Connecting sockets IP67

Type\ (mm)	A	B	øK
ESH 12543	269	114	22,5-50
ESH 12553	269	114	22,5-50



Wall sockets IP67

Type	Code No.	Description	kg	
EZH 1632	004482040	16A, 230V, 2P+PE	0,255	9
EZH 1643	004482041	16A, 400V, 3P+PE	0,273	9
EZH 1653	004482042	16A, 400V, 3P+N+PE	0,321	9
EZH 3232	004482043	32A, 230V, 2P+PE	0,418	12
EZH 3243	004482044	32A, 400V, 3P+PE	0,42	12
EZH 3253	004482045	32A, 400V, 3P+N+PE	0,456	12
EZH 6343	004482046	63A, 400V, 3P+PE	0,802	4
EZH 6353	004482047	63A, 400V, 3P+N+PE	1,178	4
EZH 12543	004482048	125A, 400V, 3P+PE	1,9	1
EZH 12553	004482049	125A, 400V, 3P+N+PE	1,95	1

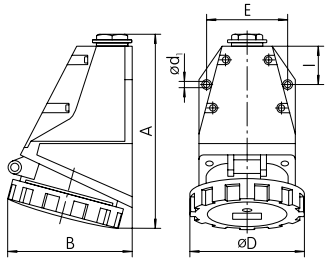
EZH 6353

EZH 1632

EZH 12543

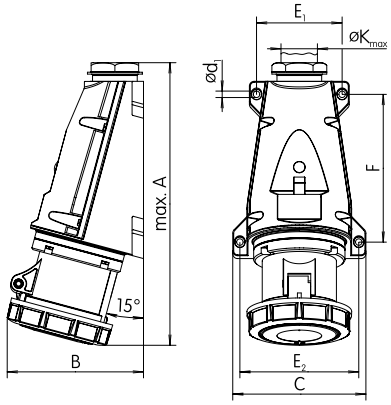
Wall sockets IP67

Type \ (mm)	A	B	D	ød1	E	I	Pg
EZH 1632	146	90	78,5	4,8	65,6	32	P16
EZH 1643	148	92	78,5	4,8	65,6	32	P16
EZH 1653	148	96	87	4,8	65,6	32	P16
EZH 3232	173	111	92,5	5,2	71	35,5	P21
EZH 3243	173	111	92,5	5,2	71	35,5	P21
EZH 3253	175	114	100	5,2	71	35,5	P21
EZH 6343	225	131	132	7	114	90,3	P36



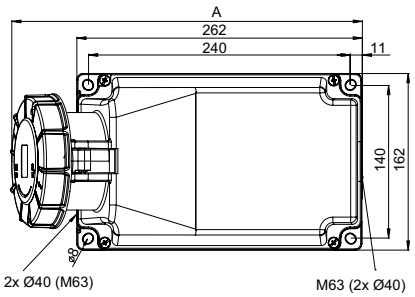
Wall sockets IP67

Type \ (mm)	A	B	C	ød1	E1	E2	F	øK
EZH 6353	300	145	140	6,5	90	125	155	35



Wall sockets IP67

Type \ (mm)	A	B=height
EZH 12543	322	205
EZH12553	322	205



Built-in sockets IP67

Type	Code No.	Description	kg	
EEH 1632	004482082	16A, 230V, 2P+PE	0,134	12
EEH 1643	004482083	16A, 400V, 3P+PE	0,152	12
EEH 1653	004482084	16A, 400V, 3P+N+PE	0,176	12
EEH 3232	004482085	32A, 230V, 2P+PE	0,226	12
EEH 3243	004482086	32A, 400V, 3P+PE	0,232	12
EEH 3253	004482087	32A, 400V, 3P+N+PE	0,268	12
EEH 6343	004482088	63A, 400V, 3P+PE	0,54	8
EEH 6353	004482089	63A, 400V, 3P+N+PE	0,638	8
EEH 12543	004482090	125A, 400V, 3P+PE	0,89	2
EEH 12553	004482091	125A, 400V, 3P+N+PE	0,99	2

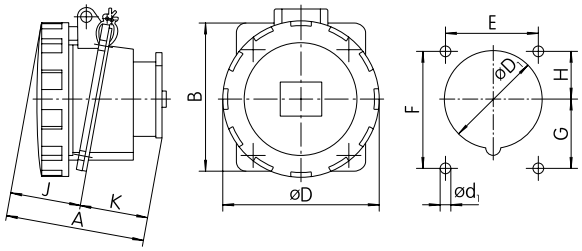
EEH 12553

EEH 6353

EEH 1632

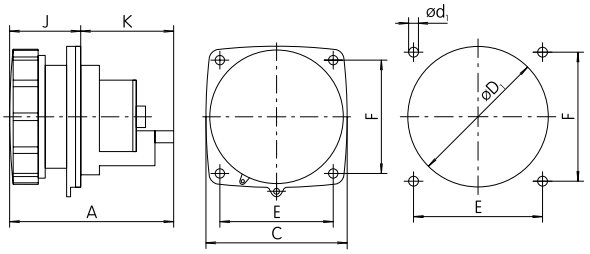
Built-in sockets IP67

Type \ (mm)	A	B	øD	øD1	ød1	E	F	G	H	J	K
EEH 1632	78	85	75	56	5,5	60	60	30	30	39	39
EEH 1643	80	85	78	62	5,5	60	60	31	29	41	39
EEH 1653	81	85	87	65	5,5	60	60	31	29	42	39
EEH 3232	89	95	92,5	68	5,5	60	70	38	32	47	42
EEH 3243	89	95	92,5	68	5,5	60	70	38	32	47	42
EEH 3253	91	95	100	74	5,5	60	70	36	34	49	42



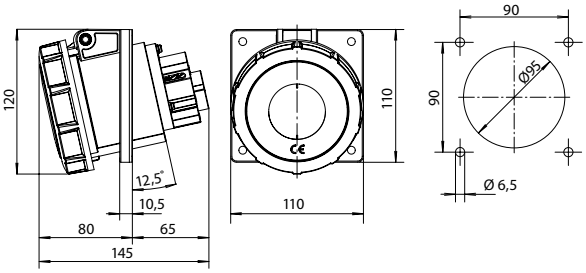
Built-in sockets IP67

Type \ (mm)	A	C	ød1	øD1	E	F	J	K
EEH 634x	131	111	6,8	93	90	90	52	79



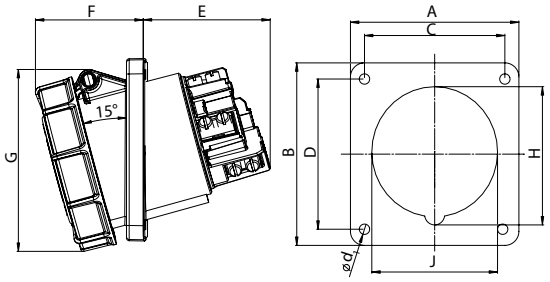
Built-in sockets IP67

Type
EEH 6353



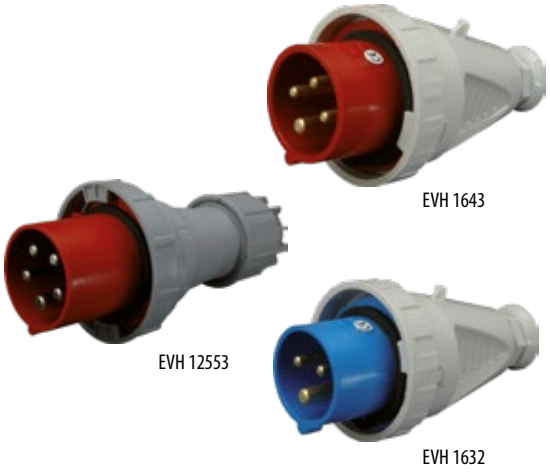
Built-in sockets IP67

Type \ (mm)	A	B	C	D	E	F	G	H	J	ød1
EEH 12543-p	114	114	90	90	92	77	130	102	90	7
EEH 12553-p	114	114	90	90	92	77	130	102	90	7



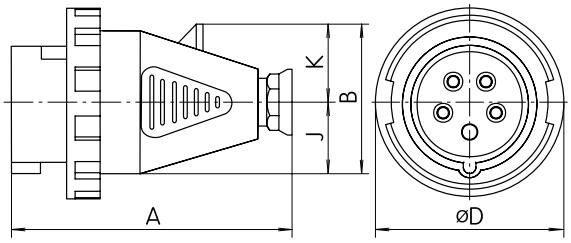
Plugs IP67

Type	Code No.	Description	kg	
EVH 1632	004482024	16A, 230V, 2P+PE	0,129	12
EVH 1643	004482025	16A, 400V, 3P+PE	0,175	12
EVH 1653	004482026	16A, 400V, 3P+N+PE	0,198	12
EVH 3232	004482027	32A, 230V, 2P+PE	0,238	12
EVH 3243	004482028	32A, 400V, 3P+PE	0,243	12
EVH 3253	004482029	32A, 400V, 3P+N+PE	0,275	12
EVH 6343	004482030	63A, 400V, 3P+PE	0,623	8
EVH 6353	004482031	63A, 400V, 3P+N+PE	0,795	2
EVH 12543	004482032	125A, 400V, 3P+PE	1,05	2
EVH 12553	004482033	125A, 400V, 3P+N+PE	1,16	2



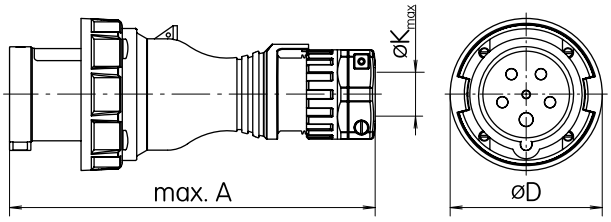
Plugs IP67

Type \ (mm)	A	øD	J	K	Pg
EVH 1632	123	70	28,5	31	P16
EVH 1643	129	78	32,5	35	P16
EVH 1653	129	87	32,5	39	P16
EVH 3232	154	92,5	36	41	P21
EVH 3243	154	92,5	36	41	P21
EVH 3253	154	100	36	46	P21
EVH 6343	224	113	195	-	P29



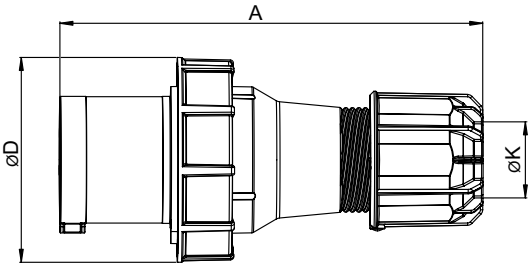
Plugs IP67

Type \ (mm)	A	øD	øK
EVH 6353	265	110	32



Plugs IP67

Type \ (mm)	A	øD	øK
EVH 12543	270	131	22,5-50
EVH 12553	270	131	22,5-50



Wall plugs IP67

Type	Code No.	Description	kg	
EPH 1632	004482066	16A, 230V, 2P+PE	0,16	10
EPH 1643	004482067	16A, 400V, 3P+PE	0,198	10
EPH 1653	004482068	16A, 400V, 3P+N+PE	0,226	6
EPH 3232	004482069	32A, 230V, 2P+PE	0,28	12
EPH 3243	004482070	32A, 400V, 3P+PE	0,274	12
EPH 3253	004482071	32A, 400V, 3P+N+PE	0,307	3
EPH 6343	004482072	63A, 400V, 3P+PE	0,848	8
EPH 6353	004482073	63A, 400V, 3P+N+PE	1,016	4
EPH 12543	004482074	125A, 400V, 3P+PE	1,8	1
EPH 12553	004482075	125A, 400V, 3P+N+PE	1,84	1

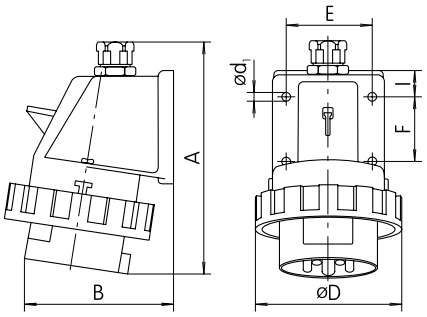
EPH 1653

EPH 6353

EPH 1632

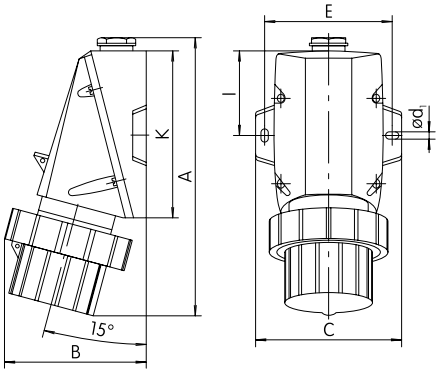
Wall plugs IP67

Type \ (mm)	A	B	ød1	øD	E	F	I	Pg
EPH 1632	140	74	4,8	70	45	30	15	P16
EPH 1643	143	92	5,2	78	50	30	18	P16
EPH 1653	143	98	5,2	87	50	30	18	P16
EPH 3243	165	108	5,2	92,5	58	40	20	P21
EPH 3253	165	113	5,2	100	58	40	20	P21



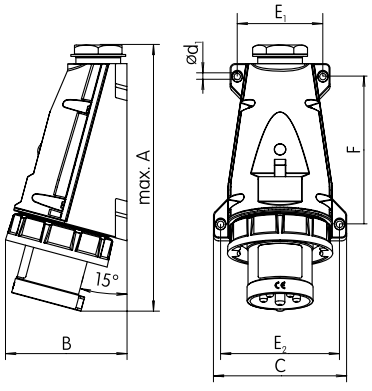
Wall plugs IP67

Type \ (mm)	A	B	C	D1	E	I	K	Pg
EPH 6343	260	122	103	7	91,5	72,2	144,5	P29
EPH 6345	260	122	103	7	91,5	72,2	144,5	P29



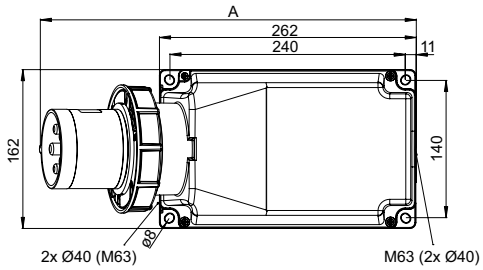
Wall plugs IP67

Type\ (mm)	A	B	C	ød1	E1	E2	F	K
EPH 6353	280	130	140	6,5	90	125	155	35



Wall plugs IP67

Type \ (mm)	A	B=height
EPH 12543	387	209
EPH 12553	387	209



Accessories

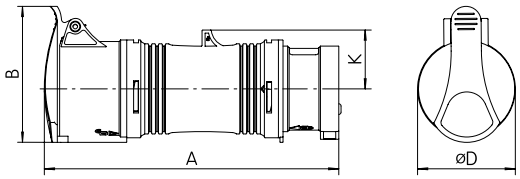
Adapters

Type	Code No.	Description	kg	
EA-1653/43	004482116	5p/4p	0,284	9
EA-3253/43	004482117	5p/4p	0,457	6
EA-1653/43-0	004482118	5p/4p, phase reverse	0,284	9
EA-3253/43-0	004482119	5p/4p, phase reverse	0,47	6
EA 16-32/4	004482120	4p	0,343	8
EA 16-32/5	004482121	5p	0,386	8
EA 16-32/5-0	004482122	16A/32A 5p, phase reverse	0,386	8

EA 16-32/5

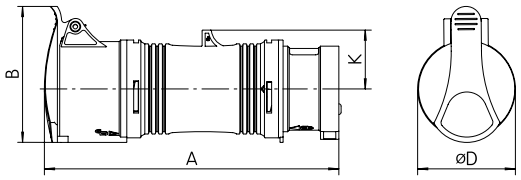
Adapters

Type \ (mm)	A	B	øD	K
EA 1653/43	180	82	64	39
EA 3253/43	235	96	73	45



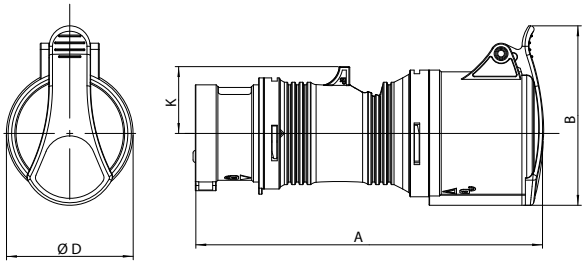
Adapters

Type \(mm)	A	B	ØD	K
EA 1653/43-0	180	82	64	39
EA 3253/43-0	235	96	73	45



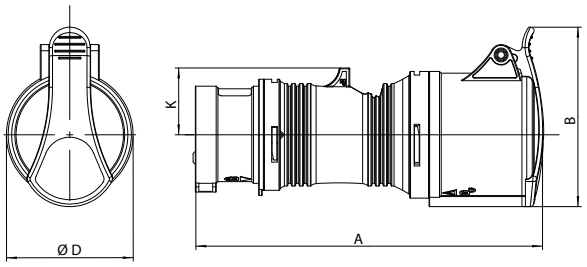
Adapters

Type \(mm)	A	B	ØD	K
EA 16-32/4	198	96	65	34
EA 16-32/5	200	103	73	37



Adapters

Type \(mm)	A	B	ØD	K
EA 16-32/5	200	103	73	37



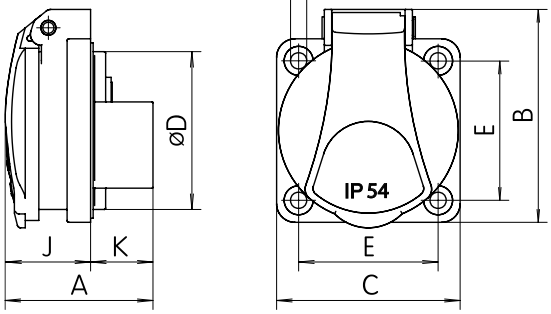
Built-in sockets schuko

Type	Code No.	Description	kg	
EE 16S	004482124	IP54	0,043	12
EEH 16S	004482126	250V/16A IP67	0,079	12

EEH 16S

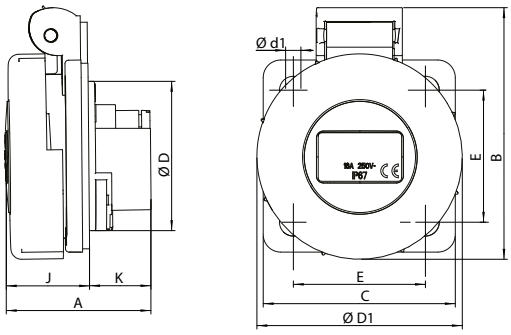
Built-in sockets schuko

Type \(mm)	A	B	C	ØD	Ød1	E	J	K
EE 16 S	43	59,5	50	43	4,5	38	26	17



Built-in sockets schuko

Type \(mm)	A	B	C	ØD	Ød1	E	J	K	ØD1
EEH 16 C	42	73	55	43	4,5	38	24	18	60
EEH 16 S	48	73	55	43	4,5	38	24	24	60



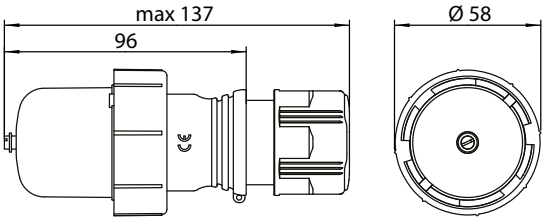
Unischuko plug

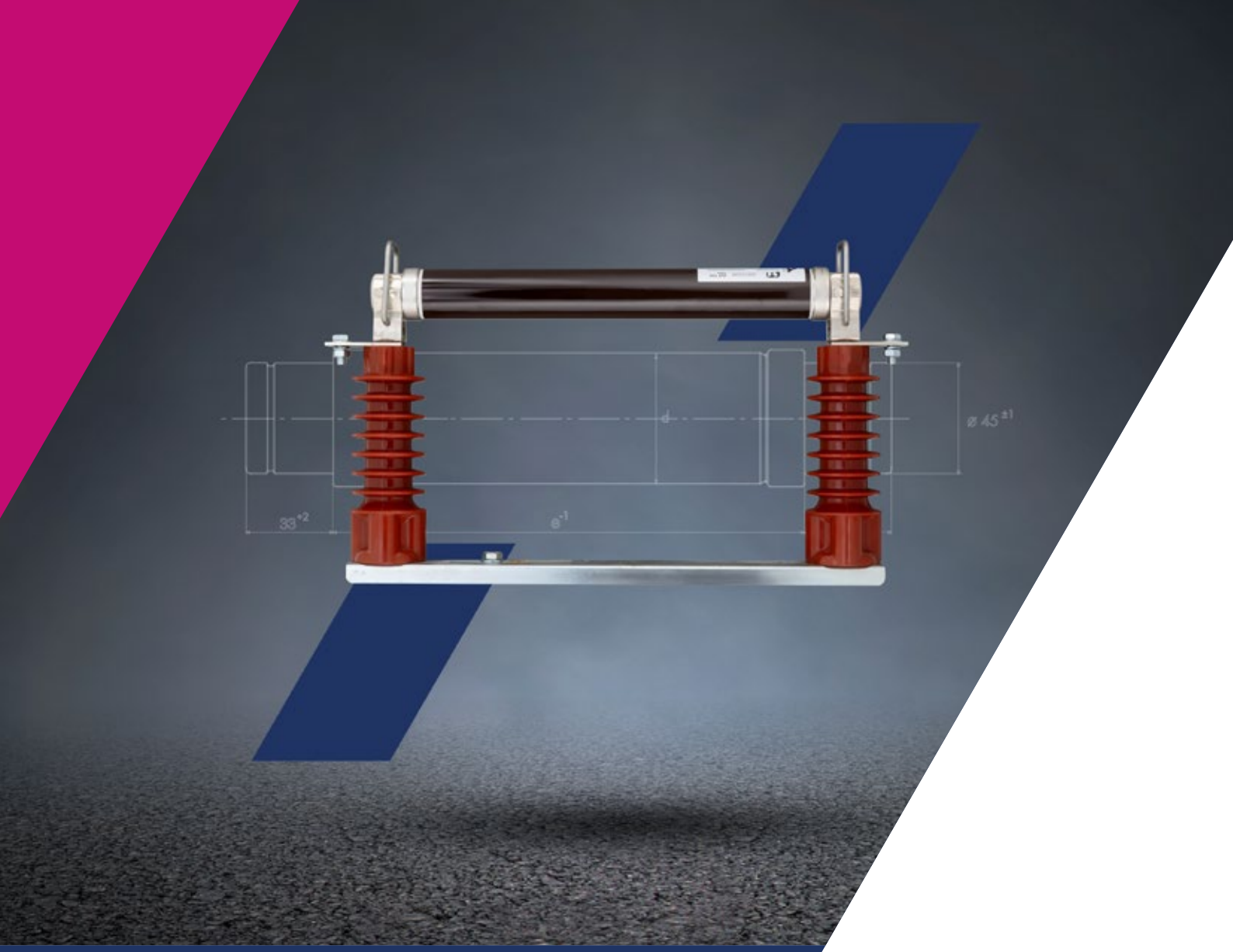
Type	Code No.	Description	kg	
EEVG 16	004482127	IP67	0,12	14

EEVG 16

Unischuko plug IP67

Type
EEVG 16 - Unischuko plug IP67





VV/HH

High Voltage Fuses

High Voltage Fuse-Links **1128**

Fuse Bases **1146**

KEMA Labs

/etigroup

ETI
SWITCH TO
A SAFE FUTURE

VV High Voltage Fuse-Links

High voltage high-breaking capacity fuse-links

General information

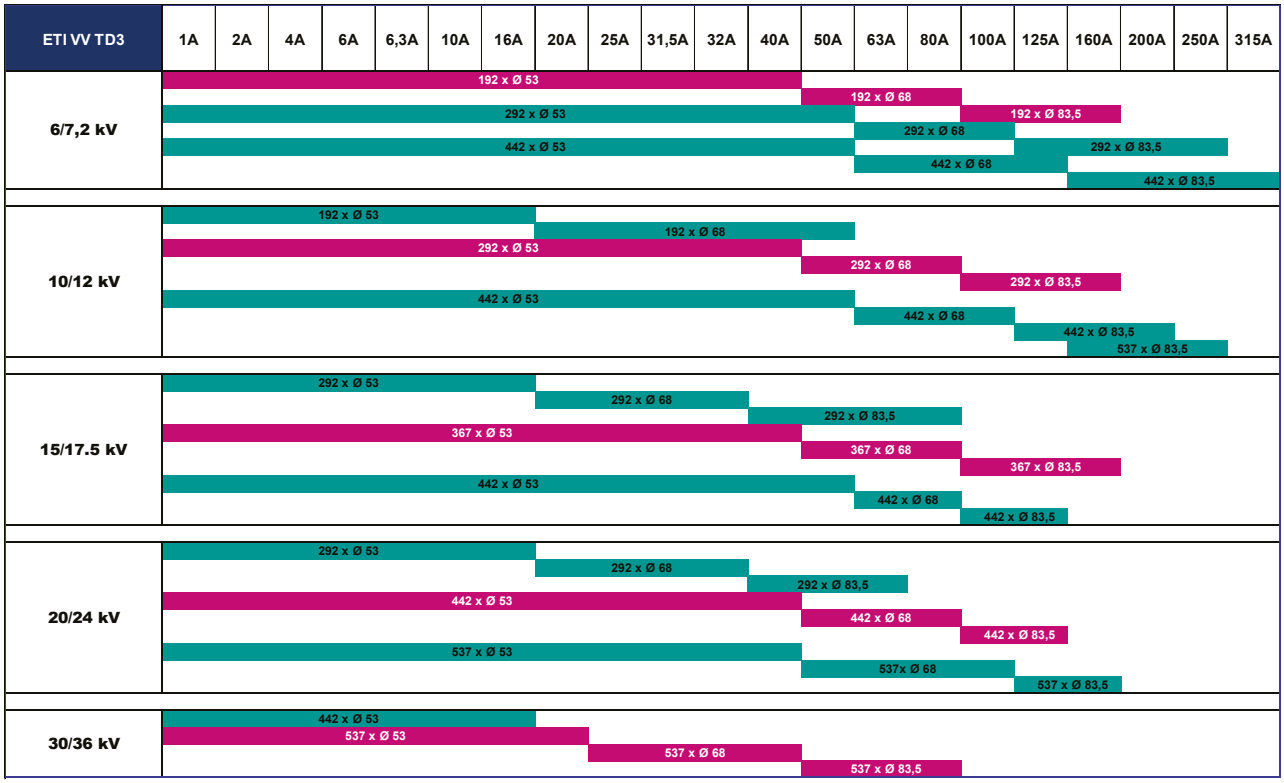
ETI HV (High-voltage Current-limiting fuse-links) named VVT TD3 are designed to protect devices in switch-gears and other equipment (distribution transformers, power capacitors, MV motors) from thermal and dynamic effects of short-circuits and over-currents. Time-current characteristics correspond to standard IEC 60282-1, item 3.3.3. Back-up fuse. They are suitable for installation in:

- indoor and outdoor RMU (Ring-Main Units) switchgear
- SF6 - insulated enclosures
- special service conditions (different from normal conditions, described in item 4.1. of standard IEC 60282-1)

The most significant features of ETI VVT TD3 high-voltage fuses:

- Low temperature rise because of low power dissipation
- Low minimum breaking currents
- High breaking capacity 63 kA (up to 24kV)
- Two types of striker pins: 50N and 80 N (with integrated temperature dependent limiter)
- Reliable sealing system against humidity irruption
- Low switching voltages
- Upon a request, fuse links can be supplied into non-standard dimensions

Overview of standard and non-standard dimensions



* purple: standard dimensions

** green: non-standard dimensions

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- KEMA type test reports
- High endurance ceramic tube
- Low temperature rise because of low power dissipation
- Low minimum breaking currents
- Low switching voltages
- High breaking capacity 63 kA
- Galvanically protected contact caps made of electrolytic copper can be nickel (Ni), tin (Sn) or silver (Ag) plated

- Reliable sealing system against humidity irruption

- Striker system: a temperature sensitive element, which does not react to short time overloads, only to inadmissible values of temperatures. Convenient for the protection of the fuse-links, installed in enclosures or SF6 switchgears
- Rigid striker pin
- Various striker variants (50N, 80N, without striker, thermo, non-thermo...)
- Silver melting element
- Easier mounting because of improved contact cap

Standards

ETI MV/VV High voltage fuse-links comply with the following standards and specifications:

- IEC 60282-1 “Current-limiting fuses”, Edition 8.0 from 2020-04
- DIN 43625 “Hochspannungs-Sicherungen; Nennspannung 3,6 bis 36kV; maβe für Sicherungseinsätze”
- VDE 0670 T402, Wechselstromschaltgeräte für Spannungen über 1kV, "Auswahl von strombegrenzenden Sicherungseinsätzen für Transformatorstromkreise”
- IEC TR 62655 “Tutorial and application guide for high-voltage fuses"
- IEC 60644 “Specification for high-voltage fuse-links for motor circuit applications”
- IEC 60549 “High-voltage fuses for external protection of shunt capacitors”

Certificates, Test reports

- KEMA Type Test Certificates of breaking performance
- Test reports for 25kV, 38.5kV, 40.5kV and 42kV versions

Construction:

ETI High voltage fuse-links are designed to assure stable and reliable technical characteristics. The glazed porcelain tube (made in ETI own ceramic factory) is extremely high mechanical and thermal resistant.
Galvanically protected contact caps made of electrolytic copper are nickel (Ni) or tin (Sn) or upon customer request silver (Ag) plated. Caps are rolled by pressing into the groove of the tube. The tightness of this connection is assured by a special seal resistant to ageing and high temperatures.
The design and method of production of the melting elements ensures precisely tolerances and stable time/current characteristics. Fuse elements are wounded on a ceramic carrier and electrically welded on a special copper strips.
The inside of the tube is filled with quartz sand with an exactly determined granulation and chemical structure. The sand guarantees good and reliable extinguishing of the electric arc.
An important element in the fuse-link construction is also the striker system. Part of that system is temperature sensitive element, which reacts in cases of temperature increasing of the fuse-link due to various reasons. The system reacts in such a way that short time overloads do not cause the fuse to interrupt the circuit unnecessarily. Only when inadmissible values of temperatures are exceeded, the fuse-link open the switch via the striker pin.
Because of these characteristics, ETI “thermal” striker pin is convenient for the protection of the fuse-links, installed in enclosures or SF6 switchgears, which requires additional protection features against inadmissible temperatures.

Striker pin Type description:

- VVA3; without striker
- VVC3; 50N striker force.
- VVT-D3; 80N striker force, with temperature limiter (VVT)

Ordering Code Numbers

rated voltage U_n [kV]	Dimension "e" according to DIN and IEC (mm)	rated current [A]	VVA (without striker pin)	VVC3 Striker type 50N	VVT-D3 Striker type 80N THERMO		Tube diameter "d" (mm)	kg
					Ni plated contacts	Ag plated contacts*		
3/7.2	192	1 A	004221102				53	1.1
		2 A	004221103	004220003	004222003	004222033		
		4 A	004221104	004220004	004222004	004222034		
		6 A	004221105	004220005	004222005	004222035		
		6,3 A	004221106	004220006	004222006	004222036		
		10 A	004221107	004220007	004222007	004222037		
		16 A	004221108	004220008	004222008	004222038		
		20 A	004221109	004220009	004222009	004222039		
		25 A	004221110	004220010	004222010	004222040		
		31,5 A	004221111	004220011	004222011	004222041		
		32 A	004221112	004220012	004222012	004222042		
		40 A	004221113	004220013	004222013	004222043		
		50A	004221114	004220014	004222014	004222044	68	1.7
		63 A	004221115	004220015	004222015	004222045		
		80 A	004221116	004220016	004222016	004222046		
		100 A	004221117	004220017	004222017	004222047	83,5	2.7
		125 A	004221118	004220018	004222018	004222048		
		160 A	004221119	004220019	004222019	004222049		
	292	2 A		004220503	004222503		53	1.6
		4 A		004220504	004222504			
		6 A		004220505	004222505			
		6,3 A		004220506	004222506			
		10 A		004220507	004222507			
		16 A		004220508	004222508			
		20 A		004220509	004222509			
		25 A		004220510	004222510			
		31,5 A		004220511	004222511			
		32 A		004220512	004222512			
		40 A		004220513	004222513			
		50 A		004220514	004222514			
		63 A		004220515	004222515		68	2.8
		80 A		004220516	004222516			
		100 A		004220517	004222517			
		125 A		004220518	004222518		83,5	4.0
		160 A		004220519	004222519			
		200 A		004220520	004222520			
		250 A		004220521	004222521			
	442	2 A		004220603	004222603		68	3.9
		4 A		004220604	004222604			
		6 A		004220605	004222605			
		6,3 A		004220606	004222606			
		10 A		004220607	004222607			
		16 A		004220608	004222608			
		20 A		004220609	004222609			
		25 A		004220610	004222610			
		31,5 A		004220611	004222611			
		32 A		004220612	004222612			
		40 A		004220613	004222613			
		50 A		004220614	004222614			
		63 A		004220615	004222615			
		80 A		004220616	004222616			
		100 A		004220617	004222617			
		125 A		004220618	004222618			
		160 A		004220619	004222619		83,5	5.8
		200 A		004220620	004222620			
		250 A		004220621	004222621			
		315 A		004220622	004222622			

Note 1: Other ratings and dimensions can be supplied by customer request. For particular applications, please contact ETI technical team.
Note 2: Orange colored types according to IEC 60282-1 dimensions.
* Other dimensions available upon request

Technical data

Rated voltage [kV]	Dimension "e" according to DIN and IEC [mm]	Rated current I_n [A]	Striker type	Rated breaking capacity [kA]	Rated minimum breaking current [A]	Cold resistance [mΩ]	Power dissipation [W]	Pre-arcing I^2t value [A^2s]	Total I^2t value [A^2s]
3/7.2	192	1	C, D	63	12	1170	3		
		2			12	580	4	6,1	57
		4			20	370	9	17,3	164
		6			25	260	10	36	340
		6,3			25	260	10	36	340
		10			43	75	9	165	1.450
		16			56	44	14	320	5.200
		20			70	27	12,5	450	7.000
		25			87	21	16	700	10.000
		31,5			110	18	23,5	1.400	15.000
		32			110	18	25	1.400	15.000
		40			140	13	28,5	3.200	27.000
		50			175	10,5	35,5	5.800	44.000
		63			220	7,5	42,5	12.000	70.000
		80			280	5,9	59	19.000	140.000
		100			360	4,8	73	35.000	202.000
		125			450	3,9	101	55.000	300.000
		160			600	3	144	94.000	580.000
	292	2	C, D	63	12	580	4	6,1	57
		4			20	370	9	17,3	164
		6			25	260	10	36	340
		6,3			25	260	10	36	340
		10			43	75	9	165	1.450
		16			56	44	14	320	5.200
		20			70	27	12,5	450	7.000
		25			87	21	16	700	10.000
		31,5			110	18	23,5	1.400	15.000
		32			110	18	25	1.400	15.000
		40			140	13	28,5	3.200	27.000
		50			175	10,5	35,5	5.800	44.000
		63			220	7,5	42,5	12.000	70.000
		80			280	5,9	59	19.000	140.000
		100			360	4,8	73	35.000	202.000
		125			450	3,9	101	55.000	300.000
		160			600	3	144	94.000	580.000
		200			1000	2,1	155	151.780	789.270
		250			1250	1,7	196	228.610	1.188.800
	442	2	C, D	63	12	840	4,7	6,1	57
		4			20	530	11,7	17,3	164
		6			25	270	13,4	36	340
		6,3			25	270	13,4	36	340
		10			43	90	11	165	1.450
		16			56	53	16	320	5.200
		20			70	32	15	450	7.000
		25			87	25	19	700	10.000
		31,5			110	21,5	28	1.400	15.000
		32			110	21,5	30	1.400	15.000
		40			140	15,5	34	3.200	27.000
		50			175	12,6	43	5.800	44.000
		63			220	9	51	12.000	70.000
		80			280	7,1	71	19.000	140.000
		100			360	5,8	88	35.000	202.000
		125			450	4,7	121	55.000	300.000
		160			600	3,6	173	94.000	580.000
		200			1000	2,65	195	151.780	789.270
		250			1250	2,2	253	228.610	1.188.800
		315			1575	1,75	320	368.640	1.916.930

Ordering Code Numbers

rated voltage U_n [kV]	Dimension "e" according to DIN and IEC (mm)	rated current [A]	VVA (without striker pin)	VVC3 Striker type 50N	VVT-D3 Striker type 80N THERMO		Tube diameter "d" (mm)	kg
					Ni plated contacts	Ag plated contacts*		
6/12	192	2 A		004230103	004232103		53	1.1
		4 A		004230104	004232104			
		6 A		004230105	004232105			
		6,3 A		004230106	004232106			
		10 A		004230107	004232107			
		16 A		004230108	004232108			
		20 A		004230109	004232109		68	1.7
		25 A		004230110	004232110			
		31,5 A		004230111	004232111			
		32 A		004230112	004232112			
		40 A		004230113	004232113			
		50 A		004230114	004232114			
	292	1 A	004231102				53	1.6
		2 A	004231103	004230003	004232003	004232033		
		4 A	004231104	004230004	004232004	004232034		
		6 A	004231105	004230005	004232005	004232035		
		6,3 A	004231106	004230006	004232006	004232036		
		10 A	004231107	004230007	004232007	004232037		
		16 A	004231108	004230008	004232008	004232038		
		20 A	004231109	004230009	004232009	004232039		
		25 A	004231110	004230010	004232010	004232040		
		31,5 A	004231111	004230011	004232011	004232041		
		32 A	004231112	004230012	004232012	004232042		
		40 A	004231113	004230013	004232013	004232043		
		50 A	004231114	004230014	004232014	004232044	68	2.8
		63 A	004231115	004230015	004232015	004232045		
		80 A	004231116	004230016	004232016	004232046		
		100 A	004231117	004230017	004232017	004232047	83,5	4.0
		125 A	004231118	004230018	004232018	004232048		
		160 A	004231119	004230019	004232019	004232049		
	442	2 A		004230503	004232503		53	2.3
		4 A		004230504	004232504			
		6 A		004230505	004232505			
		6,3 A		004230506	004232506			
		10 A		004230507	004232507			
		16 A		004230508	004232508			
		20 A		004230509	004232509			
		25 A		004230510	004232510			
		31,5 A		004230511	004232511			
		32 A		004230512	004232512			
		40 A		004230513	004232513			
		50 A		004230514	004232514			
		63 A		004230515	004232515		68	3.9
		80 A		004230516	004232516			
		100 A		004230517	004232517			
		125 A		004230518	004232518		83,5	5.8
		160 A		004230519	004232519			
		200 A		004230520	004232520			
	537	160 A		004230619	004232619		83,5	7.0
		200 A		004230620	004232620			
		250 A		004230621	004232621			

Note 1: Other ratings and dimensions can be supplied by customer request. For particular applications, please contact ETI technical team.
Note 2: Orange colored types according to IEC 60282-1 dimensions.
* Other dimensions available upon request

Technical data

Rated voltage [kV]	Dimension "e" according to DIN and IEC [mm]	Rated current I_n [A]	Striker type	Rated breaking capacity [kA]	Rated minimum breaking current [A]	Cold resistance [mΩ]	Power dissipation [W]	Pre-arcing I^2t value [A^2s]	Total I^2t value [A^2s]
6/12	192	2	C, D	50	12	980	6	6,1	57
		4			20	650	15	17,3	164
		6			27	435	21	36	340
		6,3			27	435	21	36	340
		10			42	130	15	165	1.450
		16			64	70	24	320	5.200
		20			80	44	21	450	7.000
		25			100	33	28	700	10.000
		31,5			126	29	40	1.400	15.000
		32			126	29	43	1.400	15.000
		40			160	21	48	3.200	27.000
		50			200	16,5	58	5.800	44.000
	292	1	C, D	63	12	1970	5		
		2			12	980	6	6,1	57
		4			20	650	15	17,3	164
		6			25	435	21	36	340
		6,3			25	435	21	36	340
		10			43	130	15	165	1.450
		16			56	70	24	320	5.200
		20			70	44	21	450	7.000
		25			87	33	28	700	10.000
		31,5			110	29	40	1.400	15.000
		32			110	29	43	1.400	15.000
		40			140	21	48	3.200	27.000
		50			175	16,5	58	5.800	44.000
		63			220	12	74	12.000	70.000
		80			280	9	96	19.000	140.000
		100			360	6,7	105	35.000	202.000
		125			450	5,2	138	55.000	300.000
		160			600	4,1	190	94.000	580.000
	442	2	C, D	63	12	980	6	6,1	57
		4			20	650	15	17,3	164
		6			25	435	21	36	340
		6,3			25	435	21	36	340
		10			43	130	15	165	1.450
		16			56	70	24	320	5.200
		20			70	44	21	450	7.000
		25			87	33	28	700	10.000
		31,5			110	29	40	1.400	15.000
		32			110	29	43	1.400	15.000
		40			140	21,5	48	3.200	27.000
		50			175	16,5	58	5.800	44.000
		63			220	12	74	12.000	70.000
		80			280	9	96	19.000	140.000
		100			360	6,7	105	35.000	202.000
		125			450	5,2	138	55.000	300.000
		160			600	4,1	190	94.000	580.000
		200			1000	3,3	238	151.780	789.270
	537	160	C, D	63	600	4,1	179	94.000	580.000
		200			1000	3,3	238	151.780	789.270
		250			1250	2,65	305	228.610	1.188.800

Ordering Code Numbers

rated voltage U_n [kV]	Dimension "e" according to DIN and IEC (mm)	rated current [A]	VVA (without striker pin)	VVC3 Striker type 50N	VVT-D3 Striker type 80N THERMO Ni plated contacts	VVT-D3 Striker type 80N THERMO Ag plated contacts*	Tube diameter "d" (mm)	kg
10/17,5	292	2 A		004240103	004242103		53	1.6
		4 A		004240104	004242104			
		6 A		004240105	004242105			
		6,3 A		004240106	004242106			
		10 A		004240107	004242107			
		16 A		004240108	004242108			
		20 A		004240109	004242109		68	2.8
		25 A		004240110	004242110			
		31,5 A		004240111	004242111			
		32 A		004240112	004242112			
		40 A		004240113	004242113		83,5	4.0
		50A		004240114	004242114			
		63 A		004240115	004242115			
		80 A		004240116	004242116			
		100 A		004240117	004242117			
	367	1 A	004241102				53	1.9
		2 A	004241103	004240003	004242003	004242033		
		4 A	004241104	004240004	004242004	004242034		
		6 A	004241105	004240005	004242005	004242035		
		6,3 A	004241106	004240006	004242006	004242036		
		10 A	004241107	004240007	004242007	004242037		
		16 A	004241108	004240008	004242008	004242038		
		20 A	004241109	004240009	004242009	004242039		
		25 A	004241110	004240010	004242010	004242040		
		31,5 A	004241111	004240011	004242011	004242041		
		32 A	004241112	004240012	004242012	004242042		
		40 A	004241113	004240013	004242013	004242043		
		50 A	004241114	004240014	004242014	004242044	68	3.1
		63 A	004241115	004240015	004242015	004242045		
		80A	004241116	004240016	004242016	004242046		
		100 A	004241117	004240017	004242017	004242047	83,5	4.6
		125A	004241118	004240018	004242018	004242048		
		160 A	004241119	004240019	004242019	004242049		
	442	2 A		004240503	004242503		53	2.3
		4 A		004240504	004242504			
		6 A		004240505	004242505			
		6,3 A		004240506	004242506			
		10 A		004240507	004242507			
		16 A		004240508	004242508			
		20 A		004240509	004242509			
		25 A		004240510	004242510			
		31,5 A		004240511	004242511			
		32 A		004240512	004242512			
		40 A		004240513	004242513			
		50 A		004240514	004242514			
		63 A		004240515	004242515		68	3.9
		80A		004240516	004242516			
		100 A		004240517	004242517		83,5	5.8
		125 A		004240518	004242518			

Note 1: Other ratings and dimensions can be supplied by customer request. For particular applications, please contact ETI technical team.
Note 2: Orange colored types according to IEC 60282-1 dimensions.
* Other dimensions available upon request

WATCH THE VIDEO

How to select the suitable HV fuse-links using the FuseSpline tool

Technical data

Rated voltage [kV]	Dimension "e" according to DIN and IEC [mm]	Rated current I_n [A]	Striker type	Rated breaking capacity [kA]	Rated minimum breaking current [A]	Cold resistance [mΩ]	Power dissipation [W]	Pre-arcing I^2t value $[A^2s]$	Total I^2t value $[A^2s]$
10/17.5	292	2	C, D	50	12	1400	8	6,1	57
		4			20	900	17	17,3	164
		6			27	670	35	36	340
		6,3			27	670	35	36	340
		10			42	160	20	165	1.450
		16			64	95	31	320	5.200
		20			80	58	29	450	7.000
		25			100	45	36	700	10.000
		31,5			126	38	51	1.400	15.000
		32			126	38	53	1.400	15.000
		40			160	28	64	3.200	27.000
		50			200	21,5	75	5.800	44.000
		63			252	16,5	100	12.000	70.000
		80			320	12,5	130	19.000	140.000
		100			400	9	150	35.000	202.000
	367	1	C, D	63	12	2800	6		
		2			12	1400	8	6,1	57
		4			20	900	17	17,3	164
		6			25	670	35	36	340
		6,3			25	670	35	36	340
		10			42	160	20	165	1.450
		16			56	95	31	320	5.200
		20			70	58	29	450	7.000
		25			87	45	36	700	10.000
		31,5			110	38	51	1.400	15.000
		32			110	38	53	1.400	15.000
		40			140	28	64	3.200	27.000
		50			175	21,5	75	5.800	44.000
		63			220	16,5	100	12.000	70.000
		80			280	12,5	130	19.000	140.000
		100			360	9	150	35.000	202.000
		125			450	7,5	210	55.000	300.000
		160			600	5,6	290	94.000	580.000
	442	2	C, D	63	12	1400	8	6,1	57
		4			20	900	17	17,3	164
		6			25	670	35	36	340
		6,3			25	670	35	36	340
		10			42	160	20	165	1.450
		16			56	95	31	320	5.200
		20			70	58	29	450	7.000
		25			87	45	36	700	10.000
		31,5			110	38	51	1.400	15.000
		32			110	38	53	1.400	15.000
		40			140	28	64	3.200	27.000
		50			175	21,5	75	5.800	44.000
		63			220	16,5	100	12.000	70.000
		80			280	12,5	130	19.000	140.000
		100			360	9	150	35.000	202.000
		125			450	7,5	210	55.000	300.000
		160			600	5,6	290	94.000	580.000

Ordering Code Numbers

rated voltage U_n [kV]	Dimension "e" according to DIN and IEC (mm)	rated current [A]	VVA (without striker pin)	VVC3 Striker type 50N	VVT-D3 Striker type 80N THERMO		Tube diameter "d" (mm)	kg
					Ni plated contacts	Ag plated contacts*		
10/24	292	2 A		004250103	004252103		53	1.6
		4 A		004250104	004252104			
		6 A		004250105	004252105			
		6,3 A		004250106	004252106			
		10 A		004250107	004252107			
		16 A		004250108	004252108			
		20 A		004250109	004252109		68	2.8
		25 A		004250110	004252110			
		31,5 A		004250111	004252111			
		32 A		004250112	004252112			
		40 A		004250113	004252113		83,5	4.0
		50A		004250114	004252114			
		63 A		004250115	004252115			
	442	1 A	004251102				53	2.3
		2 A	004251103	004250003	004252003	004252033		
		4 A	004251104	004250004	004252004	004252034		
		6 A	004251105	004250005	004252005	004252035		
		6,3 A	004251106	004250006	004252006	004252036		
		10 A	004251107	004250007	004252007	004252037		
		16 A	004251108	004250008	004252008	004252038		
		20 A	004251109	004250009	004252009	004252039		
		25 A	004251110	004250010	004252010	004252040		
		31,5 A	004251111	004250011	004252011	004252041		
		32 A	004251112	004250012	004252012	004252042		
		40 A	004251113	004250013	004252013	004252043		
		50 A	004251114	004250014	004252014	004252044	68	3.9
		63 A	004251115	004250015	004252015	004252045		
		80A	004251116	004250016	004252016	004252046		
		100 A	004251117	004250017	004252017	004252047	83,5	5.8
		125A	004251118	004250018	004252018	004252048		
	537	2 A		004250503	004252503		53	2.8
		4 A		004250504	004252504			
		6 A		004250505	004252505			
		6,3 A		004250506	004252506			
		10 A		004250507	004252507			
		16 A		004250508	004252508			
		20 A		004250509	004252509			
		25 A		004250510	004252510			
		31,5 A		004250511	004252511			
		32 A		004250512	004252512			
		40 A		004250513	004252513			
		50 A		004250514	004252514		68	4.7
		63 A		004250515	004252515			
		80A		004250516	004252516			
		100 A		004250517	004252517			
		125 A		004250518	004252518		83,5	7.0
		160 A		004250519	004252519			

Note 1: Other ratings and dimensions can be supplied by customer request. For particular applications, please contact ETI technical team.
Note 2: Orange colored types according to IEC 60282-1 dimensions.
* Other dimensions available upon request

Technical data

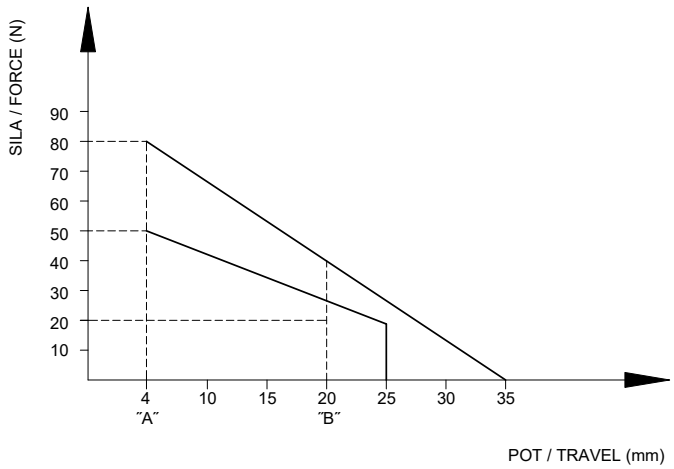
Rated voltage [kV]	Dimension "e" according to DIN and IEC [mm]	Rated current I_n [A]	Striker type	Rated breaking capacity [kA]	Rated minimum breaking current [A]	Cold resistance [mΩ]	Power dissipation [W]	Pre-arcing I^2t value [A^2s]	Total I^2t value [A^2s]
10/24	292	2	C, D	31,5	12	2040	12	6,1	57
		4			20	1300	35	17,3	164
		6			27	900	56	36	340
		6,3			27	900	56	36	340
		10			42	230	25,5	165	1.450
		16			64	125	42	320	5.200
		20			80	76	39,5	450	7.000
		25			100	59	49	700	10.000
		31,5			126	52	75	1.400	15.000
		32			126	52	79	1.400	15.000
		40			160	38	94	3.200	27.000
		50			200	29	110	5.800	44.000
		63			252	21,5	137	12.000	70.000
	442	1	C, D	63	12	3900	9		
		2			12	2040	12	6,1	57
		4			20	1300	35	17,3	164
		6			25	900	56	36	340
		6,3			25	900	56	36	340
		10			42	230	25,5	165	1.450
		16			56	125	42	320	5.200
		20			70	76	39,5	450	7.000
		25			87	59	49	700	10.000
		31,5			110	52	75	1.400	15.000
		32			110	52	79	1.400	15.000
		40			140	38	94	3.200	27.000
		50			175	29	110	5.800	44.000
		63			220	21,5	137	12.000	70.000
		80			280	16	174	19.000	140.000
		100			355	12,9	220	35.000	202.000
		125			473	11,9	365	49.000	220.000
	537	2	C, D	63	12	2040	12	6,1	57
		4			20	1300	35	17,3	164
		6			25	900	56	36	340
		6,3			25	900	56	36	340
		10			42	230	25,5	165	1.450
		16			56	125	42	320	5.200
		20			70	76	39,5	450	7.000
		25			87	59	49	700	10.000
		31,5			110	52	75	1.400	15.000
		32			110	52	79	1.400	15.000
		40			140	38	94	3.200	27.000
		50			175	29	110	5.800	44.000
		63			220	21,5	137	12.000	70.000
		80			280	16	174	19.000	140.000
		100			355	12,9	220	35.000	202.000
		125			473	11,9	365	49.000	220.000
		160			600	5,6	290	94.000	580.000

Ordering Code Numbers

rated voltage U_n [kV]	Dimension "e" according to DIN and IEC (mm)	rated current [A]	VVA (without striker pin)	VVC3 Striker type 50N	VVT-D3 Striker type 80N THERMO		Tube diameter "d" (mm)	kg
					Ni plated contacts	Ag plated contacts*		
20/36	442	2 A		004260103	004262103		53	2.3
		4 A		004260104	004262104			
		6 A		004260105	004262105			
		6,3 A		004260106	004262106			
		10 A		004260107	004262107			
		16 A		004260108	004262108			
		20 A		004260109	004262109			
		25 A		004260110	004262110			
	537	1 A	004261102				53	2.8
		2 A	004261103	004260003	004262003	004262033		
		4 A	004261104	004260004	004262004	004262034		
		6 A	004261105	004260005	004262005	004262035		
		6,3 A	004261106	004260006	004262006	004262036		
		10 A	004261107	004260007	004262007	004262037		
		16 A	004261108	004260008	004262008	004262038		
		20 A	004261109	004260009	004262009	004262039		
		25 A	004261110	004260010	004262010	004262040	68	4.7
		31,5 A	004261111	004260011	004262011	004262041		
		32 A	004261112	004260012	004262012	004262042		
		40 A	004261113	004260013	004262013	004262043		
		50 A	004261114	004260014	004262014	004262044	83,5	7.0
		63 A	004261115	004260015	004262015	004262045		
		80 A	004261116	004260016	004262016	004262046		

Note 1: Other ratings and dimensions can be supplied by customer request. For particular applications, please contact ETI technical team.
Note 2: Orange colored types according to IEC 60282-1 dimensions.
* Other dimensions available upon request

Force / travel striker pin diagram



Connection in indoor switchgear, example:

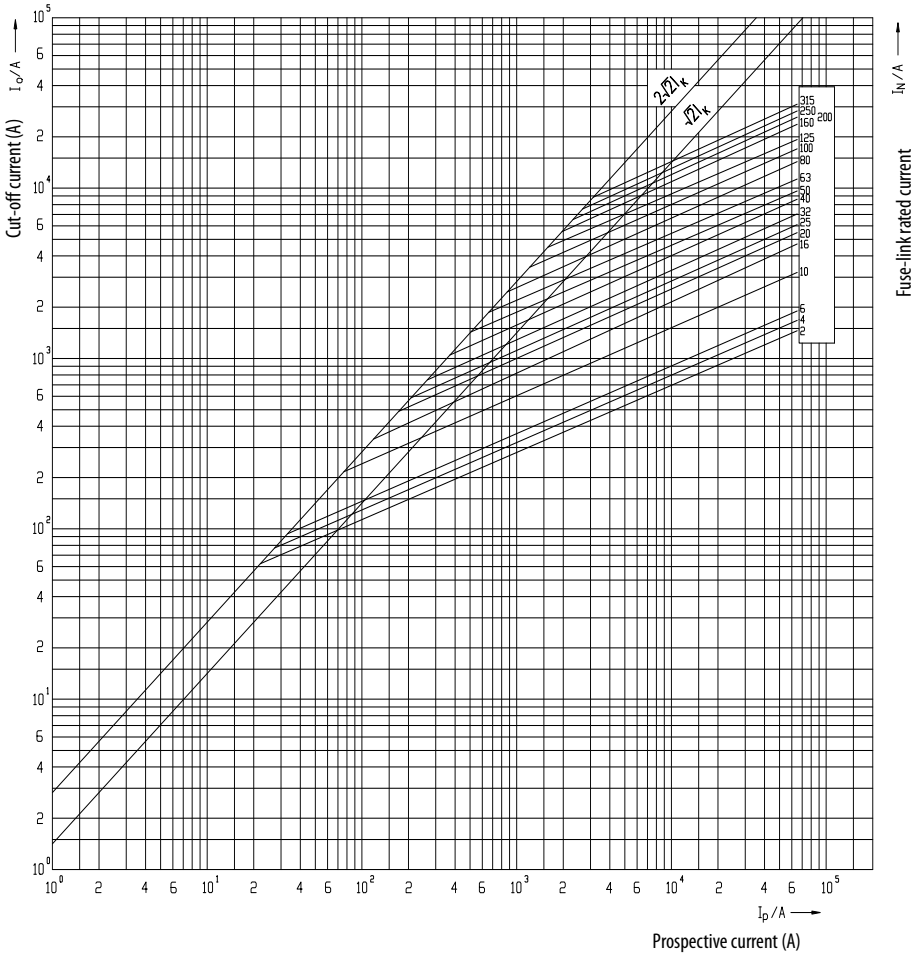
How to avoid wrong HV fuse-link selection

WATCH THE VIDEO

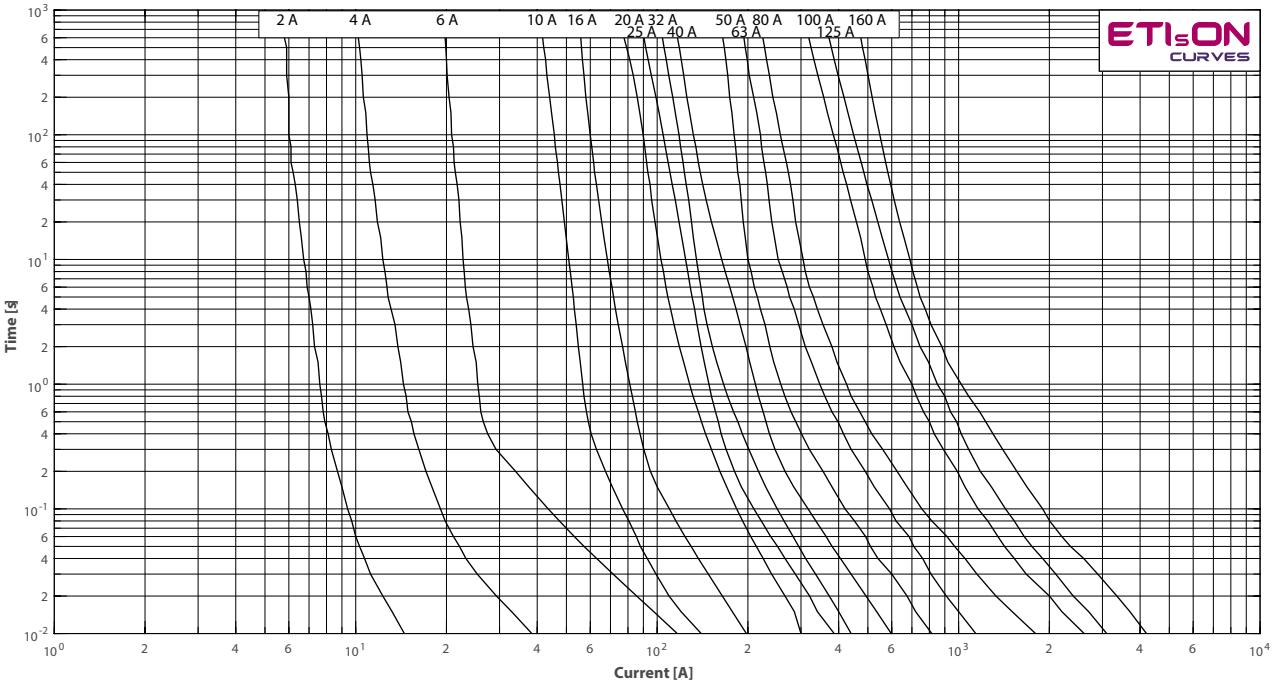
Technical data

Rated voltage [kV]	Dimension "e" according to DIN and IEC [mm]	Rated current I_n [A]	Striker type	Rated breaking capacity [kA]	Rated minimum breaking current [A]	Cold resistance [mΩ]	Power dissipation [W]	Pre-arcing I^2t value [A^2s]	Total I^2t value [A^2s]
		2			12	2900	17	6,1	57
		4			20	1870	45	17,3	164
		6			27	1300	73	36	340
		6,3			27	1300	73	36	340
	442	10	C, D	20	42	320	40	165	1.450
		16			64	185	60	320	5.200
		20			84	110	58	450	7.000
		25			100	85	80	700	10.000
		1			12	5800	14		
		2			12	2900	17	6,1	57
		4			20	1870	45	17,3	164
20/36		6			25	1300	73	36	340
		6,3			25	1300	73	36	340
		10			45	320	40	165	1.450
		16			56	185	60	320	5.200
	537	20	C, D	31,5	84	110	58	450	7.000
		25			87	90	77	700	10.000
		31,5			116	75	115	1.400	15.000
		32			116	75	120	1.400	15.000
		40			149	57	145	3.200	27.000
		50			175	47	145	5.800	44.000
		63			220	34	200	12.000	70.000
		80			280	25,5	270	19.000	140.000

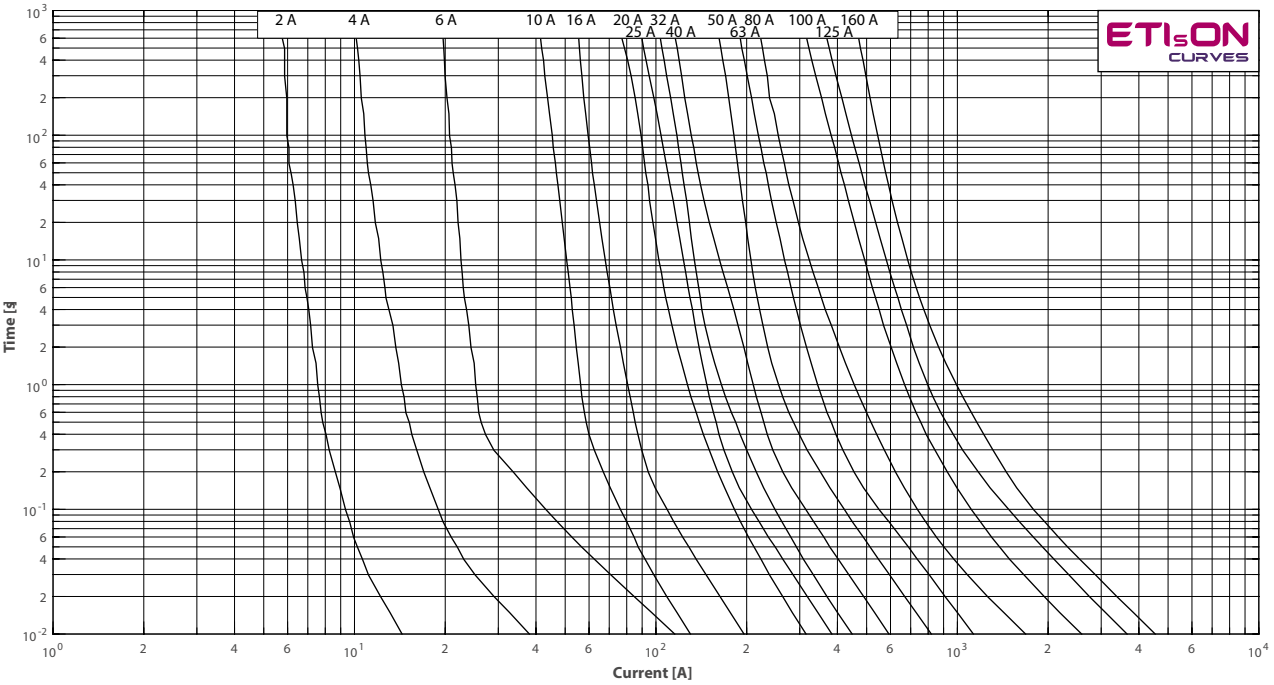
Cut-off current diagram for VV-Thermo fuse links



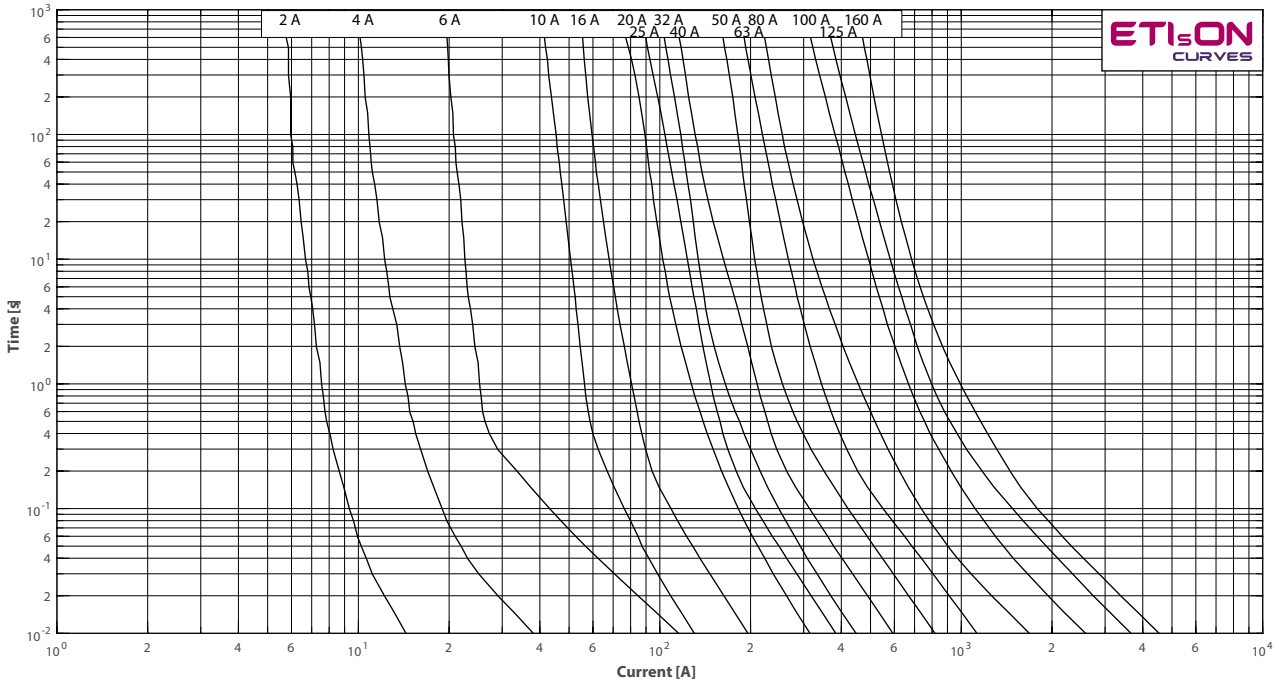
Time-current characteristics for VV-thermo fuse links - 7,2 kV



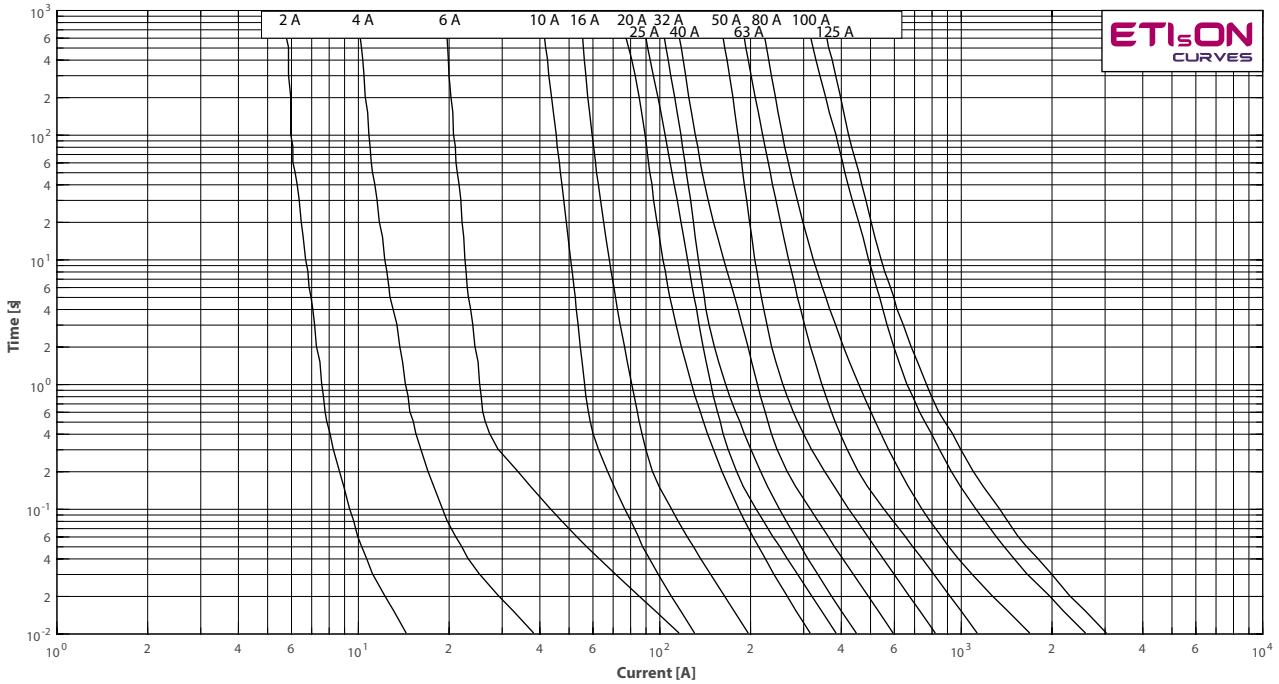
Time-current characteristics for VV-thermo fuse links - 12 kV



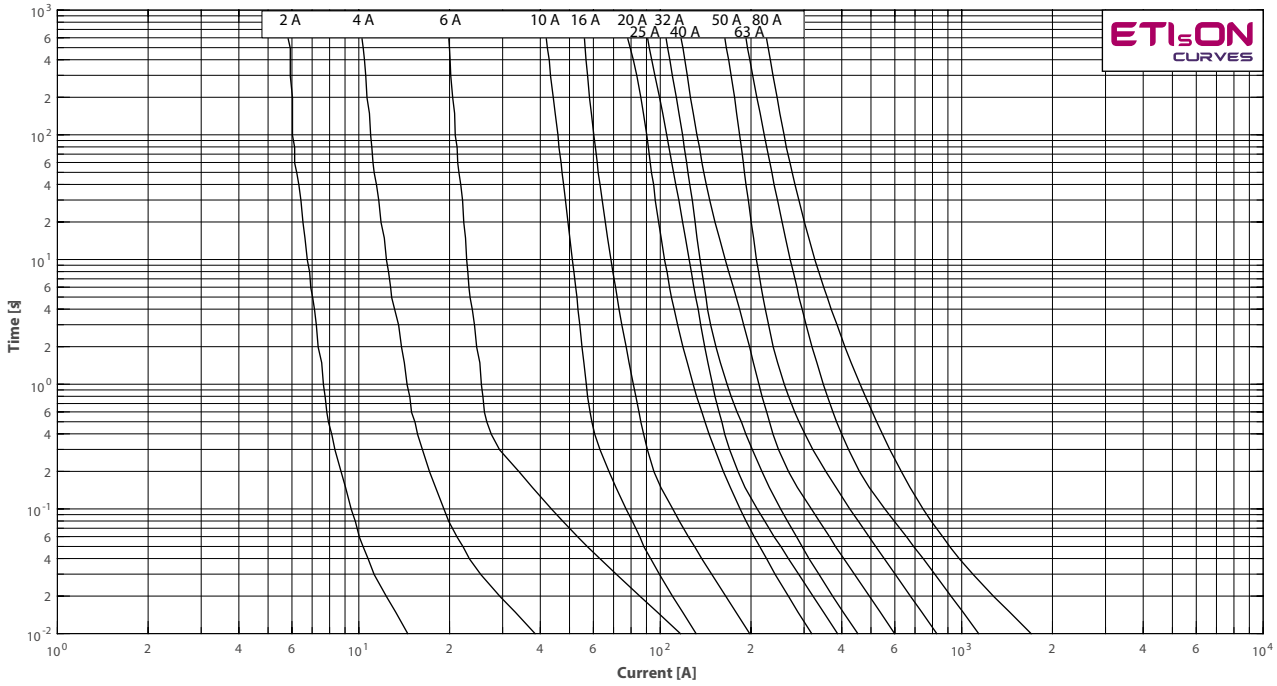
Time-current characteristics for VV-thermo fuse links - 17,5 kV



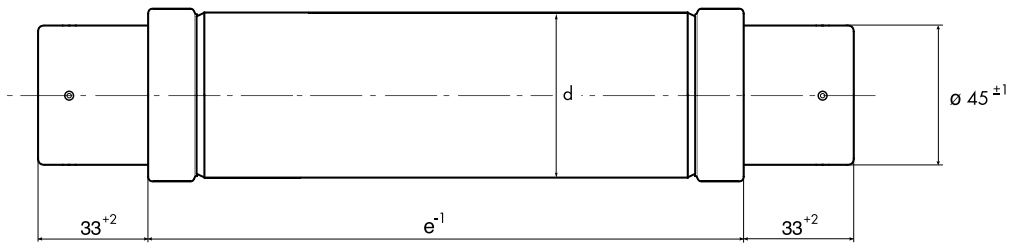
Time-current characteristics for VV-thermo fuse links - 24 kV



Time-current characteristics for VV-thermo fuse links - 36 kV



Dimensions



High voltage fuse-links for liquid-immersed transformers

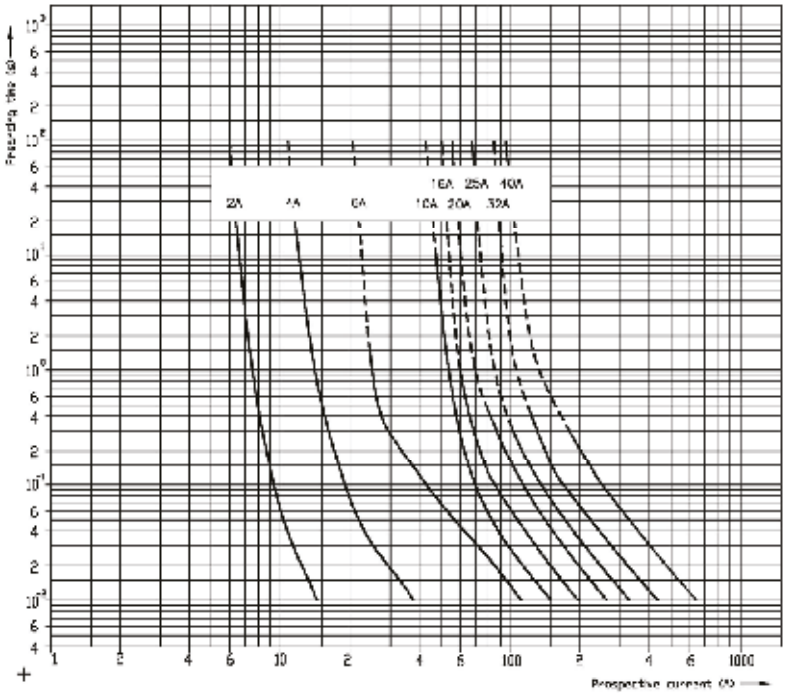
Ordering Code Numbers

rated voltage U_n [kV]	Dimension "e" according to DIN and IEC (mm)	rated current [A]	VVT-D Striker type 80N	Tube diameter "d" (mm)	kg
6/12	292	2A	004236903	53	1,6
		4A	004236904		
		6A	004236905		
		10A	004236906		
		16A	004236907		
		20A	004236908		
		25A	004236909		
		32A	004236910		
		40A	004236911		
10/24	292	2A	004256943	53	1,6
		4A	004256944		
		6A	004256945		
		10A	004256946		
		16A	004256947		
	442	2A	004256903	53	2,3
		4A	004256904		
		6A	004256905		
		10A	004256906		
		16A	004256907		
		20A	004256908		
		25A	004256909		
		32A	004256910		
		40A	004256911		

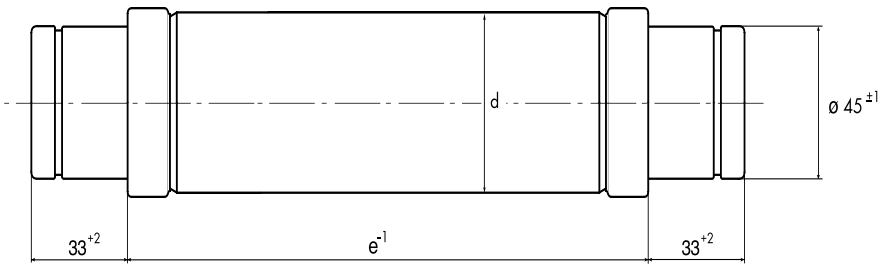
Technical data

Rated voltage [kV]	Dimension "e" according to DIN and IEC [mm]	Rated current I_n [A]	Striker type	Rated breaking capacity [kA]	Rated minimum breaking current [A]	Cold resistance [mΩ]	Power dissipation [W]	Pre-arcing I^2t value $[A^2s]$	Total I^2t value $[A^2s]$
6/12	292	2A	VVT-D	50	12	980	6	6,1	57
		4A			20	650	15	17,3	164
		6A			25	435	21	36	340
		10A			46	87	8	161	1530
		16A			60	60,5	19	250	2270
		20A			80	47	22	430	3750
		25A			105	37	34	650	5500
		32A			130	27	43	1220	10100
		40A			178	21	54	2270	18100
	292	2A	VVT-D	50	12	2040	12	6,1	57
		4A			20	1300	35	17,3	164
		6A			25	900	56	36	340
		10A			46	160	19	161	1530
		16A			60	106	35	250	2270
10/24	442	2A	VVT-D	50	12	2040	12	6,1	57
		4A			20	1300	35	17,3	164
		6A			25	900	56	36	340
		10A			46	160	19	161	1530
		16A			60	106	35	250	2270
		20A			80	85	44	430	3750
		25A			105	67	58	650	5500
		32A			130	48	71	1220	10100
		40A			178	37,5	95	2270	18100

Time-current characteristics for VV-thermo fuse links - 36 kV



Dimensions



High voltage fuse-links for protection of voltage transformers

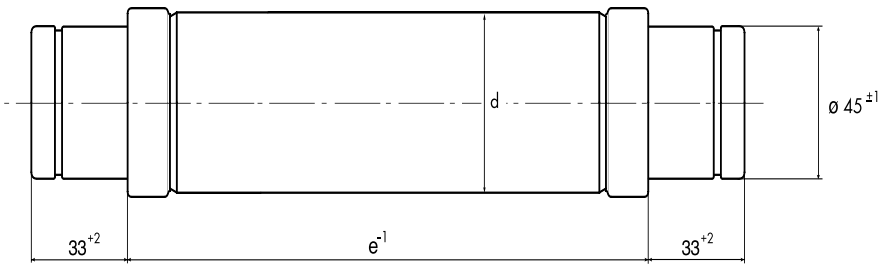
Ordering Code Numbers

rated voltage U_n [kV]	Dimension "e" according to DIN and IEC (mm)	rated current [A]	VVT-D	Tube diameter "d" (mm)	kg
10/24	235	2A	004251033	54	1,45
		4A	004251034		

Technical data

Rated voltage	Dimension "e" according to DIN and IEC	Rated current	Striker type	Rated breaking capacity	Rated minimum breaking current	Cold resistance	Power dissipation	Pre-arcing I^2t value	Total I^2t value
[kV]	[mm]	I_n [A]		[kA]	[A]	[mΩ]	[W]	[A^2s]	[A^2s]
10/24	235	2A	/	20	12	2040	14	6,1	57
		4A			20	1300	38	17,3	164

Dimensions



VV High Voltage Fuse Bases

Fuse bases for VV fuse-links

1-pole Indoor mounting

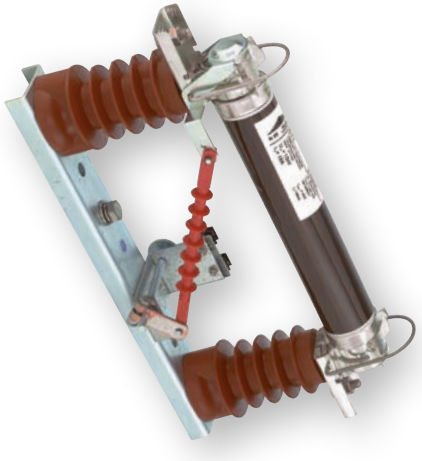
type	Rated voltage [kV]	code No.	Dimension "e" according to DIN and IEC [mm]	kg
VVP 7,2 1p-N	7,2	004229010	192	1
VVP 12 1p-N	12	004239010	292	1
VVP 17,5 1p-N	17,5	004249010	367	1
VVP 24 1p-N	24	004259010	442	1
VVP 36 1p-N	36	004269010	537	1

* when choosing right fuse base consider size and rated voltage of fuse-link
** due to safety reasons fuse bases cannot be later adjusted on different length by a user
*** indoor edition of fuse base may not be used for outside applications
**** Max thermal current: 100A, used with ETI VVT TD3 fuse-links.

1-pole Indoor mounting with microswitch fuse monitoring

type	Rated voltage <<< [kV]	code No.	Dimension "e" according to DIN and IEC [mm]	kg
VVP 7,2 1p-N + NK 7,2 BSW	7,2	004349019	192	1
VVP 12 1p-N + NK 12 BSW	12	004349020	292	1
VVP 17,5 1p-N + NK 17,5 BSW	17,5	004349021	367	1
VVP 24 1p-N + NK 24 BSW	24	004349022	442	1
VVP 36 1p-N + NK 7,2 BSW	36	004349023	537	1

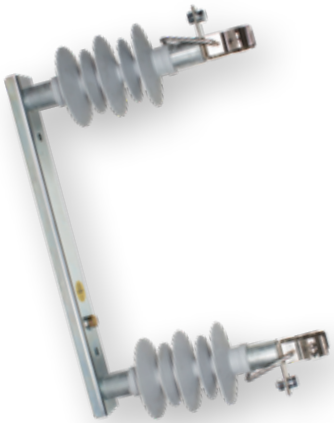
* when choosing right fuse base consider size and rated voltage of fuse-link
** due to safety reasons fuse bases cannot be later adjusted on different length by a user
*** Rotation in installation is allowed only with the pin striker pointing upward (as in the photo on the right)
**** Max thermal current: 100A, used with ETI VVT TD3 fuse-links.



1-pole Outdoor mounting

type	Rated voltage [kV]	code No.	Dimension "e" according to DIN and IEC [mm]	kg
VVP 7,2 1p-Z	7,2	004229030	192	1
VVP 12 1p-Z	12	004239030	292	1
VVP 17,5 1p-Z	17,5	004249030	367	1
VVP 24 1p-Z	24	004259030	442	1
VVP 36 1p-Z	36	004269030	537	1

* when choosing right fuse base consider size and rated voltage of fuse-link
** due to safety reasons fuse bases cannot be later adjusted on different length by a user
**** Max thermal current: 100A, used with ETI VVT TD3 fuse-links.

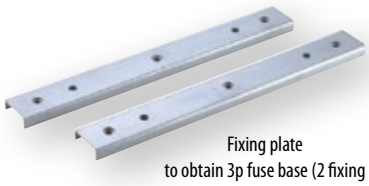


Accessories

Accessories for VVP fuse bases

type	Rated voltage [kV]	code No.	kg
Fixing plate for VVP 7,2 3p-N, INDOOR	7,2	004229020	1
Fixing plate for VVP 12 3p-N, INDOOR	12	004239020	1
Fixing plate for VVP 17,5 3p-N, INDOOR	17,5	004249020	1
Fixing plate for VVP 24 3p-N, INDOOR	24	004259020	1
Fixing plate for VVP 36 3p-N, INDOOR	36	004269020	1
Fixing plate for VVP 12 3p-Z, OUTDOOR	12	004239040	1
Fixing plate for VVP 24 3p-Z, OUTDOOR	24	004259040	1
Microswitch NK 7,2 BSW, INDOOR	7,2	004349007	1
Microswitch NK 12 BSW, INDOOR	12	004349008	1
Microswitch NK 17,5 BSW, INDOOR	17,5	004349009	1
Microswitch NK 24 BSW, INDOOR	24	004349010	1
Microswitch NK 36 BSW, INDOOR	36	004349011	1
VV universal clip with tail, prepared for M10 screw connection	7,2 - 36	004349015	1
VV universal clip	7,2 - 36	004349016	1

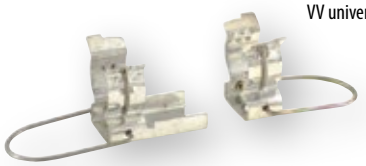
Fixing plate is used for combining 1-pole fuse bases into 3-pole fuse bases.



Fixing plate
to obtain 3p fuse base (2 fixing plates are needed)

Microswitch

VV universal clip

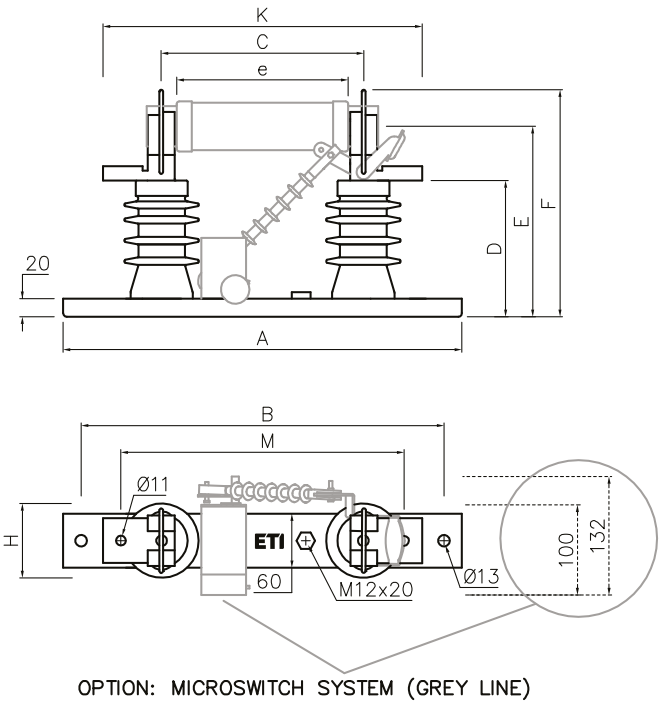


VV universal clip with tail

1-pole fuse-base	microswitch	U_n [kV]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	M [mm]	H [mm]	K [mm]	"e" Fuse length	Version
INDOOR MOUNTING	×	7,2	445	405	225	150	203	259	324	83	356	192	1
	✓	7,2	445	405	225	152	202	253	316	83	356	192	1
	×	12	405	205	325	150	203	259	424	83	456	292	2
	✓	12	405	205	325	152	202	253	416	83	456	292	2
	×	17,5	480	280	397	245	298	354	496	80	528	367	2
	✓	17,5	480	235	397	191	242	293	488	83	528	367	2
	×	24	555	355	475	245	298	354	574	80	606	442	2
	✓	24	555	355	475	245	295	346	566	77	606	442	2
	×	36	670	350	570	330	383	439	670	80	701	537	2
	✓	36	670	350	570	339	389	440	661	80	701	537	2
OUTDOOR MOUNTING	×	7,2	445	405	225	306	359	415	324	127	356	192	1
	×	12	405	205	235	306	359	415	424	127	456	292	2
	×	17,5	480	280	397	306	359	415	496	127	528	367	2
	×	24	555	355	475	306	359	415	574	127	606	442	2
	×	36	670	350	570	509	562	618	670	120	701	537	2

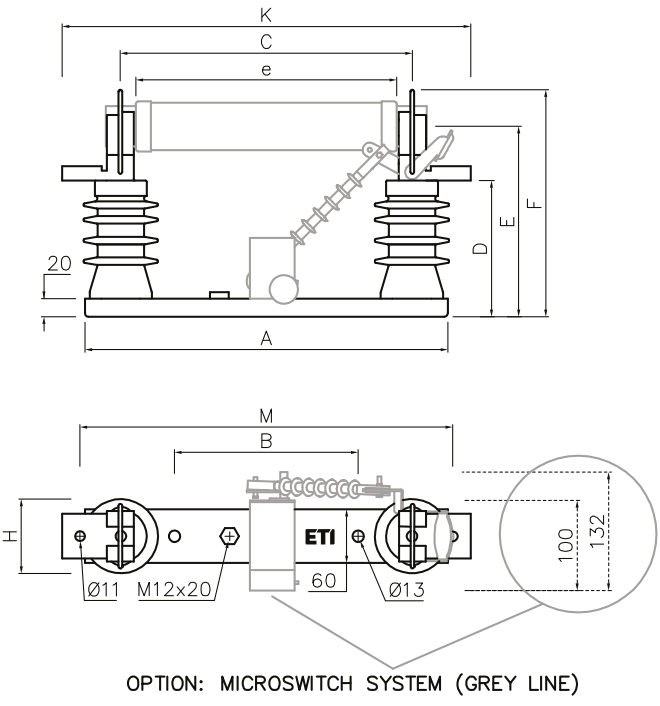
Dimensions

Version 1



OPTION: MICROSWITCH SYSTEM (GREY LINE)

Version 2



OPTION: MICROSWITCH SYSTEM (GREY LINE)

Definitions and terms

Back-up fuse-links
According to standard IEC 60282-1 Fifth edition (2002-01), item 3.3.3, Back-up fuse is current-limiting fuse capable of breaking, under specified conditions of use and behaviour, all currents from the rated maximum breaking current (I1) down to the rated minimum breaking current (I3).
Back-up fuse links should not operate below theirs minimum breaking current. If the short-circuit current of the transformer is lower than the minimum breaking current, additional protection must be provided.

Rated voltage range voltages
ETI VV Thermo fuse-links must be operated at the rated voltage. At lower operating voltages without limitation provided, please contact ETI team.

Breaking capacity I1
This value (sometimes named “rated maximum breaking current” of current indicates, that this is the maximum current which can be interrupted by the fuse-link. I1 should be greater than the maximum expected short circuit current at the fuse-link site.

Minimum breaking current I3
This value (sometimes named “rated minimum breaking current” is specified for Back-up fuse-links. Up from this current, fuse-link is capable to breaking fault current.

Power dissipation of a fuse-link Pn
The power dissipation of a VV Thermo fuse-link is specified at the rated current of the fuse-link. For calculations of protection with VV Thermo fuse-link, it should be noted, that operating current is normally below half of the rated current.

Time-current characteristics
I/t characteristics represents the correlation between current and time up to the melting of a silver fuse element. For coordination with other protection devices, melting integral must be referred for melting times below 100ms.

Current limitation
This is most significant advantage of fuse-links compared to mechanical switches. Contacts of that switches need much longer time as fuse-link to interrupt fault currents. VV fuse-link interrupt fault current within few milliseconds and sinusoidal current does not reach its peak value.

Switching voltages
Between current-limiting process, short circuit current must be limited and reduced as soon as possible. This require a switching voltage that exceed the normal system voltage and force the current to zero. Permissible value of switching voltage is 2.2 times peak value of the maximum rated voltage.

Selection of fuses for transformer protection

For HV fuse-link rated current selection, following transformer technical features has to be known:

- Rated power P_n (kVA)
- Short-circuit voltage U_{cc} (%)
- Rated current I_{nt}
- Inrush current usually between 8-12xI_{nt}
- Short-circuit current I_{cc}
- Overload current usually 1.4 I_{nt}
- Maximum short-circuit duration. Standard 2 sec for transformers up to 630 kVA and 3 sec for higher rated powers

Following HV fuse-link technical features has to be known:

- Rated voltage U_n (kV)
- Rated current I_n (A)
- I/t Characteristics According to the curves
- Melting current (0.1sec) I_f (0.1sec)
- Melting current at 2s ec or 3sec melting time
- Minimum breaking current I_3 (A)
- Breaking capacity I_1 (kA)

General about transformer protection:

- Fuse-link rated voltage U_n must be higher then network voltage.
- Maximum fuse-link breaking current I_1 must be higher then short circuit-current I_{cc}.
- Inrush current should not melt the fuse-link. Melting current at 100 msec must be higher than 12 times transformer rated current
- Fuse-link has to operate before the expected short-circuit current damage the transformer $I_{cc} > I_f$ (2 sec) or $I_{cc} > I_f$ (3 sec)
- Fuse-link must be able to withstand possible short duration overloads. I_n FUSE > 1.4 I_n TRAFO

Transformer rated capacity	6/7,2 kV				10/12 kV				15/17.5kV				20/24 kV				30/36 kV			
	Transformer rated primary current Ip(A) at	HV Fuse-link rated current	LV Fuse-Link NH gTr	LV Fuse-Link NH gG	Transformer rated primary current Ip(A) at	HV Fuse-link rated current	LV Fuse-Link gTr	LV Fuse-Link gG	Transformer rated primary current Ip(A) at	HV Fuse-link rated current	LV Fuse-Link gTr	LV Fuse-Link gG	Transformer rated primary current Ip(A) at	HV Fuse-link rated current I_F	LV Fuse-Link gTr	LV Fuse-Link gG	Transformer rated primary current Ip(A) at	HV Fuse-link rated current I_F	LV Fuse-Link gTr	LV Fuse-Link gG
Pt (kVA)		I_{HV}				I_{HV}				I_{HVmin}				I_{HVmin}				I_{HVmin}		
	6kV	(A)	(kVA)	(A)	10kV	(A)	(kVA)	(A)	15kV	(A)	(kVA)	(A)	20kV	(A)	(kVA)	(A)	30kV	(A)	(kVA)	(A)
50	4,8	**10**	**50**	**72**	2,9	**6**	**50**	**72**	1,9	**6**	**50**	**72**	1,4	**4**	**50**	**72**	1.0	**4**	**50**	**72**
75	7,2	**16**	**75**	**108**	4,3	**10**	**80**	**108**	2,9	**6**	**80**	**108**	2,2	**6**	**80**	**108**	1,4	**4**	**80**	**108**
100	9,6	**20**	**100**	**144**	5,8	**10**	**100**	**144**	3,8	**10**	**100**	**144**	2,9	**6**	**100**	**144**	1,9	**6**	**100**	**144**
125	12,0	**20**	**125**	**180**	7,2	**16**	**125**	**180**	4,8	**10**	**125**	**180**	3,6	**10**	**125**	**180**	2,4	**6**	**125**	**180**
160	15,3	**25**	**160**	**231**	9,2	**20**	**160**	**231**	6,2	**16**	**160**	**231**	4,6	**10**	**160**	**231**	3,1	**6**	**160**	**231**
200	19,2	**32**	**200**	**289**	11,5	**20**	**200**	**289**	7,7	**16**	**200**	**289**	5,8	**10**	**200**	**289**	3,8	**10**	**200**	**289**
250	24,0	**40**	**250**	**361**	14,4	**25**	**250**	**361**	9,6	**20**	**250**	**361**	7,2	**16**	**250**	**361**	4,8	**10**	**250**	**361**
315	30,3	**50**	**315**	**455**	18,2	**32**	**315**	**455**	12,1	**20**	**315**	**455**	9,1	**16**	**315**	**455**	6,0	**16**	**315**	**455**
400	38,5	**63**	**400**	**577**	23,1	**40**	**400**	**577**	15,4	**25**	**400**	**577**	11,5	**20**	**400**	**577**	7,7	**16**	**400**	**577**
500	48,1	**80**	**500**	**722**	28,8	**50**	**500**	**722**	19,2	**32**	**500**	**722**	14,4	**20**	**500**	**722**	9,6	**20**	**500**	**722**
630	60,6	**100**	**630**	**909**	36,4	**63**	**630**	**909**	24,2	**40**	**630**	**909**	18,2	**25**	**630**	**909**	12,1	**20**	**630**	**909**
800	77,0	**100**	**800**	**1.155**	46,2	**80**	**800**	**1.155**	30,8	**50**	**800**	**1.155**	23,1	**40**	**800**	**1.155**	15,4	**25**	**800**	**1.155**
1000	96,2	**125**	**1.000**	**1.443**	57,7	**80**	**1.000**	**1.443**	38,5	**63**	**1.000**	**1.443**	28,9	**50**	**1.000**	**1.443**	19,2	**32**	**1.000**	**1.443**
1250	120,0	**160**	**1250**	**	72,2	**100**	**1250**	**	48,1	**80**	**1250**	**	36,1	**63**	**1250**	**	24,0	**40**	**1250**	**
1600	154,0	**200***	**1600**	**	92,4	**125**	**1600**	**	61,6	**100**	**1600**	**	46,2	**63**	**1600**	**	30,8	**50**	**1600**	**
2000	192,5	**250***	**	**	115,5	**160**	**	**	77,0	**100**	**	**	57,7	**80**	**	**	38,5	**63**	**	**

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