

Installation Devices Protective Solutions

Product Catalog 2019



Powering Business Worldwide

SG17011



1. Protective Devices

• Residual Current Devices PF7	Page 1.10
• Residual Current Devices PF7-U	Page 1.15
• Residual Current Devices PFIM-F	Page 1.20
• Residual Current Devices PF6	Page 1.25
• Residual Current Devices HNC xPole Home	Page 1.34
• Residual Current Relays PFR, Core Balance Transformers Z-WFR	Page 1.39
• Residual Current Devices PFDM	Page 1.44
• Residual Current Devices dRCM Digital	Page 1.49
• Add-on Residual Current Protection Unit PBHT	Page 1.54
• Leakage Current Monitor PDIM	Page 1.60
• Arc Fault Detection Device AFDD+, 2-pole	Page 1.63
• Combined RCD/MCB Devices PFL7, 1+N-pole	Page 1.74
• Combined RCD/MCB Devices PFL6, 1+N-pole	Page 1.85
• RCBO Devices HNB xPole Home	Page 1.92
• Combined RCD/MCB Devices mRB6, mRB4, 3+N-pole	Page 1.99
• Miniature Circuit Breakers PL7	Page 1.105
• Miniature Circuit Breakers PL6	Page 1.123
• Miniature Circuit Breakers HL xPole Home	Page 1.140
• Miniature Circuit Breakers PL7-DC for AC/DC	Page 1.148
• Miniature Circuit Breakers with Plug-in Terminals at the output side PLI	Page 1.152
• Miniature Circuit Breakers PLHT	Page 1.158
• Adjustable MCB Z-MS, Power Limiter Z-TS, Motor-protective Circuit-breaker	Page 1.171

SG30811



2. Accessories for Protective Devices

• Auxiliary Switch Z-HK, Z-AHK, Z-HD; Tripping Signal Switch Z-NHK	Page 2.180
• Auxiliary Switch ZP-IHK, ZP-WHK; Tripping Signal Switch ZP-NHK	Page 2.183
• RCCB Tripping Module Z-AM	Page 2.185
• Shunt Trip Release Z-ASA, ZP-ASA	Page 2.187
• Undervoltage Release Z-USA, Z-USD	Page 2.189
• Switching Interlock IS/SPE-1TE, Z-IS/SPE-1TE	Page 2.191
• Terminal Covers Z-RC, Z-TC	Page 2.192
• Remote Control and Automatic Switching Device Z-FW	Page 2.193

SG05013



3. Surge Protection

• Surge Protective Class T1/T2, SPRT12-350	Page 3.197
• Surge Protective Class T1/T2 (formerly B+C), SPBT12	Page 3.201
• Surge Protective Class T2 (formerly C), SPCT2	Page 3.205
• Surge Protective Class T3 (formerly D), SPDT3	Page 3.212
• Surge Protective Class T3 (formerly D), SPD-STL Multiple Outlet Strips	Page 3.214
• Surge Protective Class T3 (formerly D), Protection Strip Multiple Outlet Strips	Page 3.214
• Photovoltaic SPD Class T2, SPPVT2	Page 3.215
• Photovoltaic SPD Class T1/T2, SPPVT12	Page 3.218
• Busbars for Surge Protection	Page 3.221

SG84011



4. Controlling & Switching

• Main Load Disconnecter Switch (Isolator) IS	Page 4.225
• Circuit Breaker ZP-A	Page 4.227
• MCB for Auxiliary Switch Circuits PL7-B4/-HS	Page 4.229
• Pushbutton Z-T/; Control Switch Z-S./; Changeover Switch Z-S/W	Page 4.231
• Switch Z-SW.; Signal Lamps Z-EL, Z-DL, Z-BEL; Pushbutton Z-PU	Page 4.233
• Rotary Switch Z-DS	Page 4.236
• Installation Relays Z-R	Page 4.242
• Installation Relays Z-TN	Page 4.247
• Installation Contactors CR	Page 4.252
• Installation Contactors Z-SCH, CMUC	Page 4.258
• Impulse Relays Z-S, Z-SC, Z-SB	Page 4.268
• Staircase Switch with switch-off warning and stop function TL	Page 4.278
• Time-Lag Relay ZR	Page 4.280
• Undervoltage Relay REUVM	Page 4.283
• Voltage Indication UVA	Page 4.285
• Load Shedding (Current) Relay Z-LAR	Page 4.287
• Digital Timers with a Weekly Program TSDW	Page 4.289
• Astronomical Timer with a Weekly Program TSDW1COA	Page 4.293
• Analogue Timers TS	Page 4.294
• Light Intensity Switch SR	Page 4.297
• Signalling Devices AS	Page 4.301
• Bell-Transformers 230 V, TR-G	Page 4.303
• Safety-Transformer 230 V, TR-G2/63-SF	Page 4.305

SG50112



5. Busbar Systems

• Plug-in busbar System 50 A, 80 A ZV	Page 5.308
• Busbar Block (Fork) Z-GV	Page 5.311
• Busbar Block (Fork and Pin) Z-GSV	Page 5.314
• Busbar Block (Pin) Z-SV...-SD, 1 Meter	Page 5.316
• Busbar Block (Pin) Z-SV	Page 5.317
• Busbar Block 12MU (Fork and Pin) Z-GSV-10	Page 5.320
• Busbar Block 13MU (Fork and Pin) Z-GSV-10	Page 5.322
• Busbar Block (Pin) Z-SV.../1P+N-F	Page 5.323
• Busbar Block (Pin) Z-SV	Page 5.325
• Euro-Vario-Busbar (Fork) EVG	Page 5.328
• Vertical Busbar BB-V-16/1P+N	Page 5.331
• AFDD-Busbar EVG-2PHAS/4AFDD	Page 5.332

SG80911



6. Fuse Devices (Protective Devices)

• Fuse-Base D01+D02 FCFBD02DI	6.334
• Switch-Disconnecter-Fuse D01 Z-SLS/D01	6.336
• Fuse-Switch-Disconnecter D02+D01 Z-SLS/NEOZ	6.338
• Fuse-Switch-Disconnecter D02+D01 Z-SLS/CEK	6.341
• Fuse-Switch-Disconnecter D02+D01 Z-SLK/NEOZ	6.343
• Fuse-Switch-Disconnecter D02+D01 Z-SLS/B, Z-SLS/E	6.346
• Fuse-Switch-Disconnecter D02+D01 Z-SLS/CB	6.350
• Switch-Disconnecter-Fuse D02+D01 D02-LTS	6.353
• Fuse-Disconnecter (empty) Z-SH, Z-SI	6.355
• Fuse-Switch-Disconnecter (empty) C10-SLS, VLCE	6.360
• Fuse-Disconnecter (empty) CHPV... (old FCFDC10DI...-SOL)	6.363
• Slide Fuse Equipment, 3-pole D02-S0/63/3-R-27, Z-D02/R/3... ..	6.366
• Slide Fuse Equipment, 3-pole DII-S0/25/3-R(-PS), DIII-S0/63/3-R(-PS)	6.366
• Slide Fuse Equipment, 3-pole FCFBD02BBC60	6.366
• Slide Fuse Equipment, 3-pole D02-S/63/3-RS	6.367
• Slide Fuse Equipment, 3-pole D02-LTS/63/3-R(-HK)	6.368
• Fuse-Links Z-D0/SE, Operating class gG (gL) Z-D0/SE	6.373
• Cartridge-Ring Adapter Insert Z-D0/PE, Z-D02-D01/PE	6.374
• Screw Caps, Adapter Spring, Cartridge-Ring Adapter Insert Plier Z-D0/SK	6.375
• Fuse-Links Z-DII/SE	6.376
• Gauge Ring Z-DII/PE, Screw-in Gauge Ring Z-DII/PS	6.378
• Screw Caps CD, Z-DII/SK	6.379
• Fuse-Links C..G., (old Z-C../SE) Operating class gG (gL)	6.380
• Fuse-Links PV-..A10F (old ASFLC10-..A-gPV-SOL) Photovoltaic Application	6.384
• Solid-Links Z-NH-../TR	6.386
• NH-Fuse-Links, 500 V AC, ...NHG...B (old Z-NH)	6.387
• Fuse Switch Disconnectors XNH	6.390
• NH In-line Fuse Switch Disconnectors, series FCFSDNH	6.421
• NH In-line Fuse Switch Disconnectors, series NH-SLS and NHW-SLS	6.432
• NH-Vertical Fuse-Switch-Disconnecter, 3-pole LTS-L	6.446

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7. Measuring Instruments

• Power Meter EME	Page 7.449
• Multimeter EME3PMMCT5	Page 7.463
• LAN Server Modbus/TCP EMELSMODBUS	Page 7.465
• Ammeter and Voltmeter Digital EM, Current Transformer Z-MG	Page 7.467
• Operating Hours Counter ASOHC230	Page 7.472
• Pulse Counter ASPC230	Page 7.472

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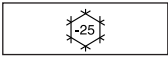
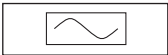
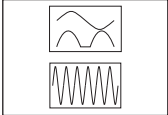
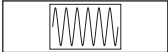
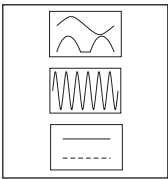
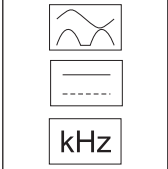
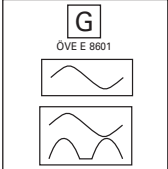
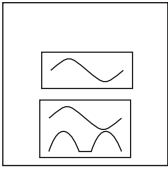


8. Other Accessories

• Protective Earth Socket Z-SD230	Page 8.474
• Neutral Conductor Lead-Through Terminal, Feed Terminal Z-D	Page 8.475
• Front Plate Tripping Device Z-MFPA	Page 8.476
• Circuit Description GR, Plastic Box Z-BOX	Page 8.477

Residual Current Devices - General Data

Short description of the most important RCD types

Symbol	Description
	Eaton standard. Suitable for outdoor installation (distribution boxes for outdoor installation and building sites) up to -25° C.
	Conditionally surge-current proof (>250 A, 8/20 µs) for general application.
	Type AC: AC current sensitive RCCB
	Type A: AC and pulsating DC current sensitive RCCB
	Type F: AC and pulsating DC current sensitive RCCB, trip also at frequency composition (10 Hz, 50 Hz, 1000 Hz)
	Frequency range up to 20 kHz
	Trip also at frequency composition (10 Hz, 50 Hz, 1000 Hz)
	Type B: All-current sensitive RCD switchgear for applications where DC fault currents may occur. Non-selective, non-delayed. Protection against all kinds of fault currents.
	Type B+: All-current sensitive RCD switchgear for applications where DC fault currents may occur. Non-selective, non-delayed. Protection against all kinds of fault currents. Also meets the requirements of the VDE 0664-400 standard (formerly known as VDE V 0664-110) and therefore provides enhanced fire safety.
	RCD of type G (min 10 ms time delay) surge current-proof up to 3 kA. For system components where protection against unwanted tripping is compulsory to avoid personal injury and damage to property (§ 12.1.6 of ÖVE/ÖNORM E 8001-1). Also for systems involving long lines and high line capacity. Some versions are sensitive to pulsating DC. Some versions are available in all-current sensitive design.
	RCD of type S (selective, min 40 ms time delay) surge current-proof up to 5 kA. Mainly used as main switch according to ÖVE/ÖNORM E 8001-1 § 12.1.5, as well as in combination with surge arresters. This is the only RCD suitable for series connection with other types if the rated tripping current of the downstream RCD does not exceed one third of the rated tripping current of the device of type S. Some versions are sensitive to pulsating DC. Some versions are available in all-current sensitive design.
	„X-ray-proof“, for avoiding unwanted tripping caused by x-ray devices.
	„Frequency converter-proof“, for avoiding unwanted tripping caused by frequency converters, speed-controlled drives, etc.

Kind of residual current and correct use of RCD Types

Kind of current	Current profile	Correct use / application field of RCCB types						Tripping current
		AC	A	F	B	/ B+		
							kHz	
Sinusoidal AC residual current		✓	✓	✓	✓			0.5 to 1.0 $I_{\Delta n}$
Pulsating DC residual current (positive or negative half-wave)		–	✓	✓	✓			0.35 to 1.4 $I_{\Delta n}$
Cut half-wave current		–	✓	✓	✓			Lead angle 90°: 0.25 to 1.4 $I_{\Delta n}$ Lead angle 135°: 0.11 to 1.4 $I_{\Delta n}$
Half-wave with smooth DC current of 6 mA		–	✓	✓	✓			max. 1.4 $I_{\Delta n}$ + 6 mA
Half-wave with smooth DC current of 10 mA		–	–	✓	✓			max. 1.4 $I_{\Delta n}$ + 10 mA
Smooth DC current		–	–	–	✓			0.5 to 2.0 $I_{\Delta n}$

Tripping time

Break time and non-actuating time for alternating residual currents (r.m.s. values) for type AC and A RCCB

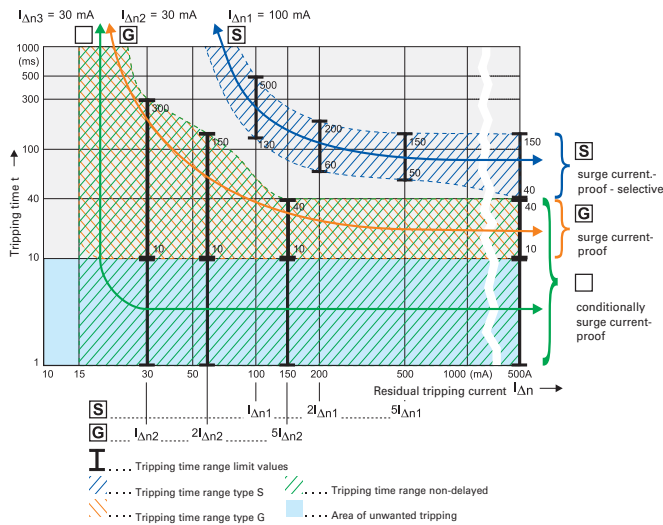
Classification	$I_{\Delta n}$ mA		$I_{\Delta n}$	2 x $I_{\Delta n}$	5 x $I_{\Delta n}$	5 x $I_{\Delta n}$ or 0.25A	500A
Standard RCD Conditionally surge current-proof 250 A	≤30	Max. tripping time (s)	0.3	0,15		0,04	0.04
Standard RCD Conditionally surge current-proof 250 A	>30	Max. tripping time (s)	0.3	0.15	0.04		0.04
RCCB Type G (Short-time-delay) Surge current-proof 3 kA	30	Min. non actuating time(s) Max. tripping time (s)	0.01 0.3	0.01 0.15		0.01 0.04	0.01 0.04
RCCB Type G (Short-time-delay) Surge current-proof 3 kA	>30	Min. non actuating time(s) Max. tripping time (s)	0.01 0.3	0.01 0.15	0.01 0.04		0.01 0.04
RCCB Type S (Selective) Surge current-proof 5 kA	>30	Min. non actuating time(s) Max. tripping time (s)	0.13 0.5	0.06 0.2	0.05 0.15		0.04 0.15

Break time for half-wave pulsating residual currents (r.m.s. values) for type A RCCB

Classification	$I_{\Delta n}$ mA		1.4 x $I_{\Delta n}$	2 x $I_{\Delta n}$	2.8 x $I_{\Delta n}$	4 x $I_{\Delta n}$	7 x $I_{\Delta n}$	0.35 A	0.5 A	350A
Standard RCD Conditionally surge current-proof 250 A	<30	Max. tripping time (s)		0.3		0.15			0.04	0.04
Standard RCD Conditionally surge current-proof 250 A	30	Max. tripping time (s)	0.3		0.15			0.04		0.04
Standard RCD Conditionally surge current-proof 250 A	>30	Max. tripping time (s)	0.3		0.15		0.04			0.04
RCCB Type G (Short-time-delay) Surge current-proof 3 kA	30	Max. tripping time (s)	0.3		0.15			0.04		0.04
RCCB Type G (Short-time-delay) Surge current-proof 3 kA	>30	Max. tripping time (s)	0.3		0.15		0.04			0.04
RCCB Type S (Selective) Surge current-proof 5 kA	>30	Max. tripping time (s)	0.5		0.2		0.15			0.15

Tripping Characteristics (IEC/EN 61008)

Tripping characteristics, tripping time range and selectivity of instantaneous, surge current-proof „G“ and surge current-proof - selective „S“ residual current devices.



§ 6.1.1 of ÖVE/ÖNORM E 8001-1/A1 deals with **additional protection** and provides essentially the following:

In circuits with **sockets up to 16 A** with fault current/residual current protection by protective earthing, protective multiple earthing or residual current devices (RCDs), additional residual current protection devices with a rated tripping current of **0.03 A** must be installed.

This means when using RCDs for fault current/residual current protection two RCDs must be connected in series.

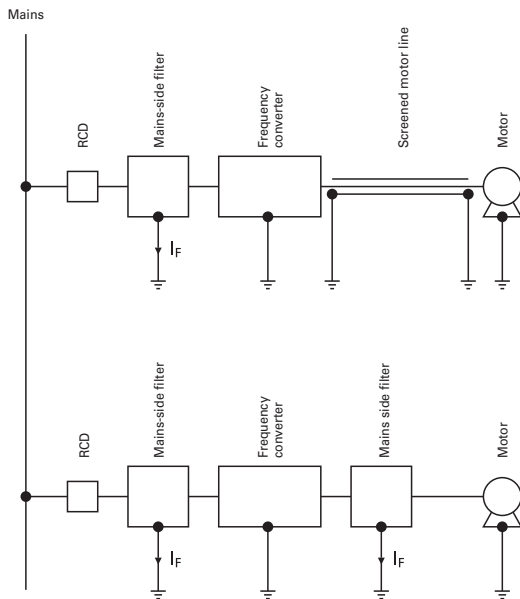
Testing:

RCDs with tripping time delay (Types -G and -S) may be function tested with conventional testing equipment which must be set according to the instructions for operation of the testing device. Due to reasons inherent in the measuring process, the tripping time determined in this way may be longer than expected in accordance with the specifications of the manufacturer of the measuring instrument.

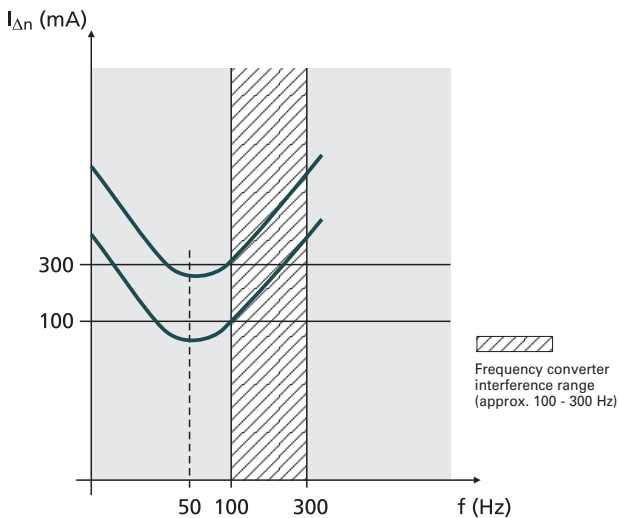
However, the device is ok if the result of measurement is within the time range specified by the manufacturer of the measuring instrument.

Hints for the application of our frequency converter-proof RCDs:

Due to the currents flowing off through the filters (designated I_F), the sum of currents through the RCD is not exactly zero, which causes unwanted tripping.



Tripping characteristic



Frequency converters are used in a wide variety of systems and equipment requiring variable speed, such as lifts, escalators, conveyor belts, and large washing machines. Using them for such purposes in circuits with conventional residual current devices causes frequent problems with unwanted tripping.

The technical root cause of this phenomenon is the following: Fast switching operations involving high voltages cause high interference levels which propagate through the lines on the one hand, and in the form of interfering radiation on the other. In order to eliminate this problem, a mains-side filter (also referred to as input filter or EMC-filter) is connected between the RCD and frequency converter. The anti-interference capacitors in the filters produce discharge currents against earth which may cause unwanted tripping of the RCD due to the apparent residual currents. Connecting a filter on the output side between frequency converter and 3-phase AC motor results in the same behaviour.

This sample tripping characteristic of a 100 mA RCD and a 300 mA RCD shows the following: In the frequency range around 50 Hz, the RCDs trip as required (50 - 100 % of the indicated $I_{\Delta n}$).

In the range shown hatched in the diagram, i. e. from approx. 100 to 300 Hz, unwanted tripping occurs frequently due to the use of frequency converters. Frequency converter-proof residual current devices are much less sensitive in this frequency range than in the 50 - 60 Hz range, which leads to an enormous increase in the reliability of systems.

Therefore, we recommend to use frequency converter-proof RCDs!

These special residual current devices can be recognised by an extension of the type designation („-U“). They meet the requirements of compatibility between RCDs and frequency converters with respect to unwanted tripping.

These are **NOT AC/DC-sensitive** RCDs of type B !!!

Our RCDs of type „-U“ are characterised by **SENSITIVITY TO RESIDUAL PULSATING DC** and **SELECTIVITY** or **SHORT-TIME DELAY** .

Protective Measures

The following rules for the application of RCDs of type „-U“ are only applicable in those cases where an RCD of type „-B“ is not explicitly demanded in the instructions of the manufacturer of the frequency converter.

How can you make sure that the required protective measures are in place when using RCDs type „-U“ and frequency converters in one system?

In Austria, the ÖVE Decision EN 219 is applicable.

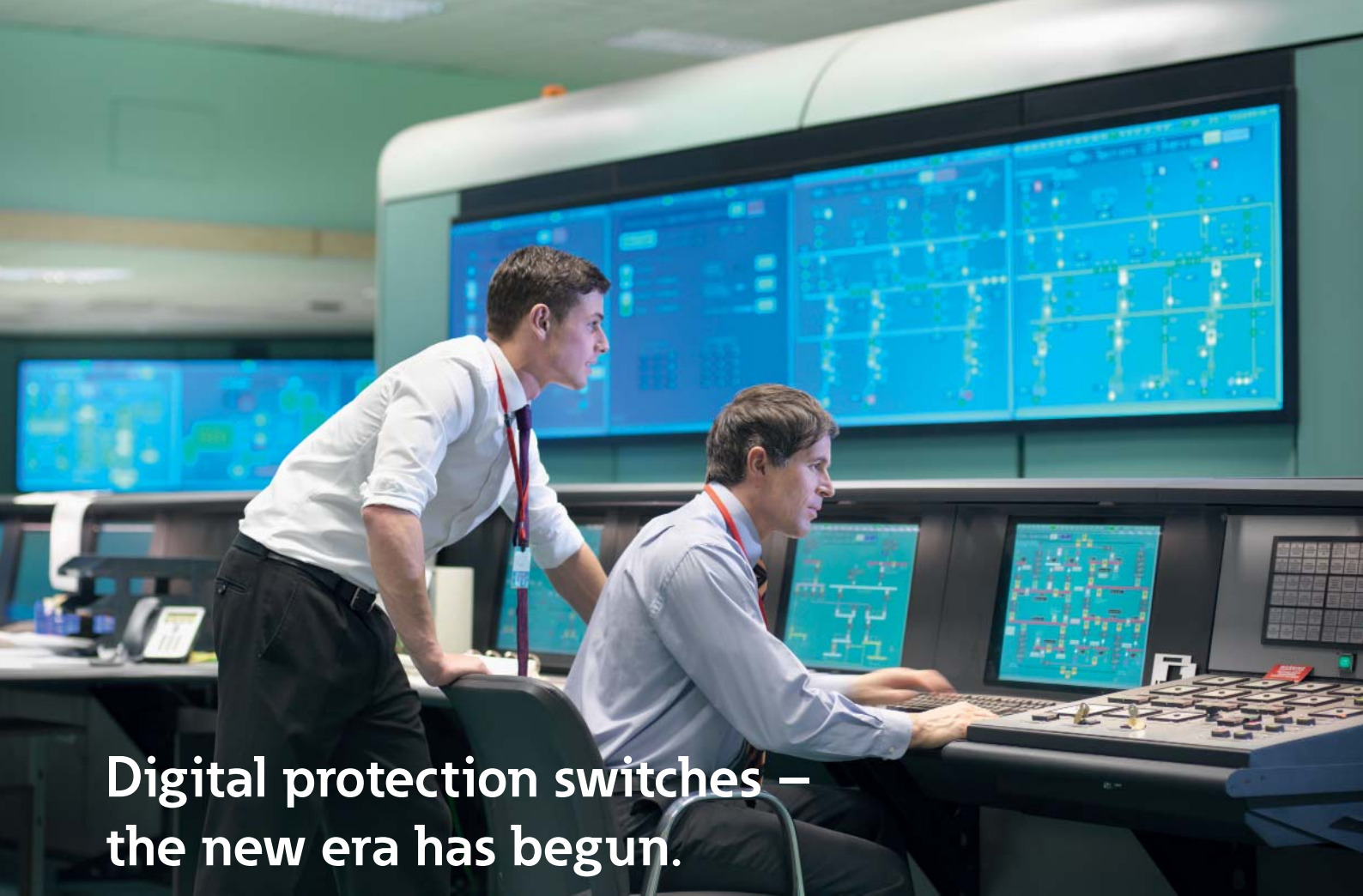
Under this standard

- frequency converters must be equipped with current limiting devices in order to ensure disconnection in cause of faults or overload, and
- the installer of a system is obliged to make sure that additional equipotential bonding is provided (additional inclusion of all metal components, such as frequency converters, mains filters, motor filters, etc. into the existing equipotential bonding), in order to ensure that the permissible touch voltage of 50 V AC or 120 V DC is

not exceeded. (In ÖVE/ÖNORM E 8001-1 the term „touch voltage“ has been omitted. There is only a fault voltage limit of 65 V AC or 120 V DC which must not be exceeded).

In Germany, VDE 0100 is applicable, in Switzerland SEV 1000.

In case of application in any **other country** than those mentioned take into account national rules and recommendations.



Digital protection switches – the new era has begun.

Better security with proactive communication!

The digital RCCB from Eaton's xEffect series are capable to do more than just switch off: They monitor electrical installations and issue advance warnings of critical current flows. Thanks to short time delay and optimized tripping threshold, briefly occurring malfunctions do not induce the digital protection switch to shut down.

When a fault current crops up, the information is reported to the security center of the industrial plant right away and troubleshooting can start before a plant failure occurs. Thus the cause of the fault current can be determined precisely and the system can be serviced easily.

That way, system availability increases and service is crucially improved by the convenient remote control.

Numerous advantages at a glance

- The difference between harmless and critical fault currents is detected
- Precise switching and reduction of nuisance tripping
- Continuous monitoring of plant/factory status – prompt warning of a change in status quo
- Convenient troubleshooting by precise location of the malfunction
- As easy to install as a conventional RCCB
- Longer intervals between servicing
- Ideal for system monitoring thanks to preventive information
- Warning of tripping at leakage current
- Clear status display of the fault current problem with tri-colored LEDs
- Real contact position indicator
- Indicator for fault current tripping
- Comprehensive range of accessories available
- Can be integrated in several bus systems

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SG08310



SG04414



Sg04312



sg44811



SG09911



SG08211



Description

- A complete spectrum of compact residual current devices for a wide range of applications to 100 A
- Rated short circuit strength 10 kA
- Especially for protection against accidents caused by current and property protection
- Wide variety of types (G, S, A, G/A, S/A, R, U, ...)
- Special type U for frequency converter applications with high surge current proof
- Comprehensive range of accessories can be mounted subsequently
- Frost resistance 

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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Type AC

Conditionally surge current-proof 250 A, type AC

SG07411



2-pole

25/0.03	PF7-25/2/003	263577	1/60
25/0.10	PF7-25/2/01	263578	1/60
40/0.03	PF7-40/2/003	263579	1/60
40/0.10	PF7-40/2/01	263580	1/60
63/0.03	PF7-63/2/003	263581	1/60
63/0.10	PF7-63/2/01	263582	1/60
63/0.30	PF7-63/2/03	263583	1/60
100/0.03	PF7-100/2/003	166797	1/60
100/0.10	PF7-100/2/01	166799	1/60
100/0.30	PF7-100/2/03	166822	1/60

SG08211



4-pole

25/0.03	PF7-25/4/003	263584	1/30
25/0.10	PF7-25/4/01	263585	1/30
40/0.03	PF7-40/4/003	263586	1/30
40/0.10	PF7-40/4/01	263587	1/30
40/0.30	PF7-40/4/03	263588	1/30
40/0.50	PF7-40/4/05	263589	1/30
63/0.03	PF7-63/4/003	263590	1/30
63/0.10	PF7-63/4/01	263591	1/30
63/0.30	PF7-63/4/03	263592	1/30
63/0.50	PF7-63/4/05	263593	1/30
80/0.03	PF7-80/4/003	263594	1/30
80/0.10	PF7-80/4/01	263595	1/30
80/0.30	PF7-80/4/03	263596	1/30
80/0.50	PF7-80/4/05	263597	1/30
100/0.03	PF7-100/4/003	102925	1/30
100/0.10	PF7-100/4/01	102926	1/30
100/0.30	PF7-100/4/03	102927	1/30
100/0.50	PF7-100/4/05	102928	1/30

$I_n/I_{\Delta n}$
(A)

Type
Designation

Article No. Units per
package
Type A**Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A**

SG07411

**2-pole**

16/0.01	PF7-16/2/001-A	263598	1/60
25/0.03	PF7-25/2/003-A	263599	1/60
25/0.10	PF7-25/2/01-A	263600	1/60
25/0.30	PF7-25/2/03-A	263601	1/60
40/0.03	PF7-40/2/003-A	263602	1/60
40/0.10	PF7-40/2/01-A	263603	1/60
40/0.30	PF7-40/2/03-A	263604	1/60
63/0.03	PF7-63/2/003-A	263605	1/60
63/0.10	PF7-63/2/01-A	263606	1/60
63/0.30	PF7-63/2/03-A	263607	1/60
100/0.10	PF7-100/2/01-A	166820	1/60
100/0.30	PF7-100/2/03-A	166823	1/60

SG08211

**4-pole**

25/0.03	PF7-25/4/003-A	263608	1/30
25/0.10	PF7-25/4/01-A	263609	1/30
25/0.30	PF7-25/4/03-A	263610	1/30
40/0.03	PF7-40/4/003-A	263611	1/30
40/0.10	PF7-40/4/01-A	263612	1/30
40/0.30	PF7-40/4/03-A	263613	1/30
63/0.03	PF7-63/4/003-A	263614	1/30
63/0.10	PF7-63/4/01-A	263615	1/30
63/0.30	PF7-63/4/03-A	263616	1/30
80/0.03	PF7-80/4/003-A	263617	1/30
80/0.30	PF7-80/4/03-A	263618	1/30
100/0.03	PF7-100/4/003-A	102929	1/30
100/0.10	PF7-100/4/01-A	102930	1/30
100/0.30	PF7-100/4/03-A	102931	1/30
100/0.50	PF7-100/4/05-A	102932	1/30

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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Type G, type G/A

Surge current-proof 3 kA, type G (ÖVE E 8601), type G  , type G/A 

SG07411



2-pole

25/0.03		PF7-25/2/003-G	263619	1/60
25/0.10		PF7-25/2/01-G	263620	1/60
40/0.03		PF7-40/2/003-G	263621	1/60
40/0.10		PF7-40/2/01-G	263622	1/60
40/0.03		PF7-40/2/003-G/A	166826	1/60
63/0.03		PF7-63/2/003-G/A	166827	1/60
80/0.03		PF7-80/2/003-G/A	166828	1/60
100/0.03		PF7-100/2/003-G/A	166798	1/60

SG08211



4-pole

40/0.03		PF7-40/4/003-G	263623	1/30
40/0.10		PF7-40/4/01-G	263624	1/30
63/0.03		PF7-63/4/003-G	263625	1/30
63/0.10		PF7-63/4/01-G	263627	1/30
80/0.03		PF7-80/4/003-G/A	166824	1/30
100/0.03		PF7-100/4/003-G/A	166829	1/30
100/0.3		PF7-100/4/03-G/A	166825	1/30

Type R

Surge current-proof 3 kA, X-ray application, type R 

SG08211



4-pole

63/0.03		PF7-63/4/003-R	263628	1/30
100/0.03		PF7-100/4/003-R	102935	1/30

Type S

Selective + surge current-proof 5 kA, type S 

SG07411



2-pole

40/0.10		PF7-40/2/01-S	263629	1/60
40/0.30		PF7-40/2/03-S	263630	1/60

SG08211



4-pole

80/0.10		PF7-80/4/01-S	263636	1/30
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SG08211

 $I_n/I_{\Delta n}$
(A)Type
DesignationArticle No. Units per
package**Type S/A****Selective + surge current-proof 5 kA, sensitive to residual pulsating DC, type S/A** **4-pole**

25/0.10	PF7-25/4/01-S/A	263631	1/30
40/0.10	PF7-40/4/01-S/A	263632	1/30
40/0.30	PF7-40/4/03-S/A	263633	1/30
63/0.10	PF7-63/4/01-S/A	263634	1/30
63/0.30	PF7-63/4/03-S/A	263635	1/30
80/0.30	PF7-80/4/03-S/A	263637	1/30
100/0.30	PF7-100/4/03-S/A	292494	1/30

SG08211



Description

- Special residual current devices
 - for frequency converter applications
- For fault current/residual current protection and additional protection
- Comprehensive range of accessories can be mounted subsequently
- Real contact position indicator
- Selective
- Frost resistance 

$I_n/I_{\Delta n}$
(A)

Type
Designation

Article No. Units per
package
Type U**Selective + surge current-proof 5 kA, frequency converter-proof, type U** **4-pole**

40/0.10	PF7-40/4/01-U	263638	1/30
40/0.30	PF7-40/4/03-U	263639	1/30
63/0.10	PF7-63/4/01-U	263640	1/30
63/0.30	PF7-63/4/03-U	263641	1/30
80/0.30	PF7-80/4/03-U	292495	1/30
100/0.30	PF7-100/4/03-U	292496	1/30

SG08211



Type

Type
Designation

Article No. Units per
package
Sealing Cover Set Z-RC/AK

- for PFIM, PFR, PF6, PF7, CF16, dRCM (not to use for PFDM)

2-pole	Z-RC/AK-2TE	285385	10/30
4-pole	Z-RC/AK-4MU	101062	10/600

SG82011



Specifications | Residual Current Devices PF7

Description

- Residual Current Devices
- Shape compatible with and suitable for standard busbar connection to other devices of the P-series
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Universal tripping signal switch, also suitable for PL, PFL, Z-A. can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green
- Delayed types suitable for being used with standard fluorescent tubes with or without electronical ballast (30mA-RCD: 30 units per phase conductor, 100mA-RCD: 90 units per phase conductor).
Notes: Depending of the fluorescent lamp ballast manufacturer partly more possible. Symmetrical allocation of the fluorescent lamp ballasts on all phases favourably. Shifting references of the fluorescent lamp ballast manufacturer consider.
- The device functions irrespective of the position of installation
- Tripping is line voltage-independent. Consequently, the RCD is suitable for "fault current/residual current protection" and "additional protection" within the meaning of the applicable installation rules
- Mains connection at either side
- Types with 80 and 100 A permissible short-circuit back-up fuse (PF7-80, PF7-100): Take into account overload protection
- The 4-pole device can also be used for 2- or 3-pole connection. See connection possibilities.
- The test key "T" must be pressed every 6 month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). The test intervall of 6 month is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervalls (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (R_E), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Type -A:** Protects against special forms of residual pulsating DC which have not been smoothed
- **Type -G:** High reliability against unwanted tripping. Compulsory for any circuit where personal injury or damage to property may occur in case of unwanted tripping (ÖVE/ÖNORM E 8001-1 § 12.1.6)
- **Type -G/A:** Additionally protects against special forms of residual pulsating DC which have not been smoothed Special types for X-ray application PF7-...-R
- **Type -S:** Selective residual current device sensitive to AC, type -S. Compulsory for systems with surge arresters downstream of the RCD (ÖVE/ÖNORM E 8001-1 § 12.1.5).
- **Type -S/A:** Additionally protects against special forms of residual pulsating DC which have not been smoothed

Accessories:

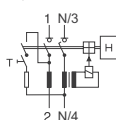
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Tripping signal contact for subsequent installation to the right	Z-NHK	248434
Remote control and automatic switching device	Z-FW/LP	248296
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Sealing cover set	Z-RC/AK-2TE	285385
	Z-RC/AK-4MU	101062

Technical Data

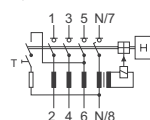
PF7	
Electrical	
Design according to	IEC/EN 61008 Type G according to ÖVE E 8601
Current test marks as printed onto the device	
Tripping	instantaneous
Type G	10 ms delay
Type S	40 ms delay - selective disconnecting function
Rated voltage	U_n 230/400 V AC, 50 Hz
Rated tripping current	$I_{\Delta n}$ 10, 30, 100, 300, 500 mA
Sensitivity	AC and pulsating DC
Rated insulation voltage	U_i 440 V
Rated impulse withstand voltage	U_{imp} 4 kV (1.2/50 μ s)
Rated short circuit strength	I_{cn} 10 kA
Maximum back-up fuse	Short circuit Overload
$I_n = 16$ A	63 A gG/gL 10 A gG/gL
$I_n = 25$ A	63 A gG/gL 16 A gG/gL
$I_n = 40$ A	63 A gG/gL 25 A gG/gL
$I_n = 63$ A	63 A gG/gL 40 A gG/gL
$I_n = 80$ A	80 A gG/gL 50 A gG/gL
$I_n = 100$ A	100 A gG/gL 63 A gG/g
In the case that the maximal possible operating current of the electrical installation don't exceed the rated current of the RCD only short circuit protection must be implemented. Overload protection must be implemented in the case if the maximal possible operating current of the electrical installation can exceed the rated current of the RCD.	
Rated breaking capacity	I_m
Rated fault breaking capacity	$I_{\Delta m}$
$I_n = 16-40$ A	500 A
$I_n = 63$ A	630 A
$I_n = 80$ A	800 A
$I_n = 100$ A	1000 A
Voltage range of test button	
2-pole	196 - 264 V~
4-pole 30 mA	196 - 264 V~
4-pole 10, 100, 300, 500 mA	196 - 456 V~
Endurance	
electrical components	$\geq 4,000$ switching operations
mechanical components	$\geq 20,000$ switching operations
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	35 mm (2MU), 70 mm (4MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Degree of protection in moisture-proof enclosure	IP54
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity	1x (1.5 - 35) mm ² single wire 2x (1.5 - 16) mm ² multi wire
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity according to IEC 60068-2

Connection diagrams

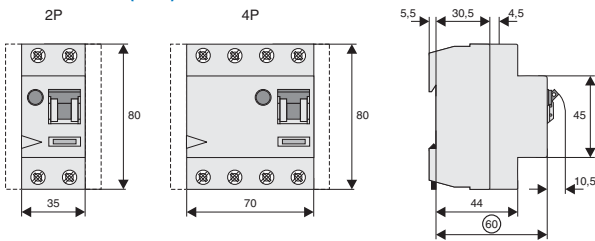
2-pole



4-pole



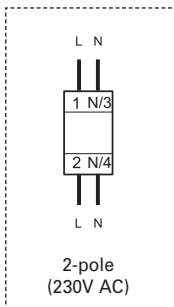
Dimensions (mm)



Correct connection

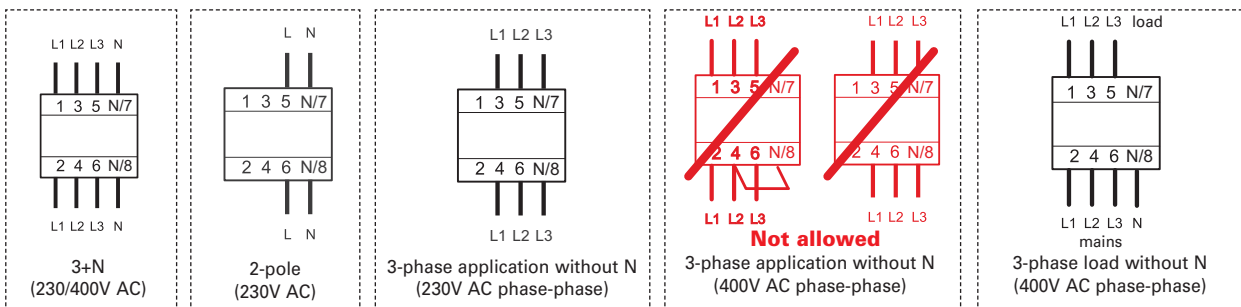
2-pole

30, 100, 300, 500mA types:

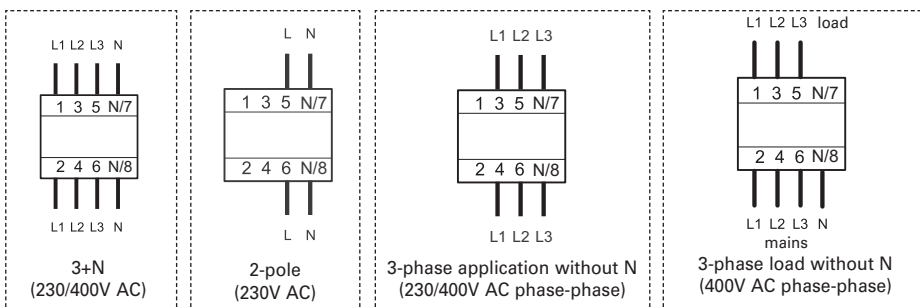


4-pole

30mA types:



10, 100, 300, 500mA types:



Influence of the ambient temperature to the maximum continuous current (A)

	16A	25A	40A	63A	80A	100A
Ambient temperature	2p	2p	4p	2p	4p	4p
40°	16	25	25	63	63	100
45°	14	21	22	59	59	95
50°	11	18	19	55	55	90
55°	9	14	16	50	50	85
60°	— *)	— *)	— *)	45	45	80

Annotation: It has to be ensured that the values in the table are not exceeded and the back-up fuse/thermal protection works properly.

*) not applicable

wa_sg02716



Description

- Increased protection in applications with 1phase frequency converter due to the detection of mixed frequencies
- Reduction of nuisance tripping thanks to
 - time delayed tripping
 - increased current withstand capability > 3 kA
- Higher load rating with DC residual currents up to 10 mA
- For fault current/residual current protection and additional protection
- Comprehensive range of accessories
- Real contact position indicator
- Automatic re-setting possible

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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Type G/F

Surge current-proof 3 kA, sensitive to residual pulsating DC, type G/F (ÖVE E 8601)  

2-pole

25/0.03	PFIM-25/2/003-G/F	187449	1/60
25/0.30	PFIM-25/2/03-G/F	187452	1/60
40/0.03	PFIM-40/2/003-G/F	187450	1/60
40/0.30	PFIM-40/2/03-G/F	187453	1/60
63/0.03	PFIM-63/2/003-G/F	187451	1/60
63/0.30	PFIM-63/2/03-G/F	187454	1/60

4-pole

25/0.03	PFIM-25/4/003-G/F	187455	1/30
25/0.30	PFIM-25/4/03-G/F	187359	1/30
40/0.03	PFIM-40/4/003-G/F	187456	1/30
40/0.30	PFIM-40/4/03-G/F	187360	1/30
63/0.03	PFIM-63/4/003-G/F	187358	1/30
63/0.30	PFIM-63/4/03-G/F	187361	1/30

Type S/F

Selective + surge current-proof 5 kA, sensitive to residual pulsating DC, type S/F  

4-pole

25/0.30	PFIM-25/4/03-S/F	187362	1/30
40/0.30	PFIM-40/4/03-S/F	187363	1/30
63/0.30	PFIM-63/4/03-S/F	187364	1/30

wa_sg02816



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wa_sg02716



Specifications | Residual Current Devices PFIM-F

Description

- Residual Current Devices
- Shape compatible with and suitable for standard busbar connection to other devices of the P-series
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Universal tripping signal switch, also suitable for PLS., PKN., Z-A. can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green
- Delayed types suitable for being used with standard fluorescent tubes with or without electronical ballast (30mA-RCD: 30 units per phase conductor).
Notes: Depending of the fluorescent lamp ballast manufacturer partly more possible. Symmetrical allocation of the fluorescent lamp ballasts on all phases favourably. Shifting references of the fluorescent lamp ballast manufacturer consider.
- The device functions irrespective of the position of installation
- Tripping is line voltage-independent. Consequently, the RCD is suitable for "fault current/residual current protection" and "additional protection" within the meaning of the applicable installation rules
- Mains connection at either side
- The 4-pole device can also be used for 2- or 3-pole connection. See connection possibilities.
- The test key "T" must be pressed every 6 month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). The test interval of 6 month is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (R_E), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Type -F:** Increased protection in applications with 1phase frequency converter due to the detection of mixed frequencies, higher load capacity with smooth DC fault currents up to 10 mA.

Accessories:

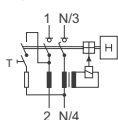
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Tripping signal contact for subsequent installation to the right	Z-NHK	248434
Remote control and automatic switching device	Z-FW/LP	248296
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Sealing cover set	Z-RC/AK-2TE	285385
	Z-RC/AK-4MU	101062

Technical Data

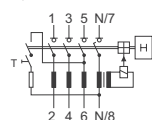
PFIM-F	
Electrical	
Design according to	IEC/EN 62423 Type G according to ÖVE E 8601
Current test marks as printed onto the device	
Tripping	instantaneous
Type G	10 ms delay
Type S	40 ms delay - selective disconnecting function
Rated voltage	U _n 230/400 V AC, 50 Hz
Rated tripping current	I _{Δn} 30, 300 mA
Sensitivity	AC and pulsating DC
Rated insulation voltage	U _i 440 V
Rated impulse withstand voltage	U _{imp} 4 kV (1.2/50 μs)
Rated short circuit strength	I _{cn} 10 kA
Maximum back-up fuse	Short circuit Overload
I _n = 25 A	63 A gG/gL 16 A gG/gL
I _n = 40 A	63 A gG/gL 25 A gG/gL
I _n = 63 A	63 A gG/gL 40 A gG/gL
In the case that the maximal possible operating current of the electrical installation don't exceed the rated current of the RCD only short circuit protection must be implemented	
Overload protection must be implemented in the case if the maximal possible operating current of the electrical installation can exceed the rated current of the RCD.	
Rated breaking capacity	I _m
Rated fault breaking capacity	I _{Δm}
I _n = 16-40 A	500 A
I _n = 63 A	630 A
Voltage range of test button	
2-pole	196 - 264 V~
4-pole 30 mA	196 - 264 V~
4-pole 300 mA	196 - 456 V~
Endurance	
electrical components	≥ 4,000 switching operations
mechanical components	≥ 20,000 switching operations
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	35 mm (2MU), 70 mm (4MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Degree of protection in moisture-proof enclosure	IP54
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity	1.5 - 35 mm² single wire 2 x 16 mm² multi wire
Terminal screw	M5 (mit geschlitzter Schraube according to EN ISO 4757-Z2, Pozidriv PZ2)
Terminal torque	2 - 2.4 Nm
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity according to IEC 60068-2

Connection diagrams

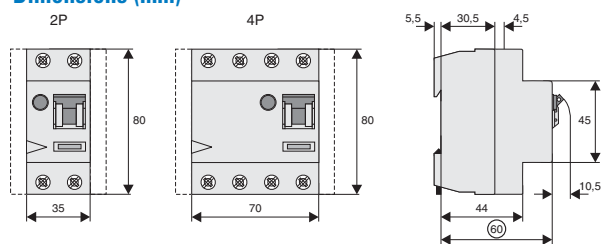
2-pole



4-pole



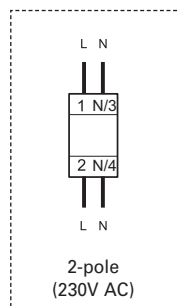
Dimensions (mm)



Correct connection

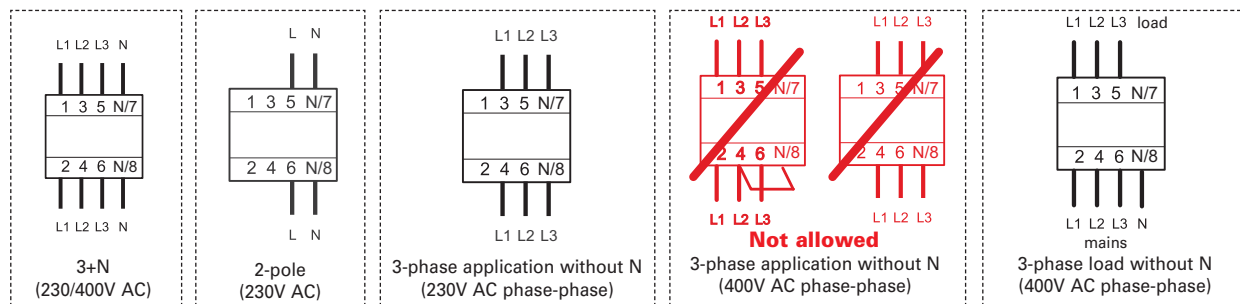
2-pole

30, 300mA types:

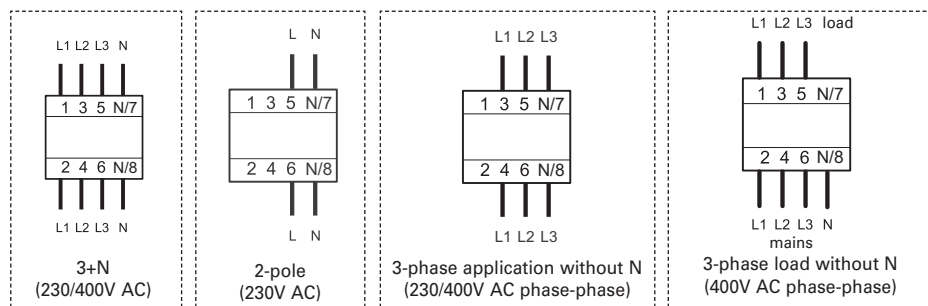


4-pole

30mA types:



300mA types:



SG80011



Description

- Economy series of RCD
- Rated short circuit strength 6 kA
- For fault current/residual current protection and additional protection
- Comprehensive range of accessories can be mounted subsequently
- Frost resistance 

$I_n/I_{\Delta n}$
(A)

Type
Designation

Article No. Units per
package
Type AC**Conditionally surge current-proof 250 A, type AC** **2-pole**

16/0.01	PF6-16/2/001	165756	1/60
16/0.03	PF6-16/2/003	119429	1/60
25/0.03	PF6-25/2/003	286492	1/60
25/0.10	PF6-25/2/01	286493	1/60
25/0.30	PF6-25/2/03	286494	1/60
25/0.50	PF6-25/2/05	286495	1/60
40/0.03	PF6-40/2/003	286496	1/60
40/0.10	PF6-40/2/01	286497	1/60
40/0.30	PF6-40/2/03	286498	1/60
40/0.50	PF6-40/2/05	286499	1/60
63/0.03	PF6-63/2/003	286500	1/60
63/0.10	PF6-63/2/01	286501	1/60
63/0.30	PF6-63/2/03	286502	1/60
63/0.50	PF6-63/2/05	286503	1/60
80/0.03	PF6-80/2/003	165790	1/60
80/0.10	PF6-80/2/01	165791	1/60
80/0.30	PF6-80/2/03	165792	1/60
80/0.50	PF6-80/2/05	165793	1/60

4-pole

25/0.03	PF6-25/4/003	286504	1/30
25/0.10	PF6-25/4/01	286505	1/30
25/0.30	PF6-25/4/03	286506	1/30
25/0.50	PF6-25/4/05	286507	1/30
40/0.03	PF6-40/4/003	286508	1/30
40/0.10	PF6-40/4/01	286509	1/30
40/0.30	PF6-40/4/03	286510	1/30
40/0.50	PF6-40/4/05	286511	1/30
63/0.03	PF6-63/4/003	286512	1/30
63/0.10	PF6-63/4/01	286513	1/30
63/0.30	PF6-63/4/03	286514	1/30
63/0.50	PF6-63/4/05	286515	1/30
80/0.03	PF6-80/4/003	165795	1/30
80/0.10	PF6-80/4/01	165796	1/30
80/0.30	PF6-80/4/03	165799	1/30
80/0.50	PF6-80/4/05	165802	1/30

SG79411



SG80011



$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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Type A

Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A 

SG79411



2-pole

16/0.01	PF6-16/2/001-A	165755	1/60
16/0.03	PF6-16/2/003-A	165757	1/60
25/0.03	PF6-25/2/003-A	112921	1/60
25/0.10	PF6-25/2/01-A	112922	1/60
25/0.30	PF6-25/2/03-A	112923	1/60
40/0.03	PF6-40/2/003-A	112924	1/60
40/0.10	PF6-40/2/01-A	112925	1/60
40/0.30	PF6-40/2/03-A	112926	1/60
40/0.50	PF6-40/2/05-A	165770	1/60
63/0.03	PF6-63/2/003-A	112927	1/60
63/0.10	PF6-63/2/01-A	112928	1/60
63/0.30	PF6-63/2/03-A	112929	1/60
63/0.50	PF6-63/2/05-A	165779	1/60

SG80011



4-pole

25/0.03	PF6-25/4/003-A	112930	1/30
25/0.10	PF6-25/4/01-A	112931	1/30
25/0.30	PF6-25/4/03-A	112932	1/30
25/0.50	PF6-25/4/05-A	165763	1/30
40/0.03	PF6-40/4/003-A	112933	1/30
40/0.10	PF6-40/4/01-A	112934	1/30
40/0.30	PF6-40/4/03-A	112935	1/30
40/0.50	PF6-40/4/05-A	165778	1/30
63/0.03	PF6-63/4/003-A	112936	1/30
63/0.10	PF6-63/4/01-A	112937	1/30
63/0.30	PF6-63/4/03-A	112938	1/30
63/0.50	PF6-63/4/05-A	165789	1/30
80/0.03	PF6-80/4/003-A	165794	1/30
80/0.30	PF6-80/4/03-A	165798	1/30

$I_n/I_{\Delta n}$
(A)

Type
Designation

Article No. Units per
package
Type G**Surge current-proof 3 kA, type G (ÖVE E 8601)** **2-pole**

25/0.03	PF6-25/2/003-G	165758	1/60
25/0.10	PF6-25/2/01-G	165759	1/60
40/0.03	PF6-40/2/003-G	165764	1/60
40/0.10	PF6-40/2/01-G	165766	1/60

4-pole

40/0.03	PF6-40/4/003-G	165772	1/30
40/0.10	PF6-40/4/01-G	165773	1/30
63/0.03	PF6-63/4/003-G	165781	1/30
63/0.10	PF6-63/4/01-G	165784	1/30

Type G/A**Surge current-proof 3 kA, sensitive to residual pulsating DC, type G/A (ÖVE E 8601)** **2-pole**

40/0.10	PF6-40/2/01-G/A	165765	1/60
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4-pole

40/0.03	PF6-40/4/003-G/A	165771	1/30
63/0.03	PF6-63/4/003-G/A	165780	1/30
63/0.10	PF6-63/4/01-G/A	165783	1/30

SG79411



SG80011



SG79411



SG80011



$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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Type R

Surge current-proof 3 kA, X-ray application, type R 

4-pole

63/0.03	PF6-63/4/003-R	165782	1/30
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SG80011



Type S

Selective + surge current-proof 5 kA, type S 

2-pole

40/0.10	PF6-40/2/01-S	165768	1/60
40/0.30	PF6-40/2/03-S	165769	1/60

SG79411



4-pole

25/0.10	PF6-25/4/01-S	165761	1/30
25/0.30	PF6-25/4/03-S	165762	1/30
40/0.10	PF6-40/4/01-S	165775	1/30
40/0.30	PF6-40/4/03-S	165777	1/30
63/0.10	PF6-63/4/01-S	165786	1/30
63/0.30	PF6-63/4/03-S	165788	1/30
80/0.10	PF6-80/4/01-S	165797	1/30
80/0.30	PF6-80/4/03-S	165801	1/30

SG80011



Type S/A

Selective + surge current-proof 5 kA, sensitive to residual pulsating DC, type S/A 

2-pole

40/0.10	PF6-40/2/01-S/A	165767	1/60
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SG79411



4-pole

25/0.10	PF6-25/4/01-S/A	165760	1/30
40/0.10	PF6-40/4/01-S/A	165774	1/30
40/0.30	PF6-40/4/03-S/A	165776	1/30
63/0.10	PF6-63/4/01-S/A	165785	1/30
63/0.30	PF6-63/4/03-S/A	165787	1/30
80/0.30	PF6-80/4/03-S/A	165800	1/30

SG80011



Type

Type
Designation

Article No.

Units per
package**Sealing Cover Set Z-RC/AK**

- for PFIM, PFR, PF6, PF7, CFI6, dRCM (not to use for PFDM)

SG82011



2-pole

Z-RC/AK-2TE

285385

10/30

4-pole

Z-RC/AK-4MU

101062

10/600

Specifications | Residual Current Devices PF6

Description

- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Universal tripping signal switch, also suitable for PLS., PKN., Z-A. can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green
- Delayed types suitable for being used with standard fluorescent tubes with or without electronical ballast (30mA-RCD: 30 units per phase conductor, 100mA-RCD: 90 units per phase conductor).
Notes: Depending of the fluorescent lamp ballast manufacturer partly more possible. Symmetrical allocation of the fluorescent lamp ballasts on all phases favourably. Shifting references of the fluorescent lamp ballast manufacturer consider.
- The device functions irrespective of the position of installation
- Tripping is line voltage-independent. Consequently, the RCD is suitable for "fault current/residual current protection" and "additional protection" within the meaning of the applicable installation rules
- Mains connection at either side
- The 4-pole device can also be used for 2- or 3-pole connection. See connection possibilities.
- The test key "T" must be pressed every 6 month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). The test interval of 6 month is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (R_E), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Type -A:** Protects against special forms of residual pulsating DC which have not been smoothed
- **Type -G:** High reliability against unwanted tripping. Compulsory for any circuit where personal injury or damage to property may occur in case of unwanted tripping (ÖVE/ÖNORM E 8001-1 § 12.1.6)
- **Type -G/A:** Additionally protects against special forms of residual pulsating DC which have not been smoothed. Special types for X-ray application PFIM-...-R
- **Type -R:** To avoid unwanted tripping due to X-ray devices
- **Type -S:** Selective residual current device sensitive to AC, type -S. Compulsory for systems with surge arresters downstream of the RCD (ÖVE/ÖNORM E 8001-1 § 12.1.5).
- **Type -S/A:** Additionally protects against special forms of residual pulsating DC which have not been smoothed.

Accessories:

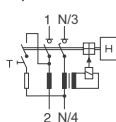
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Tripping signal contact for subsequent installation to the right	Z-NHK	248434
Remote control and automatic switching device	Z-FW/LP	248296
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Sealing cover set	Z-RC/AK-2TE	285385
	Z-RC/AK-4MU	101062

Technical Data

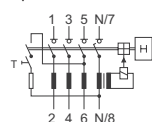
PF6	
Electrical	
Design according to	IEC/EN 61008 Type G according to ÖVE E 8601
Current test marks as printed onto the device	
Tripping	instantaneous
Type G, R	10 ms delay
Type S	40 ms delay - selective disconnecting function
Rated voltage	U_n 230/400 V AC, 50 Hz
Rated tripping current	$I_{\Delta n}$ 10, 30, 100, 300, 500 mA
Sensitivity	AC and pulsating DC
Rated insulation voltage	U_i 440 V
Rated impulse withstand voltage	U_{imp} 4 kV (1.2/50 μ s)
Rated short circuit strength	I_{cn} 10 kA
Maximum back-up fuse	Short circuit Overload
$I_n = 16$ A	63 A gG/gL 10 A gG/gL
$I_n = 25$ A	63 A gG/gL 16 A gG/gL
$I_n = 40$ A	63 A gG/gL 25 A gG/gL
$I_n = 63$ A	63 A gG/gL 40 A gG/gL
$I_n = 80$ A	80 A gG/gL 50 A gG/gL
In the case that the maximal possible operating current of the electrical installation don't exceed the rated current of the RCD only short circuit protection must be implemented. Overload protection must be implemented in the case if the maximal possible operating current of the electrical installation can exceed the rated current of the RCD.	
Rated breaking capacity	I_m
Rated fault breaking capacity	$I_{\Delta m}$
$I_n = 16-40$ A	500 A
$I_n = 63$ A	630 A
$I_n = 80$ A	800 A
Voltage range of test button	
2-pole	196 - 264 V~
4-pole 30 mA	196 - 264 V~
4-pole 10, 100, 300, 500 mA	196 - 456 V~
Endurance	
electrical components	$\geq 4,000$ switching operations
mechanical components	$\geq 20,000$ switching operations
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	35 mm (2MU), 70 mm (4MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Degree of protection in moisture-proof enclosure	IP54
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity	1x (1.5 - 35) mm ² single wire 2x (1.5 - 16) mm ² multi wire
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity according to IEC 60068-2

Connection diagrams

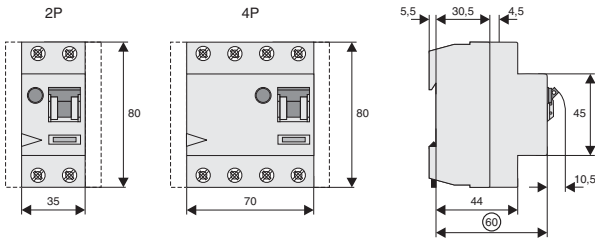
2-pole



4-pole



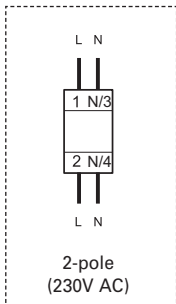
Dimensions (mm)



Correct connection

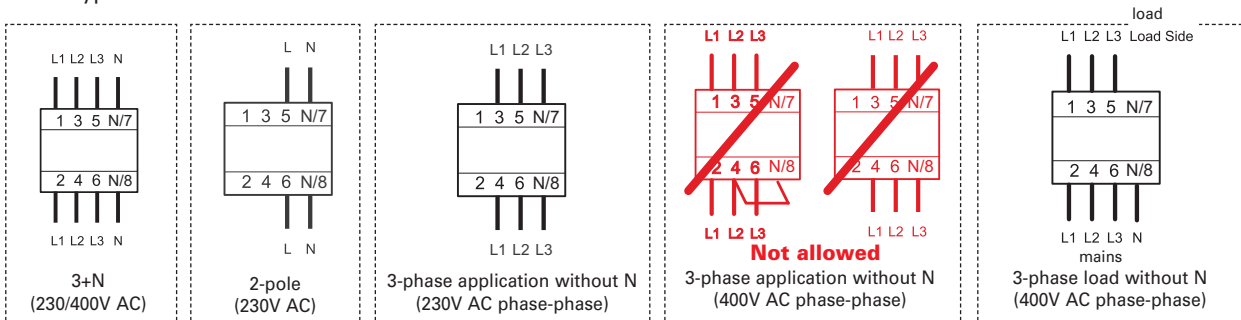
2-pole

30, 100, 300, 500mA types:

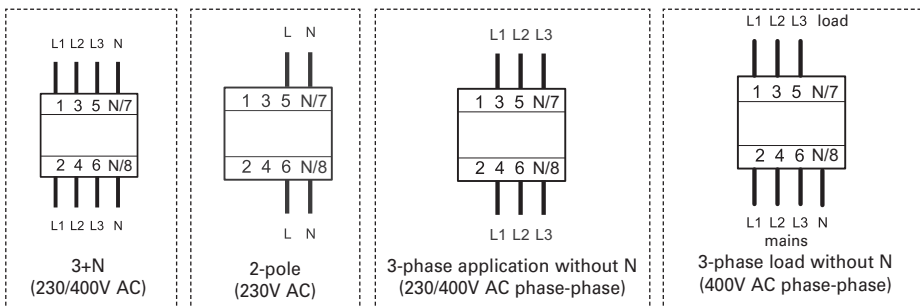


4-pole

30mA types:



10, 100, 300, 500mA types:



Influence of the ambient temperature to the maximum continuous current (A)

Ambient temperature	16A	25A	40A		63A		80A	
	2p	2p	4p	2p	4p	2p	4p	4p
40°	16	25	25	40	40	63	63	80
45°	14	21	22	37	37	59	59	76
50°	11	18	19	33	34	55	55	72
55°	9	14	16	30	31	50	50	68
60°	— *)	— *)	— *)	26	27	45	45	64

Annotation: It has to be ensured that the values in the table are not exceeded and the back-up fuse/thermal protection works properly.

*) not applicable

sg01018_r



Description

- A compact range of residual current devices for a wide range of applications
- For fault current/residual current protection and additional protection
- Selection of nominal currents
- Comprehensive range of accessories
- Real contact position indicator

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
---------------------------	---------------------	-------------	----------------------

Type AC

Conditionally surge current-proof 250 A, type AC 

sg02118_r



2-pole

25/0.03	HNC-25/2/003	194690	1/60
40/0.03	HNC-40/2/003	194691	1/60
63/0.03	HNC-63/2/003	194692	1/60

sg01018_r



4-pole

25/0.03	HNC-25/4/003	194693	1/30
40/0.03	HNC-40/4/003	194694	1/30
63/0.03	HNC-63/4/003	194695	1/30

Type A

Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A 

sg02118_r



2-pole

25/0.03	HNC-25/2/003-A	194684	1/60
40/0.03	HNC-40/2/003-A	194685	1/60
63/0.03	HNC-63/2/003-A	194686	1/60

sg01018_r



4-pole

25/0.03	HNC-25/4/003-A	194687	1/30
40/0.03	HNC-40/4/003-A	194688	1/30
63/0.03	HNC-63/4/003-A	194689	1/30

Specifications | Residual Current Devices HNC

Description

- Residual Current Devices
- Tripping is line voltage-independent. Consequently, the RCD is suitable for fault current/residual current protection and additional protection (ÖVE/ÖNORM E 8001-1 § 6.1.2)
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Universal tripping signal switch can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green
- Suitable for being used with standard fluorescent tubes with or without electronic ballast (typically up to 20 units per phase conductor)
- The device functions irrespective of the position of installation
- Tripping is line voltage-independent. Consequently, the RCD is suitable for "fault current/residual current protection" and "additional protection" within the meaning of the applicable installation rules
- Mains connection at either side
- The 4-pole device can also be used for 2- or 3-pole connection. See connection possibilities.
- The test key "T" must be pressed every 6 months. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). The test interval of 6 months is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (R_E), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Type -A:** Protects against special forms of residual pulsating DC which have not been smoothed

Accessories:

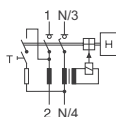
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Remote tripping module	Z-FAM	248293

Technical Data

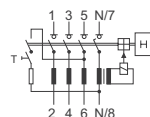
HNC	
Electrical	
Design according to	IEC/EN 61008
Current test marks as printed onto the device	
Tripping	instantaneous
Rated voltage	U _n 230/400 V AC, 50 Hz
Rated tripping current	I _{Δn} 30 mA
Sensitivity	AC and pulsating DC
Rated insulation voltage	U _i 440 V
Rated impulse withstand voltage	U _{imp} 4 kV (1.2/50 μs)
Rated short circuit strength	I _{cn} 6 kA
Maximum back-up fuse	Short circuit Overload
I _n = 25 A	63 A gG/gL 16 A gG/gL
I _n = 40 A	63 A gG/gL 25 A gG/gL
I _n = 63 A	63 A gG/gL 40 A gG/gL
In the case that the maximal possible operating current of the electrical installation don't exceed the rated current of the RCD only short circuit protection must be implemented	
Overload protection must be implemented in the case if the maximal possible operating current of the electrical installation can exceed the rated current of the RCD.	
Rated breaking capacity	I _m
Rated fault breaking capacity	I _{Δm}
I _n = 25-40 A	500 A
I _n = 63 A	630 A
Voltage range of test button	
2-pole	196 - 264 V~
4-pole	196 - 264 V~
Endurance	
electrical components	≥ 4,000 switching operations
mechanical components	≥ 20,000 switching operations
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	35 mm (2MU), 70 mm (4MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity	1.5 - 35 mm² single wire 2 x 16 mm² multi wire
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity according to IEC 60068-2

Connection diagrams

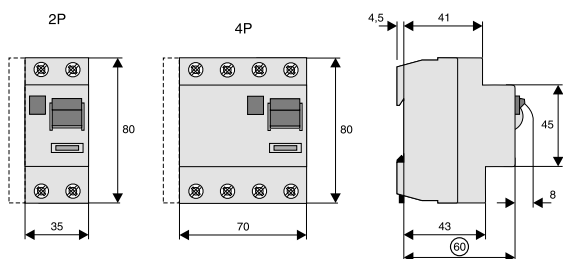
2-pole



4-pole

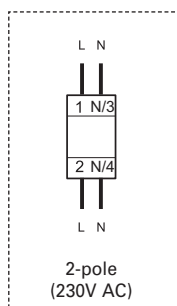


Dimensions (mm)

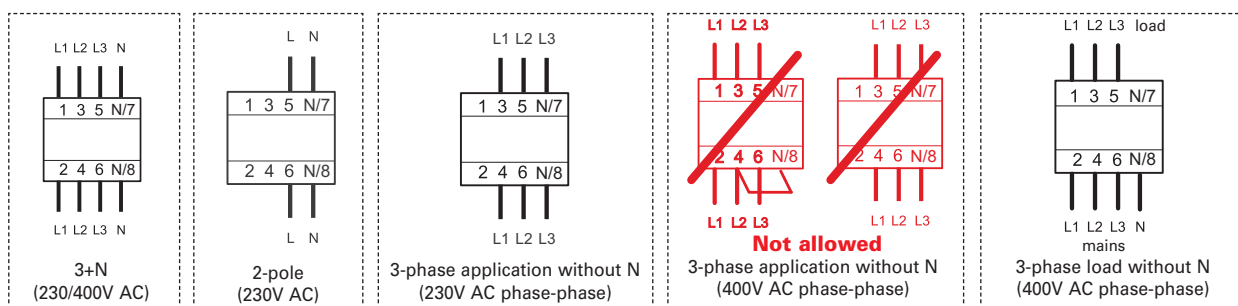


Correct connection

2-pole



4-pole



SG17311



SG47212



Description

- Especially matched residual current relays and core balance transformers
- Nominal fault currents 0.3 A and 1 A
- Standard (-S/A) and frequency converter-proof (-U) models
- Auxiliary switch can be mounted subsequently

$I_n/I_{\Delta n}$
(A)Type
DesignationArticle No. Units per
package**Residual Current Relays PFR, type S/A****Selective + surge current-proof 5 kA, sensitive to residual pulsating DC, type S/A**

0.30	PFR2-03-S/A	235864	1/30
0.30	PFR3-03-S/A	235865	1/30
1	PFR2-1-S/A	235866	1/30
1	PFR3-1-S/A	235867	1/30

SG17311

Maximum cable lead-through diameter
(mm)Type
DesignationArticle No. Units per
package**Core Balance Transformers for PFR-S/A**

60	Z-WFR 2-S/A	236981	1
130	Z-WFR 3-S/A	236982	1

SG47112

 $I_n/I_{\Delta n}$
(A)Type
DesignationArticle No. Units per
package**Residual Current Relays PFR, type U****Selective + surge current-proof 5 kA, frequency converter-proof, type U**

0.30	PFR2-03-U	235868	1/30
0.30	PFR3-03-U	235869	1/30
1	PFR2-1-U	235870	1/30
1	PFR3-1-U	235871	1/30

SG17211

Maximum cable lead-through diameter
(mm)Type
DesignationArticle No. Units per
package**Core Balance Transformers for PFR-U**

60	Z-WFR 2-U	104386	1
130	Z-WFR 3-U	104387	1

SG47112



Type

Type
DesignationArticle No. Units per
package**Sealing Cover Set Z-RC/AK**

- for PFIM, PFR, PF6, PF7, CF16, dRCM (not to use for PFDM)

2-pole	Z-RC/AK-2TE	285385	10/30
4-pole	Z-RC/AK-4MU	101062	10/600

SG82011



Specifications | Residual Current Relays PFR, Core Balance Transformers Z-WFR

Description

- Residual Current Relays
- Shape compatible with and suitable for standard busbar connection to other devices of the P-series
- Universal tripping signal switch, also suitable for PLS., PKN., Z-A. can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green
- Delayed types suitable for being used with standard fluorescent tubes with or without electronical ballast (30mA-RCD: 30 units per phase conductor, 100mA-RCD: 90 units per phase conductor).
Notes: Depending of the fluorescent lamp ballast manufacturer partly more possible. Symmetrical allocation of the fluorescent lamp ballasts on all phases favourably. Shifting references of the fluorescent lamp ballast manufacturer consider.
- The test key "T" must be pressed every 6 month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). The test intervall of 6 month is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervalls (e.g. monthly).
- Type -U:** Suitable for speed-controlled drives with frequency converters in household, trade, and industry. Unwanted tripping is avoided thanks to a tripping characteristic designed particularly for frequency converters. See also explanation "Frequency Converter-Proof RCDs - What for?" Application according to ÖVE/ÖNORM E 8001 and Decision EN 219 (1989), VDE 0100, SEV 1000.

Accessories:

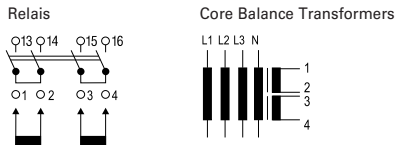
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Tripping signal contact for subsequent installation to the right	Z-NHK	248434
Compact enclosure	KLV-TC-4	276241
Sealing cover set	Z-RC/AK-4MU	101062

Technical Data

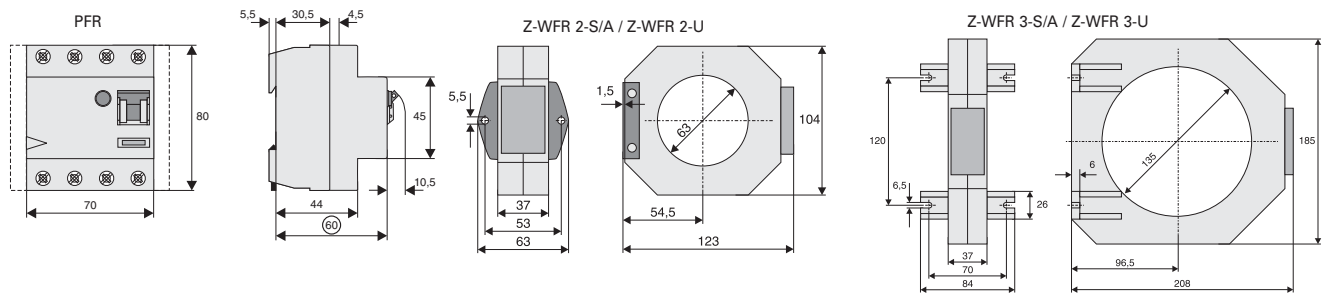
		PFR
Electrical		
Design according to		IEC/EN 61008
Current test marks as printed onto the device		
Tripping		40 ms delay - selective disconnecting function
Rated voltage	U_n	230/400 V AC, 50 Hz
Rated tripping current	$I_{\Delta n}$	(0.1) ^{*)} , 0.3 and 1 A
Rated current of relay contacts		25 A / 400 V~, 16 A / 230 V AC 15
Max. Nennstrom		400 A
Sensitivity		pulsating DC
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50 μ s)
Voltage range of test button		184 - 440 V~
Endurance		
electrical components		$\geq 4,000$ switching operations
mechanical components		$\geq 20,000$ switching operations
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		70 mm (4MU)
Mounting		quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection, built-in		IP40
Upper and lower terminals		open mouthed/lift terminals
Terminal protection		finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity		1.5 - 35 mm ² single wire 2 x 16 mm ² multi wire
Busbar thickness		0.8 - 2 mm
Control line		1.5 - 2.5 mm ²
Tripping temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		25-55°C/90-95% relative humidity according to IEC 60068-2

^{*)} see Important Information for Installation

Connection diagrams

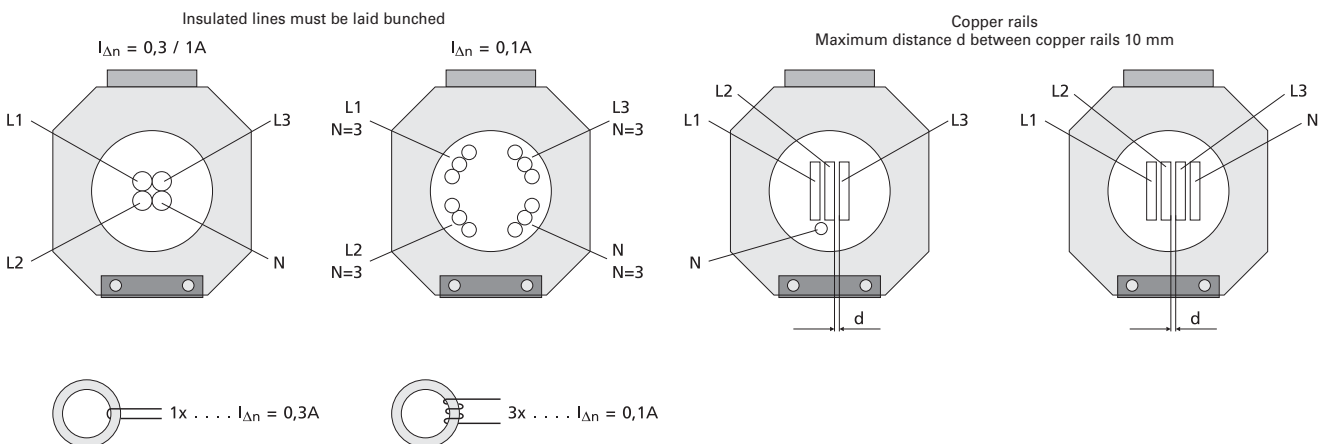


Dimensions (mm)

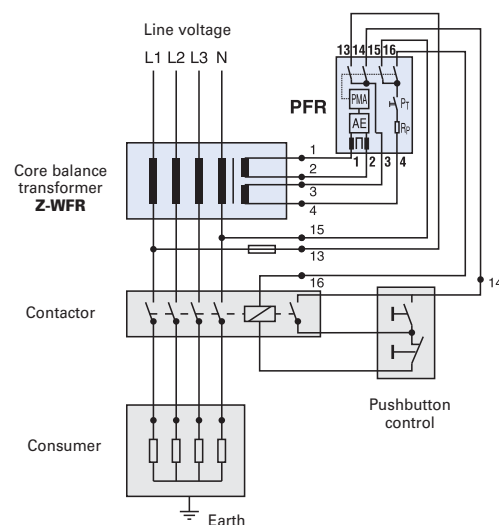


Important Information for Installation

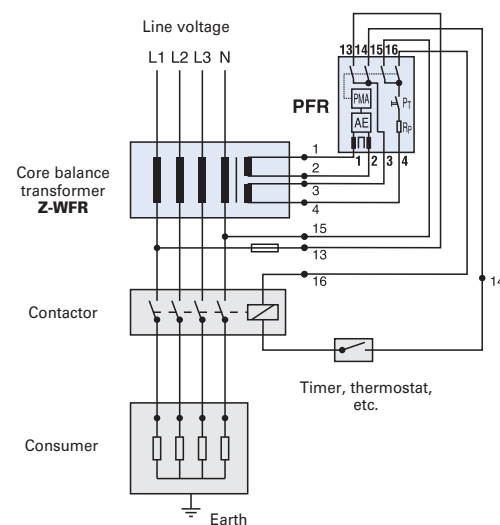
All lines required for operation, L1, L2, and L3 including neutral N, must be routed through the transformer as follows:



Impulse Contact Control



Continuous Contact Control



Two possible switching examples.

- Attention:**
- Connect terminals 1-4 of the relay to the terminals 1-4 of the transformer (see switching examples)!
 - 1+2: secondary winding; 3+4: test winding
 - Supply terminals 13 and 15 as shown, so that the test circuit can work correct!

Rated Tripping Current Matching

Matching of the rated tripping current, 0.1 or 0.3 A, is achieved by the number of turns in the primary winding of the transformer (in PFR2-03-S/A, PFR3-03-S/A, PFR2-03-U and PFR3-03-U).

Residual Current Relays	Transformer	Rated tripping current $I_{\Delta N}$ (A)	Number of primary turns	Maximum cable diameter (mm)	Maximum primary current (A)
PFR2-03-U (S/A)	Z-WFR2	0.1	3	60	150
		0.3	1	60	400
PFR3-03-U (S/A)	Z-WFR3	0.1	3	130	100
		0.3	1	130	400
PFR2-1-U (S/A)	Z-WFR2	1.0	1	60	400
PFR3-1-U (S/A)	Z-WFR3	1.0	1	130	400

SG31011



Description

- Advanced residual current devices for the 125 A nominal current range
- For fault current/residual current protection and additional protection
- Auxiliary switch
- Selective types

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
---------------------------	---------------------	-------------	----------------------

Type AC

Conditionally surge current-proof, type AC 

2-pole

125/0.03	PFDM-125/2/003	249031	1/60
125/0.30	PFDM-125/2/03	249033	1/60

SG30611



4-pole

125/0.03	PFDM-125/4/003	235916	1/30
125/0.10	PFDM-125/4/01	235917	1/30
125/0.30	PFDM-125/4/03	235918	1/30
125/0.50	PFDM-125/4/05	235919	1/30

SG31011



Type A

Conditionally surge current-proof, type A 

2-pole

125/0.03	PFDM-125/2/003-A	249035	1/60
125/0.30	PFDM-125/2/03-A	249037	1/60

SG30611



4-pole

125/0.03	PFDM-125/4/003-A	235920	1/30
125/0.10	PFDM-125/4/01-A	235921	1/30
125/0.30	PFDM-125/4/03-A	235922	1/30
125/0.50	PFDM-125/4/05-A	235923	1/30

SG31011



Type S/A

Selective + surge current-proof, type S/A 

4-pole

125/0.30	PFDM-125/4/03-S/A	285639	1/30
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SG31011



Description	Type Designation	Article No.	Units per package
Accessory			
Auxiliary switch			
6 A, 230 V AC	Z-HD	265620	1

SG34412



Specifications | Residual Current Devices PFDM

Description

- Residual Current Devices
- Tripping is line voltage-independent. Consequently, the RCD is suitable for the protection of humans and additional protection (ÖVE/ÖNORM E 8001-1§ 6.1.2)
- Twin-purpose terminal (lift/open-mouthed) above and below
- Not busbar-compatible with other devices of the P-series
- Auxiliary switch Z-HD can be mounted subsequently
- Contact position indicator red - green
- The device functions irrespective of the position of installation
- Tripping is line voltage-independent. Consequently, the RCD is suitable for "fault current/residual current protection" and "additional protection" within the meaning of the applicable installation rules
- Mains connection at either side
- The test key "T" must be pressed every 6 month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). The test interval of 6 month is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (R_E), or proper checking of the earth conductor condition redundant, which must be performed separately.
- Type -A:** Additionally protects against special forms of residual pulsating DC which have not been smoothed
- Type -S/A:** Compulsory for systems with surge arresters downstream of the RCD (ÖVE/ÖNORM E 8001-1 § 12.1.5)

Accessories:

Auxiliary switch for subsequent installation to the left	Z-HD	265620
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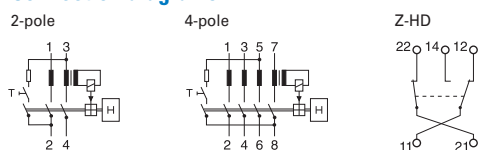
Technical Data

		PFDM
Electrical		
Design according to		IEC/EN 61008
Current test marks as printed onto the device		
Tripping		instantaneous
Type S/A		50 ms delay - selective disconnecting function
Rated voltage	U_n	230/400 V AC, 50 Hz
Rated tripping current	$I_{\Delta n}$	30, 100, 300, 500 mA
Sensitivity		AC and pulsating DC
Rated short circuit strength	I_{cn}	10 kA with back-up fuse
Maximum back-up fuse		short circuit 125 A gG/gL
Rated breaking capacity	I_m	1250 A
Rated fault breaking capacity	$I_{\Delta m}$	
Voltage range of test button		
2-pole		100 - 250 V~
4-pole		185 - 440 V~
Endurance		
electrical components		≥ 4,000 switching operations
mechanical components		≥ 20,000 switching operations
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		36 mm (2P), 72 mm (4P)
Mounting		quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in		IP40
Upper and lower terminals		open mouthed/lift terminals
Terminal protection		finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity		1,5 - 50 mm ²
Busbar thickness		0.8 - 2 mm
Tripping temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +75°C
Resistance to climatic conditions		25-55°C/90-95% relative humidity according to IEC 60068-2

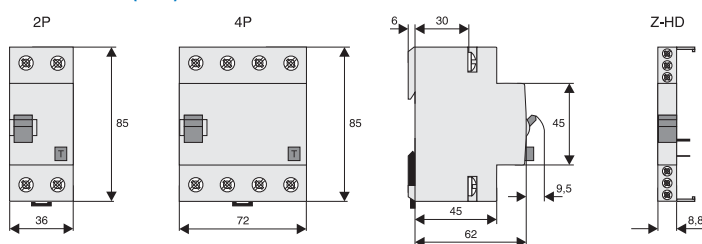
Technical Data

Auxiliary switch Z-HD	
Electrical	
Subsequent installation to the left onto	PFDM
Contacts	1CO + 1NC
Load rating	
AC11	6 A / 230 V AC
DC11	1 A / 230 V DC
Mechanical	
Terminal capacity	up to 2.5 mm ²

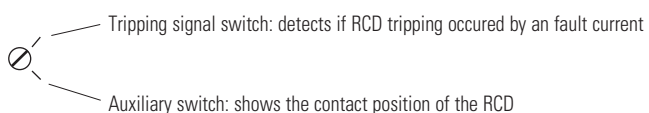
Connection diagrams



Dimensions (mm)



Function Auxiliary Switch Z-HD



SG08310



Description

- Line voltage independent RCCB for fault or additional protection with additional digital features
- System Monitoring: Preventive information / warning before the RCD trips in case of leakage currents
 - Integrated auxiliary contact(s)
 - Local Indication
- New level of accuracy -> Reduced unwanted tripping
- Local status indication of residual current through 3 LEDs
- No monthly test required
- Comprehensive range of accessories
- Real contact position indicator
- Fault current tripping indicator
- Automatic re-setting possible
- Transparent designation plate

$I_n/I_{\Delta n}$
(A)Type
DesignationArticle No. Units per
package**Type G/A****Surge current-proof 3 kA, sensitive to residual pulsating DC, type G/A (ÖVE E 8601)** **4-pole**

25/0.03	dRCM-25/4/003-G/A+	120834	1/30
25/0.30	dRCM-25/4/03-G/A+	120835	1/30
40/0.03	dRCM-40/4/003-G/A+	120836	1/30
40/0.30	dRCM-40/4/03-G/A+	120837	1/30
63/0.03	dRCM-63/4/003-G/A+	120838	1/30
63/0.30	dRCM-63/4/03-G/A+	120839	1/30
80/0.03	dRCM-80/4/003-G/A+	120840	1/30
80/0.30	dRCM-80/4/03-G/A+	120841	1/30

Type R**Surge current-proof 3 kA, X-ray application, type R** **4-pole**

63/0.03	dRCM-63/4/003-R+	120842	1/30
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Type S/A**Selective + surge current-proof typ. 5 kA, sensitive to residual pulsating DC, type S/A** **4-pole**

40/0.30	dRCM-40/4/03-S/A+	120843	1/30
63/0.30	dRCM-63/4/03-S/A+	120844	1/30
80/0.30	dRCM-80/4/03-S/A+	120845	1/30

Type U**Selective + surge current-proof typ. 5 kA, frequency converter-proof, type U** **4-pole**

40/0.03 ^{*)}	dRCM-40/4/003-U+	120850	1/30
40/0.30	dRCM-40/4/03-U+	120851	1/30
63/0.03 ^{*)}	dRCM-63/4/003-U+	120846	1/30
63/0.30	dRCM-63/4/03-U+	120847	1/30
80/0.30	dRCM-80/4/03-U+	120848	1/30

^{*)} Short time delayed + surge current-proof 3 kA

Type

Type
DesignationArticle No. Units per
package**Sealing Cover Set Z-RC/AK**

• for PFIM, PFR, PF6, PF7, CF16, dRCM (not to use for PFDM)

2-pole	Z-RC/AK-2TE	285385	10/30
4-pole	Z-RC/AK-4MU	101062	10/600

SG08310



SG08310



SG08310



SG08310



SG82011



Specifications | Residual Current Devices dRCM Digital

Description

- Residual Current Devices
- Shape compatible with and suitable for standard busbar connection to other devices of the P-series
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Universal tripping signal switch, also suitable for PLS., PKN., ZP-A. can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green
- Tripping indicator white - blue
- Additional safety
 - possibility to seal
 - possibility to lock in ON and OFF position
- Delayed types suitable for being used with standard fluorescent tubes with or without electronical ballast (30mA-RCD: 30 units per phase conductor).
Notes: Depending of the fluorescent lamp ballast manufacturer partly more possible. Symmetrical allocation of the fluorescent lamp ballasts on all phases favourably. Shifting references of the fluorescent lamp ballast manufacturer consider.
- The device functions irrespective of the position of installation
- Tripping is line voltage-independent. Consequently, the RCD is suitable for "fault current/residual current protection" and "additional protection" within the meaning of the applicable installation rules
- Mains connection at either side
- The 4-pole device can also be used for 3- and 2-pole connection.
See connection possibilities.
- The test key "T" must be pressed every year. The system operator must be informed of this obligation and his responsibility in a way that can be proven. The yearly test interval is only valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environment), it's precommended to test in shorter intervals (e.g. monthly).
A test is further needed if red and yellow LED are on together.
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (R_E), or proper checking of the earth conductor condition redundant, which must be performed separately.
- Functioning
 - The green LED becomes active at 0-30% $I_{\Delta n}$
 - The yellow LED becomes active at 30-50% $I_{\Delta n}$
 - The red LED becomes active at >50% $I_{\Delta n}$
- Potential-free relay (NO contact, in parallel with the yellow LED, up to 1 A ohmic load / 230 V~) for external prewarning function. Bistabile, means the warning stays on also when the breaker trips, until reset.
- Type -A:** Protects against special forms of residual pulsating DC which have not been smoothed
- Type -G:** High reliability against unwanted tripping. Compulsory for any circuit where personal injury or damage to property may occur in case of unwanted tripping (ÖVE/ÖNORM E 8001-1 § 12.1.6)
- Type -G/A:** Additionally protects against special forms of residual pulsating DC which have not been smoothed
- Type -R:** To avoid unwanted tripping due to X-ray devices
- Type -S:** Selective residual current device sensitive to AC, type -S. Compulsory for systems with surge arresters downstream of the RCD (ÖVE/ÖNORM E 8001-1 § 12.1.5).
- Type -S/A:** Additionally protects against special forms of residual pulsating DC which have not been smoothed
- Type -U:** Suitable for speed-controlled drives with frequency converters in household, trade, and industry.
Unwanted tripping is avoided thanks to a tripping characteristic designed particularly for frequency converters.
See also explanation "Frequency Converter-Proof RCDs - What for?"
Application according to ÖVE/ÖNORM E 8001-1 and Decision EN 219 (1989), VDE 0100, SEV 1000.

Accessories:

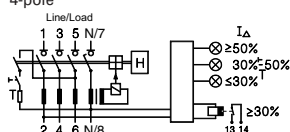
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Tripping signal contact for subsequent installation to the right	Z-NHK	248434
Remote control and automatic switching device	Z-FW/LP	248296
Compact enclosure	KLV-TC-4	276241
Sealing cover set	Z-RC/AK-4MU	101062

Technical Data

dRCM Digital	
Electrical	
Design according to	IEC/EN 61008 Type G and G/A acc. to ÖVE E 8601
Current test marks as printed onto the device	
Tripping	instantaneous
Type G, R	10 ms delay
Type S	40 ms delay - selective disconnecting function
Type U (only 30 mA)	10 ms delay
Type U (without 30 mA)	40 ms delay - selective disconnecting function
Rated voltage	U_n 230/400 V AC, 50 Hz
Minimum operational voltage electronic	50 - 254 V AC
Minimum operational voltage test circuit	196 - 264 V AC
Rated tripping current	$I_{\Delta n}$ 30, 300 mA
Sensitivity	AC and pulsating DC
Rated insulation voltage	U_i 440 V
Rated impulse withstand voltage	U_{imp} 4 kV (1.2/50 μ s)
Rated short circuit strength	I_{cn} 10 kA
Peak withstand current	
Type G, G/A, R, U (30mA)	3 kA (8/20 μ s) surge current proof
Type S/A, U (without 30mA)	typ. 5 kA (8/20 μ s) selective + surge current proof
Electrical isolation	> 4 mm contact space
Maximum back-up fuse	Short circuit and overload protection
$I_n = 16-63$ A	63 A gG/gL
$I_n = 80$ A	80 A gG/gL
In the case that the maximal possible operating current of the electrical installation don't exceed the rated current of the RCD only short circuit protection must be implemented. Overload protection must be implemented in the case if the maximal possible operating current of the electrical installation can exceed the rated current of the RCD.	
Endurance	
electrical components	$\geq 4,000$ switching operations
mechanical components	$\geq 20,000$ switching operations
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	70 mm (4MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Degree of protection in moisture-proof enclosure	IP54
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity	1.5 - 35 mm ² single wire 2 x 16 mm ² multi wire
Terminal screw	M5 (Pozidriv PZ2)
Terminal torque	2 - 2.4 Nm
Terminal capacity warning contact(s)	0.25 - 1.5 mm ² (plug in terminals)
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity according to IEC 60068-2
Real contact position indicator	red / green
Tripping indicator	white / blue

Connection diagram

4-pole



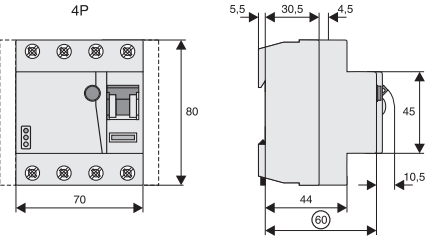
Local Indication RCCB

Status indication LED		red / yellow / green
Permanent light green		Normal operation
Permanent light yellow		The measured residual current is bigger than 30% of the nominal tripping value.
Permanent light red		The measured residual current is bigger than 50% of the nominal tripping value.

Remote Indication

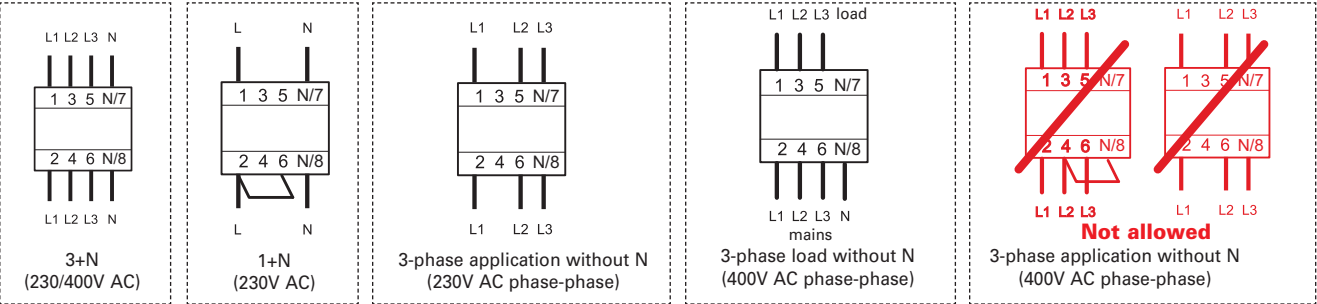
Standard Version	1 contact NO up to 230V AC, 2 terminals, 1 A ohmic load
Optional Version (available upon request)	1 NO + 1 NC up to 110V AC/contact, 2x2 terminals, 1 A ohmic load
Terminal capacity of contacts	0.25 - 1.5 mm ²

Dimensions (mm)



Correct connection

30, 300mA types:



Electronic works within 50-254 V AC !

SG17711



Description

- By combining this device with a top-quality miniature circuit breaker of type PLHT a top-quality RCBO unit (combined RCD/MCB device) is formed.
- Add-on residual current unit (screw connection) for 80 or 125 A (2-pole and 4-pole)
- High flexibility and ease of installation thanks to variable wiring
- Free selection of main power supply
- Auxiliary switch 1 make contact included as standard in all PBHT versions
- Permits combinations with a variety of characteristics thanks to the different rated currents and characteristics of the miniature circuit breakers PLHT which can be connected
- For commercial and industry applications
- For subsequent mounting onto 2, 3, 3+N and 4-pole-miniature circuit breakers PLHT
- The screw connection to the PLHT-device can be unscrewed at any time. Consequently, in case of modifications of the systems to be protected, the installation can be adapted to new requirements at any time.



$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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Type AC

AC-sensitive, conditionally surge current-proof 250 A, type AC

2-pole			
80/0.03	PBHT-80/2/003	248818	1/4
80/0.30	PBHT-80/2/03	248820	1/4
80/0.50	PBHT-80/2/05	248822	1/4
80/1.00	PBHT-80/2/1	248824	1/4
125/0.03	PBHT-125/2/003	248799	1/4
125/0.30	PBHT-125/2/03	248801	1/4
125/0.50	PBHT-125/2/05	248803	1/4
125/1.00	PBHT-125/2/1	248805	1/4
4-pole			
80/0.03	PBHT-80/4/003	248826	1/4
80/0.30	PBHT-80/4/03	248828	1/4
80/0.50	PBHT-80/4/05	248831	1/4
80/1.00	PBHT-80/4/1	248834	1/4
125/0.03	PBHT-125/4/003	248807	1/4
125/0.30	PBHT-125/4/03	248809	1/4
125/0.50	PBHT-125/4/05	248812	1/4
125/1.00	PBHT-125/4/1	248815	1/4

Type A

Sensitive to residual pulsating DC, conditionally surge current-proof 250 A, type A

2-pole			
80/0.03	PBHT-80/2/003-A	248819	1/4
80/0.30	PBHT-80/2/03-A	248821	1/4
80/0.50	PBHT-80/2/05-A	248823	1/4
80/1.00	PBHT-80/2/1-A	248825	1/4
125/0.03	PBHT-125/2/003-A	248800	1/4
125/0.30	PBHT-125/2/03-A	248802	1/4
125/0.50	PBHT-125/2/05-A	248804	1/4
125/1.00	PBHT-125/2/1-A	248806	1/4
4-pole			
80/0.03	PBHT-80/4/003-A	248827	1/4
80/0.30	PBHT-80/4/03-A	248829	1/4
80/0.50	PBHT-80/4/05-A	248832	1/4
80/1.00	PBHT-80/4/1-A	248835	1/4
125/0.03	PBHT-125/4/003-A	248808	1/4
125/0.30	PBHT-125/4/03-A	248810	1/4
125/0.50	PBHT-125/4/05-A	248813	1/4
125/1.00	PBHT-125/4/1-A	248816	1/4

SG17711


 $I_n/I_{\Delta n}$
(A)

Type
Designation

Article No. Units per
package
Type S/A**Selective + surge current-proof 5 kA, type S/A****4-pole**

80/0.30	PBHT-80/4/03-S/A	248830	1/4
80/0.50	PBHT-80/4/05-S/A	248833	1/4
80/1.00	PBHT-80/4/1-S/A	248836	1/4
125/0.30	PBHT-125/4/03-S/A	248811	1/4
125/0.50	PBHT-125/4/05-S/A	248814	1/4
125/1.00	PBHT-125/4/1-S/A	248817	1/4

Operational voltage range
V~

Type
Designation

Article No. Units per
package
Accessory**Shunt trip release**

110-415	Z-BHASA/230	248445	8
12-60	Z-BHASA/24	248444	8

SG09411

**Specifications | Add-on Residual Current Protection Unit PBHT****Description**

- By combination with miniature circuit breaker PLHT => RCBO-Unit (MCCB)
- Add-on residual current unit (screw connection) for 80 or 125 A (2-pole and 4-pole)
- High flexibility and ease of installation thanks to variable wiring (400 mm flexible connection wires 2p = 2 units, 4p = 4 units included in the set)
- Free selection of main power supply
- Auxiliary switch 1 make contact included as standard in all PBHT versions
- Permits combinations with a variety of characteristics thanks to the different rated currents and characteristics of the miniature circuit breakers PLHT which can be connected
- For commercial and industry applications
- For subsequent mounting onto 2, 3, 3+N and 4-pole-miniature circuit breakers PLHT
- Toggle (serves as switch position- and tripping indicator)
- The screw connection to the PLHT-device can be unscrewed at any time. Consequently, in case of modifications of the systems to be protected, the installation can be adapted to new requirements at any time.
- The test key "T" must be pressed every 6 month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). The test intervall of 6 month is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervalls (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (R_E), or proper checking of the earth conductor condition redundant, which must be performed separately.

Accessories:

Flexible connection wires (connection to PLHT) are included in the standard set:

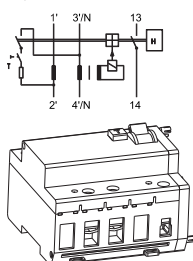
2-pole 80 A	2 x 16 mm ² (á 400 mm)
4-pole 80 A	4 x 16 mm ² (á 400 mm)
2-pole 125 A	2 x 35 mm ² (á 400 mm)
4-pole 125 A	4 x 35 mm ² (á 400 mm)

Technical Data

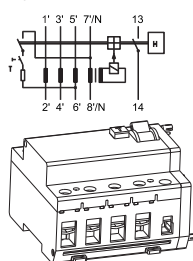
PBHT	
Electrical	
Design according to	IEC/EN 60947-2
Current test marks as printed onto the device	
Strombahnen	
Rated voltage	U_e 230/400 V AC
Limits operation voltage test circuit	
2-pole	196-264 V
4-pole, 30mA	196-264 V
4-pole	196-456 V
Rated frequency	50 Hz
Rated current	I_n 80 A, 125 A
Rated tripping current	$I_{\Delta n}$ 30, 300, 500, 1000 mA
Rated non-tripping current	$I_{\Delta no}$ 0.5 I_n
Sensitivity	AC and pulsating DC
Tripping	instantaneous 250 A (8/20 μ s), surge current proof
Type S	40 ms delay 6 kA, selective disconnecting function, surge current proof
Rated service short circuit breaking capacity	I_{cn} same as connected PLHT
Rated ultimate circuit breaking capacity	I_{cu} same as connected PLHT
Rated fault short circuit breaking capacity	$I_{\Delta/n}$ = I_{cu}
Rated impulse withstand voltage	U_{imp} 4 kV (1.2/50 μ s)
Endurance mechanical components	
PBHT-80	>10,000
PBHT-125	>8,000
Endurance electrical components	
PBHT-80	>1,500
PBHT-125	>1,000
Auxiliary Contact	
Utilisation category AC15	
Rated voltage	U_e 250 V AC
Rated operational current	I_e 16 A AC
Mechanical	
Frame size	45 mm
Device height	90 mm
Device width	95 mm (5.5MU)
Depth of central body	60 mm
Mounting	screwed onto PLHT 2-, 3-, 4-pole; PBHT-ASA
Degree of protection, built-in	IP40
Upper and lower terminals	lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity	
Main conductor	2.5 - 50 mm ²
Auxiliary switch	1 - 25 mm ²
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity according to IEC 60068-2

Connection diagrams

2-pole

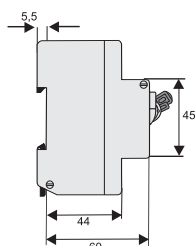
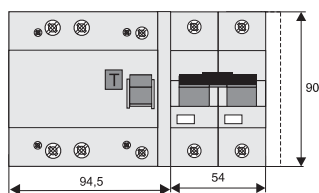


4-pole

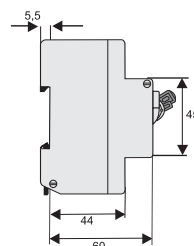
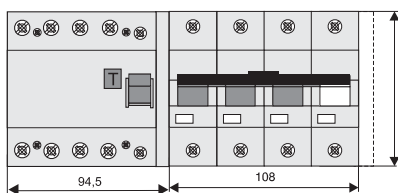


Dimensions (mm)

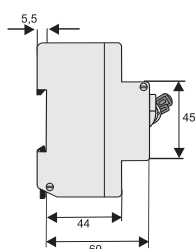
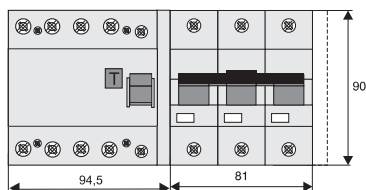
PBHT/2p + PLHT/2p



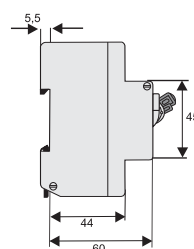
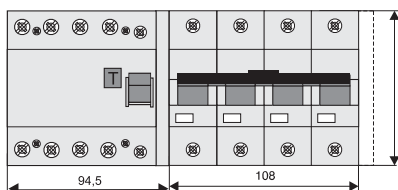
PBHT/4p + PLHT/3p+N



PBHT/4p + PLHT/3p

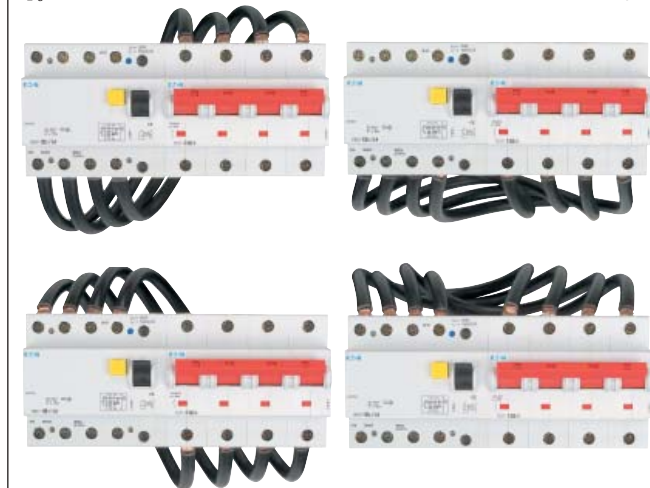


PBHT/4p + PLHT/4p



Wiring options

wa_sg05510

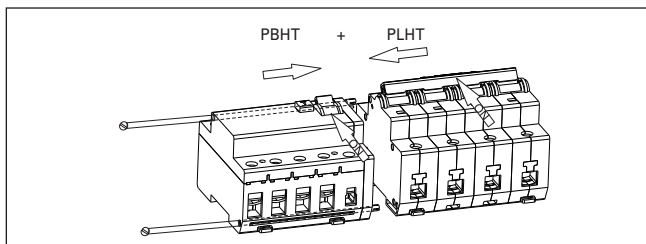


wa_sg05610

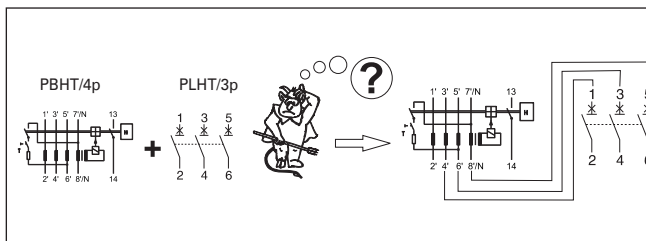
wa_sg05410

wa_sg05310

Mounting PBHT + PLHT

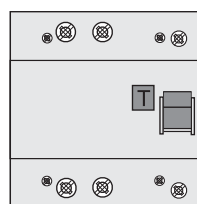
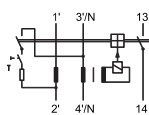


Connection PBHT/4p + PLHT/3p

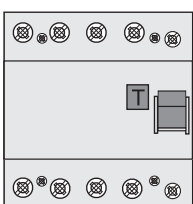
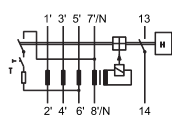


Mounting arrangement residual current protection unit - shunt trip release - miniature circuit breaker - auxiliary contact

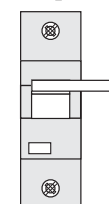
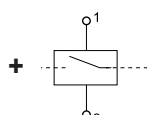
PBHT-2-pole



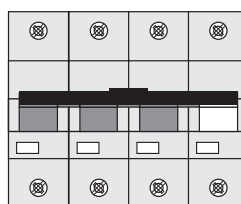
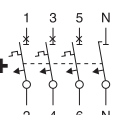
PBHT-4-pole



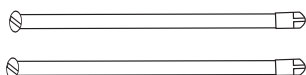
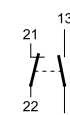
Z-PBHT-ASA



PLHT-3+N-pole



Z-LHK



Accessories for PBHT

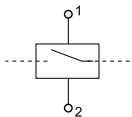
Shunt trip release Z-BHASA

- Can be mounted subsequently
- Contact position indicator red/green
- Marking labels can be fitted
- Wide operational voltage range
- Sufficient power of extra low voltage source must be ensured
PBHT-ASA/24: min. 90 VA
- Screws for mounting included PBHT => BHASA => PLHT

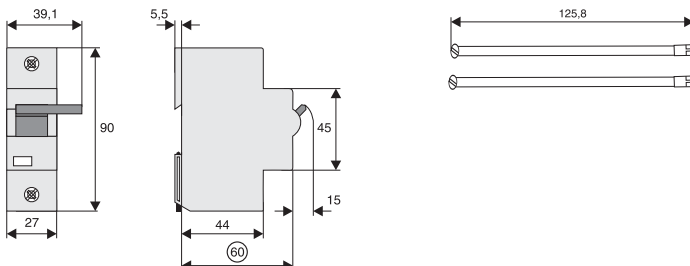
Technical Data

	Z-BHASA/24	Z-BHASA/230
Electrical		
Minimum pulse duration	15 ms	10 ms
Internal resistance	2 W	130 W
Duty	100%	100%
Tripping time	< 20 ms	< 20 ms
Peak withstand voltage (1.2/50 µs)	2 kV	2 kV
Endurance	>4,000 switching operations	>4,000 switching operations
AC voltage range		
Responding limit	8 V	70 V
Operational voltage range	12-60 V	110-415 V
Maximum current consumption during switch-on	1.4-7 A	3.4 A (at 230 V)
Current flow time at max. current consumption	4.0 ms	4.5 ms
DC voltage range		
Responding limit	11 V	90 V
Operational voltage range	12-60 V	110-230 V
Maximum current consumption during switch-on	1.7 A typ.	1.7 A typ.
Current flow time at max. current consumption	2 ms	4 ms
Mechanical		
Frame size	45 mm	45 mm
Device height	90 mm	90 mm
Device width	27 mm	27 mm
Mounting	quick fastening on DIN rail IEC/EN 60715	
Degree of protection, built-in	IP40	IP40
Upper and lower terminals	lift terminals	lift terminals
Terminal capacity	2.5-30 mm ²	2.5-30 mm ²
Terminal torque	4 Nm	4 Nm

Connection diagram



Dimensions (mm)



SG31211



Description

- Reliable, universal monitoring of residual current
- RCD characteristic and sensitivity are freely selectable
- Compact design, with integrated transformer
- DIN mounting, compatible with shapes and standard busbar connections of other Xpole devices
- Local status indication of residual current through 3 LEDs
- 2 potential-free signalling contacts

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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Leakage Current Monitor PDIM

 +  , instantaneous,  ,  => adjustable

4-pole

40/0.03; 0.1; 0.3; 0.5; 1	PDIM-40/4	111760	1/30
100/0.03; 0.1; 0.3; 0.5; 1	PDIM-100/4	111761	1/30

SG31211



Specifications | Leakage Current Monitor PDIM

Description

- Shape compatible with and suitable for standard busbar connection to other devices of the P-series
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Power supply via 'OR' disjunction of the 4 conductors
- Electronic functioning (line-voltage dependent)
- The device functions irrespective of the position of installation
- Mains connection at either side
- The 4-pole device can also be used for 3-pole connection.
For this purpose use terminals 1-2, 3-4, and 5-6.
- The 4-pole switch can also be used as a 2-pole switch
For this purpose use terminals 5-6 and N-N.
- 2 potential-free relays (make contact, in parallel with the yellow and red LED)
(up to 10 A / 230 V~)

Functioning

- The green LED becomes active at 0-30% of the preset $I_{\Delta n}$.
The yellow LED becomes active at 30-50% of the preset $I_{\Delta n}$.
The red LED becomes active at >50% of the preset $I_{\Delta n}$.
- The yellow LED turns off again when the identified residual current is <30% of the preset $I_{\Delta n}$.
- The red LED turns off again when the identified residual current is <50% of the preset $I_{\Delta n}$.
- Only one LED will be active at a time.
- An output relay will always be switched simultaneously with the yellow or red LED
- Depending on the setting of the type of RCD (instantaneous, G, S), the residual current needs to flow a sufficiently long time before an action is triggered.

Test function

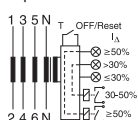
- The rotary coding switch for the RCD switch function is to be set to "TEST".
The device then alternately simulates residual currents of 30% and 50% of the $I_{\Delta n}$. In this process, the yellow and red LED flash alternately (1 Hz), both output relays remain permanently energised.

Technical Data

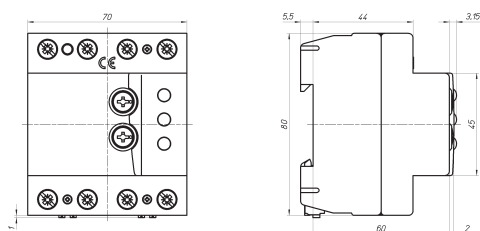
		PDIM
Electrical		
Design similar to		DIN/EN 62020
Current test marks as printed onto the device		
Rated current	I _n	40 A, 100 A
Tripping behaviour (adjustable)		instantaneous
Type G		10 ms delay
Type S		40 ms delay - selective disconnecting function
Rated voltage	U _n	230/400 V, 50/60 Hz 240/415 V, 50/60 Hz
Rated tripping current (adjustable)	I _{Δn}	30, 100, 300, 500, 1000 mA
Sensitivity		AC and pulsating DC
Rated insulation voltage	U _i	440 V
Rated short circuit strength	I _{cn}	10 kA
Maximum back-up fuse		Short circuit

Connection diagram

4-pole



Dimensions (mm)



sg06416



Description

- Arc Fault Detection Device acc. to IEC/EN-62606
- Detects and quenches arc faults in final circuits
- Fully combined with residual current circuit breaker (RCCB) and miniature circuit breaker (MCB)
- 2-pole: Both clearances between open contacts are protected
- Variable installation of N either left or right
- Rated currents from 10 to 40 A
- Contact position indicator red – green
- Tripped indication: MCB, RCCB or AFDD
- LED indication for arc faults
- Permanent self-monitoring
- Overvoltage and overheat monitoring
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- 10 and 30 mA rated residual currents
- Tripping characteristics B, C
- Rated breaking capacity up to 10 kA
- The -OL types are specifically designed to fulfill the tripping characteristic requirements of $I_2 \leq I_z$ in the Norwegian electrotechnical standard NEK 400-8-823.

sg06416


 $I_n/I_{\Delta n}$
(A)

Type
Designation

Article No. Units per
package
Type F, 10 kA, 2-pole**Surge current-proof 3 kA, sensitive to residual pulsating DC, type F****Characteristic B**

100L/0.03	AFDD-10/2/B/003-F-OL	300184	1/40
130L/0.03	AFDD-13/2/B/003-F-OL	300185	1/40
150L/0.03	AFDD-15/2/B/003-F-OL	300186	1/40
200L/0.03	AFDD-20/2/B/003-F-OL	300187	1/40
6/0.03	AFDD-6/2/B/003-F	300183	1/40
10/0.03	AFDD-10/2/B/003-F	187243	1/40
13/0.03	AFDD-13/2/B/003-F	187253	1/40
16/0.03	AFDD-16/2/B/003-F	187263	1/40
20/0.03	AFDD-20/2/B/003-F	187272	1/40
25/0.03	AFDD-25/2/B/003-F	187278	1/40

Characteristic C

100L/0.03	AFDD-10/2/C/003-F-OL	300179	1/40
130L/0.03	AFDD-13/2/C/003-F-OL	300180	1/40
150L/0.03	AFDD-15/2/C/003-F-OL	300181	1/40
200L/0.03	AFDD-20/2/C/003-F-OL	300182	1/40
6/0.03	AFDD-6/2/C/003-F	300178	1/40
10/0.03	AFDD-10/2/C/003-F	187249	1/40
13/0.03	AFDD-13/2/C/003-F	187259	1/40
16/0.03	AFDD-16/2/C/003-F	187269	1/40
20/0.03	AFDD-20/2/C/003-F	187275	1/40
25/0.03	AFDD-25/2/C/003-F	187281	1/40

Type F, 6 kA, 2-pole**Surge current-proof 3 kA, sensitive to residual pulsating DC, type F****Characteristic B**

32/0.03	AFDD-32/2/B/003-F	187284	1/40
40/0.03	AFDD-40/2/B/003-F	187290	1/40

Characteristic C

32/0.03	AFDD-32/2/C/003-F	187287	1/40
40/0.03	AFDD-40/2/C/003-F	187293	1/40

$I_n/I_{\Delta n}$
(A)Type
DesignationArticle No. Units per
package

sg06416

**Type G/A, 10 kA, 2-pole****Surge current-proof 3 kA, sensitive to residual pulsating DC, type G/A****Characteristic B**

100L/0.03	AFDD-10/2/B/003-G/A-OL	300163	1/40
130L/0.03	AFDD-13/2/B/003-G/A-OL	300166	1/40
150L/0.03	AFDD-15/2/B/003-G/A-OL	300167	1/40
200L/0.03	AFDD-20/2/B/003-G/A-OL	300172	1/40
6/0.01	AFDD-6/2/B/001-G/A	300193	1/40
10/0.01	AFDD-10/2/B/001-G/A	300194	1/40
13/0.01	AFDD-13/2/B/001-G/A	300195	1/40
16/0.01	AFDD-16/2/B/001-G/A	300196	1/40
6/0.03	AFDD-6/2/B/003-G/A	300161	1/40
10/0.03	AFDD-10/2/B/003-G/A	300162	1/40
13/0.03	AFDD-13/2/B/003-G/A	300165	1/40
16/0.03	AFDD-16/2/B/003-G/A	300168	1/40
20/0.03	AFDD-20/2/B/003-G/A	300170	1/40
25/0.03	AFDD-25/2/B/003-G/A	300173	1/40

Characteristic C

100L/0.03	AFDD-10/2/C/003-G/A-OL	300148	1/40
130L/0.03	AFDD-13/2/C/003-G/A-OL	300150	1/40
150L/0.03	AFDD-15/2/C/003-G/A-OL	300151	1/40
200L/0.03	AFDD-20/2/C/003-G/A-OL	300154	1/40
6/0.01	AFDD-6/2/C/001-G/A	300188	1/40
10/0.01	AFDD-10/2/C/001-G/A	300189	1/40
13/0.01	AFDD-13/2/C/001-G/A	300191	1/40
16/0.01	AFDD-16/2/C/001-G/A	300192	1/40
6/0.03	AFDD-6/2/C/003-G/A	300138	1/40
10/0.03	AFDD-10/2/C/003-G/A	300147	1/40
13/0.03	AFDD-13/2/C/003-G/A	300149	1/40
16/0.03	AFDD-16/2/C/003-G/A	300152	1/40
20/0.03	AFDD-20/2/C/003-G/A	300153	1/40
25/0.03	AFDD-25/2/C/003-G/A	300155	1/40

Type G/A, 6 kA, 2-pole**Surge current-proof 3 kA, sensitive to residual pulsating DC, type G/A****Characteristic B**

32/0.03	AFDD-32/2/B/003-G/A	300174	1/40
40/0.03	AFDD-40/2/B/003-G/A	300222	1/40

Characteristic C

32/0.03	AFDD-32/2/C/003-G/A	300158	1/40
40/0.03	AFDD-40/2/C/003-G/A	300159	1/40

sg06416


 $I_n/I_{\Delta n}$
(A)

Type
Designation

Article No.

Units per
package**Type A, 10 kA, 2-pole****Short-time delayed, sensitive to residual pulsating DC, type A****Characteristic B**

6/0.01	AFDD-6/2/B/001-Li/A	300210	1/40
10/0.01	AFDD-10/2/B/001-Li/A	187166	1/40
13/0.01	AFDD-13/2/B/001-Li/A	187178	1/40
150L/0.01	AFDD-15/2/B/001-Li/A-OL	187190	1/40
16/0.01	AFDD-16/2/B/001-Li/A	187202	1/40
6/0.03	AFDD-6/2/B/003-Li/A	300226	1/40
10/0.03	AFDD-10/2/B/003-Li/A	187169	1/40
13/0.03	AFDD-13/2/B/003-Li/A	187181	1/40
150L/0.03	AFDD-15/2/B/003-Li/A-OL	187193	1/40
16/0.03	AFDD-16/2/B/003-Li/A	187205	1/40
200L/0.03	AFDD-20/2/B/003-Li/A-OL	187214	1/40
20/0.03	AFDD-20/2/B/003-Li/A	187220	1/40
25/0.03	AFDD-25/2/B/003-Li/A	187226	1/40

Characteristic C

6/0.01	AFDD-6/2/C/001-Li/A	300207	1/40
10/0.01	AFDD-10/2/C/001-Li/A	187172	1/40
13/0.01	AFDD-13/2/C/001-Li/A	187184	1/40
150L/0.01	AFDD-15/2/C/001-Li/A-OL	187196	1/40
16/0.01	AFDD-16/2/C/001-Li/A	187208	1/40
6/0.01	AFDD-6/2/C/001-Li/A	300223	1/40
10/0.03	AFDD-10/2/C/003-Li/A	187175	1/40
13/0.03	AFDD-13/2/C/003-Li/A	187187	1/40
150L/0.03	AFDD-15/2/C/003-Li/A-OL	187199	1/40
16/0.03	AFDD-16/2/C/003-Li/A	187211	1/40
200L/0.03	AFDD-20/2/C/003-Li/A-OL	187217	1/40
20/0.03	AFDD-20/2/C/003-Li/A	187223	1/40
25/0.03	AFDD-25/2/C/003-Li/A	187229	1/40

Type A, 6 kA, 2-pole**Short-time delayed, sensitive to residual pulsating DC, type A****Characteristic B**

32/0.03	AFDD-32/2/B/003-Li/A	187232	1/40
40/0.03	AFDD-40/2/B/003-Li/A	187238	1/40

Characteristic C

32/0.03	AFDD-32/2/C/003-Li/A	187235	1/40
40/0.03	AFDD-40/2/C/003-Li/A	187241	1/40

$I_n/I_{\Delta n}$
(A)Type
DesignationArticle No. Units per
package

sg06416

**Type A, 10 kA, 2-pole****Non-delayed, sensitive to residual pulsating DC, type A****Characteristic B**

6/0.01	AFDD-6/2/B/001-A	300209	1/40
10/0.01	AFDD-10/2/B/001-A	187165	1/40
100L/0.03	AFDD-10/2/B/003-A-OL	300217	1/40
130L/0.03	AFDD-13/2/B/003-A-OL	300221	1/40
13/0.01	AFDD-13/2/B/001-A	187177	1/40
150L/0.01	AFDD-15/2/B/001-A-OL	187189	1/40
16/0.01	AFDD-16/2/B/001-A	187201	1/40
6/0.03	AFDD-6/2/B/003-A	300225	1/40
10/0.03	AFDD-10/2/B/003-A	187168	1/40
13/0.03	AFDD-13/2/B/003-A	187180	1/40
150L/0.03	AFDD-15/2/B/003-A-OL	187192	1/40
16/0.03	AFDD-16/2/B/003-A	187204	1/40
200L/0.03	AFDD-20/2/B/003-A-OL	187213	1/40
20/0.03	AFDD-20/2/B/003-A	187219	1/40
25/0.03	AFDD-25/2/B/003-A	187225	1/40

Characteristic C

6/0.01	AFDD-6/2/C/001-A	300206	1/40
10/0.01	AFDD-10/2/C/001-A	187171	1/40
100L/0.03	AFDD-10/2/C/003-A-OL	300215	1/40
130L/0.03	AFDD-13/2/C/003-A-OL	300216	1/40
13/0.01	AFDD-13/2/C/001-A	187183	1/40
150L/0.01	AFDD-15/2/C/001-A-OL	187195	1/40
16/0.01	AFDD-16/2/C/001-A	187207	1/40
6/0.03	AFDD-6/2/C/003-A	300199	1/40
10/0.03	AFDD-10/2/C/003-A	187174	1/40
13/0.03	AFDD-13/2/C/003-A	187186	1/40
150L/0.03	AFDD-15/2/C/003-A-OL	187198	1/40
16/0.03	AFDD-16/2/C/003-A	187210	1/40
200L/0.03	AFDD-20/2/C/003-A-OL	187216	1/40
20/0.03	AFDD-20/2/C/003-A	187222	1/40
25/0.03	AFDD-25/2/C/003-A	187228	1/40

Type A, 6 kA, 2-pole**Non-delayed, sensitive to residual pulsating DC, type A****Characteristic B**

32/0.03	AFDD-32/2/B/003-A	187231	1/40
40/0.03	AFDD-40/2/B/003-A	187237	1/40

Characteristic C

32/0.03	AFDD-32/2/C/003-A	187234	1/40
40/0.03	AFDD-40/2/C/003-A	187240	1/40

sg06416


 $I_n/I_{\Delta n}$
(A)

Type
Designation

Article No. Units per
package
Type AC, 10 kA, 2-pole**Non-delayed, alternating-current-sensitive, type AC****Characteristic B**

6/0.01	AFDD-6/2/B/001	300208	1/40
10/0.01	AFDD-10/2/B/001	187164	1/40
13/0.01	AFDD-13/2/B/001	187176	1/40
150L/0.01	AFDD-15/2/B/001-OL	187188	1/40
16/0.01	AFDD-16/2/B/001	187200	1/40
6/0.03	AFDD-6/2/C/003	300224	1/40
10/0.03	AFDD-10/2/B/003	187167	1/40
13/0.03	AFDD-13/2/B/003	187179	1/40
150L/0.03	AFDD-15/2/B/003-OL	187191	1/40
16/0.03	AFDD-16/2/B/003	187203	1/40
200L/0.03	AFDD-20/2/B/003-OL	187212	1/40
20/0.03	AFDD-20/2/B/003	187218	1/40
25/0.03	AFDD-25/2/B/003	187224	1/40

Characteristic C

6/0.01	AFDD-6/2/C/001	300205	1/40
10/0.01	AFDD-10/2/C/001	187170	1/40
13/0.01	AFDD-13/2/C/001	187182	1/40
150L/0.01	AFDD-15/2/C/001-OL	187194	1/40
16/0.01	AFDD-16/2/C/001	187206	1/40
6/0.03	AFDD-6/2/C/003	300197	1/40
10/0.03	AFDD-10/2/C/003	187173	1/40
13/0.03	AFDD-13/2/C/003	187185	1/40
150L/0.03	AFDD-15/2/C/003-OL	187197	1/40
16/0.03	AFDD-16/2/C/003	187209	1/40
200L/0.03	AFDD-20/2/C/003-OL	187215	1/40
20/0.03	AFDD-20/2/C/003	187221	1/40
25/0.03	AFDD-25/2/C/003	187227	1/40

Type AC, 6 kA, 2-pole**Non-delayed, alternating-current-sensitive, type AC****Characteristic B**

32/0.03	AFDD-32/2/B/003	187230	1/40
40/0.03	AFDD-40/2/B/003	187236	1/40

Characteristic C

32/0.03	AFDD-32/2/C/003	187233	1/40
40/0.03	AFDD-40/2/C/003	187239	1/40

Specifications | Arc Fault Detection Device AFDD+, 2-pole

Description

- Arc Fault Detection Device acc. to IEC/EN-62606
- Line-voltage-independent RCBO (combined switch) acc. to IEC/EN 61009
- 2-pole: Both clearances between open contacts are protected
- Variable installation of N either left or right
- Tripped indication: CB, RCD or AFDD
- LED indication for arc faults
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Comprehensive range of accessories can be mounted subsequently
- The test key "T" must be pressed every 6 month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). The test interval of 6 month is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (R_E), or proper checking of the earth conductor condition redundant, which must be performed separately.
- The line length (one-way) from the AFDD+ to the socket outlet should not exceed 70 m. This guarantees that arc faults can be detected reliably.
- **Type -A:** Protects against special forms of residual pulsating DC which have have not been smoothed
- **Type -Li/A:** As Type -A, but in addition it is short-time delayed. Highly reliable against unwanted tripping.
- **Type -G:** 10 ms time delay in order to avoid unwanted tripping (e.g. during thunderstorms).
-> acc. to ÖVE E 8601.
- **Type -F:** Sensitive to pulsating DC residual current and detection of multi-frequency residual currents up to 1 kHz
 - Increased protection due to the detection of mixed frequencies
 - Higher load rating with DC residual currents up to 10mA
 - Reduction of nuisance tripping thanks to time delayed tripping and increased current withstand capability > 3kA
 - Recommended for washing machines, dish washers, or motor applications with single-phase drives
 - Acc. to IEC/EN 62423.
- **OL types:** Specifically designed to fulfill the tripping characteristic requirements of $I_2 \leq I_z$ in the Norwegian electrotechnical standard NEK 400-8-823.

Error memory:

The AFDD+ saves the last reason for tripping at an arc fault. By turning off the device, press and hold the test key "T" and simultaneously turn on the last error can be queried again.

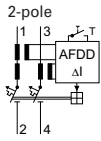
Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
Auxiliary switch	ZP-NHK	248437
	ZP-WHK	286053
Shunt trip release	ZP-ASA/..	248438, 248439
Busbars	EVG-2PHAS/4AFDD; ZV-SS; ZV-L1/N; ZV-L2/L3; ZV-ADP; ZV-AEK	

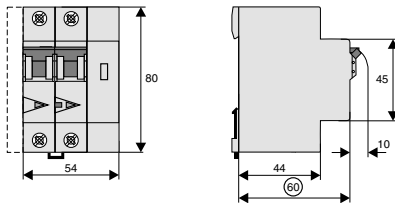
Technical Data

AFDD+	
Electrical	
Design according to	IEC/EN 62606
Current test marks as printed onto the device	IEC/EN 61009 IEC/EN 62423 Type G acc. to ÖVE E 8601
Line voltage-independent tripping	instantaneous 250 A (8/20 µs) surge current proof
Rated voltage	U_n 240 V AC; 50 Hz
Operational voltage range	180-264 V
Self-consumption	< 0.8 W
Rated tripping current	$I_{\Delta n}$ 10, 30 mA
Rated non-tripping current	$I_{\Delta no}$ 0.5 $I_{\Delta n}$
Sensitivity	AC and pulsating DC
Selectivity class	3
Rated breaking capacity	
AFDD 6-25 A	10 kA
AFDD 32-40 A	6 kA
Rated current	10 - 40 A
Rated insulation voltage	U_i 440 V
Rated impulse withstand voltage	U_{imp} 4 kV (1.2/50 µs)
Rated fault breaking capacity	$I_{\Delta m}$
EN 61009	3 kA
IEC 61009	6-16 A: 3 kA 20-40 A: 500 A
Arc fault tripping times after load current (acc. to IEC/EN62606)	
Load current (A)	Tripping time (s)
2,5	<1
5	<0.5
10	<0.25
16	<0.15
32	<0.12
40	<0.12
Characteristic	B, C, B(-OL), C(-OL)
Maximum back-up fuse (short circuit)	100 A gL (>10 kA)
Endurance	
electrical components	≥ 4,000 switching operations
mechanical components	≥ 20,000 switching operations
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	54 mm (3TE)
Mounting	3-position DIN rail clip, permits removal from existing busbar system
Degree of protection, switch	IP20
Degree of protection, built-in	IP40
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity	1 - 25 mm ²
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	according to IEC/EN 61009

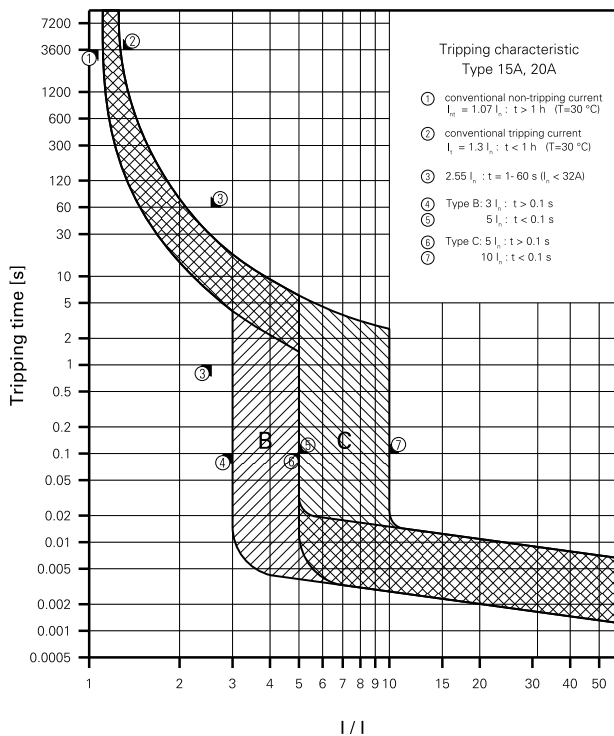
Connection diagram



Dimensions (mm)



Tripping Characteristic AFDD+, Characteristics B and C



Declaration AFDD reason for tripping

After switching on the AFDD is initially a test LED (LED sequence red-yellow-green -> continuous green).

Any previous arc tripping reasons are shown only one time after switching on again.

	$I_A > I_{An}$	Green, no arcing as tripping reason
		1x yellow, serial arc
		2x yellow, serial arc of a dimmed load
	$U > 270\text{ V}$	3x yellow, parallel arc
	$T_i > 115^\circ\text{C}$	4x yellow, over voltage (about 270V) AFDD tripped for self protection
		5x yellow, overtemperature in the device (about > 115°C) AFDD tripped for self protection
		6x yellow, device error, please check device by an expert

The last AFDD error can be reshown by pressing the test key while the device is switched on.

Short Circuit Selectivity AFDD+ 10-20 A towards Neozed¹⁾ / Diazed²⁾ / NH00³⁾

Short circuit currents in kA, rated currents of fuses in A

Short circuit selectivity AFDD+ towards Neozed¹⁾

AFDD+	Neozed ¹⁾									
I _n [A]	16	20	25	32	35	40	50	63	80	100
B10/B10-OL	<0.5	0.5	0.9	2	2.3	3.7	8	10	10	10
B13/B13-OL	<0.5	0.5	0.8	1.7	1.9	3	6	10	10	10
B16/B15-OL		0.5	0.7	1.5	1.7	2.4	4.4	6.8	10	10
B20/B20-OL			0.7	1.4	1.5	2.2	3.9	6	9.2	10
C10/C10-OL	<0.5	0.5	0.8	1.7	1.9	3	6.1	10	10	10
C13/C13-OL	<0.5	0.5	0.7	1.6	1.8	2.8	5.5	9.5	10	10
C16/B15-OL		<0.5	0.7	1.3	1.5	2.2	4	6.2	10	10
C20/C20-OL			0.6	1.3	1.4	2.1	3.7	5.6	8.5	10

Short circuit selectivity AFDD+ towards NH00³⁾

AFDD+	NH00 ³⁾												
I _n [A]	16	20	25	32	35	40	50	63	80	100	125	160	
B10/B10-OL	<0.5	<0.5	0.8	1.5	2.3	3.2	5.7	9.1	10	10	10	10	
B13/B13-OL	<0.5	<0.5	0.8	1.3	1.9	2.7	4.4	6.5	10	10	10	10	
B16/B15-OL		<0.5	0.7	1.1	1.6	2.2	3.4	4.8	8	10	10	10	
B20/B20-OL			0.6	1	1.4	2	3.1	4.3	7	10	10	10	
C10/C10-OL	<0.5	<0.5	0.7	1.3	1.9	2.7	4.5	6.9	10	10	10	10	
C13/C13-OL	<0.5	<0.5	0.7	1.2	1.8	2.5	4.1	6.1	10	10	10	10	
C16/B15-OL		<0.5	0.6	1	1.5	2	3.1	4.4	7.5	10	10	10	
C20/C20-OL			0.6	0.9	1.4	1.9	2.9	4.1	6.5	10	10	10	

Darker areas: no selectivity

¹⁾ SIEMENS Type 5SE2; Size: D01, D02, D03; Operating class gG; Rated voltage: AC 400 V/DC 250 V²⁾ SIEMENS Type 5SB2, 5SB4, 5SC2; Size: DII, DIII, DIV; Operating class gG; Rated voltage: AC 500 V/DC 500 V³⁾ SIEMENS Type 3NA3 8, 3NA6 8, 3NA7 8; Size: 000, 00; Operating class gG; Rated voltage: AC 500 V/DC 250 VShort Circuit Selectivity AFDD+ 25-40 A towards Neozed¹⁾ / Diazed²⁾ / NH00³⁾

Short circuit currents in kA, rated currents of fuses in A

Short circuit selectivity AFDD+ towards Neozed¹⁾

AFDD+	Neozed ¹⁾									
I _n [A]	16	20	25	32	35	40	50	63	80	100
B25				1.2	1.3	1.8	3.1	4.7	6	6
B32					1.2	1.7	2.7	3.8	5.5	6
B40						1.3	1.7	2.2	2.7	4.2
C25				1.1	1.3	1.8	2.8	3.9	5.6	6
C32					1.2	1.7	2.6	3.6	5.1	6
C40						1.3	1.9	3.3	3.2	5.8

Short circuit selectivity AFDD+ towards Diazed²⁾

AFDD ⁺	Diazed ²⁾								
I _n [A]	16	20	25	32	35	50	63	80	100
B25				1.1	1.5	2.4	5.5	6	6
B32					1.4	2.1	4.3	6	6
B40						1.4	2.4	2.9	5.1
C25				1.1	1.5	2.3	4.4	6	6
C32					1.4	2.2	4.1	5.6	6
C40						1.6	2.8	3.6	6

Short circuit selectivity AFDD+ towards NH00³⁾

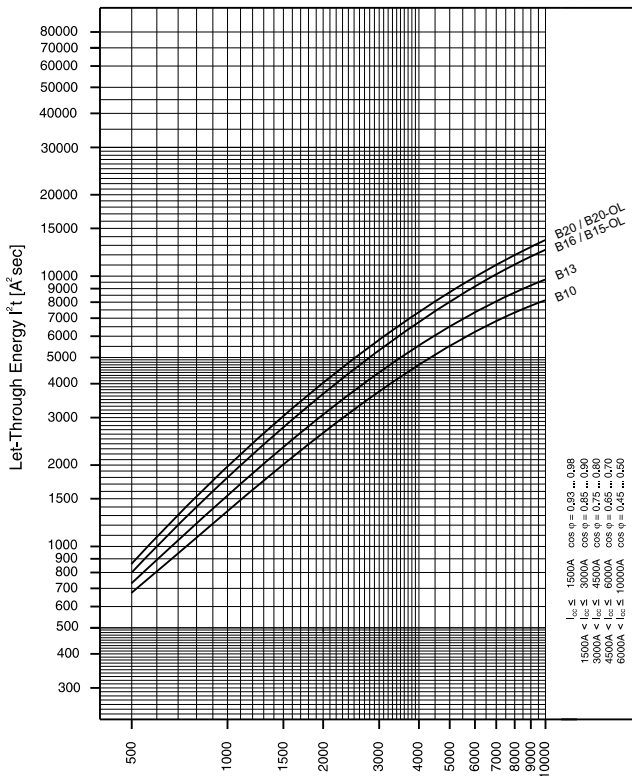
AFDD+	NH00 ³⁾											
I _n [A]	16	20	25	32	35	40	50	63	80	100	125	160
B25				0.9	1.2	1.6	2.4	3.4	5.5	6	6	6
B32					1.1	1.4	2.1	2.9	4.3	6	6	6
B40							1.4	1.9	2.8	4.1	6	6
C25				0.9	1.2	1.6	2.3	3	4.6	6	6	6
C32					1.1	1.5	2.1	2.8	4.3	6	6	6
C40							1.5	2.1	3.1	5.4	6	6

Darker areas: no selectivity

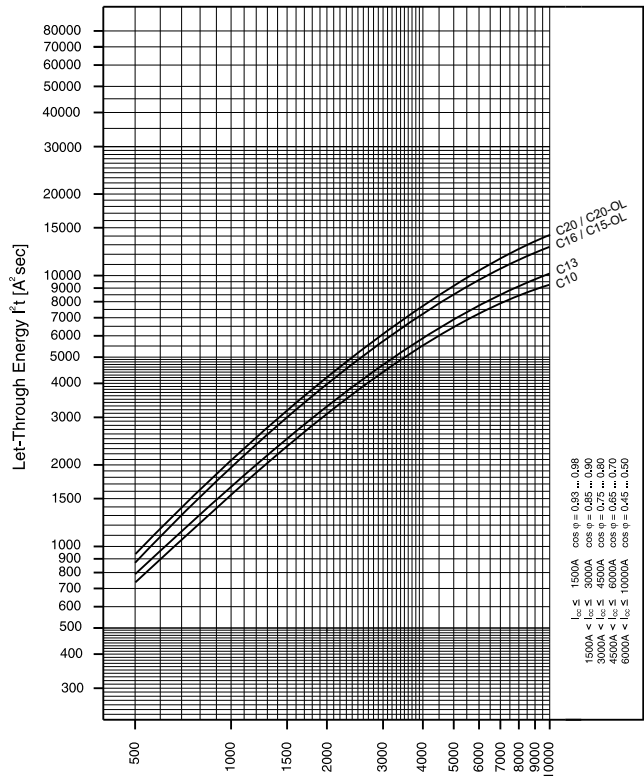
¹⁾ SIEMENS Type 5SE2; Size: D01, D02, D03; Operating class gG; Rated voltage: AC 400 V/DC 250 V²⁾ SIEMENS Type 5SB2, 5SB4, 5SC2; Size: DII, DIII, DIV; Operating class gG; Rated voltage: AC 500 V/DC 500 V³⁾ SIEMENS Type 3NA3 8, 3NA6 8, 3NA7 8; Size: 000, 00; Operating class gG; Rated voltage: AC 500 V/DC 250 V

Let-through Energy AFDD+

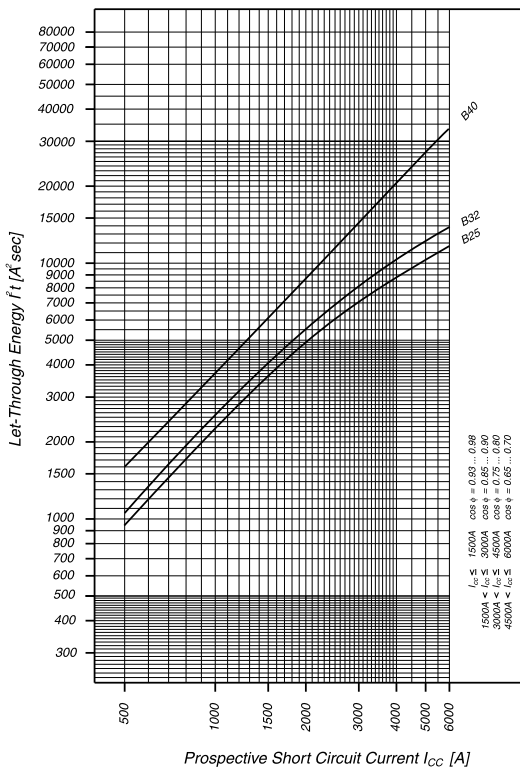
Let-through Energy AFDD+, Characteristic B, 2-pole, 10-20 A



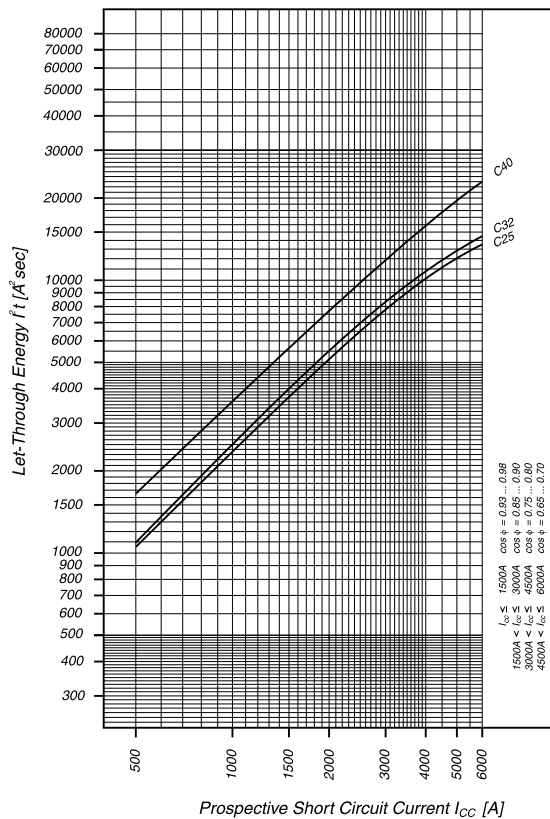
Let-through Energy AFDD+, Characteristic C, 2-pole, 10-20 A



Let-through Energy AFDD+, Characteristic B, 2-pole, 25-40 A



Let-through Energy AFDD+, Characteristic C, 2-pole, 25-40 A



SG61711



Description

- Residual current device / miniature circuit breaker combination, line voltage-independent
- Contact position indicator red - green
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories can be mounted subsequently
- Rated currents up to 40 A
- Tripping characteristics B, C
- Rated breaking capacity 10 kA
- Frost resistance 

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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Type G

10 kA, 1+N-pole
Surge current-proof 3 kA, type G (ÖVE E 8601)

SG61711



Characteristic B			
13/0.03	PFL7-13/1N/B/003-G	263530	1/60
16/0.03	PFL7-16/1N/B/003-G	263536	1/60
20/0.03	PFL7-20/1N/B/003-G	263542	1/60
25/0.03	PFL7-25/1N/B/003-G	263548	1/60
32/0.03	PFL7-32/1N/B/003-G	263554	1/60
40/0.03	PFL7-40/1N/B/003-G	263560	1/60
13/0.3	PFL7-13/1N/B/03-G	165604	1/60
16/0.3	PFL7-16/1N/B/03-G	165618	1/60
20/0.3	PFL7-20/1N/B/03-G	165646	1/60
25/0.3	PFL7-25/1N/B/03-G	165656	1/60
32/0.3	PFL7-32/1N/B/03-G	165667	1/60
40/0.3	PFL7-40/1N/B/03-G	165692	1/60

SG61711



Characteristic C			
13/0.03	PFL7-13/1N/C/003-G	263533	1/60
16/0.03	PFL7-16/1N/C/003-G	263539	1/60
20/0.03	PFL7-20/1N/C/003-G	263545	1/60
25/0.03	PFL7-25/1N/C/003-G	263551	1/60
32/0.03	PFL7-32/1N/C/003-G	263557	1/60
40/0.03	PFL7-40/1N/C/003-G	263563	1/60
13/0.3	PFL7-13/1N/C/03-G	165611	1/60
16/0.3	PFL7-16/1N/C/03-G	165625	1/60
20/0.3	PFL7-20/1N/C/03-G	165651	1/60
25/0.3	PFL7-25/1N/C/03-G	165661	1/60
32/0.3	PFL7-32/1N/C/03-G	165672	1/60
40/0.3	PFL7-40/1N/C/03-G	165697	1/60

SG61711


 $I_n/I_{\Delta n}$
(A)

Type
Designation

Article No. Units per
package
Type A**10 kA, 1+N-pole****Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A****Characteristic B**

2/0.01	PFL7-2/1N/B/001-A	165633	1/60
4/0.01	PFL7-4/1N/B/001-A	165674	1/60
6/0.01	PFL7-6/1N/B/001-A	165700	1/60
10/0.01	PFL7-10/1N/B/001-A	165587	1/60
13/0.01	PFL7-13/1N/B/001-A	165599	1/60
16/0.01	PFL7-16/1N/B/001-A	165613	1/60
2/0.03	PFL7-2/1N/B/003-A	165635	1/60
4/0.03	PFL7-4/1N/B/003-A	165676	1/60
6/0.03	PFL7-6/1N/B/003-A	263431	1/60
10/0.03	PFL7-10/1N/B/003-A	263435	1/60
13/0.03	PFL7-13/1N/B/003-A	263519	1/60
16/0.03	PFL7-16/1N/B/003-A	263535	1/60
20/0.03	PFL7-20/1N/B/003-A	263541	1/60
25/0.03	PFL7-25/1N/B/003-A	263547	1/60
32/0.03	PFL7-32/1N/B/003-A	263553	1/60
40/0.03	PFL7-40/1N/B/003-A	263559	1/60
2/0.1	PFL7-2/1N/B/01-A	165637	1/60
4/0.1	PFL7-4/1N/B/01-A	165678	1/60
6/0.1	PFL7-6/1N/B/01-A	165702	1/60
10/0.1	PFL7-10/1N/B/01-A	165589	1/60
13/0.1	PFL7-13/1N/B/01-A	165601	1/60
16/0.1	PFL7-16/1N/B/01-A	165615	1/60
20/0.1	PFL7-20/1N/B/01-A	165643	1/60
25/0.1	PFL7-25/1N/B/01-A	165653	1/60
32/0.1	PFL7-32/1N/B/01-A	165664	1/60
40/0.1	PFL7-40/1N/B/01-A	165689	1/60
2/0.3	PFL7-2/1N/B/03-A	165639	1/60
4/0.3	PFL7-4/1N/B/03-A	165680	1/60
6/0.3	PFL7-6/1N/B/03-A	165704	1/60
10/0.3	PFL7-10/1N/B/03-A	165591	1/60
13/0.3	PFL7-13/1N/B/03-A	165603	1/60
16/0.3	PFL7-16/1N/B/03-A	165617	1/60
20/0.3	PFL7-20/1N/B/03-A	165645	1/60
25/0.3	PFL7-25/1N/B/03-A	165655	1/60
32/0.3	PFL7-32/1N/B/03-A	165666	1/60
40/0.3	PFL7-40/1N/B/03-A	165691	1/60

SG61711


 $I_n/I_{\Delta n}$
(A)

Type
Designation

Article No.

Units per
package**Characteristic C**

2/0.01	PFL7-2/1N/C/001-A	165627	1/60
4/0.01	PFL7-4/1N/C/001-A	165682	1/60
6/0.01	PFL7-6/1N/C/001-A	165706	1/60
10/0.01	PFL7-10/1N/C/001-A	165593	1/60
13/0.01	PFL7-13/1N/C/001-A	165606	1/60
16/0.01	PFL7-16/1N/C/001-A	165620	1/60
2/0.03	PFL7-2/1N/C/003-A	165628	1/60
4/0.03	PFL7-4/1N/C/003-A	165684	1/60
6/0.03	PFL7-6/1N/C/003-A	263515	1/60
10/0.03	PFL7-10/1N/C/003-A	263517	1/60
13/0.03	PFL7-13/1N/C/003-A	263532	1/60
16/0.03	PFL7-16/1N/C/003-A	263538	1/60
20/0.03	PFL7-20/1N/C/003-A	263544	1/60
25/0.03	PFL7-25/1N/C/003-A	263550	1/60
32/0.03	PFL7-32/1N/C/003-A	263556	1/60
40/0.03	PFL7-40/1N/C/003-A	263562	1/60
2/0.1	PFL7-2/1N/C/01-A	165629	1/60
4/0.1	PFL7-4/1N/C/01-A	165685	1/60
6/0.1	PFL7-6/1N/C/01-A	165708	1/60
10/0.1	PFL7-10/1N/C/01-A	165595	1/60
13/0.1	PFL7-13/1N/C/01-A	165608	1/60
16/0.1	PFL7-16/1N/C/01-A	165622	1/60
20/0.1	PFL7-20/1N/C/01-A	165648	1/60
25/0.1	PFL7-25/1N/C/01-A	165658	1/60
32/0.1	PFL7-32/1N/C/01-A	165669	1/60
40/0.1	PFL7-40/1N/C/01-A	165694	1/60
2/0.3	PFL7-2/1N/C/03-A	165631	1/60
4/0.3	PFL7-4/1N/C/03-A	165687	1/60
6/0.3	PFL7-6/1N/C/03-A	165710	1/60
10/0.3	PFL7-10/1N/C/03-A	165597	1/60
13/0.3	PFL7-13/1N/C/03-A	165610	1/60
16/0.3	PFL7-16/1N/C/03-A	165624	1/60
20/0.3	PFL7-20/1N/C/03-A	165650	1/60
25/0.3	PFL7-25/1N/C/03-A	165660	1/60
32/0.3	PFL7-32/1N/C/03-A	165671	1/60
40/0.3	PFL7-40/1N/C/03-A	165696	1/60

SG61711


 $I_n/I_{\Delta n}$
(A)

Type
Designation

Article No. Units per
package
Type AC**10 kA, 1+N-pole****Conditionally surge current-proof 250 A, type AC****Characteristic B**

2/0.01	PFL7-2/1N/B/001	165634	1/60
4/0.01	PFL7-4/1N/B/001	165675	1/60
6/0.01	PFL7-6/1N/B/001	165701	1/60
10/0.01	PFL7-10/1N/B/001	165588	1/60
13/0.01	PFL7-13/1N/B/001	165600	1/60
16/0.01	PFL7-16/1N/B/001	165614	1/60
2/0.03	PFL7-2/1N/B/003	165636	1/60
4/0.03	PFL7-4/1N/B/003	165677	1/60
6/0.03	PFL7-6/1N/B/003	263430	1/60
10/0.03	PFL7-10/1N/B/003	263434	1/60
13/0.03	PFL7-13/1N/B/003	263518	1/60
16/0.03	PFL7-16/1N/B/003	263534	1/60
20/0.03	PFL7-20/1N/B/003	263540	1/60
25/0.03	PFL7-25/1N/B/003	263546	1/60
32/0.03	PFL7-32/1N/B/003	263552	1/60
40/0.03	PFL7-40/1N/B/003	263558	1/60
2/0.1	PFL7-2/1N/B/01	165638	1/60
4/0.1	PFL7-4/1N/B/01	165679	1/60
6/0.1	PFL7-6/1N/B/01	165703	1/60
10/0.1	PFL7-10/1N/B/01	165590	1/60
13/0.1	PFL7-13/1N/B/01	165602	1/60
16/0.1	PFL7-16/1N/B/01	165616	1/60
20/0.1	PFL7-20/1N/B/01	165644	1/60
25/0.1	PFL7-25/1N/B/01	165654	1/60
32/0.1	PFL7-32/1N/B/01	165665	1/60
40/0.1	PFL7-40/1N/B/01	165690	1/60
2/0.3	PFL7-2/1N/B/03	165640	1/60
4/0.3	PFL7-4/1N/B/03	165681	1/60
6/0.3	PFL7-6/1N/B/03	165705	1/60
10/0.3	PFL7-10/1N/B/03	165592	1/60
13/0.3	PFL7-13/1N/B/03	165605	1/60
16/0.3	PFL7-16/1N/B/03	165619	1/60
20/0.3	PFL7-20/1N/B/03	165647	1/60
25/0.3	PFL7-25/1N/B/03	165657	1/60
32/0.3	PFL7-32/1N/B/03	165668	1/60
40/0.3	PFL7-40/1N/B/03	165693	1/60
2/0.5	PFL7-2/1N/B/05	165641	1/60

SG61711



$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
Characteristic C			
2/0.01	PFL7-2/1N/C/001	165642	1/60
4/0.01	PFL7-4/1N/C/001	165683	1/60
6/0.01	PFL7-6/1N/C/001	165707	1/60
10/0.01	PFL7-10/1N/C/001	165594	1/60
13/0.01	PFL7-13/1N/C/001	165607	1/60
16/0.01	PFL7-16/1N/C/001	165621	1/60
2/0.03	PFL7-2/1N/C/003	263428	1/60
4/0.03	PFL7-4/1N/C/003	263429	1/60
6/0.03	PFL7-6/1N/C/003	263432	1/60
10/0.03	PFL7-10/1N/C/003	263516	1/60
13/0.03	PFL7-13/1N/C/003	263531	1/60
16/0.03	PFL7-16/1N/C/003	263537	1/60
20/0.03	PFL7-20/1N/C/003	263543	1/60
25/0.03	PFL7-25/1N/C/003	263549	1/60
32/0.03	PFL7-32/1N/C/003	263555	1/60
40/0.03	PFL7-40/1N/C/003	263561	1/60
2/0.1	PFL7-2/1N/C/01	165630	1/60
4/0.1	PFL7-4/1N/C/01	165686	1/60
6/0.1	PFL7-6/1N/C/01	165709	1/60
10/0.1	PFL7-10/1N/C/01	165596	1/60
13/0.1	PFL7-13/1N/C/01	165609	1/60
16/0.1	PFL7-16/1N/C/01	165623	1/60
20/0.1	PFL7-20/1N/C/01	165649	1/60
25/0.1	PFL7-25/1N/C/01	165659	1/60
32/0.1	PFL7-32/1N/C/01	165670	1/60
40/0.1	PFL7-40/1N/C/01	165695	1/60
1/0.3	PFL7-1/1N/C/03	165586	1/60
2/0.3	PFL7-2/1N/C/03	165632	1/60
3/0.3	PFL7-3/1N/C/03	165663	1/60
4/0.3	PFL7-4/1N/C/03	165688	1/60
5/0.3	PFL7-5/1N/C/03	165699	1/60
6/0.3	PFL7-6/1N/C/03	165711	1/60
10/0.3	PFL7-10/1N/C/03	165598	1/60
13/0.3	PFL7-13/1N/C/03	165612	1/60
16/0.3	PFL7-16/1N/C/03	165626	1/60
20/0.3	PFL7-20/1N/C/03	165652	1/60
25/0.3	PFL7-25/1N/C/03	165662	1/60
32/0.3	PFL7-32/1N/C/03	165673	1/60
40/0.3	PFL7-40/1N/C/03	165698	1/60

Specifications | Combined RCD/MCB Devices PFL7, 1+N-pole

Description

- Combined RCD/MCB Devices
- Line voltage-independent tripping
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Comprehensive range of accessories can be mounted subsequently
- The test key "T" must be pressed every 6 month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). The test interval of 6 month is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (R_E), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Type -A:** Protects against special forms of residual pulsating DC which have not been smoothed
- **Type -G:** 10 ms time delay in order to avoid unwanted tripping (e.g. during thunderstorms).
Compulsory in Austria for any circuit where personal injury or damage to property may occur in case of unwanted tripping (§12.1.6 ÖVE/ÖNORM E 8001-1).

Accessories:

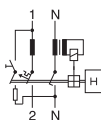
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Terminal cover cap	KLV-TC-2	276240
Additional terminal 35 mm ²	Z-HA-EK/35	263960

Technical Data

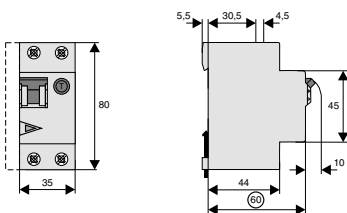
PFL7, 1+N-pole	
Electrical	
Design according to	IEC/EN 61009
Current test marks as printed onto the device	
Line voltage-independent tripping	instantaneous 250 A (8/20 μ s), surge current proof
Type G	10 ms delay 3 kA (8/20 μ s), surge current proof
Rated voltage	U_e 230 V AC; 50 Hz
Operational voltage range	196-253 V
Rated tripping current	$I_{\Delta n}$ 10, 30, 100, 300, 500 mA
Rated non-tripping current	$I_{\Delta no}$ 0.5 $I_{\Delta n}$
Rated insulation voltage	U_i 440 VAC
Sensitivity	AC and pulsating DC
Selectivity class	3
Rated breaking capacity	I_{cn} 10 kA
Rated current	6 - 40 A
Rated impulse withstand voltage	U_{imp} 6 kV (1.2/50 μ s)
Characteristic	B, C
Maximum back-up fuse (short circuit)	100 A gL (>10 kA)
Endurance	
electrical components	$\geq 4,000$ switching operations
mechanical components	$\geq 20,000$ switching operations
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	35 mm (2MU)
Mounting	3-position DIN rail clip, permits removal from existing busbar system
Degree of protection, switch	IP20
Degree of protection, built-in	IP40
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity	1 - 25 mm ²
Terminal torque	2 - 2.4 Nm
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	according to IEC/EN 61009

Connection diagram

1+N-pole



Dimensions (mm)

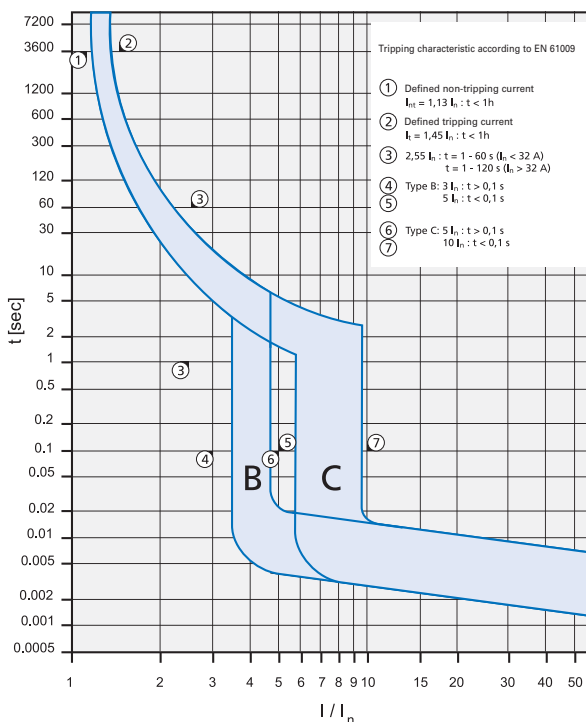


Load Capacity PFL7-../1N/

Effect of ambient temperature (MCB component)

I_n [A]	Ambient temperature T [°C]								
	-25	-20	-10	0	10	20	30	35	40
6	7.4	7.2	7.0	6.7	6.5	6.3	6.0	5.9	5.8
8	9.9	9.6	9.3	9.0	8.7	8.4	8.0	7.9	7.7
10	12	12	12	11	11	10	10	9.9	9.7
12	15	14	14	13	13	13	12	12	12
13	16	16	15	15	14	14	13	13	13
15	19	18	17	17	16	16	15	15	15
16	20	19	19	18	17	17	16	16	15
20	25	24	23	22	22	21	20	20	19
25	31	30	29	28	27	26	25	25	24
32	40	38	37	36	35	33	32	32	31
40	49	48	47	45	43	42	40	39	39

Tripping Characteristic PFL7-../1N/, Characteristics B and C



Short Circuit Selectivity PFL7-../1N/ towards DII-DIV fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices PFL7-../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{sc} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **Characteristic B** towards fuse link **DII-DIV***)

PFL7	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	0.7	1.0	2.9	6.9	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
8		<0.5 ¹⁾	0.6	1.0	2.4	5.1	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
10			0.6	0.9	1.9	3.3	7.0	10.0 ²⁾	10.0 ²⁾
13			0.5	0.7	1.6	2.8	5.7	9.0	10.0 ²⁾
16				0.7	1.4	2.4	4.4	7.0	10.0 ²⁾
20					1.3	2.2	4.0	6.3	10.0 ²⁾
25					1.3	2.1	3.8	5.8	10.0 ²⁾
32						2.0	3.5	5.2	9.5
40							3.1	4.5	8.1

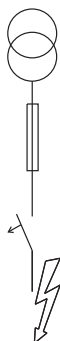
Short circuit selectivity **Characteristic C** towards fuse link **DII-DIV***)

PFL7	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	0.6	1.0	2.9	5.8	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
8		<0.5 ¹⁾	<0.5	0.9	2.5	4.8	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
10			<0.5	0.7	1.5	2.6	5.3	9.0	10.0 ²⁾
13					1.4	2.3	4.6	7.6	10.0 ²⁾
16					1.2	1.8	3.4	5.5	10.0 ²⁾
20					1.2	1.7	3.1	5.0	10.0 ²⁾
25						1.6	2.9	4.6	10.0 ²⁾
32							2.3	3.4	7.7
40								2.9	6.2

¹⁾ Selectivity limit current I_s under 0.5 kA.

²⁾ Selectivity limit current I_s = rated breaking capacity I_{cn} of the RCD/MCB device

Darker areas: no selectivity



Short Circuit Selectivity PFL7-../1N/ towards D01-D03 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices PFL7-../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **Characteristic B** towards fuse link **D01-D03***)

PFL7	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	0.5	0.8	2.4	8.2	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
8			0.6	0.8	2.0	6.0	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
10			0.5	0.8	1.6	3.7	6.0	10.0 ²⁾	10.0 ²⁾
13			0.6	0.7	1.4	3.0	4.7	9.0	10.0 ²⁾
16				0.6	1.2	2.6	3.9	7.0	10.0 ²⁾
20					1.2	2.5	3.6	6.2	10.0 ²⁾
25					1.2	2.3	3.3	5.7	10.0 ²⁾
32						2.3	3.1	5.1	10.0 ²⁾
40							2.8	4.5	9.5

Short circuit selectivity **Characteristic C** towards fuse link **D01-D03***)

PFL7	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	<0.5 ¹⁾	0.8	2.3	6.5	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
8			<0.5	0.7	2.1	5.5	9.5	10.0 ²⁾	10.0 ²⁾
10			<0.5	0.6	1.3	2.9	4.5	8.9	10.0 ²⁾
13					1.2	2.5	3.9	7.6	10.0 ²⁾
16					1.0	2.1	3.0	5.5	10.0 ²⁾
20					1.0	2.0	2.7	5.0	10.0 ²⁾
25						1.9	2.6	4.5	10.0 ²⁾
32							2.1	3.4	10.0 ²⁾
40								3.0	8.7

Short Circuit Selectivity PFL7-../1N/ towards NH-00 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices PFL7-../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **Characteristic B** towards fuse link **NH-00***)

PFL7	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
6	<0.5 ¹⁾	0.5	0.8	1.4	2.2	3.3	7.0	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
10		<0.5 ¹⁾	0.7	0.9	1.5	2.1	3.4	4.3	7.3	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
13			<0.5 ¹⁾	0.6	0.8	1.4	1.8	2.8	3.6	5.7	10.0 ²⁾	10.0 ²⁾
16				0.6	0.7	1.2	1.5	2.4	3.0	4.5	10.0 ²⁾	10.0 ²⁾
20					0.7	1.1	1.5	2.2	2.8	4.2	9.2	10.0 ²⁾
25					0.7	1.1	1.4	2.1	2.6	4.0	8.2	10.0 ²⁾
32						1.0	1.4	2.0	2.5	3.7	7.1	10.0 ²⁾
40								2.3	3.4	6.2	8.8	10.0 ²⁾

Short circuit selectivity **Characteristic C** towards fuse link **NH-00***)

PFL7	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
6	<0.5 ¹⁾	<0.5 ¹⁾	0.7	1.3	2.2	3.3	5.9	8.0	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
10			0.5	0.8	1.2	1.7	2.7	3.4	5.5	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
13					1.1	1.5	2.3	2.9	4.7	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
16					1.0	1.3	1.8	2.3	3.7	8.7	10.0 ²⁾	10.0 ²⁾
20					0.9	1.1	1.7	2.2	3.4	8.0	10.0 ²⁾	10.0 ²⁾
25						1.6	2.1	3.2	7.2	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
32							1.7	2.6	5.3	9.0	10.0 ²⁾	10.0 ²⁾
40								2.4	4.5	7.5	10.0	10.0

¹⁾ Selectivity limit current I_s under 0.5 kA.

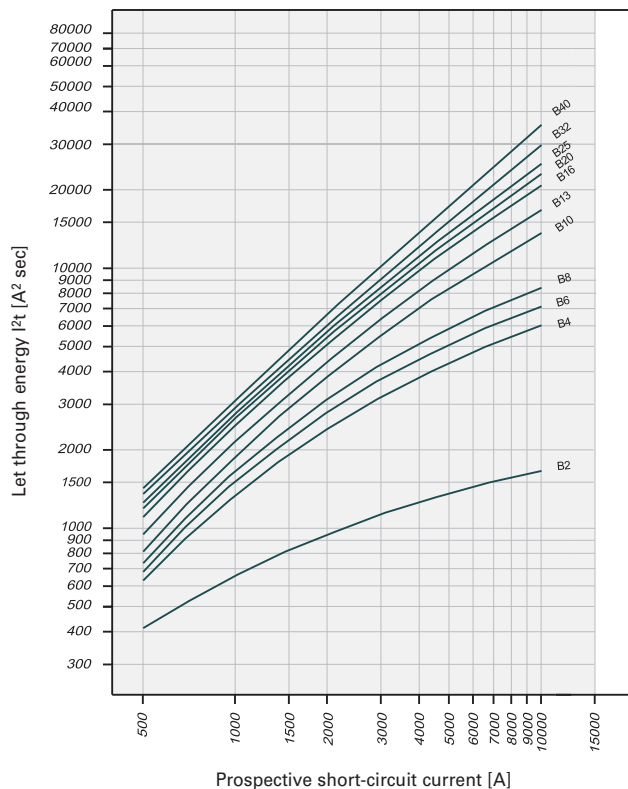
²⁾ Selectivity limit current I_s = rated breaking capacity I_{cn} of the RCD/MCB device

Darker areas: no selectivity

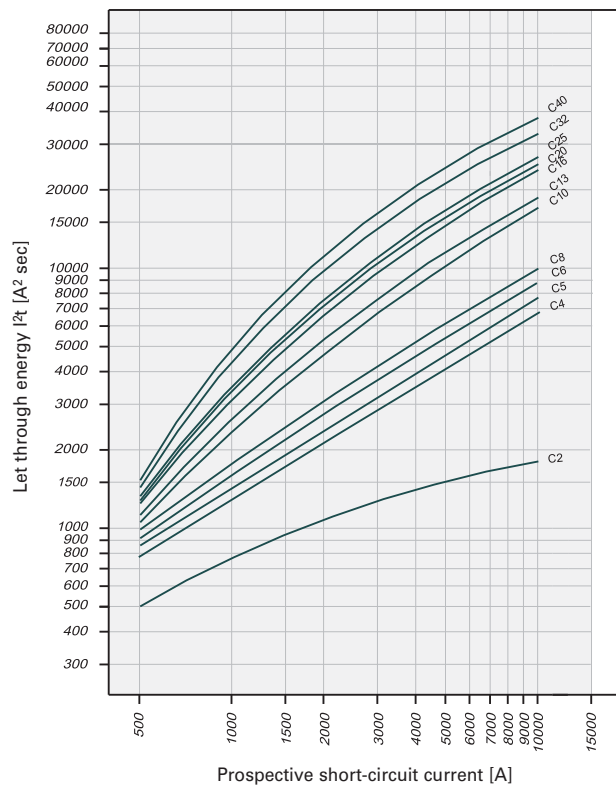


Let-through Energy PFL7-../1N/

Let-through Energy PFL7, Characteristic B, 1+N-pole



Let-through Energy PFL7, Characteristic C, 1+N-pole



SG04414



Description

- Economy series mainly for house installations
- Residual current device / miniature circuit breaker combination, line voltage-independent
- Contact position indicator red - green
- Comprehensive range of accessories can be mounted subsequently
- Rated currents up to 25 A
- Tripping characteristics B, C
- Rated breaking capacity 6 kA
- Frost resistance

$I_n/I_{\Delta n}$
(A)Type
DesignationArticle No. Units per
package**Type AC****6 kA, 1+N-pole****Conditionally surge current-proof 250 A, type AC****Characteristic B**

6/0.03	PFL6-6/1N/B/003	286428	1/60
10/0.03	PFL6-10/1N/B/003	286429	1/60
13/0.03	PFL6-13/1N/B/003	286430	1/60
16/0.03	PFL6-16/1N/B/003	286431	1/60
20/0.03	PFL6-20/1N/B/003	286432	1/60
25/0.03	PFL6-25/1N/B/003	286433	1/60

SG04414

**Characteristic C**

6/0.03	PFL6-6/1N/C/003	286464	1/60
10/0.03	PFL6-10/1N/C/003	286465	1/60
13/0.03	PFL6-13/1N/C/003	286466	1/60
16/0.03	PFL6-16/1N/C/003	286467	1/60
20/0.03	PFL6-20/1N/C/003	286468	1/60
25/0.03	PFL6-25/1N/C/003	286469	1/60

SG04414

**Type A****6 kA, 1+N-pole****Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A****Characteristic B**

6/0.03	PFL6-6/1N/B/003-A	112872	1/60
10/0.03	PFL6-10/1N/B/003-A	112873	1/60
13/0.03	PFL6-13/1N/B/003-A	112874	1/60
16/0.03	PFL6-16/1N/B/003-A	112875	1/60
20/0.03	PFL6-20/1N/B/003-A	113101	1/60
25/0.03	PFL6-25/1N/B/003-A	113103	1/60
32/0.03	PFL6-32/1N/B/003-A-A	113105	1/60
40/0.03	PFL6-40/1N/B/003-A-A	113107	1/60

SG04414

**Characteristic C**

6/0.03	PFL6-6/1N/C/003-A	112876	1/60
10/0.03	PFL6-10/1N/C/003-A	112877	1/60
13/0.03	PFL6-13/1N/C/003-A	112878	1/60
16/0.03	PFL6-16/1N/C/003-A	112879	1/60
20/0.03	PFL6-20/1N/C/003-A	113100	1/60
25/0.03	PFL6-25/1N/C/003-A	113102	1/60
32/0.03	PFL6-32/1N/C/003-A-A	113104	1/60
40/0.03	PFL6-40/1N/C/003-A-A	113106	1/60

SG04414



Specifications | Combined RCD/MCB Devices PFL6, 1+N-pole

Description

- Combined RCD/MCB Devices
- Line voltage-independent tripping
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Contact position indicator red - green
- Comprehensive range of accessories can be mounted subsequently
- The test key "T" must be pressed every 6 month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). The test interval of 6 month is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (R_E), or proper checking of the earth conductor condition redundant, which must be performed separately.

Accessories:

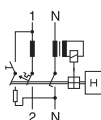
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Terminal cover cap	KLV-TC-2	276240
Additional terminal 35 mm ²	Z-HA-EK/35	263960

Technical Data

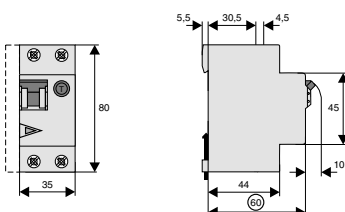
PFL6, 1+N-pole	
Electrical	
Design according to	IEC/EN 61009
Current test marks as printed onto the device	
Line voltage-independent tripping	instantaneous 250 A (8/20 μ s), surge current proof
Rated voltage	U_e 230 V AC, 50 Hz
Operational voltage range	196-253 V
Rated tripping current	$I_{\Delta n}$ 30 mA
Rated non-tripping current	$I_{\Delta no}$ 0.5 $I_{\Delta n}$
Rated insulation voltage	U_i 440 VAC
Sensitivity	AC
Selectivity class	3
Rated breaking capacity	I_{cn} 6 kA
Rated current	6 - 25 A
Rated impulse withstand voltage	U_{imp} 4 kV (1.2/50 μ s)
Characteristic	B, C
Maximum back-up fuse (short circuit)	100 A gL (>6 kA)
Endurance	
electrical components	$\geq 4,000$ switching operations
mechanical components	$\geq 20,000$ switching operations
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	35 mm (2MU)
Mounting	3-position DIN rail clip, permits removal from existing busbar system
Degree of protection, switch	IP20
Degree of protection, built-in	IP40
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity	1 - 25 mm ²
Terminal torque	2 - 2.4 Nm
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	according to IEC/EN 61009

Connection diagram

1+N-pole



Dimensions (mm)

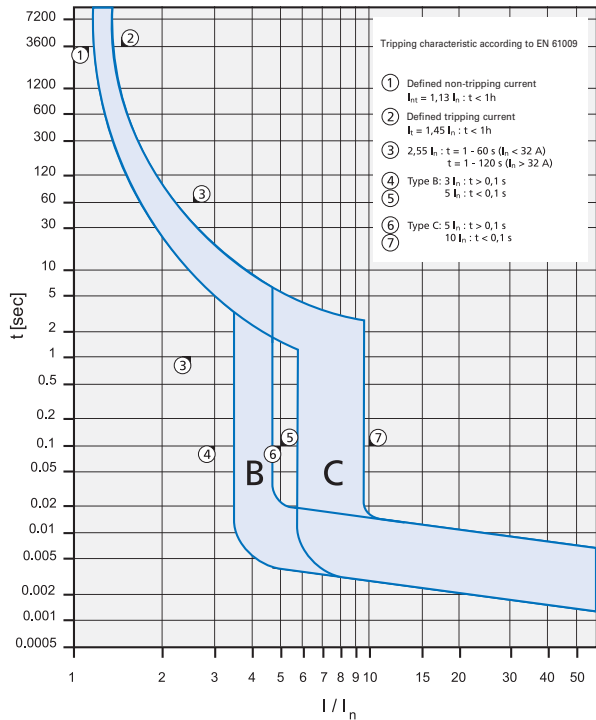


Load Capacity PFL6-../1N/

Effect of ambient temperature (MCB component)

I_n [A]	Ambient temperature T [°C]								
	-25	-20	-10	0	10	20	30	35	40
6	7.4	7.2	7.0	6.7	6.5	6.3	6.0	5.9	5.8
8	9.9	9.6	9.3	9.0	8.7	8.4	8.0	7.9	7.7
10	12	12	12	11	11	10	10	9.9	9.7
12	15	14	14	13	13	13	12	12	12
13	16	16	15	15	14	14	13	13	13
15	19	18	17	17	16	16	15	15	15
16	20	19	19	18	17	17	16	16	15
20	25	24	23	22	22	21	20	20	19
25	31	30	29	28	27	26	25	25	24

Tripping Characteristic PFL6-../1N/, Characteristics B and C



Short Circuit Selectivity PFL6-../1N/ towards DII-DIV fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices PFL6-../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{sc} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **Characteristic B** towards fuse link **DII-DIV***

PFL6	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	0.7	1.0	2.9	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
8		<0.5 ¹⁾	0.6	1.0	2.4	5.1	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10			0.6	0.9	1.9	3.3	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
13			0.5	0.7	1.6	2.8	5.7	6.0 ²⁾	6.0 ²⁾
16				0.7	1.4	2.4	4.4	6.0 ²⁾	6.0 ²⁾
20					1.3	2.2	4.0	6.0 ²⁾	6.0 ²⁾
25					1.3	2.1	3.8	5.8	6.0 ²⁾

Short circuit selectivity **Characteristic C** towards fuse link **DII-DIV***

PFL6	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	0.6	1.0	2.9	5.8	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
8		<0.5 ¹⁾	<0.5	0.9	2.5	4.8	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10			<0.5	0.7	1.5	2.6	5.3	6.0 ²⁾	6.0 ²⁾
13					1.4	2.3	4.6	6.0 ²⁾	6.0 ²⁾
16					1.2	1.8	3.4	5.5	6.0 ²⁾
20					1.2	1.7	3.1	5.0	6.0 ²⁾
25						1.6	2.9	4.6	6.0 ²⁾

¹⁾ Selectivity limit current I_s under 0.5 kA.

²⁾ Selectivity limit current I_s = rated breaking capacity I_{cn} of the RCD/MCB device

Darker areas: no selectivity



Short Circuit Selectivity PFL6-../1N/ towards D01-D03 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices PFL6-../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **Characteristic B** towards fuse link **D01-D03***)

PFL6	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	0.5	0.8	2.4	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
8			0.6	0.8	2.0	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10			0.5	0.8	1.6	3.7	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
13			0.6	0.7	1.4	3.0	4.7	6.0 ²⁾	6.0 ²⁾
16				0.6	1.2	2.6	3.9	6.0 ²⁾	6.0 ²⁾
20					1.2	2.5	3.6	6.0 ²⁾	6.0 ²⁾
25					1.2	2.3	3.3	5.7	6.0 ²⁾

Short circuit selectivity **Characteristic C** towards fuse link **D01-D03***)

PFL6	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	<0.5 ¹⁾	0.8	2.3	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
8			<0.5	0.7	2.1	5.5	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10			<0.5	0.6	1.3	2.9	4.5	6.0 ²⁾	6.0 ²⁾
13					1.2	2.5	3.9	6.0 ²⁾	6.0 ²⁾
16					1.0	2.1	3.0	5.5	6.0 ²⁾
20					1.0	2.0	2.7	5.0	6.0 ²⁾
25						1.9	2.6	4.5	6.0 ²⁾

Short Circuit Selectivity PFL6-../1N/ towards NH-00 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices PFL6-../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **Characteristic B** towards fuse link **NH-00***)

PFL6	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
6	<0.5 ¹⁾	0.5	0.8	1.4	2.2	3.3	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10		<0.5 ¹⁾	0.7	0.9	1.5	2.1	3.4	4.3	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
13			<0.5 ¹⁾	0.6	0.8	1.4	1.8	2.8	3.6	5.7	6.0 ²⁾	6.0 ²⁾
16				0.6	0.7	1.2	1.5	2.4	3.0	4.5	6.0 ²⁾	6.0 ²⁾
20					0.7	1.1	1.5	2.2	2.8	4.2	6.0 ²⁾	6.0 ²⁾
25					0.7	1.1	1.4	2.1	2.6	4.0	6.0 ²⁾	6.0 ²⁾

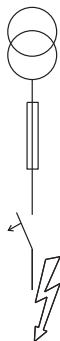
Short circuit selectivity **Characteristic C** towards fuse link **NH-00***)

PFL6	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
6	<0.5 ¹⁾	<0.5 ¹⁾	0.7	1.3	2.2	3.3	5.9	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10			0.5	0.8	1.2	1.7	2.7	3.4	5.5	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
13					1.1	1.5	2.3	2.9	4.7	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
16					1.0	1.3	1.8	2.3	3.7	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
20					0.9	1.1	1.7	2.2	3.4	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
25						1.6	2.1	3.2	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾

¹⁾ Selectivity limit current I_s under 0.5 kA.

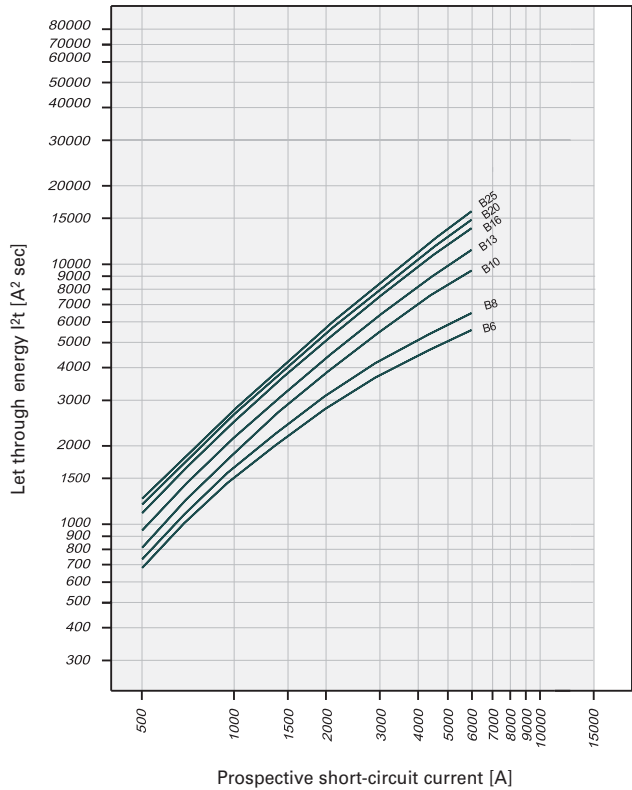
²⁾ Selectivity limit current I_s = rated breaking capacity I_{cn} of the RCD/MCB device

Darker areas: no selectivity

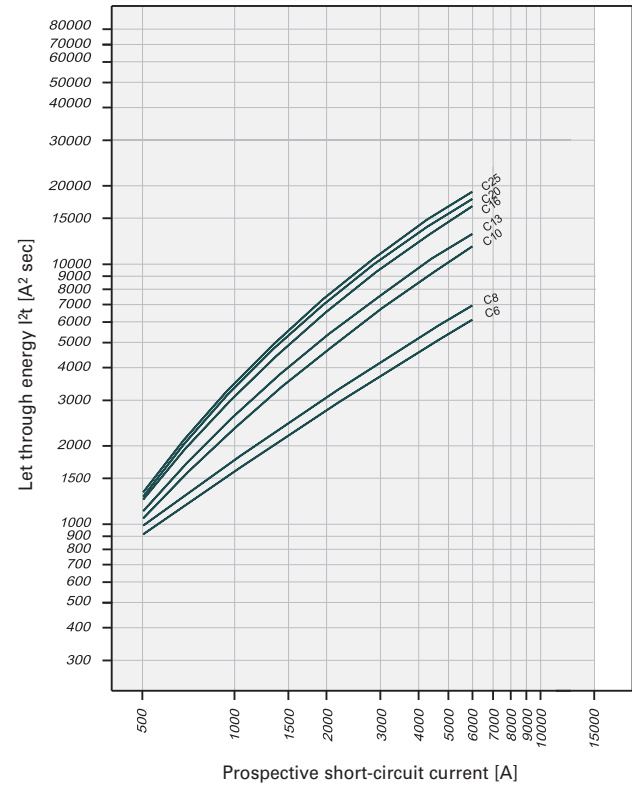


Let-through Energy PFL6-../1N/

Let-through Energy PFL6, Characteristic B, 1+N-pole



Let-through Energy PFL6, Characteristic C, 1+N-pole



sg00818_r



Description

- High-quality residual current device / miniature circuit breaker combination, line voltage-independent
- Contact position indicator red - green
- Comprehensive range of accessories can be mounted subsequently
- 3-position DIN rail clip, permits removal from existing busbar system
- Rated currents up to 25 A
- Tripping characteristics B, C
- Rated breaking capacity 6 kA

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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Type A

6 kA, 1+N-pole
Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A

sg00818_r



Characteristic B

6/0.03	HNB-B6/1N/003-A	195130	1/60
10/0.03	HNB-B10/1N/003-A	195131	1/60
13/0.03	HNB-B13/1N/003-A	195132	1/60
16/0.03	HNB-B16/1N/003-A	195133	1/60
20/0.03	HNB-B20/1N/003-A	195134	1/60
25/0.03	HNB-B25/1N/003-A	195135	1/60

sg00818_r



Characteristic C

6/0.03	HNB-C6/1N/003-A	195136	1/60
10/0.03	HNB-C10/1N/003-A	195137	1/60
13/0.03	HNB-C13/1N/003-A	195138	1/60
16/0.03	HNB-C16/1N/003-A	195139	1/60
20/0.03	HNB-C20/1N/003-A	195140	1/60
25/0.03	HNB-C25/1N/003-A	195141	1/60

Type AC

6 kA, 1+N-pole
Conditionally surge current-proof 250 A, type AC

sg00818_r



Characteristic B

6/0.03	HNB-B6/1N/003	195118	1/60
10/0.03	HNB-B10/1N/003	195119	1/60
13/0.03	HNB-B13/1N/003	195120	1/60
16/0.03	HNB-B16/1N/003	195121	1/60
20/0.03	HNB-B20/1N/003	195122	1/60
25/0.03	HNB-B25/1N/003	195123	1/60

sg00818_r



Characteristic C

6/0.03	HNB-C6/1N/003	195124	1/60
10/0.03	HNB-C10/1N/003	195125	1/60
13/0.03	HNB-C13/1N/003	195126	1/60
16/0.03	HNB-C16/1N/003	195127	1/60
20/0.03	HNB-C20/1N/003	195128	1/60
25/0.03	HNB-C25/1N/003	195129	1/60

Specifications | RCBO Devices HNB xPole Home

Description

- Combined RCD/MCB Devices
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Contact position indicator red - green
- Comprehensive range of accessories can be mounted subsequently
- The test key "T" must be pressed every 6 month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). The test interval of 6 month is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement R_E or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Type -A:** Protects against special forms of residual pulsating DC which have have not been smoothed

Accessories:

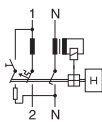
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Terminal cover cap	KLV-TC-2	276240
Additional terminal 35 mm ²	Z-HA-EK/35	263960

Technical Data

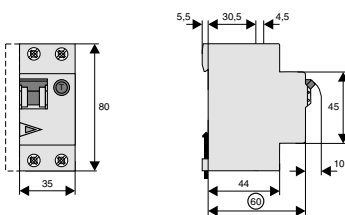
HNB, 1+N-pole	
Electrical	
Design according to	IEC/EN 61009
Current test marks as printed onto the device	
Line voltage-independent tripping	instantaneous 250 A (8/20 μ s), surge current proof
Rated voltage	U_e 230 V AC, 50 Hz
Operational voltage range	196-253 V
Rated tripping current	$I_{\Delta n}$ 30 mA
Rated non-tripping current	$I_{\Delta no}$ 0.5 $I_{\Delta n}$
Sensitivity	AC and pulsating DC
Selectivity class	3
Rated breaking capacity	I_{cn} 6 kA
Rated current	6 - 25 A
Rated impulse withstand voltage	U_{imp} 4 kV (1.2/50 μ s)
Characteristic	B, C
Maximum back-up fuse (short circuit)	100 A gL (>6 kA)
Endurance	
electrical components	$\geq 4,000$ switching operations
mechanical components	$\geq 20,000$ switching operations
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	35 mm (2MU)
Mounting	3-position DIN rail clip, permits removal from existing busbar system
Degree of protection, switch	IP20
Degree of protection, built-in	IP40
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity	1 - 25 mm ²
Terminal torque	2 - 2.4 Nm
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	according to IEC/EN 61009

Connection diagram

1+N-pole



Dimensions (mm)

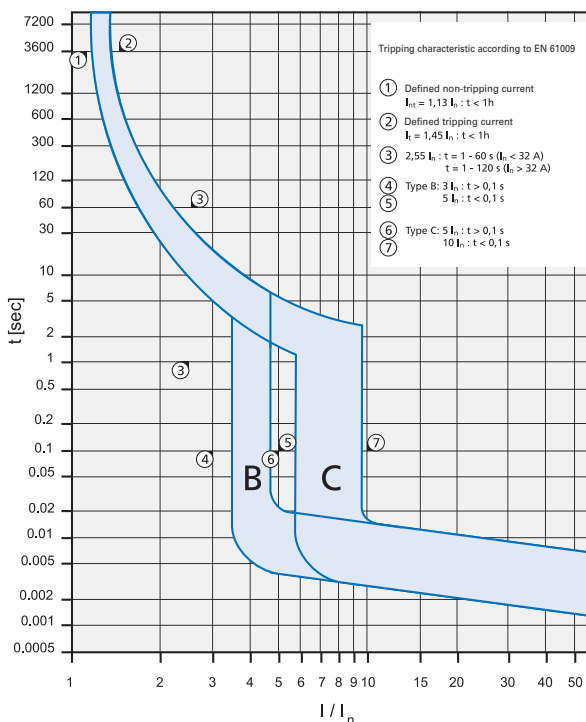


Load Capacity HNB

Effect of ambient temperature (MCB component)

I_n [A]	Ambient temperature T [°C]								
	-25	-20	-10	0	10	20	30	35	40
6	7.4	7.2	7.0	6.7	6.5	6.3	6.0	5.9	5.8
10	12	12	12	11	11	10	10	9.9	9.7
13	16	16	15	15	14	14	13	13	13
16	20	19	19	18	17	17	16	16	15
20	25	24	23	22	22	21	20	20	19
25	31	30	29	28	27	26	25	25	24

Tripping Characteristic HNB, Characteristics B and C



Short Circuit Selectivity HNB towards DII-DIV fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices HNB and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **Characteristic B** towards fuse link **DII-DIV***

HNB I_n [A]	DII-DIV gL/gG								
	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	0.7	1.0	2.9	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10			0.6	0.9	1.9	3.3	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
13			0.5	0.7	1.6	2.8	5.7	6.0 ²⁾	6.0 ²⁾
16				0.7	1.4	2.4	4.4	6.0 ²⁾	6.0 ²⁾
20					1.3	2.2	4.0	6.0 ²⁾	6.0 ²⁾
25					1.3	2.1	3.8	5.8	6.0 ²⁾

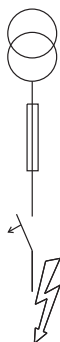
Short circuit selectivity **Characteristic C** towards fuse link **DII-DIV***

HNB I_n [A]	DII-DIV gL/gG								
	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	0.6	1.0	2.9	5.8	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10			<0.5	0.7	1.5	2.6	5.3	6.0 ²⁾	6.0 ²⁾
13					1.4	2.3	4.6	6.0 ²⁾	6.0 ²⁾
16					1.2	1.8	3.4	5.5	6.0 ²⁾
20					1.2	1.7	3.1	5.0	6.0 ²⁾
25						1.6	2.9	4.6	6.0 ²⁾

¹⁾ Selectivity limit current I_s under 0.5 kA.

²⁾ Selectivity limit current I_s = rated breaking capacity I_{cn} of the RCD/MCB device

Darker areas: no selectivity



Short Circuit Selectivity HNB towards D01-D03 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices HNB and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **Characteristic B** towards fuse link **D01-D03***

HNB	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	0.5	0.8	2.4	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10			0.5	0.8	1.6	3.7	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
13			0.6	0.7	1.4	3.0	4.7	6.0 ²⁾	6.0 ²⁾
16				0.6	1.2	2.6	3.9	6.0 ²⁾	6.0 ²⁾
20					1.2	2.5	3.6	6.0 ²⁾	6.0 ²⁾
25					1.2	2.3	3.3	5.7	6.0 ²⁾

Short circuit selectivity **Characteristic C** towards fuse link **D01-D03***

HNB	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	<0.5 ¹⁾	0.8	2.3	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10			<0.5	0.6	1.3	2.9	4.5	6.0 ²⁾	6.0 ²⁾
13					1.2	2.5	3.9	6.0 ²⁾	6.0 ²⁾
16					1.0	2.1	3.0	5.5	6.0 ²⁾
20					1.0	2.0	2.7	5.0	6.0 ²⁾
25						1.9	2.6	4.5	6.0 ²⁾

Short Circuit Selectivity HNB towards NH-00 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices HNB and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **Characteristic B** towards fuse link **NH-00***

HNB	D01-D03 gL/gG									
I_n [A]	16	20	25	32	35	40	50	63	80	100
6	<0.5 ¹⁾	0.5	0.8	1.4	2.2	3.3	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10		<0.5 ¹⁾	0.7	0.9	1.5	2.1	3.4	4.3	6.0 ²⁾	6.0 ²⁾
13		<0.5 ¹⁾	0.6	0.8	1.4	1.8	2.8	3.6	5.7	6.0 ²⁾
16			0.6	0.7	1.2	1.5	2.4	3.0	4.5	6.0 ²⁾
20				0.7	1.1	1.5	2.2	2.8	4.2	6.0 ²⁾
25				0.7	1.1	1.4	2.1	2.6	4.0	6.0 ²⁾

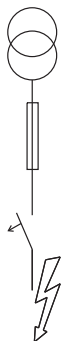
Short circuit selectivity **Characteristic C** towards fuse link **NH-00***

HNB	D01-D03 gL/gG									
I_n [A]	16	20	25	32	35	40	50	63	80	100
6	<0.5 ¹⁾	<0.5 ¹⁾	0.7	1.3	2.2	3.3	5.9	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10			0.5	0.8	1.2	1.7	2.7	3.4	5.5	6.0 ²⁾
13					1.1	1.5	2.3	2.9	4.7	6.0 ²⁾
16					1.0	1.3	1.8	2.3	3.7	6.0 ²⁾
20					0.9	1.1	1.7	2.2	3.4	6.0 ²⁾
25							1.6	2.1	3.2	6.0 ²⁾

¹⁾ Selectivity limit current I_s under 0.5 kA.

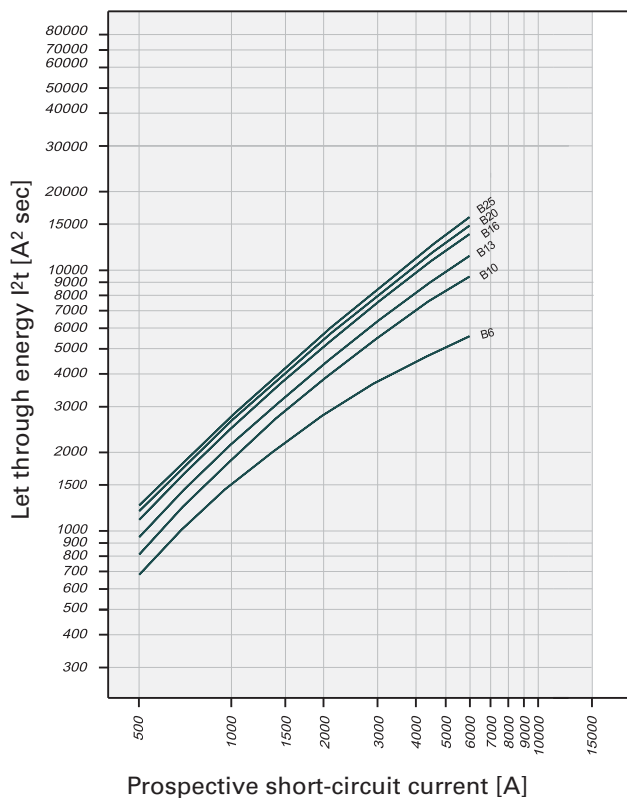
²⁾ Selectivity limit current I_s = rated breaking capacity I_{cn} of the RCD/MCB device

Darker areas: no selectivity

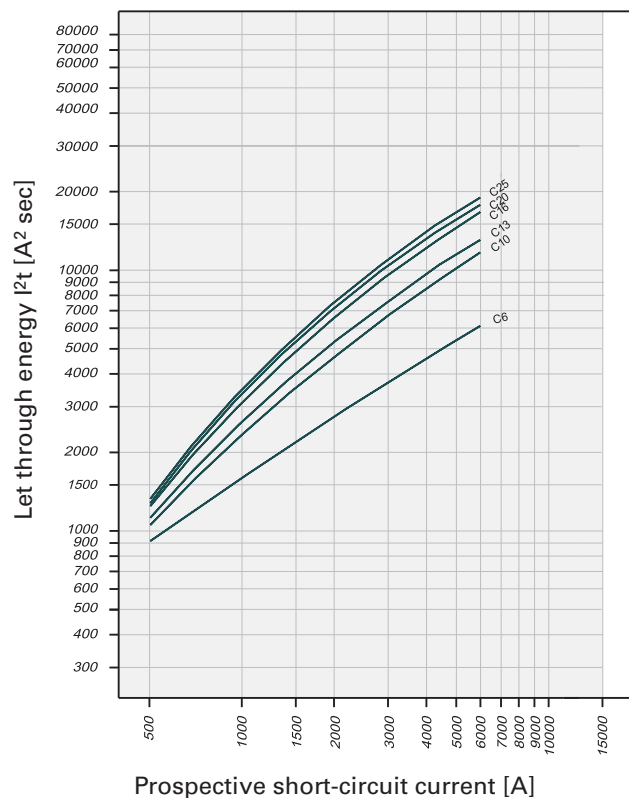


Let-through Energy HNB

Let-through Energy HNB, Characteristic B, 1+N-pole



Let-through Energy HNB, Characteristic C, 1+N-pole



SG14211



Description

- High-quality residual current device / miniature circuit breaker combination, line voltage-independent
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories can be mounted subsequently
- Wide variety of rated tripping currents
- Rated currents up to 25 A
- Tripping characteristics B, C, D
- Rated breaking capacity 6 kA or 4.5 kA

$I_n/I_{\Delta n}$
(A)

Type
Designation

Article No. Units per
package

Type A

6 kA, 3+N-pole

Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A

Characteristic B

13/0.03	mRB6-13/3N/B/003-A	120651	1/30
16/0.03	mRB6-16/3N/B/003-A	120652	1/30
13/0.1	mRB6-13/3N/B/01-A	120653	1/30
16/0.1	mRB6-16/3N/B/01-A	120654	1/30
13/0.3	mRB6-13/3N/B/03-A	120655	1/30
16/0.3	mRB6-16/3N/B/03-A	120656	1/30

Characteristic C

6/0.03	mRB6-6/3N/C/003-A	120657	1/30
10/0.03	mRB6-10/3N/C/003-A	120658	1/30
13/0.03	mRB6-13/3N/C/003-A	120659	1/30
16/0.03	mRB6-16/3N/C/003-A	120660	1/30
6/0.1	mRB6-6/3N/C/01-A	120661	1/30
10/0.1	mRB6-10/3N/C/01-A	120662	1/30
13/0.1	mRB6-13/3N/C/01-A	120663	1/30
16/0.1	mRB6-16/3N/C/01-A	120664	1/30
6/0.3	mRB6-6/3N/C/03-A	120665	1/30
10/0.3	mRB6-10/3N/C/03-A	120666	1/30
13/0.3	mRB6-13/3N/C/03-A	120667	1/30
16/0.3	mRB6-16/3N/C/03-A	120668	1/30

Characteristic D

6/0.03	mRB6-6/3N/D/003-A	120669	1/30
10/0.03	mRB6-10/3N/D/003-A	120670	1/30
13/0.03	mRB6-13/3N/D/003-A	120671	1/30
16/0.03	mRB6-16/3N/D/003-A	120672	1/30
6/0.1	mRB6-6/3N/D/01-A	120673	1/30
10/0.1	mRB6-10/3N/D/01-A	120674	1/30
13/0.1	mRB6-13/3N/D/01-A	120675	1/30
16/0.1	mRB6-16/3N/D/01-A	120676	1/30

SG14211



SG14211



SG14211



$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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Type A

4.5 kA, 3+N-pole
Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A

Characteristic C			
20/0.03	mRB4-20/3N/C/003-A	120677	1/30
25/0.03	mRB4-25/3N/C/003-A	120678	1/30
32/0.03	mRB4-32/3N/C/003-A	167508	1/30
20/0.1	mRB4-20/3N/C/01-A	120679	1/30
25/0.1	mRB4-25/3N/C/01-A	120680	1/30
32/0.1	mRB4-32/3N/C/01-A	167509	1/30
20/0.3	mRB4-20/3N/C/03-A	120681	1/30
25/0.3	mRB4-25/3N/C/03-A	120682	1/30
32/0.3	mRB4-32/3N/C/03-A	167510	1/30

Characteristic D			
20/0.03	mRB4-20/3N/D/003-A	120683	1/30
20/0.1	mRB4-20/3N/D/01-A	120684	1/30

SG14211



SG14211



Specifications | Combined RCD/MCB Devices mRB., 3+N-pole

Description

- Combined RCD/MCB Devices
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Comprehensive range of accessories can be mounted subsequently
- The test key "T" must be pressed every 6 month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). The test interval of 6 month is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (R_E), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Type -A:** Protects against special forms of residual pulsating DC which have have not been smoothed

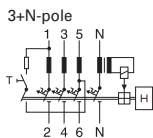
Accessories:

Tripping signal switch for subsequent installation	ZP-IHK	286052
	ZP-NHK	248437
	ZP-WHK	286053
Shunt trip release	ZP-ASA/..	248438, 248439

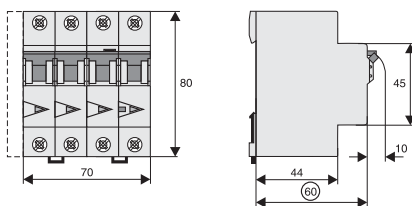
Technical Data

mRB., 3+N-pole	
Electrical	
Design according to	IEC/EN 61009
Current test marks as printed onto the device	
Line voltage-independent tripping	instantaneous 250 A (8/20 μ s), surge current proof
Rated voltage	U_e 230/400V; 50 Hz
Rated tripping current	$I_{\Delta n}$ 30, 100, 300 mA
Rated non-tripping current	$I_{\Delta no}$ 0.5 $I_{\Delta n}$
Sensitivity	AC and pulsating DC
Selectivity class	3
Rated breaking capacity	I_{cn}
mRB6	6 kA
mRB4	4.5 kA
Rated current	6 - 32 A
Rated impulse withstand voltage	U_{imp} 4 kV (1.2/50 μ s)
Characteristic	B, C, D
Maximum back-up fuse (short circuit)	100 A gL/gG
Endurance	
electrical components	$\geq 4,000$ switching operations
mechanical components	$\geq 20,000$ switching operations
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	70 mm (4MU)
Mounting	3-position DIN rail clip, permits removal from existing busbar system
Degree of protection, switch	IP20
Degree of protection, built-in	IP40
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity	1 - 25 mm ²
Terminal torque	2 - 2.4 Nm
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	according to IEC/EN 61009

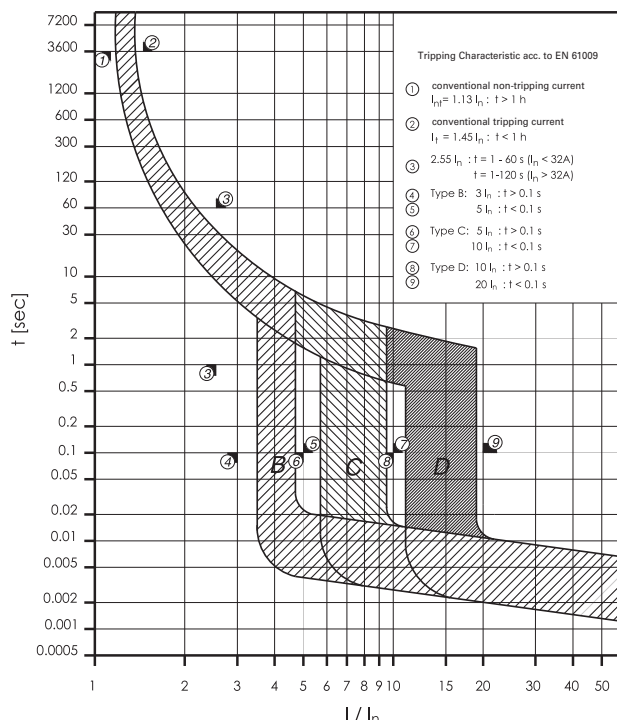
Connection diagram



Dimensions (mm)



Tripping Characteristic mRB., Characteristics B, C and D



Back-up Protection between mRB. and NZM1

Short circuit currents in kA.

mRB4/mRB6	NZMB1(C1)(N1)(H1)-A...		
	$U_e = 415$ V		
	B	C	D
6	-	20	20
10	-	20	20
13	20	20	20
16	20	20	20
20	-	20	20
25	-	20	-

$U_e = 415$ V: I_{cn} (mRB4) = 4.5 kA (acc. to IEC/EN 61009)
 $U_e = 415$ V: I_{cn} (mRB6) = 6 kA (acc. to IEC/EN 61009)
 $U_e = 400/415$ V: I_{cu} (NZMB1) = 25 kA (acc. to IEC/EN 60947-2)
 $U_e = 400/415$ V: I_{cu} (NZMC1) = 36 kA (acc. to IEC/EN 60947-2)
 $U_e = 400/415$ V: I_{cu} (NZMN1) = 50 kA (acc. to IEC/EN 60947-2)
 $U_e = 400/415$ V: I_{cu} (NZMH1) = 100 kA (acc. to IEC/EN 60947-2)

Back-up Protection between mRB. and NZM2

Short circuit currents in kA.

mRB4/mRB6	NZMB2(C2)(N2)(H2)-A...		
	$U_e = 415$ V		
	B	C	D
6	-	20	20
10	-	20	20
13	20	20	20
16	20	20	20
20	-	20	20
25	-	20	-

$U_e = 415$ V: I_{cn} (mRB4) = 4.5 kA (acc. to IEC/EN 61009)
 $U_e = 415$ V: I_{cn} (mRB6) = 6 kA (acc. to IEC/EN 61009)
 $U_e = 400/415$ V: I_{cu} (NZMB2) = 25 kA (acc. to IEC/EN 60947-2)
 $U_e = 400/415$ V: I_{cu} (NZMC2) = 36 kA (acc. to IEC/EN 60947-2)
 $U_e = 400/415$ V: I_{cu} (NZMN2) = 50 kA (acc. to IEC/EN 60947-2)
 $U_e = 400/415$ V: I_{cu} (NZMH2) = 150 kA (acc. to IEC/EN 60947-2)

Back-up Protection between mRB. and PLSM-OV63

Short circuit currents in kA.

mRB4/mRB6	PLSM-OV63		
	$U_e = 400$ V		
	B	C	D
6	-	10	10
10	-	10	10
13	10	10	10
16	10	10	10
20	-	10	10
25	-	10	-

$U_e = 415$ V: I_{cn} (mRB4) = 4.5 kA (acc. to IEC/EN 61009)
 $U_e = 415$ V: I_{cn} (mRB6) = 6 kA (acc. to IEC/EN 61009)
 $U_e = 400$ V: I_{cu} (PLSM-OV) = 10 kA (acc. to IEC/EN 60947-2)

Back-up Protection between mRB. and PLHT-OV80

Short circuit currents in kA.

mRB4/mRB6	PLHT-OV80		
	$U_e = 400$ V		
	B	C	D
6	-	20	20
10	-	20	20
13	20	20	20
16	20	20	20
20	-	20	20
25	-	20	-

$U_e = 415$ V: I_{cn} (mRB4) = 4.5 kA (acc. to IEC/EN 61009)
 $U_e = 415$ V: I_{cn} (mRB6) = 6 kA (acc. to IEC/EN 61009)
 $U_e = 400$ V: I_{cu} (PLHT-80) = 20 kA (acc. to IEC/EN 60947-2)

SG06511



Description

- High-quality miniature circuit breakers for commercial and residential applications
- Contact position indicator red - green
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories can be mounted subsequently
- Rated currents up to 63 A
- Tripping characteristics B, C, D
- Rated breaking capacity 10 kA according to IEC/EN 60898-1

SG06211



Rated current
 I_n (A)

Type
Designation

Article No.

Units per
package

10 kA, Characteristic B

1-pole

1	PL7-B1/1	165052	12/120
1.5	PL7-B1,5/1	165048	12/120
1.6	PL7-B1,6/1	165049	12/120
2	PL7-B2/1	264839	12/120
2.5	PL7-B2,5/1	165053	12/120
3	PL7-B3/1	165055	12/120
3.5	PL7-B3,5/1	165054	12/120
4	PL7-B4/1	264850	12/120
5	PL7-B5/1	165056	12/120
6	PL7-B6/1	262673	12/120
8	PL7-B8/1	165057	12/120
10	PL7-B10/1	262674	12/120
12	PL7-B12/1	165050	12/120
13	PL7-B13/1	262675	12/120
15	PL7-B15/1	165051	12/120
16	PL7-B16/1	262676	12/120
20	PL7-B20/1	262677	12/120
25	PL7-B25/1	262678	12/120
32	PL7-B32/1	262679	12/120
40	PL7-B40/1	262690	12/120
50	PL7-B50/1	262691	12/120
63	PL7-B63/1	262692	12/120

SG06311



1+N-pole

1	PL7-B1/1N	165214	8/80
1.5	PL7-B1,5/1N	165212	8/80
1.6	PL7-B1,6/1N	165213	8/80
2	PL7-B2/1N	165218	8/80
2.5	PL7-B2,5/1N	165217	8/80
3	PL7-B3/1N	165220	8/80
3.5	PL7-B3,5/1N	165219	8/80
4	PL7-B4/1N	165221	8/80
5	PL7-B5/1N	165222	8/80
6	PL7-B6/1N	262727	8/80
8	PL7-B8/1N	165223	8/80
10	PL7-B10/1N	262728	8/80
12	PL7-B12/1N	165215	8/80
13	PL7-B13/1N	262729	8/80
15	PL7-B15/1N	165216	8/80
16	PL7-B16/1N	262740	8/80
20	PL7-B20/1N	262741	8/80
25	PL7-B25/1N	262742	8/80
32	PL7-B32/1N	262743	8/80

SG06411



Rated current
 I_n (A)

Type
Designation

Article No.

Units per
package

2-pole

1	PL7-B1/2	165079	6/60
1.5	PL7-B1,5/2	165077	6/60
1.6	PL7-B1,6/2	165078	6/60
2	PL7-B2/2	165083	6/60
2.5	PL7-B2,5/2	165082	6/60
3	PL7-B3/2	165085	6/60
3.5	PL7-B3,5/2	165084	6/60
4	PL7-B4/2	165086	6/60
5	PL7-B5/2	165087	6/60
6	PL7-B6/2	262761	6/60
8	PL7-B8/2	165088	6/60
10	PL7-B10/2	262762	6/60
12	PL7-B12/2	165080	6/60
13	PL7-B13/2	262764	6/60
15	PL7-B15/2	165081	6/60
16	PL7-B16/2	262765	6/60
20	PL7-B20/2	262766	6/60
25	PL7-B25/2	262767	6/60
32	PL7-B32/2	262768	6/60
40	PL7-B40/2	262769	6/60
50	PL7-B50/2	263350	6/60
63	PL7-B63/2	263351	6/60

SG06511



3-pole

1	PL7-B1/3	165112	4/40
1.5	PL7-B1,5/3	165110	4/40
1.6	PL7-B1,6/3	165111	4/40
2	PL7-B2/3	165116	4/40
2.5	PL7-B2,5/3	165115	4/40
3	PL7-B3/3	165118	4/40
3.5	PL7-B3,5/3	165117	4/40
4	PL7-B4/3	116709	4/40
5	PL7-B5/3	165119	4/40
6	PL7-B6/3	263386	4/40
8	PL7-B8/3	165120	4/40
10	PL7-B10/3	263387	4/40
12	PL7-B12/3	165113	4/40
13	PL7-B13/3	263388	4/40
15	PL7-B15/3	165114	4/40
16	PL7-B16/3	263389	4/40
20	PL7-B20/3	263390	4/40
25	PL7-B25/3	263391	4/40
32	PL7-B32/3	263392	4/40
40	PL7-B40/3	263393	4/40
50	PL7-B50/3	263400	4/40
63	PL7-B63/3	263401	4/40

SG06711



Rated current
 I_n (A)

Type
Designation

Article No.

Units per
package

3+N-pole

1	PL7-B1/3N	165251	3/30
1.5	PL7-B1,5/3N	165249	3/30
1.6	PL7-B1,6/3N	165250	3/30
2	PL7-B2/3N	165255	3/30
2.5	PL7-B2,5/3N	165254	3/30
3	PL7-B3/3N	165257	3/30
3.5	PL7-B3,5/3N	165256	3/30
4	PL7-B4/3N	165258	3/30
5	PL7-B5/3N	165259	3/30
6	PL7-B6/3N	263982	3/30
8	PL7-B8/3N	165260	3/30
10	PL7-B10/3N	263983	3/30
12	PL7-B12/3N	165252	3/30
13	PL7-B13/3N	263984	3/30
15	PL7-B15/3N	165253	3/30
16	PL7-B16/3N	263985	3/30
20	PL7-B20/3N	263986	3/30
25	PL7-B25/3N	263987	3/30
32	PL7-B32/3N	263988	3/30
40	PL7-B40/3N	263989	3/30
50	PL7-B50/3N	263990	3/30
63	PL7-B63/3N	263991	3/30

SG06611



4-pole

1	PL7-B1/4	165146	3/30
1.5	PL7-B1,5/4	165144	3/30
1.6	PL7-B1,6/4	165145	3/30
2	PL7-B2/4	165153	3/30
2.5	PL7-B2,5/4	165152	3/30
3	PL7-B3/4	165157	3/30
3.5	PL7-B3,5/4	165156	3/30
4	PL7-B4/4	165159	3/30
5	PL7-B5/4	165161	3/30
6	PL7-B6/4	165163	3/30
8	PL7-B8/4	165165	3/30
10	PL7-B10/4	165147	3/30
12	PL7-B12/4	165148	3/30
13	PL7-B13/4	165149	3/30
15	PL7-B15/4	165150	3/30
16	PL7-B16/4	165151	3/30
20	PL7-B20/4	165154	3/30
25	PL7-B25/4	165155	3/30
32	PL7-B32/4	165158	3/30
40	PL7-B40/4	165160	3/30
50	PL7-B50/4	165162	3/30
63	PL7-B63/4	165164	3/30

Rated current
 I_n (A)

Type
Designation

Article No. Units per
package

10 kA, Characteristic C

1-pole

0.16	PL7-C0.16/1	262693	12/120
0.25	PL7-C0.25/1	262694	12/120
0.5	PL7-C0.5/1	262695	12/120
0.75	PL7-C0.75/1	262696	12/120
1	PL7-C1/1	262697	12/120
1.5	PL7-C1.5/1	165058	12/120
1.6	PL7-C1.6/1	262698	12/120
2	PL7-C2/1	262699	12/120
2.5	PL7-C2.5/1	165061	12/120
3	PL7-C3/1	165063	12/120
3.5	PL7-C3.5/1	165062	12/120
4	PL7-C4/1	262700	12/120
5	PL7-C5/1	165064	12/120
6	PL7-C6/1	262701	12/120
8	PL7-C8/1	165065	12/120
10	PL7-C10/1	262702	12/120
12	PL7-C12/1	165059	12/120
13	PL7-C13/1	262703	12/120
15	PL7-C15/1	165060	12/120
16	PL7-C16/1	262704	12/120
20	PL7-C20/1	262705	12/120
25	PL7-C25/1	262706	12/120
32	PL7-C32/1	262707	12/120
40	PL7-C40/1	262708	12/120
50	PL7-C50/1	262709	12/120
63	PL7-C63/1	262710	12/120

SG06211



1+N-pole

0.16	PL7-C0.16/1N	165224	8/80
0.25	PL7-C0.25/1N	165225	8/80
0.5	PL7-C0.5/1N	165226	8/80
0.75	PL7-C0.75/1N	165227	8/80
1	PL7-C1/1N	165230	8/80
1.5	PL7-C1.5/1N	165228	8/80
1.6	PL7-C1.6/1N	165229	8/80
2	PL7-C2/1N	262744	8/80
2.5	PL7-C2.5/1N	165233	8/80
3	PL7-C3/1N	165235	8/80
3.5	PL7-C3.5/1N	165234	8/80
4	PL7-C4/1N	262745	8/80
5	PL7-C5/1N	165236	8/80
6	PL7-C6/1N	262746	8/80
8	PL7-C8/1N	165237	8/80
10	PL7-C10/1N	262747	8/80
12	PL7-C12/1N	165231	8/80
13	PL7-C13/1N	262748	8/80
15	PL7-C15/1N	165232	8/80
16	PL7-C16/1N	262749	8/80
20	PL7-C20/1N	262750	8/80
25	PL7-C25/1N	262751	8/80
32	PL7-C32/1N	262752	8/80

SG06311



SG06411



Rated current I_n (A)	Type Designation	Article No.	Units per package
2-pole			
0.16	PL7-C0.16/2	165089	6/60
0.25	PL7-C0.25/2	165090	6/60
0.5	PL7-C0.5/2	263352	6/60
0.75	PL7-C0.75/2	165091	6/60
1	PL7-C1/2	263353	6/60
1.5	PL7-C1.5/2	165092	6/60
1.6	PL7-C1.6/2	165093	6/60
2	PL7-C2/2	263354	6/60
2.5	PL7-C2.5/2	165096	6/60
3	PL7-C3/2	165098	6/60
3.5	PL7-C3.5/2	165097	6/60
4	PL7-C4/2	263355	6/60
5	PL7-C5/2	165099	6/60
6	PL7-C6/2	263356	6/60
8	PL7-C8/2	165100	6/60
10	PL7-C10/2	263357	6/60
12	PL7-C12/2	165094	6/60
13	PL7-C13/2	263358	6/60
15	PL7-C15/2	165095	6/60
16	PL7-C16/2	263359	6/60
20	PL7-C20/2	263360	6/60
25	PL7-C25/2	263361	6/60
32	PL7-C32/2	263362	6/60
40	PL7-C40/2	263363	6/60
50	PL7-C50/2	263364	6/60
63	PL7-C63/2	263365	6/60

SG06511



Rated current I_n (A)	Type Designation	Article No.	Units per package
3-pole			
0.16	PL7-C0.16/3	165121	4/40
0.25	PL7-C0.25/3	165122	4/40
0.5	PL7-C0.5/3	263402	4/40
0.75	PL7-C0.75/3	165123	4/40
1	PL7-C1/3	263403	4/40
1.5	PL7-C1.5/3	165124	4/40
1.6	PL7-C1.6/3	165125	4/40
2	PL7-C2/3	263404	4/40
2.5	PL7-C2.5/3	165128	4/40
3	PL7-C3/3	165130	4/40
3.5	PL7-C3.5/3	165129	4/40
4	PL7-C4/3	263405	4/40
5	PL7-C5/3	165131	4/40
6	PL7-C6/3	263406	4/40
8	PL7-C8/3	165132	4/40
10	PL7-C10/3	263407	4/40
12	PL7-C12/3	165126	4/40
13	PL7-C13/3	263408	4/40
15	PL7-C15/3	165127	4/40
16	PL7-C16/3	263409	4/40
20	PL7-C20/3	263410	4/40
25	PL7-C25/3	263411	4/40
32	PL7-C32/3	263412	4/40
40	PL7-C40/3	263413	4/40
50	PL7-C50/3	263414	4/40
63	PL7-C63/3	263415	4/40

SG06711



Rated current I_n (A)	Type Designation	Article No.	Units per package
3+N-pole			
0.16	PL7-C0.16/3N	165261	3/30
0.25	PL7-C0.25/3N	165262	3/30
0.5	PL7-C0.5/3N	165263	3/30
0.75	PL7-C0.75/3N	165264	3/30
1	PL7-C1/3N	165267	3/30
1.5	PL7-C1.5/3N	165265	3/30
1.6	PL7-C1.6/3N	165266	3/30
2	PL7-C2/3N	165271	3/30
2.5	PL7-C2.5/3N	165270	3/30
3	PL7-C3/3N	165273	3/30
3.5	PL7-C3.5/3N	165272	3/30
4	PL7-C4/3N	165274	3/30
5	PL7-C5/3N	165275	3/30
6	PL7-C6/3N	263992	3/30
8	PL7-C8/3N	165276	3/30
10	PL7-C10/3N	263993	3/30
12	PL7-C12/3N	165268	3/30
13	PL7-C13/3N	263994	3/30
15	PL7-C15/3N	165269	3/30
16	PL7-C16/3N	263995	3/30
20	PL7-C20/3N	263996	3/30
25	PL7-C25/3N	263997	3/30
32	PL7-C32/3N	263998	3/30
40	PL7-C40/3N	263999	3/30
50	PL7-C50/3N	264000	3/30
63	PL7-C63/3N	264001	3/30

SG06611



4-pole			
0.16	PL7-C0.16/4	165166	3/30
0.25	PL7-C0.25/4	165167	3/30
0.5	PL7-C0.5/4	165168	3/30
0.75	PL7-C0.75/4	165169	3/30
1	PL7-C1/4	165172	3/30
1.5	PL7-C1.5/4	165170	3/30
1.6	PL7-C1.6/4	165171	3/30
2	PL7-C2/4	165178	3/30
2.5	PL7-C2.5/4	165177	3/30
3	PL7-C3/4	165182	3/30
3.5	PL7-C3.5/4	165181	3/30
4	PL7-C4/4	165184	3/30
5	PL7-C5/4	165186	3/30
6	PL7-C6/4	165188	3/30
8	PL7-C8/4	165190	3/30
10	PL7-C10/4	165173	3/30
12	PL7-C12/4	165174	3/30
13	PL7-C13/4	165175	3/30
15	PL7-C15/4	165176	3/30
16	PL7-C16/4	107329	3/30
20	PL7-C20/4	165179	3/30
25	PL7-C25/4	165180	3/30
32	PL7-C32/4	165183	3/30
40	PL7-C40/4	165185	3/30
50	PL7-C50/4	165187	3/30
63	PL7-C63/4	165189	3/30

SG06211



Rated current
 I_n (A)

Type
Designation

Article No. Units per
package

10 kA, Characteristic D

1-pole

0.5	PL7-D0,5/1	165066	12/120
1	PL7-D1/1	165071	12/120
1.5	PL7-D1,5/1	165067	12/120
1.6	PL7-D1,6/1	165068	12/120
2	PL7-D2/1	262711	12/120
2.5	PL7-D2,5/1	165072	12/120
3	PL7-D3/1	165074	12/120
3.5	PL7-D3,5/1	165073	12/120
4	PL7-D4/1	262712	12/120
5	PL7-D5/1	165075	12/120
6	PL7-D6/1	262713	12/120
8	PL7-D8/1	165076	12/120
10	PL7-D10/1	262714	12/120
12	PL7-D12/1	165069	12/120
13	PL7-D13/1	262715	12/120
15	PL7-D15/1	165070	12/120
16	PL7-D16/1	262716	12/120
20	PL7-D20/1	262717	12/120
25	PL7-D25/1	262718	12/120
32	PL7-D32/1	262719	12/120
40	PL7-D40/1	262720	12/120

SG06311



1+N-pole

0.5	PL7-D0,5/1N	165238	8/80
1	PL7-D1/1N	165241	8/80
1.5	PL7-D1,5/1N	165239	8/80
1.6	PL7-D1,6/1N	165240	8/80
2	PL7-D2/1N	262753	8/80
2.5	PL7-D2,5/1N	165244	8/80
3	PL7-D3/1N	165246	8/80
3.5	PL7-D3,5/1N	165245	8/80
4	PL7-D4/1N	262754	8/80
5	PL7-D5/1N	165247	8/80
6	PL7-D6/1N	262755	8/80
8	PL7-D8/1N	165248	8/80
10	PL7-D10/1N	262756	8/80
12	PL7-D12/1N	165242	8/80
13	PL7-D13/1N	262757	8/80
15	PL7-D15/1N	165243	8/80
16	PL7-D16/1N	262758	8/80
20	PL7-D20/1N	262759	8/80
25	PL7-D25/1N	262760	8/80

SG06411



Rated current I_n (A)	Type Designation	Article No.	Units per package
2-pole			
0.5	PL7-D0,5/2	165101	6/60
1	PL7-D1/2	108184	6/60
1.5	PL7-D1,5/2	165102	6/60
1.6	PL7-D1,6/2	165103	6/60
2	PL7-D2/2	263366	6/60
2.5	PL7-D2,5/2	165106	6/60
3	PL7-D3/2	108185	6/60
3.5	PL7-D3,5/2	165107	6/60
4	PL7-D4/2	263367	6/60
5	PL7-D5/2	165108	6/60
6	PL7-D6/2	263368	6/60
8	PL7-D8/2	165109	6/60
10	PL7-D10/2	263369	6/60
12	PL7-D12/2	165104	6/60
13	PL7-D13/2	263380	6/60
15	PL7-D15/2	165105	6/60
16	PL7-D16/2	263381	6/60
20	PL7-D20/2	263382	6/60
25	PL7-D25/2	263383	6/60
32	PL7-D32/2	263384	6/60
40	PL7-D40/2	263385	6/60

SG06411



2-pole			
0.5	PL7-D0,5/2	165101	6/60
1	PL7-D1/2	108184	6/60
1.5	PL7-D1,5/2	165102	6/60
1.6	PL7-D1,6/2	165103	6/60
2	PL7-D2/2	263366	6/60
2.5	PL7-D2,5/2	165106	6/60
3	PL7-D3/2	108185	6/60
3.5	PL7-D3,5/2	165107	6/60
4	PL7-D4/2	263367	6/60
5	PL7-D5/2	165108	6/60
6	PL7-D6/2	263368	6/60
8	PL7-D8/2	165109	6/60
10	PL7-D10/2	263369	6/60
12	PL7-D12/2	165104	6/60
13	PL7-D13/2	263380	6/60
15	PL7-D15/2	165105	6/60
16	PL7-D16/2	263381	6/60
20	PL7-D20/2	263382	6/60
25	PL7-D25/2	263383	6/60
32	PL7-D32/2	263384	6/60
40	PL7-D40/2	263385	6/60

SG06511



Rated current
 I_n (A)

Type
Designation

Article No.

Units per
package

3-pole

0.5	PL7-D0,5/3	165133	4/40
1	PL7-D1/3	165136	4/40
1.5	PL7-D1,5/3	165134	4/40
1.6	PL7-D1,6/3	165135	4/40
2	PL7-D2/3	263416	4/40
2.5	PL7-D2,5/3	165139	4/40
3	PL7-D3/3	165141	4/40
3.5	PL7-D3,5/3	165140	4/40
4	PL7-D4/3	263417	4/40
5	PL7-D5/3	165142	4/40
6	PL7-D6/3	263418	4/40
8	PL7-D8/3	165143	4/40
10	PL7-D10/3	263419	4/40
12	PL7-D12/3	165137	4/40
13	PL7-D13/3	263420	4/40
15	PL7-D15/3	165138	4/40
16	PL7-D16/3	263421	4/40
20	PL7-D20/3	263422	4/40
25	PL7-D25/3	263423	4/40
32	PL7-D32/3	263424	4/40
40	PL7-D40/3	263425	4/40

SG06711



3+N-pole

0.5	PL7-D0,5/3N	165277	3/30
1	PL7-D1/3N	165280	3/30
1.5	PL7-D1,5/3N	165278	3/30
1.6	PL7-D1,6/3N	165279	3/30
2	PL7-D2/3N	165284	3/30
2.5	PL7-D2,5/3N	165283	3/30
3	PL7-D3/3N	165286	3/30
3.5	PL7-D3,5/3N	165285	3/30
4	PL7-D4/3N	165287	3/30
5	PL7-D5/3N	165288	3/30
6	PL7-D6/3N	264002	3/30
8	PL7-D8/3N	165289	3/30
10	PL7-D10/3N	264003	3/30
12	PL7-D12/3N	165281	3/30
13	PL7-D13/3N	264004	3/30
15	PL7-D15/3N	165282	3/30
16	PL7-D16/3N	264005	3/30
20	PL7-D20/3N	264006	3/30
25	PL7-D25/3N	264007	3/30
32	PL7-D32/3N	264008	3/30
40	PL7-D40/3N	264009	3/30

SG06611



Rated current I_n (A)	Type Designation	Article No.	Units per package
4-pole			
0.5	PL7-D0,5/4	165191	3/30
1	PL7-D1/4	165194	3/30
1.5	PL7-D1,5/4	165192	3/30
1.6	PL7-D1,6/4	165193	3/30
2	PL7-D2/4	165201	3/30
2.5	PL7-D2,5/4	165200	3/30
3	PL7-D3/4	165205	3/30
3.5	PL7-D3,5/4	165204	3/30
4	PL7-D4/4	165207	3/30
5	PL7-D5/4	165209	3/30
6	PL7-D6/4	165210	3/30
8	PL7-D8/4	165211	3/30
10	PL7-D10/4	165195	3/30
12	PL7-D12/4	165196	3/30
13	PL7-D13/4	165197	3/30
15	PL7-D15/4	165198	3/30
16	PL7-D16/4	165199	3/30
20	PL7-D20/4	165202	3/30
25	PL7-D25/4	165203	3/30
32	PL7-D32/4	165206	3/30
40	PL7-D40/4	165208	3/30

Specifications | Miniature Circuit Breakers PL7

Description

- High selectivity between MCB and back-up fuse due to low let-through energy
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for secure isolation
- Suitable for applications up to 48 V DC (use PL7-DC for higher DC voltages)

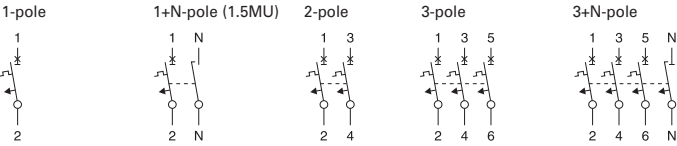
Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35 mm ²	Z-HA-EK/35	263960
Switching interlock	Z-IS/SPE-1TE	274418

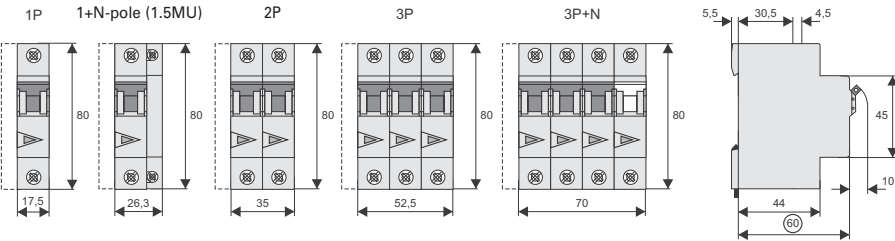
Technical Data

PL7		
Electrical		
Design according to	IEC/EN 60898-1	
Current test marks as printed onto the device		
Rated voltage	U_n	AC: 230/400 V DC: 48 V (per pole, max. 2 poles)
Rated frequency		50/60 Hz
Rated breaking capacity according to IEC/EN 60898-1	I_{cn}	10 kA
Characteristic		B, C, D
Back-up fuse		max. 125 A gL
Selectivity class		3
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50 μ s)
Endurance		
electrical components		$\geq 10,000$ switching operations
mechanical components		$\geq 20,000$ switching operations
Line voltage connection		at will (above/below)
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		17.5 mm per pole (1MU) 26.3 mm: device 1P+N (1.5MU)
Mounting		quick fastening with 3 lock-in positions on DIN rail IEC/EN 60715
Degree of protection		IP20
Upper and lower terminals		open mouthed/lift terminals
Terminal protection		finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity		1-25 mm ²
(1p+N, 1,5TE)		1-25 mm ² / 1-2x10 mm ² (N)
Terminal torque		2-2.4 Nm
(1p+N, 1,5TE)		2-2.4 Nm / 1.2-1.5 Nm (N)
Busbar thickness		0.8 - 2 mm (except N 0.5MU)
Mounting		independent of position

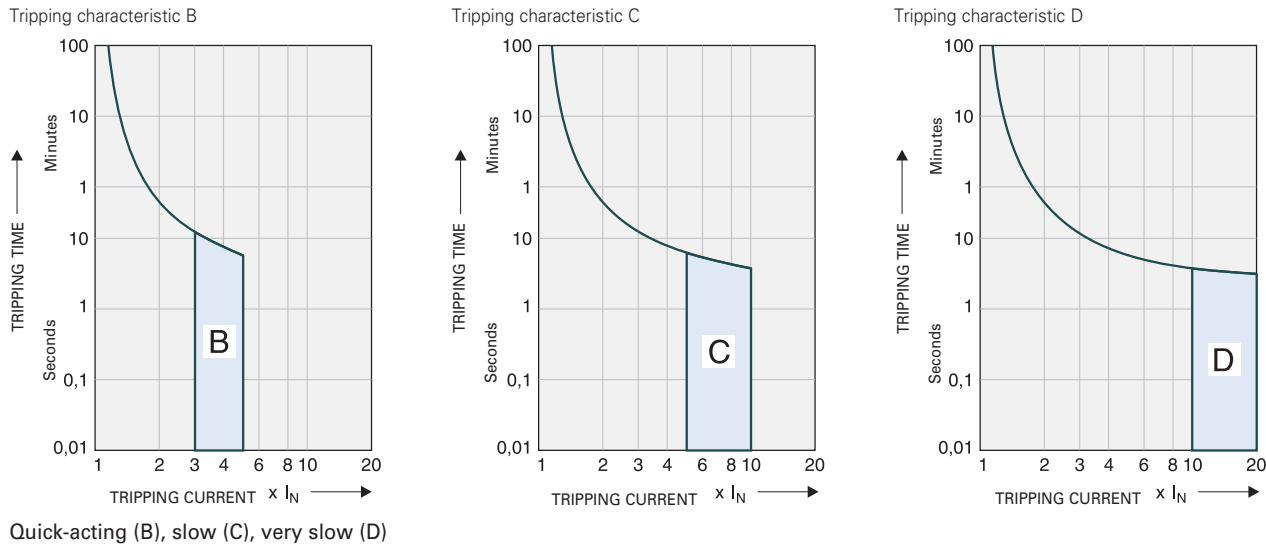
Connection diagrams



Dimensions (mm)



Tripping Characteristics (IEC/EN 60898-1)

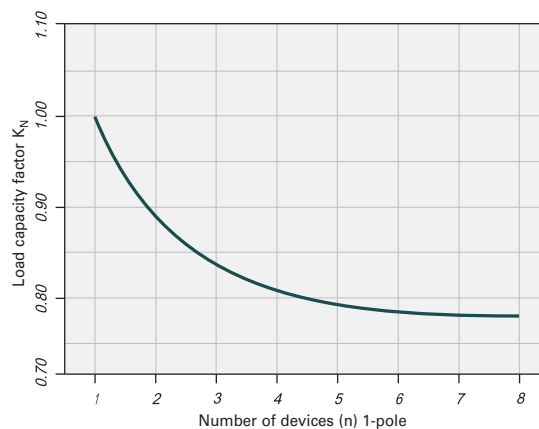


Effect of the Ambient Temperature on Thermal Tripping Behaviour

Adjusted rated current values according to the ambient temperature

I _n [A]	Ambient temperature T [°C]															
	-25	-20	-10	0	10	20	30	35	40	45	50	55	60	65	70	75
0.16	0.20	0.19	0.19	0.18	0.17	0.17	0.16	0.16	0.15	0.15	0.15	0.14	0.14	0.14	0.14	0.13
0.25	0.31	0.30	0.29	0.28	0.27	0.26	0.25	0.25	0.24	0.24	0.23	0.23	0.22	0.22	0.21	0.21
0.5	0.61	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.48	0.47	0.46	0.45	0.44	0.43	0.42	0.41
0.75	0.92	0.90	0.87	0.84	0.81	0.78	0.75	0.74	0.73	0.71	0.69	0.68	0.66	0.65	0.64	0.62
1	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.99	0.97	0.95	0.93	0.90	0.89	0.87	0.85	0.83
1.5	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.2
1.6	2.0	1.9	1.9	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3
2	2.4	2.4	2.3	2.2	2.2	2.1	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7
2.5	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1
3	3.7	3.6	3.5	3.4	3.3	3.1	3.0	3.0	2.9	2.8	2.8	2.7	2.7	2.6	2.5	2.5
3.5	4.3	4.2	4.1	3.9	3.8	3.7	3.5	3.4	3.4	3.3	3.2	3.2	3.1	3.0	3.0	2.9
4	4.9	4.8	4.7	4.5	4.3	4.2	4.0	3.9	3.9	3.8	3.7	3.6	3.5	3.5	3.4	3.3
5	6.1	6.0	5.8	5.6	5.4	5.2	5.0	4.9	4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.1
6	7.3	7.2	7.0	6.7	6.5	6.3	6.0	5.9	5.8	5.7	5.6	5.4	5.3	5.2	5.1	5.0
8	9.8	9.6	9.3	9.0	8.7	8.4	8.0	7.9	7.7	7.6	7.4	7.2	7.1	6.9	6.8	6.6
10	12	12	12	11	11	10	10	9.9	9.7	9.5	9.3	9.0	8.9	8.7	8.5	8.3
12	15	14	14	13	13	13	12	12	12	11	11	11	11	10	10	10
13	16	16	15	15	14	14	13	13	13	12	12	12	12	11	11	11
15	18	18	17	17	16	16	15	15	15	14	14	14	13	13	13	12
16	20	19	19	18	17	17	16	16	15	15	15	14	14	14	14	13
20	24	24	23	22	22	21	20	20	19	19	19	18	18	17	17	17
25	31	30	29	28	27	26	25	25	24	24	23	23	22	22	21	21
32	39	38	37	36	35	33	32	32	31	30	30	29	28	28	27	26
40	49	48	47	45	43	42	40	39	39	38	37	36	35	35	34	33
50	61	60	58	56	54	52	50	49	48	47	46	45	44	43	42	41
63	77	76	73	71	68	66	63	62	61	60	58	57	56	55	53	52

Load Capacity of Series Connected Miniature Circuit Breakers



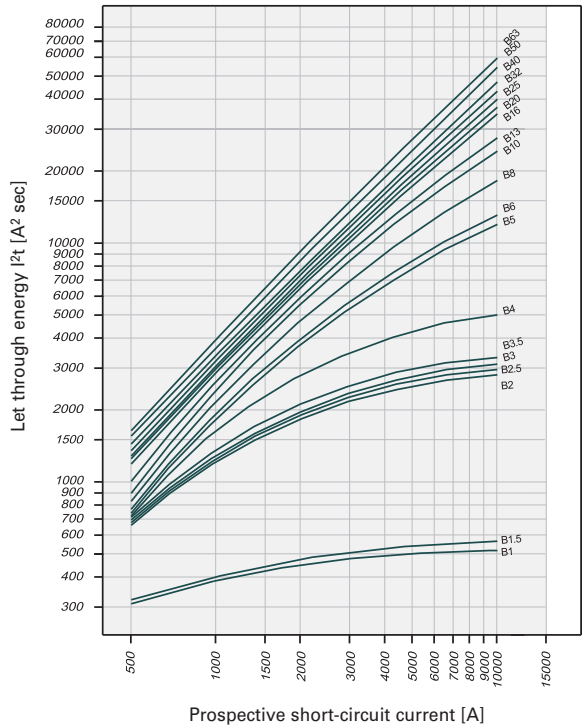
Effect of Power Frequency

Effect of power frequency on the tripping behaviour I_{MA} of the quick release

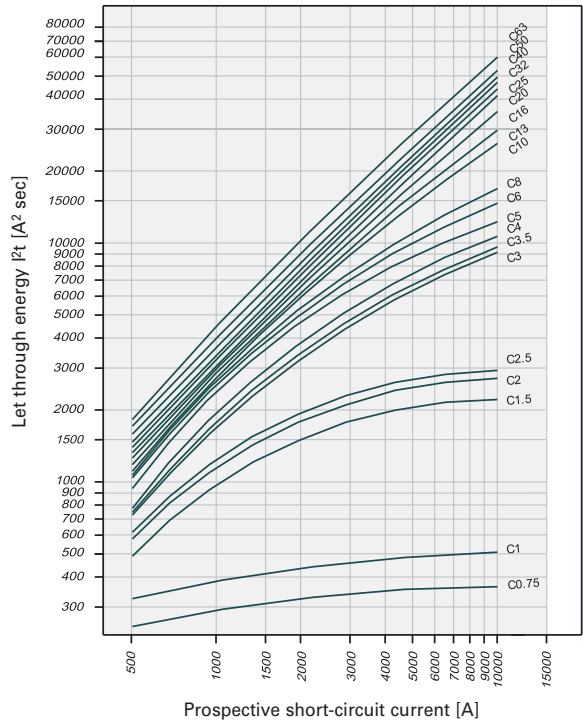
	Power frequency f [Hz]						
	16 ^{2/3}	50	60	100	200	300	400
I _{MA} (f)/I _{MA} (50 Hz) [%]	91	100	101	106	115	134	141

Let-through Energy PL7

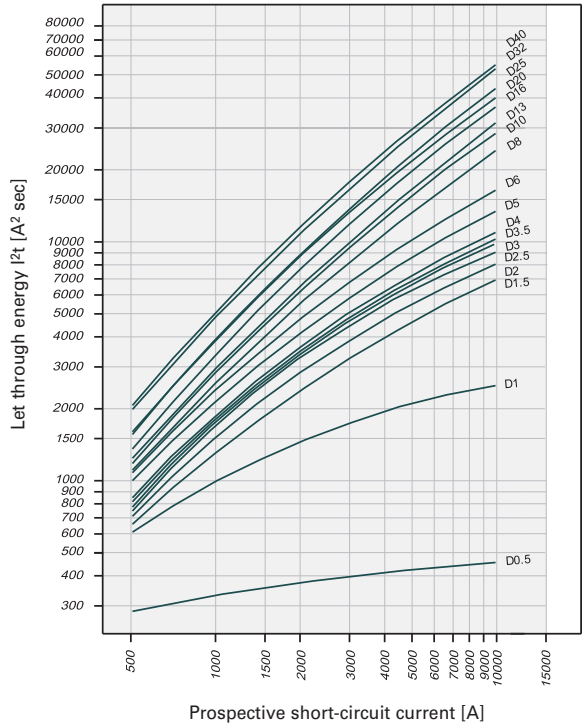
Let-through Energy PL7, Characteristic B, 1-pole



Let-through Energy PL7, Characteristic C, 1-pole



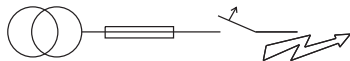
Let-through Energy PL7, Characteristic D, 1-pole



Short Circuit Selectivity PL7 towards DII-DIV fuse link

In case of short circuit, there is selectivity between the miniature circuit breakers PL7 and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b



Short circuit selectivity **Characteristic B** towards fuse link **DII-DIV***)

PL7	DII-DIV gL/gG									
I_n [A]	10	16	20	25	35	50	63	80	100	
2	<0.5 ¹⁾	<0.5 ¹⁾	0.8	1.6	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	
4	<0.5 ¹⁾	<0.5 ¹⁾	0.6	1.0	3.6	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	
5	<0.5 ¹⁾	<0.5 ¹⁾	0.6	0.9	2.0	3.5	8.5	10.0 ²⁾	10.0 ²⁾	
6		<0.5 ¹⁾	0.6	0.9	1.8	3.2	7.4	10.0 ²⁾	10.0 ²⁾	
8		<0.5 ¹⁾	0.5	0.8	1.6	2.6	5.2	8.3	10.0 ²⁾	
10			0.5	0.8	1.4	2.2	3.9	6.0	10.0 ²⁾	
13			0.5	0.7	1.3	2.0	3.6	5.4	10.0 ²⁾	
16				0.6	1.2	1.9	3.2	4.6	8.4	
20					1.2	1.8	3.1	4.4	7.8	
25					1.2	1.8	3.0	4.2	7.3	
32						1.7	2.8	3.9	6.8	
40							2.7	3.8	6.5	
50							2.5	3.5	5.7	
63									5.3	

Short circuit selectivity **Characteristic C** towards fuse link **DII-DIV***)

PL7	DII-DIV gL/gG									
I_n [A]	10	16	20	25	35	50	63	80	100	
0.75	1.0	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	
1.0	<0.5 ¹⁾	1.2	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	
1.6	<0.5 ¹⁾	<0.5 ¹⁾	1.0	2.2	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	
2	<0.5 ¹⁾	<0.5 ¹⁾	0.8	1.6	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	
4	<0.5 ¹⁾	<0.5 ¹⁾	0.6	0.8	1.8	3.6	9.7	10.0 ²⁾	10.0 ²⁾	
5	<0.5 ¹⁾	<0.5 ¹⁾	0.6	0.7	1.5	2.7	7.3	10.0 ²⁾	10.0 ²⁾	
6		<0.5 ¹⁾	0.5	0.6	1.4	2.4	5.5	10.0 ²⁾	10.0 ²⁾	
8		<0.5 ¹⁾	<0.5 ¹⁾	0.6	1.3	2.2	4.7	8.7	10.0 ²⁾	
10			<0.5 ¹⁾	0.6	1.3	2.0	3.6	5.4	10.0 ²⁾	
13					1.3	1.9	3.3	5.0	9.4	
16					1.2	1.8	3.2	4.4	8.0	
20					1.2	1.8	3.1	4.1	7.0	
25						1.7	2.8	3.8	6.5	
32							2.7	3.7	6.2	
40								3.5	5.9	
50									5.5	
63										

Short circuit selectivity **Characteristic D** towards fuse link **DII-DIV***)

PL7	DII-DIV gL/gG									
I_n [A]	10	16	20	25	35	50	63	80	100	
2	<0.5 ¹⁾	<0.5 ¹⁾	0.6	1.0	2.8	5.8	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	
4		<0.5 ¹⁾	0.6	0.9	2.0	3.8	9.5	10.0 ²⁾	10.0 ²⁾	
5		<0.5 ¹⁾	0.5	0.7	1.7	3.1	7.0	10.0 ²⁾	10.0 ²⁾	
6			0.5	0.7	1.5	2.6	5.3	9.1	10.0 ²⁾	
8			<0.5 ¹⁾	0.7	1.4	2.2	3.9	6.0	10.0 ²⁾	
10				0.7	1.2	1.9	3.4	5.0	9.5	
13					1.2	1.8	3.2	4.6	8.6	
16						1.6	2.7	4.0	7.4	
20						1.5	2.5	3.5	6.7	
25							2.4	3.4	6.2	
32								2.8	5.0	
40									4.8	

¹⁾ Selectivity limit current I_s under 0.5 kA

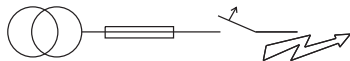
²⁾ Selectivity limit current I_s = rated breaking capacity I_{cn} of the MCB

Darker areas: no selectivity

Short Circuit Selectivity PL7 towards D01-D03 fuse link

In case of short circuit, there is selectivity between the miniature circuit breakers PL7 and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **Characteristic B** towards fuse link **D01-D03***)

PL7	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5 ¹⁾	<0.5 ¹⁾	0.6	1.0	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
4	<0.5 ¹⁾	<0.5 ¹⁾	0.5	0.9	2.5	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
5		<0.5 ¹⁾	0.5	0.8	1.7	4.0	7.0	10.0 ²⁾	10.0 ²⁾
6		<0.5 ¹⁾	0.5	0.8	1.6	3.6	6.0	10.0 ²⁾	10.0 ²⁾
8			0.5	0.8	1.4	2.8	4.3	8.2	10.0 ²⁾
10			0.5	0.7	1.3	2.4	3.4	6.0	10.0 ²⁾
13			<0.5 ¹⁾	0.7	1.2	2.3	3.2	5.3	10.0 ²⁾
16				0.6	1.1	2.2	2.9	4.6	10.0
20					1.1	2.1	2.8	4.4	9.3
25					1.1	2.0	2.7	4.2	8.7
32						2.0	2.6	4.0	8.0
40							2.5	3.8	7.5
50							2.3	3.4	6.7
63									6.2

Short circuit selectivity **Characteristic C** towards fuse link **D01-D03***)

PL7	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
0.75	<0.5 ¹⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
1.0	<0.5 ¹⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
1.6	<0.5 ¹⁾	0.5	0.6	0.9	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
2	<0.5 ¹⁾	<0.5 ¹⁾	0.5	0.7	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
4	<0.5 ¹⁾	<0.5 ¹⁾	<0.5 ¹⁾	0.6	1.6	4.0	7.6	10.0 ²⁾	10.0 ²⁾
5		<0.5 ¹⁾	<0.5 ¹⁾	0.5	1.3	3.1	5.7	10.0 ²⁾	10.0 ²⁾
6		<0.5 ¹⁾	<0.5 ¹⁾	<0.5 ¹⁾	1.2	2.7	4.5	10.0 ²⁾	10.0 ²⁾
8		<0.5 ¹⁾	<0.5 ¹⁾	<0.5 ¹⁾	1.2	2.5	4.0	8.6	10.0 ²⁾
10			<0.5 ¹⁾	<0.5 ¹⁾	1.2	2.3	3.1	5.4	10.0 ²⁾
13					1.1	2.2	3.0	4.9	10.0 ²⁾
16					1.1	2.1	2.8	4.4	9.5
20					1.0	2.0	2.6	4.0	8.3
25						1.9	2.5	3.8	7.8
32							2.5	3.7	7.3
40								3.5	7.0
50									6.5
63									

Short circuit selectivity **Characteristic D** towards fuse link **D01-D03***)

PL7	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
4		<0.5 ¹⁾	0.5	0.7	1.7	4.6	7.7	10.0 ²⁾	10.0 ²⁾
5		<0.5 ¹⁾	<0.5 ¹⁾	0.6	1.5	3.5	5.8	10.0 ²⁾	10.0 ²⁾
6			<0.5 ¹⁾	0.5	1.3	2.9	4.5	9.0	10.0 ²⁾
8			<0.5 ¹⁾	0.5	1.2	2.4	3.5	6.0	10.0 ²⁾
10				0.5	1.1	2.2	3.0	5.0	10.0 ²⁾
13					1.1	2.1	2.9	4.6	10.0 ²⁾
16						1.9	2.6	3.9	9.0
20						1.7	2.3	3.5	8.0
25							2.2	3.4	7.5
32								2.9	6.0
40									5.7

¹⁾ Selectivity limit current I_s under 0.5 kA

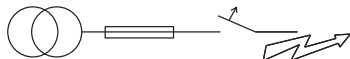
²⁾ Selectivity limit current I_s = rated breaking capacity I_{cn} of the MCB

Darker areas: no selectivity

Short Circuit Selectivity PL7 towards NH-00 fuse link

In case of short circuit, there is selectivity between the miniature circuit breakers PL7 and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b



Short circuit selectivity **Characteristic B** towards fuse link **NH-00***)

PL7 I_n [A]	NH-00 gL/gG											
	16	20	25	32	35	40	50	63	80	100	125	160
2	<0.5 ¹⁾	0.5	1.0	2.5	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
4	<0.5 ¹⁾	<0.5 ¹⁾	0.8	1.3	2.3	4.3	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
5	<0.5 ¹⁾	<0.5 ¹⁾	0.7	1.1	1.6	2.2	3.6	4.8	8.9	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
6	<0.5 ¹⁾	<0.5 ¹⁾	0.7	1.1	1.5	2.0	3.3	4.3	7.6	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
8	<0.5 ¹⁾	<0.5 ¹⁾	0.6	1.0	1.3	1.7	2.6	3.3	5.2	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
10		<0.5 ¹⁾	0.6	0.9	1.2	1.5	2.2	2.7	4.0	9.0	10.0 ²⁾	10.0 ²⁾
13		<0.5 ¹⁾	0.6	0.8	1.1	1.4	2.1	2.6	3.8	7.9	10.0 ²⁾	10.0 ²⁾
16			0.5	0.7	1.0	1.3	1.9	2.4	3.4	6.4	9.3	10.0 ²⁾
20				0.7	1.0	1.3	1.9	2.4	3.3	6.0	8.7	10.0 ²⁾
25				0.7	1.0	1.3	1.8	2.3	3.2	5.7	8.0	10.0 ²⁾
32					0.9	1.2	1.7	2.2	3.1	5.4	7.6	10.0 ²⁾
40								2.1	3.0	5.1	7.2	10.0 ²⁾
50								1.9	2.8	4.7	6.6	9.5
63									4.4	6.3	8.6	

Short circuit selectivity **Characteristic C** towards fuse link **NH-00***)

PL7 I_n [A]	NH-00 gL/gG											
	16	20	25	32	35	40	50	63	80	100	125	160
0.75	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
1.0	0.9	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
1.6	<0.5 ¹⁾	0.6	1.3	4.2	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
2	<0.5 ¹⁾	0.6	1.0	2.5	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
4	<0.5 ¹⁾	<0.5 ¹⁾	0.7	1.0	1.5	2.1	3.6	5.0	10.0	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
5	<0.5 ¹⁾	<0.5 ¹⁾	0.6	0.8	1.2	1.7	2.8	3.8	8.7	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
6	<0.5 ¹⁾	<0.5 ¹⁾	0.5	0.8	1.2	1.5	2.5	3.3	5.7	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
8	<0.5 ¹⁾	<0.5 ¹⁾	0.5	0.8	1.1	1.5	2.3	2.9	4.9	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
10			0.5	0.7	1.0	1.4	2.0	2.5	3.8	8.0	10.0 ²⁾	10.0 ²⁾
13					1.0	1.3	1.9	2.4	3.6	7.0	10.0 ²⁾	10.0 ²⁾
16					1.0	1.3	1.8	2.3	3.3	6.0	8.8	10.0 ²⁾
20					1.0	1.2	1.7	2.2	3.2	5.5	7.7	10.0 ²⁾
25						1.6	2.1	3.0	5.2	7.3	10.0 ²⁾	
32							2.1	2.9	5.0	7.0	10.0 ²⁾	
40								2.8	4.8	6.7	10.0	
50									4.5	6.3	9.5	
63										5.9	8.4	

Short circuit selectivity **Characteristic D** towards fuse link **NH-00***)

PL7 I_n [A]	NH-00 gL/gG											
	16	20	25	32	35	40	50	63	80	100	125	160
4	<0.5 ¹⁾	<0.5 ¹⁾	0.7	1.0	1.6	2.2	3.8	5.2	10.0	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
5		<0.5 ¹⁾	0.6	0.9	1.4	1.9	3.2	4.1	7.1	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
6		<0.5 ¹⁾	0.5	0.8	1.2	1.6	2.6	3.3	5.5	10.0 ²⁾	10.0 ²⁾	10.0 ²⁾
8			0.5	0.8	1.1	1.5	2.2	2.7	4.1	8.7	10.0 ²⁾	10.0 ²⁾
10			0.5	0.7	1.0	1.3	1.9	2.5	3.6	7.2	10.0 ²⁾	10.0 ²⁾
13				1.0	1.3	1.9	2.3	3.4	6.5	9.5	10.0 ²⁾	
16					1.1	1.6	2.0	3.0	5.5	8.0	10.0 ²⁾	
20						1.4	1.8	2.8	5.0	7.5	10.0 ²⁾	
25							1.8	2.7	4.8	7.0	10.0 ²⁾	
32								2.4	4.1	6.2	9.3	
40									4.0	6.0	9.0	

¹⁾ Selectivity limit current I_s under 0.5 kA

²⁾ Selectivity limit current I_s = rated breaking capacity I_{cn} of the MCB

Darker areas: no selectivity

SG62211



Description

- High-quality miniature circuit breakers for commercial and residential applications
- Contact position indicator red - green
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories can be mounted subsequently
- Rated currents up to 63 A
- Tripping characteristics B, C, D
- Rated breaking capacity 6 kA according to IEC/EN 60898-1

SG45411



Rated current
 I_n (A)

Type
Designation

Article No.

Units per
package

6 kA, Characteristic B

1-pole

1	PL6-B1/1	164740	12/120
1.5	PL6-B1,5/1	164736	12/120
1.6	PL6-B1,6/1	164737	12/120
2	PL6-B2/1	286516	12/120
2.5	PL6-B2,5/1	164741	12/120
3	PL6-B3/1	164743	12/120
3.5	PL6-B3,5/1	164742	12/120
4	PL6-B4/1	286517	12/120
5	PL6-B5/1	164744	12/120
6	PL6-B6/1	286518	12/120
8	PL6-B8/1	164745	12/120
10	PL6-B10/1	286519	12/120
12	PL6-B12/1	164738	12/120
13	PL6-B13/1	286520	12/120
15	PL6-B15/1	164739	12/120
16	PL6-B16/1	286521	12/120
20	PL6-B20/1	286522	12/120
25	PL6-B25/1	286523	12/120
32	PL6-B32/1	286524	12/120
40	PL6-B40/1	286525	12/120
50	PL6-B50/1	286526	12/120
63	PL6-B63/1	286527	12/120

SG51411



1+N-pole

1	PL6-B1/1N	164903	8/80
1.5	PL6-B1,5/1N	164901	8/80
1.6	PL6-B1,6/1N	164902	8/80
2	PL6-B2/1N	164907	8/80
2.5	PL6-B2,5/1N	164906	8/80
3	PL6-B3/1N	164911	8/80
3.5	PL6-B3,5/1N	164910	8/80
4	PL6-B4/1N	164913	8/80
5	PL6-B5/1N	164914	8/80
6	PL6-B6/1N	106025	8/80
8	PL6-B8/1N	164915	8/80
10	PL6-B10/1N	106026	8/80
12	PL6-B12/1N	164904	8/80
13	PL6-B13/1N	106027	8/80
15	PL6-B15/1N	164905	8/80
16	PL6-B16/1N	106028	8/80
20	PL6-B20/1N	164908	8/80
25	PL6-B25/1N	164909	8/80
32	PL6-B32/1N	164912	8/80

SG51511



Rated current
 I_n (A)

Type
Designation

Article No.

Units per
package

2-pole

1	PL6-B1/2	164803	6/60
1.5	PL6-B1,5/2	164801	6/60
1.6	PL6-B1,6/2	164802	6/60
2	PL6-B2/2	286550	6/60
2.5	PL6-B2,5/2	164806	6/60
3	PL6-B3/2	164808	6/60
3.5	PL6-B3,5/2	164807	6/60
4	PL6-B4/2	286551	6/60
5	PL6-B5/2	164809	6/60
6	PL6-B6/2	286552	6/60
8	PL6-B8/2	164810	6/60
10	PL6-B10/2	286553	6/60
12	PL6-B12/2	164804	6/60
13	PL6-B13/2	286554	6/60
15	PL6-B15/2	164805	6/60
16	PL6-B16/2	286555	6/60
20	PL6-B20/2	286556	6/60
25	PL6-B25/2	286557	6/60
32	PL6-B32/2	286558	6/60
40	PL6-B40/2	286559	6/60
50	PL6-B50/2	286560	6/60
63	PL6-B63/2	286561	6/60

SG62211

**3-pole**

1	PL6-B1/3	164868	4/40
1.5	PL6-B1,5/3	164866	4/40
1.6	PL6-B1,6/3	164867	4/40
2	PL6-B2/3	286584	4/40
2.5	PL6-B2,5/3	164871	4/40
3	PL6-B3/3	164873	4/40
3.5	PL6-B3,5/3	164872	4/40
4	PL6-B4/3	286585	4/40
5	PL6-B5/3	164874	4/40
6	PL6-B6/3	286586	4/40
8	PL6-B8/3	164875	4/40
10	PL6-B10/3	286587	4/40
12	PL6-B12/3	164869	4/40
13	PL6-B13/3	286588	4/40
15	PL6-B15/3	164870	4/40
16	PL6-B16/3	286589	4/40
20	PL6-B20/3	286590	4/40
25	PL6-B25/3	286591	4/40
32	PL6-B32/3	286592	4/40
40	PL6-B40/3	286593	4/40
50	PL6-B50/3	286594	4/40
63	PL6-B63/3	286595	4/40

SG64711



Rated current
 I_n (A)

Type
Designation

Article No.

Units per
package

3+N-pole

1	PL6-B1/3N	165002	3/30
1.5	PL6-B1,5/3N	165000	3/30
1.6	PL6-B1,6/3N	165001	3/30
2	PL6-B2/3N	165007	3/30
2.5	PL6-B2,5/3N	165006	3/30
3	PL6-B3/3N	165009	3/30
3.5	PL6-B3,5/3N	165008	3/30
4	PL6-B4/3N	165010	3/30
5	PL6-B5/3N	165011	3/30
6	PL6-B6/3N	106035	3/30
8	PL6-B8/3N	165012	3/30
10	PL6-B10/3N	106036	3/30
12	PL6-B12/3N	165003	3/30
13	PL6-B13/3N	165004	3/30
15	PL6-B15/3N	165005	3/30
16	PL6-B16/3N	106037	3/30
20	PL6-B20/3N	106038	3/30
25	PL6-B25/3N	106039	3/30
32	PL6-B32/3N	106040	3/30
40	PL6-B40/3N	106041	3/30
50	PL6-B50/3N	106903	3/30
63	PL6-B63/3N	106904	3/30

SG26612



4-pole

1	PL6-B1/4	166489	3/30
1.5	PL6-B1,5/4	166487	3/30
1.6	PL6-B1,6/4	166488	3/30
2	PL6-B2/4	166496	3/30
2.5	PL6-B2,5/4	166495	3/30
3	PL6-B3/4	166499	3/30
4	PL6-B4/4	166501	3/30
5	PL6-B5/4	166503	3/30
6	PL6-B6/4	166505	3/30
8	PL6-B8/4	166507	3/30
10	PL6-B10/4	166490	3/30
12	PL6-B12/4	166491	3/30
13	PL6-B13/4	166492	3/30
15	PL6-B15/4	166493	3/30
16	PL6-B16/4	166494	3/30
20	PL6-B20/4	166497	3/30
25	PL6-B25/4	166498	3/30
32	PL6-B32/4	166500	3/30
40	PL6-B40/4	166502	3/30
50	PL6-B50/4	166504	3/30
63	PL6-B63/4	166506	3/30

SG45411

Rated current
 I_n (A)Type
DesignationArticle No. Units per
package**6 kA, Characteristic C****1-pole**

0.16	PL6-C0.16/1	164746	12/120
0.25	PL6-C0.25/1	164747	12/120
0.5	PL6-C0.5/1	164748	12/120
0.75	PL6-C0.75/1	164749	12/120
1	PL6-C1/1	164754	12/120
1.5	PL6-C1.5/1	164750	12/120
1.6	PL6-C1.6/1	164751	12/120
2	PL6-C2/1	286528	12/120
2.5	PL6-C2.5/1	164755	12/120
3	PL6-C3/1	164757	12/120
3.5	PL6-C3.5/1	164756	12/120
4	PL6-C4/1	286529	12/120
5	PL6-C5/1	164758	12/120
6	PL6-C6/1	286530	12/120
8	PL6-C8/1	164759	12/120
10	PL6-C10/1	286531	12/120
12	PL6-C12/1	164752	12/120
13	PL6-C13/1	286532	12/120
15	PL6-C15/1	164753	12/120
16	PL6-C16/1	286533	12/120
20	PL6-C20/1	286534	12/120
25	PL6-C25/1	286535	12/120
32	PL6-C32/1	286536	12/120
40	PL6-C40/1	286537	12/120
50	PL6-C50/1	286538	12/120
63	PL6-C63/1	286539	12/120

SG51411

**1+N-pole**

0.16	PL6-C0.16/1N	164916	8/80
0.25	PL6-C0.25/1N	164917	8/80
0.5	PL6-C0.5/1N	164918	8/80
0.75	PL6-C0.75/1N	164919	8/80
1	PL6-C1/1N	164922	8/80
1.5	PL6-C1.5/1N	164920	8/80
1.6	PL6-C1.6/1N	164921	8/80
2	PL6-C2/1N	106029	8/80
2.5	PL6-C2.5/1N	164925	8/80
3	PL6-C3/1N	164929	8/80
3.5	PL6-C3.5/1N	164928	8/80
4	PL6-C4/1N	106030	8/80
5	PL6-C5/1N	164931	8/80
6	PL6-C6/1N	106031	8/80
8	PL6-C8/1N	164932	8/80
10	PL6-C10/1N	106032	8/80
12	PL6-C12/1N	164923	8/80
13	PL6-C13/1N	106033	8/80
15	PL6-C15/1N	164924	8/80
16	PL6-C16/1N	106034	8/80
20	PL6-C20/1N	164926	8/80
25	PL6-C25/1N	164927	8/80
32	PL6-C32/1N	164930	8/80

SG51511



Rated current
 I_n (A)

Type
Designation

Article No.

Units per
package

2-pole

0.16	PL6-C0.16/2	164811	6/60
0.25	PL6-C0.25/2	164812	6/60
0.5	PL6-C0.5/2	164813	6/60
0.75	PL6-C0.75/2	164814	6/60
1	PL6-C1/2	164817	6/60
1.5	PL6-C1.5/2	164815	6/60
1.6	PL6-C1.6/2	164816	6/60
2	PL6-C2/2	286562	6/60
2.5	PL6-C2.5/2	164820	6/60
3	PL6-C3/2	164822	6/60
3.5	PL6-C3.5/2	164821	6/60
4	PL6-C4/2	286563	6/60
5	PL6-C5/2	164823	6/60
6	PL6-C6/2	286564	6/60
8	PL6-C8/2	164824	6/60
10	PL6-C10/2	286565	6/60
12	PL6-C12/2	164818	6/60
13	PL6-C13/2	286566	6/60
15	PL6-C15/2	164819	6/60
16	PL6-C16/2	286567	6/60
20	PL6-C20/2	286568	6/60
25	PL6-C25/2	286569	6/60
32	PL6-C32/2	286570	6/60
40	PL6-C40/2	286571	6/60
50	PL6-C50/2	286572	6/60
63	PL6-C63/2	286573	6/60

SG62211



3-pole

0.16	PL6-C0.16/3	164876	4/40
0.25	PL6-C0.25/3	164877	4/40
0.5	PL6-C0.5/3	164878	4/40
0.75	PL6-C0.75/3	164879	4/40
1	PL6-C1/3	164882	4/40
1.5	PL6-C1.5/3	164880	4/40
1.6	PL6-C1.6/3	164881	4/40
2	PL6-C2/3	286596	4/40
2.5	PL6-C2.5/3	164885	4/40
3	PL6-C3/3	164887	4/40
3.5	PL6-C3.5/3	164886	4/40
4	PL6-C4/3	286597	4/40
5	PL6-C5/3	164888	4/40
6	PL6-C6/3	286598	4/40
8	PL6-C8/3	164889	4/40
10	PL6-C10/3	286599	4/40
12	PL6-C12/3	164883	4/40
13	PL6-C13/3	286600	4/40
15	PL6-C15/3	164884	4/40
16	PL6-C16/3	286601	4/40
20	PL6-C20/3	286602	4/40
25	PL6-C25/3	286603	4/40
32	PL6-C32/3	286604	4/40
40	PL6-C40/3	286605	4/40
50	PL6-C50/3	286606	4/40
63	PL6-C63/3	286607	4/40

SG64711



Rated current I_n (A)	Type Designation	Article No.	Units per package
3+N-pole			
0.16	PL6-C0.16/3N	165013	3/30
0.25	PL6-C0.25/3N	165014	3/30
0.5	PL6-C0.5/3N	165015	3/30
0.75	PL6-C0.75/3N	165016	3/30
1	PL6-C1/3N	165019	3/30
1.5	PL6-C1.5/3N	165017	3/30
1.6	PL6-C1.6/3N	165018	3/30
2	PL6-C2/3N	106905	3/30
2.5	PL6-C2.5/3N	165022	3/30
3	PL6-C3/3N	165024	3/30
3.5	PL6-C3.5/3N	165023	3/30
4	PL6-C4/3N	106906	3/30
5	PL6-C5/3N	165025	3/30
6	PL6-C6/3N	106907	3/30
8	PL6-C8/3N	165026	3/30
10	PL6-C10/3N	106908	3/30
12	PL6-C12/3N	165020	3/30
13	PL6-C13/3N	106909	3/30
15	PL6-C15/3N	165021	3/30
16	PL6-C16/3N	106910	3/30
20	PL6-C20/3N	106911	3/30
25	PL6-C25/3N	106912	3/30
32	PL6-C32/3N	106913	3/30
40	PL6-C40/3N	106914	3/30
50	PL6-C50/3N	106915	3/30
63	PL6-C63/3N	106916	3/30

SG26612



4-pole			
0.16	PL6-C0.16/4	166508	3/30
0.25	PL6-C0.25/4	166509	3/30
0.5	PL6-C0.5/4	166510	3/30
0.75	PL6-C0.75/4	166511	3/30
1	PL6-C1/4	166514	3/30
1.5	PL6-C1.5/4	166512	3/30
1.6	PL6-C1.6/4	166513	3/30
2	PL6-C2/4	166521	3/30
2.5	PL6-C2.5/4	166520	3/30
3	PL6-C3/4	166525	3/30
3.5	PL6-C3.5/4	166524	3/30
4	PL6-C4/4	166527	3/30
5	PL6-C5/4	166529	3/30
6	PL6-C6/4	166531	3/30
8	PL6-C8/4	166533	3/30
10	PL6-C10/4	166515	3/30
12	PL6-C12/4	166516	3/30
13	PL6-C13/4	166517	3/30
15	PL6-C15/4	166518	3/30
16	PL6-C16/4	166519	3/30
20	PL6-C20/4	166522	3/30
25	PL6-C25/4	166523	3/30
32	PL6-C32/4	166526	3/30
40	PL6-C40/4	166528	3/30
50	PL6-C50/4	166530	3/30
63	PL6-C63/4	166532	3/30

SG45411



Rated current
 I_n (A)

Type
Designation

Article No. Units per
package

6 kA, Characteristic D

1-pole

0.5	PL6-D0,5/1	164760	12/120
1	PL6-D1/1	164765	12/120
1.5	PL6-D1,5/1	164761	12/120
1.6	PL6-D1,6/1	164762	12/120
2	PL6-D2/1	286540	12/120
2.5	PL6-D2,5/1	164766	12/120
3	PL6-D3/1	164768	12/120
3.5	PL6-D3,5/1	164767	12/120
4	PL6-D4/1	286541	12/120
5	PL6-D5/1	164769	12/120
6	PL6-D6/1	286542	12/120
8	PL6-D8/1	164770	12/120
10	PL6-D10/1	286543	12/120
12	PL6-D12/1	164763	12/120
13	PL6-D13/1	286544	12/120
15	PL6-D15/1	164764	12/120
16	PL6-D16/1	286545	12/120
20	PL6-D20/1	286546	12/120
25	PL6-D25/1	286547	12/120
32	PL6-D32/1	286548	12/120
40	PL6-D40/1	286549	12/120

SG51411



1+N-pole

0.5	PL6-D0,5/1N	164933	8/80
1	PL6-D1/1N	164936	8/80
1.5	PL6-D1,5/1N	164934	8/80
1.6	PL6-D1,6/1N	164935	8/80
2	PL6-D2/1N	164943	8/80
2.5	PL6-D2,5/1N	164942	8/80
3	PL6-D3/1N	164947	8/80
3.5	PL6-D3,5/1N	164946	8/80
4	PL6-D4/1N	164948	8/80
5	PL6-D5/1N	164949	8/80
6	PL6-D6/1N	164950	8/80
8	PL6-D8/1N	164951	8/80
10	PL6-D10/1N	164937	8/80
12	PL6-D12/1N	164938	8/80
13	PL6-D13/1N	164939	8/80
15	PL6-D15/1N	164940	8/80
16	PL6-D16/1N	164941	8/80
20	PL6-D20/1N	164944	8/80
25	PL6-D25/1N	164945	8/80

SG51511



Rated current
 I_n (A)

Type
Designation

Article No. Units per
package

2-pole

0.5	PL6-D0,5/2	164825	6/60
1	PL6-D1/2	164828	6/60
1.5	PL6-D1,5/2	164826	6/60
1.6	PL6-D1,6/2	164827	6/60
2	PL6-D2/2	286574	6/60
2.5	PL6-D2,5/2	164831	6/60
3	PL6-D3/2	164833	6/60
3.5	PL6-D3,5/2	164832	6/60
4	PL6-D4/2	286575	6/60
5	PL6-D5/2	164834	6/60
6	PL6-D6/2	286576	6/60
8	PL6-D8/2	164835	6/60
10	PL6-D10/2	286577	6/60
12	PL6-D12/2	164829	6/60
13	PL6-D13/2	286578	6/60
15	PL6-D15/2	164830	6/60
16	PL6-D16/2	286579	6/60
20	PL6-D20/2	286580	6/60
25	PL6-D25/2	286581	6/60
32	PL6-D32/2	286582	6/60
40	PL6-D40/2	286583	6/60

SG62211



3-pole

0.5	PL6-D0,5/3	164890	4/40
1	PL6-D1/3	164893	4/40
1.5	PL6-D1,5/3	164891	4/40
1.6	PL6-D1,6/3	164892	4/40
2	PL6-D2/3	286608	4/40
2.5	PL6-D2,5/3	164896	4/40
3	PL6-D3/3	164898	4/40
3.5	PL6-D3,5/3	164897	4/40
4	PL6-D4/3	286609	4/40
5	PL6-D5/3	164899	4/40
6	PL6-D6/3	286610	4/40
8	PL6-D8/3	164900	4/40
10	PL6-D10/3	286611	4/40
12	PL6-D12/3	164894	4/40
13	PL6-D13/3	286612	4/40
15	PL6-D15/3	164895	4/40
16	PL6-D16/3	286613	4/40
20	PL6-D20/3	286614	4/40
25	PL6-D25/3	286615	4/40
32	PL6-D32/3	286616	4/40
40	PL6-D40/3	286617	4/40

SG64711



Rated current
 I_n (A)

Type
Designation

Article No.

Units per
package

3+N-pole

0.5	PL6-D0,5/3N	165027	3/30
1	PL6-D1/3N	165030	3/30
1.5	PL6-D1,5/3N	165028	3/30
1.6	PL6-D1,6/3N	165029	3/30
2	PL6-D2/3N	165037	3/30
2.5	PL6-D2,5/3N	165036	3/30
3	PL6-D3/3N	165041	3/30
3.5	PL6-D3,5/3N	165040	3/30
4	PL6-D4/3N	165043	3/30
5	PL6-D5/3N	165045	3/30
6	PL6-D6/3N	165046	3/30
8	PL6-D8/3N	165047	3/30
10	PL6-D10/3N	165031	3/30
12	PL6-D12/3N	165032	3/30
13	PL6-D13/3N	165033	3/30
15	PL6-D15/3N	165034	3/30
16	PL6-D16/3N	165035	3/30
20	PL6-D20/3N	165038	3/30
25	PL6-D25/3N	165039	3/30
32	PL6-D32/3N	165042	3/30
40	PL6-D40/3N	165044	3/30

SG26612



4-pole

0.5	PL6-D0,5/4	166534	3/30
1	PL6-D1/4	166537	3/30
1.5	PL6-D1,5/4	166535	3/30
1.6	PL6-D1,6/4	166536	3/30
2	PL6-D2/4	166544	3/30
2.5	PL6-D2,5/4	166543	3/30
3	PL6-D3/4	166548	3/30
3.5	PL6-D3,5/4	166547	3/30
4	PL6-D4/4	166550	3/30
5	PL6-D5/4	166552	3/30
6	PL6-D6/4	166553	3/30
8	PL6-D8/4	166554	3/30
10	PL6-D10/4	166538	3/30
12	PL6-D12/4	166539	3/30
13	PL6-D13/4	166540	3/30
15	PL6-D15/4	166541	3/30
16	PL6-D16/4	166542	3/30
20	PL6-D20/4	166545	3/30
25	PL6-D25/4	166546	3/30
32	PL6-D32/4	166549	3/30
40	PL6-D40/4	166551	3/30

Specifications | Miniature Circuit Breakers PL6

Description

- High selectivity between MCB and back-up fuse due to low let-through energy
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for secure isolation
- Suitable for applications up to 48 V DC

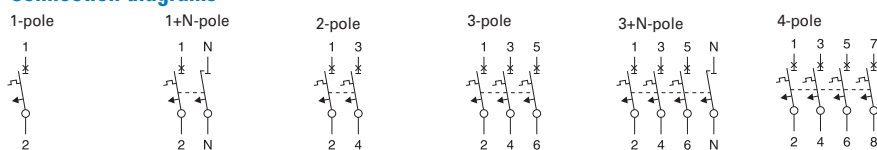
Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35 mm ²	Z-HA-EK/35	263960
Switching interlock	Z-IS/SPE-1TE	274418

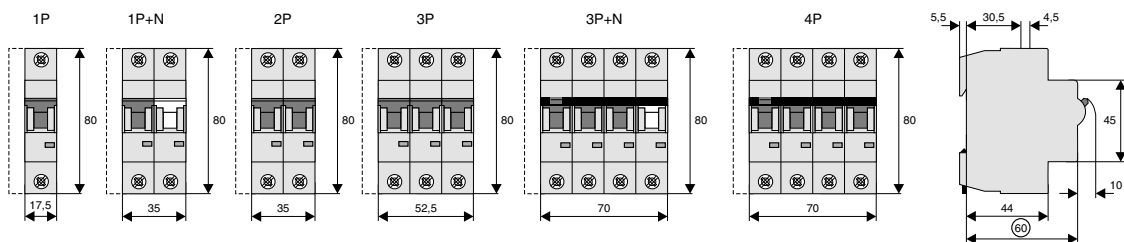
Technical Data

PL6		
Electrical		
Design according to	IEC/EN 60898-1	
Current test marks as printed onto the device		
Rated voltage	U_n	AC: 230/400 V DC: 48 V (per pole, max. 2 poles)
Rated frequency		50/60 Hz
Rated breaking capacity according to IEC/EN 60898-1	I_{cn}	6 kA
Characteristic		B, C, D
Back-up fuse		max. 100 A gL
Selectivity class		3
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50 μ s)
Endurance		
electrical components		$\geq 10,000$ switching operations
mechanical components		$\geq 20,000$ switching operations
Line voltage connection		at will (above/below)
Minimal voltage		12 V AC/DC
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		17.5 mm per pole (1MU)
Mounting		quick fastening with 3 lock-in positions on DIN rail IEC/EN 60715
Degree of protection		IP20
Upper and lower terminals		open mouthed/lift terminals
Terminal protection		finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity		1-25 mm ²
Terminal torque		2-2.4 Nm
Busbar thickness		0.8 - 2 mm
Mounting		independent of position

Connection diagrams

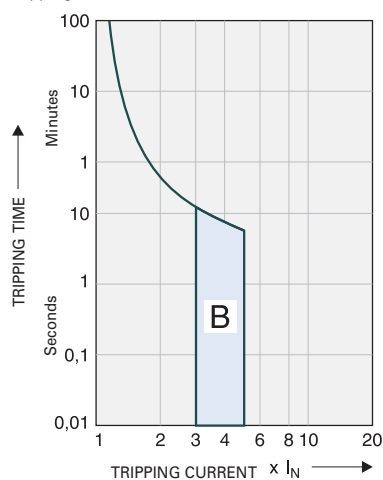


Dimensions (mm)

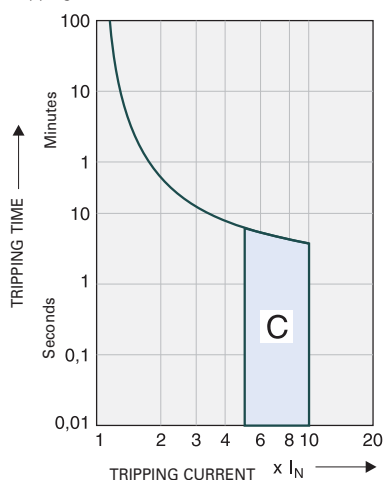


Tripping Characteristics (IEC/EN 60898-1)

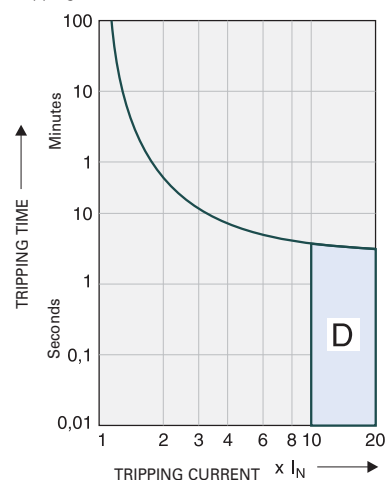
Tripping characteristic B



Tripping characteristic C



Tripping characteristic D



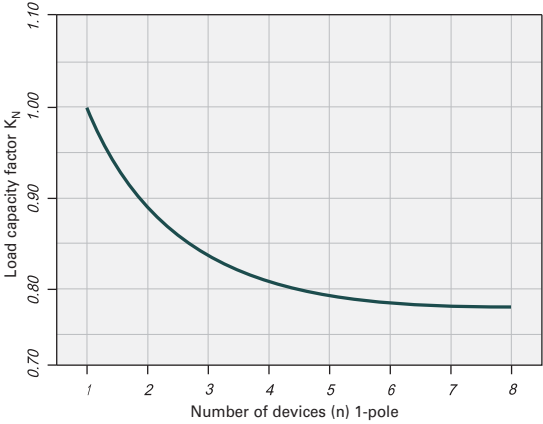
Quick-acting (B), slow (C), very slow (D)

Effect of the Ambient Temperature on Thermal Tripping Behaviour

Adjusted rated current values according to the ambient temperature

I _n [A]	Ambient temperature T [°C]															
	-25	-20	-10	0	10	20	30	35	40	45	50	55	60	65	70	75
0.16	0.20	0.19	0.19	0.18	0.17	0.17	0.16	0.16	0.15	0.15	0.15	0.14	0.14	0.14	0.14	0.13
0.25	0.31	0.30	0.29	0.28	0.27	0.26	0.25	0.25	0.24	0.24	0.23	0.23	0.22	0.22	0.21	0.21
0.5	0.61	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.48	0.47	0.46	0.45	0.44	0.43	0.42	0.41
0.75	0.92	0.90	0.87	0.84	0.81	0.78	0.75	0.74	0.73	0.71	0.69	0.68	0.66	0.65	0.64	0.62
1	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.99	0.97	0.95	0.93	0.90	0.89	0.87	0.85	0.83
1.5	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.2
1.6	2.0	1.9	1.9	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3
2	2.4	2.4	2.3	2.2	2.2	2.1	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7
2.5	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1
3	3.7	3.6	3.5	3.4	3.3	3.1	3.0	3.0	2.9	2.8	2.8	2.7	2.7	2.6	2.5	2.5
3.5	4.3	4.2	4.1	3.9	3.8	3.7	3.5	3.4	3.4	3.3	3.2	3.2	3.1	3.0	3.0	2.9
4	4.9	4.8	4.7	4.5	4.3	4.2	4.0	3.9	3.9	3.8	3.7	3.6	3.5	3.5	3.4	3.3
5	6.1	6.0	5.8	5.6	5.4	5.2	5.0	4.9	4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.1
6	7.3	7.2	7.0	6.7	6.5	6.3	6.0	5.9	5.8	5.7	5.6	5.4	5.3	5.2	5.1	5.0
8	9.8	9.6	9.3	9.0	8.7	8.4	8.0	7.9	7.7	7.6	7.4	7.2	7.1	6.9	6.8	6.6
10	12	12	12	11	11	10	10	9.9	9.7	9.5	9.3	9.0	8.9	8.7	8.5	8.3
12	15	14	14	13	13	13	12	12	12	11	11	11	11	10	10	10
13	16	16	15	15	14	14	13	13	13	12	12	12	12	11	11	11
15	18	18	17	17	16	16	15	15	15	14	14	14	13	13	13	12
16	20	19	19	18	17	17	16	16	15	15	15	14	14	14	14	13
20	24	24	23	22	22	21	20	20	19	19	19	18	18	17	17	17
25	31	30	29	28	27	26	25	25	24	24	23	23	22	22	21	21
32	39	38	37	36	35	33	32	32	31	30	30	29	28	28	27	26
40	49	48	47	45	43	42	40	39	39	38	37	36	35	35	34	33
50	61	60	58	56	54	52	50	49	48	47	46	45	44	43	42	41
63	77	76	73	71	68	66	63	62	61	60	58	57	56	55	53	52

Load Capacity of Series Connected Miniature Circuit Breakers



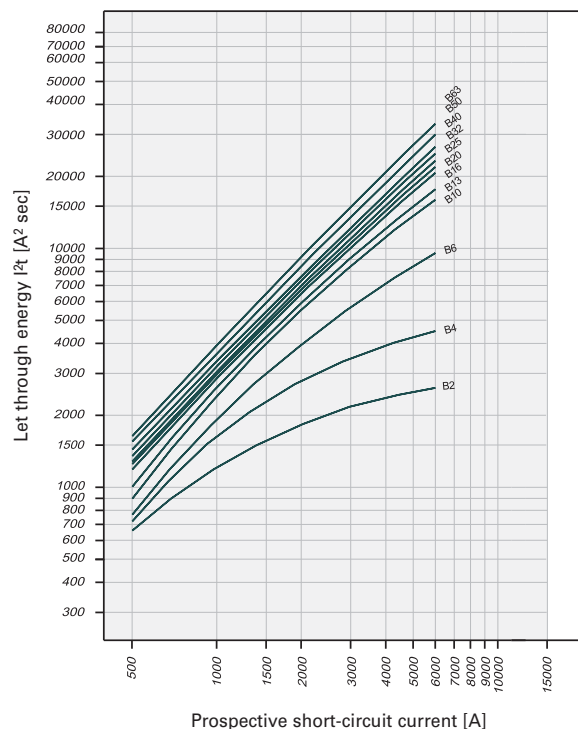
Effect of Power Frequency

Effect of power frequency on the tripping behaviour I_{MA} of the quick release

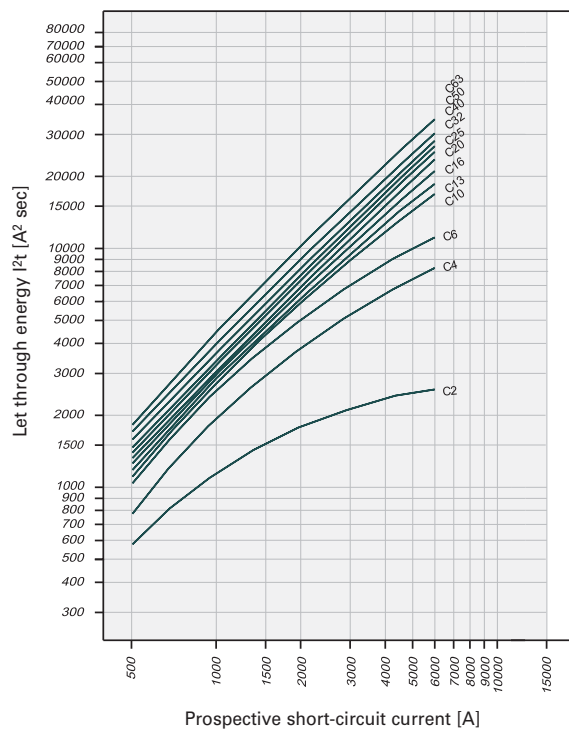
	Power frequency f [Hz]						
	16 ² / ₃	50	60	100	200	300	400
I _{MA} (f)/I _{MA} (50 Hz) [%]	91	100	101	106	115	134	141

Let-through Energy PL6

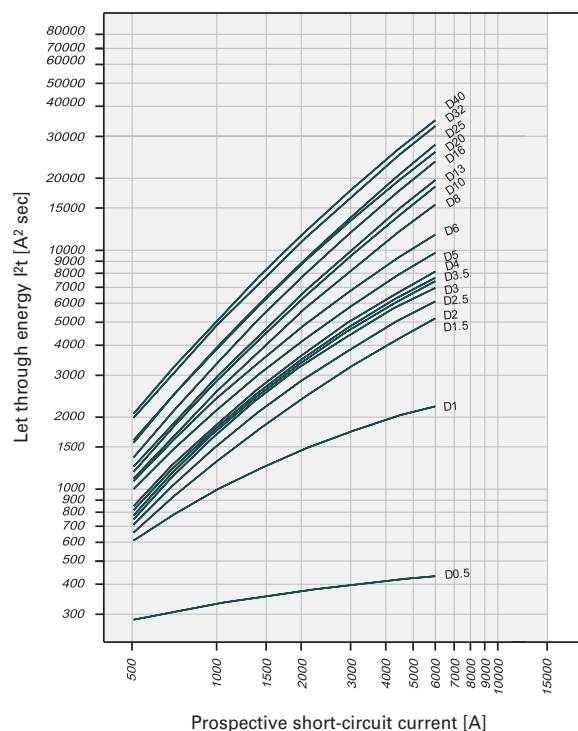
Let-through Energy PL6, Characteristic B, 1-pole



Let-through Energy PL6, Characteristic C, 1-pole



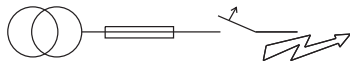
Let-through Energy PL6, Characteristic D, 1-pole



Short Circuit Selectivity PL6 towards DII-DIV fuse link

In case of short circuit, there is selectivity between the miniature circuit breakers PL6 and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **Characteristic B** towards fuse link **DII-DIV***)

PL6	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5 ¹⁾	<0.5 ¹⁾	0.8	1.6	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
4	<0.5 ¹⁾	<0.5 ¹⁾	0.6	1.0	3.6	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
5	<0.5 ¹⁾	<0.5 ¹⁾	0.6	0.9	2.0	3.5	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
6		<0.5 ¹⁾	0.6	0.9	1.8	3.2	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
8		<0.5 ¹⁾	0.5	0.8	1.6	2.6	5.2	6.0 ²⁾	6.0 ²⁾
10			0.5	0.8	1.4	2.2	3.9	6.0 ²⁾	6.0 ²⁾
13			0.5	0.7	1.3	2.0	3.6	5.4	6.0 ²⁾
16				0.6	1.2	1.9	3.2	4.6	6.0 ²⁾
20					1.2	1.8	3.1	4.4	6.0 ²⁾
25					1.2	1.8	3.0	4.2	6.0 ²⁾
32						1.7	2.8	3.9	6.0 ²⁾
40							2.7	3.8	6.0 ²⁾
50							2.5	3.5	5.7
63									5.3

Short circuit selectivity **Characteristic C** towards fuse link **DII-DIV***)

PL6	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5 ¹⁾	<0.5 ¹⁾	0.8	1.6	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
4	<0.5 ¹⁾	<0.5 ¹⁾	0.6	0.8	1.8	3.6	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
5	<0.5 ¹⁾	<0.5 ¹⁾	0.6	0.7	1.5	2.7	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
6		<0.5 ¹⁾	0.5	0.6	1.4	2.4	5.5	6.0 ²⁾	6.0 ²⁾
8		<0.5 ¹⁾	<0.5 ¹⁾	0.6	1.3	2.2	4.7	6.0 ²⁾	6.0 ²⁾
10			<0.5 ¹⁾	0.6	1.3	2.0	3.6	6.0 ²⁾	6.0 ²⁾
13					1.3	1.9	3.3	5.0	6.0 ²⁾
16					1.2	1.8	3.2	4.4	6.0 ²⁾
20						1.2	1.8	3.1	4.1
25							1.7	2.8	3.8
32								2.7	3.7
40									3.5
50									5.5

Short circuit selectivity **Characteristic D** towards fuse link **DII-DIV***)

PL6	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5 ¹⁾	<0.5 ¹⁾	0.6	1.0	2.8	5.8	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
4		<0.5 ¹⁾	0.6	0.9	2.0	3.8	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
5		<0.5 ¹⁾	0.5	0.7	1.7	3.1	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
6			0.5	0.7	1.5	2.6	5.3	6.0 ²⁾	6.0 ²⁾
8			<0.5 ¹⁾	0.7	1.4	2.2	3.9	6.0 ²⁾	6.0 ²⁾
10				0.7	1.2	1.9	3.4	5.0	6.0 ²⁾
13					1.2	1.8	3.2	4.6	6.0 ²⁾
16						1.6	2.7	4.0	6.0 ²⁾
20						1.5	2.5	3.5	6.0 ²⁾
25							2.4	3.4	6.0 ²⁾
32								2.8	5.0
40									4.8

¹⁾ Selectivity limit current I_s under 0.5 kA

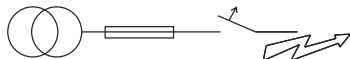
²⁾ Selectivity limit current I_s = rated breaking capacity I_{cn} of the MCB

Darker areas: no selectivity

Short Circuit Selectivity PL6 towards D01-D03 fuse link

In case of short circuit, there is selectivity between the miniature circuit breakers PL6 and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b



Short circuit selectivity **Characteristic B** towards fuse link **D01-D03*)**

PL6	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5 ¹⁾	<0.5 ¹⁾	0.6	1.0	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
4	<0.5 ¹⁾	<0.5 ¹⁾	0.5	0.9	2.5	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
5		<0.5 ¹⁾	0.5	0.8	1.7	4.0	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
6		<0.5 ¹⁾	0.5	0.8	1.6	3.6	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
8			0.5	0.8	1.4	2.8	4.3	6.0 ²⁾	6.0 ²⁾
10			0.5	0.7	1.3	2.4	3.4	6.0 ²⁾	6.0 ²⁾
13			<0.5 ¹⁾	0.7	1.2	2.3	3.2	5.3	6.0 ²⁾
16				0.6	1.1	2.2	2.9	4.6	6.0 ²⁾
20					1.1	2.1	2.8	4.4	6.0 ²⁾
25					1.1	2.0	2.7	4.2	6.0 ²⁾
32						2.0	2.6	4.0	6.0 ²⁾
40							2.5	3.8	6.0 ²⁾
50							2.3	3.4	6.0 ²⁾
63									6.0 ²⁾

Short circuit selectivity **Characteristic C** towards fuse link **D01-D03*)**

PL6	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5 ¹⁾	<0.5 ¹⁾	0.5	0.7	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
4	<0.5 ¹⁾	<0.5 ¹⁾	<0.5 ¹⁾	0.6	1.6	4.0	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
5		<0.5 ¹⁾	<0.5 ¹⁾	0.5	1.3	3.1	5.7	6.0 ²⁾	6.0 ²⁾
6		<0.5 ¹⁾	<0.5 ¹⁾	<0.5 ¹⁾	1.2	2.7	4.5	6.0 ²⁾	6.0 ²⁾
8		<0.5 ¹⁾	<0.5 ¹⁾	<0.5 ¹⁾	1.2	2.5	4.0	6.0 ²⁾	6.0 ²⁾
10			<0.5 ¹⁾	<0.5 ¹⁾	1.2	2.3	3.1	5.4	6.0 ²⁾
13					1.1	2.2	3.0	4.9	6.0 ²⁾
16					1.1	2.1	2.8	4.4	6.0 ²⁾
20					1.0	2.0	2.6	4.0	6.0 ²⁾
25						1.9	2.5	3.8	6.0 ²⁾
32							2.5	3.7	6.0 ²⁾
40								3.5	6.0 ²⁾
50									6.0 ²⁾

Short circuit selectivity **Characteristic D** towards fuse link **D01-D03*)**

PL6	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5 ¹⁾	<0.5 ¹⁾	0.6	0.8	2.2	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
4		<0.5 ¹⁾	0.5	0.7	1.7	4.6	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
5		<0.5 ¹⁾	<0.5 ¹⁾	0.6	1.5	3.5	5.8	6.0 ²⁾	6.0 ²⁾
6			<0.5 ¹⁾	0.5	1.3	2.9	4.5	6.0 ²⁾	6.0 ²⁾
8			<0.5 ¹⁾	0.5	1.2	2.4	3.5	6.0 ²⁾	6.0 ²⁾
10				0.5	1.1	2.2	3.0	5.0	6.0 ²⁾
13					1.1	2.1	2.9	4.6	6.0 ²⁾
16						1.9	2.6	3.9	6.0 ²⁾
20						1.7	2.3	3.5	6.0 ²⁾
25							2.2	3.4	6.0 ²⁾
32								2.9	6.0 ²⁾
40									5.7

¹⁾ Selectivity limit current I_s under 0.5 kA

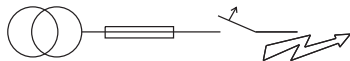
²⁾ Selectivity limit current I_s = rated breaking capacity I_{cn} of the MCB

Darker areas: no selectivity

Short Circuit Selectivity PL6 towards NH-00 fuse link

In case of short circuit, there is selectivity between the miniature circuit breakers PL6 and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **Characteristic B** towards fuse link **NH-00***

PL6	NH-00 gL/gG											
I _n [A]	16	20	25	32	35	40	50	63	80	100	125	160
2	<0.5 ¹⁾	0.5	1.0	2.5	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
4	<0.5 ¹⁾	<0.5 ¹⁾	0.8	1.3	2.3	4.3	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
5	<0.5 ¹⁾	<0.5 ¹⁾	0.7	1.1	1.6	2.2	3.6	4.8	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
6	<0.5 ¹⁾	<0.5 ¹⁾	0.7	1.1	1.5	2.0	3.3	4.3	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
8	<0.5 ¹⁾	<0.5 ¹⁾	0.6	1.0	1.3	1.7	2.6	3.3	5.2	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10		<0.5 ¹⁾	0.6	0.9	1.2	1.5	2.2	2.7	4.0	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
13		<0.5 ¹⁾	0.6	0.8	1.1	1.4	2.1	2.6	3.8	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
16			0.5	0.7	1.0	1.3	1.9	2.4	3.4	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
20				0.7	1.0	1.3	1.9	2.4	3.3	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
25				0.7	1.0	1.3	1.8	2.3	3.2	5.7	6.0 ²⁾	6.0 ²⁾
32					0.9	1.2	1.7	2.2	3.1	5.4	6.0 ²⁾	6.0 ²⁾
40								2.1	3.0	5.1	6.0 ²⁾	6.0 ²⁾
50								1.9	2.8	4.7	6.0 ²⁾	6.0 ²⁾
63										4.4	6.0 ²⁾	6.0 ²⁾

Short circuit selectivity **Characteristic C** towards fuse link **NH-00***

PL6	NH-00 gL/gG											
I _n [A]	16	20	25	32	35	40	50	63	80	100	125	160
2	<0.5 ¹⁾	0.6	1.0	2.5	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
4	<0.5 ¹⁾	<0.5 ¹⁾	0.7	1.0	1.5	2.1	3.6	5.0	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
5	<0.5 ¹⁾	<0.5 ¹⁾	0.6	0.8	1.2	1.7	2.8	3.8	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
6	<0.5 ¹⁾	<0.5 ¹⁾	0.5	0.8	1.2	1.5	2.5	3.3	5.7	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
8	<0.5 ¹⁾	<0.5 ¹⁾	0.5	0.8	1.1	1.5	2.3	2.9	4.9	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10			0.5	0.7	1.0	1.4	2.0	2.5	3.8	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
13					1.0	1.3	1.9	2.4	3.6	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
16					1.0	1.3	1.8	2.3	3.3	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
20					1.0	1.2	1.7	2.2	3.2	5.5	6.0 ²⁾	6.0 ²⁾
25							1.6	2.1	3.0	5.2	6.0 ²⁾	6.0 ²⁾
32								2.1	2.9	5.0	6.0 ²⁾	6.0 ²⁾
40									2.8	4.8	6.0 ²⁾	6.0 ²⁾
50										4.5	6.0 ²⁾	6.0 ²⁾
63											5.9	6.0 ²⁾

Short circuit selectivity **Characteristic D** towards fuse link **NH-00***

PL6	NH-00 gL/gG											
I _n [A]	16	20	25	32	35	40	50	63	80	100	125	160
2	<0.5 ¹⁾	<0.5 ¹⁾	0.8	1.3	2.1	3.1	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
4	<0.5 ¹⁾	<0.5 ¹⁾	0.7	1.0	1.6	2.2	3.8	5.2	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
5		<0.5 ¹⁾	0.6	0.9	1.4	1.9	3.2	4.1	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
6		<0.5 ¹⁾	0.5	0.8	1.2	1.6	2.6	3.3	5.5	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
8			0.5	0.8	1.1	1.5	2.2	2.7	4.1	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
10			0.5	0.7	1.0	1.3	1.9	2.5	3.6	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
13					1.0	1.3	1.9	2.3	3.4	6.0 ²⁾	6.0 ²⁾	6.0 ²⁾
16						1.1	1.6	2.0	3.0	5.5	6.0 ²⁾	6.0 ²⁾
20							1.4	1.8	2.8	5.0	6.0 ²⁾	6.0 ²⁾
25								1.8	2.7	4.8	6.0 ²⁾	6.0 ²⁾
32									2.4	4.1	6.0 ²⁾	6.0 ²⁾
40										4.0	6.0 ²⁾	6.0 ²⁾

¹⁾ Selectivity limit current I_s under 0.5 kA

²⁾ Selectivity limit current I_s = rated breaking capacity I_{cn} of the MCB

Darker areas: no selectivity

sg03518_r



Description

- High-quality miniature circuit breakers for commercial and residential applications
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Rated currents up to 63 A
- Tripping characteristics B, C
- Rated breaking capacity 4.5 kA according to IEC/EN 60898-1

sg02818_r



Rated current I_n (A)	Type Designation	Article No.	Units per package
4.5 kA, Characteristic B			
1-pole			
6	HL-B6/1	194718	12/120
10	HL-B10/1	194719	12/120
13	HL-B13/1	194720	12/120
16	HL-B16/1	194721	12/120
20	HL-B20/1	194722	12/120
25	HL-B25/1	194723	12/120
32	HL-B32/1	194724	12/120
40	HL-B40/1	194725	12/120
50	HL-B50/1	194726	12/120
63	HL-B63/1	194727	12/120

sg03218_r



1+N-pole			
6	HL-B6/1N	194738	6/60
10	HL-B10/1N	194739	6/60
13	HL-B13/1N	194740	6/60
16	HL-B16/1N	194741	6/60
20	HL-B20/1N	194742	6/60
25	HL-B25/1N	194743	6/60
32	HL-B32/1N	194744	6/60
40	HL-B40/1N	194745	6/60
50	HL-B50/1N	194746	6/60
63	HL-B63/1N	194747	6/60

sg03018_r



2-pole			
6	HL-B6/2	194758	6/60
10	HL-B10/2	194759	6/60
13	HL-B13/2	194760	6/60
16	HL-B16/2	194761	6/60
20	HL-B20/2	194762	6/60
25	HL-B25/2	194763	6/60
32	HL-B32/2	194764	6/60
40	HL-B40/2	194765	6/60
50	HL-B50/2	194766	6/60
63	HL-B63/2	194767	6/60

sg03318_r



3-pole			
6	HL-B6/3	194778	4/40
10	HL-B10/3	194779	4/40
13	HL-B13/3	194780	4/40
16	HL-B16/3	194781	4/40
20	HL-B20/3	194782	4/40
25	HL-B25/3	194783	4/40
32	HL-B32/3	194784	4/40
40	HL-B40/3	194785	4/40
50	HL-B50/3	194786	4/40
63	HL-B63/3	194787	4/40

sg03518_r

Rated current
 I_n (A)Type
Designation

Article No.

Units per
package**3+N-pole**

6	HL-B6/3N	194798	3/30
10	HL-B10/3N	194799	3/30
13	HL-B13/3N	194800	3/30
16	HL-B16/3N	194801	3/30
20	HL-B20/3N	194802	3/30
25	HL-B25/3N	194803	3/30
32	HL-B32/3N	194804	3/30
40	HL-B40/3N	194805	3/30
50	HL-B50/3N	194806	3/30
63	HL-B63/3N	194807	3/30

sg02818_r

**4.5 kA, Characteristic C****1-pole**

6	HL-C6/1	194728	12/120
10	HL-C10/1	194729	12/120
13	HL-C13/1	194730	12/120
16	HL-C16/1	194731	12/120
20	HL-C20/1	194732	12/120
25	HL-C25/1	194733	12/120
32	HL-C32/1	194734	12/120
40	HL-C40/1	194735	12/120
50	HL-C50/1	194736	12/120
63	HL-C63/1	194737	12/120

sg03218_r

**1+N-pole**

6	HL-C6/1N	194748	6/60
10	HL-C10/1N	194749	6/60
13	HL-C13/1N	194750	6/60
16	HL-C16/1N	194751	6/60
20	HL-C20/1N	194752	6/60
25	HL-C25/1N	194753	6/60
32	HL-C32/1N	194754	6/60
40	HL-C40/1N	194755	6/60
50	HL-C50/1N	194756	6/60
63	HL-C63/1N	194757	6/60

sg03018_r

**2-pole**

6	HL-C6/2	194768	6/60
10	HL-C10/2	194769	6/60
13	HL-C13/2	194770	6/60
16	HL-C16/2	194771	6/60
20	HL-C20/2	194772	6/60
25	HL-C25/2	194773	6/60
32	HL-C32/2	194774	6/60
40	HL-C40/2	194775	6/60
50	HL-C50/2	194776	6/60
63	HL-C63/2	194777	6/60

sg03318_r



Rated current I_n (A)	Type Designation	Article No.	Units per package
3-pole			
6	HL-C6/3	194788	4/40
10	HL-C10/3	194789	4/40
13	HL-C13/3	194790	4/40
16	HL-C16/3	194791	4/40
20	HL-C20/3	194792	4/40
25	HL-C25/3	194793	4/40
32	HL-C32/3	194794	4/40
40	HL-C40/3	194795	4/40
50	HL-C50/3	194796	4/40
63	HL-C63/3	194797	4/40

sg03518_r



3+N-pole			
6	HL-C6/3N	194808	3/30
10	HL-C10/3N	194809	3/30
13	HL-C13/3N	194810	3/30
16	HL-C16/3N	194811	3/30
20	HL-C20/3N	194812	3/30
25	HL-C25/3N	194813	3/30
32	HL-C32/3N	194814	3/30
40	HL-C40/3N	194815	3/30
50	HL-C50/3N	194816	3/30
63	HL-C63/3N	194817	3/30

Specifications | Miniature Circuit Breakers HL

Description

- High selectivity between and back-up fuse due to low let-through energy
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for secure isolation
- Suitable for applications up to 48 V DC

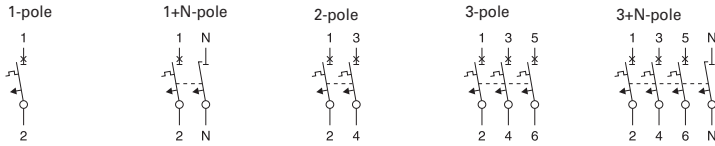
Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35 mm ²	Z-HA-EK/35	263960
Switching interlock	Z-IS/SPE-1TE	274418

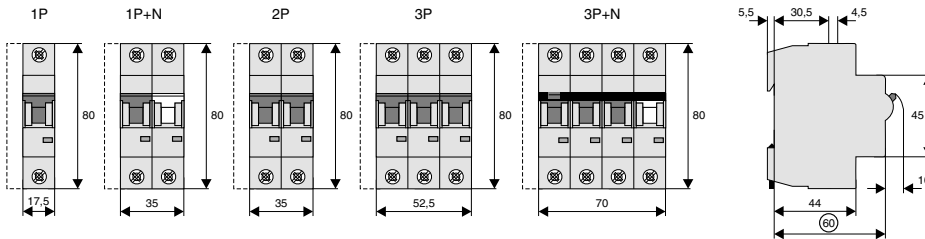
Technical Data

HL		
Electrical		
Design according to	IEC/EN 60898-1	
Current test marks as printed onto the device		
Rated voltage	U_n	AC: 230/400 V DC: 48 V (per pole, max. 2 poles)
Rated frequency		50/60 Hz
Rated breaking capacity according to IEC/EN 60898-1	I_{cn}	4.5 kA
Characteristic		B, C
Back-up fuse		max. 100 A gL
Selectivity class		3
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50 μ s)
Endurance		
electrical components		$\geq 10,000$ switching operations
mechanical components		$\geq 20,000$ switching operations
Line voltage connection		at will (above/below)
Minimal voltage		12 V AC/DC
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		17.5 mm per pole (1MU)
Mounting		quick fastening with 3 lock-in positions on DIN rail IEC/EN 60715
Degree of protection		IP20
Upper and lower terminals		open mouthed/lift terminals
Terminal protection		finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity		1-25 mm ²
Terminal torque		2-2.4 Nm
Busbar thickness		0.8 - 2 mm
Mounting		independent of position
Climatic conditions		according to IEC 68-2 (25...55 °C / 90...95 % RH)

Connection diagrams

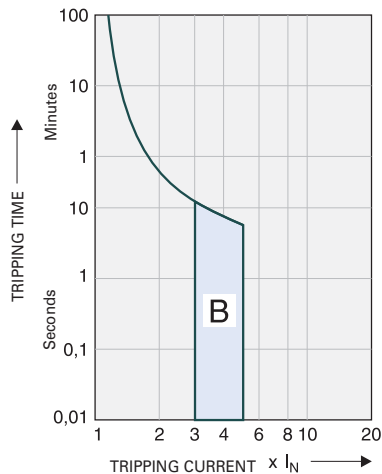


Dimensions (mm)

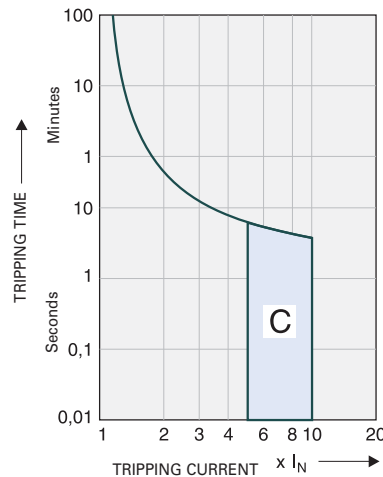


Tripping Characteristics (IEC/EN 60898-1)

Tripping characteristic B



Tripping characteristic C



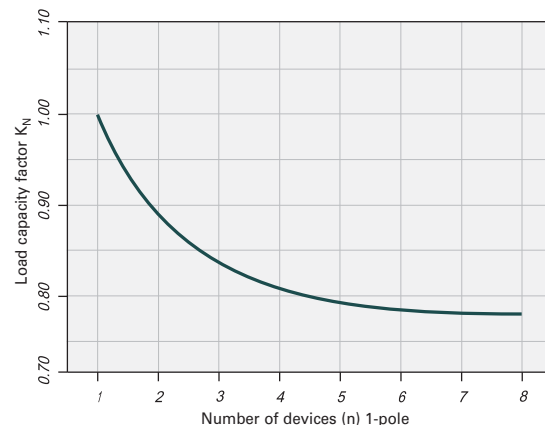
Quick-acting (B), slow (C)

Effect of the Ambient Temperature on Thermal Tripping Behaviour

Adjusted rated current values according to the ambient temperature

	Ambient temperature T [°C]															
I_n [A]	-25	-20	-10	0	10	20	30	35	40	45	50	55	60	65	70	75
6	7.3	7.2	7.0	6.7	6.5	6.3	6.0	5.9	5.8	5.7	5.6	5.4	5.3	5.2	5.1	5.0
10	12	12	12	11	11	10	10	9.9	9.7	9.5	9.3	9.0	8.9	8.7	8.5	8.3
13	16	16	15	15	14	14	13	13	13	12	12	12	12	11	11	11
16	20	19	19	18	17	17	16	16	15	15	15	14	14	14	14	13
20	24	24	23	22	22	21	20	20	19	19	19	18	18	17	17	17
25	31	30	29	28	27	26	25	25	24	24	23	23	22	22	21	21
32	39	38	37	36	35	33	32	32	31	30	30	29	28	28	27	26
40	49	48	47	45	43	42	40	39	39	38	37	36	35	35	34	33
50	61	60	58	56	54	52	50	49	48	47	46	45	44	43	42	41
63	77	76	73	71	68	66	63	62	61	60	58	57	56	55	53	52

Load Capacity of Series Connected Miniature Circuit Breakers



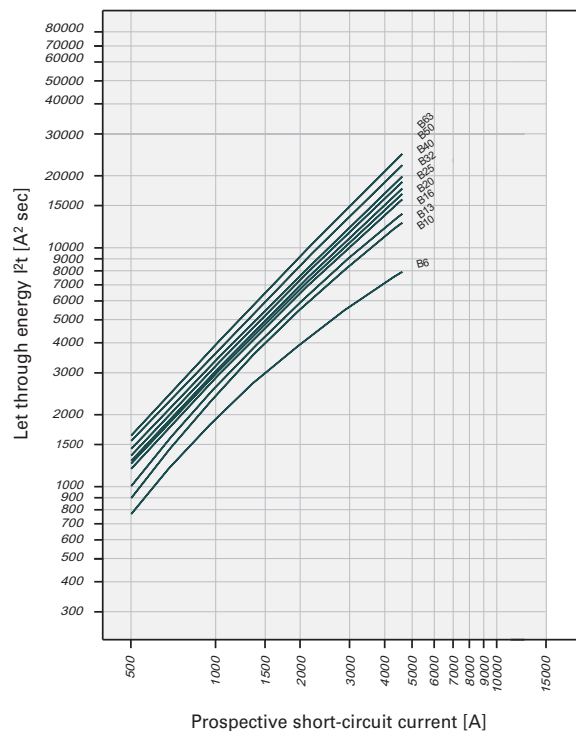
Effect of Power Frequency

Effect of power frequency on the tripping behaviour I_{MA} of the quick release

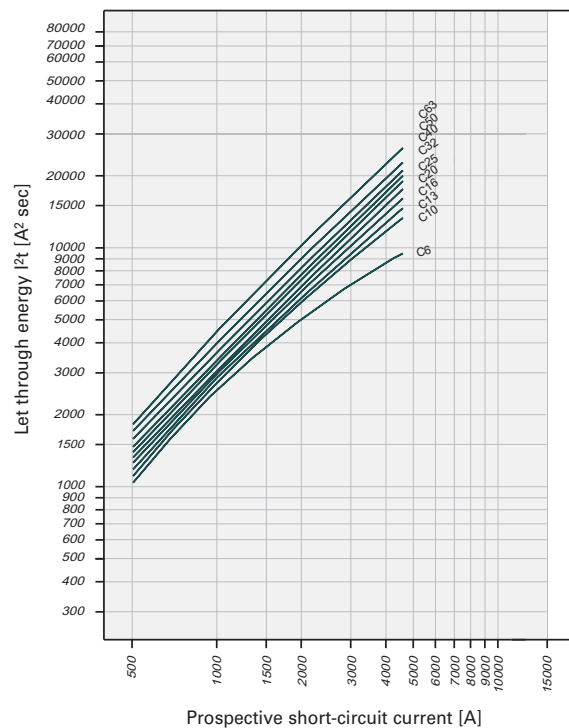
	Power frequency f [Hz]						
	16 $\frac{2}{3}$	50	60	100	200	300	400
$I_{MA}(f)/I_{MA}(50 \text{ Hz})$ [%]	91	100	101	106	115	134	141

Let-through Energy HL

Let-through Energy HL, Characteristic B, 1-pole



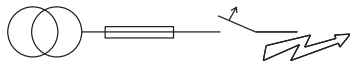
Let-through Energy HL, Characteristic C, 1-pole



Short Circuit Selectivity HL towards DII-DIV fuse link

In case of short circuit, there is selectivity between the miniature circuit breakers HL and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

*) basically in accordance with EN 60898-1 D.5.2.b

**Towards DII-DIV fuse link**

Short circuit selectivity **Characteristic B** towards fuse link **DII-DIV***)

HL	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	0.6	0.9	1.8	3.2	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
10			0.5	0.8	1.4	2.2	3.9	4.5 ²⁾	4.5 ²⁾
13			0.5	0.7	1.3	2.0	3.6	4.5 ²⁾	4.5 ²⁾
16				0.6	1.2	1.9	3.2	4.5 ²⁾	4.5 ²⁾
20					1.2	1.8	3.1	4.4	4.5 ²⁾
25					1.2	1.8	3.0	4.2	4.5 ²⁾
32						1.7	2.8	3.9	4.5 ²⁾
40							2.7	3.8	4.5 ²⁾
50							2.5	3.5	4.5 ²⁾
63									4.5 ²⁾

Short circuit selectivity **Characteristic C** towards fuse link **DII-DIV***)

HL	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	0.5	0.6	1.4	2.4	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
10			<0.5 ¹⁾	0.6	1.3	2.0	3.6	4.5 ²⁾	4.5 ²⁾
13					1.3	1.9	3.3	4.5 ²⁾	4.5 ²⁾
16					1.2	1.8	3.2	4.4	4.5 ²⁾
20					1.2	1.8	3.1	4.1	4.5 ²⁾
25						1.7	2.8	3.8	4.5 ²⁾
32							2.7	3.7	4.5 ²⁾
40								3.5	4.5 ²⁾
50									4.5 ²⁾
63									

Towards D01-D03 fuse link

Short circuit selectivity **Characteristic B** towards fuse link **D01-D03***)

HL	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	0.5	0.8	1.6	3.6	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
10			0.5	0.7	1.3	2.4	3.4	4.5 ²⁾	4.5 ²⁾
13			<0.5 ¹⁾	0.7	1.2	2.3	3.2	4.5 ²⁾	4.5 ²⁾
16				0.6	1.1	2.2	2.9	4.5 ²⁾	4.5 ²⁾
20					1.1	2.1	2.8	4.4	4.5 ²⁾
25					1.1	2.0	2.7	4.2	4.5 ²⁾
32						2.0	2.6	4.0	4.5 ²⁾
40							2.5	3.8	4.5 ²⁾
50							2.3	3.4	4.5 ²⁾
63									4.5 ²⁾

Short circuit selectivity **Characteristic C** towards fuse link **D01-D03***)

HL	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
6		<0.5 ¹⁾	<0.5 ¹⁾	<0.5 ¹⁾	1.2	2.7	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
10			<0.5 ¹⁾	<0.5 ¹⁾	1.2	2.3	3.1	4.5 ²⁾	4.5 ²⁾
13					1.1	2.2	3.0	4.5 ²⁾	4.5 ²⁾
16					1.1	2.1	2.8	4.4	4.5 ²⁾
20					1.0	2.0	2.6	4.0	4.5 ²⁾
25						1.9	2.5	3.8	4.5 ²⁾
32							2.5	3.7	4.5 ²⁾
40								3.5	4.5 ²⁾
50									4.5 ²⁾
63									

Towards NH-00 fuse link

Short circuit selectivity **Characteristic B** towards fuse link **NH-00***)

HL	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
6	<0.5 ¹⁾	<0.5 ¹⁾	0.7	1.1	1.5	2.0	3.3	4.3	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
10		<0.5 ¹⁾	0.6	0.9	1.2	1.5	2.2	2.7	4.0	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
13		<0.5 ¹⁾	0.6	0.8	1.1	1.4	2.1	2.6	3.8	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
16			0.5	0.7	1.0	1.3	1.9	2.4	3.4	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
20				0.7	1.0	1.3	1.9	2.4	3.3	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
25				0.7	1.0	1.3	1.8	2.3	3.2	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
32					0.9	1.2	1.7	2.2	3.1	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
40								2.1	3.0	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
50								1.9	2.8	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
63									4.4	4.5 ²⁾	4.5 ²⁾	

Short circuit selectivity **Characteristic C** towards fuse link **NH-00***)

HL	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
6	<0.5 ¹⁾	<0.5 ¹⁾	0.5	0.8	1.2	1.5	2.5	3.3	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
10			0.5	0.7	1.0	1.4	2.0	2.5	3.8	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
13					1.0	1.3	1.9	2.4	3.6	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
16					1.0	1.3	1.8	2.3	3.3	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
20					1.0	1.2	1.7	2.2	3.2	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
25						1.6	2.1	3.0	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
32							2.1	2.9	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
40								2.8	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
50									4.5 ²⁾	4.5 ²⁾	4.5 ²⁾	4.5 ²⁾
63										4.5 ²⁾	4.5 ²⁾	

¹⁾ Selectivity limit current I_s under 0.5 kA

²⁾ Selectivity limit current I_s = rated breaking capacity I_{cn} of the MCB

Darker areas: no selectivity

SG06211



Description

- High-quality miniature circuit breakers for DC-applications
- Contact position indicator red - green
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories can be mounted subsequently
- Rated currents up to 50 A
- Tripping Characteristic C
- Rated breaking capacity 10 kA according to IEC/EN 60947-2
- Up to 250 V DC per pole

SG06211



Rated current I_n (A)	Type Designation	Article No.	Units per package
10 kA, Characteristic C			
1-pole			
1	PL7-C1/1-DC	264851	12/120
2	PL7-C2/1-DC	264883	12/120
3	PL7-C3/1-DC	264884	12/120
4	PL7-C4/1-DC	264885	12/120
6	PL7-C6/1-DC	264886	12/120
10	PL7-C10/1-DC	264887	12/120
13	PL7-C13/1-DC	264888	12/120
16	PL7-C16/1-DC	264889	12/120
20	PL7-C20/1-DC	264890	12/120
25	PL7-C25/1-DC	264891	12/120
32	PL7-C32/1-DC	264892	12/120
40	PL7-C40/1-DC	264893	12/120
50	PL7-C50/1-DC	264894	12/120

SG06411



2-pole			
1	PL7-C1/2-DC	264895	6/60
2	PL7-C2/2-DC	264896	6/60
3	PL7-C3/2-DC	264897	6/60
4	PL7-C4/2-DC	264898	6/60
6	PL7-C6/2-DC	264899	6/60
10	PL7-C10/2-DC	264900	6/60
13	PL7-C13/2-DC	264901	6/60
16	PL7-C16/2-DC	264902	6/60
20	PL7-C20/2-DC	264903	6/60
25	PL7-C25/2-DC	264904	6/60
32	PL7-C32/2-DC	264905	6/60
40	PL7-C40/2-DC	264906	6/60
50	PL7-C50/2-DC	264907	6/60

Specifications | Miniature Circuit Breakers PL7-DC

Description

- High selectivity between MCB and back-up fuse due to low let-through energy
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for secure isolation
- Rated breaking capacity 10 kA according to IEC/EN 60947
- Rated voltage to 250 V (per pole), $\tau = 4$ ms
- Take into account polarity!

Accessories:

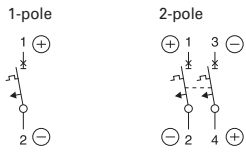
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35 mm ²	Z-HA-EK/35	263960
Switching interlock	Z-IS/SPE-1TE	274418

Technical Data

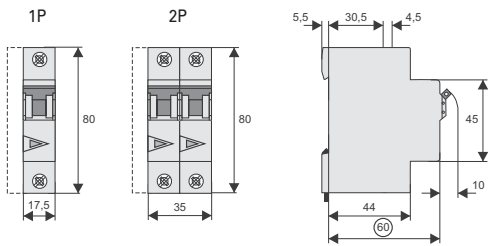
PL7-DC	
Electrical	
Design according to	IEC/EN 60947-2
Current test marks as printed onto the device	
Rated voltage DC	1-2 A types: 220 V (per pole) 3-50 A types: 250 V (per pole)
Rated frequency	50/60 Hz
Rated breaking capacity according to IEC/EN 60947-2	10 kA
Characteristic	C
Back-up fuse	max. 100 A gL
Selectivity class	3
Rated impulse withstand voltage	U_{imp} 4 kV (1.2/50 μ s)
Endurance	
electrical components	$\geq 4,000$ switching operations
mechanical components	$\geq 20,000$ switching operations
Line voltage connection	at will (above/below)
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm per pole (1MU)
Mounting	quick fastening with 3 lock-in positions on DIN rail IEC/EN 60715
Degree of protection	IP20
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity	1-25 mm ²
Terminal torque	2-2.4 Nm
Busbar thickness	0.8 - 2 mm
Mounting	independent of position

Note: not for PV string protection!

Connection diagrams

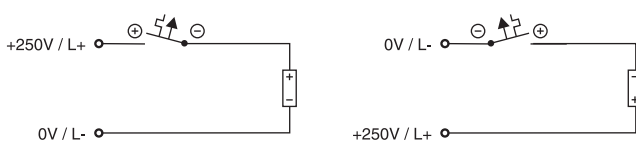


Dimensions (mm)

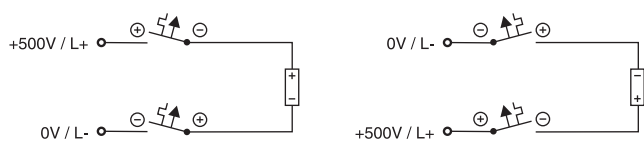


Connection examples

Connection example at 250 V_s, 1-pole

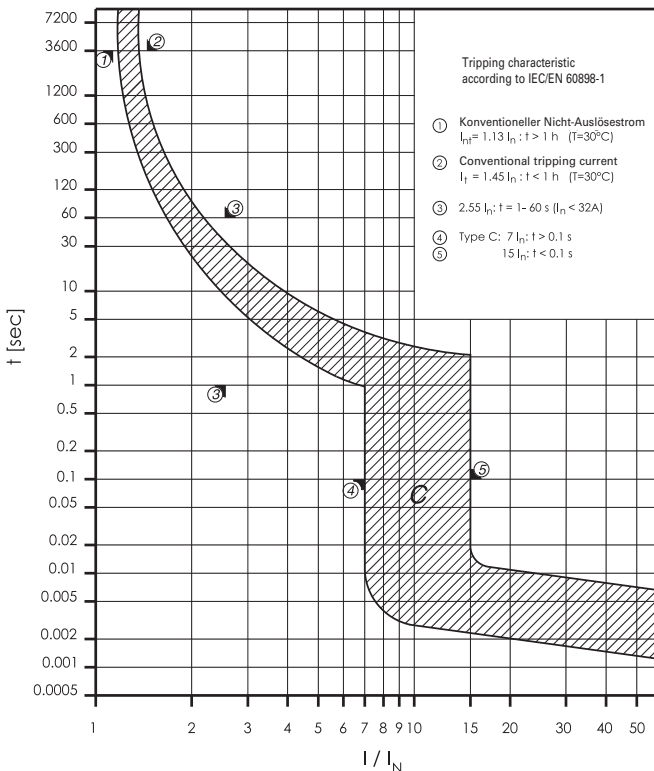


Connection example at 500 V_s, 2-pole



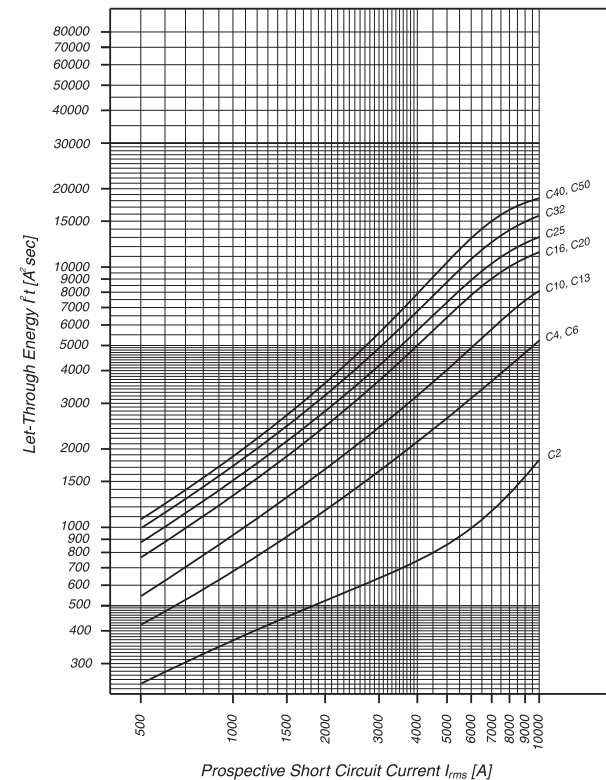
Tripping characteristic PL7-DC

Type C



Let-through Energy PL7-DC

Type C, 250 V d.c., $\tau = 5 \text{ ms}$ (according to IEC/EN 60947-2)



SG33911



Description

- Contact position indicator red - green
- Two plug-in terminals at the output side
- Single-wire lines can be connected without tools
- Plug-in terminals can be opened conveniently by means of a screwdriver
- Guide for secure terminal connection below
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories can be mounted subsequently
- Rated currents up to 16 A
- Tripping characteristics B, C, D
- Rated breaking capacity 10 kA according to IEC/EN 60898-1

Rated current
 I_n (A)Type
Designation

Article No.

Units per
package**10 kA, Characteristic B**

SG11511

**1-pole**

2	PLI-B2/1	101245	12/120
4	PLI-B4/1	101246	12/120
6	PLI-B6/1	101247	12/120
8	PLI-B8/1	101248	12/120
10	PLI-B10/1	101249	12/120
13	PLI-B13/1	101250	12/120
16	PLI-B16/1	101251	12/120

SG20011

**1+N-pole 2MU**

2	PLI-B2/1N	101266	1/60
4	PLI-B4/1N	101267	1/60
6	PLI-B6/1N	101268	1/60
8	PLI-B8/1N	101269	1/60
10	PLI-B10/1N	101270	1/60
13	PLI-B13/1N	101271	1/60
16	PLI-B16/1N	101272	1/60

SG19511

**2-pole**

2	PLI-B2/2	101287	1/60
4	PLI-B4/2	101288	1/60
6	PLI-B6/2	101289	1/60
8	PLI-B8/2	101290	1/60
10	PLI-B10/2	101291	1/60
13	PLI-B13/2	101292	1/60
16	PLI-B16/2	101293	1/60

SG33911

**3-pole**

2	PLI-B2/3	101308	1/40
4	PLI-B4/3	101309	1/40
6	PLI-B6/3	101310	1/40
8	PLI-B8/3	101311	1/40
10	PLI-B10/3	101312	1/40
13	PLI-B13/3	101313	1/40
16	PLI-B16/3	101314	1/40

SG19211

**3+N-pole**

2	PLI-B2/3N	101329	1/30
4	PLI-B4/3N	101330	1/30
6	PLI-B6/3N	101331	1/30
8	PLI-B8/3N	101332	1/30
10	PLI-B10/3N	101333	1/30
13	PLI-B13/3N	101334	1/30
16	PLI-B16/3N	101335	1/30

SG39011

**4-pole**

2	PLI-B2/4	101350	1/30
4	PLI-B4/4	101351	1/30
6	PLI-B6/4	101352	1/30
8	PLI-B8/4	101353	1/30
10	PLI-B10/4	101354	1/30
13	PLI-B13/4	101355	1/30
16	PLI-B16/4	101356	1/30

Rated current
 I_n (A)Type
Designation

Article No.

Units per
package**10 kA, Characteristic C****1-pole**

2	PLI-C2/1	101252	12/120
4	PLI-C4/1	101253	12/120
6	PLI-C6/1	101254	12/120
8	PLI-C8/1	101255	12/120
10	PLI-C10/1	101256	12/120
13	PLI-C13/1	101257	12/120
16	PLI-C16/1	101258	12/120

1+N-pole 2MU

2	PLI-C2/1N	101273	1/60
4	PLI-C4/1N	101274	1/60
6	PLI-C6/1N	101275	1/60
8	PLI-C8/1N	101276	1/60
10	PLI-C10/1N	101277	1/60
13	PLI-C13/1N	101278	1/60
16	PLI-C16/1N	101279	1/60

2-pole

2	PLI-C2/2	101294	1/60
4	PLI-C4/2	101295	1/60
6	PLI-C6/2	101296	1/60
8	PLI-C8/2	101297	1/60
10	PLI-C10/2	101298	1/60
13	PLI-C13/2	101299	1/60
16	PLI-C16/2	101300	1/60

3-pole

2	PLI-C2/3	101315	1/40
4	PLI-C4/3	101316	1/40
6	PLI-C6/3	101317	1/40
8	PLI-C8/3	101318	1/40
10	PLI-C10/3	101319	1/40
13	PLI-C13/3	101320	1/40
16	PLI-C16/3	101321	1/40

3+N-pole

2	PLI-C2/3N	101336	1/30
4	PLI-C4/3N	101337	1/30
6	PLI-C6/3N	101338	1/30
8	PLI-C8/3N	101339	1/30
10	PLI-C10/3N	101340	1/30
13	PLI-C13/3N	101341	1/30
16	PLI-C16/3N	101342	1/30

4-pole

2	PLI-C2/4	101357	1/30
4	PLI-C4/4	101358	1/30
6	PLI-C6/4	101359	1/30
8	PLI-C8/4	101360	1/30
10	PLI-C10/4	101361	1/30
13	PLI-C13/4	101362	1/30
16	PLI-C16/4	101363	1/30

SG11511



SG20011



SG19511



SG33911



SG19211



SG39011



Miniature Circuit Breakers with Plug-in Terminals at the output side PLI

Rated current
 I_n (A)Type
Designation

Article No.

Units per
package**10 kA, Characteristic D**

SG11511

**1-pole**

2	PLI-D2/1	101259	12/120
4	PLI-D4/1	101260	12/120
6	PLI-D6/1	101261	12/120
8	PLI-D8/1	101262	12/120
10	PLI-D10/1	101263	12/120
13	PLI-D13/1	101264	12/120
16	PLI-D16/1	101265	12/120

SG20011

**1+N-pole 2MU**

2	PLI-D2/1N	101280	1/60
4	PLI-D4/1N	101281	1/60
6	PLI-D6/1N	101282	1/60
8	PLI-D8/1N	101283	1/60
10	PLI-D10/1N	101284	1/60
13	PLI-D13/1N	101285	1/60
16	PLI-D16/1N	101286	1/60

SG19511

**2-pole**

2	PLI-D2/2	101301	1/60
4	PLI-D4/2	101302	1/60
6	PLI-D6/2	101303	1/60
8	PLI-D8/2	101304	1/60
10	PLI-D10/2	101305	1/60
13	PLI-D13/2	101306	1/60
16	PLI-D16/2	101307	1/60

SG33911

**3-pole**

2	PLI-D2/3	101322	1/40
4	PLI-D4/3	101323	1/40
6	PLI-D6/3	101324	1/40
8	PLI-D8/3	101325	1/40
10	PLI-D10/3	101326	1/40
13	PLI-D13/3	101327	1/40
16	PLI-D16/3	101328	1/40

SG19211

**3+N-pole**

2	PLI-D2/3N	101343	1/30
4	PLI-D4/3N	101344	1/30
6	PLI-D6/3N	101345	1/30
8	PLI-D8/3N	101346	1/30
10	PLI-D10/3N	101347	1/30
13	PLI-D13/3N	101348	1/30
16	PLI-D16/3N	101349	1/30

SG39011

**4-pole**

2	PLI-D2/4	101364	1/30
4	PLI-D4/4	101365	1/30
6	PLI-D6/4	101366	1/30
8	PLI-D8/4	101367	1/30
10	PLI-D10/4	101368	1/30
13	PLI-D13/4	101369	1/30
16	PLI-D16/4	101370	1/30

Specifications | Miniature Circuit Breakers with Plug-in Terminals at the output side PLI

Description

- High selectivity between MCB and back-up fuse due to low let-through energy
- Plug-in terminals above (at the output side)
- Two terminal points per pole
- Single-wire lines can be connected without tools
- The conductor can be removed from the plug-in terminal and single- or fine-wire lines can be connected by means of a screwdriver DIN 5264 Type A and Type B (maximum blade width 3 mm)
- Twin-purpose terminal (lift/open-mouthed) below
- Compatible with standard busbar below
- Meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for secure isolation
- Suitable for applications up to 48 V DC

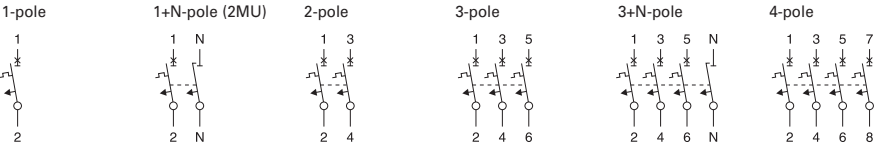
Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35 mm ²	Z-HA-EK/35	263960
Switching interlock	Z-IS/SPE-1TE	274418

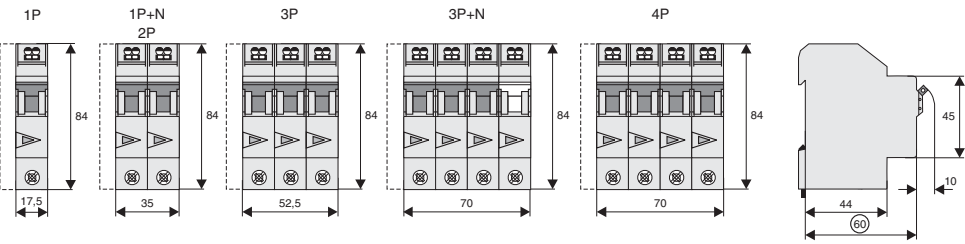
Technical Data

PLI		
Electrical		
Design according to	IEC/EN 60898-1	
Current test marks as printed onto the device		
Rated voltage	U_n	AC: 230/400 V DC: 48 V (per pole)
Rated frequency		50/60 Hz
Rated breaking capacity according to IEC/EN 60898-1	I_{cn}	10 kA
Characteristic		B, C, D
Back-up fuse		max. 125 A gL
Selectivity class		3
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50 μ s)
Endurance electrical components		$\geq 8,000$ switching operations
Line voltage connection		below
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		17.5 mm per pole (1MU)
Mounting		quick fastening with 3 lock-in positions on DIN rail IEC/EN 60715
Degree of protection		IP20
Upper terminals		twin plug-in terminals
Lower terminals		open mouthed/lift terminals
Terminal protection		finger and hand touch safe, DGUV VS3, EN 50274
Upper terminal capacity		1-4 mm ² , with wire end sleeve 1-2.5 mm ²
Lower terminal capacity		1-25 mm ²
Terminal torque		2-2.4 Nm
Busbar thickness		0.8 - 2 mm
Mounting		independent of position

Connection diagrams



Dimensions (mm)



SG43611



Description

- High-quality miniature circuit breakers for commercial and industrial applications
- Contact position indicator red - green
- Accessories suitable for subsequent installation
- Rated currents up to 125 A
- Tripping characteristics B, C, D
- Rated breaking capacity up to 25 kA according to EN 60947-2

SG41311



SG42111



SG42911



SG45111



SG44811



Rated current I_n (A)	Type Designation	Article No.	Units per package
25 kA, Characteristic B			
1-pole			
20	PLHT-B20	247972	12
25	PLHT-B25	247973	12
32	PLHT-B32	247974	12
40	PLHT-B40	247975	12
50	PLHT-B50	247976	12
63	PLHT-B63	247977	12
80	PLHT-B80	247978	12
100	PLHT-B100	247979	12
125	PLHT-B125	247980	12
2-pole			
20	PLHT-B20/2	247998	6
25	PLHT-B25/2	247999	6
32	PLHT-B32/2	248000	6
40	PLHT-B40/2	248001	6
50	PLHT-B50/2	248002	6
63	PLHT-B63/2	248003	6
80	PLHT-B80/2	248004	6
100	PLHT-B100/2	248005	6
125	PLHT-B125/2	248006	6
3-pole			
20	PLHT-B20/3	248024	4
25	PLHT-B25/3	248025	4
32	PLHT-B32/3	248026	4
40	PLHT-B40/3	248027	4
50	PLHT-B50/3	248028	4
63	PLHT-B63/3	248029	4
80	PLHT-B80/3	248030	4
100	PLHT-B100/3	248031	4
125	PLHT-B125/3	248032	4
3+N-pole			
20	PLHT-B20/3N	248050	3
25	PLHT-B25/3N	248051	3
32	PLHT-B32/3N	248052	3
40	PLHT-B40/3N	248053	3
50	PLHT-B50/3N	248054	3
63	PLHT-B63/3N	248055	3
80	PLHT-B80/3N	248056	3
100	PLHT-B100/3N	248057	3
125	PLHT-B125/3N	248058	3
4-pole			
20	PLHT-B20/4	248076	3
25	PLHT-B25/4	248077	3
32	PLHT-B32/4	248078	3
40	PLHT-B40/4	248079	3
50	PLHT-B50/4	248080	3
63	PLHT-B63/4	248081	3
80	PLHT-B80/4	248082	3
100	PLHT-B100/4	248083	3
125	PLHT-B125/4	248084	3

SG41311



Rated current
 I_n (A)

Type
Designation

Article No. Units per
package

25 kA, Characteristic C

1-pole

20	PLHT-C20	247981	12
25	PLHT-C25	247982	12
32	PLHT-C32	247983	12
40	PLHT-C40	247984	12
50	PLHT-C50	247985	12
63	PLHT-C63	247986	12
80	PLHT-C80	247987	12
100	PLHT-C100	247988	12
125	PLHT-C125	247989	12

SG42111



2-pole

20	PLHT-C20/2	248007	6
25	PLHT-C25/2	248008	6
32	PLHT-C32/2	248009	6
40	PLHT-C40/2	248010	6
50	PLHT-C50/2	248011	6
63	PLHT-C63/2	248012	6
80	PLHT-C80/2	248013	6
100	PLHT-C100/2	248014	6
125	PLHT-C125/2	248015	6

SG42911



3-pole

20	PLHT-C20/3	248033	4
25	PLHT-C25/3	248034	4
32	PLHT-C32/3	248035	4
40	PLHT-C40/3	248036	4
50	PLHT-C50/3	248037	4
63	PLHT-C63/3	248038	4
80	PLHT-C80/3	248039	4
100	PLHT-C100/3	248040	4
125	PLHT-C125/3	248041	4

SG45111



3+N-pole

20	PLHT-C20/3N	248059	3
25	PLHT-C25/3N	248060	3
32	PLHT-C32/3N	248061	3
40	PLHT-C40/3N	248062	3
50	PLHT-C50/3N	248063	3
63	PLHT-C63/3N	248064	3
80	PLHT-C80/3N	248065	3
100	PLHT-C100/3N	248066	3
125	PLHT-C125/3N	248067	3

SG44811



4-pole

20	PLHT-C20/4	248085	3
25	PLHT-C25/4	248086	3
32	PLHT-C32/4	248087	3
40	PLHT-C40/4	248088	3
50	PLHT-C50/4	248089	3
63	PLHT-C63/4	248090	3
80	PLHT-C80/4	248091	3
100	PLHT-C100/4	248092	3
125	PLHT-C125/4	248093	3

	Rated current I _n (A)	Type Designation	Article No.	Units per package
25 kA, Characteristic D				
SG41311 	1-pole			
	20	PLHT-D20	247990	12
	25	PLHT-D25	247991	12
	32	PLHT-D32	247992	12
	40	PLHT-D40	247993	12
	50	PLHT-D50	247994	12
	63	PLHT-D63	247995	12
	80	PLHT-D80	247996	12
	100	PLHT-D100	247997	12
SG42111 	2-pole			
	20	PLHT-D20/2	248016	6
	25	PLHT-D25/2	248017	6
	32	PLHT-D32/2	248018	6
	40	PLHT-D40/2	248019	6
	50	PLHT-D50/2	248020	6
	63	PLHT-D63/2	248021	6
	80	PLHT-D80/2	248022	6
	100	PLHT-D100/2	248023	6
SG42911 	3-pole			
	20	PLHT-D20/3	248042	4
	25	PLHT-D25/3	248043	4
	32	PLHT-D32/3	248044	4
	40	PLHT-D40/3	248045	4
	50	PLHT-D50/3	248046	4
	63	PLHT-D63/3	248047	4
	80	PLHT-D80/3	248048	4
	100	PLHT-D100/3	248049	4
SG45111 	3+N-pole			
	20	PLHT-D20/3N	248068	3
	25	PLHT-D25/3N	248069	3
	32	PLHT-D32/3N	248070	3
	40	PLHT-D40/3N	248071	3
	50	PLHT-D50/3N	248072	3
	63	PLHT-D63/3N	248073	3
	80	PLHT-D80/3N	248074	3
	100	PLHT-D100/3N	248075	3
SG44811 	4-pole			
	20	PLHT-D20/4	248094	3
	25	PLHT-D25/4	248095	3
	32	PLHT-D32/4	248096	3
	40	PLHT-D40/4	248097	3
	50	PLHT-D50/4	248098	3
	63	PLHT-D63/4	248099	3
	80	PLHT-D80/4	248100	3
	100	PLHT-D100/4	248101	3

SG69611



Rated current
 I_n (A)

Type
Designation

Article No. Units per package

Miniature Circuit Breakers PLHT-V, 25 kA, similar to characteristic D

1-pole

20	PLHT-20-V	248102	12
25	PLHT-25-V	248103	12
32	PLHT-32-V	248104	12
40	PLHT-40-V	248105	12
50	PLHT-50-V	248106	12
63	PLHT-63-V	248107	12

Accessories for Miniature Circuit Breakers PLHT, PLHT-V

Shunt trip release, Shunt trip release-Kit

Operational voltage range
V~

Type
Designation

Article No. Units per package

SG09311



110-415 / Shunt trip release	Z-LHASA/230	248442	8
12-60 / Shunt trip release	Z-LHASA/24	248441	8
110-415 / Shunt trip release-Kit	Z-BHASA/230	248445	8
12-60 / Shunt trip release-Kit	Z-BHASA/24	248444	8

Auxiliary switch

Function

Type
Designation

Article No. Units per package

SG16111



1NO+1NC	Z-LHK	248440	10/100
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Accessories for Miniature Circuit Breakers PLHT-V

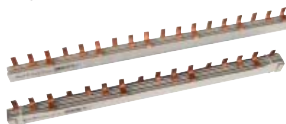
Switching interlock, Busbar block, Neutral disconnecter

Benennung

Type
Designation

Article No. Units per package

wa_sg11402



Switching interlock	LH-SPL	285752	1
Switching interlock	LHSP-E	215999	1
Switchoff interlock	LHSP-A	216000	1
Busbar block 35 mm ²	Z-SV-35/PLHT-V	264939	4

SG15911



Neutral disconnecter	Z-NTS	248443	1
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Specifications | Miniature Circuit Breakers PLHT

Description

- Independent switching contacts
- With isolator function, meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for secure isolation

Accessories:

Auxiliary switch for subsequent installation (0.5 MU)	Z-LHK	248440
Shunt trip release subsequent installation (1.5 MU)	Z-LHASA/230	248442
	Z-LHASA/24	248441
Switching interlock	LH-SPL	285752

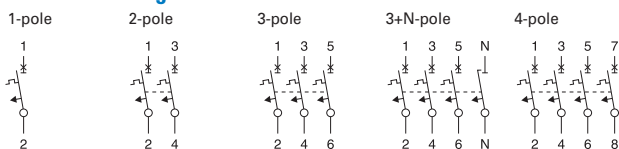
Busbars:

see chapter busbar systems

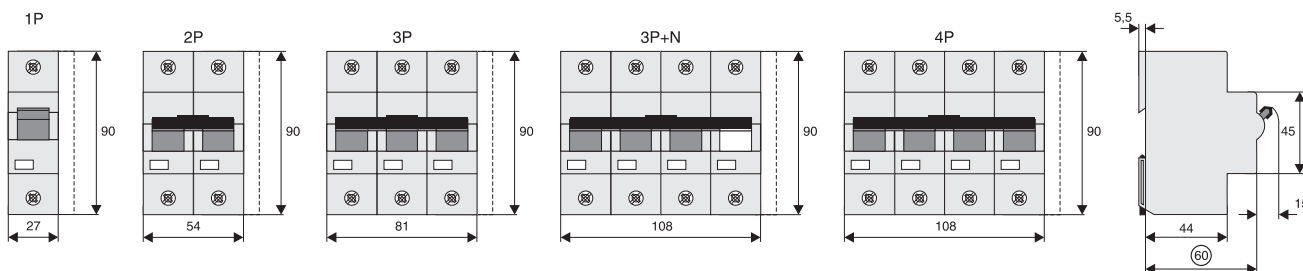
Technical Data

		PLHT
Electrical		
Design according to		EN 60947-2
Current test marks as printed onto the device		
Rated voltage	U_n	AC: 230/400 V DC: 60 V (per pole, max. 2 poles)
Ultimate short circuit breaking capacity according to IEC/EN 60947-2		
Characteristic B, C		$I_n = 20-63$ A: 25 kA $I_n = 80-100$ A: 20 kA $I_n = 125$ A: 15 kA
Characteristic D		$I_n = 20-63$ A: 25 kA $I_n = 80$ A: 20 kA $I_n = 100$ A: 15 kA
Characteristic		in accordance with B, C, D
Back-up fuse		max. 200 A gL
Rated insulation voltage		440 V
Peak withstand voltage	U_{imp}	4 kV
Selectivity class		in accordance with class 3
Endurance		$\geq 20,000$ switching operations
Mechanical		
Frame size		45 mm
Device height		90 mm
Device width		27 mm (1.5MU) per pole
Mounting		quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection		IP20
Degree of protection, built-in		IP40
Upper and lower terminals		lift terminals
Terminal protection		finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity		2.5-50 mm ²

Connection diagrams

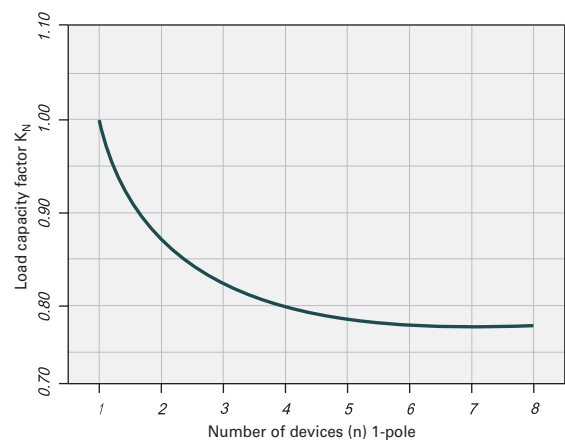


Dimensions (mm)

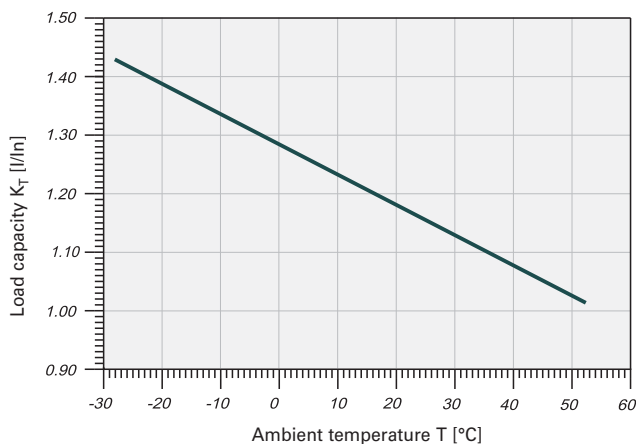


Load Capacity

Load capacity in case of block installation



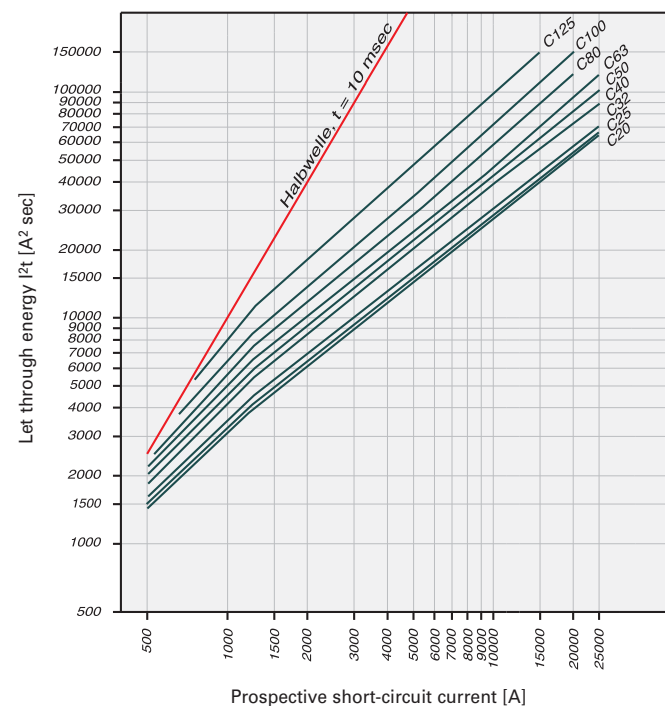
Effect of ambient temperature



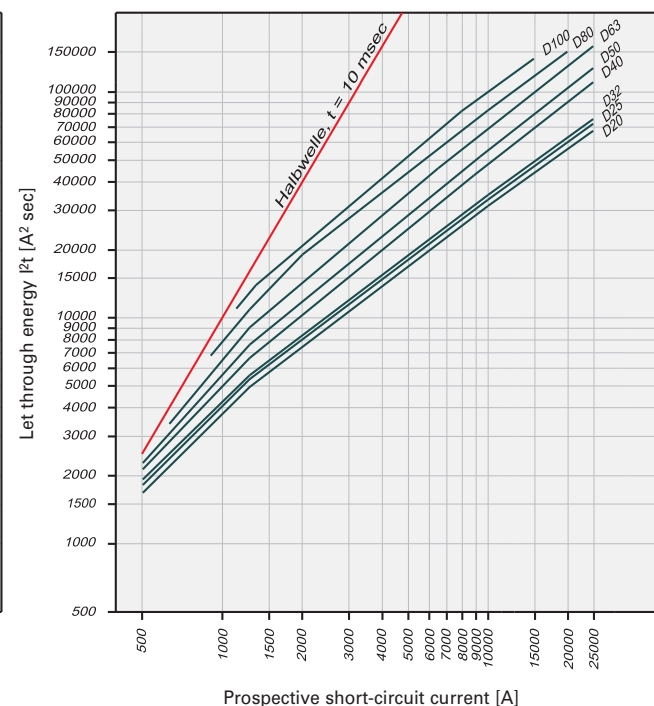
Permitted permanent load at ambient temperature T [°C] with n devices: $I_{DL} = I_n K_T(T) K_N(N)$.

Durchlassenergie

Maximum let-through energy PLHT, Characteristic C, 1-pole



Maximum let-through energy PLHT, Characteristic D, 1-pole



Determined according to 60898-1.

Short Circuit Selectivity PLHT towards D01, D02, D03 and NH size 00

- Short circuit selectivity (in kA) PLHT and upstream fuse D0 or NH, operating class gL/gG
- 1.4 . . . selectivity up to 1.4 kA; Darker areas: no selectivity

Selectivity towards back-up fuses D01, D02, D03**Characteristic C**

PLHT	Rated current of the back-up fuse in A gL/gG					
I _n [A]	25	35	50	63	80	100
20	0.5	1.0	2.0	2.9	3.9	7.6
25		1.0	1.9	2.8	3.8	7.3
32		1.0	1.8	2.7	3.6	7.0
40			1.6	2.2	3.0	5.6
50				2.1	2.8	5.2
63					2.7	4.8
80						4.3
100						
125						

Characteristic D

PLHT	Rated current of the back-up fuse in A gL/gG					
I _n [A]	25	35	50	63	80	100
20	0.5	0.9	1.7	2.5	3.4	6.7
25		0.9	1.6	2.3	3.2	6.2
32		0.9	1.5	2.3	3.0	6.0
40			1.4	2.0	2.6	4.7
50				1.8	2.3	4.3
63					2.1	3.7
80						3.1
100						

Selectivity towards back-up fuses NH size 00**Characteristic C**

PLHT	Rated current of the back-up fuse in A gL/gG									
I _n [A]	25	35	40	50	63	80	100	125	160	200
20	0.5	1.0	1.3	1.9	2.7	3.7	6.7	17.0	25.0	25.0
25		0.9	1.3	1.8	2.6	3.5	6.5	17.0	25.0	25.0
32		0.9	1.2	1.7	2.4	3.3	6.0	15.0	23.0	25.0
40				1.4	2.1	2.9	4.8	12.0	18.0	25.0
50					1.9	2.7	4.5	11.0	17.0	25.0
63							4.2	10.0	15.0	25.0
80							3.8	8.5	12.0	25.0
100								7.0	10.0	25.0
125									7.5	25.0

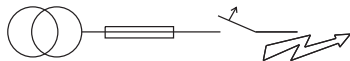
Characteristic D

PLHT	Rated current of the back-up fuse in A gL/gG									
I _n [A]	25	35	40	50	63	80	100	125	160	200
20	<0.5	0.8	1.1	1.5	2.3	3.1	5.6	16.0	25.0	25.0
25		0.7	1.0	1.4	2.1	3.0	5.3	14.0	23.0	25.0
32		0.7	1.0	1.3	2.1	2.9	5.0	13.0	22.0	25.0
40				1.1	1.8	2.5	4.2	10.0	15.0	25.0
50					1.6	2.3	3.8	8.5	13.0	22.0
63						2.1	3.2	7.0	10.5	18.0
80							2.8	5.5	8.4	15.0
100								4.8	7.5	12.5

Short Circuit Selectivity PLHT towards NZM

In case of short circuit, there is selectivity between the miniature circuit breakers PLHT and the upstream NZM up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s only the MCB will trip, in case of short circuit currents above this value both protective devices will respond). Overload and short-circuit release unit NZM at max. value.

*) basically in accordance with EN 60898-1 D.5.2.b



Short circuit selectivity **Characteristic C** towards **NZM1***)

PLHT	NZM...1-A gL/gG					
I_n [A]	40	50	63	80	100	125
20	0.3	0.4	0.5	0.75	0.9	1.25
25	0.3	0.4	0.5	0.7	0.9	1.2
32		0.4	0.5	0.7	0.85	1.2
40			0.5	0.6	0.85	1.1
50				0.6	0.85	1.1
63					0.8	1
80						1
100						
125						

Short circuit selectivity **Characteristic D** towards **NZM1***)

PLHT	NZM...1-A gL/gG					
I_n [A]	40	50	63	80	100	125
50						
63						
80						
100						

Short circuit selectivity **Characteristic C** towards **NZM2***)

PLHT	NZM...2-A gL/gG								
I_n [A]	40	50	63	80	100	125	160	200	250
20	0.3	0.4	0.5	0.75	0.9	1.25	1.8	2.5	3.5
25	0.3	0.4	0.5	0.7	0.9	1.2	1.7	2.4	3.3
32		0.4	0.5	0.7	0.85	1.2	1.65	2.3	3.2
40			0.5	0.6	0.85	1.1	1.5	2.1	2.9
50				0.6	0.85	1.1	1.5	2	2.8
63					0.8	1	1.4	1.8	2.5
80						1	1.4	1.8	2.4
100							1.3	1.7	2.3
125								1.6	2.1

Short circuit selectivity **Characteristic D** towards **NZM2***)

PLHT	NZM...2-A gL/gG								
I_n [A]	40	50	63	80	100	125	160	200	250
50							1	1.4	2.6
63							1	1.3	2.3
80									2.1
100									

¹⁾ Selectivity limit current I_s under 0.5 kA

²⁾ Selectivity limit current I_s = rated breaking capacity I_{cn} of the MCB

Darker areas: no selectivity

Specifications | Miniature Circuit Breakers PLHT-V

Description

- Special type of miniature circuit breaker PLHT for trade and industry applications upstream of the meter
- Independent switching contacts
- High current limit
- With isolator function, meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for secure isolation
- Anti-Tamper device and Switchoff interlock available

Accessories:

Auxiliary switch for subsequent installation (0.5 MU)	Z-LHK	248440
Shunt trip release subsequent installation (1.5 MU)	Z-LHASA/230	248442
	Z-LHASA/24	248441
Neutral disconnect	Z-NTS	248443

Busbars:

see capter busbar systems

Technical Data

		PLHT-V
Electrical		
Design according to		EN 60947-2
Current test marks as printed onto the device		
Rated voltage	U_n	AC: 230/400 V DC: 60 V (per pole, max. 2 poles)
Ultimate short circuit breaking capacity according to IEC/EN 60947-2		25 kA
Service short circuit breaking capacity		20 kA
Rated breaking capacity		DC: max. 60 V, 1-pole
Characteristic		similar to D
Back-up fuse		max. 200 A gL (>20 kA)
Rated insulation voltage		440 V
Peak withstand voltage	U_{imp}	4 kV
Selectivity class		in accordance with class 3
Endurance		$\geq 20,000$ switching operations
Mechanical		
Frame size		45 mm
Device height		90 mm
Device width		27 mm (1.5MU) per pole, 30 mm per pole PLHT-V with interlock
Mounting		quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection		IP20
Degree of protection, built-in		IP40
Upper and lower terminals		lift terminals
Terminal protection		finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity		2.5-50 mm ²

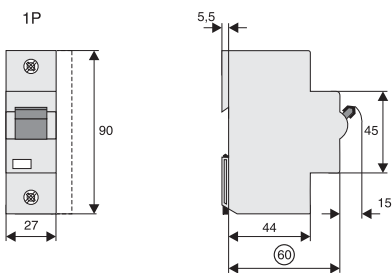
Connection diagram

1-pole



Dimensions (mm)

1P



Specifications | Accessories for PLHT, PLHT-V

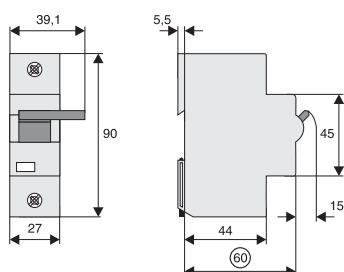
Shunt trip release Z-LHASA

- Can be mounted subsequently
 - Contact position indicator red/green
 - Marking labels can be fitted
 - Wide operational voltage range
 - Sufficient power of extra low voltage source must be ensured
- Z-LHASA/24: min. 90 VA

Technical Data

	Z-LHASA
Electrical	
Operational voltage range	
Z-LHASA/230	110-415 V~
Z-LHASA/24	12-60 V~
Operational frequency	50-60 Hz
Maximum current consumption during switch-on at U_n	
Z-LHASA/230	2 A
Z-LHASA/24	18 A
Mechanical	
Frame size	45 mm
Device height	90 mm
Device width	27 mm
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection	IP20
Degree of protection, built-in	IP40
Upper and lower terminals	lift terminals

Dimensions (mm)



Auxiliary switch Z-LHK

- Auxiliary switch according to IEC 947-5-1
- Can be mounted subsequently

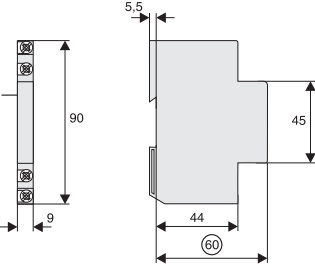
Technical Data

	Z-LHK
Electrical	
Rated operational current	(250 V~) 6 A / AC13
Minimum operational voltage	24 V each line
Rated thermal current	8 A
Rated insulation voltage	440 V~
Maximum back-up fuse	6 A gL or CLS6-4/.B-HS
Contacts	1NO+1NC
Utilisation category AC13	6 A / 250 VAC 2 A / 440 VAC
Utilisation category DC13	4 A / 60 VDC 2 A / 110 VDC 0,5 A / 230 VDC
Mechanical	
Frame size	45 mm
Device height	90 mm
Device width	9 mm
Mounting	mounted onto protective devices
Degree of protection, built-in	IP40
Upper and lower terminals	lift terminals
Terminal capacity	1 x 1 mm ² to 2 x 2.5 mm ²

Connection diagram



Dimensions (mm)



Specifications | Accessories for PLHT-V

Switching interlock LHSP-E, LH-SPL

- Prevents undesired switching ON or OFF

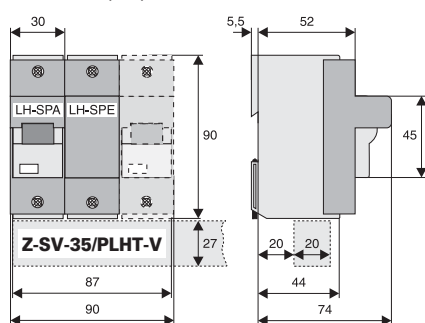
Switchoff interlock LHSP-A

- Prevents undesired switch-OFF

Busbar block 35 mm² Z-SV-35/PLHT-V, 3-pole (see chapter busbar systems)

- 110/220 A
- Step distance 30 mm

Dimensions (mm)



SG09811



SG09711



SG09911

Setting Range
(A)Type
Designation

Article No.

Units per
package**Adjustable MCB Z-MS****2-pole**

0.10 - 0.16	Z-MS-0.16/2	248389	1/60
0.16 - 0.25	Z-MS-0,25/2	248390	1/60
0.25 - 0.40	Z-MS-0,4/2	248391	1/60
0.40 - 0.63	Z-MS-0,63/2	248392	1/60
0.63 - 1.00	Z-MS-1/2	248393	1/60
1.00 - 1.60	Z-MS-1,6/2	248394	1/60
1.60 - 2.50	Z-MS-2,5/2	248395	1/60
2.50 - 4.00	Z-MS-4/2	248396	1/60
4.00 - 6.30	Z-MS-6,3/2	248397	1/60
6.30 - 10.0	Z-MS-10/2	248398	1/60
10.0 - 16.0	Z-MS-16/2	248399	1/60
16.0 - 25.0	Z-MS-25/2	248400	1/60
25.0 - 40.0	Z-MS-40/2	248401	1/60

SG09811

**3-pole**

0.10 - 0.16	Z-MS-0.16/3	248402	1/40
0.16 - 0.25	Z-MS-0,25/3	248403	1/40
0.25 - 0.40	Z-MS-0,4/3	248404	1/40
0.40 - 0.63	Z-MS-0,63/3	248405	1/40
0.63 - 1.00	Z-MS-1/3	248406	1/40
1.00 - 1.60	Z-MS-1,6/3	248407	1/40
1.60 - 2.50	Z-MS-2,5/3	248408	1/40
2.50 - 4.00	Z-MS-4/3	248409	1/40
4.00 - 6.30	Z-MS-6,3/3	248410	1/40
6.30 - 10.0	Z-MS-10/3	248411	1/40
10.0 - 16.0	Z-MS-16/3	248412	1/40
16.0 - 25.0	Z-MS-25/3	248413	1/40
25.0 - 40.0	Z-MS-40/3	248414	1/40

Rated Current
 I_n (A)Setting Range
(A)Type
Designation

Article No.

Units per
package**Power Limiter Z-TS****1-pole, 230 V~**

20	13-20	Z-TS20/1	266850	2
25	16-25	Z-TS25/1	266852	2
32	20-32	Z-TS32/1	266853	2
40	25-40	Z-TS40/1	266854	2
50	40-50	Z-TS50/1	266855	2
63	50-63	Z-TS63/1	266856	2

SG09611

**3-pole, 400 V~**

20	13-20	Z-TS20/3	266857	1
25	16-25	Z-TS25/3	266858	1
32	20-32	Z-TS32/3	266859	1
40	25-40	Z-TS40/3	266860	1
50	40-50	Z-TS50/3	266861	1
63	50-63	Z-TS63/3	266862	1

SG09711



Accessories for Adjustable MCB and Power Limiter

Function	Type Designation	Article No.	Units per package
Shunt trip release 24 V	ZP-ASA/24	248438	6/60
Shunt trip release 230 V	ZP-ASA/230	248439	6/60
Undervoltage release 115 V	Z-USA/115	248288	6/60
Undervoltage release 230 V	Z-USA/230	248289	6/60
Undervoltage release 400 V	Z-USA/400	248290	6/60
Undervoltage release, delayed 115 V	Z-USD/115	248292	6/60
Undervoltage release, delayed 230 V	Z-USD/230	248291	6/60
Auxiliary switch	ZP-IHK	286052	4/120
Tripping signal switch	ZP-NHK	248437	4/120
Remote control and automatic switching device	Z-FW-LP	248296	1/20
Additional terminal 35 mm ²	Z-HA-EK/35	263960	12/720

Moisture-proof enclosure Z-MFG, IP54

SG82111



ON/OFF	Z-MFG	248383	1
ON/OFF N-conductor	Z-MFG/NL	248384	1
ON/OFF with EMERGENCY OFF	Z-MFG/NOT	248385	1

Specifications | Adjustable MCB Z-MS

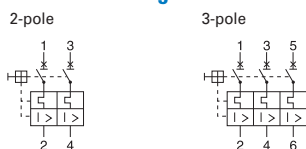
Description

- Reliable protection in case of thermal overload and short circuit
- Suitable for installation in compact distribution boxes
- Contact position indicator red - green
- Main field of application: switching and protection of three-phase AC motors with power ratings up to 15 kW (380/400 V) and other consumers up to 40 A
- Also suitable as main switch, isolating characteristics according to IEC/EN 60947
- All manual motor starters with thermal overload tripping and magnetic short-circuit tripping
- Terminals and accessories compatible with CLS6, Z-A40, PFIM etc.

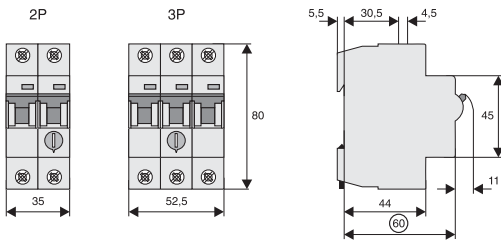
Technical Data

		Z-MS
General		
Terminal capacity		1 - 25 mm ²
Busbar thickness		0.8-2 mm
Endurance mechanical components		20,000 switching operations
Shock resistance (shock duration 20 ms)		20 g
Ambient temperature		
open		-25 ... + 50 °C
hermetically enclosed		-25 ... + 40 °C
Resistance to climatic conditions		
humidity and heat, constant, according to		IEC 68-2-3
humidity and heat, periodical, according to		IEC 68-2-30
Weight approx.		
2-pole		244 g
3-pole		366 g
Degree of protection		IP20
Main Current Paths		
Rated insulation voltage	U_i	440 V
Rated impulse withstand voltage	U_{imp}	4 kV
Rated short circuit breaking capacity	I_q	10 kA
Thermal current $I_{th\ max} = I_{e\ max}$		40 A
Electrical endurance AC3 and I_e		6,000 switching operations
Motor switching capacity AC3		400 (415) V
Power loss per contact		
1.6-10 A		2.3 W
16 A		3.3 W
25-40 A		4.5 W
Operating frequency		50/60 Hz
Auxiliary switch Z-AHK/Z-NHK		
Rated insulation voltage	U_i	440 V
Thermal current	I_{th}	8 A
Rated operational current	I_e	
250 V		6 A
with AC 13, 440 V		2 A
Max. back-up fuse for short-circuit protection		4 A (gL, gG) CLS6-4/B-HS
Terminal capacity (1 or 2 conductors)		0.75 ... 2.5 mm ²
Moisture-Proof Enclosure 4 MU IP54, Z-MFG		
Reliable power loss of incorporated devices		17W (e.g. Z-MS-40/3+Z-USA/230)

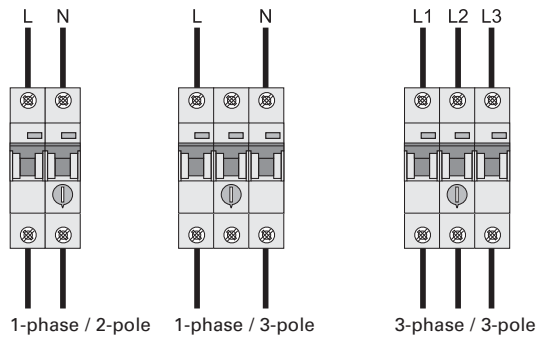
Connection diagram



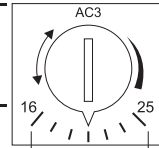
Dimensions (mm)



Connection



U_e = 400 V~
I_e = 10 - 16 A
I_q = 10000 A
Z-MS - 25 /3



Magnetic release responding current (typ.)
referring to setting range end value 16x 10x I_e

Selection of Switches for the Protection of Motors

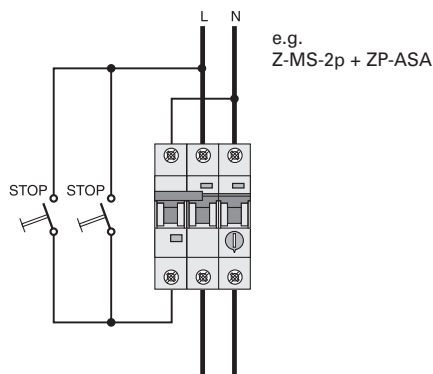
Motor power and current						Setting ranges of overload release
1-phase 230 - 240 V		3-phase 230 - 240 V		3-phase 400 - 415 V		
kW	A	kW	A	kW	A	A
		0.06	0.4	0.06	0.2	0.16 - 0.25
		0.09	0.5	0.09	0.3	0.25 - 0.4
				0.12	0.4	0.4 - 0.63
				0.18	0.6	0.4 - 0.63
0.06	0.7	0.12	0.7	0.25	0.8	0.63 - 1
0.09	0.7					0.63 - 1
0.12	1.3	0.18	1.0	0.37	1.1	1 - 1.6
		0.25	1.4	0.55	1.5	1 - 1.6
0.18	1.9	0.37	2.0	0.75	1.9	1.6 - 2.5
0.25	2.4					1.6 - 2.5
0.37	2.9	0.55	2.7	1.1	2.6	2.5 - 4
		0.8	3.2	1.5	3.6	2.5 - 4
0.55	4.2	1.1	4.6	2.2	5.0	4 - 6.3
0.75	5.6					4 - 6.3
1.1	7.4	1.5	6.3	2.5-3.0	6.6	6.3 - 10
1.5	8.9	2.5	8.7			6.3 - 10
				4.0	8.5	6.3 - 10
2.2	14.5	3.0	11.5	5.5	11.3	10 - 16
				7.5	13.2	10 - 16
3	17.8	4.0	14.8			16 - 20
		5.5	19.6	11.0	21.7	16 - 20
		7.5	26.4	15.0	29.3	25 - 40
		11.0	38.0	18.5	36.0	25 - 40

Overview of Types, Maximum Back-up Fuse and Short Circuit Behaviour

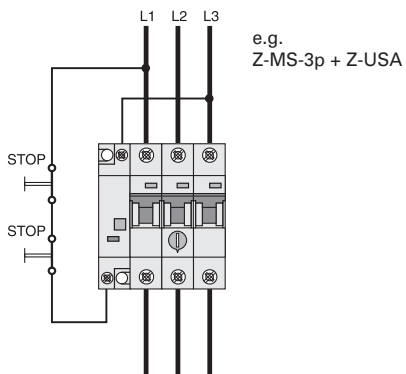
Type	Setting Range (A)	max. Back-up Fuse gL, gG ¹⁾		Typical responding currents of short-circuit releases (A)
		(A) 3 x 230 V	(A) 3 x 400 V	
Z-MS-0.16	0.10 - 0.16			1.3 - 1.7
Z-MS-0.25	0.16 - 0.25			2.0 - 2.6
Z-MS-0.40	0.25 - 0.40			3.1 - 4.8
Z-MS-0.63	0.40 - 0.63			4.9 - 6.6
Z-MS-1.00	0.63 - 1.00			10 - 13
Z-MS-1.60	1.0 - 1.6			16 - 21
Z-MS-2.50	1.6 - 2.5			25 - 33
Z-MS-4.00	2.5 - 4.0			40 - 52
Z-MS-6.30	4.0 - 6.3	100	100	63 - 82
Z-MS-10.0	6.3 - 10.0	100	100	78 - 105
Z-MS-16.0	10.0 - 16.0	100	100	160 - 208
Z-MS-25.0	16.0 - 25.0	100	100	250 - 325
Z-MS-40.0	25.0 - 40.0	100	100	400 - 520

¹⁾ In case of short circuit currents up to the rated breaking capacity, no back-up fuse is required (inherent current withstand capability)

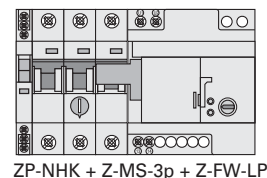
Connection of Shunt Trip Release



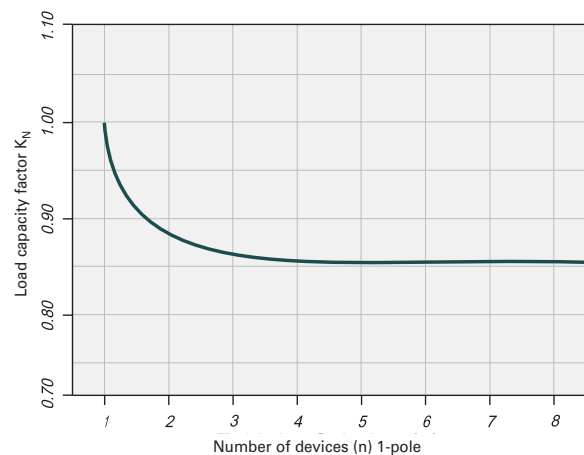
Connection of Undervoltage Release



Block Diagram with Remote Switching Device

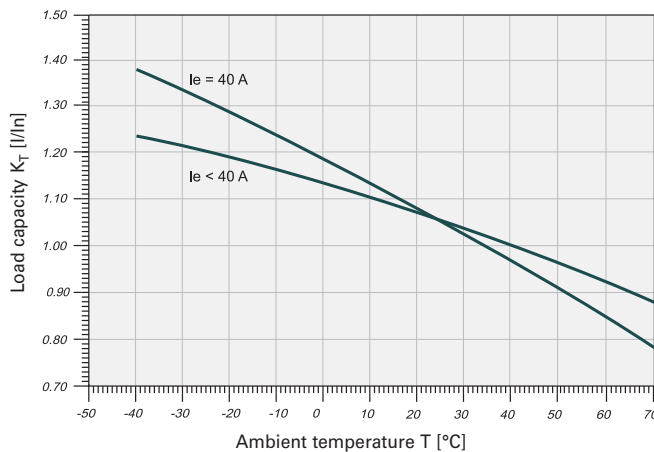


Load Capacity in Case of Block Installation



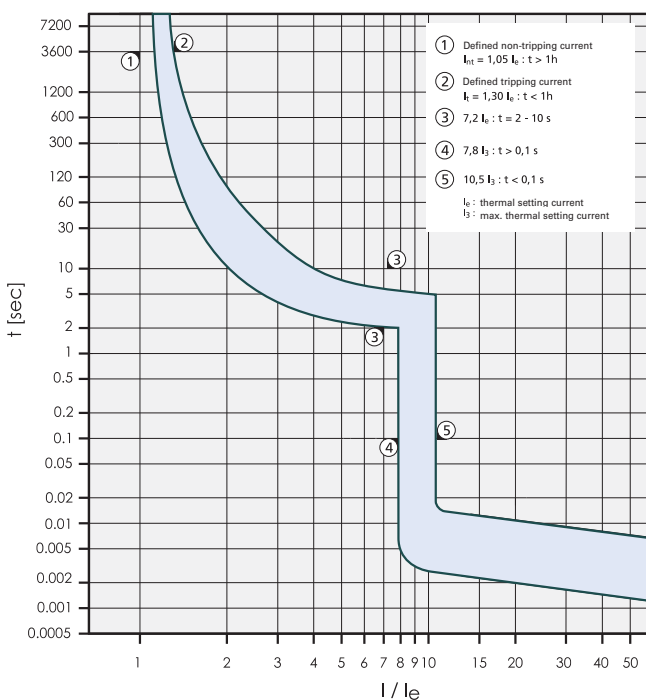
Permitted permanent load at ambient temperature T [°C] with n devices:
 $I_{DL}(T, n) = I_n K_T(T) K_n(n)$

Effect of the Ambient Temperature to the Load Capacity



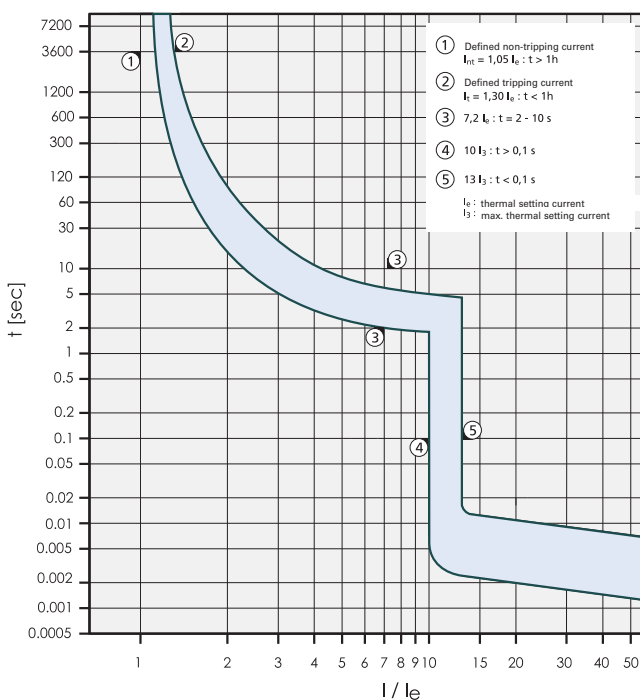
Valid for Z-MS devices, 3-pole, reference ambient temperature 20°C,
 permitted permanent load at ambient temperature T [°C] with n devices:
 $I_L(T) = I_n K_T(T)$

Typical Tripping Characteristic MS 0.16/0.25/0.4/0.63/10A



Tripping current as a multiple of the maximum setting current, at an ambient temperature of 20 °C, from cold state

Typical Tripping Characteristic MS 1/1.6/2.5/4/6.3/16/25/40A

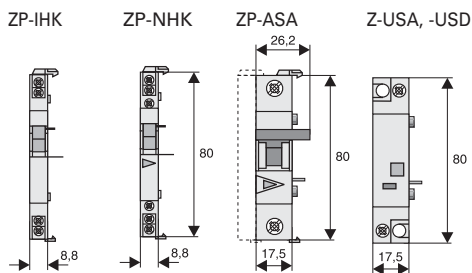


Tripping current as a multiple of the maximum setting current, at an ambient temperature of 20 °C, from cold state

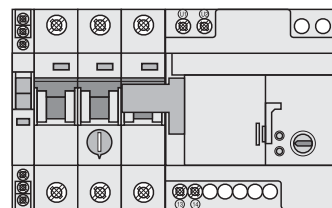
Adjustable MCB Accessory

- Accessories for Adjustable MCB are the same as for PFIM, CLS etc. (releases, auxiliary switches, and busbars)
- Shunt trip release ZP-ASA
- Undervoltage releases
 - Z-USA: instantaneous
 - Z-USD: delayed
- Auxiliary switch ZP-IHK: 1 NO + 1 NC
- Tripping signal switch ZP-NHK: 1 CO + 1 CO
- Remote control and automatic switching device Z-FW
- Moisture-proof enclosure Z-MFG
 - Z-MFG
 - Z-MFG/NL: with N-led through (solid neutral)
 - Z-MFG/NOT: with N-led through (solid neutral) and EMERGENCY OFF key

Dimensions (mm)



Installation Example



ZP-NHK + Z-MS-2p + Z-FW-LP

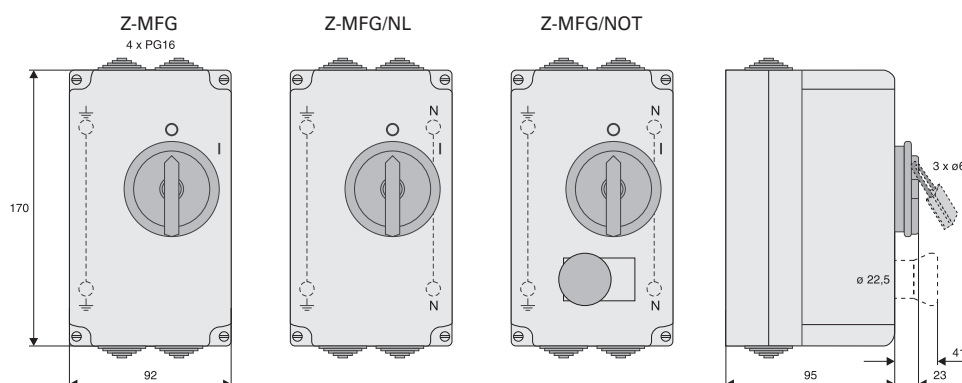
Moisture-proof enclosure Z-MFG

- According to EN 50298
- Suitable for manual motor starters Z-MS, e.g. 3p (+ Z-USA); miniature circuit breakers CLS, e.g. 3p (+ Z-USA); circuit breakers Z-A40
- Earth conductor connection integrated in all types
- Entries for 4 x PG16 cable glands prepared
- Operation: Turning handle, can be locked in the OFF-position by means of 3 padlocks, max. Ø 6 mm
- Enclosure cover can be sealed with leads in 2 locations
- Scope of delivery: 4 entry bushes, 1 mushroom-shaped pushbutton (red) + 1 contact (NC) in Z-MFG/NOT

Technical Data

	Z-MFG	Z-MFG/NL	Z-MFG/NOT
Electrical			
Power Loss of installed devices	max. 17 W	max. 17 W	max. 17 W
Mechanical			
Degree of protection	IP54	IP54	IP54
Protection class	II	II	II
Neutral connection	-	integrated	integrated
Max. Device width	4MU	4MU	4MU
Terminal capacity N/PE	max. 16 mm ²	max. 16 mm ²	max. 16 mm ²
Tightening torque			
N/PE terminals	max. 2 Nm	max. 2 Nm	max. 2 Nm
Cover screws	max. 2 Nm	max. 2 Nm	max. 2 Nm

Dimensions (mm)



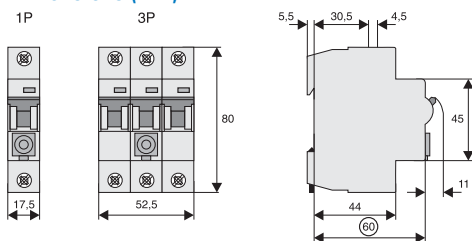
Power Limiter Z-TS

- Type in accordance with EN/IEC 60898-1, EN/IEC 60947
- Shape compatible with and suitable for standard busbar connection to e.g. CLS6, PLSM, Z-A40, Z-MS, PFIM
- Switching device for voluntary or power-authority limitation of power consumption of user systems and equipment
- Approved by the Austrian regional power supply companies, easy to re-set by the customer
- 1- and 3-pole design
- Adjustment screw for setting range under sealable cover cap

Technical Data

		Z-TS20/.	Z-TS25/.	Z-TS32/.	Z-TS40/.	Z-TS50/.	Z-TS63/.
Electrical							
Rated operating voltage	U_e	230/400 V AC	230/400 V AC	230/400 V AC	230/400 V AC	230/400 V AC	230/400 V AC
Rated frequency		50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Rated current (Current setpoint values)	I_e	13-16-20 A	16-20-25 A	20-25-32 A	25-32-40 A	40-50 A	50-63 A
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50 μ s)	4 kV (1.2/50 μ s)	4 kV (1.2/50 μ s)	4 kV (1.2/50 μ s)	4 kV (1.2/50 μ s)	4 kV (1.2/50 μ s)
Rated insulation voltage	U_i	500 V	500 V	500 V	500 V	500 V	500 V
Reference ambient temperature		30 °C	30 °C	30 °C	30 °C	30 °C	30 °C
Tripping method		Overload release and magnetic fast release					
Conventional non-tripping current	I_{nt}	1.13 I_e (t > 1 h)	1.13 I_e (t > 1 h)	1.13 I_e (t > 1 h)	1.13 I_e (t > 1 h)	1.13 I_e (t > 1 h)	1.13 I_e (t > 1 h)
Conventional tripping current	I_t	1.45 I_e (t < 1 h)	1.45 I_e (t < 1 h)	1.45 I_e (t < 1 h)	1.45 I_e (t < 1 h)	1.45 I_e (t < 1 h)	1.45 I_e (t < 1 h)
Response values for the magnetic fast release	I_{MA}	200-300 A	250-375 A	320-500 A	320-500 A	380-500 A	380-500 A
Utilization category		AC-1 (Conventional operating behavior / switch and breaking capacity according to EN/IEC 60947): $I = I_e$, $U = 1,05 U_e$, $\cos \varphi = 0.8$, 6,000 operating cycles $I = 1,5 I_e$, $U = 1,05 U_e$, $\cos \varphi = 0.8$, 50 operating cycles					
Rated breaking capacity (according to EN/IEC 60868)	I_{cn}	10 kA	10 kA	10 kA	6 kA	6 kA	6 kA
Service short circuit breaking capacity (acc. to EN/IEC 60868)	I_{cs}	7.5 kA	7.5 kA	7.5 kA	6 kA	6 kA	6 kA
Energy limitation class (according to EN/IEC 60898-1)		3	3	3	3	3	3
Maximum back-up fuse		125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG
Mechanical							
Frame size		45 mm	45 mm	45 mm	45 mm	45 mm	45 mm
Device height		80 mm	80 mm	80 mm	80 mm	80 mm	80 mm
Device width		1MU (1P), 3MU (3P)	1MU (1P), 3MU (3P)	1MU (1P), 3MU (3P)	1MU (1P), 3MU (3P)	1MU (1P), 3MU (3P)	1MU (1P), 3MU (3P)
Number of poles		1, 3	1, 3	1, 3	1, 3	1, 3	1, 3
Mounting		quick fastening on DIN rail IEC/EN 60715					
Upper and lower terminals		lift terminals	lift terminals	lift terminals	lift terminals	lift terminals	lift terminals
Terminal capacity single/multi wire		1x(1-25) mm ²	1x(1-25) mm ²	1x(1-25) mm ²	1x(1-25) mm ²	1x(1-25) mm ²	1x(1-25) mm ²
Terminal capacity fine wire with wire end sleeve		1x(0.75-16) mm ²	1x(0.75-16) mm ²	1x(0.75-16) mm ²	1x(0.75-16) mm ²	1x(0.75-16) mm ²	1x(0.75-16) mm ²
Terminal screw		M5, cross recess according to DIN 7962-Z2, Pozidrive					
Terminal torque		max. 2.4 Nm	max. 2.4 Nm	max. 2.4 Nm	max. 2.4 Nm	max. 2.4 Nm	max. 2.4 Nm
Terminal protection		finger and hand touch safe, DGUV VS3, EN 50274					
Resistance to climatic conditions		Damp heat, constant, acc. to IEC 68-2-3 / Damp heat, cyclic, acc. to IEC 68-2-30					

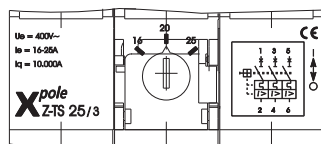
Dimensions (mm)



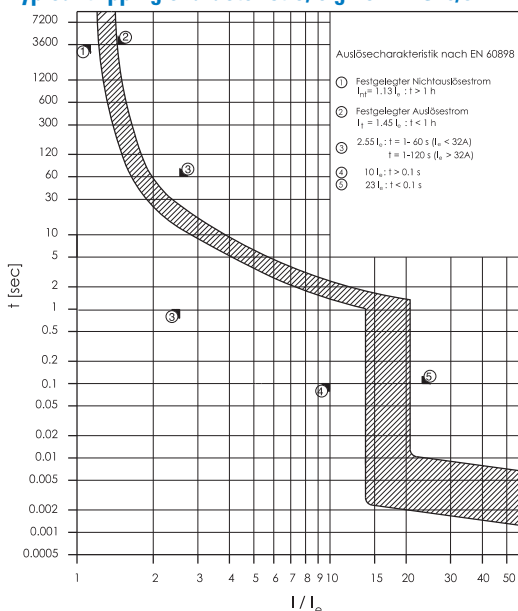
Accessories

- Busbar block ZV7
- Auxiliary switch and tripping signal switch Z-AHK, Z-NHK
- Shunt trip release and undervoltage release Z-ASA, Z-USA, Z-USD
- Moisture-proof enclosure Z-MFG

Imprint



Typical tripping characteristic, e.g. for Z-TS20/3



SG30811



SG60811



Description

- SWD Auxiliary Module
- Auxiliary Switch
- RCD-Tripping Module
- Shunt Trip Release
- Undervoltage Release
- Remote Control and Automatic Switching Device
- Switching Interlocks
- Terminal Covers

2.180 Accessories for Protective Devices

xEffect

Auxiliary Switch Z-HK, Z-AHK, Z-HD; Tripping Signal Switch Z-NHK

	For Protective Device / Function	Type Designation	Article No.	Units per package
Design: for screwing				
	RCCB / 1NO+1NC	Z-HK	248432	4/120
	MCB, RCBO (1+N, 3P, 3+N) / 1NO+1NC	Z-AHK	248433	4/120
	MCB, RCBO, RCCB / 2CO	Z-NHK	248434	4/120
	RCCB / 1CO+1NC	Z-HD	265620	1

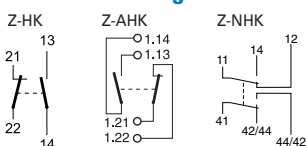
Description Auxiliary Switch Z-HK, Z-AHK; Tripping Signal Switch Z-NHK

- Design according to IEC/EN 60947-5-1, IEC/EN 62019
- Can be mounted subsequently (screws) onto FRCmM, FRCdM
- The specified minimum voltages are per contact.
Take into account particularly in case of series connection!
- **Z-AHK, Z-NHK:** Contact function with relative movement (selfcleaning contacts)
- Contact material and design particularly suitable for extra low voltage
- **Z-NHK:** The function of one of the two change-over contacts can be switched from "auxiliary switch" to "tripping signal switch"
- Tripping signal contact transmits message of electric tripping, not mechanical switch-off
- Test key for contact function "electrical tripping"

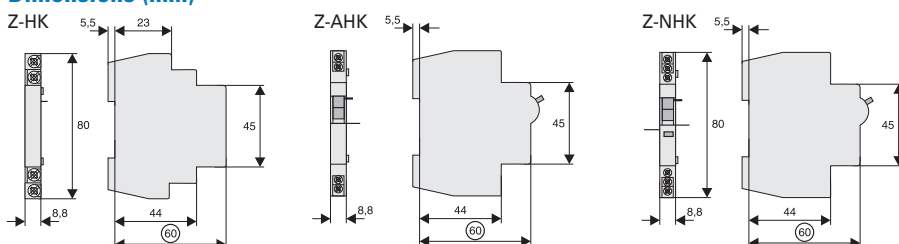
Technical Data

		Z-HK	Z-AHK	Z-NHK
Electrical				
Contact function		1NO + 1NC	1NO + 1NC	2CO
Rated voltage		250 V	250 V	250 V
Frequency		50/60 Hz	50/60 Hz	50/60 Hz
Rated current		8 A	4 A	4 A
Rated thermal current	I_{th}	8 A	4 A	4 A
Utilisation category AC13				
Rated operational current	I_e	6 A / 250 V AC 2 A / 440 V AC	3 A / 250 V AC –	3 A / 250 V AC –
Utilisation category AC15				
Rated operational current	I_e	–	2 A / 250 V AC	2 A / 250 V AC
Utilisation category DC12				
Rated operational current	I_e	–	0.5 A / 110 V DC	0.5 A / 110 V DC
Utilisation category DC13				
Rated operational current	I_e	0.5 A / 230 V DC 2 A / 110 V DC 4 A / 60 V DC	– – –	– – –
Rated insulation voltage	U_i	250 V AC	250 V AC	250 V AC
Minimum operational voltage per contact	U_{min}	24 V AC/DC	5 V DC	5 V DC
Minimum operational current	I_{min}	50 mA AC/DC	10 mA DC	10 mA DC
Rated impulse withstand voltage (1,2/50µ)	U_{imp}	2.5 kV	2.5 kV	2.5 kV
Conditional short circuit current with back-up fuse 6 A or FAZ-B4-HS		1 kA	1 kA	1 kA
Max. back-up fuse, overload and short circuit		6 A gL / FAZ-4/.. /B-HS	4 A gL / FAZ-4/.. /B-HS	4 A gL / FAZ-4/.. /B-HS
Mechanical				
Can be mounted from the left onto		RCCB	MCB, RCBO (1+N, 3P, 3+N) MCB, RCBO	
Can be mounted from the right onto		–	–	–
Tripping indicator “electrical tripping”		–	–	blue/white
Frame size		45 mm	45 mm	45 mm
Device height		80 mm	80 mm	80 mm
Device width		8.8 mm (0.5MU)	8.8 mm (0.5MU)	8.8 mm (0.5MU)
Mounting		onto switching device	onto switching device	onto switching device
Degree of protection, built-in		IP40	IP40	IP40
Terminal protection		finger and hand touch safe according to DGUV VS3, EN 50274		
Terminals		Lift terminals	Lift terminals	Lift terminals
Terminal capacity		0.5-2.5 mm ²	0.5-2.5 mm ²	0.5-2.5 mm ²
Terminal screws		M3.5 (Pozidrive Z2)	M3 (Pozidrive Z1)	M3 (Pozidrive Z1)
Fastening torque of terminal screws		max. 0.8-1.0 Nm	max. 0.8-1.0 Nm	max. 0.8-1.0 Nm

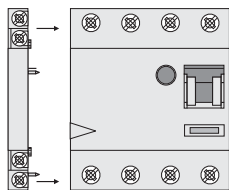
Connection diagram



Dimensions (mm)

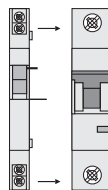


Example: Z-HK+FI



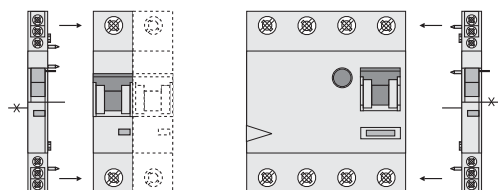
1NO+1NC 24V 50mA min.

Example: Z-AHK+LS



1NO+1NC 5V 10mA min.

Example: Z-NHK+LS FI+Z-NHK



2CO 5V 10mA min.

Description Auxiliary Switch Z-HD

Function Auxiliary Switch Z-HD

- Tripping signal switch: detects if RCD tripping occurred by an fault current
- Auxiliary switch: shows the contact position of the RCD

Technical Data

Z-HD

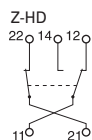
Electrical

Can be mounted from the left onto	FRCmM-125A
Contact functions	1CO + 1NC
Min. creeping distance	> 12.7 mm/50.8 mm (intern/external)
Load rating	
AC11	6 A / 230 V AC
DC11	1 A / 230 V DC

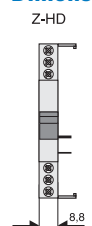
Mechanical

Terminal capacity	up to 2.5 mm ²
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Connection diagram



Dimensions (mm)



	For Protective Device / Function	Type Designation	Article No.	Units per package
Design: for snapping				
SG60811	MCB, RCBO / 1NO+1NC	ZP-IHK	286052	4/120
SG34612	MCB, RCBO / 1CO	ZP-WHK	286053	4/120
SG34512	MCB, RCBO / 2CO	ZP-NHK	248437	4/120

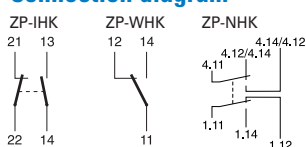
Description Auxiliary Switch ZP-IHK, ZP-WHK; Tripping Signal Switch ZP-NHK

- Design according to IEC/EN 62019
- No screws required. Can be snapped onto FAZ and FRBmM-1N subsequently
- **ZP-IHK, ZP-WHK:** Can be snapped on additionally 1 time onto itself
- The specified minimum voltages are per contact. Take into account particularly in case of series connection!
- Contact material and design particularly suitable for extra low voltage.
- Contact function with relative movement (self-cleaning contacts)e)
- **ZP-NHK:** The function of one of the two change-over contacts can be switched from "auxiliary switch" to „tripping signal switch“
- Tripping signal contact transmits message of electric tripping, not mechanical switch-off
- **ZP-NHK:** The "Service button" is used to check whether or not the auxiliary switch is correctly wired in the tripping-signal-switch position. Activating the "service button" will mechanically simulate an electrical switch-off, so the mechanism for the electrical switchoff will disengage and can be checked. The main switchgear (MCB or combined MCB/RCD) connected to the ZP-NHK auxiliary switch does not need to trip as well during an inspection through the service button.

Technical Data

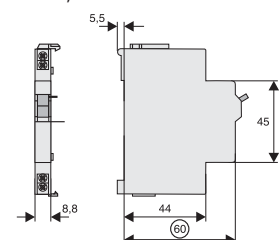
	ZP-IHK	ZP-WHK	ZP-NHK
Electrical			
Contact function	1NO + 1NC	1CO	2CO
Rated voltage	250 V	250 V	250 V
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Rated current	6 A	6 A	4 A
Rated thermal current	I_{th} 6 A	6 A	4 A
Utilisation category AC13			
Rated operational current	I_e 3 A / 250 V AC	3 A / 250 V AC	3 A / 250 V AC
Utilisation category AC15			
Rated operational current	I_e 2 A / 250 V AC	2 A / 250 V AC	2 A / 250 V AC
Utilisation category DC12			
Rated operational current	I_e 0.5 A / 110 V DC	0.5 A / 110 V DC	0.5 A / 110 V DC
Rated insulation voltage	U_i 250 V AC	250 V AC	250 V AC
Minimum operational voltage per contact	U_{min} 5 V DC	5 V DC	5 V DC
Minimum operational current	I_{min} 10 mA DC	10 mA DC	10 mA DC
Rated impulse withstand voltage (1,2/50 μ)	U_{imp} 2.5 kV	2.5 kV	2.5 kV
Conditional short circuit current with back-up fuse 6 A or FAZ-B4-HS	1 kA	1 kA	1 kA
Max. back-up fuse, overload and short circuit	6 A gL / FAZ-4/.../B-HS	6 A gL / FAZ-4/.../B-HS	6 A gL / FAZ-4/.../B-HS
Mechanical			
Can be mounted from the left onto	MCB, RCBO	MCB, RCBO	MCB, RCBO
Accessories	ZP-ASA	ZP-ASA	ZP-ASA
Tripping indicator "electrical tripping"	—	—	blue/white
Frame size	45 mm	45 mm	45 mm
Device height	80 mm	80 mm	80 mm
Device width	8.8 mm (0.5MU)	8.8 mm (0.5MU)	8.8 mm (0.5MU)
Mounting	onto switching device	onto switching device	onto switching device
Degree of protection, built-in	IP40	IP40	IP40
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274		
Terminals	Lift terminals	Lift terminals	Lift terminals
Terminal capacity	0.5-2.5 mm ²	0.5-2.5 mm ²	0.5-2.5 mm ²
Terminal screws	M4 (Pozidrive Z2)	M4 (Pozidrive Z2)	M3 (Pozidrive Z1)
Fastening torque of terminal screws	max. 1.2 Nm	max. 1.2 Nm	max. 0.8-1.0 Nm

Connection diagram

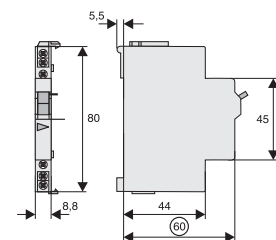


Dimensions (mm)

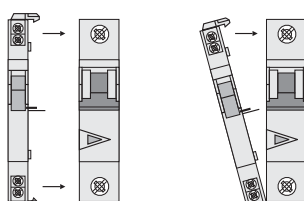
ZP-IHK, ZP-WHK



ZP-NHK

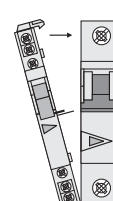
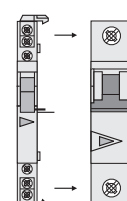
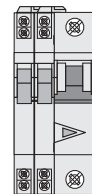


Example: ZP-IHK/(ZP-WHK)+LS



Example: ZP-NHK+LS

max. 2x



	For Protective Device	Type Designation	Article No.	Units per package
	RCCB	Z-FAM	248293	1/60
	RCBO	Z-KAM	248294	1/60

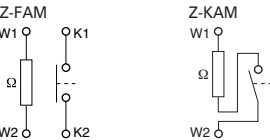
Description RCCB Tripping Module Z-FAM, Z-KAM

- For remote switch-off of RCCBs, standard and electronic combined RCD/MCB devices
- Remote switch-off by one or several parallel potential-free contacts, e.g. pushbutton max. rated current 3 A at 250 V, take into account maximum pushbutton voltage
- Remote tripping test by means of remote testing module Z-FW
- Can be mounted subsequently, to be wired according to connection diagram with the respective terminals of the RCCB
- No undesired voltage rise in the consumer system during remote switch-off thanks to integrated breaker contact K1-K2

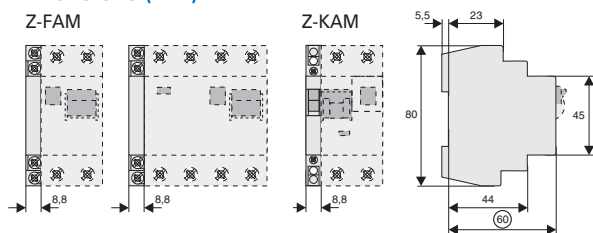
Technical Data

	Z-FAM	Z-KAM
Electrical		
Rated voltage	230(400) V AC	230(400) V AC
Frequency	50/60 Hz	50/60 Hz
Rated tripping current	$I_{\Delta n}$ 0.01 - 0.3 A	0.01 - 0.3 A
Function	1NO	1NO
Mechanical		
Tripping module for	RCCB	RCBO
Frame size	45 mm	45 mm
Device height	80 mm	80 mm
Device width	8.8 mm (0.5MU)	8.8 mm (0.5MU)
Degree of protection, built-in	IP40	IP40
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274	
Terminal capacity	1 - 2x2.5 mm ²	1 - 2x2.5 mm ²

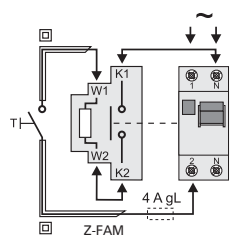
Connection diagram



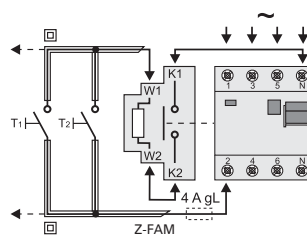
Dimensions (mm)



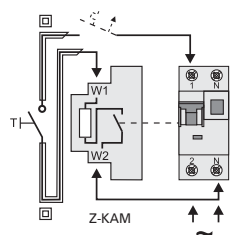
Connection examples: Lay lines to the switching devices with double insulation and overload protection, e.g. 4A gL or CLS6-4..-HS



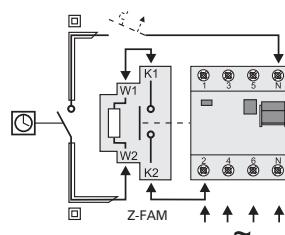
Connection diagram:
RCCB-2p, RCCB feed above



Connection diagram:
RCCB-4p, RCCB feed above



Connection diagram:
RCBO-2p, RCBO feed below



Connection diagram:
RCCB-4p, RCCB feed below

Operational voltage range (V~)

Type
DesignationArticle No. Units per
package**To be glued on**

SG00712



12-110	Z-ASA/24	248286	1/60
110-415	Z-ASA/230	248287	1/60

To be snapped on

SG00212



12-110	ZP-ASA/24	248438	1/60
110-415	ZP-ASA/230	248439	1/60

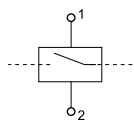
Description Shunt Trip Release Z-ASA, ZP-ASA

- Remote release for subsequent mounting onto PXL, PLI, PXK, FAZ, FRBmM-1N, Z-MS
- Module width 1MU
- Additional installation of standard auxiliary switch is possible
- Position indicator red - green
- Type ZP-ASA for snap-on mounting

Technical Data

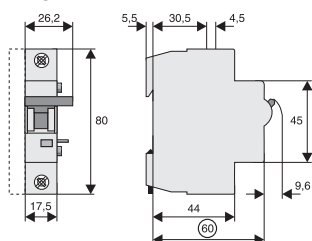
	Z-ASA24	Z-ASA230	ZP-ASA24	ZP-ASA230
Electrical				
Minimum pulse duration	15 ms	10 ms	15 ms	10 ms
Internal resistance	2,2 Ω	215 Ω	2,2 Ω	215 Ω
Duty cycle	100%	100%	100%	100%
Tripping time	< 20 ms	< 20 ms	< 20 ms	< 20 ms
Rated peak withstand voltage (1.2/50μs)	2.5 kV	2.5 kV	2.5 kV	2.5 kV
Endurance	>4000 operating cycles	>4000 operating cycles	>4000 operating cycles	>4000 operating cycles
AC voltage range				
Operating limit	10 V	60 V	10 V	60 V
Operational voltage range	12-110 V	110-415 V	12-110 V	110-415 V
Maximum current consumption during switch-on	15 A	2.1 A	15 A	2.1 A
Current flow time at max. current consumption	10 ms	10 ms	10 ms	10 ms
DC voltage range				
Operating limit	9 V	72 V	9 V	72 V
Operational voltage range	10-60 V	110-220 V	10-60 V	110-220 V
Maximum current consumption during switch-on	21 A	1 A	21 A	1 A
Current flow time at max. current consumption	2 ms	2 ms	2 ms	2 ms
Mechanical				
Frame size	45 mm	45 mm	45 mm	45 mm
Device height	80 mm	80 mm	80 mm	80 mm
Device width	17.5 mm (1MU)	17.5 mm (1MU)	17.5 mm (1MU)	17.5 mm (1MU)
Mounting	bonding	bonding	aufschnappen	aufschnappen
Degree of protection, built-in	IP40	IP40	IP40	IP40
Terminals above/below	open mouthed/lift	open mouthed/lift	open mouthed/lift with guide	open mouthed/lift with guide
Terminal capacity	1-25 mm ²	1-25 mm ²	1-25 mm ²	1-25 mm ²
Fastening torque of terminal screws	max. 2.4 Nm	max. 2.4 Nm	max. 2.4 Nm	max. 2.4 Nm

Connection diagram

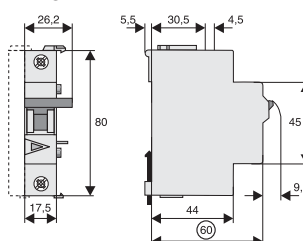


Dimensions (mm)

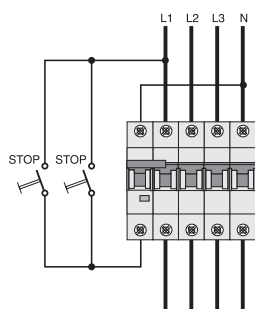
Z-ASA



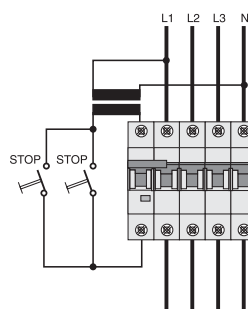
ZP-ASA



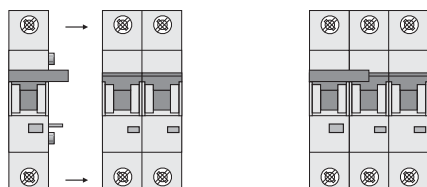
Connection Example 230 V



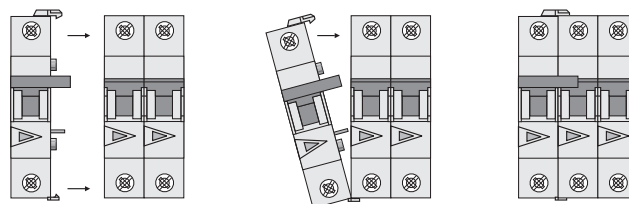
Connection Example 24 V



Example: Z-ASA + LS



Example: ZP-ASA + LS



SG78811



Operational voltage range (V~)	Function	Type Designation	Article No.	Units per package
To be screwed on				
115	undelayed	Z-USA/115	248288	1/60
230	undelayed	Z-USA/230	248289	1/60
400	undelayed	Z-USA/400	248290	1/60
115	delayed 0.4s	Z-USD/115	248292	1/60
230	delayed 0.4s	Z-USD/230	248291	1/60

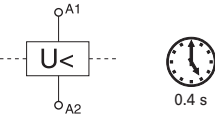
Description Undervoltage Release Z-USA, Z-USD

- Tripping:
Instantaneous Z-USA
Delayed Z-USD, typ. 0.4 s
- Voltage control indicator blue/white
- Service key for zero voltage switch-on for testing purposes
- Can be used with PXL, PLI, PKX, FAZ

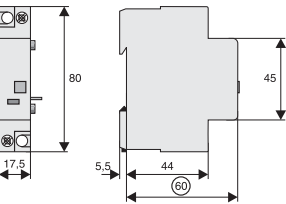
Technical Data

		Z-US./115	Z-US./230	Z-US./400
Electrical				
Rated voltage	U_n	115 V AC	230 V AC	400 V AC
Frequency		50/60 Hz	50/60 Hz	50/60 Hz
Making threshold		80% of U_n	80% of U_n	80% of U_n
Tripping threshold		50% of U_n	50% of U_n	50% of U_n
Mechanical				
Frame size		45 mm	45 mm	45 mm
Device height		80 mm	80 mm	80 mm
Device width		17.5 mm (1MU)	17.5 mm (1MU)	17.5 mm (1MU)
Mounting		quick fastening on DIN rail IEC/EN 60715		
Degree of protection, built-in		IP40	IP40	IP40
Terminal protection		finger and hand touch safe according to DGUV VS3, EN 50274		
Terminals		open mouthed/lift	open mouthed/lift	open mouthed/lift
Terminal capacity		1 - 2x2.5 mm ²	1 - 2x2.5 mm ²	1 - 2x2.5 mm ²

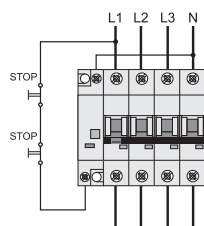
Connection diagram



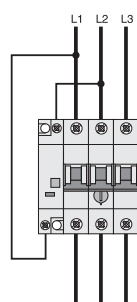
Dimensions (mm)



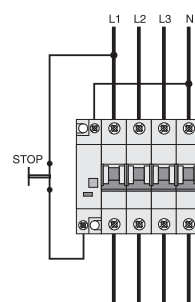
Connection Example Release



Connection Example 400V and 230V



Connection Example
Z-USA/400 + Z-MS



Connection Example
Z-USA/230 + LS

Description	Type Designation	Article No.	Units per package
 SG47812 PHASE OUT	IS/SPE-1TE	101911	5/30
	Z-IS/SPE-1TE	274418	5/30

Description Switching Interlock IS/SPE-1TE, Z-IS/SPE-1TE

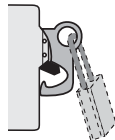
- without lock

Type IS/SPE-1TE:

- for Isolators, RCDs, combined RCD/MCBs, ...

Type Z-IS/SPE-1TE:

- for MCBs
- maximum usable diameter of the padlock: 4-5 mm



SG82011



Description

Type
Designation

Article No.

Units per
package

Terminal Covers for RCDs

2-poles	Z-RC/AK-2TE	285385	10
4-poles	Z-RC/AK-4TE	101062	10

SG02614



Terminal Covers for Add-on Device

2-poles	Z-TC/AO-2P	178097	10
3+4-poles	Z-TC/AO-3-4P	178098	10

SG02314



Terminal Covers for MCB, RCBO

2-poles	Z-TC/SD-2P	178099	10
3-poles	Z-TC/SD-3P	178100	10
4-poles	Z-TC/SD-4P	178101	10

Terminal Cover for MCBs

1-pole	Z-TC/MCB-1P	178102	10
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Function	Type Designation	Article No.	Units per package
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Remote Control Device Z-FW

SG30811



Automatic restarting 230VAC	Z-FW-LP	248296	1/20
Automatic restarting 24-48VDC	Z-FW-LPD	265244	1/20

SG30711



+ Remote control module ON/OFF/TEST (only in connection with Z-FW-LP, -LPD from delivery date 2006!)	Z-FW-MO	284730	1
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Operational voltage range	Type Designation	Article No.	Units per package
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Pre-mounted sets Z-FW

Automatic restoring + remote control

SG31311



230 VAC	Z-FW-LP/MO	290171	1/12
24-48 VDC	Z-FW-LPD/MO	290172	1/12

Remote control

230 VAC	Z-FW-LPE/MO	108104	1/12
24-48 VDC	Z-FW-LPS/MO	100052	1/12

Rated Fault Current	Type Designation	Article No.	Units per package
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Remote Testing Module Z-FW

- for Z-FW-LP./MO set use only

SG12111



0.01 A	Z-FW/001	248297	4/120
0.03 A	Z-FW/003	248298	4/120
0.1 A	Z-FW/010	248299	4/120
0.3 A	Z-FW/030	248300	4/120
0.5 A	Z-FW/050	248301	4/120

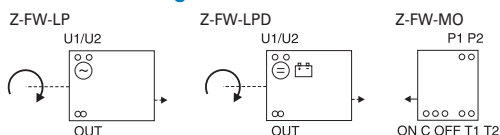
Description Remote Testing Module and Remote Control Device Z-FW

- Shape compatible switching device suitable for subsequent installation for automatic re-setting and remote control of MCBs, RCCBs and Z-MS
- Mechanical interlock, can be sealed with leads
- Mechanical switching capability up to max. RCCB-100/4p, MCB-100/4p
- Operating and alarm display by green and red LED
- Function extension with Switching Modul Z-FW-MO
Operating and trouble display by LED pre-assembled only with Z-FW...

Technical Data

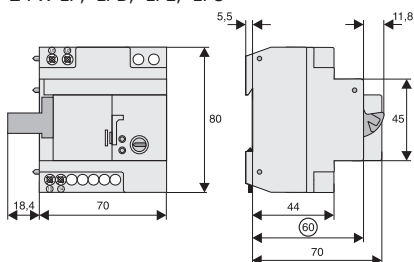
	Z-FW-LP	Z-FW-LPD	Z-FW-MO
Electrical			
Possible operating voltages	220-240 V AC	24-48 V DC	—
Frequency	50/60 Hz	—	—
Testing module (0.5MU) for remote testing of RCDs	Z-FW...	Z-FW...	—
Control voltage for remote control	—	—	24-230 V AC/DC
Relay output for tripping test with Z-FW	—	—	400 V AC max.
Relay output for alarm, potential-free	5 A / 250 V AC	5 A / 250 V AC	—
Functions	Automatic restarting	Automatic restarting	+ON/OFF/TEST
Function selector	Automatic 5x, OFF/RESET	Automatic 5x, OFF/RESET	ON, OFF/RESET
Remote control function via telephone with Telecommander	—	—	—
Mechanical			
Frame size	45 mm	45 mm	45 mm
Device height	80 mm	80 mm	80 mm
Device width	70 mm	70 mm	35 mm
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715	—	—
Degree of protection, built-in	IP40	IP40	IP40
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274	—	—
Terminals	Lift terminals	Lift terminals	Lift terminals
Terminal capacity	2 x 1.5 mm ² or 1 x 2.5 mm ²	2 x 1.5 mm ² or 1 x 2.5 mm ²	4 x 1.5 mm ² or 2 x 2.5 mm ²
Scope of delivery	—	—	Coupling plug

Connection diagram

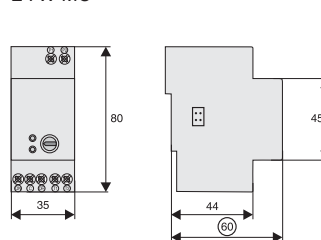


Dimensions (mm)

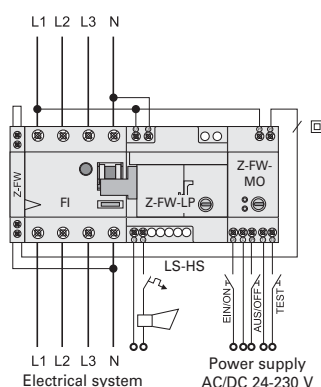
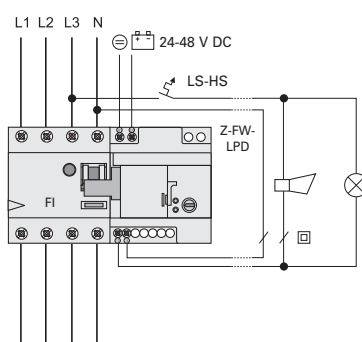
Z-FW-LP, -LPD, -LPE, -LPS



Z-FW-MO



Connection Example



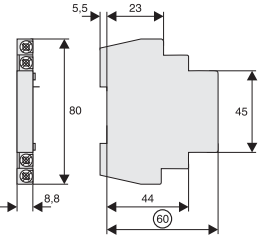
Description Remote Testing Module Z-FW (for Z-FW-LP)

- External testing module with testing resistor for RCDs
- Proper „external“ test key function according to the applicable rules thanks to design adapted to the rated tripping current
- For remote testing with remote control and automatic switching device Z-FW-LP
- No undesired voltage rise in the consumer system during remote switch-off thanks to integrated breaker contact K1-K2
- Can also be used as a remote tripping module for RCDs

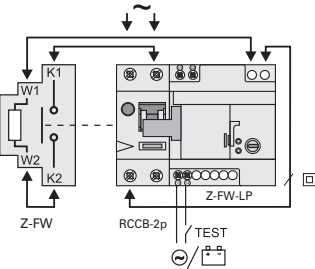
Technical Data

	Z-FW-LP/MO	Z-FW-LPD/MO	Z-FW-LPE/MO	Z-FW-LPS/MO
Electrical				
Possible operating voltages	220-240 V AC	24-48 V DC	220-240 V AC	24-48 V DC
Frequency	50/60 Hz	–	50/60 Hz	–
Testing module (0.5MU) for remote testing of RCDs	Z-FW...	Z-FW...	Z-FW...	Z-FW...
Control voltage for remote control	24-230 V AC/DC	24-230 V AC/DC	24-230 V AC/DC	24-230 V AC/DC
Relay output for tripping test with Z-FW	400 V AC max.	400 V AC max.	400 V AC max.	400 V AC max.
Relay output for alarm, potential-free	5 A / 250 V AC	5 A / 250 V AC	5 A / 250 V AC	5 A / 250 V AC
Functions	Automatic restoring + remote control	Automatic restoring + remote control	Remote control	Remote control
Mechanical				
Frame size	45 mm	45 mm	45 mm	45 mm
Device height	80 mm	80 mm	80 mm	80 mm
Device width	105 mm	105 mm	105 mm	105 mm
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715			
Degree of protection, built-in	IP40	IP40	IP40	IP40
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274			
Terminals	Lift terminals	Lift terminals	Lift terminals	Lift terminals

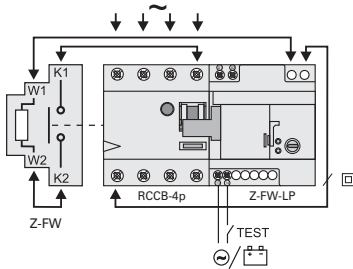
Dimensions (mm)



Connection Example



Connection diagram:
RCCB-2p, RCD feed above



Connection diagram:
RCCB-4p, RCD feed above

Surge Protective Class

xPole

sg04518_r



sg03316



sq04813



sq03316



N04011



sq04914



Poles	Max. Continuous Operating Voltage U_c	Type Designation	Article No.	Units per package
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Combined Surge Protective Device SPRT12-350

- incl. FM contact (change-over contact)
- for TN-C

sg04518_r



3pole	350 VAC	SPRT12-350/3-AX	195235	1
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- incl. FM contact (change-over contact)
- for TN-S/TT

sg04418_r



3pole+NPE	350 VAC	SPRT12-350/3+NPE-AX	195236	1
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Range of protection	Max. Continuous Operating Voltage U_c	Type Designation	Article No.	Units per package
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Insert for SPRT12-350

sg04318_r



L-N / L-PEN	350 VAC	SPRT12-350	195237	1
N-PE	350 VAC	SPRT12-350/NPE	195238	1

Description Surge Protective Class T1/T2

- Ready-to-connect Combined Surge Protection Device Type 1/2 on the basis of spark gaps
- Consisting of the base unit and plug-type modules

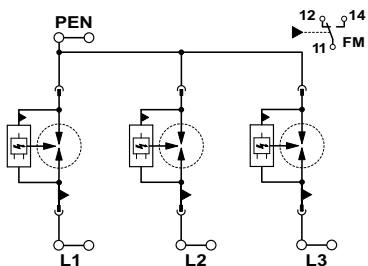
Technical Data

	SPRT12-350/3-AX	SPRT12-350/3+NPE-AX
General data		
Standards/regulations	IEC 61643-11, EN 61643-11	IEC 61643-11, EN 61643-11
IEC test classification	T1 / T2	T1 / T2
EN type	T1 / T2	T1 / T2
Number of ports	One	One
SPD design	Voltage-switching type	Voltage-switching type
Mode of protection	L-PEN	L-N, L-PE, N-PE
Mounting type	DIN rail 35 mm	DIN rail 35 mm
Surge protection fault message	Optical, remote indicator contact	Optical, remote indicator contact
Color	Light grey RAL 7035	Light grey RAL 7035
Insulating material	PBT-FR	PBT-FR
Housing material	PBT-FR	PBT-FR
Air clearances and creepage distances (according to EN 60664-1 and EN 61643-11)		
Degree of pollution	2	2
Overvoltage category	III	III
Material group	I	I
CTI value of material	≥ 600	≥ 600
U _{max}	< 2 kV	< 2 kV
Flammability rating according to UL 94	V-0	V-0
Degree of protection	IP20 (only when all terminal points are used)	IP20 (only when all terminal points are used)
Shock (operation)	30 g (Half-sine / 11 ms / 3x ±X, ±Y, ±Z)	30 g (Half-sine / 11 ms / 3x ±X, ±Y, ±Z)
Vibration (operation)	5 g (5 - 500 Hz/2.5 h/X, Y, Z)	5 g (5 - 500 Hz/2.5 h/X, Y, Z)
Ambient temperature (operation)	-40 °C ... 80 °C	-40 °C ... 80 °C
Ambient temperature (storage/transport)	-40 °C ... 80 °C	-40 °C ... 80 °C
Permissible humidity (operation)	5 % ... 95 %	5 % ... 95 %
Altitude	≤ 2000 m (amsl (above mean sea level))	≤ 2000 m (amsl (above mean sea level))
Width	106.8 mm	142.4 mm
Height	97 mm	95 mm
Depth	71.2 mm (incl. DIN rail 7.5 mm)	71.2 mm (incl. DIN rail 7.5 mm)
Horizontal pitch	6 Module units	8 Module units
Electrical data		
Nominal voltage	U _N	
	240/415 V AC (TN-C)	240/415 V AC (TN-S) 240/415 V AC (TT)
Nominal frequency	f _N	50 Hz (60 Hz)
Maximum continuous operating voltage	U _C	350 V AC
Reference test voltage	U _{REF}	264 V AC
Rated load current	I _L	125 A (< 55 °C)
Nominal discharge current (8/20) μs	I _n	
(L-PEN)	25 kA	-
(L-N)	-	25 kA
(L-PE)	-	25 kA
(N-PE)	-	100 kA
Maximum discharge current (8/20) μs	I _{max}	
(L-PEN)	50 kA	-
(L-N)	-	50 kA
(L-PE)	-	50 kA
Impulse discharge current (10/350) μs		
Peak value	I _{imp}	25 kA (L-PEN)
Charge		12.5 As (L-PEN)
Specific energy		160 kJ/Ω (L-PEN)
Impulse discharge current (10/350) μs (L-PE)		
Peak value	I _{imp}	25 kA
Charge		12.5 As
Specific energy		160 kJ/Ω

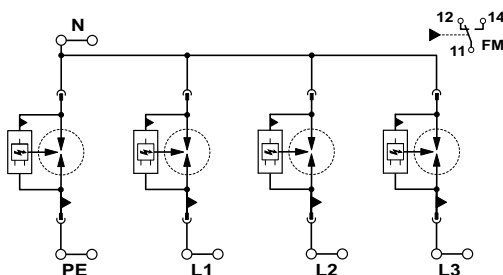
		SPRT12-350/3-AX	SPRT12-350/3+NPE-AX
Impulse discharge current (10/350) μ s (N-PE)			
Peak value	I_{imp}	-	100 kA
Charge		-	50 As
Specific energy		-	2500 kJ/ Ω
Total discharge current (10/350) μ s	I_{total}	75 kA	100 kA
Follow current interrupt rating	I_{fi}		
(L-PEN)		50 kA	-
(L-N)		-	50 kA
(N-PE)		-	100 A
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Voltage protection level	U_p		
(L-PEN)		≤ 1.5 kV	-
(L-N)		-	≤ 1.5 kV
(L-PE)		-	≤ 2.5 kV
(N-PE)		-	≤ 1.5 kV
Residual voltage	U_{res}		
(L-PEN)		≤ 1.5 kV (at I_n)	-
(L-N)		-	≤ 1.5 kV (at I_n)
(L-PE)		-	≤ 2.5 kV (at I_n)
(N-PE)		-	≤ 1.5 kV (at I_n)
Front of wave sparkover voltage at 6 kV (1.2/50) μ s			
(L-PEN)		≤ 1.5 kV	-
(L-N)		-	≤ 1.5 kV
(L-PE)		-	≤ 2.5 kV
(N-PE)		-	≤ 1.5 kV
TOV behavior at U_T			
(L-PEN)		415 V AC (5 s / withstand mode)	-
		457 V AC (120 min / withstand mode)	-
(L-N)		-	415 V AC (5 s / withstand mode)
			457 V AC (120 min / withstand mode)
(N-PE)		-	1200 V AC (200 ms / withstand mode)
Response time	t_A	≤ 100 ns	≤ 100 ns
Current tripping factor	k	1.6	1.6
Max. backup fuse with branch wiring		315 A (gG)	315 A (gG)
Max. backup fuse with V-type through wiring (at 35 mm ²)		125 A (gG)	125 A (gG)
Additional technical data			
Follow current interrupt rating	I_{fi}	100 kA (264 V AC)	100 kA (264 V AC) (L-N)
Short-circuit current rating	I_{SCCR}	100 kA (264 V AC)	100 kA (264 V AC)
Remote signaling			
Connection name		Remote fault indicator contact	Remote fault indicator contact
Switching function		PDT contact	PDT contact
Connection method		Plug-in/screw connection via COMBICON	Plug-in/screw connection via COMBICON
Operating voltage		12 V AC ... 250 V AC 125 V DC (200 mA DC)	12 V AC ... 250 V AC 125 V DC (200 mA DC)
Operating current		10 mA AC ... 1 A AC 1 A DC (30 V DC)	10 mA AC ... 1 A AC 1 A DC (30 V DC)
Screw thread		M2	M2
Conductor cross section			
flexible		0.14 mm ² ... 1.5 mm ²	0.14 mm ² ... 1.5 mm ²
solid		0.14 mm ² ... 1.5 mm ²	0.14 mm ² ... 1.5 mm ²
AWG		28 ... 16	28 ... 16
Stripping length		7 mm	7 mm
Tightening torque		0.25 Nm	0.25 Nm
Connection data			
Connection method		Screw terminal blocks	Screw terminal blocks
Screw thread		M5	M5
Connection technology		Biconnect terminal block	Biconnect terminal block
Conductor cross section			
flexible, solid		2.5 mm ² ... 35 mm ²	2.5 mm ² ... 35 mm ²
AWG		13 ... 2	13 ... 2
Stripping length		18 mm	18 mm
Connection method		Fork-type cable lug	Fork-type cable lug
Diameter		5 mm	5 mm
Conductor cross section flexible		1.5 mm ² ... 16 mm ²	1.5 mm ² ... 16 mm ²
Tightening torque		4.5 Nm	4.5 Nm

Circuit diagrams

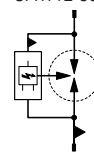
SPRT12-350/3-AX



SPRT12-350/3+NPE-AX

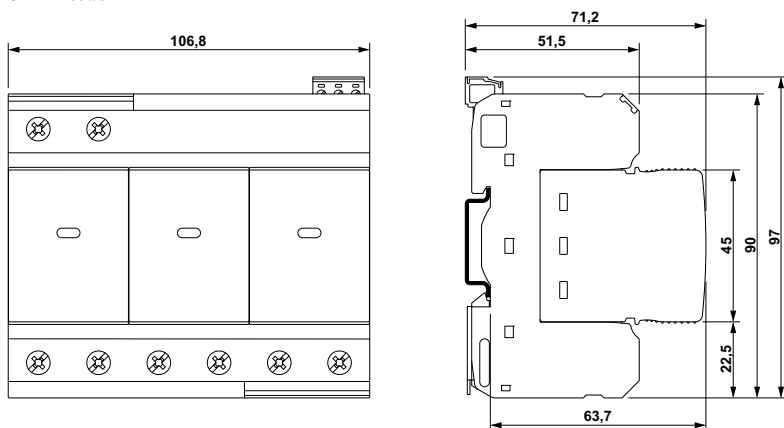


SPRT12-350, SPRT12-350/NPE

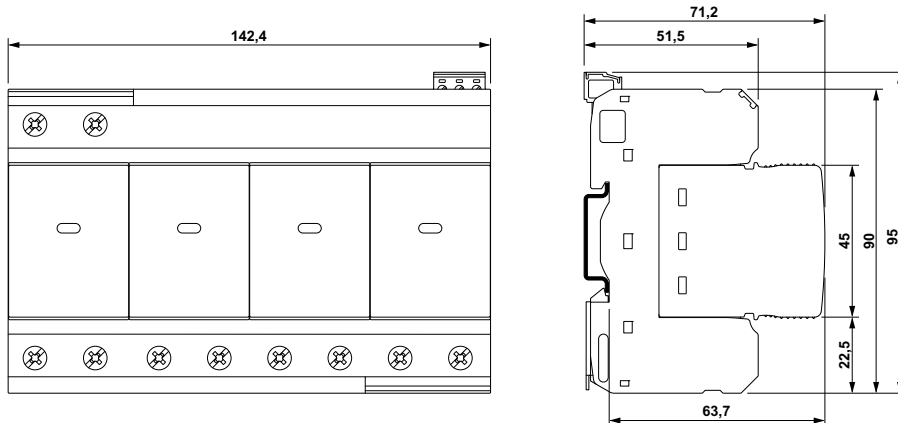


Dimensions (mm)

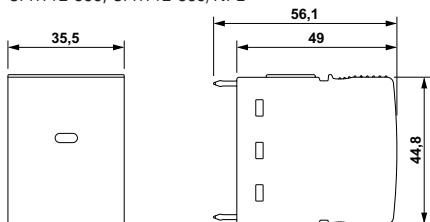
SPRT12-350/3-AX



SPRT12-350/3+NPE-AX



SPRT12-350, SPRT12-350/NPE



SG29612



SPBT12-280/3

Description	Type Designation	Article No.	Units per package
Lightning current arrester - surge arrester sets, Lightning protection classes III, IV			
Without remote indication			
TN-S/TT Set 1+N Set	SPBT12-280-1+NPE50	184752	1 / 30
TN-S-Set 2pole	SPBT12-280/2	158309	1 / 60
TN-C-Set 3pole	SPBT12-280/3	158330	1 / 40
TN-S-Set 4pole	SPBT12-280/4	158331	1 / 30
TN-S/TT Set 3+N Set	SPBT12-280-3+NPE50	184750	1 / 60
TN-S/TT Set 3+N Set with busbar	SPBT12-280-3+NPE50/BB	184751	1
TN-S/TT-Set 1+1pole	SPBT12-280-1+NPE	158308	1 / 40
TN-S/TT-Set 3+1pole	SPBT12-280-3+NPE	158332	1 / 20
TN-S/TT-Set 3+1pole	SPBT12-280-3+NPE/BB	158333	1
Accessories			
Auxiliary switch for SPBT12-280	ASAXSC-SPM	131785	4 / 120
Busbar	ZV-KSBI...		

SG27112



SPBT12-280/1

sg63312

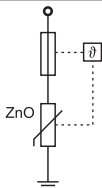


Impulse current I_{imp} (10/350) μ s	Type Designation	Article No.	Units per package
Lightning current arrester - surge arrester SPBT12			
Complete			
12.5 kA L - (PE) N	SPBT12-280/1	158306	12 / 120
50 kA N-PE	SPBT12-NPE50	184749	1 / 60
100 kA N-PE	SPBT12-NPE100	158307	1 / 60
Insert			
12.5 kA Insert	SPBT12-280	167341	4 / 120

Description Surge Protective Class T1&T2

- Field of application:
For the protection of low voltage distribution systems against transient overvoltage caused by direct and indirect lightning stroke and switching operations
- Application according to IEC 60364-5-53 Clause 534
- Test class **I**, **II** according to IEC 61643-1
- SPD-type **T1**, **T2** according to EN 61643-11
- Lightning protection classes III and IV according to IEC 62305
- Busbars ZV-KSBI are available for all customary applications

Technical Data

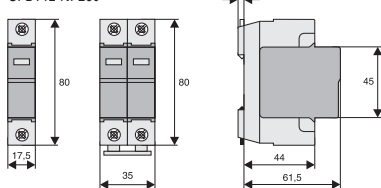
		SPBT12-280...	SPBT12-NPE50	SPBT12-NPE100
Electrical	per pole			
Responding time (rate of voltage rise 5 kV/μs)		< 25 ns	< 100 ns	< 100 ns
Voltage protection level	U_p	< 1.5 kV	< 1.4 kV	< 1.5 kV
Voltage protection level at 5 kA (8/20) μs	U_p	950 V	—	—
Max. continuous operating voltage	U_c	280 VAC	260 VAC	255 VAC
TOV test value	U_T	370 VAC (5 s)	1200 VAC (200 ms)	1200 VAC (200 ms)
Rated frequency		50/60 Hz	50/60 Hz	50/60 Hz
Open circuit voltage	U_{oc}	10 kV	—	20 kV
Nominal discharge current (8/20) μs	I_n	25 kA	50 kA	100 kA
Max. discharge current	I_{max}	50 kA	100 kA	100 kA
Impulse current (10/350) μs	I_{imp}			
Peak current		12.5 kA	50 kA	100 kA
Charge Q		6.25 As	25 As	50 As
Specific energy		39,1 kJ/Ω	625 kJ/Ω	2500 kJ/Ω
Follow current interrupt rating	I_{fi}	—	100 A _{r.m.s.}	100 A _{r.m.s.}
Maximum back-up fuse		160 AgL/gG	—	—
Maximum short-circuit current		50 A _{r.m.s.}	—	—
Connection diagram				

Mechanical

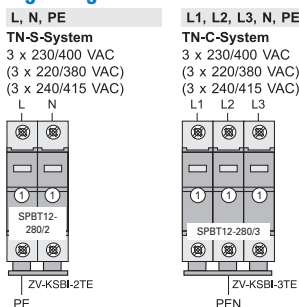
Frame size	45 mm	45 mm	45 mm
Device height	80 mm	80 mm	80 mm
Device width	17.5 mm	17.5 mm	35 mm
Weight	121 g	93 g	250 g
Permitted ambient temperature	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C
Degree of protection (built-in)	IP40	IP40	IP40
Upper and lower lift terminal capacity	4 - 25 mm²	top 4 - 50 mm²; bottom 4 - 35 mm²	4 - 35 mm²
Upper and lower open mouthed terminals for busbar thickness up to	1.5 mm	top - / bottom 1.5 mm	1.5 mm
Tightening torque of terminal screws	2.4 - 3 Nm	2.4 - 3 Nm	2.4 - 3 Nm
Quick fastening on DIN rail according to	IEC/EN 60715	IEC/EN 60715	IEC/EN 60715
Accessories: busbars 16 mm²	Type ZV-KSBI ...	Type ZV-KSBI ...	Type ZV-KSBI ...

Dimensions (mm)

SPBT12-280 SPBT12-NPE100
SPBT12-NPE50

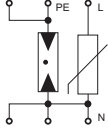
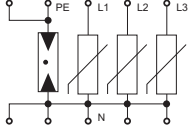


Lightning current arrester - surge arrester sets, Lightning protection classes III, IV



① ... SPBT12-280

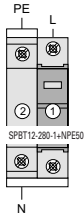
Technical Data

			SPBT12-280-1+NPE50	SPBT12-280-3+NPE50
Electrical			per pole	
Responding time (rate of voltage rise 5 kV/μs)	L-N / N-PE		< 25 ns / < 100 ns	< 25 ns / < 100 ns
Voltage protection level	L-N / L-PE / N-PE	U_p	< 1.5 kV	< 1.5 kV
Max. continuous operating voltage	L-N / N-PE	U_C	280 VAC / 260 VAC	280 VAC / 260 VAC
TOV test value		U_T		
5 s	L-N / L-PE		348 VAC / 370 VAC	348 VAC / 370 VAC
200 ms	N-PE		1200 VAC	1200 VAC
Rated frequency			50/60 Hz	50/60 Hz
Open circuit voltage		U_{oc}	10 kV	20 kV
Nominal discharge current (8/20) μs	L-N / N-PE	I_n	25 kA / 50 kA	3x25 kA / 50 kA
Max. discharge current	L-N / N-PE	I_{max}	50 kA / 100 kA	3x50 kA / 100 kA
Impulse current (10/350) μs		I_{imp}		
Peak current	L-N / N-PE		12.5 kA / 50 kA	3x12.5 kA / 50 kA
Charge Q			25 As	25 As
Specific energy			625 kJ/Ω	625 kJ/Ω
Follow current interrupt rating	N-PE	I_{fi}	100 A _{r.m.s.}	100 A _{r.m.s.}
Maximum back-up fuse			—	—
Maximum short-circuit current			—	—
Connection diagram				
Mechanical				
Frame size			45 mm	45 mm
Device height			80 mm	80 mm
Device width			35 mm	70 mm
Weight			218 g	470 g
Permitted ambient temperature			-40°C to +70°C	-40°C to +70°C
Degree of protection (built-in)			IP40	IP40
Upper and lower lift terminal capacity				
L, N			4 - 25 mm ²	4 - 25 mm ²
N, PE			4 - 50 mm ²	4 - 50 mm ²
Upper and lower open mouthed terminals for busbar thickness up to			1.5 mm	1.5 mm
Tightening torque of terminal screws			2.4 - 3 Nm	2.4 - 3 Nm
Quick fastening on DIN rail according to			IEC/EN 60715	IEC/EN 60715
Accessories: busbars 16 mm ²			Type ZV-KSBI ...	Type ZV-KSBI ...

Lightning current arrester - surge arrester sets, Lightning protection classes III, IV

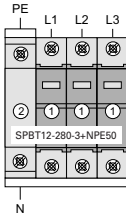
L, N, PE

TN-S-System
 3 x 230/400 VAC
 (3 x 220/380 VAC)
 (3 x 240/415 VAC)

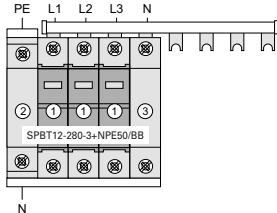


L1, L2, L3, N, PE

TN-S/TT-System
 3 x 230/400 VAC
 (3 x 220/380 VAC)
 (3 x 240/415 VAC)

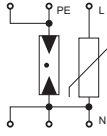
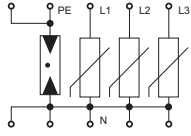


TN-S/TT-System
 3 x 230/400 VAC
 (3 x 220/380 VAC)
 (3 x 240/415 VAC)

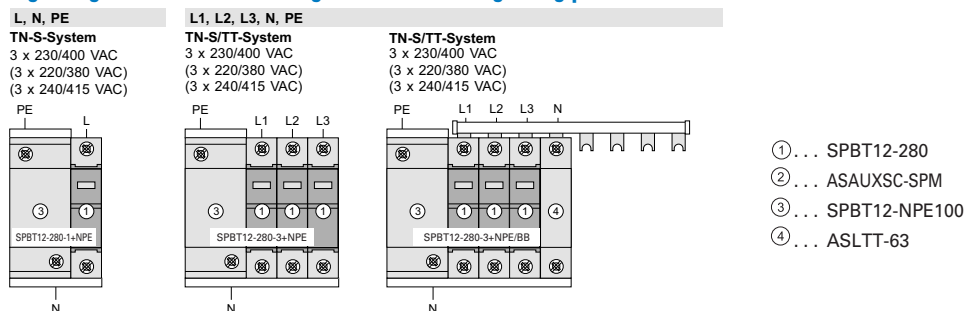


- ① ... SPBT12-280
- ② ... SPBT12-NPE50
- ③ ... ASLTT-63

Technical Data

		SPBT12-280-1+NPE		SPBT12-280-3+NPE
Electrical		per pole		
Responding time (rate of voltage rise 5 kV/μs)	L-N / N-PE		< 25 ns / < 100 ns	< 25 ns / < 100 ns
Voltage protection level	L-N / L-PE / N-PE	U _p	< 1.5 kV	< 1.5 kV
Max. continuous operating voltage	L-N / N-PE	U _c	280 VAC / 255 VAC	280 VAC / 255 VAC
TOV test value		U _T		
5 s	L-N / L-PE		348 VAC / 370 VAC	348 VAC / 370 VAC
200 ms	N-PE		1200 VAC	1200 VAC
Rated frequency			50/60 Hz	50/60 Hz
Open circuit voltage		U _{oc}	10 kV	20 kV
Nominal discharge current (8/20) μs	L-N / N-PE	I _n	25 kA / 100 kA	3x25 kA / 100 kA
Max. discharge current	L-N / N-PE	I _{max}	50 kA / 100 kA	3x50 kA / 100 kA
Impulse current (10/350) μs		I _{imp}		
Peak current	L-N / N-PE		12.5 kA / 100 kA	3x12.5 kA / 100 kA
Charge Q			50 As	50 As
Specific energy			2500 kJ/Ω	2500 kJ/Ω
Follow current interrupt rating	N-PE	I _{fi}	100 A _{r.m.s.}	100 A _{r.m.s.}
Maximum back-up fuse			160 AgL/gG	160 AgL/gG
Maximum short-circuit current			50 kA _{r.m.s.}	50 kA _{r.m.s.}
Connection diagram				
Mechanical				
Frame size			45 mm	45 mm
Device height			80 mm	80 mm
Device width			52.5 mm	87.5 mm
Weight			375 g	626 g
Permitted ambient temperature			-40°C to +70°C	-40°C to +70°C
Degree of protection (built-in)			IP40	IP40
Upper and lower lift terminal capacity				
L, N			4 - 25 mm ²	4 - 25 mm ²
N, PE			4 - 35 mm ²	4 - 35 mm ²
Upper and lower open mouthed terminals for busbar thickness up to			1.5 mm	1.5 mm
Tightening torque of terminal screws			2.4 - 3 Nm	2.4 - 3 Nm
Quick fastening on DIN rail according to			IEC/EN 60715	IEC/EN 60715
Accessories: busbars 16 mm ²			Type ZV-KSBI ...	Type ZV-KSBI ...

Lightning current arrester - surge arrester sets, Lightning protection classes III, IV



Poles	Max. Continuous Operating Voltage U_c	I_n (8/20) μ s	Type Designation	Article No.	Units per package
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Plug-in surge arrester SPCT2. 1- to 4pole

Complete (2- and multi-pole surge arresters are supplied with busbar)

1pole	75 VAC	20 kA	SPCT2-075/1	167578	12/120
1pole	135 VAC	20 kA	SPCT2-135/1	167583	12/120
1pole	175 VAC	20 kA	SPCT2-175/1	167588	12/120
1pole	280 VAC	20 kA	SPCT2-280/1	167593	12/120
1pole	335 VAC	20 kA	SPCT2-335/1	167598	12/120
1pole	385 VAC	20 kA	SPCT2-385/1	167603	12/120
1pole	460 VAC	20 kA	SPCT2-460/1	167608	12/120
1pole	580 VAC	20 kA	SPCT2-580/1	167613	12/120
1pole	260 VAC	30 kA	SPCT2-NPE60/1	167618	12/120
2pole	75 VAC	2x20 kA	SPCT2-075/2	167579	1/60
2pole	135 VAC	2x20 kA	SPCT2-135/2	167584	1/60
2pole	175 VAC	2x20 kA	SPCT2-175/2	167589	1/60
2pole	280 VAC	2x20 kA	SPCT2-280/2	167594	1/60
2pole	335 VAC	2x20 kA	SPCT2-335/2	167599	1/60
2pole	385 VAC	2x20 kA	SPCT2-385/2	167604	1/60
2pole	460 VAC	2x20 kA	SPCT2-460/2	167609	1/60
2pole	580 VAC	2x20 kA	SPCT2-580/2	167614	1/60
3pole	75 VAC	3x20 kA	SPCT2-075/3	167580	1/40
3pole	135 VAC	3x20 kA	SPCT2-135/3	167585	1/40
3pole	175 VAC	3x20 kA	SPCT2-175/3	167590	1/40
3pole	280 VAC	3x20 kA	SPCT2-280/3	167595	1/40
3pole	335 VAC	3x20 kA	SPCT2-335/3	167600	1/40
3pole	385 VAC	3x20 kA	SPCT2-385/3	167605	1/40
3pole	460 VAC	3x20 kA	SPCT2-460/3	167610	1/40
3pole	580 VAC	3x20 kA	SPCT2-580/3	167615	1/40
4pole	75 VAC	4x20 kA	SPCT2-075/4	167581	1/30
4pole	135 VAC	4x20 kA	SPCT2-135/4	167586	1/30
4pole	175 VAC	4x20 kA	SPCT2-175/4	167591	1/30
4pole	280 VAC	4x20 kA	SPCT2-280/4	167596	1/30
4pole	335 VAC	4x20 kA	SPCT2-335/4	167601	1/30
4pole	385 VAC	4x20 kA	SPCT2-385/4	167606	1/30
4pole	460 VAC	4x20 kA	SPCT2-460/4	167611	1/30
4pole	580 VAC	4x20 kA	SPCT2-580/4	167616	1/30
1+N	280 VAC	20 kA	SPCT2-280-1+NPE	167619	1/60
1+N	335 VAC	20 kA	SPCT2-335-1+NPE	167621	1/60
1+N	385 VAC	20 kA	SPCT2-385-1+NPE	167623	1/60
1+N	460 VAC	20 kA	SPCT2-460-1+NPE	167625	1/60
1+N	580 VAC	20 kA	SPCT2-580-1+NPE	167627	1/60
3+N	280 VAC	20 kA	SPCT2-280-3+NPE	167620	1/30
3+N	335 VAC	20 kA	SPCT2-335-3+NPE	167622	1/30
3+N	385 VAC	20 kA	SPCT2-385-3+NPE	167624	1/30
3+N	460 VAC	20 kA	SPCT2-460-3+NPE	167626	1/30
3+N	580 VAC	20 kA	SPCT2-580-3+NPE	167628	1/30
3+N/BB	280 VAC	3x20 kA	SPCT2-280-3+NPE/BB	167629	1
3+N/BB	335 VAC	3x20 kA	SPCT2-335-3+NPE/BB	167630	1
3+N/BB	385 VAC	3x20 kA	SPCT2-385-3+NPE/BB	167631	1
3+N/BB	460 VAC	3x20 kA	SPCT2-460-3+NPE/BB	167632	1

Plug-in surge arrester SPCT2. Insert

Insert 1pole

Insert	75 VAC	20 kA	SPCT2-075	167577	4/120
Insert	135 VAC	20 kA	SPCT2-135	167582	4/120
Insert	175 VAC	20 kA	SPCT2-175	167587	4/120
Insert	280 VAC	20 kA	SPCT2-280	167592	4/120
Insert	335 VAC	20 kA	SPCT2-335	167597	4/120
Insert	385 VAC	20 kA	SPCT2-385	167602	4/120
Insert	460 VAC	20 kA	SPCT2-460	167607	4/120
Insert	580 VAC	20 kA	SPCT2-580	167612	4/120
Insert	260 VAC	30 kA	SPCT2-NPE60	167617	4/120

SG04713



SPCT2-280/3

sg08213



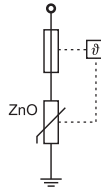
Description Surge Protective Class T2

- Field of application:
For the protection of low voltage distribution systems against transient overvoltage caused by direct and indirect lightning stroke and switching operations
- Test class **[II]** according to IEC 61643-1+A1
- SPD-type **[T2]** according to EN 61643-11
- Auxiliary switch ASAXSC-SPM for remote message transmission can be mounted onto the device

Technical Data

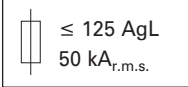
Inserts		SPCT2-075	SPCT2-135	SPCT2-175	SPCT2-280	SPCT2-335	SPCT2-385	SPCT2-460
Electrical								
Mechanical coding		x	x	x	x	x	x	x
Responding time (rate of voltage rise 5 kV/μs)		< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns
Voltage protection level at nominal discharge current / U_{oc}	U_p	< 550 V	< 800 V	< 1.0 kV	< 1.4 kV	< 1.6 kV	< 1.8 kV	< 2.2 kV
Voltage protection level at 5 kA (8/20) μs	U_n	400 V	550 V	700 V	1000 V	1200 V	1350 V	1700 V
Max. continuous operating voltage	U_c	75 VAC	135 VAC	175 VAC	280 VAC	335 VAC	385 VAC	460 VAC
TOV test value (5 s)	U_T	= U_c	= U_c	= U_c	350 VAC	415 VAC	415 VAC	580 VAC
Rated frequency		50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Open circuit voltage	U_{oc}	—	—	—	10 kV	5 kV	—	—
Nominal discharge current (8/20) μs	I_n	15 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Charge Q at I_n		0.43 As	0.57 As	0.57 As	0.57 As	0.57 As	0.57 As	0.57 As
Specific energy at I_n		3.2 kJ/Ω	5.7 kJ/Ω	5.7 kJ/Ω	5.7 kJ/Ω	5.7 kJ/Ω	5.7 kJ/Ω	5.7 kJ/Ω
Max. discharge current	I_{max}	30 kA	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA
Follow current interrupt rating	I_{fi}	—	—	—	—	—	—	—
Maximum back-up fuse		 ≤ 125 AgL 50 kA _{r.m.s.}		 PLHT-C100 20 kA _{r.m.s.}				
Maximum short-circuit current								

Connection diagram

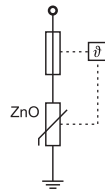


Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	
1pole	17.5 mm (1MU)
1+1pole, 2pole	35 mm (2MU)
3pole	52.5 mm (3TE)
3+1pole, 4pole	70 mm (4TE)
Mechanical coding	
1pole	x
1+1pole	yx
2pole	xx
3pole	xxx
3+1pole	yxxx
4pole	xxxx
Weight base 1P, 1+1P, 2P, 3P, 3+1P, 4P	53/120/120/180/240/240 g
Weight complete devices 1P, 1+1P, 2P, 3P, 3+1P, 4P	110/201/220/330/412/440 g
Permitted ambient temperature	-40°C to +70°C
Degree of protection (built-in)	IP40
Upper and lower lift terminal capacity	4 - 25 mm ²
Upper and lower open mouthed terminals for busbar thickness up to	1.5 mm
Tightening torque of terminal screws	2.4 - 3 Nm
Quick fastening on DIN rail according to	IEC/EN 60715
Accessories: busbars 16 mm ²	Type ZV-KSBI ...

Technical Data

Inserts	SPCT2-580	SPCT2-NPE60
Electrical		
Mechanical coding	x	y
Responding time (rate of voltage rise 5 kV/ μ s)	< 25 ns	< 100 ns
Voltage protection level at nominal discharge current / U_{oc}	U_p < 2.6 kV	< 1.0 kV
Voltage protection level at 5 kA (8/20) μ s	U_p 2000 V	—
Max. continuous operating voltage	U_c 580 VAC	260 VAC
TOV test value	U_T = U_c (5 s)	1200 VAC (200 ms)
Rated frequency	50/60 Hz	50/60 Hz
Open circuit voltage	U_{oc} —	—
Nominal discharge current (8/20) μ s	I_n 20 kA	30 kA
Charge Q at I_n	0.57 As	0.57 As
Specific energy at I_n	5.7 kJ/ Ω	5.7 kJ/ Ω
Max. discharge current	I_{max} 40 kA	60 kA
Follow current interrupt rating	I_f —	100 A _{r.m.s.}
Maximum back-up fuse		
Maximum short-circuit current		

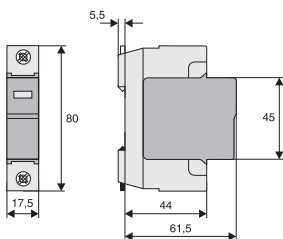
Connection diagram



Mechanical

Frame size	45 mm
Device height	80 mm
Device width	
1pole	17.5 mm (1MU)
1+1pole, 2pole	35 mm (2MU)
3pole	52.5 mm (3TE)
3+1pole, 4pole	70 mm (4TE)
Mechanical coding	
1pole	x
1+1pole	yx
2pole	xx
3pole	xxx
3+1pole	yxxx
4pole	xxxx
Weight base 1P, 1+1P, 2P, 3P, 3+1P, 4P	53/120/120/180/240/240 g
Weight complete devices 1P, 1+1P, 2P, 3P, 3+1P, 4P	110/201/220/330/412/440 g
Permitted ambient temperature	-40°C to +70°C
Degree of protection (built-in)	IP40
Upper and lower lift terminal capacity	4 - 25 mm ²
Upper and lower open mouthed terminals for busbar thickness up to	1.5 mm
Tightening torque of terminal screws	2.4 - 3 Nm
Quick fastening on DIN rail according to	IEC/EN 60715
Accessories: busbars 16 mm ²	Type ZV-KSBI ...

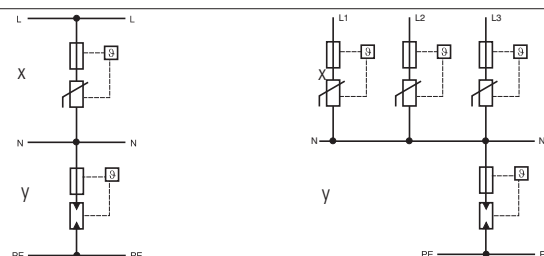
Dimensions (mm)



Technical Data

			SPCT2-1+NPE	SPCT2-3+NPE
Electrical				
Mechanical coding			yx	yxxx
Responding time (rate of voltage rise 5 kV/μs)	L-N/N-PE/L-PE		< 25ns/< 100ns/< 100ns	< 25ns/< 100ns/< 100ns
Max. continuous operating voltage	L-N/N-PE	U_C	335VAC/260VAC	280VAC/260VAC
TOV test value		U_T		
5 s	L-N		415 VAC	350 VAC
200 ms	N-PE		1200 VAC	1200 VAC
Rated frequency			50/60 Hz	50/60 Hz
Nominal discharge current (8/20) μs	L-N/N-PE/L-PE	I_n	20 kA	20 kA
Voltage protection level at I_n	L-N/N-PE/L-PE	U_p	≤ 1600V/≤ 1000V/≤ 1650V	≤ 1000V/≤ 1000V/≤ 1300V
Max. discharge current (8/20) μs	L-N/N-PE/L-PE	I_{max}	40 kA	40 kA
Follow current interrupt rating	N-PE	I_{fi}	100 A _{r.m.s.}	100 A _{r.m.s.}
Maximum back-up fuse			 ≤ 125 AgL	 PLHT-C100
Maximum short-circuit current			50 kA _{r.m.s.}	20 kA _{r.m.s.}

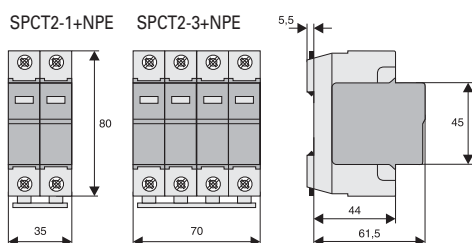
Connection diagram



Mechanical

Mechanical coding of base	yx	yxxx
Frame size	45 mm	45 mm
Device height	80 mm	80 mm
Device width	35 mm	70 mm
Weight	201 g	412 g
Permitted ambient temperature	-40°C to +70°C	-40°C to +70°C
Degree of protection (built-in)	IP40	IP40
Upper and lower lift terminal capacity	1 - 25 mm ²	1 - 25 mm ²
Upper and lower open mouthed terminals for busbar thickness up to	1.5 mm	1.5 mm
Tightening torque of terminal screws	2.4 - 3 Nm	2.4 - 3 Nm
Quick fastening on DIN rail according to	IEC/EN 60715	IEC/EN 60715
Accessories: busbars 16 mm ²	Type ZV-KSBI ...	Type ZV-KSBI ...

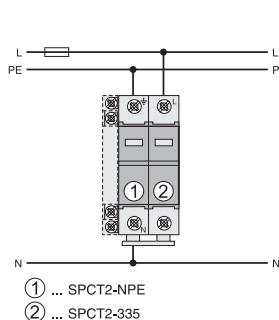
Dimensions (mm)



Application Examples

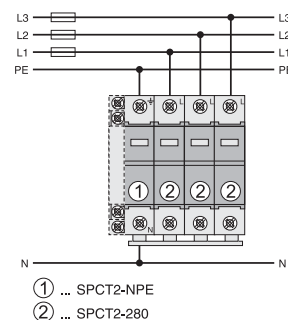
SPCT2-1+NPE

TN-, TT-System
3 x 230/400 VAC
3 x 240/415 VAC



SPCT2-3+NPE

TN-S-, TT-System
3 x 230/400 VAC
3 x 240/415 VAC



Surge arrester Sets

Surge Protective Class C, SPCT2

Surge Arrester Set SPCT2-335-3+NPE/BB

- The 3+1 circuit offers a universal solution for surge protection in low voltage distribution systems
- Suitable for TT- and TN-S-systems according to IEC 60364-5-53 Clause 534
- Remote message transmission is possibly by mounting auxiliary switch ASAXSC-SPM
- Busbar connected, minimum installation work required

Content

SPCT2-335-3+NPE/BB	
- 1 unit SPCT2-335-3+NPE	Surge arrester
- 1 unit ASLTT-63	Lead-through terminal
- busbar included	

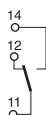
Description Auxiliary switch for Surge arrester ASAXSC-SPM

- Field of application:
For mounting onto surge protective devices for external defect message transmission
- Design basically in accordance with IEC 60947-5-1
- Can be mounted subsequently
- Suitable with SPBT12, SPCT2, SPET2, SPDT3, SP-B+C

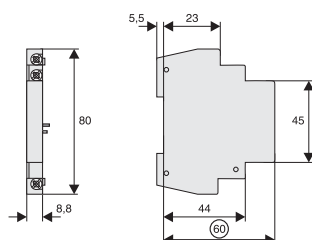
Technical Data

	ASAXSC-SPM
Electrical	
Rated insulation voltage	250 V
Rated frequency	50/60 Hz
Switching contact	1 CO
Minimum voltage per contact	24 VAC
Rated operational current AC12	2 A / 250 VAC
Maximum back-up fuse	2 A gL
Overvoltage category	IV
Pollution degree	2
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	8.8 mm
Mounting	Screw-mounting
Degree of protection, built-in	IP40
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274
Upper and lower terminals	lift terminals
Terminal capacity	2 x 2.5 mm ²
Tightening torque of terminal screws	0.8 - 1 Nm

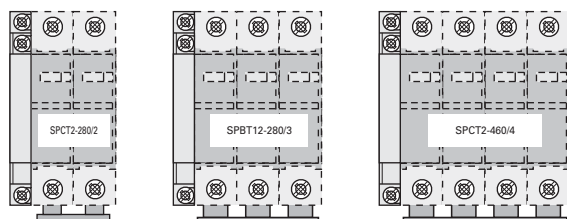
Connection diagram



Dimensions (mm)



Application Examples



Description Lead-Through Terminal for Surge Protective Devices, SPD-type 2 (Surge Protective Class C), ASLTT-63

- The lead-through terminal permits orderly wiring of SPDs types 2 (Surge Protective Class C).
It serves as lead-through terminal in circuits requiring vertical connections from the upper to the lower SPD connection level.
- 1pole
- Suitable for standard busbar connection to EATON switchgear

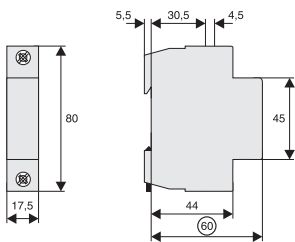
Technical Data

	ASLTT-63
Electrical	
Rated voltage	690 V AC/DC
Rated current	63 A
Rated frequency	50/60 Hz
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm
Mounting	quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274
Upper and lower terminals	Lift- and Maulklemme
Terminal capacity	1 - 25 mm ²
Busbar thickness	0.8 - 2 mm
Tightening torque of terminal screws	2.4 - 3 Nm

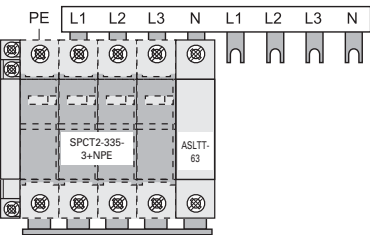
Connection diagram



Dimensions (mm)



Application Example / Connection type 2 according to IEC 60364-5-53 Clause 534



3.212 Surge Protection

xPole

Surge Protective Class T3 (formerly D), SPDT3

SG03213



SPDT3-335-1+NPE

Poles	Max. Continuous Operating Voltage U_c	Type Designation	Article No.	Units per package
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Surge arrester SPDT3

Complete (2-pole surge arresters are supplied with busbar)

1pole+N	335 VAC	SPDT3-335-1+NPE	170487	1/60
2pole	280 VAC	SPDT3-280/2	170485	1/60

Max. Continuous Operating Voltage U_c	Type Designation	Article No.	Units per package
--	---------------------	-------------	----------------------

Surge arrester SPDT3, Insert

Insert 1pole

280 VAC	SPDT3-280	170484	2/120
335 VAC	SPDT3-335	170486	2/120

sg03413



Description Surge Protective Class T3

- Field of application:
For fine protection of user equipment against transient overvoltage
- For mounting on DIN rails in distribution boxes for electrical installation
- No decoupling from upstream surge protection in the low voltage distribution system required
- Test class III according to IEC 61643-1+A1
- SPD-type T3 according to EN 61643-11
- Suitable for high back-up fuse 63 A gL / C 63
- Auxiliary switch ASAXSC-SPM for remote message transmission can be mounted onto the device

Technical Data

SPDT3-335-1+NPE			SPDT3-280/2			
Electrical						
Mechanical coding		yx		xx		
Responding time (rate of voltage rise 5 kV/μs)		L-N/N-PE/L-PE	< 25ns/< 100ns/< 100ns	L1-L2(N)/L2(N)-PE/L1-PE	< 25ns	
Max. continuous operating voltage		U _C	L-N/N-PE	335VAC/260VAC	L1-L2(N)/L2(N)-PE	280VAC
TOV test value		U _T				
5 s		L-N/L-PE	350VAC/416VAC	L-N/L-PE	350VAC/416VAC	
200 ms		N-PE	1200VAC	N-PE	1200VAC	
Rated frequency			50/60 Hz		50/60 Hz	
Open circuit voltage		U _{OC}	L-N/N-PE/L-PE	6kV	L1-L2(N)/L2(N)-PE/L1-PE	6kV
Voltage protection level at UOC		U _p	L-N/N-PE/L-PE	≤900V/≤1500V/≤900V	L1-L2(N)/L2(N)-PE	≤900V
Nominal discharge current (8/20) μs		I _n	L-N/N-PE/L-PE	2.5kA	L1-L2(N)/L2(N)-PE	5kA
Voltage protection level at I _n		U _p	L-N/N-PE/L-PE	≤1000V/≤1500V/≤1000V	L1-L2(N)/L2(N)-PE	≤950V
Max. discharge current (8/20) μs		I _{max}	L-N/N-PE/L-PE	10kA	L1-L2(N)/L2(N)-PE/L1-PE	10kA
Follow current interrupt rating		I _{fi}	N-PE	100 A _{r.m.s.}	—	
Maximum back-up fuse		 ≤ 125 AgL 50 kA _{r.m.s.}		 ≤ C63 10 kA _{r.m.s.}		
Maximum short-circuit current						

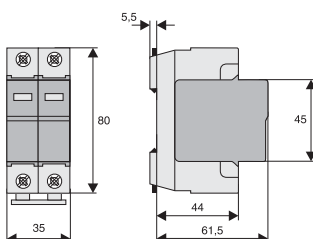
Connection diagram



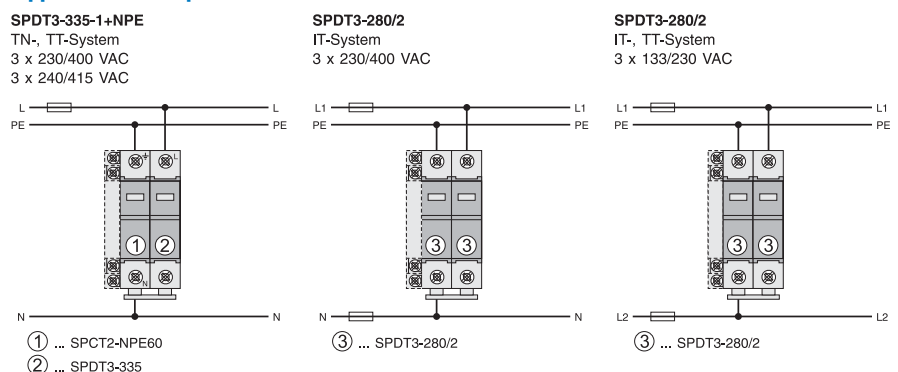
Mechanical

Mechanical coding of base	yx	xx
Frame size	45 mm	45 mm
Device height	80 mm	80 mm
Device width	35 mm	35 mm
Weight	220 g	220 g
Permitted ambient temperature	-40°C to +70°C	-40°C to +70°C
Degree of protection (built-in)	IP40	IP40
Upper and lower lift terminal capacity	1 - 25 mm ²	1 - 25 mm ²
Upper and lower open mouthed terminals for busbar thickness up to	1.5 mm	1.5 mm
Tightening torque of terminal screws	2.4 - 3 Nm	2.4 - 3 Nm
Quick fastening on DIN rail according to	IEC/EN 60715	IEC/EN 60715

Dimensions (mm)



Application Examples



3.214 Surge Protection

Surge Protective Class T3 (formerly D)

xPole



Description	Type Designation	Article No.	Units per package
19" Multiple Outlet Strips with Surge Protection SPD-STL/19/7F-S/BL			
7outlets plus switch,, DIN	SPD-STL/19/7F-S/BL	283449	1
7outlets, UTE	SPD-STL/19/7F-S/BL/UTE	290032	1

Description 19" Multiple Outlet Strips with Surge Protection SPD-STL/19/7F-S/BL

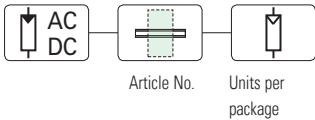
- Can be mounted on 19" rails
- Installation height: 1U
- Diagonally arranged socket outlets with earthing contact according to DIN 49440 or NF-C61314 (UTE), 16 A / 250 V AC
- Connection cable of 2.5 m H05VV-F 3G 1.5 mm² with an angled connector
- On/Off switch, 2-pole, lit
- Max. power consumption: 3680 W
- Degree of protection: IP20
- Temperature range: -5 up to +40 °C
- Surge protection tested according to IEC 61643-1 (Class: SPD Type 3)
- Response time: < 25 ns
- Dimensions: 482.6x44x44.45 mm (WxDxH)
- Material: Enclosure made of aluminium, front cover made of plastic similar to RAL 7035
- Weight: approx. 0.9 kg
- Scope of delivery: 1 Outlet strip incl. 19" fixing bracket, different fixing material



Description	Type Designation	Article No.	Units per package
Surge Protection Multiple Outlet Strips with High-Range Filter and Energy Absorption for full Equipment Protection SPD-STL/6F-S			
4 outlets plus switch, DIN	Eaton Protection Strip 4 DIN	PS4D	1
6 outlets plus switch, DIN	Eaton Protection Strip 6 DIN	PS6D	1
6 outlets plus switch, DIN+ISDN	Eaton Protection Strip 6 Tel@ DIN	PS6T	1
19" fixing bracket for SPD-STL/6F-S (1U)	NWS-HW/19/SPD-STL/6F-S	166364	1

Description Surge Protection Multiple Outlet Strips with High-Range Filter and Energy Absorption for full Equipment Protection SPD-STL/6F-S

- Suitable for wall-mounting in indoor areas
- A 19" fixing bracket is available as an option for mounting the strip in a cabinet
- Diagonally arranged socket outlets with earthing contact according to DIN 49440, 10 A / 250 V AC
- Connection cable of 1.0 m H05VV-F 3G 1.0 mm² with an angled connector
- On/Off switch with MCB that can be reset
- Max. power consumption: 2500 W
- Degree of protection: IP20
- Temperature range: -15 to +70 °C
- Surge protection tested according to IEC 61643-1 (Class: SPD Type 3)
- Response time: < 1 ns
- Dimensions: 390x42x52 mm (WxDxH)
- Material: Enclosure made of plastic similar to RAL 7021
- Weight: approx. 0.4 kg
- Scope of delivery: 1 Multiple outlet strip



Max. continuous operating voltage
 U_c

Type
Designation

Plug-in Surge Arrester SPPVT2 for Photovoltaic application

- For insulated and earthed systems

sg04914



600 V DC	SPPVT2-06-2+PE	176088	1 / 40
1000 V DC	SPPVT2-10-2+PE	176090	1 / 40

With auxiliary switch

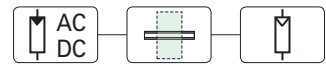
600 V DC	SPPVT2-06-2+PE-AX	176087	1 / 40
1000 V DC	SPPVT2-10-2+PE-AX	176089	1 / 40

sg04714



Inserts for replacement

600 V DC	SPPVT2-06	176091	1 / 50
1000 V DC	SPPVT2-10	176092	1 / 50

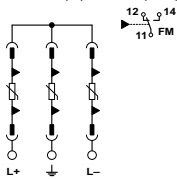


Description Plug-in Surge Arrester SPPVT2-...-2+PE(-AX)

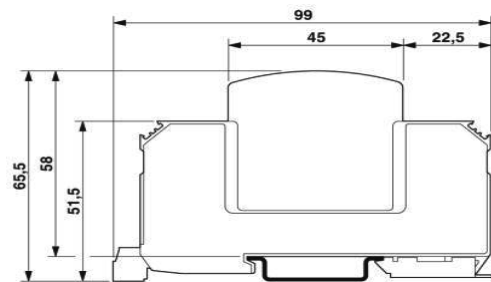
- Increased safety through compliance with the EN 50539-11 standard
- Safe contacting thanks to integrated redary bolts
- Easy to replace thanks to a plug-type arrester
- Optimal protection of the inverter thanks to a low protection level
- Selective replacement of defective connectors thanks to a visual status indicator
- Optimized planning of maintenance interventions thanks to remote signalling (Type -AX)
- No wrong connecting possible thanks to coded connectors and base elements

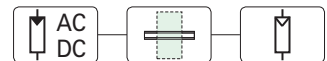
Connection diagram

SPPVT2(H)-...-2+PE(-AX)



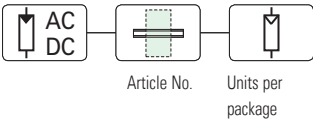
Dimensions (mm)





Technical Data

	SPPVT2-06-2+PE(-AX)	SPPVT2-10-2+PE(-AX)
Environmental condition		
Degree of protection	IP20	IP20
Ambient temperature of operation	-40 ... +80°C	-40 ... +80°C
Altitude	≤ 2000 m	≤ 2000 m
Allowed range of air humidity of operation	5 ... 95 %	5 ... 95 %
General		
Standards/regulations	EN 50539-11	EN 50539-11
EN Test class	PV T2	PV T2
SPD failure performance	OCM	OCM
Mounting	DIN rail 35 mm	DIN rail 35 mm
Material of the enclosure	PBT/PA	PBT/PA
Pollution degree	II	II
Flammability class according to UL 94	V0	V0
Signal for surge protection defective	visual, with remote signalling contact	visual, with remote signalling contact
Predictive circuit on the direct current side (DC)		
Max. continuous operating voltage	U_{CPV} 800 V DC	1170 V DC
No-load output voltage	U_{OCSTC} ≤ 670 V DC	≤ 970 V DC
Short-circuit current strength	I_{SCP} 2000 A	2000 A
Nominal load current	I_L 80 A DC	80 A DC
Predictive conductor current	I_{PE}	
DC	≤ 20 µA	≤ 20 µA
AC	≤ 300 µA	≤ 250 µA
Standby power consumption	P_C ≤ 20 mVA	≤ 25 mVA
Nominal discharge current (8/20) µs	15 kA	15 kA
Maximum discharge current (8/20) µs	I_{max} 40 kA	40 kA
Total lightning discharge current (8/20) µs	I_{Total} 40 kA	40 kA
Voltage protection level (L+) - (L-)	U_p ≤ 2.7 kV	≤ 3.7 kV
Voltage protection level (L+/L-) - PE	U_p ≤ 2.7 kV	≤ 3.7 kV
Responding time	t_A ≤ 25 ns	≤ 25 ns
Size		
Height	99 mm	99 mm
Width	53.4 mm	53.4 mm
Depth	65.5 mm	65.5 mm
Module units (MU)	3 MU	3 MU
Weight		
...+PE	gross 313 g / net 288 g	gross 337 g / net 311 g
...+PE-AX	gross 320 g / net 294 g	gross 343 g / net 317 g
Connection data		
Type of connection	Screw connection	Screw connection
Lift terminal capacity		
flexible	1.5-25 mm ²	1.5-25 mm ²
solid	1.5-35 mm ²	1.5-35 mm ²
Bolt thread	M5	M5
Tightening torque	4.5 Nm	4.5 Nm
Stripping length	16 mm	16 mm
Type of connection	Biconnect-terminals	Biconnect-terminals
Lift terminal capacity		
solid	1.5-16 mm ²	1.5-16 mm ²
Bolt thread	M6	M6
Tightening torque	30 lb in	30 lb in
Auxiliary Switch		
Switching function	CO, 1-pole	CO, 1-pole
Rated operational voltage	5 ... 250 V AC, 30 V DC	5 ... 250 V AC, 30 V DC
Rated operational current	5 mA ... 1.5 A AC, 1.5 A DC	5 mA ... 1.5 A AC, 1.5 A DC
Type of connection	MC 1.5/3	MC 1.5/3
Lift terminal capacity		
flexible	0.14-1.5 mm ²	0.14-1.5 mm ²
solid	0.14-1.5 mm ²	0.14-1.5 mm ²
Lift terminal capacity AWG/kcmil	30 ... 14	30 ... 14
Bolt thread	M2	M2
Tightening torque	0.25 Nm, 2 ... 4 lb in	0.25 Nm, 2 ... 4 lb in
Stripping length	7 mm	7 mm



Max. continuous operating voltage
 U_c

Type
Designation

Plug-in Surge Arrester SPPVT12 for Photovoltaic application

- For insulated and earthed systems

sg04914



600 V DC	SPPVT12-06-2+PE	177258	1 / 40
1000 V DC	SPPVT12-10-2+PE	177256	1 / 40

With auxiliary switch

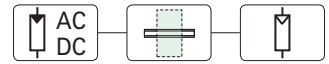
600 V DC	SPPVT12-06-2+PE-AX	177257	1 / 40
1000 V DC	SPPVT12-10-2+PE-AX	177255	1 / 40

sg04714



Inserts for replacement

600 V DC	SPPVT12-06	177259	1 / 50
1000 V DC	SPPVT12-10	177260	1 / 50

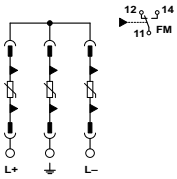


Description Plug-in Surge Arrester SPPVT12-...-2+PE(-AX)

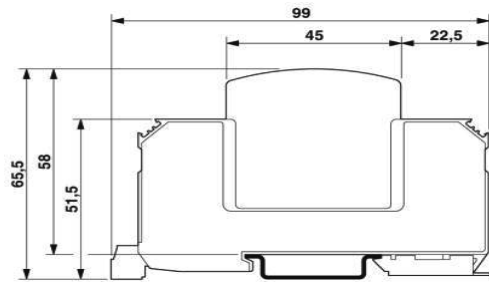
- Increased safety through compliance with the EN 50539-11 standard
- Safe contacting thanks to integrated redary bolts
- Easy to replace thanks to a plug-type arrester
- Optimal protection of the inverter thanks to a low protection level
- Selective replacement of defective connectors thanks to a visual status indicator
- Optimized planning of maintenance interventions thanks to remote signalling (Type -AX)
- No wrong connecting possible thanks to coded connectors and base elements
- Always the right arrester thanks to universal Type1/Type2 predictive components

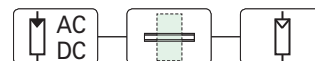
Connection diagram

SPPVT12-...-2+PE(-AX)



Dimensions (mm)





Technical Data

	SPPVT12-06-2+PE(-AX)	SPPVT12-10-2+PE(-AX)
Environmental condition		
Degree of protection	IP20	IP20
Ambient temperature of operation	-40 ... +80°C	-40 ... +80°C
Altitude	≤ 2000 m	≤ 2000 m
Allowed range of air humidity of operation	5 ... 95 %	5 ... 95 %
General		
Standards/regulations	EN 50539-11	EN 50539-11
EN Test class	PV T1/PV T2	PV T1/PV T2
SPD failure performance	OCM	OCM
Mounting	DIN rail 35 mm	DIN rail 35 mm
Material of the enclosure	PBT/PA	PBT/PA
Pollution degree	II	II
Flammability class according to UL 94	V0	V0
Signal for surge protection defective	visual, with remote signalling contact	visual, with remote signalling contact
Predictive circuit on the direct current side (DC)		
Max. continuous operating voltage	U_{CPV} 720 V DC	1050 V DC
No-load output voltage	U_{OCSTC} ≤ 600 V DC	≤ 875 V DC
Short-circuit current strength	I_{SCPV} 2000 A	2000 A
Nominal load current	I_L 80 A DC	80 A DC
Predictive conductor current	I_{PE}	
DC	≤ 20 µA	≤ 20 µA
AC	≤ 350 µA	≤ 350 µA
Standby power consumption	P_C ≤ 20 mVA	≤ 25 mVA
Nominal discharge current (8/20) µs	15 kA	15 kA
Maximum discharge current (8/20) µs	I_{max} 40 kA	40 kA
Lightning test current (10/350) µs, Peak current	I_{imp} 5 kA	5 kA
Total lightning discharge current (8/20) µs	I_{Total} 7 kA	5 kA
Voltage protection level (L+) - (L-) U_p	≤ 2.6 kV	≤ 357 kV
Voltage protection level (L+/L-) - PE U_p	≤ 2.6 kV	≤ 3.5 kV
Responding time t_A	≤ 25 ns	≤ 25 ns
Required max. back-up fuse with stub-line wiring	not necessary	not necessary
Size		
Height	99 mm	99 mm
Width	53.4 mm	53.4 mm
Depth	65.5 mm	65.5 mm
Module units (MU)	3 MU	3 MU
Weight		
...+PE	gross 407 g / net 379 g	gross 407 g / net 379 g
...+PE-AX	gross 414 g / net 386 g	gross 414 g / net 386 g
Connection data		
Type of connection	Screw connection	Screw connection
Lift terminal capacity		
flexible	1.5-25 mm ²	1.5-25 mm ²
solid	1.5-35 mm ²	1.5-35 mm ²
Bolt thread	M5	M5
Tightening torque	4.5 Nm	4.5 Nm
Stripping length	16 mm	16 mm
Type of connection	Biconnect-terminals	Biconnect-terminals
Lift terminal capacity		
solid	1.5-16 mm ²	1.5-16 mm ²
Bolt thread	M6	M6
Tightening torque	30 lb in	30 lb in
Auxiliary Switch		
Switching function	CO, 1-pole	CO, 1-pole
Rated operational voltage	5 ... 250 V AC, 30 V DC	5 ... 250 V AC, 30 V DC
Rated operational current	5 mA ... 1.5 A AC, 1.5 A DC	5 mA ... 1.5 A AC, 1.5 A DC
Type of connection	MC 1.5/3	MC 1.5/3
Lift terminal capacity		
flexible	0.14-1.5 mm ²	0.14-1.5 mm ²
solid	0.14-1.5 mm ²	0.14-1.5 mm ²
Lift terminal capacity AWG/kcmil	30 ... 14	30 ... 14
Bolt thread	M2	M2
Tightening torque	0.25 Nm, 2 ... 4 lb in	0.25 Nm, 2 ... 4 lb in
Stripping length	7 mm	7 mm

	Poles	Type Designation	Article No.	Units per package
 Z-GV-U/9	Busbar Z-GV-U/ for SPI, SP-B+C			
	2	Z-GV-U/2	272588	20 / 1200
	3	Z-GV-U/3	272589	20 / 1200
	4	Z-GV-U/4	274080	20 / 1200
	5	Z-GV-U/5	274081	20 / 1200
	6	Z-GV-U/6	274082	20 / 400
	8	Z-GV-U/8	274083	20 / 200
	9	Z-GV-U/9	274084	20 / 200

Description busbar Z-GV-U/

- Busbars Z-GV-U/ permit to implement customary SPD combinations
- Suitable for SPI-..., SPB-D-125
- The rated cross-section of Z-GV-U/ is 16 mm²
- The busbars must be cut to length in some cases

Technical Data

Z-GV-U/	
Electrical	
Rated voltage	230/400 V, 50/60 Hz
Rated current	63 A
Mechanical	
Busbar cross section	16 mm² Cu

Design

 Z-GV-U/2

 Z-GV-U/3

 Z-GV-U/4

 Z-GV-U/5

 Z-GV-U/6

 Z-GV-U/8

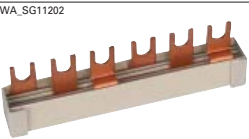
 Z-GV-U/9

3.222 Surge Protection

xPole

Busbar

Used for	Type Designation	Article No.	Units per package
Busbar Z-GV-16/3P-3TE/6			
for SPI and SPC	Z-GV-16/3P-3TE/6	267511	12 / 240



	Poles	Type Designation	Article No.	Units per package
Busbar ZV-KSBI for SPC				
 ZV-KSBI-2TE	2MU	ZV-KSBI-2MU	263961	10 / 600
 ZV-KSBI-3TE	3MU	ZV-KSBI-3TE	263962	10 / 600
 ZV-KSBI-3TE/S	3MU	ZV-KSBI-3TE/S	263963	10 / 600
 ZV-KSBI-3TE+HI	2MU+1.5MU	ZV-KSBI-3TE+HI	112370	50 / 150
 ZV-KSBI-4TE	4MU	ZV-KSBI-4TE	263964	10 / 600
 ZV-KSBI-5TE	5MU	ZV-KSBI-5TE	263965	10 / 200
 ZV-KSBI-5TE/N	5MU	ZV-KSBI-5TE/N	263966	10 / 200
 ZV-KSBI-5TE+HI	2MU+3x1.5MU	ZV-KSBI-5TE+HI	112371	50 / 150
 ZV-KSBI-6TE	6MU	ZV-KSBI-6TE	113118	50 / 500
 ZV-KSBI-7TE	7MU	ZV-KSBI-7TE	263967	50 / 500
 ZV-KSBI-7TE/S	7MU	ZV-KSBI-7TE/S	263968	10 / 100
 ZV-KSBI-7TE/N	7MU	ZV-KSBI-7TE/N	263969	10 / 100
 ZV-KSBI-9TE/N	9MU	ZV-KSBI-9TE/N	266874	50 / 500
 ZV-KSBI-11TE	11MU	ZV-KSBI-11MU	263970	50 / 500

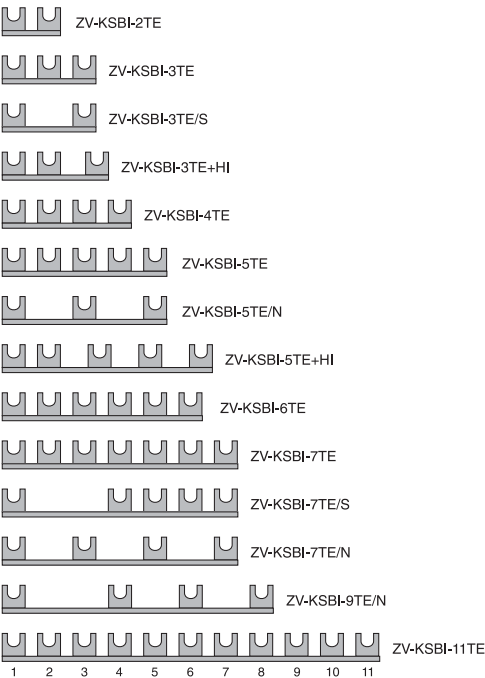
Description busbar ZV-KSBI

- With the ZV KSBI busbar bracket you can realize the common combinations of arrestors.
- Used for SPB-..., SPC-..., Z-D63
- The rated cross-section of the ZV-KSBI bridge metals is 16 mm²
- The busbar mounting bracket can be shortened

Technical Data

	Z-GV-U/
Electrical	
Rated voltage	230/400 V, 50/60 Hz
Rated current	63 A
Mechanical	
Busbar cross section	16 mm ² Cu

Design



SG10611



SG83911



SG82911



Description

- Switches
- Installation Contactors
- Relays
- Signalling Devices
- Transformers

SG10611



SG10711



SG10811



SG10911



Rated current (A)	Poles	Type Designation	Article No.	Units per package
Main Load Disconnecter Switch (Isolator) IS				
16	1	IS-16/1	276254	12/120
16	2	IS-16/2	276255	1/60
16	3	IS-16/3	276256	1/40
16	4	IS-16/4	276257	1/30
20	1	IS-20/1	276258	12/120
20	2	IS-20/2	276259	1/60
20	3	IS-20/3	276260	1/40
20	4	IS-20/4	276261	1/30
25	1	IS-25/1	276262	12/120
25	2	IS-25/2	276263	1/60
25	3	IS-25/3	276264	1/40
25	4	IS-25/4	276265	1/30
32	1	IS-32/1	276266	12/120
32	2	IS-32/2	276267	1/60
32	3	IS-32/3	276268	1/40
32	4	IS-32/4	276269	1/30
40	1	IS-40/1	276270	12/120
40	2	IS-40/2	276271	1/60
40	3	IS-40/3	276272	1/40
40	4	IS-40/4	276273	1/30
63	1	IS-63/1	276274	12/120
63	2	IS-63/2	276275	1/60
63	3	IS-63/3	276276	1/40
63	4	IS-63/4	276277	1/30
80	1	IS-80/1	276278	12/120
80	2	IS-80/2	276279	1/60
80	3	IS-80/3	276280	1/40
80	4	IS-80/4	276281	1/30
100	1	IS-100/1	276282	12/120
100	2	IS-100/2	276283	1/60
100	3	IS-100/3	276284	1/40
100	4	IS-100/4	276285	1/30
125	1	IS-125/1	276286	12/120
125	2	IS-125/2	276287	1/60
125	3	IS-125/3	276288	1/40
125	4	IS-125/4	276289	1/30

Description	Type Designation	Article No.	Units per package
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Accessories

SG47812

**PHASE OUT**

Switching interlock without lock for Isolators, RCDs, combined RCD/MCBs, ...

IS/SPE-1MU

101911

5/30

sg01215



Terminal cover

Z-IS/AK-1MU

276290

10/600

Switching interlock IS/SPE-1MU

- Without lock
- Also suitable for PFIM, CF16, PKNM, CKN6

Terminal cover Z-IS/AK-1MU

- Can be sealed with leads
- Modular design, width 1 MU

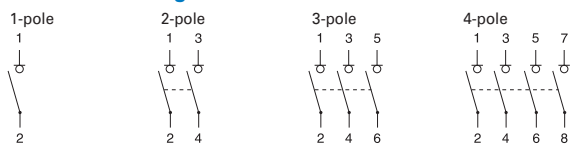
Description Main Load Disconnecter Switch (Isolator) IS

- Load circuit breaker with isolating function
- Design according to IEC/EN 60947-3
- Highly wear resistant contacts
- Quick make, black toggle
- Terminal capacity 50 mm²
- Compatible busbars with switchgear series Xpole by use of the mouth terminal in combination with standard fork busbar

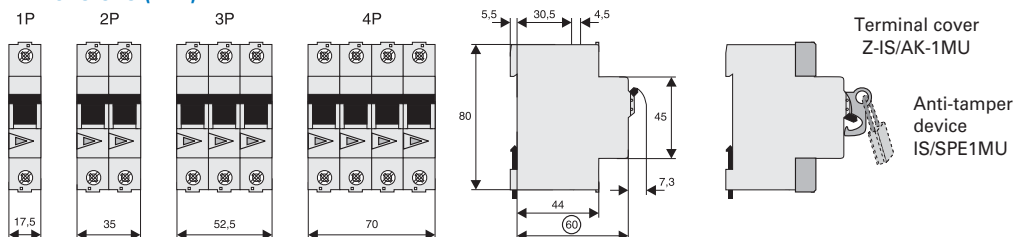
Technical Data

		IS-16	IS-20	IS-25	IS-32	IS-40	IS-63	IS-80	IS-100	IS-125
Electrical										
Design		according to IEC/EN 60947-3								
Rated voltage		240/415 V								
Frequency		50/60 Hz								
Rated insulation voltage	U _i	690 V~								
Rated peak withstand voltage	U _{imp}	6 kV								
Pollution degree		3								
Rated short-time withstand current	I _{cw}	2 kA								
Rated short-circuit making capacity	I _{cm}	2.8 kA								
Rated current 240/415 V, AC23A		16 A	20 A	25 A	32 A	40 A	63 A	80 A	100 A	125 A
Number of poles		1-, 2-, 3-, 4-pole								
Maximum back-up fuse		125 A gG								
Short-circuit current strength - with back-up fuse according to IEC/EN 60947-3		12.5 kA	12.5 kA	12.5 kA	12.5 kA	12.5 kA	12.5 kA	12.5 kA	10 kA	10 kA
Endurance										
operating cycles electrical components		≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 2,000
operating cycles mechanical components		≥ 16,000	≥ 16,000	≥ 16,000	≥ 16,000	≥ 16,000	≥ 16,000	≥ 16,000	≥ 16,000	≥ 14,000
Mechanical										
Frame size		45 mm								
Device height		80 mm								
Device width		17.5mm/pole								
Mounting		quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715								
Degree of protection, built-in		IP40								
Terminal protection		finger and hand touch safe according to DGUV VS3, EN 50274								
Upper and lower terminals		Twin-purpose terminals								
Terminal capacity		2.5 - 50 mm ²								
Busbar thickness		0.8 - 2 mm								
Tightening torque of terminal screws		2.5 - 5 Nm								
Function		irrespective of the position of installation								

Connection diagram



Dimensions (mm)



SG00912



Poles	Rated current (A)	Type Designation	Article No.	Units per package
Circuit Breaker ZP-A				
1	40	ZP-A40/1	248263	12 / 120
2	40	ZP-A40/2	248264	1 / 60
3	40	ZP-A40/3	248265	1 / 40
3+N	40	ZP-A40/3N	248266	1 / 30
1	63	ZP-A63/1	284906	12 / 120
2	63	ZP-A63/2	284907	1 / 60
3	63	ZP-A63/3	284908	1 / 40
3+N	63	ZP-A63/3N	284909	1 / 30

Description Circuit Breaker ZP-A

- Design according to IEC/EN 60947-1, -3
- Poles: 1, 2, 3, 3N
- Rated current: 40 A, 63 A
- Accessories for switchgear also for ZP-A usable!

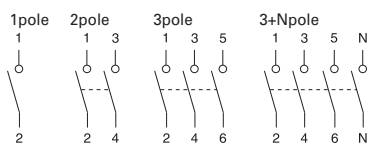
Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal contact for subsequent installation	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Additional terminal 35 mm ²	Z-HA-EK/35	263960
Anti-tamper device	Z-IS/SPE-1MU	274418

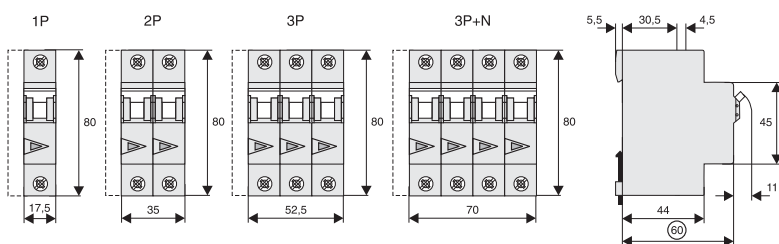
Technical Data

ZP-A		
Electrical		
Rated operational voltage	U_e	230/400 V AC
Rated frequency		50 Hz
Rated insulation voltage	U_i	440 V AC
Rated peak withstand voltage (1.2/50 μ S)	U_{imp}	4 kV
Conventional thermal current	I_{th}	
ZP-A40		40 A
ZP-A63		63 A
Utilisation category AC22A		
Minimum voltage per contact	I_e	
ZP-A40		40 A AC
ZP-A63		63 A AC
Utilisation category AC23A		
Minimum voltage per contact	I_e	16 A AC
Short-circuit current strength with back-up fuse 40 A gG		3 kA ($U = 240$ V, $\cos\varphi = 0.87$)
Endurance		
electrical components		$\geq 8,000$ switching operations
mechanical components		$\geq 20,000$ switching operations
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		17.5mm/pole
Mounting		quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in		IP40
Terminal protection		finger and hand touch safe according to DGUV VS3, EN 50274
Upper and lower terminals		lift terminals + guide for secure terminal
Terminal capacity		1.5-25 mm ²
Terminal screws		M5 (Pozidrive) Z2
Tightening torque of terminal screws		max. 2.4 Nm

Connection diagram



Dimensions (mm)



Practical Hint

e.g. 16(2)A

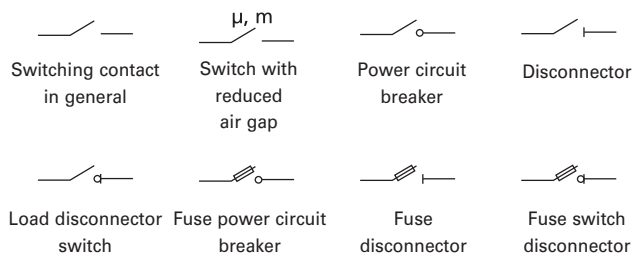


Ratings for
resistive/inductive
consumers

Ratings for
incandescent lamp
load
(AC 5b IEC 60947-4)

ÖVE-SN45, § 305

Practical Hint



ÖVE-SN45, § 207, IEC 60947-3

wa_sg06113



Poles	Rated Breaking Capacity (kA)	Type Designation	Article No.	Units per package
MCB for Auxiliary Switch Circuits PL7-B4/-HS				
1	10	PL7-B4-HS	264908	2 / 120
1+N	10	PL7-B4/1N-HS	264909	2 / 80
2	10	PL7-B4/2-HS	264910	1 / 60

Description MCB for Auxiliary Switch Circuits PL7-B4/-HS

- Compliant with EN 60898, 4 A, Characteristic B
- A very low I_{2t} short-circuit value limits contact wear in auxiliary contacts
- Fully compatible with PL7, PF7, ...

Technical Data

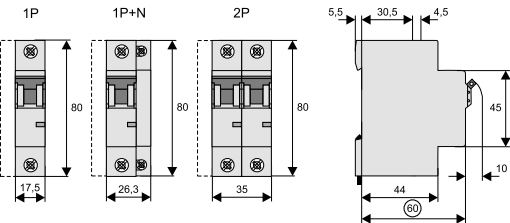
PL7-B4/-HS	
Electrical	
Number of poles	1-, 1+N-, 2pole
Rated voltage	230/400 V
Frequency	50/60 Hz
Rated current	4 A
Rated breaking capacity	10 kA
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm (1MU) / 26.3 mm / 35 mm (2MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274
Terminals	Twin-purpose terminals
Terminal capacity	1-25 mm ²
Terminal screws	M3 (Pozidrive)
Tightening torque of terminal screws	0.8-1.0 Nm
Busbar thickness	0.8 - 2 mm

Connection diagram



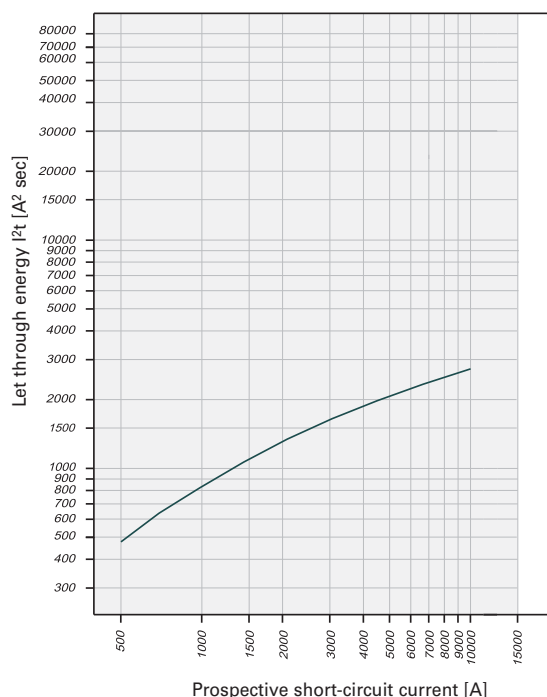
Dimensions (mm)

PL7-B4/-HS



Let-through Energy PL7-B4-HS

Let-through Energy PL7-B4-HS, Characteristic B, 1 pole



Practical Hint

Even auxiliary switches must be protected against overload and short circuit by means of suitable back-up fuses according to manufacturer specification. According to IEC 60947-5 a maximum back-up fuse is specified for conditional short circuit prevention up to 1,000 A. Therefore, connection of the auxiliary switch to the nearest MCB is not permitted. Danger of contact welding! The MCB for auxiliary switch circuits ...-HS offers a simple solution.

Colour	Pushbutton/Function	Type Designation	Article No.	Units per package
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Pushbutton Z-T/

green	4NO	Z-T/4S-G	248328	12 / 120
black	3NO+1NC	Z-T/3S10	248330	12 / 120

SG37112



Rated current (A)	Function	Type Designation	Article No.	Units per package
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Control Switch Z-S../

16	3NO	Z-S/3S	248334	12 / 120
16	4NO	Z-S/4S	248335	12 / 120
16	2NO+2NC	Z-S/SS00	248337	12 / 120
16	3NO+1NC	Z-S/3S10	248338	12 / 120

SG38912



Function	Type Designation	Article No.	Units per package
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Changeover Switch Z-S/.W

1CO I-0-II	Z-S/WM	248345	12 / 120
2CO I-0-II	Z-S/2WM	248346	12 / 120
1CO DAY-0-NIGHT	Z-S/WTN	248347	12 / 120
2CO DAY-0-NIGHT	Z-S/2WTN	248348	12 / 120

SG39012

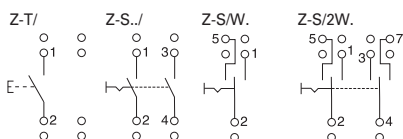
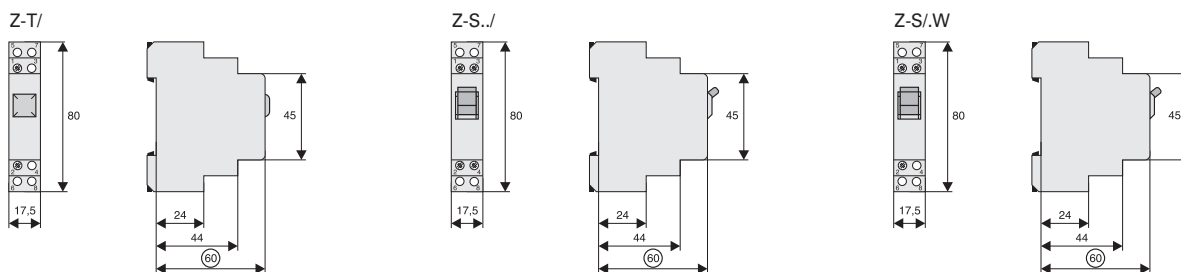


Description Pushbutton Z-T/; Control Switch Z-S../; Changeover Switch Z-S/W

- Design according to IEC 60669, VDE 0632
- Types Z-S/WM and /2WM with central position (0-position)
- Types Z-S/WTN and -2WTN with TAG-0-NACHT (DAY-0-NIGHT) printed onto the device

Technical Data

	Z-T/	Z-S../	Z-S/W
Electrical			
Rated voltage	230 V AC	240 V AC	240 V AC
Frequency	50 HZ	50 HZ	50 HZ
Rated current	16 A / 230 V~	20 A / 240 V~	20 A / 240 V~
Switching capacity	—	$1.25 \times I_n; 1.1 \times U_n$	$1.25 \times I_n; 1.1 \times U_n$
Short-circuit current strength	10 kA	10 kA	10 kA
Mechanical			
Switching toggle	—	black	black
Pushbutton colour	green - NO black - NO/NC	—	—
Frame size	45 mm	45 mm	45 mm
Device height	80 mm	80 mm	80 mm
Device width	17.5 mm (1MU)	17.5 mm (1MU)	17.5 mm (1MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715		
Degree of protection, built-in	IP40	IP40	IP40
Upper and lower terminals	lift terminals	lift terminals	lift terminals
Terminal capacity	1-10 mm ²	1-10 mm ²	1-10 mm ²
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274		
Resistance to climatic conditions	acc. to IEC/EN 60068	acc. to IEC/EN 60068	acc. to IEC/EN 60068

Connection diagram**Dimensions (mm)**

Rated voltage LED

Function

Type
Designation

Article No.

Units per
package**Switch Z-SW, Z-SWL**

- Z-SWL: with LED
- 16 A 250 VAC

SG59911



—	1NO	Z-SW/S	276300	2 / 120
—	2NO	Z-SW/SS	276301	2 / 120
—	1NO+1NC	Z-SW/SO	276302	2 / 120
—	1CO	Z-SW/W	276303	2 / 120
24 V AC/DC	2NO	Z-SWL24/SS	276304	2 / 120
24 V AC/DC	1NO+1NC	Z-SWL24/SO	276305	2 / 120
230 V AC/DC	1NO	Z-SWL230/S	292300	2 / 120
230 V AC/DC	2NO	Z-SWL230/SS	276306	2 / 120
230 V AC/DC	1NO+1NC	Z-SWL230/SO	276307	2 / 120

Additional LED colours, voltages and contact functions upon enquiry.

Description

Type
Designation

Article No.

Units per
package**Busbar**

wa_sg02512



Z-EK/25

1pole angulated grey 10 mm²	Z-SV-10/1P-F/13	264918	10
1pole angulated blue 10 mm²	Z-SV-10/N-F/13	264919	10
1pole angulated grey 16 mm²	Z-SV-16/1P-1MU/F	269523	25
1pole angulated blue 16 mm²	Z-SV-16/N-1MU/F	269524	25
Extension terminal 25 mm² long, straight	Z-EK/25	264935	10 / 600
Extension terminal 25 mm² short, straight	Z-EK/25/K	269525	10 / 600
Extension terminal 25 mm² long, crosswise	Z-EK/25/QL	264937	10 / 600
Extension terminal 25 mm² short, crosswise	Z-EK/25/Q	264936	10 / 600

Rated voltage LED

Colour

Type
Designation

Article No.

Units per
package**Signal Lamps****Single Lamp Z-EL**

SG59211



Z-BEL/R230

24 V AC/DC	orange	Z-EL/OR24	275444	2 / 120
24 V AC/DC	white	Z-EL/WH24	107493	2 / 120
230 V AC/DC	red	Z-EL/R230	284921	2 / 120
230 V AC/DC	green	Z-EL/G230	284922	2 / 120
230 V AC/DC	orange	Z-EL/OR230	275865	2 / 120
230 V AC/DC	blue	Z-EL/BL230	103131	2 / 120
230 V AC/DC	white	Z-EL/WH230	107494	2 / 120

Twin Lamp Z-DLD

2 x 24 V AC/DC	red + green	Z-DLD/2/24	284926	2 / 120
2 x 230 V AC/DC	red + green	Z-DLD/2/230	284925	2 / 120
2 x 24 V AC/DC	white + white	Z-DLD/WH24	108897	2 / 120
2 x 230 V AC/DC	white + white	Z-DLD/WH230	108898	2 / 120

Universal Single Lamp - changeover function Z-UEL

24 V AC/DC	red/green	Z-UEL24	284924	2 / 120
230 V AC/DC	red/green	Z-UEL230	284923	2 / 120

Universal Twin Lamp - changeover function Z-UDL

2 x 24 V AC/DC	red/green	Z-UDL24	284928	2 / 120
2 x 230 V AC/DC	red/green	Z-UDL230	284927	2 / 120

Signal Lamp - with integrated flash function Z-BEL

24 V AC/DC	red	Z-BEL/R24	284931	2 / 120
24 V AC/DC	green	Z-BEL/G24	284932	2 / 120
230 V AC/DC	red	Z-BEL/R230	284929	2 / 120
230 V AC/DC	green	Z-BEL/G230	284930	2 / 120

SG59811



Rated voltage LED	Function	Type Designation	Article No.	Units per package
Pushbutton Z-PU, Z-PUL				
• Z-PUL: with LED • 16 A 250 VAC				
—	1NO	Z-PU/S	276291	2 / 120
—	2NO	Z-PU/SS	276292	2 / 120
—	1NO+1NC	Z-PU/SO	276293	2 / 120
—	2NC	Z-PU/OO	276294	2 / 120
24 V AC/DC	2NO	Z-PUL24/SS	276295	2 / 120
24 V AC/DC	1NO+1NC	Z-PUL24/SO	276296	2 / 120
230 V AC/DC	2NO	Z-PUL230/SS	276297	2 / 120
230 V AC/DC	1NO+1NC	Z-PUL230/SO	276298	2 / 120
230 V AC/DC	2NC	Z-PUL230/OO	276299	2 / 120

Description Pushbutton Z-T/; Control Switch Z-S./; Changeover Switch Z-S/.W

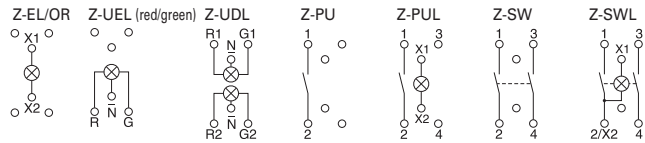
- Design according to IEC/EN 60669, VDE 0632
- Low power loss
- Long service life
- Twin lamp with separate connections
- Colour red/green, can be selected by alternative wiring
- Flash option by usage of different terminals only, changeover option, no additional relay necessary (Z-BEL)
- Terminals with guide for secure terminal connection
- Identical terminal screws for coil and contacts

Technical Data

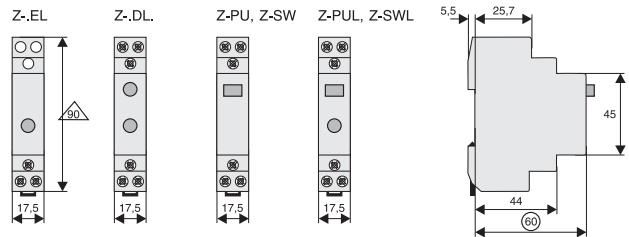
	Z-.EL, Z-.DLD, Z-BEL	Z-PU, Z-PUL	Z-SW, Z-SWL
Electrical			
Rated voltage	–	250 V AC	250 V AC
Frequency	–	50 HZ	50 HZ
Rated current	–	16 A	16 A
LED			
Rated voltage	230 V AC/DC	230 V AC/DC	230 V AC/DC
Range of operational voltage	24 V AC/DC	24 V AC/DC	24 V AC/DC
	(50 V) 110-240 V AC/DC	(50 V) 110-240 V AC/DC	(50 V) 110-240 V AC/DC
Luminosity	(5 V) 12-24 V AC/DC	(5 V) 12-24 V AC/DC	(5 V) 12-24 V AC/DC
Power loss	15 mcd	15 mcd	15 mcd
	2 W / LED	2 W	2 W
Switching contact	–	16 A / 250 V~	16 A / 250 V~
Contact function	–	1S, 2S, 1NO+1NC, 2Ö	1S, 2S, 1NO+1NC
Flashing frequency	typ. 2 Hz (Z-BEL)	–	–
Maximum back-up fuse, short circuit	–	20 A gG	20 A gG
Mechanical			
LED-Colour	red, green, red + green, white + white, red/green, orange, blue, white	orange	orange
Taster-Colour	–	green - NO red - NC black - NO/NC	black
Frame size	45 mm	45 mm	45 mm
Device height	90 mm	90 mm	90 mm
Device width	17.5 mm (1MU)	17.5 mm (1MU)	17.5 mm (1MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715		
Degree of protection, built-ines Gerät	IP40	IP40	IP40
Upper and lower terminals	lift terminals with guides for secure connection		
Terminal capacity			
one- or more wire	1 x (0.5 ...10) mm²	1 x (0.5 ...10) mm²	1 x (0.5 ...10) mm²
fine wires with wire end sleeve	1 x (0.5 ...10) mm²	1 x (0.5 ...10) mm²	1 x (0.5 ...10) mm²
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274		
Resistance to climatic conditions	acc. to IEC/EN 60068	acc. to IEC/EN 60068	acc. to IEC/EN 60068

Switch Z-SW.; Signal Lamps Z-.EL, Z-.DL., Z-BEL; Pushbutton Z-PU.

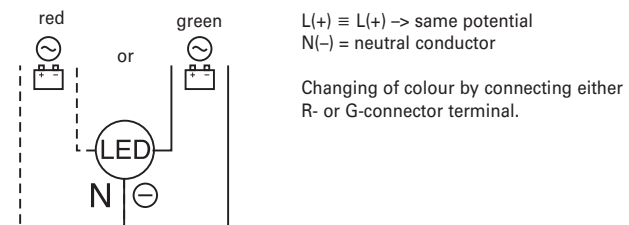
Connection diagram



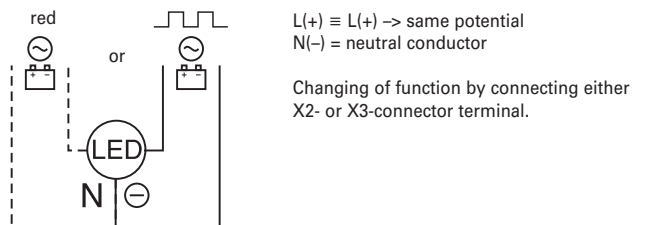
Dimensions (mm)



Connection example for LED red/green



Connection example for Blinkfunktion



SG85211



Z-DSU1-102

SG85311



Z-DSA2-01-SL

Function	Position	Type Designation	Article No.	Units per package
Rotary Switch Z-DS				
1pole OFF	0 - 1	Z-DSA1-01	248868	1 / 40
1pole CO	1 - 0 - 2	Z-DSU1-102	248869	1 / 40
1pole CO	HA - 0 - AU	Z-DSU1-H0A	248870	1 / 40
1pole CO	TA - 0 - NA	Z-DSU1-T0N	248871	1 / 40
2pole OFF	0 - 1	Z-DSA2-01	248872	1 / 40
2pole OFF	0 - 1	Z-DSA2-01-SL	248873	1 / 40
2pole CO	1 - 2	Z-DSU2-12	248874	1 / 40
2pole CO	1 - 0 - 2	Z-DSU2-102	248875	1 / 40
2pole CO	HA - 0 - AU	Z-DSU2-H0A	248876	1 / 40
3pole CO	1 - 0 - 2	Z-DSU3-102	248877	1 / 40
Voltmeter L-N	L1 - N...	Z-DSV-LN	248878	1 / 40
Voltmeter L-L	L1 - L2...	Z-DSV-LL	248879	1 / 40
Voltmeter L+N	L1 - N3...	Z-DSV-LLL	248880	1 / 40
Ammeter	0-1-2-3	Z-DSAM-0123	129712	1 / 40

Description Rotary Switch Z-DS

- Rotary switches of series Z-DS are of a modular design:
The switch proper consists of the engaging work and the switching package. The switching cams (for which it is also called cam switch) are driven by a stable, torsion-proof aluminium shaft. The switching package consists of one or several switching cells with one or two independent contacts. Connections of adjoining switch terminals (necessary in case of voltmeter changeover switch Z-DSV) are contained in the pressed switch component. Consequently, there is no obstacle when connecting the connection lines.
- Application:
Suitable for virtually any application, e.g. motor switch, garage doors, fans, shutters, heating system control, lighting fixtures, instrument switches, different control purposes, etc.

Technical Data

		Z-DS
Data according to		IEC 60947-3, IEC 60947-5-1, VDE 0660, EN 60947-3, SEV
Nominal thermal current		
open	I_{th}	20 A
hermetically enclosed	I_{thg}	20 A
Nominal operational voltage		U_e 690 V
Rated peak withstand voltage		U_{imp} 6 kV
Disconnecter conditions according to ÖVE, IEC met up to		440 V
Circuit breaking capacity		I_v
3 x 220-440V		160 A
3 x 500 V		100 A
3 x 660-690V		80 A
Utilisation category AC21A, AC21B		
Switching resistive loads including low overloads		
Nominal operational current	I_n	20 A
Utilisation category AC23A, AC23B		
Switching motors and other highly inductive loads		
Nominal operational current 400 V	I_n	16 A
Nominal power 220-240 V		4 kW
3phase 3pole 380-440 V		7.5 kW
3phase 3pole 500 V		7.5 kW
3phase 3pole 660-690 V		7.5 kW
Star-delta starting switch		
for squirrel cage motors		
Nominal power		
3phase 3pole 220-240 V		3.7 kW
3phase 3pole 380-415 V		7.5 kW
Utilisation category AC3		
Switching of 3phase AC motors		
Nominal operational current 400 V	I_n	12 A
Nominal power 220-240 V		3 kW
3phase 3pole 380-440 V		5.5 kW
3phase 3pole 500 V		5.5 kW
3phase 3pole 660-690 V		5.5 kW
Utilisation category AC15		
Switching of electromagnetic drives, contactors, valves, pull-type electromagnets		
Nominal operational current to 240 V	I_n	6 A
Nominal operational current 380-440 V	I_n	4 A
2pole disconnection 500 V		5 A
Utilisation category DC21A, DC21B		
Switching of resistive loads, time constant $L/R \leq 1$ ms		
Nominal operational current	I_n	
1pole 30 V		20 A
1pole 60 V		4 A
1pole 110 V		0.6 A
1pole 220 V		0.3 A
1pole 440 V		—
Utilisation category DC3 - DC5		
Switching of shunt motors and series motors, time constant $L/R \leq 15$ ms		
Nominal operational current	I_n	
1pole 30 V		8 A
1pole 60 V		1 A
1pole 110 V		0.3 A
Terminal capacity		
one or several wires		1 - 2.5 mm ²
fine-wire		0.75 - 2.5 mm ²
fine wires with wire end sleeve		0.75 - 1.5 mm ²
terminal screw		M3.5
number of conductors per terminal		2

Technical Data (continue page)

	Z-DS
Switching of capacitive load	
maximum making capacity up to 500 V	140 A
Degree of protection from behind	IP20
Short circuit protection	
max. fuse gL (gG)	20 A
Rated short-time withstand current (1 second current)	250 A
Conditional rated short circuit current	10 kA _{r.m.s.}
Short-time load capacity	
Load duration (values applicable to already closed contacts only)	
3 s	100 A
10 s	60 A
30 s	35 A
60 s	25 A

Rotary Switch Z-DS for Lighting Systems

	Z-DS
Utilisation category AC1	
Rated operational current 60 °C	I_{BAC1} 20 A
Utilisation category AC5a	
Rated operational power $\cos\varphi$ 0.5	1.1 kW
Rated operational power 220-240 V~ $\cos\varphi$ 0.9	0.4 A
Rated operational power DUO	3 kW
Utilisation category AC5b	
 Rated operational power 220-240 V~	1.4 kW

Incandescent Lamps

Utilisation category AC5b	Power	Current	Z-DS
Incandescent Lamps AC5B	W	A	max. number of lamps per current path at 230 V, 50 Hz
	60	0.27	22
	100	0.45	13
	200	0.91	7
	300	1.36	4
	500	2.27	3
	1000	4.5	1

Fluorescent Tubes, Mercury Arc Lamps

Utilisation category AC5a	Power	Current	Capacitor	Z-DS
Lamp Types	W	A	µF	max. number of lamps per current path at 230 V, 50 Hz
Fluorescent tubes without compensation or with series compensation	11	0.16	-	60
	18	0.37	2.7	25
	24	0.35	2.5	25
	36	0.43	3.4	20
	58	0.67	5.3	14
	65	0.67	5.3	13
	85	0.8	-	11
Fluorescent tubes lead-lag circuit	11	0.07	-	2 x 100
	18	0.11	-	2 x 50
	24	0.14	-	2 x 40
	36	0.22	-	2 x 30
	58	0.35	-	2 x 20
	65	0.35	-	2 x 15
	85	0.47	-	2 x 10
Fluorescent tubes with parallel compensation	11	0.16	2.0	30
	18	0.37	2.0	20
	24	0.35	3.0	15
	36	0.43	4.5	10
	58	0.67	7.0	6
	65	0.67	7.0	5
	85	0.8	8.0	4
Fluorescent tubes with electronic ballast	18	0.09	-	40
	36	0.16	-	20
	58	0.25	-	15
	2 x 18	0.17	-	2 x 20
	2 x 36	0.32	-	2 x 10
	2 x 58	0.49	-	2 x 7
Mercury arc lamps, high pressure without compensation e.g.: HQL, HPL	50	0.61	-	16
	80	0.8	-	12
	125	1.15	-	8
	250	2.15	-	4
	400	3.25	-	3
	700	5.4	-	1
	1000	7.5	-	1
Mercury arc lamps, high pressure with compensation e.g.: HQL, HPL	50	0.28	7	7
	80	0.41	8	5
	125	0.65	10	3
	250	1.22	18	2
	400	1.95	25	1
	700	3.45	45	1
	1000	4.8	60	-

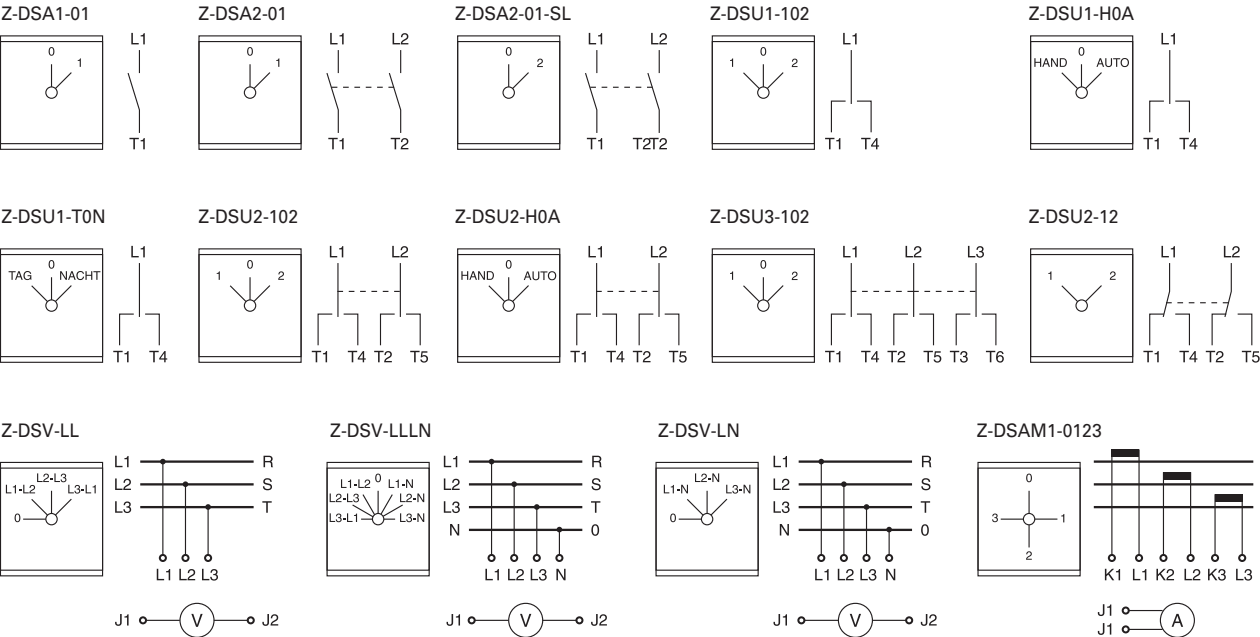
Metal Halide Lamps

Lamp Types	Power W	Current A	Capacitor µF	Z-DS max. number of lamps per current path at 230 V, 50 Hz
Metal halide lamps without compensation e.g. HQI, HPI	35	0.53	-	22
	70	1	-	12
	150	1.8	-	6
	250	3	-	4
	400	3.5	-	3
	1000	9.5	-	1
	2000	16.5	-	-
Metal halide lamps with compensation e.g. HQI, HPI	35	0.25	6	8
	70	0.45	12	4
	150	0.75	20	2
	250	1.5	33	1
	400	2.1	35	1
	1000	5.8	95	-
	2000	11.5	148	-
Transformers for low-voltage halogen lamps	20	-	-	40
	50	-	-	20
	75	-	-	13
	100	-	-	10
	150	-	-	7
	200	-	-	5
	300	-	-	3

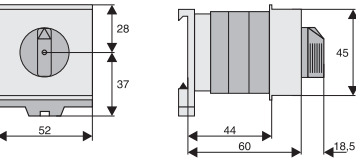
Sodium Vapour Lamps

Lamp Types	Power W	Current A	Capacitor µF	Z-DS max. number of lamps per current path at 230 V, 50 Hz
Sodium vapour lamps low-pressure without compensation	35	1.5	-	7
	55	1.5	-	7
	90	2.4	-	4
	135	3.5	-	3
	150	3.3	-	3
	180	3.3	-	3
	200	3.3	-	3
Sodium vapour lamps low-pressure with compensation	35	0.31	20	3
	55	0.42	20	2
	90	0.63	30	1
	135	0.94	45	1
	150	1	40	1
	180	1.16	40	1
	200	1.32	25	1
Sodium vapour lamps high-pressure without compensation	150	1.8	-	5
	250	3	-	4
	330	3.7	-	3
	400	4.7	-	2
	1000	10.3	-	1
Sodium vapour lamps high pressure with compensation	150	0.83	20	2
	250	1.5	33	2
	330	2	40	1
	400	2.4	48	1
	1000	6.3	106	-

Connection diagram



Dimensions (mm)



sg01418_r



Z-R30/16-10

Control Voltage	Function	Type Designation	Article No.	Units per package
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Installation Relays Type Z-R

- with manual operation and LED
- 16 A 240 V AC $\frac{1}{2}$ AC1

230-240 V, 50/60 Hz	1NO	Z-R230/16-10	ICS-R16A230B100	2 / 120
230-240 V, 50/60 Hz	2NO	Z-R230/16-20	ICS-R16A230B200	2 / 120
230-240 V, 50/60 Hz	1NC	Z-R230/16-01	ICS-R16A230B010	2 / 120
230-240 V, 50/60 Hz	1NO + 1NC	Z-R230/16-11	ICS-R16A230B110	2 / 120
24 V, 50/60 Hz	1NO	Z-R24/16-10	ICS-R16A024B100	2 / 120
24 V, 50/60 Hz	2NO	Z-R24/16-20	ICS-R16A024B200	2 / 120
24 V, 50/60 Hz	1NC	Z-R24/16-01	ICS-R16A024B010	2 / 120
24 V, 50/60 Hz	1NO + 1NC	Z-R24/16-11	ICS-R16A024B110	2 / 120
24 V DC	1NO	Z-R23/16-10	ICS-R16D024B100	2 / 120
24 V DC	2NO	Z-R23/16-20	ICS-R16D024B200	2 / 120
24 V DC	1NC	Z-R23/16-01	ICS-R16D024B010	2 / 120
24 V DC	1NO + 1NC	Z-R23/16-11	ICS-R16D024B110	2 / 120

Description	Type Designation	Article No.	Units per package
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Accessories

Spacer 0.5MU	Z-DST	248949	10
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Description Installation Relays Z-R

Installation relays Z-R are suitable for switching 1-phase consumers up to 16 A. These devices for universal use in building installations and systems permit implementation of the following applications and control functions:

- Switching lighting systems and electrical heating systems
- Switching ventilation and air conditioning systems, fans
- Switching heat pumps
- Switching electrically controlled roller doors/gates, and blinds
- Switching incandescent lamps and gas discharge lamps

The installation relays of series Z-R meet the requirements of standards EN/IEC 60947.

EN/IEC 60947 deals with „Electromagnetic contactors in electrical system manufacturing“.

Security:

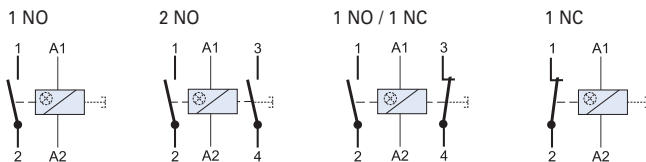
- Manual operation for testing purposes
- All terminals - coil and contacts - equipped with guide for secure terminal connection. Misplacement of wires impossible.
- Main contacts can be connected to standard pin busbar
- Made of hardly flammable materials and plastics free from chlorine and halogens
- Finger and hand touch safe according to VBG4

Advantages:

- Low power loss
- No humming
- Optical operating status display by means of LED
- Low switching noise
- Easy to connect thanks to large terminals supplied open
- Simple snap-on fastening on 35 mm DIN rail
- High degree of flexibility thanks to a variety of contact configurations
- Easy access for coil feed connection

Connection diagrams

1MU

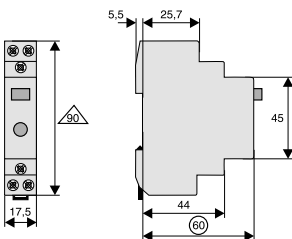


Version

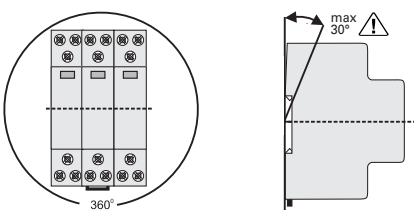
with manual operation and LED



Dimensions (mm)

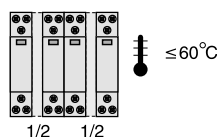


Permitted installation positions



Packing density

Spacers recommended! (Z-DST)



Technical Data

		Z-R
Electrical		
Standard according		IEC/EN 60947-4-1
Rated voltage		1p: 240 V AC
Rated operational current AC1	I_e	16 A
Rated operational power	P_e	3.8 kW
Number of poles		1, 2
Main contacts		
NO/NC		1/2
Control circuit		
Rated control feed voltage	U_s	
AC		24, 230, 240 V
DC		24 V
Minimum operational voltage	U_{min}	
230, 240 V AC		184 V AC
24 V AC		19.2 V AC
24 V DC		16.8 V DC
Rated frequency		50/60 Hz
Operating range		0.85-1.1 x U_s
Maximum power of coils retaining		
24, 230, 240 V AC		0.75 W per pole
24 V DC		0.4 W per pole
Minimum command duration		> 50 ms
Operating noise		no humming
Rated peak withstand voltage (1.2/50 μ s)	U_{imp}	2.5 kV
Duty		100%
Load Circuit		
Rated operational voltage	U_e	240 V
Rated frequency		50/60 Hz
Rated insulation voltage	U_i	240 V
Rated peak withstand voltage (1.2/50 μ s)	U_{imp}	2.5 kV
Conventional thermal current	I_{th}	16 A
Rated operational current	I_e	16 A
Rated constant current	I_u	16 A
Rated current DC	I_e	
24 V		16 A
48 V		1.2 A
120 V		0.22 A
250 V		0.1 A
Conditional rated short circuit current	I_q	1 kA (with 16 A gL/gG)
Duration of bouncing		< 10 ms (typ. < 5 ms)
Max. peak inrush current		42 A
Mechanical		
Frame size		45 mm
Device height		90 mm
Device width		17.5 mm (1MU)
Mounting		quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in		IP20
Degree of protection, built-in behind panel		IP40
Mounting position		works in any position, however not hanging
Upper and lower terminals		lift terminals (captive) M4 (combination head), captive screw
Terminal capacity		
Contact and coil		1 x (0.5...10) mm ² one- or more wire 1 x (0.5...6) mm ² fine wires with wire end sleeve
Temperature range		-5 to +40 °C
Total contact gap		0.6 mm
Contact material		does not contain cadmium
Endurance		
electrical components		I = 16 A AC: > 700.000 switching operations
mechanical components		> 1.000.000 switching operations

Utilisation categories	Z-R		
AC-1 $\text{-(}\triangle/\triangle\text{)-}^*)$			
Rated operational voltage	U_e	240 V AC	
Rated operational current	I_e	16 A AC	
Rated operational power AC-1		3072 W ($\cos\varphi = 0.8$)	
AC-3 $\otimes$			
Rated operational voltage	U_e	240 V AC	
Rated operational current	I_e	3 A AC	
Rated operational power AC-3		324 W ($\cos\varphi = 0.45$)	
AC-5a $\otimes$			
Rated operational voltage	U_e	240 V AC	
Rated operational current	I_e	5 A AC	
Rated operational power AC-5a		540 W ($\cos\varphi = 0.45$)	
AC-5b $\otimes$			
Rated operational voltage	U_e	240 V AC	
Rated operational current	I_e	3 A AC	
Rated operational power AC-5b		720 W	
AC-7a (according to EN 61095) $\text{-(}\blacksquare\text{)-}$			
Rated operational voltage	U_e	240 V AC	
Rated operational current	I_e	10 A AC	
Rated operational power AC-7a		1920 W ($\cos\varphi = 0.8$)	
Make-/break-current AC-7a	I_c	24 A AC	

Max. number of lamps

Lamp Types	Power W	Current A	Capacitor μF	Z-R max. number of lamps per current path at 230 V, 50 Hz
Incandescent Lamps	60	0.27	-	11
Low-voltage halogen lamps (12 or 24 V) with transformer / electronic transformer	20	0.09	-	18
	50	0.22	-	7
	75	0.33	-	4
	100	0.43	-	3
	150	0.65	-	2
	200	0.87	-	1
	300	1.3	-	1
Fluorescent tubes without compensation or with series compensation	11	0.16	0.4	20
	18	0.37	0.9	9
	24	0.35	0.8	9
	36	0.43	1.1	8
	58	0.67	1.8	5
	65	0.67	1.8	4
	85	0.8	1.8	3
Fluorescent tubes lead-lag circuit	11	0.07	-	2 x 23
	18	0.11	-	2 x 15
	24	0.14	-	2 x 11
	36	0.22	-	2 x 7
	58	0.35	-	2 x 4
	65	0.35	-	2 x 4
	85	0.47	-	2 x 3
Fluorescent tubes with parallel compensation	11	0.16	1.0	11
	18	0.37	1.3	8
	24	0.35	1.3	8
	36	0.43	1.3	8
	58	0.67	2.3	4
	65	0.67	2.3	4
	85	0.8	2.7	4
Fluorescent tubes with electronic ballast	18	0.09	-	10
	36	0.16	-	5
	58	0.25	-	4
	2 x 18	0.17	-	5
	2 x 36	0.32	-	2
	2 x 58	0.49	-	2

LED Lamps		
Type of lamps	Z-R	
LED Lamps. Pay attention on the inrush current of the ballast and cosφ of the lamp	max. permissible inrush current of installation relay [A]	42 A
	$\frac{\text{Max. Inrush current installation relay [A]}}{\text{Inrush current lamp [A]}} = \text{max. number of lamps per pole}$	

Control Voltage	Function	MU	Type Designation	Article No.	Units per package
Installation Relays Type Z-TN					
• with manual pre-selection of functions - permanently ON / AUTOM / OFF • 20 A 250 V AC — —					
SG59711  Z-TN230/SO	230 V, 50 Hz	2NO	1	Z-TN230/SS	265574 2 / 120
	230 V, 50 Hz	3NO	2	Z-TN230/3S	265576 1 / 60
	230 V, 50 Hz	4NO	2	Z-TN230/4S	265579 1 / 60
	230 V, 50 Hz	1NO+1NC	1	Z-TN230/1S1O	267975 2 / 120
	230 V, 50 Hz	2NO+2NC	2	Z-TN230/2S2O	103168 1 / 60
	24 V, 50 Hz	2NO	1	Z-TN24/SS	267976 2 / 120
	24 V, 50 Hz	3NO	2	Z-TN24/3S	267977 1 / 60
	24 V, 50 Hz	4NO	2	Z-TN24/4S	267978 1 / 60
	24 V, 50 Hz	1NO+1NC	1	Z-TN24/1S1O	267979 2 / 120
	24 V, 50 Hz				
SG60111  Z-TN230/3S					

Description	Type Designation	Article No.	Units per package
Accessories			
Spacer 0.5MU	Z-DST	248949	10

Description Installation Relays Z-TN

Installation relays Z-TN are suitable for switching 1-phase or 3-phases consumers up to 20 A. These devices for universal use in building installations and systems permit implementation of the following applications and control functions:

- Switching lighting systems and electrical heating systems
- Switching ventilation and air conditioning systems, fans
- Switching heat pumps
- Switching electrically controlled roller doors/gates, and blinds
- Switching incandescent lamps and gas discharge lamps

The installation relays of series Z-TN meet the requirements of standards EN/IEC 60947 and EN/IEC 1095.

EN/IEC 1095 deals with „Electromechanical contactors for household and similar purposes.“ Compliance with this standard means meeting very high demands in terms of safety for humans and property.

EN/IEC 60947 deals with „Electromagnetic contactors in electrical system manufacturing“.

Security:

- Manual operation
- All terminals - coil and contacts - equipped with guide for secure terminal connection. Misplacement of wires impossible.
- Main contacts can be connected to standard pin busbar
- Made of hardly flammable materials and plastics free from chlorine and halogens
- Finger and hand touch safe according to VBG4

Advantages:

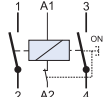
- Low switching noise
- Easy to connect thanks to large terminals supplied open
- Simple snap-on fastening on 35 mm DIN rail
- High degree of flexibility thanks to a variety of contact configurations
- Easy access for coil feed connection
- Version with mechanical pre-selection of functions ON/AUTO/OFF
 - ON/permanently ON: Contact permanently ON until a control pulse is switched on and OFF again. Then, the relay reverts to the AUT position.
 - AUT/AUTOMATIC: Standard relay function by control voltage at the coil.
 - OFF/permanently OFF: Contacts permanently OFF, independently of the control voltage at the coil.
- Only in AC

Connection diagrams

1MU

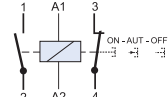
“SS”

2 NO



“SO”

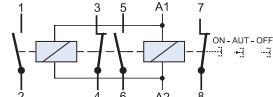
1 NO / 1 NC



2MU

“2S2O”

2 NO / 2 NC



Versions

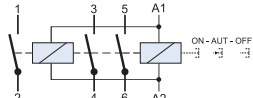
with mech. pre-selection



2MU

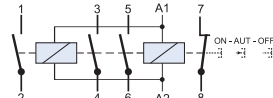
“3S”

3 NO

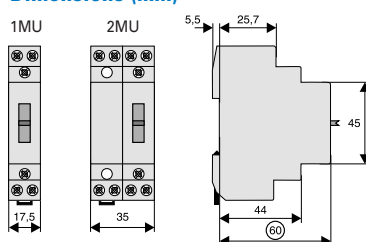


“4S”

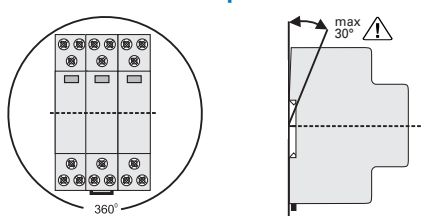
4 NO



Dimensions (mm)

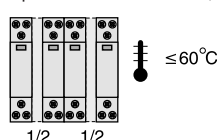


Permitted installation positions



Packing density

Spacers recommended! (Z-DST)



Technical Data

		Z-TN
Electrical		
Standard according		IEC/EN 60947
Rated voltage		250 V, 240/415 V AC
Rated current 250 V AC		20 A
Rated current AC1	I_e	20 A 
Rated operational power	P_e	4.6 kW 415 V
Number of poles		1 to 4
Main contacts		
NO/NC		1/2 (1MU), 3/4 (2MU)
EMC-Environment		B
Control circuit		
Rated control feed voltage	U_s	
AC		8, 12, 24, 48, 110, 230, 240 V
DC		8, 12, 24, 110 V
Rated frequency		50 Hz
Operating range		0.85-1.1 x U_s
Maximum power of coils		
pick-up		10-13 VA, 6-8 W
retaining		3.4-4.0 VA, 2.0-2.4 W
Minimum command duration		> 50 ms
Operating noise		low noise
Rated peak withstand voltage (1.2/50 µs)	U_{imp}	2 kV
Duty		100%
Load Circuit		
Rated operational voltage	U_e	
1p, 2p		250 VAC
3p, 4p		240/415 VAC
Minimum operational voltage	U_{min}	24 V AC/DC (U_s 8-110 V)
Rated insulation voltage	U_i	500 V
Rated peak withstand voltage (1.2/50 µs)	U_{imp}	4 kV
Conventional thermal current	I_{th}	20 A AC
Rated operational current	I_e	20 A AC
Rated constant current	I_u	20 A AC
Rated current DC	I_e	
24 V		16 A
48 V		12.5 A
230 V		1 A
Conditional rated short circuit current	I_q	10 kA (with 20 A gL/gG)
Duration of bouncing		< 10 ms (typ. < 5 ms)
Mechanical		
Frame size		45 mm
Device height		90 mm
Device width		17.5 mm (1MU)
Mounting		quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in		IP20
Mounting position		works in any position, however not hanging
Upper and lower terminals		lift terminals (captive)
Terminal capacity		
Contact and coil		0.5 - 10 mm ² one- or more wire 0.5 - 6 mm ² fine wires with wire end sleeve
Temperature range		-20 to +45 °C
Total contact gap		> 5 mm / independent contacts
Contact material		does not contain cadmium
Endurance		
electrical components		≥ 40x10 ³ switching operations
mechanical components		≥ 1x10 ⁶ switching operations

Utilisation categories 1MU, 2MU (except 3 NO, 4 NO)		Z-TN
AC-1  *)		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	20 A AC
Rated operational power AC-1		4000 W ($\cos\varphi = 0.8$), 5000 VA
AC-3 		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	8 A AC
Rated operational power AC-3		4000 W ($\cos\varphi = 0.45$), 2000 VA
AC-5a 		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	10 A AC
Rated operational power AC-5a		1125 W ($\cos\varphi = 0.45$), 2500 VA
AC-5b 		
Rated operational voltage	U_e	230 V AC
Rated operational current	I_e	8.8 A AC
Rated operational power AC-5b		2024 W
AC-7a (according to EN 61095) 		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	20 A AC
Rated operational power AC-7a		4000 W ($\cos\varphi = 0.8$), 5000 VA
Utilisation categories 2MU (3 NO, 4 NO)		
AC-1  *)		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	20 A AC
Rated operational power AC-1		4000 W ($\cos\varphi = 0.8$), 5000 VA
AC-3 		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	8 A AC
Rated operational power AC-3		900 W ($\cos\varphi = 0.45$), 2000 VA
AC-5a 		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	10 A AC
Rated operational power AC-5a		1125 W ($\cos\varphi = 0.45$), 2500 VA
AC-5b 		
Rated operational voltage	U_e	230/400 V AC
Rated operational current	I_e	8.8 A AC
Rated operational power AC-5b		2024 W
AC-7a (according to EN 61095) 		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	20 A AC
Rated operational power AC-7a		4000 W ($\cos\varphi = 0.8$), 5000 VA
AC-7b (according to EN 61095) 		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	10 A AC
Rated operational power AC-7b		1125 W ($\cos\varphi = 0.8$), 2500 VA

 *) suitable for insulation, tested on AC-1

Max. number of lamps

Lamp Types	Power W	Current A	Capacitor μF	Z-TN max. number of lamps per current path at 230 V, 50 Hz
Incandescent Lamps	60	0.27	-	33
Low-voltage halogen lamps (12 or 24 V) with transformer / electronic transformer	20	0.09	-	55
	50	0.22	-	22
	75	0.33	-	14
	100	0.43	-	11
	150	0.65	-	7
	200	0.87	-	5
	300	1.3	-	3
Fluorescent tubes without compensation or with series compensation	11	0.16	1.3	62
	18	0.37	2.7	27
	24	0.35	2.5	27
	36	0.43	3.4	24
	58	0.67	5.3	15
	65	0.67	5.3	14
	85	0.8	5.3	12
Fluorescent tubes lead-lag circuit	11	0.07	-	2 x 71
	18	0.11	-	2 x 45
	24	0.14	-	2 x 35
	36	0.22	-	2 x 22
	58	0.35	-	2 x 14
	65	0.35	-	2 x 14
	85	0.47	-	2 x 10
Fluorescent tubes with parallel compensation	11	0.16	3.0	34
	18	0.37	4.0	26
	24	0.35	4.0	26
	36	0.43	4.0	26
	58	0.67	7.0	14
	65	0.67	7.0	14
	85	0.8	8.0	13
Fluorescent tubes with electronic ballast	18	0.09	-	32
	36	0.16	-	16
	58	0.25	-	12
	2 x 18	0.17	-	16
	2 x 36	0.32	-	8
	2 x 58	0.49	-	6

4.252 Controlling & Switching

Installation Contactors CR

xPole

sg05617_r



U _c	Rating	Function	Type Designation	Article No.	Units per package
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Installation Contactors, 20A

24 V AC/DC	20 A	1NO + 1NC	CR2011024	135171	1
24 V AC/DC	20 A	2NO	CR2020024	135177	1
24 V AC/DC	20 A	2NC	CR2002024	176469	1
12 V AC/DC	20 A	1NO + 1NC	CR2011012	193906	1
12 V AC/DC	20 A	2NO	CR2020012	135175	1
12 V AC/DC	20 A	2NC	CR2002012	193907	1
8 V AC/DC	20 A	1NO + 1NC	CR2011008	193909	1
8 V AC/DC	20 A	2NO	CR2020008	193908	1

Description	Type Designation	Article No.	Units per package
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Accessories

Spacer 0.5MU	Z-DST	248949	10
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Description Installation Contactors CR

Contactors are frequently applied for switching of lamp loads, fans or pumps in both utility as well as industrial areas. All contactors with AC/DC coils ensure silent operation which is further enhanced by a low power consumption. Optimal contacts and low heat dissipation guarantee a long lifetime of the contactor.

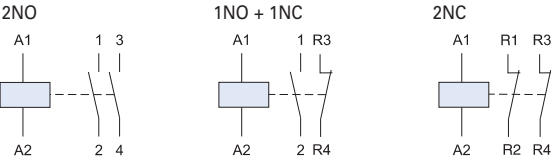
Technical characteristics:

- Designed according to IEC 60947-4-1 and IEC 61095 standards
- Suitable for applications in general control, heating & lighting applications
- Available in 20 A rating with 2-pole contacts
- Coil voltages: 8 V AC/DC, 12 V AC/DC, 24 V AC/DC
- DIN modular profile
- Spacers available to extend lifetime (it is recommended to use 1 spacer between every 2 contactors installed)

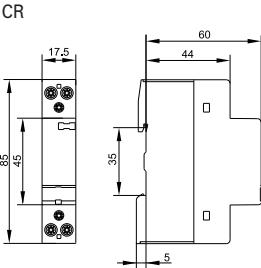
Advantages:

- Low inrush power for all AC/DC types
- Availability of combined AC/DC type contactors ensure silent operation
- Contactors of AC/DC coil type are operable on both AC and DC voltage
- All combined AC/DC type versions are equipped with surge protection on the operating coil
- Equipped with contact indication
- Optimal quality of contacts and low heat dissipation ensure a long life time

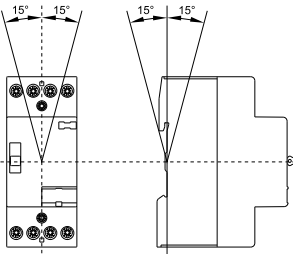
Connection diagrams



Dimensions (mm)

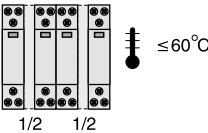


Permitted installation positions



Packing density

Spacers recommended! (Z-DST)



Technical Data

CR		
General		
Standards		IEC 60947-4-1, IEC 61095
Nominal operating voltage	U_e	230 V
Mechanical endurance		3,000,000 switching cycles
Protection class (according to DIN 40 050, IEC 529)		IP20
Permissible ambient temperature		-5 °C up to 55 °C
Storage temperature		-30 °C up to +80 °C
Contact rating		
Rated insulation voltage	U_i	230 V
Frequency		50 - 60 Hz
Rated impulse withstand voltage	U_{imp}	4 kV
Rated thermal current	I_{th}	20 A
AC1 / AC7a Rated operational current	I_e	20 A
AC1 / AC7a Operational power rating at $U_e = 230$ VAC	P_{max}	4 kW
AC3 / AC7b Operational power rating at $U_e = 230$ VAC	P_{max}	NO: 1.3 kW; NC: 0.75 kW
DC1 (L/R ≤ 1 ms) Rated thermal current		
1-pole:		
at $U_e = 24$ V DC		20 A
at $U_e = 110$ V DC		6 A
at $U_e = 220$ V DC		0,6 A
2-poles in series:		
at $U_e = 24$ V DC		20 A
at $U_e = 110$ V DC		10 A
at $U_e = 220$ V DC		6 A
Electrical endurance		
AC1 / AC7a Application		200,000 maximum operating cycles
AC3 / AC7b Application		300,000 maximum operating cycles
AC-1/AC-3/AC-5b/AC-6b/AC-15		600 maximum operating cycles per hour
Power dissipation per contact at I_n		1.7 W
Operating coil		
Coil inrush power (for all voltage ratings)		2.5 W
Coil consumption (for all voltage ratings)		2.5 W
Closing delay		15 – 45 ms
Opening delay		20 – 50 ms
Range of control voltage	U_c	85 up to 110%
Kind of voltage		AC / DC
Frequency (AC)		50/60 Hz
Dimensions		
Width		17.5 mm
Height		85 mm
Depth		65 mm
Terminals for main		
Terminal capacity - fine stranded wire		1 to 6 mm ²
Terminal capacity - solid wire		1 to 10 mm ²
Terminal screw size		M3,5
Terminal screw head type (Pozidrive)		PZ Size 1
Maximum torque		1.2 Nm
Terminals for operating coils		
Terminal capacity - fine stranded wire		1 to 2.5 mm ²
Terminal capacity - solid wire		1 to 2.5 mm ²
Terminal screw size		M3,5
Terminal screw head type (Pozidrive)		PZ Size 1
Maximum torque		0.6 Nm

Fluorescent Tubes, Mercury Arc Lamps

Lamp Types	Power W	Current A	Capacitor μF	CR max. number of lamps per current path at 230 V, 50 Hz
Incandescent lamps and halogen lamps	15	0.07	–	130
	25	0.11	–	80
	40	0.18	–	50
	60	0.26	–	33
	75	0.33	–	26
	100	0.44	–	20
	150	0.65	–	13
	200	0.87	–	10
	300	1.30	–	6
	500	2.17	–	3
Energy saving lamps	1000	4.35	–	1
	3	0.03	–	50
	5	0.04	–	45
	7	0.055	–	40
	8	0.065	–	35
	9	0.075	–	30
	10	0.08	–	30
	11	0.09	–	30
	12	0.1	–	25
	14	0.11	–	25
	15	0.12	–	20
	16	0.13	–	20
	18	0.145	–	18
	20	0.16	–	17
	21	0.17	–	15
	23	0.185	–	15
	24	0.195	–	15
	30	0.16	–	15
Compact fluorescent lamps - series correction	10	0.19	1.4	50
	13	0.18	1.4	50
	18	0.23	1.7	40
	26	0.33	2.5	30
	18	0.38	2.7	25
	24	0.35	2.7	25
Compact fluorescent lamps - parallel correction	36	0.44	3.4	20
	5	0.18	2.2	13
	7	0.18	2.1	14
	9	0.17	2.0	15
	10	0.19	2.2	13
	11	0.16	1.7	17
	13	0.18	1.8	16
	18	0.23	2.3	13
	26	0.33	3.3	9
	18	0.38	4.2	7
	24	0.35	3.6	8
	36	0.44	4.4	6
Compact fluorescent lamps with electronic control gear (ECG)	5	0.05	–	45
	7	0.05	–	45
	9	0.07	–	32
	10	0.07	–	32
	11	0.07	–	32
	13	0.07	–	32
	18	0.22	–	10
	24	0.22	–	10
	26	0.22	–	10
	32	0.22	–	10
	36	0.22	–	10
	40	0.22	–	10
	42	0.22	–	10
	55	0.28	–	8
	57	0.28	–	8
	70	0.35	–	6
	80	0.41	–	5
	120	0.58	–	4

Lamp Types	Power W	Current A	Capacitor µF	CR max. number of lamps per current path at 230 V, 50 Hz
(to be continued)	2 x 9	0.11	–	2 x 16
Compact fluorescent lamps with electronic control gear (ECG)	2 x 10	0.11	–	2 x 16
	2 x 11	0.11	–	2 x 16
	2 x 13	0.11	–	2 x 16
	2 x 18	0.30	–	2 x 5
	2 x 24	0.31	–	2 x 5
	2 x 26	0.31	–	2 x 5
	2 x 32	0.31	–	2 x 5
	2 x 36	0.31	–	2 x 5
	2 x 40	0.40	–	2 x 4
	2 x 42	0.40	–	2 x 4
	2 x 55	0.55	–	2 x 3
	2 x 57	0.55	–	2 x 3
Fluorescent lamps - uncorrected or series correction	11	0.16	1.3	55
	18	0.37	2.7	22
	24	0.35	2.5	22
	36	0.43	3.4	17
	58	0.67	5.3	14
	65	0.67	5.3	14
	85	0.80	5.3	12
Fluorescent lamps - lead-lag circuit	2 x 11	0.07	–	2 x 50
	2 x 18	0.11	–	2 x 30
	2 x 24	0.14	–	2 x 24
	2 x 36	0.22	–	2 x 17
	2 x 58	0.35	–	2 x 10
	2 x 65	0.35	–	2 x 9
	2 x 85	0.47	–	2 x 6
Fluorescent lamps - parallel correction	11	0.16	3.5	9
	18	0.37	4.5	7
	24	0.35	4.5	7
	36	0.34	4.5	7
	58	0.67	7.0	4
	65	0.67	7.0	4
	85	0.80	8.0	3
Fluorescent lamps with electronic control gear (ECG)	18	0.09	–	25
	36	0.16	–	15
	58	0.25	–	14
	2 x 18	0.17	–	2 x 12
	2 x 36	0.32	–	2 x 7
	2 x 58	0.49	–	2 x 7
High-pressure mercury-vapour lamps - uncorrected	50	0.61	–	14
	80	0.80	–	10
	125	1.15	–	7
	250	2.15	–	4
	400	3.25	–	2
	700	5.40	–	1
	1000	7.50	–	1
High-pressure mercury-vapour lamps - parallel correction	50	0.28	7	4
	80	0.41	8	4
	125	0.65	10	3
	250	1.22	18	1
	400	1.95	25	1
	700	3.45	45	–
Metal halide lamps - uncorrected	35	0.35	–	18
	70	1.00	–	10
	150	1.80	–	5
	250	3.00	–	3
	400	3.50	–	3
	1000	9.50	–	1
	2000	16.50	–	–
Metal halide lamps - parallel correction	35	0.25	6	5
	70	0.45	12	2
	150	0.75	20	1
	250	1.50	33	–

Lamp Types	Power W	Current A	Capacitor µF	CR max. number of lamps per current path at 230 V, 50 Hz
Metal halide lamps with electronic control gear (PCI) + 50-125 x I _n lamp for 0.6 ms	20	0.10	–	9
	35	0.20	–	6
	70	0.36	–	5
	150	0.70	–	4
High-pressure sodium-vapour lamps - uncorrected	150	1.8	–	5
	250	3.0	–	3
	400	4.7	–	2
	1000	10.3	–	–
High-pressure sodium-vapour lamps - correction	150	0.83	20	1
	250	1.50	33	–
High-pressure sodium-vapour lamps with electronic control gear (PCI) + 50-125 x I _n lamp for 0.6 ms	20	0.10	–	9
	35	0.20	–	6
	70	0.36	–	5
	150	0.70	–	4
Low-pressure sodium-vapour lamps - uncorrected	18	0.35	–	22
	35	1.50	–	7
	55	1.50	–	7
	90	2.40	–	4
	135	3.50	–	3
	180	3.50	–	3
Low-pressure sodium-vapour lamps - parallel correction	18	0.35	5	6
	35	0.31	20	1
	55	0.42	20	1
	90	0.63	26	1
	135	0.94	45	–
Transformers for low-voltage tungsten halogen lamps	20	–	–	40
	50	–	–	20
	75	–	–	13
	100	–	–	10
	150	–	–	7
	200	–	–	5
	300	–	–	3
Fluorescent lamps T5 with electronic control gear (ECG)	22	0.11	FC	22
	40	0.21	FC	12
	55	0.28	FC	8
	14	0.08	HE	30
	21	0.11	HE	22
	28	0.14	HE	18
	35	0.18	HE	14
	24	0.12	HO	20
	39	0.20	HO	12
	49	0.24	HO	10
	54	0.27	HO	9
	80	0.39	HO	6
	2 x 22	0.23	2 x FC	2 x 11
	2 x 40	0.42	2 x FC	2 x 6
	2 x 55	0.55	2 x FC	2 x 4
	2 x 14	0.15	2 x HE	2 x 15
	2 x 21	0.22	2 x HE	2 x 11
	2 x 28	0.28	2 x HE	2 x 9
	2 x 35	0.36	2 x HE	2 x 7
	2 x 24	0.24	2 x HO	2 x 10
	2 x 39	0.39	2 x HO	2 x 6
	2 x 49	0.48	2 x HO	2 x 5
	2 x 54	0.54	2 x HO	2 x 4
	2 x 80	0.74	2 x HO	2 x 3

General remarks:

- In case multiple contactors are installed in one panel it is required to multiply the above mentioned fittings by the applicable load factor according the IEC 60439-1.
- It is recommended to install one spacer between each 2 contactors installed (e.g. contactor, contactor, spacer, contactor, etc.).

4.258 Controlling & Switching

Installation Contactors Z-SCH, CMUC

xPole

U_s I_n AC1 Function Type Designation Article No. Units per package

Installation Contactors Z-SCH

SG84511



Z-SCH230/1/25-20

SG84611



Z-SCH230/25-40

SG84711



Z-SCH230/63-40

230 V AC	25 A	2NO	Z-SCH230/1/25-20	120853	2 / 120
230 V AC	25 A	1NO+1NC	Z-SCH230/1/25-11	193886	2 / 120
230 V AC	25 A	2NC	Z-SCH230/1/25-02	193887	2 / 120
24 V AC	25 A	2NO	Z-SCH24/1/25-20	193885	2 / 120
24 V AC	25 A	1NO+1NC	Z-SCH24/1/25-11	193888	2 / 120
24 V AC	25 A	2NC	Z-SCH24/1/25-02	193984	2 / 120
230 V AC	25 A	4NO	Z-SCH230/25-40	248847	1 / 60
230 V AC	25 A	4NC	Z-SCH230/25-04	248848	1 / 60
230 V AC	25 A	3NO+1NC	Z-SCH230/25-31	248846	1 / 60
230 V AC	25 A	2NO+2NC	Z-SCH230/25-22	248849	1 / 60
24 V AC	25 A	4NO	Z-SCH24/25-40	248851	1 / 60
24 V AC	25 A	2NO+2NC	Z-SCH24/25-22	248850	1 / 60
230 V AC	40 A	4NO	Z-SCH230/40-40	248852	1 / 40
230 V AC	40 A	3NO+1NC	Z-SCH230/40-31	248854	1 / 40
230 V AC	40 A	2NO+2NC	Z-SCH230/40-22	248853	1 / 40
230 V AC	40 A	2NO	Z-SCH230/40-20	248855	1 / 40
230 V AC	63 A	4NO	Z-SCH230/63-40	248856	1 / 40
230 V AC	63 A	4NC	Z-SCH230/63-04	285735	1 / 40
230 V AC	63 A	3NO+1NC	Z-SCH230/63-31	248858	1 / 40
230 V AC	63 A	2NO+2NC	Z-SCH230/63-22	248857	1 / 40
230 V AC	63 A	2NO	Z-SCH230/63-20	248859	1 / 40

Installation Contactors CMUC

• Universal Control Voltage U_s AC/DC

SG28812



CMUC230/25-40

230 V AC/DC	25 A	4NO	CMUC230/25-40	137309	1 / 60
230 V AC/DC	25 A	4NC	CMUC230/25-04	137405	1 / 60
230 V AC/DC	25 A	3NO+1NC	CMUC230/25-31	137401	1 / 60
230 V AC/DC	25 A	2NO+2NC	CMUC230/25-22	137403	1 / 60
24 V AC/DC	25 A	4NO	CMUC24/25-40	137308	1 / 60
24 V AC/DC	25 A	4NC	CMUC24/25-04	137404	1 / 60
24 V AC/DC	25 A	3NO+1NC	CMUC24/25-31	137400	1 / 60
24 V AC/DC	25 A	2NO+2NC	CMUC24/25-22	137402	1 / 60

Description Type Designation Article No. Units per package

Accessories suitable for Z-SCH / CMUC

SG84311



Z-SC

Sealing cover	Z-SCHAK-2TE	248860	10
Sealing cover	Z-SCHAK-3TE	248861	10
Auxiliary Switch 1NO+1NC *)	Z-SC	248862	3
Spacer 0.5MU	Z-DST	248949	10
Suppressor RC-Combination 12-250 VAC	Z-RC/230	101428	2 / 120

*) NOT suitable for Z-SCH.../1/...- and CMUC types

Description Installation Contactors Z-SCH, CMUC

These Installation Contactors are design to cover all applications in residential and commercial sites as for as example:

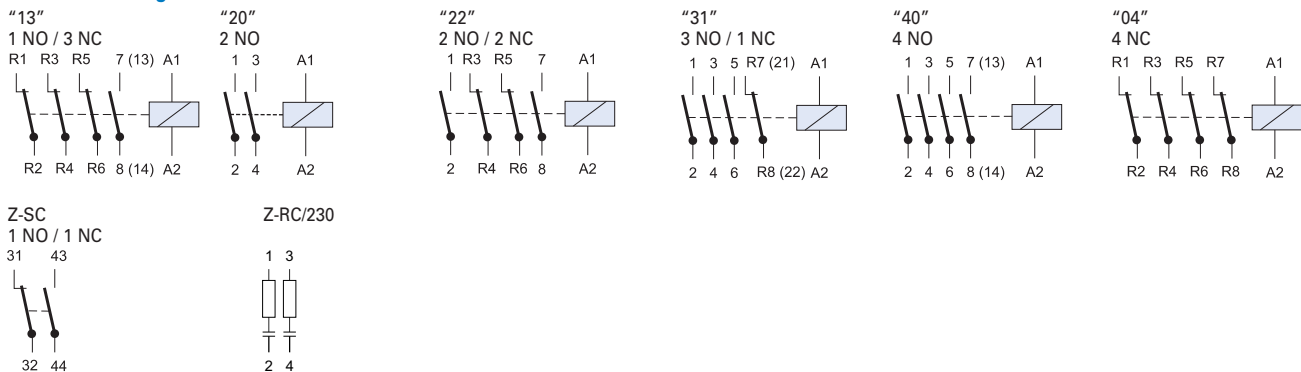
- Switching of lighting systems
- Switching of electrical heating systems
- Switching of ventilation systems
- Switching of air conditioning systems and fans
- Switching of heat pumps
- Switching of roller doors/gates and blinds
- etc. etc.

Advantages and Safety:

- Front-side switch position indicator
- Compact frame
- Large terminals
- Low switching noise
- Z-SCH low noise
- CMUC no humming
- High contact force for high switching capacity
- Simple snap-on fastening of 35 mm DIN rail
- Finger and hand touch safe according to VGB 4
- Hardly flammable materials and chlorine-free and halogen-free plastics are used
- Z-SCH: Innovative AC magnet system
- CMUC: Innovative AC/DC magnet system

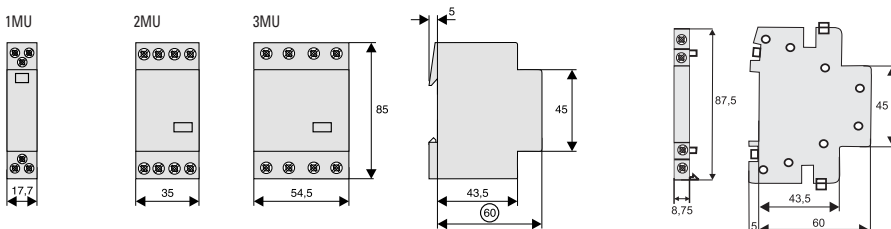
These products meets the requirement of the standards IEC/EN 60947-4-1 and IEC/EN 61095

Connection diagram

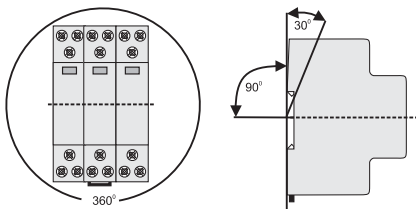


Dimensions (mm)

Z-SCH.../1/25 Z-SCH.../25 Z-SCH.../40, .../63 Z-SC (NOT suitable for Z-SCH.../1/... and CMUC types)
Z-RC/230 CMUC.../25



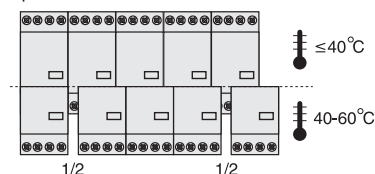
Permitted installation positions



Packing Density at full contact load

Z-SCH / CMUC

Spacers recommended!



Technical Data

		Z-SCH/25/.., CMUC../25/	Z-SCH/40/..	Z-SCH/63/..	Z-SC
Data according to		IEC 61095, EN 61095, VDE 0660, IEC 60947-4-1, EN 60947-4-1, VDE			
Utilisation category AC1 (e.g. heating system)					
Rated operational current (= I _{th})	I _n				
open at 60 °C		25 A	40 A	63 A	-
Service life of switching element		0.1 S x 10 ⁶	0.1 S x 10 ⁶	0.1 S x 10 ⁶	-
Rated operational power AC1 220 - 240 V		9.5 kW	16 kW	25 kW	-
Rated operational power AC1 380 - 415 V		17 kW	27.5 kW	43 kW	-
Lowest switching power		24 V / 100 mA	24 V / 100 mA	24 V / 100 mA	17 V / 5 mA
Utilisation category AC3 (Switching of 3phase AC motors)					
Rated operational current	I _n	9 A	27 A	30 A	-
Service life of switching element		0.15 S x 10 ⁶	0.15 S x 10 ⁶	0.15 S x 10 ⁶	-
Rated power of 3phase AC motors 50-60 Hz, 220 V		2.2 kW	7.5 kW	8 kW	-
Rated power of 3phase AC motors 50-60 Hz, 230-240 V		2.5 kW	8 kW	8.5 kW	-
Rated power of 3phase AC motors 50-60 Hz, 380-415 V		4 kW	12.5 kW	15 kW	-
Utilisation category DC1 (Switching of resistive loads, L/R ≤ 15 ms), values for NO contacts					
1pole 24 V DC		25 A	40 A	63 A	-
1pole 48 V DC		22 A	25 A	26 A	-
1pole 60 V DC		18 A	19 A	21 A	-
1pole 110 V DC		5 A	7 A	8 A	-
1pole 220 V DC		0.5 A	0.7 A	0.7 A	-
2pole in series 24 V DC		25 A	40 A	63 A	-
2pole in series 48 V DC		25 A	40 A	44 A	-
2pole in series 60 V DC		25 A	33 A	36 A	-
2pole in series 110 V DC		16 A	17 A	18 A	-
2pole in series 220 V DC		4 A	5 A	6 A	-
3pole in series 24 V DC		25 A	40 A	63 A	-
3pole in series 48 V DC		25 A	40 A	63 A	-
3pole in series 60 V DC		25 A	40 A	61 A	-
3pole in series 110 V DC		25 A	31 A	34 A	-
3pole in series 220 V DC		10 A	15 A	16 A	-
4pole in series 24 V DC		25 A	40 A	63 A	-
4pole in series 48 V DC		25 A	40 A	63 A	-
4pole in series 60 V DC		25 A	40 A	63 A	-
4pole in series 110 V DC		25 A	40 A	63 A	-
4pole in series 220 V DC		15 A	20 A	21 A	-
Utilisation category DC3 and DC5 (Switching of resistive loads, L/R ≤ 15 ms), values for NO contacts					
1pole 24 V DC		15 A	23 A	25 A	-
1pole 48 V DC		5 A	10 A	10 A	-
1pole 60 V DC		4 A	5 A	5 A	-
1pole 110 V DC		1 A	1.5 A	1.5 A	-
1pole 220 V DC		0.1 A	0.3 A	0.3 A	-
2pole in series 24 V DC		25 A	40 A	45 A	-
2pole in series 48 V DC		17 A	23 A	25 A	-
2pole in series 60 V DC		13 A	15 A	15 A	-
2pole in series 110 V DC		5 A	5 A	5 A	-
2pole in series 220 V DC		0.5 A	1 A	1 A	-
3pole in series 24 V DC		25 A	40 A	63 A	-
3pole in series 48 V DC		25 A	40 A	45 A	-
3pole in series 60 V DC		25 A	30 A	30 A	-
3pole in series 110 V DC		15 A	15 A	15 A	-
3pole in series 220 V DC		3 A	4 A	4 A	-
4pole in series 24 V DC		25 A	40 A	63 A	-
4pole in series 48 V DC		25 A	40 A	63 A	-
4pole in series 60 V DC		25 A	40 A	63 A	-
4pole in series 110 V DC		25 A	40 A	45 A	-
4pole in series 220 V DC		8 A	10 A	10 A	-
Main switching elements (U _{imp} = 4 kV)					
Rated insulation voltage	U _i	440 V AC	440 V AC	440 V AC	440 V AC
Rated operational voltage	U _e	440 V AC	440 V AC	440 V AC	440 V AC
Permissible switching frequency AC1, AC3	z	300 x/h	600 x/h	600 x/h	600 x/h
Endurance mechanical components		1 x 10 ⁶	1 x 10 ⁶	1 x 10 ⁶	1 x 10 ⁶

Technical Data (continue page)

		Z-SCH/25/.., CMUC.../25/	Z-SCH/40/..	Z-SCH/63/..	Z-SC
Auxiliary switching elements ($U_{imp} = 4 \text{ kV}$)					
Rated insulation voltage	U_i	440 V AC	440 V AC	440 V AC	440 V AC
Nominal thermal current = I_{tn} , 40°C		25 A	40 A	63 A	10 A
Nominal thermal current = I_{tn} , 60°C		25 A	40 A	63 A	6 A
Utilisation category AC15 (Controlling of electromagnetic load)					
Rated operational current 220-240 V	I_e	-	-	-	3 A
Rated operational current 380-415 V	I_e	-	-	-	2 A
Rated operational current 440 V	I_e	-	-	-	1.6 A
Utilisation category DC13 (Controlling of electromagnetic load at DC)					
Rated operational current per pole 24-60 V	I_e	-	-	-	2 A
Rated operational current per pole 110 V	I_e	-	-	-	0.4 A
Rated operational current per pole 220 V	I_e	-	-	-	0.1 A
Trip Coil Power					
 Z-SCH					
Switching on		14 - 18 VA	33 - 45 VA	33 - 45 VA	-
Holding		4.4 - 8.4 VA	7 VA	7 VA	-
		1.6 - 3.2 W	2.6 W	2.6 W	-
 CMUC		3 - 4 W	-	-	-
Operating range of trip coils multiple of U_e (-40 to +40°C)					
 Z-SCH					
Coil voltage 50 Hz		24, 220 - 240 V	220 - 240 V	220 - 240 V	-
Coil voltage 60 Hz		24, 230 - 264 V	230 - 264 V	230 - 264 V	-
 CMUC					
Coil voltage 50/60 Hz		24, 220-240 V	-	-	-
DC		24, 220 V			
Power loss per current path					
	P_v	2 W	3 W	7 W	0.5 W
Power loss per device at nominal current load 1pole	P_{vges}	5.2 W	5.6 W	5.6 W	-
Power loss per device at nominal current load 2pole	P_{vges}	7.2 W	8.6 W	16.6 W	-
Power loss per device at nominal current load 3pole	P_{vges}	9.2 W	11.6 W	23.6 W	-
Power loss per device at nominal current load 4pole	P_{vges}	11.2 W	14.6 W	30.6 W	-
Switching noise (on and off), typical mean values		80 dB	78 dB	78 dB	-
Terminal capacity					
Main conductor					
one or several wires		1.5 - 10 mm ²	2.5 - 25 mm ²	2.5 - 25 mm ²	0.5 - 2.5 mm ²
fine-wire		1.5 - 6 mm ²	2.5 - 16 mm ²	2.5 - 16 mm ²	0.5 - 2.5 mm ²
fine wires with wire end sleeve		1.5 - 6 mm ²	2.5 - 16 mm ²	2.5 - 16 mm ²	0.5 - 1.5 mm ²
number of conductors per terminal		1	1	1	2
Coil					
one or several wires		0.75 - 2.5 mm ²	0.75 - 2.5 mm ²	0.75 - 2.5 mm ²	-
fine-wire		0.5 - 2.5 mm ²	0.5 - 2.5 mm ²	0.5 - 2.5 mm ²	-
fine wires with wire end sleeve		0.5 - 1.5 mm ²	0.5 - 1.5 mm ²	0.5 - 1.5 mm ²	-
number of conductors per terminal		1	1	1	-
Weight		0.22 kg/unit	0.36 kg/unit	0.36 kg/unit	0.026 kg/unit
Tightening torque of terminal screws					
Main contacts		0.8 - 1.4 Nm	2.5 - 3.0 Nm	2.5 - 3.0 Nm	-
Coil		0.6 - 1.2 Nm	0.6 - 1.2 Nm	0.6 - 1.2 Nm	-
Short circuit protection (main circuit), maximum nominal current of fuse					
Co-ordination type (1), gL (gG)		35 A	63 A	80 A	-
Short circuit protection (auxiliary circuit), maximum nominal current of fuses					
Short-circuit current 1 kA, without fusing of contacts, gL (gG)		-	-	-	10 A
Switching times at control voltage $U_s \pm 10\%$					
Make delay		9 - 15 ms	11 - 15 ms	11 - 15 ms	-
Break delay		4 - 8 ms	6 - 13 ms	6 - 13 ms	-
Arc duration		10 - 15 ms	10 - 15 ms	10 - 15 ms	-
Pollution degree		3	3	3	3
Overvoltage category (grounded neutral system)		1 - 3	1 - 3	1 - 3	1 - 3

Installation Contactors Z-SCH, CMUC for Lighting Systems

The decisive factors are the type, connection and current consumption of lamps during switch-on and in permanent operation. Only 90 % of the continuous current of switching devices should be used in view of higher current consumption as a result of increases of voltage. The maximum number of lamps per phase that can be operated

by a switching device is dependent on the nominal current and making current of lamps on the one hand, and on the continuous current and making capacity of the switching devices on the other. Thus, e.g. in lead-lag circuits, the continuous current of contactors can be used, while this is not possible in fluorescent tubes with separate compensation.

		Z-SCH/25/... CMUC.../25/	Z-SCH/40/..	Z-SCH/63/..	Z-SC
Utilisation category AC1					
Rated operational current	I_e	25 A (60 °C)	40 A (60 °C)	63 A (60 °C)	-
Making capacity root mean square	$I_{r.m.s.}$	200 A	360 A	480 A	-
Making capacity peak value	I_{peak}	280 A	510 A	680 A	-
Utilisation category AC5a					
Rated operational power 250 V $\cos\phi = 0.45$		1.3 kW	3.4 kW	5.5 kW	-
Rated operational power 220-240 V $\sim \cos\phi = 0.90$		1.2 kW	3.1 kW	5.1 kW	-
DUO		3.7 kW	6.3 kW	10 kW	-
Utilisation category AC5b					
 Rated operational power 240V~		3 kW	5.7 kW	8 kW	-

Incandescent Lamps

The incandescent lamp filament has a very low ohmic resistance when it is cold. Therefore, when switching on, there is a high peak current (up to 20x I_n). When switching off, only the nominal current is switched off.

Utilisation category AC5b	Power	Current	Z-SCH/25/.. CMUC.../25/	Z-SCH/40/..	Z-SCH/63/..	Z-SC
	W	A	max. number of lamps per current path at 230 V, 50 Hz			
Incandescent Lamps AC5B (with or except halogen)	60	0.27	50	92	129	-
	100	0.45	30	55	77	-
	200	0.91	15	27	38	-
	300	1.36	10	19	26	-
	500	2.27	6	11	16	-
	1000	4.5	3	6	8	-
Low voltage halogen lamps (12 or 24V) with transformer (with electronic transformer)	0.09	52	110	174	-	-
	0.22	24	50	80	-	-
	75	0.33	16	35	54	-
	100	0.43	12	27	43	-
	150	0.65	9	19	29	-
	200	0.87	6	14	23	-
	300	1.30	4	9	14	-

LED Lamps

Lamp Types	Power	Current	Z-SCH/25/.. CMUC.../25/	Z-SCH/40/..	Z-SCH/63/..	Z-SC
	W	A	max. number of lamps per current path			
LED Lamp. Pay attention on the inrush current of the ballast and $\cos\phi$ of the lamp.	max. permissible inrush current contactor [A]		233	424	565	-
$\frac{\text{inrush current contactor [A]}}{\text{inrush current lamp/ballast [A]}} = \text{max. number of lamps per current path } (I_{nLED} \leq I_{th})$						

Fluorescent Tubes, Mercury Arc Lamps

High- and low pressure discharge lamps with mercury vapour, with or without fluorescent-coated glass body are perfectly identical in their electrical behaviour.

In order to limit the operational current and pre-conduction current, and to achieve the initial peak voltage, reactance coils are used as ballast. Capacitors are used for compensation of the resulting reactive current, which are either connected in series

with the coil (lead-lag circuit) or parallel to the mains (separate compensation, very rarely used now). The high making current in case of separate compensation (max. 30 x nominal current of the capacitor) which goes down quickly is usually attenuated considerably by the feed line.

Utilisation category AC5a

I / I_{Lampe} = number of connectable lamps per current path	Fluorescent lamps without comp. or with series comp.	$I = I_{eAC1} \times 0.5$
	Lead-lag circuit (2x..)	$I = I_{eAC1} \times 0.35$
	Fluorescent tubes with parallel compensation	$I = I_{peak} / 100$ (take into account compensation capacitor)
	Fluorescent tubes with electronic ballast	$I = I_{peak} / 50$
	Mercury arc lamps, HD without compensation	$I = I_{eAC1} \times 0.5$
	Mercury arc lamps, HD with compensation	$I = I_{peak} / 100$ (take into account compensation capacitor)

Utilisation category AC5a	Power	Current	Capacitor	Z-SCH/25/.. CMUC.../25/	Z-SCH/40/..	Z-SCH/63/..	Z-SC
Lamp Types	W	A	µF	max. number of lamps per current path at 230 V, 50 Hz			
Fluorescent tubes without compensation or with series compensation	11	0.16	1.3	75	210	310	-
	18	0.37	2.7	34	90	140	-
	24	0.35	2.5	34	90	140	-
	36	0.43	3.4	30	70	140	-
	58	0.67	5.3	20	45	70	-
	65	0.67	5.3	19	40	65	-
	85	0.8	5.3	16	35	60	-
Fluorescent tubes lead-lag circuit	11	0.07	-	2 x 110	2 x 220	2 x 250	-
	18	0.11	-	2 x 55	2 x 130	2 x 200	-
	24	0.14	-	2 x 44	2 x 110	2 x 160	-
	36	0.22	-	2 x 33	2 x 70	2 x 100	-
	58	0.35	-	2 x 22	2 x 46	2 x 70	-
	65	0.35	-	2 x 16	2 x 40	2 x 60	-
	85	0.47	-	2 x 11	2 x 30	2 x 40	-
Fluorescent tubes with parallel compensation	11	0.16	3.0	43	67	107	-
	18	0.37	4.0	32	50	80	-
	24	0.35	4.0	32	50	80	-
	36	0.43	4.0	32	50	80	-
	58	0.67	7.0	18	36	46	-
	65	0.67	7.0	18	36	46	-
	85	0.8	8.0	16	33	44	-
Fluorescent tubes with electronic ballast	18	0.09	-	40	100	150	-
	36	0.16	-	20	50	75	-
	58	0.25	-	15	30	55	-
	80	0.4	-	10	20	30	-
	2 x 18	0.17	-	20	50	60	-
	2 x 36	0.32	-	10	25	30	-
	2 x 58	0.49	-	7	15	20	-
Mercury arc lamps, high pressure without compensation e.g.: HQL, HPL	50	0.61	-	21	38	55	-
	80	0.8	-	16	28	40	-
	125	1.15	-	11	20	28	-
	250	2.15	-	6	11	15	-
	400	3.25	-	4	7	10	-
	700	5.4	-	2	4	6	-
	1000	7.5	-	1	3	4	-
Mercury arc lamps, high pressure with compensation e.g.: HQL, HPL	50	0.28	7	18	36	50	-
	80	0.41	8	16	31	44	-
	125	0.65	10	13	25	35	-
	250	1.22	18	7	14	19	-
	400	1.95	25	5	10	14	-
	700	3.45	45	3	6	8	-
	1000	4.8	60	2	4	6	-

Metal Halide Lamps

Metal halide lamps are a version of high-pressure mercury arc lamps with higher luminous efficiency and fidelity of colour (metalloids [halogens] added to the mercury fill up the Hg-spectrum with its many gaps). Ballast and ignition devices are necessary. Starting time 3 ... 5 minutes at 1.4 - 2 x I.
After switching on, it is not possible to light the lamp again immediately (lamp extinguishes after a power cut-off of only 1/2 period). Therefore, in many cases in important

facilities ionisation of part of the lamps is maintained by switching over to 415 V, 500 Hz (e.g. to an emergency power supply). In this case, the lamp lights immediately after the mains voltage is on again. Otherwise, this would take several minutes. When using suitable ignition devices, the lamps can be lit again immediately.

I / I _{Lampe} = number of connectable lamps per current path	Metal halide lamps (HQL) without compensation	I = I _{eACT} x 0.5
	Metal halide lamps (HQL) with compensation	I = I _{peak} / 100 (take into account compensation capacitor)
	Transformer for low voltage halogen lamps	I = I _{peak} / 50

	Power	Current	Capacitor	Z-SCH/25/.. CMUC.../25/	Z-SCH/40/..	Z-SCH/63/..	Z-SC
Lamp Types	W	A	µF	max. number of lamps per current path at 230 V, 50 Hz			
Metal halide lamps without compensation e.g. HQL, HPI	35	0.53	-	28	57	-	-
	70	1	-	15	30	-	-
	150	1.8	-	8	17	-	-
	250	3	-	5	10	-	-
	400	3.5	-	4	8	-	-
	1000	9.5	-	1	3	-	-
	2000	16.5	-	-	2	-	-
400 V per pole	2000	10.5	-	-	2	-	-
	3500	18	-	-	1	-	-
Metal halide lamps with electronic ballast (50-125 xI _n) HQL	20	0.1	i	9	18	20	-
	35	0.2	i	6	11	13	-
	70	0.36	i	5	12	12	-
	150	0.7	i	4	10	10	-
Metal halide lamps with compensation, with parallel compensation e.g. HQL, HPI	35	0.25	6	21	42	58	-
	70	0.45	12	11	21	29	-
	150	0.75	20	7	13	18	-
	250	1.5	33	4	9	11	-
	400	2.1	35	4	9	10	-
	1000	5.8	95	1	3	4	-
	2000	11.5	148	-	2	2	-
400 V per pole	2000	6.6	58	-	3	4	-
	3500	11.6	100	-	2	3	-
Transformers for low-voltage halogen lamps	20	-	-	52	110	174	-
	50	-	-	24	50	80	-
	75	-	-	16	35	54	-
	100	-	-	12	27	43	-
	150	-	-	9	19	29	-
	200	-	-	5	14	23	-
	300	-	-	4	9	14	-

Sodium Vapour Lamps

For 200 W, 1200 mm high-pressure lamps and low-pressure lamps, reactance coils are used as ballast. For smaller lamps, stray field transformers can be used as ballast. Take into account, the long starting period.

Low pressure lamps:

Without compens.: Making current $1 \times X_{L_g}$, $\cos\varphi$ 0.3; starting time 5 ... 10min
Decisive for selection of device: 60% Constant current
 $I = I_{eAC1} \times 0.6$

With compensation: Making current $20 \times X_{L_g}$, $\cos\varphi$ 0.45; starting time 5 ... 10min
(at $1.6 \times I_n$), $I = I_{peak}/200$

High pressure lamps:

Without compens.: Making current $1.4 \times X_{L_g}$, $\cos\varphi$ 0.5; starting time 5 ... 10min
Decisive for selection of device: 60% Constant current
 $I = I_{eAC1} \times 0.6$

With compensation: Making current $20 \times X_{L_g}$, $\cos\varphi$ 0.95; starting time 5 ... 10min
(at $1.6 \times I_n$)

	Power	Current	Capacitor	Z-SCH/25/.. CMUC.../25/	Z-SCH/40/..	Z-SCH/63/..	Z-SC
Lamp Types	W	A	µF	max. number of lamps per current path at 230 V, 50 Hz			
Sodium vapour lamps low-pressure without compensation	35	1.5	-	9	22	30	-
	55	1.5	-	9	22	30	-
	90	2.4	-	6	13	19	-
	135	3.3	-	4	10	14	-
	150	3.3	-	4	10	14	-
	180	3.3	-	4	10	14	-
	200	3.3	-	4	10	14	-
Sodium vapour lamps low-pressure with compensation, with parallel compensation	35	0.31	20	6	15	18	-
	55	0.42	20	6	15	18	-
	90	0.63	30	4	10	12	-
	135	0.94	45	3	7	8	-
	150	1	40	3	8	9	-
	180	1.16	40	3	8	9	-
	200	1.32	30	-	10	12	-
Sodium vapour lamps high-pressure without compensation	150	1.8	-	8	15	22	-
	250	3	-	5	10	13	-
	330	3.7	-	4	8	10	-
	400	4.7	-	3	6	8	-
	1000	10.3	-	1	3	4	-
Sodium vapour lamps high pressure with compensation, with parallel compensation	150	0.83	20	7	20	25	-
	250	1.5	33	4	12	15	-
	330	2	40	3	10	13	-
	400	2.4	48	2	8	12	-
	1000	6.3	106	1	4	6	-
Sodium vapour lamps high pressure with electronic ballast (50-125 xI _n)	20	0.1	i	9	18	20	-
	35	0.2	i	6	11	13	-
	70	0.36	i	5	12	12	-
	150	0.7	i	4	10	10	-

Utilisation Categories of Contactors

Type of current	Utilisation category	Typical Applications I = Making current, I _c = Breaking current, I _e = Rated operational current, U = Voltage, U _e = Rated operational voltage, U _r = Recovery voltage	Verification of electrical service life							Verification of switching capacity						
			Switching on				Switching off			Switching on				Switching off		
			I _e A	I I _e	U U _e	cosφ	I _c I _e	U _r U _e	cosφ	I _e A	I I _e	U U _e	cosφ	I _c I _e	U _r U _e	cosφ
AC	AC-1	Non-inductive or slightly inductive load Resistance furnaces	all values	1	1	0.95	1	1	0.95	all values	1.5	1.05	0.8	1.5	1.05	0.8
	AC-2	Slip ring motors: starting, switching off	all values	2.5	1	0.65	2.5	1	0.65	all values	4	1.05	0.65	4	1.05	0.8
	AC-3	Squirrel cage motors: starting, switching off (running motors ⁴⁾)	I _e ≤ 17 I _e > 17	6 6	1 1	0.65 0.35	1 1	0.17 0.17	0.65 0.35	I _e ≤ 100 I _e > 100	10 8	1.05 1.05	0.45 0.35	8 6	1.05 1.05	0.45 0.35
	AC-4	Squirrel cage motors: starting, plugging reversing, inching	I _e ≤ 17 I _e > 17	6 6	1 1	0.65 0.35	6 6	1 1	0.65 0.35	I _e ≤ 100 I _e > 100	12 10	1.05 1.05	0.45 0.35	10 8	1.05 1.05	0.45 0.35
	AC-5	Switching of electric discharge lamp controls									3.0	1.05	0.45	3.0	1.05	0.45
	AC-5b	Switching of incandescent lamps									1.5 ²⁾	1.05 ²⁾		1.05 ²⁾	1.05 ²⁾	
	AC-6a ³⁾	Switching of transformers														
	AC-6b ³⁾	Switching of capacitor banks														
	AC-7a	Slightly inductive loads in household appliances and similar applications	according to manufacturer specifications							1.5	1.05	0.8	1.5	1.05	0.8	
	AC-7b	Motor loads for household appliances									8,0	1.05 ¹⁾		8,0	1.05 ¹⁾	
	AC-8a	Switching of hermetically enclosed refrigerant compressor motors with manual reset of overload releases ⁵⁾									6,0	1.05 ¹⁾		6,0	1.05 ¹⁾	
	AC-8b	Switching of hermetically enclosed refrigerant compressor motors with automatic reset of overload releases ⁵⁾									6,0	1.05 ¹⁾		6,0	1.05 ¹⁾	
DC	DC-1	Non-inductive or slightly inductive load, Resistance furnaces	all values	1	1	1	1	1	1	all values	1.5	1.05	1	1.5	1.05	1
	DC-3	Shunt motors: starting, plugging, reversing, inching, dynamic braking	all values	2.5	1	2	2.5	1	2	all values	4	1.05	2.5	4	1.05	2.5
	DC-5	Series motors: starting, plugging, reversing, inching, dynamic braking	all values	2	1	7.5	2.5	1	7.5	all values	4	1.05	2.5	4	1.05	2.5
	DC-6	Switching of incandescent lamps									1.5 ²⁾	1.05 ²⁾		1.5 ²⁾	1.05 ²⁾	

acc. to IEC 947-4-1, EN 60 947 VDE 0660 Part 102

¹⁾ cosφ = 0.45 for I_e ≤ 100 A; cosφ = 0.35 for I_e > 100 A.

²⁾ The tests must be carried out with an incandescent lamp load connected.

³⁾ In this case, the test data must be derived from the test values for AC-3 or AC-4 according to a special table.

⁴⁾ Devices for utilisation category AC-3 may be used for occasional inching or plugging during a limited period, such as for setting up a machine. However, during this limited period of time, the number of operations must not exceed five per minute or ten in a ten minute period.

⁵⁾ Hermetically enclosed refrigerant compressor motor means a combination of a compressor and a motor both of which are housed in the same enclosure with no external shaft or shaft seals, the motor running in the refrigerant.

Utilisation Categories of Auxiliary Switches

Type of current	Utilisation category	Typical Applications I = Making current, I _c = Breaking current, I _e = Rated operational current, U = Voltage, U _e = Rated operational voltage, U _r = Recovery voltage, t _{0.95} = the time in ms until 95% of the stationary current has been reached, P = U _e x I _e = Rated power in Watts	Normal conditions of use						Divergent conditions of use					
			Switching on			Switching off			Switching on			Switching off		
			I	U	cosφ	I _c	U _r	cosφ	I	U	cosφ	I _c	U _r	cosφ
			I _e	U _e		I _e	U _e		I _e	U _e		I _e	U _e	
AC	AC-12	Control of resistive and solid state loads in optocoupler input circuits	1	1	0.9	1	1	0.9	-	-	-	-	-	-
	AC-13	Control of solid state loads with transformer isolation	2	1	0.65	1	1	0.65	10	1.1	0.65	1.1	1.1	0.65
	AC-14	Control of small electromagnetic loads (max. 72 VA)	6	1	0.3	1	1	0.3	6	1.1	0.7	6	1.1	0.7
	AC-15	Control of electromagnetic loads (above 72 VA)	10	1	0.3	1	1	0.3	10	1.1	0.3	10	1.1	0.3
			I	U	t _{0.95}	I _c	U _r	t _{0.95}	I	U	t _{0.95}	I _c	U _r	t _{0.95}
			I _e	U _e		I _e	U _e		I _e	U _e		I _e	U _e	
DC	DC-12	Control of resistive and solid state loads in optocoupler input circuits	1	1	1 ms	1	1	1 ms	-	-	-	-	-	-
	DC-13	Control of electromagnets	1	1	6xP ¹⁾	1	1	6xP ¹⁾	1.1	1.1	6xP ¹⁾	1.1	1.1	6xP ¹⁾
	DC-14	Control of electromagnetic loads with economy resistors in the circuit	10	1	15 ms	1	1	15 ms	10	1.1	15 ms	10	1.1	15 ms

acc. to IEC 947-4-1, EN 60 947 VDE 0660 Part 102

¹⁾ The value „6xP“ is the result of an empirical relationship which is found to represent most direct current magnetic loads up to an upper limit of P = 50W with 6 [ms]/[W] = 200 [ms]. Loads with a rated power above 50 W are composed of small loads located parallel to each other. Therefore, 300 ms is an upper limit independent of the power rating.

SGS9611



Z-S230/SO

Control Voltage	Function	MU	Type Designation	Article No.	Units per package
Impulse Relays Z-S					
• 16 A 250 VAC					
240 V 50Hz	1NO	1	Z-S240/S	265261	2 / 120
240 V 50Hz	2NO	1	Z-S240/SS	265269	2 / 120
240 V 50Hz	1NO+1NC	1	Z-S240/SO	265282	2 / 120
240 V 50Hz	2NO+2NC	2	Z-S240/2S20	265304	1 / 60
240 V 50Hz	1CO	1	Z-S240/W	265289	2 / 120
240 V 50Hz	2CO	2	Z-S240/WW	265311	1 / 60
240 V 60Hz	2NO	1	Z-S241/SS	265268	2 / 120
230 V 50Hz	1NO	1	Z-S230/S	265262	2 / 120
230 V 50Hz	2NO	1	Z-S230/SS	265271	2 / 120
230 V 50Hz	4NO	2	Z-S230/4S	270335	1 / 60
230 V 50Hz	1NO+1NC	1	Z-S230/SO	265283	2 / 120
230 V 50Hz	2NO+2NC	2	Z-S230/2S20	265305	1 / 60
230 V 50Hz	1CO	1	Z-S230/W	265290	2 / 120
230 V 50Hz	2CO	2	Z-S230/WW	265312	1 / 60
230 V 60Hz	2NO	1	Z-S231/SS	265270	2 / 120
110 V 50Hz	1NO	1	Z-S110/S	265263	2 / 120
110 V 50Hz	2NO	1	Z-S110/SS	265273	2 / 120
110 V 50Hz	1NO+1NC	1	Z-S110/SO	265284	2 / 120
110 V 50Hz	2NO+2NC	2	Z-S110/2S20	265306	1 / 60
110 V 50Hz	1CO	1	Z-S110/W	265291	2 / 120
110 V 50Hz	2CO	2	Z-S110/WW	265313	1 / 60
110 V 60Hz	2NO	1	Z-S111/SS	265272	2 / 120
110 V DC	2NO	1	Z-S109/SS	265274	2 / 120
110 V DC	1CO	1	Z-S109/W	265292	2 / 120
110 V DC	2CO	2	Z-S109/WW	265314	1 / 60
48VAC/24VDC*)	1NO	1	Z-S48/S	265534	2 / 120
48VAC/24VDC*)	2NO	1	Z-S48/SS	265536	2 / 120
48VAC/24VDC*)	4NO	2	Z-S48/4S	100665	1 / 60
48VAC/24VDC*)	1NO+1NC	1	Z-S48/SO	265538	2 / 120
48VAC/24VDC*)	2NO+2NC	2	Z-S48/2S20	265540	1 / 60
48VAC/24VDC*)	1CO	1	Z-S48/W	265544	2 / 120
48VAC/24VDC*)	2CO	2	Z-S48/WW	265542	1 / 60
24VAC/12VDC*)	1NO	1	Z-S24/S	265535	2 / 120
24VAC/12VDC*)	2NO	1	Z-S24/SS	265537	2 / 120
24VAC/12VDC*)	1NO+1NC	1	Z-S24/SO	265539	2 / 120
24VAC/12VDC*)	2NO+2NC	2	Z-S24/2S20	265541	1 / 60
24VAC/12VDC*)	1CO	1	Z-S24/W	265545	2 / 120
24VAC/12VDC*)	2CO	2	Z-S24/WW	265543	1 / 60
24 V 60Hz	2NO	1	Z-S25/SS	265276	2 / 120
12 V 50Hz	1NO	1	Z-S12/S	265266	2 / 120
12 V 50Hz	2NO	1	Z-S12/SS	265278	2 / 120
12 V 50Hz	1NO+1NC	1	Z-S12/SO	265287	2 / 120
12 V 50Hz	2NO+2NC	2	Z-S12/2S20	265309	1 / 60
12 V 50Hz	1CO	1	Z-S12/W	265296	2 / 120
12 V 50Hz	2CO	2	Z-S12/WW	265317	1 / 60
8 V 50Hz	1NO	1	Z-S8/S	265267	2 / 120
8 V 50Hz	2NO	1	Z-S8/SS	265280	2 / 120
8 V 50Hz	1NO+1NC	1	Z-S8/SO	265288	2 / 120
8 V 50Hz	2NO+2NC	2	Z-S8/2S20	265310	1 / 60
8 V 50Hz	1CO	1	Z-S8/W	265297	2 / 120
8 V 50Hz	2CO	2	Z-S8/WW	265318	1 / 60
8 V DC	2NO	1	Z-S7/SS	265281	2 / 120
8 V DC	1CO	1	Z-S7/W	265298	2 / 120
8 V DC	2CO	2	Z-S7/WW	265319	1 / 60

*) Doppelspannung AC/DC

Control Voltage

Function

MU

Type
Designation

Article No.

Units per
package**Impulse Relays with central control Z-SC**

SG69011



Z-SC230/S

240 V AC 50/60Hz	3NO	2	Z-SC240/3S	265320	1 / 60
240 V AC 50/60Hz	1NO+1CO	2	Z-SC240/1S1W	265323	1 / 60
240 V AC 50/60Hz	2NO+1NC	2	Z-SC240/2S1O	265326	1 / 60
230 V AC 50/60Hz	1NO	1	Z-SC230/S	265299	2 / 120
230 V AC 50/60Hz	3NO	2	Z-SC230/3S	265321	1 / 60
230 V AC 50/60Hz	1NO+1CO	2	Z-SC230/1S1W	265324	1 / 60
230 V AC 50/60Hz	2NO+1NC	2	Z-SC230/2S1O	265327	1 / 60
24 V AC 50/60Hz	1NO	1	Z-SC24/S	265300	2 / 120

Impulse Relays with switchable LED Z-SB

SG69111



Z-SB230/SS

230 V 50Hz	2NO	1	Z-SB230/SS	265301	2 / 120
24 V 50Hz	2NO	1	Z-SB24/SS	265302	2 / 120
24 V DC	2NO	1	Z-SB23/SS	265303	2 / 120

Description

MU

Type
Designation

Article No.

Units per
package**Accessories for Z-S./.**

SG59011



Z-S/KO

Compensator	1	Z-S/KO	270588	2 / 120
Group block	1	Z-SC/GP	270587	2 / 120

Busbar

wa_sg02512



Z-EK/25

1pole angulated grey 10 mm ²	Z-SV-10/1P-F/13	264918	10
1pole angulated blue 10 mm ²	Z-SV-10/N-F/13	264919	10
1pole angulated grey 16 mm ²	Z-SV-16/1P-1MU/F	269523	25
1pole angulated blue 16 mm ²	Z-SV-16/N-1MU/F	269524	25
Extension terminal 25 mm ² long, straight	Z-EK/25	264935	10 / 600
Extension terminal 25 mm ² short, straight	Z-EK/25/K	269525	10 / 600
Extension terminal 25 mm ² long, crosswise	Z-EK/25/QL	264937	10 / 600
Extension terminal 25 mm ² short, crosswise	Z-EK/25/Q	264936	10 / 600

Description Impulse Relays Z-S

- Impulse relays according to EN/IEC 60669 for switching electrical consumers in impulse operation.
- Shape and terminal compatible with the installation relay range
- Manual operation for testing purposes is possible
- Separately switchable LED (Z-SB../SS) for signalling purposes
- Glow lamps of illuminated pushbuttons connected parallel produce reactive currents which may be compensated by a capacitor block in order to prevent excessive heating of coils in case of high numbers of glow lamps.
- Glow lamps parallel to control keys according to table
- Main contacts can be connected to standard pin busbar

Security:

- Optional optical operating status display by means of LED
- Switching position indicated on the front side by manual operating key
- All terminals - coil and contacts - equipped with guide for secure terminal connection. Misplacement of wires impossible.
- Made of hardly flammable materials and plastics free from chlorine and halogens.
- Finger and hand touch safe according to VBG4

Advantages:

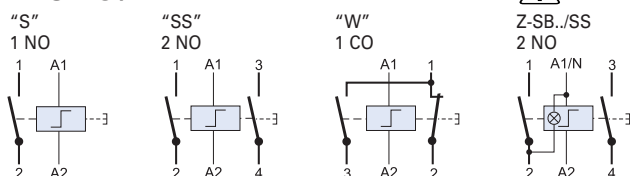
- Available in two versions (Z-S., Z-SB.)
- Low switching noise and no humming
- Easy to connect thanks to large terminals which are supplied open
- Simple snap-on fastening on 35 mm DIN rail
- High degree of flexibility thanks to a variety of contact configurations
- Easy access for coil connection

Accessories:

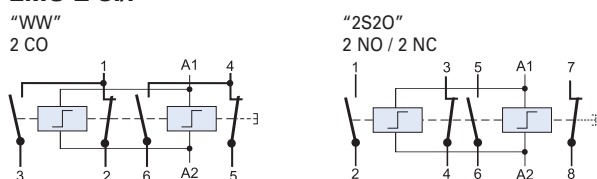
Capacitor block	Z-S/KO	270588
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Connection diagram

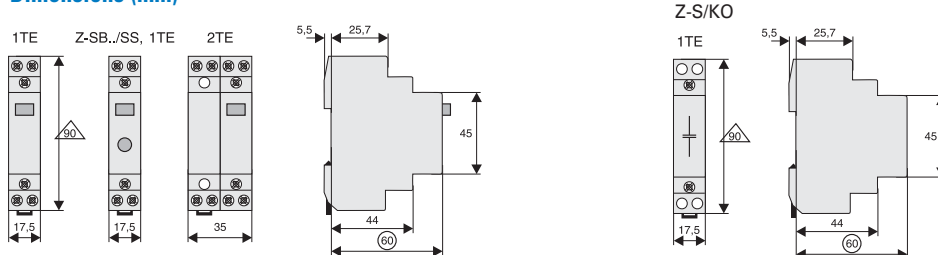
1MU Z-S./.



2MU Z-S./.



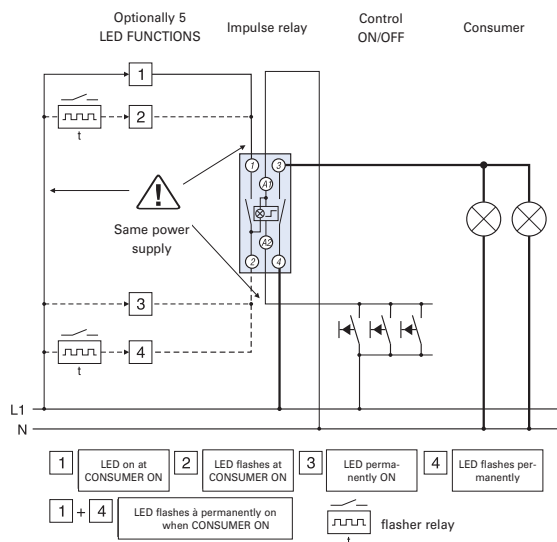
Dimensions (mm)



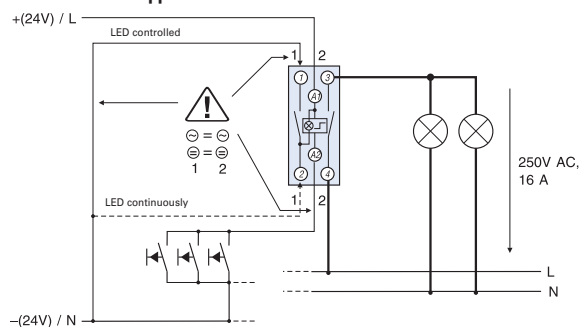
Technical Data

		Z-S
Electrical		
Rated current (IEC/EN 60669-2-2) 250 V AC		16 A
Number of poles		1 to 4
Main contacts		
NO/NC		1/2 (1MU), 3/4 (2MU)
CO		1 (1MU), 2 (2MU)
Control circuit		
Rated control feed voltage	U_s	
AC		8, 12, 24, 48, 230 V
DC		8, 12, 24, 110 V
Alternative control voltages, frequencies, and contact arrangements upon enquiry		
Rated frequency		50 Hz
Operating range		0.9-1.1 x U_s
Pickup power of coils		12 VA / 7 W typ.
Max. number of parallel pushbutton units		unlimited
Max. number of parallel illuminated pushbutton units 230 V 0.6 mA typ.		
without compensation		8 units (1MU), 15 units (2MU)
with compensation 1 x Z-SC/KO (Z-S/KO)		23 units (1MU), –
with compensation 2 x Z-SC/KO (Z-S/KO)		46 units (1MU), 43 units (2MU)
Minimum command duration		> 200 ms
Operating noise		no humming
Rated peak withstand voltage (1.2/50 μ s)	U_{imp}	2 kV
Duty max.		1 h, 100% with spacer
Load Circuit		
Rated operational voltage	U_e	
1p, 2p		250 VAC
3p, 4p		240/415 VAC
Minimum operational voltage	U_{min}	24 V AC/DC (U_s 8-110 V)
Rated insulation voltage	U_i	500 V
Rated peak withstand voltage (1.2/50 μ s)	U_{imp}	4 kV
Conventional thermal current	I_{th}	16 A AC
Rated operational current	I_e	16 A AC
Rated constant current	I_u	16 A AC
Rated current DC	I_e	
24 V		16 A
48 V		12.5 A
230 V		1 A
Conditional rated short circuit current	I_q	10 kA (with 20 A gL/gG)
Duration of bouncing		< 10 ms (typ. < 5 ms)
Endurance		
electrical components		$\geq 40 \times 10^3$ switching operations
mechanical components		$\geq 1 \times 10^6$ switching operations
Mechanical		
Frame size		45 mm
Device height		90 mm
Device width		17.5 mm pro MU
Mounting		quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in		IP20
Mounting position		as required
Upper and lower terminals		lift terminals (captive)
Terminal capacity		
Contact and coil		0.5 - 10 mm ² one- or more wire 0.5 - 6 mm ² fine wires with wire end sleeve
Temperature range		-20 to +45 °C
Total contact gap		> 5 mm / independent contacts
Contact material		does not contain cadmium
Accessories		
Capacitor block		1.5 μ F, 240 V AC

Impulse Relays with switchable LED



24 V AC and DC Application



Description Impulse Relays Z-SC with Central Control

- Impulse relay according to EN/IEC 60669 for switching electrical consumers in impulse operation.
- Local and central control, capable of switching 2-stage groups
- Shape and terminal compatible with the installation relay range
- Manual operation for testing purposes is possible
- Glow lamps of illuminated pushbuttons connected parallel produce reactive currents which may be compensated by a capacitor block in order to prevent excessive heating of coils in case of high numbers of glow lamps.
- Glow lamps parallel to control keys according to table
- Main contacts can be connected to standard busbar

Security:

- Switching position indicated on the front side by manual operating key
- All terminals - coil and contacts - equipped with guide for secure terminal connection. Misplacement of wires impossible.
- Made of hardly flammable materials and plastics free from chlorine and halogens.
- Finger and hand touch safe according to VBG4.

Advantages:

- Low switching noise and no humming
- Easy to connect thanks to large terminals which are supplied open
- Simple snap-on fastening on 35 mm DIN rail
- High degree of flexibility thanks to a variety of contact configurations
- Easy access for coil connection

- Permanent command, control by long pulse (1MU) and timer is possible

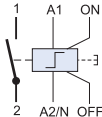


Connection diagram

1MU Z-SC./S

"S"

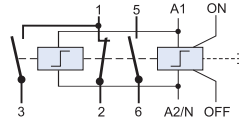
1 NO



2MU Z-SC./.

"1S1W"

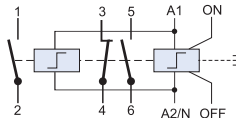
1 NO / 1 CO



2MU Z-SC./.

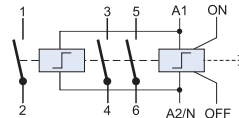
"2S1O"

2 NO / 1 NC

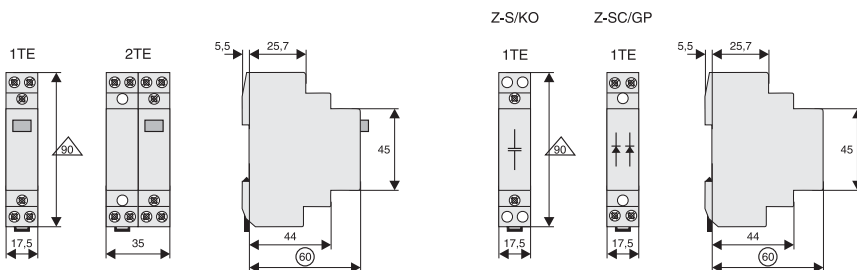


"3S"

3 NO



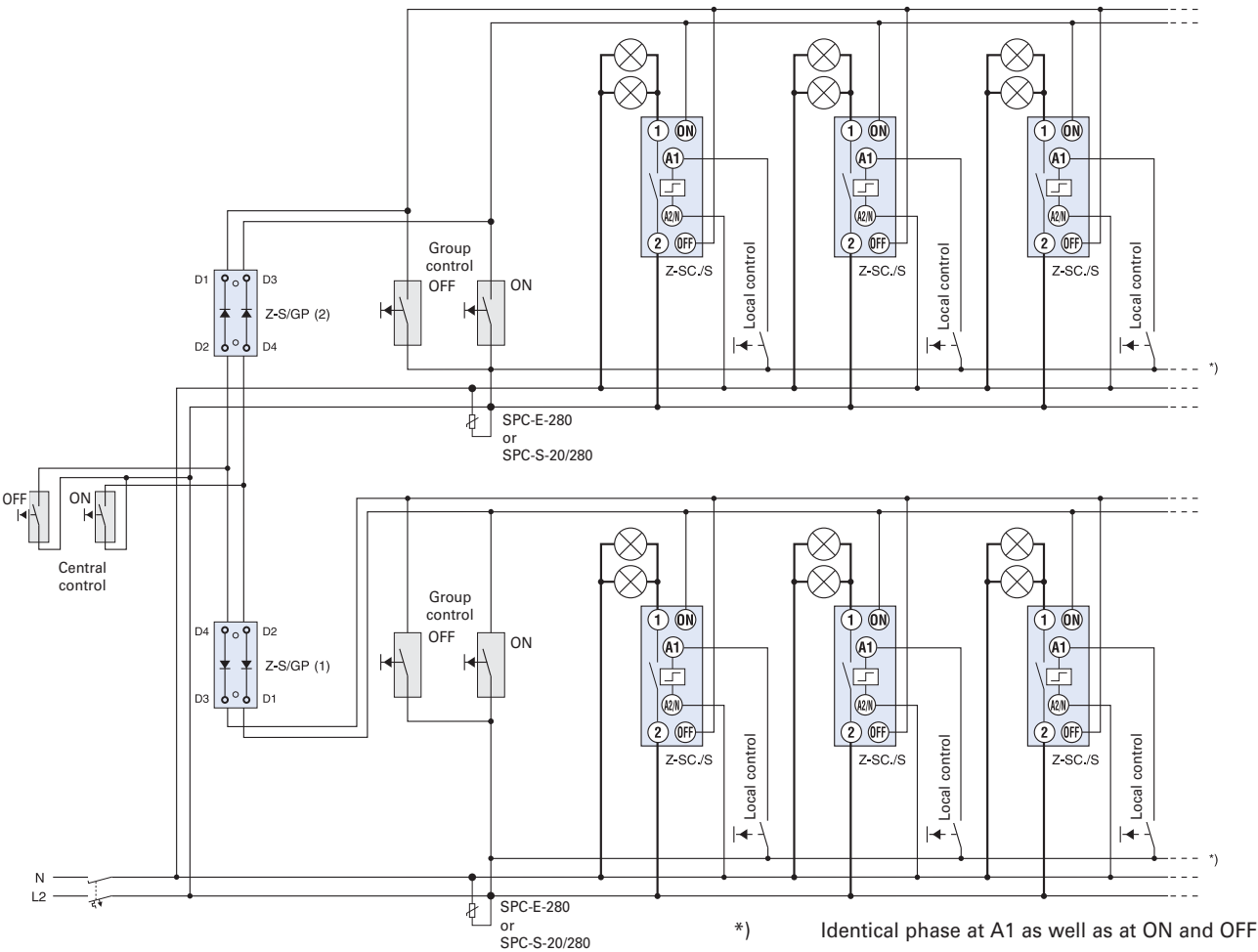
Dimensions (mm)



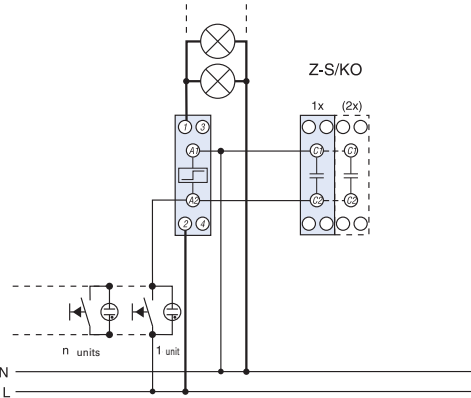
Technical Data

Z-SC	
Electrical	
Rated current (IEC/EN 60669-2-2) 250 V AC	16 A
Number of poles	1 to 3
Main contacts	
NO	1 (1MU), 3 (2MU)
NO/NC	2+1 (2MU)
CO/NO	1 (2MU)
Control circuit	
Rated control feed voltage	U_s
AC	12, 24, 230, 240 V
Alternative control voltages, frequencies, and contact arrangements upon enquiry	
Rated frequency	50 Hz; 50-60 Hz 240 V
Operating range	$0.9-1.1 \times U_s$
Maximum power of coils, pick-up	
$U_s = 24 \text{ V}$	25 VA (15W)
$U_s = 230 \text{ V}$	32 VA (19W)
Max. number of parallel pushbutton units	unlimited
Max. number of parallel illuminated pushbutton units 230 V 0.6 mA typ.	
without compensation	4 units (1MU, 2MU)
with compensation 1 x Z-SC/KO (Z-S/KO)	19 units (1MU), 9 units (2MU)
with compensation 2 x Z-SC/KO (Z-S/KO)	30 units (1MU), 18 units (2MU)
Minimum command duration	> 200 ms
Operating noise	no humming
Rated peak withstand voltage (1.2/50 μ s)	U_{imp} 2 kV
Duty	100% (1MU) see above, $\Delta t < 100\%$ (2MU), 1 h max. with spacer
Load Circuit	
Rated operational voltage	U_e
1p, 2p	250 VAC
3p	240/415 VAC
Minimum operational voltage	U_{min} 24 V AC/DC (U_s 8-110 V)
Rated insulation voltage	U_i 500 V
Rated peak withstand voltage (1.2/50 μ s)	U_{imp} 4 kV
Conventional thermal current	I_{th} 16 A AC
Rated operational current	I_e 16 A AC
Rated constant current	I_u 16 A AC
Rated current DC	I_e
24 V	16 A
48 V	12.5 A
230 V	1 A
Conditional rated short circuit current	I_q 10 kA (with 20 A gL/gG)
Duration of bouncing	< 10 ms (typ. < 5 ms)
Endurance	
electrical components	$\geq 40 \times 10^3$ switching operations
mechanical components	$\geq 1 \times 10^6$ switching operations
Mechanical	
Frame size	45 mm
Device height	90 mm
Device width	17.5 mm (1MU), 35 mm (2MU)
Mounting	quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in	IP20
Mounting position	as required
Upper and lower terminals	lift terminals (captive)
Terminal capacity	
Contact and coil	0.5 - 10 mm ² one- or more wire 0.5 - 6 mm ² fine wires with wire end sleeve
Temperature range	-20 to +45 °C
Total contact gap	> 5mm / independent contacts
Contact material	does not contain cadmium
Accessories	
Capacitor block	1.5 μ F, 240 V AC
Group block	240 V AC

Block Diagram for Central, Group, and Local Control



Compensation by means of Capacitor Block



Utilisation categories (according to IEC/EN 60947-4-1)

Utilisation categories 1MU (1S, 2S, 1S+10, 1W), 2MU (2S+20, 2W, 3S+10)		Z-S, Z-ZC, Z-SB
AC-1 $\text{--}\triangle\triangle\text{--}$		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	16 A AC
Rated operational power AC-1		3200 W ($\cos\varphi = 0.8$), 4000 VA
Make-/break-current AC-1	I_c	24 A AC
AC-3 Ⓢ		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	8 A AC
Rated operational power AC-3		900 W ($\cos\varphi = 0.45$), 2000 VA
Make-/break-current AC-3	I_c	80 A AC
AC-5a ⓧ		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	10 A AC
Rated operational power AC-5a		1125 W ($\cos\varphi = 0.45$), 2500 VA
Make-/break-current AC-5a	I_c	30 A AC
AC-5b ⓧ		
Rated operational voltage	U_e	230 V AC
Rated operational current	I_e	8.8 A AC
Rated operational power AC-5b		2024 W
Make-/break-current AC-5b	I_c	13.2 A AC
AC-7a (according to EN 61095) $\text{--}\blacksquare\text{--}$		
Rated operational voltage	U_e	250 V AC
Rated operational current	I_e	16 A AC
Rated operational power AC-7a		3200 W ($\cos\varphi = 0.8$), 4000 VA
Make-/break-current AC-7a	I_c	24 A AC
Utilisation categories 2MU (3S, 4S)		
AC-1 $\text{--}\triangle\triangle\text{--}$		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	16 A AC
Rated operational power AC-1		3200 W ($\cos\varphi = 0.8$), 4000 VA
Make-/break-current AC-1	I_c	24 A AC
AC-3 Ⓢ		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	8 A AC
Rated operational power AC-3		900 W ($\cos\varphi = 0.45$), 2000 VA
Make-/break-current AC-3	I_c	80 A AC / 64 A AC
AC-5a ⓧ		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	10 A AC
Rated operational power AC-5a		1125 W ($\cos\varphi = 0.45$), 2500 VA
Make-/break-current AC-5a	I_c	30 A AC
AC-5b ⓧ		
Rated operational voltage	U_e	230/400 V AC
Rated operational current	I_e	8.8 A AC
Rated operational power AC-5b		2024 W
Make-/break-current AC-5b	I_c	13.2 A AC
AC-7a (according to EN 61095) $\text{--}\blacksquare\text{--}$		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	16 A AC
Rated operational power AC-7a		3200 W ($\cos\varphi = 0.8$), 4000 VA
Make-/break-current AC-7a	I_c	24 A AC
AC-7b (according to EN 61095) Ⓢ		
Rated operational voltage	U_e	240/415 V AC
Rated operational current	I_e	10 A AC
Rated operational power AC-7b		1125 W ($\cos\varphi = 0.8$), 2500 VA
Make-/break-current AC-7b	I_c	30 A AC

Lamp Types	Power W	Current A	Capacitor µF	Z-S, Z-ZC, Z-SB max. number of lamps per current path at 230 V, 50 Hz
Incandescent Lamps	60	0.27		33
Low-voltage halogen lamps (12 or 24 V) with transformer / electronic transformer	20	0.09	-	55
	50	0.22	-	22
	75	0.33	-	14
	100	0.43	-	11
	150	0.65	-	7
	200	0.87	-	5
	300	1.3	-	3
Fluorescent tubes without compensation or with series compensation	11	0.16	1.3	62
	18	0.37	2.7	27
	24	0.35	2.5	27
	36	0.43	3.4	24
	58	0.67	5.3	15
	65	0.67	5.3	14
	85	0.8	5.3	12
Fluorescent tubes lead-lag circuit	11	0.07	-	2 x 71
	18	0.11	-	2 x 45
	24	0.14	-	2 x 35
	36	0.22	-	2 x 22
	58	0.35	-	2 x 14
	65	0.35	-	2 x 14
	85	0.47	-	2 x 10
Fluorescent tubes with parallel compensa- tion	11	0.16	3.0	34
	18	0.37	4.0	26
	24	0.35	4.0	26
	36	0.43	4.0	26
	58	0.67	7.0	14
	65	0.67	7.0	14
	85	0.8	8.0	13
Fluorescent tubes with electronic ballast	18	0.09	-	32
	36	0.16	-	16
	58	0.25	-	12
	2 x 18	0.17	-	16
	2 x 36	0.32	-	8
	2 x 58	0.49	-	6

Function

Type
Designation

Article No.

Units per
package**Staircase Switch with switch-off warning and stop function TL**

SG07312



Staircase switch with switchoff warning and stop function TLE

101064 2 / 120

Staircase switch as TLE, with additional control input for central control, zero-voltage proof TLK

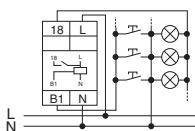
101066 2 / 120

Description Staircase Switch with switch-off warning and stop function TL

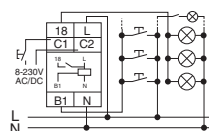
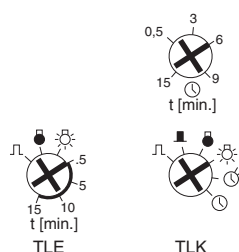
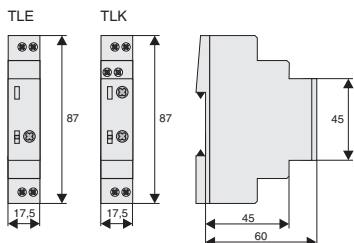
- Automatic electronic staircase switch
- Switch-off warning can be switched off (type TLK)
- Subsequent switching is possible, programmable long-time function
- Power saving function, low switching noise
- Automatic 3-/4 wire circuit recognition
- Zero voltage safety thanks to memory function (type TLK)
- Central control function (type TLK)
- External voltage control input (type TLK)

Connection diagram

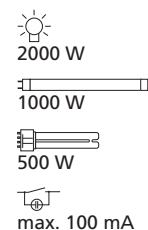
e.g. 3 wire circuit TLE



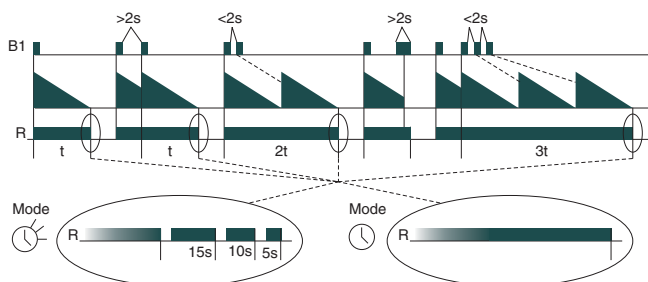
e.g. 4 wire circuit with attic lighting TLK

**Dimensions (mm)****Modes**

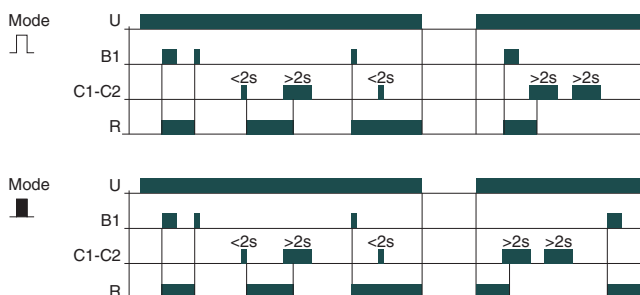
- ⌚ Automatic timing
- ⌚ Automatic timing with switch-off warning
- ☀ Permanent light
- ⬛ Off
- ⏏ Impulse relay
- ⏏ Impulse relay, zero-voltage proof

**Functional Description****Automatic timing** ⌚ ⌚ :

After pushing the button the output relay closes (terminals L-18) and the set time starts to run. If the button is pushed again before the time t has lapsed the time re-starts from zero (subsequent switching function in accordance with EN 60669-2-3). Repeated quick pressing of the pushbutton („pumping”) leads to the addition of 2, 3 or more time intervals up to 60 min. Pushing the button once for a long time (> 2 s) stops the running lighting period, and the relay switches off (power saving function). In the ⌚ function, the device generates short pulses (flickering) as a switch-off warning (according to DIN 18015-2), 15 s, 10 s, and 5 s prior to switching off.

**Impulse mode** ⏏ ⏏ :

In the impulse mode each push of the button makes the output relay switch over. In the function ⏏ the output relay is always open after the feed voltage has been applied. In the function ⏏ the relay immediately picks up when the feed voltage is applied provided that it was closed prior to the power failure. By applying a short voltage pulse (< 2 s) to the additional control input C1-C2 the relay R is switched on (central ON). A longer voltage pulse (> 2 s) causes the relay R to switch off (central OFF).



The additional control input permits activating the staircase switch e.g. from an intercom system by means of a voltage from 8 to 230 V AC/DC in the modes ⌚ and ⌚. This input channel permits starting the lighting time, as well as subsequent switching. Switching off (power saving function) and programming of longer lighting periods („pumping”) is not possible via this input channel.

Technical Data

	TL
Electrical	
Feed voltage	230 V AC
Rated voltage tolerance	-15%, +10%
Power consumption	6 VA (0.8 W)
Rated frequency	48-63 Hz
Duty	100%
Reset time	500 ms
Adjustment range	0.5 - 15 min.
Overvoltage category	III (in accordance with IEC 60664-1)
Rated surge voltage	4 kV
Output	
Switching contact	1 NO (Terminals L-18)
Rated voltage	250 VAC
Constant current	16 A
Switch on peak current (20 ms)	80 A
Breaking capacity AC	4000 VA / AC1, 384 W / DC
Maximum current	30 A / < 3s
Switching voltage	250 V AC1 / 24 V DC
Min. Breaking capacity DC	500 mW
Output indication	yellow LED (𐀀)
Mechanical endurance	30 x 10 ⁶ switching operations
Electrical endurance (AC1)	10 x 10 ⁵ switching operations 16 A / 250 V
Control input B1	
Connection (carrying voltage)	Pushbutton T-N (3-wire circuit) Pushbutton T-L (4-wire circuit)
Glow lamps parallel to control keys	max. 100 mA
Overload protection	electronic
Control input	
C1-C2 (Type TLK)	8-230 V AC/DC
Mechanical	
Frame size	45 mm
Device height	87 mm
Device width	17.5 mm (1MU)
Mounting	quick fastening on DIN rail IEC/EN 60715
Degree of protection / Pollution degree	IP20 / 2
Type of connection	lift terminals according to VBG 4 (PZ1 required)
Terminal capacity	1x 0.5-4 mm ² , 2x 0.5-2.5 mm ²
Tightening torque	max. 1 Nm
Temperature range	-25 to +55 °C
Operation position	as required

4.280 Controlling & Switching

xPole

Time-Lag Relay ZR

SG07412



ZRMF1/W

SG07912



ZRMF2/WW

Function	Contactors	Type Designation	Article No.	Units per package
Time-Lag Relay ZR				
E, R	1CO	ZRER/W	110405	2 / 120
E, R, Ws, Wa, Es, Wu, Bp	1CO	ZRMF1/W	110406	2 / 120
E, R, Ws, Wa, Es, Wu, Bp	2CO	ZRMF2/WW	110408	1 / 60
Ip, li	1CO	ZRTAK/W	110747	2 / 120

Description Time-Lag Relay ZR

Functions

- **ZRER/W**
 - E ON delay
 - R OFF delay
- **ZRMF1/W, ZRMF2/WW**
 - E ON delay
 - R OFF delay
 - Ws Single shot leading edge with control input
 - Wa Single shot trailing edge with control input
 - Es ON delay with control input
 - Wu Single shot leading edge voltage controlled
 - Bp Flasher pause first
- **ZRTAK/W**
 - Ip Asymmetric flasher pause first
 - li Asymmetric flasher pulse first (with bridge A1-B1)

Indicators

ZRER/W, ZRMF1/W, ZRMF2/WW

- Green LED U/t ON: indication of supply voltage
- Green LED U/t flashes: indication of time period
- Gelbe LED R ON/OFF: indication of output relay

ZRTAK/W

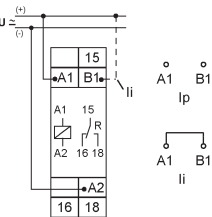
- Green LED U/t ON: indication of supply voltage
- Green LED U/t slow flashing: indication of time period t1
- Green LED U/t fast flashing: indication of time period t2
- Gelbe LED R ON/OFF: indication of output relay

Time Ranges

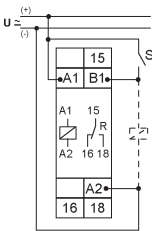
Absolute time range	Adjustment range	
1s	50ms	1s
10s	500ms	10s
1min	3s	1min
10min	30s	10min
1h	3min	1h
10h	30min	10h
100h	5h	100h

Connection diagram

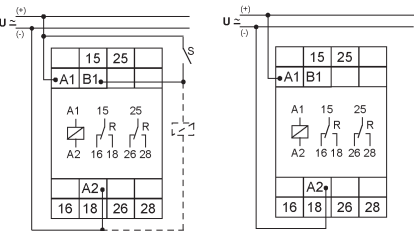
Type ZRTAK/W



Type ZRER/W, ZRMF1/W



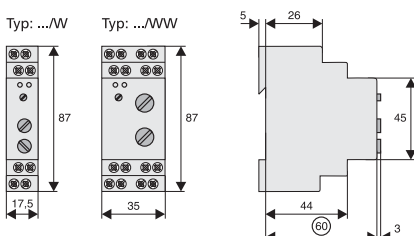
Type ZRMF2/WW



Technical Data

ZR	
Electrical	
Standard according	EN 60669
Basic accuracy	±1% (of scale end value)
Setting accuracy	<5% (of scale end value)
Repeating accuracy:	<0.5% or ±5ms
Effect of voltage	—
Effect of temperature	≤0.01% / °C
Input circuit	
Feed voltage Terminals A1-A2	24 V to 240 V AC/DC, 24 V / -15% to 240 V / +10%
Rated frequency	48 to 63 Hz
Power consumption	
Type: .../W	4 VA (1.5 W)
Type: .../WW	6 VA (2 W)
Duty	100%
Reset time	100 ms
Residual ripple in case of DC	10%
Release voltage	>30% of min. feed voltage
Output circuit	
Breaking capacity	potential-free CO
Fuse protection	2000 VA (8 A / 250 V AC)
Endurance	8 A fast
electrical components at a resistive load of 1000 VA	2 x 10 ⁵ switching operations
mechanical components	20 x 10 ⁶ switching operations
Switching frequency	
at a resistive load of 100 VA	max. 60/min
at a resistive load of 1000 VA (in accordance with IEC 60947-5-1)	max. 6/min
Rated surge voltage	4 kV
Overvoltage category	III (in accordance with IEC 60664-1)
Control contact	
Input carrying potential	Terminals A1-B1
loadable	yes
Maximum line length	10 m
Overload protection	electronic
Minimum control pulse length	
DC	50 ms
AC	100 ms
Trigger level (sensitivity)	automatic adaption to supply voltage
Mechanical	
Frame size	45 mm
Device height	87 mm
Device width	17.5 mm (/W) and 35 mm (/WW)
Degree of protection, built-in	IP40
Operation position	as required
Upper and lower terminals	lift terminals
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274
Terminal capacity	1 x 0.5-2.5 mm ² with/without multicore cable end 1 x 4 mm ² without multicore cable end 2 x 0.5-1.5 mm ² with/without multicore cable end 2 x 2.5 mm ² flexible without multicore cable end
Tightening torque of terminal screws	max. 1 Nm
Permitted relative air humidity in accordance with IEC 60721-3-3 class 3K3	15 to 85%
Ambient temperature in accordance with IEC 60068-1	-25 to +55 °C
Storage and transport temperature	-25 to +70 °C
Pollution degree	2
when built in	3

Dimensions (mm)



Description of Functions

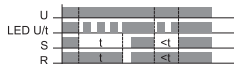
• ON delay (E)

When the supply voltage U is applied, the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated) the output relay R switches into on-position (yellow LED illuminated). This status remains until the supply voltage is interrupted. If the supply voltage is interrupted before the expiry of the interval t, the interval already expired is erased and is restarted when the supply voltage is next applied.



• OFF delay (R)

The supply voltage U must be constantly applied to the device (green LED U/t illuminated). When the control contact S is closed, the output relay R switches into on-position (yellow LED illuminated). If the control contact is opened, the set interval t begins (green LED flashes). After the interval t has expired (green LED U/t illuminated) the output relay switches into off-position (yellow LED not illuminated). If the control contact is closed again before the interval t has expired, the interval already expired is erased and is restarted.



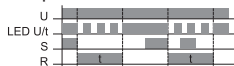
• Single shot leading edge with control input (Ws)

The supply voltage U must be constantly applied to the device (green LED U/t illuminated). When the control contact S is closed, the output relay R switches into on-position (green LED U/t illuminated) and the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated) the output relay switches into off-position (yellow LED not illuminated). During the interval, the control contact can be operated any number of times. A further cycle can only be started when the cycle run has been completed.



• Single shot trailing edge with control input (Wa)

The supply voltage U must be constantly applied to the device (green LED U/t illuminated). Closing the control contact S has no influence on the condition of the output R. When the control contact is opened, the output relay switches into on-position (yellow LED illuminated) and the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated), the output relay switches into off-position (yellow LED not illuminated). During the interval, the control contact can be operated any number of times. A further cycle can only be started when the cycle run has been completed.



• ON delay with control input (Es)

The supply voltage U must be constantly applied to the device (green LED U/t illuminated). When the control contact S is closed, the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated) the output relay R switches into on-position (yellow LED illuminated). This status remains until the control contact is opened again. If the control contact is opened before the interval t has expired, the interval already expired is erased and is restarted with the next cycle.



• Single shot leading edge voltage controlled (Wu)

When the supply voltage U is applied, the output relay R switches into on-position (yellow LED illuminated) and the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated) the output relay switches into off-position (yellow LED not illuminated). This status remains until the supply voltage is interrupted. If the supply voltage is interrupted before the interval t has expired, the output relay switches into off-position. The interval already is erased and is restarted when the supply voltage is next applied.



• Flasher pause first (Bp)

When the supply voltage U is applied, the set interval t begins (green LED U/t flashes). After the interval t has expired, the output relay R switches into on-position (yellow LED illuminated) and the set interval t begins again. After the interval t has expired, the output relay switches into off-position (yellow LED not illuminated). The output relay is triggered at a ratio of 1:1 until the supply voltage is interrupted.



• Asymmetric flasher pause first (Ip)

When the supply voltage U is applied, the set interval t1 begins (green LED U/t flashes slowly). After the interval t1 has expired, the output relay R switches into on-position (yellow LED illuminated) and the set interval t2 begins (green LED U/t flashes fast). After the interval t2 has expired, the output relay switches into off-position (yellow LED not illuminated). The output relay is triggered at the ratio of t1:t2 until the supply voltage is interrupted.



• Asymmetric flasher pulse first (Ii)

When the supply voltage U is applied, the output relay R switches into on-position (yellow LED illuminated) and the set interval t1 begins (green LED U/t flashes slowly). After the interval t1 has expired, the output relay switches into off-position (yellow LED not illuminated) and the set interval t2 begins (green LED U/t flashes fast). After the interval t2 has expired, the output relay switches into on-position (yellow LED illuminated). The output relay is triggered at the ratio of t1:t2 until the supply voltage is interrupted.



Switching voltage

 U_N

Contactors

Type
Designation

Article No.

Units per
package**Undervoltage Relay REUVM**

- Optical indication
Relay active ... green LED
Fault in phases L1, L2, L3 ... red LED is flashing
Loss of Neutral conductor N ... green LED is flashing
- Single phase application is possible

SG83511



$U_N \times 0.85$	230/400 VAC	1CO	REUVM	148598	1
$U_N \times 0.85$	230/400 VAC	2CO	REUVM2	167284	1

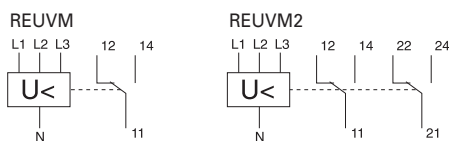
Description Undervoltage Relay REUVM

- When the connection to the three phases and neutral conductor is made the relay is energized in case there is no fault and the green LED lights. If the monitored nominal voltage U_N drops under the switching voltage U_S , in one, two or all three phases the relay reverts to its de-energized position. The green LED disappear.
- Optical indication
Relay active ... green LED
Fault in phases L1, L2, L3 ... red LED is flashing
Loss of Neutral conductor N ... green LED is flashing
- Single-phases operation: bridge L1-L2-L3

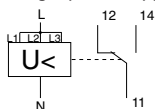
Technical Data

		REUVM
Electrical		
Rated operational voltage	U_N	230/400 V AC
Rated frequency		50-60 Hz
Switching voltage	U_S	$U_N \times 0.85$ fix
Power consumption		< 1 VA
Switching time delay		500 ms
Switching contact		1 CO, 2 CO
Rated operational voltage / current		250 VAC / 5A $\cos\varphi = 1$ 30 VDC / 5A 300 VDC / 0.25A
Min. Rated operational voltage		100 mV AC/DC
Min. Rated operational current		10 mA AC/DC
Rated peak withstand voltage		4 kV
Duty		100%
Overvoltage category		III
Dielectric strength		
Coil – contact circuit		4 kV _{r.m.s.}
Open circuit contact		1 kV _{r.m.s.}
Mechanical		
Frame size		45 mm
Device height		90 mm
Device width		17.8 mm
Weight		65 g, 73 g
Mounting		quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in		IP40
Upper and lower terminals		lift terminals
Terminal capacity		
solid		1x4 mm ² , 2x1.5 mm ²
fine-wire		1x2.5 mm ²
Tightening torque of terminal screws		0.5 Nm
Resistance to climatic conditions		F / DIN 40040
Temperature range		-25 to +60 °C
Flame class		V0, glow wire 960 °C
Pollution degree		2
Comparative tracking index		CTI 600

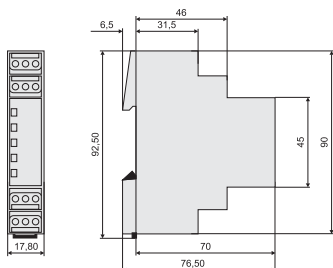
Connection diagram



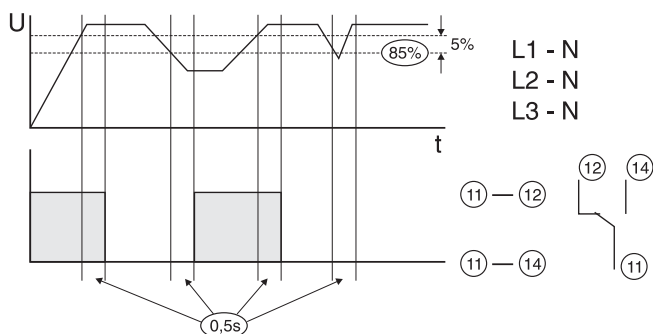
Single-phases application



Dimensions (mm)

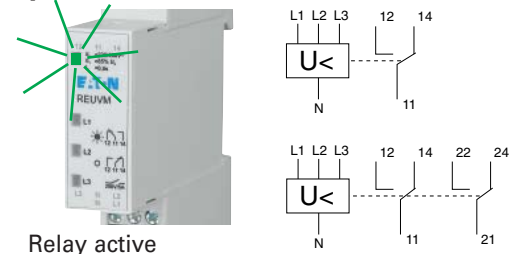


Functional diagram

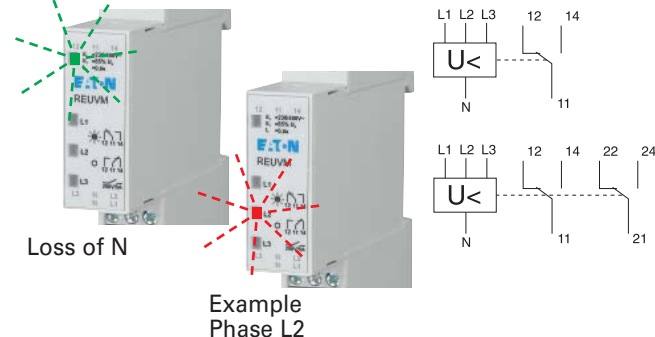


Optical indication and contact position

Operation



Fault



Rated operational voltage

Type
Designation

Article No.

Units per
package**Voltage Indication UVA**

- Optical indication
Voltage of phases L1, L2, L3 is indicated with green LED's even at loss of Neutral conductor N
- Single-phases application, or even possible to use DC

SG00112



230/400 V AC, 50/60 Hz

UVA

167285

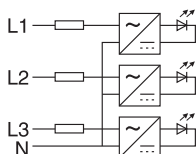
1

Description Voltage Indication UVA

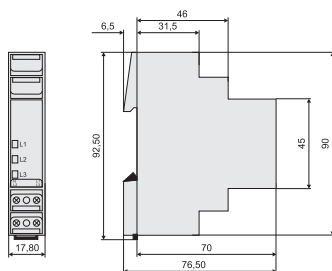
- When the connection to the three phases and neutral conductor is made, the green Power LED lights. If only two phases are connected, eg. L1 and L3, only these green LED's lights, even at loss of Neutral conductor N.
- For use as voltage return indication in manual operated Mains-Emergency-system operation
- Large operational voltage range 85-480 V AC, 85-300 V DC

Technical Data

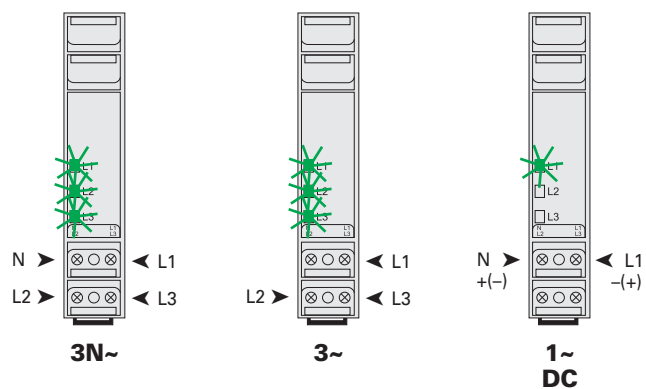
		UVA
Electrical		
Rated operational voltage	U_N	230/400 V AC
Rated frequency		50-60 Hz
Rated operational voltage range		
L-L		85-480 V AC
L-N		85-300 V AC/DC
Power consumption at 400 V AC		3x 23 mW
Max. permissible back-up fuse		16A gG (gL)
Duty		100%
Rated peak withstand voltage		6 kV
Overvoltage category		IV
Mechanical		
Frame size		45 mm
Device height		90 mm
Device width		17.8 mm
Weight		42 g
Mounting		quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in		IP40
Upper and lower terminals		lift terminals
Terminal capacity		
solid		1x4 mm ² , 2x1.5 mm ²
fine-wire		1x2.5 mm ²
Tightening torque of terminal screws		0.5 Nm
Temperature range		-30 to +60°C
Flame class		V0, glow wire 960 °C
Pollution degree		2
Comparative tracking index		CTI 600

Connection diagram

Dimensions (mm)



Application and visuelle indicators



SG78711



Function	Rated operational current range (A)	Type Designation	Article No.	Units per package
Load Shedding (Current) Relay Z-LAR				
NC	3-8	Z-LAR/8-O	248256	1 / 60
NC	10-16	Z-LAR/16-O	248257	1 / 60
NC	15-32	Z-LAR/32-O	248258	1 / 60
NO	3-8	Z-LAR/8-S	248259	1 / 60
NO	10-16	Z-LAR/16-S	248260	1 / 60
NO	15-32	Z-LAR/32-S	248261	1 / 60
CO	3-8	Z-LAR/8-W	248262	1 / 60

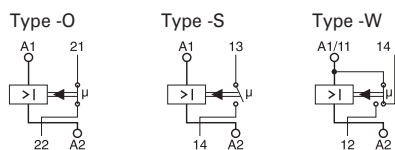
Description Load Shedding (Current) Relay Z-LAR

- For simple priority connection of important consumers
- For fast current increase
- Expensive peak loads are avoided efficiently (staggered heating)
- Integrated auxiliary switch, 1 NC or 1 NO or 1 CO contact
- NC and NO contact are potential free

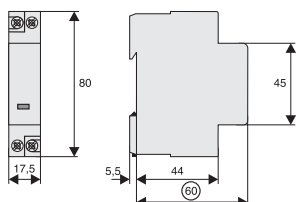
Technical Data

		Z-LAR/8	Z-LAR/16	Z-LAR/32
Electrical				
Nominal thermal current	I _{th}	8 A	16 A	32 A
Rated voltage	U	250 V AC	250 V AC	250 V AC
Responding current	I _{AN}	≥ 3 A	≥ 10 A	≥ 15 A
Release current	I _A	≤ 1.8 A	≤ 4.2 A	≤ 7.4 A
Max. electrical switching frequency		3600/h	3600/h	3600/h
Rated insulation voltage	U _i	440 V	440 V	440 V
Power loss at I _{th}				
Effective power		3.4 W	1.95 W	3.17 W
Apparent power		7.7 VA	4.66 VA	7,36 VA
Rated peak withstand voltage	U _{imp}	4 kV	4 kV	4 kV
Back-up fuse line protection		max. 10 A	max. 16 A	max. 32 A
Switching contact				
Function NC, NO, CO				
Back-up fuse		max. 1 A gL	max. 1 A gL	max. 1 A gL
Contact gap *)		< 3 mm (μ)	< 3 mm (μ)	< 3 mm (μ)
Breaking capacity		1 A / 250 V~	1 A / 250 V~	1 A / 250 V~
Minimum switching capacity		300 mW	300 mW	300 mW
Minimum operational voltage		12 V	12 V	12 V
Endurance electrical components		100,000 switching operations		
*) Do not use as the only means of isolating a device from the line voltage				
Mechanical				
Frame size		45 mm	45 mm	45 mm
Device height		80 mm	80 mm	80 mm
Device width		17.5 mm (1MU)	17.5 mm (1MU)	17.5 mm (1MU)
Mounting		quick fastening on DIN rail IEC/EN 60715		
Degree of protection, built-in		IP40	IP40	IP40
Terminal protection		finger and hand touch safe according to DGUV VS3, EN 50274		
Upper and lower terminals		lift terminals	lift terminals	lift terminals
Terminal capacity				
Main circuit		2 x 10 mm ²	2 x 10 mm ²	2 x 10 mm ²
Auxiliary circuit		2 x 2.5 mm ²	2 x 2.5 mm ²	2 x 2.5 mm ²
Tightening torque of terminal screws				
Main circuit		max. 2.4 Nm	max. 2.4 Nm	max. 2.4 Nm
Auxiliary circuit		max. 1 Nm	max. 1 Nm	max. 1 Nm

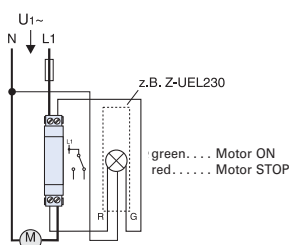
Connection diagram



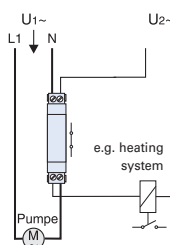
Dimensions (mm)



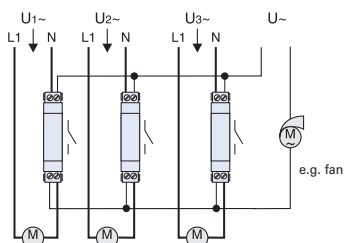
Connection Example - Operating Status



Connection Example - Priority for Pump



Connection Example - „OR“ Circuit, Extraction System



SG84011



Drive	Program	Channels	Type Designation	Article No.	Units per package
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Digital Timers TSDW

Digital	Week	1 channel	TSDW1CO	167379	1
Digital	Week	2 channelss	TSDW2CO	167380	1
DCF/GPS	Week	1 channel	TSDW1CODG	PHASE OUT 167382	1
Digital	Week	1 channel	TSDW1COMIN	167383	1

Description	Type Designation	Article No.	Units per package
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Accessories

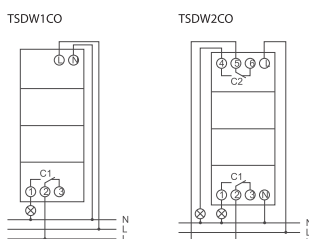
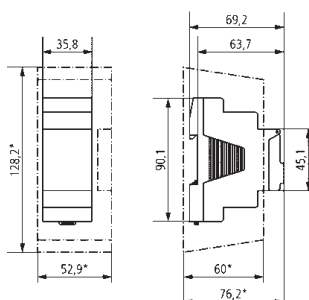
DCF antenna for timers digital TSDW1CODG	TSADCF	PHASE OUT 167384	1
GPS antenna with power supply for TSDW1CODG	TSAGPSKIT	PHASE OUT 167385	1
PC Set + memory card for SRC1CO, TSDW1CO, TSDW2CO, TSDW1COA, TSDW1CODG	TSAMEMKIT	PHASE OUT 167386	1
Memory card	TSAMEM	167387	1

Description Digital Timers with a Weekly Program TSDW1CO, TSDW2CO

- Spring terminals
- Text-based user guidance on the display
- 56 memory cells
- Interface for memory card (PC programming)
- 10 years power backup (lithium battery)
- Zero-cross switching for a relay-saving way of switching and for high lamp loads
- ON-OFF switching times
- Pre-selected switching
- Permanent ON/OFF switching
- Integrated counter for operating hours
- Vacation program
- Display background lighting (can be switched off)
- PIN coding
- Automatic spring forward/fall back at daylight-saving start and end dates
- TSDW1CO: 1 channel
- TSDW2CO: 2 channels

Technical Data

	TSDW1CO	TSDW2CO
Electrical		
Rated operational voltage	230–240 V AC	230–240 V AC
Frequency	50–60 Hz	50–60 Hz
Power backup	10 years	10 years
Breaking capacity		
at 250 V AC, $\cos\varphi = 1$	16 A	16 A
at 250 V AC, $\cos\varphi = 0.6$	10 A	10 A
Incandescent/halogen lamp load	2600 W	2600 W
Min. switching capacity	ca.10 mA	ca.10 mA
Shortest switching time	1 min	1 min
Accuracy	$\leq \pm 0.5$ s/day (quartz)	$\leq \pm 0.5$ s/day (quartz)
Stand-by Power	0.8 W	0.8 W
Mechanical		
Frame size	45 mm	45 mm
Device width	36 mm	36 mm
Mounting	DIN rail	DIN rail
Degree of protection	IP20	IP20
Protection class	II according to EN 60730-1	II according to EN 60730-1
Ambient temperature	-30 to +55 °C	-30 to +55 °C
Certification mark	V	V

Connection example**Dimensions (mm)**

Description Digital Timers with a Weekly Program TSDW1CODG

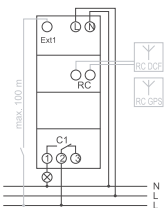
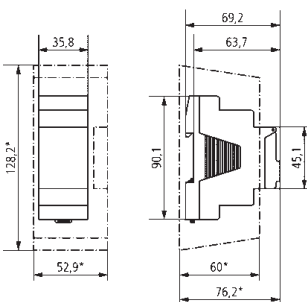
- Spring terminals
- Text-based user guidance on the display
- 84 memory cells
- Interface for memory card (PC programming)
- 10 years power backup (lithium battery)
- Zero-cross switching for a relay-saving way of switching and for high lamp loads
- ON-OFF switching times
- Pulse program
- Cyclical program
- Pre-selected switching
- Permanent ON/OFF switching
- Expiry timer
- Integrated counter for operating hours
- Vacation program
- 2 random programs
- Display background lighting (can be switched off)
- PIN coding
- Automatic spring forward/fall back at daylight-saving start and end dates
- Time synchronization is possible by connecting an external aerial, e. g. a TSADCF or TSAGPSKIT aerial set
- 1 channel
- External input

Technical Data

	TSDW1CODG
Electrical	
Rated operational voltage	230–240 V AC
Frequency	50–60 Hz
Power backup	10 years
Breaking capacity	
at 250 V AC, $\cos\varphi = 1$	16 A
at 250 V AC, $\cos\varphi = 0.6$	10 A
Incandescent/halogen lamp load	2600 W
Min. switching capacity	ca.10 mA
Shortest switching time	1 s
Accuracy	$\leq \pm 0.5$ s/day (quartz) or DCF77/GPS
Stand-by Power	1.4 W
Mechanical	
Frame size	45 mm
Device width	36 mm
Mounting	DIN rail
Degree of protection	IP20
Protection class	II according to EN 60730-1
Ambient temperature	-30 to +55 °C
Certification mark	V

Connection example

TSDW1CODG

**Dimensions (mm)**

Description Digital Timers with a Weekly Program TSDW1COMIN

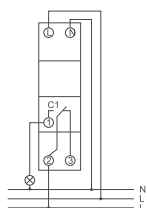
- 1 channel
- Screw-type terminals
- Text-based operator guidance on the display
- 28 memory cells
- 3 years Power backup (exchangeable lithium battery)
- ON-OFF switching times
- Pre-selected switching
- Permanent ON/OFF switching
- PIN coding
- Automatic spring forward/fall back at daylight-saving start and end dates

Technical Data

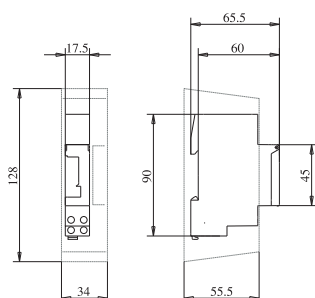
	TSDW1COMIN
Electrical	
Rated operational voltage	230 V AC
Frequency	50–60 Hz
Power backup	3 years
Breaking capacity	
at 250 V AC, $\cos\varphi = 1$	16 A
at 250 V AC, $\cos\varphi = 0.6$	6 A
Incandescent/halogen lamp load	1000 W
Shortest switching time	1 min
Accuracy	$\leq \pm 1 \text{ s/day (quartz)}$
Stand-by Power	0.4 W
Mechanical	
Frame size	45 mm
Device width	17.5 mm
Mounting	DIN rail
Degree of protection	IP20
Protection class	II according to EN 60730-1
Ambient temperature	-10 to +55 °C
Certification mark	V

Connection example

TSDW1COMIN



Dimensions (mm)



Drive	Program	Channels	Type Designation	Article No.	Units per package
Astronomical Timer with a Weekly Program TSDW1COA					
Quartz	Week	1 channel	TSDW1COA	167381	1

SG84011



Description Astronomical Timer with a Weekly Program TSDW1COA

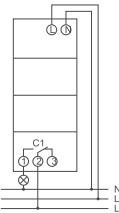
- Astronomical switching function (automatic calculation of sunrise and sunset times for the entire year)
- Spring terminals
- Text-based user guidance on the display
- Interface for memory card (PC programming)
- 10 years power backup (lithium battery)
- Zero-cross switching for a relay-saving way of switching and for high lamp loads
- Calculated astronomical switching times
- Programmable ON/OFF switching times
- Pre-selected switching
- Permanent ON/OFF switching
- Integrated counter for operating hours
- Vacation program
- Display background lighting (can be switched off)
- PIN coding
- Automatic spring forward/fall back at daylight-saving start and end dates
- 1 channel
- 54 memory cells

Technical Data

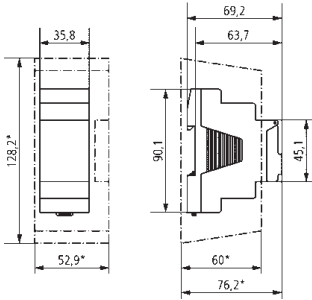
TSDW1COA	
Electrical	
Rated operational voltage	230–240 V AC
Frequency	50–60 Hz
Power backup	10 years
Breaking capacity	
at 250 V AC, $\cos\varphi = 1$	16 A
at 250 V AC, $\cos\varphi = 0.6$	10 A
Incandescent/halogen lamp load	2600 W
Min. switching capacity	ca.10 mA
Shortest switching time	1 s
Accuracy	$\leq \pm 0.5$ s/day (quartz)
Stand-by Power	0.8 W
Mechanical	
Frame size	45 mm
Device width	36 mm
Mounting	DIN rail
Degree of protection	IP20
Protection class	II according to EN 60730-1
Ambient temperature	-30 to +55 °C
Certification mark	V

Connection example

TSDW1COA



Dimensions (mm)



4.294

Controlling & Switching

xPole

Analogue Timers TS

SG83911



Drive	Program	Channnels	Type Designation	Article No.	Units per package
Analogue Timers TS					
Quartz	Day	1 channnel	TSQD1N0	167388	1
Synchron	Day	1 channnel	TSSD1N0	167389	1
Quartz	Day	1 channnel	TSQD1C0	167390	1
Synchron	Day	1 channnel	TSSD1C0	167391	1
Quartz	Week	1 channnel	TSQW1C0	167392	1

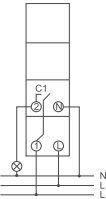
Description Analogue Timers TSQD1NO, TSSD1NO

- 1 MU
 - 1 channel
 - Screw-type terminals
 - Manual switch with 3 positions: Permanent ON/AUTO/Permanent OFF
 - Switching status indication
- TSQD1NO: with power backup (exchangeable NiMH cell)
 - Quartz-controlled
 - TSSD1NO: Daily program
 - Without power backup
 - 96 switching segments
 - Mains-synchronized
 - Shortest switching time: 15 minutes

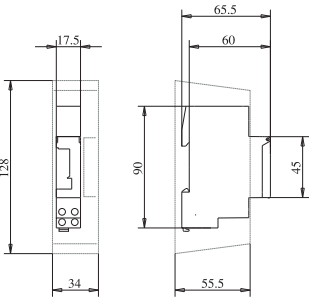
Technical Data

	TSQD1NO	TSSD1NO
Electrical		
Rated operational voltage	230–240 V AC	230 V AC
Frequency	50–60 Hz	50 Hz
Program	Daily program	Daily program
Power backup	3 days	–
Breaking capacity		
at 250 V AC, $\cos\varphi = 1$	16 A	16 A
at 250 V AC, $\cos\varphi = 0.6$	4 A	4 A
Shortest switching time	15 min	15 min
Programmable	every 15 min	every 15 min
Accuracy	$\leq \pm 1$ s/day (quartz)	Mains-synchronized
Stand-by Power	0.5 W	0.9 W
Mechanical		
Frame size	45 mm	45 mm
Device width	17.5 mm	17.5 mm
Mounting	DIN rail	DIN rail
Degree of protection	IP20	IP20
Protection class	II according to EN 60730-1	II according to EN 60730-1
Ambient temperature	-10 to +55 °C	-25 to +55 °C
Certification mark	V	V

Connection example



Dimensions (mm)



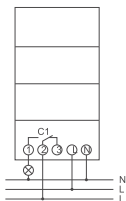
Description Analogue Timers TSQD1CO, TSSD1CO, TSQW1CO

- 3 MU
- 1 channel
- Spring terminals
- Pre-selected switching
- Manual switch with 3 positions: Permanent ON/AUTO/Permanent OFF
- Switching status indication
- TSQD1CO:
 - With power backup (NiMH cell)
 - Quartz-controlled
 - Clock-hands for time indication and 12h/24h recognition
 - Easy correction of spring forward/fall back at daylight-saving start and end
- TSQW1CO:
 - Weekly program
 - 84 switching segments
 - Shortest switching time: 2 hours
- TSSD1CO:
 - Daily program
 - Without power backup
 - 96 switching segments
 - Shortest switching time: 15 minutes
 - Clock-hands for time indication and 12h/24h recognition
 - Easy correction of spring forward/fall back at daylight-saving start and end

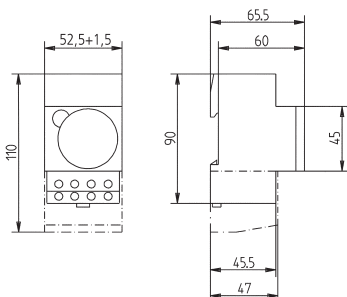
Technical Data

	TSQD1CO	TSSD1CO	TSQW1CO
Electrical			
Rated operational voltage	110–230 V AC	110–230 V AC	110–230 V AC
Frequency	50–60 Hz	50 Hz	50–60 Hz
Program	Daily program	Daily program	Weekly program
Power backup	200 hours, approx. 100 hours– at 110 V		200 hours, approx. 100 hours at 110 V
Breaking capacity			
at 250 V AC, $\cos\varphi = 1$	16 A	16 A	16 A
at 250 V AC, $\cos\varphi = 0.6$	4 A	4 A	4 A
Shortest switching time	15 min	15 min	2 h
Programmable	every 15 min	every 15 min	alle 2 h
Accuracy	$\leq \pm 1$ s/day (quartz)	Mains-synchronized	$\leq \pm 1$ s/day (quartz)
Stand-by Power	0.5 W	0.9 W	0.5 W
Mechanical			
Frame size	45 mm	45 mm	45 mm
Device width	52.5+1.5 mm	52.5+1.5 mm	52.5+1.5 mm
Mounting	DIN rail	DIN rail	DIN rail
Degree of protection	IP20	IP20	IP20
Protection class	II according to EN 60730-1	II according to EN 60730-1	II according to EN 60730-1
Ambient temperature	-20 to +55 °C	-20 to +55 °C	-20 to +55 °C
Certification mark	V	V	V

Connection example



Dimensions (mm)



Switching contact	Brightness range	Type Designation	Article No.	Units per package
-------------------	------------------	---------------------	-------------	----------------------

Light Intensity Switch SR				
1NO	2-100 Lux	SRSD1NO	167375	1
1NO	2-2000 Lux	SRSW1NO	167376	1
1CO	with timer	SRCD1CO	167377	1
1CO	2-2000 Lux	SRSD1COW	167378	1



Description Light Intensity Switch analog for DIN rail SRSD1NO, SRSD1COW

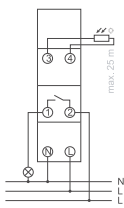
- Analog twilight switch
- External surface-mounted light sensor is incl. in the scope of delivery
- Indication of the channel and switching status
- Brightness level can be continuously adjusted
- SRSD1NO: Fixed switch-on and switch-off delay
- SRSD1COW: Variable switch-on and switch-off delay
 - Spring terminals
 - Expanded brightness range and variable delay time
 - Five adjustable brightness ranges for easy setting of the lux value
 - Permanent OFF and permanent ON function can be set at the potentiometer
 - Test function

Technical Data

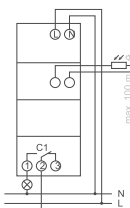
	SRSD1NO	SRSD1COW
Electrical		
Rated operational voltage	220–240 V AC	220–240 V AC
Frequency	50–60 Hz	50 Hz
Setting range for brightness	2–100 lx	2–2000 lx
Switch-on delay	20 s	60 s
Switch-off delay	80 s	60 s
Contact type	NO	CO
Switch output	Potential-free	Potential-free, not suitable for SELV
Breaking capacity		
at 250 V AC, $\cos\varphi = 1$	16 A	16 A
with fluorescent lamp load	10 AX	10 AX
Min. switching capacity	–	<10 mA
Incandescent lamp load	2300 W	2300 W
Fluorescent lamp load (VVG - low-loss ballast) non-compensated/series-compensated/duo switching	2300 VA	2300 VA
Energy saving lamps	9 x 7 W, 7 x 11 W, 7 x 15 W, 7 x 20 W, 7 x 23 W	34 x 7 W, 27 x 11 W, 24 x 15 W, 22 x 23 W
Stand-by Power	0.8 W	1.3 W
Mechanical		
Frame size	45 mm	45 mm
Device width	17.5 mm	54 mm
Mounting	DIN rail	DIN rail
Protection class	II	II
Ambient temperature	-25 to +50 °C	-30 to +55 °C
Certification mark	V	V
Max. line length to the sensor	25 m	100 m

Connection diagram

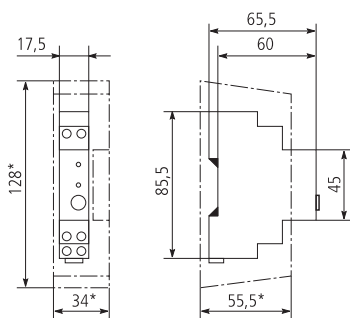
SRSD1NO



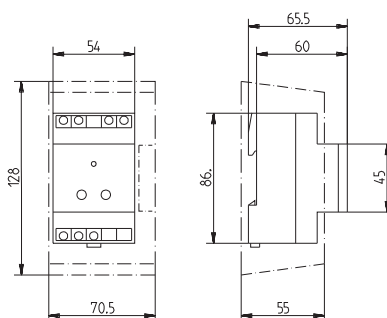
SRSD1COW

**Dimensions (mm)**

SRSD1NO



SRSD1COW



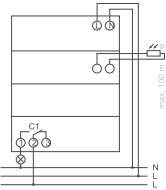
Description Surface-Mounted Light Intensity Switch SRSW1NO

- Twilight switch with an integrated light sensor
- Cable entry is possible at the rear or from the bottom
- Large terminal area
- Setting the brightness value is possible from outside, without the need to open the device
- Wide angle of light incidence (approx. 180°)
- Test button
- Switch-on and switch-off delay can be adjusted
- Brightness level can be continuously adjusted
- Expanded brightness range

Technical Data

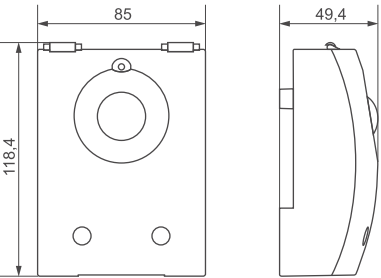
	SRSW1NO
Electrical	
Rated operational voltage	220–230 V AC
Frequency	50–60 Hz
Setting range for brightness	2–2000 lx
Switch-on delay	2–100 s
Contact type	NO
Switch output	Not potential-free (230 V)
Breaking capacity	
at 230 V AC, $\cos\varphi = 1$	16 A
at 230 V AC, $\cos\varphi = 0.3$	10 AX
Incandescent lamp load	2300 W
Fluorescent lamp load (VVG - low-loss ballast) non-compensated/series-compensated/duo switching	2300 VA
Energy saving lamps	9 x 7 W, 7 x 11 W, 7 x 15 W, 7 x 20 W, 7 x 23 W
Stand-by Power	0.6 W
Mechanical	
Hight	118.4 mm
Width	85 mm
Depth	49.4 mm
Degree of protection	IP55
Protection class	II
Ambient temperature	-35 to +55 °C

Connection diagram



Dimensions (mm)

SRSW1NO

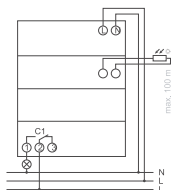
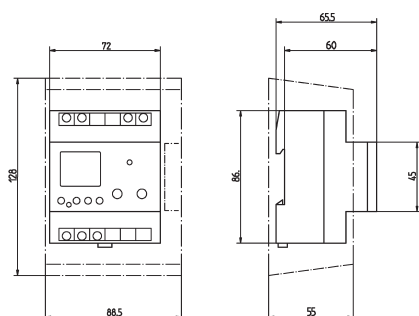


Description Light Intensity Switch with Timer for DIN Rail SRCD1CO

- Twilight switch with an integrated weekly timer
- Adjustable switch-on and switch-off delay
- Brightness levels and switching-delay can separately be set for switch-on and switch-off
- Fixed times for ON and OFF (e.g. interruption during the night)
- DuoFix spring terminals
- Zero-cross switching to protect the relay contact and the lamp so as to increase their service life
- Interface for the OBELISK top2 memory card (PC programming)
- Light sensor included in the scope of delivery
- Permanent ON/OFF switching
- Test function
- Pre-selected switching
- Display background lighting
- PIN coding
- Counter for operating hours
- Display of the channel and switching status
- Vacation and holiday program with annual function for fixed date and variable date holidays (e.g. the ones that depend on Easter)
- Different rules can be selected for daylight-saving start and end or they can be freely selected
- For type SRCD1CO:
 - Analog twilight switch
 - 1 Channel
 - Analog setting of brightness levels

Technical Data

	SRCD1CO
Electrical	
Rated operational voltage	220–240 V AC
Frequency	50–60 Hz
Setting range for brightness	2–2000 lx
Switch-on delay	0–59 min
Contact type	CO
Switch output	Potential-free, not suitable for SELV
Breaking capacity	
at 250 V AC, $\cos\varphi = 1$	16 A
at 250 V AC, $\cos\varphi = 0.6$	10 A
with fluorescent lamp load	10 AX
Incandescent lamp load	2600 W
Fluorescent lamp load (VVG - low-loss ballast) non-compensated/series-compensated/duo switching	2300 VA
Energy saving lamps	22 x 7 W, 18 x 11 W, 16 x 15 W, 16 x 20 W, 14 x 23 W
Stand-by Power	1.3 W
Mechanical	
Frame size	45 mm
Device width	72 mm
Mounting	DIN rail
Protection class	II
Ambient temperature	-30 to +55 °C
Max. line length to the sensor	100 m

Connection diagram**Dimensions (mm)**

wa_sg04311



ASBELL230

Function	Rated voltage (V~)	Type Designation	Article No.	Units per package
Signalling Devices AS				
Bell	230 V AC	ASBELL230	167393	1
Bell	12 V AC	ASBELL12	167394	1
Buzzer	230 V AC	ASBUZZ230	167395	1
Siren	24 V AC/DC	ASSIR24	167396	1

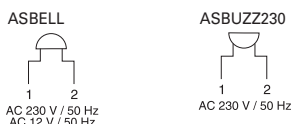
Description Bell ASBELL, Buzzer ASBUZZ230

- Signal bells and buzzers are typically used in residential buildings and in functional buildings such as shops, offices, banks etc. They are either used to signalize alert conditions, or generally as audible sound signals.
- These devices are built-in devices installed in distribution cabinets. They are designed for short-time operation in compliance with the IEC 62080 standard.
- Space-saving design of one module unit only.
- Safe device protection thanks to PTC to avoid overloads and short-circuits.

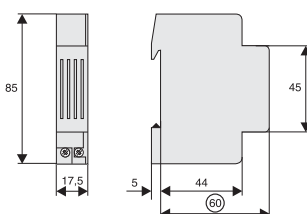
Technical Data

		ASBELL230, ASBUZZ230	ASBELL12
Electrical			
Standards		IEC 62080	IEC 62080
Rated operational voltage	U_b	230 V AC	12 V AC
Rated operational power	P_s	5.5 VA	4 VA
Working range 50/60 Hz		$0.94 \dots 1.06 \times U_c$	$0.94 \dots 1.06 \times U_c$
Rated frequency		50 Hz	50 Hz
Working range of frequency		45 ... 65 Hz	45 ... 65 Hz
Rated power loss in idle operation	P_v	0.83 W	0.83 W
Pollution degree according to EN 61010-1		2	2
Operating voltage according to EN 61010-1		230 V AC	12 V AC
Insulating material group according to EN 61010-1		II	II
Safe separation			
Air gap		$\geq 3 \text{ mm}$	$\geq 1.5 \text{ mm}$
Creep distance within the device		$\geq 2.5 \text{ mm}$	$\geq 1.5 \text{ mm}$
Test voltage 50 Hz, 1 min.		1.25 kV	1 kV
Flammability class		V0	V0
Terminal capacity			
solid		$1 \times 6 \text{ or } 2 \times 4 \text{ mm}^2$	$1 \times 6 \text{ or } 2 \times 4 \text{ mm}^2$
flexible with wire end sleeve, min.		0.75 mm^2	0.75 mm^2
Sound volume		$\geq 75 \text{ dB}$	$\geq 75 \text{ dB}$
Permitted ambient temperature		-10 to +55 °C	-10 to +55 °C
Degree of protection according to DIN EN 60529		IP20, with angeschlossenen wiresn	IP20, with angeschlossenen wiresn
Protection class according to DIN EN 61140 / VDE 0140		II	II

Connection diagram



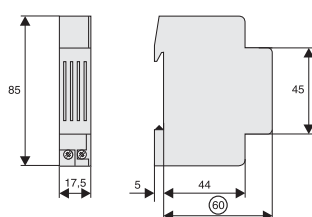
Dimensions (mm)



Technical Data Siren ASSIR24

	ASSIR24
Electrical	
Data according to	EN 60669-1
Feed voltage	24 V AC/DC
Voltage tolerance range	± 15%
Power loss	2.4 VA
Voltage test AC	2.5 kV
Sound volume	105 dB
Operative temperature	-10 to +55 °C
Storage temperature	-25 to +70 °C
Degree of protection	IP20

Dimensions (mm)



MU	Secondary voltage (V)	Secondary current (A)	Type Designation	Article No.	Units per package
Bell-Transformers 230 V, TR-G					
2	8	1	TR-G/8	272480	1 / 28
2	4-8-12	1-1-0.67	TR-G3/8	272481	1 / 28
2	8	1	TR-G/8-S	272482	1 / 28
2	4-8-12	2-2-1.5	TR-G3/18	272483	1 / 28
3	12-24	2-1	TR-G2/24	272484	1 / 20

SG82911



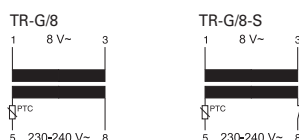
Description Bell-Transformers 230 V, TR-G

- Type -S with primary switch
- Accessories: Surface Mounting Set (mounting plate, terminal covers)

Technical Data

	TR-G/8	TR-G3/8	TR-G/8-S	TR-G3/18	TR-G2/24
Electrical					
Nominal power	8 VA	8 VA	8 VA	18 VA	24 VA
Rated supply voltage range at terminals	230-240 V AC	230-240 V AC	230-240 V AC	230-240 V AC	230-240 V AC
Rated frequency	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
No-load current	25 mA	26 mA	25 mA	36 mA	24 mA
Rated supply current	69 mA	58 mA	69 mA	72/124/138 mA	155/160 mA
Primary resistance	616 Ω	667 Ω	616 Ω	229 Ω	616 Ω
Rated output voltage at terminals	8 V AC	4/8/12 V AC	8 V AC	4/8/12 V AC	12/24 V AC
No-load output voltage	13 V	4.9/12/16.8 V	13 V	5.9/12/17.8 V	16/31 V
Rated output voltage at rated output current	8.4 V	3.8/7.9/12.2 V	8.4 V	4.3/8.4/12.7 V	12.2/23.2 V
Secondary resistance	2 Ω	0.9/1.9/2.8 Ω	2 Ω	0.4/1/1.3 Ω	1/3 Ω
Power loss in no-load operation	1.4 W	1.4 W	1.4 W	1.8 W	1.9 W
Total power loss at nominal load	7.1 W	6.2 W	7.1 W	11.6 W	11.9 W
Short circuit proof	PTC	PTC	PTC	PTC	PTC
Test voltage (primary-secondary)	5 kV	5 kV	5 kV	5 kV	5 kV
Pollution degree	P2	P2	P2	P2	P2
Mechanical					
Frame size	45 mm	45 mm	45 mm	45 mm	45 mm
Device height	90 mm	90 mm	90 mm	90 mm	90 mm
Device width	36 mm	36 mm	36 mm	36 mm	54 mm
Weight	236 g	253 g	236 g	354 g	612 g
Mounting	quick fastening on DIN rail IEC/EN 60715				
Degree of protection, built-in	IP20	IP20	IP20	IP20	IP20
Upper and lower terminals	lift terminals	lift terminals	lift terminals	lift terminals	lift terminals
Terminal capacity	1 - 3x2.5 mm ²	1 - 3x2.5 mm ²	1 - 3x2.5 mm ²	1 - 3x2.5 mm ²	1 - 3x2.5 mm ²
Tightening torque of terminal screws	0.5 Nm	0.5 Nm	0.5 Nm	0.5 Nm	0.5 Nm
Permitted relative air humidity	<95%	<95%	<95%	<95%	<95%
Rated ambient temperature	40 °C	40 °C	40 °C	40 °C	35 °C
Temperature rise at intermittent duty (20 x 1 min. 100% and 5 min. 20%)	24 K	24 K	24 K	26 K	31 K
Insulation class	E	E	E	E	E
Glow wire-test enclosure	850 °C	850 °C	850 °C	850 °C	850 °C

Connection diagram (e.g.)

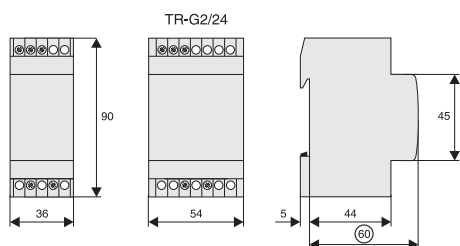


Bell transformer



Short circuit-proof transformer

Dimensions (mm)



MU	Secondary voltage (V)	Secondary current (A)	Type Designation	Article No.	Units per package
Safety-Transformer 230V, TR-G2/63-SF					
5	12-24	5.2-2.6	TR-G2/63-SF	272485	1 / 12

SG42512



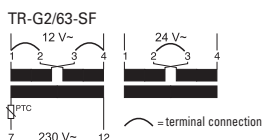
Description Safety-Transformer 230V, TR-G2/63-SF

- 100% duty
- Safety transformer with separate windings according to EN 61558
- Accessories: Surface Mounting Set (mounting plate, terminal covers)

Technical Data

	TR-G2/63-SF
Electrical	
Nominal power	63 VA
Rated supply voltage range at terminals	230-240 V AC 7-12
Rated frequency	50 Hz
No-load current	60 mA
Rated supply current	340 mA
Primary resistance	41 Ω
Rated output voltage at terminals	12/24 V AC 1-4/1-4 (terminal connection)
No-load output voltage	13.6/27.3 V
Rated output voltage at rated output current	12/24.1 V 5.2-2.6 A
Secondary resistance	0.15/0.6 Ω
Power loss in no-load operation	4.1 W
Total power loss at nominal load	19.6 W
Duty	100%
Short circuit proof	inherently (PTC)
Test voltage (primary-secondary)	5 kV
Pollution degree	P2
Mechanical	
Frame size	45 mm
Device height	90 mm
Device width	90 mm
Weight	1256 g
Mounting	quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in	IP20
Upper and lower terminals	lift terminals
Terminal capacity	1 - 3x2.5 mm ²
Tightening torque of terminal screws	0.5 Nm
Permitted relative air humidity	<95%
Rated ambient temperature	25 °C
Temperature rise at uninterrupted duty	51 K
Insulation class	F
Glow wire-test enclosure	850 °C

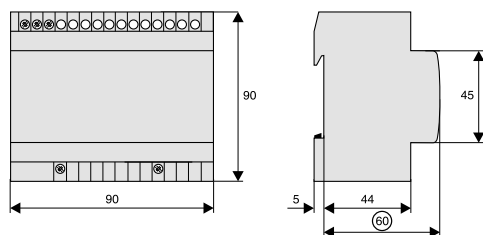
Connection diagram (e.g.)



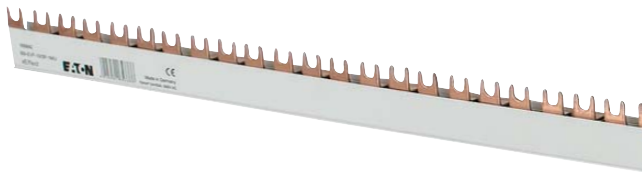
Safety transformer according to EN 61558
(Fail-safe = no danger in case of failure)

Short circuit-proof trans-
former

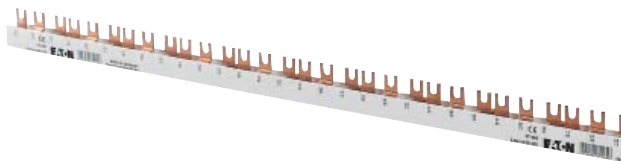
Dimensions (mm)



SG13113



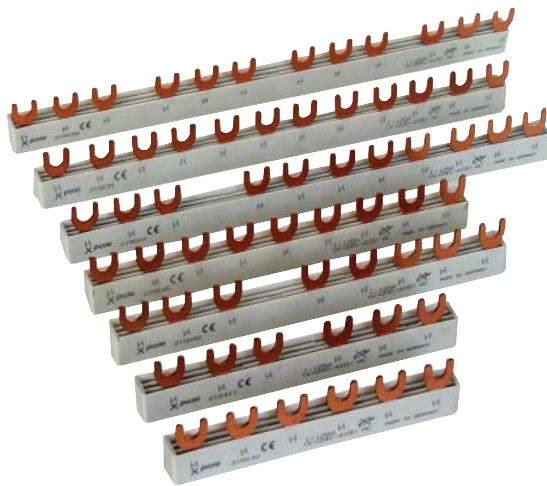
sg03515



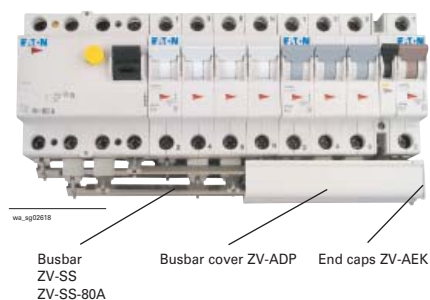
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Plug-in busbar System 50 A, 80 A ZV



for PLS., CLS., PKN., PFIM, PFHM (with Auxiliary Switch)

Description	Cu-factor	Type Designation	Article No.	Units per package
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Connection Angle L1, N



50 A				
10 units	0.005	ZV-L1/N-10	263941	10 / 600
36 units	0.005	ZV-L1/N-36	263942	36 / 2160
100 units	0.005	ZV-L1/N-100	263943	100 / 3000
80 A				
10 units	0.005	ZV-L1/N-80A-10	263950	10 / 600
36 units	0.005	ZV-L1/N-80A-36	263951	36 / 2160
100 units	0.005	ZV-L1/N-80A-100	263952	100 / 3000

Connection Angle L2, L3



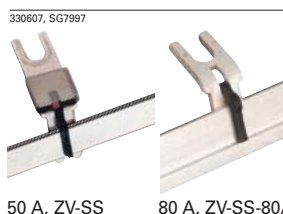
50 A				
10 units	0.007	ZV-L2/L3-10	263944	10 / 600
36 units	0.007	ZV-L2/L3-36	263945	36 / 2160
100 units	0.007	ZV-L2/L3-100	263946	100 / 3000
80 A				
10 units	0.007	ZV-L2/L3-80A-10	263953	10 / 600
36 units	0.007	ZV-L2/L3-80A-36	263954	36 / 2160
100 units	0.007	ZV-L2/L3-80A-100	263955	100 / 3000

Connection Angle N (0.5 MU) for PLSM, CLS6 with 1.5 MU



50 A				
10 units	0.005	ZV-N-05TE-10	263947	10 / 600
36 units	0.005	ZV-N-05TE-36	263948	36 / 2160
80 A				
100 units	0.005	ZV-N-05TE-100	263949	100 / 3000

Busbar 1m



50 A				
	0.143	ZV-SS	263956	1 / 10
80 A				
	0.230	ZV-SS-80A	263957	1 / 10

Description	Type Designation	Article No.	Units per package
Accessories			
Busbar cover 1m, for 50+80 A	ZV-ADP	263958	1 / 10
End caps for busbar cover	ZV-AEK	263959	10 / 600
Power feed block 35/50mm ²	Z-D80	248269	12 / 120

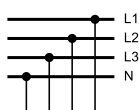
Description Plug-in busbar System 50 A, 80 A ZV

- Any combinations of switchgear with or without auxiliary switch possible
- Low number of components, 2 angle types per busbar cross-section for three-phases AC
- Same busbar cover and end caps for ZV-SS and ZV-SS-80A
- Short-circuit withstand strength and dielectric properties tested according to IEC/EN 60439-1

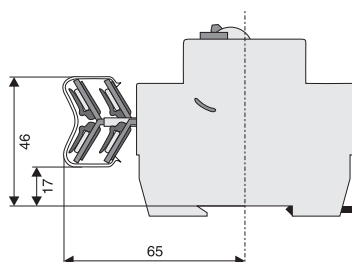
Technical Data

ZV	
Electrical	
Rated operational voltage	240/415 VA C
Rated frequency	50/60 Hz, DC
Rated voltage	690 V (at Pollution degree 2) 440 V (at Pollution degree 3)
Overvoltage category	III
Rated peak withstand voltage	U_{imp} 4 kV
Rated current	
ZV-./., ZV-SS	50 A
ZV-./.-80A, ZV-SS-80A	80 A
ZV..-N-05TE	32 A
Conditional rated short circuit current	
AC with 125 A gG	
ZV-./., ZV-SS	50 kA
ZV-./.-80A, ZV-SS-80A	50 kA
ZV..-N-05TE	10 kA
AC with 160 A gG	
ZV-./., ZV-SS	—
ZV-./.-80A, ZV-SS-80A	50 kA
ZV..-N-05TE	10 kA
DC with 160 A gG	
ZV-./., ZV-SS	10 kA
ZV-./.-80A, ZV-SS-80A	10 kA
ZV..-N-05TE	—
Mechanical	
Busbar cross section	
ZV-SS	16 mm ² Cu
ZV-SS-80A	25 mm ² Cu
Busbar length	1 m
Degree of protection mounted with busbar cover and end caps	IP20
Pollution degree	2 (3)
Air gap	≥ 3.2 mm
Minimum creepage distance	≥ 7 mm

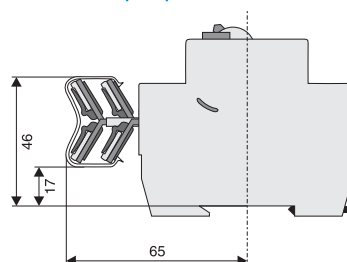
Connection diagram



Dimensions (mm) 50 A



Dimensions (mm) 80 A



Description

Cu-factor

Type
Designation

Article No.

Units per
package**Busbar Block (Fork) Z-GV**

- for PXL, PKK, PXF, PLS., CLS., PKN., PFIM, PFHM, Z-SLS/D01

Busbar Block (Fork) Z-GV

- delivered with end caps

sg03515

**16 mm² - Rated current 80 A**

1-phase 16x	0.095	Z-GV-16/1P-1MU/16	271074	50
2-phases 8x	0.187	Z-GV-16/1P+N-2MU/16	271075	20
4-phases 4x	0.444	Z-GV-16/3P+N-4MU/16	271078	15

Busbar Block (Fork) Z-GV, 1 Meter

- delivered without end caps

sg03515

**10 mm² - Rated current 63 A**

1-phase	0.408	Z-GV-10/1P-1MU	270339	50
3-phases	0.739	Z-GV-10/3P-3MU	271060	20
3-phases	0.739	Z-GV-10/3P-4MU	271080	20
End cap 1-phase		Z-V-AK/1P	104905	10 / 600
End cap 2+3-phases		BB-EC/2+3P	120805	10 / 600

16 mm² - Rated current 80 A

1-phase	0.470	Z-GV-16/1P-1MU	271061	50
1-phase + Auxiliary Switch	0.470	Z-GV-16/1P+HS	271062	50
2-phases	0.657	Z-GV-16/1P+N-2MU	271063	20
3-phases	1.042	Z-GV-16/3P-3MU	271064	20
3-phases + Auxiliary Switch	0.998	Z-GV-16/3P+HS	271065	20
4-phases	1.465	Z-GV-16/3P+N-4MU	271066	15
4-phases	1.522	Z-GV-16/3P+3N-6MU	263142	15
4-phases	1.050	Z-GV-16/PKPX/4PHAS	116882	10
End cap 1-phase		Z-V-AK/1P	104905	10 / 600
End cap 2+3-phases		BB-EC/2+3P	120805	10 / 600
End cap 4-phases		Z-V-AK/4P	264931	10 / 600

Description

Type
Designation

Article No.

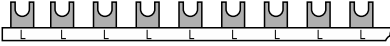
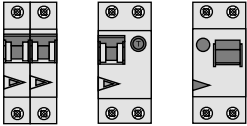
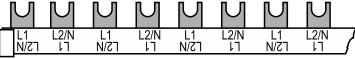
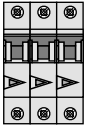
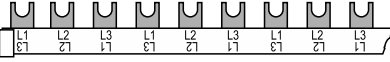
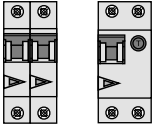
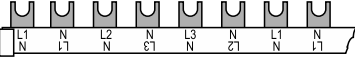
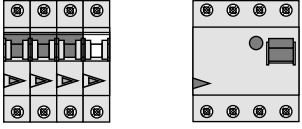
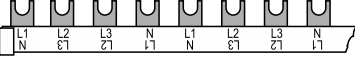
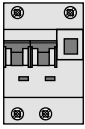
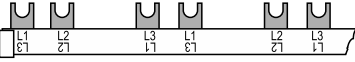
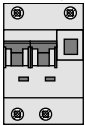
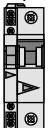
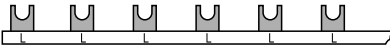
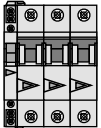
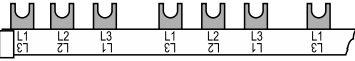
Units per
package**Accessories****Busbar Tag Shrouds for busbar, yellow ZV-BS-G**

SG05705



Finger and hand touch safe	ZV-BS-G	104903	10/600
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Description of the Busbar Block (Fork) Z-GV

Devices to busbar	Pcs. of the devices	End caps	Type
1-phase 	x57 x57 x16	Z-V- AK/1P	 Z-GV-10/1P-1TE Z-GV-16/1P-1TE Z-GV-16/1P-1TE/16
2-phases 	x28 x8	Z-AK- 16/2+3P	 Z-GV-16/1P+N-2TE Z-GV-16/1P+N-2TE/16
3-phases 	x19 x19 x2 x5	Z-AK- 10/2+3P Z-AK- 16/2+3P	 Z-GV-10/3P-3TE Z-GV-16/3P-3TE Z-GV-16/3P-3TE/8 Z-GV-16/3P-3TE/16
4-phases 	x27	Z-AK- 16/4P	 Z-GV-16/3P+3N-6TE
	x14 x4	Z-AK- 16/4P	 Z-GV-16/3P+N-4TE Z-GV-16/3P+N-4TE/16
For 2-pole Combined RCD/MCB Device, 3-phases 	x18 x6	Z-AK- 10/2+3P	 Z-GV-10/3P-4TE Z-GV-10/3P-4TE/17
For 2-pole Combined RCD/MCB Device, 4-phases 	x18	Z-V-AK/ 4P	 Z-GV-16/PKPX/4PHAS
1-phase + Auxiliary Switch 	x38	Z-V- AK/1P	 Z-GV-16/1P+HS
3-phases + Auxiliary Switch 	x16	Z-AK- 16/2+3P	 Z-GV-16/3P+HS

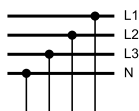
Description Busbar Block 10mm², 16mm² (Fork) Z-GV

- Length 1m
- Delivered without end caps. Please order separately.
- Short version (/17, /16, /8) delivered with end caps

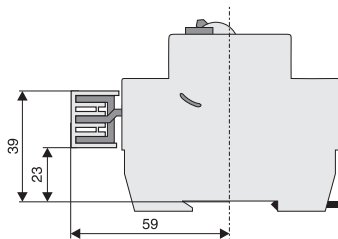
Technical Data

Z-GV	
Electrical	
Rated voltage	240/415 V, 50/60 Hz
Rated current	
10 mm²	63 A
16 mm²	80 A
Short-circuit current strength	25 kA
Mechanical	
Busbar cross section	10 and 16 mm² Cu
Step distance	17.8 mm
Z-GV-16-P+HS	17.8/27 mm

Connection diagram



Dimensions (mm)



Description	Cu-factor	Type Designation	Article No.	Units per package
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Busbar Block (Fork and Pin) Z-GSV

- for PLS.1N (1.5MU)

Busbar Block (Fork and Pin) Z-GSV

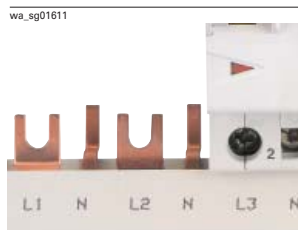
- delivered with end caps

10 mm² - Rated current 63 A

4-phases	0.208	Z-GSV-10/FI+EH+2XLS1N	113138	10
4-phases	0.277	Z-GSV-10/FI+EH+4XLS1N	113139	10

16 mm² - Rated current 80 A

2-phases 9x	0.179	Z-GSV-16/1P+N/9	PHASE OUT	271077	15
4-phases 3x	0.408	Z-GSV-16/3P+3N/9		271079	15

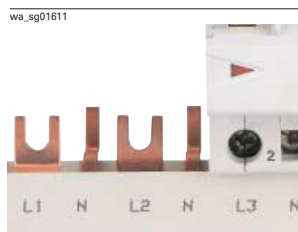


Busbar Block (Fork and Pin) Z-GSV, 1 Meter

- delivered without end caps

16 mm² - Rated current 80 A

2-phases	0.585	Z-GSV-16/1P+N	271067	10
4-phases	1.840	Z-GSV-16/3P+3N	271068	10
4-phases	2.196	Z-GSV-16/FI+EH+KR+30XLS1N	113137	7
End cap 4-phases		Z-V-AK/4P	264931	10 / 600



Description of the Busbar Block (Fork and Pin) Z-GSV

Devices to busbar	Pcs. of the devices	End caps	Type
4-phases 			Z-GSV-10/FI+EH+2XLS1N
4-phases 			Z-GSV-10/FI+EH+4XLS1N
2-phases 	x37 x9	Z-AK-16/2+3P	Z-GSV-16/1P+N Z-GSV-16/1P+N/9
4-phases 	x37 x9	Z-AK-16/4P	Z-GSV-16/3P+3N Z-GSV-16/3P+3N/9
4-phases 		Z-V-AK/4P	Z-GSV-16/FI+EH+KR+30XLS1N

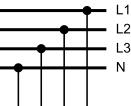
Description Busbar Block 10mm², 16mm² (Fork and Pin) Z-GSV

- Length 1m
- Delivered without end caps. Please order separately.
- Short version (/9) delivered with end caps

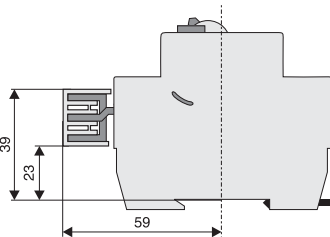
Technical Data

Z-GSV	
Electrical	
Rated voltage	240/415 V, 50/60 Hz
Rated current	
10 mm²	63 A
16 mm²	80 A
Short-circuit current strength	25 kA
Mechanical	
Busbar cross section	10 and 16 mm² Cu
Step distance	26.7 mm

Connection diagram



Dimensions (mm)



5.316 Busbar Systems

xPole

Busbar Block (Pin) Z-SV...-SD, 1 Meter

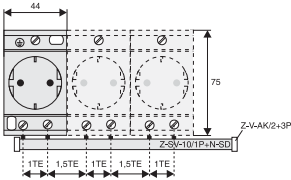
Description	Cu-factor	Type Designation	Article No.	Units per package
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Busbar Block (Pin) Z-SV...-SD, 1 Meter

- For Protected Earth Socket Z-SD230
- delivered with end caps

10 mm² - Rated current 50 A

Z-phases	0.588	Z-SV-10/1P+N-SD	269526	10
End caps		Z-V-AK/2+3P	264930	10 / 600



Description Busbar Block 10mm² (Pin) Z-SV ...-SD

- Delivered without end caps
- Step (distance between two pins of identical phase, i. e. L or N) 2.5 MU
- Length 1 m

Technical Data

	Z-SV-10/1P+N-SD
Electrical	
Rated voltage	230/400 V, 50/60 Hz
Rated current	50 A
Short-circuit current strength	25 kA
Mechanical	
Busbar cross section	10 mm ² Cu
Step distance	44 mm

Connection diagram



Accessories

WA_SG10602



End caps

WA_SG10702



Extension terminal
Z-EK/25/QL

WA_SG10702



Extension terminal
Z-EK/25

Description

Cu-factor

Type
Designation

Article No.

Units per
package**Busbar Block (Pin) Z-SV**

- for PLN. (1MU), Z-SI

Busbar Block (Pin) Z-SV, 13TE

- delivered with end caps

10 mm² - Rated current 50 A

1-phase straight grey	0.055	Z-SV-10/1P-1MU/13	264916	10
1-phase straight blue	0.055	Z-SV-10/N-1MU/13	264917	10
1-phase angulated grey	0.055	Z-SV-10/1P-F/13	264918	10
1-phase angulated blue	0.055	Z-SV-10/N-F/13	264919	10
2-phases	0.126	Z-SV-10/2P-2MU/13	264922	10
3-phases	0.203	Z-SV-10/3P-3TE/13	264924	10
4-phases	0.258	Z-SV-10/3P+N-4TE/12	264926	10
4-phases (for PLN.)	0.258	Z-SV-10/3P+3N-3TE/13	264927	10

Busbar Block (Pin) Z-SV, 1 Meter

- delivered without end caps

16 mm² - Rated current 63 A

1-phase straight grey	0.385	Z-SV-16/1P-1MU	264912	25
1-phase straight blue	0.385	Z-SV-16/N-1MU	264913	25
1-phase angulated grey	0.385	Z-SV-16/1P-1MU/F	269523	25
1-phase angulated blue	0.385	Z-SV-16/N-1MU/F	269524	25
2-phases	0.941	Z-SV-16/2P-2MU	264923	10
3-phases (for PLN.)	1.326	Z-SV-16/2P+2N-2MU	264914	7
3-phases	1.422	Z-SV-16/3P-3TE	264925	10
4-phases	2.177	Z-SV-16/3P+N-4TE	264928	7
4-phases (for PLN.)	1.807	Z-SV-16/3P+3N-3TE	264915	7

Description

Type
Designation

Article No.

Units per
package**Accessories****End caps, Z-V-AK/, Z-BB-EC/4P**

1-phase	Z-V-AK/1P	104905	10 / 600
2+3-phases	Z-V-AK/2+3P	264930	10 / 600
4-phases	Z-BB-EC/4P ¹⁾	183116	10 / 600

¹⁾ only for Z-SV-16/3P+N-4TE, Article No. 264928

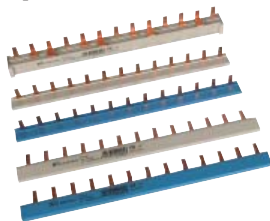
Extension terminals 6 - 25 mm², Z-EK/25

long, straight	Z-EK/25	264935	10 / 600
short, straight	Z-EK/25/K	269525	10 / 600
long, crosswise	Z-EK/25/QL	264937	10 / 600
short, crosswise	Z-EK/25/Q	264936	10 / 600

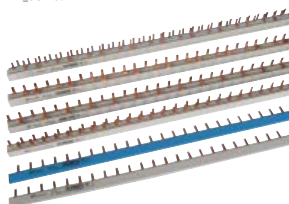
Busbar Tag Shrouds for busbar, yellow ZV-BS-G

Finger and hand touch safe	ZV-BS-G	104903	10/600
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WA_SG11302



WA_SG11302



wa_sg05413



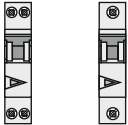
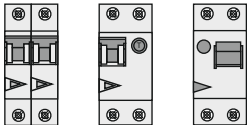
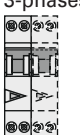
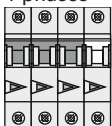
wa_sg02512



SG05705

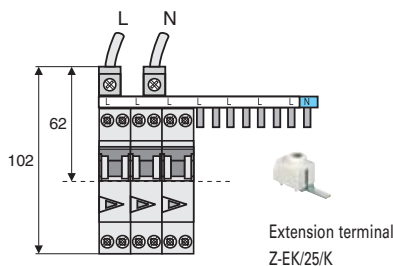
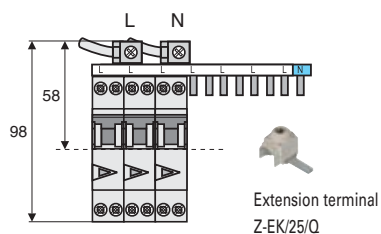


Description of the Busbar Block (Pin) Z-SV

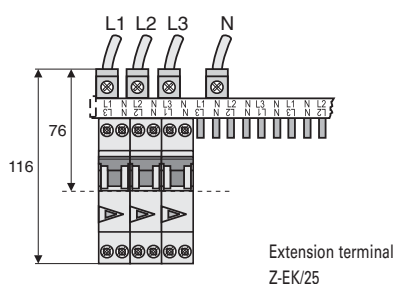
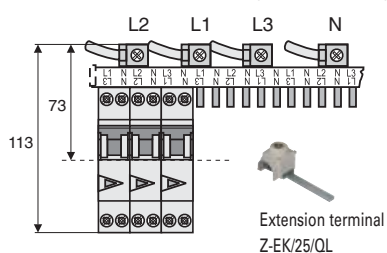
Devices to busbar	Pcs. of the devices	End caps	Type
1-phase + 2-phases			
	x13 x56		Z-SV-10/1P-F/13 Z-SV-16/1P-1TE/F
	x13 x56		Z-SV-10/N-F/13 Z-SV-16/N-1TE/F
	x13 x56		Z-SV-10/1P-1TE/13 Z-SV-16/1P-1TE
	x13 x56		Z-SV-10/N-1TE/13 Z-SV-16/N-1TE
2-phases			
	x6 x28	Z-V- AK/2+3P	Z-SV-10/2P-2TE/13 Z-SV-16/2P-2TE
3-phases			
	x56	Z-V- AK/2+3P	Z-SV-16/2P+2N-2TE
	x4 x19	Z-V- AK/2+3P	Z-SV-10/3P-3TE/13 Z-SV-16/3P-3TE
4-phases			
	x3 x14	Z-V-AK/4P Z-BB-EC/4P	Z-SV-10/3P+N-4TE/12 Z-SV-16/3P+N-4TE
	x13 x56	Z-V- AK/2+3P	Z-SV-10/3P+3N-3TE/13 Z-SV-16/3P+3N-3TE

Example

Z-SV-10/1P-F/13, Z-SV-16/1P-1TE/F
Z-SV-10/N-F/13, Z-SV-16/N-1TE/F



Z-SV... 2-phasig bis 4-phasig



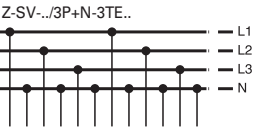
Description Busbar Block 10mm² (Pin) Z-SV-10/, 16mm² (Pin) Z-SV-16/

- Busbar Block 10 mm² delivered with end caps, length 13TE
- Busbar Block 16 mm² without end caps, length 1m

Technical Data

	Z-SV
Electrical	
Rated voltage	240/415 V, 50/60 Hz
Rated current	
10 mm²	50 A
16 mm²	63 A
Short-circuit current strength	25 kA
Mechanical	
Busbar cross section	10 and 16 mm² Cu
Step distance	17.80 mm

Connection diagram



Accessories

SG4800



End caps

WA_SG10702



Extension terminal
Z-EK/25/Q

SG07703



Extension terminal
Z-EK/25/K

WA_SG10702



Extension terminal
Z-EK/25/QL

WA_SG10702



Extension terminal
Z-EK/25

Description	Cu-factor	Type Designation	Article No.	Units per package
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Busbar Block 12MU (Fork and Pin) Z-GSV-10

- for PLN. (1MU) + FI
- delivered with end caps

10 mm² - Rated current 50 A

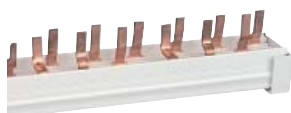
below

2-phases, RCD-2p + 4xPLN	0.07	Z-GSV-10/1P+N-NL/6	274297	10 / 200
2-phases, RCD-2p + 10xPLN	0.131	Z-GSV-10/1P+N/12-U	274299	10 / 100
4-phases, RCD-4p + 4xPLN	0.13	Z-GSV-10/3P+N-NL/8	116858	10
4-phases, RCD-4p + 8xPLN	0.463	Z-GSV-10/3P+N/12-U	274400	10 / 100
4-phases, RCD-4p + 3xPLS.. + 5xPLN	0.463	Z-GSV-10/3P+N/12H-U	274401	10 / 100

above

2-phases, RCD-2p + 10xPLN	0.131	Z-GSV-10/1P+N/12-O	274402	10 / 100
4-phases, RCD-4p + 8xPLN	0.463	Z-GSV-10/3P+N/12-O	274403	10 / 100

SG4700



Description of the Busbar Block 12MU (Fork and Pin) Z-GSV-10

Devices to busbar	Pcs. of the devices	End caps	Type
2-phases 	4xPLN	Z-V- AK/2+3P	Z-GSV-10/1P+N-NL/6
	x10	Z-V- AK/2+3P	Z-GSV-10/1P+N/12-O
	x10	Z-V- AK/2+3P	Z-GSV-10/1P+N/12-U
4-phases 	x5	Z-V- AK/4P	Z-GSV-10/3P+N/12H-U
	x8	Z-V- AK/4P	Z-GSV-10/3P+N/12-O
	x8	Z-V- AK/4P	Z-GSV-10/3P+N/12-U
	4xPLN	Z-V- AK/4P	Z-GSV-10/3P+N-NL/8

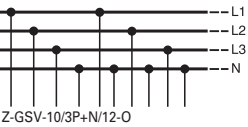
Description Busbar Block 12MU 10mm² (Fork and Pin) Z-GSV-10

- 12MU busbar elements incl. end caps

Technical Data

	Z-GSV-10
Electrical	
Rated voltage	240/415 V, 50/60 Hz
Rated current	50 A
Short-circuit current strength	25 kA
Mechanical	
Busbar cross section	10 mm² Cu
Step distance	17.95 mm

Connection diagram



Accessories

WA_SG10702



Extension terminal
Z-EK/25/QL

WA_SG10702



Extension terminal
Z-EK/25

5.322 Busbar Systems

xPole

Busbar Block 13MU (Fork and Pin) Z-GSV-10

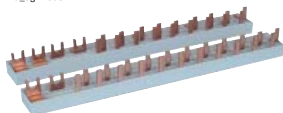
Description	Cu-factor	Type Designation	Article No.	Units per package
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Busbar Block 13MU (Fork and Pin) Z-GSV-10

- for 1x RCD + PLG. (1MU)

- Do not cut!! 

wa_sg14303



10 mm² - Rated current 63 A

above

2-phases, RCD-2p + 11xPLG	0.251	Z-GSV-10/1P+N-F/13	264920	10
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Description	Type Designation	Article No.	Units per package
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Accessories

Extension terminals 6 - 25 mm², Z-EK/25

long, straight	Z-EK/25	264935	10 / 600
long, crosswise	Z-EK/25/QL	264937	10 / 600

wa_sg02512



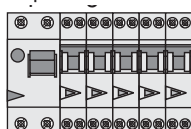
Busbar Tag Shrouds for busbar, yellow ZV-BS-G

Finger and hand touch safe	ZV-BS-G	104903	10/600
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SG05705



Description of the Busbar Block 13MU (Fork and Pin) Z-GSV-10

Devices to busbar	Pcs. of the devices	Type
2-phases 	x11 	 Z-GSV-10/1P+N-F/13

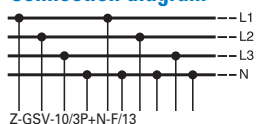
Description Busbar Block 13MU 10mm² (Fork and Pin) Z-GSV-10

- 13MU busbar elements without end caps

Technical Data

Z-GSV-10	
Electrical	
Rated voltage	240/415 V, 50/60 Hz
Rated current	63 A
Short-circuit current strength	25 kA
Mechanical	
Busbar cross section	10 mm ² Cu
Step distance	17.95 mm

Connection diagram



Accessories

 End caps WA_SG10602	 Extension terminal Z-EK/25/QL WA_SG10702	 Extension terminal Z-EK/25 WA_SG10702
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Description	Cu-factor	Type Designation	Article No.	Units per package
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Busbar Block (Pin) Z-SV-../1P+N-F

- for 1x PFGC + PLGC. (1MU)
- 2-phases
- Do not cut!! 



10 mm² - Rated current 50 A

PFGC + 4x PLGC	0.105	Z-SV-10/1P+N-F/6	107944	10 / 100
PFGC + 7x PLGC	0.155	Z-SV-10/1P+N-F/9	107943	10 / 100
PFGC + 11x PLGC	0.22	Z-SV-10/1P+N-F/13	107942	10 / 100

16 mm² - Rated current 63 A

PFGC + 4x PLGC	0.155	Z-SV-16/1P+N-F/6	191245	10 / 100
PFGC + 7x PLGC	0.231	Z-SV-16/1P+N-F/9	191244	10 / 100
PFGC + 8x PLGC	0.259	Z-SV-16/1P+N-F/10	191246	10 / 100
PFGC + 11x PLGC	0.328	Z-SV-16/1P+N-F/13	191243	10 / 100

Description	Type Designation	Article No.	Units per package
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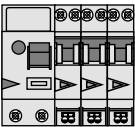
Accessories

Busbar Tag Shrouds for busbar, yellow ZV-BS-G



Finger and hand touch safe	ZV-BS-G	104903	10/600
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Description of the Busbar Block (Pin) Z-SV-../1P+N-F

Devices to busbar	Pcs. of the devices	Type
2-phases 	x4 x7 x8 x11	 Z-SV-../1P+N-F/6  Z-SV-../1P+N-F/9  Z-SV-16/1P+N-F/10  Z-SV-../1P+N-F/13

Description Busbar Block 10/16mm² (Pin) Z-SV-../1P+N-F

- Busbar elements without end caps

Technical Data

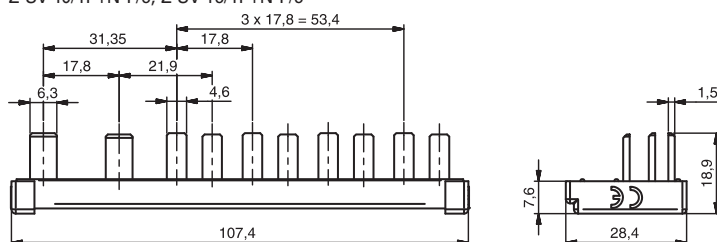
Z-SV-../1P+N-F	
Electrical	
Rated voltage	240/415 V, 50/60 Hz
Rated current	
10 mm ²	50 A
16 mm ²	63 A
Overvoltage category	III
Rated peak withstand voltage	U_{imp} 4 kV
Conditional rated short circuit current AC with 125 A gG	10 kA
Mechanical	
Busbar cross section	10 and 16 mm ² Cu
Step distance	17.8 mm
Flame class according to UL94	V0, glowing wire test 960 °C
Pollution degree	2
Comparative tracking index	CTI 300
Air gap	≥ 5.5 mm
Minimum creepage distance	≥ 5 mm

Connection diagram

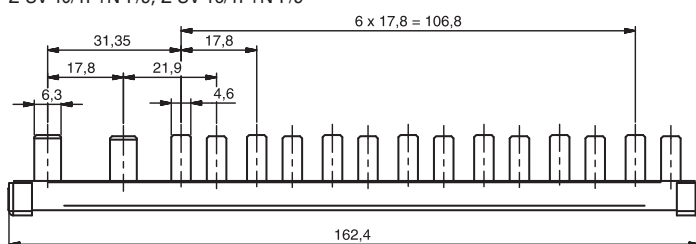


Dimensions (mm)

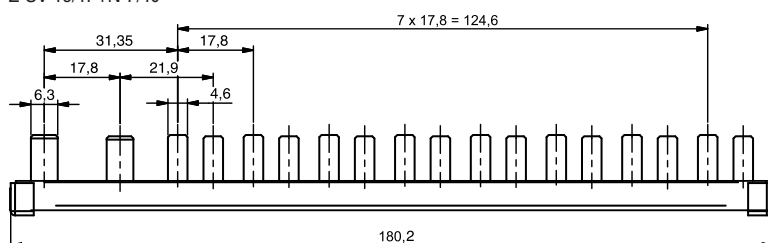
Z-SV-10/1P+N-F/6, Z-SV-16/1P+N-F/6



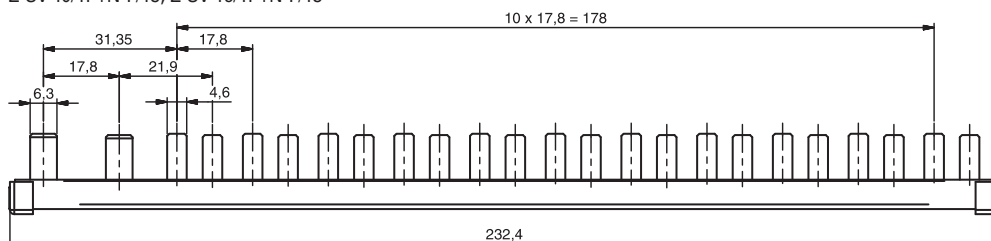
Z-SV-10/1P+N-F/9, Z-SV-16/1P+N-F/9



Z-SV-16/1P+N-F/10



Z-SV-10/1P+N-F/13, Z-SV-16/1P+N-F/13



Description	Cu-factor	Type Designation	Article No.	Units per package
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Busbar Block (Pin) Z-SV

- delivered without end caps

Busbar Block (Pin) Z-SV-16/3P

- for Z-SLS, PLHT, D0.-SO/.. (1.5MU)

16 mm² - Rated current 80 A

3-phases	0.84	Z-SV-16/3P	271072	20
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Accessories for Z-SV-16/3P

Extension terminal

Extension terminal 6-50 mm ²	Z-EK/50	264934	3 / 180
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End cap

End cap	Z-V-35/AK/3P	264932	10 / 600
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Busbar Block (Pin) Z-SV-35

- for Z-SLS, PLHT, D0.-SO/.. (1.5MU), PLHT-V (1.5MU)

35 mm² - Rated current 110 A

1-phase angulated grey	0.83	Z-SV-35/1P	113135	1
3-phases	2.74	Z-SV-35/3P	264938	4
3-phases	2.74	Z-SV-35/PLHT-V	264939	4
4-phases*	1.57	Z-SV-35/3P+N-6TE	263110	4

* delivered with end caps

Accessories for Z-SV-35

End cap

End cap	Z-V-35/AK/3P	264932	10 / 600
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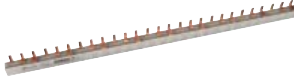
Accessories for Z-SV-35

Extension terminals Z-EK/95

- 25-95 mm² single-/multi-wire
- 16-70 mm² fine wires with wire end sleeve

for Z-SV-35/1P	Z-EK/95-1	113136	3 / 90
for Z-SV-... 3-phases	Z-EK/95	264933	3 / 90
for Z-SV-35/3P+N	Z-EK/95-3N	264911	4 / 120

wa_sg03611



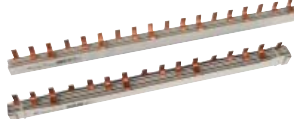
wa_sg05913



SG4800



wa_sg03711



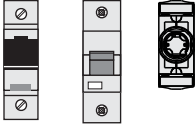
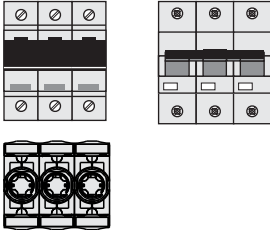
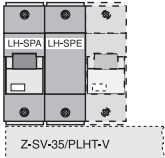
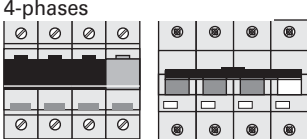
SG4800



wa_sg05513



Description of the Busbar Block (Pin) Z-SV

Devices to busbar	Pcs. of the devices	End caps	Type
1-phase 	x36		Z-SV-35/1P
3-phases 	x12	Z-AK-16/2+3P Z-V-35AK/3P	Z-SV-16/3P Z-SV-35/3P
	x33	Z-V-35AK/3P	Z-SV-35/PLHT-V
4-phases 	x4	Z-V-35AK/3P	Z-SV-35/3P+N-6TE

Description Busbar Block (Pin) Z-SV

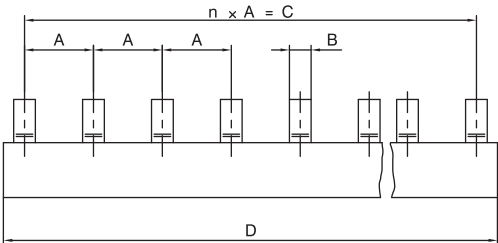
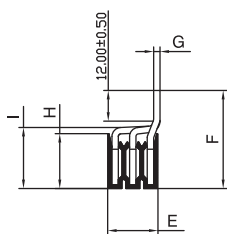
- End caps are to be ordered separately, exception Z-SV-35/3P+N-6TE
- Halogenfree plastic

Technical Data

	Z-SV-16	Z-SV-35
Electrical		
Rated operational voltage	240/415 V AC	240/415 V AC
Rated frequency	50/60 Hz	50/60 Hz
Rated voltage	500 V	690 V
Overvoltage category	III	III
Rated peak withstand voltage	U_{imp} 4 kV	6 kV
Rated current	80 A	110 A
Conditional rated short circuit current AC with 250 A gG	50 kA _{r.m.s.}	100 kA _{r.m.s.}
Mechanical		
Busbar cross section	16 mm ² Cu	35 mm ² Cu
Step distance	27 mm	27 mm (Z-SV-35/PLHT-V 30.5 mm)
Flame class according to UL94	V0, glowing wire test 960 °C	V0, glowing wire test 850 °C
Degree of protection, with end caps	IP20	IP20
Pollution degree	2	2
Comparative tracking index	CTI 300	CTI 600
Air gap	≥ 5 mm	≥ 4.3 mm
Minimum creepage distance	≥ 10.2 mm	≥ 6.7 mm

Dimensions (mm)

	n	A	B	C	D	E	F	G	H	I
Z-SV-16/3P	35	27	5	945	971	14.9	31	1.5	17	19
Z-SV-35/3P	35	27	8.5	945	1000	19.7	38.4	2.5	21.5	23.9
Z-SV-35/PLHT-V	32	30.5	8.5	976	1000	19.7	38.4	2.5	21.5	23.9



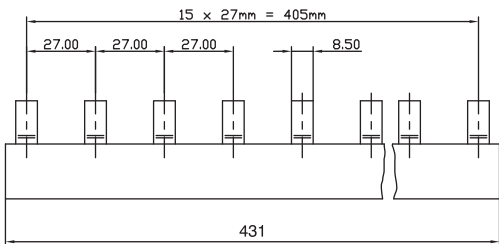
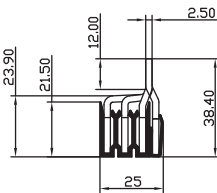
Accessories for Z-SV-16

Wa_sg10802



Extension terminal
Z-EK/50

Z-SV-35/3P+N-6TE



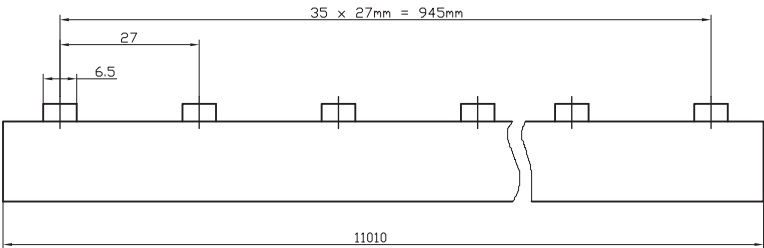
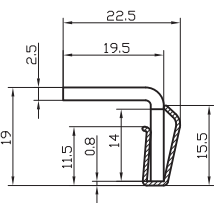
Accessories for Z-SV-35

Wa_sg10802



Extension terminaln
Z-EK/95, Z-EK/95-3N,
Z-EK/95-1

Z-SV-35/1P



Phases

MU

Cu-factor

Type
Designation

Article No.

Units per
package**Euro-Vario-Busbar (Fork) EVG**

- for PLS., CLS., PKN., PFIM, PFHM, PFNM
- no end caps necessary

- Do not cut!! 

10 mm² - Rated current 63 A**1- to 4-phases**

1-phase	2	0.015	EVG-1PHAS/2MODUL	215646	40 / 800
1-phase	6	0.039	EVG-1PHAS/6MODUL	215638	40 / 800
1-phase	12	0.075	EVG-1PHAS/12MODUL	215637	40 / 400
2-phases	4	0.051	EVG-2PHAS/4MODUL	268220	20 / 400
2-phases	6	0.079	EVG-2PHAS/6MODUL	215642	20 / 400
2-phases	12	0.150	EVG-2PHAS/12MODUL	215641	20 / 200
3-phases	6	0.086	EVG-3PHAS/6MODUL	215640	20 / 400
3-phases	9	0.128	EVG-3PHAS/9MODUL	215645	20 / 200
3-phases	12	0.168	EVG-3PHAS/12MODUL	215639	20 / 200
3-phases	16	0.230	EVG-3PHAS/16MODUL	285381	20
3-phases	20	0.310	EVG-3PHAS/20MODUL	285383	20 / 180
4-phases	16	0.320	EVG-3P+3N/16MODUL	105215	20
4-phases	18	0.350	EVG-3P+3N/18MODUL	274161	20
4-phases	8	0.219	EVG-4PHAS/8MODUL	215644	10 / 100
4-phases	12	0.324	EVG-4PHAS/12MODUL	215643	10 / 100

For 2-pole Combined RCD/MCB Device with a width of 3MU

1-phase	2-5	0.045	EVG-1PHAS/N/2-5MODUL/FILS	285384	40 / 800
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For combination RCD/MCBs with RCD 4-pole

3-phases	4+5	0.138	EVG-3PHAS/N/5MODUL/LS	215659	20 / 200
3-phases	4+8	0.188	EVG-3PHAS/N/8MODUL/LS	215660	20 / 200

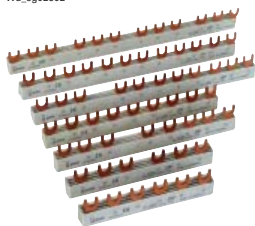
For applications with Auxiliary Switch

1-phase	2.5	0.025	EVG-1PHAS/2MODUL/HI	215655	40 / 200
1-phase	13	0.096	EVG-1PHAS/9MODUL/HI	215656	40
2-phases	4.5	0.053	EVG-2PHAS/4MODUL/HI	219573	20 / 400
2-phases	12	0.160	EVG-2PHAS/10MODUL/HI	215657	20
3-phases	6.5	0.100	EVG-3PHAS/6MODUL/HI	216411	20 / 200
3-phases	13.5	0.200	EVG-3PHAS/12MODUL/HI	215658	20

16 mm² - Rated current 80 A**1- to 4-phases**

1-phase	2	0.023	EVG-16/1PHAS/2MODUL	291464	40 / 800
1-phase	6	0.059	EVG-16/1PHAS/6MODUL	291465	40 / 800
1-phase	12	0.113	EVG-16/1PHAS/12MODUL	291466	40 / 400
2-phases	4	0.080	EVG-16/2PHAS/4MODUL	291467	20 / 400
2-phases	6	0.120	EVG-16/2PHAS/6MODUL	291468	20 / 400
2-phases	12	0.225	EVG-16/2PHAS/12MODUL	291469	20 / 200
3-phases	6	0.112	EVG-16/3PHAS/6MODUL	291470	20 / 400
3-phases	9	0.163	EVG-16/3PHAS/9MODUL	291471	20 / 200
3-phases	12	0.218	EVG-16/3PHAS/12MODUL	291472	20 / 200
3-phases	16	0.300	EVG-16/3PHAS/16MODUL	291473	20 / 80
3-phases	20	0.363	EVG-16/3PHAS/20MODUL	291474	10 / 100
4-phases	8	0.200	EVG-16/4PHAS/8MODUL	291475	10 / 100
4-phases	12	0.284	EVG-16/4PHAS/12MODUL	291476	10 / 100

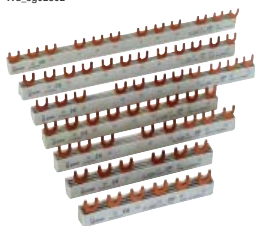
Wa_sg02902



Wa_sg01602



Wa_sg02902



Phases	MU	Cu-factor	Type Designation	Article No.	Units per package
For 2-pole Combined RCD/MCB Device with a width of 3MU					
4-phases	18	0.260	EVG-16/4PHAS/L-N-X/6PC	116880	10
4-phases	24	0.360	EVG-16/4PHAS/L-N-X/8PC	116881	10
For combination RCD/MCBs with RCD 4-pole					
3-phases	4+5	0.179	EVG-16/3PHAS/N/5MODUL/LS	291477	20 / 200
3-phases	4+8	0.244	EVG-16/3PHAS/N/8MODUL/LS	291478	20 / 200
For applications with Auxiliary Switch					
1-phase	2.5	0.038	EVG-16/1PHAS/2MODUL/HI	291479	40 / 800
1-phase	8.5	0.105	EVG-16/1PHAS/6MODUL/HI	291480	40 / 400
1-phase	13	0.162	EVG-16/1PHAS/9MODUL/HI	291481	40 / 160
2-phases	4.5	0.080	EVG-16/2PHAS/4MODUL/HI	291482	20 / 400
2-phases	7	0.120	EVG-16/2PHAS/6MODUL/HI	291483	20 / 200
2-phases	12	0.200	EVG-16/2PHAS/10MODUL/HI	291484	20 / 200
3-phases	6.5	0.130	EVG-16/3PHAS/6MODUL/HI	291485	20 / 200
3-phases	13.5	0.260	EVG-16/3PHAS/12MODUL/HI	291486	20 / 80
3x1-phase	8.5	0.231	EVG-16/3x1PHAS/6MODUL/HI	291487	20 / 200
3x1-phase	11.5	0.300	EVG-16/3x1PHAS/8MODUL/HI	291488	20 / 200
3x1-phase	13	0.344	EVG-16/3x1PHAS/9MODUL/HI	291489	20 / 80

Wa_sg01602



Description Euro-Vario-Busbar (Fork) EVG

- Euro Vario busbars (EVG) offer maximum user comfort and a high degree of safety.
- Using EVG busbars helps to save up to 30 % assembly time as compared to conventional systems.
- The danger of flashover is minimised since there is no need of cutting, burring, or cleaning.
- No end caps are needed.

Technical Data

EVG	
Electrical	
Rated voltage	240/415 V, 50/60 Hz
Rated current	
10 mm ²	63 A
16 mm ²	80 A
Short-circuit current strength	25 kA
Mechanical	
Busbar length	2, 6, 9, 12, 16, 20 MU
Busbar cross section	10 and 16 mm ² Cu
Step distance	
10 mm ²	17.8 mm / 26.8 mm / 71.2 mm
16 mm ²	17.8 mm / 27 mm / 71.2 mm

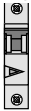
Description of Euro-Vario-Busbar (Fork) EVG

Devices to busbar

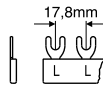
Pcs. of the devices

Type

1-phase

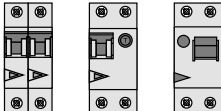


x2
x6
x12

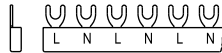


EVG-../1PHAS/2MODUL
EVG-../1PHAS/6MODUL
EVG-../1PHAS/12MODUL

2-phases

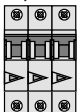


x2
x3
x6

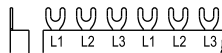


EVG-../2PHAS/4MODUL
EVG-../2PHAS/6MODUL
EVG-../2PHAS/12MODUL

3-phases

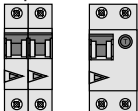


x2
x3
x4
x5
x6

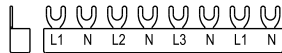


EVG-../3PHAS/6MODUL
EVG-../3PHAS/9MODUL
EVG-../3PHAS/12MODUL
EVG-../3PHAS/16MODUL
EVG-../3PHAS/20MODUL

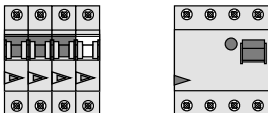
4-phases



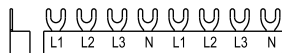
x8
x9



EVG-3P+3N/16MODUL
EVG-3P+3N/18MODUL

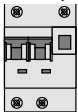


x2
x3

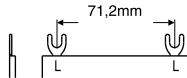


EVG-../4PHAS/8MODUL
EVG-../4PHAS/12MODUL

For 2-pole Combined RCD/MCB Device, 1-phase

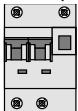


x2

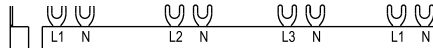


EVG-1PHAS/2-5MODUL/FILS

For 2-pole Combined RCD/MCB Device, 4-phases

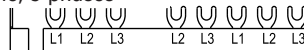
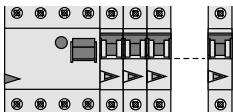


x6
x8

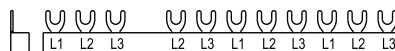


EVG-16/4PHAS/L-N-X/6PC
EVG-16/4PHAS/L-N-X/8PC

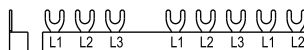
For combination RCD/MCBs with RCD 4-pole, 3-phases



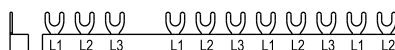
EVG-3PHAS/N/5MODUL/LS



EVG-3PHAS/N/8MODUL/LS

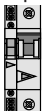


EVG-16/3PHAS/N/5MODUL/LS

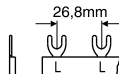


EVG-16/3PHAS/N/8MODUL/LS

1-phase + Auxiliary Switch

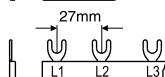


x2
x6
x9



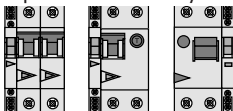
EVG-../1PHAS/2MODUL/HI
EVG-16/1PHAS/6MODUL/HI
EVG-../1PHAS/9MODUL/HI

x6
x8
x9

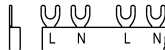


EVG-16/3x1PHAS/6MODUL/HI
EVG-16/3x1PHAS/8MODUL/HI
EVG-16/3x1PHAS/9MODUL/HI

2-phases + Auxiliary Switch

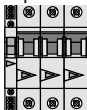


x2
x3
x5

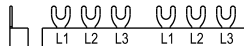


EVG-../2PHAS/4MODUL/HI
EVG-16/2PHAS/6MODUL/HI
EVG-../2PHAS/10MODUL/HI

3-phases + Auxiliary Switch



x2
x4



EVG-../3PHAS/6MODUL/HI
EVG-../3PHAS/12MODUL/HI

wa_sg02616



Description	Type Designation	Article No.	Units per package
Vertical Busbar 16mm² BB-V-16/1P+N			
2-phases	BB-V-16/1P+N	186887	5

Description Vertical Busbar 16mm² BB-V-16/1P+N

Attention:

The thermal overload protection for the RCCB installing next to the vertical busbar must be considered (please refer to our catalogue register RCCB
 $I_n = 16A$ RCCB $\Rightarrow$ 10 A gG/gL Fuse/Main Incomer
 $I_n = 25-40A$ RCCB $\Rightarrow$ 25 A gG/g Fuse/Main Incomer
 $I_n = 63A$ RCCB $\Rightarrow$ 40 A gG/gL Fuse/Main Incomer
or country specific wiring regulations).

The thermal emission from the vertical busbar can affect the tripping characteristics of the neighboring RCDs, please follow notes in our product documentation regarding possible temperature derating.
Thermal overload protection for the vertical busbar according to EN61439-3 must be considered $\Rightarrow$ nominal current 80A, max. 84A for 15 minutes, maximum setting for ELCB NF: 60A.

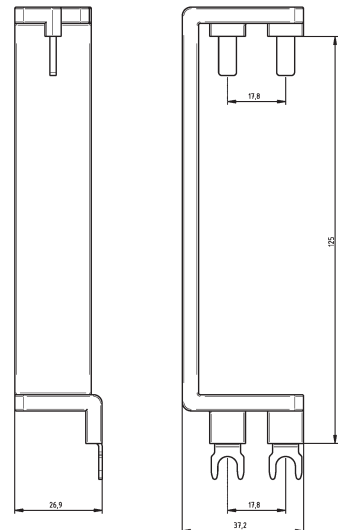


Products are EU comform and correspond to the RoHS of the EU

Technical Data

BB-V-16/1P+N		
General		
Busbar		Copper
Surface busbar		plain
Insulation		PA66
Surface insulation		grey RAL 7035
Standards		EN 60947-1:2007 / IEC 60947-1:2007
Temperature resistance		125 °C – UL94 V0
CTI Insulation		600 V
Insulation coordination		Overvoltage category III / Pollution degree 2
Electrical		
Max. electrical load		690 V AC
Protection class		IP20
Rated peak withstand voltage	U _{imp}	6 kV
Rated insulation voltage	U _i	800 V
Capacity at 35 °C ambient temperature		
Max. current with bar cross section 16 mm²	I _s /Phase	80 A

Dimensions (mm)





Phases	Cu-factor	Type Designation	Article No.	Units per package
2-phase	0.114	EVG-2PHAS/4AFDD	193378	10

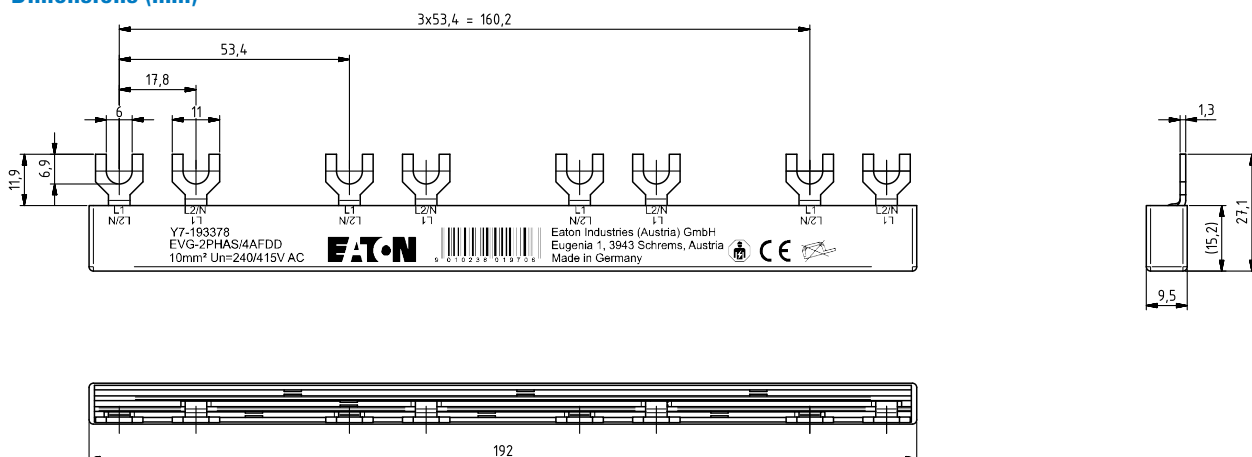
Technical Data



Products are EU conform and correspond to the RoHS of the EU

EVG-2PHAS/4AFDD	
General	
Busbar	Copper
Surface busbar	plain
Insulation	PC/ABS
Surface insulation	grey
Standards	EN 60947-1:2007 / IEC 60947-1:2007
Heat deflection temperature	90 °C – UL94 V0
Glow Wire Flammability Index	960 °C / 1 mm
Insulation coordination	Overvoltage category III / Pollution degree 2
Electrical	
Max. operating voltage	690 V AC/DC
Protection class	IP20
Rated impulse withstand voltage	$U_{imp} \geq 4,5 \text{ kV}$
Max. operating voltage	690 V IEC
1-, 3-phase	480Y/277V & 240 V AC
Load Capacity at 35 °C ambient temperature depending of feeding point	
Max. busbar current feeding at beginning / ending	I_s/Phase 50 A
Busbar cross section	10 mm ²
Connection cross section	10 mm ²

Dimensions (mm)



SG80911



sg82311

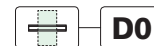


v61615



sg09610





Rated current (A)	Poles	Width (mm)	Type Designation	Article No.	Units per package
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Fuse-Base D01+D02

Fuse-Base FCFBD02DI

- One design for Fuse-Links size D02 and D01, because adapter springs for screw caps D02 are in scope of delivery
- Only screw cap D02 for all applications necessary
- Mounting on DIN-rail or mounting plate possible
- Finger and hand touch safe according to DGUV VS3, EN 50274
- Fuse-Base is equipped with holes for sealing

SG80211



63	1	27	FCFBD02DI-1	148599	15
63	3	81	FCFBD02DI-3	148810	5

Description	Type Designation	Article No.	Units per package
-------------	---------------------	-------------	----------------------

Screw Caps Z-D0./SK

wa_sg04013



D01 max. 16 A	Z-D01/SK	100650	20
D02 max. 63 A	Z-D02/SK	100651	20

Adapter Spring Z-D02/SIKA-HF

- To apply D01-Fuse-Links into the screw cap Z-D02/SK

wa_sg02612



D02-D01	Z-D02/SIKA-HF	263149	50 / 3000
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Accessories for FCFBD02DI-

Fuse-Links Z-D0./SE-...

Cartridge-ring adapter inserts Z-D02-PE-... and Z-D02-D01-PE-...

Adapter Spring Z-D02/SIKA-HF (scope of delivery)

Cartridge-ring adapter insert plier Z-D0-PE-Zsee chapter Accessories Fuse Devices.

For busbar blocks and feed terminals refer to fuse-switch-disconnector and busbar systems.

Description Fuse-Base FCFBD02DI

- According to DIN VDE 0636-301
- For Fuse-Links size D02 and D01
- Can be sealed with leads
- Silicone-, halogen- and phosphorfree
- Cartridge-ring adapter inserts Z-D02-PE and Z-D02-D01-PE required for current coding
- Low-loss stainless steel terminal (anti-magnetic)

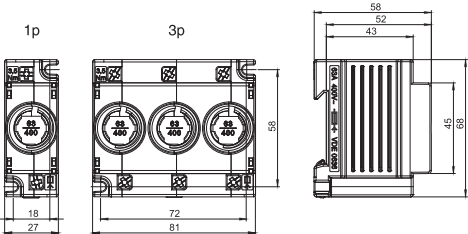


D0

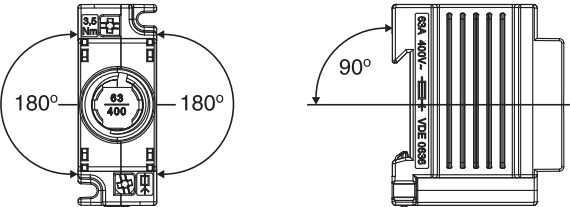
Technical Data

FCFBD02D1	
Electrical	
Number of poles	1P, 3P
Rated voltage	400 V AC, 250 V DC
Rated current	
D01	16 A
D02	63 A
Conditional rated short circuit current tested with inserts Operating class gG (gL)	
AC	50 kA
DC	8 kA
Short-circuit current strength	25 kA
Mechanical	
Frame size	45 mm
Device height	68 mm
Device width	27 mm per pole
Weight	
1P	74 g
3P	213 g
Mounting	Quick fastening on DIN rail according to IEC/EN 60715 Screw fastening on mounting plate screw ≤4 mm, head ≤7 mm
Upper and lower terminals	lift terminals
Terminal capacity	1.5-35 mm ²
Tightening torque of terminal screws	3.5 Nm
Flame class according to UL94	V0
Comparative tracking index	CTI 600

Dimensions (mm)

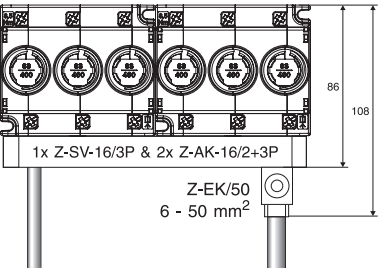


Operation position



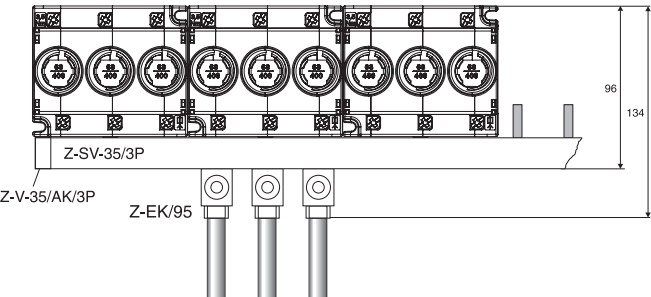
Examples

3-phases 16 mm²

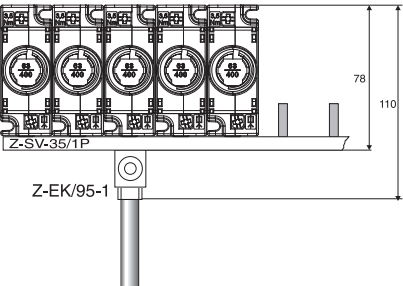


Terminal capacity Z-EK/95, Z-EK/95-1:
25-95 mm² single-/fine-wire
16-70 mm² fine wires with wire end sleeve

3-phases 35 mm²



1-phase 35 mm²





Poles	Rated constant current (A)	Type Designation	Article No.	Units per package
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Switch-Disconnecter-Fuse D01

With visual tripping indicator Z-SLS/D01 (empty)

- Rated operational voltage 230/400 V AC
1-pole 60 V DC, 2-pole 110 V DC
- Suitable for fuse-links with operating classes gG (gL), aM
- Mechanical current coding is integrated
- Can be sealed with leads
- Supply side from top or bottom

SG80411



1	max. 16	Z-SLS/D01/1	263155	18
1+N	max. 16	Z-SLS/D01/1+N	263158	9
2	max. 16	Z-SLS/D01/2	263156	9
3	max. 16	Z-SLS/D01/3	263157	6
3+N	max. 16	Z-SLS/D01/3+N	263159	4

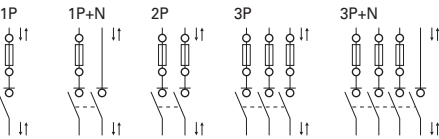
Accessories

Fuse-Links Z-D01/SE-...see chapter Accessories Fuse Devices

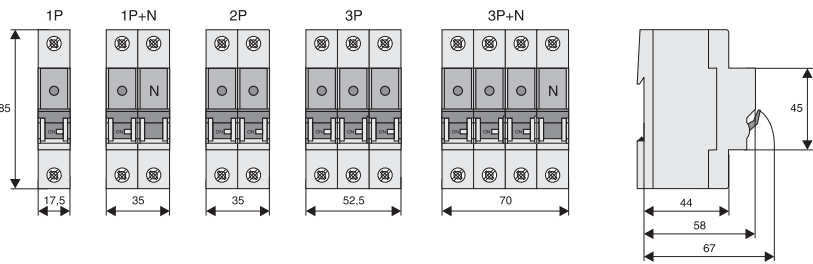
Description Switch-Disconnecter-Fuse D01

- Design according to IEC/EN 60947-3
- Mechanical current coding by means of integrated, adjustable coding ring
- Plug-in technology without screw caps
- Visual tripping indicator is flashing
- Suitable for the following fuse-links
D01: 2, 4, 6, 10, 16 A

Connection diagram



Dimensions (mm)

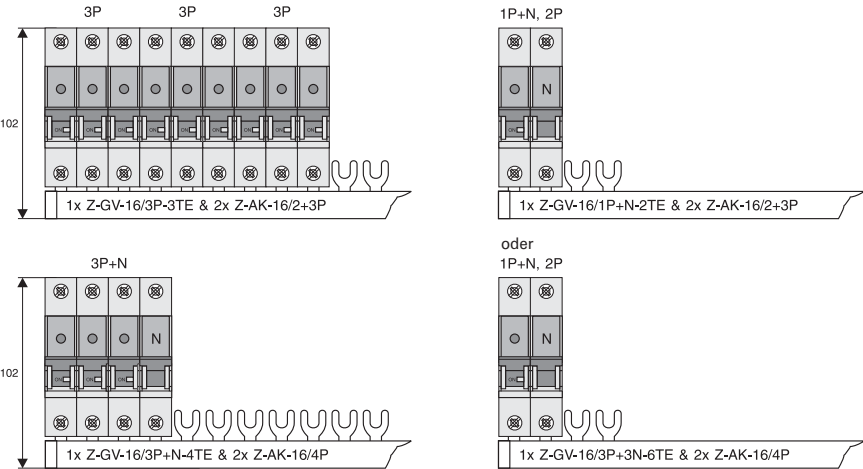




Technical Data

Z-SLS/D01		
Electrical		
Number of poles		1P, 1P+N, 2P, 3P, 3P+N
Rated operational voltage	U_e	
AC		400 V
DC		1P to 60 V / 2P to 110 V
Rated operational current	I_e	16 A
Rated constant current	I_u	16 A
Conditional rated short circuit current		50 kA _{r.m.s.}
Utilization category		AC 22B, DC 21B
Overvoltage category		IV
Rated peak withstand voltage	U_{imp}	6 kV
Power loss per current path I_e		0.64 W
Power loss per current path with fuse-link I_e		2.24 W
Mechanical		
Frame size		45 mm
Device height		86 mm
Device width		17.5 mm per pole (1MU)
Weight		
1P		90 g
1P+N		170 g
2P		180 g
3P		270 g
3P+N		350 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715
Degree of protection		IP20
Upper and lower terminals		lift terminals
Terminal capacity		1.5-25 mm ²
Tightening torque of terminal screws		max. 2.5 Nm
Temperature range		-25 to +60 °C
Flame class		V0, glowing wire test 960 °C
Pollution degree		3
Comparative tracking index		CTI 600

Examples





Poles	Rated constant current (A)	Type Designation	Article No.	Units per package
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Fuse-Switch-Disconnecter D02+D01

Standard Z-SLS/NEOZ (empty)

- Rated operational voltage 1-pole 60-230 V AC / 60-110 V DC
2-pole 60-400 V AC / 60-220 V DC
1+N, 3-pole, 3+N, 3+PEN 60-400 V AC
- Suitable for fuse-links with operating classes gG (gL), aM
- Mechanical current coding with Fuse-Link set
- Can be sealed with leads
- Supply side from top or bottom



1	max. 63	Z-SLS/NEOZ/1	248235	12
1+N	max. 63	Z-SLS/NEOZ/1+N	248237	6
2	max. 63	Z-SLS/NEOZ/2	248233	6
3	max. 63	Z-SLS/NEOZ/3	248234	4
3+N	max. 63	Z-SLS/NEOZ/3+N	248236	3
3+PEN	max. 63	Z-SLS/NEOZ/3+PEN	182399	3

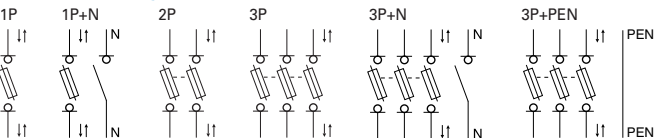
Accessories

- Metal locking device for 1-pole Z-SLZ/SC
- Plastic locking device for 1-pole Z-SLZ/SP
- Fuse-Link set with visual tripping indicator Z-SLS/B-..
- Fuse-Link set without visual tripping indicator Z-SLS/E-..
- Plug-in Busbars ...

Description Fuse-Switch-Disconnecter Z-SLS/NEOZ, Standard

- Design according to IEC/EN 60947-3
- Mechanical current coding
- Plug-in technology without screw caps
- Suitable for the following fuse-links
D01: 1, 2, 4, 6, 10, 13, 16 A
D02: 20, 25, 32, 35, 40, 50, 63 A
- Can be sealed with leads

Connection diagram

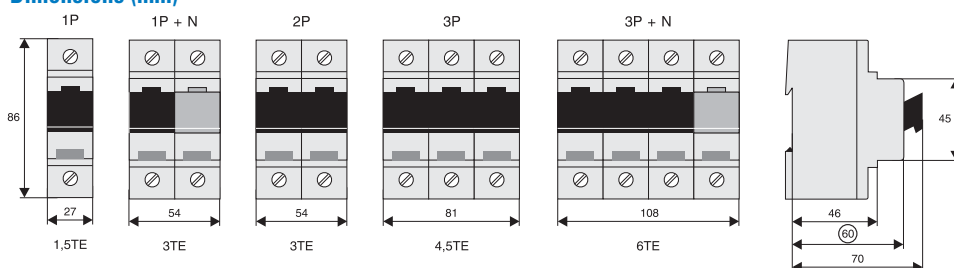




Technical Data

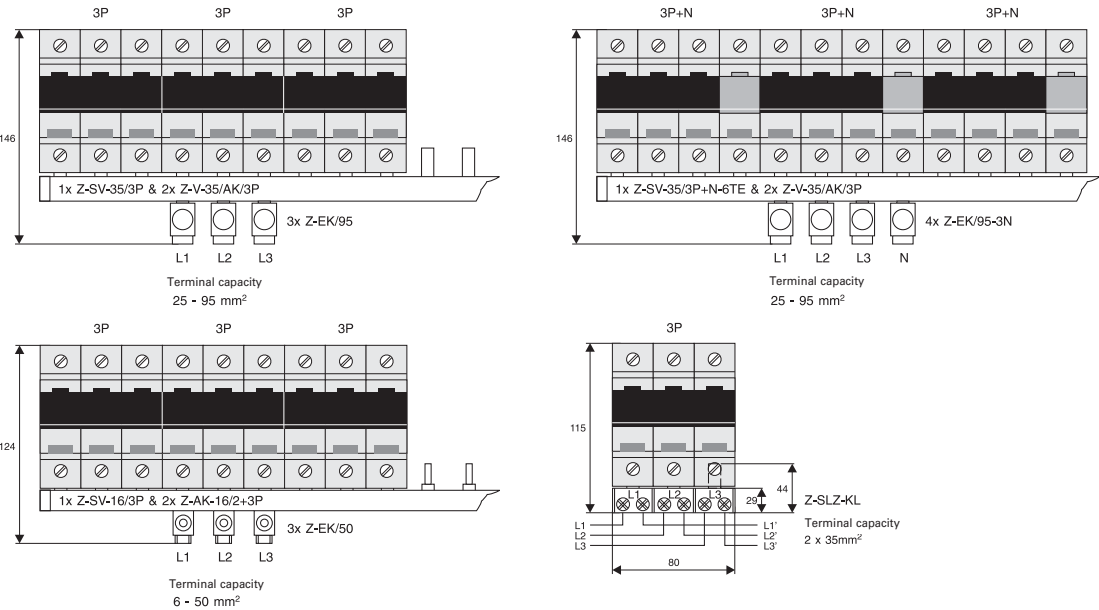
Z-SLS/NE0Z		
Electrical		
Number of poles		1P, 1P+N, 2P, 3P, 3P+N
Rated operational voltage	U_e	
AC 1P, 1P+N		230 V
2P, 3P, 3P+N		400 V
DC 1P		bis 110 V
2P		bis 220 V
Rated operational current	I_e	63 A
Rated constant current	I_u	63 A
Conditional rated short circuit current		50 kA _{r.m.s.}
Utilization category		AC 22B, DC 21B
Overvoltage category		IV
Rated peak withstand voltage	U_{imp}	6 kV
Power loss per current path I_e		
L1, L2, L3		0.5 W
N		1 W
Power loss per current path with fuse-link I_e L1, L2, L3		6.6 W
Max. permissible power loss of fuse-links		5.5 W
Mechanical		
Frame size		45 mm
Device height		86 mm
Device width		27 mm per pole (1.5MU)
Weight		
1P		113 g
1P+N		225 g
2P		224 g
3P		450 g
3P+N		472 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715
Degree of protection (behind front plate)		IP20C
Upper and lower terminals		lift terminals
Terminal capacity		1.5-35 mm ²
Tightening torque of terminal screws		max. 4 Nm
Temperature range		
Ambient air		-25 to +40 °C, on 24h average ≤+35 °C
Storage		-25 to +60 °C
Temperature rise limits		
Terminals		≤+70 °K
Manual operating means		≤+25 °K
Parts intended to be touched		≤+40 °K
Parts need not to be touched		≤+50 °K
Flame class		V0, glowing wire test 960 °C
Pollution degree		3
Comparative tracking index		CTI 600

Dimensions (mm)





Examples





Poles	Rated constant current (A)	Type Designation	Article No.	Units per package
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Fuse-Switch-Disconnecter D02+D01

Complete with captive current code Z-SLS/CEK

- Rated operational voltage 1-pole 60-230 V AC / 60-110 V DC
3-pole 60-400 V AC
- Fuse carrier with visual tripping indicator and fuses inclusive
- Mechanical current coding with Fuse-Link set
- Can be sealed with leads
- Supply side from top or bottom



1pole	10	Z-SLS/CEK10/1	272587	12
1pole	16	Z-SLS/CEK16/1	263135	12
1pole	25	Z-SLS/CEK25/1	263136	12
3pole	16	Z-SLS/CEK16/3	248243	4
3pole	25	Z-SLS/CEK25/3	248244	4
3pole	35	Z-SLS/CEK35/3	248245	4
3pole	40	Z-SLS/CEK40/3	150687	4
3pole	50	Z-SLS/CEK50/3	248246	4
3pole	63	Z-SLS/CEK63/3	263160	4

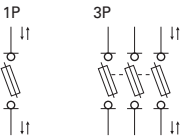
Accessories

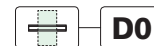
Metal locking device for 1-pole Z-SLZ/SC
Plastic locking device for 1-pole Z-SLZ/SP
Fuse-Link set with visual tripping indicator Z-SLS/B-..
Fuse-Link set without visual tripping indicator Z-SLS/E-..
Plug-in Busbars ...

Description Fuse-Switch-Disconnecter Z-SLS/CEK, complete with captive current code

- Design according to IEC/EN 60947-3
- Can be used as main fuse downstream of the meter according to the Technical Connection Rules of the Austrian Power Supply Companies („TAEV“)
- Current coding by the manufacturer
- Plug-in technology without screw caps
- Suitable for the following fuse-links
 - D01: 10, 16 A
 - D02: 25, 35, 40, 50, 63 A
- Can be sealed with leads
- Visual tripping indicator included

Connection diagram

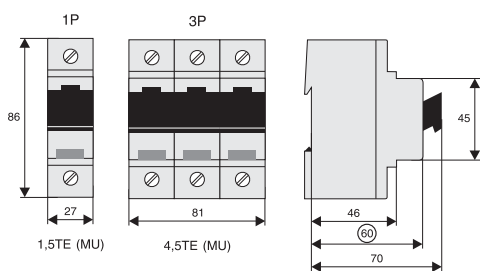




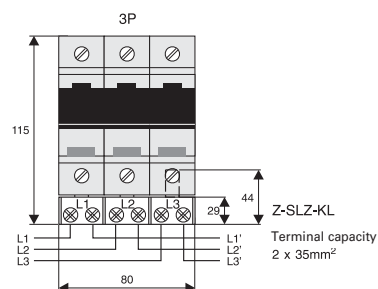
Technical Data

Z-SLS/CEK	
Electrical	
Number of poles	1P, 3P
Rated operational voltage	U_e
1P	230 V AC
3P	400 V AC
Rated constant current	I_u
1P	10, 16, 25 A
3P	16, 25, 35, 40, 50, 63 A
Conditional rated short circuit current	50 kA _{r.m.s.}
Utilization category	AC 22B
Overvoltage category	IV
Rated peak withstand voltage	U_{imp} 6 kV
Power loss per current path at 63A L1, L2, L3	0.5 W
Power loss per current path	
with fuse-link	L1, L2, L3
10 A	2.0 W
16 A	2.5 W
25 A	3.7 W
35 A	4.3 W
40 A	5.2 W
50 A	5.7 W
63 A	6.6 W
Max. permissible power loss of fuse-links	5.5 W
Mechanical	
Frame size	45 mm
Device height	86 mm
Device width	27mm per pole (1.5MU)
Weight	
1P	147 g
3P	441 g
Mounting	Quick fastening on DIN rail according to IEC/EN 60715
Degree of protection (behind front plate)	IP20C
Upper and lower terminals	lift terminals
Terminal capacity	1.5-35 mm ²
Tightening torque of terminal screws	max. 4 Nm
Temperature range	
Ambient air	-25 to +40 °C, on 24h average ≤ +35 °C
Storage	-25 to +60 °C
Temperature rise limits	
Terminals	≤ +70 °K
Manual operating means	≤ +25 °K
Parts intended to be touched	≤ +40 °K
Parts need not to be touched	≤ +50 °K
Flame class	V0, glowing wire test 960 °C
Pollution degree	3
Comparative tracking index	CTI 600

Dimensions (mm)



Example





Poles	Rated constant current (A)	Type Designation	Article No.	Units per package
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Fuse-Switch-Disconnecter D02+D01

With fuse monitoring Z-SLK/NEOZ (empty)

- Rated operational voltage 1-pole 60-230 V AC / 60-110 V DC
2-pole 60-400 V AC / 60-220 V DC
1+N, 3-pole, 3+N 60-400 V AC
- Mechanical current coding with Fuse-Link set
- Can be sealed with leads
- Supply side from top or bottom



1+HS	max. 63	Z-SLK/NEOZ/1	248238	6
2+HS	max. 63	Z-SLK/NEOZ/2	248239	4
3+HS	max. 63	Z-SLK/NEOZ/3	248240	3
3+N+HS	max. 63	Z-SLK/NEOZ/3+N	248241	2

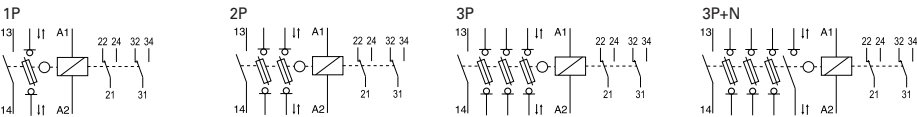
Accessories

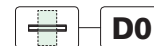
Metal locking device for 1-pole Z-SLZ/SC
Plastic locking device for 1-pole Z-SLZ/SP
Fuse-Link set with visual tripping indicator Z-SLS/B-..
Fuse-Link set without visual tripping indicator Z-SLS/E-..
Plug-in Busbars ...

Description Fuse-Switch-Disconnecter Z-SLK/NEOZ, with fuse monitoring

- Design according to IEC/EN 60947-3
- Fuse monitoring by relay contact
- Mechanical current coding
- Plug-in technology without screw caps
- Suitable for the following fuse-links
D01: 1, 2, 4, 6, 10, 13, 16 A
D02: 20, 25, 32, 35, 40, 50, 63 A
- Can be sealed with leads
- Other AC/DC voltages requires special types

Connection diagram



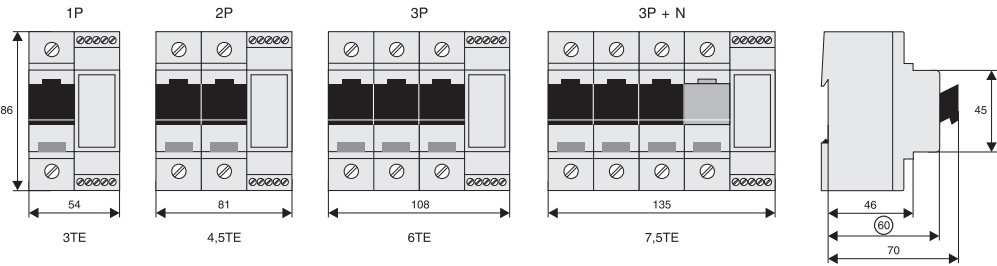


Technical Data

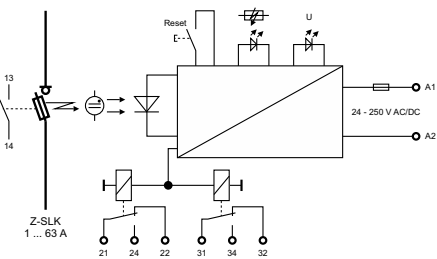
		Z-SLK/NEOZ
Electrical		
Number of poles		1P, 1P+N, 2P, 3P, 3P+N
Rated operational voltage	U_o	
AC 1P, 1P+N		60-230 V
2P, 3P, 3P+N		60-400 V
DC 1P		60-110 V
2P		60-220 V
Rated operational current	I_o	63 A
Rated constant current	I_u	63 A
Conditional rated short circuit current		50 kA _{r.m.s.}
Utilization category		AC 22B, DC 21B
Overvoltage category		IV
Rated peak withstand voltage	U_{imp}	6 kV
Power loss per current path I_o		
L1, L2, L3		0.5 W
N		1 W
Power loss per current path with fuse-link I_o L1, L2, L3		6.6 W
Max. permissible power loss of fuse-links		5.5 W
Auxiliary Switch 1 NO		5 A / 250 V AC
Relay Component electrical components		
Rated operational voltage range		24-250 V AC/DC
Rated operational voltage tolerance		±10%
Power consumption		1 VA
Frequency		16.67; 50-60 Hz
Function display		
Line voltage		1 LED green
Trouble		1 LED red
Duty		100%
Responding delay		approx. 100 ms - 1 s
Reset time		1 s
Relay contacts		2 CO, 5 A / 250 V AC
Auxiliary switch rated impulse withstand voltage		4 kV
Overvoltage category		III
Mechanical		
Frame size		45 mm
Device height		86 mm
Device width		27 mm/pole (1.5MU) + 27 mm
Weight		
1P		224 g
2P		345 g
3P		450 g
3P+N		590 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715
Degree of protection (behind front plate)		IP20C
Upper and lower terminals		lift terminals
Terminal capacity		1.5-35 mm ²
Tightening torque of terminal screws		max. 4 Nm
Temperature range		
Ambient air		-25 to +40 °C, on 24h average ≤ +35 °C
Storage		-25 to +60 °C
Temperature rise limits		
Terminals		≤ +70 °K
Manual operating means		≤ +25 °K
Parts intended to be touched		≤ +40 °K
Parts need not to be touched		≤ +50 °K
Flame class		V0, glowing wire test 960 °C
Pollution degree		3
Comparative tracking index		CTI 600
Relay Component mechanical components		
Upper and lower terminals		lift terminals
Terminal capacity		
solid		0.14-4 mm ²
fine-wire		0.14-2.5 mm ²
Tightening torque of terminal screws		0.5-0.7 Nm



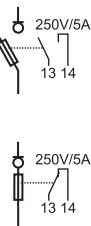
Dimensions (mm)



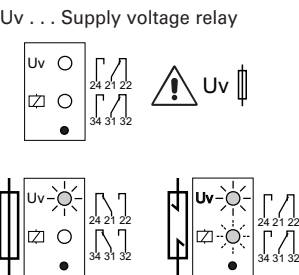
Simplified diagram

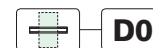


Function - Switch position



Relay - Fuse monitoring





Rated current
(A)

Type
Designation

Article No.

Units per
package

Fuse-Link sets complete Z-SLS/B, Z-SLS/E

- For Z-SLS/NEOZ, Z-SLS/CEK, Z-SLK/NEOZ
- 1 set consists of 3 fuse-links, 3 gauge-pieces, 1 plastic box in the color of the visual tripping indicator
- to snap on DIN rail

With visual tripping indicator Z-SLS/B

- Rated operational voltage 60-400 V AC

SG81211



1	Z-SLS/B-1A	268983	1 / 12
2	Z-SLS/B-2A	268984	1 / 12
4	Z-SLS/B-4A	268985	1 / 12
6	Z-SLS/B-6A	268986	1 / 12
10	Z-SLS/B-10A	268987	1 / 12
13	Z-SLS/B-13A	289972	1 / 12
16	Z-SLS/B-16A	268988	1 / 12
20	Z-SLS/B-20A	268989	1 / 12
25	Z-SLS/B-25A	268990	1 / 12
32	Z-SLS/B-32A	289973	1 / 12
35	Z-SLS/B-35A	268991	1 / 12
40	Z-SLS/B-40A	289974	1 / 12
50	Z-SLS/B-50A	268992	1 / 12
63	Z-SLS/B-63A	268993	1 / 12

With visual tripping indicator Z-SLS/B

- Rated operational voltage 24-60 V AC / V DC

1	Z-SLS/B/24-1A	268994	1 / 12
2	Z-SLS/B/24-2A	268995	1 / 12
4	Z-SLS/B/24-4A	268996	1 / 12
6	Z-SLS/B/24-6A	268997	1 / 12
10	Z-SLS/B/24-10A	268998	1 / 12
13	Z-SLS/B/24-13A	289975	1 / 12
16	Z-SLS/B/24-16A	268999	1 / 12
20	Z-SLS/B/24-20A	269000	1 / 12
25	Z-SLS/B/24-25A	269001	1 / 12
32	Z-SLS/B/24-32A	289976	1 / 12
35	Z-SLS/B/24-35A	269002	1 / 12
40	Z-SLS/B/24-40A	289977	1 / 12
50	Z-SLS/B/24-50A	269003	1 / 12
63	Z-SLS/B/24-63A	269004	1 / 12

Without visual tripping indicator Z-SLS/E

- Rated operational voltage 400 V AC, 220 V DC

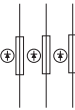
2	Z-SLS/E-2A	263147	1 / 12
4	Z-SLS/E-4A	263148	1 / 12
6	Z-SLS/E-6A	269005	1 / 12
10	Z-SLS/E-10A	269006	1 / 12
13	Z-SLS/E-13A	289978	1 / 12
16	Z-SLS/E-16A	269007	1 / 12
20	Z-SLS/E-20A	269008	1 / 12
25	Z-SLS/E-25A	269009	1 / 12
32	Z-SLS/E-32A	289979	1 / 12
35	Z-SLS/E-35A	269010	1 / 12
40	Z-SLS/E-40A	289990	1 / 12
50	Z-SLS/E-50A	269011	1 / 12
63	Z-SLS/E-63A	269012	1 / 12



Description Fuse-Link sets complete Z-SLS/B, Z-SLS/E

- Fuse-Links with flashing function (Z-SLS/B) in case of disconnection
- Fuse-Links without flashing function (Z-SLS/E) upon enquiry, not on stock
- Supplied as a set with 3 fuse-links and 3 gauge-pieces in plastic box of different colours which can be mounted onto DIN rail.
- Dimensions of plastic box:
Frame size 45 mm
Depth 75 mm
Width 54 mm

Connection diagram

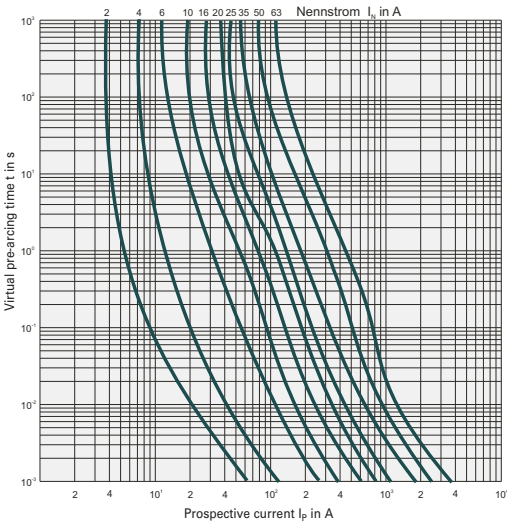


Technical Data

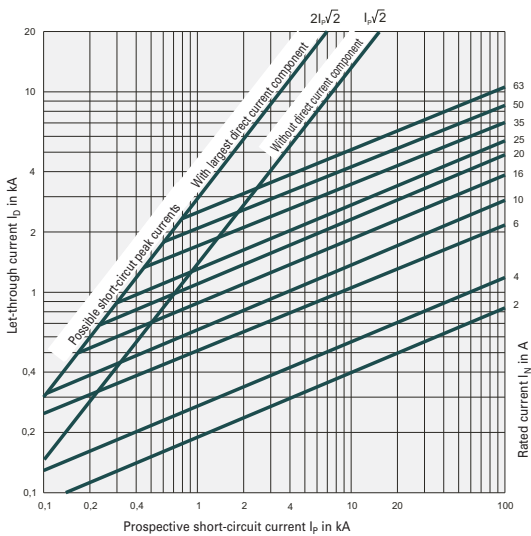
Z-SLS/B, Z-SLS/E	
Electrical	
Operating class	gG (gL)
Rated voltage	
Z-SLS/B/24	24 - 60 V AC, 24 - 60 V DC
Z-SLS/B	60 - 400 V AC
Z-SLS/E	400 V AC, 220 V DC
Test voltage	5 kV
Mechanical	
Size	
D01	1, 2, 4, 6, 10, 13, 16 A
D02	20, 25, 32, 35, 40, 50, 63 A

Characteristics

Time/current characteristics of D0-Fuse-Links 2 ... 63A gG(gL)



Let-through characteristics of D0-Fuse-Links 2 ... 63A gG(gL)





Rated current (A)	Type Designation	Article No.	Units per package
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Solid-link Set complete Z-SLS/TR-SET

- For Z-SLS/NEOZ, Z-SLK/NEOZ, Z-SLS/CEK
- 1 set consists of 3 solid-link inserts, 3 gauge-pieces, 1 plastic box to be snapped onto DIN rail
- By installing this set, the fuse-switch-disconnector is converted into a switch-disconnector

SG81311	63	Z-SLS/TR-SET	100660	1 / 12
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Description Solid-link Set complete Z-SLS/TR-SET

- Supplied as a set with 3 solid-links inserts and 3 gauge-pieces in plastic box which can be mounted onto DIN rail.
- Dimensions of plastic box:

Frame size

45 mm

Depth

75 mm

Width

54 mm

Connection diagram



Technical Data

Z-SLS/TR-SET		
Electrical		
Rated voltage		400 V AC
Rated constant current	I_u	63 A
Test voltage		5 kV
Mechanical		
Size D02		63 A

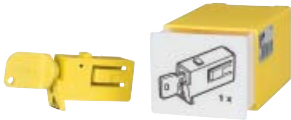


Description	Type Designation	Article No.	Units per package
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Switch-on-locking Z-SLZ/SP

- For Z-SLS/NEOZ, Z-SLS/CEK, Z-SLK/NEOZ
- Only one lock per device required

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Plastic lock	Z-SLZ/SP	268981	1 / 12
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6.350 Fuse Devices

Fuse-Switch-Disconnecter D02+D01

xPole



Poles	Rated constant current (A)	Type Designation	Article No.	Units per package
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Fuse-Switch-Disconnecter D02+D01

With visual tripping indicator Z-SLS/CB - Current coding by cartridge-ring adapter inserts

1	max. 63	Z-SLS/CB/1	248247	12
1+N	max. 63	Z-SLS/CB/1+N	167282	6
2	max. 63	Z-SLS/CB/2	248248	6
3	max. 63	Z-SLS/CB/3	248249	4
3+N	max. 63	Z-SLS/CB/3+N	167283	3



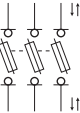
Accessories

Fuse-Links Z-D0./SE-..
Cartridge-ring adapter inserts D01 Z-D02-D01/PE-..
Cartridge-ring adapter inserts D02 Z-D02/PE-..
Adapter Spring D01 Z-SLS/CB-HF see chapter Accessories Fuse Devices

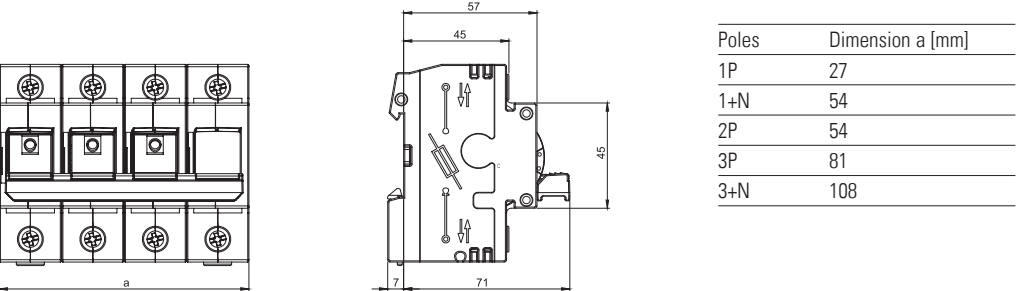
Description Fuse-Switch-Disconnecter with visual tripping indicator Z-SLS/CB - Current coding by cartridge-ring adapter inserts

- Design according to IEC/EN 60947-3
- Current coding by means of cartridge-ring adapter inserts
- Visual tripping indicator is flashing
- Suitable for the following fuse-links
 - D01: 2, 4, 6, 10, 13, 16 A with cartridge-ring adapter insert Z-D02-D01/PE-.. and Adapter Spring Z-SLS/CB-HF
 - D02: 20, 25, 32, 35, 40, 50, 63 A
- Can be sealed with leads

Connection diagram



Dimensions (mm)

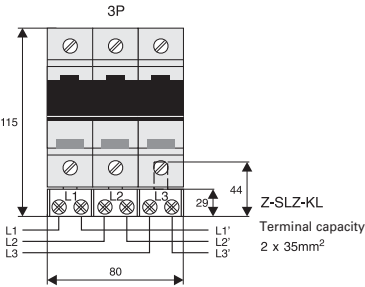
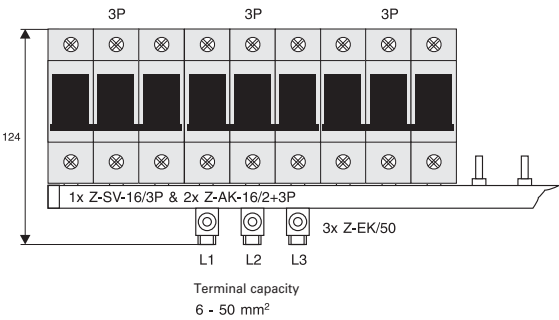
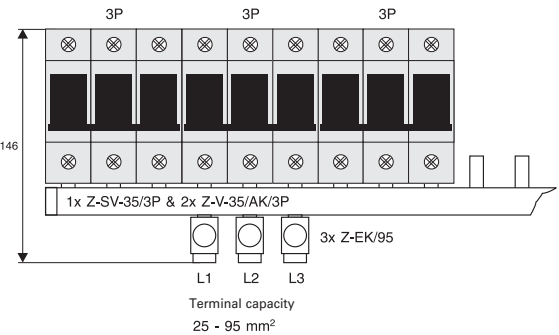




Technical Data

Z-SLS/CB		
Electrical		
Number of poles		1P, 1+N, 2P, 3P, 3+N
Rated operational voltage	U_e	230 V AC 400 V AC
1P, 1P+N		
2P, 3P, 3P+N		
Rated operational current	I_e	63 A
Rated constant current	I_u	63 A
Conditional rated short circuit current		50 kA _{r.m.s.}
Utilization category		AC 22B
Overvoltage category		IV
Rated peak withstand voltage	U_{imp}	6 kV
Power loss per current path I_e		0.5 W
Power loss per current path with fuse-link I_e		7.5 W
Mechanical		
Frame size		45 mm
Device height		86 mm
Device width		27 mm per pole (1.5MU)
Weight		
1P		120 g
1P+N		230 g
2P		230 g
3P		350 g
3P+N		448 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715
Degree of protection		IP20
Upper and lower terminals		lift terminals
Terminal capacity		1.5-35 mm ²
Tightening torque of terminal screws		max. 4 Nm
Temperature range		-25 to +60 °C
Flame class		V0, glowing wire test 960 °C
Pollution degree		3
Comparative tracking index		CTI 600

Examples





Size	Type Designation	Article No.	Units per package
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Adapter Spring Z-SLS/CB-HF

- For Z-SLS/CB/. for the use of fuse-links size D01



wa_sg02712

D01	Z-SLS/CB-HF	263154	12 / 288
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Description	Type Designation	Article No.	Units per package
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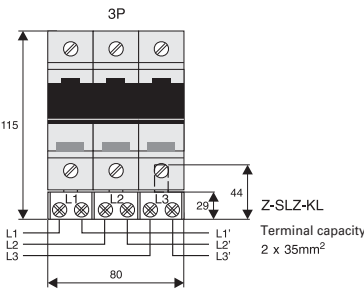
Double Terminal Z-SLZ/KL

- For Z-SLS/NEOZ, Z-SLS/CEK, Z-SLK/NEOZ



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Terminal 2 x 3x35 mm ²	Z-SLZ/KL	268982	15
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Accessories for Z-SLS

For busbar blocks and feed terminals refer to the technical part, fuse-switch-disconnector, and ordering part, busbar systems.



Poles	Rated constant current (A)	Type Designation	Article No.	Units per package
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Switch-Disconnecter-Fuse D02+D01

With visual tripping indicator D02-LTS

- Rated operational voltage 400 V AC
- Suitable for fuse-links with operating classes gG (gL), aM
- Only 4MU in width, busbar compatible to Xpole switchgear
- Current coding by cartridge-ring adapter inserts
- Can be sealed with leads
- Supply side from top or bottom
- Version with Auxiliary Switch D02-LTS/63-3-HK
- Delivered with Adapter Springs for fuse-links D01 or cylindrical fuse-links 10x38

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3	max. 63	D02-LTS/63-3	114320	3
3	max. 63	D02-LTS/63-3-HK	114322	3
3N	max. 63	D02-LTS/63-3N	114321	3

Accessories for D02-LTS



Fuse-Links Z-D0/SE-...
Cartridge-ring adapter inserts D01: Z-D02-D01/PE-...
D02: Z-D02/PE-...
Adapter Spring Z-D02-LTS-HF (scope of delivery)



Fuse-Links Z-C10/SE-...
Adapter Spring Z-D02-LTS-HF (scope of delivery)

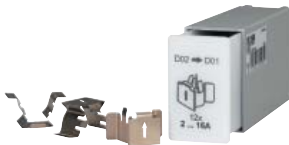
Siehe Fuse Devices Accessories

Max. Rated operational current I_g (A)	Size	Type Designation	Article No.	Units per package
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Adapter Spring Z-D02-LTS-HF

- To accommodate D01 fuse-links or cylindrical fuse-links 10x38 in the Switch-disconnectorfuse D02-LTS/63...

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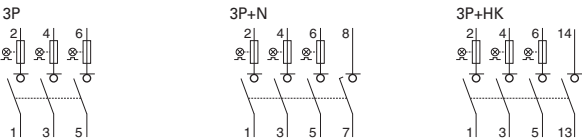


16	D02-D01	Z-D02-LTS-HF	114323	12 / 288
32	C 10x38			

Description Switch-Disconnecter-Fuse D02-LTS - Current coding by cartridge-ring adapter inserts

- Design according to IEC/EN 60947-3
- Current coding by means of cartridge-ring adapter inserts
- Visual tripping indicator is flashing
- Suitable for fuse-links with operating classes gG (gL), aM
D01: 2, 4, 6, 10, 13, 16 A with cartridge-ring adapter insert Z-D02-D01/PE-... and Adapter Spring Z-D02-LTS-HF
D02: 20, 25, 32, 35, 50, 63 A
Cylindrical 10x38 up to 32 A with adapter spring Z-D02-LTS-HF
- Can be sealed with leads

Connection diagram

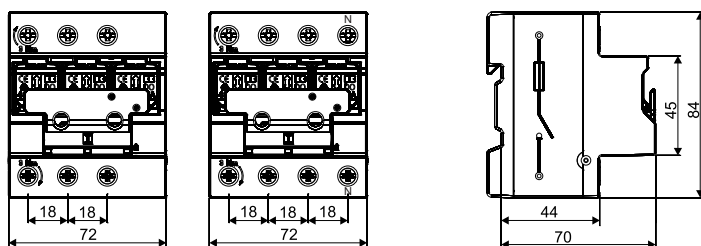




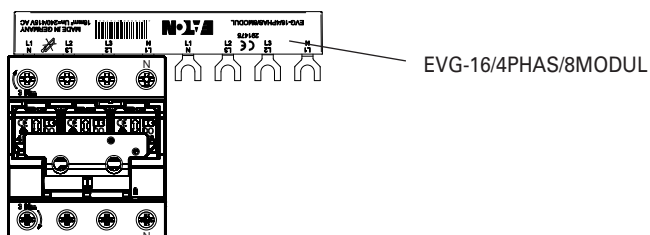
Technical Data

		D02-LTS
Electrical		
Number of poles		3P, 3P+N, 3P+HK
Rated operational voltage	U_e	400 V AC
Rated operational voltage range		48-400 V AC
Rated operational current	I_e	63 A
Rated constant current	I_u	63 A
Conditional rated short circuit current		50 kA _{r.m.s.}
Utilization category		AC 22B
Overvoltage category		IV
Rated peak withstand voltage	U_{imp}	6 kV
Power loss per current path I_e		1.8 W
Power loss per current path with fuse-link I_e		7.3 W
Max. permissible power loss of fuse-links		5.5 W
Auxiliary Switch		
1P 1 NO		5 A / 250 V AC
Max. thermal back-up protection		2 A gL
Mechanical		
Frame size		45 mm
Device height		86 mm
Device width		18 mm per pole (1MU)
Weight		
3P		340 g
3P+N		380 g
3P+HK		380 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715
Degree of protection		IP20
Upper and lower terminals		lift terminals
Terminal capacity		1.5-25 mm ²
Tightening torque of terminal screws		max. 3 Nm
Temperature range		-25 to +60 °C
Flame class		V0, glowing wire test 960 °C
Pollution degree		3
Comparative tracking index		CTI 600

Dimensions (mm)



Example 3P, 3P+N





Poles	Size	Type Designation	Article No.	Units per package
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Fuse-Disconnecter (empty)

- For cylindrical fuse-links
- The visual tripping indicator indicates the tripped fuse-link
- Can be sealed with leads

For industry Z-SH

Without visual tripping indicator

1	10x38	Z-SH/1	263876	12 / 120
1+N	10x38	Z-SH/1N	263877	12 / 120
2	10x38	Z-SH/2	263878	6 / 60
3	10x38	Z-SH/3	263879	4 / 40
3+N	10x38	Z-SH/3N	263880	4 / 40

With visual tripping indicator

1	10x38	Z-SHL/1	263883	12 / 120
1+N	10x38	Z-SHL/1N	263884	12 / 120
2	10x38	Z-SHL/2	263885	6 / 60
3	10x38	Z-SHL/3	263886	4 / 40
3+N	10x38	Z-SHL/3N	263887	4 / 40

Rated current (A)	Size	Type Designation	Article No.	Units per package
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For household applications Z-SI, 1pole

Without visual tripping indicator

10	8.5x23	Z-SI/10/1	263889	12 / 120
16	10.3x25.8	Z-SI/16/1	263890	12 / 120
20	8.5x31.5	Z-SI/20/1	263891	12 / 120
25	10.3x31.5	Z-SI/25/1	263892	12 / 120
32	10.3x38	Z-SI/32/1	263893	12 / 120

With visual tripping indicator

20	8.5x31.5	Z-SIL/20/1	263901	12 / 120
25	10.3x31.5	Z-SIL/25/1	263902	12 / 120
32	10.3x38	Z-SIL/32/1	263903	12 / 120

For household applications Z-SI, 1+Npole

Without visual tripping indicator

10	8.5x23	Z-SI/10/1N	263894	12 / 120
16	10.3x25.8	Z-SI/16/1N	263895	12 / 120
20	8.5x31.5	Z-SI/20/1N	263896	12 / 120
25	10.3x31.5	Z-SI/25/1N	263897	12 / 120
32	10.3x38	Z-SI/32/1N	263898	12 / 120

With visual tripping indicator

20	8.5x31.5	Z-SIL/20/1N	263938	12 / 120
25	10.3x31.5	Z-SIL/25/1N	263939	12 / 120
32	10.3x38	Z-SIL/32/1N	263940	12 / 120

Accessories for Z-SH, Z-SI

Fuse-Links Z-C/SE...

see chapter Accessories Fuse Devices

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SG36412



SG00412



SG53912





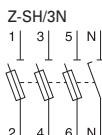
Description Fuse-Disconnecter for Industrial Applications Z-SH

- Design according to IEC/EN 60947-3
- Design
 - without visual tripping indicator Z-SH
 - with visual tripping indicator Z-SHL
- Can be sealed with leads
- Supplied without fuse-links

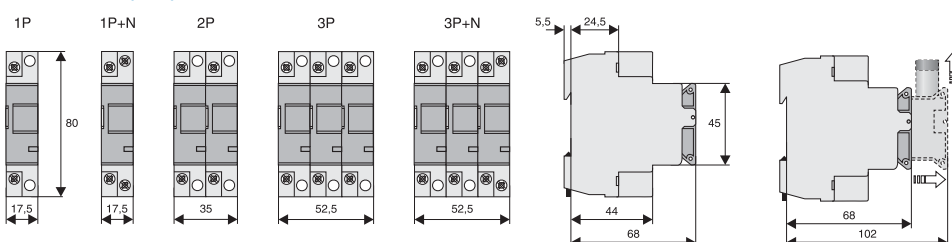
Technical Data

		Z-SH
Electrical		
Number of poles		1P, 1P+N, 2P, 3P, 3P+N
Rated voltage		
1P, 1P+N		230 V AC
2P, 3P, 3P+N		400 V AC
Rated operational current	I_e	32 A
Conditional short-circuit current		10 kA _{r.m.s.}
Utilization category		AC 20B
Overvoltage category		IV
Rated peak withstand voltage	U_{imp}	4 kV
Fuse-Links		10, 16, 20, 25, 32 A
Operating class		gG(gL) / aM
Max. Power loss per current path		3.2 W
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		according to dimensioned drawing
Weight		Z-SH Z-SHL
1P		74 g 76 g
1P+N		84 g 86 g
2P		156 g 158 g
3P		234 g 236 g
3P+N		244 g 246 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715
Degree of protection (built-in)		IP20 (IP40)
Upper and lower terminals		lift terminals
Terminal capacity		1.5-10 mm ²
Tightening torque of terminal screws		max. 2 Nm
Temperature range		-25 to +60 °C
Dimensions of fuse-link		10.3 x 38 mm

Connection diagram

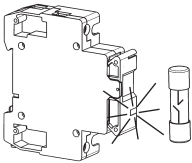


Dimensions (mm)

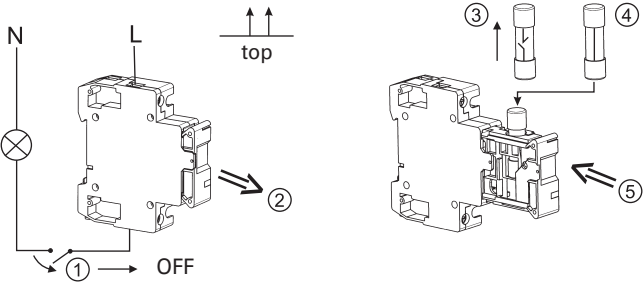




Visual Tripping Indicator



Attention



 Do not switch the fuse-disconnector under load



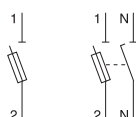
Description Fuse-Disconnecter for Household Applications Z-SI

- Design according to IEC/EN 60947-3
- Design
 - without visual tripping indicator Z-SI
 - with visual tripping indicator Z-SIL
- Can be sealed with leads
- The open fuse drawer can be secured against re-switch-on by means of a padlock
- Supplied without fuse-links

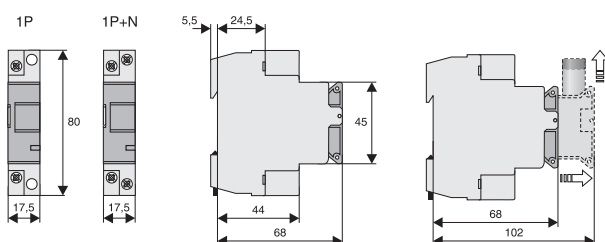
Technical Data

		Z-SI
Electrical		
Number of poles		1P, 1P+N
Rated voltage		230 V AC
Rated operational current	I_e	32 A
Conditional short-circuit current		10 kA _{r.m.s.}
Utilization category		AC 20B
Rated peak withstand voltage	U_{imp}	4 kV
Fuse-Links		10, 16, 20, 25, 32 A
Operating class		gG(gL) / aM
Max. Power loss per current path		3.2 W
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		17.5 mm
Weight		Z-SI Z-SIL
1P		74 g 76 g
1P+N		84 g 86 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715
Degree of protection (built-in)		IP20 (IP40)
Upper and lower terminals		lift terminals
Terminal capacity		1.5-10 mm ²
Tightening torque of terminal screws		max. 2 Nm
Dimensions of fuse-link		
Rated current (A)		mm
10		8.5 x 23
16		10.3 x 25.8
20		8.5 x 31.5
25		10.3 x 31.5
32		10.3 x 38

Connection diagram

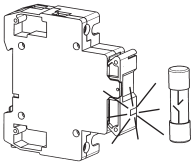


Dimensions (mm)

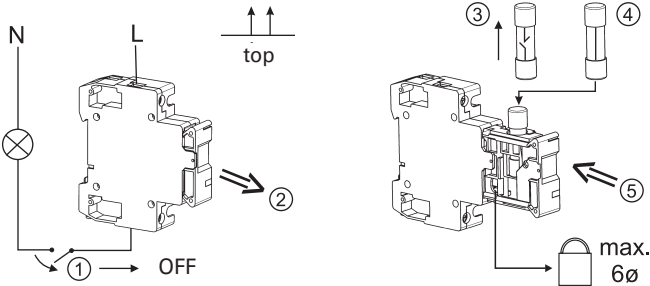




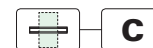
Visual Tripping Indicator



Attention



 Do not switch the fuse-disconnector under load



Poles	Size	Type Designation	Article No.	Units per package
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Fuse-Switch-Disconnecter (empty) C10-SLS, VLCE

- The visual tripping indicator indicates the tripped fuse-link
- Rated operational voltage 690 V AC
- For cylindrical fuse-links with operating classes gG (gL), aM
- Can be sealed with leads
- Supply side from top or bottom

Size 10x38, Rated operational current 32 A, C10-SLS

Without Visual Tripping Indicator

1	10x38	C10-SLS/32/1	112220	12 / 108
1+N	10x38	C10-SLS/32/1N	112221	12 / 108
2	10x38	C10-SLS/32/2	112222	6 / 54
3	10x38	C10-SLS/32/3	112223	4 / 36
3+N	10x38	C10-SLS/32/3N	112224	4 / 36

With Visual Tripping Indicator

1	10x38	C10-SLS/32/1-L 1	112225	12 / 108
1+N	10x38	C10-SLS/32/1N-L	112226	12 / 108
2	10x38	C10-SLS/32/2-L	112227	6 / 54
3	10x38	C10-SLS/32/3-L	112228	4 / 36
3+N	10x38	C10-SLS/32/3N-L	112229	4 / 36

Size 14x51, Rated operational current 50 A, VLCE14

Without Visual Tripping Indicator

1	14x51	VLCE14-1P	192373	12 / 96
1+N	14x51	VLCE14-1P+N	192375	6 / 48
2	14x51	VLCE14-2P	192376	6 / 48
3	14x51	VLCE14-3P	192377	4 / 32
3+N	14x51	VLCE14-3P+N	192379	3 / 24

With Visual Tripping Indicator

1	14x51	VLCE14-1P/L	192374	12 / 96
3	14x51	VLCE14-3P/L	192378	4 / 32

Size 22x58, Rated operational current 100 A, VLCE22

Without Visual Tripping Indicator

1	22x58	VLCE22-1P	192380	3 / 105
1+N	22x58	VLCE22-1P+N	192381	2 / 48
2	22x58	VLCE22-2P	192382	2 / 48
3	22x58	VLCE22-3P	192370	1 / 35
3+N	22x58	VLCE22-3P+N	192372	1 / 24

With Visual Tripping Indicator

3	22x58	VLCE22-3P/L	192371	1 / 35
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Accessories

Fuse-Links	Z-C10/SE...
	Z-C14/SE..
	Z-C22/SE...

see chapter Accessories Fuse Devices

SG27212



wa_sg01917



wa_sg02017





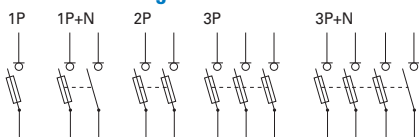
Description Fuse-Switch-Disconnecter C10-SLS, VLCE

- Design according to IEC/EN 60947-3
- Design /L with visual tripping indicator (flashing)
- Suitable for cylindrical fuse-links with operating classes gG, aM
 - 10x38 C10-SLS
 - 14x51 VLCE14
 - 22x58 VLCE22
- Can be sealed with leads
- Supplied without fuse-links

Technical Data

		C10-SLS	VLCE14	VLCE22
Electrical				
Number of poles		1P, 1P+N, 2P, 3P, 3P+N	1P, 1P+N, 2P, 3P, 3P+N	1P, 1P+N, 2P, 3P, 3P+N
Rated operational voltage	U_e			
1P		690 V, 50 Hz	690 V, 50 Hz	690 V, 50 Hz
1P+N		400 V, 50 Hz	690 V, 50 Hz	690 V, 50 Hz
2P, 3P, 3P+N		690 V, 50 Hz	690 V, 50 Hz	690 V, 50 Hz
Rated operational current	I_e	32 A	50 A	100 A
Conditional rated short circuit current		100 kA (at 400 V)	120 kA	120 kA
Rated short-time withstand current	I_{cw}	300 A	600 A	1200 A
Utilization category	U_i	AC 22B	AC 22B	AC 21B
Rated insulation voltage		690 V	690 V	690 V
Overtoltage category		II	III	III
Rated impulse withstand voltage	U_{imp}	4 kV	8 kV	8 kV
Power loss per current path without fuse-link		0.9 W	1 W	3.1 W
Maximum permissible power loss of fuse-links				
gG		3 W	5 W	9.5 W
aM		1.2 W	3 W	7 W
Mechanical				
Frame size		45 mm	45 mm	45 mm
Device height		83.3 mm	94 mm	121 mm
Device width		17.5 mm / pole	W = 27 mm / pole	W = 36 mm / pole
Weight				
1P		58 g	100 g	156 g
1P+N		70 g	222 g	351 g
2P		120 g	206 g	317 g
3P		180 g	310 g	476 g
3P+N		195 g	434 g	671 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715		
Degree of protection		IP20	IP20	IP20
Upper and lower terminals		lift terminals	lift terminals	lift terminals
Terminal capacity		0.5 - 10 mm ² AWG 20-8	1.5 - 35 mm ² AWG 18-6	4 - 50 mm ² AWG 12-2
Tightening torque of terminal screws		≤ 1.2 Nm	2.5 - 3 Nm	2.5 - 3 Nm
Ambient temperature range		-25 to +40 °C	-25 to +40 °C	-25 to +40 °C
Flame class		glow wire 960 °C	glow wire 960 °C	glow wire 960 °C
Pollution degree		2	3	3
Comparative tracking index		CTI 450	CTI 450	CTI 450

Connection diagram



6.362 Fuse Devices

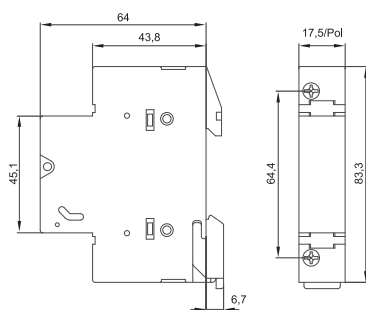
Fuse-Switch-Disconnecter (empty) C10-SLS, VLCE

xPole

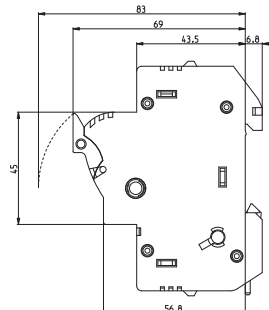


Dimensions (mm)

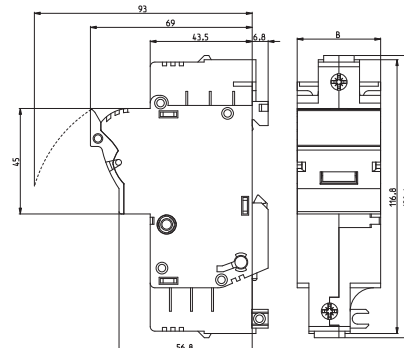
C10-SLS



VLCE14



VLCE22



 DC



C



Article No.

Units per package

Poles

Size

Type
Designation

Fuse-Disconnecter (empty) CHPV...

- String protection of PV generator
- The visual tripping indicator indicates the tripped fuse-link
50-400 V flashing
400-1000 V permanent light
- Rated operational voltage 1000 VDC
- For cylindrical fuse-links photovoltaic application
- Lead-sealable

Size 10x38 CHPV (old FCFDC10DI), Rated operational current 30 A DC

Without Visual Tripping Indicator

1	10x38	1P 30A 1000Vdc MFH for 10x38 gPV	CHPV1U	12/240
2	10x38	2P 30A 1000Vdc MFH For 10x38 gPV	CHPV2U	6/120

With Visual Tripping Indicator

1	10x38	1P 1000Vdc MFH for 10x38 gPV with indicator	CHPV1IU	12/240
2	10x38	2P 1000Vdc MFH for 10x38 gPV with indicator	CHPV2IU	6/120

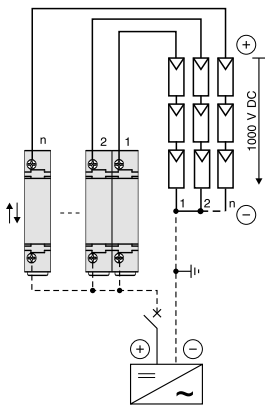
wa_eg00210



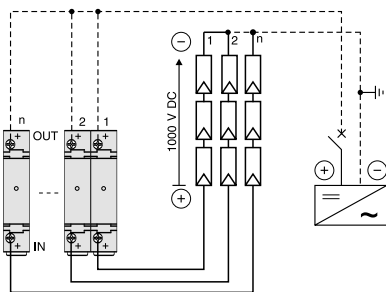
Applikation Photovoltaic

Earthed System

FCFDC10DI-1-SOL

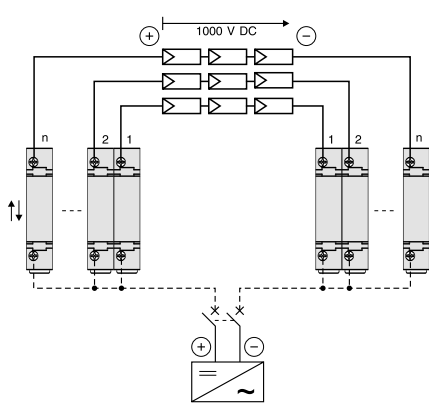


FCFDC10DI-1L-SOL

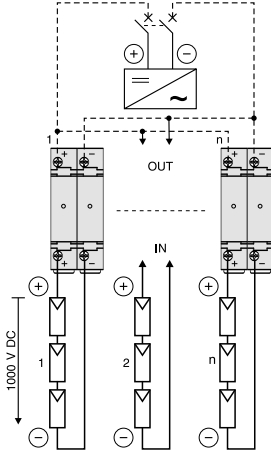


Unearthed System

FCFDC10DI-1-SOL



FCFDC10DI-2L-SOL





Description Fuse-Disconnecter (empty) FCFDC10DI-..-SOL

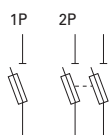
- Design according to IEC 60947-1 Ed. 4.0, EN 60947-1:1999+A1:2000+A2:2001 IEC 60947-3 Ed. 2.1, EN 60947-3:1999+A1:2001
- Design L with visual tripping indicator (flashing)
- table for cylindrical fuse-links photovoltaic application 10x38 according to IEC 60269, UL284-4
- Can be sealed with leads
- Supplied without fuse-links

Technical Data

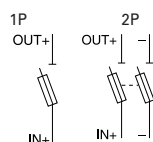
		FCFDC10DI-..-SOL
Electrical		
Number of poles		1P, 2P
Rated voltage	U_e	1000 V DC
Rated current	I_e	25 A
Conditional rated short circuit current		10 kA
Utilization category		DC 20B
Overvoltage category		III
Rated peak withstand voltage	U_{imp}	6 kV
Power loss per current path without fuse-link		0.9 W
Maximum permissible power loss of fuse-links		3 W
Mechanical		
Frame size		45 mm
Device height		83.3 mm
Device width		17.5 mm / pole
Weight		
1P		58 g
2P		70 g
Mounting		Quick fastening on DIN rail according to IEC/EN 60715
Degree of protection		IP20
Upper and lower terminals		lift terminals
Terminal capacity		1.5-10 mm ² AWG 20-8
Tightening torque of terminal screws		1.5 Nm
Ambient temperature range		-25 to +40 °C
Flame class		glow wire 960 °C
Pollution degree		2
Comparative tracking index		CTI 450

Connection diagram

FCFDC10DI-..-SOL

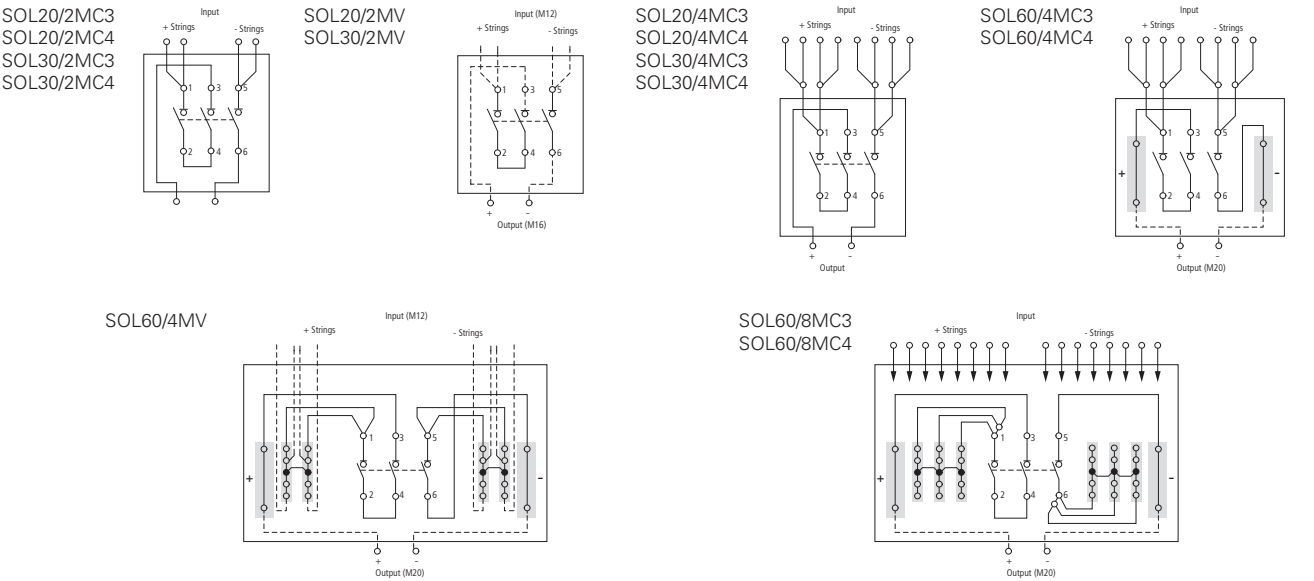


FCFDC10DI-.L-SOL

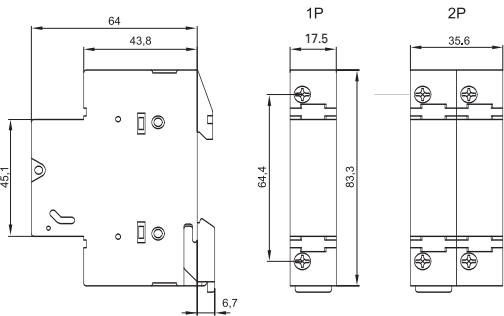




Connection diagram



Dimensions (mm)



Max. Rated Operational Current I_e (A)	Rated Voltage U_e (V AC)	Size	Utilisation	Width	Notes	Type Designation	Article No.	Units per package
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Slide Fuse Equipment, 3-pole

D-Type Slide Fuse-Base

- Delivered empty, without screw caps

sg03516, sg03716, sg03616



63	400	E18, D02	12 x 5/10 20 x 5/10 25 x 5/10 30 x 5/10 Double-T	27	Cartridge-ring adapter insert	D02-SO/63/3-R-27 ¹⁾	114315	10
				36	Cartridge-ring adapter insert	Z-D02/R/3-36 ²⁾	100663	10
				54	Cartridge-ring adapter insert	Z-D02/R/3-54 ²⁾	100664	10

wa_sg01112



25	500	E27, DII	12 x 5/10 20 x 5/10 25 x 5/10 30 x 5/10 Double-T	45	Gauge ring	DII-SO/25/3-R ¹⁾	107965	10
					Screw-in gauge ring	DII-SO/25/3-R-PS ¹⁾	110394	10

wa_sg01212



63	690	E33, DIII	12 x 5/10 20 x 5/10 25 x 5/10 30 x 5/10 Double-T	45	Gauge ring	DIII-SO/63/3-R ¹⁾	107966	10
					Screw-in gauge ring	DIII-SO/63/3-R-PS ¹⁾	110395	10

D-Type Slide Fuse-Base, compact-type

- Incl. shock hazard protection cover with front and bottom plate and marking label
- Delivered empty, without screw caps

SG82411



63	400	E18, D02	12 x 5/10	36	Cartridge-ring adapter insert, snap-on mechanism mechanism when sliding it onto the busbar.	FCFBD02BBC60-3-36 ¹⁾	139532	6
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Designation	Utilisation	Width	Notes	Type Designation	Article No.	Units per package
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Covers

SG60412



Set for covering busbar support	D02	36	Suitable for D02-SO/63/3-R-27	Z-D02-S-AB-SET	100662	10
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wa_sg01713



Side cover	DII	—	Suitable for DII.-SO/.../3-R(-PS)	SBS-RS60	060541	10
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¹⁾ Incl. shock hazard protection cover with front and bottom plate

²⁾ Incl. shock hazard protection cover without front and bottom plate

Max. Rated Operational Current I_e (A)	Rated Voltage U_e (V AC)	Size	Width	Utilisation	Notes	Type Designation	Article No.	Units per package
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Screw Caps

wa_sg04013



63	400	E18, D02	—	D02-SO...	—	Z-D02/SK	100651	20/500
25	500	E27, D II	—	DII-SO...	—	Z-DII/SK	112148	50/600
63	500	E33, D III	—	DIII-SO...	—	Z-DIII/SK	112149	30/360
63	690	E33, D III	—	DIII-SO...	—	Z-DIII/SK-690	118904	3

Adapter Spring

- To accommodate D01 fuse-links in Z-D02/SK screw caps

wa_sg02612



16	—	D02-D01	—	—	—	Z-D02/SIKA-HF	263149	50/3000
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D02 Switch-Disconnect-Fuse

- Incl. shock hazard protection cover with front and bottom plate
- Delivered empty, without screw caps

SG45912



63	400	E18, D02	20 x 5/10 30 x 5/10 Double-T	36	Cartridge-ring adapter insert	D02-S/63/3-RS	284649	10
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Screw Caps

wa_sg04013



63	400	E18, D02	—	D02-SO...	—	Z-D02/SK	100651	20/500
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Adapter Spring

- To accommodate D01 fuse-links in Z-D02/SK screw caps

wa_sg02612



16	—	D02-D01	—	—	—	Z-D02/SIKA-HF	263149	50/3000
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Max. Rated Operational Current I_e (A)	Rated Voltage U_e (V AC)	Size	Width	Utilisation	Notes	Type Designation	Article No.	Units per package
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Switch-Disconnecter-Fuse D02 (+D01) + C

- Visual tripping indicator is flashing
- Delivered empty, without cartridge-ring adapter inserts and fuse-links
- Delivered with adapter springs for fuse-links D01 or cylindrical fuse-links 10x38
- Contact position indicator
- Plug-in technique without screw caps
- All-pole and hand independent switching of load
- Version D02-LTS/63/3-R-HK with incorporated auxiliary switch
- Lead-seal- and lockable

3P

63	400	E18, D02	27	12 x 5/10 15 x 5/10	Cartridge-ring adapter insert without auxiliary switch	D02-LTS/63/3-R	114316	3
32	400	C 10x38		20 x 5/10 25 x 5/10 30 x 5/10 Double-T	Cartridge-ring adapter insert with auxiliary switch	D02-LTS/63/3-R-HK	114318	3

3P+N

63	400	E18, D02	27	12 x 5/10 15 x 5/10	Cartridge-ring adapter insert without auxiliary switch	D02-LTS/63/3N-R	114317	3
32	400	C 10x38		20 x 5/10 25 x 5/10 30 x 5/10 Double-T	Cartridge-ring adapter insert with auxiliary switch	D02-LTS/63/3N-R-HK	114319	3

Accessories for D02-LTS/63..



Fuse-links Z-D0./SE-...
Cartridge-ring adapter inserts D01: Z-D02-D01/PE-...
D02: Z-D02/PE-...
Adapter spring Z-D02-LTS-HF (scope of delivery)



Fuse-links Z-C10/SE-...
Adapter spring Z-D02-LTS-HF (scope of delivery)

See Fuse Material Accessories

Adapter Spring

- To accommodate D01 fuse-links or cylindrical fuse-links 10x38 in the Switch-disconnector-fuse D02-LTS/63...

16	—	D02-D01	—	—	—	Z-D02-LTS-HF	114323	12/288
32		C 10x38						

SG82311



SG82211



SG81811



Technical Data D-Type Slide Fuse-Base

- Design according to IEC/EN 60269-1, VDE 0636 Part 301
- Vertical and horizontal mounting possible
- Delivered empty, without screw caps

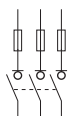
		D02-S0/63/3-R-27 Z-D02/R/3...	DII-S0/25/3-R(-PS)	DIII-S0/63/3-R(-PS)
Electrical				
Number of poles		3	3	3
Rated operational voltage	U_e	400 V AC	500 V AC	690 V AC
Rated frequency		40-60 Hz	40-60 Hz	40-60 Hz
Rated operational current	I_e	63 A	25 A	63 A
Conventional thermal current with fuse-links	I_{th}	63 A	25 A	63 A
Rated duty		uninterrupted duty	uninterrupted duty	uninterrupted duty
Rated conditional short-circuit current		50 kA _{r.m.s}	50 kA _{r.m.s}	50 kA _{r.m.s}
Overvoltage category		IV	III	III
Rated impulse withstand voltage	U_{imp}	6 kV	4 kV	4 kV
Power loss per current path		0.5 W	0.4 W	3.34 W
Power loss of base without fuse-links		1.5 W	1.2 W	10 W
Max. permissible power loss of fuse-links		5.5 W	4 W	7 W
Mechanical				
Device height		201 mm	200 mm	200 mm
Width		27 mm	45 mm	54 mm
Weight		150 g	140 g	150 g
Mounting onto busbars, without drilling or screwing		12x5/10	12x5/10	12x5/10
		15x5/10	-	-
		20x5/10	20x5/10	20x5/10
		25x5/10	25x5/10	25x5/10
		30x5/10	30x5/10	30x5/10
Degree of protection while operating		IP20	IP20	IP20
Terminals		lift terminals	lift terminals	lift terminals
Terminal capacity		1.5-35 mm ²	1.5-25 mm ²	1.5-25 mm ²
Tightening torque of terminal screws		3-4 Nm	2.6 Nm	2.6 Nm
Electrical thread type		E18	E27	E33
Ambient temperature range		-25 to +55 °C	-25 to +55 °C *)	-25 to +55 °C *)
*) (35 °C normal temperature, at 55 °C with reduced operating current)				
Pollution degree		3	3	3
Climatic resistance: moist heat		constant according to IEC 60068-2-78, cyclical according to IEC 60068-2-30		

Technical Data Busbar-Slide Switch Disconnecter with Fuses D02-S/63/3-RS

- Design according to IEC/EN 60947-3
- Vertical and horizontal mounting possible
- Delivered empty, without screw caps
- Current coding by means of cartridge-ring adapter insert
- Suitable for fuse-links
 - D01: 2, 4, 6, 10, 16 A in combination with cartridge-ring adapter inserts Z-D02-D01/PE... and adapter spring Z-D02/SIKA-HF
 - D02: 20, 25, 35, 50, 63 A
- Sealable

		D02-S/63/3-RS
Electrical		
Number of poles		3
Rated operational voltage	U_e	400 V AC
Rated frequency		40-60 Hz
Rated operational current	I_e	63 A
Conventional thermal current with fuse-links	I_{th}	63 A
Rated duty		uninterrupted duty
Rated conditional short-circuit current		50 kA _{r.m.s}
Utilization category		AC-23B
Overvoltage category		III
Rated impulse withstand voltage	U_{imp}	8 kV
Power loss per current path		2 W with I_e
Power loss per current path with fuse-link		7.5 W with I_e
Max. permissible power loss of fuse-links		5.5 W
Mechanical		
Device height		212 mm
Width		36 mm
Weight		260 g
Mounting onto busbars, without drilling or screwing		20x5/10 mm
		30x5/10 mm
Degree of protection while operating		IP20
Terminals		lift terminals
Terminal capacity		1.5-25 mm ² Cu
Tightening torque of terminal screws		max. 2.6 Nm
Electrical thread type		E18
Ambient temperature range		-25 to +55 °C
Pollution degree		3
Climatic resistance: moist heat		constant according to IEC 60068-2-78, cyclical according to IEC 60068-2-30

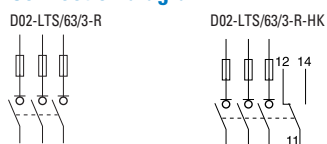
Connection diagram



Technical Data Busbar-Slide Switch Disconnecter with Fuses D02-LTS/63/3-R(-HK)

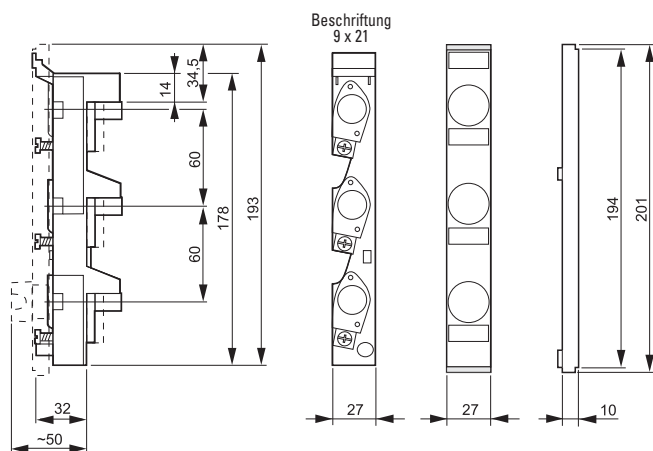
- Design according to IEC/EN 60947-3
- Vertical and horizontal mounting possible
- Supplied empty
- Current coding by means of cartridge-ring adapter insert
- Suitable for fuse-links
 - D01: 2, 4, 6, 10, 16 A in combination with cartridge-ring adapter inserts Z-D02-D01/PE... and adapter spring Z-D02-LTS-HF
 - D02: 20, 25, 35, 50, 63 A
 - Cylindrical 10x38: 1 - 32 A
- Lead-seal- and lockable

		D02-LTS/63/3-R(-HK)
Electrical		
Number of poles		3
Rated operational voltage	U_e	400 V AC
Rated frequency		40-60 Hz
Rated operational current	I_e	63 A
Conventional thermal current with fuse-links	I_{th}	63 A
Rated duty		uninterrupted duty
Rated conditional short-circuit current		50 kA _{r.m.s}
Utilization category		AC-22B
Overvoltage category		IV
Rated impulse withstand voltage	U_{imp}	6 kV
Power loss per current path		1.5 W with I_e
Power loss per current path with fuse-link		7 W with I_e
Max. permissible power loss of fuse-links		5.5 W
Mechanical		
Device height		226 mm
Width		27 mm
Weight		340 g
Mounting onto busbars, without drilling or screwing		12x5/10 mm
		15x5/10 mm
		20x5/10 mm
		25x5/10 mm
		30x5/10 mm
Degree of protection while operating		IP20
Degree of protection built-in		IP40
Terminals		lift terminals
Terminal capacity		1.5-35 mm ² Cu
Tightening torque of terminal screws		max. 4 Nm
Ambient temperature range		-25 to +55 °C
Pollution degree		3
Climatic resistance: moist heat		constant according to IEC 60068-2-78, cyclical according to IEC 60068-2-30
Auxiliary switch electrical		
1 CO		5 A / 250 V AC
Max. thermal back-up fuse		2 A gL
		PLSM-B4/...-HS / CLS6-B4/...-HS
Connection		
Femal push-on connector		2.8 x 0.5 mm

Connection diagram

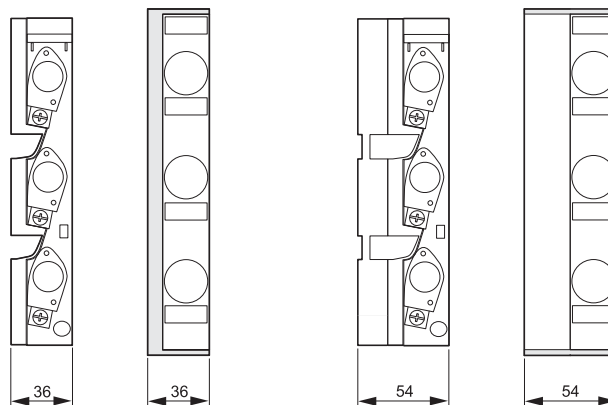
Dimensions

D02-S0/63/3-R-27



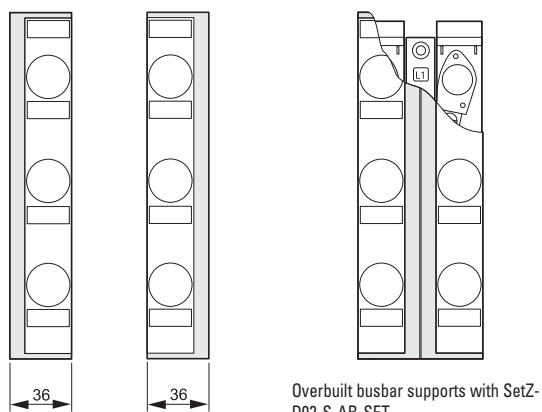
Front plate support

Z-D02/R/3-36, Z-D02/R/3-54



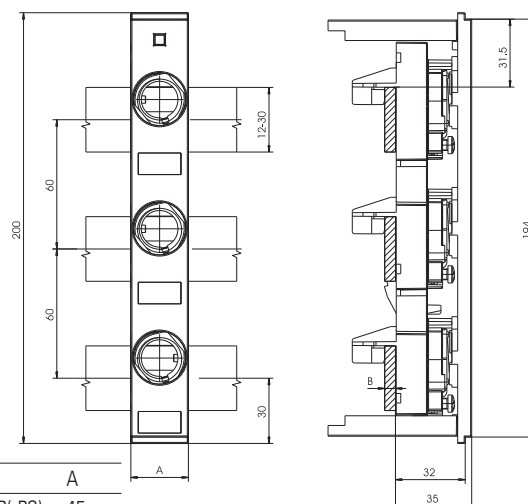
Front plate support

Z-D02-S-AB-SET



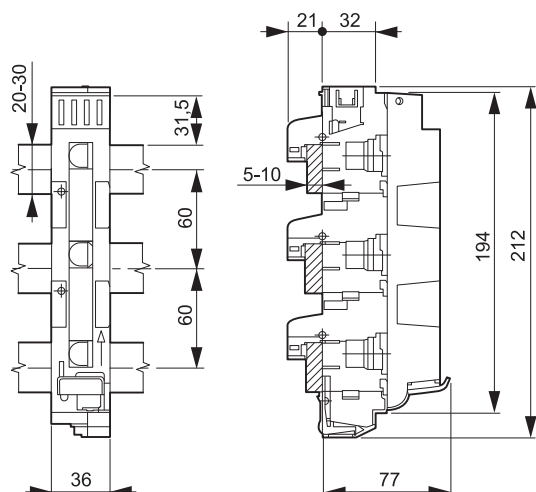
Front plate support

D...S0/.../3-R(-PS)

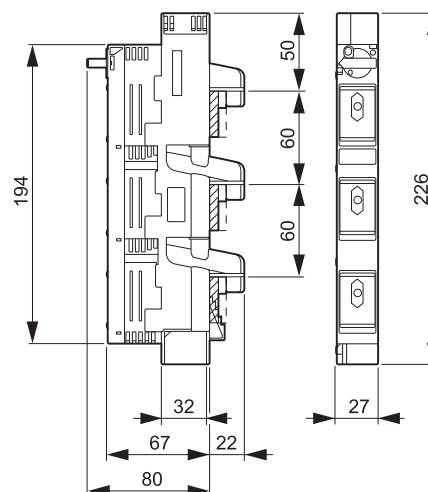


Type	A
DII-S0/25/3-R(-PS)	45
DIII-S0/63/3-R(-PS)	54

D02-S/63/3-RS



D02-LTS/63/3-R(-HK)





Size	Rated current (A)	Type Designation	Article No.	Units per package
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Fuse-Links Z-D0./SE, Operating class gG (gL)

- In practical plastic box in the color of the visual tripping indicator - to snap on DIN rail



D01	2	Z-D01/SE-2	288934	12/288
D01	4	Z-D01/SE-4	288935	12/288
D01	6	Z-D01/SE-6	288936	12/288
D01	10	Z-D01/SE-10	288937	12/288
D01	13	Z-D01/SE-13	288938	12/288
D01	16	Z-D01/SE-16	288939	12/288



D02	20	Z-D02/SE-20	288940	12/144
D02	25	Z-D02/SE-25	288941	12/144
D02	32	Z-D02/SE-32	288942	12/144
D02	35	Z-D02/SE-35	288943	12/144
D02	40	Z-D02/SE-40	288944	12/144
D02	50	Z-D02/SE-50	288945	12/144
D02	63	Z-D02/SE-63	288946	12/144

Description Fuse-Links Z-D0./SE, Operating class gG (gL)

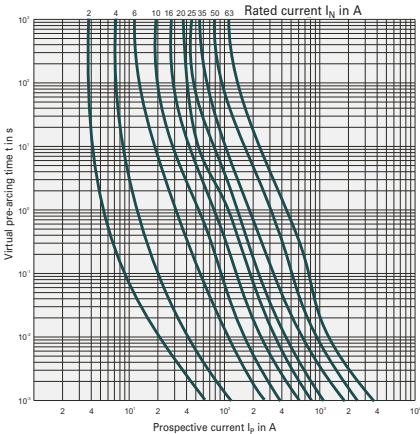
- According to DIN VDE 0636, DIN 49522
- For Fuse-Switch-Disconnecter Z-SLS, -SLK
- For Fuse-Bases D0.-SO and Z-D02/R/3

Technical Data

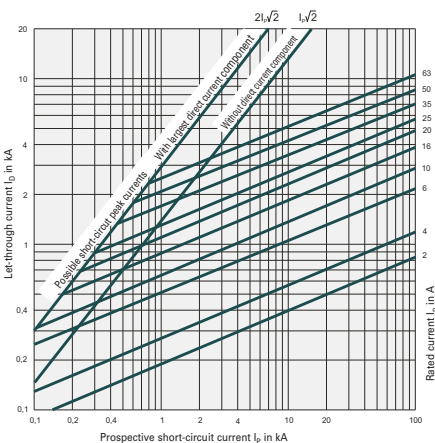
Z-D0./SE	
Electrical	
Operating class	gG (gL)
Rated voltage	
AC	400 V
DC	250 V
Rated frequency	45-65 Hz
Rated insulation voltage	U _i 2500 V
Rated short-circuit breaking capacity	
AC	50 kA
DC	8 kA
Mechanical	
Size	
D01	1, 2, 4, 6, 10, 13, 16 A
D02	20, 25, 32, 35, 40, 50, 63 A

Characteristics Z-D0./SE

Time/current characteristics of Z-D0-Fuse-Links 2 ... 63A gG(gL)



Let-through characteristics of Z-D0-Fuse-Links 2 ... 63A gG(gL)





Size	Rated current (A)	Type Designation	Article No.	Units per package
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Cartridge-Ring Adapter Insert

Cartridge-Ring Adapter Insert Z-D0./PE

- In practical plastic box in the color of the visual tripping indicator - to snap on DIN rail

SG81611



D01	2	Z-D01/PE-2	288909	12/288
D01	4	Z-D01/PE-4	288910	12/288
D01	6	Z-D01/PE-6	288911	12/288
D01	10, 13	Z-D01/PE-10	288912	12/288
D02	20	Z-D02/PE-20	288913	12/288
D02	25	Z-D02/PE-25	288914	12/288
D02	35, 32	Z-D02/PE-35	288915	12/288
D02	40	Z-D02/PE-40	288916	12/288
D02	50	Z-D02/PE-50	288917	12/288

Cartridge-Ring Adapter Insert Z-D02-D01/PE

- D01 for Fuse-Base D02 and Fuse-Switch-Disconnecter D02
- In practical plastic box in the color of the visual tripping indicator - to snap on DIN rail

SG81511



D02-D01	2	Z-D02-D01/PE-2	263112	12/288
D02-D01	4	Z-D02-D01/PE-4	263113	12/288
D02-D01	6	Z-D02-D01/PE-6	263150	12/288
D02-D01	10, 13	Z-D02-D01/PE-10	263151	12/288
D02-D01	16	Z-D02-D01/PE-16	263152	12/288

Description Cartridge-Ring Adapter Insert Z-D0./PE, Z-D02-D01/PE

- According to DIN 49523
- Used for current coding of D0.-SO, Z-D02/R/3, Z-SLS/CB

Technical Data

Z-D0./PE, Z-D02-D01/PE	
Electrical	
Rated current	
D01	2 - 10 A
D02	20 - 50 A
D02-D01	2 - 16 A



Size	Rated current (A)	Type Designation	Article No.	Units per package
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Screw Caps Z-D0/SK

wa_sg04013



D01	max. 16	Z-D01/SK	100650	20
D02	max. 63	Z-D02/SK	100651	20

Description Screw Caps Z-D0/SK

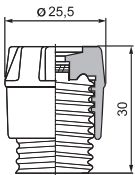
- Used for D0.-SO, Z-D02/R/3
- Adapter Spring Z-D02/SIKA-HF for application of D01 fuse-links into the screw cap Z-D02/SK available

Technical Data

Z-D0/SK	
Electrical	
Rated current	
D01	max. 16 A
D02	max. 63 A
Mechanical	
Electrical thread	
D01	E14
D02	E18

Practical Hint

A complete and functioning D-fuse system consists of base + fuse-link + cartridge-ring adapter insert + screw cap.
The cartridge-ring adapter insert is not required for the highest rated current of each size (D01...16A and D02...63A).



Size	Type Designation	Article No.	Units per package
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Adapter Spring Z-D02/SIKA-HF

- To apply D01-Fuse-Links into the screw cap Z-D02/SK

wa_sg02612



D02-D01	Z-D02/SIKA-HF	263149	50/3000
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Cartridge-ring adapter insert plier Z-D0-PE-Z

SG19707



D01, D02	Z-D0-PE-Z	114324	1 / 10
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Size	Rated current (A)	Type Designation	Article No.	Units per package
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Fuse-Links

Fuse-Links D27, D33 (old Z-DII./SE../GG), Operating class gG (gL)

- Rated voltage 500 V AC

SG19007



DII E27 2	2	FUSE-D2 2A T GL/GG 500VAC E27	2D27	25/900
DII E27 4	4	FUSE-D2 4A T GL/GG 500VAC E27	4D27	25/900
DII E27 6	6	FUSE-D2 6A T GL/GG 500VAC E27	6D27	25/900
DII E27 10	10	FUSE-D2 10A T GL/GG 500VAC E27	10D27	25/900
DII E27 16	16	FUSE-D2 16A T GL/GG 500VAC E27	16D27	25/900
DII E27 20	20	FUSE-D2 20A T GL/GG 500VAC E27	20D27	25/900
DII E27 25	25	FUSE-D2 25A T GL/GG 500VAC E27	25D27	25/1000
DIII E33 35	35	FUSE-D3 35A T GL/GG 500VAC E33	35D33	25/1000
DIII E33 50	50	FUSE-D3 50A T GL/GG 500VAC E33	50D33	25/1000
DIII E33 63	63	FUSE-D3 63A T GL/GG 500VAC E33	63D33	25/1000

Fuse-Links D27, D33 (old Z-DII./SE../DZ), Operating class DZ

- Rated voltage 500 V AC

SG19107



DII E27 6	6	FUSE 6A DII/E27 500VAC, DZ	6D27Q	25/500
DII E27 10	10	FUSE 10A DII/E27 500VAC, DZ	10D27Q	25/900
DII E27 16	16	FUSE 16A DII/E27 500VAC, DZ	16D27Q	25/900
DII E27 20	20	FUSE 20A DII/E27 500VAC, DZ	20D27Q	25/900
DII E27 25	25	FUSE 25A DII/E27 500VAC, DZ	25D27Q	25/500
DIII E33 35	35	FUSE 35A DIII/E33 500VAC, DZ	35D33Q	25/1000
DIII E33 50	50	FUSE 50A DIII/E33 500VAC, DZ	50D33Q	25/1000
DIII E33 63	63	FUSE 63A DIII/E33 500VAC, DZ	63D33Q	25/1000

Description Fuse-Links Z-DII./SE

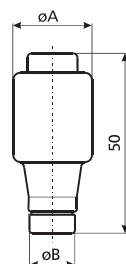
- According to DIN EN 60269-1 (VDE 0636 Part 10), DIN EN 60269-3 (VDE 0636 Part 30), DIN VDE 0636-301, CEE 16, IEC/EN 60269-1, IEC/EN 60269-3
- For Fuse-Bases DII-SO..., DIII-SO...

Technical Data

		Z-DII./SE
Electrical		
Operating class		gG (gL), DZ
Rated voltage	U_n	
AC		500 V
DC		400 V
Rated frequency		45-65 Hz
Insulating class		C-VDE0110
Rated short-circuit breaking capacity at $1.1 \times U_n$		
AC		50 kA / $\cos\phi = 0.2$
DC		8 kA / $\tau = 15$ ms

Dimensions (mm)

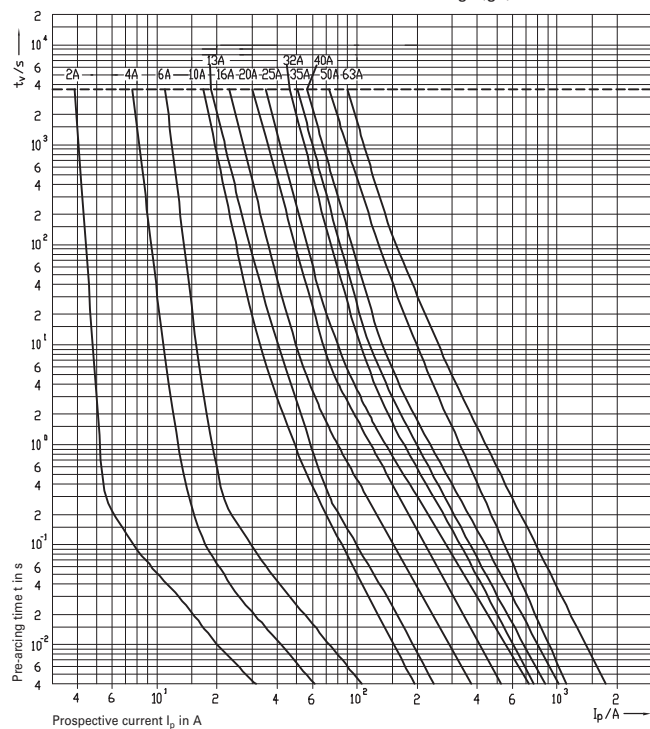
I_n (A)	$\varnothing A$	$\varnothing B$
DII for Fuse-Base E27		
2	21.5	6
4	21.5	6
6	21.5	6
10	21.5	8
16	21.5	10
20	21.5	12
25	21.5	14
DIII for Fuse-Base E33		
35	27	16
50	27	18
63	27	20



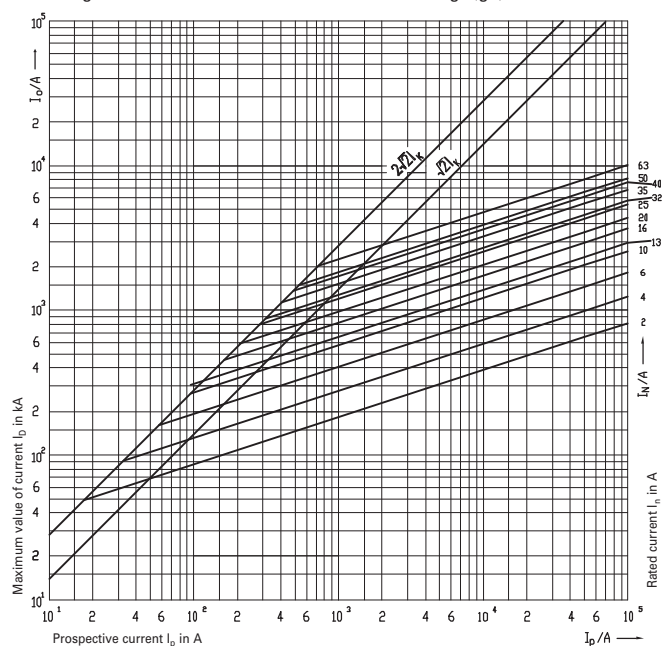


Characteristics Z-DII/SE

Time/current characteristics of Z-DII-Fuse-Links 2 ... 63A gG(gL)

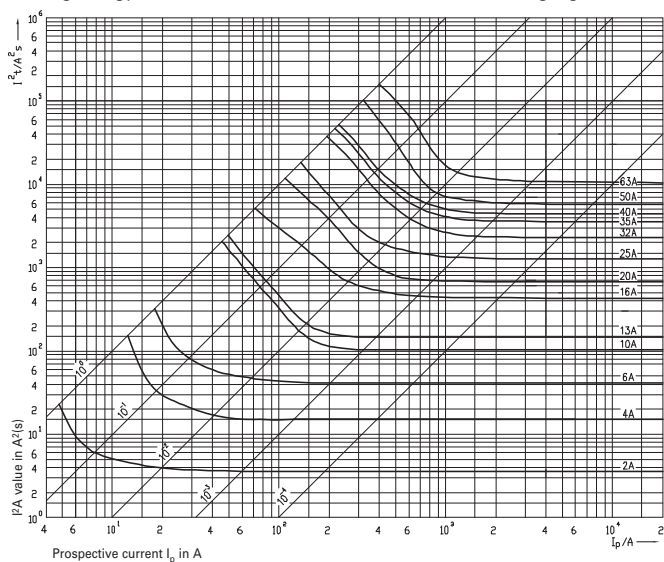


Let-through characteristics of Z-DII-Fuse-Links 2 ... 63A gG(gL)

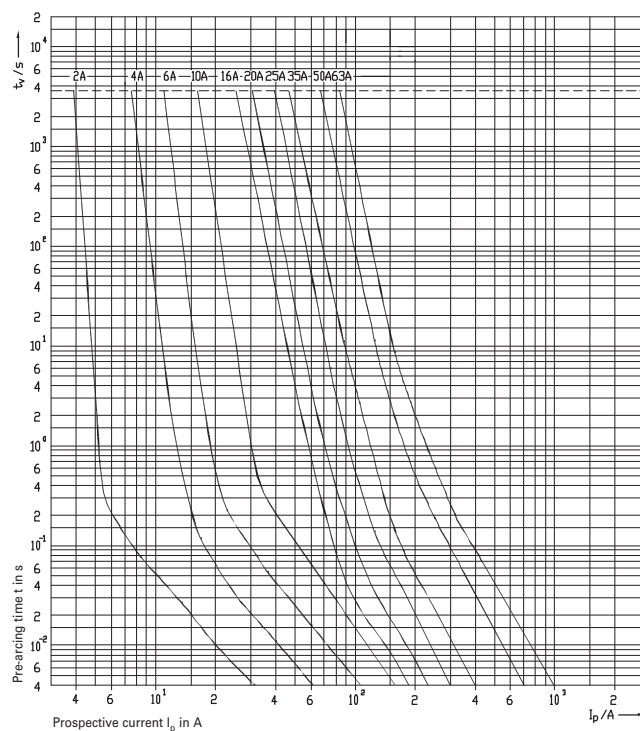


Characteristics Z-DII/SE

Melting energy characteristics I^2t/A of Z-DII-Fuse-Links 2 ... 63A gG(gL)



Time/current characteristics of Z-DII-Fuse-Links 2 ... 63A DZ





Size	Rated current (A)	Type Designation	Article No.	Units per package
Gauge Ring Z-DII./PE				
DII E27	6	Z-DII/PE-6A	110398	50
DII E27	10	Z-DII/PE-10A	110399	50
DII E27	16	Z-DII/PE-16A	110790	50
DII E27	20	Z-DII/PE-20A	110791	50
DIII E33	16	Z-DIII/PE-16A	110796	50
DIII E33	25	Z-DIII/PE-25A	110798	50
DIII E33	35	Z-DIII/PE-35A	110799	50
DIII E33	50	Z-DIII/PE-50A	110800	50

wa_sg05908



Description Gauge Ring Z-DII./PE

- Used for current coding of DII.-SO/...

Technical Data

		Z-DII./PE
Electrical		
Rated current		
DII		6 - 20 A
DIII		16 - 50 A

Screw-in Gauge Ring Z-DII./PS

DII E27	2	Z-DII/PS-2A	112138	25/1500
DII E27	4	Z-DII/PS-4A	112139	25/1500
DII E27	6	Z-DII/PS-6A	112140	25/1500
DII E27	10	Z-DII/PS-10A	112141	25/1500
DII E27	16	Z-DII/PS-16A	112142	25/1500
DII E27	20	Z-DII/PS-20A	112143	25/1500
DII E27	25	Z-DII/PS-25A	112144	25/1500
DIII E33	35	Z-DIII/PS-35A	112145	25/850
DIII E33	50	Z-DIII/PS-50A	112146	25/850
DIII E33	63	Z-DIII/PS-63A	112147	25/850

wa_sg03312



Description Screw-in Gauge Ring Z-DII./PS

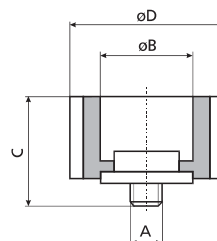
- Used for current coding of DII.-SO/...-PS

Technical Data

		Z-DII./PS
Electrical		
Rated current		
DII		2 - 25 A
DIII		35 - 63 A

Dimensions (mm)

I _n (A)	A	B	C	D
DII for Fuse-Base E27				
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
DIII for Fuse-Base E33				
35	3/16"	16.5	17	24
50	3/16"	18.5	17	24
63	3/16"	20.5	17	24





Size	Rated voltage (V AC)	Type Designation	Article No.	Units per package
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Screw Caps CD, Z-DII./SK

SG07608



DII E27	500	FUSE CARRIER D2 E27 25A 500V	CD27	50
DIII E33	500	FUSE CARRIER D3 E33 63A 500V	CD33	30
DIII E33	690	Z-DIII/SK-690	118904	3

Description Screw Caps CD, Z-DII./SK

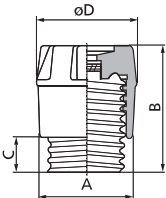
- Used for DII.-SO

Technical Data

CD, Z-DII./SK	
Electrical	
Rated current	
DII	max. 25 A
DIII	max. 63 A
Rated voltage	
CD27	500 V AC / 400 V DC
CD33	500 V AC / 400 V DC
Z-DIII/SK-690	690 V AC
Mechanical	
Electrical thread	
DII	E27
DIII	E33

Dimensions (mm)

I _n (A)	A	B	C	D
CD27	E27	44	12	34
CD33	E33	44	12	43
Z-DIII/SK-690	43	65	12	43



Practical Hint

A complete and functioning D-fuse system consists of

- base for screw-in gauge ring + fuse-link + screw-in gauge ring + screw cap
- base for gauge ring + fuse-link + gauge ring + screw cap

The gauge ring is not required for the highest rated current of each size (DII ... 25 A and DIII ... 63 A).

Cylindrical Fuse-Links

Rated current
(A)Rated voltage
(V AC)Type
Designation

Article No.

Units per
package

Fuse-Links C..G., (old Z-C../SE) Operating class gG (gL)

SG01010



Size 10x38

1	500	CYLINDRICAL FUSE 10 x 38 1A gG 500V AC	C10G1	10/500
2	500	CYLINDRICAL FUSE 10 x 38 2A gG 500V AC	C10G2	10/500
4	500	CYLINDRICAL FUSE 10 x 38 4A gG 500V AC	C10G4	10/500
6	500	CYLINDRICAL FUSE 10 x 38 6A gG 500V AC	C10G6	10/500
8	500	CYLINDRICAL FUSE 10 x 38 8A gG 500V AC	C10G8	10/500
10	500	CYLINDRICAL FUSE 10 x 38 10A gG 500V AC	C10G10	10/500
12	500	CYLINDRICAL FUSE 10 x 38 12A gG 500V AC	C10G12	10/500
16	500	CYLINDRICAL FUSE 10 x 38 16A gG 500V AC	C10G16	10/500
20	500	CYLINDRICAL FUSE 10 x 38 20A gG 500V AC	C10G20	10/500
25	500	CYLINDRICAL FUSE 10 x 38 25A gG 500V AC	C10G25	10/500
32	400	CYLINDRICAL FUSE 10 x 38 32A gG 400V AC	C10G32	10/500

SG20507



Size 14x51

2	690	CYLINDRICAL FUSE 14 x 51 2A gG 690V AC	C14G2	10/200
4	690	CYLINDRICAL FUSE 14 x 51 4A gG 690V AC	C14G4	10/200
6	690	CYLINDRICAL FUSE 14 x 51 6A gG 690V AC	C14G6	10/200
8	690	CYLINDRICAL FUSE 14 x 51 8A gG 690V AC	C14G8	10/200
10	690	CYLINDRICAL FUSE 14 x 51 10A gG 690V AC	C14G10	10/200
12	690	CYLINDRICAL FUSE 14 x 51 12A gG 690V AC	C14G12	10/200
16	690	CYLINDRICAL FUSE 14 x 51 16A gG 690V AC	C14G16	10/200
20	690	CYLINDRICAL FUSE 14 x 51 20A gG 690V AC	C14G20	10/200
25	690	CYLINDRICAL FUSE 14 x 51 25A gG 690V AC	C14G25	10/200
32	500	CYLINDRICAL FUSE 14 x 51 32A gG 500V AC	C14G32	10/200
40	500	CYLINDRICAL FUSE 14 x 51 40A gG 500V AC	C14G40	10/200
50	400	CYLINDRICAL FUSE 14 x 51 50A gG 400V AC	C14G50	10/200

SG20407



Size 22x58

16	690	CYLINDRICAL FUSE 22 x 58 16A gG 690V AC	C22G16	10/300
20	690	CYLINDRICAL FUSE 22 x 58 20A gG 690V AC	C22G20	10/300
25	690	CYLINDRICAL FUSE 22 x 58 25A gG 690V AC	C22G25	10/300
32	690	CYLINDRICAL FUSE 22 x 58 32A gG 690V AC	C22G32	10/300
40	690	CYLINDRICAL FUSE 22 x 58 40A gG 690V AC	C22G40	10/300
50	690	CYLINDRICAL FUSE 22 x 58 50A gG 690V AC	C22G50	10/300
63	690	CYLINDRICAL FUSE 22 x 58 63A gG 690V AC	C22G63	10/300
80	500	CYLINDRICAL FUSE 22 x 58 80A gG 500V AC	C22G80	10/300
100	500	CYLINDRICAL FUSE 22 x 58 100A gG 500V AC	C22G100	10/300

Description Fuse-Links Z-C../SE Operating class gG (gL)

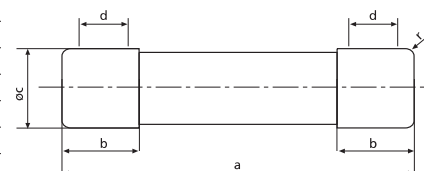
- According to IEC 60269-1 and IEC 60269-2-1
- For fuse-switch-disconnectors C10-SLS, VLC, C10-CCI
- Operating class gG (gL)

Technical Data

		Z-C10/SE, 10x38	Z-C14/SE, 14x51	Z-C22/SE, 22x58
Electrical				
Operating class		gG (gL)	gG (gL)	gG (gL)
Rated voltage	U_n	1 - 16 A / 500 V AC 20 - 32 A / 400 V AC	1 - 25 A / 690 V AC 32 - 50 A / 500 V AC	16 - 63 A / 690 V AC 80 - 100 A / 500 V AC
Rated frequency		50 Hz	50 Hz	50 Hz
Rated short-circuit breaking capacity		100 kA	100 kA	100 kA

Dimensions (mm)

Type	Size	a	b _{max}	c	d _{min}	r
Z-C10	10x38	38,0±0.6	10.5	10.3±0.1	6	1.5±0.5
Z-C14	14x51	51.0+0.6/-1	13.8	14.3±0.1	7.5	2±0.5
Z-C22	22x58	58,0+1/-2	16.2	22.2±0.1	11	2±0.5





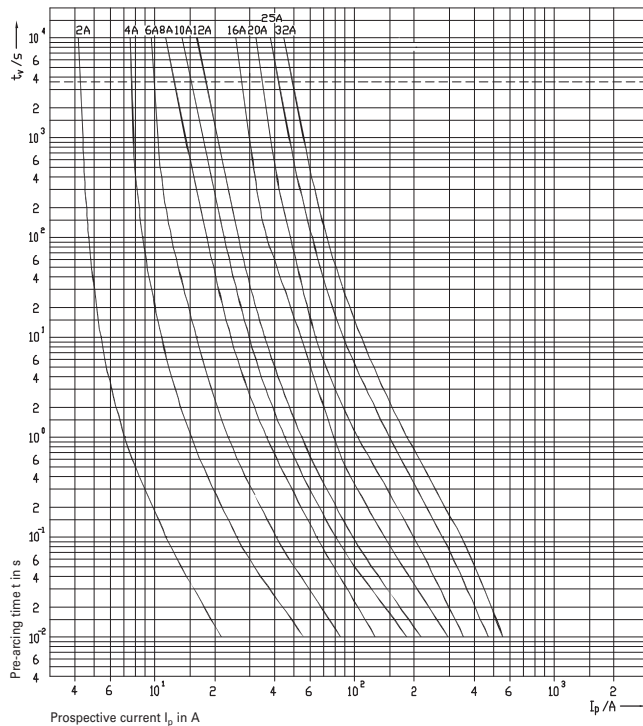
Max. Power loss

Operating class gG - Power dissipations 400 V / 500 V / 690 V

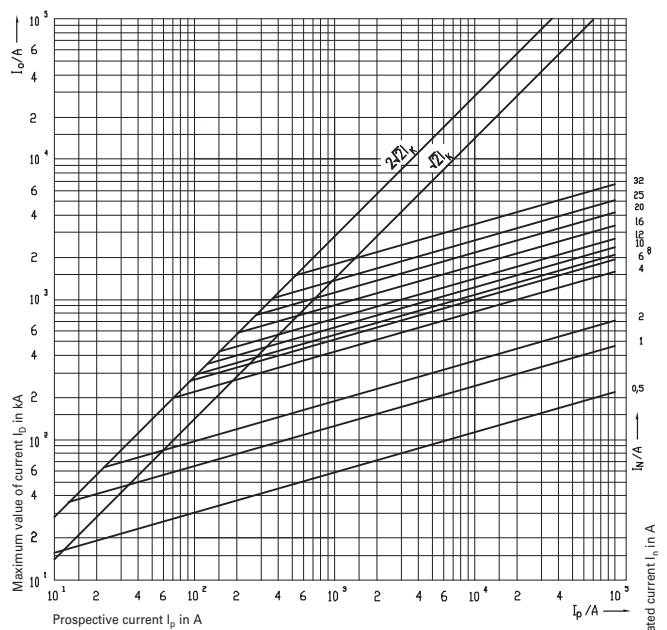
Rated current I_n	max. 3 W according to IEC 60269-2 10x38	max. 5 W according to IEC 60269-2 14x51	max. 9.5 W according to IEC 60269-2 22x58
1	0.55		
2	0.90	1.45	
4	1.45	1.60	
6	1.55	1.95	
8	1.05	1.40	
10	1.10	1.45	
12	1.55	1.95	
16	2.85	3.00	3.05
20	2.80	3.15	3.40
25	2.95	4.10	4.40
32	3.00	4.80	5.10
40		4.75	7.20
50		4.95	7.60
63			8.00
80			8.20
100			9.40

Characteristics Z-C10/SE, Operating class gG, 10x38

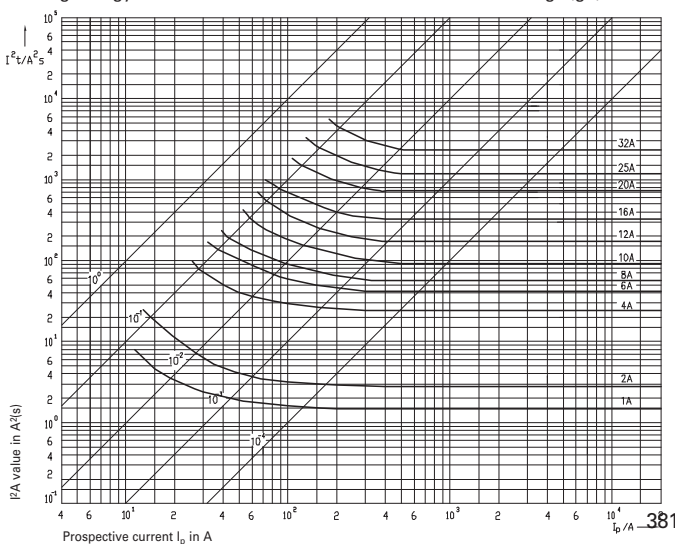
Time/current characteristics of Z-C10-Fuse-Links 2 ... 32A gG(gL)



Let-through characteristics of Z-C10-Fuse-Links 2 ... 32A gG(gL)



Melting energy characteristics I²t/A of Z-C10-Fuse-Links 1 ... 32A gG(gL)



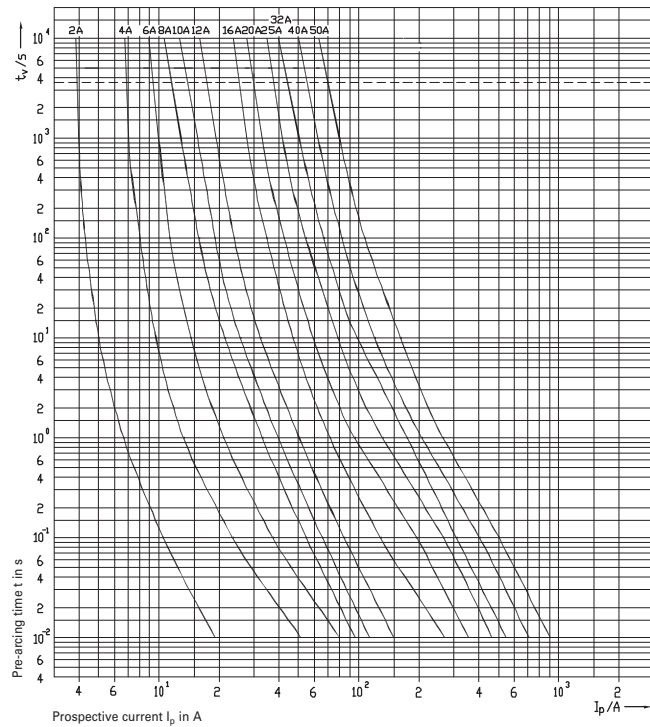
Cylindrical Fuse-Links



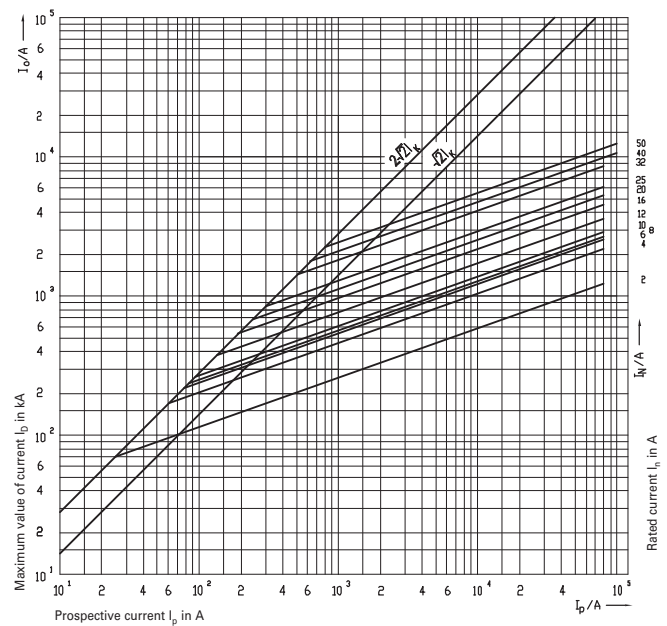
C

Characteristics Z-C14/SE, Operating class gG, 14x51

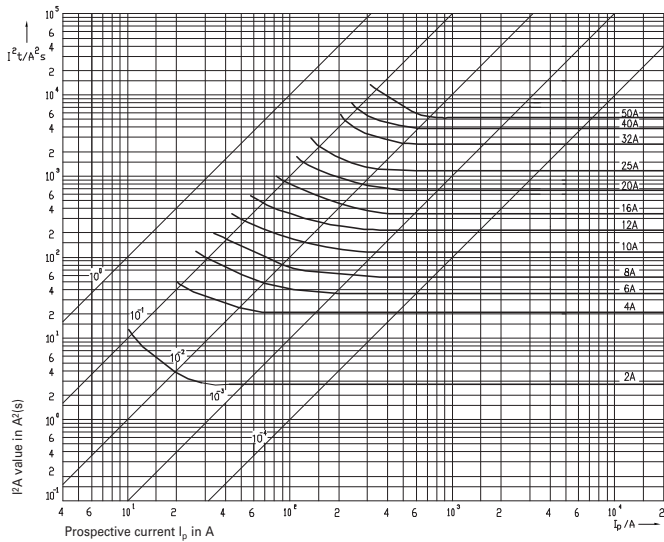
Time/current characteristics of Z-C14-Fuse-Links 2 ... 50A gG(gL)

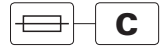


Let-through characteristics of Z-C14-Fuse-Links 2 ... 50A gG(gL)



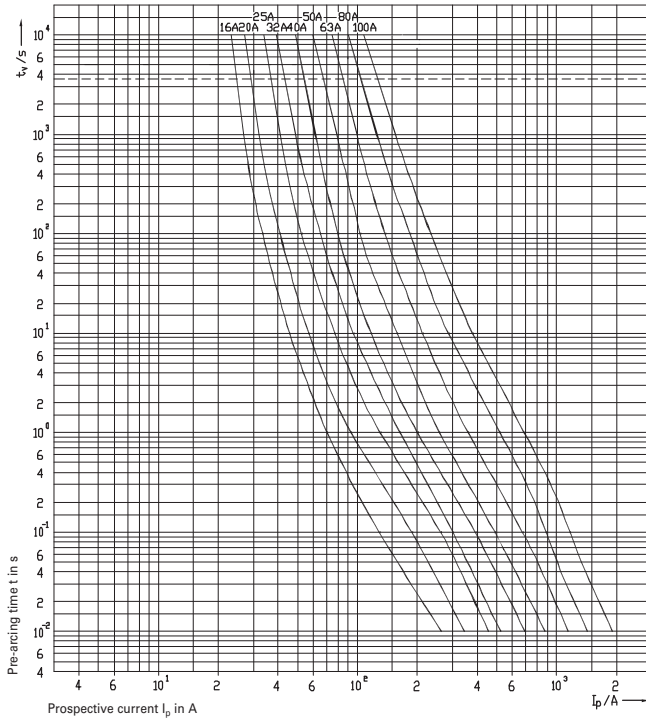
Melting energy characteristics I^2t/A of Z-C14-Fuse-Links 2 ... 50A gG(gL)



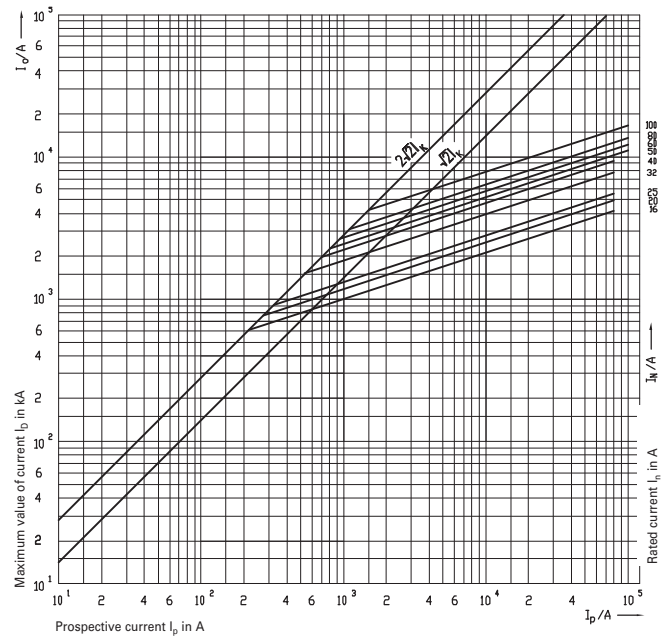


Characteristics Z-C22/SE, Operating class gG, 22x58

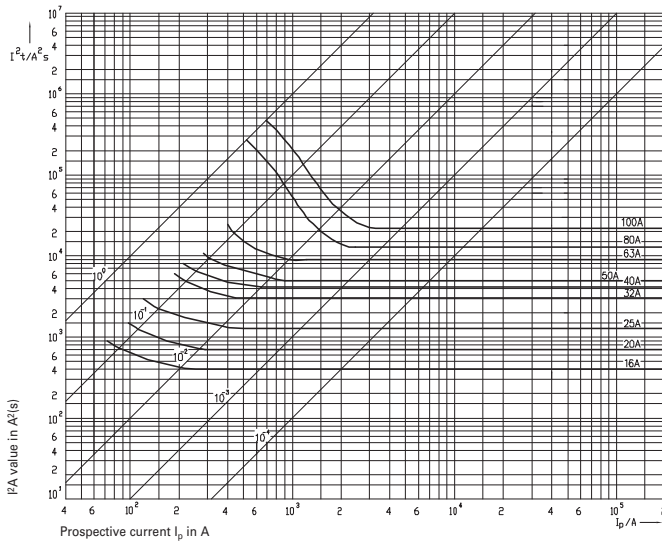
Time/current characteristics of Z-C22-Fuse-Links 16 ... 100A gG(gL)



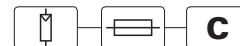
Let-through characteristics of Z-C22-Fuse-Links 16 ... 100A gG(gL)



Melting energy characteristics I^2t/A of Z-C22-Fuse-Links 16 ... 100A gG(gL)



Cylindrical Fuse-Links

Rated current
(A)Rated voltage
(V DC)Type
Designation

Article No.

Units per
package**Fuse-Links PV-..A10F (old ASFLC10-..A-gPV-SOL) Photovoltaic Application****Size 10x38**

2	1000	2AMP 1000V DC SOLAR FERRULE 10 X 38MM	PV-2A10F	10/500
4	1000	4AMP 1000V DC SOLAR FERRULE 10 X 38MM	PV-4A10F	10/500
6	1000	6AMP 1000V DC SOLAR FERRULE 10 X 38MM	PV-6A10F	10/500
8	1000	8AMP 1000V DC SOLAR FERRULE 10 X 38MM	PV-8A10F	10/500
10	1000	10AMP 1000V DC SOLAR FERRULE 10 X 38MM	PV-10A10F	10/500
12	1000	12AMP 1000V DC SOLAR FERRULE 10 X 38MM	PV-12A10F	10/500
15	1000	15AMP 1000V DC SOLAR FERRULE 10 X 38MM	PV-15A10F	10/500
20	1000	20AMP 1000V DC SOLAR FERRULE 10 X 38MM	PV-20A10F	10/500

*) melamine instead of ceramic

SG11008

**PV-fuse-link selection:**

- ① Maximum DC Operating voltage of the fuse-link must be:
 $1.2 \times V_{oc}$ of string
 - ② Rated current I_n of the fuse-link must be higher or equal than:
 $1.5 \times I_{sc}$
- I_{sc} short circuit current of PV-module
 V_{oc} open circuit voltage of string

Description Fuse-Links ASFLC10-..A-gPV-SOL Photovoltaic Application

- According to IEC 60269-1 and IEC 60269-4
- For fuse-switch-disconnectors FCFDC10DI

Technical Data**ASFLC10-..A-gPV-SOL, 10x38****Electrical**

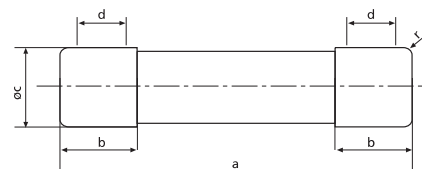
Rated voltage	U_n	6 - 20 A / 1000 V DC 25 A / 900 V DC
Rated frequency		—
Rated short-circuit breaking capacity		30 kA
$\tau = L/R$		2 ms

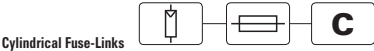
Max.Power loss

Rated current I_n	Pre-arcing Joule integral $L/R = 2 \text{ ms}$	Operating Joule integral $L/R = 2 \text{ ms}$	Power loss at $0.7 \times I_n$	Power loss at I_n P_d	Weight
[A]	[A ² s]	[A ² s]	[W]	[W]	[g]
2	1.3	3.5	1.47	1.00	10
4	3.3	28	0.52	1.25	10
6	5.5	45	0.73	1.65	10
8	8	62	0.93	1.9	10
10	11	88	1.06	2.3	10
12	23	180	1.03	1.9	10
16	35	270	1.00	2.5	10
20	50	430	1.18	3.25	10
25	75	620	1.25	3.45	10

Dimensions (mm)

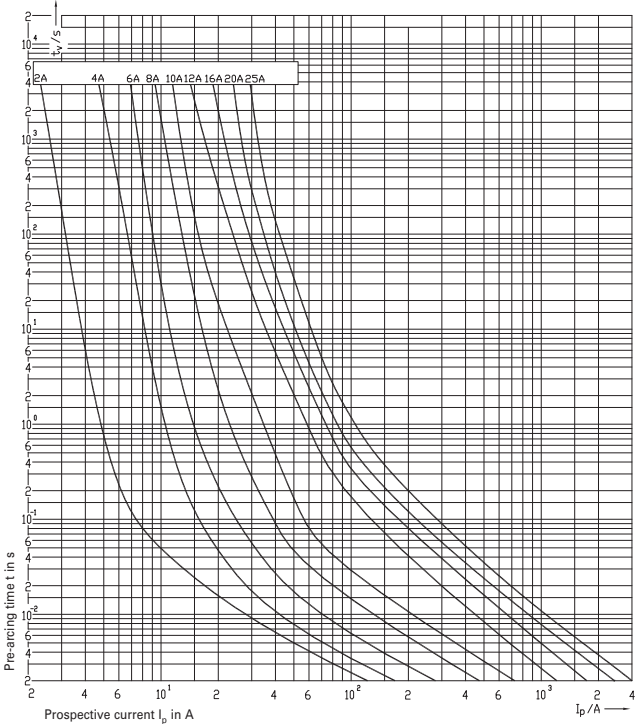
Type	Size	a	$b_{max.}$	c	$d_{min.}$	r
ASFLC10	10x38	38,0±0.6	10.5	10.3±0.1	6	1.5±0.5





Characteristics ASFLC10-..A-gPV-SOL, Photovoltaic Application

Time/current characteristics of ASFLC10-..A-gPV-SOL Fuse-Links 2 ... 25A



6.386 Fuse Devices

Solid-Links Z-NH-../TR

xPole



Size	Type Designation	Article No.	Units per package
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Solid-Links Z-NH-../TR

wa_sg04413



00	Z-NH-00/TR	263114	3 / 180
1	Z-NH-1/TR	263115	6 / 60
2	Z-NH-2/TR	263116	6 / 60
3	Z-NH-3/TR	263117	3 / 30



Size	Rated current (A)	Type Designation	Article No.	Units per package
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NH-Fuse-Links, 500 V AC, ...NHG...B (old Z-NH)

- Operating class gG (gL)

wa_sg03412



0	10	NH FUSE 10A 500V GG/GL SIZE 000	10NHG000B	3
0	16	NH FUSE 16A 500V GG/GL SIZE 000	16NHG000B	3
0	20	NH FUSE 20A 500V GG/GL SIZE 000	20NHG000B	3
0	25	NH FUSE 25A 500V GG/GL SIZE 000	25NHG000B	3
0	32	NH FUSE 32A 500V GG/GL SIZE 000	32NHG000B	3
0	35	NH FUSE 35A 500V GG/GL SIZE 000	35NHG000B	3
0	40	NH FUSE 40A 500V GG/GL SIZE 000	40NHG000B	3
0	50	NH FUSE 50A 500V GG/GL SIZE 000	50NHG000B	3
0	63	NH FUSE 63A 500V GG/GL SIZE 000	63NHG000B	3
0	80	NH FUSE 80A 500V GG/GL SIZE 000	80NHG000B	3
0	100	NH FUSE 100A 500V GG/GL SIZE 000	100NHG000B	3
0	125	NH FUSE 125A 500V GG/GL SIZE 00	125NHG000B	3
0	160	NH FUSE 160A 500V GG/GL SIZE 00	160NHG000B	3
1	50	NH FUSE 50A 500V GG/GL SIZE 01	50NHG01B	3
1	63	NH FUSE 63A 500V GG/GL SIZE 01	63NHG01B	3
1	80	NH FUSE 80A 500V GG/GL SIZE 01	80NHG01B	3
1	100	NH FUSE 100A 500V GG/GL SIZE 01	100NHG01B	3
1	125	NH FUSE 125A 500V GG/GL SIZE 01	125NHG01B	3
1	160	NH FUSE 160A 500V GG/GL SIZE 01	160NHG01B	3
1	200	NH FUSE 200A 500V GG/GL SIZE 1	200NHG1B	3
1	250	NH FUSE 250A 500V GG/GL SIZE 1	250NHG1B	3
2	100	NH FUSE 100A 500V GG/GL SIZE 02	100NHG02B	3
2	125	NH FUSE 125A 500V GG/GL SIZE 02	125NHG02B	3
2	160	NH FUSE 160A 500V GG/GL SIZE 02	160NHG02B	3
2	200	NH FUSE 200A 500V GG/GL SIZE 02	200NHG02B	3
2	250	NH FUSE 250A 500V GG/GL SIZE 02	250NHG02B	3
2	315	NH FUSE 315A 500V GG/GL SIZE 2	315NHG2B	3
2	400	NH FUSE 400A 500V GG/GL SIZE 2	400NHG2B	3
3	250	NH FUSE 250A 500V GG/GL SIZE 03	250NHG03B	3
3	315	NH FUSE 315A 500V GG/GL SIZE 03	315NHG03B	3
3	400	NH FUSE 400A 500V GG/GL SIZE 03	400NHG03B	3
3	500	NH FUSE 500A 500V GG/GL SIZE 3	500NHG3B	3
3	630	NH FUSE 630A 500V GG/GL SIZE 3	630NHG3B	3

Description NH-Fuse-Links, 500 V AC, Z-NH

- Design according to ÖVE-SN 40, IEC 60269, VDE 0636, SEV 1066
- Dimensions according to Austrian standard ÖNORM E-6020, DIN 43.620
- NH-fuse-links of operating class gG/gL are used for line protection. They reliably disconnect overcurrent and short-circuit current above the permitted levels up to the nominal breaking current.
- gG/gL NH-fuse-links also protect electrical systems and equipment against the electrodynamic effects of high short-circuit currents.
- Insulating bodies of steatite/corderite
- Full contact blade of silver-plated copper
- Double blow-out indicator (flat indicator and centre indicator), live grips
- Corrosion-proof
- NH-fuse-links have a selectivity of 1:1.6 (ratio of the series-connected nominal currents), permitting optimum utilization and protection of line cross-sections.
- Strict current limitation permits reduced mechanical dimensions of electrical systems
- High breaking capacity of 120 kA

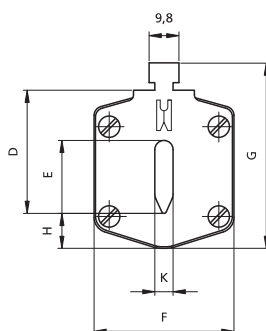
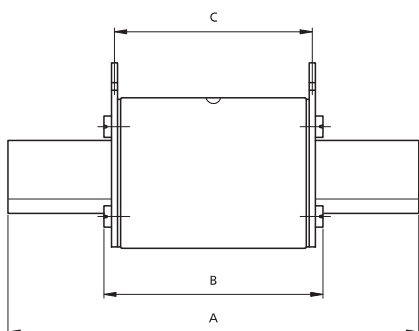


Technical Data

	NH Fuse-00/	NH Fuse-1/	NH Fuse-2/	NH Fuse-3/
Electrical				
Rated voltage				
AC	500 V	500 V	500 V	500 V
DC	230 V	440 V	440 V	440 V
Nominal current	10-160 A	50-250 A	100-400 A	250-630 A
Rated frequency	45-62 Hz	45-62 Hz	45-62 Hz	45-62 Hz
Nominal breaking capacity				
AC	120 kA	120 kA	120 kA	120 kA
DC	25 kA	25 kA	25 kA	25 kA
Nominal breaking capacity				
$I_n = 10$ A	1.1 W	-	-	-
16 A	1.6 W	-	-	-
20 A	1.7 W	-	-	-
25 A	1.9 W	-	-	-
35 A	3.0 W	-	-	-
40 A	3.5 W	-	-	-
50 A	4.6 W	5.4 W	-	-
63 A	5.4 W	6.3 W	-	-
80 A	5.1 W	7.2 W	-	-
100 A	6.9 W	8.6 W	8.8 W	-
125 A	10.3 W	11.9 W	12.1 W	-
160 A	11.0 W	13.9 W	14.0 W	-
200 A	-	15.2 W	15.2 W	-
250 A	-	21.8 W	21.8 W	19.4 W
315 A	-	-	23.7 W	23.7 W
400 A	-	-	30.5 W	30.5 W
500 A	-	-	-	42.0 W
630 A	-	-	-	47.0 W

Dimensions (mm)

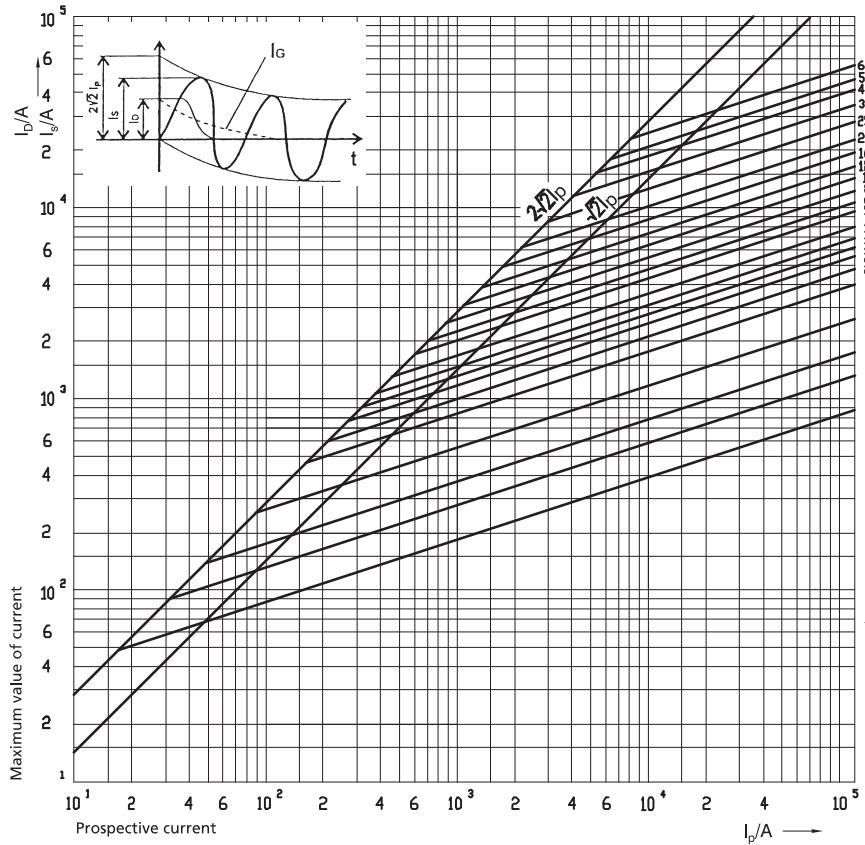
Type	Size	A	B	C	D	E	F	G	H	K	
Z-NH-00/	up to 100 A	000	79	53	47	35	15	21	52	7.5	6
	125 - 160 A	00	79	53	47	35	15	28	56	12	6
Z-NH-1/	up to 160 A	1C	135	68	65	40	15	28	61	12	6
	200 - 250 A	1	135	72	65	40	20	46	65	14	6
Z-NH-2/	up to 250 A	2C	150	72	65	48	20	46	73	14	6
	315 - 400 A	2	150	72	65	48	26	54	73	14	6
Z-NH-3/	up to 400 A	3C	150	72	65	60	26	54	84	14	6
	500 - 630 A	3	150	72	65	60	33	65	84	14	6



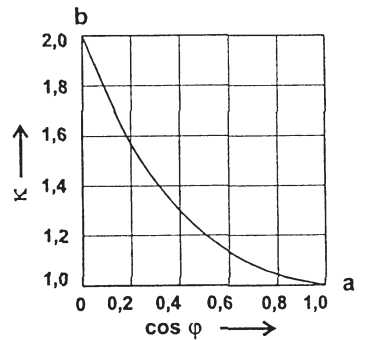


Let-through Current Characteristic, Current Limitation Diagram

The characteristic shows the limited let-through current values (peak values) depending on the prospective short-circuit current (r. m. s.) under unfavourable connection conditions and depending on the respective nominal current.



Correction Factor for DC Component



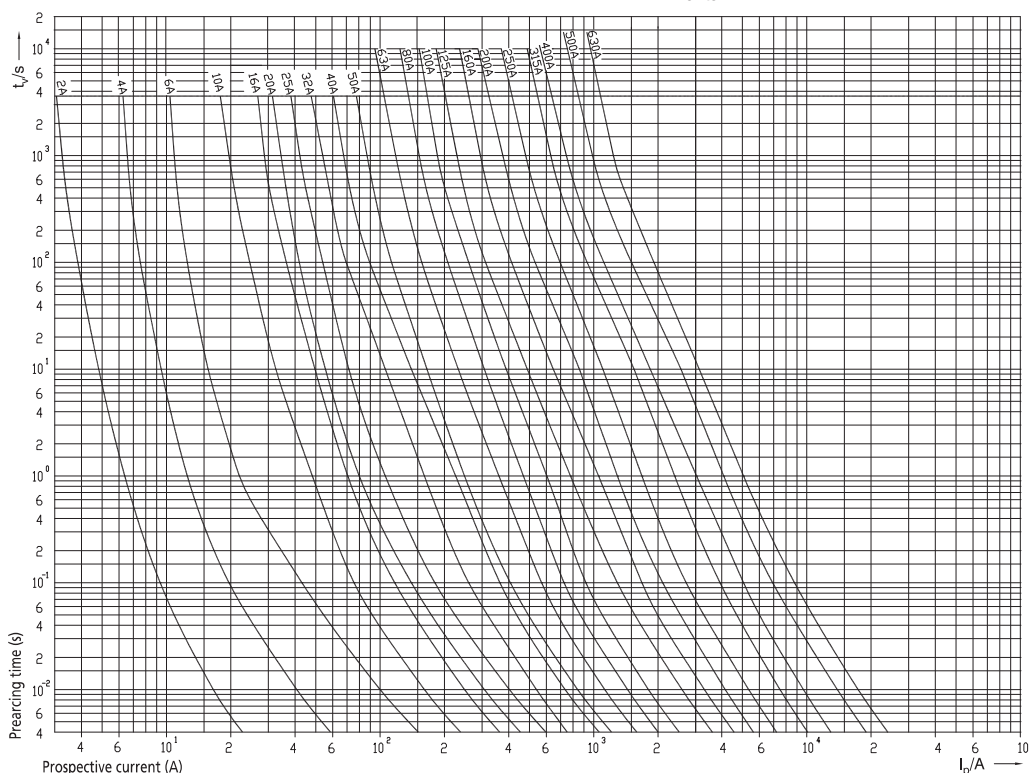
a Surge short-circuit current without DC component ($\kappa = 1$)
b Surge short-circuit current with maximum DC component ($\kappa = 2$)

I_D let-through current
 I_G declining DC component
 I_p prospective short-circuit current
 I_s surge short-circuit current = $I_p \cdot \kappa \cdot \sqrt{2}$
 $\kappa = 2$ for $\cos \varphi = 0$, $\kappa = 1$ for $\cos \varphi = 1$

Time-Current Characteristics

For NH-fuse-links 2 - 630 A operating class gL/gG

The time-current characteristics are valid at an ambient temperature of $20 \pm 5^\circ\text{C}$ C and for the cable (line) cross-sections assigned in the regulations for test arrangements.



vi61615



vi64215



vi64015



vi61715



Description

- For fuse links NH000 to NH3
- Rated operating current of 160, 250, 400 and 630 A
- Sizes 00, 1, 2 and 3
- Degree of protection IP2XC
- Frame widths of 106, 184, 210 and 250 mm
- For mounting plate, DIN rail and busbar system of 60 mm
- System size 195 and 300 mm
- Can be locked with a pad lock
- Current-theft protection
- Flex-System for cable connection at the top/bottom
- Improved operator safety
- Flat connection for cable lug, box terminal, clamp-type terminal, prism terminal and double prism terminal
- Switch cover with safety parking position
- Fuse monitoring light with LED on the device
- Electronic fuse monitoring
- SmartWire-DT® option

System Overview 3-pole

	XNH00	XNH1	XNH2	XNH3
Basic device	■	■	■	■
Fuse control - light	■	■	■	■
Fuse control - electronic	■	■	■	■

Setup options

	XNH00	XNH1	XNH2	XNH3
Busbar system 60 mm	■	■	■	■
Mounting plate	■	■	■	■
DIN rails	■	■	-	-

Standard connection options

	XNH00	XNH1	XNH2	XNH3
Flat connection	■	■	■	■
Installation distribution board box terminal BT2 ¹⁾	■	-	-	-
Box terminal	■	■	■	■

SmartWire-DT® Module

	XNH00	XNH1	XNH2	XNH3
Complete set for direct mounting on the switchgear (with 2 DX)	■	■	■	■
For fixing on the mounting plate (with 2 DX)	■	■	■	■

System Overview Accessories

	XNH00	XNH1	XNH2	XNH3
DIN rail fastening	■	■	-	-
Locking device	■	■	■	■
Current-theft protection	■	■	■	■
Switch position indicator	■	■	■	■
Mechanical fuse monitoring	■	■	■	■
Internal lock for contact protection	■	■	■	■
Clamp-type terminal	■	■	■	■
Prism terminal	■	■	■	■
Double-prism terminal	-	■	■	■
Box terminal	-	■	■	■
Extinguishing chambers	-	■	■	■
Spare handle cover	■	■	■	■
Connection kit, 2- and 4-pole	■	■	-	■
Cover supports	■	■	■	■
Reach-over protection at busbar	■	■	■	■
Cover for connection area	■	■	■	■
Extension of the cover for the connection area	■	-	-	-
Height compensation adapter	■	-	-	-

¹⁾ Deeper-positioned box terminal with busbar-devices for improved connection when using front panels, e.g. installation distribution boards.

Size	Type of connection	I_b (A)	Type designation	Article No.	Pack (pcs.)
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Fuse Switch Disconnecter XNH... for Mounting Plate

vt64015



- Degree of protection IP2XC in operating mode
- According to IEC/EN 60947-3
- AC 690 V / DC 440 V
- Conditional rated short-circuit current 120 kA (500 V) and 100 kA (690 V)
- Reaction to fire according to UL 94, self-extinguishing
- Current paths of electrolytic copper, silver-plated
- For fixing on mounting plates and DIN rails
- Fuse Control Light with optical signalling of triggered fuse-links
- Fuse Control FCE with electronic monitoring of fuse-links

Basic Device

3-pole for mounting plate

vt61615



00	Flat connection M8 max. 95 mm ²	160	XNH00-A160	183025	1
	Box terminal 1,5 - 95 mm ²	160	XNH00-A160-BT	183026	1
1	Flat connection M10 max. 150 mm ²	250	XNH1-A250	183043	1
	Box terminal 35 - 150 mm ²	250	XNH1-A250-BT	183044	1
2	Flat connection M10 max. 240 mm ²	400	XNH2-A400	183057	1
	Box terminal 95 - 300 mm ²	400	XNH2-A400-BT	183058	1
3	Flat connection M10 max. 300 mm ²	630	XNH3-A630	183071	1
	Box terminal 95 - 300 mm ²	630	XNH3-A630-BT	183072	1

Fuse Control - light

3-pole for mounting plate

wa_vt15515



00	Flat connection M8 max. 95 mm ²	160	XNH00-FCL-A160	183027	1
	Box terminal 1,5 - 95 mm ²	160	XNH00-FCL-A160-BT	183028	1
1	Flat connection M10 max. 150 mm ²	250	XNH1-FCL-A250	183045	1
	Box terminal 35 - 150 mm ²	250	XNH1-FCL-A250-BT	183046	1
2	Flat connection M10 max. 240 mm ²	400	XNH2-FCL-A400	183059	1
	Box terminal 95 - 300 mm ²	400	XNH2-FCL-A400-BT	183060	1
3	Flat connection M10 max. 300 mm ²	630	XNH3-FCL-A630	183073	1
	Box terminal 95 - 300 mm ²	630	XNH3-FCL-A630-BT	183074	1

Fuse Control FCE

3-pole for mounting plate

vt02416



00	Flat connection M8 max. 95 mm ²	160	XNH00-FCE-A160	183029	1
	Box terminal 1,5 - 95 mm ²	160	XNH00-FCE-A160-BT	183030	1
1	Flat connection M10 max. 150 mm ²	250	XNH1-FCE-A250	183047	1
	Box terminal 35 - 150 mm ²	250	XNH1-FCE-A250-BT	183048	1
2	Flat connection M10 max. 240 mm ²	400	XNH2-FCE-A400	183061	1
	Box terminal 95 - 300 mm ²	400	XNH2-FCE-A400-BT	183062	1
3	Flat connection M10 max. 300 mm ²	630	XNH3-FCE-A630	183075	1
	Box terminal 95 - 300 mm ²	630	XNH3-FCE-A630-BT	183076	1

1-pole for mounting plate

vt00217



00	Flat connection M8 max. 95 mm ²	160	XNH00-1-A160	183031	1
	Box terminal 1,5 - 95 mm ²	160	XNH00-1-A160-BT	183032	1
1	Flat connection M10 max. 150 mm ²	250	XNH1-1-A250	183049	1
	Box terminal 35 - 150 mm ²	250	XNH1-1-A250-BT	183050	1
3	Flat connection M10 max. 300 mm ²	400/630	XNH32-1-A630	183063	1
	Box terminal 95 - 300 mm ²	400/630	XNH32-1-A630-BT	183064	1

Size	Type of connection	I _g (A)	Type designation	Article No.	Pack (pcs.)
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Fuse Switch Disconnector XNH... SASY 60i

vt64215



- Degree of protection IP2XC in operating mode
- According to IEC/EN 60947-3
- AC 690 V / DC 440 V
- Conditional rated short-circuit current 120 kA (500 V) and 100 kA (690 V)
- Reaction to fire according to UL 94, self-extinguishing
- Current paths of electrolytic copper, silver-plated
- For fixing on busbars of 60 mm (SASY 60i)
- Cable connection optionally at the top or bottom
- Fuse Control Light with optical signalling of triggered fuse-links
- Fuse Control FCE with electronic monitoring of fuse-links

Basic Device

3-pole for SASY 60i

00	Flat connection M8 max. 95 mm ²	160	XNH00-S160	183033	1
	Box terminal 1,5 - 95 mm ²	160	XNH00-S160-BT1	183034	1
	Box terminal 1,5 - 95 mm ²	160	XNH00-S160-BT2	183035	1
1	Flat connection M10 max. 150 mm ²	250	XNH1-S250	183051	1
	Box terminal 35 - 150 mm ²	250	XNH1-S250-BT	183052	1
2	Flat connection M10 max. 240 mm ²	400	XNH2-S400	183065	1
	Box terminal 95 - 300 mm ²	400	XNH2-S400-BT	183066	1
3	Flat connection M10 max. 300 mm ²	630	XNH3-S630	183077	1
	Box terminal 95 - 300 mm ²	630	XNH3-S630-BT	183078	1

Fuse Control - light

3-pole for SASY 60i

00	Flat connection M8 max. 95 mm ²	160	XNH00-FCL-S160	183036	1
	Box terminal 1,5 - 95 mm ²	160	XNH00-FCL-S160-BT1	183037	1
	Box terminal 1,5 - 95 mm ²	160	XNH00-FCL-S160-BT2	183038	1
1	Flat connection M10 max. 150 mm ²	250	XNH1-FCL-S250	183053	1
	Box terminal 35 - 150 mm ²	250	XNH1-FCL-S250-BT	183054	1
2	Flat connection M10 max. 240 mm ²	400	XNH2-FCL-S400	183067	1
	Box terminal 95 - 300 mm ²	400	XNH2-FCL-S400-BT	183068	1
3	Flat connection M10 max. 300 mm ²	630	XNH3-FCL-S630	183079	1
	Box terminal 95 - 300 mm ²	630	XNH3-FCL-S630-BT	183080	1

Fuse Control FCE

3-pole for SASY 60i

00	Flat connection M8 max. 95 mm ²	160	XNH00-FCE-S160	183039	1
	Box terminal 1,5 - 95 mm ²	160	XNH00-FCE-S160-BT1	183040	1
	Box terminal 1,5 - 95 mm ²	160	XNH00-FCE-S160-BT2	183041	1
1	Flat connection M10 max. 150 mm ²	250	XNH1-FCE-S250	183055	1
	Box terminal 35 - 150 mm ²	250	XNH1-FCE-S250-BT	183056	1
2	Flat connection M10 max. 240 mm ²	400	XNH2-FCE-S400	183069	1
	Box terminal 95 - 300 mm ²	400	XNH2-FCE-S400-BT	183070	1
3	Flat connection M10 max. 300 mm ²	630	XNH3-FCE-S630	183081	1
	Box terminal 95 - 300 mm ²	630	XNH3-FCE-S630-BT	183082	1

1-pole for SASY 60i

00	Flat connection M8 max. 95 mm ²	160	XNH00-1-S160	183042	1
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vt61915



wa_vt14215



vt03016



vt01917



Description

Suitable
for sizeType
designation

Article No.

Pack
(pcs.)**SmartWire-DT®, Module Kit**

- XNH...-SDW-KIT: Consisting of SWD module, ready-made cables and additional cover for cable area
- Only in connection with Fuse Control FCE
- XNH...-SDW-KIT-EXT: Consisting of SWD module, mounting element for mounting plate, mini cable channel and contact plug

vt00417



SWD module with 2 digital inputs for switch position indication and trip signal. Complete set for [direct mounting at the switchgear](#).

SWD module with 2 digital inputs for switch position indication and trip signal and 3 analog inputs for current measurement. For fixing on the [mounting plate](#).

00 with FCE	XNH00-SWD-KIT	183083	1
1 with FCE	XNH1-SWD-KIT	183084	1
2 with FCE	XNH2-SWD-KIT	183085	1
3 with FCE	XNH3-SWD-KIT	183086	1
00 with FCE	XNH00-SWD-KIT-EXT	183087	1
1/2/3 with FCE	XNH123-SWD-KIT-EXT	183088	1

SmartWire-DT®, Modules

2723PIC-198



SWD module with 2 digital inputs

00/1/2/3
with FCE

XNH-SWD-2DX-1

183089 1

SWD module with 2 digital and 3 analogue inputs

00/1/2/3
with FCE

XNH-SWD-2DX-3AX-1

183090 1

Cover for connection area, 3-pole

vt09816



Cable entries can be knocked out as required. 36, 42 and 66 mm length for top and bottom. Multiple use per device is possible.

00	XNH00-XKSA-36	183091	2
00	XNH00-XKSA-66	183092	2
1	XNH1-XKSA-42	183093	2
2	XNH2-XKSA-42	183094	2
3	XNH3-XKSA-42	183095	2

Cover for connection area, 1-pole

vt55116



Cable entries can be knocked out as required. 36, 42 and 66 mm length for top and bottom. Multiple use per device is possible.

00	XNH00-1-XKSA-36	184585	2
00	XNH00-1-XKSA-66	184586	2
1	XNH1-1-XKSA-42	184587	2
3 (2)	XNH3-1-XKSA-42	184588	2

Extension of the cover for the connection area, 3-pole for SASY 60i

vt10016



Can be fixed at the top or bottom of the device. 32 or 39 and 34 mm distance to the base plate.

00	XNH00-XKSV-39-34	183096	2
00	XNH00-XKSV-32	183097	2

Description

Suitable
for sizeType
designationArticle No. Pack
(pcs.)**Reach-over protection, 3-pole for SASY 60i**

- Can be fixed at the top or bottom of the device
- For 32 or 39 and 34mm distance to the base plate

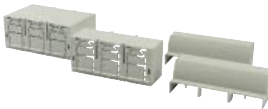
vt09916



For flat connection or box terminal	00	XNH00-XKSS-39-34	183098	2
		XNH00-XKSS-32	183099	2
For BT2 box terminal	00	XNH00-XKSS-BT-39-34	183100	2
		XNH00-XKSS-BT-32	183101	2
For flat connection or box terminal	1	XNH1-XKSS-39-34	183102	2
		XNH1-XKSS-32	183103	2
	2	XNH2-XKSS-39-34	183104	2
		XNH2-XKSS-32	183105	2
	3	XNH3-XKSS-39-34	183106	2
		XNH3-XKSS-32	183107	2

Height compensation adapter 20 mm, 3-pole

vt67015



Compensation adapter top/bottom Level 70 => 90 mm	00	XNH00-XHAA-T/B	183108	2
Side compensation profiles Level 70 => 90 mm	00	XNH00-XHAA-R/L	183109	2

Cover supports

vt10616, vt10416



Top and bottom Level 60, 70 mm	00	XNH00-XCS-T/B	183110	2
Side Level 32, 60, 70 mm	00	XNH00-XCS-R/L	183111	2
Top and bottom, side Level 32, 60, 70 mm	1, 2, 3	XNH123-XCS	183112	2

Current-theft protection

vt10916



For manipulation-protected blocking of the inspection window	00, 1, 2, 3	XNH-XSECUR	183113	1 Set
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Note: 1 set includes current-theft protection for a 3-pole XNH.

DIN rail fastener

vt68115



For mounting XNH disconnectors on 2x DIN rails EN 50022	00	XNH00-XRAIL	183114	1
	1	XNH1-XRAIL	183115	1

Locking device

vt11016



For locking with a padlock when using a closed XNH disconnector	00, 1, 2, 3	XNH-XLOCK	182993	1
--	-------------	-----------	--------	---

Note: Padlock with a shackle diameter of 6 mm max.

Description	Suitable for size	Type designation	Article No.	Pack (pcs.)
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Device locking with sign

vt11116



For keyless locking of the XNH switching devices in combination with XNH-XLOCK. Language German.

00, 1, 2, 3

XNH-XLDG-G

184805

5

Internal lock for contact protection

wa_vt15815



Tool-requiring lock of internal contact protection covers

00, 1, 2, 3

XNH-XLATCH

182992

1

Switch position indicator

vt67815



1 change-over contact, AC 250 V, 10/3 A

00

XNH00-XPOS

182995

1

1, 2, 3

XNH123-XPOS

182996

1

Mechanical fuse monitoring

vt67915



1 change-over contact, AC 250 V, 10/3 A

00

XNH00-XMFM

182997

3

1, 2, 3

XNH123-XMFM

182998

3

Note: Only in combination with NH fuse links equipped with a striker pin.
Not for use in combination with box terminal or double-prism terminals.

Connection kit, 2- and 4-pole

vt00517



To mechanically connect 2x 1-pole or 3-pole+ 1-pole XNH disconnectors

00, 1, 3/(2)

XNH-XLINK

182999

1

Description

Suitable
for sizeType
designationArticle No. Pack
(pcs.)**Connection technology****Clamp-type terminal**

vi68215



1,5 - 50 mm ² , Cu	00	XNH00-XCT	183002	3
25 - 150 mm ² , Cu	1	XNH1-XCT	183003	3
25 - 240 mm ² , Cu	2	XNH2-XCT	183004	3
CU-BAND-11x21x1	3	XNH3-XCT	183005	3

Prism terminal

vi67515



10 - 70 mm ² , Cu/Al	00	XNH00-XPRC	183006	3
70 - 150 mm ² , Cu/Al	1	XNH1-XPRC	183007	3
120 - 240 mm ² , Cu/Al	2	XNH2-XPRC	183008	3
120 - 300 mm ² , Cu/Al	3	XNH3-XPRC	183009	3

Double-prism terminal

vi67315



2 x 70 - 95 mm ² , Cu/Al	1	XNH1-X2PRC	183010	3
2 x 120 - 150 mm ² , Cu/Al	2	XNH2-X2PRC	183011	3
2 x 120 - 240 mm ² , Cu/Al	3	XNH3-X2PRC	183012	3

Box terminal

vi68615



35 - 150 mm ² , Cu/Al	1	XNH1-BT	183000	3
95 - 300 mm ² , Cu/Al	2, 3	XNH23-BT	183001	3

Note: Box terminal and double-prism terminal not for use in combination with mechanical fuse monitoring XNH...-XMFM.

Spare handle cover, 3-pole

vi08016



Cover for XNH disconnector Basic	00	XNH00-XGRIP	183013	1
	1	XNH1-XGRIP	183014	1
	2	XNH2-XGRIP	183015	1
	3	XNH3-XGRIP	183016	1

vi08116



Cover for XNH disconnector with Fuse Control FCL	00	XNH00-XGRIP-FCL	183017	1
	1	XNH1-XGRIP-FCL	183018	1
	2	XNH2-XGRIP-FCL	183019	1
	3	XNH3-XGRIP-FCL	183020	1

vi08116



Cover for XNH disconnector with Fuse Control FCE	00	XNH00-XGRIP-FCE	183021	1
	1	XNH1-XGRIP-FCE	183022	1
	2	XNH2-XGRIP-FCE	183023	1
	3	XNH3-XGRIP-FCE	183024	1

Note: FCL and FCE can only be used with fuse links equipped with live handle straps.

Technical Data

Replacing NH fuses or any other activities (such as installation, operation etc. ...) on NH fuse switch disconnectors may be carried out by electro-technically qualified and specialized staff only. Power-related data provided by the manufacturer, e.g. max. rated make and break capacities, must be taken into account. Non-qualified employees are not authorized to install or operate such products as they cannot foresee the consequences of their actions. General regulations (e.g. safety regulations, protective clothing ...) and regional requirements (e.g. for accident prevention on electrical systems and operating resources) must at all times be respected.

		XNH00...-A160...	XNH00...-S160...	XNH1...-A250...	XNH1...-S250...
Standard		IEC/EN 60947-3	IEC/EN 60947-3	IEC/EN 60947-3	IEC/EN 60947-3
NH fuses ¹⁾ according to DIN VDE 0636-2		000 / 00	000 / 00	1	1
Rated operating voltage	U _e V	AC 690, DC 440	AC 690, DC 440	AC 690, DC 440	AC 690, DC 440
Rated operating current	I _e A	160	160	250	250
Rated frequency	f Hz	40 - 60	40 - 60	40 - 60	40 - 60
Rated insulation voltage	U _i V	AC 800	AC 800	AC 800	AC 800
Total power loss at I _{th} (without fuses)	P _v W	9	14	16	22
Power loss at 80% (without fuses)	P _v W	5.8	9	10.2	14.1
Rated impulse withstand voltage	U _{imp} kV	8	8	8	8
Utilization category		AC-23B (400V/160A)	AC-23B (400V/160A)	AC-23B (400V/250A)	AC-23B (400V/250A)
		AC-22B (500V/160A)	AC-22B (500V/160A)	AC-22B (500V/250A)	AC-22B (500V/250A)
		AC-21B (690V/160A)	AC-21B (690V/160A)	AC-21B (690V/250A)	AC-21B (690V/250A)
		DC-22B (250V/160A)	DC-22B (250V/160A)	DC values on request	DC values on request
		DC-21B (440V/160A)	DC-21B (440V/160A)		
Conditional rated short-circuit current	kA	120 (500V)	120 (500V)	120 (500V)	120 (500V)
		100 (690V)	100 (690V)	100 (690V)	100 (690V)
Rated short-time withstand current	I _{cw} kA	7	7	10	10
Max. permitted power loss per fuse link	P _{NH} W	12	12	23	23
Degree of protection - front (XNH installed)		Operating status IP20	Operating status IP20	Operating status IP20	Operating status IP20
		Contact prot. IP2XC	Contact prot. IP2XC	Contact prot. IP2XC	Contact prot. IP2XC
		Handle cover open IP10	Handle cover open IP10	Handle cover open IP10	Handle cover open IP10
Ambient temperature	T ₃₅ °C	-25 up to +55	-25 up to +55	-25 up to +55	-25 up to +55
Rated operating mode		Permanent operation	Permanent operation	Permanent operation	Permanent operation
Activation		Dependent manual activation	Dependent manual activation	Dependent manual activation	Dependent manual activation
Mounting position		Vertical/horizontal	Vertical/horizontal	Vertical/horizontal	Vertical/horizontal
Altitude	m	max. 2000	max. 2000	max. 2000	max. 2000
Degree of pollution		3	3	3	3
Overvoltage category		III	III	III	III
Colour		Grey	Grey	Grey	Grey
RoHs		Yes	Yes	Yes	Yes
Energy feeder direction		Any	Any (FLEX system)	Any	Any (FLEX system)
Lockable		Yes, optional	Yes, optional	Yes, optional	Yes, optional
Sealable		Yes, standard	Yes, standard	Yes, standard	Yes, standard
Material		Polyamide	Polyamide	Polyamide	Polyamide
Reaction to fire		Self-extinguishing acc. to UL94	Self-extinguishing acc. to UL94	Self-extinguishing acc. to UL94	Self-extinguishing acc. to UL94
Halogen-free		Yes	Yes	Yes	Yes
Voltage test		Yes, sliding inspection windows	Yes, sliding inspection windows	Yes, sliding inspection windows	Yes, sliding inspection windows
Electrical service life (operating cycles)		300	300	200	200
Mechanical service life (operating cycles)		1400	1400	1400	1400
Track resistance		CTI 600	CTI 600	CTI 600	CTI 600
Temperature resistance up to	°C	125	125	125	125
Terminal capacities					
Flat connection:					
Bolt diameter		M8	M8	M10	M10
Cable lug max. width	mm	25	25	37	37
Flat bar	mm	20x10	20x10	30x10	30x10
Box terminal:					
multi-wire	mm ²	1,5 - 95 Cu	1,5 - 95 Cu	35 - 150 Cu/Al	35 - 150 Cu/Al
Cu Band		9x9x0.8	9x9x0.8	10x16x0.8	10x16x0.8
Clamp-type terminal:					
multi-wire	mm ²	1,5 - 50 Cu	1,5 - 50 Cu	25 - 150 Cu	25 - 150 Cu
Cu Band		6x9x0.8	6x9x0.8	6x16x0.8	6x16x0.8
Prism terminal:					
multi-wire	mm ²	10 - 70 Cu/Al	10 - 70 Cu/Al	10 - 150 Cu/Al	10 - 150 Cu/Al
Double-prism terminal:					
multi-wire	mm ²	-	-	2x (70 - 95) Cu/Al	2x (70 - 95) Cu/Al

Note: Please leave a minimum distance to grounded live parts: Side = 20 mm, top = 50 mm. Exception DC-21B: Side = 50 mm, top = 100 mm (valid for XNH00...).

¹⁾ Type-tested with NH fuse links of characteristic gG. Safety control FCE and FCL only in combination with NH fuses equipped with live handle straps.

Technical Data

Replacing NH fuses or any other activities (such as installation, operation etc. ...) on NH fuse switch disconnectors may be carried out by electro-technically qualified and specialized staff only. Power-related data provided by the manufacturer, e.g. max. rated make and break capacities, must be taken into account. Non-qualified employees are not authorized to install or operate such products as they cannot foresee the consequences of their actions. General regulations (e.g. safety regulations, protective clothing ...) and regional requirements (e.g. for accident prevention on electrical systems and operating resources) must at all times be respected.

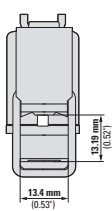
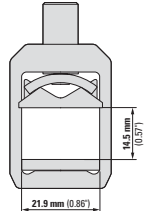
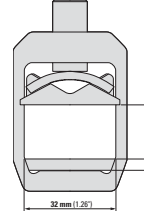
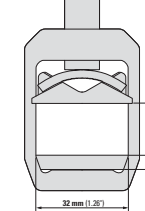
		XNH2...-A400...	XNH2...-S400...	XNH3...-A630...	XNH3...-S630...
Standard		IEC/EN 60947-3	IEC/EN 60947-3	IEC/EN 60947-3	IEC/EN 60947-3
NH fuses ¹⁾ according to DIN VDE 0636-2		2	2	3 / 2	3 / 2
Rated operating voltage	U _e V	AC 690, DC 440	AC 690, DC 440	AC 690, DC 440	AC 690, DC 440
Rated operating current	I _e A	400	400	630	630
Rated frequency	f Hz	40 - 60	40 - 60	40 - 60	40 - 60
Rated insulation voltage	U _i V	AC 800	AC 800	AC 800	AC 800
Total power loss at I _{th} (without fuses)	P _v W	28	36	51	86
Power loss at 80% (without fuses)	P _v W	17.8	22.9	32.5	54.8
Rated impulse withstand voltage	U _{imp} kV	8	8	8	8
Utilization category		AC-23B (400V/400A)	AC-23B (400V/400A)	AC-23B (400V/630A)	AC-23B (400V/630A)
		AC-22B (500V/400A)	AC-22B (500V/400A)	AC-22B (500V/630A)	AC-22B (500V/630A)
		AC-21B (690V/400A)	AC-21B (690V/400A)	AC-21B (690V/630A)	AC-21B (690V/630A)
		DC values on request	DC values on request	DC values on request	DC values on request
Conditional rated short-circuit current	kA	120 (500V)	120 (500V)	120 (500V)	120 (500V)
		100 (690V)	100 (690V)	100 (690V)	100 (690V)
Rated short-time withstand current	I _{cw} kA	10	10	10	10
Max. permitted power loss per fuse link	P _{NH} W	34	34	48	48
Degree of protection - front (XNH installed)		Operating status IP20	Operating status IP20	Operating status IP20	Operating status IP20
		Contact prot. IP2XC	Contact prot. IP2XC	Contact prot. IP2XC	Contact prot. IP2XC
		Handle cover open IP10	Handle cover open IP10	Handle cover open IP10	Handle cover open IP10
Ambient temperature	T ₃₅ °C	-25 up to +55	-25 up to +55	-25 up to +55	-25 up to +55
Rated operating mode		Permanent operation	Permanent operation	Permanent operation	Permanent operation
Activation		Dependent manual activation	Dependent manual activation	Dependent manual activation	Dependent manual activation
Mounting position		Vertical/horizontal	Vertical/horizontal	Vertical/horizontal	Vertical/horizontal
Altitude	m	max. 2000	max. 2000	max. 2000	max. 2000
Degree of pollution		3	3	3	3
Overvoltage category		III	III	III	III
Colour		Grey	Grey	Grey	Grey
RoHs		Yes	Yes	Yes	Yes
Energy feeder direction		Any	Any (FLEX system)	Any	Any (FLEX system)
Lockable		Yes, optional	Yes, optional	Yes, optional	Yes, optional
Sealable		Yes, standard	Yes, standard	Yes, standard	Yes, standard
Material		Polyamide	Polyamide	Polyamide	Polyamide
Reaction to fire		Self-extinguishing acc. to UL94	Self-extinguishing acc. to UL94	Self-extinguishing acc. to UL94	Self-extinguishing acc. to UL94
Halogen-free		Yes	Yes	Yes	Yes
Voltage test		Yes, sliding inspection windows	Yes, sliding inspection windows	Yes, sliding inspection windows	Yes, sliding inspection windows
Electrical service life (operating cycles)		200	200	200	200
Mechanical service life (operating cycles)		800	800	800	800
Track resistance		CTI 600	CTI 600	CTI 600	CTI 600
Temperature resistance up to	°C	125	125	125	125
Terminal capacities					
Flat connection:					
Bolt diameter		M10	M10	M10	M10
Cable lug max. width	mm	48	48	56	56
Flat bar	mm	40x10	40x10	50x10	50x10
Box terminal:					
multi-wire	mm ²	95 - 300 Cu/Al	95 - 300 Cu/Al	95 - 300 Cu/Al	95 - 300 Cu/Al
Cu Band		6x16x0.8 up to 10x32x1	6x16x0.8 up to 10x32x1	6x16x0.8 up to 10x32x1	6x16x0.8 up to 10x32x1
Clamp-type terminal:					
multi-wire	mm ²	25 - 240 Cu	25 - 240 Cu	on request	on request
Cu Band		10x16x0.8	10x16x0.8	11x21x1	11x21x1
Prism terminal:					
multi-wire	mm ²	120 - 240 Cu/Al	120 - 240 Cu/Al	120 - 300 Cu/Al	120 - 300 Cu/Al
Double-prism terminal:					
multi-wire	mm ²	2x (120 - 150) Cu/Al	2x (120 - 150) Cu/Al	2x (120 - 240) Cu/Al	2x (120 - 240) Cu/Al

Note: Please leave a minimum distance to grounded live parts: Side = 20 mm, top = 50 mm.

¹⁾ Type-tested with NH fuse links of characteristic gG. Safety control FCE and FCL only in combination with NH fuses equipped with live handle straps.

Technical Data

Connection of laminated copper band (CU-BAND...) to XNH fuse switch disconnectors with box terminal BT

Number of layers	Width		Thickness of layers	=	Cross-section (mm ²)	Height copper band (mm)	Max. rated operating current (A)					
	x	x										
	x		x					XNH00...-BT	XNH1...-BT	XNH2...-BT	XNH3...-BT	
3	x	9	x	0.8	=	21.6	2.4	100	x	x	-	-
6	x	9	x	0.8	=	43.2	4.8	160	x	x	-	-
9	x	9	x	0.8	=	64.8	7.2	200	x	x	-	-
6	x	16	x	0.8	=	74.4	4.65	250	-	x	x	x
10	x	16	x	0.8	=	124	7.75	400	-	x	x	x
5	x	24	x	1.0	=	120	5	400	-	-	x	x
11	x	21	x	1.0	=	231	11	630	-	-	x	x
8	x	24	x	1.0	=	192	8	630	-	-	x	x
10	x	24	x	1.0	=	240	10	630	-	-	x	x
5	x	32	x	1.0	=	160	5	160	-	-	x	x
10	x	32	x	1.0	=	320	10	800	-	-	x	x
10	x	40	x	1.0	=	400	10	1000	-	-	-	-
10	x	50	x	1.0	=	500	10	1250	-	-	-	-
10	x	80	x	1.0	=	800	10	1600	-	-	-	-

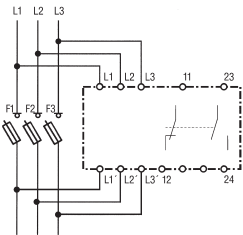
Technical Data XNH...FCE...

		XNH...FCE...
Power supply	V	Self-supplied
Power consumption	VA	1.5
Overvoltage category		230/400 V: III 500 V: II
Frequency range	HZ	50 - 60
Input resistance		>1 kOhm/V
Voltage inputs	V	AC 400 - 500 (+/-10%)
Temperature range	°C	-5 up to +55
Operation indicator		1 LED green
Failure indicator		3 LEDs (F1, F2, F3) red
IP degree of protection		IP3X
Function test		Test button for relay + LEDs
EMC		IEC 61000-4-5 / IEC 61000-4-4
Fuse links		NH with live handle straps

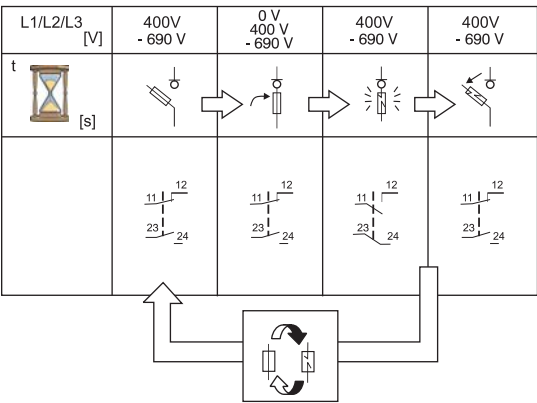
Outputs

Relay output		1 NC, 1 NO
Max. voltage	V	AC 250 / DC 24
Max. switching current	A	1

Circuit diagram



Function diagram



Note: Not suitable for single-phase application!

Product range XNH.-SWD-KIT

	XNH00-SWD-KIT	XNH1-SWD-KIT	XNH2-SWD-KIT	XNH3-SWD-KIT
Basic function	SmartWire-DT® module for direct connection			
Accessories	SmartWire-DT® XNH module (NH fuse switch disconnecter)			
Compatible with the devices	XNH00-FCE-...	XNH1-FCE-...	XNH2-FCE-...	XNH3-FCE-...
Scope of delivery	Base module with 2 digital inputs for XNH Switch position indicator (1 change-over contact, AC 250 V, 10/3 A) ver for connection area - bottom Mini cable duct Contact plug 4-pole Control cable 0.75 mm², 4 units			
Description	Mounting onto XNH fuse switch disconnecter			
Signals	Switch position XNH Fuse tripped			
Connection to SmartWire-DT	Yes			

Technical Data XNH.-SWD-KIT

		XNH00-SWD-KIT	XNH1-SWD-KIT	XNH2-SWD-KIT	XNH3-SWD-KIT
General information					
Standards and regulations		Immunity: IEC 61131-2: 2007 include test according IEC 61000-4-2: 2008 IEC 61000-4-3: 2006+A1:2007+A2:2010 IEC 61000-4-4: 2012 IEC 61000-4-6: 2008 IEC 61000-4-8: 2010 Emission: IEC 61131-2: 2007 IEC/CISPR 11:2009, mod. + A1:2010, Group 1, Class A			
Dimensions (W x H x D)	mm	92 x 51 x 26.5			
Weight	kg	0.07			
Installation		On the cover of the cable area of the XNH-...			
Mounting position		Same as XNH-...			
Mechanical ambient conditions					
Degree of protection (IEC/EN 60529, EN50178, VBG 4)		IP2X			
Electromagnetic compatibility (EMC)					
Overvoltage category		II			
Degree of pollution		2			
Electrostatic discharge (IEC/EN 61131-2:2008)					
Air discharge (Level 3)	kV	8			
Contact discharge (Level 2)	kV	4			
Electromagnetic fields (IEC/EN 61131-2:2008)					
80 - 1000 MHz	V/m	10			
1.4 - 2 GHz	V/m	3			
2 - 2.7 GHz	V/m	3			
Radio interference suppression SmartWire-DT					
Radio interference suppression		EN 55011 Class A			
Burst (IEC/EN 61131-2:2008, Level 3)					
SmartWire-DT cables					
Signal cables	kV	2			
CAN/DP Bus cables					
SmartWire-DT cables	kV	2			
Inrush (IEC/EN 61131-2:2008, Level 3)	V	10			

Technical Data XNH.-SWD-KIT (continued)

		XNH00-SWD-KIT	XNH1-SWD-KIT	XNH2-SWD-KIT	XNH3-SWD-KIT
Climatic ambient conditions					
Operating ambient temperature (IEC 60068-2)					
Ambient temperature	°C	-25 up to +60			
Condensation		Condensation is to be prevented through appropriate measures			
Storage	θ	°C	-30 up to +70		
Relative humidity, non-condensating (IEC/EN 60068-2-30)		%	5 - 95		
SmartWire-DT Network					
Type of participant		SmartWire-DT participant (slave)			
Address setting		automatic			
Status SmartWire-DT		LED	green		
Terminal connections		Multi-pin strip, 8-pole			
Connection		Device plug SWD4-8SF2-5			
Current consumption					
15-V-SWD supply	mA	35			
Control connections digital input					
Single core		FEP-6Y (is included in the scope of delivery)			
Nominal cross section		mm²	0.75		

Product range XNH...-SWD-KIT-EXT

	XNH00-SWD-KIT-EXT	XNH123-SWD-KIT-EXT
Basic function	SmartWire-DT® module for direct connection	
Accessories	SmartWire-DT® XNH module (NH fuse switch disconnectors)	
Compatible with the devices	XNH00-FCE-...	XNH1(2/3)-FCE-...
Scope of delivery	SWD module with 2 digital inputs and 3 analog inputs Without change-over Without control cables Fixing element for mounting plate Mini cable duct Contact plug 4-pole and 6-pole	
Description	Installation on the mounting plate	
Signals	Current measurement Switch position XNH Fuse tripped	
Connection to SmartWire-DT	Yes	

Technical Data XNH...-SWD-KIT-EXT

		XNH00-SWD-KIT-EXT	XNH123-SWD-KIT-EXT
General information			
Standards and regulations		Immunity: IEC 61131-2: 2007 include test according IEC 61000-4-2: 2008 IEC 61000-4-3: 2006+A1:2007+A2:2010 IEC 61000-4-4: 2012 IEC 61000-4-6: 2008 IEC 61000-4-8: 2010 Emission: IEC 61131-2: 2007 IEC/CISPR 11:2009, mod. + A1:2010, Group 1, Class A	
Dimensions (W x H x D)	mm	92 x 51 x 26.5	
Weight	kg	0.07	
Installation	On mounting plate		
Mounting position	Same as XNH-...		
Mechanical ambient conditions			
Degree of protection (IEC/EN 60529, EN50178, VBG 4)	IP2X		
Electromagnetic compatibility (EMC)			
Overvoltage category	II		
Degree of pollution	2		
Electrostatic discharge (IEC/EN 61131-2:2008)			
Air discharge (Level 3)	kV	8	
Contact discharge (Level 2)	kV	4	
Electromagnetic fields (IEC/EN 61131-2:2008)			
80 - 1000 MHz	V/m	10	
1.4 - 2 GHz	V/m	3	
2 - 2.7 GHz	V/m	3	
Radio interference suppression SmartWire-DT			
Radio interference suppression	EN 55011 Class A		
Burst (IEC/EN 61131-2:2008, Level 3)			
SmartWire-DT cables			
Signal cables	kV	2	
CAN/DP Bus cables			
SmartWire-DT cables	kV	2	
Inrush (IEC/EN 61131-2:2008, Level 3)	V	10	

Technical Data XNH...-SWD-KIT-EXT (continued)

		XNH123-SWD-KIT-EXT	XNH3-SWD-KIT
Climatic ambient conditions			
Operating ambient temperature (IEC 60068-2)			
Ambient temperature	°C	-25 up to +60	
Condensation		Condensation is to be prevented through appropriate measures	
Storage	J	°C	-30 up to +70
Relative humidity, non-condensating (IEC/EN 60068-2-30)		%	5 - 95
SmartWire-DT Network			
Type of participant		SmartWire-DT participant (slave)	
Address setting		automatic	
Status SmartWire-DT	LED	green	
Terminal connections		Multi-pin strip, 8-pole	
Connection		Device plug SWD4-8SF2-5	
Current consumption			
15-V-SWD supply	mA	35	
Control connections digital input			
Single core		FEP-6Y (not included in the scope of delivery)	
Nominal cross section	mm ²	0.75	

Product range XNH-SWD-2DX...

	XNH-SWD-2DX-1	XNH-SWD-2DX-3AX-1
Basic function	SmartWire-DT® module for direct connection	
Accessories	SmartWire-DT® XNH module (NH fuse switch disconnector)	
Compatible with the devices (as well as universal use without XNH)	XNH00-FCE-... XNH1-FCE-... XNH2-FCE-... XNH3-FCE-...	
Scope of delivery	SWD module with 2 digital inputs for XNH Contact plug 4-pole	SWD module with 2 digital and 3 analogue inputs for XNH Contact plug 4- and 6-pole
Description	Mounting onto fuse switch disconnector XNH or mounting plate	
Signals	Switch position XNH Fuse tripped	Switch position XNH Fuse tripped Current phase 1 Current phase 2 Current phase 3
Connection to SmartWire-DT	Yes	

Technical Data XNH-SWD-2DX...

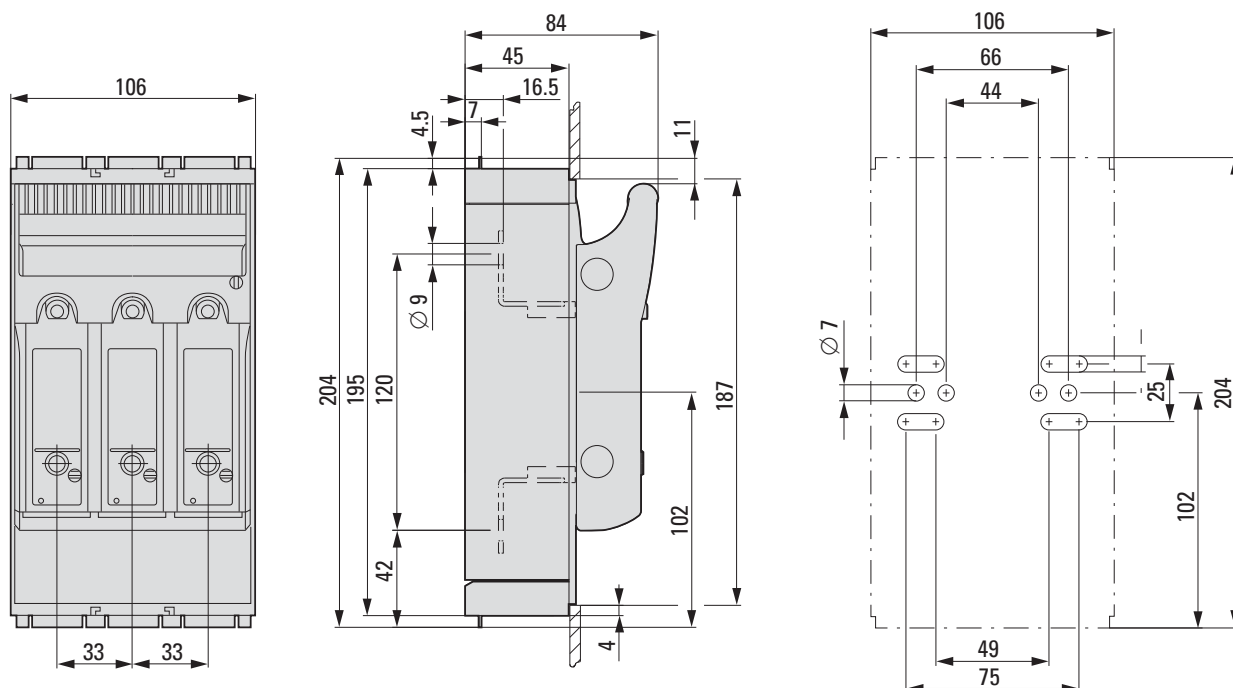
		XNH-SWD-2DX-1	XNH-SWD-2DX-3AX-1
General information			
Standards and regulations		Immunity: IEC 61131-2: 2007 include test according IEC 61000-4-2: 2008 IEC 61000-4-3: 2006+A1:2007+A2:2010 IEC 61000-4-4: 2012 IEC 61000-4-6: 2008 IEC 61000-4-8: 2010 Emission: IEC 61131-2: 2007 IEC/CISPR 11:2009, mod. + A1:2010, Group 1, Class A	
Dimensions (W x H x D)	mm	92 x 51 x 26.5	
Weight	kg	0.07	0.08
Installation		On the cover of the cable area of the XNH-...	
Mounting position		Same as XNH-...	
Mechanical ambient conditions			
Degree of protection (IEC/EN 60529, EN50178, VBG 4)		IP2X	
Electromagnetic compatibility (EMC)			
Overvoltage category		II	
Degree of pollution		2	
Electrostatic discharge (IEC/EN 61131-2:2008)			
Air discharge (Level 3)	kV	8	
Contact discharge (Level 2)	kV	4	
Electromagnetic fields (IEC/EN 61131-2:2008)			
80 - 1000 MHz	V/m	10	
1.4 - 2 GHz	V/m	3	
2 - 2.7 GHz	V/m	3	
Radio interference suppression SmartWire-DT			
Radio interference suppression		EN 55011 Class A	
Burst (IEC/EN 61131-2:2008, Level 3)			
SmartWire-DT cables			
Signal cables	kV	2	
CAN/DP Bus cables			
SmartWire-DT cables	kV	2	
Inrush (IEC/EN 61131-2:2008, Level 3)	V	10	

Technical Data XNH-SWD-2DX... (continued)

		XNH-SWD-2DX-1		XNH-SWD-2DX-3AX-1	
Climatic ambient conditions					
Operating ambient temperature (IEC 60068-2)					
Ambient temperature		°C	-25 up to +60		
Condensation		Condensation is to be prevented through appropriate measures			
Storage		J	°C	-30 up to +70	
Relative humidity, non-condensating (IEC/EN 60068-2-30)		%		5 - 95	
SmartWire-DT Network					
Type of participant		SmartWire-DT participant (slave)			
Address setting		automatic			
Status SmartWire-DT		LED	green		
Terminal connections		Multi-pin strip, 8-pole			
Connection		Device plug SWD4-8SF2-5			
Current consumption					
15-V-SWD supply		mA	35		
Control connections digital input					
Single core		FEP-6Y (not included in the scope of delivery)			
Nominal cross section		mm²	0.75		
Connection		Contact plug, 4-pole (included in the scope of delivery)		Contact plug, 4- and 6-pole (included in the scope of delivery)	

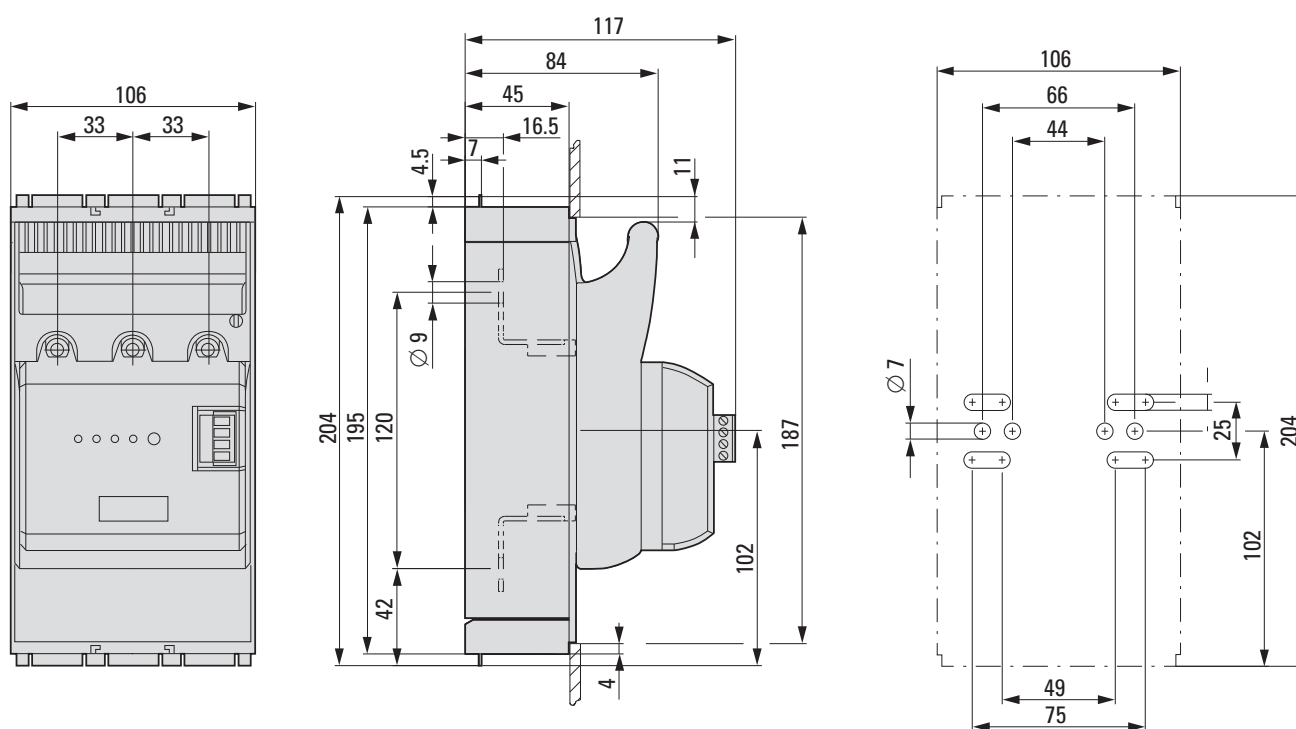
Dimensional drawings

XNH00-A160..., XNH00-FCL-A160...



1230DIM-352

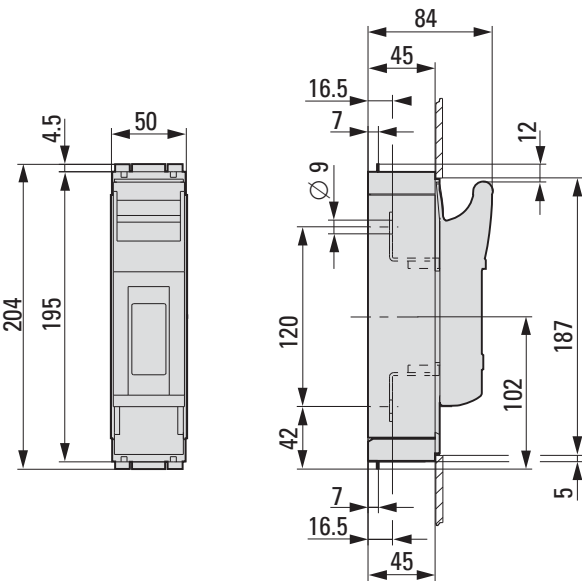
XNH00-FCE-A160...,



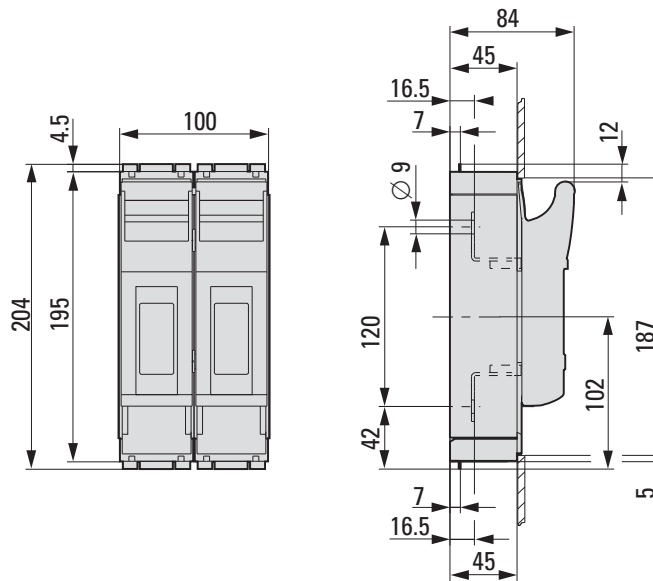
1230DIM-353

Dimensional drawings

1x XNH00-1-A160...



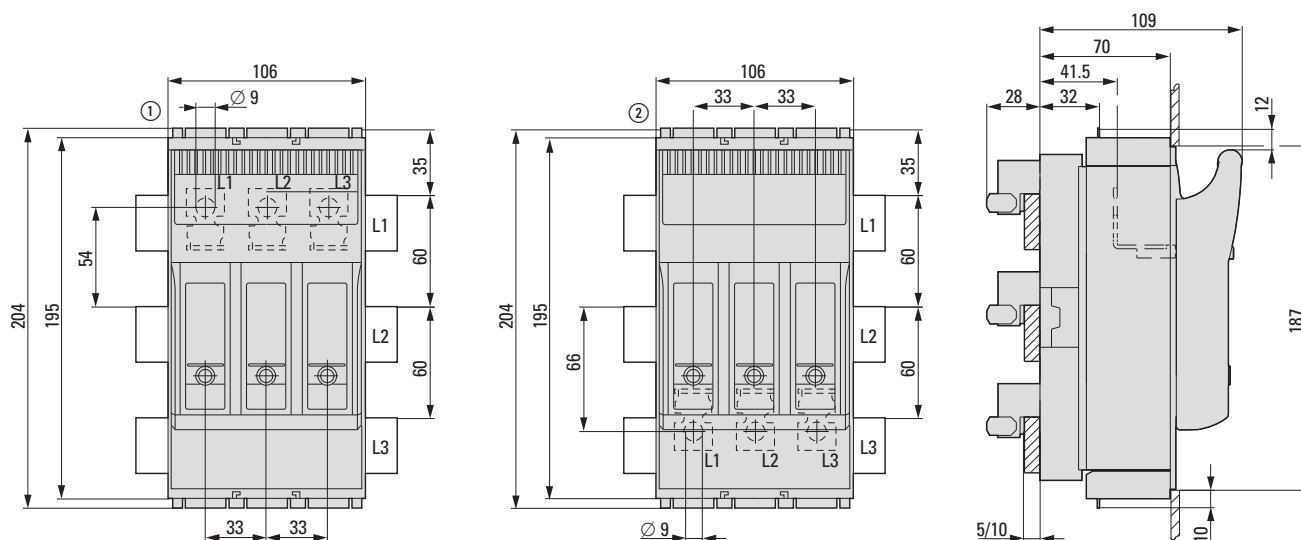
2x XNH00-1-A160...



1230DIM-373, 1230DIM-374

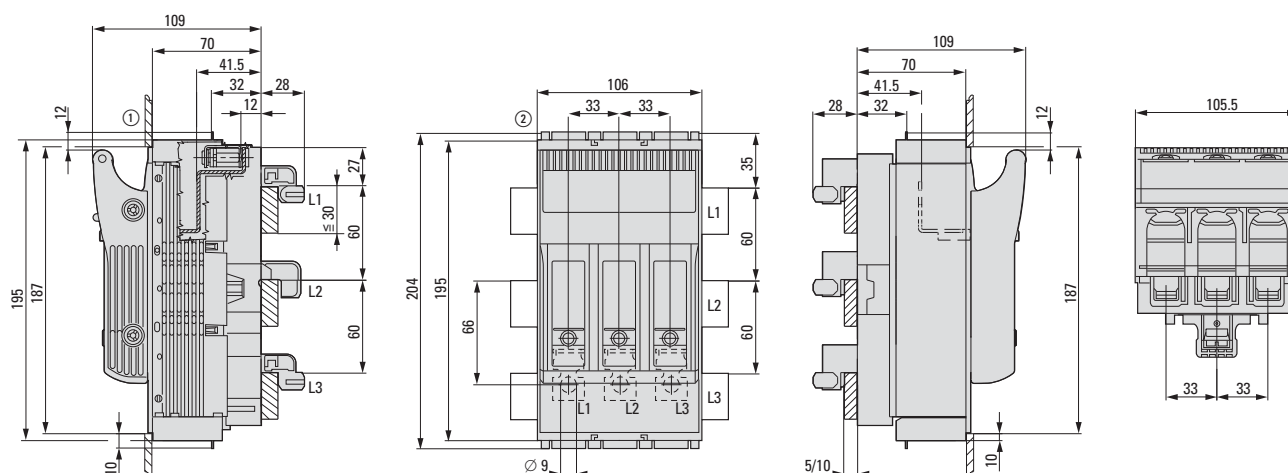
Dimensional drawings

XNH00-S160..., XNH00-FCL-S160, XNH00-FCL-S160-BT1



1230DIM-362

XNH00-FCL-S160-BT2

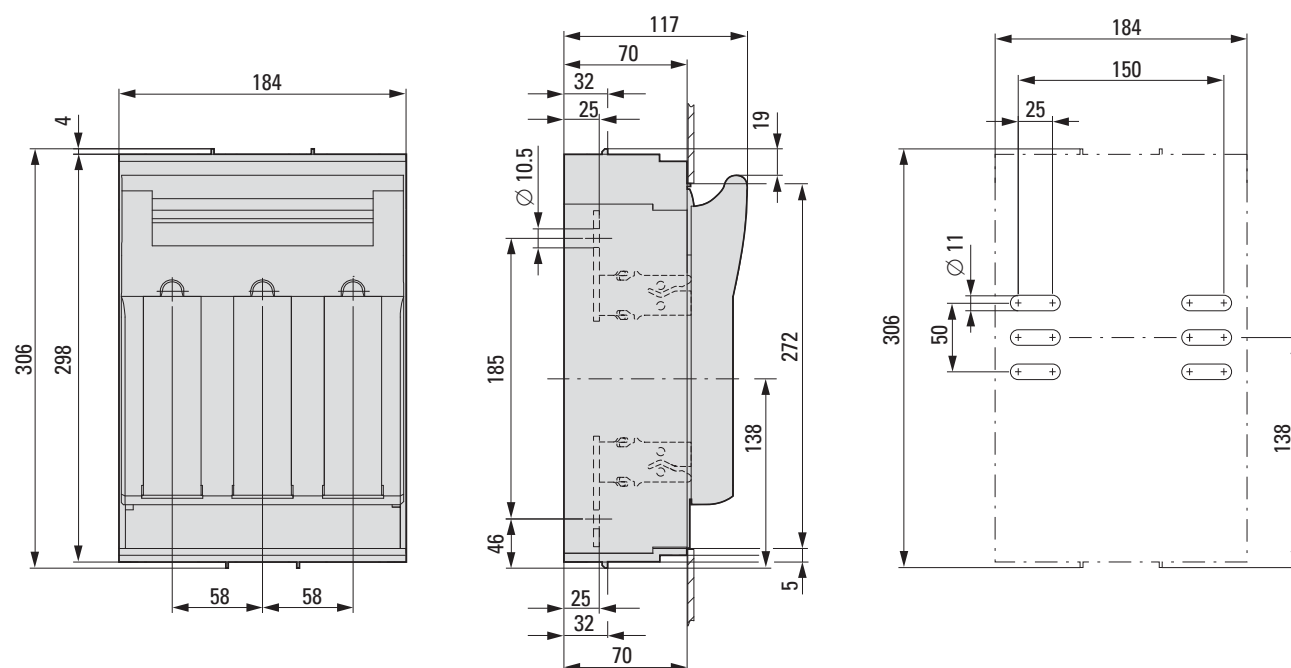


1230DIM-363

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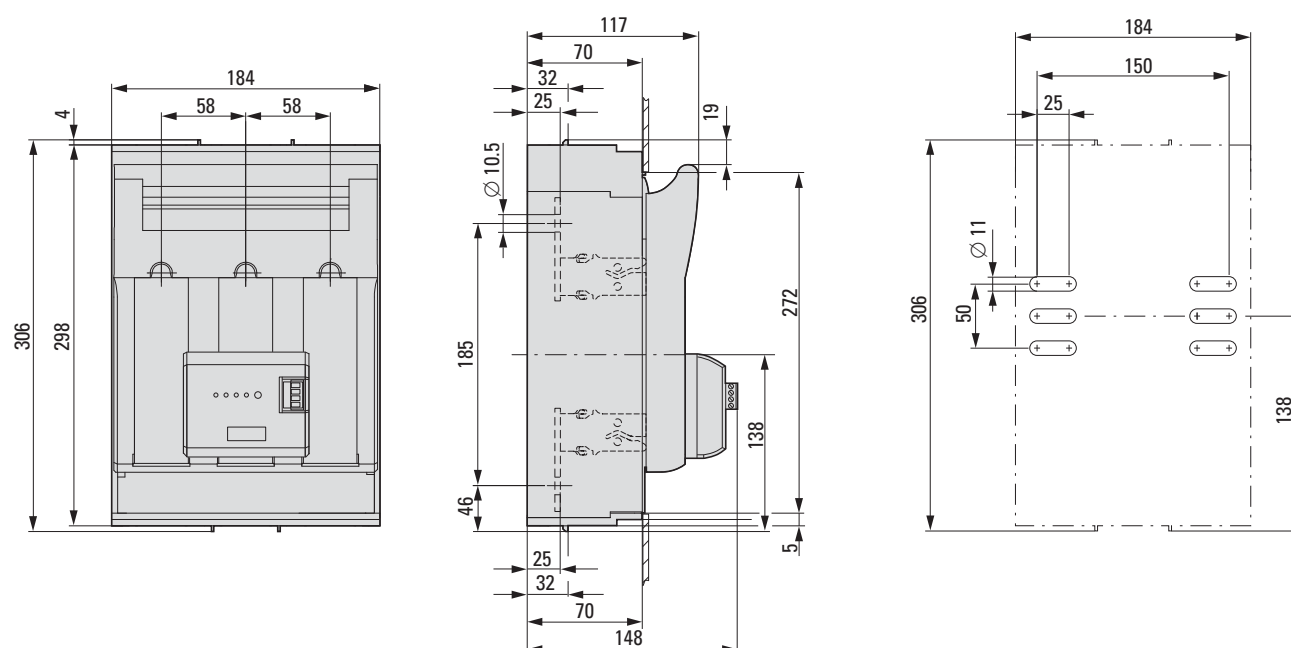
Dimensional drawings

XNH1-A250..., XNH1-FCL-A250...



1230DIM-355

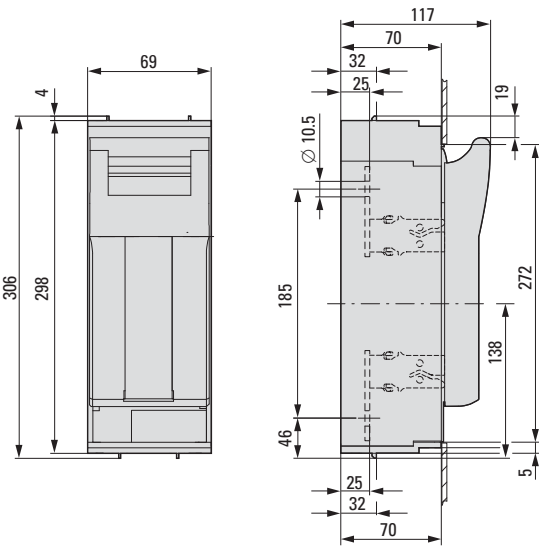
XNH1-FCE-A250...



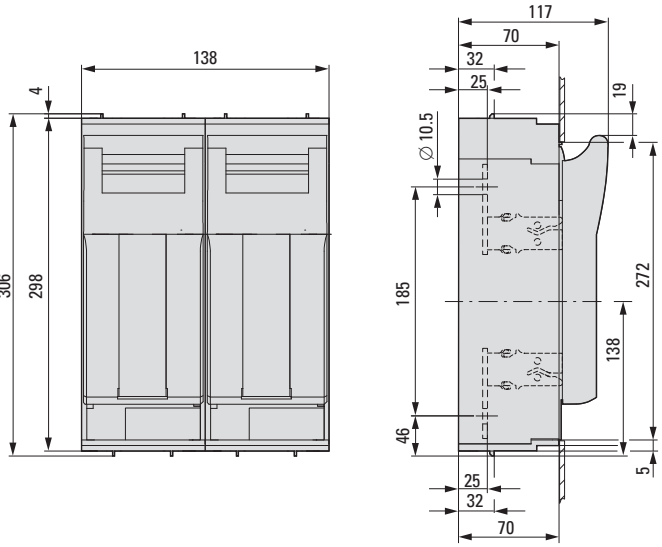
1230DIM-359

Dimensional drawings

1x XNH1-1-A250...



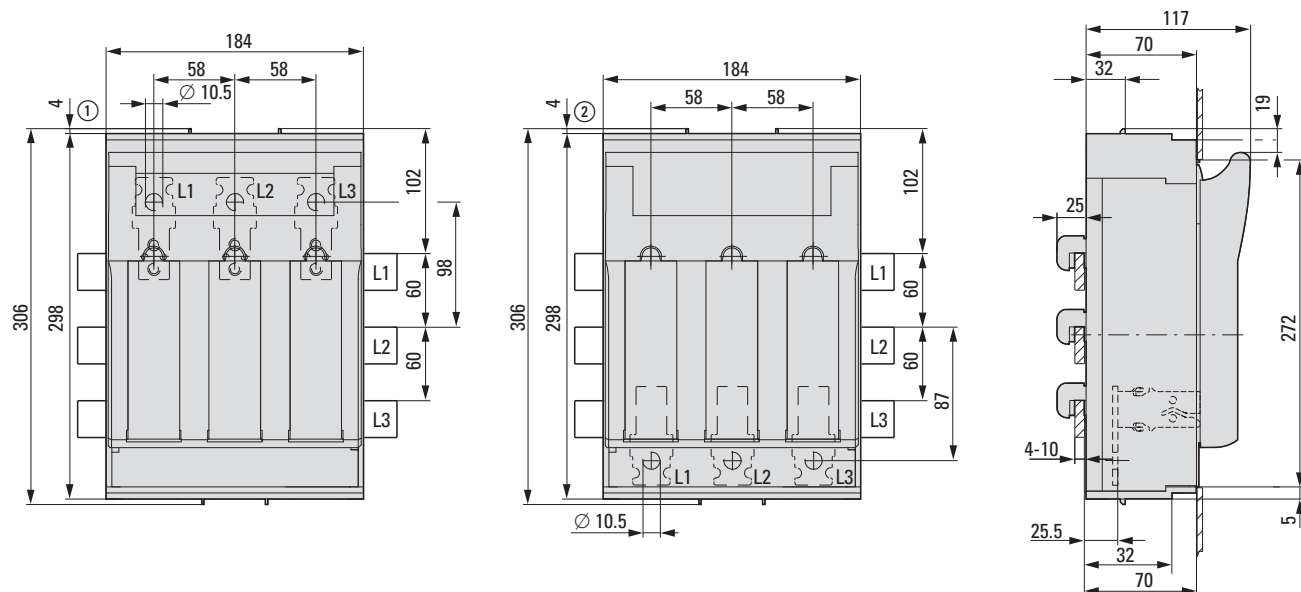
2x XNH1-1-A250...



1230DIM-377, 1230DIM-380

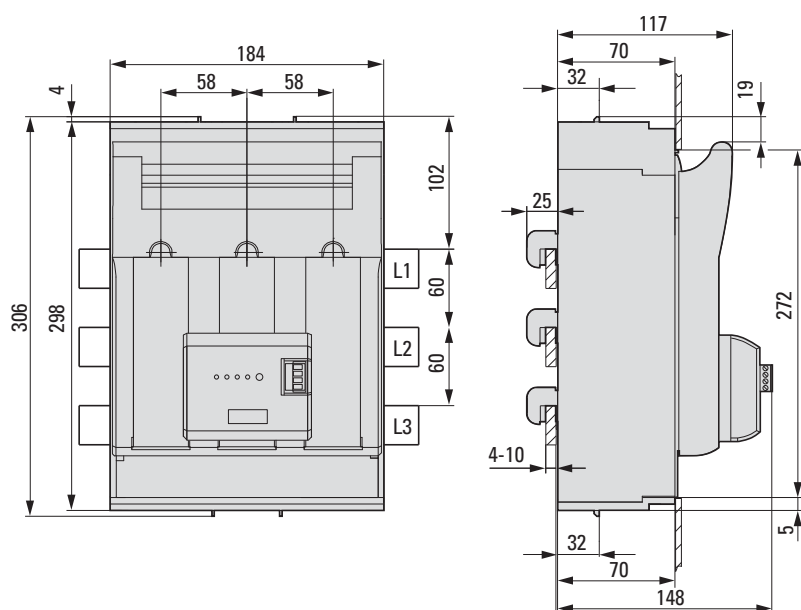
Dimensional drawings

XNH1-S250..., XNH1-FCL-S250...



1230DIM-366

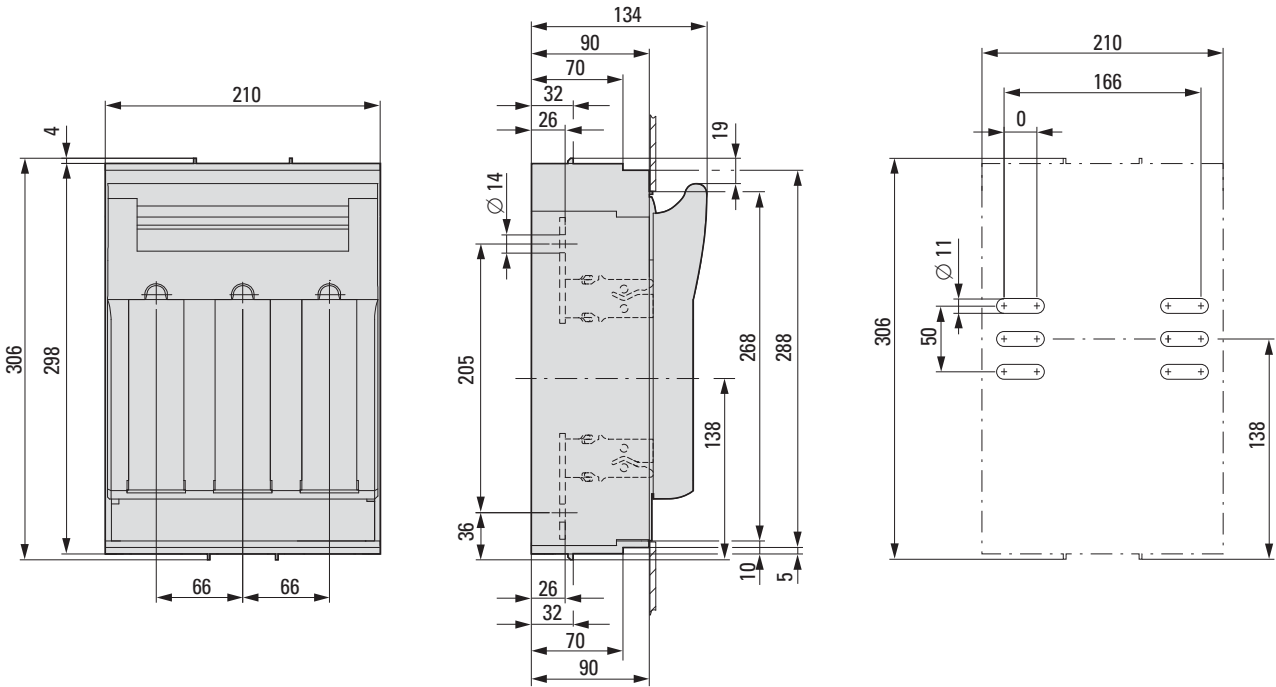
XNH1-FCE-S250...



1230DIM-370

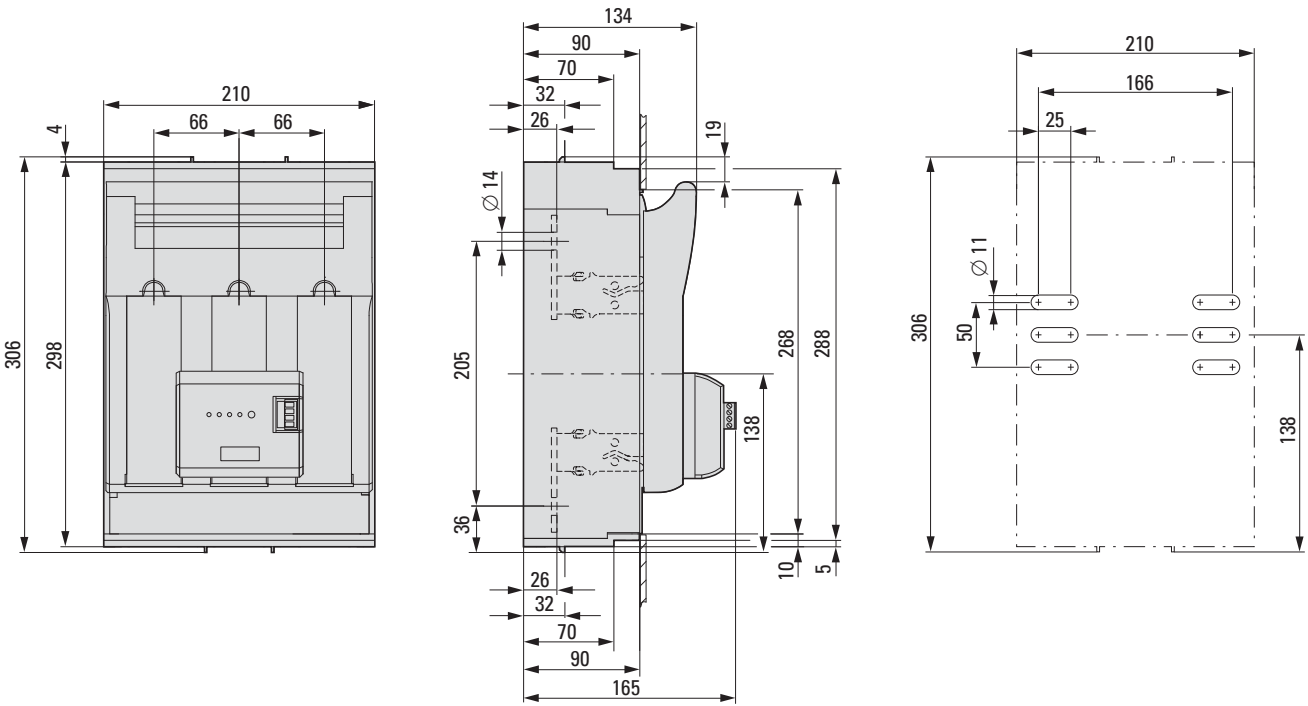
Dimensional drawings

XNH2-A400..., XNH2-FCL-A400...



1230DIM-356

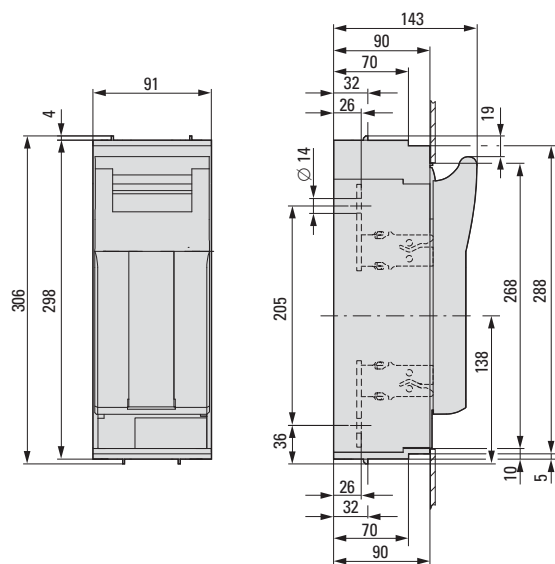
XNH2-FCE-A400...



1230DIM-360

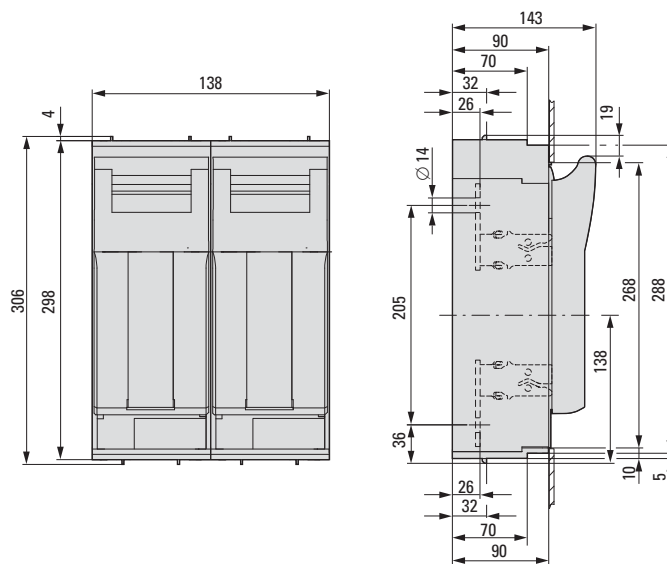
Dimensional drawings

1x XNH32-1-A630...



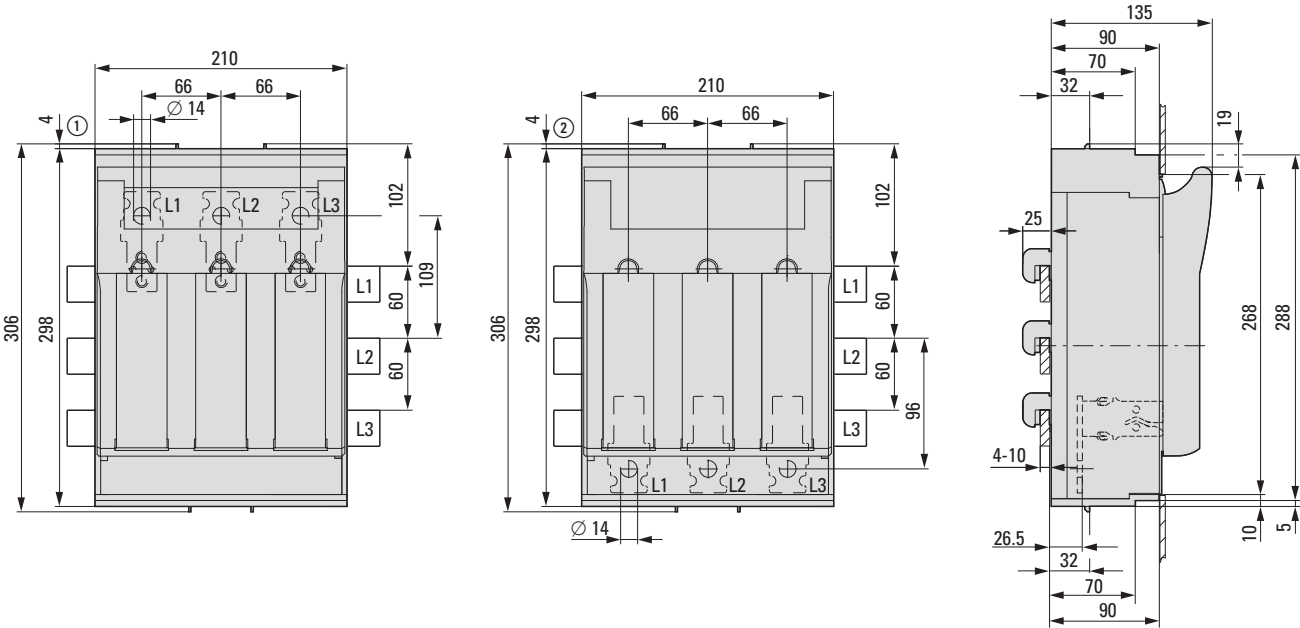
1230DIM-378, 1230DIM-381

2x XNH32-1-A630...



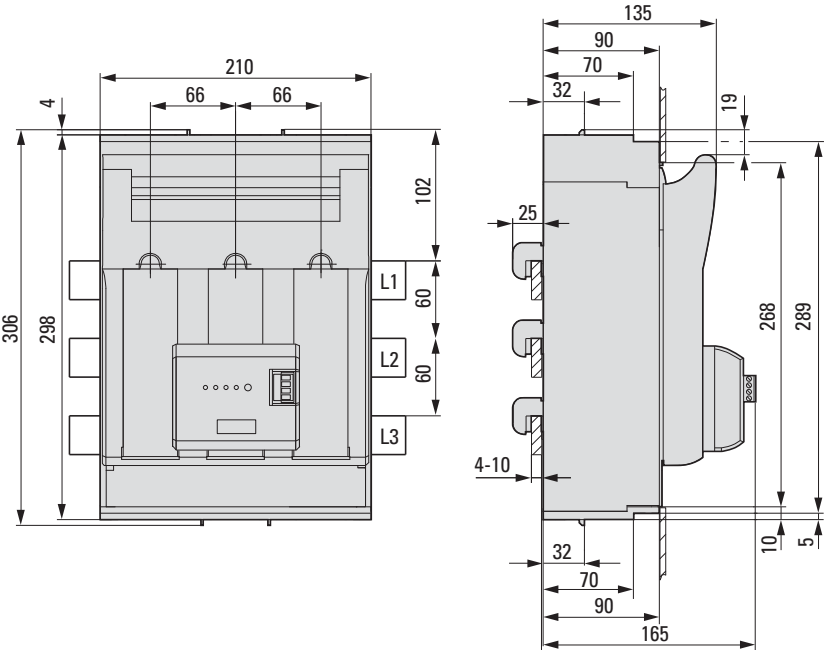
Dimensional drawings

XNH2-S400..., XNH2-FCL-S400...



1230DIM-367

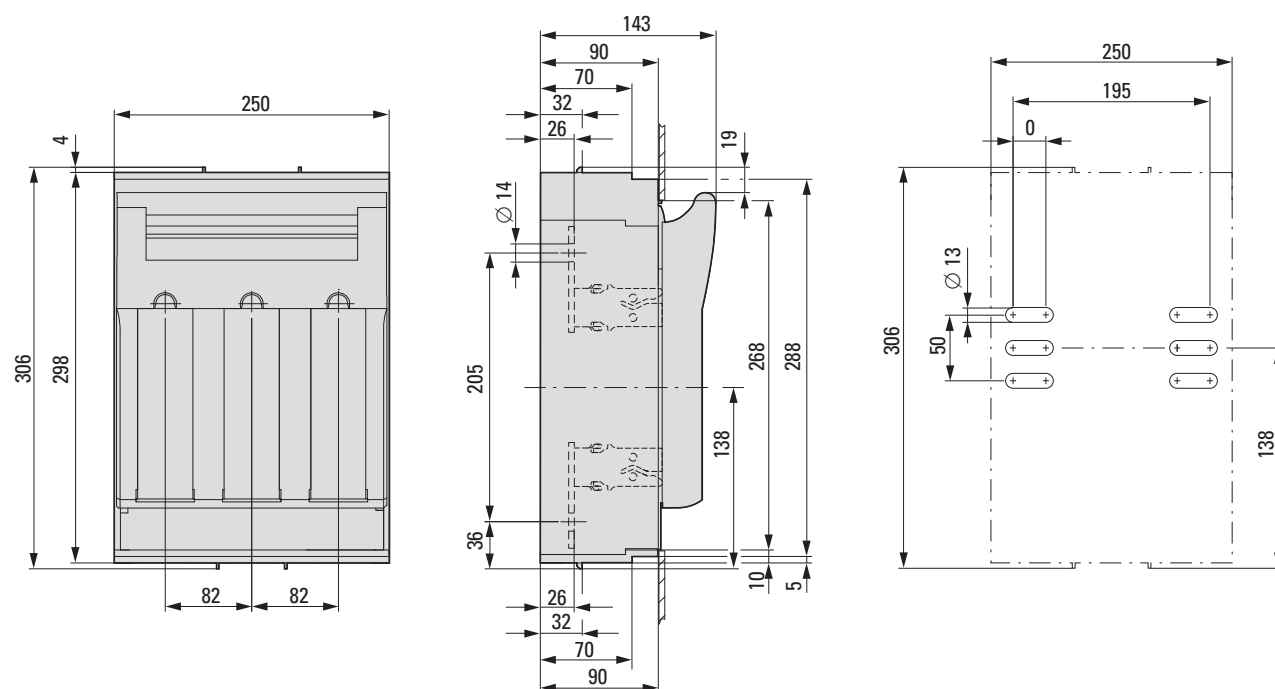
XNH2-FCE-S400...



1230DIM-371

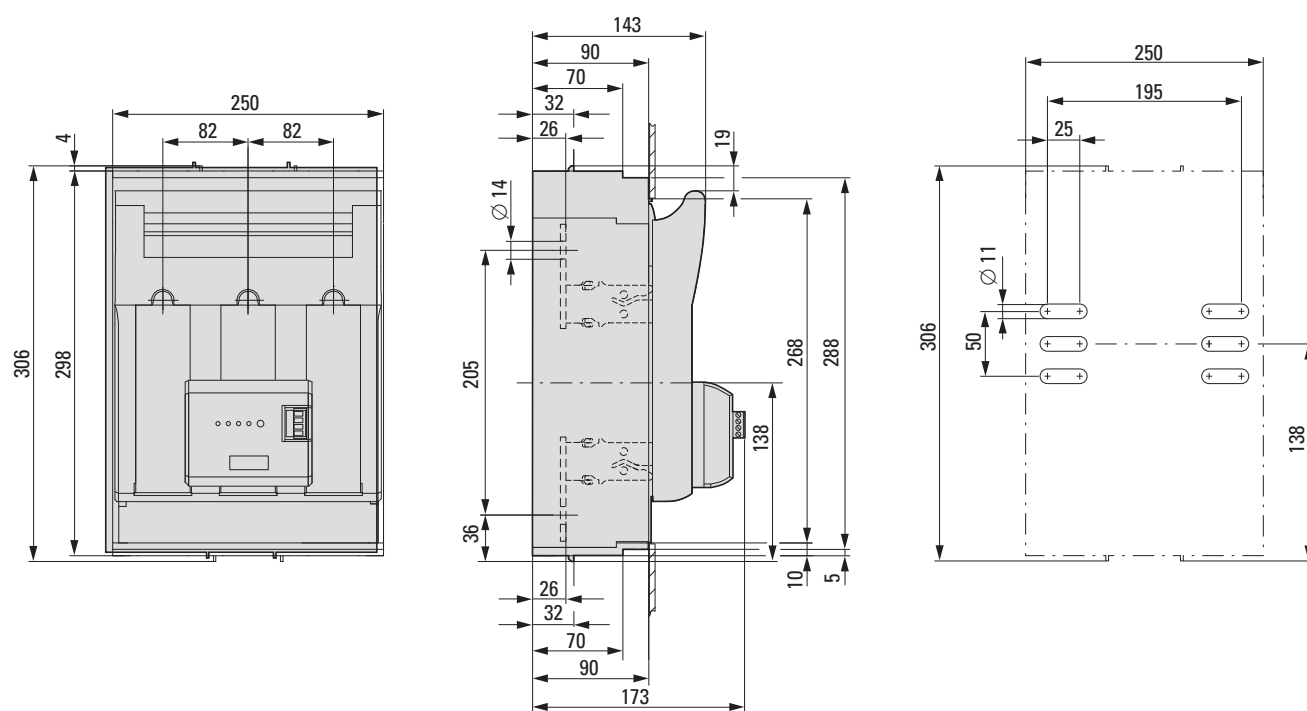
Dimensional drawings

XNH3-A630..., XNH3-FCL-A630...



1230DIM-357

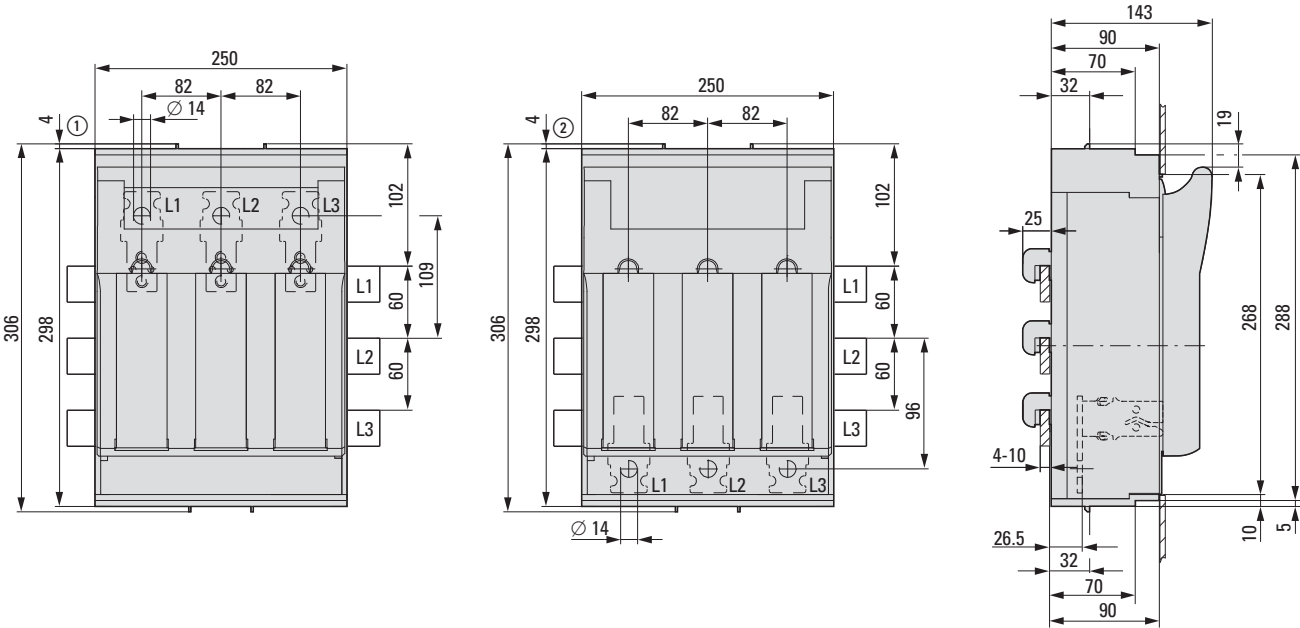
XNH3-FCE-A630...



1230DIM-361

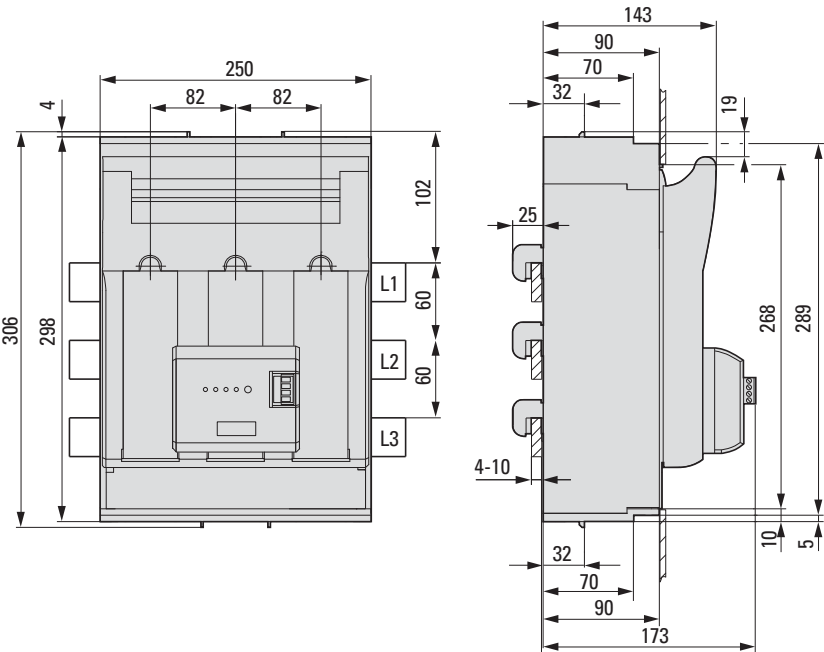
Dimensional drawings

XNH3-S630..., XNH3-FCL-S630...



1230DIM-368

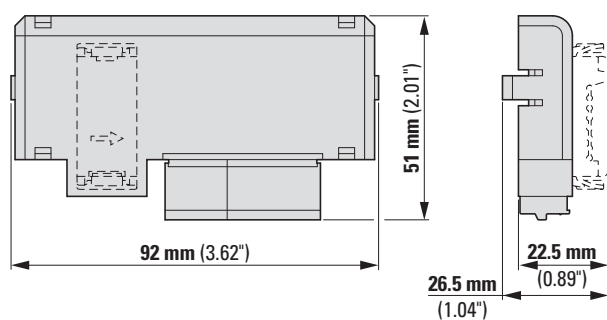
XNH3-FCE-S630...



1230DIM-372

Dimensional drawings

XNH-SWD-2DX-1...



2723DIM-55

SG09610



Max. Rated Operational Current I_e (A)	Max. Fuse-link 500 V (A)	690 V (A)	Size	Type designation	Article No.	Pack (pcs.)
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NH In-line Fuse Switch Disconnectors 3-pole, FCFSDNH

- Incl. cover for connection area
- Mounting without the need of drilling (Accessories)
- Connection either at the top or at the bottom

Center-to-center distance of 100 mm between the phases - size 00

160	160	160	00	FCFSDNH00BB100	149430	1
-----	-----	-----	----	----------------	--------	---

SG09310



Center-to-center distance of 100 mm between the phases - size 00 - for installing current transformers

- Equipped with spacer pins for retro-fitting of current transformers if ever the need should arise

160	160	160	00	FCFSDNH00BB100-CTO	149431	1
-----	-----	-----	----	--------------------	--------	---

185 mm center-to-center distance between phases - size 1 - Size 3

250	250	250	1	FCFSDNH1BB185	149436	1
400	400	400	2	FCFSDNH2BB185	149437	1
630	630	630	3	FCFSDNH3BB185	149438	1

SG09410



185 mm center-to-center distance between phases - size 1 - Size 3 - for installing current transformers

- Equipped with spacer pins for retro-fitting of current transformers if ever the need should arise

250	250	250	1	FCFSDNH1BB185-CTO	149439	1
400	400	400	2	FCFSDNH2BB185-CTO	149440	1
630	630	630	3	FCFSDNH3BB185-CTO	149441	1

Description

Type
designationArticle No. Pack
(pcs.)**Double adapter to adjust the center-to-center distance between the phases from 100 to 185 mm**

SG10010

Adapater for fixing two strips of size 00
on a busbar of 185 mm

ASNH100BABB100

149454

1

Adapter clip to adjust the center-to-center distance between the phases from 100 to 185 mm

SG10910

Clip for fixing one strip of size 00
on a busbar of 185 mm

ASNH100ACBB100

149455

1

Busbar Terminal Size 00

SG10910

For mounting the NH in-line fuse switch disconnector
without the need of drilling Size 00 for a busbar
thickness of 5 - 10 mm

ASNH100CT

149457

15

Compensation Cover

SG09710



For height adjustment of a size 00 strip to a strip of size 1 to size 3

ASNH185CP100

149458

1

Prism terminal

SG11110



ASPT70

149456

3

Connection-Set

SG11210



Set for 2 cable lugs suitable for a strip of 185 mm size 1-3

ASNH185

149459

1

Cover for connection area

SG63212



Cover for connection area, size 1-3

ASNH185CP123

170267

1

6.424 Fuse Devices

xPole

NH In-line Fuse Switch Disconnectors, series FCF - Accessories

Description	Type designation	Article No.	Pack (pcs.)
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Connection Assembly Kit - consisting of 3 different items

- For parallel switching of 2 strips of size 2 or 3

SG11010



Handle connection	ASNH185HCK	149460	10
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SG10710



Busbar kit	ASNH185RK	149461	1
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SG09910



Cover for connection area	ASNH185CP	149462	1
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G Class	Transformer ratio (A)	Rated Apparent Power (VA)	Type designation	Article No.	Pack (pcs.)
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Current transformer for 100 mm center-to-center distance between the phases

SG00611



0.5	100/5	1	ASCNH100CT100-5-05	149432	3
	150/5	1.5	ASCNH100CT150-5-05	149433	3
1	100/5	1.5	ASCNH100CT100-5-1	149434	3
	150/5	2.5	ASCNH100CT150-5-1	149435	3

Current transformer for 185 mm center-to-center distance between the phases

SG00611



0.5	150/5	1.5	ASCNH185CT150-5-05	149442	3
	250/5	2.5	ASCNH185CT250-5-05	149443	3
	300/5	2.5	ASCNH185CT300-5-05	149444	3
	400/5	2.5	ASCNH185CT400-5-05	149445	3
	500/5	2.5	ASCNH185CT400-5-05	149446	3
	600/5	2.5	ASCNH185CT600-5-05	149447	3
1	150/5	2.5	ASCNH185CT150-5-1	149448	3
	250/5	3.75	ASCNH185CT250-5-1	149449	3
	300/5	3.75	ASCNH185CT300-5-1	149450	3
	400/5	5	ASCNH185CT400-5-1	149451	3
	500/5	5	ASCNH185CT500-5-1	149452	3
	600/5	5	ASCNH185CT600-5-1	149453	3

Technical Data FCFSDNH00BB100(-CT0)

- Center-to-center distance of 100 mm between the phases
- Size 00

FCFSDNH00BB100(-CT0)			
Electrical			
For LV HRC fuse-links acc. to DIN VDE 0636-2	Size	000/00	
Rated operating voltage	U_e	V AC	690
Rated operating current ¹⁾	I_e	A	160
Conv. free air thermal current with fuse-links ¹⁾	I_{th}	A	160
Conv. free air thermal current with solid-links ¹⁾	I_{th}	A	210
Rated frequency	Hz	40 - 60	
Rated insulation voltage	U_i	V AC	800
Total power loss at I_{th} (without fuses)	P_v	W	18
Rated impuls withstand voltage	U_{imp}	kV	8
Utilization category (AC-22B)			
400 V	A	160	
500 V	A	160	
690 V	A	100	
Conditional rated short-circuit current ²⁾	kA	80	
Rated short-time withstand current	I_{cw}	kA	—
Max. permissible power loss per fuse-link	P_a	W	12
Mechanical			
Flat connection			
Bolt diameter		M8	
Cable lug (DIN 46235)		mm ²	1 x 10-95 (max. 25 mm width)
Flat bar		mm	20 x 10
Tightening torque	M_a	Nm	12 - 15
Terminal			
Terminal capacity		mm ²	round 1.5 - 70 Cu / flat 6 x 9 x 0.8
Tightening torque	M_a	Nm	2.6
Degree of protection, front side, device fitted			
Operating condition		IP30	
Switching element open		IP10	
Ambient temperature ³⁾	T_{amb}	°C	-25 up to +55
Rated operating mode		Permanent operation	
Activation		Dependent manual operation	
Mounting position		Vertical, horizontal	
Altitude	m	Up to 2000	
Degree of pollution		3	
Overvoltage category		III	

¹⁾ In case of mounting several units in low voltage switchgear-combinations, please consider rated diversity factors acc. to EN 60439-1.

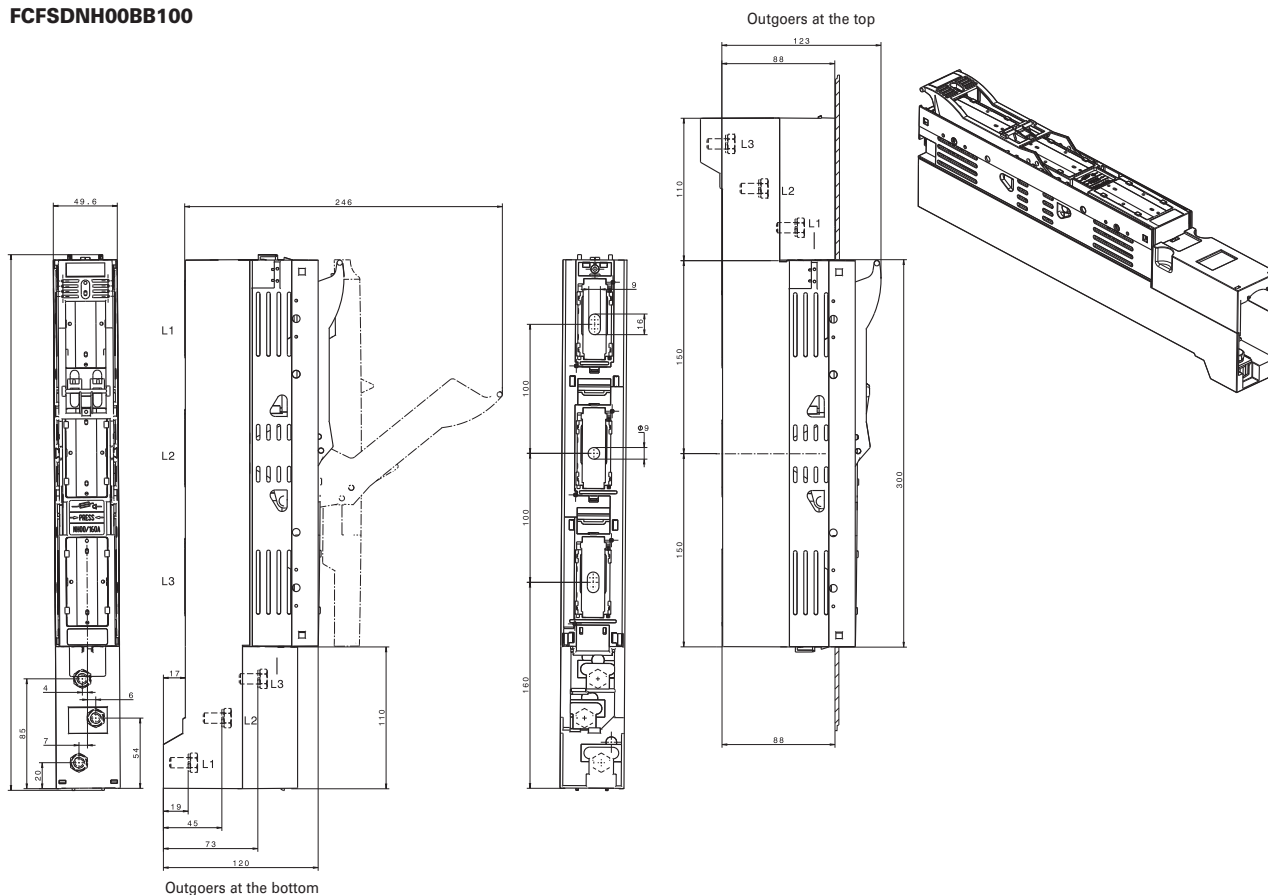
²⁾ Type-tested with LV-HRC-fuse-links characteristic gG.

³⁾ 35 °C normal temperature, at 55 °C with reduced operating current.

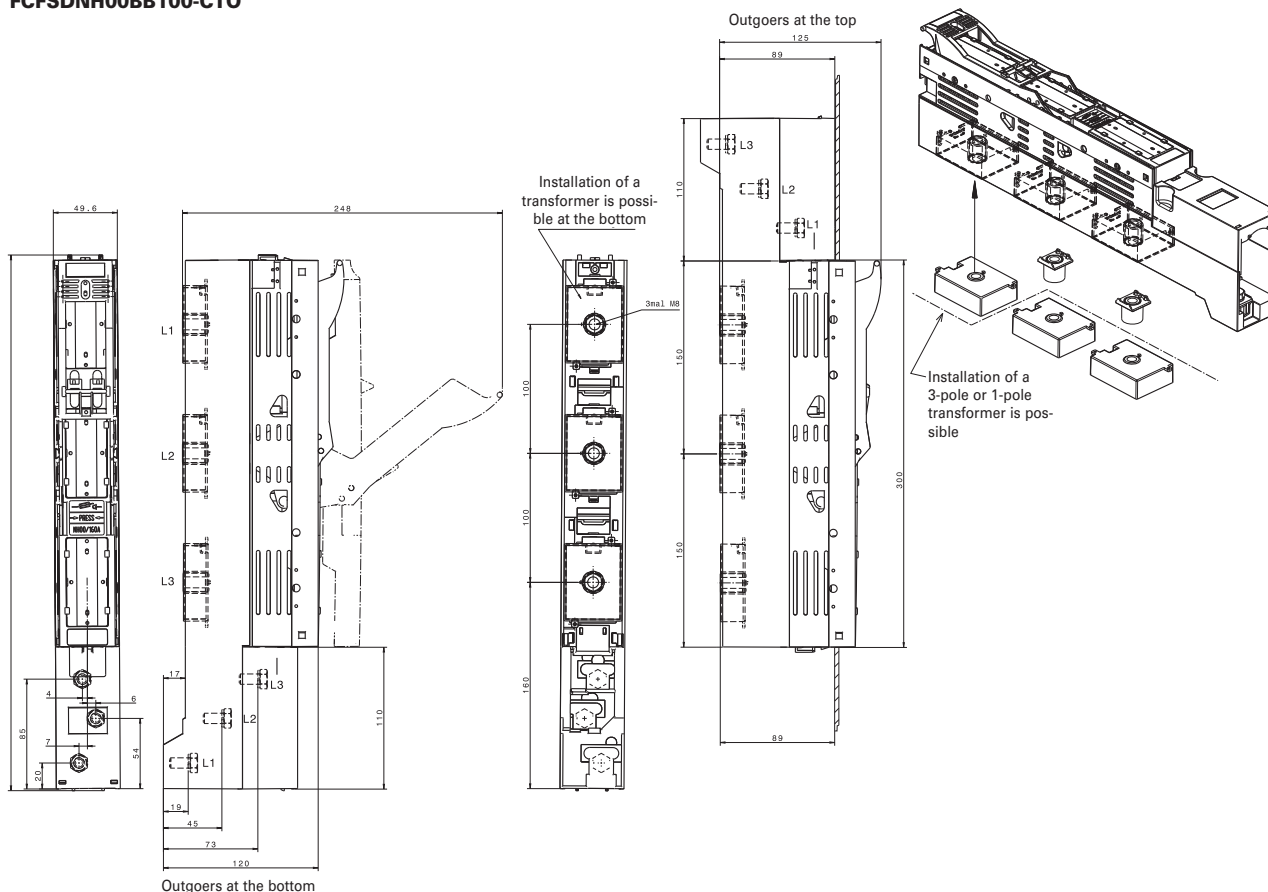
Dimensions (mm)

NH In-line Fuse Switch Disconnectors, 3 poles, center-to-center distance of 100 mm between the phases, size 00

FCFSDNH00BB100



FCFSDNH00BB100-CTO



Technical Data FCFSDNH.BB185...

- 185 mm center-to-center distance between phases
- Size 1, 2, 3

			FCFSDNH1BB185(-CTO)	FCFSDNH2BB185(-CTO)	FCFSDNH3BB185(-CTO)
Electrical					
For LV HRC fuse-links acc. to DIN VDE 0636-2		Size	1	2	3
Rated operating voltage	U_e	V AC	690	690	690
Rated operating current ¹⁾	I_e	A	250	400	630
Conv. free air thermal current with fuse-links ¹⁾	I_{th}	A	250	400	630
Conv. free air thermal current with solid-links ¹⁾	I_{th}	A	400	630	800
Rated frequency		Hz	40 - 60	40 - 60	40 - 60
Rated insulation voltage	U_i	V AC	1000	1000	1000
Total power loss at I_{th} (without fuses)	P_v	W	23	54	115
Rated impuls withstand voltage	U_{imp}	kV	12	12	12
Utilization category (AC-22B)					
400 V		A	250 (AC-23B)	400 (AC-23B)	630 (AC-22B)
500 V		A	250 (AC-22B)	400 (AC-22B)	630 (AC-22B)
690 V		A	250 (AC-22B)	400 (AC-22B)	630 (AC-21B)
Conditional rated short-circuit current ²⁾		kA	110	110	110
Rated short-time withstand current	I_{cw}	kA	14,5	14,5	14,5
Max. permissible power loss per fuse-link	P_a	W	32	45	48
Mechanical					
Flat connection					
Bolt diameter		M	M10	M12	M12
Cable lug (DIN 46235)		mm ²	1 x 25-150	1 x 25-240	1 x 25-300 (max. 43 mm width)
Flat bar		mm	30 x 10	30 x 10	30 x 10
Tightening torque	M_a	Nm	30 - 35	35 - 40	35 - 40
Degree of protection, front side, device fitted					
Operating condition			IP30	IP30	IP30
Switching element open			IP10	IP10	IP10
Ambient temperature ³⁾	T_{amb}	°C	-25 up to +55	-25 up to +55	-25 up to +55
Rated operating mode			Permanent operation	Permanent operation	Permanent operation
Activation			Dependent manual operation	Dependent manual operation	Dependent manual operation
Mounting position			Vertical, horizontal	Vertical, horizontal	Vertical, horizontal
Altitude	m		Up to 2000	Up to 2000	Up to 2000
Degree of pollution			3	3	3
Overvoltage category			IV	IV	IV

¹⁾ In case of mounting several units in low voltage switchgear-combinations, please consider rated diversity factors acc. to EN 60439-1.

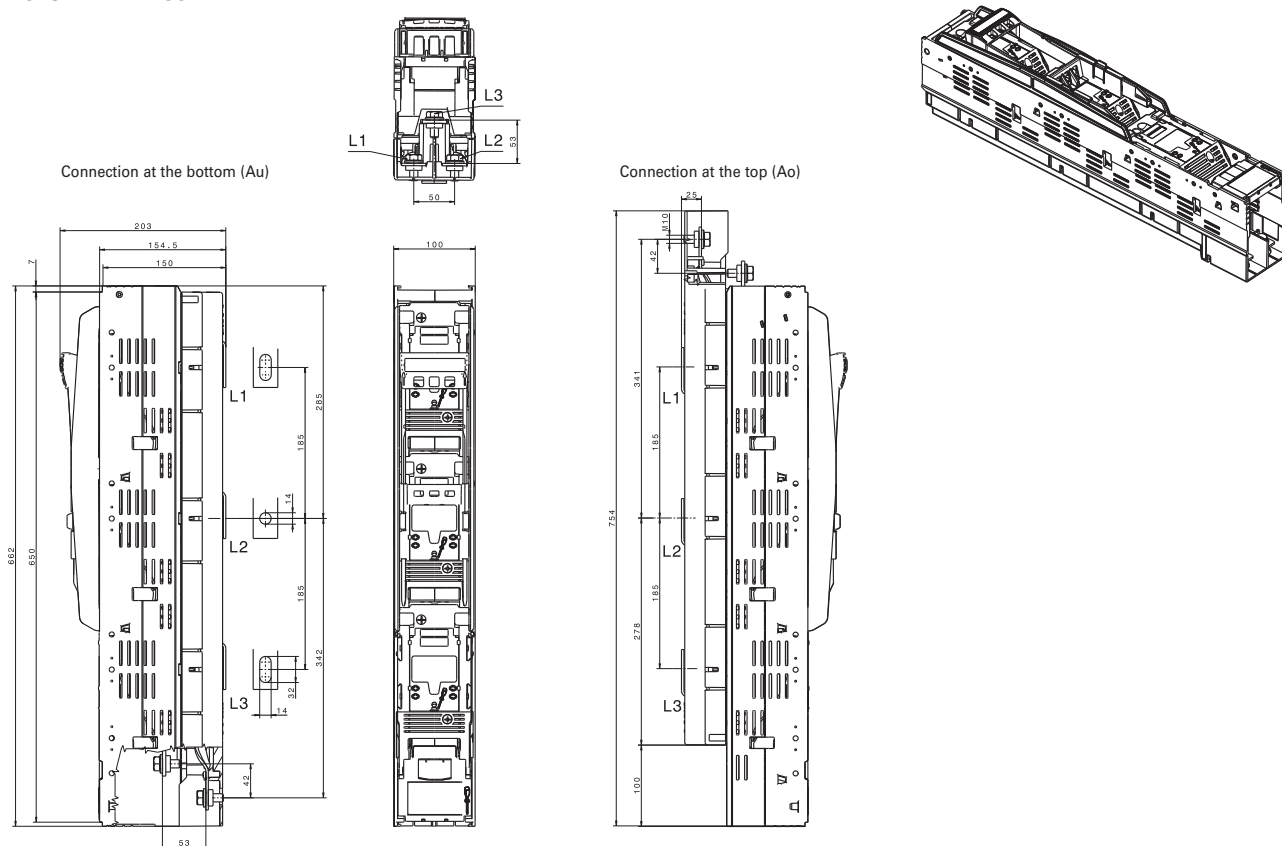
²⁾ Type-tested at AC 725 V with LV-HRC-fuse-links characteristic gG.

³⁾ 35 °C normal temperature, at 55 °C with reduced operating current.

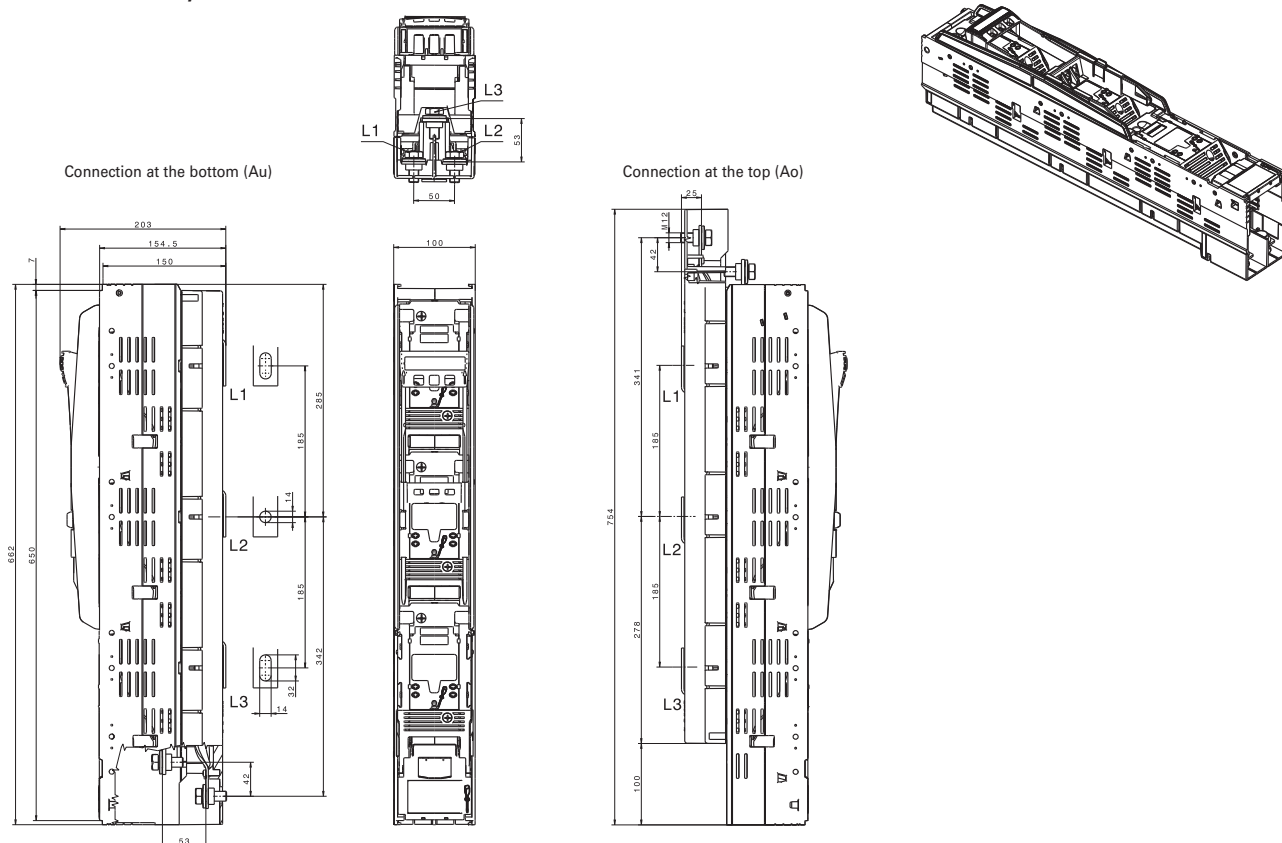
Dimensions (mm)

NH In-line Fuse Switch Disconnectors, 3 poles, center-to-center distance of 185 mm between the phases, size 1 - size 3

FCFSDNH1BB185



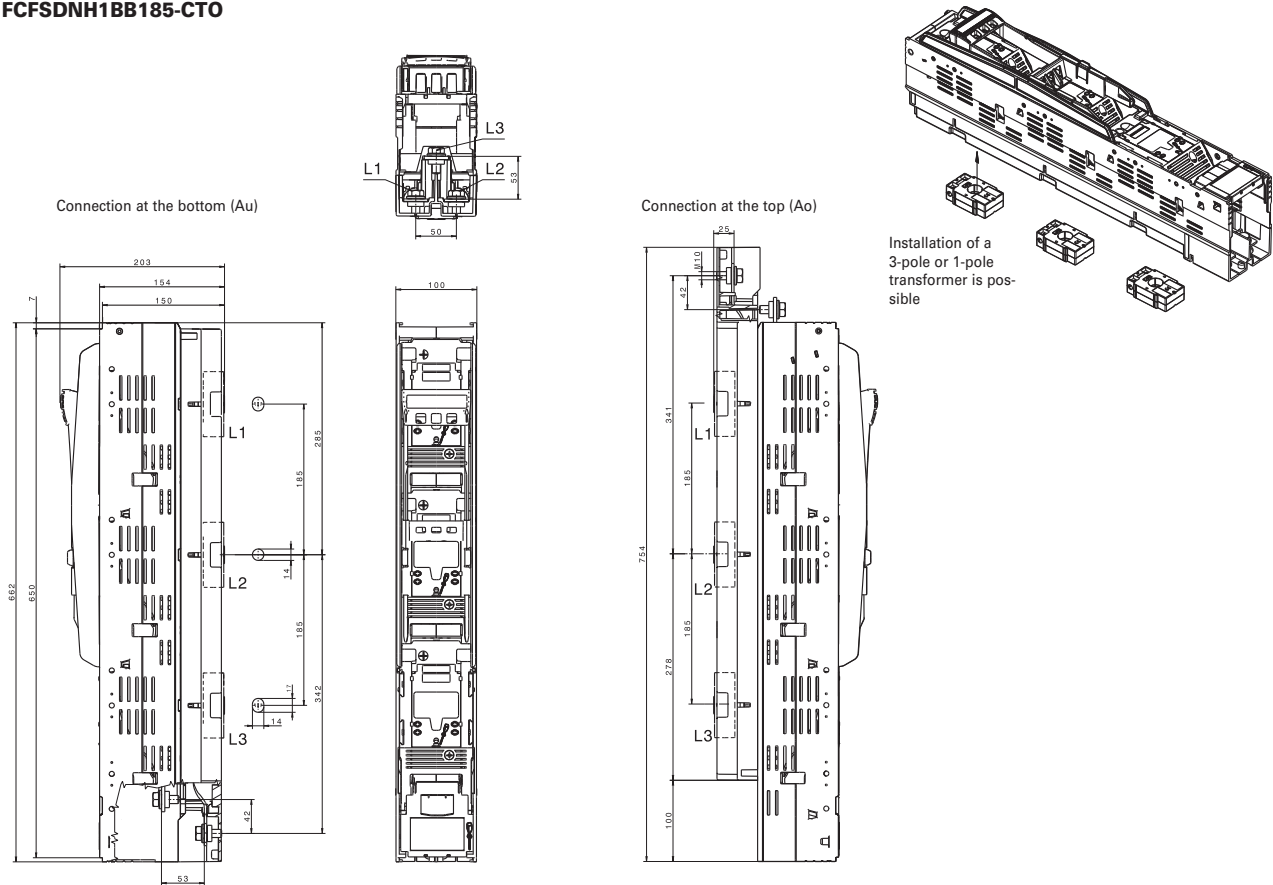
FCFSDNH2BB185, FCFSDNH3BB185



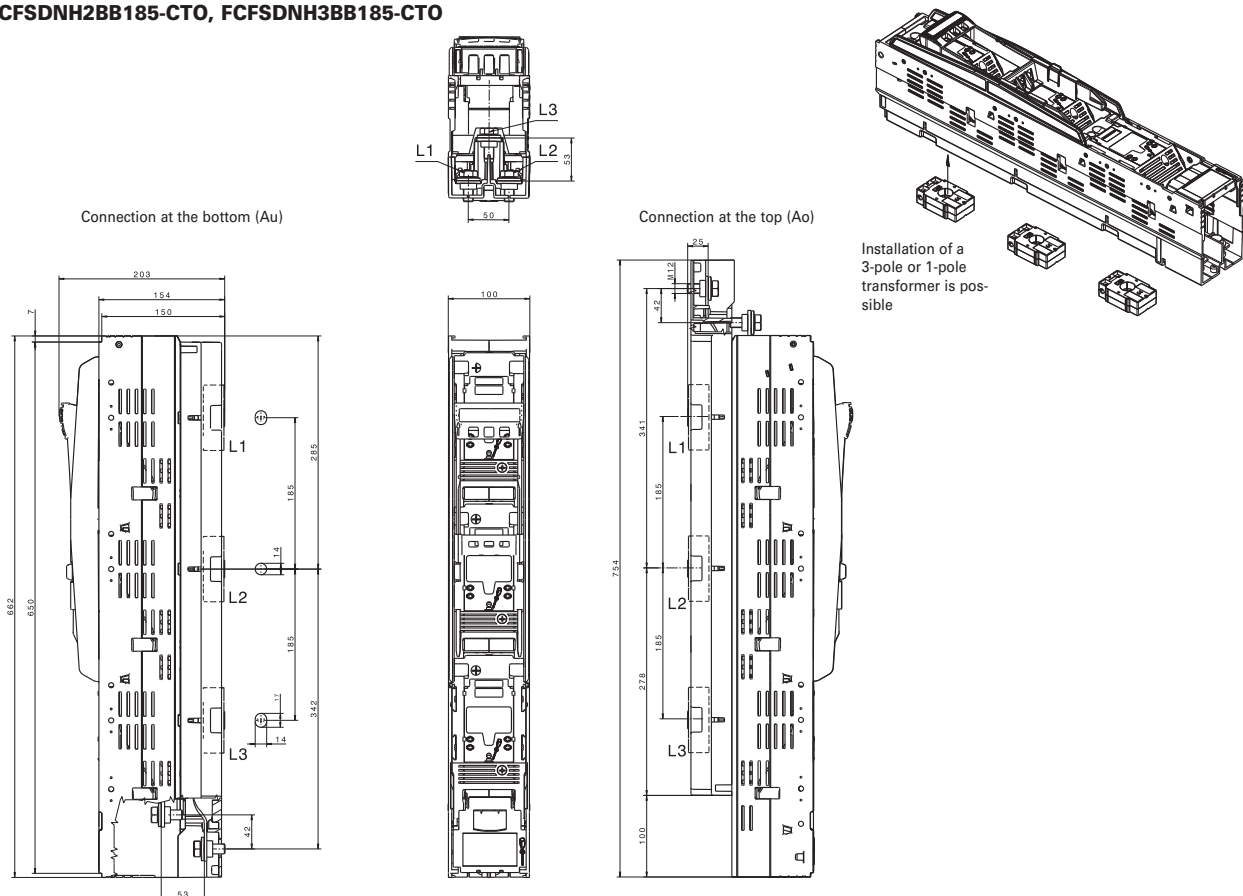
Dimensions (mm)

NH In-line Fuse Switch Disconnectors, 3 poles, center-to-center distance of 185 mm between the phases , size 1 - size 3, for installing transformers

FCFSDNH1BB185-CTO



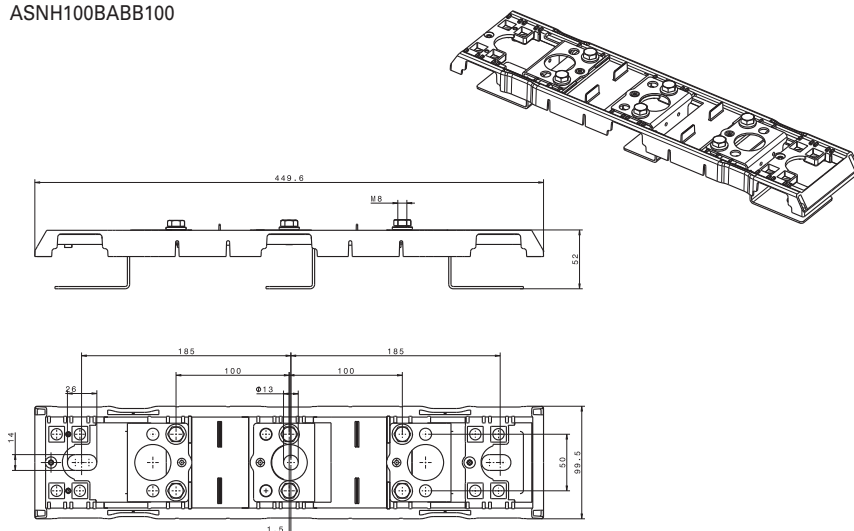
FCFSDNH2BB185-CTO, FCFSDNH3BB185-CTO



Dimensions (mm) - Accessories

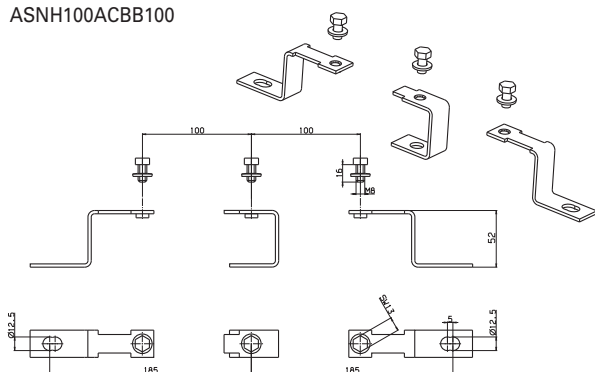
Double Adapter

ASNH100BABB100



Adapter Clips

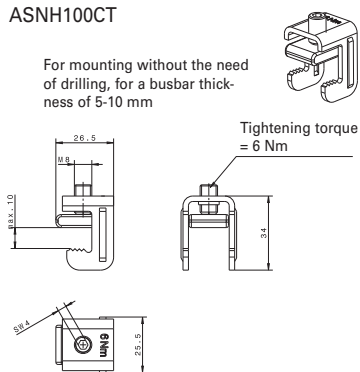
ASNH100ACBB100



Busbar Terminal Size 00

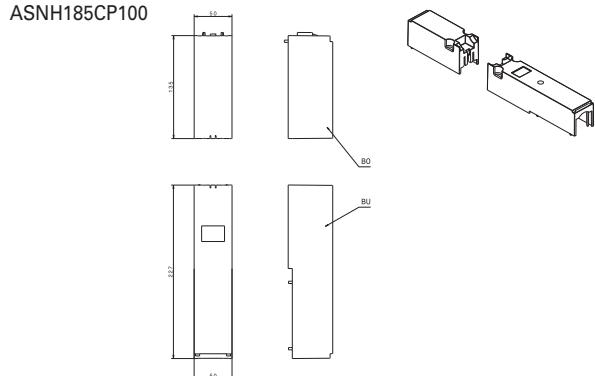
ASNH100CT

For mounting without the need of drilling, for a busbar thickness of 5-10 mm



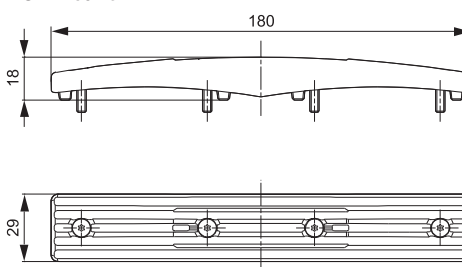
Compensation Cover

ASNH185CP100



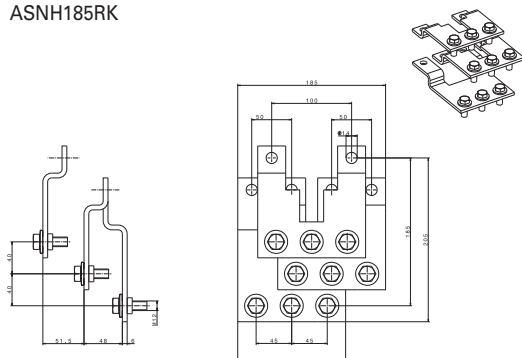
Handle Connection

ASNH185HCK



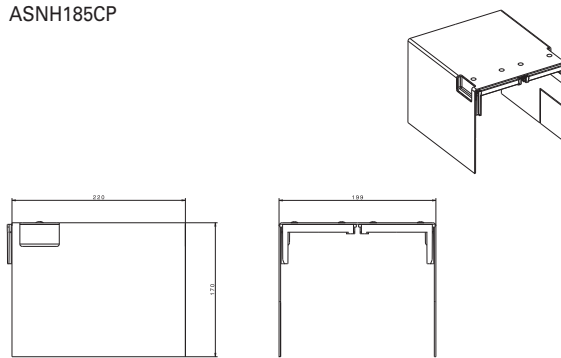
Busbar Kit

ASNH185RK



Cover for connection area

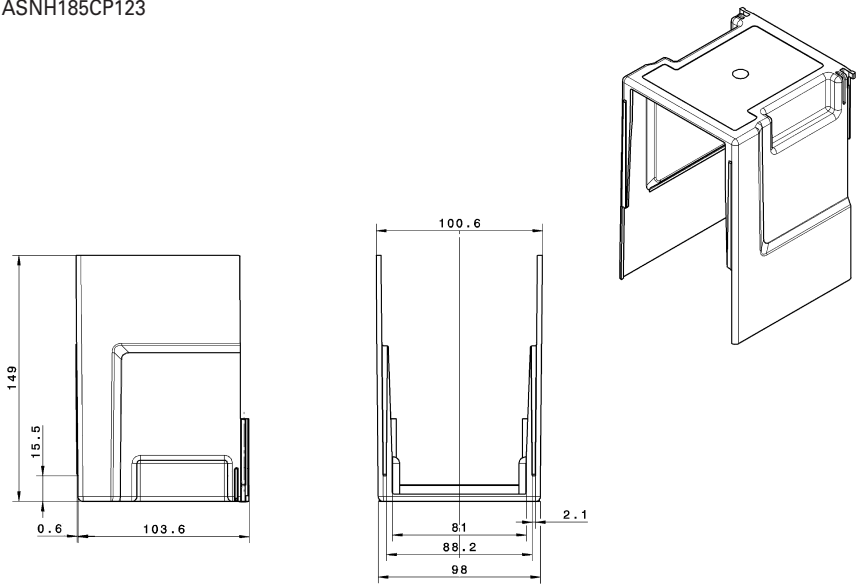
ASNH185CP



Dimensions (mm) - Accessories

Cover for connection area

ASNH185CP123



6.432 Fuse Devices

Fuse Devices

NH In-line Fuse Switch Disconnectors, series NH-SLS and NHW-SLS

xPole

vi40815



NH In-line Fuse Switch Disconnectors, series NH-SLS and NHW-SLS

Max. Rated Operational Current I_e (A)	Max. Fuse-link 400 V (A)	Size 690 V (A)	Use	Type designation	Article No.	Pack (pcs.)
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NH Vertical Fuse Switch Disconnectors, 3-pole, 60 mm Center-to-Center Distance between Phases, NH-SLS

- Incl. cover for connection area
- To be mounted with snap-on mechanism
- Connection either at the top or at the bottom
- Scope of delivery NH-SLS Size 00: with a set of clips/screws for connecting
- Busbar mounting of NH-SLS Size 00: 60 mm center-to-center distance between the bars, to be mounted with snap-on mechanism
- Delivery includes connecting screw and box terminal

Without fuse monitoring

160	160	160	00	12x5/10 15x5/10 20x5/10 25x5/10 30x5/10 Double T-profile Triple T-profile	NH-SLS-00/160-60	106211	1/182
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SG46912

**With fuse monitoring**

160	160	-	00	12x5/10 15x5/10 20x5/10 25x5/10 30x5/10 Double T-profile Triple T-profile	NH-SLS-00/160-60-SI	106216	1/112
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SG46912



Max. Rated Operational Current I_e (A)	Max. Fuse-link 500 V (A)	Size 690 V (A)	Use	Type designation	Article No.	Pack (pcs.)
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NH Vertical Fuse Switch Disconnectors, 3-pole, 100 mm Center-to-Center Distance between Phases, NH-SLS

- Incl. cover for connection area
- M8 connection screw and clip-terminals are included
- Screwless or drill-free mounting with claw-type terminals
- In combination with fuse strips of sizes 1/2/3 NO mounting on a 185 mm busbar system possible (as there is no height compensation possible)
- Connection either at the top or at the bottom

Without fuse monitoring

160	160	160	00	Z-NH-SLS-00-SAD...	NH-SLS-00/160	106210	1/182
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SG46912



Max. Rated Operational Current I_e (A)	Max. Fuse-link 500 V (A)	Size 690 V (A)	Notes	Type designation	Article No.	Pack (pcs.)
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NH Vertical Fuse Switch Disconnectors, 3-pole, 185 mm Center-to-Center Distance between Phases, NHW-SLS

- With integrated cover for the connection area (additional cover for cable area is possible)
- Drill-free mounting using claw-type terminals for size 00 (Z-NHW-SLS-00-BBC, Article No. 179770)
- Drill-free mounting using claw-type terminals for sizes 1,2,3 (Z-NHW-SLS-00-BBC, Article No. 179771)
- Self-closing test holes integrated in the cover
- High version for size 00 = suitable for mounting a current transformer
- Flat version for size 00 = NO direct mounting of a current transformer possible, height compensation to construction depth for sizes 1,2,3 via an adapter (NHW-SLS-00-185/185-SADD, Article No. 179764), mounting a current transformer is possible if an adapter is used
- Connection either at the top or at the bottom

Without fuse monitoring

160	160	160	00	high version	NHW-SLS-00/H	179754	1
160	160	160	00	flat version	NHW-SLS-00/F	179755	1
250	250	250	1		NHW-SLS-1	179756	1
400	400	400	2		NHW-SLS-2	179757	1
630	630	630	3		NHW-SLS-3	179758	1

VT40815



With fuse monitoring

160	160	160	00	high version	NHW-SLS-00/H/SI	179759	1
160	160	160	00	flat version	NHW-SLS-00/F/SI	179760	1
250	250	250	1		NHW-SLS-1/SI	179761	1
400	400	400	2		NHW-SLS-2/SI	179762	1
630	630	630	3		NHW-SLS-3/SI	179763	1

VT40515



Description

Type
designationArticle No. Pack
(pcs.)**Bar adapter - depth compensation (185/185)**

- Adapter + NHW-SLS-00/F = same construction depth as NHW-SLS-1,2,3

VT41515



Double adapter 185/185 - flat version

Z-NHW-SLS-00-185/185-SADD

179764

1

Can be used for

Type
designationArticle No. Pack
(pcs.)**Claw-type terminals for size 00 (185 mm)**

- Screwless fixing of size 00 fuse strips, 185 mm center-to-center distance between phases

VT42415



NHW-SLS-00/F+H

Z-NHW-SLS-00-BBC

179770

3

Claw-type terminals for size 1, 2, 3 (185 mm)

- Screwless fixing of size 1/2/3 fuse strips

VT42315



NHW-SLS-1+2+3

Z-NHW-SLS-1+2+3-BBC

179771

3

Cover for connection area, 185 mm center-to-center distance between phases**For size 00**

VT42015



flat/bottom, NHW-SLS-00/F

Z-NHW-SLS-00-TC/F/D

179767

1

flat/top, NHW-SLS-00/F

Z-NHW-SLS-00-TC/F/U

179768

1

high/bottom, NHW-SLS-00/H

Z-NHW-SLS-00-TC/H/D

179752

1

high/top, NHW-SLS-00/H

Z-NHW-SLS-00-TC/H/U

179753

1

For size 1/2/3

NHW-SLS-1,2,3

Z-NHW-SLS-1+2+3-TC

179769

1

Can be used for

Terminal capacity

Type
designationArticle No. Pack
(pcs.)**Box terminal**

- Suitable for fuse strips of sizes 1/2/3

VT42615



HW-SLS-1, 2, 3

1x50-185 mm² rm Cu/Al

Z-NHW-SLS-1+2-VT

179765

3

1x70-240 mm² sm/se Cu/Al

NHW-SLS-1 ,2 ,3

1x185-240 mm² sm Cu/Al

Z-NHW-SLS-3-VT

179766

3

1x150-300 mm² se Cu/Al1x120-300 mm² rm Cu/Al

Can be used for

Type
designation

Article No. Pack
 (pcs.)

Quick connector

- Suitable for fuse strips of sizes 00, 60 and 100 mm center-to-center distance between phases



Size 00	Z-NHW-00-BK	179773	3
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Screw (M8) universal

- M8



Size 00	Z-NHW-SCREW-M8	179772	3
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Type
designation

Article No. Pack
 (pcs.)

Connection strap with brace terminal

- Universal use
- Direct mounting on Cu rails
- Not suitable for fuse strips of the NHW-SLS series
- Drill hole for connection screw Ø 13 in the connection strap
- For cross sections of 120-300 mm²



	Z-NHW-SPK	182491	1
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NH Vertical Fuse Switch Disconnectors, 3-pole, 60 and 100 mm Center-to-Center Distance between Phases, NHW-SLS**Technical Data**

Version in accordance with	IEC 60947-1: 2007 + A1: 2010, IEC 60947-3: 2008 + A1: 2012		
Connection	at the top and bottom		
Arc quenching device			
For NH fuse links according to	IEC 60269-2-1 size NH00		
Contact protection even with open switch covers and in parking position			
Mechanical interlock of fuse links			
Degree of protection (front side), Degree of protection in the connection area depends on the installation position	IP30		
Connection contacts	- Screw M8, clip 2xM5, clear diameter 12 mm - Prismatic terminal connection Cu, Al *) 16-70 mm ² rm, sm, f+AE *) Connections to aluminium conductors are not maintenance-free		
For 60 mm center-to-center distance between bars	screwless busbar contacting		
For 100 mm center-to-center distance between bars	- for screw-fixing on busbars with drill holes, screw M8 - drill-free mounting with clamping bracket		
Version	3-pole switching		
Type of current	AC (50-60 Hz)		
Rated operating voltage ²⁾	U_e	V AC	690
Rated insulation voltage ²⁾	U_i	V	1000
Rated impulse withstand voltage without fuse monitoring ²⁾	U_{imp}	kV	8
Rated operating current ¹⁾	I_e	A	160
Utilization categories without fuse monitoring ²⁾		kV	AC22B (690 V) AC23B (400 V) AC23B (500 V 125 A)
Conditional rated short-circuit current ³⁾		kA	50
For NH fuse links according to IEC 60269-2 with power loss per phase up to		W	12

Indicator switch for displaying the cover position

2 switches (change-over) can be used

Rated operating voltage	V AC	250
	V DC	30
Rated operating current	A AC	5
	A DC	4

Electronic fuse monitoring

2 LED indicators

Memory functions and remote reset can be programmed

2 change-over contacts

2x Cu 2.5 mm² massive, DIN 46288 or 2x Cu 1,5 mm² litz wire with ferrule, DIN 46228-1 /-2 /-3

Internal resistance of measurement paths within MOhm range, VDE regulations regarding contact voltage (> 1000 Ohm/V) are complied with.

For disconnecting switch off the upstream main switch.

¹⁾ For permanent simultaneous operation of several devices please respect the rated load factor acc. to IEC/EN 61439-2, table 101. With AC23B please make sure a distance of 50 mm at the top and 25 mm at the side is guaranteed with regard to grounded components.

²⁾ Fuse monitoring U_e , U_i 400 V AC, U_{imp} 4 kV, VG2 (mains connections)

³⁾ Type-tested with fuse links of operating class gL/gG

NH Vertical Fuse Switch Disconnectors, 3-pole, 185 mm Center-to-Center Distance between Phases, NHW-SLS**Technical Data**

Version in accordance with	IEC 60947-1: 2007 + A1: 2010, IEC 60947-3: 2008 + A1: 2012
Version	1- and 3-pole switching
For NH fuse links according to	IEC 60269-2-1 size NH00, 1, 2, 3
Can be mounted on a 185mm system by screw-fixing on busbars with drill holes	Screw M8 for size 00, Screw M12 for size 1, 2, 3
Optionally drill-free with a clamping bracket for busbars (10 mm thick) and profile rails	
Cable connections at the top and bottom by turning the bottom part of the strip	
Contact protection and switch-on aids	
Contact protection even with open switch covers and in parking position	
Contact protection even with open switch covers and in parking position	
Degree of protection (front side), Degree of protection in the connection area depends on the installation position	IP20
Test holes in the switch covers are self-closing	
Cover of connection area (accessories) for lateral contact protection	

Conductor connections

Size	Screw-type connection	Direct connection terminals Cu and Al*	Box terminal	Clip or prismatic connection	Clip/Prismatic connection terminal area for flat Cu conductor
00	M8 70 mm ² **	-	1x1.5-70 mm ²	1x10-70 mm ²	12x(1-10) mm rm, sm, f, f+AE 1x95 mm ² rm, sm, f
1, 2	M12 2x185 mm ² - 240 mm ²	1x35-150 mm ² sm 1x50-185 mm ² se 1x35-70 mm ² rm 1x50 mm ² re Md 32-40 Nm 2x35-150 mm ² sm 2x50-185 mm ² se 2x35-70 mm ² rm 2x35-50 mm ² re Md 18-24 Nm	Cu/Al 1x50-185 mm ² rm 1x70-240 mm ² sm/se	-	-
3	M12 2x185 mm ² - 240 mm ²	1x35-150 mm ² sm 1x50-185 mm ² se 1x35-70 mm ² rm 1x50 mm ² re Md 32-40 Nm 2x35-150 mm ² sm 2x50-185 mm ² se 2x35-70 mm ² rm 2x35-50 mm ² re Md 18-24 Nm	Cu/Al 1x185-240 mm ² sm 1x150-300 mm ² se 1x120-300 mm ² rm	-	-

* Connections to aluminium conductors are not maintenance-free

** Copper conductors for relevant rated currents according to IEC/EN 60947-1

NH Vertical Fuse Switch Disconnectors, 3-pole, 185 mm Center-to-Center Distance between Phases, NHW-SLS**Technical Data (continued)**

Size		00	1	2	3
Type of current		AC (50 Hz)	AC (50 Hz)	AC (50 Hz)	AC (50 Hz)
Rated operating voltage ²⁾	U _e V AC	690	690	690	690
Rated insulation voltage ²⁾	U _i V	1000	1000	1000	1000
Rated impulse withstand voltage without fuse monitoring ²⁾	U _{imp} kV	8	8	8	8
Utilization categories without fuse monitoring ²⁾		AC22B	AC23B	AC23B	AC23B
		(160 A / 500 V)	(250 A / 400 V)	(400 A / 400 V)	(630 A / 400 V)
		AC23B	AC22B	AC22B	AC22B
		(160 A / 400 V)	(250 A / 690 V)	(400 A / 690 V)	(630 A / 400 V)
Conditional rated short-circuit current, 3-pole switching ³⁾		AC21B	AC21B	AC21B	AC21B
		(250 A / 690 V)	(400 A / 690 V)	(400 A / 690 V)	(630 A / 400 V)
Conditional rated short-circuit current, 1-pole switching ³⁾	kA	100 / 500 V	80 / 500 V	80 / 500 V	80 / 500 V
		100 / 690 V	80 / 690 V	80 / 690 V	80 / 690 V
For NH fuse links according to IEC 60269-2 ⁴⁾ with power loss per phase up to	kA	100 / 500 V	80 / 500 V	80 / 500 V	80 / 500 V
		100 / 690 V	80 / 690 V	80 / 690 V	80 / 690 V
	W	12	23	34	48

¹⁾ For permanent simultaneous operation of several devices please respect the rated load factor acc. to IEC/EN 61439-2, table 101. Please make sure a distance of 50 mm at the top and 25 mm at the side is guaranteed with regard to grounded components.

²⁾ Fuse monitoring U_e, U_i 400 V AC, U_{imp} 4 kV, VG2 (mains connections)

³⁾ Type-tested with fuse links of operating class gL/gG

⁴⁾ NH fuse links of size 1 can be used in NHW-SLS of size 2

Size 3 as double NH vertical fuse disconnecter**Technical Data**

Size 3 as double NH vertical fuse disconnecter		1250 A
Version		3-pole switching
Rated operating voltage	U _e V AC	690
Conditional rated short-circuit current	kA	up to 80
With fuses		gL/gG
Utilization categories		AC20B (690 V)
2x630 A		

Indicator switch for displaying the cover position

3 switches (change-over) can be used for sizes 00, 1, 2, 3

Rated operating voltage	V AC	250
	V DC	30
Rated operating current	A AC	5
	A DC	4

Electronic fuse monitoring

2 LED indicators

Memory functions and remote reset can be programmed

2 change-over contacts

2x Cu 2.5 mm² massive, DIN 46288 or 2x Cu 1.5 mm² litz wire with ferrule, DIN 46228-1 /-2 /-3

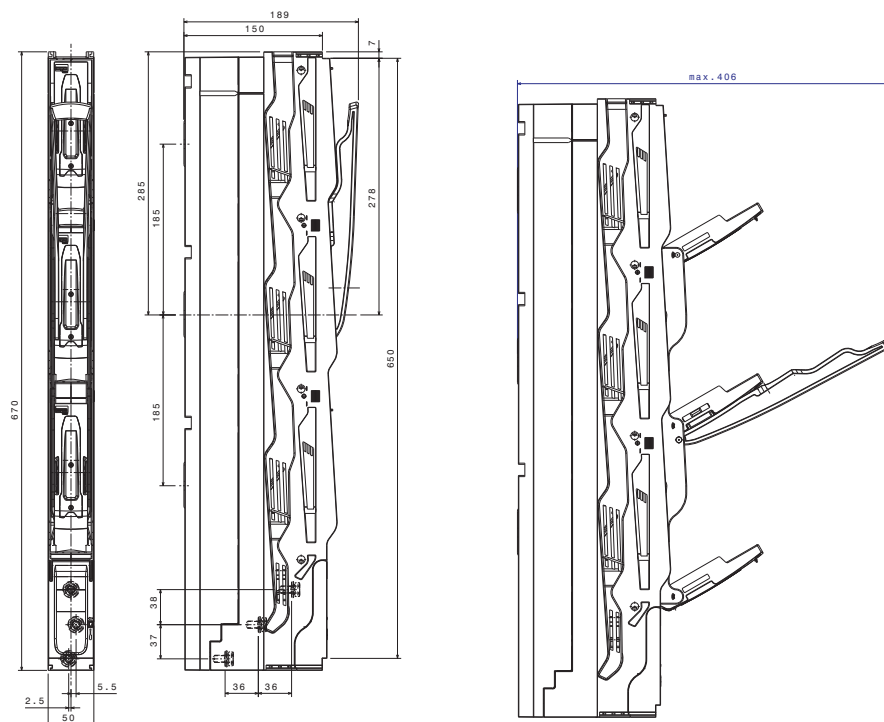
Internal resistance of measurement paths within MOhm range, VDE regulations regarding contact voltage (> 1000 Ohm/V) are complied with.

For disconnecting switch off the upstream main switch.

Dimensions (mm)

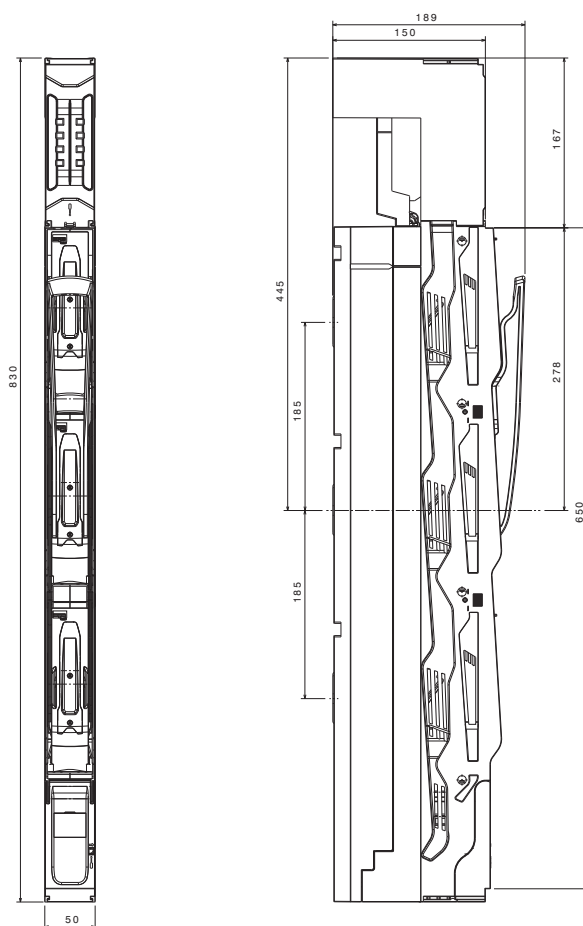
NH Vertical Fuse Switch Disconnecter NHW-SLS-00/H

High version - Same height as sizes 1, 2, 3 - Installation of a transformer is possible!



NH Vertical Fuse Switch Disconnecter NHW-SLS-00/H/SI

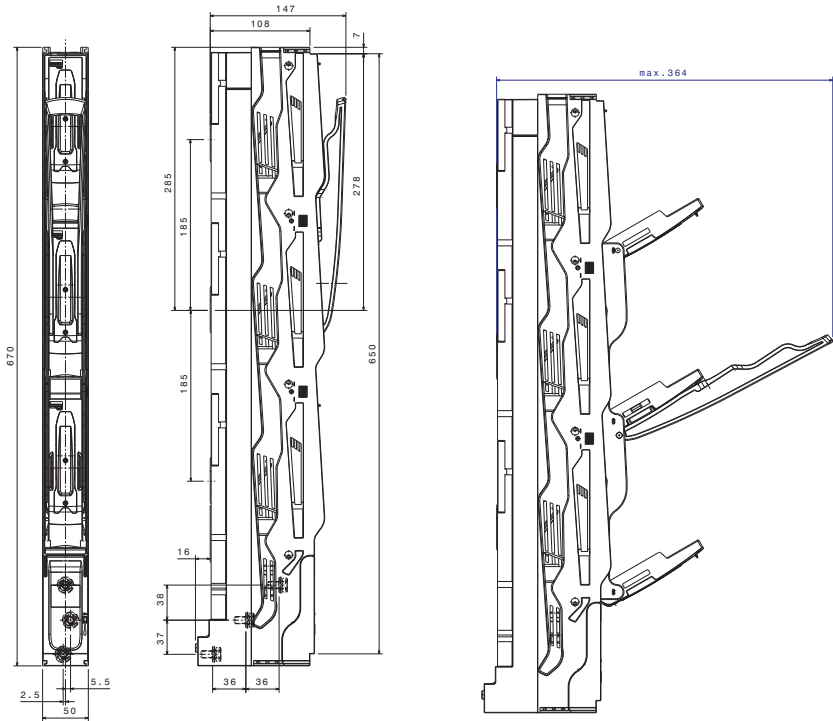
Incl. fuse monitoring - high version - Same height as sizes 1, 2, 3 - Installation of a transformer is possible!



Dimensions (mm)

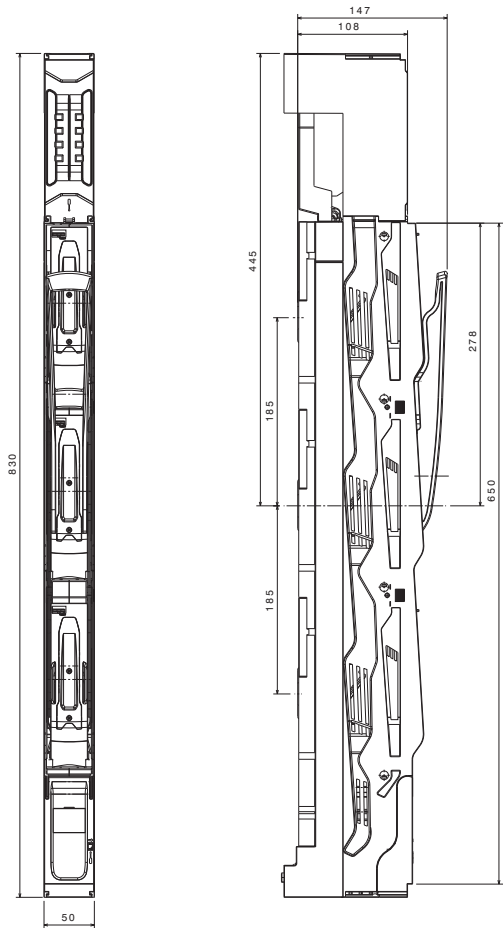
NH Vertical Fuse Switch Disconnecter NHW-SLS-00/F

Flat version - In order to reach the same depth as with sizes 1, 2, 3 you need to use an additional adapter (NHW-SLS-00-185/185-SADD_179764) - Installation of a transformer is only possible if you use a device adapter



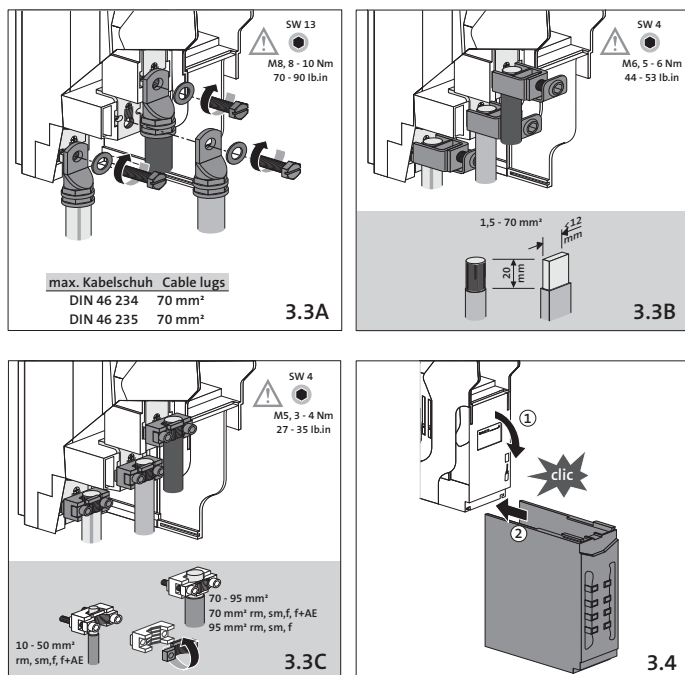
NH Vertical Fuse Switch Disconnecter NHW-SLS-00/F/SI

Incl. fuse monitoring - flat version - In order to reach the same depth as with sizes 1, 2, 3 you need to use an additional adapter (NHW-SLS-00-185/185-SADD_179764) - Installation of a transformer is only possible if you use a device adapter



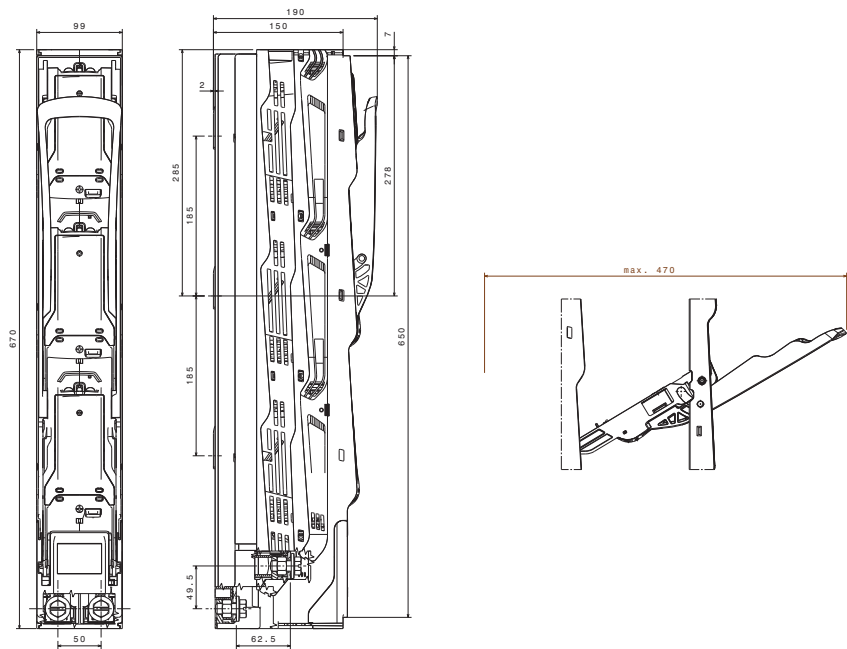
Dimensions (mm)

Cable connection for size 00 flat and high version:

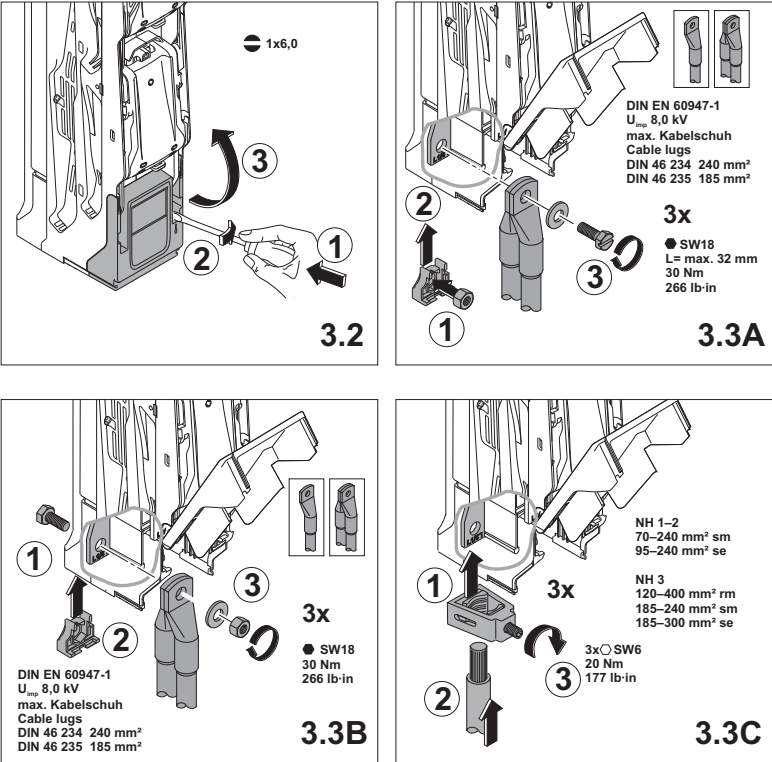


Dimensions (mm)

NH Vertical Fuse Switch Disconnecter NHW-SLS-1/2/3



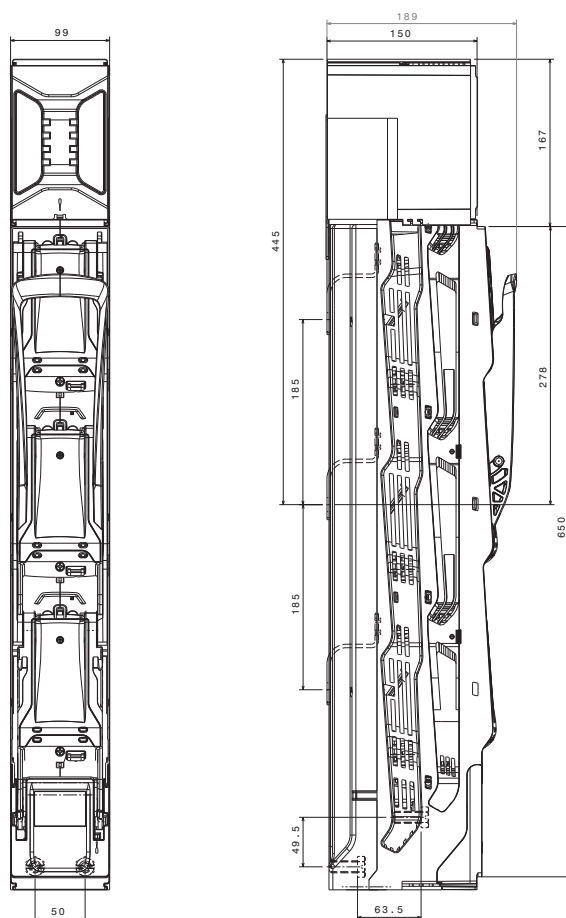
Cable connection NHW-SLS-1/2/3



Dimensions (mm)

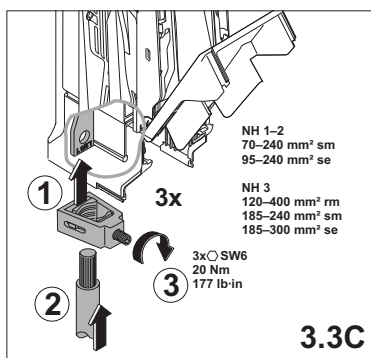
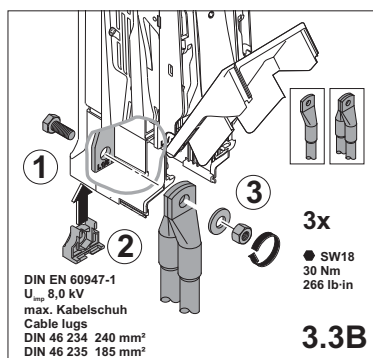
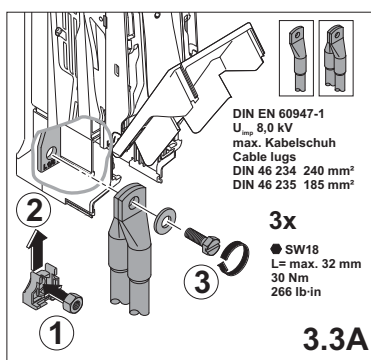
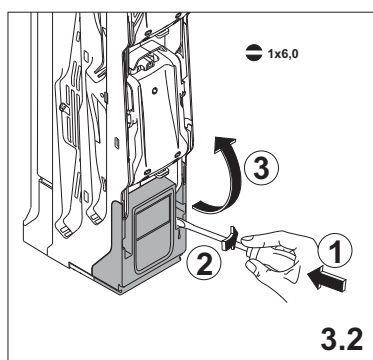
NH Vertical Fuse Switch Disconnecter NHW-SLS-1/2/3-SI

With fuse monitoring



Cable connection NHW-SLS-1/2/3-SI

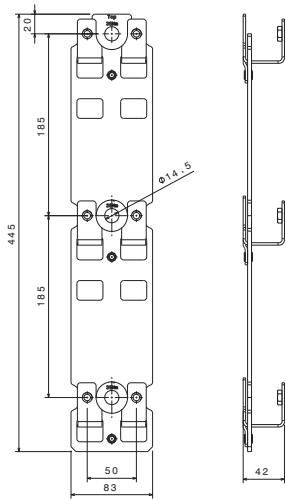
With fuse monitoring



Dimensions (mm) - Accessories

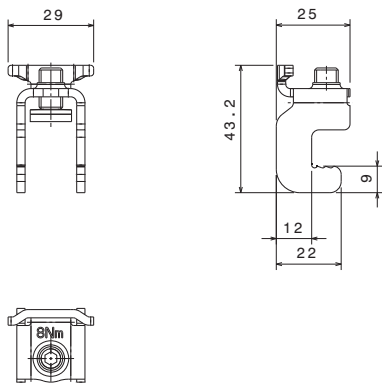
Double Adapter

Z-NHW-SLS-00-185/185-SADD

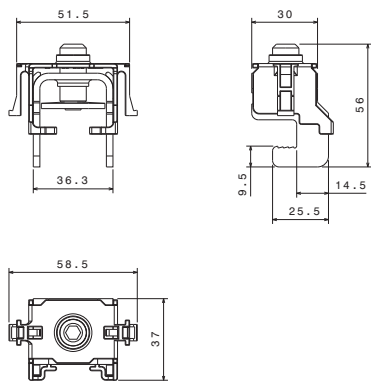


W x H x D:	83 x 450 x 50
Weight:	55 kg/100

Claw-type terminals for size 00



Claw-type terminals for size 1, 2, 3



Rated Operational Current le (A)	Max. Fuse-link 500V (A)	690V (A)	Size	Utilisation	Notes	Type Designation	Article No.	Units per package
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NH-Vertical Fuse-Switch-Disconnecter, 3-pole

- Incl. terminal cover
- Drill-free mounting
- Clamp straps included in the delivery

wa_sg02212



160	160	100	00	20 x 10 25 x 10 30 x 10	Connection at the top or bottom. Clamp strap 4-70 mm² or screw M8.	LTS-L/160/00-60-10-R	289997	1/100
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Accessories for NH-Vertical Fuse-Switch-Disconnecter

Terminal Capacity	Utilisation	Notes	Type Designation	Article No.	Units per package
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Compensation covers for combination with NH-fuse-switch-disconnectors LTS**70**

Cover level to Cu-front distance: 70 mm	LTS-L/160/00-60-10-R	Z-LTS-L/160-AB/70-SET	289995	1 set
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90

Cover level to Cu-front distance: 90 mm	LTS-L/160/00-60-10-R	Z-LTS-L/160-AB/90-SET	289996	1 set
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Lateral cover for LTS, LTS-L

SG18005



In connection with the compensation covers they serve as support for the front plate, as well as electric shock protection	LTS-L... LTS...	Z-LTS-SAB/70-90	288908	2
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Clamp Straps

wa_sg02312



4-70 mm² Cu	LTS-L/160/00-60-10-R	3 Clamp Straps per device	Z-LTS-160-BK	286812	3/180
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Screws

Wa_sg02702



M8 6-70 mm² Cu 16-95 mm² Al	LTS-L/160/00-60-10-R	3 screws per device	Z-LTS-SC	263119	3/180
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NH-Vertical Fuse-Switch-Disconnecter, 3-pole

Rated Operational Current le (A)	Max. Fuse-link 500V (A)	Size 690V (A)	Utilisation	Notes	Type Designation	Article No.	Units per package
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NH-Vertical Fuse-Switch-Disconnecter, 3-pole

- Incl. terminal cover
- Drill-free mounting thanks to terminal clamps
- Scope of delivery LTS-L/160/00: incl. terminal clamps and clamp straps
LTS-L/160/00/3-L: type with lift terminals 70 mm² and terminal clamps
LTL-L sizes 1, 2, 3: no terminal clamps included, no clamp straps included
- Busbar mounting
Size 00: LTS-L/160/00... distance 100 mm, drill-free mounting / optional screw-mounting
Sizes 1, 2, 3: distance 185 mm, screw-mounting / optional drill-free mounting

wa_sg02212



160	160	100	00	Z-LTS-L/00-SAD.	Connection at the top or bottom. Clamp strap 4-70 mm ² or screw M8.	LTS-L/160/00	269349	1/100
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SG57312



250	250	200	1	screwed 30 x 5/10 40 x 5/10 50 x 5/10 60 x 5/10 80 x 5/10	Connection at the top or bottom. Screw M10	LTS-L/250/1	269350	1/33
400	400	315	2		Screw M12	LTS-L/400/2	269351	1/33
630	630	500	3	terminal clamps 30 x 5/10 40 x 5/10 50 x 5/10 60 x 5/10 80 x 5/10	Screw M12	LTS-L/630/3	269352	1/33

Accessories for NH-Vertical Fuse-Switch-Disconnecter

Terminal Capacity	Utilisation	Notes	Type Designation	Article No.	Units per package
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Adapters

wa_sg01202



Single adapter 100/185	LTS-L/160/00...	Cu...x5/10	Z-LTS-LG/00-SAD	263118	1
Double adapter 100/185	LTS-L/160/00...	Cu...x5/10	Z-LTS-L/160-SADD	286815	1

Adapter for drill-free mounting

Single adapter 100/185	LTS-L/160/00...	Cu...x5/10	Z-LTS-L/160-SAD-KR	263114	1
Double adapter 100/185	LTS-L/160/00...	Cu...x5/10	Z-LTS-L/160-SADD-KR	286816	1

wa_sg05811



wa_sg04911



SG10007



System	Rated current	Type Designation	Article No.	Units per package
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Power Meter EME

1N	32 A	EME1P32	167397	1
1N	32 A, MID cert.	EME1P32MID	167398	1
3N	80 A	EME3P80	167413	1
3N	80 A, MID cert.	EME3P80MID	167414	1
3N	5 A, CT	EME3PCT	167417	1
3N	125 A, MID cert.	EME3P125MID	167416	1

Accessories Current Transformer

Z-MG/WAK: maximum cable diameter 21 mm

Z-MG/WAS: maximum busbar cross section 30 x 10 mm, 40 x 10 mm or 50 x 12 mm, cable diameter 23 mm / 30 mm
- according to type, see dimension diagrams

Description	Type Designation	Article No.	Units per package
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Communication moduless

wa_sg00312



EMECMODB

Communication module MBUS	EMECSMBUS	167420	1
Communication module with MODBUS	EMECSMODB	167421	1

System	Rated current	Type Designation	Article No.	Units per package
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Basic Devices

wa_sg05711



3N	63 A, MODBUS	EME3P63BMODBUS	PHASE OUT	167409	1
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Description Power Meter single-phase 32-40 A, EME

- Digital active energy meter with measurement I - U - Hz - PF measurement of active instantaneous power, by IR side set up communication - 1 tariff - 1 S0
- Active energy-meters for single-phase alternating current with a, 7 digits counter. These meters have 1 S0 output generating pulses for remote processing of the active energy measurements for 1 tariff.
- Display LCD
- For direct connection 32 A and 40 A
- 7 digits for energy values indication
- Accuracy class 1 for active energy according to EN 50470-3 (B)
- Most attractive operating range current ($I_{st} \dots I_{max}$) - for direct connection 32 A and 40 A = 0.020 ... 32 A or 40 A
- The standard versions are designed to be combined with the communication module
- Active energy register zero setting (not for MID types)
- Active energy register in T1 import/export
- Instantaneous power active import/export display
- Current RMS
- Voltage RMS
- Power factor
- Frequency
- FW release
- FW checksum
- 1 DIN modules wide (18 mm)

Technical Data

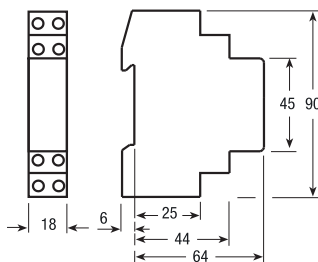
		EME1P32	EME1P32MID
		direct connection 32 A	direct connection 32 A
Data according to		EN 50470-1, EN 50470-3 and EN 62053-31	
General characteristics			
Housing	DIN 43880	1 module	
Mounting	EN 60715	DIN rail 35 mm	
Depth		70 mm	
Reference standard according to	active energy	EN 50470-1-3, EN 62053-31	
Function			
Connectivity	to single-phase network	2 wires	
Storage of energy values and configuration	FRAM memory	yes	
Supply			
Rated control feed voltage	U _n	230 V AC	
Operating range voltage		184 ... 276 V	
Rated frequency	f _n	50 Hz	
Rated power dissipation (max.)	P _v	≤8 (0.6) VA (W)	
Overload capability			
Voltage U _n	continuous	276 V	
	momentary (1 s)	300 V	
Current I _{max}	continuous	32 A	
	momentary (10 ms)	960 A	
Display			
Display	LCD	7 digits (2 decimals)	
	digit dimensions	6.00 mm x 3 mm	
Active energy: 1 display, 7-digit		0.00 ... 999999.9 kWh	
Instantaneous tariff measurement	1 display, 1-digit	T1	
Display period refresh		1 s	
Measuring accuracy		at 23 ±1°C referred to nominal values	
Active energy and power	according to EN 50470-3	±1% (B)	
Measuring input			
Type of connection	phase/N	direct	
Operating range voltage	phase/N	184 ... 276 V	
Current	I _{ref}	5 A	
Current	I _{min}	0.25 A	
Operating range current (I _{st} ... I _{max})	direct connection	0.02 ... 32 A	
Frequency		50 Hz	
Input waveform		alternating	
Starting current for energy measurement	(I _{st})	20 mA	
Pulse output S0		according to EN 62053-31	
Pulse output	for active energy	yes	
Pulse quantity		1000 Imp/kWh	
Pulse duration		90 ms	
Required voltage	min. (max.)	5 ... 230 V AC/DC ±5% (5 ... 300 V AC/DC)	
Permissible current	pulse ON (max. 230 V AC/DC)	90 mA	
Permissible current	impuls OFF (leakage current max. 230 V AC/DC)	1 µA	

Technical Data (continue page)

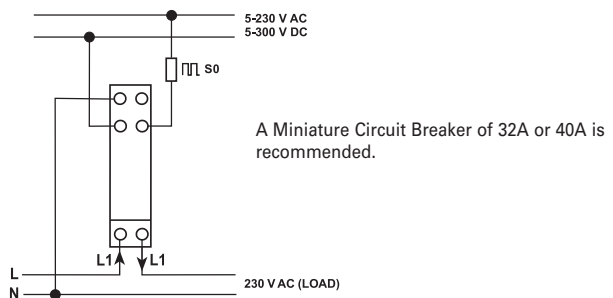
		EME1P32 direct connection 32 A	EME1P32MID direct connection 32 A
Optical interfaces			
Front side (accuracy control)	LED	5000 Imp/kWh	
Safety according to EN 50470-1			
Indoor meter		yes	
Pollution degree		2	
Rated operational voltage		300 V	
AC voltage test	EN 50470-3. 7.2	4 kV	
Test voltage	1.2/50 μ s	6 kV	
Protection class	EN 50470	II	
Housing material flame resistance	UL 94	V0	
Safety-sealing between upper and lower housing part		no	yes
Adaptor for Communication			
Plug-and-play technology		yes	
LAN Interface (TCP/IP)	Ethernet 802.3	10/100 Mbps EMECLAN	
Modbus RTU, Ascii Interface	RS-485 3 wires	up to 19,200 bps EMECMODB	
M-Bus Interface	RS-485 2 wires	up to 9,600 bps EMECMBUS	
Connection terminals			
Type cage main current paths	screw head Z +/-	PZ1 POZIDRIV	
Type cage pulse output	blade for slotted screw	0.8 x 3.5 mm	
Terminal capacity main current paths	solid min. (max.)	16 mm ²	
	stranded wire with sleeve min. (max.)	16 mm ²	
Terminal capacity pulse outlet	solid min. (max.)	0.15 (2.5) mm ²	
	stranded wire with sleeve min. (max.)	0.15 (4) mm ²	
Environmental conditions			
Mechanical environment		M1	
Electromagnetic environment		E2	
Operative temperature		-10 to +55 °C	
Limit temperature of transportation and storage		-25 to +70 °C	
Vibrations	sinusoidal vibration amplitude at 50 Hz	± 0.075 mm	
Degree protection housing when mounted in front (terminal)		IP51*)/IP20	

*) For the installation in a cabinet at least with IP51 protection

Dimensions (mm)



Connection diagram



Description Power Meter three-phase, transformer 5 A, direct 80 A, EME

- Digital active and reactive energy-meter with measurement of active and reactive instantaneous power, by IR side set up communication - 2 tariffs - 2 SO (MID types: displays only active power).
- Active energy-meters for three-phase alternating current with either 2, 8 digits digital counters. These meters have 2 SO output generating pulses for remote processing of the instantaneous energy active and reactive measurements for 2 tariffs.
- Green backlit LCD
- For direct connection 80 A, or for transformer .../5 A
- For transformer primary current of 5 A to 10.000/5 A. Input is in 5 A increments
- 8 digits - 8 display for energy values indication
- Detection of connection errors (phase transposition)
- Accuracy class 1 for active energy and power according to EN 50470-3 (B)
- Accuracy class 2 for reactive energy and power according to EN 62053-23
- Most attractive operating range current ($I_{st} \dots I_{max}$), for direct connection 80 A = 0.015 ... 80 A, for connection by CT .../5 A = 0.003 ... 5 A
- The standard versions are designed to be combined with the communication module
- Energy register zero setting (not for MID types)
- Energy register for import and export
- Instantaneous power active and reactive display (MID types: only active power)
- Sealable terminal covers
- 4 DIN modules wide (72 mm)

Technical Data

		EME3P80 direct connection 80 A	EME3P80MID direct connection 80 A	EME3PCT CT connection till 10,000/5 A
Data according to		EN 50470-1, EN 50470-3, EN 62053-23 and EN 62053-31		
General characteristics				
Housing	DIN 43880	4 MU		4 MU
Mounting	EN 60715	DIN rail 35 mm		DIN rail 35 mm
Depth		70 mm		70 mm
Reference standard according to	active energy pulse output	EN 50470-1-3 EN 62053-31		EN 50470-1-3 EN 62053-31
Function				
Connectivity	to single/three-phase network	2-4 wires		4 wires
Storage of energy values and configuration	digital display (EEPROM)	yes		yes
Display tariffs identifier	for active and reactive energy	T1 and T2		T1 and T2
Supply				
Rated control feed voltage	U _n	230 V AC		230 V AC
Operating range voltage		184 ... 276 V		184 ... 276 V
Rated frequency	f _n	50 Hz		50 Hz
Rated power dissipation (max.)	P _v	≤8 (0.6) VA (W)		≤8 (0.6) VA (W)
Overload capability				
Voltage U _n	continuous: phase/phase	480 V		480 V
	1 second: phase/phase	800 V		800 V
	continuous: phase/N	276 V		276 V
	1 second: phase/N	460 V		460 V
Current I _{max}	continuous	80 A		6 A
	momentary (0.5 s)	-		120 A
	momentary (10 ms)	2400 A		-
Display				
Connection errors and phase out	discernible from phase-sequence indication	PHASE Err		PHASE Err
Display	LCD	8 digits (2 decimals)		8 digits (2 decimals)
	digit dimensions	6.00 mm x 3 mm		6.00 mm x 3 mm
Active energy: 1 display, 8-digit	tariffs 2	0.01 Wh		0.01 Wh
+ display import or export (arrow)	overflow	999999.99 MWh		999999.99 MWh
Reactive energy: 1 display, 8-digit	tariffs 2	0.01 varh		0.01 varh
+ display import or export (arrow)	overflow	999999.99 Mvarh		999999.99 Mvarh
Instantaneous active power: 1 display, 3-digit		000 ... 999 W, kW or MW		000 ... 999 W, kW or MW
Instantaneous reactive power: 1 display, 3-digit		000 ... 999 var, kvar or Mvar		000 ... 999 var, kvar or Mvar
Instantaneous tariff measurement	1 display, 1-digit	T1 or T2		T1 or T2
Transformer primary current		-		5 ... 10,000 A
Display period refresh		1 s		1 s
Measuring accuracy				
Active energy and power	at 23 ±1°C referred to nominal values according to EN 50470-3	class 1: B		class 1: B
Reactive energy and power	according to EN 62053-23	class 2: 2%		class 2: 2%

Technical Data (continue page)

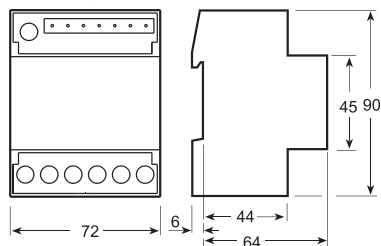
		EME3P80 direct connection 80 A	EME3P80MID direct connection 80 A	EME3PCT CT connection till 10,000/5 A
Measuring input				
Type of connection		direct		transformer .../5 A
Voltage U_n	phase/phase	400 V		400 V
	phase/N	230 V		230 V
Operating range voltage	phase/phase	319 ... 480 V		319 ... 480 V
	phase/N	184 ... 276 V		184 ... 276 V
Current	I_{ref}	5 A		-
Current	I_n	-		5 A
Current	I_{min}	0.25 A		0.05 A
Operating range current ($I_{st} ... I_{max}$)	direct connection	0.015 ... 80 A		-
	transformer connection (CT)	-		0.003 ... 6 A
Transformer current	primary current of the transformer	-		5 ... 10,000 A
	smallest input step adjustment	-		in 5 A steps
Frequency		50 Hz		50 Hz
Input waveform		sinusoidal		sinusoidal
Starting current for energy measurement	(I_{st})	15 mA		3 mA
Pulse output S0	according to EN 62053-31			
Pulse output	for active and reactive energy T1 and T2	yes		yes
Pulse quantity	at direct connection 80 A	500 Imp/kWh		-
	depending on the transformer factor	-		100-10-1 Imp/kWh
Pulse duration		30 ms ± 2		30 ms ± 2
Required voltage	min. (max.)	5 ... 230 V AC/DC $\pm 5\%$ (5 ... 300 V AC/DC)		5 ... 230 V AC/DC $\pm 5\%$ (5 ... 300 V AC/DC)
Permissible current	pulse ON (max. 230 V AC/DC)	90 mA		90 mA
Permissible current	impuls OFF (leakage current max. 230 V AC/DC)	1 μ A		1 μ A
Optical interfaces				
Front side (accuracy control)	LED	1000 Imp/kWh		10000 Imp/kWh
Safety according to EN 50470-1				
Indoor meter		yes		yes
Pollution degree		2		2
Rated operational voltage		300 V		300 V
AC voltage test	EN 50470-3: 7.2	4 kV		4 kV
Test voltage	1.2/50 μ s	6 kV		6 kV
Protection class	EN 50470	II		II
Housing material flame resistance	UL 94	V0		V0
Safety-sealing between upper and lower housing part		yes	no	no
Adaptor for Communication				
Plug-and-play technology		yes		yes
LAN Interface (TCP/IP)	Ethernet 802.3	10/100 Mbps EMECLAN		10/100 Mbps EMECLAN
Modbus RTU, Ascii Interface	RS-485 3 wires	up to 19,200 bps EMECMODB		up to 19,200 bps EMECMODB
M-Bus Interface	RS-485 2 wires	up to 9,600 bps EMECMBUS		up to 9,600 bps EMECMBUS
Connection terminals				
Type cage main current paths	screw head Z +/-	P22 POZIDRIV		P21 POZIDRIV
Type cage pulse output	blade for slotted screw	0.8 x 3.5 mm		0.8 x 3.5 mm
Terminal capacity main current paths	solid min. (max.)	1.5 (35) mm ²		1 (4) mm ²
	stranded wire with sleeve min. (max.)	1.5 (35) mm ²		1 (4) mm ²
Terminal capacity pulse outlet	solid min. (max.)	1 (4) mm ²		1 (4) mm ²
	stranded wire with sleeve min. (max.)	1 (2.5) mm ²		1 (4) mm ²
Environmental conditions				
Mechanical environment		M1		M1
Electromagnetic environment		E2		E2
Operative temperature		-10 to +55 °C		-10 to +55 °C
Limit temperature of transportation and storage		-25 to +70 °C		-25 to +70 °C
Relative humidity (not condensation)		$\leq 80\%$		$\leq 80\%$
Vibrations	sinusoidal vibration amplitude at 50 Hz	± 0.075 mm		± 0.075 mm
Degree protection housing when mounted in front (terminal)		IP51*)/IP20		IP51*)/IP20

*) For the installation in a cabinet at least with IP51 protection

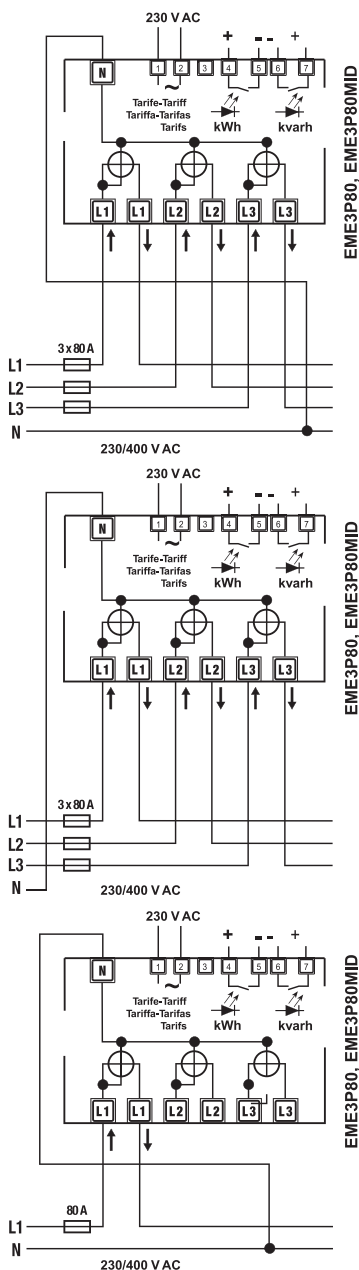
Direct connection to 80 A

Dimensions (mm)

EME3P80, EME3P80MID



Connection diagram

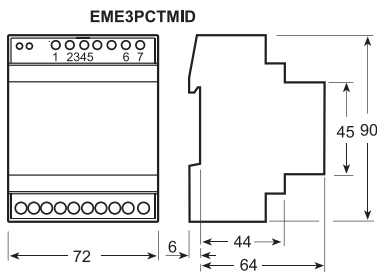


A Miniature Circuit Breaker of 80A is recommended.

Wire N needs to be connected to the meter.

Connection through CT .../5 A to 10,000/5 A

Dimensions (mm)

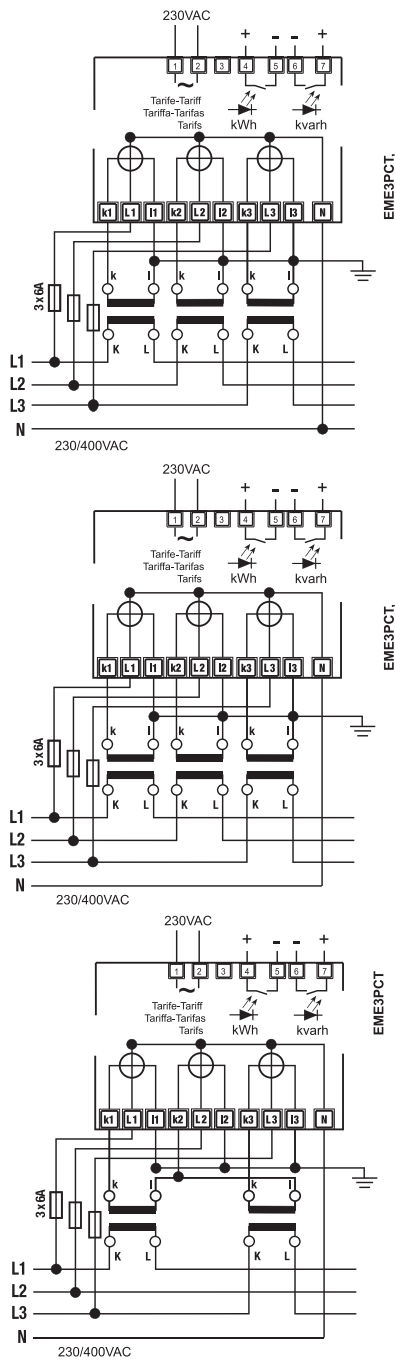


Wire N needs to be connected to the meter.

Instructions for the connection of transformer counters

A Miniature Circuit Breaker of 6A is recommended. Current transformers must not be operated with open terminals since dangerous high voltages might occur which may result in personal injuries and property damage. In addition to this, the transformers are exposed to thermal overload.

Connection diagram



Description Power Meter three-phase 125 A, EME

- Digital active and reactive energy-meter with measurement of active and reactive instantaneous power, by IR side set up communication - 2 tariffs - 2 SO (MID types: displays only active power).
- Active energy-meters for three-phase alternating current with either 2, 8 digits digital counters. These meters have 2 SO output generating pulses for remote processing of the instantaneous energy active and reactive measurements for 2 tariffs.
- Green backlit LCD
- For direct connection 125 A
- 8 digits - 8 display for energy values indication
- Detection of connection errors (phase transposition)
- Accuracy class 1 for active energy and power according to EN 50470-3 (B)
- Accuracy class 2 for reactive energy and power according to EN 62053-23
- Most attractive operating range current ($I_{st} \dots I_{max}$) for direct connection 125 A = 0.020 ... 125 A
- The standard versions are designed to be combined with the communication module
- Energy register zero setting (not for MID types)
- Energy register for import and export
- Instantaneous power active and reactive display (MID types: only active power)
- Sealable terminal covers
- 6 DIN modules wide (108 mm)

Technical Data

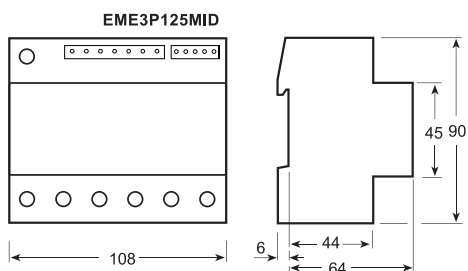
		EME3P125MID direct connection 125 A
Data according to		EN 50470-1, EN 50470-3, EN 62053-23 and EN 62053-31
General characteristics		
Housing	DIN 43880	6 MU
Mounting	EN 60715	DIN rail 35 mm
Depth		70 mm
Reference standard according to	active energy	EN 50470-1-3
	reactive energy - pulse output	EN 62053-23-31
Function		
Connectivity	to single/three-phase network	2-4 wires
Storage of energy values and configuration	digital display (EEPROM)	yes
Display tariffs identifier	for active and reactive energy	T1 and T2
Supply		
Rated control feed voltage	U _n	230 V AC
Operating range voltage		184 ... 276 V
Rated frequency	f _n	50 Hz
Rated power dissipation (max.)	P _v	≤8 (0.6) VA (W)
Overload capability		
Voltage U _n	continuous: phase/phase	480 V
	1 second: phase/phase	800 V
	continuous: phase/N	276 V
	1 second: phase/N	300 V
Current I _{max}	continuous	125 A
	momentary (10 ms)	3750 A
Display		
Connection errors and phase out	discernible from phase-sequence indication	PHASE Err
Display	LCD	8 digits (2 decimals)
	digit dimensions	6.00 mm x 3 mm
Active energy: 1 display, 8-digit	tariffs 2	0.01 Wh
+ display import or export (arrow)	overflow	999999.99 MWh
Reactive energy: 1 display, 8-digit	tariffs 2	0.01 varh
+ display import or export (arrow)	overflow	999999.99 Mvarh
Instantaneous active power: 1 display, 3-digit		000 ... 999 W, kW or MW
Instantaneous reactive power: 1 display, 3-digit		000 ... 999 var, kvar or Mvar
Instantaneous tariff measurement	1 display, 1-digit	T1 or T2
Display period refresh		1 s
Measuring accuracy		
Active energy and power	at 23 ±1°C referred to nominal values	
	according to EN 50470-3	class 1: B
Reactive enervay and power	according to EN 62053-23	class 2: 2%

Technical Data (continue page)

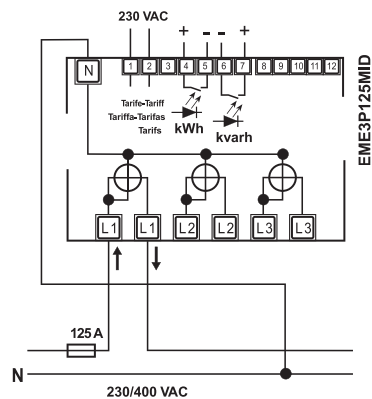
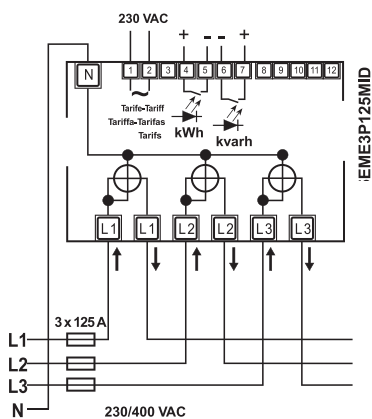
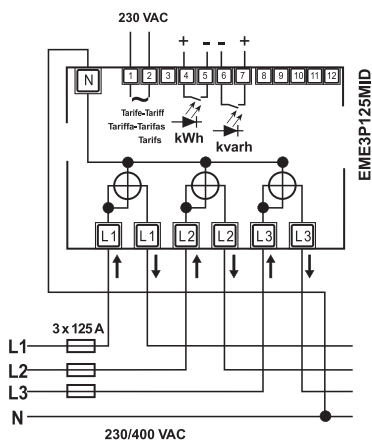
EME3P125MID direct connection 125 A		
Measuring input		
Type of connection		direct
Voltage U_n	phase/phase	400 V
	phase/N	230 V
Operating range voltage	phase/phase	319 ... 480 V
	phase/N	184 ... 276 V
Current	I_{ref}	5 A
Current	I_{min}	0.25 A
Operating range current (I_{st} ... I_{max})	direct connection	0.020 ... 125 A
Frequency		50 Hz $\pm 2\%$
Input waveform		sinusoidal
Starting current for energy measurement	(I_{st})	20 mA
Pulse output S0		
	according to EN 62053-31	
Pulse output	for active and reactive energy T1 and T2	
Pulse quantity	at direct connection 80 A	yes
Pulse duration		500 Imp/kWh
		30 ms ± 2
Required voltage	min. (max.)	5 ... 230 V AC/DC $\pm 5\%$ (5 ... 300 V AC/DC)
Permissible current	pulse ON (max. 230 V AC/DC)	90 mA
Permissible current	impuls OFF (leakage current max. 230 V AC/DC)	1 μ A
Optical interfaces		
Front side (accuracy control)	LED	1000 Imp/kWh
Safety according to EN 50470-1		
Indoor meter		yes
Pollution degree		2
Rated operational voltage		300 V
AC voltage test	EN 50470-3. 7.2	4 kV
Test voltage	1.2/50 μ s	6 kV
Protection class	EN 50470	II
Housing material flame resistance	UL 94	V0
Safety-sealing between upper and lower housing part		yes
Adaptor for Communication		
Plug-and-play technology		yes
LAN Interface (TCP/IP)	Ethernet 802.3	10/100 Mbps EMECLAN
Modbus RTU, Ascii Interface	RS-485 3 wires	up to 19,200 bps EMECMODB
M-Bus Interface	RS-485 2 wires	up to 9,600 bps EMECMBUS
Connection terminals		
Type cage main current paths	screw head Z +/-	PZ2 POZIDRIV
Type cage pulse output	blade for slotted screw	0.8 x 3.5 mm
Terminal capacity main current paths	solid min. (max.)	1.5 (50) mm ²
	stranded wire with sleeve min. (max.)	1.5 (50) mm ²
Terminal capacity pulse outlet	solid min. (max.)	1 (4) mm ²
	stranded wire with sleeve min. (max.)	1 (2.5) mm ²
Environmental conditions		
Mechanical environment		M1
Electromagnetic environment		E2
Operative temperature		-10 to +55 °C
Limit temperature of transportation and storage		-25 to +70 °C
Relative humidity (not condensation)		$\leq 80\%$
Vibrations	sinusoidal vibration amplitude at 50 Hz	± 0.075 mm
Degree protection housing when mounted in front (terminal)		IP51*)/IP20

*) For the installation in a cabinet at least with IP51 protection

Dimensions (mm)



Connection diagram



A Miniature Circuit Breaker of 125A is recommended.

Wire N needs to be connected to the meter.

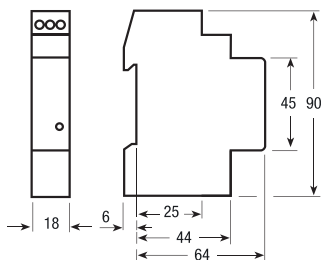
Description M-Bus interface EMECMBUS

- Additional communication modules for Energy-meter, Network analyzer and Power-meters
- Additional module for M-Bus connection for energy, power, V, I, cos ϕ , frequency
- M-Bus according to EN1434
- Suitable for both single-phase and three-phase energy meters
- 1 DIN module wide (18 mm)

Technical Data

		EMECMBUS
Data according to		EN 13757-1-2-3, IEC 60950, EN 61000-6-2, EN 61000-6-3 and EN 61000-4-2
General characteristics		
Housing	DIN 43880	1 module
Mounting	EN 60715	DIN rail 35 mm
Depth		70 mm
Power supply		
Power supply		through bus connection
Function		
Suitable for both single-phase and three-phase energy meters		yes
Modbus interface		
HW Interface		2 lift terminals
SW protocol		M-Bus according to EN1434
Baudrate		300-9600 baud
Interface to measuring instrument		
HW Interface	optical IR	2 (Tx, Rx)
SW protocol		proprietary
Safety according to IEC 60950		
Pollution degree		2
Overvoltage category		II
Rated operational voltage		24 ... 36 V
Air gap	in equipment	≥ 1.5 mm
	on PCB (not coated)	≥ 1.5 mm
Minimum creepage distance		≥ 2.1 mm
Test voltage	impulse (1.2/50 μ s)	2.5 kV
	50 Hz 1 min	1.35 kV
Housing material flame resistance	UL 94	V0
Connection terminals		
Type cage main current paths	screw head Z +/-	PZ0 POZIDRIV
Terminal capacity	solid min. (max.)	0.15 (2.5) mm ²
	stranded wire with sleeve min. (max.)	0.15 (4) mm ²
Environmental conditions		
Operative temperature		0 to +55 °C
Limit temperature of transportation and storage		-25 to +70 °C
Relative humidity (not condensation)		$\leq 80\%$
Vibrations	sinusoidal vibration amplitude at 50 Hz	± 0.25 mm
Protection class	acc. to IEC 60950	II
Degree of protection, housing when mounted in front		IP20

Dimensions (mm)



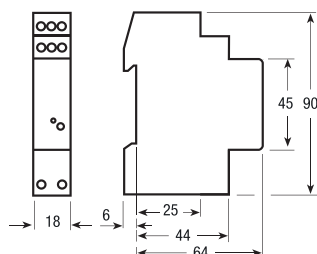
Description Modbus Interface RTU and Ascii EMECMODB

- Additional communication modules for Energy-meter, Network analyzer and Power-meters
- Additional module for Modbus RTU and Ascii connection for energy, power, V, I, cosj, frequency
- Protocols Modbus Ascii - Modbus RTU
- Suitable for both single-phase and three-phase energy meters
- 1 DIN module wide (18 mm)

Technical Data

		EMECMODB
Data according to		IEC 60950, EN 61000-6-2, EN 61000-6-3 and EN 61000-4-2
General characteristics		
Housing	DIN 43880	1 module
Mounting	EN 60715	DIN rail 35 mm
Depth		70 mm
Supply		
Rated control feed voltage	U_n	230 V AC
Auxiliary power rating		≤ 10 W
Auxiliary voltage range		0.80 ... 1.20 V AC x U_n
Rated frequency		50/60 Hz
Frequency range		45 ... 65 Hz
Function		
Protocol	selectable by software	Modbus RTU or Ascii
Suitable for both single-phase and three-phase energy meters		yes
Modbus interface		
HW Interface	RS-485	3 terminals (+/-, cable shielded)
Input resistance		1 UL (12 kΩ)
Termination resistance		80 Ω
SW protocol	selectable by software	Modbus Ascii - Modbus RTU
Data transfer speed	selectable by software	≤ 38,400 baud - default: 19,200 baud
Parity		none/even - default: none
Addressing		1 to 247
Interface to measuring instrument		
HW Interface	optical IR	2 (Tx, Rx)
SW protocol		proprietary
Safety according to IEC 60950		
Pollution degree		2
Overvoltage category		II
Rated operational voltage		300 V
Air gap		≥ 4 mm
Minimum creepage distance		≥ 4 mm
Test voltage	impulse (1.2/50 μs) with AC-Supply	2.5 kV
	impulse (1.2/50 μs) telecommunication network	1.5 kV
	50 Hz 1 min	2.5 kV
Housing material flame resistance	UL 94	V0
Connection terminals		
lift terminals	screw head Z +/-	PZ0 POZIDRIV
Terminal capacity	solid min. (max.)	0.15 (2.5) mm²
	stranded wire with sleeve min. (max.)	0.15 (4) mm²
Environmental conditions		
Operative temperature		0 to +55 °C
Limit temperature of transportation and storage		-25 to +70 °C
Relative humidity (not condensation)		≤ 80%
Vibrations	sinusoidal vibration amplitude at 50 Hz	± 0.25 mm
Protection class	acc. to IEC 60950	II
Degree of protection, housing when mounted in front		IP20

Dimensions (mm)



Description Basic Power Meters three-phase, 63 A, EME

- Digital active energy meter with partial active energy counter resettable and inbuilt communication Modbus RTU - 2 tariffs
- Three-phase digital active energy-meter with direct connection 0.25-5 (63) A, and inbuilt communication Modbus RTU - 2 tariffs
- For direct connection 63 A
- 9 digits for 8 energy indication values
- Detection of connection errors (phase transposition and phase missing)
- Accuracy class 1 for active energy and power according to EN 50470-3 (B)
- Most attractive operating range current ($I_{st} \dots I_{max}$), for direct connection 63 A = 0.015 ... 63 A
- Energy register zero setting (not for MID types)
- Energy register "Partial" zero setting also for MID types
- Sealable terminal covers
- Energy register for delivery and supply
- 4 DIN modules wide (72 mm)

Technical Data

EME3P63BMODBUS direct connection 63 A		
Data according to EN 50470-1, EN 50470-3 and EN 62053-31		
General characteristics		
Housing	DIN 43880	4 MU
Mounting	EN 60715	DIN rail 35 mm
Depth		70 mm
Reference standard according to	active energy pulse output	EN 50470-1-3 EN 62053-31
Function		
Connectivity	to three-phase network	4 wires
Storage of energy values and configuration	digital display (EEPROM)	yes
Display tariffs identifier	for active energy	T1 and T2
Supply		
Rated control feed voltage	U_n	230 V AC
Operating range voltage		184 ... 276 V
Rated frequency	f_n	50 Hz
Rated power dissipation (max.)	P_v	≤ 8 (0.6) VA (W)
Overload capability		
Voltage U_n	continuous: phase/phase 1 second: phase/phase continuous: phase/N 1 second: phase/N	480 V 800 V 276 V 300 V
Current I_{max}	continuous momentary (10 ms)	80 A 2400 A
Display		
Connection errors and phase out	discernible from phase-sequence indication	PHASE Err
Display	LCD digit dimensions	9 digits (2 decimals) 6.00 mm x 3 mm
Active energy: 1 display, 9-digit + display import or export (arrow)	tariffs 2 overflow	0.01 Wh 999999.99 MWh
Reactive energy: 1 display, 8-digit	tariffs 2	0.01 varh
Instantaneous tariff measurement	1 display, 1-digit	T1 or T2
Display period refresh		1 s
Measuring accuracy		
active energy	according to EN 50470-3	class 1: B
Measuring input		
Type of connection		direct
Voltage U_n	phase/phase phase/N	400 V 230 V
Operating range voltage	phase/phase phase/N	319 ... 480 V 184 ... 276 V
Current	I_{ref}	5 A
Current	I_{min}	0.25 A
Operating range current ($I_{st} \dots I_{max}$)	direct connection	0.015 ... 63 A
Frequency		50 Hz
Input waveform		sinusoidal
Starting current for energy measurement	I_{st}	15 mA

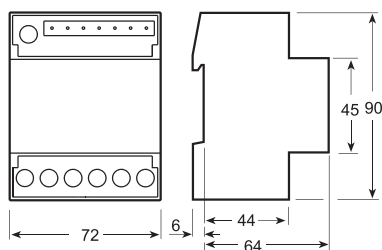
Technical Data (continue page)

EME3P63BMODBUS direct connection 63 A		
Optical interfaces		
Front side (accuracy control)	LED	1000 Imp/kWh
Safety according to EN 50470-1		
Indoor meter		yes
Pollution degree		2
Rated operational voltage		300 V
AC voltage test	EN 50470-3. 7.2	4 kV
Test voltage	1.2/50 µs	6 kV
Protection class	EN 50470	II
Housing material flame resistance	UL 94	V0
Safety-sealing between upper and lower housing part		yes
Adaptor for Communication		
Modbus RTU	RS-485 3 wires	up to 19,200 bps
Connection terminals		
Type cage main current paths	screw head Z +/-	PZ2 POZIDRIV
Type cage pulse output	blade for slotted screw	0.8 x 3.5 mm
Terminal capacity main current paths	solid min. (max.)	1.5 (35) mm ²
	stranded wire with sleeve min. (max.)	1.5 (35) mm ²
Terminal capacity pulse outlet	solid min. (max.)	1 (4) mm ²
	stranded wire with sleeve min. (max.)	1 (2.5) mm ²
Environmental conditions		
Mechanical environment		M1
Electromagnetic environment		E2
Operative temperature		-10 to +55 °C
Limit temperature of transportation and storage		-25 to +70 °C
Relative humidity (not condensation)		≤80%
Vibrations	sinusoidal vibration amplitude at 50 Hz	±0.075 mm
Degree protectionhousing when mounted in front (terminal)		IP51*)/IP20

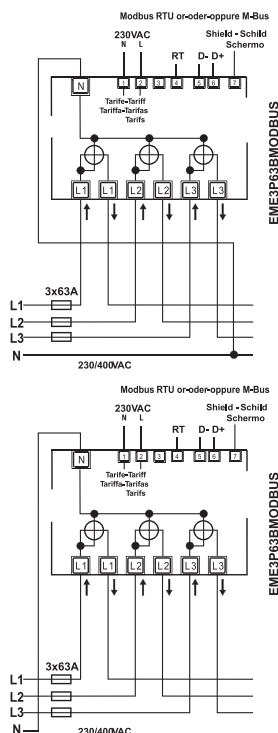
*) For the installation in a cabinet at least with IP51 protection

Dimensions (mm)

EME3P63BMODBUS



Connection diagram



Wire N needs to be connected to the meter.

A Miniature Circuit Breaker of 63A is recommended.

Communication link	Type Designation	Article No.	Units per package
Multimeter EME3PMMCT5			
S0	EME3PMMCT5	171631	1

SG14413



Description Multimeter EME3PMMCT5

- The Eaton Multimeter offer an extremely compact multifunction solution for switch-gear and incoming or outgoing feeders in industrial plants and buildings like offices, hospitals, universities and so on
- Can be connected to three phase networks via current transformers (.../5A till 10.000/5A)
- Three phase 38 readouts, imported and exported power
- Clear readable LED display that reports all measurements through a user-friendly interface controlled directly from the front panel
- Analysis of the different loads on each phase to identify displacements, asymmetrical or unbalanced conditions
- Offers a range of different options to combine and assess measured values
- Provided with 2 SO outputs report active and reactive energy
- Two different tariffs settled by an external energy counter (Wh and VAh)
- With a side IrDA interface for external communication
- External communication allows for the transmission of measured values to a remote energy management system
- 6 modules housing for DIN rail mounting
- User can display continuously five indicated values

Technical Data

EME3PMMCT5		
Communication link		SO
Connection		.../5 A
Housing (width)		6 DIN modules
Measuring voltage range		50 ..., 276 / 87 ..., 480 V AC
Frequency range		49 ..., 51 Hz
Starting current	I_{st}	3 mA
Reference current	I_{ref}	5 A
Main supply		auxiliary 184 ..., 276 V AC
System connectivity		2 - 3 - 4 wires
Display		LED
Display green backlighted		yes
Main terminal		4 mm ²
Operative temperature		-10 to +55 °C
Pulse output SO		2
Measuring accuracy		
EN 50470-1-3 active energy		class 1: B (1%)
EN 62053-23 reactive energy		class 2: 2%
Voltage	L1, L2, L3	● ▲
	L1-2, L2-3, L3-1	● ▲
Current	L1, L2, L3	● ▲
	N	●
Power factor	L1, L2, L3	● ▲
	ΣL	● ▲
Frequency		● ▲
Effective power	L1, L2, L3	● ▲
	ΣL	● ▲
Reactive power	L1, L2, L3	● ▲
	ΣL	● ▲
Apparent power	L1, L2, L3	● ▲
	ΣL	● ▲
Import active energy	L1, L2, L3, ΣL	● ▲
	tariff 1 and 2	● ▲
Export active energy	L1, L2, L3, ΣL	● ▲
	tariff 1 and 2	● ▲
Import reactive energy	L1, L2, L3, ΣL	● ▲
	tariff 1 and 2	● ▲
Export reactive energy	L1, L2, L3, ΣL	● ▲
	tariff 1 and 2	● ▲

Communication (▲)

IR-side: M-Bus, Modbus RTU, KNX, LAN-TCP/IP, SD-Card	yes
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● = Measured parameters displayed, ▲ = Measured parameters through IR side modules

Description	Type Designation	Article No.	Units per package
LAN Server Modbus/TCP EMELSMODBUS			
Data Concentrator with Modbus/TCP	EMELSMODBUS	170509	1

SG14313



Description LAN Server Modbus/TCP EMELSMODBUS

Overview:

The LAN Servers are Plug-and-Play data concentrators for Energy Meter, Network Analyzer and Power Meter products. The LAN Server allows an easy and reliable connection of several instruments to a data communication network. It is an innovative product designed to implement fast data communication between a supervisory PC and a set of measurement instruments connected through LAN, WAN or Internet. Instruments may be of different kinds and are automatically recognized through a unique coding.

LAN Server Modbus/TCP:

This Plug-and-Play product collects the measurement data from different devices connected via a Modbus serial bus. Data are made available on LAN, WAN or Intranet through an HTTP interface and are accessible using simultaneously a standard browser or a Modbus/TCP Application.

The LAN Server Modbus/TCP requires an auxiliary at 230 V AC power supply.

Common features

- Worldwide communication with measuring devices
- Hardware connection through RJ45
- TCP/IP data protocol
- HTTP for web server
- FTP for file transfer
- NTP for time synchronization
- Static or DHCP based addressing
- DDNS to maintain a host name, accessible on the internet, without the need for a static IP
- Plug-and-play technology
- Internet browser user interface, three languages
- Password-protected site access
- Internal memory: 2 Gigabytes available for long period storage
- 4 DIN modules wide (72 mm)

Technical Data

		EMELSMODBUS
Type		LAN Server Modbus/TCP
Description		Data Concentrator with Modbus/TCP
According to norm general	EN 61000-6-2-3, EN 61000-4-2	yes
According to norm general		EN 60950
Device width		4 modules
Power supply		
Voltage range		230 V AC $\pm 20\%$
Auxiliary power rating		≤ 10 VA
Frequency range		45 ... 65 Hz
Operation feature		
Memory storage		internal 2 Gigabyte
LAN - HW Interface		RJ 45
LAN - SW Protocol		TCP/IP
LAN - Bandrate		10/100 Mbit/s
Application level protocols		HTTP - FTP - Modbus/TCP
Interface to instruments		RS485
HW Interface		3 Screw-type terminals
SW Protocol		Modbus RTU and ASCII
Directly connected instruments		31
S0 impulse input		—
Safety according to IEC 60950		
Pollution degree		2
Overvoltage category		II
Operating voltage		... 300 VAC
Test voltage impulse		
(1.2/50 μ s) peak value		4 kV
50 Hz 1 min		4 kV
Environmental condition		
Operative temperature		-10 to 55 °C
Limit temperature of storage		-25 to 70 °C
Relative humidity (non condensing)		$\leq 80\%$
Vibrations amplitude at 50 Hz		± 0.25 mm
Protection class		II
Degree of protection		IP20

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Description	Type Designation	Article No.	Units per package
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Ammeter and Voltmeter digital EM

Ammeter	EMA20	PHASE OUT	167423	1
Voltmeter	EMV600	PHASE OUT	167422	1

Function	Ratio/Measuring Range	Type Designation	Article No.	Units per package
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Accessories Current Transformer

- Z-MG/WAK: maximum cable diameter 21 mm
- Z-MG/WAS: maximum busbar cross section 30 x 10 mm, 40 x 10 mm or 50 x 12 mm, cable diameter 23 mm / 30 mm - according to type, see dimension diagramms

SG8797



Current transformer for cable	40/5	Z-MG/WAK-40	101619	1
Current transformer for cable	50/5	Z-MG/WAK-50	101620	1
Current transformer for cable	60/5	Z-MG/WAK-60	101621	1
Current transformer for cable	80/5	Z-MG/WAK-80	101622	1
Current transformer for busbar	100/5	Z-MG/WAS-100	101623	1
Current transformer for busbar	150/5	Z-MG/WAS-150	101625	1
Current transformer for busbar	200/5	Z-MG/WAS-200	101626	1
Current transformer for busbar	250/5	Z-MG/WAS-250	101627	1
Current transformer for busbar	300/5	Z-MG/WAS-300	101628	1
Current transformer for busbar	400/5	Z-MG/WAS-400	101629	1
Current transformer for busbar	500/5	Z-MG/WAS-500	101630	1
Current transformer for busbar	600/5	Z-MG/WAS-600	101631	1
Current transformer for busbar	800/5	Z-MG/WAS-800	101632	1
Current transformer for busbar	1000/5	Z-MG/WAS-1000	101624	1

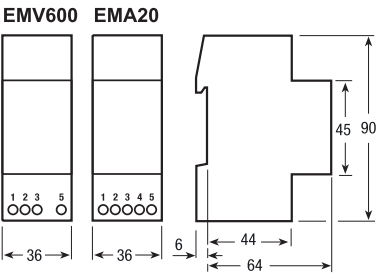
Description Ammeter EMA20 - Voltmeter EMV600

- Digital measuring instruments offer greater readout immediacy for the value displayed. They also offer the advantage of having no moving parts which are subject to wear over the long term, an issue which can affect the precision and reliability of the instrument.
- Voltmeter AC
- Ammeter AC
- 2 DIN modules wide (36 mm)

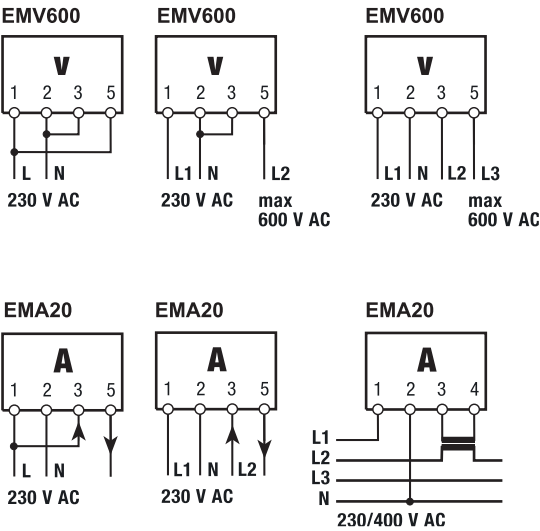
Technical Data

		Voltmeter EMV600	Ammeter EMA20
Data according to		EN 61010-1, EN 61000-6-2, EN 61000-6-3	
General characteristics			
Housing	DIN 43880	2 MU	2 MU
Mounting	EN 60715	DIN rail 35 mm	DIN rail 35 mm
Depth		70 mm	70 mm
Reference standard		DIN 43751-1-2	DIN 43751-1-2
Supply			
Voltage		230 V AC	230 V AC
Operating range voltage		0.90 ... 1.15 V AC	0.90 ... 1.15 V AC
Rated frequency		50/60 Hz	50/60 Hz
Operating range frequency		45 ... 65 Hz	45 ... 65 Hz
Power rating		2 VA	2 VA
Overload capability			
Voltage U _n	continuous	1.2 V x voltage rating	-
	momentary (1 s)	1.3 V x voltage rating	-
Current I _b /I _n	continuous	-	1.1 A x Currentbereich
	momentary (1 s)	-	10 A x Currentbereich
Display			
Voltage	3 digits h = 10 mm	12 ... 600 V	-
	Voltage >600 V	HHH	-
	Voltage <12 V	----	-
Current	3 digits h = 10 mm	-	0.4 ... 20 A (a)
			0.1 ... 5 A (b) (CT operation)
	Current >10 A - 20 A/5 A (connection CT)	-	HHH
	Current <0.1 A - 0.2 A - 0.4 A (connection CT)	-	---
Display period refresh		4 readout/s	4 readout/s
Measuring accuracy	at 23 ±1°C referred to nominal values		
Voltage		±1% ±1 Digit	-
Current		-	± 0.5% ±1 Digit
Temperature (deviating)		±0.03% for °C	±0.03% for °C
Measuring input			
Type of connection		direct	direct (a)(b < 5 A), with CT .../5 A (b)
Voltage	U _n	600 V	-
Measurement range voltage		12 ... 600 V	-
Current	I _b /I _n	-	20 A (a), 5 A (b)
Measurement range current		-	0.2 ... 10 (b), (0.1 ... 5) x transformer ratio (b)
Rated frequency		50 Hz	50 Hz
Measurement range frequency		45 ... 65 Hz	45 ... 65 Hz
Input waveform		synus. symmetric	synus. symmetric
Safety according to EN 61010-1			
Pollution degree		2	2
Overvoltage category		II	II
Rated operational voltage		300 V	600 V
Material group		II	II
Air gap		≥3.0	≥1.5
Minimum creepage distance	in equipment	≥4.3	≥2.1
	on printed wiring boards (not coated)	≥3.0	≥1.5
Test voltage	impulse (1.2/50 µs)	4 kV	2.5 kV
	50 Hz 1 min	2.2 kV	1.35 kV
Housing material flame resistance	UL 94	V0	V0
Connection terminals			
Type cage	screw head Z +/-	PZ1 POZIDRIV	PZ1 POZIDRIV
Terminal capacity	solid min. (max.)	1 (6) mm ²	1 (6) mm ²
	stranded wire with sleeve min. (max.)	1 (6) mm ²	1 (6) mm ²
Environmental conditions			
Operative temperature		-10 to +55 °C	-10 to +55 °C
Limit temperature of transportation and storage		-40 to +70 °C	-40 to +70 °C
Relative humidity (not condensation)		≤80%	≤80%
Vibrations	sinusoidal vibration amplitude at 50 Hz	±0.25 mm	±0.25 mm
Protection class	according to EN 61010-1	II	II
Degree of protection (terminals)		IP40 (IP20)	IP40 (IP20)

Dimensions (mm)



Connection diagram



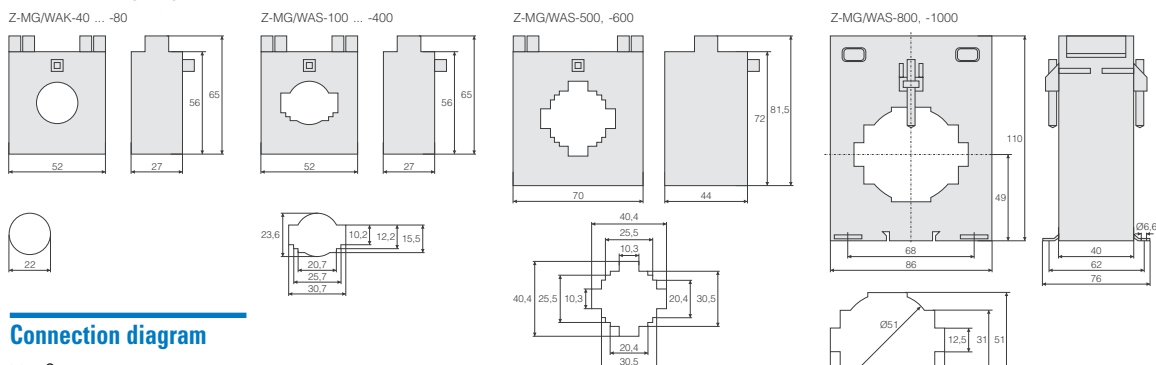
Description Current transformer for cable Z-MG/WAK, Current transformer for busbar Z-MG/WAS

- Transform high currents to standard measuring currents
- Current transformers help to cut costs when installing and connecting busbar system
- Recommended from 40 A upward
- Accuracy classes
 - Class 0.5: for accurate measurement and calibrated kWh-meters
 - Class 1: for general measurement and non-calibrated kWh-meters
 - Class 3: for coarse measurement, relays and for protection
- When winding several turns of the primary cable around the current transformer, you will receive half the primary current per turn while power and class remain unchanged.

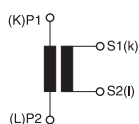
Technical Data

		Z-MG/WAK		Z-MG/WAS	
Electrical					
Max. Rated operational voltage		720 V		720 V	
Secondary current		5 A		5 A	
Rated frequency		50-60 Hz		50-60 Hz	
Cable diameter		21 mm		23 mm, 30 mm	
Busbar cross section		—		30 x 10 mm, 40 x 10 mm, 50 x 12 mm	
Primary nominal current	I_{pN}	class	P [VA]	class	P [VA]
40 A		3	1.3		
50 A		3	1.5		
60 A		3	1.5		
80 A		3	2		
100 A				1	1.5
150 A				1	3
200 A				1	3
250 A				0.5	2
300 A				0.5	2
400 A				0.5	3
500 A				0.5	10
600 A				0.5	10
800 A				0.5	10
1000 A				0.5	10
Connections		P1 (K) primary input, P2 (L) primary output, s1 (k) secondary input, s2 (l) secondary output			
Nominal thermic short-time current	I_{th}	60 x I_{pN} for 1 s		60 x I_{pN} for 1 s	
Nominal dynamic short circuit current	I_{dyn}	2.5 x I_{th} for 1 s		2.5 x I_{th} for 1 s	
Permanent overload		1.2 x I_{pN}		1.2 x I_{pN}	
Insulating class	IEC 85	E		E	
Test voltage	50 Hz / 1 min.	6 kV		6 kV	
Mechanical					
Mounting		quick fastening on DIN rail IEC/EN 60715. wall mounting, directly onto the cable or onto busbar			
Degree of protection		IP30		IP30	
Secondary connection		plug-in terminals 6.3 mm		plug-in terminals 6.3 mm	
Permitted relative air humidity		80%		80%	
Temperature range		-20 to +50 °C		-20 to +50 °C	
Max. temperature of busbars		—		70 °C	

Dimensions (mm)



Connection diagram



Display	Rated voltage	Type Designation	Article No.	Units per package
Operating Hours Counter ASOHC230				
5+2 digit	230 V 50Hz	ASOHC230	167424	1

wa_sg04411



Description Operating Hours Counter ASOHC230

- The operating hours counter registers the operating hours to an accuracy of two decimals (hundredths of a second).
- Power supply for terminals 1 and 3 of the electronic counter is required to enable the device to continuously display the measured values. If terminal 3 is supplied with voltage (at DC "+"), the counting process will get started.
- In case of a power failure, the counting result will be saved for an indefinite period of time (EEPROM). Once power is back again, counting will be continued from the value that has been saved before.
- Time counters are used for a reliable collection of production and service hours, which allows an accurate planning and monitoring of production processes, maintenance cycles and warranty periods.

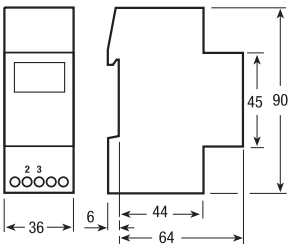
Technical Data

ASOHC230		
Standards		DIN VDE 0435-110, DIN EN 60255-6, UL 863
Approvals		UL 863, UL File No. E300537, CSA C22.2 No. 6 and 55
Rated control feed voltage	U_c	230 V AC
Auxiliary voltage range	at 50/60 Hz	$0.9 \dots 1.1 \times U_c$
Rated frequency		50 Hz
Auxiliary power rating	P_v	<1 VA
Type of operation	counting of	hours
Display	Cyclometer register	00000,00 h
Connection terminals	$\pm$ screws (Philips)	1
Terminal capacity	solid	1.5 mm ²
	stranded wire with sleeve min.	0.75 mm ²
Permitted ambient temperature		-10 ... +70 °C
Degree of protection	according to DIN EN 60529	IP20, with conductors connected
Protection class	according to DIN EN 61140 / VDE 0140	II
Allowed range of air humidity		<80 %

Connection diagram



Dimensions (mm)



Display	Rated voltage	Type Designation	Article No.	Units per package
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Pulse Counter ASPC230

wa_sg05011



7 digits	230 V 50Hz	ASPC230	167425	1
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Description Pulse Counter ASPC230

- The pulse counter sums up the number of pulses, e.g. how many times a device is switched on.
- Power supply for terminals 1 and 3 of the electronic counter is required to enable the device to continuously display the measured values. If terminal 3 is supplied with voltage (at DC "+"), the counting process will get started.
- In case of a power failure, the counting result will be saved for an indefinite period of time (EEPROM). Once power is back again, counting will be continued from the value that has been saved before.
- Pulse counters are used for a reliable collection of production and service hours, which allows an accurate planning and monitoring of production processes, maintenance cycles and warranty periods.
- Pulse counting is used for general quantity counting, registration of the switch-on frequency, and for the collection of switch-on cycles or production quantities in systems and machines.

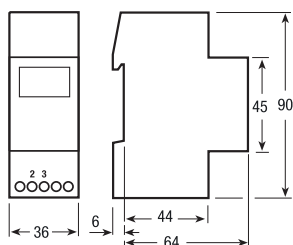
Technical Data

ASPC230		
Standards		DIN VDE 0435-110, DIN EN 60255-6, UL 863
Approvals		UL 863, UL File No. E300537, CSA C22.2 No. 6 and 55
Rated control feed voltage	U_c	230 V AC
Auxiliary voltage range	at 50/60 Hz	0.9 ... 1.1 x U_c
Rated frequency		50/60 Hz
Auxiliary power rating	P_v	<1 VA
Type of operation	counting of	pulses
Display	Cyclometer register	0000000
	LCD display	-- h
Frequency of counting		10 Hz
Pulse duration		50 ms
Resetting	electrical components	--
	mechanical components	--
Connection terminals	±screws (Philips)	1
Terminal capacity	solid	1.5 mm ²
	stranded wire with sleeve min.	0.75 mm ²
Permitted ambient temperature		-10 ... +70 °C
Degree of protection	according to DIN EN 60529	IP20, with conductors connected
Protection class	according to DIN EN 61140 / VDE 0140	II
Allowed range of air humidity		<80 %

Connection diagram



Dimensions (mm)



sg68912



138103900

Stromkreis-Verzeichnis			
1	1	16	16
2	2	17	17
3	3	18	18
4	4	19	19
5	5	20	20
6	6	21	21
7	7	22	22
8	8	23	23
9	9	24	24
10	10	25	25
11	11	26	26
12	12	27	27
13	13	28	28
14	14	29	29
15	15	30	30

Stromkreisverzeichnis beschriften und auf die Innenseite der Tür kleben
Zugehörige Nummernschilder auf Geräte kleben

sg68912



Design	Type Designation	Article No.	Units per package
Protective Earth Socket Z-SD230			
Standard	Z-SD230	266875	10 / 50
Child protection device and earth pin	Z-SD230-BS	266876	10 / 50

Accessories Busbar Block			
Busbar	Z-SV-10/1P+N-SD	269526	10
End caps	Z-V-AK/2+3P	264930	10 / 600

Description Protective Earth Socket Z-SD230

- Design according to VDE, ÖVE
- Modular busbar connection system L/N
- Screw fastening is possible
- Width 2.5MU
- Busbar block Z7-SD/1P+N 10 mm2 available
- Model -BS with child protection device and earth pin

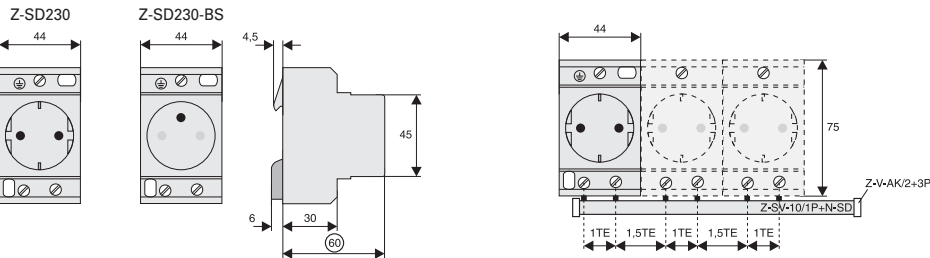
Technical Data

Z-SD230	
Electrical	
Rated voltage	250 V AC
Rated current	10/16 A
Mechanical	
Frame size	45 mm
Device height	76 mm
Device width	44 mm
Mounting	quick fastening on DIN rail IEC/EN 60715, screw-mounting possible
Degree of protection, built-in	IP40
Upper and lower terminals	lift terminals
Terminal capacity	1 to 2x2.5 mm ²

Connection diagram



Dimensions (mm)



SG59511



Rated current / Design	Type Designation	Article No.	Units per package
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Neutral Conductor Lead-Through Terminal, Feed Terminal Z-D

63 A	Z-D63	248267	12/120
63 A with test socket	Z-D63/P	248268	12/120
100 A	Z-D80	248269	12/120

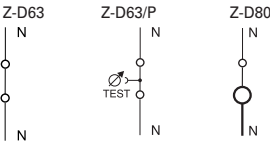
Description Neutral Conductor Lead-Through Terminal, Feed Terminal Z-D

- Compatible with standard busbar to Xtra Combination devices
- Z-D80: Feeder block for busbar system 80 A.
Lift terminal (35 mm²) and open mouthed terminal above, lift terminal (50 mm²) below.
Busbar positioning optionally above or below
- Z-D80: with testing bush 4 mm Ø, 10 A for N-conductor

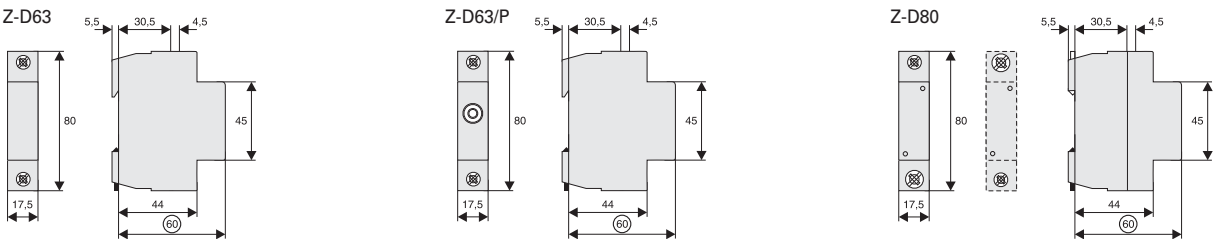
Technical Data

	Z-D63	Z-D63/P	Z-D80
Electrical			
Rated current	63 A	63 A	100 A
Frequency	50-60 Hz	50-60 Hz	50-60 Hz
N-conductor test bush	–	10 A, Ø 4 mm	–
Mechanical			
Frame size	45 mm	45 mm	45 mm
Device height	80 mm	80 mm	80 mm
Device width	17.5 mm (1MU)	17.5 mm (1MU)	17.5 mm (1MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715		
Degree of protection, built-in	IP40	IP40	IP40
Terminals			
above	open mouthed/lift terminals	open mouthed/lift terminals	open mouthed/lift terminals
below	open mouthed/lift terminals	open mouthed/lift terminals	lift terminals
Terminal capacity			
above	1-25 mm ²	1-25 mm ²	1-35 mm ²
below	1-25 mm ²	1-25 mm ²	2.5-50 mm ²
Busbar thickness	0.8 - 2 mm	0.8 - 2 mm	0.8 - 2 mm

Connection diagram



Dimensions (mm)



	Type Designation	Article No.	Units per package
Front Plate Tripping Device Z-MFPA			
	Z-MFPA	248302	6 / 60

SG58911



Description Front Plate Tripping Device Z-MFPA

- Mechanical tripping device for PXF, P XK, FAZ, PLSM, CLS, Z-A40, PKNM and PKDM, responds when the front plate of a distribution box is removed
- Maximum tripping capacity: 4 + 4 poles symmetrically
- Can be interlocked by twisting when the tripping pin is in the pressed position

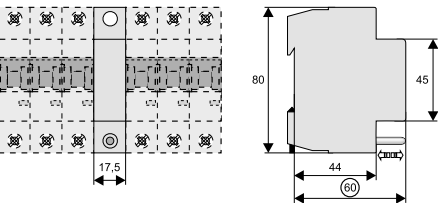
Technical Data

	Z-MFPA
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm
Mounting	quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40

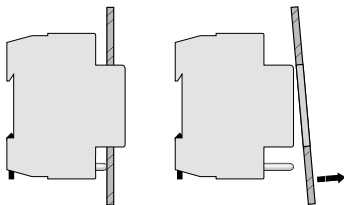
Function Diagram



Dimensions (mm)



Function



Number of Circuits	Dimensions (mm)	Type Designation	Article No.	Units per package
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Circuit Description GR

- Self-adhesive table for synoptic description of circuits, to be attached inside or on a distribution box.
- Pre-printed individual adhesive labels for device designation included



30	210x120	GR-2	138103900	1
90	210x300	GR-3	138104100	1

Colour	Dimensions (mm)	Type Designation	Article No.	Units per package
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Plastic Box Z-BOX

- Empty, can be snapped onto DIN rail
- For spare fuse links, small spare parts



blue	45x54x75	Z-BOX/BLA	286062	12/120
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