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xEffect - Industrial Switchgear Range

Catalogue 2019

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Powering Business Worldwide

Energizing a world that demands more.

We deliver:

- **Electrical solutions** that use less energy, improve power reliability and make the places we live and work safer and more comfortable
- **Hydraulic and electrical solutions** that enable machines to deliver more productivity without wasting power
- **Aerospace solutions** that make aircraft lighter, safer and less costly to operate, and help airports operate more efficiently
- **Vehicle drivetrain and powertrain solutions** that deliver more power to cars, trucks and buses, while reducing fuel consumption and emissions

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With 2017 sales $20.4 billion, Eaton has approximately 96.000 employees around the world and sells products in more than 175 countries.

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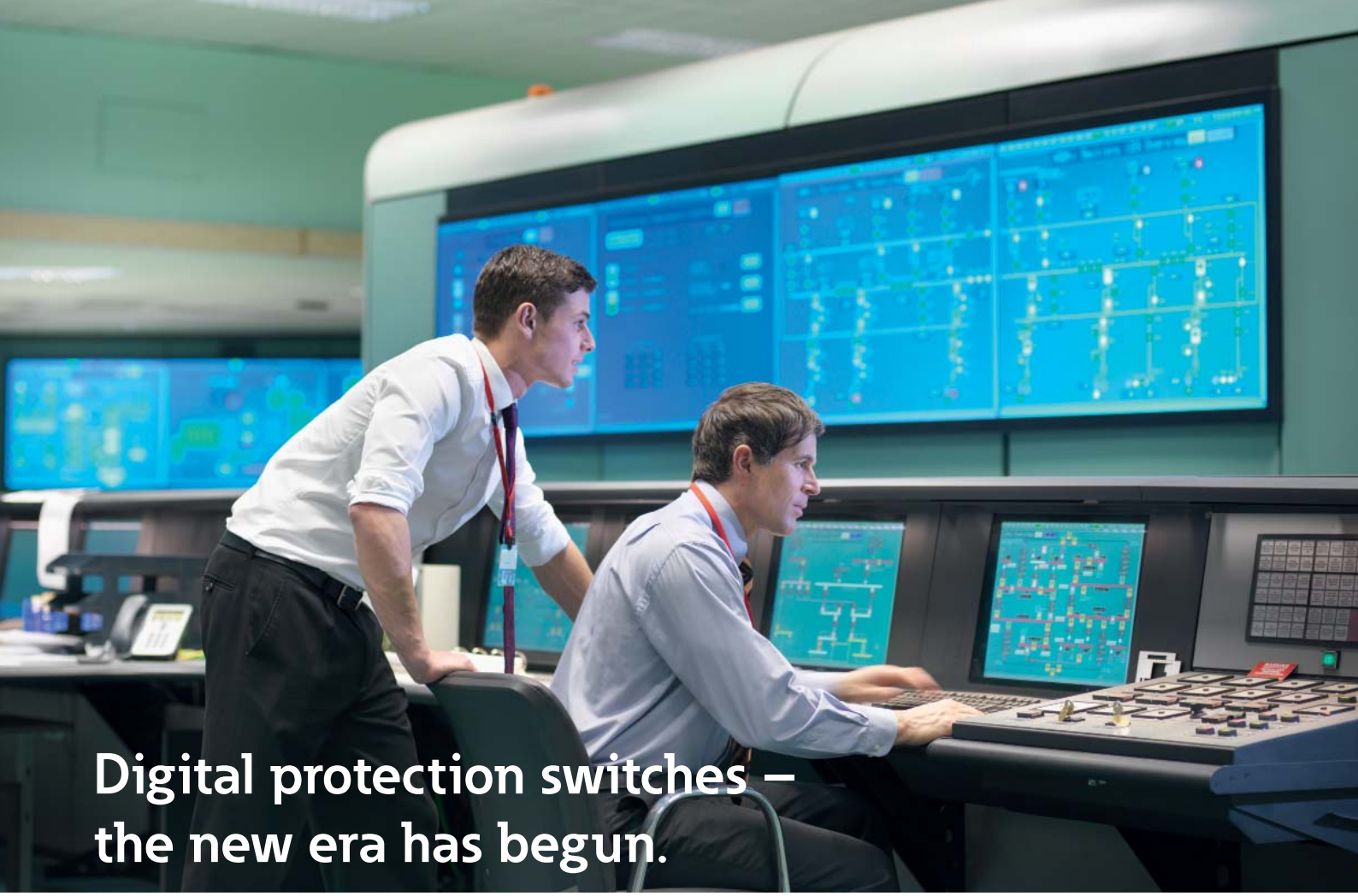
MCBs and RCCBs for North American market UL certified for eOEMs who acting worldwide providing power distribution systems for Power Plants in North America.

High frequency TL lighting is often used in agricultural industry applications (such as barns). Conventional circuit breakers appear to sometimes fail spontaneously, which is very undesirable in barns. Consider a failure of the ventilation systems, feeding systems, manure and egg collection in poultry barns. By using the new digital circuit breaker from Eaton, the problem of undesired switch off can be minimized.

B+ type RCCB for enhanced fire protection and where DC leakage currents occure – data centers, ...

High safety relevant applications e.g. hospitals where digital RCCBs are used in the distribution system, ...



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

Highly qualified controllers offer their services

PROMOTION

Allow us to introduce ourselves: **FRCdM** and **FRBdM** would like to work in your switchbox. We're two highly qualified control robots from the famous EATON talent factory – the first of the new digital generation.

It's not only that I work completely reliably as a Residual Current Operated Circuit Breaker with integrated Overcurrent Protection (RCBO), but I also display the cause and extent of the flowing fault current. This enables fast actions quickly take measures to maintain system availability.

And since I'm the RCCB a fault current protection switch, I don´t wait until the tripping threshold is reached; I continuously check the present status and register any possible failures, sending this information by remote warning immediately to the central control system. This increases system safety, application availability and minimizes maintenance costs.

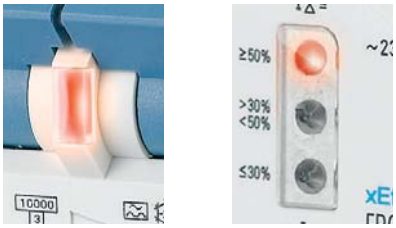
Hire us – and finally experience communication at eye level!

The LEDs set off an alarm when fault currents or a shut down are coming. This makes the troubleshooting faster and much easier. The service mode of the fault current protection switch quickly indicates the extent of the flowing fault current in milliamp increments. By pushing the service button, the blinking LED identifies the area where the fault current is located in.

- Mains voltage-independent residual current protection and additional protection with other digital functions
- Auto-reclosure is possible

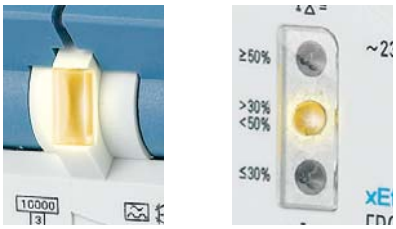
Red

When the red LED lights up, the leakage current is already higher than 50 percent of the nominal fault current. Therefore the system is in a critical status – the digital RCCB only trips when the fault current continues to increase.



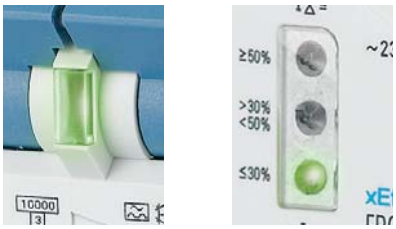
Yellow

The yellow LED shows a residual current in the ambit of 30 to 50 percent of the nominal fault current. Before the system is shut down, professional countermeasures can be taken.



Green

If the current flow in the system to ground is in the ambit from 0 to 30 percent of the nominal fault current, the green LED indicates the proper status.



FRBdM and FRCdM offer several other advantages

The LED allows for a fault current display directly on site. In the service mode, malfunction causes can be determined quickly and without complication.

The digital display facilitates real-time diagnostics directly at the switch.
By means of the LEDs, the system status can be seen at anytime, and with one glance.

All models have at least a short time delay to prevent from nuisance tripping due to transient disruptions (lightning, engine start).

Digital Combi-switch FRBdM:

With help of the service mode, the exact extent of the leakage current can be identified. This is a big advantage for industrial plants and any locations where the maximum security of supply must be ensured in time before the shut down of the plant.

Digital RCCB type A

Protection in case of specific, non-smooth types of DC fault currents.

Digital RCCB type B

In addition to fault currents in the AC and pulse current range, type B also detects DC fault currents, which can occur in frequency inverter controls, photovoltaic systems as well as through the electronic use in households, and increases safety considerably.

Digital RCCB type B+

Complies with the standard VDE 0664-400 (formerly VVDEV 0664-110) for elevated fire protection as required by the Association of German Insurance Companies.

Digital RCCB type Bfq

Adjusted frequency range (insensitive to higher frequencies) prevents nuisance tripping errors in industrial plants with powerful frequency inverter controllers.

Residual Current Devices Type F

Benefits:

- Reliable protection for machines with 1-phase frequency converters
- Increased protection due to
  - detection of mixed frequencies
  - higher load rating with DC residual currents up to 10mA
- Reduction of nuisance tripping thanks to
  - time delayed tripping
  - high current withstand capability

Definition

The Type F RCD is defined according IEC/EN 62423. It provides safe and reliable protection against sinusoidal residual currents and pulsating DC fault currents (like Type A devices). It is also capable of handling residual currents with mixed frequencies of up to 1 kHz (10, 50, 1000 Hz) in accordance with the IEC 62423 standard.

Type F RCDs can accept smooth DC residual currents of up to 10 mA without affecting their standard functionality, have a time delayed tripping and distinguish themselves from other devices thanks to their high resistance to power surges: this ensures minimal false tripping and a high degree of safety.

They are available as RCCBs (2-pole or 4-pole up to 100 A) as well as RCBOs (1N up to 40 A). With three versions for different protection levels (30 mA, 100 mA and 300 mA), Type F RCDs are voltage independent and can be used for fault and additional protection. As a result, the recommendations for installations including variable frequency drives have been modified.

Field of Application

Type F residual current devices are designed specifically for use in applications with single phase frequency converters, such as pumps, welding units, vibrators or hammer drills. In this type of application, residual currents with mixed frequencies can arise which residual current devices Type AC and A are unable to cope with. The detection of mixed frequencies and the higher load rating with DC residual currents up to 10 mA the RCD Type F provides excellent protection for humans and the system in all applications which contains appliances and motors with single phase frequency converters.

The time delayed tripping and the high current withstands capability supports in addition to avoid nuisance tripping. Overall the RCD Type F enables machine builders and plant manufacturers to develop equipment that is extremely reliable while ensuring high safety levels for the operator and maintenance staff.

Selection help RCDs Type F / Type B

Applications with:

- Appliances and motors with 1phase frequency converters (supply: phase/neutral)

Applications with:

- Appliances and motors with 1 phase frequency converters with PFC (Power Factor Compensation) or
- 1 phase frequency converters supplied between phase/phase or
- 3 phase frequency converters
- DC systems (photovoltaic systems, ups units...)

- Washing machines, dishwashers
- Heat pumps
- Motor applications
- Ventilation, cooling and air condition systems
- Welding equipment
- ...

- PV Systems
- Battery banks
- UPS Units
- EV charging
- Medical devices
- ...

Industrial applications which contains high-power frequency converter controls as:

- 3 phase motor applications
- Speed regulated machine tools

Fire risk applications as:

- Petrol station
- Agriculture
- Paint shop
- Warehouses
- Biogas plants ...
- VDE 0664-400

RCD **Type F**
(acc. IEC 62423)
Standard type, multi-frequency residual currents up to 1 kHz

F

RCCB **Type B**
(acc. IEC 62423)
Standard type, sensitive to all residual currents according up to 1 kHz

B

RCCB **Type Bfq**
(acc. IEC62423)
Non-sensitive against system caused earth leakage currents at high frequencies up to 50 kHz

Bfq

RCCB **Type B+**
(acc. VDE 0664-400)
For superior fire protection (max. tripping current of 420 mA for frequencies up to 20 kHz)

B+

Lean connectivity for protective devices (MCBs, RCCBs, RCBOs)

- Permanent information of the system
- Decrease system downtime/Increase system uptime
- Direct connection to the SmartWire-DT line
- Reduction of installation time, wiring and costs

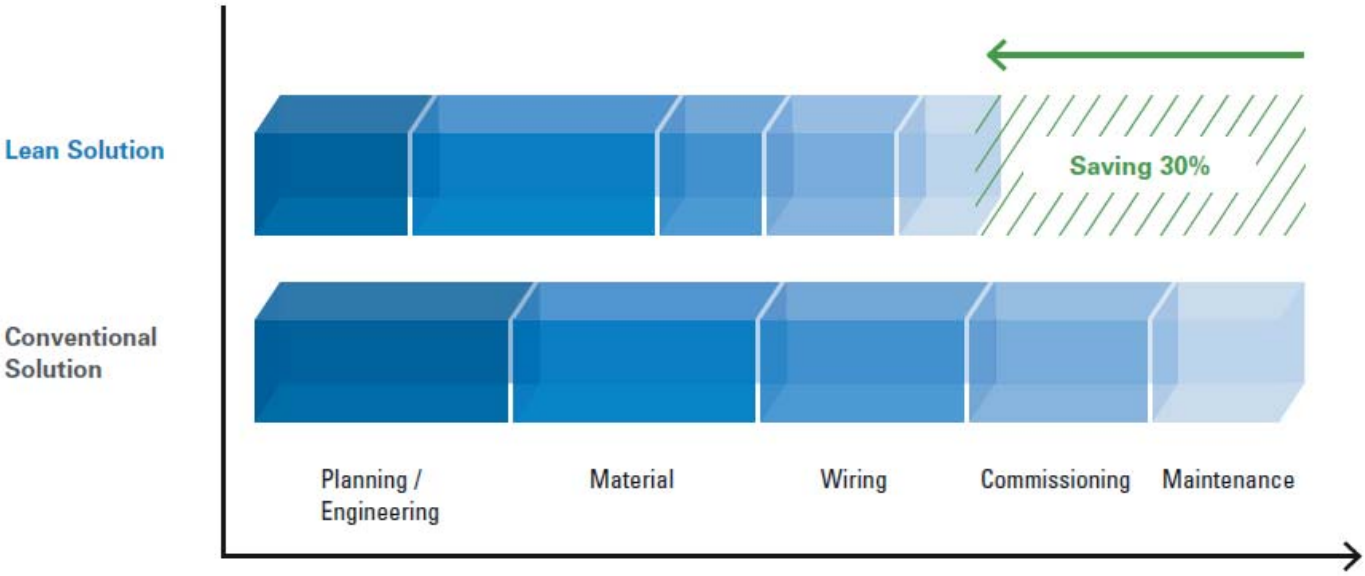
The SmartWire-DT MCB module allows a fast and easy connection of protective devices as MCBs, RCCBs and RCBOs to the SmartWire-DT line.

This gives machinery builders and installers the possibility to integrate protective devices comfortable in the Lean automation.

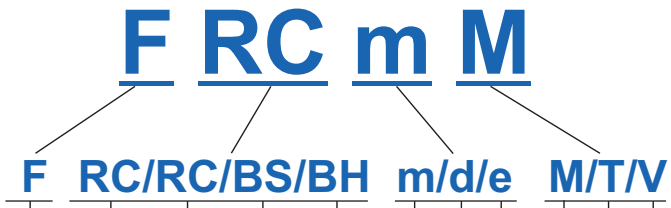
The status (on, off, tripped) of the protective devices is so implement in the control or monitor system of the machinery or the power distribution and supports the service and maintenance teams permanently with information about the system and helps to react immediately in case of problems to keep the system downtime as short as possible.

A further big benefit is also the direct connection on the SmartWire-DT line. This makes the additional I/O level and wiring redundant and machinery builders can reduce so installation time and costs.

Example: Savings in every step of the life cycle



Description type designation RCD's



F ... xEffect
RC ... RCCB
RB ... RCBO
BS ... RCD add on Block up to 63A
BH ... RCD add on Block up to 125A

m ... mechanical
d ... digital
e ... electronic, voltage dependent

M ... breaking capacity 10kA
T ... breaking capacity >10kA
V ... breaking capacity variable

Description type designation MCB's

FAZ ... MCBs up to 63A
FAZT ... MCBS up to 40A with braking capacity >10kA
AZ ... MCBs up to 125A

General definitions

RCD ... Residual Current operated Device (umbrella term for RCCB and RCBO)
RCCB ... Residual Current Circuit Breaker
RCBO ... Residual Current Operated Circuit Breaker with Overcurrent Protection
MCB ... Miniature Circuit Breaker

SG49712

Protective Devices

1. General

2. Components

Table of Contents

Residual Current Devices - General Data

Short description of the most important RCD types:

Symbol	Description
-25	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)
kHz	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.
kHz	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.
G ÖVE E 8601	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.
"röntgenfest"	„X-ray-proof", for avoiding unwanted tripping caused by x-ray devices.
„umrichterfest"	„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 AC	A	F	B	/ B+	Tripping current
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 90° el Lead angle 135° el			✔	✔	✔		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

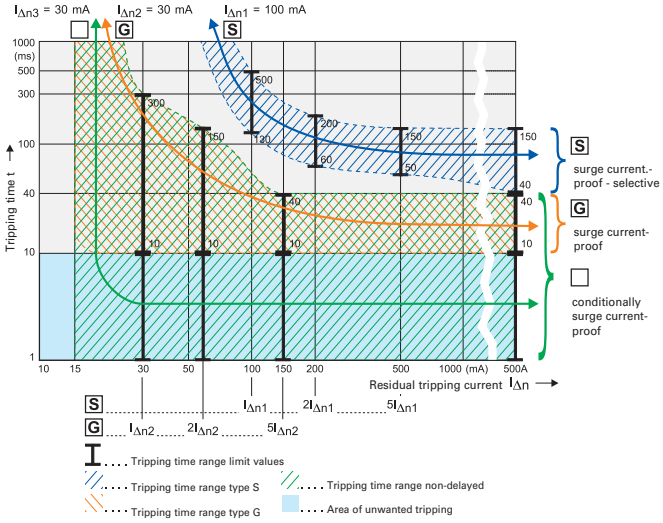
Classification	$I_{\Delta n}$ mA		$I_{\Delta n}$	$2xI_{\Delta n}$	$5xI_{\Delta n}$	$5_{\Delta}x$ I_n or 0.25A	500A
Standard RCD Conditionally surge current-proof 250 A	≤30	Max. tripping time (s)	0,3	0,15		0,04	0,04
Standard RCD Conditionally surge current-proof 250 A	>30	Max. tripping time (s)	0,3	0,15	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		$1,4xI_{\Delta n}$	$2xI_{\Delta n}$	$2,8xI_{\Delta n}$	$4xI_{\Delta n}$	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.

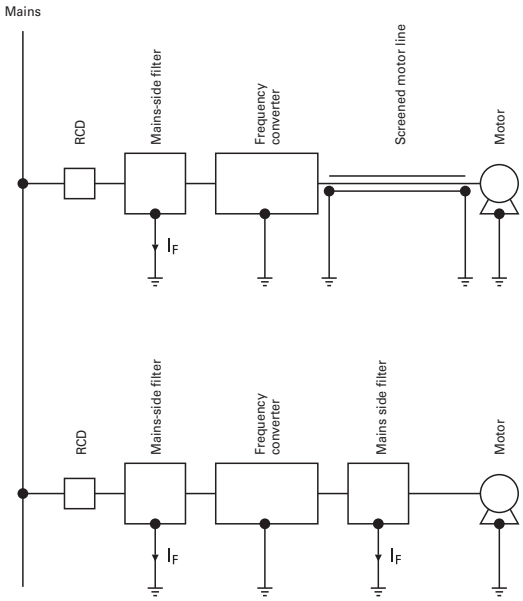


§ 6.1.1 of ÖVE/ÖNORM E 8001-1/A1 deals with **additional protection** and provides essentially the following:
In circuits with **sockets up to 16 A** with fault current/residual current protection by protective earthing, protective multiple earthing or residual current devices (RCDs), additional residual 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:

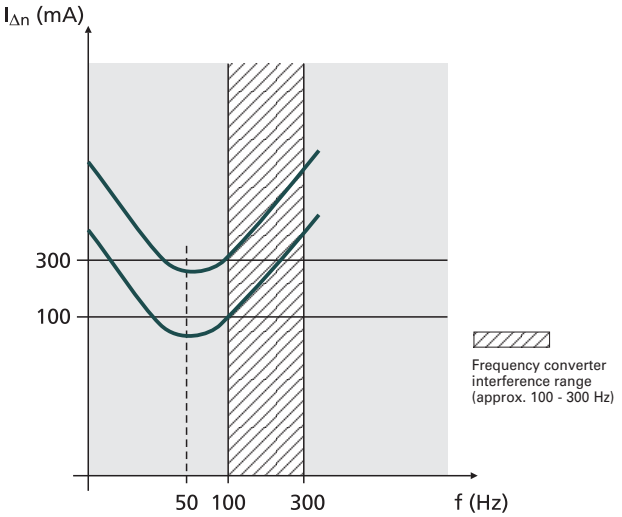
Due to the currents flowing off through the filters (designated IF), the sum of currents through the RCD is not exactly zero, which causes unwanted tripping.



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.

Tripping characteristic



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** S or **SHORT-TIME DELAY** G .

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.

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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
  – Local Indication
- New level of accuracy -> reduced unwanted tripping
- Yearly test interval
- Comprehensive range of accessories
- Real contact position indicator
- Fault current tripping indicator
- Automatic re-setting possible
- Transparent designation plate

Type G/A

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

SG49712

4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
25/0.03	FRCdM-25/4/003-G/A	168646	1/30
25/0.3	FRCdM-25/4/03-G/A	168647	1/30
40/0.03	FRCdM-40/4/003-G/A	168648	1/30
40/0.3	FRCdM-40/4/03-G/A	168649	1/30
63/0.03	FRCdM-63/4/003-G/A	168650	1/30
63/0.3	FRCdM-63/4/03-G/A	168651	1/30
80/0.03	FRCdM-80/4/003-G/A	168634	1/30
80/0.3	FRCdM-80/4/03-G/A	168635	1/30

Type R

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

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4-poles

63/0.03	FRCdM-63/4/003-R	168636	1/30

Type S/A

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

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4-poles

40/0.3	FRCdM-40/4/03-S/A	168637	1/30
63/0.3	FRCdM-63/4/03-S/A	168638	1/30
80/0.3	FRCdM-80/4/03-S/A	168639	1/30

Type U

Short-time delayed + surge current-proof 3 kA, Type U

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4-poles

40/0.03	FRCdM-40/4/003-U	168643	1/30
63/0.03	FRCdM-63/4/003-U	168640	1/30

SG49712

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
Type U			
Selective + surge current-proof typ. 5 kA, frequency converter-proof, Type U			
4-poles			
40/0.3	FRCdM-40/4/03-U	168644	1/30
63/0.3	FRCdM-63/4/03-U	168641	1/30
80/0.3	FRCdM-80/4/03-U	168642	1/30

Specifications | Residual Current Devices FRCdM

Description

- Residual current devices
- Shape compatible with and suitable for standard busbar connection to other devices of the xEffect-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 FAZ, FRBmM-1N 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, 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 protection" and "additional protection" within the meaning of the applicable installation rules.
- Mains connection at either side (except applications according to connection diagramm ②)
- The 4-pole device can also be used for 3-pole connection:
  See connection possibilities.
- The 4-pole device can also be used for 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. Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals. 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% $I_{\Delta n}$
  - Tolerance: ± 5%
- Potential-free auxiliary contact (NO contact, in parallel with the yellow LED, up to 0.25 A ohmic load / 240 V~) for external prewarning function. The potential-free auxiliary contact stay ON also when the breaker trips. After switching the breaker ON again, the contact will be reseted. The potential-free auxiliary contact (13, 14) provides only basic insulation from terminals 2, 4, 6, N of the RCCB. Without any additional protective measures (isolation transformer 1:1 according to IEC/EN 60664) the potential-free auxiliary contact (13, 14) may only be supplied from the terminals 2, 4, 6, N. See also connection diagrams ②, ③.
- **Type -A**: Protects against special forms of residual pulsating DC which have 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 aviod 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 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.

Local Indication RCCB

Statusanzeige LED		red / yellow / green
Permanent light green		Normal operation
Permanent light yellow		The measured residual current is higher than 30% of the nomi$_{va}$l tripping value.
Permanent light red		The measured residual current is higher than 50% of the no$_{\mu i}$nal tripping value.
Flashing yellow/red		Check the device with test key. If the LEDs are still flashing check the direction of connection (supply side / load side).

Remote Indication

Potential-free auxiliary contact for use in control circuits. The potential-free auxiliary contact (13, 14) provides only basic insulation from terminals 2, 4, 6, N of the RCCB. Without any additional protective measures (isolation transformer 1:1 according to IEC/EN 60664) the potential-free auxiliary contact (13, 14) may only be supplied from the terminals 2, 4, 6, N. See also connection diagrams.
0.25A ohmic load / 240V AC.

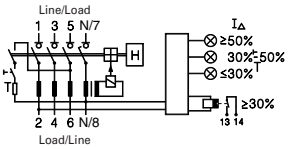
Accessories:		
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Tripping signal contact for subsequent installation to the right	Z-NHK	248434
Automatic restarting device	Z-FW/LP	248296
	Z-FW-LPD	265244
Remote control	Z-FW-MO	284730
Pre-mounted sets	Z-FW-LP/MO	290171
	Z-FW-LPD/MO	290172
Remote testing module	Z-FW/003	248298
	Z-FW/010	248299
	Z-FW/030	248300
Terminal cover 4-poles	Z-RC/AK-4TE	101062

Technical Data

		FRCdM
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 - with selective disconnecting function
Type U (only 30 mA)		10 ms delay
Type U (except 30 mA)		40 ms delay - with selective disconnecting function
Rated voltage	U_n	240/415 V AC, 50Hz
Limits operation voltage electronic		50 – 264V AC
Limits operation voltage test circuit		
30, 300 mA		196 – 264V 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 (1.2/50µs)
Rated short circuit capacity	I_{cn}	10 kA with back-up fuse
Peak withstand current		
Type G, G/A, R, U (30 mA)		3 kA (8/20 µs) surge current-proof
Type S/A, U (except 30 mA)		typ. 5 kA (8/20 µs) selective + surge current-proof
Rated breaking capacitiy	I_m	
or rated fault breaking capacity	$I_{\Delta m}$	
I_n = 25-40 A		500 A
I_n = 63 A		630 A
I_n = 80 A		800 A
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 20,000 operating cycles
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 predection 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 (with slotted screw acc. to EN ISO 4757-Z2, Pozidriv PZ2)
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Operation temperature		-25°C to +40°C (for higher values see table on ambient temperature)
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		acc. to IEC/EN 61008
Contact position indicator		red / green
Tripping indicator		white / blue
Alarm contact (potential-free)		
Rated breaking capacitiy @ 30 V DC (resistive load)		2 A
Rated breaking capacitiy @ 240 V AC (resistive load)		0.25 A
Maximum switching power (resistive load)		60 W
Maximum switching voltage DC		220 V
Maximum switching voltage AC		240 V
Maximum switching current		2 A
Minimum switching capacity (reference value)		10 µA, 10 mV DC
Endurance		
Electrical (at 20 cpm) 2 A 30 V DC resistive load)		$>10^5$
Electrical (at 20 cpm) 1 A 30 V DC resistive load)		$>5 \times 10^5$
Terminal capacity		0.25 - 1.5 mm^2

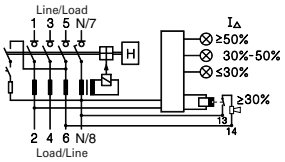
Connection diagram

4-poles



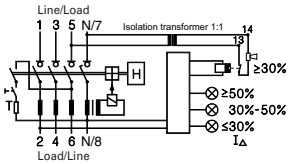
① Without use of auxiliary contact line/load side free selectable

4-poles



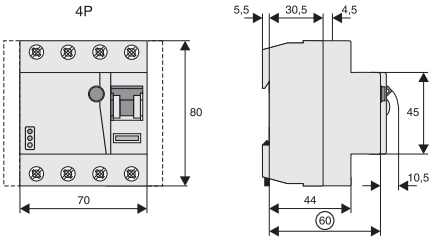
② Signalisation without Isolation Transformer 1:1 (IEC/EN 60664)

4-poles



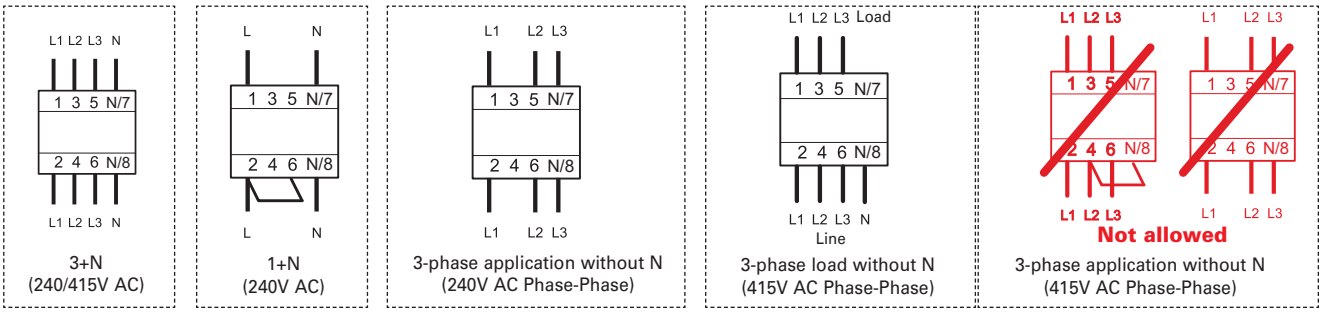
③ Signalisation with Isolation Transformer 1:1 (IEC/EN 60664)

Dimensions (mm)



Correct connection

30, 300mA Types:



Electronic works within 50-264V AC!
- Disconnect load side of the switch gear, if you make a insulation test of the installation!

Internal Resistance FRCdM

At room temperature (single pole)

In [A]	Z* [mΩ]
25	0.66
40	0.64
63	0.64
80	0.62

* 50Hz

Power Loss at In FRCdM

(entire unit)

In [A]	P* [W]
25	2.2
40	3.8
63	8.5
80	12.9

* 50Hz

Impact of ambient temperature on the maximum permanent current allowed (A) FRCdM type A, U and R

	25A	**40A**	**63A**
Ambient temperature	**4p**	**4p**	**4p**
40°	25	40	63
45°	25	35	55
50°	25	30	47
55°	23	28	38
60°	20	25	30
65°	-	-	-
70°	-	-	-
75°	-	-	-

Note: Please make sure that these values are not exceeded and that any upstream thermal overload protection switches off in time.

Max. back-up fuse FRCdM

In [A]	Short Circuit [A]	Overload [A]
25	63 gG/gl	25 gG/gl
40	63 gG/gl	40 gG/gl
63	63 gG/gl	63 gG/gl

Important:
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.

SG49812

Description

- All-current sensitive RCCB for fault or additional protection
- Digital Features to increase the system availability
- System Monitoring: Preventive information / warning before the RCD trips in case of leakage currents
  – Integrated auxiliary contact for remote pre-warning
  – Local Indication through 3 LEDs
- B+ types also meet the requirements of superior fire-protection systems according to VDE 0664-400 (formerly known as VDE V 0664-110)
- 4-pole types can also be used as 2-pole devices for photovoltaic applications
- New level of accuracy -> reduced unwanted tripping
- Yearly test interval
- Comprehensive range of accessories
- Real contact position indicator
- Fault current tripping indicator
- Automatic re-setting possible
- Transparent designation plate

Type G/B

Surge current-proof 3 kA, AC-DC sensitive, Type G/B (ÖVE E 8601)

SG49812

4-poles

$I_n/I_{\Delta n}$ (A)	Operating frequency (Hz)	Type Designation	Article No.	Units per package
25/0.03	50	FRCdM-25/4/003-G/B	167892	1/30
25/0.3	50/60	FRCdM-25/4/03-G/B	167896	1/30
40/0.03	50	FRCdM-40/4/003-G/B	167893	1/30
40/0.3	50/60	FRCdM-40/4/03-G/B	167897	1/30
63/0.03	50	FRCdM-63/4/003-G/B	167894	1/30
63/0.3	50/60	FRCdM-63/4/03-G/B	167898	1/30

Type S/B

Selective + surge current-proof 5 kA, Type S/B

SG49812

4-poles

25/0.3	50	FRCdM-25/4/03-S/B	167900	1/30
40/0.3	50	FRCdM-40/4/03-S/B	167901	1/30
63/0.3	50	FRCdM-63/4/03-S/B	167902	1/30

Type G/Bfq

Surge current-proof 3 kA, AC-DC sensitive, Type G/Bfq (ÖVE E 8601)

SG49812

4-poles

25/0.03	50	FRCdM-25/4/003-G/Bfq	179530	1/30
25/0.3	50/60	FRCdM-25/4/03-G/Bfq	167904	1/30
40/0.03	50	FRCdM-40/4/003-G/Bfq	179531	1/30
40/0.3	50/60	FRCdM-40/4/03-G/Bfq	167905	1/30
63/0.03	50	FRCdM-63/4/003-G/Bfq	179532	1/30
63/0.3	50/60	FRCdM-63/4/03-G/Bfq	167906	1/30

Type S/Bfq

Selective + surge current-proof 5 kA, Type S/Bfq

SG49812

4-poles

25/0.3	50	FRCdM-25/4/03-S/Bfq	167908	1/30
40/0.3	50	FRCdM-40/4/03-S/Bfq	167909	1/30
63/0.3	50	FRCdM-63/4/03-S/Bfq	167910	1/30

Type G/B+

Surge current-proof 3 kA, Type G/B+ (ÖVE E 8601) kHz

SG49812

4-poles

$I_n/I_{\Delta n}$ (A)	Operating frequency (Hz)	Type Designation	Article No.	Units per package
25/0.03	50	FRCdM-25/4/003-G/B+	167880	1/30
25/0.3	50/60	FRCdM-25/4/03-G/B+	167884	1/30
40/0.03	50	FRCdM-40/4/003-G/B+	167881	1/30
40/0.3	50/60	FRCdM-40/4/03-G/B+	167885	1/30
63/0.03	50	FRCdM-63/4/003-G/B+	167882	1/30
63/0.3	50/60	FRCdM-63/4/03-G/B+	167886	1/30

Type S/B+

Selective + surge current-proof 5 kA, Type S/B+ kHz

SG49812

4-poles

25/0.3	50	FRCdM-25/4/03-S/B+	167888	1/30
40/0.3	50	FRCdM-40/4/03-S/B+	167889	1/30
63/0.3	50	FRCdM-63/4/03-S/B+	167890	1/30

Residual Current Devices FRCdM - Special types for 60 Hz Networks

Type G/B

Surge current-proof 3 kA, AC-DC sensitive, Type G/B (ÖVE E 8601)

SG49812

4-poles

$I_n/I_{\Delta n}$ (A)	Operating frequency (Hz)	Type Designation	Article No.	Units per package
25/0.03	60	FRCdM-25/4/003-G/B/60Hz	180418	1/30
40/0.03	60	FRCdM-40/4/003-G/B/60Hz	180421	1/30
63/0.03	60	FRCdM-63/4/003-G/B/60Hz	180424	1/30

Type G/Bfq

Surge current-proof 3 kA, AC-DC sensitive, Type G/Bfq (ÖVE E 8601)

SG49812

4-poles

25/0.03	60	FRCdM-25/4/003-G/Bfq/60Hz	180420	1/30
40/0.03	60	FRCdM-40/4/003-G/Bfq/60Hz	180423	1/30
63/0.03	60	FRCdM-63/4/003-G/Bfq/60Hz	180426	1/30

Type G/B+

Surge current-proof 3 kA, Type G/B+ (ÖVE E 8601) kHz

SG49812

4-poles

25/0.03	60	FRCdM-25/4/003-G/B+/60Hz	180419	1/30
25/0.3	50/60	FRCdM-25/4/03-G/B+	167884	1/30
40/0.03	60	FRCdM-40/4/003-G/B+/60Hz	180422	1/30
40/0.3	50/60	FRCdM-40/4/03-G/B+	167885	1/30
63/0.03	60	FRCdM-63/4/003-G/B+/60Hz	180425	1/30
63/0.3	50/60	FRCdM-63/4/03-G/B+	167886	1/30

Specifications | Residual Current Devices FRCdM - digital, Type B, Bfq and B+

Description

- Residual current devices, all-current sensitive
- Shape compatible with and suitable for standard busbar connection to other devices of the xEffect- and xPole-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 FAZ, FRBmM-1N 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 (G, S) 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
- The RCD is suitable for “fault protection” and “additional protection” within the meaning of the applicable installation rules.
- 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 year. The system operator must be informed of this obligation and his responsibility in a way that can be proven. Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it’s recommended to test in monthly intervals. A test is further needed if red and yellow LED are flashing alternately.
- 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% $I_{\Delta n}$
  - Tolerance: ± 5%
- Potential-free auxiliary contact for use in control circuits, insulated from main circuit of the switch gear according to IEC/EN60664 (0.25A ohmic load / 240V AC) in parallel with the yellow LED, for external prewarning function. The potential-free auxiliary contact stays ON also when the breaker trips. After switching the breaker ON again the contact will be reseted. The potential-free contact (13, 14) provides only basic insulation from load side terminals of the RCCB. Without any additional protective measures (isolation transformer 1:1 according to IEC/EN 60664) the potential-free auxiliary contact (13, 14) may only be supplied from the load side terminals. See also connection diagrams.
- **Type -G/B and G/B+:** 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). Protection against all types of fault currents.
- **Type -S/B and S/B+:** Selective residual current device. Protection against all types of fault currents.
- **Type -S/Bfq:** Suitable for speed-controlled drives with frequency converters inhousehold, trade, and industry.Unwanted tripping is avoided thanks to a tripping characteristic designedparticularly for frequency converters. Protection against all types of fault currents.

Local Indication RCCB

Statusanzeige LED		red / yellow / green
Permanent light green		Normal operation
Permanent light yellow		The measured residual current is higher than 30% of the nomi$_{va}$l tripping value.
Permanent light red		The measured residual current is higher than 50% of the no$_{\mu i}$nal tripping value.
Flashing yellow/red		Check the device with test key. If the LEDs are still flashing check the direction of connection (supply side / load side).

Remote Indication

Potential-free auxiliary contact for use in control circuits. The potential-free auxiliary contact (13, 14) provides only basic insulation from load side terminals (2, 4, 6, N) of the RCCB. Without any additional protective measures (isolation transformer 1:1 according to IEC/EN 60664) the potential-free auxiliary contact (13, 14) may only be supplied from the load side terminals (2, 4, 6, N). See also connection diagrams ②, ③. 0.25A ohmic load / 240V AC.

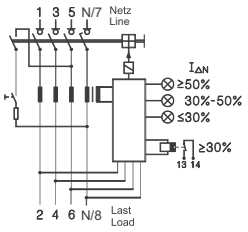
Accessories:		
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Tripping signal contact for subsequent installation to the right	Z-NHK	248434
Automatic restarting device	Z-FW/LP	248296
	Z-FW-LPD	265244
Remote control	Z-FW-MO	284730
Pre-mounted sets	Z-FW-LP/MO	290171
	Z-FW-LPD/MO	290172
Remote testing module	Z-FW/001	248297
	Z-FW/003	248298
	Z-FW/010	248299
	Z-FW/030	248300
	Z-FW/050	248301
Terminal cover 4-poles	Z-RC/AK-4TE	101062

Technical Data

		FRCdM Type B, Bfq and B+
Electrical		
Design according to		Types B and Bfq acc. to IEC/EN 61008, IEC/EN 62423 Types B+ acc. to VDE 0664-400, formerly known as VDE V 0664-110 Type G/B, G/Bfq and G/B+ additional acc. to ÖVE E 8601
Current test marks as printed onto the device		
Tripping		
Type G		10 ms delay @ 50 Hz
Type S		40 ms delay @ 50 Hz - with selective disconnecting function
Rated voltage	U_n	240/415 V AC 50 Hz and/or 60 Hz – see individual article for operating frequency
Limits operation voltage electronic		50 – 456V AC
Limits operation voltage test circuit		
30 mA		196 - 264V AC
300 mA		196 - 456V AC
Rated tripping current	$I_{\Delta n}$	30, 300 mA
Sensitivity		All types of current
Rated insulation voltage	U_i	440 V
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50µs)
Rated short circuit capacity	I_{cn}	10 kA with back-up fuse
Peak withstand current		
Type G/B, G/B+ and G/Bfq		3 kA (8/20 µs) surge current-proof
Type S/B, S/B+ and S/Bfq		typ. 5 kA (8/20 µs) selective + surge current-proof
Rated breaking capacitiy	I_m	
or rated fault breaking capacity	$I_{\Delta m}$	
I_n = 25-40 A		500 A
I_n = 63 A		630 A
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 20,000 operating cycles
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 predection 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 (with slotted screw acc. to EN ISO 4757-Z2, Pozidriv PZ2)
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Operation temperature		-25°C to +40°C (for higher values see table on ambient temperature)
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		25-55°C/90-95% relative humidity acc. to IEC 60068-2
Contact position indicator		red / green
Tripping indicator		white / blue
Alarm contact (potential-free)		
Rated breaking capacitiy @ 30 V DC (resistive load)		2 A
Rated breaking capacitiy @ 240 V AC (resistive load)		0.25 A
Maximum switching power (resistive load)		60 W
Maximum switching voltage DC		220 V
Maximum switching voltage AC		240 V
Maximum switching current		2 A
Minimum switching capacity (reference value)		10 µA, 10 mV DC
Endurance		
Electrical (at 20 cpm) 2 A 30 V DC resistive load)		$>10^5$
Electrical (at 20 cpm) 1 A 30 V DC resistive load)		$>5 \times 10^5$
Terminal capacity		0.25 - 1.5 mm^2

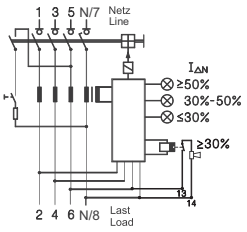
Connection diagram

4-poles



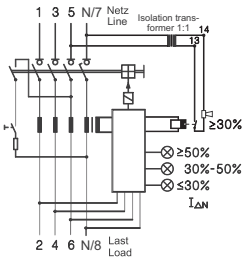
① Basic diagram

4-poles



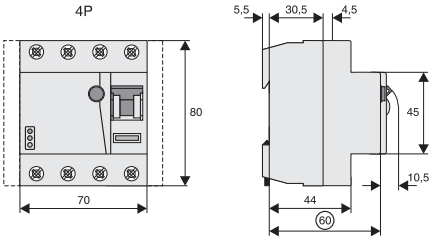
② Signalisation without Isolation Transformer 1:1 (IEC/EN 60664)

4-poles



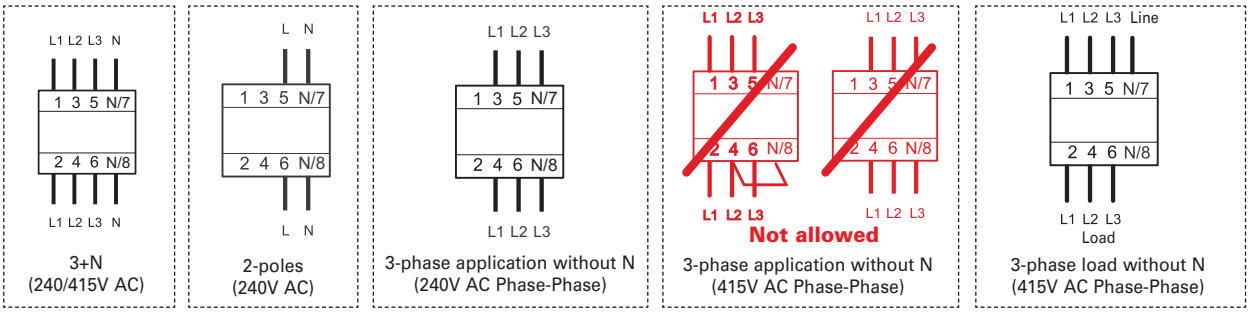
③ Signalisation with Isolation Transformer 1:1 (IEC/EN 60664)

Dimensions (mm)

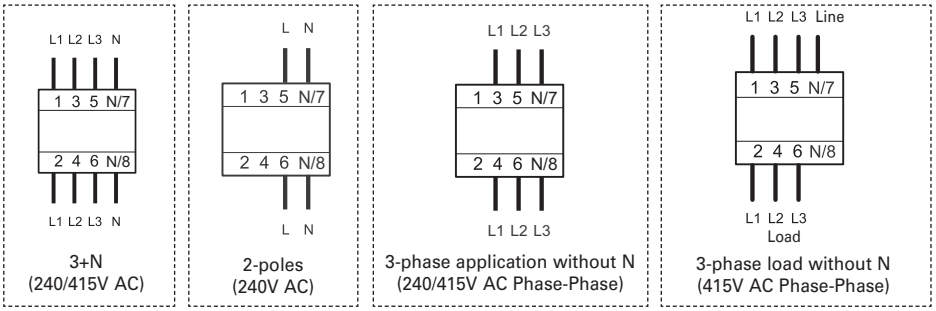


Correct connection

30mA Types:



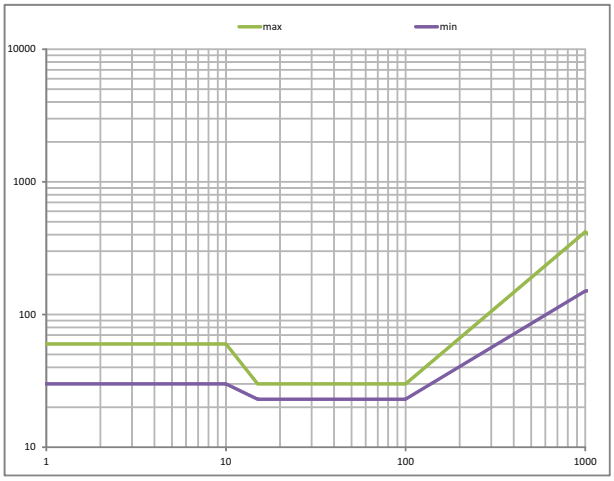
300mA Types:



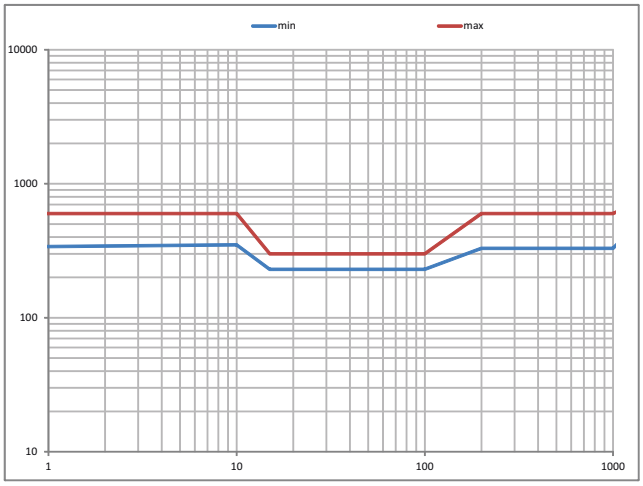
- Disconnect load side of the switch gear, if you make a insulation test of the installation!
- Please take care of supply side and load side!

Tripping current frequency response FRCdM Type B, Bfq and B+

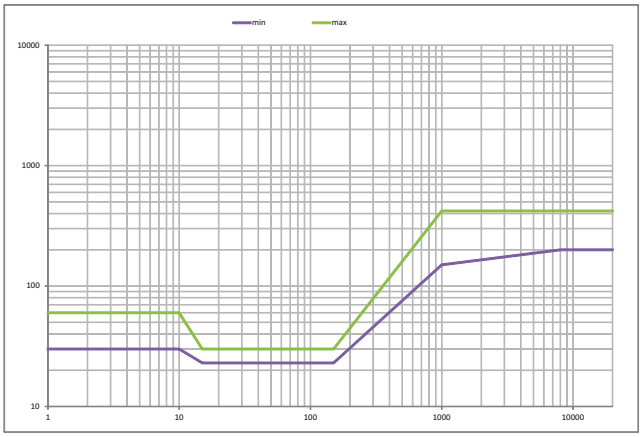
Type B 30mA



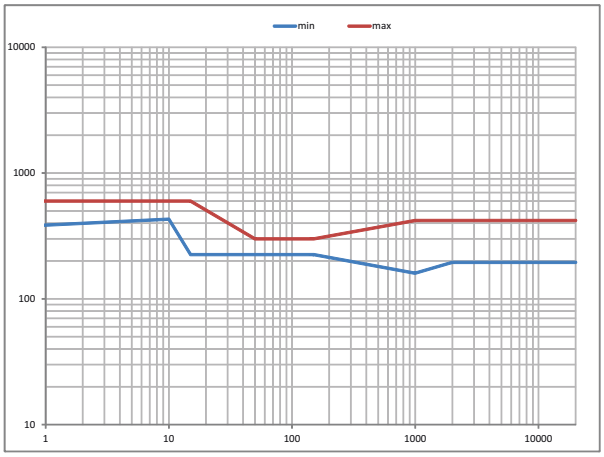
Type B 300mA



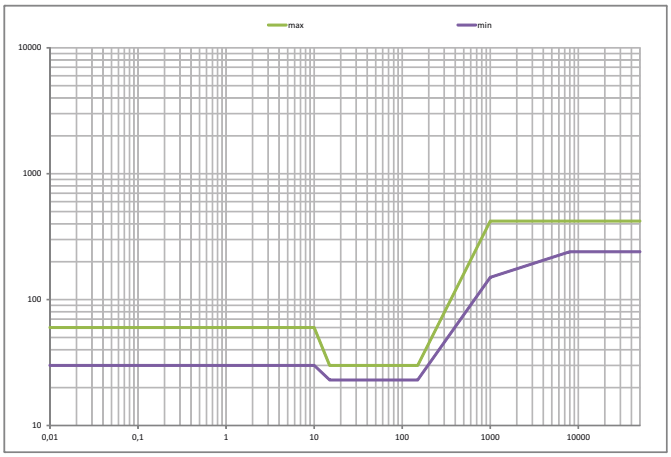
Type B+ 30mA



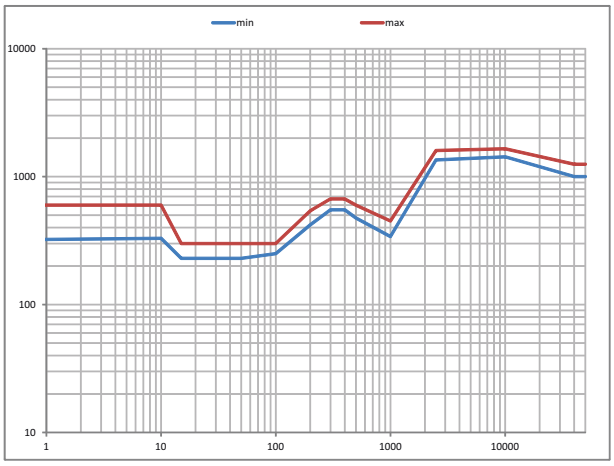
Type B+ 300mA



Type Bfq 30mA



Type Bfq 300mA



Power Loss at I_n FRCdM

(entire unit)	
In [A]	P* [W]
25	4.6
40	6.2
63	10.0
* 50Hz	

Impact of ambient temperature on the maximum permanent current allowed (A) FRCdM Type B, Bfq and B+

	25A	**40A**	**63A**
Ambient temperature	**4p**	**4p**	**4p**
40°	25	40	63
45°	25	40	56
50°	25	40	50
55°	25	35	45
60°	25	30	40
65°	-	-	-
70°	-	-	-
75°	-	-	-

Note: Please make sure that these values are not exceeded and that any upstream thermal overload protection switches off in time.

Max. back-up fuse FRCdM

In [A]	Short Circuit [A]	Overload [A]
25	63 gG/gl	25 gG/gl
40	63 gG/gl	40 gG/gl
63	63 gG/gl	63 gG/gl

Important:
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.

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Description

- A complete spectrum of compact residual current devices for a wide range of applications
- For fault current/residual current protection and additional protection
- Wide variety of nominal currents
- Comprehensive range of accessories
- Real contact position indicator
- Automatic re-setting possible

Type AC

Conditionally surge current-proof 250 A, Type AC

SG02713

2-poles

$I_n/I_{\Delta n}$ (A)	Operating frequency (Hz)	Type Designation	Article No.	Units per package
16/0.03	50	FRCmM-16/2/003	170390	1/60
16/0.1	50	FRCmM-16/2/01	170396	1/60
16/0.3	50	FRCmM-16/2/03	170402	1/60
16/0.5	50	FRCmM-16/2/05	170405	1/60
25/0.03	50	FRCmM-25/2/003	170391	1/60
25/0.1	50	FRCmM-25/2/01	170397	1/60
25/0.3	50	FRCmM-25/2/03	170403	1/60
25/0.5	50	FRCmM-25/2/05	170406	1/60
40/0.03	50	FRCmM-40/2/003	170392	1/60
40/0.1	50	FRCmM-40/2/01	170398	1/60
40/0.3	50	FRCmM-40/2/03	170404	1/60
40/0.5	50	FRCmM-40/2/05	170407	1/60
63/0.03	50	FRCmM-63/2/003	170393	1/60
63/0.1	50	FRCmM-63/2/01	170399	1/60
63/0.5	50	FRCmM-63/2/05	170408	1/60
80/0.03	50	FRCmM-80/2/003	170394	1/60
80/0.1	50	FRCmM-80/2/01	170400	1/60
100/0.03	50	FRCmM-100/2/003	170395	1/60
100/0.1	50	FRCmM-100/2/01	170401	1/60

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4-poles

16/0.03	50	FRCmM-16/4/003	170409	1/30
16/0.1	50	FRCmM-16/4/01	170415	1/30
16/0.3	50	FRCmM-16/4/03	170418	1/30
16/0.5	50	FRCmM-16/4/05	170424	1/30
25/0.03	50	FRCmM-25/4/003	170410	1/30
25/0.1	50	FRCmM-25/4/01	170416	1/30
25/0.3	50	FRCmM-25/4/03	170419	1/30
25/0.5	50	FRCmM-25/4/05	170425	1/30
40/0.03	50	FRCmM-40/4/003	170411	1/30
40/0.1	50	FRCmM-40/4/01	170417	1/30
40/0.3	50	FRCmM-40/4/03	170420	1/30
40/0.5	50	FRCmM-40/4/05	170426	1/30
63/0.03	50	FRCmM-63/4/003	170412	1/30
63/0.3	50	FRCmM-63/4/03	170421	1/30
63/0.5	50	FRCmM-63/4/05	170427	1/30
80/0.03	50	FRCmM-80/4/003	170413	1/30
80/0.3	50	FRCmM-80/4/03	170422	1/30
80/0.5	50	FRCmM-80/4/05	170428	1/30
100/0.03	50	FRCmM-100/4/003	170414	1/30
100/0.3	50	FRCmM-100/4/03	170423	1/30
100/0.5	50	FRCmM-100/4/05	170429	1/30

Type A

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

SG02713

2-poles

$I_n/I_{\Delta n}$ (A)	Operating frequency (Hz)	Type Designation	Article No.	Units per package
16/0.03	50/60	FRCmM-16/2/003-A	170430	1/60
16/0.1	50/60	FRCmM-16/2/01-A	170436	1/60
16/0.3	50/60	FRCmM-16/2/03-A	170278	1/60
16/0.5	50	FRCmM-16/2/05-A	170281	1/60
25/0.03	50/60	FRCmM-25/2/003-A	170431	1/60
25/0.1	50/60	FRCmM-25/2/01-A	170437	1/60
25/0.3	50/60	FRCmM-25/2/03-A	170279	1/60
25/0.5	50	FRCmM-25/2/05-A	170282	1/60
40/0.03	50/60	FRCmM-40/2/003-A	170432	1/60
40/0.1	50/60	FRCmM-40/2/01-A	170274	1/60
40/0.3	50/60	FRCmM-40/2/03-A	170280	1/60
40/0.5	50	FRCmM-40/2/05-A	170283	1/60
63/0.03	50/60	FRCmM-63/2/003-A	170433	1/60
63/0.1	50/60	FRCmM-63/2/01-A	170275	1/60
63/0.5	50	FRCmM-63/2/05-A	170284	1/60
80/0.03	50/60	FRCmM-80/2/003-A	170434	1/60
80/0.1	50/60	FRCmM-80/2/01-A	170276	1/60
100/0.03	50/60	FRCmM-100/2/003-A	170435	1/60
100/0.1	50/60	FRCmM-100/2/01-A	170277	1/60

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4-poles

16/0.03	50/60	FRCmM-16/4/003-A	170285	1/30
16/0.03	50/60	FRCmM-16/4/003-A-400	184567	1/30
16/0.1	50/60	FRCmM-16/4/01-A	170337	1/30
16/0.3	50/60	FRCmM-16/4/03-A	170340	1/30
16/0.5	50	FRCmM-16/4/05-A	170346	1/30
25/0.03	50/60	FRCmM-25/4/003-A	170332	1/30
25/0.03	50/60	FRCmM-25/4/003-A-400	184568	1/30
25/0.1	50/60	FRCmM-25/4/01-A	170338	1/30
25/0.3	50/60	FRCmM-25/4/03-A	170341	1/30
25/0.5	50	FRCmM-25/4/05-A	170347	1/30
40/0.03	50/60	FRCmM-40/4/003-A	170333	1/30
40/0.03	50/60	FRCmM-40/4/003-A-400	184569	1/30
40/0.1	50/60	FRCmM-40/4/01-A	170339	1/30
40/0.3	50/60	FRCmM-40/4/03-A	170342	1/30
40/0.5	50	FRCmM-40/4/05-A	170348	1/30
63/0.03	50/60	FRCmM-63/4/003-A	170334	1/30
63/0.03	50/60	FRCmM-63/4/003-A-400	184570	1/30
63/0.3	50/60	FRCmM-63/4/03-A	170343	1/30
63/0.5	50	FRCmM-63/4/05-A	170349	1/30
80/0.03	50/60	FRCmM-80/4/003-A	170335	1/30
80/0.03	50/60	FRCmM-80/4/003-A-400	184571	1/30
80/0.3	50/60	FRCmM-80/4/03-A	170344	1/30
80/0.5	50	FRCmM-80/4/05-A	170350	1/30
100/0.03	50/60	FRCmM-100/4/003-A	170336	1/30
100/0.3	50/60	FRCmM-100/4/03-A	170345	1/30
100/0.5	50	FRCmM-100/4/05-A	170351	1/30

Type G

Surge current-proof 3 kA, Type G (ÖVE E 8601)

SG02713

2-poles

$I_n/I_{\Delta n}$ (A)	Operating frequency (Hz)	Type Designation	Article No.	Units per package
16/0.03	50/60	FRCmM-16/2/003-G	170352	1/60
16/0.1	50/60	FRCmM-16/2/01-G	170358	1/60
16/0.3	50/60	FRCmM-16/2/03-G	170364	1/60
25/0.03	50/60	FRCmM-25/2/003-G	170353	1/60
25/0.1	50/60	FRCmM-25/2/01-G	170359	1/60
25/0.3	50/60	FRCmM-25/2/03-G	170365	1/60
40/0.03	50/60	FRCmM-40/2/003-G	170354	1/60
40/0.1	50/60	FRCmM-40/2/01-G	170360	1/60
40/0.3	50/60	FRCmM-40/2/03-G	170366	1/60
63/0.03	50/60	FRCmM-63/2/003-G	170355	1/60
63/0.1	50/60	FRCmM-63/2/01-G	170361	1/60
80/0.03	50/60	FRCmM-80/2/003-G	170356	1/60
80/0.1	50/60	FRCmM-80/2/01-G	170362	1/60
100/0.03	50/60	FRCmM-100/2/003-G	170357	1/60
100/0.1	50/60	FRCmM-100/2/01-G	170363	1/60

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4-poles

16/0.03	50/60	FRCmM-16/4/003-G	170367	1/30
16/0.1	50/60	FRCmM-16/4/01-G	170373	1/30
16/0.3	50/60	FRCmM-16/4/03-G	170376	1/30
25/0.03	50/60	FRCmM-25/4/003-G	170368	1/30
25/0.1	50/60	FRCmM-25/4/01-G	170374	1/30
25/0.3	50/60	FRCmM-25/4/03-G	170377	1/30
40/0.03	50/60	FRCmM-40/4/003-G	170369	1/30
40/0.1	50/60	FRCmM-40/4/01-G	170375	1/30
40/0.3	50/60	FRCmM-40/4/03-G	170378	1/30
63/0.03	50/60	FRCmM-63/4/003-G	170370	1/30
63/0.3	50/60	FRCmM-63/4/03-G	170379	1/30
80/0.03	50/60	FRCmM-80/4/003-G	170371	1/30
80/0.3	50/60	FRCmM-80/4/03-G	170380	1/30
100/0.03	50/60	FRCmM-100/4/003-G	170372	1/30
100/0.3	50/60	FRCmM-100/4/03-G	170381	1/30

Type G/A

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

SG02713

2-poles

$I_n/I_{\Delta n}$ (A)	Operating frequency (Hz)	Type Designation	Article No.	Units per package
16/0.03	50/60	FRCmM-16/2/003-G/A	170382	1/60
16/0.1	50/60	FRCmM-16/2/01-G/A	170388	1/60
16/0.3	50/60	FRCmM-16/2/03-G/A	170290	1/60
25/0.03	50/60	FRCmM-25/2/003-G/A	170383	1/60
25/0.1	50/60	FRCmM-25/2/01-G/A	170389	1/60
25/0.3	50/60	FRCmM-25/2/03-G/A	170291	1/60
40/0.03	50/60	FRCmM-40/2/003-G/A	170384	1/60
40/0.1	50/60	FRCmM-40/2/01-G/A	170286	1/60
40/0.3	50/60	FRCmM-40/2/03-G/A	170292	1/60
63/0.03	50/60	FRCmM-63/2/003-G/A	170385	1/60
63/0.1	50/60	FRCmM-63/2/01-G/A	170287	1/60
80/0.03	50/60	FRCmM-80/2/003-G/A	170386	1/60
80/0.1	50/60	FRCmM-80/2/01-G/A	170288	1/60
100/0.03	50/60	FRCmM-100/2/003-G/A	170387	1/60
100/0.1	50/60	FRCmM-100/2/01-G/A	170289	1/60

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4-poles

16/0.03	50/60	FRCmM-16/4/003-G/A	170293	1/30
16/0.1	50/60	FRCmM-16/4/01-G/A	170299	1/30
16/0.3	50/60	FRCmM-16/4/03-G/A	170302	1/30
25/0.03	50/60	FRCmM-25/4/003-G/A	170294	1/30
25/0.1	50/60	FRCmM-25/4/01-G/A	170300	1/30
25/0.3	50/60	FRCmM-25/4/03-G/A	170303	1/30
40/0.03	50/60	FRCmM-40/4/003-G/A	170295	1/30
40/0.1	50/60	FRCmM-40/4/01-G/A	170301	1/30
40/0.3	50/60	FRCmM-40/4/03-G/A	170304	1/30
63/0.03	50/60	FRCmM-63/4/003-G/A	170296	1/30
63/0.3	50/60	FRCmM-63/4/03-G/A	170305	1/30
80/0.03	50/60	FRCmM-80/4/003-G/A	170297	1/30
80/0.3	50/60	FRCmM-80/4/03-G/A	170306	1/30
100/0.03	50/60	FRCmM-100/4/003-G/A	170298	1/30
100/0.3	50/60	FRCmM-100/4/03-G/A	170307	1/30

Type S

Selective + surge current-proof 5 kA, Type S

SG02713

2-poles

$I_n/I_{\Delta n}$ (A)	Operating frequency (Hz)	Type Designation	Article No.	Units per package
16/0.1	50/60	FRCmM-16/2/01-S	170314	1/60
25/0.1	50/60	FRCmM-25/2/01-S	170315	1/60
40/0.1	50/60	FRCmM-40/2/01-S	170316	1/60
63/0.1	50/60	FRCmM-63/2/01-S	170317	1/60
80/0.1	50/60	FRCmM-80/2/01-S	170318	1/60
100/0.1	50/60	FRCmM-100/2/01-S	170319	1/60

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4-poles

$I_n/I_{\Delta n}$ (A)	Operating frequency (Hz)	Type Designation	Article No.	Units per package
16/0.1	50/60	FRCmM-16/4/01-S	170320	1/30
16/0.3	50/60	FRCmM-16/4/03-S	170324	1/30
25/0.1	50/60	FRCmM-25/4/01-S	170321	1/30
25/0.3	50/60	FRCmM-25/4/03-S	170325	1/30
40/0.1	50/60	FRCmM-40/4/01-S	170322	1/30
40/0.3	50/60	FRCmM-40/4/03-S	170326	1/30
63/0.1	50/60	FRCmM-63/4/01-S	170323	1/30
63/0.3	50/60	FRCmM-63/4/03-S	170327	1/30
80/0.3	50/60	FRCmM-80/4/03-S	170328	1/30
100/0.3	50/60	FRCmM-100/4/03-S	170329	1/30

Type S/A

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

SG02713

2-poles

$I_n/I_{\Delta n}$ (A)	Operating frequency (Hz)	Type Designation	Article No.	Units per package
16/0.1	50/60	FRCmM-16/2/01-S/A	170330	1/60
25/0.1	50/60	FRCmM-25/2/01-S/A	170331	1/60
40/0.1	50/60	FRCmM-40/2/01-S/A	170438	1/60
63/0.1	50/60	FRCmM-63/2/01-S/A	170439	1/60
80/0.1	50/60	FRCmM-80/2/01-S/A	170440	1/60
100/0.1	50/60	FRCmM-100/2/01-S/A	170441	1/60

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4-poles

$I_n/I_{\Delta n}$ (A)	Operating frequency (Hz)	Type Designation	Article No.	Units per package
16/0.1	50/60	FRCmM-16/4/01-S/A	170442	1/30
16/0.3	50/60	FRCmM-16/4/03-S/A	170446	1/30
25/0.1	50/60	FRCmM-25/4/01-S/A	170443	1/30
25/0.3	50/60	FRCmM-25/4/03-S/A	170447	1/30
40/0.1	50/60	FRCmM-40/4/01-S/A	170444	1/30
40/0.3	50/60	FRCmM-40/4/03-S/A	170448	1/30
63/0.1	50/60	FRCmM-63/4/01-S/A	170445	1/30
63/0.3	50/60	FRCmM-63/4/03-S/A	170449	1/30
80/0.3	50/60	FRCmM-80/4/03-S/A	170450	1/30
100/0.3	50/60	FRCmM-100/4/03-S/A	170451	1/30

Type U

Short-time delayed + surge current-proof 3 kA, frequency converter-proof, Type U

SG02613

4-poles

$I_n/I_{\Delta n}$ (A)	Operating frequency (Hz)	Type Designation	Article No.	Units per package
16/0.03	50/60	FRCmM-16/4/003-U	170452	1/30
25/0.03	50/60	FRCmM-25/4/003-U	170453	1/30
40/0.03	50/60	FRCmM-40/4/003-U	170454	1/30
63/0.03	50/60	FRCmM-63/4/003-U	170455	1/30
80/0.03	50/60	FRCmM-80/4/003-U	170456	1/30
100/0.03	50/60	FRCmM-100/4/003-U	170457	1/30

Type U

Selective + surge current-proof 5 kA, frequency converter-proof, Type U

SG02613

4-poles

16/0.1	50/60	FRCmM-16/4/01-U	170458	1/30
16/0.3	50/60	FRCmM-16/4/03-U	170462	1/30
25/0.1	50/60	FRCmM-25/4/01-U	170459	1/30
25/0.3	50/60	FRCmM-25/4/03-U	170463	1/30
40/0.1	50/60	FRCmM-40/4/01-U	170460	1/30
40/0.3	50/60	FRCmM-40/4/03-U	170464	1/30
63/0.1	50/60	FRCmM-63/4/01-U	170461	1/30
63/0.3	50/60	FRCmM-63/4/03-U	170465	1/30
80/0.3	50/60	FRCmM-80/4/03-U	170466	1/30
100/0.3	50/60	FRCmM-100/4/03-U	170467	1/30

Type R

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

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4-poles

16/0.03	50/60	FRCmM-16/4/003-R	170308	1/30
25/0.03	50/60	FRCmM-25/4/003-R	170309	1/30
40/0.03	50/60	FRCmM-40/4/003-R	170310	1/30
63/0.03	50/60	FRCmM-63/4/003-R	170311	1/30
80/0.03	50/60	FRCmM-80/4/003-R	170312	1/30
100/0.03	50/60	FRCmM-100/4/003-R	170313	1/30

Specifications | Residual Current Devices FRCmM

Description

- Residual current devices
- Shape compatible with and suitable for standard busbar connection to other devices of the xEffect-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 FAZ, FRBmM-1N 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 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). Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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.
- **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 aviod 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 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.

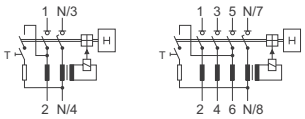
Accessories:		
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Tripping signal contact for subsequent installation to the right	Z-NHK	248434
Automatic restarting device	Z-FW/LP	248296
	Z-FW-LPD	265244
Remote control	Z-FW-MO	284730
Pre-mounted sets	Z-FW-LP/MO	290171
	Z-FW-LPD/MO	290172
Remote testing module	Z-FW/003	248298
	Z-FW/010	248299
	Z-FW/030	248300
	Z-FW/050	248301
Terminal cover 4-poles	Z-RC/AK-4TE	101062

Technical Data

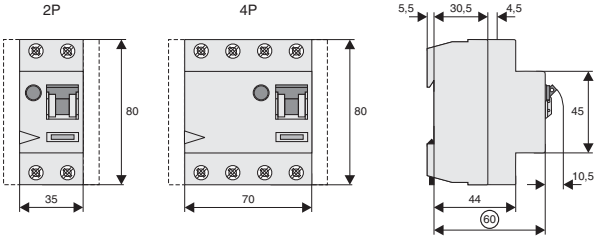
		FRCmM
Electrical		
Design according to		IEC/EN 61008 Type G acc. to ÖVE E 8601
Current test marks as printed onto the device		
Tripping		instantaneous
Type G , R		10 ms delay @ 50 Hz
Type S		40 ms delay @ 50 Hz - with selective disconnecting function
Type U (only 30 mA)		10 ms delay @ 50 Hz
Type U (except 30 mA)		40 ms delay @ 50 Hz - with selective disconnecting function
Rated voltage	U_n	240/415 V AC 50 Hz and/or 60 Hz – see individual article for operating frequency
Limits operation voltage test circuit		
2-poles		196 - 264 V~
4-poles 30 mA		196 - 264 V~
4-poles 30 mA -400		353 - 456 V~
4-poles 100, 300, 500 mA		196 - 456 V~
Rated tripping current	$I_{\Delta n}$	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 (1.2/50µs)
Rated short circuit capacity	I_{cn}	10 kA with back-up fuse
Peak withstand current		
Type AC, A		250 A (8/20 µs) surge current-proof
Type G, G/A		3 kA (8/20 µs) surge current-proof, 10 ms delay
Type S, S/A		5 kA (8/20 µs) surge current-proof, 40 ms delay
Rated breaking capacitiy	I_m	
or 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		1,000 A
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 20,000 operating cycles
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 predection 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 (with slotted screw acc. to EN ISO 4757-Z2, Pozidriv PZ2)
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Operation temperature		-25°C to +40°C (for higher values see table on ambient temperature)
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		acc. to IEC/EN 61008
Contact position indicator		red / green
Tripping indicator		white / blue

Connection diagram

2-poles 4-poles



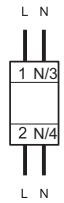
Dimensions (mm)



Correct connection

2-poles

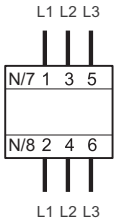
30, 100, 300, 500mA Types:



2-poles
(240V AC)

4-poles

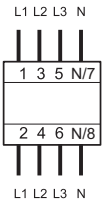
30mA -400 Types:



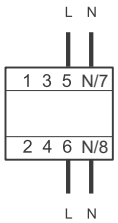
3-phase application without N
(415V AC Phase-Phase)

4-poles

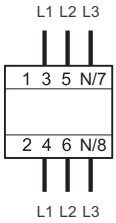
30mA Types:



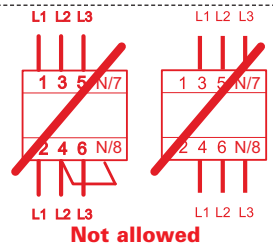
3+N
(240/415V AC)



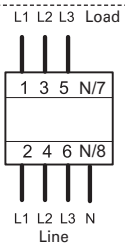
2-poles
(240V AC)



3-phase application without N
(240V AC Phase-Phase)

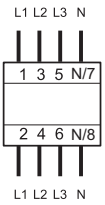


3-phase application without N
(415V AC Phase-Phase)

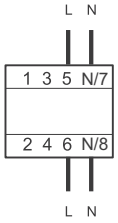


3-phase load without N
(415V AC Phase-Phase)

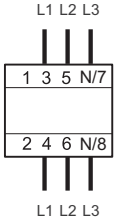
100, 300, 500mA Types:



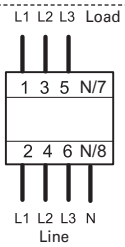
3+N
(240/415V AC)



2-poles
(240V AC)



3-phase application without N
(240/415V AC Phase-Phase)



3-phase load without N
(415V AC Phase-Phase)

Power Loss at I_n FRCmM

(entire unit)

Tripping: AC

I_n [A]	$I_{\Delta n}$ [mA]	P [W]
2-poles		
16	10	2.9
25	30	2.0
25	100, 300, 500	1.3
40	30	7.8
40	100, 300, 500	5.5
63	30	9.7
63	100, 300, 500	7.2
80	30	13.5
80	100, 300, 500	8.6
100	30, 100, 300	13.6
4-poles		
25	30	3.1
25	100, 300, 500	2.8
40	30	13.1
40	100, 300, 500	8.8
63	30	13.4
63	100, 300, 500	10.5
80	30, 100, 300, 500	11.4
100	30, 100, 300, 500	18.8

Tripping: A

I_n [A]	$I_{\Delta n}$ [mA]	P [W]
2-poles		
16	10	2.9
16	30	1.2
25	30	2.0
25	100, 300	1.3
40	30	7.8
40	100, 300, 500	5.5
63	30	9.7
63	100, 300, 500	7.2
100	30, 100, 300	13.6
4-poles		
25	30	3.1
25	100, 300, 500	2.8
40	30	13.1
40	100, 300, 500	8.8
63	30, 100, 300, 500	10.5
80	30, 300	11.4
100	30, 100, 300, 500	18.8

Tripping: G, G/A

I_n [A]	$I_{\Delta n}$ [mA]	P [W]
2-poles		
25	30, 100 (G)	2.0
40	30, 100 (G)	7.8
4-poles		
40	30 (G)	13.1
40	100 (G, G/A)	8.8
40	30 (G/A)	13.1
63	30 (G)	13.4
63	100 (G, G/A)	10.5
63	30 (G/A)	13.4
100	30, 300 (G/A)	18.8

Tripping: S, S/A

I_n [A]	$I_{\Delta n}$ [mA]	P [W]
2-poles		
40	100 (S, S/A)	7.8
40	300 (S)	5.5
4-poles		
25	100, 300 (S)	2.8
25	100 (S/A)	2.8
40	100, 300 (S, S/A)	8.8
63	100, 300 (S)	10.5
63	100, 300 (S/A)	10.5
80	100, 300 (S)	11.4
80	300 (S/A)	11.4
100	300 (S/A)	18.8

Tripping: R, U

I_n [A]	$I_{\Delta n}$ [mA]	P [W]
4-poles		
40	100, 300 (U)	8.4
63	30 (R)	13.4
63	100, 300 (U)	10.5
100	300 (U)	18.8

Impact of ambient temperature on the maximum permanent current allowed (A) FRCmM

	25A		40A		63A		80A		100A	
Ambient temperature	**2p**	**4p**	**2p**	**4p**	**2p**	**4p**	**2p**	**4p**	**2p**	**4p**
40°	25	25	40	40	63	63	80	80	100	100
45°	21	22	37	37	59	59	76	76	95	95
50°	18	19	33	34	55	55	72	72	90	90
55°	14	16	30	31	50	50	68	68	85	85
60°	–	–	26	27	45	45	64	64	80	80
65°	–	–	20	24	40	41	60	60	75	75
70°	–	–	14	19	34	37	56	56	70	70
75°	–	–	8	15	28	32	52	52	65	65

Note: Please make sure that these values are not exceeded and that any upstream thermal overload protection switches off in time.

Max. back-up fuse FRCmM

In [A]	Short Circuit [A]	Overload [A]
25	63 gG/gl	25 gG/gl
40	63 gG/gl	40 gG/gl
63	63 gG/gl	63 gG/gl
80	80 gG/gl	80 gG/gl
100	100 gG/gl	80 gG/gl

Important:
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.

SG02613

Description

- A complete spectrum of compact residual current devices foruse in the 110 V range of applications
- For fault current/residual current protection and additional protection
- Wide variety of nominal currents
- Comprehensive range of accessories
- Real contact position indicator
- Automatic re-setting possible

Type AC

Conditionally surge current-proof 250 A, Type AC

SG02713

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
25/0.03	FRCmM-25/2/003-110	180585	1/60
25/0.3	FRCmM-25/2/03-110	180586	1/60
40/0.03	FRCmM-40/2/003-110	180587	1/60
40/0.3	FRCmM-40/2/03-110	180588	1/60
63/0.03	FRCmM-63/2/003-110	180589	1/60
63/0.3	FRCmM-63/2/03-110	180590	1/60
80/0.03	FRCmM-80/2/003-110	180591	1/60
80/0.3	FRCmM-80/2/03-110	180592	1/60
100/0.03	FRCmM-100/2/003-110	180593	1/60
100/0.3	FRCmM-100/2/03-110	180594	1/60

SG02613

4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
25/0.03	FRCmM-25/4/003-110	180595	1/30
25/0.3	FRCmM-25/4/03-110	180596	1/30
40/0.03	FRCmM-40/4/003-110	180597	1/30
40/0.3	FRCmM-40/4/03-110	180598	1/30
63/0.03	FRCmM-63/4/003-110	180599	1/30
63/0.3	FRCmM-63/4/03-110	180600	1/30
80/0.03	FRCmM-80/4/003-110	180601	1/30
80/0.3	FRCmM-80/4/03-110	180602	1/30
100/0.03	FRCmM-100/4/003-110	180603	1/30
100/0.3	FRCmM-100/4/03-110	180604	1/30

Type A

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

SG02713

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
25/0.03	FRCmM-25/2/003-A-110	180605	1/60
25/0.3	FRCmM-25/2/03-A-110	180606	1/60
40/0.03	FRCmM-40/2/003-A-110	180607	1/60
40/0.3	FRCmM-40/2/03-A-110	180608	1/60
63/0.03	FRCmM-63/2/003-A-110	180609	1/60
80/0.03	FRCmM-80/2/003-A-110	180610	1/60
100/0.03	FRCmM-100/2/003-A-110	180611	1/60

SG02613

4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
25/0.03	FRCmM-25/4/003-A-110	180612	1/30
25/0.3	FRCmM-25/4/03-A-110	180613	1/30
40/0.03	FRCmM-40/4/003-A-110	180614	1/30
40/0.3	FRCmM-40/4/03-A-110	180615	1/30
63/0.03	FRCmM-63/4/003-A-110	180616	1/30
63/0.3	FRCmM-63/4/03-A-110	180617	1/30
80/0.03	FRCmM-80/4/003-A-110	180618	1/30
80/0.3	FRCmM-80/4/03-A-110	180619	1/30
100/0.03	FRCmM-100/4/003-A-110	180620	1/30
100/0.3	FRCmM-100/4/03-A-110	180621	1/30

Specifications | Residual Current Devices FRCmM-110

Description

- Residual current devices
- Shape compatible with and suitable for standard busbar connection to other devices of the xEffect-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 FAZ, FRBmM-1N can be mounted subsequently
- Auxiliary switch Z-HK 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 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). Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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.

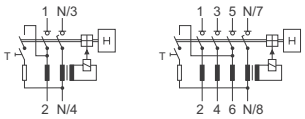
Accessories:		
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Tripping signal contact for subsequent installation to the right	Z-NHK	248434
Automatic restarting device	Z-FW/LP	248296
	Z-FW-LPD	265244
Remote control	Z-FW-MO	284730
Pre-mounted sets	Z-FW-LP/MO	290171
	Z-FW-LPD/MO	290172
Remote testing module	Z-FW/003	248298
	Z-FW/010	248299
	Z-FW/030	248300
Terminal cover 4-poles	Z-RC/AK-4TE	101062

Technical Data

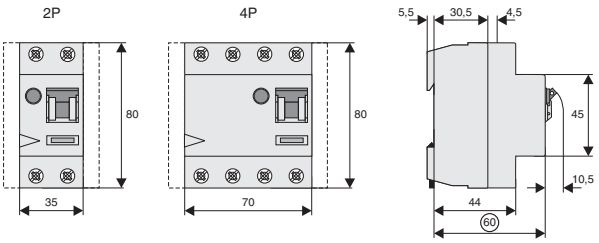
		FRCmM-110
Electrical		
Design according to Current test marks as printed onto the device		IEC/EN 61008
Tripping		instantaneous
Rated voltage	U_n	110/190V AC, Type AC: 50 Hz, Type A: 50/60 Hz
Limits operation voltage test circuit		94 - 121 V~
Rated tripping current	$I_{\Delta n}$	30, 300 mA
Sensitivity		AC and pulsating DC
Rated insulation voltage	U_i	440 V
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50µs)
Rated short circuit capacity	I_{cn}	10 kA with back-up fuse
Peak withstand current		
Type AC, A		250 A (8/20 µs) surge current-proof
Rated breaking capacitiy	I_m	
or 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		1,000 A
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 20,000 operating cycles
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 predection 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 (with slotted screw acc. to EN ISO 4757-Z2, Pozidriv PZ2)
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Operation temperature		-25°C to +40°C (for higher values see table on ambient temperature)
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		acc. to IEC/EN 61008
Contact position indicator		red / green
Tripping indicator		white / blue

Connection diagram

2-poles 4-poles



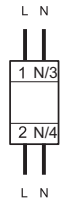
Dimensions (mm)



Correct connection

2-poles

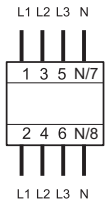
30, 300mA Types:



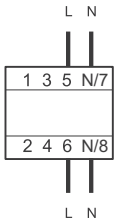
2-poles
(110V AC)

4-poles

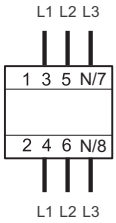
30mA Types:



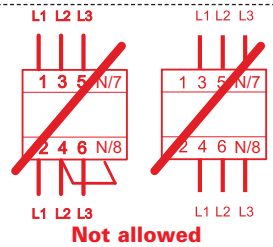
3+N
(110/190V AC)



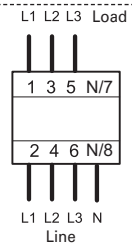
2-poles
(110V AC)



3-phase application without N
(110V AC Phase-Phase)

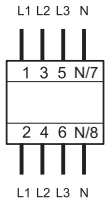


3-phase application without N
(190V AC Phase-Phase)

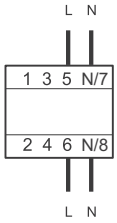


3-phase load without N
(190V AC Phase-Phase)

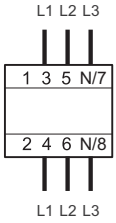
100, 300, 500mA Types:



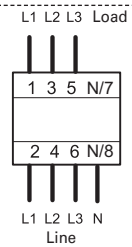
3+N
(110/190V AC)



2-poles
(110V AC)



3-phase application without N
(110/190V AC Phase-Phase)



3-phase load without N
(190V AC Phase-Phase)

Power Loss at I_n FRCmM-110

(entire unit)

Tripping: AC

I_n [A]	$I_{\Delta n}$ [mA]	P [W]
2-poles		
25	30	2.0
25	100, 300, 500	1.3
40	30	7.8
40	100, 300, 500	5.5
63	30	9.7
63	100, 300, 500	7.2
80	30	13.5
80	100, 300, 500	8.6
100	30, 100, 300	13.6
4-poles		
25	30	3.1
25	100, 300, 500	2.8
40	30	13.1
40	100, 300, 500	8.8
63	30	13.4
63	100, 300, 500	10.5
80	30, 100, 300, 500	11.4
100	30, 100, 300, 500	18.8

Tripping: A

I_n [A]	$I_{\Delta n}$ [mA]	P [W]
2-poles		
16	30	1.2
25	30	2.0
25	100, 300	1.3
40	30	7.8
40	100, 300, 500	5.5
63	30	9.7
63	100, 300, 500	7.2
100	30, 100, 300	13.6
4-poles		
25	30	3.1
25	100, 300, 500	2.8
40	30	13.1
40	100, 300, 500	8.8
63	30, 100, 300, 500	10.5
80	30, 300	11.4
100	30, 100, 300, 500	18.8

sg01616

Description

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

Type G/F

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

sg01516

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
16/0.03	FRCMM-16/2/003-G/F	187365	1/60
16/0.1	FRCMM-16/2/01-G/F	187371	1/60
16/0.3	FRCMM-16/2/03-G/F	187377	1/60
25/0.03	FRCMM-25/2/003-G/F	187366	1/60
25/0.1	FRCMM-25/2/01-G/F	187372	1/60
25/0.3	FRCMM-25/2/03-G/F	187378	1/60
40/0.03	FRCMM-40/2/003-G/F	187367	1/60
40/0.1	FRCMM-40/2/01-G/F	187373	1/60
40/0.3	FRCMM-40/2/03-G/F	187379	1/60
63/0.03	FRCMM-63/2/003-G/F	187368	1/60
63/0.1	FRCMM-63/2/01-G/F	187374	1/60
63/0.3	FRCMM-63/2/03-G/F	187380	1/60
80/0.03	FRCMM-80/2/003-G/F	187369	1/60
80/0.1	FRCMM-80/2/01-G/F	187375	1/60
80/0.3	FRCMM-80/2/03-G/F	187381	1/60
100/0.03	FRCMM-100/2/003-G/F	187370	1/60
100/0.1	FRCMM-100/2/01-G/F	187376	1/60
100/0.3	FRCMM-100/2/03-G/F	187382	1/60

sg01616

4-poles

16/0.03	FRCMM-16/4/003-G/F	187407	1/30
16/0.1	FRCMM-16/4/01-G/F	187413	1/30
16/0.3	FRCMM-16/4/03-G/F	187419	1/30
25/0.03	FRCMM-25/4/003-G/F	187408	1/30
25/0.1	FRCMM-25/4/01-G/F	187414	1/30
25/0.3	FRCMM-25/4/03-G/F	187420	1/30
40/0.03	FRCMM-40/4/003-G/F	187409	1/30
40/0.1	FRCMM-40/4/01-G/F	187415	1/30
40/0.3	FRCMM-40/4/03-G/F	187421	1/30
63/0.03	FRCMM-63/4/003-G/F	187410	1/30
63/0.1	FRCMM-63/4/01-G/F	187416	1/30
63/0.3	FRCMM-63/4/03-G/F	187422	1/30
80/0.03	FRCMM-80/4/003-G/F	187411	1/30
80/0.1	FRCMM-80/4/01-G/F	187417	1/30
80/0.3	FRCMM-80/4/03-G/F	187423	1/30
100/0.03	FRCMM-100/4/003-G/F	187412	1/30
100/0.1	FRCMM-100/4/01-G/F	187418	1/30
100/0.3	FRCMM-100/4/03-G/F	187424	1/30

Type S/F

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

sg01516

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
16/0.1	FRCMM-16/2/01-S/F	187389	1/60
16/0.3	FRCMM-16/2/03-S/F	187395	1/60
25/0.1	FRCMM-25/2/01-S/F	187390	1/60
25/0.3	FRCMM-25/2/03-S/F	187396	1/60
40/0.1	FRCMM-40/2/01-S/F	187391	1/60
40/0.3	FRCMM-40/2/03-S/F	187397	1/60
63/0.1	FRCMM-63/2/01-S/F	187392	1/60
63/0.3	FRCMM-63/2/03-S/F	187398	1/60
80/0.1	FRCMM-80/2/01-S/F	187393	1/60
80/0.3	FRCMM-80/2/03-S/F	187399	1/60
100/0.1	FRCMM-100/2/01-S/F	187394	1/60
100/0.3	FRCMM-100/2/03-S/F	187400	1/60

sg01616

4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
16/0.1	FRCMM-16/4/01-S/F	187431	1/30
16/0.3	FRCMM-16/4/03-S/F	187437	1/30
25/0.1	FRCMM-25/4/01-S/F	187432	1/30
25/0.3	FRCMM-25/4/03-S/F	187438	1/30
40/0.1	FRCMM-40/4/01-S/F	187433	1/30
40/0.3	FRCMM-40/4/03-S/F	187439	1/30
63/0.1	FRCMM-63/4/01-S/F	187434	1/30
63/0.3	FRCMM-63/4/03-S/F	187440	1/30
80/0.1	FRCMM-80/4/01-S/F	187435	1/30
80/0.3	FRCMM-80/4/03-S/F	187441	1/30
100/0.1	FRCMM-100/4/01-S/F	187436	1/30
100/0.3	FRCMM-100/4/03-S/F	187442	1/30

Specifications | Residual Current Devices FRCmM, Type F

Description

- Residual current devices
- Shape compatible with and suitable for standard busbar connection to other devices of the xEffect-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 FAZ, FRBmM-1N 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 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). Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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 1-phase frequency, higher load rating with DC residual currents up to 10 mA.

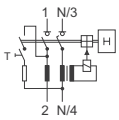
Accessories:		
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Tripping signal contact for subsequent installation to the right	Z-NHK	248434
Automatic restarting device	Z-FW/LP	248296
	Z-FW-LPD	265244
Remote control	Z-FW-MO	284730
Pre-mounted sets	Z-FW-LP/MO	290171
	Z-FW-LPD/MO	290172
Remote testing module	Z-FW/003	248298
	Z-FW/010	248299
	Z-FW/030	248300
	Z-FW/050	248301
Terminal cover 2-poles	Z-RC/AK-2TE	285385
Terminal cover 4-poles	Z-RC/AK-4TE	101062

Technical Data

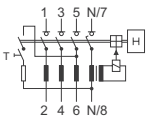
		FRCmM, Type F
Electrical		
Design according to		IEC/EN 62423 Type G acc. to ÖVE E 8601
Current test marks as printed onto the device		
Tripping		
Type G		10 ms delay
Type S		40 ms delay - with selective disconnecting function
Rated voltage	U_n	240/415 V AC, 50/60 Hz
Limits operation voltage test circuit		
2-poles		196 - 264 V~
4-poles 30 mA		196 - 264 V~
4-poles 100, 300 mA		196 - 456 V~
Rated tripping current	$I_{\Delta n}$	30, 100, 300 mA
Sensitivity		AC and pulsating DC
Rated insulation voltage	U_i	440 V
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50µs)
Rated short circuit capacity	I_{cn}	10 kA with back-up fuse
Peak withstand current		
Type G/F		3 kA (8/20 µs) surge current-proof, 10 ms delay
Type S/F		5 kA (8/20 µs) surge current-proof, 40 ms delay
Rated breaking capacitiy	I_m	
or 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		1,000 A
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 20,000 operating cycles
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 predection 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 (with slotted screw acc. to EN ISO 4757-Z2, Pozidriv PZ2)
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Operation temperature		-25°C to +40°C (for higher values see table on ambient temperature)
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		acc. to IEC/EN 62423
Contact position indicator		red / green
Tripping indicator		white / blue

Connection diagram

2-poles

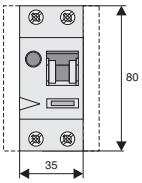


4-poles

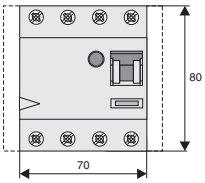


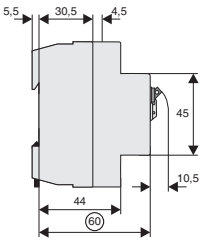
Dimensions (mm)

2P



4P





Correct connection

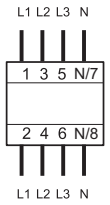
2-poles

30, 100, 300mA Types:

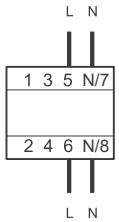
2-poles
(240V AC)

4-poles

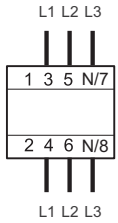
30mA Types:



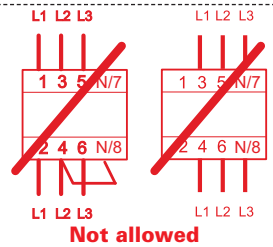
3+N
(240/415V AC)



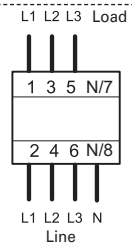
2-poles
(240V AC)



3-phase application without N
(240V AC Phase-Phase)

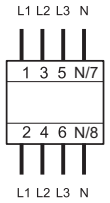


3-phase application without N
(415V AC Phase-Phase)

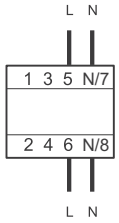


3-phase load without N
(415V AC Phase-Phase)

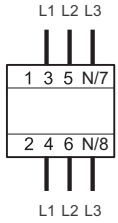
100, 300mA Types:



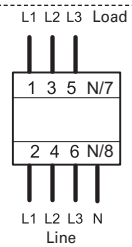
3+N
(240/415V AC)



2-poles
(240V AC)



3-phase application without N
(240/415V AC Phase-Phase)



3-phase load without N
(415V AC Phase-Phase)

Impact of ambient temperature on the maximum permanent current allowed (A) FRCmM, Type F

	25A		40A		63A		80A		100A	
Ambient temperature	**2p**	**4p**	**2p**	**4p**	**2p**	**4p**	**2p**	**4p**	**2p**	**4p**
40°	25	25	40	40	63	63	80	80	100	100
45°	21	22	37	37	59	59	76	76	95	95
50°	18	19	33	34	55	55	72	72	90	90
55°	14	16	30	31	50	50	68	68	85	85
60°	–	–	26	27	45	45	64	64	80	80
65°	–	–	20	24	40	41	60	60	75	75
70°	–	–	14	19	34	37	56	56	70	70
75°	–	–	8	15	28	32	52	52	65	65

Note: Please make sure that these values are not exceeded and that any upstream thermal overload protection switches off in time.

Max. back-up fuse FRCmM, Type F

In [A]	Short Circuit [A]	Overload [A]
25	63 gG/gl	25 gG/gl
40	63 gG/gl	40 gG/gl
63	63 gG/gl	63 gG/gl
80	80 gG/gl	80 gG/gl
100	100 gG/gl	80 gG/gl

Important:
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.

Residual Current Devices

Residual Current Devices FRCmM-NA Type A according to UL1053 & IEC/EN 61008

SG49612

Description

- Wide range of compact types of RCDs serving as fault-current and additional protection according to UL1053 & IEC/EN 61008 standards, suitable for worldwide use
- Comprehensive range of accessories
- Real contact position indicator
- Fault current tripping indicator
- Automatic re-setting possible
- Transparent designation plate

Type A

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

SG48612

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
25/0.03	FRCmM-25/2/003-A-NA	167113	1/60
25/0.3	FRCmM-25/2/03-A-NA	167116	1/60
40/0.03	FRCmM-40/2/003-A-NA	167114	1/60
40/0.3	FRCmM-40/2/03-A-NA	167117	1/60
63/0.03	FRCmM-63/2/003-A-NA	167115	1/60
63/0.3	FRCmM-63/2/03-A-NA	167118	1/60

SG49612

4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
25/0.03	FRCmM-25/4/003-A-NA	167125	1/30
25/0.3	FRCmM-25/4/03-A-NA	167104	1/30
40/0.03	FRCmM-40/4/003-A-NA	167102	1/30
40/0.3	FRCmM-40/4/03-A-NA	167105	1/30
63/0.03	FRCmM-63/4/003-A-NA	167103	1/30
63/0.3	FRCmM-63/4/03-A-NA	167106	1/30

Type G/A

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

SG48612

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
25/0.03	FRCmM-25/2/003-G/A-NA	167119	1/60
25/0.3	FRCmM-25/2/03-G/A-NA	167122	1/60
40/0.03	FRCmM-40/2/003-G/A-NA	167120	1/60
40/0.3	FRCmM-40/2/03-G/A-NA	167123	1/60
63/0.03	FRCmM-63/2/003-G/A-NA	167121	1/60
63/0.3	FRCmM-63/2/03-G/A-NA	167124	1/60

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4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
25/0.03	FRCmM-25/4/003-G/A-NA	167107	1/30
25/0.3	FRCmM-25/4/03-G/A-NA	167110	1/30
40/0.03	FRCmM-40/4/003-G/A-NA	167108	1/30
40/0.3	FRCmM-40/4/03-G/A-NA	167111	1/30
63/0.03	FRCmM-63/4/003-G/A-NA	167109	1/30
63/0.3	FRCmM-63/4/03-G/A-NA	167112	1/30

Specifications | Residual Current Devices FRCmM-NA

Description

- Residual current devices
- Purpose terminal lift above and below
- Universal tripping signal switch, also suitable for FAZ, FRBmM-1N can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green
- Tripping indicator white - blue
- All types suitable for being used with standard fluorescent tubes with or without electronical ballast (30mA-RCD: 30 units per phase conductor, 300mA-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-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). Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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.
- **Type -G/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
Automatic restarting device *)	Z-FW/LP	248296
	Z-FW-LPD	265244
Remote control *)	Z-FW-MO	284730
Pre-mounted sets *)	Z-FW-LP/MO	290171
	Z-FW-LPD/MO	290172
Remote testing module *)	Z-FW/003	248298
	Z-FW/030	248300
Terminal cover 4-poles *)	Z-RC/AK-4TE	101062

*) without UL certification

Technical Data

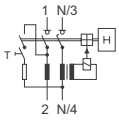
		FRCmM-NA
Electrical according to IEC/EN 61008		
Design according to		IEC/EN 61008, ÖVE E 8601
Current test marks as printed onto the device		
Tripping		instantaneous
Type G		10 ms delay at 50 Hz
Rated voltage	U_n	240/415 V; 50/60 Hz
Limits operation voltage test circuit		
2-poles		196 - 264 V~
4-poles 30 mA		196 - 264 V~
4-poles 300 mA		196 - 456 V~
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 (1.2/50µs)
Rated short circuit capacity	I_{cn}	10 kA with back-up fuse
Peak withstand current		
Type A		250 A (8/20 µs) surge current-proof
Type G/A		3 kA (8/20 µs) surge current-proof, 10 ms delay
Rated breaking capacitiy	I_m	
or rated fault breaking capacity	$I_{\Delta m}$	
I_n = 25-40 A		500 A
I_n = 63 A		630 A
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 10,000 operating cycles
Electrical according to UL1053		
Design according to		UL1053
Current test marks as printed onto the device		
Tripping		instantaneous
Type G		8 ms delay at 60 Hz
Rated voltage	U_n	480Y/277 V, 60 Hz
Limits operation voltage test circuit		
2-poles		196 - 305 V~
4-poles 30 mA		196 - 305 V~
4-poles 300 mA		196 - 528 V~
Pick-up current		
30 mA Types		22 mA
300 mA Types		200 mA
Sensitivity		AC and pulsating DC
Overvoltage tested		530 V
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50µs)
Rated short circuit capacity	I_{cn}	5 kA acc. to CSA
Rated breaking capacitiy	I_m	
or rated fault breaking capacity	$I_{\Delta m}$	
I_n = 25-40 A		500 A
I_n = 63 A		630 A
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 10,000 operating cycles

Mechanical

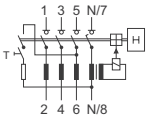
Frame size	45 mm
Device height	80 mm
Device width	35 mm (2MU), 70 mm (4MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Degree of predection in moisture-proof enclosure	IP54
Upper and lower terminals	lift terminals
Terminal protection	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 (with slotted screw acc. to EN ISO 4757-Z2, Pozidriv PZ2)
Operation temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61008
Humidity	5-95 %
Pollution degree	2
Contact position indicator	red / green
Tripping indicator	white / blue

Connection diagram

2-poles

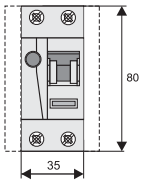


4-poles

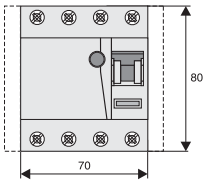


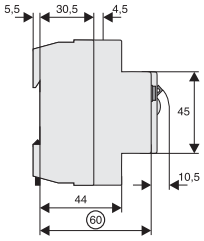
Dimensions (mm)

2P



4P





Correct connection

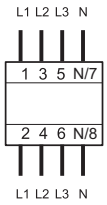
2-poles acc. to IEC61008/UL1053

30, 300mA Types:

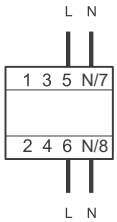
2-poles
(240V AC) IEC
(277V AC) UL

4-poles acc. to IEC61008

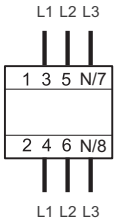
30mA Types:



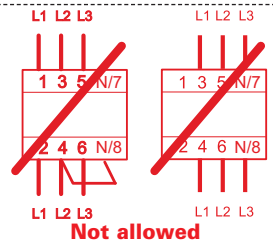
3+N
(240/415V AC) IEC



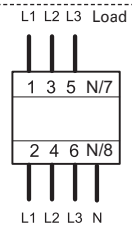
2-poles
(240V AC) IEC



3-phase application without N
(240V AC Phase-Phase) IEC

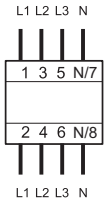


3-phase application without N
(415V AC Phase-Phase) IEC

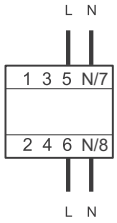


3-phase load without N
(415V AC Phase-Phase) IEC

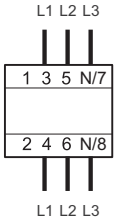
300mA Types:



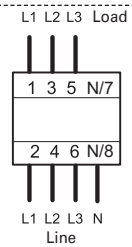
3+N
(240/415V AC) IEC



2-poles
(240V AC) IEC



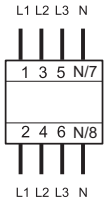
3-phase application without N
(240/415V AC Phase-Phase) IEC



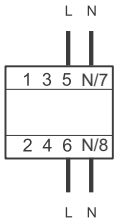
3-phase load without N
(415V AC Phase-Phase) IEC

4-poles acc. to UL1053

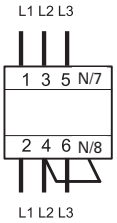
30, 300mA Types:



3+N
(480Y/277V AC) UL



2-poles
(277V AC) UL



3-phase application without N
(480Y/277V AC Phase-Phase) UL

Impact of ambient temperature on the maximum permanent current allowed (A) FRCmM-NA

	25A		40A		63A	
Ambient temperature	**2p**	**4p**	**2p**	**4p**	**2p**	**4p**
40°	25	25	40	40	63	63
45°	21	22	37	37	59	59
50°	18	19	33	34	55	55
55°	14	16	30	31	50	50
60°	–	–	26	27	45	45
65°	–	–	20	24	40	41
70°	–	–	14	19	34	37
75°	–	–	8	15	28	31

Note: Please make sure that these values are not exceeded and that any upstream thermal overload protection switches off in time.

Max. back-up fuse FRCmM-NA (acc. to IEC)

In [A]	Short Circuit [A]	Overload [A]
25	63 gG/gl	25 gG/gl
40	63 gG/gl	40 gG/gl
63	63 gG/gl	40 gG/gl

Important:
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.

Max. back-up fuse FRCmM-NA (acc. to UL)

In [A]	Short Circuit [A]
25-63	70 J-Class Fuse

Important:
The maximal possible operating current of the electrical installation may not exceed the rated current of the RCD (VDE 0100-520 Bbl. 2).

Residual Current Devices FRCmM-NA-110 Type A according to UL1053 & IEC/EN 61008

SG49612

Description

- Wide range of compact types of RCDs serving as fault-current and additional protection according to UL1053 & IEC/EN 61008 standards, suitable for worldwide use in the 110 V range of applications
- Comprehensive range of accessories
- Real contact position indicator
- Fault current tripping indicator
- Automatic re-setting possible
- Transparent designation plate

Type A

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

SG49612

4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
25/0.03	FRCmM-25/4/003-A-NA-110	167699	1/30
25/0.3	FRCmM-25/4/03-A-NA-110	167702	1/30
40/0.03	FRCmM-40/4/003-A-NA-110	167700	1/30
40/0.3	FRCmM-40/4/03-A-NA-110	167703	1/30
63/0.03	FRCmM-63/4/003-A-NA-110	167701	1/30
63/0.3	FRCmM-63/4/03-A-NA-110	167704	1/30

Type G/A

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

SG48612

2-poles

25/0.03	FRCmM-25/2/003-G/A-NA-110	167693	1/60
25/0.3	FRCmM-25/2/03-G/A-NA-110	167696	1/60
40/0.03	FRCmM-40/2/003-G/A-NA-110	167694	1/60
40/0.3	FRCmM-40/2/03-G/A-NA-110	167697	1/60
63/0.03	FRCmM-63/2/003-G/A-NA-110	167695	1/60
63/0.3	FRCmM-63/2/03-G/A-NA-110	167698	1/60

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4-poles

25/0.03	FRCmM-25/4/003-G/A-NA-110	167705	1/30
25/0.3	FRCmM-25/4/03-G/A-NA-110	167708	1/30
40/0.03	FRCmM-40/4/003-G/A-NA-110	167706	1/30
40/0.3	FRCmM-40/4/03-G/A-NA-110	167709	1/30
63/0.03	FRCmM-63/4/003-G/A-NA-110	167707	1/30
63/0.3	FRCmM-63/4/03-G/A-NA-110	167710	1/30

Specifications | Residual Current Devices FRCmM-NA-110

Description

- Residual current devices
- Purpose terminal lift above and below
- Universal tripping signal switch, also suitable for FAZ, FRBmM-1N can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green
- Tripping indicator white - blue
- All types suitable for being used with standard fluorescent tubes with or without electronical ballast (30mA-RCD: 30 units per phase conductor, 300mA-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-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). Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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.
- **Type -G/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
Automatic restarting device *)	Z-FW/LP	248296
	Z-FW-LPD	265244
Remote control *)	Z-FW-MO	284730
Pre-mounted sets *)	Z-FW-LP/MO	290171
	Z-FW-LPD/MO	290172
Remote testing module *)	Z-FW/003	248298
	Z-FW/030	248300
Terminal cover 4-poles *)	Z-RC/AK-4TE	101062

*) without UL certification

Technical Data

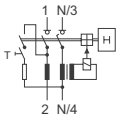
		FRCmM-NA-110
Electrical according to IEC/EN 61008		
Design according to		IEC/EN 61008, ÖVE E 8601
Current test marks as printed onto the device		
Tripping		instantaneous
Type G		10 ms delay at 50 Hz
Rated voltage	U_n	110/190 V, 50/60Hz
Limits operation voltage test circuit		
2-poles		94 - 121 V~
4-poles 30 mA		94 - 121 V~
4-poles 300 mA		94 - 210 V~
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 (1.2/50µs)
Rated short circuit capacity	I_{cn}	10 kA with back-up fuse
Peak withstand current		
Type A		250 A (8/20 µs) surge current-proof
Type G/A		3 kA (8/20 µs) surge current-proof, 10 ms delay
Rated breaking capacitiy	I_m	
or rated fault breaking capacity	$I_{\Delta m}$	
I_n = 25-40 A		500 A
I_n = 63 A		630 A
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 10,000 operating cycles
Electrical according to UL1053		
Design according to		UL1053
Current test marks as printed onto the device		
Tripping		instantaneous
Type G		8 ms delay at 60 Hz
Rated voltage	U_n	208/120 V, 60 Hz
Limits operation voltage test circuit		
2-poles		94 - 132 V~
4-poles 30 mA		94 - 132 V~
4-poles 300 mA		94 - 230 V~
Pick-up current		
30 mA Types		22 mA
300 mA Types		200 mA
Sensitivity		AC and pulsating DC
Overvoltage tested		530 V
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50µs)
Rated short circuit capacity	I_{cn}	5 kA acc. to CSA
Rated breaking capacitiy	I_m	
or rated fault breaking capacity	$I_{\Delta m}$	
I_n = 25-40 A		500 A
I_n = 63 A		630 A
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 10,000 operating cycles

Mechanical

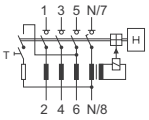
Frame size	45 mm
Device height	80 mm
Device width	35 mm (2MU), 70 mm (4MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Degree of predection in moisture-proof enclosure	IP54
Upper and lower terminals	lift terminals
Terminal protection	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 (with slotted screw acc. to EN ISO 4757-Z2, Pozidriv PZ2)
Operation temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61008
Humidity	5-95 %
Pollution degree	2
Contact position indicator	red / green
Tripping indicator	white / blue

Connection diagram

2-poles

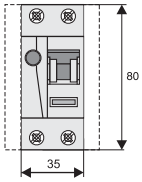


4-poles

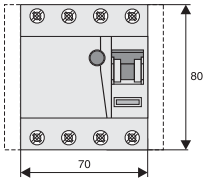


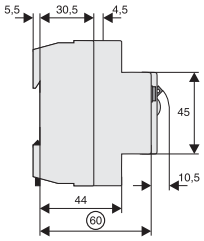
Dimensions (mm)

2P



4P

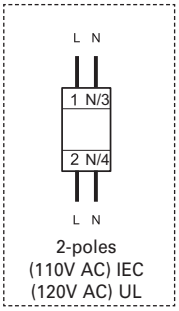




Correct connection

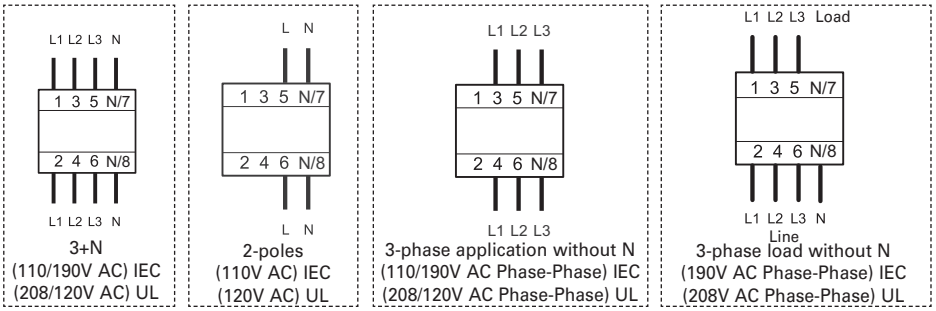
2-poles

30, 300mA Types:



4-poles

30, 300mA Types:



Impact of ambient temperature on the maximum permanent current allowed (A) FRCmM-NA-110

	25A		40A		63A	
Ambient temperature	**2p**	**4p**	**2p**	**4p**	**2p**	**4p**
40°	25	25	40	40	63	63
45°	21	22	37	37	59	59
50°	18	19	33	34	55	55
55°	14	16	30	31	50	50
60°	–	–	26	27	45	45
65°	–	–	20	24	40	41
70°	–	–	14	19	34	37
75°	–	–	8	15	28	31

Note: Please make sure that these values are not exceeded and that any upstream thermal overload protection switches off in time.

Max. back-up fuse FRCmM-NA-110 (acc. to IEC)

In [A]	Short Circuit [A]	Overload [A]
25	63 gG/gl	25 gG/gl
40	63 gG/gl	40 gG/gl
63	63 gG/gl	40 gG/gl

Important:
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.

Max. back-up fuse FRCmM-NA-110 (acc. to UL)

In [A]	Short Circuit [A]
25-63	70 J-Class Fuse

Important:
The maximal possible operating current of the electrical installation may not exceed the rated current of the RCD (VDE 0100-520 Bbl. 2).

SG08013

Description

- Special residual current devices - all fault-current sensitive
- High level of protection against unwanted tripping
- Selective versions available
- Auxiliary switches available
- 30 mA types for operator protection available
- Modern RCB for 125 A rated current
- For fault current/residual current protection and additional protection

Type AC

Conditionally surge current-proof 250 A, Type AC

SG07913

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
125/0,03	FRCMM-125/2/003	187810	1/60
125/0,1	FRCMM-125/2/01	187811	1/60
125/0,3	FRCMM-125/2/03	187812	1/60
125/0,5	FRCMM-125/2/05	187813	1/60

SG08013

4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
125/0,03	FRCMM-125/4/003	187814	1/30
125/0,1	FRCMM-125/4/01	187815	1/30
125/0,3	FRCMM-125/4/03	187816	1/30
125/0,5	FRCMM-125/4/05	187817	1/30

Type A

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

SG07913

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
125/0.03	FRCMM-125/2/003-A	171164	1/60
125/0.1	FRCMM-125/2/01-A	171165	1/60
125/0.3	FRCMM-125/2/03-A	171166	1/60
125/0.5	FRCMM-125/2/05-A	171167	1/60

SG08013

4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
125/0.03	FRCMM-125/4/003-A	171174	1/30
125/0.1	FRCMM-125/4/01-A	171175	1/30
125/0.3	FRCMM-125/4/03-A	171176	1/30
125/0.5	FRCMM-125/4/05-A	171177	1/30

Type G/A

Short-time delayed, surge current-proof 3 kA, sensitive to residual pulsating DC, Type G/A

SG07913

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
125/0.03	FRCMM-125/2/003-G/A	171168	1/60
125/0.1	FRCMM-125/2/01-G/A	171169	1/60
125/0.3	FRCMM-125/2/03-G/A	171170	1/60

SG08013

4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
125/0.03	FRCMM-125/4/003-G/A	171178	1/30
125/0.1	FRCMM-125/4/01-G/A	171179	1/30
125/0.3	FRCMM-125/4/03-G/A	171180	1/30

Type S/A

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

SG07913

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
125/0.1	FRCMM-125/2/01-S/A	171171	1/60
125/0.3	FRCMM-125/2/03-S/A	171172	1/60
125/0.5	FRCMM-125/2/05-S/A	171173	1/60

SG08013

4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
125/0.1	FRCMM-125/4/01-S/A	171181	1/30
125/0.3	FRCMM-125/4/03-S/A	171182	1/30
125/0.5	FRCMM-125/4/05-S/A	171183	1/30

SG08013

Type B

Surge current-proof 3 kA, all-current sensitive, Type B

4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
125/0.03	FRCMM-125/4/003-B	171184	1/30
125/0.1	FRCMM-125/4/01-B	171185	1/30
125/0.3	FRCMM-125/4/03-B	171186	1/30
125/0.5	FRCMM-125/4/05-B	171187	1/30

SG08013

Type G/B

Short-time delayed, surge current-proof 3 kA, all-current sensitive, Type G/B

4-poles

125/0.03	FRCMM-125/4/003-G/B	171188	1/30

SG08013

Type S/Bfq

Selective + surge current-proof 5 kA, all-current sensitive, Type S/Bfq

4-poles

125/0.3	FRCMM-125/4/03-S/BFQ	171190	1/30
125/0.5	FRCMM-125/4/05-S/BFQ	171191	1/30

SG08013

Type G/B+

Short-time delayed, surge current-proof 3 kA, all-current sensitive, Type G/B+ kHz

4-poles

125/0.03	FRCMM-125/4/003-G/B+	171189	1/30

Specifications | Residual Current Devices FRCmM-125, Type A

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 xEffect-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 the meaning of the applicable installation rules
- Mains connection at either side
- 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). Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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 -G/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:

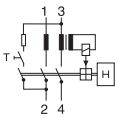
Auxiliary switch for subsequent installation to the left	Z-HD	265620

Technical Data

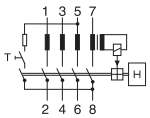
		FRCmM-125A, Type AC, A, G/A and S/A
Electrical		
Design according to		IEC/EN 61008
Current test marks as printed onto the device		
Tripping		instantaneous
Type G/A		10 ms delay
Type S/A		50 ms delay - with selective disconnecting function
Rated voltage	U_n	240/415 V; 50 Hz
Limits operation voltage test circuit		
30 mA		150 - 250 V~
100, 300, 500 mA		185 - 440 V~
Rated tripping current	$I_{\Delta n}$	30, 100, 300, 500 mA
Sensitivity		AC and pulsating DC
Rated insulation voltage	U_i	400 V
Rated impulse withstand voltage	U_{imp}	2,5 kV
Rated short circuit capacity	I_{cn}	10 kA with back-up fuse
Peak withstand current		
Type A		250 A (8/20µs), surge current-proof
Type G/A		3 kA (8/20µs), surge current-proof, 10 ms delay
Type S/A		5 kA (8/20µs), surge current-proof, 40 ms delay
Maximum back-up fuse		Short circuit protection: 125 A gG/gL; Overload protection: 80 A gG/gL
Rated breaking capacitiy	I_m	
or rated fault breaking capacity	$I_{\Delta m}$	1250 A
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 10,000 operating cycles
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		35 mm (2MU), 70 mm (4MU)
Mounting		quick fastening with DIN rail EN50022
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 mm²
Busbar thickness		0.8 - 2 mm
Operation temperature		-25°C to +40°C
Storage- and transport temperature		-25°C to +60°C
Resistance to climatic conditions		25-55°C/90-95% relative humidity acc. to IEC 60068-2
Mounting position		any

Connection diagram

2-poles

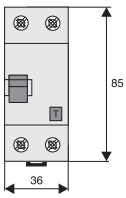


4-poles

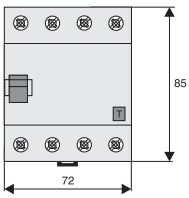


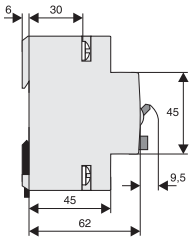
Dimensions (mm)

2P



4P





Power Loss at I_n FRCmM-125 - Type AC, A, G/A and S/A

(entire unit)

I_n [A]	P [W]
2-poles	
125	18
4-poles	
125	22.5

Specifications | Residual Current Devices FRCmM-125, Type B, Bfg and B+

Description

- Residual current devices - all fault-current sensitive
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Not busbar-compatible with other devices of the P series
- Auxiliary switch Z-HD can be mounted at a later point in time
- Contact position indicator red - green
- The device functions irrespective of the position of installation
- Tripping happens independent from line voltage (Type A currents). 50 VAC are required to identify currents of Type B.
- Mains connection is at the top
- The test key "T" must be pressed every half year. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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 B:** All fault-current sensitive protective devices are designed for use in 50 Hz AC systems with electrical equipment such as frequency converters, uninterruptible power supply systems, switch mains adapters or highfrequency power converters. In case of a fault, electronic equipment may not only cause AC residual currents and pulsating DC residual currents, but also pure DC and AC residual currents of different frequencies in which case residual current devices of Type AC and A will not trip. Residual current devices of Type FRCmM-125A, however, will identify all types of fault currents in line with tripping characteristic B of the IEC 60755 standard, i.e. pure DC residual currents as well. In addition, they will also identify all AC residual currents of all frequencies up to 100 kHz in undulating (mixed) currents.
- **Type Bfq:** Suitable for speed-controlled drives with frequency converters; designed for household, commercial and industrial applications. Unwanted tripping is prevented through a tripping characteristic especially adapted to frequency converters. 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.

Accessories:

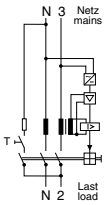
Auxiliary switch for subsequent installation to the left	Z-HD	265620

Technical Data

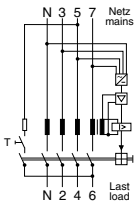
		FRCmM-125A, Type B, Bfg and B+
Electrical		
Design according to		IEC/EN 61008
Current test marks as printed onto the device		
Tripping		
Type B, G/B, G/B+		short-time delayed
Type S/Bfq		50 ms delay - with selective disconnecting function
Rated voltage	U_n	240/415 V; 50 Hz
Limits operation voltage test circuit		
30 mA		250 - 440 V~
100, 300, 500 mA		185 - 440 V~
Rated tripping current	$I_{\Delta n}$	30, 100, 300, 500 mA
Sensitivity		All types of current
Rated insulation voltage	U_i	400 V
Rated impulse withstand voltage	U_{imp}	2,5 kV
Rated short circuit capacity	I_{cn}	10 kA with back-up fuse
Peak withstand current		
Type B		3 kA (8/20µs), surge current-proof
Type G/B, G/Bfg, G/B+		3 kA (8/20µs), surge current-proof, 10 ms delay
Type S/Bfg		5 kA (8/20µs), surge current-proof, 40 ms delay
Maximum back-up fuse		Short circuit protection: 125 A gG/gL; Overload protection: 80 A gG/gL
Rated breaking capacitiy	I_m	
or rated fault breaking capacity	$I_{\Delta m}$	1250 A
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 10,000 operating cycles
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		70 mm (4MU) für 2-poles and 4-poles
Mounting		quick fastening with DIN rail EN50022
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 mm²
Busbar thickness		0.8 - 2 mm
Operation temperature		-25°C to +40°C
Storage- and transport temperature		-25°C to +60°C
Resistance to climatic conditions		25-55°C/90-95% relative humidity acc. to IEC 60068-2
Mounting position		any

Connection diagram

2-poles

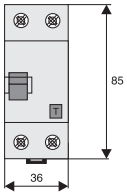


4-poles



Dimensions (mm)

2P



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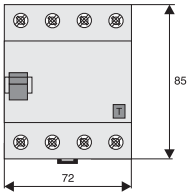
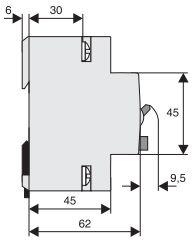




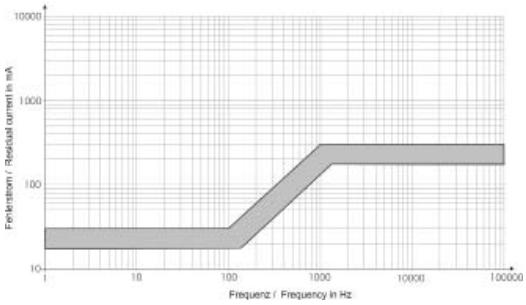
Power Loss at I_n FRCmM-125 - Type B, Bfg and B+

(entire unit)

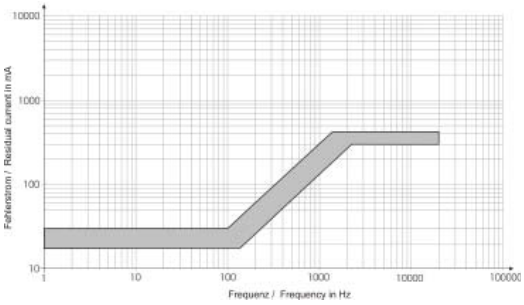
I_n [A]	P [W]
4-poles	
125	22.5

Tripping current frequency response FRCmM-125 - Type B, Bfg and B+

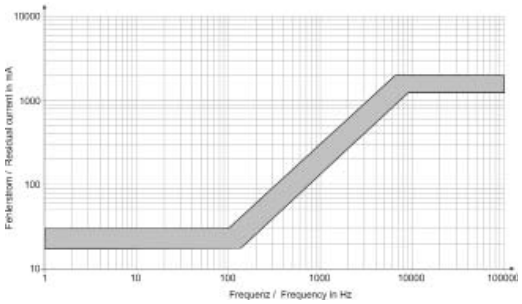
Tripping current frequency response 30 mA Type B



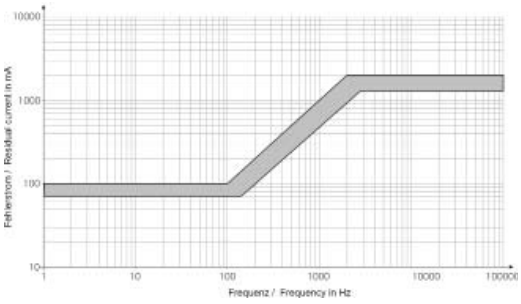
Tripping current frequency response 30 mA Type G/B+



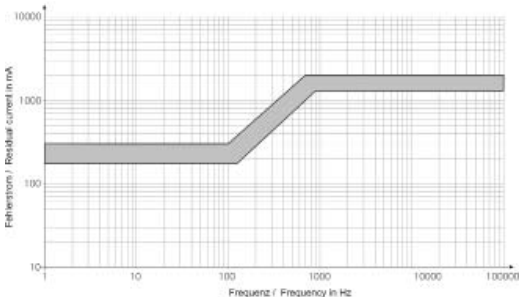
Tripping current frequency response 30 mA Type G/B



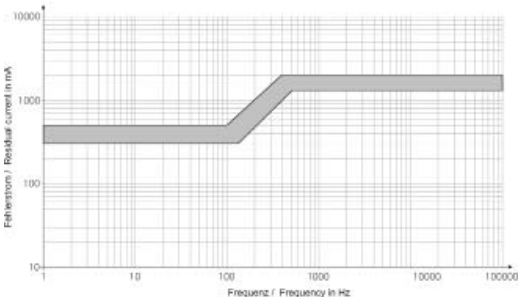
Tripping current frequency response 100 mA Type B



Tripping current frequency response 300 mA Type S/Bfq



Tripping current frequency response 500 mA Type S/Bfq



SG08013

Description

- Special residual current devices - all fault-current sensitive
- High level of protection against unwanted tripping
- Selective versions available
- Auxiliary switches available
- 30 mA types for operator protection available
- For fault current/residual current protection and additional protection

SG08013

Type B

Conditionally surge current-proof 250 A, Type B

4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
40/0.1	FRCMM-40/4/01-B	187804	1/30
63/0.1	FRCMM-63/4/01-B	187805	1/30
80/0.03	FRCMM-80/4/003-B	187806	1/30
80/0.1	FRCMM-80/4/01-B	187807	1/30
80/0.3	FRCMM-80/4/03-B	187808	1/30

SG08013

Type S/B

Selective + surge current-proof 5 kA, all-current sensitive, Type S/B

4-poles

80/0,3	FRCMM-80/4/03-S/B	187809	1/30

Specifications | Residual Current Devices FRCmM, Type B

Description

- Residual current devices - all fault-current sensitive
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Not busbar-compatible with other devices of the P series
- Auxiliary switch Z-HD can be mounted at a later point in time
- Contact position indicator red - green
- The device functions irrespective of the position of installation
- Tripping happens independent from line voltage (Type A currents). 50 VAC are required to identify currents of Type B.
- Mains connection is at the top
- The test key "T" must be pressed every half year. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed). Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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 B:** All fault-current sensitive protective devices are designed for use in 50 Hz AC systems with electrical equipment such as frequency converters, uninterruptible power supply systems, switch mains adapters or highfrequency power converters. In case of a fault, electronic equipment may not only cause AC residual currents and pulsating DC residual currents, but also pure DC and AC residual currents of different frequencies in which case residual current devices of Type AC and A will not trip. Residual current devices of Type FRCmM (non-digital), however, will identify all types of fault currents in line with tripping characteristic B of the IEC 60755 standard, i.e. pure DC residual currents as well. In addition, they will also identify all AC residual currents of all frequencies up to 100 kHz in undulating (mixed) currents.

Accessories:

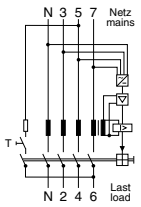
Auxiliary switch for subsequent installation to the left	Z-HD	265620

Technical Data

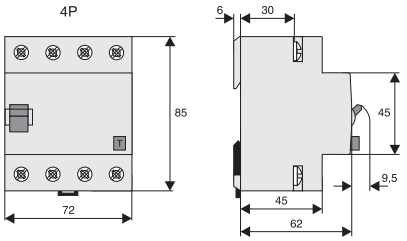
		FRCmM, Type B	
Electrical			
Design according to		IEC/EN 61008	
Current test marks as printed onto the device			
Tripping			
Type B		short-time delayed	
Type S/B		50 ms delay - with selective disconnecting function	
Rated voltage	U_n	230/400 V; 50 Hz	
Limits operation voltage test circuit			
30 mA		250 - 440 V~	
100, 300 mA		185 - 440 V~	
Rated tripping current	$I_{\Delta n}$	30, 100, 300 mA	
Sensitivity		All types of current	
Rated insulation voltage	U_i	400 V	
Rated impulse withstand voltage	U_{imp}	2,5 kV	
Rated short circuit capacity	I_{cn}	10 kA with back-up fuse	
Peak withstand current			
Type B		3 kA (8/20µs), surge current-proof, 10 ms delay	
Type S/B		5 kA (8/20µs), surge current-proof, 40 ms delay	
Maximum back-up fuse		Short circuit protection	Overload protection
I_n = 40 A		100 A gG/gL	40 A gG/gL
I_n = 63 A		100 A gG/gL	63 A gG/gL
I_n = 80 A		100 A gG/gL	80 A gG/gL
Rated breaking capacitiy	I_m		
or rated fault breaking capacity	$I_{\Delta m}$		
I_n = 40 A		500 A	
I_n = 63 A		630 A	
I_n = 80 A		800 A	
Endurance			
electrical components		≥ 4,000 operating cycles	
mechanical components		≥ 10,000 operating cycles	
Mechanical			
Frame size		45 mm	
Device height		80 mm	
Device width		70 mm (4MU)	
Mounting		quick fastening with DIN rail EN50022	
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 mm²	
Busbar thickness		0.8 - 2 mm	
Operation temperature		-25°C to +40°C	
Storage- and transport temperature		-25°C to +60°C	
Resistance to climatic conditions		25-55°C/90-95% relative humidity acc. to IEC 60068-2	
Mounting position		any	

Connection diagram

4-poles



Dimensions (mm)



Power Loss at I_n FRCmM - Type B

(entire unit)

I_n [A]	P [W]
4-poles	
40	1.3
63	3.1
80	5.0

1.78 XX

XX

SG05613

Description

- High-quality residual current device / miniature circuit breaker combination, line voltage-dependent
- 1+N- and 2-poles
- Contact position indicator red - green
- Tripping indicator white - blue
- New level of accuracy -> reduced unwanted tripping
- Local status indication of residual current through 3 LEDs
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Wide variety of rated tripping currents
- Rated currents up to 25 A
- Tripping characteristics B, C, D
- Rated breaking capacitiy 10 kA

Type G/A

10 kA, 1+N-poles

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

SG05713

Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
10/0.01	FRBdM-B10/1N/001-G/A	168249	1/60
13/0.01	FRBdM-B13/1N/001-G/A	168250	1/60
16/0.01	FRBdM-B16/1N/001-G/A	168251	1/60
10/0.03	FRBdM-B10/1N/003-G/A	168264	1/60
13/0.03	FRBdM-B13/1N/003-G/A	168265	1/60
16/0.03	FRBdM-B16/1N/003-G/A	168266	1/60
10/0.1	FRBdM-B10/1N/01-G/A	168279	1/60
13/0.1	FRBdM-B13/1N/01-G/A	168280	1/60
16/0.1	FRBdM-B16/1N/01-G/A	168281	1/60

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Characteristic C

6/0.01	FRBdM-C6/1N/001-G/A	168252	1/60
10/0.01	FRBdM-C10/1N/001-G/A	168253	1/60
13/0.01	FRBdM-C13/1N/001-G/A	168254	1/60
16/0.01	FRBdM-C16/1N/001-G/A	168255	1/60
20/0.01	FRBdM-C20/1N/001-G/A	168256	1/60
25/0.01	FRBdM-C25/1N/001-G/A	168257	1/60
6/0.03	FRBdM-C6/1N/003-G/A	168267	1/60
10/0.03	FRBdM-C10/1N/003-G/A	168268	1/60
13/0.03	FRBdM-C13/1N/003-G/A	168269	1/60
16/0.03	FRBdM-C16/1N/003-G/A	168270	1/60
20/0.03	FRBdM-C20/1N/003-G/A	168271	1/60
25/0.03	FRBdM-C25/1N/003-G/A	168272	1/60
6/0.1	FRBdM-C6/1N/01-G/A	168282	1/60
10/0.1	FRBdM-C10/1N/01-G/A	168283	1/60
13/0.1	FRBdM-C13/1N/01-G/A	168284	1/60
16/0.1	FRBdM-C16/1N/01-G/A	168285	1/60
20/0.1	FRBdM-C20/1N/01-G/A	168286	1/60
25/0.1	FRBdM-C25/1N/01-G/A	168287	1/60

SG05713

Characteristic D

6/0.01	FRBdM-D6/1N/001-G/A	168258	1/60
10/0.01	FRBdM-D10/1N/001-G/A	168259	1/60
13/0.01	FRBdM-D13/1N/001-G/A	168260	1/60
16/0.01	FRBdM-D16/1N/001-G/A	168261	1/60
20/0.01	FRBdM-D20/1N/001-G/A	168262	1/60
25/0.01	FRBdM-D25/1N/001-G/A	168263	1/60
6/0.03	FRBdM-D6/1N/003-G/A	168273	1/60
10/0.03	FRBdM-D10/1N/003-G/A	168274	1/60
13/0.03	FRBdM-D13/1N/003-G/A	168275	1/60
16/0.03	FRBdM-D16/1N/003-G/A	168276	1/60
20/0.03	FRBdM-D20/1N/003-G/A	168277	1/60
25/0.03	FRBdM-D25/1N/003-G/A	168278	1/60
6/0.1	FRBdM-D6/1N/01-G/A	168288	1/60
10/0.1	FRBdM-D10/1N/01-G/A	168289	1/60
13/0.1	FRBdM-D13/1N/01-G/A	168290	1/60
16/0.1	FRBdM-D16/1N/01-G/A	168291	1/60
20/0.1	FRBdM-D20/1N/01-G/A	168292	1/60
25/0.1	FRBdM-D25/1N/01-G/A	168293	1/60

Type G/A

10 kA, 2-poles

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

SG05613

Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
10/0.01	FRBdM-B10/2/001-G/A	168294	1/60
13/0.01	FRBdM-B13/2/001-G/A	168295	1/60
16/0.01	FRBdM-B16/2/001-G/A	168296	1/60
10/0.03	FRBdM-B10/2/003-G/A	168198	1/60
13/0.03	FRBdM-B13/2/003-G/A	168199	1/60
16/0.03	FRBdM-B16/2/003-G/A	168200	1/60
10/0.1	FRBdM-B10/2/01-G/A	168213	1/60
13/0.1	FRBdM-B13/2/01-G/A	168214	1/60
16/0.1	FRBdM-B16/2/01-G/A	168215	1/60

SG05613

Characteristic C

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
6/0.01	FRBdM-C6/2/001-G/A	168297	1/60
10/0.01	FRBdM-C10/2/001-G/A	168298	1/60
13/0.01	FRBdM-C13/2/001-G/A	168299	1/60
16/0.01	FRBdM-C16/2/001-G/A	168300	1/60
20/0.01	FRBdM-C20/2/001-G/A	168301	1/60
25/0.01	FRBdM-C25/2/001-G/A	168302	1/60
6/0.03	FRBdM-C6/2/003-G/A	168201	1/60
10/0.03	FRBdM-C10/2/003-G/A	168202	1/60
13/0.03	FRBdM-C13/2/003-G/A	168203	1/60
16/0.03	FRBdM-C16/2/003-G/A	168204	1/60
20/0.03	FRBdM-C20/2/003-G/A	168205	1/60
25/0.03	FRBdM-C25/2/003-G/A	168206	1/60
6/0.1	FRBdM-C6/2/01-G/A	168216	1/60
10/0.1	FRBdM-C10/2/01-G/A	168217	1/60
13/0.1	FRBdM-C13/2/01-G/A	168218	1/60
16/0.1	FRBdM-C16/2/01-G/A	168219	1/60
20/0.1	FRBdM-C20/2/01-G/A	168220	1/60
25/0.1	FRBdM-C25/2/01-G/A	168221	1/60

SG05613

Characteristic D

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
6/0.01	FRBdM-D6/2/001-G/A	168303	1/60
10/0.01	FRBdM-D10/2/001-G/A	168304	1/60
13/0.01	FRBdM-D13/2/001-G/A	168305	1/60
16/0.01	FRBdM-D16/2/001-G/A	168195	1/60
20/0.01	FRBdM-D20/2/001-G/A	168196	1/60
25/0.01	FRBdM-D25/2/001-G/A	168197	1/60
6/0.03	FRBdM-D6/2/003-G/A	168207	1/60
10/0.03	FRBdM-D10/2/003-G/A	168208	1/60
13/0.03	FRBdM-D13/2/003-G/A	168209	1/60
16/0.03	FRBdM-D16/2/003-G/A	168210	1/60
20/0.03	FRBdM-D20/2/003-G/A	168211	1/60
25/0.03	FRBdM-D25/2/003-G/A	168212	1/60
6/0.1	FRBdM-D6/2/01-G/A	168222	1/60
10/0.1	FRBdM-D10/2/01-G/A	168223	1/60
13/0.1	FRBdM-D13/2/01-G/A	168224	1/60
16/0.1	FRBdM-D16/2/01-G/A	168225	1/60
20/0.1	FRBdM-D20/2/01-G/A	168226	1/60
25/0.1	FRBdM-D25/2/01-G/A	168227	1/60

Specifications | Combined RCD/MCB Devices FRBdM, digital

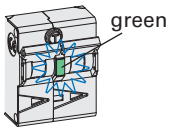
Description

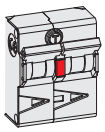
- Combined RCD/MCB device
- Line voltage-dependent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Comprehensive range of accessories suitable for subsequent installation
- 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. Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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 -G/A**: Additionally 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). Additionally protects against special forms of residual pulsating DC which 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 2-poles	Z-TC/SD-2P	178099

Local Indication RCD

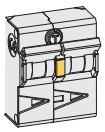
Self check (power ON) 2 s –>





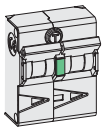
red

$I_\Delta \geq 50\%\ I_{\Delta n}$



amber

$I_\Delta = 30\text{-}50\%\ I_{\Delta n}$

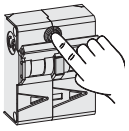


green

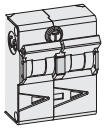
$I_\Delta \leq 30\%\ I_{\Delta n}$

Service Mode (measuring of residual current I_Δ)

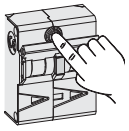
Pressing test button twice to activate Service-Mode



press
(0,1 - 0,4 s)



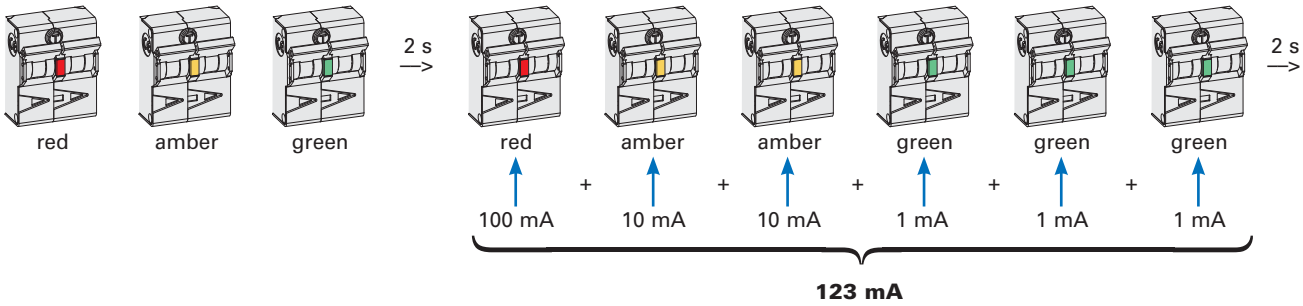
release
(0,1 - 0,4 s)



press
(0,1 - 0,4 s)

Measurement delimiter	red
Measurement delimiter ON time	400 ms
10 mA measurement color	amber
1 mA measurement color	green
Double-pressing test button to activate Service Mode	press (0.1-0.4 s) -> release (0.1-0.4 s) -> press (0.1-0.4 s)
Time duration of Service Mode	4 min (during activated Service Mode all protection functions are still working)

Lamp test

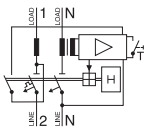


Technical Data

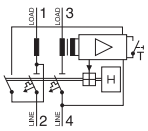
		FRBdM
Electrical		
Design according to		IEC/EN 61009
Current test marks as printed onto the device		
Number of protected poles		
1+N-poles		1
2-poles		2
Tripping		
Type G		line voltage-dependent, 10 ms delay 3 kA (8/20µs), surge current-proof
Rated voltage	U_n	240 V AC, 50 Hz
Rated operational voltage	U_e	204-260 V AC
Voltage range test circuit		195-264 V AC
Rated tripping current	$I_{\Delta n}$	10, 30, 100 mA
Rated non-tripping current	$I_{\Delta no}$	0.55 $I_{\Delta n}$
Sensitivity		G/A
Press of test button duration		> 0.5 s
Selectivity class		3
Service short circuit capacity	I_{cs}	7.5 kA
Rated short circuit capacity	I_{cn}	10 kA
Rated current		6 - 25 A
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50µs)
Characteristic		B, C, D
Maximum back-up fuse (short circuit protection)		100 A gL (>10 kA)
Endurance		
electrical components		≥ 4,000 operating cycles (I_n, U_n, cosφ = 0.87)
mechanical components		≥ 10,000 operating cycles
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 mm²
Terminal screw		M5 (with slotted screw acc. to EN ISO 4757-Z2, Pozidriv PZ2)
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Operation temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)
Line side (supply)		lower terminals
Load side		upper terminals

Connection diagram

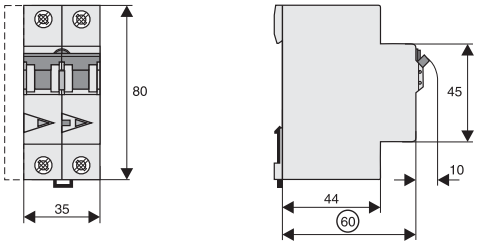
1+N-poles



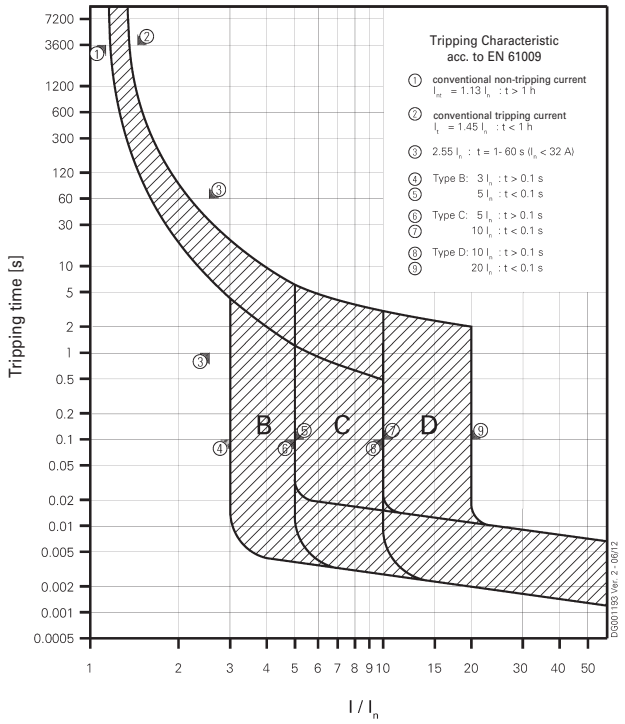
2-poles



Dimensions (mm)



Tripping Characteristic FRBdM, Characteristics B, C and D



Internal Resistance FRBdM

Type B

At room temperature (single pole)

I_n [A]	R* [mΩ]
10	17.9
13	12.3
16	7.6

* 50Hz

Type C

At room temperature (single pole)

I_n [A]	R* [mΩ]
6	28.5
10	17.7
13	9.0
16	6.7
20	5.5
25	3.0

* 50Hz

Type D

At room temperature (single pole)

I_n [A]	R* [mΩ]
6	28.5
10	14.9
13	9.0
16	6.7
20	5.5
25	3.0

* 50Hz

Power Loss at I_n FRBdM

Type B

(entire unit)

I_n [A]	P* [W]
10	4.0
13	4.9
16	4.5

* 50Hz and ambient temperature

Type C

(entire unit)

I_n [A]	P* [W]
6	2.1
10	4.0
13	3.4
16	3.9
20	5.0
25	4.2

* 50Hz and ambient temperature

Type D

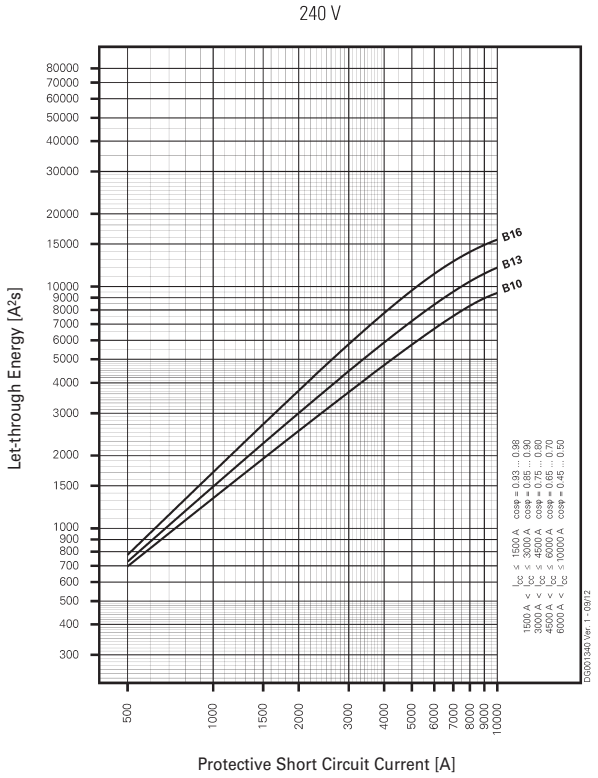
(entire unit)

I_n [A]	P* [W]
6	2.1
10	3.2
13	3.4
16	3.9
20	5.0
25	4.2

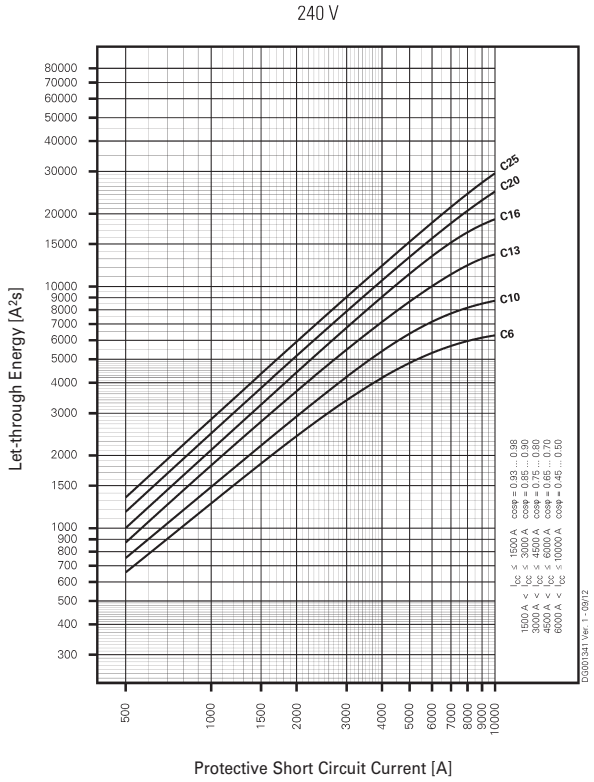
* 50Hz and ambient temperature

Let-through Energy FRBdM

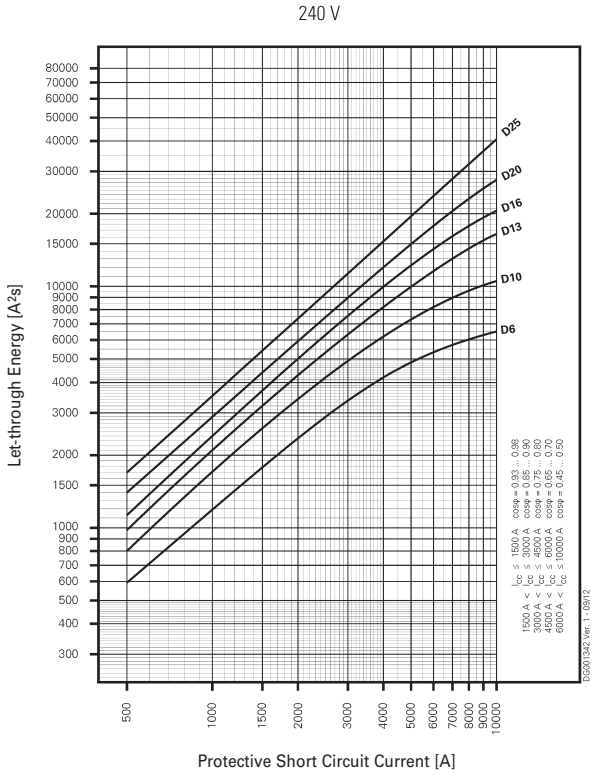
Let-through Energy FRBdM, Characteristic B



Let-through Energy FRBdM, Characteristic C

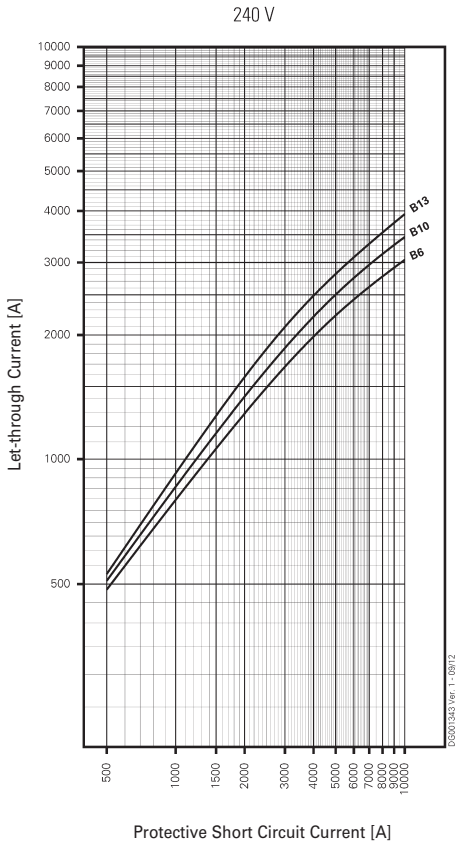


Let-through Energy FRBdM, Characteristic D

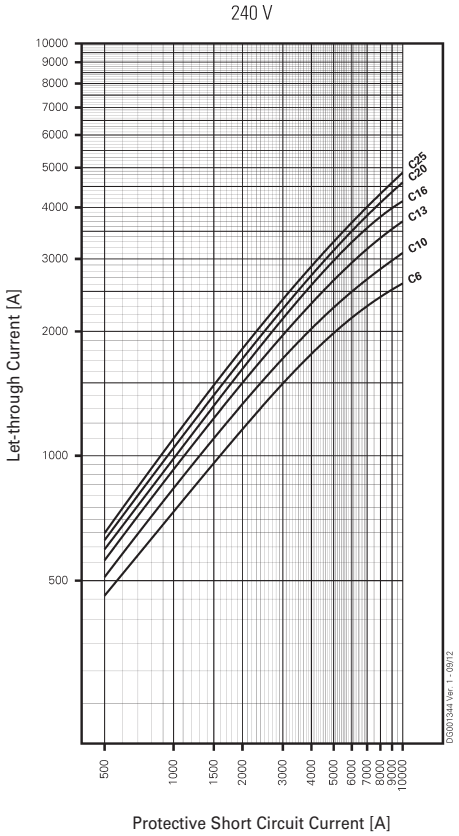


Let-through Current FRBdM

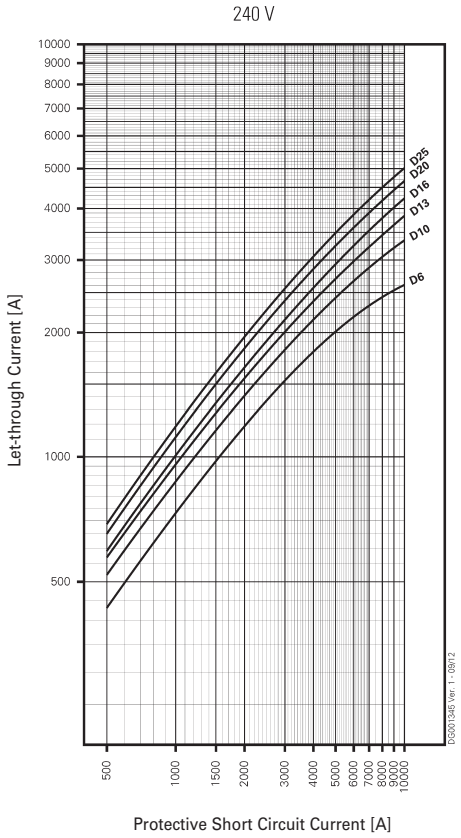
Let-through Current FRBdM, Characteristic B



Let-through Current FRBdM, Characteristic C



Let-through Current FRBdM, Characteristic D



Short-circuit Selectivity FRBdM

In case of a short-circuit, selectivity is provided up to the specified selective current values I_s (kA) applicable between the FRBdM RCD/MCB circuit breakers and the up-stream protective devices.

When a short-circuit occurs, this means that with I_{KS} current values below I_s only the MCB will trip. However, in case of short-circuit currents beyond these values both protective devices will trip.

FRBdM and NZMB(C)(N)(H)1-A..., NZMB(C)(N)(H)2-A...

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

Overload and short-circuit release unit NZM at max. value

FRBdM	NZM.1-A… I_{cu} = 25 (36) (50) (100) kA					
	40	50	63	80	100	125
B10	1.2	1.5	2	2	4	10
B13	1	1.5	2	2	4	10
B16	1	1.2	1.5	2	3	8
C+D6	1.2	1.5	2	2	4	10
C+D10	1.2	1.5	2	2	4	10
C+D13	1	1.5	2	2	4	10
C+D16	1	1.2	1.5	2	3	8
C+D20	0.8	1.2	1.5	1.5	3	8
C+D25	0.7	1.1	1.3	1.3	2.5	6

FRBdM	NZM.2-A… I_{cu} = 25 (36) (50) (150) kA								
	40	50	63	80	100	125	160	200	250
B10	1	1.5	2.5	3	10	10	10	10	10
B13	1	1.2	2	3	10	10	10	10	10
B16	1	1.2	1.5	2.5	10	10	10	10	10
C+D6	1	1.5	2.5	3	10	10	10	10	10
C+D10	1	1.5	2.5	3	10	10	10	10	10
C+D13	1	1.2	2	3	10	10	10	10	10
C+D16	1	1.2	1.5	2.5	10	10	10	10	10
C+D20	1	1.2	1.5	1.5	10	10	10	10	10
C+D25	0.9	1.1	1.3	1.3	10	10	10	10	10

NZMB1(C1)(N1)(H1): I_{cu} (400/415V) = 25(36)(50)(100) kA (acc. to IEC/EN 60947-2)
NZMB2(C2)(N2)(H2): I_{cu} (400/415V) = 25(36)(50)(150) kA (acc. to IEC/EN 60947-2)

FRBdM and NH000/NH00/NH1 gG

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

FRBdM	NH000/NH00/NH1 gG										
	16	20	25	32	35	40	50	63	80	100	125
B10	<0.5	<0.5	0,9	1,7	2,3	3,4	5,2	6,9	>10	>10	>10
B13	<0.5	<0.5	0,8	1,4	1,9	2,7	4,1	5,2	8,5	>10	>10
B16	<0.5	<0.5	0,7	1,2	1,6	2,2	3,1	3,8	5,7	>10	>10
C6	<0.5	0,5	0,9	1,8	2,5	3,8	8,2	>10	>10	>10	>10
C10	<0.5	<0.5	0,8	1,5	2,0	2,9	4,5	6,6	>10	>10	>10
C13	<0.5	<0.5	0,6	1,2	1,5	2,2	3,3	4,2	6,7	>10	>10
C16	<0.5	<0.5	0,6	1,0	1,3	1,8	2,6	3,3	4,8	>10	>10
C20	<0.5	<0.5	0,5	0,9	1,1	1,6	2,3	2,8	4,1	8,6	>10
C25	<0.5	<0.5	<0.5	0,8	1,0	1,4	2,0	2,5	3,6	7,1	>10
D6	<0.5	0,5	1,0	1,8	2,5	3,8	7,8	>10	>10	>10	>10
D10	<0.5	<0.5	0,7	1,2	1,6	2,4	3,8	5,2	>10	>10	>10
D13	<0.5	<0.5	0,6	1,0	1,3	1,9	2,8	3,6	5,6	>10	>10
D16	<0.5	<0.5	0,5	0,9	1,1	1,6	2,3	2,9	4,3	>10	>10
D20	<0.5	<0.5	<0.5	0,8	1,0	1,4	2,0	2,5	3,6	7,5	>10
D25	<0.5	<0.5	<0.5	0,7	0,8	1,1	1,6	2,1	3,1	5,5	7,7

Rated breaking capacity (NH) AC 500 V = 120 kA (acc. to IEC/EN 60269)

FRBdM and PLSM-OV/PLHT-OV...

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

FRBdM	PLSM-OV/PLHT-OV I_{cu} = 10 kA						
	25	32	40	50	56	63	80
B10	1.5	1.5	1.5	1.5	1.5	1.5	1.5
B13	1.5	1.5	1.5	1.5	1.5	1.5	1.5
B16	1.5	1.5	1.5	1.5	1.5	1.5	1.5
C+D6	1.5	1.5	1.5	1.5	1.5	1.5	1.5
C+D10	1.5	1.5	1.5	1.5	1.5	1.5	1.5
C+D13	1.5	1.5	1.5	1.5	1.5	1.5	1.5
C+D16	1.5	1.5	1.5	1.5	1.5	1.5	1.5
C+D20	-	1.5	1.5	1.5	1.5	1.5	1.5
C+D25	-	-	1.5	1.5	1.5	1.5	1.5

Back-up Protection FRBdM

The up-stream protective devices will protect the down-stream FRBdM up to the short-circuit current specified.

FRBdM and NZM.1-A…, 240 V

Short circuit currents in kA.

FRBdM	NZMB1-A… U_e = 240 V		
	B	C	D
6	-	25	25
10	25	25	25
13	25	25	25
16	25	25	25
20	-	20	20
25	-	20	20

U_e = 240V: I_{cn} (FRBdM) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415V: I_{cu} (NZMB1) = 25 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBdM	NZMC1-A… U_e = 240 V		
	B	C	D
6	-	36	36
10	36	36	36
13	36	36	36
16	36	36	36
20	-	20	20
25	-	20	20

U_e = 240V: I_{cn} (FRBdM) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415V: I_{cu} (NZMC1) = 36 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBdM	NZMN1-A… U_e = 240 V		
	B	C	D
6	-	40	40
10	40	40	40
13	40	40	40
16	40	40	40
20	-	20	20
25	-	20	20

U_e = 240V: I_{cn} (FRBdM) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415V: I_{cu} (NZMN1) = 50 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBdM	NZMH1-A… U_e = 240 V		
	B	C	D
6	-	40	40
10	40	40	40
13	40	40	40
16	40	40	40
20	-	20	20
25	-	20	20

U_e = 240V: I_{cn} (FRBdM) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415V: I_{cu} (NZMH1) = 100 kA (acc. to IEC/EN 60947-2)

FRBdM and NZM.2-A…, 240 V

Short circuit currents in kA.

FRBdM	NZMB2-A… U_e = 240 V		
	B	C	D
6	-	25	25
10	25	25	25
13	25	25	25
16	25	25	25
20	-	20	20
25	-	10	10

U_e = 240V: I_{cn} (FRBdM) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415V: I_{cu} (NZMB2) = 25 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBdM	NZMC2-A… U_e = 240 V		
	B	C	D
6	-	36	36
10	36	36	36
13	36	36	36
16	25	25	25
20	-	20	20
25	-	10	10

U_e = 240V: I_{cn} (FRBdM) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415V: I_{cu} (NZMC2) = 36 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBdM	NZMN2-A… U_e = 240 V		
	B	C	D
6	-	40	40
10	40	40	40
13	40	40	40
16	25	25	25
20	-	15	15
25	-	10	10

U_e = 240V: I_{cn} (FRBdM) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415V: I_{cu} (NZMN2) = 50 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBdM	NZMH2-A… U_e = 240 V		
	B	C	D
6	-	40	40
10	40	40	40
13	40	40	40
16	25	25	25
20	-	15	15
25	-	10	10

U_e = 240V: I_{cn} (FRBdM) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415V: I_{cu} (NZMH2) = 150 kA (acc. to IEC/EN 60947-2)

FRBdM and NH00-125 A, 240 V

Short circuit currents in kA.

FRBdM	NH00-125A gG U_e = 240 V		
	B	**C**	**D**
6	-	40	40
10	40	40	40
13	40	40	40
16	40	40	40
20	-	20	20
25	-	10	10

U_e = 240V: I_{cn} (FRBdM) = 10 kA (acc. to IEC/EN 61009)
AC 500 V (NH00-125A gG) = 120 kA (acc. to IEC/EN 60269)

FRBdM and PLSM-OV63, 230 V

Short circuit currents in kA.

FRBdM	PLSM-OV63/2, 3, 4, 3N IT-system U = 230 V		
	B	**C**	**D**
6	-	10	10
10	10	10	10
13	10	10	10
16	10	10	10
20	-	10	10
25	-	10	10

U_e = 240V: I_{cn} (FRBdM) = 10 kA (acc. to IEC/EN 61009)
U_e = 230/400V: I_{cu} (PLSM-OV63) = 10 kA (acc. to IEC/EN 60947-2)

Combined RCD/MCB Devices

Combined RCD/MCB Devices FRBmM, FRBm6, 1+N-poles

SG03013

Description

- High-quality residual current device / miniature circuit breaker combination, line voltage-independent
- Increased protection in applications with 1-phase frequency converter due to the detection of mixed frequencies (type F)
- Reduction of nuisance tripping (type F, G, or G/A) thanks to
  - time delayed tripping
  - increased current withstand capability >3 kA
- Higher load rating with DC residual currents up to 10 mA (type F)
- Contact position indicator red - green
- Fault current tripping indicator
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Wide variety of rated tripping currents
- Rated currents up to 40 A
- Tripping characteristics B, C, D
- Rated breaking capacitiy 10 kA

Type F

10 kA, 1+N-poles

Selective + surge current-proof 3 kA, sensitive to residual pulsating DC, Type F

SG03013

Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
13/003	FRBmM-B13/1N/003-F	193479	1/60
16/003	FRBmM-B16/1N/003-F	193480	1/60
20/003	FRBmM-B20/1N/003-F	193481	1/60
25/003	FRBmM-B25/1N/003-F	193488	1/60
32/003	FRBmM-B32/1N/003-F	193489	1/60
40/003	FRBmM-B40/1N/003-F	193490	1/60
13/03	FRBmM-B13/1N/03-F	193494	1/60
16/03	FRBmM-B16/1N/03-F	193495	1/60
20/03	FRBmM-B20/1N/03-F	193496	1/60
25/03	FRBmM-B25/1N/03-F	193503	1/60
32/03	FRBmM-B32/1N/03-F	193504	1/60
40/03	FRBmM-B40/1N/03-F	193505	1/60
13/01	FRBmM-B13/1N/01-F	193509	1/60
16/01	FRBmM-B16/1N/01-F	193510	1/60
20/01	FRBmM-B20/1N/01-F	193514	1/60
25/01	FRBmM-B25/1N/01-F	193521	1/60
32/01	FRBmM-B32/1N/01-F	193522	1/60
40/01	FRBmM-B40/1N/01-F	193523	1/60

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Characteristic C

13/003	FRBmM-C13/1N/003-F	193482	1/60
16/003	FRBmM-C16/1N/003-F	193483	1/60
20/003	FRBmM-C20/1N/003-F	193484	1/60
25/003	FRBmM-C25/1N/003-F	193491	1/60
32/003	FRBmM-C32/1N/003-F	193492	1/60
40/003	FRBmM-C40/1N/003-F	193493	1/60
13/03	FRBmM-C13/1N/03-F	193497	1/60
16/03	FRBmM-C16/1N/03-F	193498	1/60
20/03	FRBmM-C20/1N/03-F	193499	1/60
25/03	FRBmM-C25/1N/03-F	193506	1/60
32/03	FRBmM-C32/1N/03-F	193507	1/60
40/03	FRBmM-C40/1N/03-F	193508	1/60
13/01	FRBmM-C13/1N/01-F	193515	1/60
16/01	FRBmM-C16/1N/01-F	193516	1/60
20/01	FRBmM-C20/1N/01-F	193517	1/60
25/01	FRBmM-C25/1N/01-F	193524	1/60
32/01	FRBmM-C32/1N/01-F	193525	1/60
40/01	FRBmM-C40/1N/01-F	193526	1/60

Combined RCD/MCB Devices FRBmM, FRBm6 1+N-poles

SG03013

Characteristic D

13/003	FRBmM-D13/1N/003-F	193485	1/60
16/003	FRBmM-D16/1N/003-F	193486	1/60
20/003	FRBmM-D20/1N/003-F	193487	1/60
13/03	FRBmM-D13/1N/03-F	193500	1/60
16/03	FRBmM-D16/1N/03-F	193501	1/60
20/03	FRBmM-D20/1N/03-F	193502	1/60
13/01	FRBmM-D13/1N/01-F	193518	1/60
16/01	FRBmM-D16/1N/01-F	193519	1/60
20/01	FRBmM-D20/1N/01-F	193520	1/60

Type G/A

10 kA, 1+N-poles

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

SG03013

Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
13/0.03	FRBmM-B13/1N/003-G/A	170716	1/60
16/0.03	FRBmM-B16/1N/003-G/A	170717	1/60
20/0.03	FRBmM-B20/1N/003-G/A	170528	1/60
25/0.03	FRBmM-B25/1N/003-G/A	170529	1/60
32/0.03	FRBmM-B32/1N/003-G/A	170530	1/60
40/0.03	FRBmM-B40/1N/003-G/A	170531	1/60

SG03013

Characteristic C

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
13/0.03	FRBmM-C13/1N/003-G/A	170630	1/60
16/0.03	FRBmM-C16/1N/003-G/A	170631	1/60
20/0.03	FRBmM-C20/1N/003-G/A	170632	1/60
25/0.03	FRBmM-C25/1N/003-G/A	170633	1/60
32/0.03	FRBmM-C32/1N/003-G/A	170634	1/60
40/0.03	FRBmM-C40/1N/003-G/A	170635	1/60

SG03013

Characteristic D

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
13/0.03	FRBmM-D13/1N/003-G/A	170653	1/60
16/0.03	FRBmM-D16/1N/003-G/A	170654	1/60
20/0.03	FRBmM-D20/1N/003-G/A	170655	1/60

Type G

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

SG03013

Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
13/0.03	FRBmM-B13/1N/003-G	170710	1/60
16/0.03	FRBmM-B16/1N/003-G	170711	1/60
20/0.03	FRBmM-B20/1N/003-G	170712	1/60
25/0.03	FRBmM-B25/1N/003-G	170713	1/60
32/0.03	FRBmM-B32/1N/003-G	170714	1/60
40/0.03	FRBmM-B40/1N/003-G	170715	1/60
13/0.3	FRBmM-B13/1N/03-G	170555	1/60
16/0.3	FRBmM-B16/1N/03-G	170556	1/60
20/0.3	FRBmM-B20/1N/03-G	170557	1/60
25/0.3	FRBmM-B25/1N/03-G	170558	1/60
32/0.3	FRBmM-B32/1N/03-G	170559	1/60
40/0.3	FRBmM-B40/1N/03-G	170560	1/60

SG03013

Characteristic C

13/0.03	FRBmM-C13/1N/003-G	170624	1/60
16/0.03	FRBmM-C16/1N/003-G	170625	1/60
20/0.03	FRBmM-C20/1N/003-G	170626	1/60
25/0.03	FRBmM-C25/1N/003-G	170627	1/60
32/0.03	FRBmM-C32/1N/003-G	170628	1/60
40/0.03	FRBmM-C40/1N/003-G	170629	1/60
13/0.3	FRBmM-C13/1N/03-G	170581	1/60
16/0.3	FRBmM-C16/1N/03-G	170582	1/60
20/0.3	FRBmM-C20/1N/03-G	170583	1/60
25/0.3	FRBmM-C25/1N/03-G	170584	1/60
32/0.3	FRBmM-C32/1N/03-G	170585	1/60
40/0.3	FRBmM-C40/1N/03-G	170586	1/60

SG03013

Characteristic D

13/0.03	FRBmM-D13/1N/003-G	170650	1/60
16/0.03	FRBmM-D16/1N/003-G	170651	1/60
20/0.03	FRBmM-D20/1N/003-G	170652	1/60
13/0.3	FRBmM-D13/1N/03-G	170869	1/60
16/0.3	FRBmM-D16/1N/03-G	170870	1/60
20/0.3	FRBmM-D20/1N/03-G	170871	1/60

Type A

10 kA, 1+N-poles

bedingt surge current-proof 250A, pulsstromsensitiv, Type A

SG03013

Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
6/0.01	FRBmM-B6/1N/001-A	170975	1/60
10/0.01	FRBmM-B10/1N/001-A	170976	1/60
13/0.01	FRBmM-B13/1N/001-A	170977	1/60
16/0.01	FRBmM-B16/1N/001-A	170978	1/60
6/0.03	FRBmM-B6/1N/003-A	170702	1/60
10/0.03	FRBmM-B10/1N/003-A	170703	1/60
13/0.03	FRBmM-B13/1N/003-A	170704	1/60
16/0.03	FRBmM-B16/1N/003-A	170705	1/60
20/0.03	FRBmM-B20/1N/003-A	170706	1/60
25/0.03	FRBmM-B25/1N/003-A	170707	1/60
32/0.03	FRBmM-B32/1N/003-A	170708	1/60
40/0.03	FRBmM-B40/1N/003-A	170709	1/60
6/0.1	FRBmM-B6/1N/01-A	170664	1/60
10/0.1	FRBmM-B10/1N/01-A	170665	1/60
13/0.1	FRBmM-B13/1N/01-A	170666	1/60
16/0.1	FRBmM-B16/1N/01-A	170667	1/60
20/0.1	FRBmM-B20/1N/01-A	170668	1/60
25/0.1	FRBmM-B25/1N/01-A	170669	1/60
32/0.1	FRBmM-B32/1N/01-A	170670	1/60
40/0.1	FRBmM-B40/1N/01-A	170671	1/60
6/0.3	FRBmM-B6/1N/03-A	170607	1/60
10/0.3	FRBmM-B10/1N/03-A	170608	1/60
13/0.3	FRBmM-B13/1N/03-A	170609	1/60
16/0.3	FRBmM-B16/1N/03-A	170610	1/60
20/0.3	FRBmM-B20/1N/03-A	170611	1/60
25/0.3	FRBmM-B25/1N/03-A	170552	1/60
32/0.3	FRBmM-B32/1N/03-A	170553	1/60
40/0.3	FRBmM-B40/1N/03-A	170554	1/60

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Characteristic C

2/0.01	FRBmM-C2/1N/001-A	170904	1/60
4/0.01	FRBmM-C4/1N/001-A	170905	1/60
6/0.01	FRBmM-C6/1N/001-A	170906	1/60
10/0.01	FRBmM-C10/1N/001-A	170907	1/60
13/0.01	FRBmM-C13/1N/001-A	170908	1/60
16/0.01	FRBmM-C16/1N/001-A	170921	1/60
2/0.03	FRBmM-C2/1N/003-A	170614	1/60
4/0.03	FRBmM-C4/1N/003-A	170615	1/60
6/0.03	FRBmM-C6/1N/003-A	170616	1/60
10/0.03	FRBmM-C10/1N/003-A	170617	1/60
13/0.03	FRBmM-C13/1N/003-A	170618	1/60
16/0.03	FRBmM-C16/1N/003-A	170619	1/60
20/0.03	FRBmM-C20/1N/003-A	170620	1/60
25/0.03	FRBmM-C25/1N/003-A	170621	1/60
32/0.03	FRBmM-C32/1N/003-A	170622	1/60
40/0.03	FRBmM-C40/1N/003-A	170623	1/60
2/0.1	FRBmM-C2/1N/01-A	170682	1/60
4/0.1	FRBmM-C4/1N/01-A	170683	1/60
6/0.1	FRBmM-C6/1N/01-A	170684	1/60
10/0.1	FRBmM-C10/1N/01-A	170685	1/60
13/0.1	FRBmM-C13/1N/01-A	170686	1/60
16/0.1	FRBmM-C16/1N/01-A	170687	1/60
20/0.1	FRBmM-C20/1N/01-A	170688	1/60
25/0.1	FRBmM-C25/1N/01-A	170689	1/60
32/0.1	FRBmM-C32/1N/01-A	170690	1/60
40/0.1	FRBmM-C40/1N/01-A	170691	1/60
2/0.3	FRBmM-C2/1N/03-A	170571	1/60
4/0.3	FRBmM-C4/1N/03-A	170572	1/60
6/0.3	FRBmM-C6/1N/03-A	170573	1/60
10/0.3	FRBmM-C10/1N/03-A	170574	1/60
13/0.3	FRBmM-C13/1N/03-A	170575	1/60
16/0.3	FRBmM-C16/1N/03-A	170576	1/60
20/0.3	FRBmM-C20/1N/03-A	170577	1/60
25/0.3	FRBmM-C25/1N/03-A	170578	1/60
32/0.3	FRBmM-C32/1N/03-A	170579	1/60
40/0.3	FRBmM-C40/1N/03-A	170580	1/60

Combined RCD/MCB Devices FRBmM, FRBm6 1+N-poles

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Characteristic D

2/0.01	FRBmM-D2/1N/001-A	170914	1/60
4/0.01	FRBmM-D4/1N/001-A	170915	1/60
6/0.01	FRBmM-D6/1N/001-A	170916	1/60
10/0.01	FRBmM-D10/1N/001-A	170917	1/60
13/0.01	FRBmM-D13/1N/001-A	170918	1/60
16/0.01	FRBmM-D16/1N/001-A	170919	1/60
2/0.03	FRBmM-D2/1N/003-A	170643	1/60
4/0.03	FRBmM-D4/1N/003-A	170644	1/60
6/0.03	FRBmM-D6/1N/003-A	170645	1/60
10/0.03	FRBmM-D10/1N/003-A	170646	1/60
13/0.03	FRBmM-D13/1N/003-A	170647	1/60
16/0.03	FRBmM-D16/1N/003-A	170648	1/60
20/0.03	FRBmM-D20/1N/003-A	170649	1/60
2/0.1	FRBmM-D2/1N/01-A	170544	1/60
4/0.1	FRBmM-D4/1N/01-A	170545	1/60
6/0.1	FRBmM-D6/1N/01-A	170546	1/60
10/0.1	FRBmM-D10/1N/01-A	170547	1/60
13/0.1	FRBmM-D13/1N/01-A	170548	1/60
16/0.1	FRBmM-D16/1N/01-A	170549	1/60
20/0.1	FRBmM-D20/1N/01-A	170550	1/60
2/0.3	FRBmM-D2/1N/03-A	170594	1/60
4/0.3	FRBmM-D4/1N/03-A	170595	1/60
6/0.3	FRBmM-D6/1N/03-A	170596	1/60
10/0.3	FRBmM-D10/1N/03-A	170597	1/60
13/0.3	FRBmM-D13/1N/03-A	170598	1/60
16/0.3	FRBmM-D16/1N/03-A	170599	1/60
20/0.3	FRBmM-D20/1N/03-A	170868	1/60

Type AC

10 kA, 1+N-poles

Conditionally surge current-proof 250 A, Type AC

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Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
6/0.01	FRBmM-B6/1N/001	170971	1/60
10/0.01	FRBmM-B10/1N/001	170972	1/60
13/0.01	FRBmM-B13/1N/001	170973	1/60
16/0.01	FRBmM-B16/1N/001	170974	1/60
6/0.03	FRBmM-B6/1N/003	170920	1/60
10/0.03	FRBmM-B10/1N/003	170695	1/60
13/0.03	FRBmM-B13/1N/003	170696	1/60
16/0.03	FRBmM-B16/1N/003	170697	1/60
20/0.03	FRBmM-B20/1N/003	170698	1/60
25/0.03	FRBmM-B25/1N/003	170699	1/60
32/0.03	FRBmM-B32/1N/003	170700	1/60
40/0.03	FRBmM-B40/1N/003	170701	1/60
6/0.1	FRBmM-B6/1N/01	170656	1/60
10/0.1	FRBmM-B10/1N/01	170657	1/60
13/0.1	FRBmM-B13/1N/01	170658	1/60
16/0.1	FRBmM-B16/1N/01	170659	1/60
20/0.1	FRBmM-B20/1N/01	170660	1/60
25/0.1	FRBmM-B25/1N/01	170661	1/60
32/0.1	FRBmM-B32/1N/01	170662	1/60
40/0.1	FRBmM-B40/1N/01	170663	1/60
6/0.3	FRBmM-B6/1N/03	170551	1/60
10/0.3	FRBmM-B10/1N/03	170600	1/60
13/0.3	FRBmM-B13/1N/03	170601	1/60
16/0.3	FRBmM-B16/1N/03	170602	1/60
20/0.3	FRBmM-B20/1N/03	170603	1/60
25/0.3	FRBmM-B25/1N/03	170604	1/60
32/0.3	FRBmM-B32/1N/03	170605	1/60
40/0.3	FRBmM-B40/1N/03	170606	1/60

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Characteristic C

2/0.01	FRBmM-C2/1N/001	170979	1/60
4/0.01	FRBmM-C4/1N/001	170980	1/60
6/0.01	FRBmM-C6/1N/001	170981	1/60
10/0.01	FRBmM-C10/1N/001	170982	1/60
13/0.01	FRBmM-C13/1N/001	170983	1/60
16/0.01	FRBmM-C16/1N/001	170984	1/60
2/0.03	FRBmM-C2/1N/003	170532	1/60
4/0.03	FRBmM-C4/1N/003	170533	1/60
6/0.03	FRBmM-C6/1N/003	170534	1/60
10/0.03	FRBmM-C10/1N/003	170535	1/60
13/0.03	FRBmM-C13/1N/003	170536	1/60
16/0.03	FRBmM-C16/1N/003	170537	1/60
20/0.03	FRBmM-C20/1N/003	170538	1/60
25/0.03	FRBmM-C25/1N/003	170539	1/60
32/0.03	FRBmM-C32/1N/003	170612	1/60
40/0.03	FRBmM-C40/1N/003	170613	1/60
2/0.1	FRBmM-C2/1N/01	170672	1/60
4/0.1	FRBmM-C4/1N/01	170673	1/60
6/0.1	FRBmM-C6/1N/01	170674	1/60
10/0.1	FRBmM-C10/1N/01	170675	1/60
13/0.1	FRBmM-C13/1N/01	170676	1/60
16/0.1	FRBmM-C16/1N/01	170677	1/60
20/0.1	FRBmM-C20/1N/01	170678	1/60
25/0.1	FRBmM-C25/1N/01	170679	1/60
32/0.1	FRBmM-C32/1N/01	170680	1/60
40/0.1	FRBmM-C40/1N/01	170681	1/60
2/0.3	FRBmM-C2/1N/03	170561	1/60
4/0.3	FRBmM-C4/1N/03	170562	1/60
6/0.3	FRBmM-C6/1N/03	170563	1/60
10/0.3	FRBmM-C10/1N/03	170564	1/60
13/0.3	FRBmM-C13/1N/03	170565	1/60
16/0.3	FRBmM-C16/1N/03	170566	1/60
20/0.3	FRBmM-C20/1N/03	170567	1/60
25/0.3	FRBmM-C25/1N/03	170568	1/60
32/0.3	FRBmM-C32/1N/03	170569	1/60
40/0.3	FRBmM-C40/1N/03	170570	1/60

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Characteristic D

2/0.01	FRBmM-D2/1N/001	170922	1/60
4/0.01	FRBmM-D4/1N/001	170909	1/60
6/0.01	FRBmM-D6/1N/001	170910	1/60
10/0.01	FRBmM-D10/1N/001	170911	1/60
13/0.01	FRBmM-D13/1N/001	170912	1/60
16/0.01	FRBmM-D16/1N/001	170913	1/60
2/0.03	FRBmM-D2/1N/003	170636	1/60
4/0.03	FRBmM-D4/1N/003	170637	1/60
6/0.03	FRBmM-D6/1N/003	170638	1/60
10/0.03	FRBmM-D10/1N/003	170639	1/60
13/0.03	FRBmM-D13/1N/003	170640	1/60
16/0.03	FRBmM-D16/1N/003	170641	1/60
20/0.03	FRBmM-D20/1N/003	170642	1/60
2/0.1	FRBmM-D2/1N/01	170692	1/60
4/0.1	FRBmM-D4/1N/01	170693	1/60
6/0.1	FRBmM-D6/1N/01	170694	1/60
10/0.1	FRBmM-D10/1N/01	170540	1/60
13/0.1	FRBmM-D13/1N/01	170541	1/60
16/0.1	FRBmM-D16/1N/01	170542	1/60
20/0.1	FRBmM-D20/1N/01	170543	1/60
2/0.3	FRBmM-D2/1N/03	170587	1/60
4/0.3	FRBmM-D4/1N/03	170588	1/60
6/0.3	FRBmM-D6/1N/03	170589	1/60
10/0.3	FRBmM-D10/1N/03	170590	1/60
13/0.3	FRBmM-D13/1N/03	170591	1/60
16/0.3	FRBmM-D16/1N/03	170592	1/60
20/0.3	FRBmM-D20/1N/03	170593	1/60

Type G/A

6 kA, 1+N-poles

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

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Characteristic B

13/003	FRBm6-B13/1N/003-G/A	177847	1/60
16/003	FRBm6-B16/1N/003-G/A	177848	1/60
20/003	FRBm6-B20/1N/003-G/A	177849	1/60
25/003	FRBm6-B25/1N/003-G/A	177850	1/60
32/003	FRBm6-B32/1N/003-G/A	177851	1/60
40/003	FRBm6-B40/1N/003-G/A	177852	1/60

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Characteristic C

13/003	FRBm6-C13/1N/003-G/A	177853	1/60
16/003	FRBm6-C16/1N/003-G/A	177854	1/60
20/003	FRBm6-C20/1N/003-G/A	177855	1/60
25/003	FRBm6-C25/1N/003-G/A	177856	1/60
32/003	FRBm6-C32/1N/003-G/A	177857	1/60
40/003	FRBm6-C40/1N/003-G/A	177858	1/60

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Characteristic D

13/003	FRBm6-D13/1N/003-G/A	177859	1/60
16/003	FRBm6-D16/1N/003-G/A	177860	1/60
20/003	FRBm6-D20/1N/003-G/A	177861	1/60

Specifications | Combined RCD/MCB Devices FRBm., 1+N-poles

Description

- Combined RCD/MCB device
- 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
- Contact position indicator red - green
- Comprehensive range of accessories suitable for subsequent installation
- Nameplate
- 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. Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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.
- **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 -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.

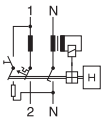
Accessories:		
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Tripping module	Z-KAM	248294
Terminal cover 2-poles	Z-TC/SD-2P	178099

Technical Data

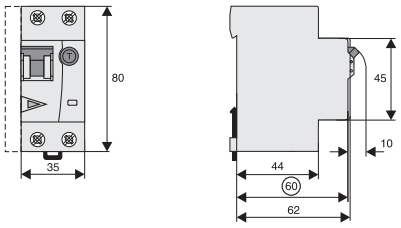
		FRBm., 1+N-poles
Electrical		
Design according to		IEC/EN 61009
Current test marks as printed onto the device		
Tripping line voltage-independent		instantaneous 250A (8/20µs), surge current-proof
Type G, F		10 ms delay 3kA (8/20µs), surge current-proof
Rated voltage	U_n	240 V AC, 50 Hz
Rated tripping current	$I_{\Delta n}$	10, 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 short circuit capacity	I_{cn}	
FRBmM		10 kA
FRBm6		6 kA
Rated current		2 - 40 A
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50µs)
Characteristic		B, C, D
Maximum back-up fuse (short circuit protection)		100 A gL (>10 kA)
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 10,000 operating cycles
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 mm²
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Operation temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)

Connection diagram

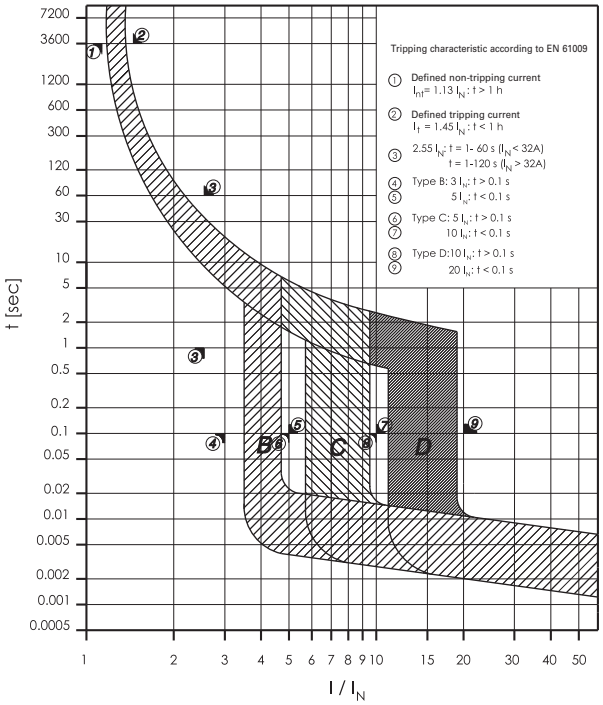
1+N-poles



Dimensions (mm)



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



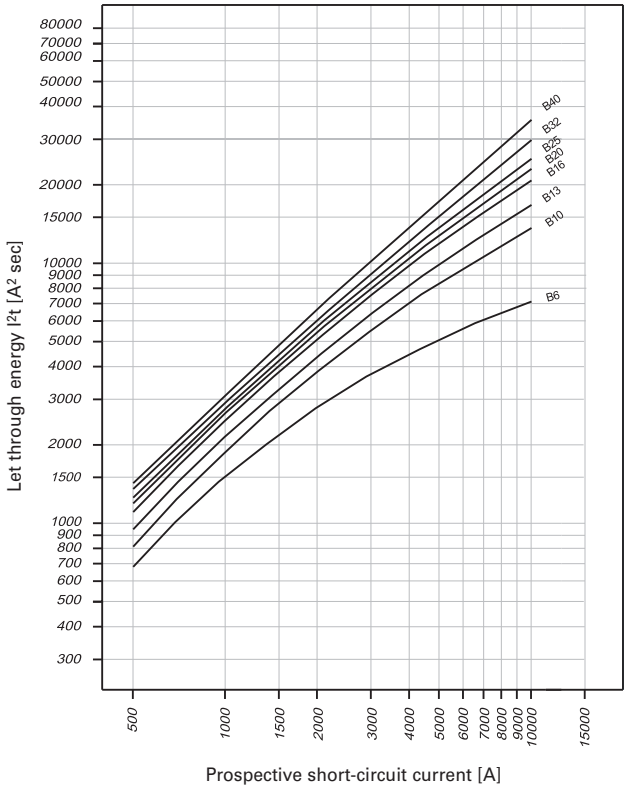
Effect of ambient temperature FRBm.-../1N/

Effect of ambient temperature (MCB component)

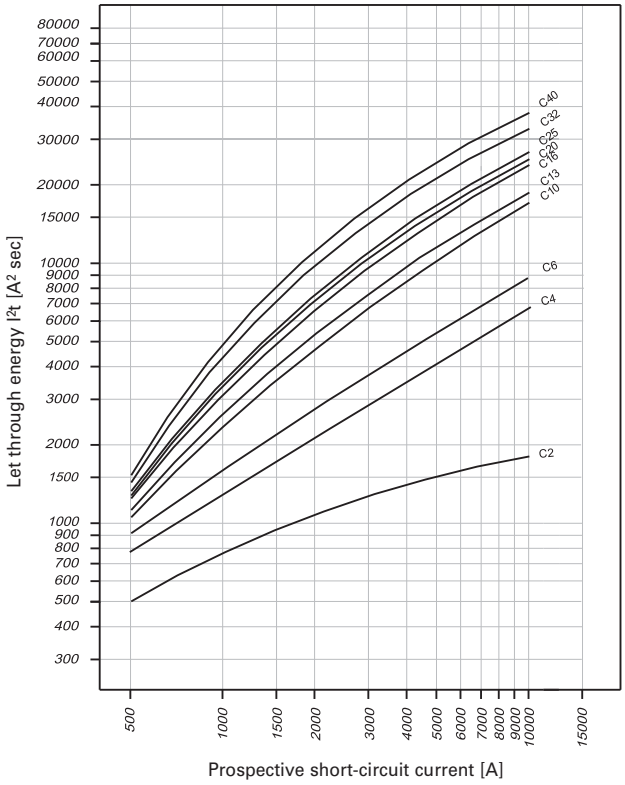
	Ambient temperature **T [°C]**								
I_n [A]	**-25**	**-20**	**-10**	**0**	**10**	**20**	**30**	**35**	**40**
2	2.5	2.4	2.3	2.2	2.2	2.1	2.0	2.0	1.9
4	4.9	4.8	4.7	4.5	4.3	4.2	4.0	3.9	3.9
6	7.4	7.2	7.0	6.7	6.5	6.3	6.0	5.9	5.8
10	12	12	12	11	11	10	10	9.9	9.7
13	16	16	15	15	14	14	13	13	13
16	20	19	19	18	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
32	40	38	37	36	35	33	32	32	31
40	49	48	47	45	43	42	40	39	39

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

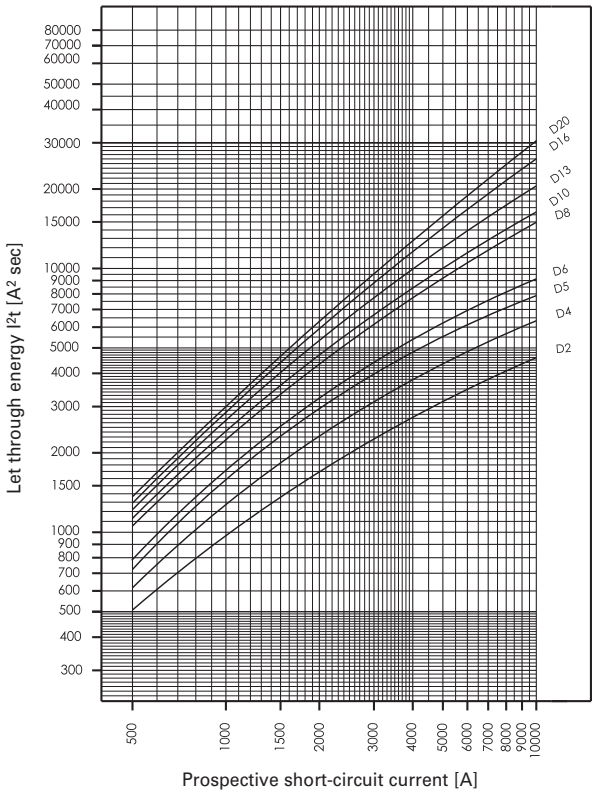
Let-through Energy FRBmM, Characteristic B, 1+Npolig



Let-through Energy FRBmM, Characteristic C, 1+Npolig



Let-through Energy FRBmM, Characteristic D, 1+Npolig



Short-circuit Selectivity FRBmM-../1N/

In case of a short-circuit, selectivity is provided up to the specified selective current values I_s (kA) applicable between the FRBmM RCD/MCB circuit breakers and the up-stream protective devices.

When a short-circuit occurs, this means that with I_{KS} current values below I_s only the MCB will trip. However, in case of short-circuit currents beyond these values both protective devices will trip.

FRBmM-../1N/ and DII-DIV fuse link

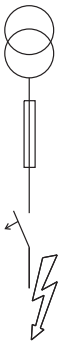
Short-circuit Selectivity **Characteristic B** towards fuse link **DII-DIV***)

FRBmM	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)]
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

[1)] Selectivity-limit current I_s under 0.5 kA.

[2)] Selectivity-limit current I_s = Rated breaking capacitiy I_{cn} of the RCD/MCB device

Darker areas: no selectivityt



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

FRBmM	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5[1)]	<0.5[1)]	1.7	6.0	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
4	<0.5[1)]	<0.5[1)]	0.7	1.3	4.2	8.5	10.0[2)]	10.0[2)]	10.0[2)]
6		<0.5[1)]	0.6	1.0	2.9	5.8	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

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

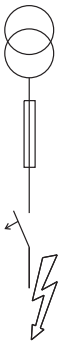
FRBmM	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5[1)]	<0.5[1)]	1.0	1.8	6.5	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
4		<0.5[1)]	0.8	1.3	3.8	9.0	10.0[2)]	10.0[2)]	10.0[2)]
6			0.6	0.9	2.3	4.7	10.0[2)]	10.0[2)]	10.0[2)]
10				0.7	1.5	2.6	5.5	9.4	10.0[2)]
13					1.4	2.2	4.4	7.0	10.0[2)]
16						2.0	3.7	5.5	10.0[2)]
20						1.9	3.4	5.0	10.0[2)]

FRBmM-../1N/ and D01-D03 fuse link

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

FRBmM	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)]
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

[1)] Selectivity-limit current I_s under 0.5 kA.
[2)] Selectivity-limit current I_s = Rated breaking capacitiy I_{cn} of the RCD/MCB device
Darker areas: no selectivityt



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

FRBmM	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5[1)]	0.5	0.5	2.4	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)]	0.9	3.4	9.5	10.0[2)]	10.0[2)]	10.0[2)]
6		<0.5[1)]	<0.5[1)]	0.8	2.3	6.5	10.0[2)]	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 **Characteristic D** towards fuse link **D01-D03***)

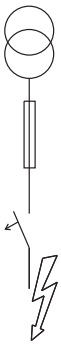
FRBmM	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5[1)]	0.5	0.8	1.2	5.0	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
4		<0.5[1)]	0.7	1.0	3.0	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
6			0.5	0.8	1.9	5.5	10.0[2)]	10.0[2)]	10.0[2)]
10				0.6	1.3	2.9	4.7	9.2	10.0[2)]
13					1.2	2.5	3.8	7.0	10.0[2)]
16						2.3	3.2	5.5	10.0[2)]
20						2.2	3.0	3.9	10.0[2)]

FRBmM-../1N/ and NH-00 fuse link

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

FRBmM	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)]	10.0[2)]
16			0.6	0.7	1.2	1.5	2.4	3.0	4.5	10.0[2)]	10.0[2)]	10.0[2)]
20				0.7	1.1	1.5	2.2	2.8	4.2	9.2	10.0[2)]	10.0[2)]
25				0.7	1.1	1.4	2.1	2.6	4.0	8.2	10.0[2)]	10.0[2)]
32					1.0	1.4	2.0	2.5	3.7	7.1	10.0[2)]	10.0[2)]
40								2.3	3.4	6.2	8.8	10.0[2)]

[1)] Selectivity-limit current I_s under 0.5 kA.
[2)] Selectivity-limit current I_s = Rated breaking capacitiy I_{cn} of the RCD/MCB device
Darker areas: no selectivityt



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

FRBmM	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	2.6	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)]
4	<0.5[1)]	<0.5[1)]	0.9	1.8	3.2	4.8	8.7	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
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)]
32								1.7	2.6	5.3	9.0	10.0[2)]
40									2.4	4.5	7.5	10.0

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

FRBmM	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	1.3	2.5	4.7	7.7	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
4	<0.5[1)]	0.5	0.9	1.6	2.8	4.3	9.2	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
6		<0.5[1)]	0.7	1.2	1.8	2.6	4.9	7.0	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
10			0.5	0.8	1.2	1.7	2.7	3.5	5.6	10.0[2)]	10.0[2)]	10.0[2)]
13					1.1	1.5	2.3	2.9	4.5	10.0[2)]	10.0[2)]	10.0[2)]
16						1.4	2.0	2.6	3.9	8.0	10.0[2)]	10.0[2)]
20							1.9	2.4	3.6	7.0	10.0[2)]	10.0[2)]

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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 suitable for subsequent installation
- Wide variety of rated tripping currents
- Rated currents up to 40 A
- Tripping characteristics B, C
- Rated breaking capacitiy 10 kA and 6 kA

Type Super A

10 kA, 2-poles

Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, short-time delayed, Type Super A

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Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
10/0.03	FRBmM-B10/2/003-LiA	170886	1/60
13/0.03	FRBmM-B13/2/003-LiA	170887	1/60
16/0.03	FRBmM-B16/2/003-LiA	170888	1/60
20/0.03	FRBmM-B20/2/003-LiA	170889	1/60
25/0.03	FRBmM-B25/2/003-LiA	170890	1/60
10/0.1	FRBmM-B10/2/01-LiA	170810	1/60
13/0.1	FRBmM-B13/2/01-LiA	170811	1/60
16/0.1	FRBmM-B16/2/01-LiA	170812	1/60
20/0.1	FRBmM-B20/2/01-LiA	170813	1/60
25/0.1	FRBmM-B25/2/01-LiA	170814	1/60

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Characteristic C

6/0.03	FRBmM-C6/2/003-LiA	170795	1/60
10/0.03	FRBmM-C10/2/003-LiA	170796	1/60
13/0.03	FRBmM-C13/2/003-LiA	170797	1/60
16/0.03	FRBmM-C16/2/003-LiA	170798	1/60
20/0.03	FRBmM-C20/2/003-LiA	170799	1/60
25/0.03	FRBmM-C25/2/003-LiA	170800	1/60
6/0.1	FRBmM-C6/2/01-LiA	170829	1/60
10/0.1	FRBmM-C10/2/01-LiA	170830	1/60
13/0.1	FRBmM-C13/2/01-LiA	170831	1/60
16/0.1	FRBmM-C16/2/01-LiA	170832	1/60
20/0.1	FRBmM-C20/2/01-LiA	170833	1/60
25/0.1	FRBmM-C25/2/01-LiA	170834	1/60

Type A

10 kA, 2-poles

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

SG02913

Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
10/0.03	FRBmM-B10/2/003-A	170879	1/60
13/0.03	FRBmM-B13/2/003-A	170880	1/60
16/0.03	FRBmM-B16/2/003-A	170881	1/60
20/0.03	FRBmM-B20/2/003-A	170882	1/60
25/0.03	FRBmM-B25/2/003-A	170883	1/60
10/0.1	FRBmM-B10/2/01-A	170803	1/60
13/0.1	FRBmM-B13/2/01-A	170804	1/60
16/0.1	FRBmM-B16/2/01-A	170805	1/60
20/0.1	FRBmM-B20/2/01-A	170806	1/60
25/0.1	FRBmM-B25/2/01-A	170807	1/60
10/0.3	FRBmM-B10/2/03-A	170844	1/60
13/0.3	FRBmM-B13/2/03-A	170845	1/60
16/0.3	FRBmM-B16/2/03-A	170846	1/60
20/0.3	FRBmM-B20/2/03-A	170847	1/60
25/0.3	FRBmM-B25/2/03-A	170848	1/60

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Characteristic C

6/0.03	FRBmM-C6/2/003-A	170785	1/60
10/0.03	FRBmM-C10/2/003-A	170786	1/60
13/0.03	FRBmM-C13/2/003-A	170787	1/60
16/0.03	FRBmM-C16/2/003-A	170788	1/60
20/0.03	FRBmM-C20/2/003-A	170789	1/60
25/0.03	FRBmM-C25/2/003-A	170790	1/60
6/0.1	FRBmM-C6/2/01-A	170819	1/60
10/0.1	FRBmM-C10/2/01-A	170820	1/60
13/0.1	FRBmM-C13/2/01-A	170821	1/60
16/0.1	FRBmM-C16/2/01-A	170822	1/60
20/0.1	FRBmM-C20/2/01-A	170823	1/60
25/0.1	FRBmM-C25/2/01-A	170824	1/60
6/0.3	FRBmM-C6/2/03-A	170863	1/60
10/0.3	FRBmM-C10/2/03-A	170864	1/60
13/0.3	FRBmM-C13/2/03-A	170865	1/60
16/0.3	FRBmM-C16/2/03-A	170866	1/60
20/0.3	FRBmM-C20/2/03-A	170867	1/60
25/0.3	FRBmM-C25/2/03-A	170730	1/60

Type AC

10 kA, 2-poles
Conditionally surge current-proof 250 A, Type AC

SG02913

Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
10/0.03	FRBmM-B10/2/003	170872	1/60
13/0.03	FRBmM-B13/2/003	170873	1/60
16/0.03	FRBmM-B16/2/003	170874	1/60
20/0.03	FRBmM-B20/2/003	170875	1/60
25/0.03	FRBmM-B25/2/003	170876	1/60
10/0.3	FRBmM-B10/2/03	170837	1/60
13/0.3	FRBmM-B13/2/03	170838	1/60
16/0.3	FRBmM-B16/2/03	170839	1/60
20/0.3	FRBmM-B20/2/03	170840	1/60
25/0.3	FRBmM-B25/2/03	170841	1/60

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Characteristic C

6/0.03	FRBmM-C6/2/003	170721	1/60
10/0.03	FRBmM-C10/2/003	170722	1/60
13/0.03	FRBmM-C13/2/003	170723	1/60
16/0.03	FRBmM-C16/2/003	170724	1/60
20/0.03	FRBmM-C20/2/003	170725	1/60
25/0.03	FRBmM-C25/2/003	170726	1/60
6/0.3	FRBmM-C6/2/03	170853	1/60
10/0.3	FRBmM-C10/2/03	170854	1/60
13/0.3	FRBmM-C13/2/03	170855	1/60
16/0.3	FRBmM-C16/2/03	170856	1/60
20/0.3	FRBmM-C20/2/03	170857	1/60
25/0.3	FRBmM-C25/2/03	170858	1/60

Type Super A

6 kA, 2-poles

Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, short-time delayed, Type Super A

SG02913

Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
32/0.03	FRBm6-B32/2/003-LiA	170891	1/60
40/0.03	FRBm6-B40/2/003-LiA	170718	1/60
32/0.1	FRBm6-B32/2/01-LiA	170815	1/60
40/0.1	FRBm6-B40/2/01-LiA	170816	1/60

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Characteristic C

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
32/0.03	FRBm6-C32/2/003-LiA	170801	1/60
40/0.03	FRBm6-C40/2/003-LiA	170802	1/60
32/0.1	FRBm6-C32/2/01-LiA	170835	1/60
40/0.1	FRBm6-C40/2/01-LiA	170836	1/60

Type A

6 kA, 2-poles

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

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Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
32/0.03	FRBm6-B32/2/003-A	170884	1/60
40/0.03	FRBm6-B40/2/003-A	170885	1/60
32/0.1	FRBm6-B32/2/01-A	170808	1/60
40/0.1	FRBm6-B40/2/01-A	170809	1/60
32/0.3	FRBm6-B32/2/03-A	170849	1/60
40/0.3	FRBm6-B40/2/03-A	170850	1/60

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Characteristic C

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
32/0.03	FRBm6-C32/2/003-A	170791	1/60
40/0.03	FRBm6-C40/2/003-A	170792	1/60
32/0.1	FRBm6-C32/2/01-A	170825	1/60
40/0.1	FRBm6-C40/2/01-A	170826	1/60
32/0.3	FRBm6-C32/2/03-A	170731	1/60
40/0.3	FRBm6-C40/2/03-A	170732	1/60

Type AC

6 kA, 2-poles
Conditionally surge current-proof 250 A, Type AC

SG02913

Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
32/0.03	FRBm6-B32/2/003	170877	1/60
40/0.03	FRBm6-B40/2/003	170878	1/60
32/0.3	FRBm6-B32/2/03	170842	1/60
40/0.3	FRBm6-B40/2/03	170843	1/60

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Characteristic C

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
32/0.03	FRBm6-C32/2/003	170727	1/60
40/0.03	FRBm6-C40/2/003	170728	1/60
32/0.3	FRBm6-C32/2/03	170859	1/60
40/0.3	FRBm6-C40/2/03	170860	1/60

Specifications | Combined RCD/MCB Devices FRBmM, FRBm6, 2-poles

Description

- Combined RCD/MCB device
- 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
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Comprehensive range of accessories suitable for subsequent installation
- 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. Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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.
- **Type -Super A**: High reliability against unwanted tripping. Compulsory for any circuit where personal injury or damage to property may occur in case of unwanted tripping.

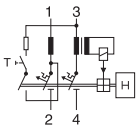
Accessories:		
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Terminal cover 2-poles	Z-TC/SD-2P	178099

Technical Data

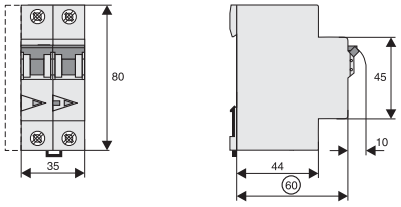
		FRBmM, FRBm6, 2-poles
Electrical		
Design according to		IEC/EN 61009
Current test marks as printed onto the device		
Tripping line voltage-independent		instantaneous 250A (8/20µs), surge current-proof
Type Super A		10 ms delay, surge current-proof
Rated voltage	U_n	240 V AC, 50 Hz
Rated tripping current	$I_{\Delta n}$	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 short circuit capacity	I_{cn}	
FRBmM		10 kA
FRBm6		6 kA
Rated current		6 - 40 A
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50µs)
Characteristic		B, C
Maximum back-up fuse (short circuit protection)		100 A gL (>10 kA)
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 10,000 operating cycles
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 mm²
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Operation temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)

Connection diagram

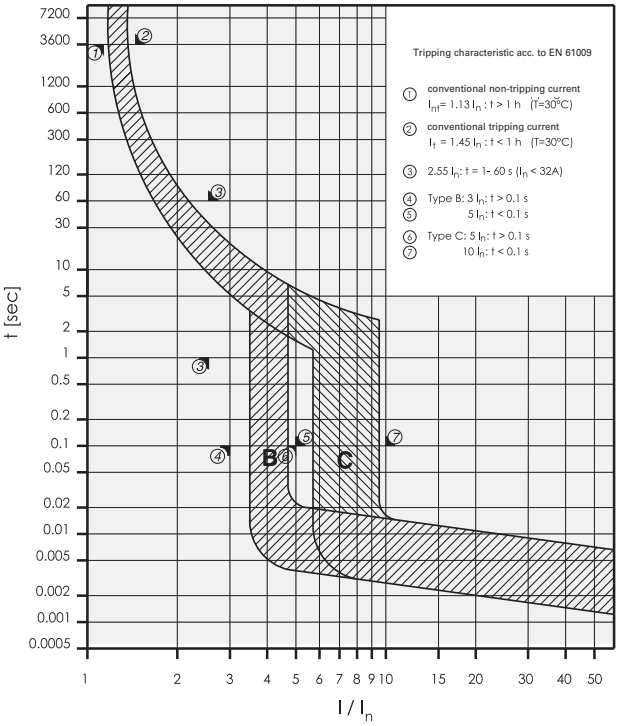
2-poles



Dimensions (mm)



Tripping Characteristic FRBm. 2-poles, Characteristics B and C



Internal Resistance FRBmM 2-poles

	Type B	Type C
At room temperature (single pole)		
I_n [A]	R* [mΩ]	R* [mΩ]
6	29,7	29,7
10	19,1	19,1
13	17,4	17,4
16	12,2	12,2
20	9,3	9,3
25	4,9	4,9
32	5,6	5,6
40	4,6	4,6
* 50Hz		

Internal Resistance FRBm6 2-poles

	Type B/C
At room temperature (single pole)	
I_n [A]	R* [mΩ]
10	36.1
13	25.9
16	18.6
20	14.2
25	8.0
32	7.3
40	5.6
* 50Hz	

Power Loss at I_n FRBmM 2-poles

	Type B	Type C
(entire unit)		
I_n [A]	P* [W]	P* [W]
6	2,2	2,2
10	4,3	4,3
13	4,0	4,0
16	5,0	5,0
20	5,9	5,9
25	4,6	4,6
32	5,5	5,5
40	6,7	6,7
* 50Hz and ambient temperature		

Power Loss at I_n FRBm6 2-poles

	Type B/C
(entire unit)	
I_n [A]	P* [W]
10	4.1
13	5.2
16	5.7
20	7.0
25	5.6
32	8.7
40	10.9
* 50Hz and ambient temperature	

FRBmM: Influence of ambient temperature on load carrying capacity

- Values = max. allowed current in Ampere at the specific temperature
- Temperature factor (%/K) = 0.5

	Ambient temperature / °C									
I_n [A]	**-40**	**-30**	**-25**	**-20**	**-10**	**0**	**10**	**20**	**30**	**40**
6	8.1	7.8	7.7	7.5	7.2	6.9	6.6	6.3	6.0	5.7
10	13.5	13.0	12.8	12.5	12.0	11.5	11.0	10.5	10.0	9.5
13	17.6	16.9	16.6	16.3	15.6	15.0	14.3	13.7	13.0	12.4
16	21.6	20.8	20.4	20.0	19.2	18.4	17.6	16.8	16.0	15.2
20	27.0	26.0	25.5	25.0	24.0	23.0	22.0	21.0	20.0	19.0

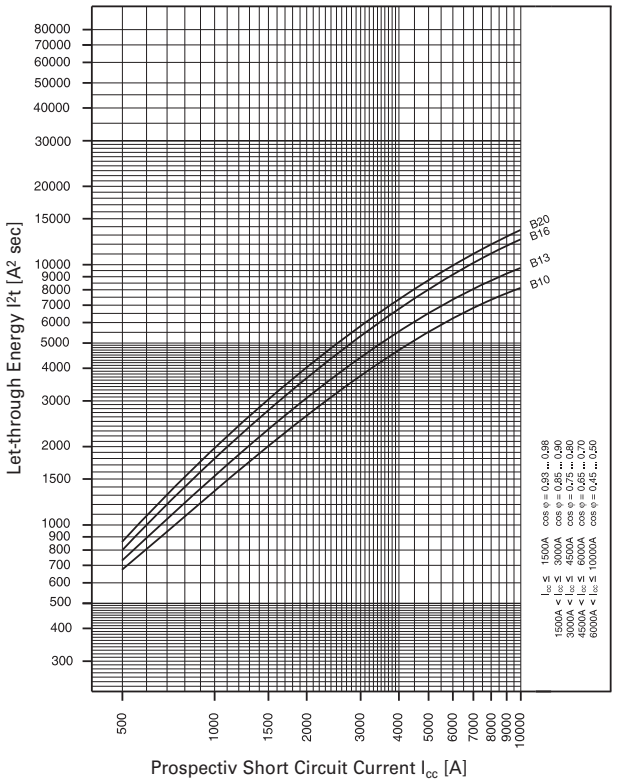
FRBm6: Influence of ambient temperature on load carrying capacity

- Values = max. allowed current in Ampere at the specific temperature
- Temperature factor (%/K) = 0.5

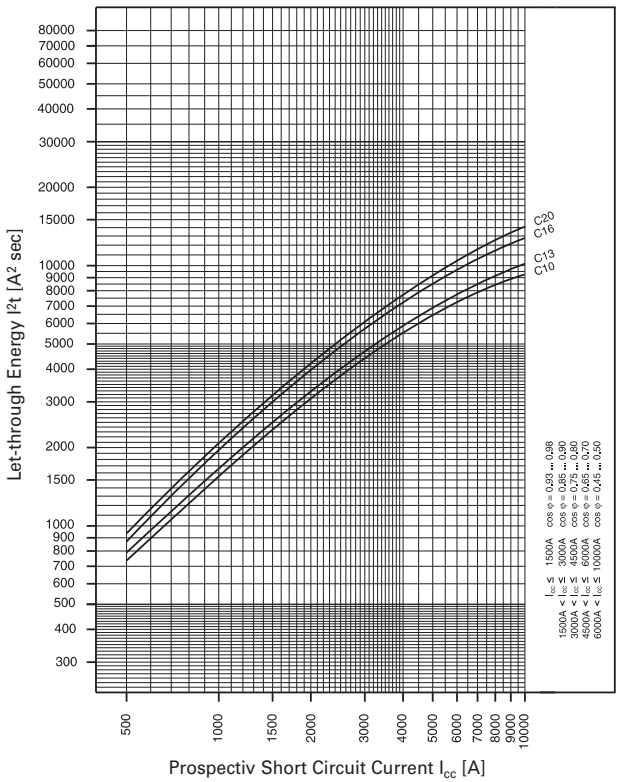
	Ambient temperature / °C									
I_n [A]	**-40**	**-30**	**-25**	**-20**	**-10**	**0**	**10**	**20**	**30**	**40**
25	33.8	32.5	31.9	31.3	30.0	28.8	27.5	26.3	25.0	23.8
32	43.2	41.6	40.8	40.0	38.4	36.8	35.2	33.6	32.0	30.4
40	54.0	52.0	51.0	50.0	48.0	46.0	44.0	42.0	40.0	38.0

Let-through Energy FRBmM 2-poles

Let-through Energy FRBmM, Characteristic B, 2polig

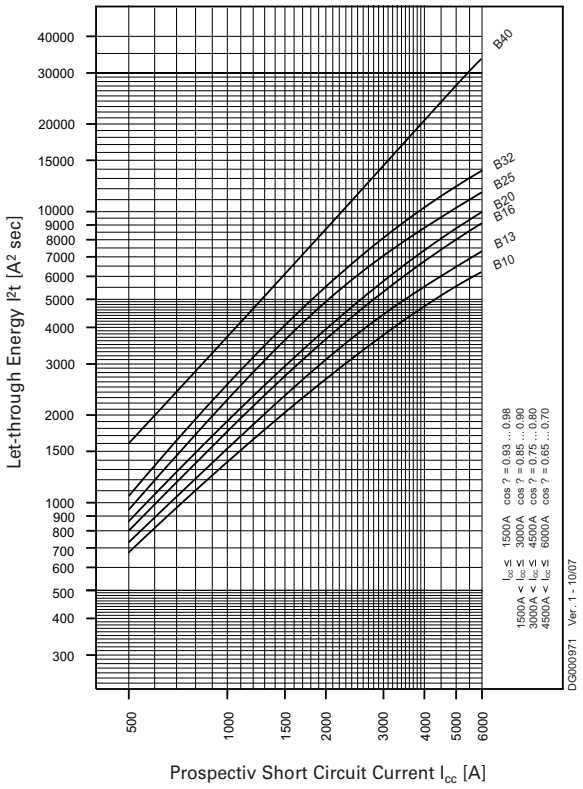


Let-through Energy FRBmM, Characteristic C, 2polig

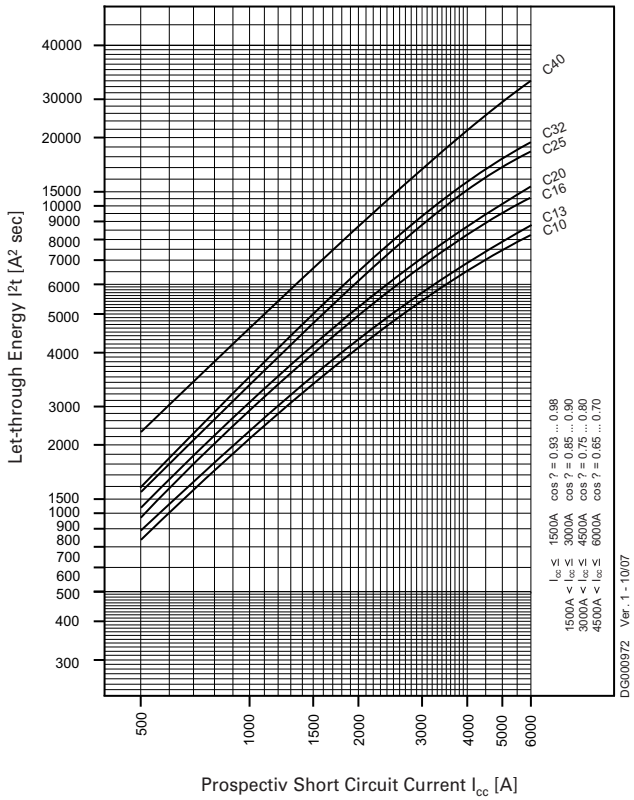


Let-through Energy FRBm6 2-poles

Let-through Energy FRBm6, Characteristic B, 2polig



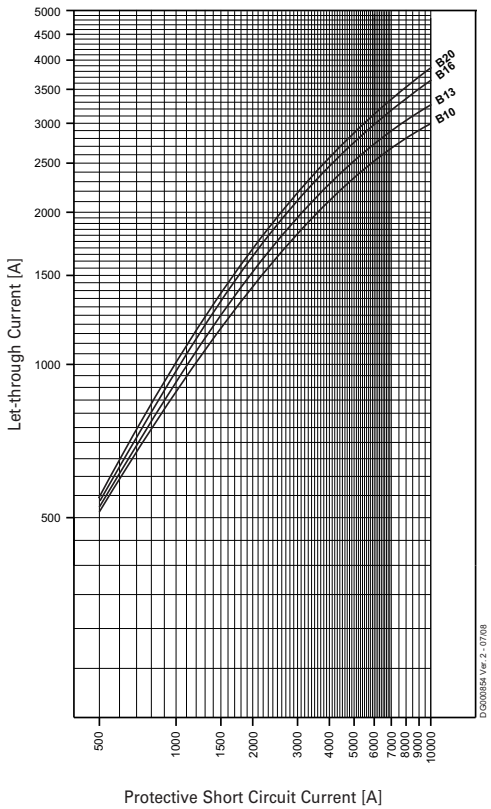
Let-through Energy FRBm6, Characteristic C, 2polig



Let-through Current FRBmM 2-poles

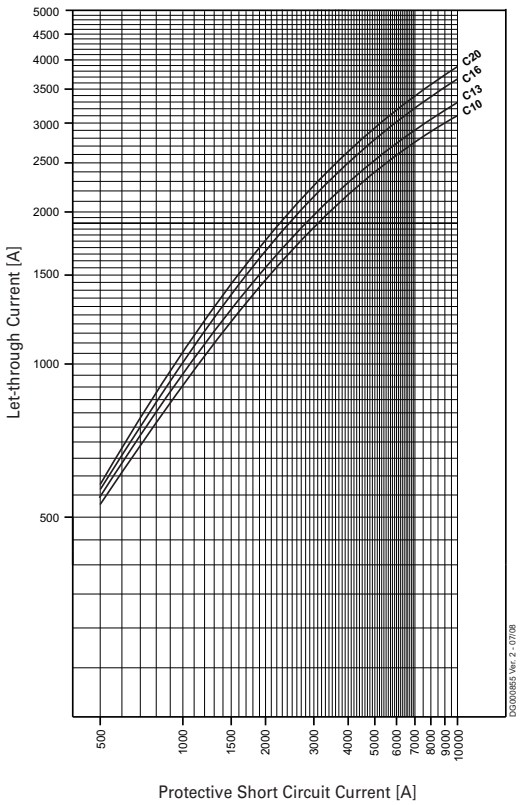
Characteristic B

230 V



Characteristic C

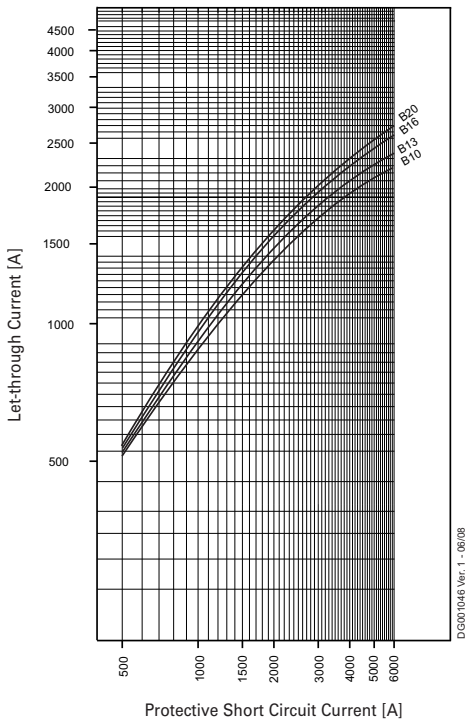
230 V



Let-through Current FRBm6 2-poles

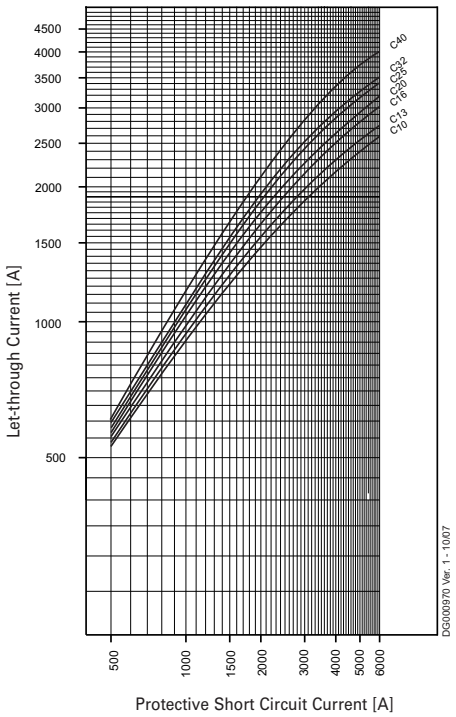
Characteristic B

230V



Characteristic C

230V



Short-circuit Selectivity FRBmM 2-poles

In case of a short-circuit, selectivity is provided up to the specified selective current values I_s (kA) applicable between the FRBmM RCD/MCB circuit breakers and the up-stream protective devices.

When a short-circuit occurs, this means that with I_{KS} current values below I_s only the MCB will trip. However, in case of short-circuit currents beyond these values both protective devices will trip.

FRBmM 2-poles and NZM1/NZM2

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

Overload and short-circuit release unit NZM at max. value

FRBmM	NZM...1-A... I_{cu} = 25 (50) kA					
	40	50	63	80	100	125
B10	1.2	1.5	2	2	4	10
B13	1	1.5	2	2	4	10
B16	1	1.2	1.5	2	3	8
B20	0.8	1.2	1.5	1.5	3	8
C10	1.2	1.5	2	2	4	10
C13	1	1.5	2	2	4	10
C16	1	1.2	1.5	2	3	8
C20	0.8	1.2	1.5	1.5	3	8

FRBmM	NZM...2-A... I_{cu} = 25 (50)(100)(150) kA								
	40	50	63	80	100	125	160	200	250
B10	1	1.5	2.5	3	10	10	10	10	10
B13	1	1.2	2	3	10	10	10	10	10
B16	1	1.2	1.5	2.5	10	10	10	10	10
B20	1	1.2	1.5	1.5	10	10	10	10	10
C10	1	1.5	2.5	3	10	10	10	10	10
C13	1	1.2	2	3	10	10	10	10	10
C16	1	1.2	1.5	2.5	10	10	10	10	10
C20	1	1.2	1.5	1.5	10	10	10	10	10

FRBmM 2-poles and PLSM-OV/PLHT-OV

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

FRBmM	PLSM-OV/PLHT-OV I_{cu} = 10 kA						
	25	32	40	50	56	63	80
B+C10	1.5	1.5	1.5	1.5	1.5	1.5	1.5
B+C13	1.5	1.5	1.5	1.5	1.5	1.5	1.5
B+C16	1.5	1.5	1.5	1.5	1.5	1.5	1.5
B+C20	-	1.5	1.5	1.5	1.5	1.5	1.5

FRBmM 2-poles and Neozed[1] / Diazed[2] / NH00[3]

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

Short-circuit Selectivity **FRBmM** towards fuse link **Neozed** [1]

FRBmM	Neozed [1]									
	16	**20**	**25**	**32**	**35**	**40**	**50**	**63**	**80**	**100**
B10	<0,5	0,5	0,9	2	2,3	3,7	8	10	10	10
B13	<0,5	0,5	0,8	1,7	1,9	3	6	10	10	10
B16	-	0,5	0,7	1,5	1,7	2,4	4,4	6,8	10	10
B20	-	-	0,7	1,4	1,5	2,2	3,9	6	9,2	10
C10	<0,5	0,5	0,8	1,7	1,9	3	6,1	10	10	10
C13	<0,5	0,5	0,7	1,6	1,8	2,8	5,5	9,5	10	10
C16	-	<0,5	0,7	1,3	1,5	2,2	4	6,2	10	10
C20	-	-	0,6	1,3	1,4	2,1	3,7	5,6	8,5	10

Short-circuit Selectivity **FRBmM** towards fuse link **Diazed** [2]

FRBmM	Diazed [2]								
	16	20	25	32	35	50	63	80	100
B10	<0,5	0,5	0,9	1,8	2,9	5,6	10	10	10
B13	<0,5	0,5	0,8	1,5	2,4	4,5	10	10	10
B16	-	0,5	0,8	1,3	2	3,4	8	10	10
B20	-	-	0,7	1,3	1,9	3,1	7,1	10	10
C10	<0,5	0,5	0,8	1,5	2,4	4,4	10	10	10
C13	<0,5	0,5	0,8	1,4	2,3	4,2	10	10	10
C16	-	<0,5	0,7	1,2	1,9	3,2	7,6	10	10
C20	-	-	0,7	1,2	1,8	2,9	6,5	9,7	10

Short-circuit Selectivity **FRBmM** towards fuse link **NH00** [3]

FRBmM	NH00 [3]											
	16	**20**	**25**	**32**	**35**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
B10	<0,5	<0,5	0,8	1,5	2,3	3,2	5,7	9,1	10	10	10	10
B13	<0,5	<0,5	0,8	1,3	1,9	2,7	4,4	6,5	10	10	10	10
B16	-	<0,5	0,7	1,1	1,6	2,2	3,4	4,8	8	10	10	10
B20	-	-	0,6	1	1,4	2	3,1	4,3	7	10	10	10
C10	<0,5	<0,5	0,7	1,3	1,9	2,7	4,5	6,9	10	10	10	10
C13	<0,5	<0,5	0,7	1,2	1,8	2,5	4,1	6,1	10	10	10	10
C16	-	<0,5	0,6	1	1,5	2	3,1	4,4	7,5	10	10	10
C20	-	-	0,6	0,9	1,4	1,9	2,9	4,1	6,5	10	10	10

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

FRBm6 2-poles and NZM1/NZM2

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

Overload and short-circuit release unit NZM at max. value

FRBm6	NZMB(C)(N)(H)1-A... I_{cu} = 25 (36)(50)(100) kA					
	40	50	63	80	100	125
B10	1	1.3	1.6	1.6	3.5	6
B13	0.9	1.3	1.6	1.6	3.5	6
B16	0.9	1	1.5	1.6	2.5	6
B20	0.6	1	1.3	1.3	2.5	6
B25	0.6	1	1.3	1.3	2.5	6
B32	-	1	0.9	1.3	1.6	5
B40	-	-	0.9	1.3	1.6	4.3
C10	1	1.3	1.6	1.6	3.5	6
C13	0.9	1.3	1.6	1.6	3.5	6
C16	0.9	1	1.5	1.6	2.5	6
C20	0.6	1	1.3	1.3	2.5	6
C25	0.6	1	1.3	1.3	2.5	6
C32	-	1	0.9	1.3	1.6	5
C40	-	-	0.9	1.3	1.6	4.3

FRBm6	NZMB(C)(N)(H)2-A... I_{cu} = 25 (36)(50)(150) kA								
	40	50	63	80	100	125	160	200	250
B10	0.9	1.3	2.5	2.5	6	6	6	6	6
B13	0.9	1	1.6	2.5	6	6	6	6	6
B16	0.9	1	1.3	2.1	6	6	6	6	6
B20	0.9	1	1.3	1.3	6	6	6	6	6
B25	0.6	0.9	1.3	1.6	6	6	6	6	6
B32	-	0.9	1.3	1.6	6	6	6	6	6
B40	-	-	1	1.3	5	5	5	5	6
C10	0.9	1.3	2.5	2.5	6	6	6	6	6
C13	0.9	1	1.6	2.5	6	6	6	6	6
C16	0.9	1	1.3	2.1	6	6	6	6	6
C20	0.9	1	1.3	1.3	6	6	6	6	6
C25	0.6	0.9	1.3	1.6	6	6	6	6	6
C32	-	0.9	1.3	1.6	6	6	6	6	6
C40	-	-	1	1.3	5	5	5	5	6

FRBm6 2-poles and PLSM-OV/PLHT-OV

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

FRBm6	PLSM-OV/PLHT-OV I_{cu} = 10 kA						
	25	32	40	50	56	63	80
B+C10	1.5	1.5	1.5	1.5	1.5	1.5	1.5
B+C13	1.5	1.5	1.5	1.5	1.5	1.5	1.5
B+C16	1.5	1.5	1.5	1.5	1.5	1.5	1.5
B+C20	-	1.5	1.5	1.5	1.5	1.5	1.5
B+C25	-	-	1.5	1.5	1.5	1.5	1.5
B+C32	-	-	-	1.5	1.5	1.5	1.5
B+C40	-	-	-	-	1.5	1.5	1.5

FRBm6 2-poles and Neozed[1] / Diazed[2] / NH00[3]

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

Short-circuit Selectivity **FRBm6** towards fuse link **Neozed** [1]

FRBm6	Neozed [1]									
	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 **FRBm6** towards fuse link **Diazed** [1]

FRBm6	Diazed [2]								
	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 **FRBm6** towards fuse link **NH00** [3]

FRBm6	NH00 [3]											
	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

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

Back-up Protection FRBmM 2-poles

The up-stream protective devices will protect the down-stream FRBmM up to the short-circuit current specified.

FRBmM 2-poles and NZM1

Short circuit currents in kA.

FRBmM	NZMB1
	IT-system U = 230 V
B, C, D	
10	20
13	20
16	20
20	15

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMB1) = 25 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBmM	NZMC1
	IT-system U = 230 V
B, C, D	
10	20
13	20
16	20
20	20

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMC1) = 36 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBmM	NZMN1
	IT-system U = 230 V
B, C, D	
10	25
13	25
16	25
20	20

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMN1) = 50 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBmM	NZMH1
	IT-system U = 230 V
B, C, D	
10	30
13	30
16	30
20	20

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMH1) = 100 kA (acc. to IEC/EN 60947-2)

Backup tests acc. to IEC/EN 60947-2, app. A: U = 1.05 U_e, (O - t - CO)

FRBmM 2-poles and NZM2

Short circuit currents in kA.

FRBmM	NZMB2
	IT-system U = 230 V
B, C, D	
10	25
13	25
16	25
20	25

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMH2) = 25 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBmM	NZMC2
	IT-system U = 230 V
B, C, D	
10	36
13	36
16	36
20	36

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMH2) = 36 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBmM	NZMN2
	IT-system U = 230 V
B, C, D	
10	40
13	40
16	40
20	40

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMH2) = 50 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBmM	NZMH2
	IT-system U = 230 V
B, C, D	
10	40
13	40
16	40
20	40

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMH2) = 100 kA (acc. to IEC/EN 60947-2)

Backup tests acc. to IEC/EN 60947-2, app. A: U = 1.05 U_e, (O - t - CO)

FRBmM 2-poles and LZM1

Short circuit currents in kA.

FRBmM	LZMB1
	IT-system U = 230 V
B, C, D	
10	20
13	20
16	20
20	15

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} ((LZMB1) = 25 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBmM	LZMC1
	IT-system U = 230 V
B, C, D	
10	20
13	20
16	20
20	20

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMC1) = 36 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBmM	LZMN1
	IT-system U = 230 V
B, C, D	
10	25
13	25
16	25
20	20

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMN1) = 50 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBmM	LZMS1
	IT-system U = 230 V
B, C, D	
10	30
13	30
16	30
20	20

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMS1) = 70 kA (acc. to IEC/EN 60947-2)

Backup tests acc. to IEC/EN 60947-2, app. A: U = 1.05 U_e, (O - t - CO)

FRBmM 2-poles and LZM2

Short circuit currents in kA.

FRBmM	LZMB2
	IT-system U = 230 V
B, C, D	
10	25
13	25
16	25
20	25

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMB2) = 25 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBmM	LZMC2
	IT-system U = 230 V
B, C, D	
10	36
13	36
16	36
20	36

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMC2) = 36 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBmM	LZMN2
	IT-system U = 230 V
B, C, D	
10	40
13	40
16	40
20	40

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMN2) = 50 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBmM	LZMS2
	IT-system U = 230 V
B, C, D	
10	40
13	40
16	40
20	40

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMS2) = 70 kA (acc. to IEC/EN 60947-2)

Backup tests acc. to IEC/EN 60947-2, app. A: U = 1.05 U_e, (O - t - CO)

FRBmM 2-poles and PLSM-OV, NH00 gG/gL

Short circuit currents in kA.

FRBmM	PLSM-OV63/2, 3, 4, 3N IT-system U = 230 V
B, C, D	
10	10
13	10
16	10
20	10

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
U_e = 230/400 V: I_{cn} (PLSM-OV63) = 10 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBmM	NH00 125 A gG/gL IT-system U = 230 V
B, C, D	
10	40
13	40
16	40
20	40

U_e = 230 V: I_{cu} (FRBmM2) = 10 kA (acc. to IEC/EN 61009)
AC 500 V: (NH00 125A gG/gL) = 120 kA (acc. to IEC60269)

Backup tests acc. to IEC/EN 60947-2, app. A: U = 1.05 U_e, (O - t - CO)

Back-up Protection FRBm6 2-poles

The up-stream protective devices will protect the down-stream FRBm6 up to the short-circuit current specified.

FRBm6 2-poles and NZM1

Short circuit currents in kA.

FRBm6	NZMB1-A... IT-system U = 230 V
B, C, D	
10	20
13	20
16	20
20	15
25	15
32	15
40	15

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMB1) = 25 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBm6	NZMC1-A... IT-system U = 230 V
B, C, D	
10	20
13	20
16	20
20	20
25	20
32	20
40	20

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMC1) = 36 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBm6	NZMN1-A... IT-system U = 230 V
B, C, D	
10	25
13	25
16	25
20	20
25	20
32	20
40	20

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMN1) = 50 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBm6	NZMH1-A... IT-system U = 230 V
B, C, D	
10	20
13	20
16	20
20	15
25	15
32	15
40	15

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMH1) = 100 kA (acc. to IEC/EN 60947-2)

Backup tests acc. to IEC/EN 60947-2, app. A: U = 1.05 U_e, (O - t - CO)

FRBm6 2-poles and NZM2

Short circuit currents in kA.

FRBm6	NZMB2-A... IT-system U = 230 V
B, C, D	
10	20
13	20
16	20
20	15
25	15
32	15
40	10

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMB2) = 25 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBm6	NZMC2-A... IT-system U = 230 V
B, C, D	
10	25
13	25
16	25
20	20
25	20
32	20
40	10

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMC2) = 36 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBm6	NZMN2-A... IT-system U = 230 V
B, C, D	
10	30
13	30
16	30
20	20
25	20
32	20
40	10

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMN2) = 50 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBm6	NZMH2-A... IT-system U = 230 V
B, C, D	
10	30
13	30
16	30
20	25
25	25
32	25
40	10

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (NZMH2) = 100 kA (acc. to IEC/EN 60947-2)

Backup tests acc. to IEC/EN 60947-2, app. A: U = 1.05 U_e, (O - t - CO)

FRBm6 2-poles and LZM1

Short circuit currents in kA.

FRBm6	LZMB1-A...
	IT-system U = 230 V
B, C, D	
10	20
13	20
16	20
20	15
25	15
32	15
40	15

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMB1) = 25 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBm6	LZMC1-A...
	IT-system U = 230 V
B, C, D	
10	20
13	20
16	20
20	20
25	20
32	20
40	20

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMC1) = 36 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBm6	LZMN1-A...
	IT-system U = 230 V
B, C, D	
10	25
13	25
16	25
20	20
25	20
32	20
40	20

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMN1) = 50 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBm6	LZMS1-A...
	IT-system U = 230 V
B, C, D	
10	30
13	30
16	30
20	20
25	20
32	20
40	20

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMS1) = 70 kA (acc. to IEC/EN 60947-2)

Backup tests acc. to IEC/EN 60947-2, app. A: U = 1.05 U_e, (O - t - CO)

FRBm6 2-poles and LZM2

Short circuit currents in kA.

FRBm6	LZMB2-A...
	IT-system U = 230 V
B, C, D	
10	20
13	20
16	20
20	15
25	15
32	15
40	10

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMB2) = 25 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBm6	LZMC2-A...
	IT-system U = 230 V
B, C, D	
10	20
13	20
16	20
20	20
25	20
32	20
40	20

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMC2) = 36 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBm6	LZMN2-A...
	IT-system U = 230 V
B, C, D	
10	25
13	25
16	25
20	20
25	20
32	20
40	20

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMN2) = 50 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBm6	LZMS2-A...
	IT-system U = 230 V
B, C, D	
10	30
13	30
16	30
20	20
25	20
32	20
40	20

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415 V: I_{cu} (LZMS2) = 70 kA (acc. to IEC/EN 60947-2)

Backup tests acc. to IEC/EN 60947-2, app. A: U = 1.05 U_e, (O - t - CO)

FRBm6 2-poles and PLSM-OV, NH00 gG/gL

Short circuit currents in kA.

FRBm6	PLSM-OV63/2, 3, 4, 3N IT-system U = 230 V
B, C, D	
10	10
13	10
16	10
20	10
25	10
32	10
40	10

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
U_e = 230/400 V: I_{cn} PLSM-OV63) = 10 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBm6	NH00 100 A gG/gL IT-system U = 230 V
B, C, D	
10	40
13	40
16	40
20	40
25	40
32	40
40	40

U_e = 230 V: I_{cu} (FRBm62) = 6 kA (acc. to IEC/EN 61009)
AC 500 V: (NH00 125A gG/gL) = 120 kA (acc. to IEC60269)

Backup tests acc. to IEC/EN 60947-2, app. A: U = 1.05 U_e, (O - t - CO)

Backup tests acc. to IEC/EN 60947-2, app. A: U = 1.05 U_e, (O - t - CO)

SG02013

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 suitable for subsequent installation
- Wide variety of rated tripping currents
- Rated currents up to 32 A
- Tripping characteristics B, C, D
- Rated breaking capacitiy 10 kA

Type A

10 kA, 3-poles

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

SG02013

Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
10/0.03	FRBmM-B10/3/003-A	170733	1/30
13/0.03	FRBmM-B13/3/003-A	170734	1/30
16/0.03	FRBmM-B16/3/003-A	170735	1/30
20/0.03	FRBmM-B20/3/003-A	170736	1/30
10/0.1	FRBmM-B10/3/01-A	170780	1/30
13/0.1	FRBmM-B13/3/01-A	170781	1/30
16/0.1	FRBmM-B16/3/01-A	170782	1/30
20/0.1	FRBmM-B20/3/01-A	170783	1/30

SG02013

Characteristic C

6/0.03	FRBmM-C6/3/003-A	170737	1/30
10/0.03	FRBmM-C10/3/003-A	170738	1/30
13/0.03	FRBmM-C13/3/003-A	170739	1/30
16/0.03	FRBmM-C16/3/003-A	170740	1/30
20/0.03	FRBmM-C20/3/003-A	170741	1/30
25/0.03	FRBmM-C25/3/003-A	170772	1/30
32/0.03	FRBmM-C32/3/003-A	170773	1/30
6/0.1	FRBmM-C6/3/01-A	170742	1/30
10/0.1	FRBmM-C10/3/01-A	170743	1/30
13/0.1	FRBmM-C13/3/01-A	170744	1/30
16/0.1	FRBmM-C16/3/01-A	170745	1/30
20/0.1	FRBmM-C20/3/01-A	170746	1/30
25/0.1	FRBmM-C25/3/01-A	170747	1/30
32/0.1	FRBmM-C32/3/01-A	170748	1/30

SG02013

Characteristic D

6/0.03	FRBmM-D6/3/003-A	170774	1/30
10/0.03	FRBmM-D10/3/003-A	170775	1/30
13/0.03	FRBmM-D13/3/003-A	170776	1/30
16/0.03	FRBmM-D16/3/003-A	170777	1/30
20/0.03	FRBmM-D20/3/003-A	170778	1/30
25/0.03	FRBmM-D25/3/003-A	170779	1/30
6/0.1	FRBmM-D6/3/01-A	170749	1/30
10/0.1	FRBmM-D10/3/01-A	170750	1/30
13/0.1	FRBmM-D13/3/01-A	170751	1/30
16/0.1	FRBmM-D16/3/01-A	170752	1/30
20/0.1	FRBmM-D20/3/01-A	170753	1/30
25/0.1	FRBmM-D25/3/01-A	170754	1/30

Specifications | Combined RCD/MCB Devices FRBmM, 3-poles

Description

- Combined RCD/MCB device
- 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
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Comprehensive range of accessories suitable for subsequent installation
- 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. Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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.
- **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).

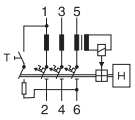
Accessories:		
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Terminal cover 4-poles	Z-TC/SD-4P	178101

Technical Data

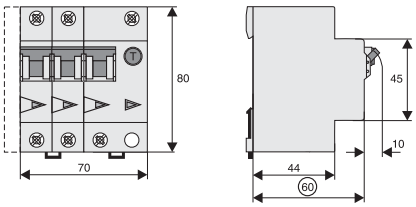
		FRBmM, 3-poles
Electrical		
Design according to		IEC/EN 61009
Current test marks as printed onto the device		
Tripping line voltage-independent		instantaneous 250A (8/20µs), surge current-proof
Type G		10 ms delay, surge current-proof
Rated voltage	U_n	240/415V AC, 50Hz
Rated tripping current	$I_{\Delta n}$	30, 100 mA
Rated non-tripping current	$I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity		AC and pulsating DC
Selectivity class		3
Rated short circuit capacity	I_{cn}	10 kA
Rated current		6 - 32 A
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50µs)
Characteristic		B, C, D
Maximum back-up fuse (short circuit protection)		100 A gL (>10 kA)
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 10,000 operating cycles
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
Operation temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)

Connection diagram

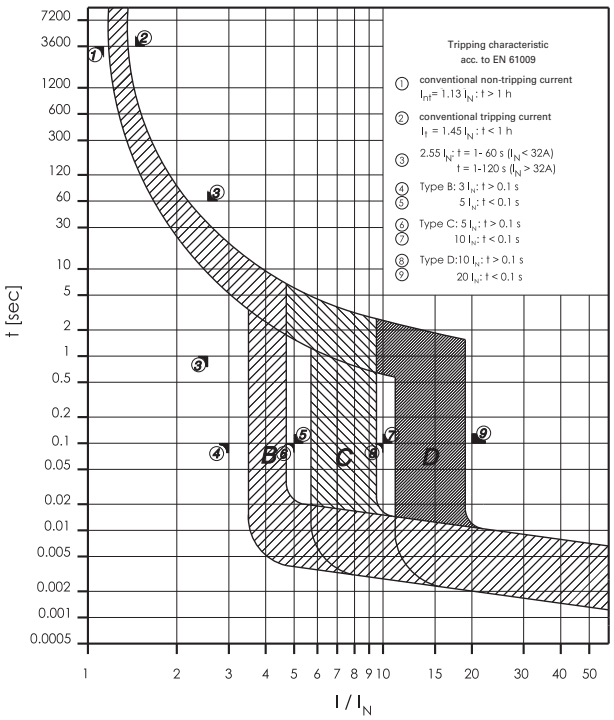
3-poles



Dimensions (mm)



Tripping Characteristic FRBmM 3-poles, Characteristics B, C and D



Internal Resistance FRBmM 3-poles

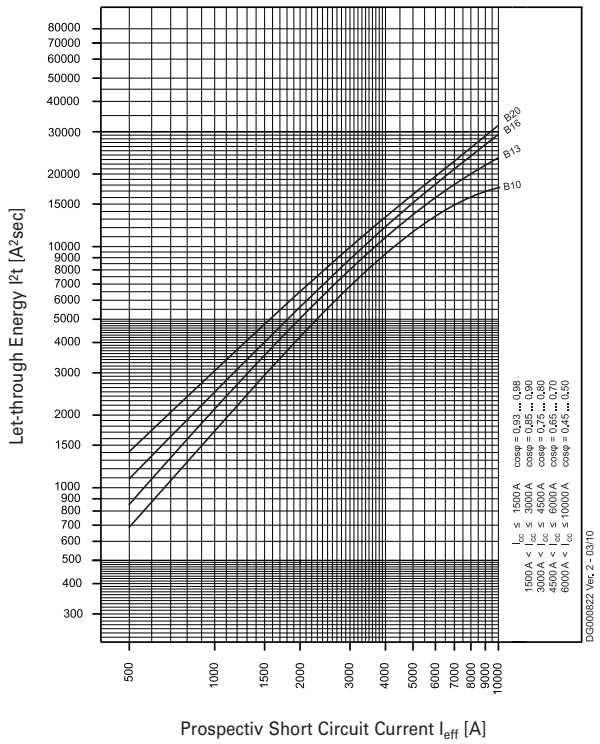
	Type B	Type C	Type D
At room temperature (single pole)			
I_n [A]	Z* [mΩ]	Z* [mΩ]	Z* [mΩ]
6	-	34	34
10	22	56	20
13	38	31	9.8
16	28	27	9.3
20	7.4	6.4	6.6
25	-	4.2	3.9
32	-	3.1	-
* 50Hz			

Power Loss at I_n FRBmM 3-poles

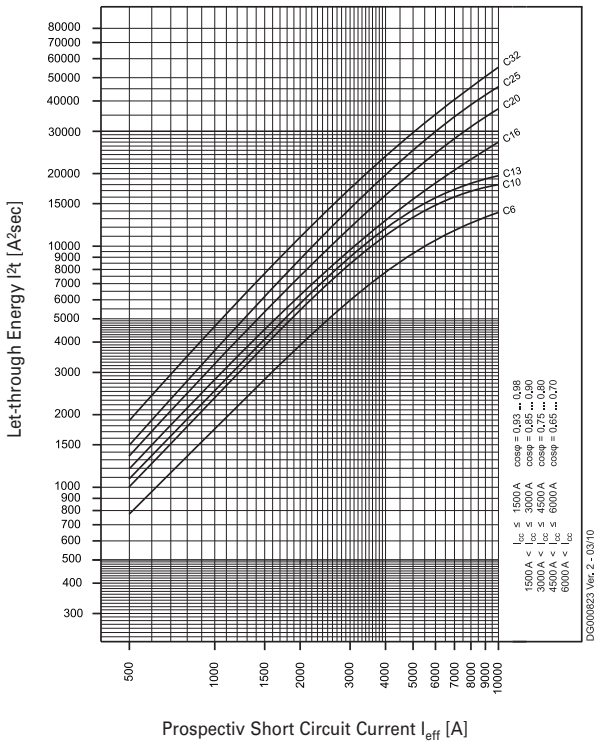
	Type B	Type C	Type D
(entire unit)			
I_n [A]	P* [W]	P* [W]	P* [W]
6	-	4.0	4.0
10	7.6	6.3	6.5
13	8.9	9.0	5.9
16	8.3	8.6	9.0
20	11.3	9.2	9.7
25	-	9.4	9.2
32	-	12.8	-
* 50Hz			

Maximale Let-through Energy FRBmM 3-poles

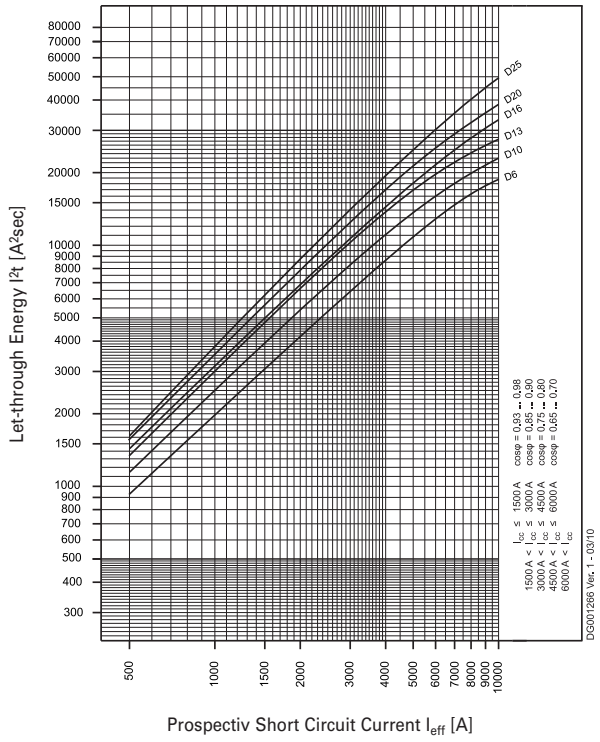
Type B



Type C

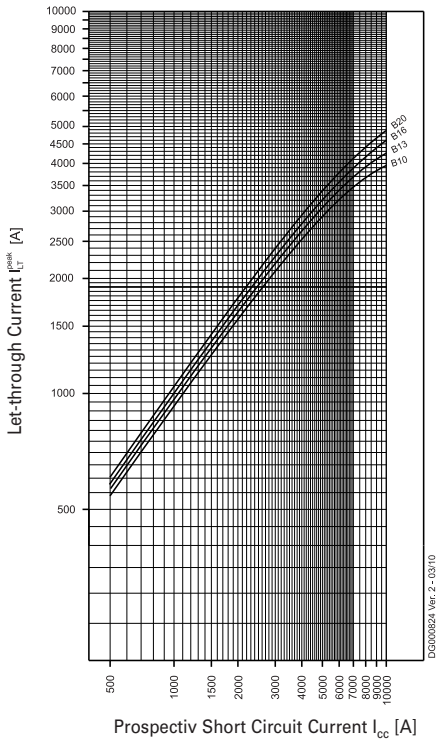


Type D

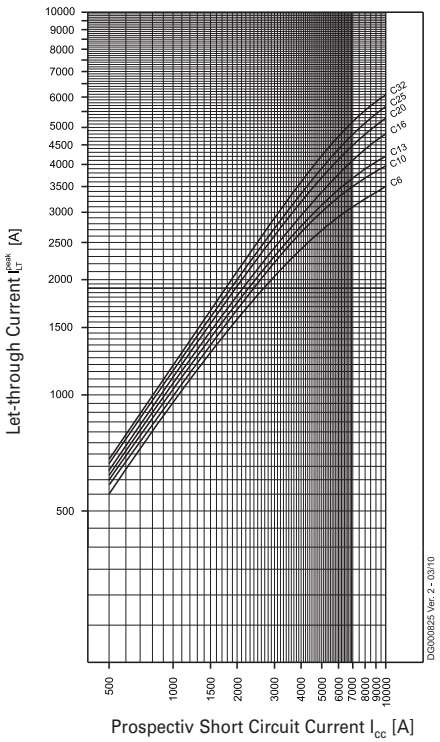


Maximaler Let-through Current FRBmM 3-poles

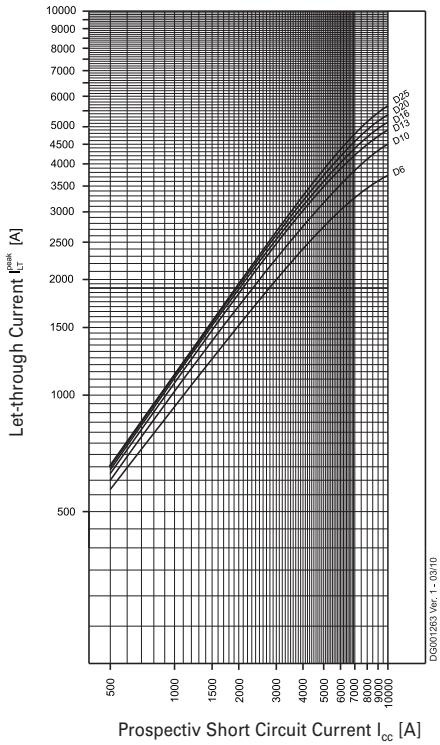
Type B



Type C



Type D

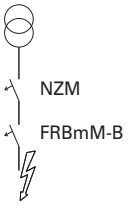


Short-circuit Selectivity FRBmM, 3-poles

In case of a short-circuit, selectivity is provided up to the specified selective current values I_s (kA) applicable between the FRBmM RCD/MCB circuit breakers and the up-stream protective devices.

When a short-circuit occurs, this means that with I_{KS} current values below I_s only the MCB will trip. However, in case of short-circuit currents beyond these values both protective devices will trip.

FRBmM, 3-poles, Characteristic B and NZM 1/2

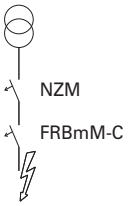


Selectivity-limit current I_s [kA] for selectivity between FRBmM-.../B and NZM (overload and short-circuit release unit NZM at max. value).

FRBmM-B	NZM...1-A... I_{cu} = 25(36)(50)(100) kA bei U_e = 400/415 V					
I_n [A]	40	50	63	80	100	125
10	1.2	1.5	2	2	4	10
13	1	1.5	2	2	4	10
16	1	1.2	1.5	2	3	8
20	0.8	1.2	1.5	1.5	3	8

FRBmM-B	NZM...2-A... I_{cu} = 25(36)(50)(150) kA bei U_e = 400/415 V								
I_n [A]	40	50	63	80	100	125	160	200	250
10	1	1.5	2.5	3	10	10	10	10	10
13	1	1.2	2	3	10	10	10	10	10
16	1	1.2	1.5	2.5	10	10	10	10	10
20	1	1.2	1.5	1.5	10	10	10	10	10

FRBmM, 3-poles, Characteristic C and NZM 1/2

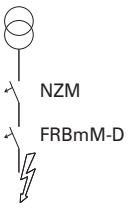


Selectivity-limit current I_s [kA] for selectivity between FRBmM-.../C and NZM (overload and short-circuit release unit NZM at max. value).

FRBmM-C	NZM...1-A... I_{cu} = 25(36)(50)(100) kA bei U_e = 400/415 V					
I_n [A]	40	50	63	80	100	125
6	1.2	2	2.5	3	5	10
10	1.2	1.5	2	2	4	10
13	1	1.5	2	2	4	10
16	1	1.2	1.5	2	3	8
20	0.8	1.2	1.5	1.5	3	8
25	0.7	1.2	1.5	1.5	3	7
32	-	1.2	1	1.5	2	6

FRBmM-C	NZM...2-A... I_{cu} = 25(36)(50)(150) kA bei U_e = 400/415 V								
I_n [A]	40	50	63	80	100	125	160	200	250
6	1.2	1.5	2.5	3	10	10	10	10	10
10	1	1.5	2.5	3	10	10	10	10	10
13	1	1.2	2	3	10	10	10	10	10
16	1	1.2	1.5	2.5	10	10	10	10	10
20	1	1.2	1.5	1.5	10	10	10	10	10
25	0.8	1	1.5	2	10	10	10	10	10
32	-	1	1.5	2	6	6	6	6	6

FRBmM, 3-poles, Characteristic D and NZM 1/2



Selectivity-limit current I_s [kA] for selectivity between FRBmM-.../D and NZM (overload and short-circuit release unit NZM at max. value).

FRBmM-D	NZM...1-A... I_{cu} = 25(36)(50)(100) kA bei U_e = 400/415 V					
I_n [A]	40	50	63	80	100	125
6	1.2	2	2.5	3	5	10
10	1.2	1.5	2	2	4	10
13	1	1.5	2	2	4	10
16	1	1.2	1.5	2	3	8
20	0.8	1.2	1.5	1.5	3	8
25	0.7	1.2	1.5	1.5	3	7

FRBmM-D	NZM...2-A... I_{cu} = 25(36)(50)(150) kA bei U_e = 400/415 V								
I_n [A]	40	50	63	80	100	125	160	200	250
6	1.2	1.5	2.5	3	10	10	10	10	10
10	1	1.5	2.5	3	10	10	10	10	10
13	1	1.2	2	3	10	10	10	10	10
16	1	1.2	1.5	2.5	10	10	10	10	10
20	1	1.2	1.5	1.5	10	10	10	10	10
25	0.8	1	1.5	2	10	10	10	10	10

Back-up Protection FRBmM 3-poles

The up-stream protective devices will protect the down-stream FRBmM up to the short-circuit current specified.

FRBmM 3-poles and NZMB(C)(N)(H)1

FRBmM 3-poles and NZMB1

U_e = 133 / 230 V

FRBmM	NZMB1 I_n/3/B(C)(D)/003(01)(03)		
	Type B	Type C	Type D
6	-	25kA	25kA
10	25kA	25kA	25kA
13	25kA	25kA	25kA
16	25kA	25kA	25kA
20	25kA	25kA	25kA
25	-	25kA	25kA
32	-	25kA	-

FRBmM 3-poles and NZMC1

U_e = 133 / 230 V

FRBmM	NZMC1 I_n/3/B(C)(D)/003(01)(03)		
	Type B	Type C	Type D
6	-	36kA	36kA
10	36kA	36kA	36kA
13	36kA	36kA	36kA
16	36kA	36kA	36kA
20	36kA	36kA	36kA
25	-	36kA	36kA
32	-	36kA	-

FRBmM 3-poles and NZMN1

U_e = 133 / 230 V

FRBmM	NZMN1 I_n/3/B(C)(D)/003(01)(03)		
	Type B	Type C	Type D
6	-	50kA	50kA
10	50kA	50kA	50kA
13	50kA	50kA	50kA
16	50kA	50kA	50kA
20	50kA	50kA	50kA
25	-	50kA	50kA
32	-	50kA	-

FRBmM 3-poles and NZMH1

U_e = 133 / 230 V

FRBmM	NZMH1 I_n/3/B(C)(D)/003(01)(03)		
	Type B	Type C	Type D
6	-	70kA	70kA
10	70kA	70kA	70kA
13	70kA	70kA	70kA
16	70kA	70kA	70kA
20	70kA	70kA	70kA
25	-	70kA	70kA
32	-	70kA	-

FRBmM 3-poles and NZMB(C)(N)(H)2

FRBmM 3-poles and NZMB2

U_e = 133 / 230 V

FRBmM	NZMB2 I_n/3/B(C)(D)/003(01)(03)		
	Type B	Type C	Type D
6	-	25kA	25kA
10	25kA	25kA	25kA
13	25kA	25kA	25kA
16	25kA	25kA	25kA
20	25kA	25kA	25kA
25	-	25kA	25kA
32	-	25kA	-

FRBmM 3-poles and NZMC2

U_e = 133 / 230 V

FRBmM	NZMC2 I_n/3/B(C)(D)/003(01)(03)		
	Type B	Type C	Type D
6	-	36kA	36kA
10	36kA	36kA	36kA
13	36kA	36kA	36kA
16	36kA	36kA	36kA
20	36kA	36kA	36kA
25	-	36kA	36kA
32	-	36kA	-

FRBmM 3-poles and NZMN2

U_e = 133 / 230 V

FRBmM	NZMN2 I_n/3/B(C)(D)/003(01)(03)		
	Type B	Type C	Type D
6	-	50kA	50kA
10	50kA	50kA	50kA
13	50kA	50kA	50kA
16	50kA	50kA	50kA
20	50kA	50kA	50kA
25	-	50kA	50kA
32	-	50kA	-

FRBmM 3-poles and NZMH2

U_e = 133 / 230 V

FRBmM	NZMH2 I_n/3/B(C)(D)/003(01)(03)		
	Type B	Type C	Type D
6	-	70kA	70kA
10	70kA	70kA	70kA
13	70kA	70kA	70kA
16	70kA	70kA	70kA
20	70kA	70kA	70kA
25	-	70kA	70kA
32	-	70kA	-

FRBmM 3-poles and NH00

FRBmM 3-poles and NH00 125A gG/gL

U_e = 133 / 230 V

FRBmM	NH00 125A gG/gL I_n/3/B(C)(D)/003(01)(03)		
	Type B	**Type C**	**Type D**
6	-	70kA	70kA
10	70kA	70kA	70kA
13	70kA	70kA	70kA
16	70kA	70kA	70kA
20	70kA	70kA	70kA
25	-	70kA	70kA
32	-	70kA	-

SG02213

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 suitable for subsequent installation
- Wide variety of rated tripping currents
- Rated currents up to 32 A
- Tripping characteristics B, C, D
- Rated breaking capacitiy 6 kA or 4.5 kA

Type A

6 kA, 3+N-poles

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

SG02213

Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
13/0.03	FRBm6-B13/3N/003-A	170987	1/30
16/0.03	FRBm6-B16/3N/003-A	170988	1/30
13/0.1	FRBm6-B13/3N/01-A	170898	1/30
16/0.1	FRBm6-B16/3N/01-A	170899	1/30
13/0.3	FRBm6-B13/3N/03-A	170945	1/30
16/0.3	FRBm6-B16/3N/03-A	170946	1/30

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Characteristic C

6/0.03	FRBm6-C6/3N/003-A	170996	1/30
10/0.03	FRBm6-C10/3N/003-A	170997	1/30
13/0.03	FRBm6-C13/3N/003-A	170998	1/30
16/0.03	FRBm6-C16/3N/003-A	170999	1/30
6/0.1	FRBm6-C6/3N/01-A	170926	1/30
10/0.1	FRBm6-C10/3N/01-A	170927	1/30
13/0.1	FRBm6-C13/3N/01-A	170928	1/30
16/0.1	FRBm6-C16/3N/01-A	170929	1/30
6/0.3	FRBm6-C6/3N/03-A	170954	1/30
10/0.3	FRBm6-C10/3N/03-A	170955	1/30
13/0.3	FRBm6-C13/3N/03-A	170956	1/30
16/0.3	FRBm6-C16/3N/03-A	170957	1/30

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Characteristic D

6/0.03	FRBm6-D6/3N/003-A	171008	1/30
10/0.03	FRBm6-D10/3N/003-A	170892	1/30
13/0.03	FRBm6-D13/3N/003-A	170893	1/30
16/0.03	FRBm6-D16/3N/003-A	170894	1/30
6/0.1	FRBm6-D6/3N/01-A	170938	1/30
10/0.1	FRBm6-D10/3N/01-A	170939	1/30
13/0.1	FRBm6-D13/3N/01-A	170940	1/30
16/0.1	FRBm6-D16/3N/01-A	170941	1/30
6/0.3	FRBm6-D6/3N/03-A	170966	1/30
10/0.3	FRBm6-D10/3N/03-A	170967	1/30
13/0.3	FRBm6-D13/3N/03-A	170968	1/30
16/0.3	FRBm6-D16/3N/03-A	170969	1/30

Type AC

6 kA, 3+N-poles

Conditionally surge current-proof 250 A, Type AC

SG02213

Characteristic B

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
13/0.03	FRBm6-B13/3N/003	170985	1/30
16/0.03	FRBm6-B16/3N/003	170986	1/30
13/0.1	FRBm6-B13/3N/01	170896	1/30
16/0.1	FRBm6-B16/3N/01	170897	1/30
13/0.3	FRBm6-B13/3N/03	170943	1/30
16/0.3	FRBm6-B16/3N/03	170944	1/30

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Characteristic C

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
6/0.03	FRBm6-C6/3N/003	170989	1/30
10/0.03	FRBm6-C10/3N/003	170990	1/30
13/0.03	FRBm6-C13/3N/003	170991	1/30
16/0.03	FRBm6-C16/3N/003	170992	1/30
6/0.1	FRBm6-C6/3N/01	170900	1/30
10/0.1	FRBm6-C10/3N/01	170901	1/30
13/0.1	FRBm6-C13/3N/01	170902	1/30
16/0.1	FRBm6-C16/3N/01	170903	1/30
6/0.3	FRBm6-C6/3N/03	170947	1/30
10/0.3	FRBm6-C10/3N/03	170948	1/30
13/0.3	FRBm6-C13/3N/03	170949	1/30
16/0.3	FRBm6-C16/3N/03	170950	1/30

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Characteristic D

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
6/0.03	FRBm6-D6/3N/003	171003	1/30
10/0.03	FRBm6-D10/3N/003	171004	1/30
13/0.03	FRBm6-D13/3N/003	171005	1/30
16/0.03	FRBm6-D16/3N/003	171006	1/30
6/0.1	FRBm6-D6/3N/01	170933	1/30
10/0.1	FRBm6-D10/3N/01	170934	1/30
13/0.1	FRBm6-D13/3N/01	170935	1/30
16/0.1	FRBm6-D16/3N/01	170936	1/30
6/0.3	FRBm6-D6/3N/03	170961	1/30
10/0.3	FRBm6-D10/3N/03	170962	1/30
13/0.3	FRBm6-D13/3N/03	170963	1/30
16/0.3	FRBm6-D16/3N/03	170964	1/30

Type A

4.5 kA, 3+N-poles

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

SG02213

Characteristic C

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
20/0.03	FRBm4-C20/3N/003-A	171000	1/30
25/0.03	FRBm4-C25/3N/003-A	171001	1/30
32/0.03	FRBm4-C32/3N/003-A	171002	1/30
20/0.1	FRBm4-C20/3N/01-A	170930	1/30
25/0.1	FRBm4-C25/3N/01-A	170931	1/30
32/0.1	FRBm4-C32/3N/01-A	170932	1/30
20/0.3	FRBm4-C20/3N/03-A	170958	1/30
25/0.3	FRBm4-C25/3N/03-A	170959	1/30
32/0.3	FRBm4-C32/3N/03-A	170960	1/30

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Characteristic D

20/0.03	FRBm4-D20/3N/003-A	170895	1/30
20/0.1	FRBm4-D20/3N/01-A	170942	1/30
20/0.3	FRBm4-D20/3N/03-A	170970	1/30

Type AC

4.5 kA, 3+N-poles

Conditionally surge current-proof 250 A, Type AC

SG02213

Characteristic C

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
20/0.03	FRBm4-C20/3N/003	170993	1/30
25/0.03	FRBm4-C25/3N/003	170994	1/30
32/0.03	FRBm4-C32/3N/003	170995	1/30
20/0.1	FRBm4-C20/3N/01	170923	1/30
25/0.1	FRBm4-C25/3N/01	170924	1/30
32/0.1	FRBm4-C32/3N/01	170925	1/30
20/0.3	FRBm4-C20/3N/03	170951	1/30
25/0.3	FRBm4-C25/3N/03	170952	1/30
32/0.3	FRBm4-C32/3N/03	170953	1/30

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Characteristic D

20/0.03	FRBm4-D20/3N/003	171007	1/30
20/0.1	FRBm4-D20/3N/01	170937	1/30
20/0.3	FRBm4-D20/3N/03	170965	1/30

Specifications | Combined RCD/MCB Devices FRBm6, FRBm4, 3+N-poles

Description

- Combined RCD/MCB device
- 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
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Comprehensive range of accessories suitable for subsequent installation
- 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. Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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.

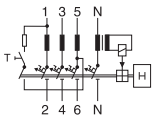
Accessories:		
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Terminal cover 4-poles	Z-TC/SD-4P	178101

Technical Data

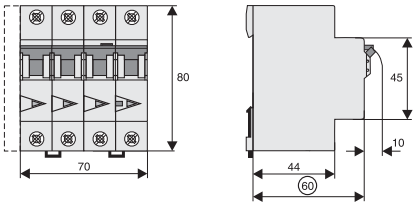
		FRBm6, FRBm4, 3+N-poles
Electrical		
Design according to Current test marks as printed onto the device		IEC/EN 61009
Tripping line voltage-independent		instantaneous 250A (8/20µs), surge current-proof, N protected
Rated voltage	U_n	240/415V AC, 50Hz
Rated tripping current	$I_{\Delta n}$	30, 100, 300 mA
Rated non-tripping current	$I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity		AC and pulsating DC
Selectivity class		3
Rated short circuit capacity	I_{cn}	
FRBm6		6 kA
FRBm4		4.5 kA
Rated current		6 - 32 A
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50µs)
Characteristic		B, C, D
Maximum back-up fuse (short circuit protection)		100 A gL (>10 kA)
Endurance		
electrical components		≥ 4,000 operating cycles
mechanical components		≥ 10,000 operating cycles
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 mm²
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Operation temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)

Connection diagram

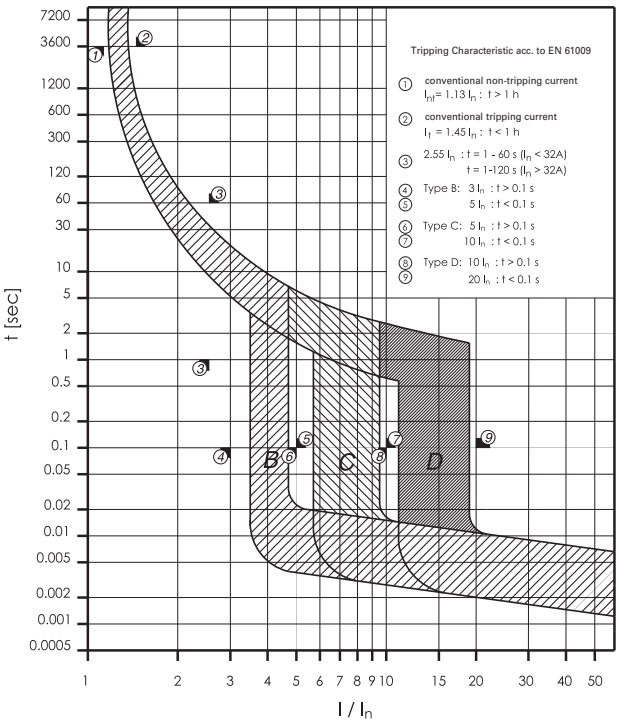
3+N-poles



Dimensions (mm)



Tripping Characteristic FRBm. 3+N-poles, Characteristics B, C and D



Internal Resistance FRBm. 3+N-poles

	Type B			Type C			Type D		
At room temperature (single pole)									
	L1, L2	L3	N	L1, L2	L3	N	L1, L2	L3	N
I_n [A]	R* [mΩ]	R* [mΩ]	R* [mΩ]	R* [mΩ]	R* [mΩ]	R* [mΩ]	R* [mΩ]	R* [mΩ]	R* [mΩ]
6	-	-	-	34,3	28,2	28,8	34,3	28,0	29,7
10	-	-	-	19,3	15,3	18,1	19,7	15,3	15,3
13	11,8	12,6	12,2	11,9	12,7	9,1	9,9	10,4	8,9
16	9,8	9,3	7,8	9,5	8,8	6,6	9,8	9,2	6,8
20	-	-	-	6,5	5,9	5,5	6,6	6,1	5,5
25	-	-	-	4,3	3,7	3,5	-	-	-
* 50Hz									

Power Loss at I_n FRBm. 3+N-poles

	Type B	Type C	Type D
(entire unit)			
I_n [A]	P* [W]	P* [W]	P* [W]
6	-	4,8	4,8
10	-	8,2	7,8
13	10,2	9,4	7,7
16	11,6	10,9	11,2
20	-	11,8	12,0
25	-	11,6	-
* 50Hz and ambient temperature			

Back-up Protection FRBm4/FRBm6

The up-stream protective devices will protect the down-stream FRBm4/FRBm6 up to the short-circuit current specified.

FRBm and NZM1

Short circuit currents in kA.

FRBm4/ FRBm6	NZMB1(C1)(N1)(H1)-A… U_e = 415 V		
	Type B	Type C	Type D
6	-	20	20
10	-	20	20
13	20	20	20
16	20	20	20
20	-	20	20
25	-	20	-

U_e = 415V: I_{cn} (FRBm4) = 4.5 kA (acc. to IEC/EN 61009)
U_e = 415V: I_{cu} (FRBm6) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415V: I_{cn} (NZMB1) = 25 kA (acc. to IEC/EN 60947-2)
U_e = 400/415V: I_{cn} (NZMC1) = 36 kA (acc. to IEC/EN 60947-2)
U_e = 400/415V: I_{cn} (NZMN1) = 50 kA (acc. to IEC/EN 60947-2)
U_e = 400/415V: I_{cn} (NZMH1) = 100 kA (acc. to IEC/EN 60947-2)

FRBm and NZM2

Short circuit currents in kA.

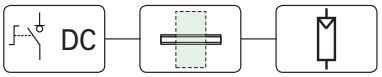
FRBm4/ FRBm6	NZMB2(C2)(N2)(H2)-A… U_e = 415 V		
	Type B	Type C	Type D
6	-	20	20
10	-	20	20
13	20	20	20
16	20	20	20
20	-	20	20
25	-	20	-

U_e = 415V: I_{cn} (FRBm4) = 4.5 kA (acc. to IEC/EN 61009)
U_e = 415V: I_{cu} (FRBm6) = 6 kA (acc. to IEC/EN 61009)
U_e = 400/415V: I_{cn} (NZMB2) = 25 kA (acc. to IEC/EN 60947-2)
U_e = 400/415V: I_{cn} (NZMC2) = 36 kA (acc. to IEC/EN 60947-2)
U_e = 400/415V: I_{cn} (NZMN2) = 50 kA (acc. to IEC/EN 60947-2)
U_e = 400/415V: I_{cn} (NZMH2) = 150 kA (acc. to IEC/EN 60947-2)

sg09615

Description

- Photovoltaic - Switch-disconnectors
- Acc .to EN 60947-3 DC-PV1 or DC-PV2 resp.
- Very compact
- Improved reliability due to independent manual operation
- Stable performance at any load current
- Polarity independent
- Only one path per pole => lower power loss



sg09615

Rated operating current I_e (A)	Type Designation	Article No.	Units per package
2-poles with rotary handle, 600 V			
16	PV-DIS-06-16/2-ROT	179259	1
32	PV-DIS-06-32/2-ROT	179260	1
63	PV-DIS-06-63/2-ROT	179261	1
100	PV-DIS-06-100/2-ROT	185503	1
125	PV-DIS-06-125/2-ROT	179262	1
2-poles with rotary handle, 800 V			
16	PV-DIS-08-16/2-ROT	179263	1
32	PV-DIS-08-32/2-ROT	179264	1
63	PV-DIS-08-63/2-ROT	179265	1
100	PV-DIS-08-100/2-ROT	185504	1
125	PV-DIS-08-125/2-ROT	179266	1
2-poles with rotary handle, 1000 V			
16	PV-DIS-10-16/2-ROT	179267	1
32	PV-DIS-10-32/2-ROT	179268	1
63	PV-DIS-10-63/2-ROT	179269	1
100	PV-DIS-10-100/2-ROT	185505	1
125	PV-DIS-10-125/2-ROT	179270	1
2-poles without rotary handle, 600 V			
16	PV-DIS-06-16/2	179255	1
32	PV-DIS-06-32/2	179256	1
63	PV-DIS-06-63/2	179257	1
100	PV-DIS-06-100/2	185502	1
125	PV-DIS-06-125/2	179258	1

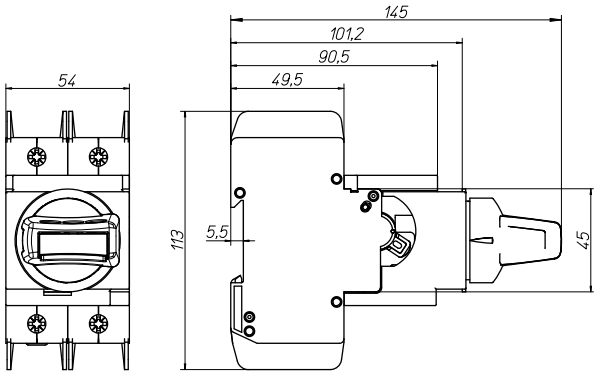
Technical Data

	PV-DIS-06...	PV-DIS-08...	PV-DIS-10...
Rated operating voltage	600 V	800 V	1000 V
Rated impulse withstand voltage	4 kV	6 kV	6 kV

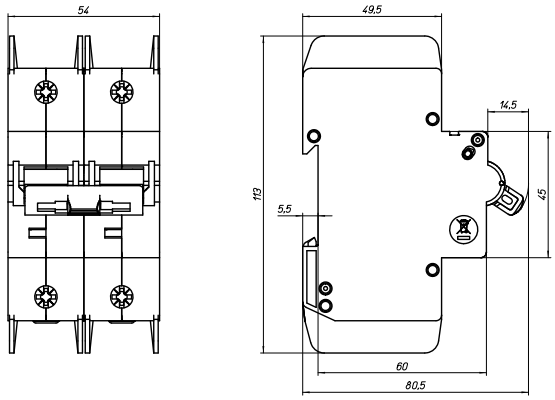
	PV-DIS-.../2	PV-DIS-.../2-ROT
Rated insulation voltage	630 V	1000 V

Utilization category (acc. to EN 60947-3)	
Rated operating current I_e 16-100 A	DC-PV2
Rated operating current I_e 125 A	DC-PV1
Mechanical operations	acc. to IEC 60947-3 Category of utilization DC-PV2 or DC-PV1
Electrical operations	acc. to IEC 60947-3 Category of utilization DC-PV2 or DC-PV1
Rated frequency / Operating frequency	DC only
Approbation	ÖVE, VDE
Resistance to climatic conditions according to	IEC 60947-2
Shock resistance, Vibration resistance acc. to	IEC 60947-2
Dimensions	according to drawing
Dimensions of terminals	2.5-50 mm^2
Cable material	Cu
Degree of protection	IP20
Degree of protection, built-in	IP40
Mounting position	all the same
Ambient temperature range	-20 to +40 °C, 40 to 75 °C Derating
Storage Temperature	-40 to +75 °C
Max. DC contact rating	100 %
Safe electrical isolation	yes

Dimensions (mm)



2-poles with rotary handle



2-poles without rotary handle

SG03613

Description

- Combining this device with a top-quality miniature circuit breaker of Type FAZ (except FAZ-PN) will form a top-quality RCBO unit (combined RCD/MCB device)
- Draw-out connection bar locked in installation position
- For subsequent mounting onto 2-, 3-, 3+N- and 4-pole miniature circuit breakers FAZ
- Rated current 40 and 63 A
- 120 V Types

Type AC

Conditionally surge current-proof 250 A, Type AC

SG03513

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
40/0.03	FBSmV-40/2/003	170177	1/20
40/0.03	FBSmV-40/2/003-400	180632	1/20
63/0.03	FBSmV-63/2/003	170178	1/20
63/0.03	FBSmV-63/2/003-400	180633	1/20
40/0.1	FBSmV-40/2/01	170179	1/20
63/0.1	FBSmV-63/2/01	170180	1/20
40/0.3	FBSmV-40/2/03	170181	1/20
63/0.3	FBSmV-63/2/03	170182	1/20
40/0.5	FBSmV-40/2/05	170183	1/20
63/0.5	FBSmV-63/2/05	170184	1/20
40/1	FBSmV-40/2/1	170185	1/20
63/1	FBSmV-63/2/1	170186	1/20

SG03713

3-poles

40/0.03	FBSmV-40/3/003	170187	1/20
63/0.03	FBSmV-63/3/003	170188	1/20
40/0.1	FBSmV-40/3/01	170189	1/20
63/0.1	FBSmV-63/3/01	170190	1/20
40/0.3	FBSmV-40/3/03	170191	1/20
63/0.3	FBSmV-63/3/03	170192	1/20
40/0.5	FBSmV-40/3/05	170193	1/20
63/0.5	FBSmV-63/3/05	170194	1/20
40/1	FBSmV-40/3/1	170195	1/20
63/1	FBSmV-63/3/1	170196	1/20

SG03613

4-poles

40/0.03	FBSmV-40/4/003	170197	1/13
63/0.03	FBSmV-63/4/003	170198	1/13
40/0.1	FBSmV-40/4/01	170199	1/13
63/0.1	FBSmV-63/4/01	170200	1/13
40/0.3	FBSmV-40/4/03	170201	1/13
63/0.3	FBSmV-63/4/03	170202	1/13
40/0.5	FBSmV-40/4/05	170203	1/13
63/0.5	FBSmV-63/4/05	170204	1/13
40/1	FBSmV-40/4/1	170205	1/13
63/1	FBSmV-63/4/1	170206	1/13

Type A

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

SG03513

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
40/0.03	FBSmV-40/2/003-A	170207	1/20
40/0.03	FBSmV-40/2/003-A-120	180622	1/20
40/0.03	FBSmV-40/2/003-A-400	180623	1/20
63/0.03	FBSmV-63/2/003-A	170208	1/20
63/0.03	FBSmV-63/2/003-A-120	180626	1/20
63/0.03	FBSmV-63/2/003-A-400	180627	1/20
40/0.1	FBSmV-40/2/01-A	170209	1/20
63/0.1	FBSmV-63/2/01-A	170210	1/20
40/0.3	FBSmV-40/2/03-A	170211	1/20
40/0.3	FBSmV-40/2/03-A-120	180630	1/20
63/0.3	FBSmV-63/2/03-A	170212	1/20
63/0.3	FBSmV-63/2/03-A-120	180631	1/20
40/0.5	FBSmV-40/2/05-A	170213	1/20
63/0.5	FBSmV-63/2/05-A	170214	1/20
40/1	FBSmV-40/2/1-A	170215	1/20
63/1	FBSmV-63/2/1-A	170216	1/20

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3-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
40/0.03	FBSmV-40/3/003-A	170217	1/20
40/0.03	FBSmV-40/3/003-A-230	180624	1/20
63/0.03	FBSmV-63/3/003-A	170218	1/20
63/0.03	FBSmV-63/3/003-A-230	180628	1/20
40/0.1	FBSmV-40/3/01-A	170219	1/20
63/0.1	FBSmV-63/3/01-A	170220	1/20
40/0.3	FBSmV-40/3/03-A	170221	1/20
63/0.3	FBSmV-63/3/03-A	170222	1/20
40/0.5	FBSmV-40/3/05-A	170223	1/20
63/0.5	FBSmV-63/3/05-A	170224	1/20
40/1	FBSmV-40/3/1-A	170225	1/20
63/1	FBSmV-63/3/1-A	170226	1/20

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4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
40/0.03	FBSmV-40/4/003-A	170227	1/13
40/0.03	FBSmV-40/4/003-A-230	180625	1/13
63/0.03	FBSmV-63/4/003-A	170228	1/13
63/0.03	FBSmV-63/4/003-A-230	180629	1/13
40/0.1	FBSmV-40/4/01-A	170229	1/13
63/0.1	FBSmV-63/4/01-A	170230	1/13
40/0.3	FBSmV-40/4/03-A	170231	1/13
63/0.3	FBSmV-63/4/03-A	170232	1/13
40/0.5	FBSmV-40/4/05-A	170233	1/13
63/0.5	FBSmV-63/4/05-A	170234	1/13
40/1	FBSmV-40/4/1-A	170235	1/13
63/1	FBSmV-63/4/1-A	170236	1/13

Type G

Surge current-proof 3 kA, Type G (ÖVE E 8601)

SG03513

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
40/0.03	FBSmV-40/2/003-G	170237	1/20

SG03713

3-poles

40/0.03	FBSmV-40/3/003-G	170238	1/20

SG03613

4-poles

40/0.03	FBSmV-40/4/003-G	170239	1/13

Type S

Selective + surge current-proof 5 kA, Type S

SG03513

2-poles

40/0.1	FBSmV-40/2/01-S	170240	1/20
63/0.1	FBSmV-63/2/01-S	170241	1/20
40/0.3	FBSmV-40/2/03-S	170142	1/20
63/0.3	FBSmV-63/2/03-S	170143	1/20
40/1	FBSmV-40/2/1-S	170144	1/20
63/1	FBSmV-63/2/1-S	170145	1/20

SG03713

3-poles

40/0.1	FBSmV-40/3/01-S	170146	1/20
63/0.1	FBSmV-63/3/01-S	170147	1/20
40/0.3	FBSmV-40/3/03-S	170148	1/20
63/0.3	FBSmV-63/3/03-S	170149	1/20
40/1	FBSmV-40/3/1-S	170150	1/20
63/1	FBSmV-63/3/1-S	170151	1/20

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4-poles

40/0.1	FBSmV-40/4/01-S	170152	1/13
63/0.1	FBSmV-63/4/01-S	170153	1/13
40/0.3	FBSmV-40/4/03-S	170154	1/13
63/0.3	FBSmV-63/4/03-S	170155	1/13
40/1	FBSmV-40/4/1-S	170156	1/13
63/1	FBSmV-63/4/1-S	170157	1/13

Type S/A

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

SG03513

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
40/0.1	FBSmV-40/2/01-S/A	170158	1/20
63/0.1	FBSmV-63/2/01-S/A	170159	1/20
40/0.3	FBSmV-40/2/03-S/A	170160	1/20
63/0.3	FBSmV-63/2/03-S/A	170161	1/20

SG03713

3-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
40/0.1	FBSmV-40/3/01-S/A	170162	1/20
63/0.1	FBSmV-63/3/01-S/A	170163	1/20
40/0.3	FBSmV-40/3/03-S/A	170164	1/20
63/0.3	FBSmV-63/3/03-S/A	170165	1/20

SG03613

4-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
40/0.1	FBSmV-40/4/01-S/A	170166	1/13
63/0.1	FBSmV-63/4/01-S/A	170167	1/13
40/0.3	FBSmV-40/4/03-S/A	170168	1/13
63/0.3	FBSmV-63/4/03-S/A	170169	1/13

Specifications | Add-on Residual Current Protection Unit FBSmV

Description

- Add-on residual current unit
- Line voltage-independent tripping
- By combining this device with a top-quality miniature circuit breaker type FAZ (exept FAZ-PN) a top-quality RCBO unit (combined RCD/MCB device) is formed
- Rated current 40 and 63 A
- Permits combinations with a variety of characteristics thanks to the different rated currents and characteristics of the FAZ-miniature circuit breakers which can be connected
- Comrehensive range of accessories suitable for subsequent installation onto FAZ
- 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. Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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.
- **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 -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 pulsating DC which have not been smoothed.

Accessories:		
Cover cap for draw-out connection bar	included	
Slotted one-way cheese head screw	included	

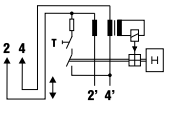
Accessories (on FAZ):		
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Remote testing module	Z-FW/001	248297
	Z-FW/003	248298
	Z-FW/010	248299
	Z-FW/030	248300
	Z-FW/050	248301
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA	258288, 248289, 248290
	Z-USD	248292, 248291
Terminal cover		
1-pole	Z-TC/MCB-1P	178102
2-poles	Z-TC/SD-2P	178099
3-poles	Z-TC/SD-3P	178100
4-poles	Z-TC/SD-4P	178101

Technical Data

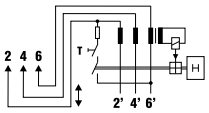
		FBSmV
Electrical		
Design according to		IEC/EN 61009
Current test marks as printed onto the device		
Tripping		instantaneous 250A (8/20µs), surge current-proof
Type G		10 ms delay 3kA (8/20µs), surge current-proof
Type S		40 ms delay 5kA (8/20µs) with selective disconnecting function, surge current-proof
Rated voltage	U_n	240/415V AC
Voltage range test circuit		
2-poles, 30mA		196-264 V~
2-poles, 30mA-120		102-132 V~
2-poles, 30mA-400		340-456 V~
2-poles, 100, 300, 500, 1000mA		196-456 V~
3-poles, 30mA		340-456 V~
3-poles, 30mA-230		196-264 V~
3-poles, 100, 300, 500, 1000mA		196-456 V~
4-poles, 30mA		340-456 V~
4-poles, 30mA-230		196-264 V~
4-poles, 100, 300, 500, 1000mA		196-456 V~
Rated frequency		50 Hz
Rated tripping current	$I_{\Delta n}$	30, 100, 300, 500, 1000 mA
Rated non-tripping current	$I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity		AC and pulsating DC
Rated current	I_n	≤ 40 A, ≤ 63 A
Rated short circuit breaking capacity	I_{cs}	same as connected FAZ
Rated short circuit capacity	I_{cn}	same as connected FAZ
Mechanical		
Frame size		45 mm
Device height		90 mm
Device width		70 mm (2p), 107.5 mm (3p), 125 mm (4p)
Mounting		fix mounted onto FAZ
Degree of protection switch		IP20
Degree of protection, built-in		IP40
Fastening screw		M2.5 (slotted one-way cheese head screw)
Screw head breaking torque		> 0.6 Nm
Upper and lower terminals		lift terminals
Terminal protection		finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity		
rigid conductors		1 x (1 - 25) mm^2
flexible conductors (with wire end sleeve)		1 x (0.75 - 16) mm^2
Busbar thickness		0.8 - 2 mm
Operation temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)

Connection diagram

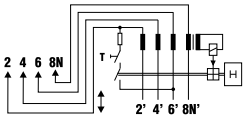
2-poles



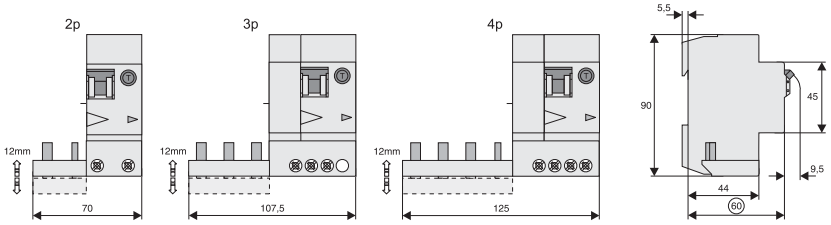
3-poles



4-poles



Dimensions (mm)



SG03913

Description

- By combining this device with a top-quality miniature circuit breaker of type AZ 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 FBHmV versions
- Permits combinations with a variety of characteristics thanks to the different rated currents and characteristics of the miniature circuit breakers AZ which can be connected
- For commercial and industry applications
- For subsequent mounting onto 2, 3, 3+N and 4-pole-miniature circuit breakers AZ
- The screw connection to the AZ-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.

Type AC

Sensitive to residual current, conditionally surge-current-proof 250 A, Type AC

SG03813

2-poles

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
80/0.03	FBHmV-80/2/003	170266	1/4
125/0.03	FBHmV-125/2/003	170242	1/4
80/0.3	FBHmV-80/2/03	170243	1/4
125/0.3	FBHmV-125/2/03	170244	1/4
80/0.5	FBHmV-80/2/05	170245	1/4
125/0.5	FBHmV-125/2/05	170246	1/4
80/1	FBHmV-80/2/1	170247	1/4
125/1	FBHmV-125/2/1	170248	1/4

SG04013

4-poles

80/0.03	FBHmV-80/4/003	170249	1/4
125/0.03	FBHmV-125/4/003	170250	1/4
80/0.3	FBHmV-80/4/03	170251	1/4
125/0.3	FBHmV-125/4/03	170252	1/4
80/0.5	FBHmV-80/4/05	170253	1/4
125/0.5	FBHmV-125/4/05	170254	1/4
80/1	FBHmV-80/4/1	170255	1/4
125/1	FBHmV-125/4/1	170256	1/4

Type A

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

SG03813

2-poles

80/0.03	FBHmV-80/2/003-A	170257	1/4
125/0.03	FBHmV-125/2/003-A	170258	1/4
80/0.3	FBHmV-80/2/03-A	170259	1/4
125/0.3	FBHmV-125/2/03-A	170260	1/4
80/0.5	FBHmV-80/2/05-A	170261	1/4
125/0.5	FBHmV-125/2/05-A	170262	1/4
80/1	FBHmV-80/2/1-A	170263	1/4
125/1	FBHmV-125/2/1-A	170264	1/4

SG03913

4-poles

80/0.03	FBHmV-80/4/003-A	170265	1/4
125/0.03	FBHmV-125/4/003-A	170130	1/4
80/0.3	FBHmV-80/4/03-A	170131	1/4
125/0.3	FBHmV-125/4/03-A	170132	1/4
80/0.5	FBHmV-80/4/05-A	170133	1/4
125/0.5	FBHmV-125/4/05-A	170134	1/4
80/1	FBHmV-80/4/1-A	170135	1/4
125/1	FBHmV-125/4/1-A	170136	1/4

Type S/A

Selective + surge current-proof 5 kA, Type S/A

SG04113

2-poles

80/0.3	FBHmV-80/2/03-S/A	170137	1/4
125/0.3	FBHmV-125/2/03-S/A	170138	1/4
80/0.5	FBHmV-80/2/05-S/A	170139	1/4
125/0.5	FBHmV-125/2/05-S/A	170140	1/4
80/1	FBHmV-80/2/1-S/A	170141	1/4
125/1	FBHmV-125/2/1-S/A	170170	1/4

SG03913

4-poles

80/0.3	FBHmV-80/4/03-S/A	170171	1/4
125/0.3	FBHmV-125/4/03-S/A	170172	1/4
80/0.5	FBHmV-80/4/05-S/A	170173	1/4
125/0.5	FBHmV-125/4/05-S/A	170174	1/4
80/1	FBHmV-80/4/1-S/A	170175	1/4
125/1	FBHmV-125/4/1-S/A	170176	1/4

Specifications | Add-on Residual Current Protection Unit FBHmV

Description

- By combination with miniature circuit breaker AZ => 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 NO included as standard in all FBHmV versions
- Permits combinations with a variety of characteristics thanks to the different rated currents and characteristics of the miniature circuit breakers AZ which can be connected
- For trade and industry applications
- For subsequent mounting onto 2, 3, 3+N and 4-pole-miniature circuit breakers AZ
- Toggle (serves as switch position- and tripping indicator)
- The screw connection to the AZ-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 months. The system operator must be informed of this obligation and his responsibility in a way that can be proven. Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- 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:

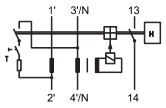
Flexible connection wires (connection to AZ) are included in the standard set:		
	2-poles 80 A	2 x 16 mm² (400 mm each)
	4-poles 80 A	4 x 16 mm² (400 mm each)
	2-poles 125 A	2 x 35 mm² (400 mm each)
	4-poles 125 A	4 x 35 mm² (400 mm each)
Shunt trip release	Z-BHASA/24	248444
	Z-BHASA/230	248445

Technical Data

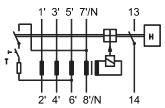
		FBHmV
Electrical current flow paths		
Design according to		IEC/EN 61009
Current test marks as printed onto the device		
Tripping		instantaneous 250A (8/20µs), surge current-proof
Type S		40 ms delay 5kA (8/20µs) with selective disconnecting function, surge current-proof
Rated voltage	U_n	240/415V AC
Voltage range test circuit		
2-poles		196-264 V~
4-poles, 30mA		196-264 V~
4-poles, 100, 300, 500, 1000mA		196-456 V~
Rated frequency		50 Hz
Rated tripping current	$I_{\Delta n}$	30, 300, 500, 1000 mA
Rated non-tripping current	$I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity		AC and pulsating DC
Rated current	I_n	80, 125 A
Rated short circuit breaking capacity	I_{cs}	same as connected AZ
Rated short circuit capacity	I_{cn}	same as connected AZ
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50µs)
Endurance		
electrical components		
80A		≥ 1,500 operating cycles
125A		≥ 1,000 operating cycles
mechanical components		
80A		≥ 10,000 operating cycles
125A		≥ 8,000 operating cycles
Electrical Auxiliary Contact		
Category of utilization 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 (5,5TE)
Depth of central body		60 mm
Mounting		screwed onto AZ 2-, 3-, 4-poles; Z-BHASA
Degree of protection switch		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		
main conductor		2.5 - 50 mm²
auxiliary switch		1 - 25 mm²
Operation temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)

Connection diagram

2-poles

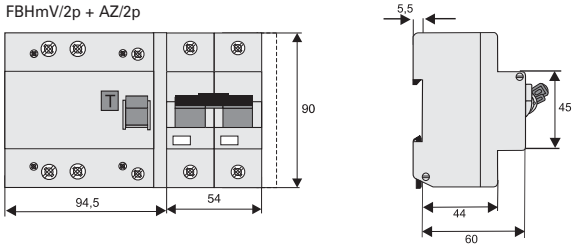


4-poles

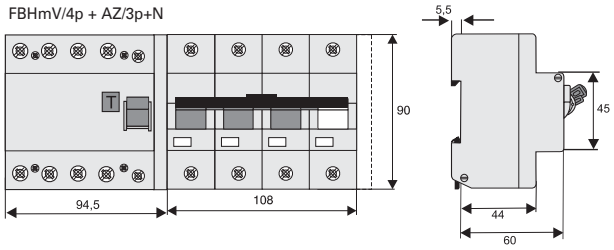


Dimensions (mm)

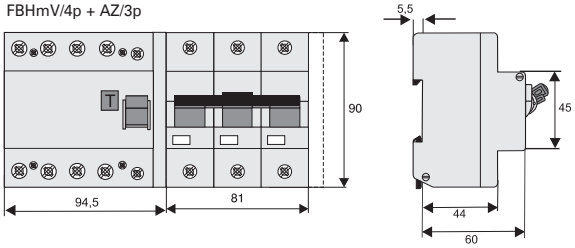
FBHmV/2p + AZ/2p



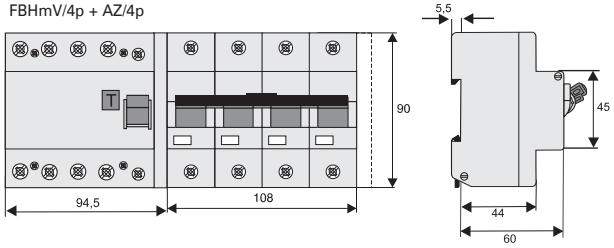
FBHmV/4p + AZ/3p+N



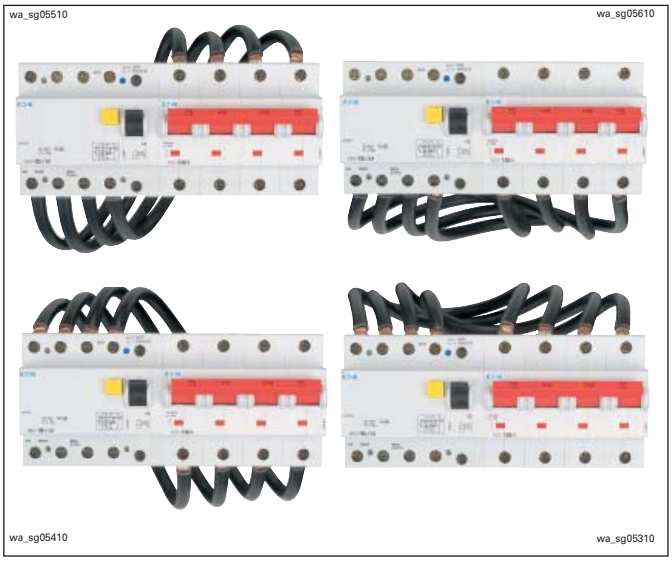
FBHmV/4p + AZ/3p



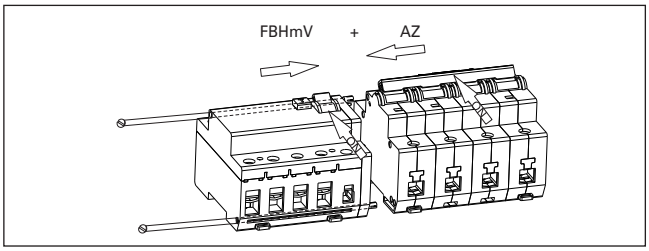
FBHmV/4p + AZ/4p



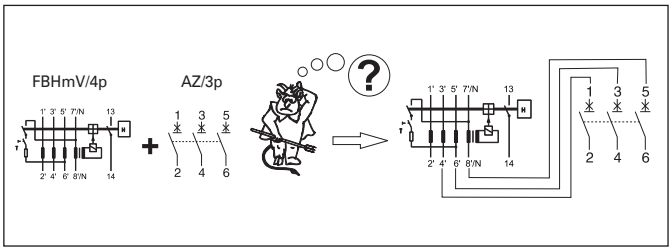
Wiring options



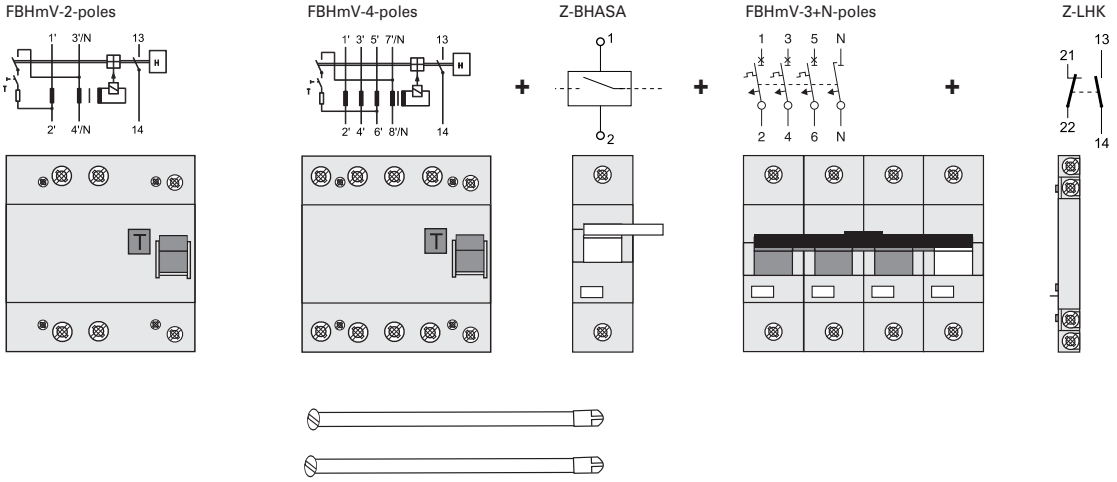
Mounting FBHmV + AZ



Connection FBHmV/4p + AZ/3p



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



Specifications | Accessories for FBHmV - Shunt trip release Z-BHASA

Description

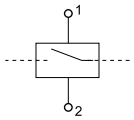
- Can be mounted subsequently
- Contact position indicator red - green
- Marking labels can be fitted
- Wide operational voltage range
- Sufficient power of extra low voltage source must be ensured Z-BHASA/24: min. 90 VA
- Screws for mounting included FBHmV => BHASA => AZ

Technical Data

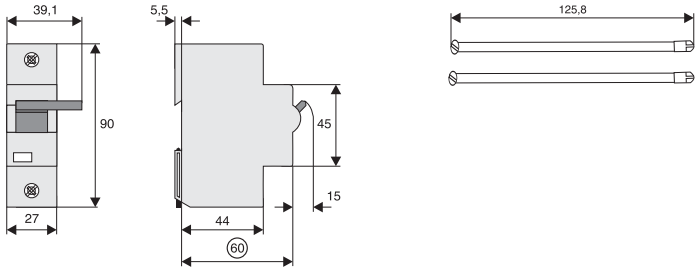
	Z-BHASA/24	Z-BHASA/230
Electrical		
Minimum pulse duration	15 ms	10 ms
Internal resistance	2 Ω	130 Ω
Duty Cycle	100%	100%
Tripping time	< 20 ms	< 20 ms
Peak withstand voltage (1.2/50µs)	2 kV	2 kV
Endurance		
electrical components	≥ 4,000 operating cycles	
mechanical components	≥ 4,000 operating cycles	
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 230V)
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 switch	IP20	IP20
Degree of protection, built-in	IP40	IP40
Upper and lower terminals	lift terminals	lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274	
Terminal capacity	2.5 - 30 mm²	2.5 - 30 mm²
Terminal torque	4 Nm	4 Nm

Connection diagram

2-poles



Dimensions (mm)



sg05317

Description

- The highest standards of safety and reliability at 24 V DC circuits
- Direct connection of up to 3 loads
- Simple and quick installation with push-in terminals and busbars
- Active current limitation
- Sequence control - easy linking of channels
- Modular system
- Individual and collective fault messages
- ON-OFF remote reset function
- Subsequent switching of system in fault situation
- PLC compatible conform to IEC/EN 61131-2
- Local sliding switch
- UL approval

PXS24...F/ORT-IT

Standard with feed-in terminals (with Communication plug)

sg05317

Rated current I_n (A)	Rated voltage U_n (V)	Type Designation	Article No.	Units per package
2	24	PXS24S-e2/F/ORT-IT	PXS24S02A001	1/42
4	24	PXS24S-e4/F/ORT-IT	PXS24S04A001	1/42
6	24	PXS24S-e6/F/ORT-IT	PXS24S06A001	1/42
8	24	PXS24S-e8/F/ORT-IT	PXS24S08A001	1/42
10	24	PXS24S-e10/F/ORT-IT	PXS24S10A001	1/42
13	24	PXS24S-e13/F/ORT-IT	PXS24S13A001	1/42
16	24	PXS24S-e16/F/ORT-IT	PXS24S16A001	1/42

PXS24...F/ORT

Standard without feed-in terminals (with Communication plug)

sg05317

Rated current I_n (A)	Rated voltage U_n (V)	Type Designation	Article No.	Units per package
2	24	PXS24S-e2/F/ORT	PXS24S02A002	1/42
4	24	PXS24S-e4/F/ORT	PXS24S04A002	1/42
6	24	PXS24S-e6/F/ORT	PXS24S06A002	1/42
8	24	PXS24S-e8/F/ORT	PXS24S08A002	1/42
10	24	PXS24S-e10/F/ORT	PXS24S10A002	1/42
13	24	PXS24S-e13/F/ORT	PXS24S13A002	1/42
16	24	PXS24S-e16/F/ORT	PXS24S16A002	1/42

PXS24E...F-IT

Economy with feed-in terminals (without Communication plug)

sg05417

Rated current I_n (A)	Rated voltage U_n (V)	Type Designation	Article No.	Units per package
2	24	PXS24E-e2/F-IT	PXS24E02A001	1/42
4	24	PXS24E-e4/F-IT	PXS24E04A001	1/42
6	24	PXS24E-e6/F-IT	PXS24E06A001	1/42
8	24	PXS24E-e8/F-IT	PXS24E08A001	1/42
10	24	PXS24E-e10/F-IT	PXS24E10A001	1/42

PXS24E...F

Economy without feed-in terminals (without Communication plug)

sg05417

Rated current I_n (A)	Rated voltage U_n (V)	Type Designation	Article No.	Units per package
2	24	PXS24E-e2/F	PXS24E02A002	1/42
4	24	PXS24E-e4/F	PXS24E04A002	1/42
6	24	PXS24E-e6/F	PXS24E06A002	1/42
8	24	PXS24E-e8/F	PXS24E08A002	1/42
10	24	PXS24E-e10/F	PXS24E10A002	1/42

Busbar

- Can be cut
- Max. current: 80 A (at 55 °C ambient temperature)

sg03718

Operating voltage	Length	Type Designation	Article No.	Units per package
Max. 30 V	1 m	PXS24-BB/80A/1M	PXS24BB00001	1/1
Max. 30 V	4 TE (approx. 70 mm)	PXS24-BB/80A/4TE	PXS24BB00004	1/1
Max. 30 V	8 TE (approx. 140 mm)	PXS24-BB/80A/8TE	PXS24BB00008	1/1
Max. 30 V	12 TE (approx. 210 mm)	PXS24-BB/80A/12TE	PXS24BB000012	1/1

Busbar cover

- Can be cut

sg03818

	1 m	PXS24-BBC	PXS24ACC0002	1/1

Placeholder

- Module with no electrical function

sg03918_r

		PXS24-PCH	PXS24ACC0000	1/42

Input terminals

- 2 pieces per power supply are required!
- Terminal capacity 1.5 - 16 mm² with or without end-sleeves, rigid and flexible
- Max. load current: 60 A (at 55 °C ambient temperature, only in connection with PXS24-BB…)

sg05917

		PXS24-IT	PXS24ACC0001	1/1

Technical Data

Mark		CE
Certification		UL508 + UL2367 (Section 10 and 12)
Product Standard		Applicable sections of: EN60947-1, EN60947-5-1, EN61009-1, EN61131-2 and EN61000-4-2 Details see In-House Standard WN-PXS24
Electrical		
Operating voltage	U_B	24 DC (16….30 V DC)
Rated current	I_N	Fix; 2, 4, 6, 8, 10, 13, 16 A
Overload and short circuit current protection		Typ. 1.3 x I_N, with active current-limiting up to 1.25 x I_N
Trip characteristic		see time / current table
Capacitive Loads		up to 20,000 µF
Inductive Loads		$I_N \leq 6$ A … $\tau_{max} \leq 60$ ms 6 A < $I_N \leq 10$ A … $\tau_{max} \leq 12$ ms 10 A < $I_N \leq 16$ A … $\tau_{max} \leq 7.5$ ms
Service life when used as a relay		see Time / Current Table
Mechanical		
Number of Channels		1
Width		17.5 (1MU)
Height		92.5 mm
Depth		119.2 mm
Type of terminals		Push-In terminals
Line terminals (optional)		3x LINE (+) and 3x GND (-)
Load terminals		3x LOAD (+) and 3x GND (-)
Terminal capacity Input/Output terminals		2.5 mm² (flexible with wire end sleeve) 4 mm² (rigid)
Terminal capacity Communication plug		1 mm² (flexible with wire end sleeve) 1.5 mm² (rigid)
Communication plug		2x control output (internal linked) 2x control input (internal linked) 1x GND
Busbar		LINE (+) and GND (-); max. 80 A in various length up to 1 m
Montage		Snapping on DIN rail TH35 (EN 60715)
Status LED		Bi-colour; Green = OK; Red = tripped; OFF = channel not in use
Sliding switch		ON/OFF/Reset
Control output		Triped; about Communication plug (according to IEC 61131-2), Class: 0.1 A; Typ1/Typ2 and Typ3 Digital Inputs Max. 30 PXS24V Other indication devices up to 0.2 A @ 24 V (EATON RMQ series,…)
Control input		ON/OFF/Reset; about Communication plug (according to IEC 61131-2) Type1/Type3; Max. 30 PXS24
Sequencer		About Communication plug
Text field		17.5 x 6 mm
Degree of protection		IP20
Operation temperature		-30 °C to +55 °C
Storage Temperature		-40 °C to +100 °C

Time / Current Table

Rated current I_N [A]	Shut-off time [ms]	Active current limiting	Service life when used as a relay t_{on} = 0.05 s / t_{off} = 10 s
2	470	1.25 x I_N	> 10,000,000
4	280	1.25 x I_N	> 10,000,000
6	170	1.25 x I_N	> 10,000,000
8	110	1.25 x I_N	400,000
10	90	1.25 x I_N	10,000
13	80	1.25 x I_N	no usage as relay - only protection
16	70	1.25 x I_N	no usage as relay - only protection

Overview of the PXS24 features

Feature	Economy	Standard
Rated current (fixed, 2, 4, 6, 8, 10, 13, 16 A)	0-10 A	0-16 A
Active current limiting	x	x
Modular system	x	x
3 load connections (+/-)	x	x
Push-in terminals	x	x
Busbar (+/-)	x	x
Local status LED	x	x
Local switch (on/off/reset)	x	x
Sequencer		x
Digital control outputs (on/off/reset)		x
Digital control inputs (on/off/reset)		x

Note for UL applications: The PXS solid state overcurrent protector has been tested in accordance to UL 508 and CSA 22.2 No. 14 for DC general use. Temperature, overload and endurance, dielectric and breakdown of component tests were conducted. Calibration and overloaded operation tests were conducted in accordance with UL 2367.

SG55812

Description

FAZ

- High-quality miniature circuit breakers for industrial applications 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 suitable for subsequent installation
- Rated currents up to 63 A
- Tripping characteristics B, C, D, K, S, Z
- Rated breaking capacity up to 15 kA according to IEC/EN 60947-2

FAZ-PN

- Tripping characteristic B
- Rated breaking capacity up to 6 kA according to IEC/EN 60898-1
- Module width 1MU (1+N-poles)

FAZ-HS

- Tripping characteristic B
- Rated breaking capacity up to 10 kA according to IEC/EN 60898-1
- 1- and 2-polesavailable

Characteristic B

SG53112

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
1	254	10	230	15	277	10	FAZ-B1/1	278520	12/120
1.5	254	10	230	15	277	10	FAZ-B1,5/1	278521	12/120
1.6	254	10	230	15	277	10	FAZ-B1,6/1	278522	12/120
2	254	10	230	15	277	10	FAZ-B2/1	278523	12/120
2.5	254	10	230	15	277	10	FAZ-B2,5/1	278524	12/120
3	254	10	230	15	277	10	FAZ-B3/1	278525	12/120
3.5	254	10	230	15	277	10	FAZ-B3,5/1	278526	12/120
4	254	10	230	15	277	10	FAZ-B4/1	278527	12/120
5	254	10	230	15	277	10	FAZ-B5/1	278528	12/120
6	254	10	230	15	277	10	FAZ-B6/1	278529	12/120
8	254	10	230	15	277	10	FAZ-B8/1	278530	12/120
10	254	10	230	15	277	10	FAZ-B10/1	278531	12/120
12	254	10	230	15	277	10	FAZ-B12/1	278532	12/120
13	254	10	230	15	277	10	FAZ-B13/1	278533	12/120
15	254	10	230	15	277	10	FAZ-B15/1	278534	12/120
16	254	10	230	15	277	10	FAZ-B16/1	278535	12/120
20	254	10	230	15	277	10	FAZ-B20/1	278536	12/120
25	254	10	230	15	277	10	FAZ-B25/1	278537	12/120
32	254	10	230	15	277	10	FAZ-B32/1	278538	12/120
40	254	10	230	15	277	5	FAZ-B40/1	278539	12/120
50	230	15	230	15	277	5	FAZ-B50/1	278540	12/120
63	230	15	230	15	277	5	FAZ-B63/1	278541	12/120

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1+N-poles

1	254	10	230	15	277	10	FAZ-B1/1N	278633	1/60
1.5	254	10	230	15	277	10	FAZ-B1,5/1N	278634	1/60
1.6	254	10	230	15	277	10	FAZ-B1,6/1N	278635	1/60
2	254	10	230	15	277	10	FAZ-B2/1N	278636	1/60
2.5	254	10	230	15	277	10	FAZ-B2,5/1N	278637	1/60
3	254	10	230	15	277	10	FAZ-B3/1N	278638	1/60
3.5	254	10	230	15	277	10	FAZ-B3,5/1N	278639	1/60
4	254	10	230	15	277	10	FAZ-B4/1N	278640	1/60
5	254	10	230	15	277	10	FAZ-B5/1N	278641	1/60
6	254	10	230	15	277	10	FAZ-B6/1N	278642	1/60
8	254	10	230	15	277	10	FAZ-B8/1N	278643	1/60
10	254	10	230	15	277	10	FAZ-B10/1N	278644	1/60
12	254	10	230	15	277	10	FAZ-B12/1N	278645	1/60
13	254	10	230	15	277	10	FAZ-B13/1N	278646	1/60
15	254	10	230	15	277	10	FAZ-B15/1N	278647	1/60
16	254	10	230	15	277	10	FAZ-B16/1N	278648	1/60
20	254	10	230	15	277	10	FAZ-B20/1N	278649	1/60
25	254	10	230	15	277	10	FAZ-B25/1N	278650	1/60
32	254	10	230	15	277	10	FAZ-B32/1N	278651	1/60
40	254	10	230	15	277	5	FAZ-B40/1N	278652	1/60
50	230	15	230	15	277	5	FAZ-B50/1N	278653	1/60
63	230	15	230	15	277	5	FAZ-B63/1N	278654	1/60

SG55112

2-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
1	440	10	400	15	480Y/277	10	FAZ-B1/2	278719	1/60
1.5	440	10	400	15	480Y/277	10	FAZ-B1,5/2	278720	1/60
1.6	440	10	400	15	480Y/277	10	FAZ-B1,6/2	278721	1/60
2	440	10	400	15	480Y/277	10	FAZ-B2/2	278722	1/60
2.5	440	10	400	15	480Y/277	10	FAZ-B2,5/2	278723	1/60
3	440	10	400	15	480Y/277	10	FAZ-B3/2	278724	1/60
3.5	440	10	400	15	480Y/277	10	FAZ-B3,5/2	278725	1/60
4	440	10	400	15	480Y/277	10	FAZ-B4/2	278726	1/60
5	440	10	400	15	480Y/277	10	FAZ-B5/2	278727	1/60
6	440	10	400	15	480Y/277	10	FAZ-B6/2	278728	1/60
8	440	10	400	15	480Y/277	10	FAZ-B8/2	278729	1/60
10	440	10	400	15	480Y/277	10	FAZ-B10/2	278730	1/60
12	440	10	400	15	480Y/277	10	FAZ-B12/2	278731	1/60
13	440	10	400	15	480Y/277	10	FAZ-B13/2	278732	1/60
15	440	10	400	15	480Y/277	10	FAZ-B15/2	278733	1/60
16	440	10	400	15	480Y/277	10	FAZ-B16/2	278734	1/60
20	440	10	400	15	480Y/277	10	FAZ-B20/2	278735	1/60
25	440	10	400	15	480Y/277	10	FAZ-B25/2	278736	1/60
32	440	10	400	15	480Y/277	10	FAZ-B32/2	278737	1/60
40	440	10	400	15	480Y/277	5	FAZ-B40/2	278738	1/60
50	400	15	400	15	480Y/277	5	FAZ-B50/2	278739	1/60
63	400	15	400	15	480Y/277	5	FAZ-B63/2	278740	1/60

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3-poles

1	440	10	400	15	480Y/277	10	FAZ-B1/3	278832	1/40
1.5	440	10	400	15	480Y/277	10	FAZ-B1,5/3	278833	1/40
1.6	440	10	400	15	480Y/277	10	FAZ-B1,6/3	278834	1/40
2	440	10	400	15	480Y/277	10	FAZ-B2/3	278835	1/40
2.5	440	10	400	15	480Y/277	10	FAZ-B2,5/3	278836	1/40
3	440	10	400	15	480Y/277	10	FAZ-B3/3	278837	1/40
3.5	440	10	400	15	480Y/277	10	FAZ-B3,5/3	278838	1/40
4	440	10	400	15	480Y/277	10	FAZ-B4/3	278839	1/40
5	440	10	400	15	480Y/277	10	FAZ-B5/3	278840	1/40
6	440	10	400	15	480Y/277	10	FAZ-B6/3	278841	1/40
8	440	10	400	15	480Y/277	10	FAZ-B8/3	278842	1/40
10	440	10	400	15	480Y/277	10	FAZ-B10/3	278843	1/40
12	440	10	400	15	480Y/277	10	FAZ-B12/3	278844	1/40
13	440	10	400	15	480Y/277	10	FAZ-B13/3	278845	1/40
15	440	10	400	15	480Y/277	10	FAZ-B15/3	278846	1/40
16	440	10	400	15	480Y/277	10	FAZ-B16/3	278847	1/40
20	440	10	400	15	480Y/277	10	FAZ-B20/3	278848	1/40
25	440	10	400	15	480Y/277	10	FAZ-B25/3	278849	1/40
32	440	10	400	15	480Y/277	10	FAZ-B32/3	278850	1/40
40	440	10	400	15	480Y/277	5	FAZ-B40/3	278851	1/40
50	400	15	400	15	480Y/277	5	FAZ-B50/3	278852	1/40
63	400	15	400	15	480Y/277	5	FAZ-B63/3	278853	1/40

SG55712

3+N-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
1	440	10	400	15	480Y/277	10	FAZ-B1/3N	278934	1/30
1.5	440	10	400	15	480Y/277	10	FAZ-B1,5/3N	278935	1/30
1.6	440	10	400	15	480Y/277	10	FAZ-B1,6/3N	278936	1/30
2	440	10	400	15	480Y/277	10	FAZ-B2/3N	278937	1/30
2.5	440	10	400	15	480Y/277	10	FAZ-B2,5/3N	278938	1/30
3	440	10	400	15	480Y/277	10	FAZ-B3/3N	278939	1/30
3.5	440	10	400	15	480Y/277	10	FAZ-B3,5/3N	278940	1/30
4	440	10	400	15	480Y/277	10	FAZ-B4/3N	278941	1/30
5	440	10	400	15	480Y/277	10	FAZ-B5/3N	278942	1/30
6	440	10	400	15	480Y/277	10	FAZ-B6/3N	278943	1/30
8	440	10	400	15	480Y/277	10	FAZ-B8/3N	278944	1/30
10	440	10	400	15	480Y/277	10	FAZ-B10/3N	278945	1/30
12	440	10	400	15	480Y/277	10	FAZ-B12/3N	278946	1/30
13	440	10	400	15	480Y/277	10	FAZ-B13/3N	278947	1/30
15	440	10	400	15	480Y/277	10	FAZ-B15/3N	278948	1/30
16	440	10	400	15	480Y/277	10	FAZ-B16/3N	278949	1/30
20	440	10	400	15	480Y/277	10	FAZ-B20/3N	278950	1/30
25	440	10	400	15	480Y/277	10	FAZ-B25/3N	278951	1/30
32	440	10	400	15	480Y/277	10	FAZ-B32/3N	278952	1/30
40	440	10	400	15	480Y/277	5	FAZ-B40/3N	278953	1/30
50	400	15	400	15	480Y/277	5	FAZ-B50/3N	278954	1/30
63	400	15	400	15	480Y/277	5	FAZ-B63/3N	278955	1/30

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4-poles

1	440	10	400	15	480Y/277	10	FAZ-B1/4	279020	1/30
1.5	440	10	400	15	480Y/277	10	FAZ-B1,5/4	279021	1/30
1.6	440	10	400	15	480Y/277	10	FAZ-B1,6/4	279022	1/30
2	440	10	400	15	480Y/277	10	FAZ-B2/4	279023	1/30
2.5	440	10	400	15	480Y/277	10	FAZ-B2,5/4	279024	1/30
3	440	10	400	15	480Y/277	10	FAZ-B3/4	279025	1/30
3.5	440	10	400	15	480Y/277	10	FAZ-B3,5/4	279026	1/30
4	440	10	400	15	480Y/277	10	FAZ-B4/4	279027	1/30
5	440	10	400	15	480Y/277	10	FAZ-B5/4	279028	1/30
6	440	10	400	15	480Y/277	10	FAZ-B6/4	279029	1/30
8	440	10	400	15	480Y/277	10	FAZ-B8/4	279030	1/30
10	440	10	400	15	480Y/277	10	FAZ-B10/4	279031	1/30
12	440	10	400	15	480Y/277	10	FAZ-B12/4	279032	1/30
13	440	10	400	15	480Y/277	10	FAZ-B13/4	279033	1/30
15	440	10	400	15	480Y/277	10	FAZ-B15/4	279034	1/30
16	440	10	400	15	480Y/277	10	FAZ-B16/4	279035	1/30
20	440	10	400	15	480Y/277	10	FAZ-B20/4	279036	1/30
25	440	10	400	15	480Y/277	10	FAZ-B25/4	279037	1/30
32	440	10	400	15	480Y/277	10	FAZ-B32/4	279038	1/30
40	440	10	400	15	480Y/277	5	FAZ-B40/4	279039	1/30
50	400	15	400	15	480Y/277	5	FAZ-B50/4	279040	1/30
63	400	15	400	15	480Y/277	5	FAZ-B63/4	279041	1/30

Characteristic C

SG53112

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
0.16	254	10	230	15	277	5	FAZ-C0,16/1	278542	12/120
0.25	254	10	230	15	277	5	FAZ-C0,25/1	278543	12/120
0.5	254	10	230	15	277	10	FAZ-C0,5/1	278544	12/120
0.75	254	10	230	15	277	10	FAZ-C0,75/1	278545	12/120
1	254	10	230	15	277	10	FAZ-C1/1	278546	12/120
1.5	254	10	230	15	277	10	FAZ-C1,5/1	278547	12/120
1.6	254	10	230	15	277	10	FAZ-C1,6/1	278548	12/120
2	254	10	230	15	277	10	FAZ-C2/1	278549	12/120
2.5	254	10	230	15	277	10	FAZ-C2,5/1	278550	12/120
3	254	10	230	15	277	10	FAZ-C3/1	278551	12/120
3.5	254	10	230	15	277	10	FAZ-C3,5/1	278552	12/120
4	254	10	230	15	277	10	FAZ-C4/1	278553	12/120
5	254	10	230	15	277	10	FAZ-C5/1	278554	12/120
6	254	10	230	15	277	10	FAZ-C6/1	278555	12/120
8	254	10	230	15	277	10	FAZ-C8/1	278556	12/120
10	254	10	230	15	277	10	FAZ-C10/1	278557	12/120
12	254	10	230	15	277	10	FAZ-C12/1	278558	12/120
13	254	10	230	15	277	10	FAZ-C13/1	278559	12/120
15	254	10	230	15	277	10	FAZ-C15/1	278560	12/120
16	254	10	230	15	277	10	FAZ-C16/1	278561	12/120
20	254	10	230	15	277	10	FAZ-C20/1	278562	12/120
25	254	10	230	15	277	10	FAZ-C25/1	278563	12/120
32	254	10	230	15	277	10	FAZ-C32/1	278564	12/120
40	254	10	230	15	277	5	FAZ-C40/1	278565	12/120
50	230	15	230	15	277	5	FAZ-C50/1	278566	12/120
63	230	15	230	15	277	5	FAZ-C63/1	278567	12/120

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1+N-poles

0.16	254	10	230	15	277	5	FAZ-C0,16/1N	278655	1/60
0.25	254	10	230	15	277	5	FAZ-C0,25/1N	278656	1/60
0.5	254	10	230	15	277	10	FAZ-C0,5/1N	278657	1/60
0.75	254	10	230	15	277	10	FAZ-C0,75/1N	278658	1/60
1	254	10	230	15	277	10	FAZ-C1/1N	278659	1/60
1.5	254	10	230	15	277	10	FAZ-C1,5/1N	278660	1/60
1.6	254	10	230	15	277	10	FAZ-C1,6/1N	278661	1/60
2	254	10	230	15	277	10	FAZ-C2/1N	278662	1/60
2.5	254	10	230	15	277	10	FAZ-C2,5/1N	278663	1/60
3	254	10	230	15	277	10	FAZ-C3/1N	278664	1/60
3.5	254	10	230	15	277	10	FAZ-C3,5/1N	278665	1/60
4	254	10	230	15	277	10	FAZ-C4/1N	278666	1/60
5	254	10	230	15	277	10	FAZ-C5/1N	278667	1/60
6	254	10	230	15	277	10	FAZ-C6/1N	278668	1/60
8	254	10	230	15	277	10	FAZ-C8/1N	278669	1/60
10	254	10	230	15	277	10	FAZ-C10/1N	278670	1/60
12	254	10	230	15	277	10	FAZ-C12/1N	278671	1/60
13	254	10	230	15	277	10	FAZ-C13/1N	278672	1/60
15	254	10	230	15	277	10	FAZ-C15/1N	278673	1/60
16	254	10	230	15	277	10	FAZ-C16/1N	278674	1/60
20	254	10	230	15	277	10	FAZ-C20/1N	278675	1/60
25	254	10	230	15	277	10	FAZ-C25/1N	278676	1/60
32	254	10	230	15	277	10	FAZ-C32/1N	278677	1/60
40	254	10	230	15	277	5	FAZ-C40/1N	278678	1/60
50	230	15	230	15	277	5	FAZ-C50/1N	278679	1/60
63	230	15	230	15	277	5	FAZ-C63/1N	278680	1/60

SG55112

2-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
0.16	440	10	400	15	480Y/277	5	FAZ-C0,16/2	278741	1/60
0.25	440	10	400	15	480Y/277	5	FAZ-C0,25/2	278742	1/60
0.5	440	10	400	15	480Y/277	10	FAZ-C0,5/2	278743	1/60
0.75	440	10	400	15	480Y/277	10	FAZ-C0,75/2	278744	1/60
1	440	10	400	15	480Y/277	10	FAZ-C1/2	278745	1/60
1.5	440	10	400	15	480Y/277	10	FAZ-C1,5/2	278746	1/60
1.6	440	10	400	15	480Y/277	10	FAZ-C1,6/2	278747	1/60
2	440	10	400	15	480Y/277	10	FAZ-C2/2	278748	1/60
2.5	440	10	400	15	480Y/277	10	FAZ-C2,5/2	278749	1/60
3	440	10	400	15	480Y/277	10	FAZ-C3/2	278750	1/60
3.5	440	10	400	15	480Y/277	10	FAZ-C3,5/2	278751	1/60
4	440	10	400	15	480Y/277	10	FAZ-C4/2	278752	1/60
5	440	10	400	15	480Y/277	10	FAZ-C5/2	278753	1/60
6	440	10	400	15	480Y/277	10	FAZ-C6/2	278754	1/60
8	440	10	400	15	480Y/277	10	FAZ-C8/2	278755	1/60
10	440	10	400	15	480Y/277	10	FAZ-C10/2	278756	1/60
12	440	10	400	15	480Y/277	10	FAZ-C12/2	278757	1/60
13	440	10	400	15	480Y/277	10	FAZ-C13/2	278758	1/60
15	440	10	400	15	480Y/277	10	FAZ-C15/2	278759	1/60
16	440	10	400	15	480Y/277	10	FAZ-C16/2	278760	1/60
20	440	10	400	15	480Y/277	10	FAZ-C20/2	278761	1/60
25	440	10	400	15	480Y/277	10	FAZ-C25/2	278762	1/60
32	440	10	400	15	480Y/277	10	FAZ-C32/2	278763	1/60
40	440	10	400	15	480Y/277	5	FAZ-C40/2	278764	1/60
50	400	15	400	15	480Y/277	5	FAZ-C50/2	278765	1/60
63	400	15	400	15	480Y/277	5	FAZ-C63/2	278766	1/60

SG53412

3-poles

0.16	440	10	400	15	480Y/277	5	FAZ-C0,16/3	278854	1/40
0.25	440	10	400	15	480Y/277	5	FAZ-C0,25/3	278855	1/40
0.5	440	10	400	15	480Y/277	10	FAZ-C0,5/3	278856	1/40
0.75	440	10	400	15	480Y/277	10	FAZ-C0,75/3	278857	1/40
1	440	10	400	15	480Y/277	10	FAZ-C1/3	278858	1/40
1.5	440	10	400	15	480Y/277	10	FAZ-C1,5/3	278859	1/40
1.6	440	10	400	15	480Y/277	10	FAZ-C1,6/3	278860	1/40
2	440	10	400	15	480Y/277	10	FAZ-C2/3	278861	1/40
2.5	440	10	400	15	480Y/277	10	FAZ-C2,5/3	278862	1/40
3	440	10	400	15	480Y/277	10	FAZ-C3/3	278863	1/40
3.5	440	10	400	15	480Y/277	10	FAZ-C3,5/3	278864	1/40
4	440	10	400	15	480Y/277	10	FAZ-C4/3	278865	1/40
5	440	10	400	15	480Y/277	10	FAZ-C5/3	278866	1/40
6	440	10	400	15	480Y/277	10	FAZ-C6/3	278867	1/40
8	440	10	400	15	480Y/277	10	FAZ-C8/3	278868	1/40
10	440	10	400	15	480Y/277	10	FAZ-C10/3	278869	1/40
12	440	10	400	15	480Y/277	10	FAZ-C12/3	278870	1/40
13	440	10	400	15	480Y/277	10	FAZ-C13/3	278871	1/40
15	440	10	400	15	480Y/277	10	FAZ-C15/3	278872	1/40
16	440	10	400	15	480Y/277	10	FAZ-C16/3	278873	1/40
20	440	10	400	15	480Y/277	10	FAZ-C20/3	278874	1/40
25	440	10	400	15	480Y/277	10	FAZ-C25/3	278875	1/40
32	440	10	400	15	480Y/277	10	FAZ-C32/3	278876	1/40
40	440	10	400	15	480Y/277	5	FAZ-C40/3	278877	1/40
50	400	15	400	15	480Y/277	5	FAZ-C50/3	278878	1/40
63	400	15	400	15	480Y/277	5	FAZ-C63/3	278879	1/40

SG55712

3+N-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
0.16	440	10	400	15	480Y/277	5	FAZ-C0,16/3N	278956	1/30
0.25	440	10	400	15	480Y/277	5	FAZ-C0,25/3N	278957	1/30
0.5	440	10	400	15	480Y/277	10	FAZ-C0,5/3N	278958	1/30
0.75	440	10	400	15	480Y/277	10	FAZ-C0,75/3N	278959	1/30
1	440	10	400	15	480Y/277	10	FAZ-C1/3N	278960	1/30
1.5	440	10	400	15	480Y/277	10	FAZ-C1,5/3N	278961	1/30
1.6	440	10	400	15	480Y/277	10	FAZ-C1,6/3N	278962	1/30
2	440	10	400	15	480Y/277	10	FAZ-C2/3N	278963	1/30
2.5	440	10	400	15	480Y/277	10	FAZ-C2,5/3N	278964	1/30
3	440	10	400	15	480Y/277	10	FAZ-C3/3N	278965	1/30
3.5	440	10	400	15	480Y/277	10	FAZ-C3,5/3N	278966	1/30
4	440	10	400	15	480Y/277	10	FAZ-C4/3N	278967	1/30
5	440	10	400	15	480Y/277	10	FAZ-C5/3N	278968	1/30
6	440	10	400	15	480Y/277	10	FAZ-C6/3N	278969	1/30
8	440	10	400	15	480Y/277	10	FAZ-C8/3N	278970	1/30
10	440	10	400	15	480Y/277	10	FAZ-C10/3N	278971	1/30
12	440	10	400	15	480Y/277	10	FAZ-C12/3N	278972	1/30
13	440	10	400	15	480Y/277	10	FAZ-C13/3N	278973	1/30
15	440	10	400	15	480Y/277	10	FAZ-C15/3N	278974	1/30
16	440	10	400	15	480Y/277	10	FAZ-C16/3N	278975	1/30
20	440	10	400	15	480Y/277	10	FAZ-C20/3N	278976	1/30
25	440	10	400	15	480Y/277	10	FAZ-C25/3N	278977	1/30
32	440	10	400	15	480Y/277	10	FAZ-C32/3N	278978	1/30
40	440	10	400	15	480Y/277	5	FAZ-C40/3N	278979	1/30
50	400	15	400	15	480Y/277	5	FAZ-C50/3N	278980	1/30
63	400	15	400	15	480Y/277	5	FAZ-C63/3N	278981	1/30

SG55812

4-poles

0.16	440	10	400	15	480Y/277	5	FAZ-C0,16/4	279042	1/30
0.25	440	10	400	15	480Y/277	5	FAZ-C0,25/4	279043	1/30
0.5	440	10	400	15	480Y/277	10	FAZ-C0,5/4	279044	1/30
0.75	440	10	400	15	480Y/277	10	FAZ-C0,75/4	279045	1/30
1	440	10	400	15	480Y/277	10	FAZ-C1/4	279046	1/30
1.5	440	10	400	15	480Y/277	10	FAZ-C1,5/4	279047	1/30
1.6	440	10	400	15	480Y/277	10	FAZ-C1,6/4	279048	1/30
2	440	10	400	15	480Y/277	10	FAZ-C2/4	279049	1/30
2.5	440	10	400	15	480Y/277	10	FAZ-C2,5/4	279050	1/30
3	440	10	400	15	480Y/277	10	FAZ-C3/4	279051	1/30
3.5	440	10	400	15	480Y/277	10	FAZ-C3,5/4	279052	1/30
4	440	10	400	15	480Y/277	10	FAZ-C4/4	279053	1/30
5	440	10	400	15	480Y/277	10	FAZ-C5/4	279054	1/30
6	440	10	400	15	480Y/277	10	FAZ-C6/4	279055	1/30
8	440	10	400	15	480Y/277	10	FAZ-C8/4	279056	1/30
10	440	10	400	15	480Y/277	10	FAZ-C10/4	279057	1/30
12	440	10	400	15	480Y/277	10	FAZ-C12/4	279058	1/30
13	440	10	400	15	480Y/277	10	FAZ-C13/4	279059	1/30
15	440	10	400	15	480Y/277	10	FAZ-C15/4	279060	1/30
16	440	10	400	15	480Y/277	10	FAZ-C16/4	279061	1/30
20	440	10	400	15	480Y/277	10	FAZ-C20/4	279062	1/30
25	440	10	400	15	480Y/277	10	FAZ-C25/4	279063	1/30
32	440	10	400	15	480Y/277	10	FAZ-C32/4	279064	1/30
40	440	10	400	15	480Y/277	5	FAZ-C40/4	279065	1/30
50	400	15	400	15	480Y/277	5	FAZ-C50/4	279066	1/30
63	400	15	400	15	480Y/277	5	FAZ-C63/4	279067	1/30

Characteristic D

SG53112

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
0.5	230	15	277	5	FAZ-D0,5/1	278568	12/120
1	230	15	277	5	FAZ-D1/1	278569	12/120
1.5	230	15	277	5	FAZ-D1,5/1	278570	12/120
1.6	230	15	277	5	FAZ-D1,6/1	278571	12/120
2	230	15	277	5	FAZ-D2/1	278572	12/120
2.5	230	15	277	5	FAZ-D2,5/1	278573	12/120
3	230	15	277	5	FAZ-D3/1	278574	12/120
3.5	230	15	277	5	FAZ-D3,5/1	278575	12/120
4	230	15	277	5	FAZ-D4/1	278576	12/120
5	230	15	277	5	FAZ-D5/1	278577	12/120
6	230	15	277	5	FAZ-D6/1	278578	12/120
8	230	15	277	5	FAZ-D8/1	278579	12/120
10	230	15	277	5	FAZ-D10/1	278580	12/120
12	230	15	277	5	FAZ-D12/1	278581	12/120
13	230	15	277	5	FAZ-D13/1	278582	12/120
15	230	15	277	5	FAZ-D15/1	278583	12/120
16	230	15	277	5	FAZ-D16/1	278584	12/120
20	230	15	277	5	FAZ-D20/1	278585	12/120
25	230	15	277	5	FAZ-D25/1	278586	12/120
32	230	15	277	5	FAZ-D32/1	278587	12/120
40	230	15	277	5	FAZ-D40/1	278588	12/120
50	230	10	-	-	FAZ-D50/1	115370	12/120
63	230	10	-	-	FAZ-D63/1	115371	12/120

SG55612

1+N-poles

0.5	230	15	277	5	FAZ-D0,5/1N	278681	1/60
1	230	15	277	5	FAZ-D1/1N	278682	1/60
1.5	230	15	277	5	FAZ-D1,5/1N	278683	1/60
1.6	230	15	277	5	FAZ-D1,6/1N	278684	1/60
2	230	15	277	5	FAZ-D2/1N	278685	1/60
2.5	230	15	277	5	FAZ-D2,5/1N	278686	1/60
3	230	15	277	5	FAZ-D3/1N	278687	1/60
3.5	230	15	277	5	FAZ-D3,5/1N	278688	1/60
4	230	15	277	5	FAZ-D4/1N	278689	1/60
5	230	15	277	5	FAZ-D5/1N	278690	1/60
6	230	15	277	5	FAZ-D6/1N	278691	1/60
8	230	15	277	5	FAZ-D8/1N	278692	1/60
10	230	15	277	5	FAZ-D10/1N	278693	1/60
12	230	15	277	5	FAZ-D12/1N	278694	1/60
13	230	15	277	5	FAZ-D13/1N	278695	1/60
15	230	15	277	5	FAZ-D15/1N	278696	1/60
16	230	15	277	5	FAZ-D16/1N	278697	1/60
20	230	15	277	5	FAZ-D20/1N	278698	1/60
25	230	15	277	5	FAZ-D25/1N	278699	1/60
32	230	15	277	5	FAZ-D32/1N	278700	1/60
40	230	15	277	5	FAZ-D40/1N	278701	1/60
50	230	10	-	-	FAZ-D50/1N	115378	1/60
63	230	10	-	-	FAZ-D63/1N	115379	1/60

SG55112

2-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
0.5	400	15	480Y/277	5	FAZ-D0,5/2	278767	1/60
1	400	15	480Y/277	5	FAZ-D1/2	278768	1/60
1.5	400	15	480Y/277	5	FAZ-D1,5/2	278769	1/60
1.6	400	15	480Y/277	5	FAZ-D1,6/2	278770	1/60
2	400	15	480Y/277	5	FAZ-D2/2	278771	1/60
2.5	400	15	480Y/277	5	FAZ-D2,5/2	278772	1/60
3	400	15	480Y/277	5	FAZ-D3/2	278773	1/60
3.5	400	15	480Y/277	5	FAZ-D3,5/2	278774	1/60
4	400	15	480Y/277	5	FAZ-D4/2	278775	1/60
5	400	15	480Y/277	5	FAZ-D5/2	278776	1/60
6	400	15	480Y/277	5	FAZ-D6/2	278777	1/60
8	400	15	480Y/277	5	FAZ-D8/2	278778	1/60
10	400	15	480Y/277	5	FAZ-D10/2	278779	1/60
12	400	15	480Y/277	5	FAZ-D12/2	278780	1/60
13	400	15	480Y/277	5	FAZ-D13/2	278781	1/60
15	400	15	480Y/277	5	FAZ-D15/2	278782	1/60
16	400	15	480Y/277	5	FAZ-D16/2	278783	1/60
20	400	15	480Y/277	5	FAZ-D20/2	278784	1/60
25	400	15	480Y/277	5	FAZ-D25/2	278785	1/60
32	400	15	480Y/277	5	FAZ-D32/2	278786	1/60
40	400	15	480Y/277	5	FAZ-D40/2	278787	1/60
50	400	10	-	-	FAZ-D50/2	115372	1/60
63	400	10	-	-	FAZ-D63/2	115373	1/60

SG53412

3-poles

0.5	400	15	480Y/277	5	FAZ-D0,5/3	278880	1/40
1	400	15	480Y/277	5	FAZ-D1/3	278881	1/40
1.5	400	15	480Y/277	5	FAZ-D1,5/3	278882	1/40
1.6	400	15	480Y/277	5	FAZ-D1,6/3	278883	1/40
2	400	15	480Y/277	5	FAZ-D2/3	278884	1/40
2.5	400	15	480Y/277	5	FAZ-D2,5/3	278885	1/40
3	400	15	480Y/277	5	FAZ-D3/3	278886	1/40
3.5	400	15	480Y/277	5	FAZ-D3,5/3	278887	1/40
4	400	15	480Y/277	5	FAZ-D4/3	278888	1/40
5	400	15	480Y/277	5	FAZ-D5/3	278889	1/40
6	400	15	480Y/277	5	FAZ-D6/3	278890	1/40
8	400	15	480Y/277	5	FAZ-D8/3	278891	1/40
10	400	15	480Y/277	5	FAZ-D10/3	278892	1/40
12	400	15	480Y/277	5	FAZ-D12/3	278893	1/40
13	400	15	480Y/277	5	FAZ-D13/3	278894	1/40
15	400	15	480Y/277	5	FAZ-D15/3	278895	1/40
16	400	15	480Y/277	5	FAZ-D16/3	278896	1/40
20	400	15	480Y/277	5	FAZ-D20/3	278897	1/40
25	400	15	480Y/277	5	FAZ-D25/3	278898	1/40
32	400	15	480Y/277	5	FAZ-D32/3	278899	1/40
40	400	15	480Y/277	5	FAZ-D40/3	278900	1/40
50	400	10	-	-	FAZ-D50/3	115374	1/40
63	400	10	-	-	FAZ-D63/3	115375	1/40

SG55712

3+N-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
0.5	400	15	480Y/277	5	FAZ-D0,5/3N	278982	1/30
1	400	15	480Y/277	5	FAZ-D1/3N	278983	1/30
1.5	400	15	480Y/277	5	FAZ-D1,5/3N	278984	1/30
1.6	400	15	480Y/277	5	FAZ-D1,6/3N	278985	1/30
2	400	15	480Y/277	5	FAZ-D2/3N	278986	1/30
2.5	400	15	480Y/277	5	FAZ-D2,5/3N	278987	1/30
3	400	15	480Y/277	5	FAZ-D3/3N	278988	1/30
3.5	400	15	480Y/277	5	FAZ-D3,5/3N	278989	1/30
4	400	15	480Y/277	5	FAZ-D4/3N	278990	1/30
5	400	15	480Y/277	5	FAZ-D5/3N	278991	1/30
6	400	15	480Y/277	5	FAZ-D6/3N	278992	1/30
8	400	15	480Y/277	5	FAZ-D8/3N	278993	1/30
10	400	15	480Y/277	5	FAZ-D10/3N	278994	1/30
12	400	15	480Y/277	5	FAZ-D12/3N	278995	1/30
13	400	15	480Y/277	5	FAZ-D13/3N	278996	1/30
15	400	15	480Y/277	5	FAZ-D15/3N	278997	1/30
16	400	15	480Y/277	5	FAZ-D16/3N	278998	1/30
20	400	15	480Y/277	5	FAZ-D20/3N	278999	1/30
25	400	15	480Y/277	5	FAZ-D25/3N	279000	1/30
32	400	15	480Y/277	5	FAZ-D32/3N	279001	1/30
40	400	15	480Y/277	5	FAZ-D40/3N	279002	1/30
50	400	10	-	-	FAZ-D50/3N	115380	1/30
63	400	10	-	-	FAZ-D63/3N	115381	1/30

SG55812

4-poles

0.5	400	15	480Y/277	5	FAZ-D0,5/4	279068	1/30
1	400	15	480Y/277	5	FAZ-D1/4	279069	1/30
1.5	400	15	480Y/277	5	FAZ-D1,5/4	279070	1/30
1.6	400	15	480Y/277	5	FAZ-D1,6/4	279071	1/30
2	400	15	480Y/277	5	FAZ-D2/4	279072	1/30
2.5	400	15	480Y/277	5	FAZ-D2,5/4	279073	1/30
3	400	15	480Y/277	5	FAZ-D3/4	279074	1/30
3.5	400	15	480Y/277	5	FAZ-D3,5/4	279075	1/30
4	400	15	480Y/277	5	FAZ-D4/4	279076	1/30
5	400	15	480Y/277	5	FAZ-D5/4	279077	1/30
6	400	15	480Y/277	5	FAZ-D6/4	279078	1/30
8	400	15	480Y/277	5	FAZ-D8/4	279079	1/30
10	400	15	480Y/277	5	FAZ-D10/4	279080	1/30
12	400	15	480Y/277	5	FAZ-D12/4	279081	1/30
13	400	15	480Y/277	5	FAZ-D13/4	279082	1/30
15	400	15	480Y/277	5	FAZ-D15/4	279083	1/30
16	400	15	480Y/277	5	FAZ-D16/4	279084	1/30
20	400	15	480Y/277	5	FAZ-D20/4	279085	1/30
25	400	15	480Y/277	5	FAZ-D25/4	279086	1/30
32	400	15	480Y/277	5	FAZ-D32/4	279087	1/30
40	400	15	480Y/277	5	FAZ-D40/4	279088	1/30
50	400	10	-	-	FAZ-D50/4	115376	1/30
63	400	10	-	-	FAZ-D63/4	115377	1/30

Characteristic K

SG53112

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
0.5	240	10	277	5	FAZ-K0,5/1	278589	12/120
1	240	10	277	5	FAZ-K1/1	278590	12/120
1.6	240	10	277	5	FAZ-K1,6/1	278591	12/120
2	240	10	277	5	FAZ-K2/1	278592	12/120
3	240	10	277	5	FAZ-K3/1	278593	12/120
4	240	10	277	5	FAZ-K4/1	278594	12/120
6	240	10	277	5	FAZ-K6/1	278595	12/120
8	240	10	277	5	FAZ-K8/1	278596	12/120
10	240	10	277	5	FAZ-K10/1	278597	12/120
13	240	10	277	5	FAZ-K13/1	278598	12/120
16	240	10	277	5	FAZ-K16/1	278599	12/120
20	240	10	277	5	FAZ-K20/1	278600	12/120
25	240	10	277	5	FAZ-K25/1	278601	12/120
32	240	10	277	5	FAZ-K32/1	278602	12/120
40	240	10	277	5	FAZ-K40/1	278603	12/120
50	240	10	277	5	FAZ-K50/1	278604	12/120
63	240	10	277	5	FAZ-K63/1	278605	12/120

SG55612

1+N-poles

0.5	240	10	277	5	FAZ-K0,5/1N	278702	1/60
1	240	10	277	5	FAZ-K1/1N	278703	1/60
1.6	240	10	277	5	FAZ-K1,6/1N	278704	1/60
2	240	10	277	5	FAZ-K2/1N	278705	1/60
3	240	10	277	5	FAZ-K3/1N	278706	1/60
4	240	10	277	5	FAZ-K4/1N	278707	1/60
6	240	10	277	5	FAZ-K6/1N	278708	1/60
8	240	10	277	5	FAZ-K8/1N	278709	1/60
10	240	10	277	5	FAZ-K10/1N	278710	1/60
13	240	10	277	5	FAZ-K13/1N	278711	1/60
16	240	10	277	5	FAZ-K16/1N	278712	1/60
20	240	10	277	5	FAZ-K20/1N	278713	1/60
25	240	10	277	5	FAZ-K25/1N	278714	1/60
32	240	10	277	5	FAZ-K32/1N	278715	1/60
40	240	10	277	5	FAZ-K40/1N	278716	1/60
50	240	10	277	5	FAZ-K50/1N	278717	1/60
63	240	10	277	5	FAZ-K63/1N	278718	1/60

SG55112

2-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
0.5	415	10	480Y/277	5	FAZ-K0,5/2	278788	1/60
1	415	10	480Y/277	5	FAZ-K1/2	278789	1/60
1.6	415	10	480Y/277	5	FAZ-K1,6/2	278790	1/60
2	415	10	480Y/277	5	FAZ-K2/2	278791	1/60
3	415	10	480Y/277	5	FAZ-K3/2	278792	1/60
4	415	10	480Y/277	5	FAZ-K4/2	278793	1/60
6	415	10	480Y/277	5	FAZ-K6/2	278794	1/60
8	415	10	480Y/277	5	FAZ-K8/2	278795	1/60
10	415	10	480Y/277	5	FAZ-K10/2	278796	1/60
13	415	10	480Y/277	5	FAZ-K13/2	278797	1/60
16	415	10	480Y/277	5	FAZ-K16/2	278798	1/60
20	415	10	480Y/277	5	FAZ-K20/2	278799	1/60
25	415	10	480Y/277	5	FAZ-K25/2	278800	1/60
32	415	10	480Y/277	5	FAZ-K32/2	278801	1/60
40	415	10	480Y/277	5	FAZ-K40/2	278802	1/60
50	415	10	480Y/277	5	FAZ-K50/2	278803	1/60
63	415	10	480Y/277	5	FAZ-K63/2	278804	1/60

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3-poles

0.5	415	10	480Y/277	5	FAZ-K0,5/3	278901	1/40
1	415	10	480Y/277	5	FAZ-K1/3	278902	1/40
1.6	415	10	480Y/277	5	FAZ-K1,6/3	278903	1/40
2	415	10	480Y/277	5	FAZ-K2/3	278904	1/40
3	415	10	480Y/277	5	FAZ-K3/3	278905	1/40
4	415	10	480Y/277	5	FAZ-K4/3	278906	1/40
6	415	10	480Y/277	5	FAZ-K6/3	278907	1/40
8	415	10	480Y/277	5	FAZ-K8/3	278908	1/40
10	415	10	480Y/277	5	FAZ-K10/3	278909	1/40
13	415	10	480Y/277	5	FAZ-K13/3	278910	1/40
16	415	10	480Y/277	5	FAZ-K16/3	278911	1/40
20	415	10	480Y/277	5	FAZ-K20/3	278912	1/40
25	415	10	480Y/277	5	FAZ-K25/3	278913	1/40
32	415	10	480Y/277	5	FAZ-K32/3	278914	1/40
40	415	10	480Y/277	5	FAZ-K40/3	278915	1/40
50	415	10	480Y/277	5	FAZ-K50/3	278916	1/40
63	415	10	480Y/277	5	FAZ-K63/3	278917	1/40

SG55712

3+N-poles

0.5	415	10	480Y/277	5	FAZ-K0,5/3N	279003	1/30
1	415	10	480Y/277	5	FAZ-K1/3N	279004	1/30
1.6	415	10	480Y/277	5	FAZ-K1,6/3N	279005	1/30
2	415	10	480Y/277	5	FAZ-K2/3N	279006	1/30
3	415	10	480Y/277	5	FAZ-K3/3N	279007	1/30
4	415	10	480Y/277	5	FAZ-K4/3N	279008	1/30
6	415	10	480Y/277	5	FAZ-K6/3N	279009	1/30
8	415	10	480Y/277	5	FAZ-K8/3N	279010	1/30
10	415	10	480Y/277	5	FAZ-K10/3N	279011	1/30
13	415	10	480Y/277	5	FAZ-K13/3N	279012	1/30
16	415	10	480Y/277	5	FAZ-K16/3N	279013	1/30
20	415	10	480Y/277	5	FAZ-K20/3N	279014	1/30
25	415	10	480Y/277	5	FAZ-K25/3N	279015	1/30
32	415	10	480Y/277	5	FAZ-K32/3N	279016	1/30
40	415	10	480Y/277	5	FAZ-K40/3N	279017	1/30
50	415	10	480Y/277	5	FAZ-K50/3N	279018	1/30
63	415	10	480Y/277	5	FAZ-K63/3N	279019	1/30

SG55812

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
4-poles							
0.5	415	10	480Y/277	5	FAZ-K0,5/4	279089	1/30
1	415	10	480Y/277	5	FAZ-K1/4	279090	1/30
1.6	415	10	480Y/277	5	FAZ-K1,6/4	279091	1/30
2	415	10	480Y/277	5	FAZ-K2/4	279092	1/30
3	415	10	480Y/277	5	FAZ-K3/4	279093	1/30
4	415	10	480Y/277	5	FAZ-K4/4	279094	1/30
6	415	10	480Y/277	5	FAZ-K6/4	279095	1/30
8	415	10	480Y/277	5	FAZ-K8/4	279096	1/30
10	415	10	480Y/277	5	FAZ-K10/4	279097	1/30
13	415	10	480Y/277	5	FAZ-K13/4	279098	1/30
16	415	10	480Y/277	5	FAZ-K16/4	279099	1/30
20	415	10	480Y/277	5	FAZ-K20/4	279100	1/30
25	415	10	480Y/277	5	FAZ-K25/4	279101	1/30
32	415	10	480Y/277	5	FAZ-K32/4	279102	1/30
40	415	10	480Y/277	5	FAZ-K40/4	279103	1/30
50	415	10	480Y/277	5	FAZ-K50/4	279104	1/30
63	415	10	480Y/277	5	FAZ-K63/4	279105	1/30

Characteristic S

SG53112

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
1	240	10	277	5	FAZ-S1/1	278606	12/120
2	240	10	277	5	FAZ-S2/1	278607	12/120
3	240	10	277	5	FAZ-S3/1	278608	12/120
4	240	10	277	5	FAZ-S4/1	278609	12/120
6	240	10	277	5	FAZ-S6/1	278610	12/120
10	240	10	277	5	FAZ-S10/1	278611	12/120
16	240	10	277	5	FAZ-S16/1	278612	12/120
20	240	10	277	5	FAZ-S20/1	278613	12/120
25	240	10	277	5	FAZ-S25/1	278614	12/120
32	240	10	277	5	FAZ-S32/1	278615	12/120
40	240	10	277	5	FAZ-S40/1	278616	12/120

SG55112

2-poles

1	415	10	480Y/277	5	FAZ-S1/2	278805	1/60
2	415	10	480Y/277	5	FAZ-S2/2	278806	1/60
3	415	10	480Y/277	5	FAZ-S3/2	278807	1/60
4	415	10	480Y/277	5	FAZ-S4/2	278808	1/60
6	415	10	480Y/277	5	FAZ-S6/2	278809	1/60
10	415	10	480Y/277	5	FAZ-S10/2	278810	1/60
16	415	10	480Y/277	5	FAZ-S16/2	278811	1/60
20	415	10	480Y/277	5	FAZ-S20/2	278812	1/60
25	415	10	480Y/277	5	FAZ-S25/2	278813	1/60
32	415	10	480Y/277	5	FAZ-S32/2	278814	1/60
40	415	10	480Y/277	5	FAZ-S40/2	278815	1/60

Characteristic Z

SG53112

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
0.5	240	10	277	5	FAZ-Z0,5/1	278617	12/120
1	240	10	277	5	FAZ-Z1/1	278618	12/120
1.6	240	10	277	5	FAZ-Z1,6/1	278619	12/120
2	240	10	277	5	FAZ-Z2/1	278620	12/120
3	240	10	277	5	FAZ-Z3/1	278621	12/120
4	240	10	277	5	FAZ-Z4/1	278622	12/120
6	240	10	277	5	FAZ-Z6/1	278623	12/120
8	240	10	277	5	FAZ-Z8/1	278624	12/120
10	240	10	277	5	FAZ-Z10/1	278625	12/120
13	240	10	277	5	FAZ-Z13/1	106020	12/120
16	240	10	277	5	FAZ-Z16/1	278626	12/120
20	240	10	277	5	FAZ-Z20/1	278627	12/120
25	240	10	277	5	FAZ-Z25/1	278628	12/120
32	240	10	277	5	FAZ-Z32/1	278629	12/120
40	240	10	277	5	FAZ-Z40/1	278630	12/120
50	240	10	277	5	FAZ-Z50/1	278631	12/120
63	240	10	277	5	FAZ-Z63/1	278632	12/120

SG55112

2-poles

0.5	415	10	480Y/277	5	FAZ-Z0,5/2	278816	1/60
1	415	10	480Y/277	5	FAZ-Z1/2	278817	1/60
1.6	415	10	480Y/277	5	FAZ-Z1,6/2	278818	1/60
2	415	10	480Y/277	5	FAZ-Z2/2	278819	1/60
3	415	10	480Y/277	5	FAZ-Z3/2	278820	1/60
4	415	10	480Y/277	5	FAZ-Z4/2	278821	1/60
6	415	10	480Y/277	5	FAZ-Z6/2	278822	1/60
8	415	10	480Y/277	5	FAZ-Z8/2	278823	1/60
10	415	10	480Y/277	5	FAZ-Z10/2	278824	1/60
13	415	10	480Y/277	5	FAZ-Z13/2	106021	1/60
16	415	10	480Y/277	5	FAZ-Z16/2	278825	1/60
20	415	10	480Y/277	5	FAZ-Z20/2	278826	1/60
25	415	10	480Y/277	5	FAZ-Z25/2	278827	1/60
32	415	10	480Y/277	5	FAZ-Z32/2	278828	1/60
40	415	10	480Y/277	5	FAZ-Z40/2	278829	1/60
50	415	10	480Y/277	5	FAZ-Z50/2	278830	1/60
63	415	10	480Y/277	5	FAZ-Z63/2	278831	1/60

SG53412

3-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL1077 (V)	Breaking capacity acc. to UL1077 (kA)	Type Designation	Article No.	Units per package
0.5	415	10	480Y/277	5	FAZ-Z0,5/3	278918	1/40
1	415	10	480Y/277	5	FAZ-Z1/3	278919	1/40
1.6	415	10	480Y/277	5	FAZ-Z1,6/3	278920	1/40
2	415	10	480Y/277	5	FAZ-Z2/3	278921	1/40
3	415	10	480Y/277	5	FAZ-Z3/3	278922	1/40
4	415	10	480Y/277	5	FAZ-Z4/3	278923	1/40
6	415	10	480Y/277	5	FAZ-Z6/3	278924	1/40
8	415	10	480Y/277	5	FAZ-Z8/3	278925	1/40
10	415	10	480Y/277	5	FAZ-Z10/3	278926	1/40
13	415	10	480Y/277	5	FAZ-Z13/3	106022	1/40
16	415	10	480Y/277	5	FAZ-Z16/3	278927	1/40
20	415	10	480Y/277	5	FAZ-Z20/3	278928	1/40
25	415	10	480Y/277	5	FAZ-Z25/3	278929	1/40
32	415	10	480Y/277	5	FAZ-Z32/3	278930	1/40
40	415	10	480Y/277	5	FAZ-Z40/3	278931	1/40
50	415	10	480Y/277	5	FAZ-Z50/3	278932	1/40
63	415	10	480Y/277	5	FAZ-Z63/3	278933	1/40

SG55812

4-poles

0.5	415	10	480Y/277	5	FAZ-Z0,5/4	279106	1/60
1	415	10	480Y/277	5	FAZ-Z1/4	279107	1/60
1.6	415	10	480Y/277	5	FAZ-Z1,6/4	279108	1/60
2	415	10	480Y/277	5	FAZ-Z2/4	279109	1/60
3	415	10	480Y/277	5	FAZ-Z3/4	279110	1/60
4	415	10	480Y/277	5	FAZ-Z4/4	279111	1/60
6	415	10	480Y/277	5	FAZ-Z6/4	279112	1/60
8	415	10	480Y/277	5	FAZ-Z8/4	279113	1/60
10	415	10	480Y/277	5	FAZ-Z10/4	279114	1/60
13	415	10	480Y/277	5	FAZ-Z13/4	106023	1/60
16	415	10	480Y/277	5	FAZ-Z16/4	279115	1/60
20	415	10	480Y/277	5	FAZ-Z20/4	279116	1/60
25	415	10	480Y/277	5	FAZ-Z25/4	279117	1/60
32	415	10	480Y/277	5	FAZ-Z32/4	279118	1/60
40	415	10	480Y/277	5	FAZ-Z40/4	279119	1/60
50	415	10	480Y/277	5	FAZ-Z50/4	279120	1/60
63	415	10	480Y/277	5	FAZ-Z63/4	279121	1/60

Characteristic B

SG54212

1+N-poles (1MU)

Rated current I_n (A)	Rated voltage (V)	Breaking capacity acc. to IEC/EN 60898-1 (kA)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Type Designation	Article No.	Units per package
6	240	6	10	FAZ-PN-B6/1N	279146	12/120
10	240	6	10	FAZ-PN-B10/1N	279147	12/120
13	240	6	10	FAZ-PN-B13/1N	279148	12/120
16	240	6	10	FAZ-PN-B16/1N	279149	12/120
20	240	6	10	FAZ-PN-B20/1N	279150	12/120
25	240	6	10	FAZ-PN-B25/1N	279151	12/120
32	240	6	10	FAZ-PN-B32/1N	279152	12/120
40	240	6	10	FAZ-PN-B40/1N	279153	12/120

Characteristic C

SG54212

1+N-poles (1MU)

Rated current I_n (A)	Rated voltage (V)	Breaking capacity acc. to IEC/EN 60898-1 (kA)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Type Designation	Article No.	Units per package
2	240	6	10	FAZ-PN-C2/1N	279154	12/120
4	240	6	10	FAZ-PN-C4/1N	279155	12/120
6	240	6	10	FAZ-PN-C6/1N	279156	12/120
10	240	6	10	FAZ-PN-C10/1N	279157	12/120
13	240	6	10	FAZ-PN-C13/1N	279158	12/120
16	240	6	10	FAZ-PN-C16/1N	279159	12/120
20	240	6	10	FAZ-PN-C20/1N	279160	12/120
25	240	6	10	FAZ-PN-C25/1N	279161	12/120
32	240	6	10	FAZ-PN-C32/1N	279162	12/120
40	240	6	10	FAZ-PN-C40/1N	279163	12/120

Characteristic B

wa_sg00114

1-pole

Rated current I_n (A)	Rated voltage (V)	Breaking capacity acc. to IEC/EN 60898-1 (kA)	Type Designation	Article No.	Units per package
4	240	10	FAZ-B4/1-HS	279274	12/120

SG55512

2-poles

4	240	10	FAZ-B4/2-HS	279275	1/60

Miniature Circuit Breakers FAZ

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	258288, 248289, 248290
	Z-USD	248292, 248291
Switching interlock	Z-IS/SPE-1TE	274418
Terminal cover		
1-pole	Z-TC/MCB-1P	178102
2-poles	Z-TC/SD-2P	178099
3-poles	Z-TC/SD-3P	178100
4-poles	Z-TC/SD-4P	178101

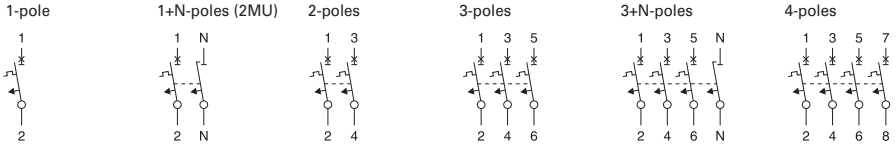
Technical Data

Electrical	B Characteristic		C Characteristic		D Characteristic
Approvals	UR (UL 1077), CSA (CSA 22.2 No. 235), CE, VDE				
Standards	IEC/EN 60947-2				
Short-circuit trip response	3–5 I_n		5–10 I_n		10–20 I_n
Supplementary Protectors - UL/CSA					
Current range	1–63 A		0.16–63 A		0.5–40 A
Maximum voltage ratings - UL/CSA					
Single-pole, single-pole + neutral	277 V AC		277 V AC		277 V AC
	48 V DC		48 V DC		48 V DC
Two-, three-, four-pole and three-pole + neutral	480Y/277 V AC		480Y/277 V AC		480Y/277 V AC
Two poles in series	96 V DC		96 V DC		96 V DC
Thermal tripping characteristics					
Single-pole	< 1 hour @ 1.35 x In @ 40°C		< 1 hour @ 1.35 x In @ 40°C		< 1 hour @ 1.35 x In @ 40°C
Multi-pole	< 1 hour @ 1.45 x In @ 40°C		< 1 hour @ 1.45 x In @ 40°C		< 1 hour @ 1.45 x In @ 40°C
Short-circuit ratings (at max. voltage)					
Single-pole	10 kA (5 kA for 40–63A device)		10 kA (5 kA for 40–63A device)		5 kA
Two-, three-pole	10 kA (5 kA for 40–63A device)		10 kA (5 kA for 40–63A device)		5 kA
Single-pole	10 kA @ 48 V DC		10 kA @ 48 V DC		10 kA @ 48 V DC
Two poles in series	10 kA @ 96 V DC		10 kA @ 96 V DC		10 kA @ 96 V DC
Miniature Circuit Breaker - IEC					
Current range	1–40 A	50–63 A	0.16–40 A	50–63 A	0.5–63 A
Maximum voltage ratings - IEC 60947-2					
Single-pole, single-pole + neutral	254 V AC	230 V AC	254 V AC	230 V AC	230 V AC
	60 V DC	60 V DC	60 V DC	60 V DC	60 V DC
Two-, three-, four-pole and three-pole + neutral	440 V AC	400 V AC	440 V AC	400 V AC	400 V AC
Maximum voltage ratings - IEC 60898					
Single-pole, single-pole + neutral	240 V AC	240 V AC	240 V AC	240 V AC	240 V AC
Two-, three-, four-pole and three-pole + neutral	415 V AC	415 V AC	415 V AC	415 V AC	415 V AC
Thermal tripping characteristics - IEC 60947-2					
	> 1 hour @ 1.05 x In @ 40°C		> 1 hour @ 1.05 x In @ 40°C		> 1 hour @ 1.05 x In @ 40°C
	< 1 hour @ 1.3 x In @ 40°C		< 1 hour @ 1.3 x In @ 40°C		< 1 hour @ 1.3 x In @ 40°C
Interrupt ratings (at max. voltage)					
IEC 60947-2	10 kA	15 kA	10 kA	15 kA	15 kA (type D50 and D63: 10k A)
IEC 60898	10 kA	10 kA	10 kA	10 kA	10 kA (type D50 and D63: not testet)
Operational switching capacity	7.5 kA	7.5 kA	7.5 kA	7.5 kA	7.5 kA (type D50 and D63: 6 kA)
Max. back-up fuse [gL/gG]	125 A	125 A	125 A	125 A	125 A
Rated impulse withstand voltage - U_{imp}	4000 V AC	4000 V AC	4000 V AC	4000 V AC	4000 V AC
Rated insulation voltage - U_i	440 V AC	440 V AC	440 V AC	440 V AC	440 V AC
Environmental / General					
Selectivity class	3		3		3
Endurance (operations)	>10000 (1 operation = ON/OFF)		>10000 (1 operation = ON/OFF)		>10000 (1 operation = ON/OFF)
Shock (IEC 68-2-22)	10 g / 120 ms		10 g / 120 ms		10 g / 120 ms
Operating temperature range	-40 up to +75°C		-40 up to +75°C		-40 up to +75°C
Mechanical					
Device height	80 mm		80 mm		80 mm
Terminal protection	Finger and back-of-hand proof		Finger and back-of-hand proof		Finger and back-of-hand proof
Mounting width per pole	17.5 mm		17.5 mm		17.5 mm
Mounting	IEC/EN 60715 top-hat rail		IEC/EN 60715 top-hat rail		IEC/EN 60715 top-hat rail
Degree of protection	IP20		IP20		IP20
Terminals top and bottom	Twin-purpose terminals		Twin-purpose terminals		Twin-purpose terminals
Supply connection	Line or load side		Line or load side		Line or load side
Terminal capacity [mm^2]	1 x 25 / 2 x 10		1 x 25 / 2 x 10		1 x 25 / 2 x 10
Torque of terminals	2.4 Nm		2.4 Nm		2.4 Nm
Thickness of busbar material	0.8 - 2 mm		0.8 - 2 mm		0.8 - 2 mm
Mounting position	As required		As required		As required

Technical Data

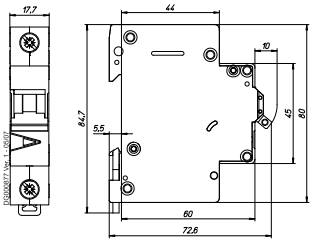
Electrical	K Characteristic	S Characteristic	Z Characteristic
Approvals	UR (UL 1077), CE	UR (UL 1077), CSA (CSA 22.2 No. 235) for 1-16 A, CE	UR (UL 1077), CE
Standards	IEC/EN 60947-2		
Short-circuit trip response	8–12 I_n	13–17 I_n	2–3 I_n
Supplementary Protectors - UL/CSA			
Current range	1–63 A	0.5–63 A	0.5–40 A
Maximum voltage ratings - UL/CSA			
Single-pole, single-pole + neutral	277 V AC	277 V AC	277 V AC
	48 V DC	48 V DC	48 V DC
Two-, three-, four-pole and three-pole + neutral	480Y/277 V AC	480Y/277 V AC	480Y/277 V AC
Two poles in series	96 V DC	96 V DC	96 V DC
Thermal tripping characteristics			
Single-pole	< 1 hour @ 1.35 x In @ 40°C	< 1 hour @ 1.35 x In @ 40°C	< 1 hour @ 1.35 x In @ 40°C
Multi-pole	< 1 hour @ 1.45 x In @ 40°C	< 1 hour @ 1.45 x In @ 40°C	< 1 hour @ 1.45 x In @ 40°C
Short-circuit ratings (at max. voltage)			
Single-pole	5 kA @ 277 V AC	5 kA @ 277 V AC	5 kA @ 277 V AC
Single-pole + neutral	5 kA @ 277 V AC	5 kA @ 277 V AC	5 kA @ 277 V AC
Two-, three-, four-pole	5 kA @ 480Y/277 V AC	5 kA @ 480Y/277 V AC	5 kA @ 480Y/277 V AC
Miniature Circuit Breaker - IEC			
Current range	0.5–63 A	0.5–40 A	1–63 A
Maximum voltage ratings - IEC 60947-2			
Single-pole, single-pole + neutral	240 V AC	240 V AC	240 V AC
Single-pole	60 V DC	60 V DC	60 V DC
Two-, three-, four-pole and three-pole + neutral	415 V AC	415 V AC	415 V AC
Thermal tripping characteristics			
	> 1 hour @ 1.05 x In @ 40°C	> 1 hour @ 1.05 x In @ 40°C	> 1 hour @ 1.05 x In @ 40°C
	< 1 hour @ 1.3 x In @ 40°C	< 1 hour @ 1.3 x In @ 40°C	< 1 hour @ 1.3 x In @ 40°C
Interrupt ratings (at max. voltage)			
IEC 60947-2	10 kA	10 kA	10 kA
Operational switching capacity	7.5 kA	7.5 kA	7.5 kA
Max. back-up fuse [gL/gG]	125 A	125 A	125 A
Rated impulse withstand voltage - U_{imp}	4000 V AC	4000 V AC	4000 V AC
Rated insulation voltage - U_i	440 V AC	440 V AC	440 V AC
Environmental / General			
Selectivity class	3	3	3
Endurance (operations)	>10000 (1 operation = ON/OFF)	>10000 (1 operation = ON/OFF)	>10000 (1 operation = ON/OFF)
Shock (IEC 68-2-22)	10 g / 120 ms	10 g / 120 ms	10 g / 120 ms
Operating temperature range	-40 up to +75°C	-40 up to +75°C	-40 up to +75°C
Mechanical			
Device height	80 mm	80 mm	80 mm
Terminal protection	Finger and back-of-hand proof	Finger and back-of-hand proof	Finger and back-of-hand proof
Mounting width per pole	17.5 mm	17.5 mm	17.5 mm
Mounting	IEC/EN 60715 top-hat rail	IEC/EN 60715 top-hat rail	IEC/EN 60715 top-hat rail
Degree of protection	IP20	IP20	IP20
Terminals top and bottom	Twin-purpose terminals	Twin-purpose terminals	Twin-purpose terminals
Supply connection	Line or load side	Line or load side	Line or load side
Terminal capacity [mm^2]	1 x 25 / 2 x 10	1 x 25 / 2 x 10	1 x 25 / 2 x 10
Torque of terminals	2.4 Nm	2.4 Nm	2.4 Nm
Thickness of busbar material	0.8 - 2 mm	0.8 - 2 mm	0.8 - 2 mm
Mounting position	As required	As required	As required

Connection diagram

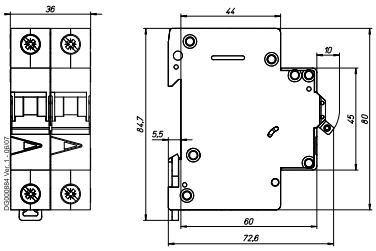


Dimensions (mm) FAZ

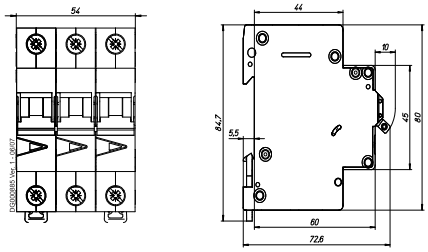
1-pole



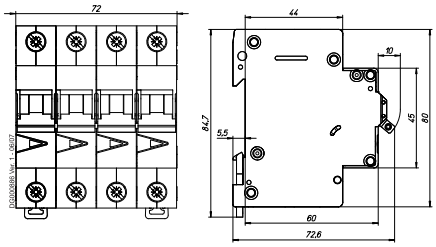
1+N-poles, 2-poles



3-poles

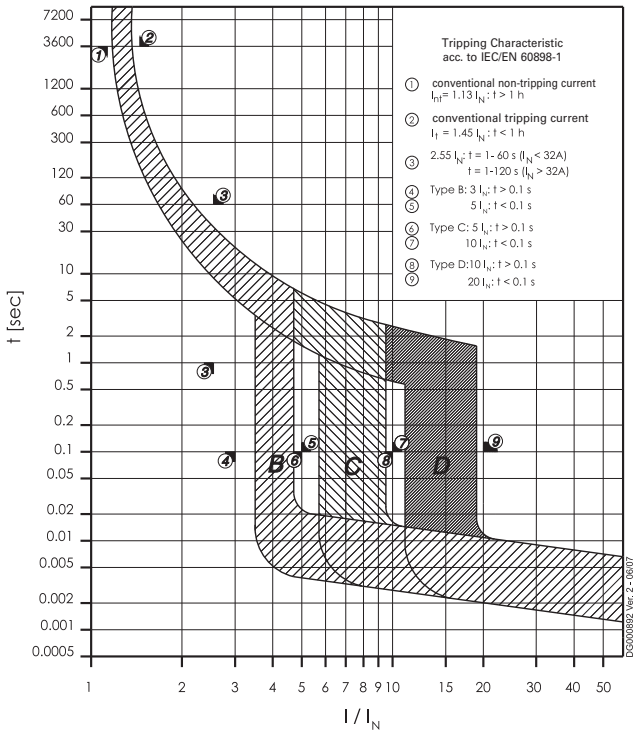


3+N-poles, 4-poles

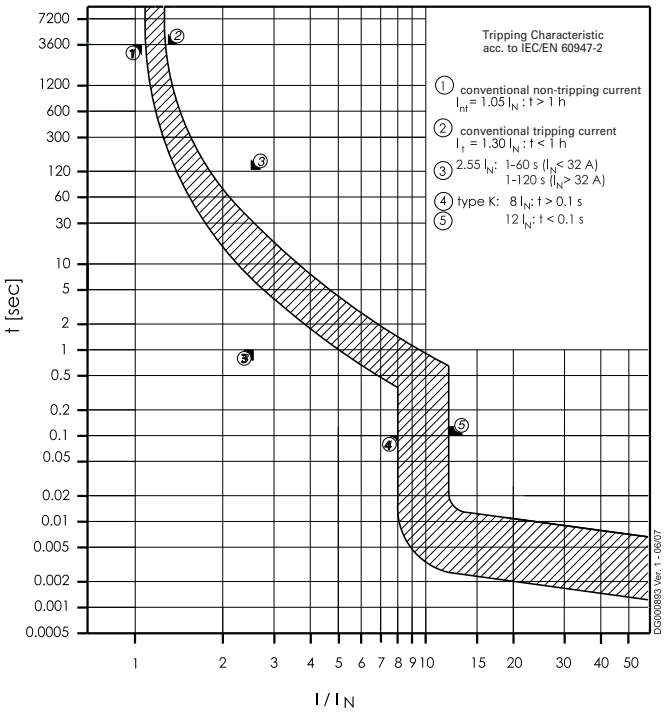


Tripping Characteristics FAZ

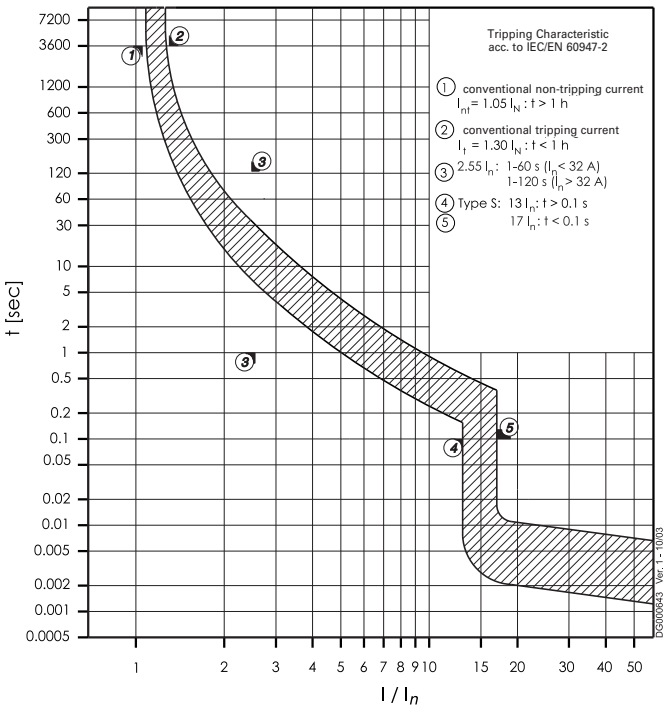
Characteristics B, C and D - IEC/EN60898-1



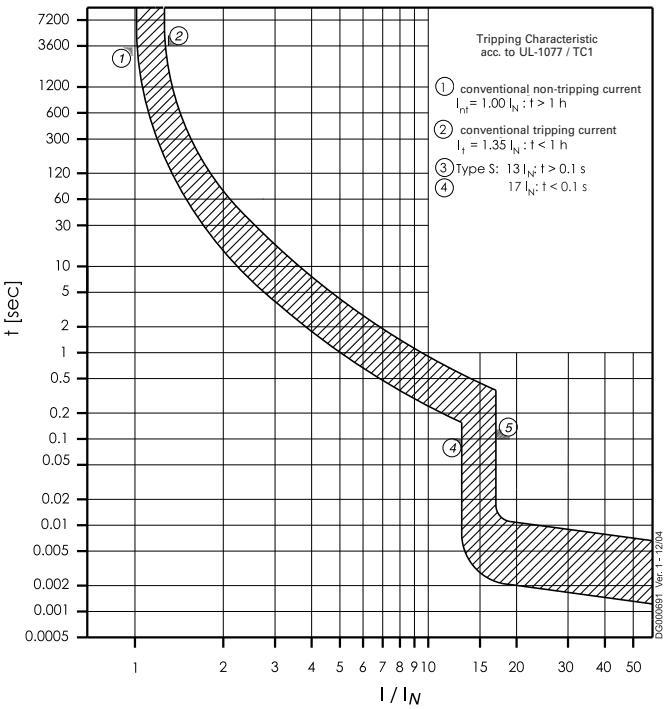
Characteristic K - IEC/EN 60947-2



Characteristic S - IEC/EN 60947-2

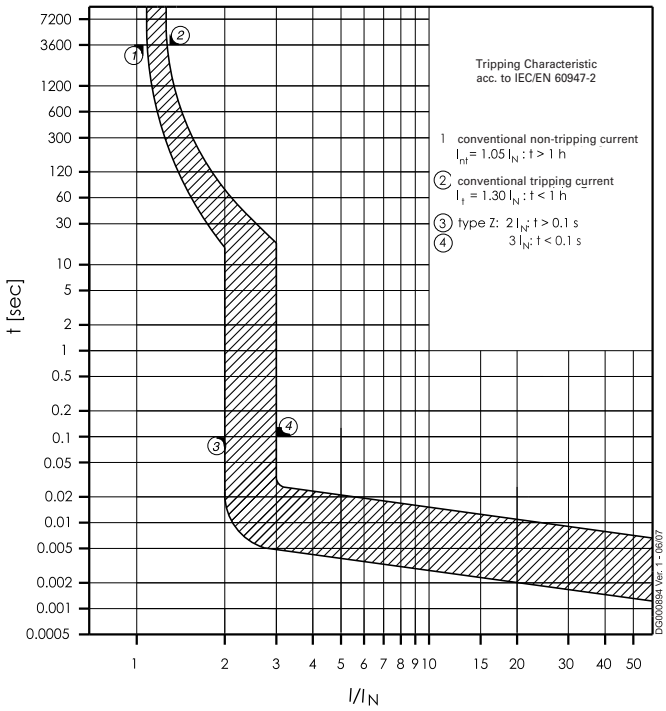


Characteristic S - UL1077

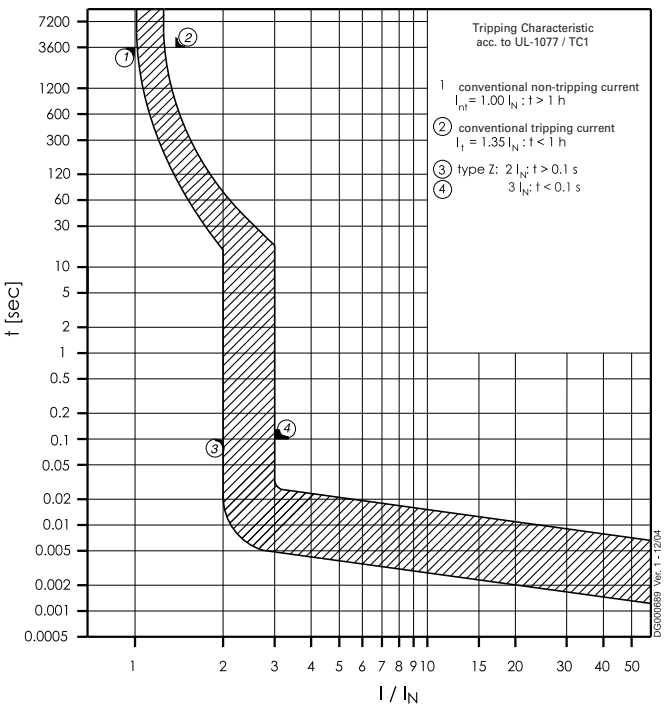


Tripping Characteristics FAZ

Characteristic Z - IEC/EN 60947-2



Characteristic Z - UL1077



Internal Resistance FAZ

Type B

At room temperature (single pole)

I_n [A]	Z* [mΩ]	R* [mΩ]
1	1120	1102
1.5	922	912
1.6	922	912
2	335	333
2.5	234	230
3	211	208
3.5	184	180
4	87.7	87.2
5	73.5	72.8
6	46.8	46.3
8	30.5	30.4
10	17.5	17.4
12	16.9	16.8
13	13.4	13.3
15	8.0	7.9
16	8.0	7.9
20	7.2	7.1
25	5.0	4.9
32	3.7	3.7
40	2.6	2.5
50	2.1	2.1
63	2.0	2.0

* 50 Hz

Type C

At room temperature (single pole)

I_n [A]	Z* [mΩ]	R* [mΩ]
0.16	68500	68300
0.25	27500	27400
0.5	4680	4670
0.75	2280	2250
1	1120	1100
1.5	589	587
1.6	589	587
2	335	333
2.5	234	230
3	131	130
3.5	143	141
4	87.7	87.2
5	73.5	72.8
6	39.3	39.1
8	30.5	30.4
10	14.1	14.0
12	13.5	13.4
13	13.4	13.3
15	8.0	7.9
16	8.0	7.9
20	7.2	7.1
25	5.0	4.9
32	3.7	3.7
40	2.6	2.5
50	2.1	2.1
63	2.0	2.0

* 50 Hz

Type D

At room temperature (single pole)

I_n [A]	Z* [mΩ]	R* [mΩ]
0.5	4680	4670
1	772	770
1.5	512	508
1.6	512	508
2	250	249
2.5	153	153
3	131	130
3.5	143	141
4	87.7	87.2
5	65.4	65.1
6	39.3	39.1
8	19.5	19.5
10	14.1	14.0
12	11.3	11.2
13	10.1	10.1
15	8.0	7.9
16	8.0	7.9
20	4.9	4.9
25	3.9	3.8
32	3.5	3.4
40	2.7	2.6

* 50 Hz

Fault Loop Impedance FAZ

Max. allowed value for the Fault Loop Impedance Z_S
(acc. to DIN VDE 0100. Teil 410)

U_0 = 230 V

	Type B		Type C		Type D	
Tripping time	0.4s	5s	0.4s	5s	0.4s	5s
I_n [A]	Zs* [mΩ]	R* [mΩ]	Zs* [mΩ]	R* [mΩ]	Zs* [mΩ]	R* [mΩ]
1	40.4	40.4	24.3	40.4	12.4	40.4
1.5	26.9	26.9	16.2	26.9	8.3	26.9
2	20.2	20.2	12.2	20.2	6.2	20.2
2.5	16.1	16.1	9.7	16.1	5.0	16.1
3	13.5	13.5	8.1	13.5	4.1	13.5
3.5	11.5	11.5	7.0	11.5	3.6	11.5
4	10.1	10.1	6.1	10.1	3.1	10.1
5	8.1	8.1	4.9	8.1	2.5	8.1
6	6.7	6.7	4.1	6.7	2.1	6.7
8	5.0	5.0	3.0	5.0	1.6	5.0
10	4.0	4.0	2.4	4.0	1.2	4.0
12	3.4	3.4	2.0	3.4	1.0	3.4
13	3.1	3.1	1.9	3.1	1.0	3.1
15	2.7	2.7	1.6	2.7	0.8	2.7
16	2.5	2.5	1.5	2.5	0.8	2.5
20	2.0	2.0	1.2	2.0	0.6	2.0
25	1.6	1.6	1.0	1.6	0.5	1.6
32	1.3	1.3	0.8	1.3	0.4	1.3
40	1.0	1.0	0.6	1.0	0.3	1.0
50	0.8	0.8	0.5	0.8	0.2	0.8
63	0.6	0.6	0.4	0.6	0.2	0.6

$Z_s = R_{M.C.B.} + R_{Loop}$
Data/factors taken from the time-current characteristic FAZ

For other rated voltages U_0:
U_0 = 240 V: Z_s * 1.04
U_0 = 127 V: Z_s * 0.55

Power Loss at I_n FAZ

Type B

I_n [A]	1p P [W]	1pN P [W]	2p P [W]	3p P [W]	3pN* P [W]
1	1.6	1.7	3.1	4.7	4.8
1.5	2.3	2.5	4.6	6.9	7.2
1.6	2.5	2.7	4.9	7.4	7.6
2	1.4	1.5	2.8	4.1	4.3
2.5	1.5	1.7	3.1	4.6	4.7
3	2.5	2.7	5.0	7.6	7.8
3.5	2.5	2.8	5.1	7.8	8.0
4	1.4	1.6	2.9	4.4	4.5
5	1.9	2.1	3.8	5.8	6.0
6	1.8	2.0	3.6	5.5	5.6
8	2.1	2.3	4.1	6.3	6.5
10	1.9	2.1	3.9	5.9	6.1
12	2.8	3.2	5.9	8.7	9.0
13	2.5	2.9	5.3	7.8	8.1
15	2.1	2.4	4.4	6.5	6.7
16	2.2	2.6	4.7	6.9	7.2
20	3.2	3.6	6.6	9.8	10.1
25	3.0	3.5	6.4	9.4	9.7
32	3.7	4.4	8.1	12.1	12.5
40	3.4	4.1	7.5	11.2	11.5
50	4.5	5.4	9.9	14.9	15.3
63	5.2	6.3	11.5	17.2	17.7

* symmetrical load

Type C

I_n [A]	1p P [W]	1pN P [W]	2p P [W]	3p P [W]	3pN* P [W]
0.16	2.2	2.4	4.4	6.7	6.9
0.25	2.0	2.2	4.0	6.1	6.3
0.5	1.2	1.3	2.4	3.5	3.7
0.75	1.3	1.4	2.6	3.9	4.1
1	1.6	1.7	3.1	4.7	4.8
1.5	1.5	1.6	2.9	4.4	4.6
1.6	1.6	1.7	3.1	4.7	4.9
2	1.4	1.5	2.8	4.1	4.3
2.5	1.5	1.7	3.1	4.6	4.7
3	1.2	1.3	2.4	3.6	3.7
3.5	1.3	1.4	2.6	3.9	4.0
4	1.4	1.6	2.9	4.4	4.5
5	1.9	2.1	3.8	5.8	6.0
6	1.5	1.6	2.9	4.4	4.6
8	2.1	2.3	4.1	6.3	6.5
10	1.5	1.7	3.0	4.6	4.7
12	2.1	2.4	4.4	6.5	6.8
13	2.5	2.9	5.3	7.8	8.1
15	2.1	2.4	4.4	6.5	6.7
16	2.2	2.6	4.7	6.9	7.2
20	3.2	3.6	6.6	9.8	10.1
25	3.0	3.5	6.4	9.4	9.7
32	3.7	4.4	8.1	12.1	12.5
40	3.4	4.1	7.5	11.2	11.5
50	4.5	5.4	9.9	14.9	15.3
63	5.2	6.3	11.5	17.2	17.7

* symmetrical load

Type D

I_n [A]	1p P [W]	1pN P [W]	2p P [W]	3p P [W]	3pN* P [W]
0.5	1.2	1.3	2.4	3.5	3.7
1	0.8	0.9	1.6	2.4	2.5
1.5	1.2	1.3	2.3	3.5	3.6
1.6	1.3	1.4	2.5	3.8	3.9
2	1.0	1.1	2.0	3.0	3.1
2.5	1.0	1.1	1.9	2.9	3.0
3	1.2	1.3	2.4	3.6	3.7
3.5	1.3	1.4	2.6	3.9	4.0
4	1.4	1.6	2.9	4.4	4.5
5	1.7	1.8	3.3	5.1	5.3
6	1.5	1.6	2.9	4.4	4.6
8	1.3	1.5	2.6	4.0	4.2
10	1.5	1.7	3.0	4.6	4.7
12	1.7	2.0	3.6	5.3	5.4
13	1.9	2.2	4.0	5.9	6.1
15	2.1	2.4	4.4	6.5	6.7
16	2.2	2.6	4.7	6.9	7.2
20	2.0	2.2	4.1	6.1	6.2
25	2.5	2.9	5.2	7.7	7.9
32	3.4	4.0	7.4	11.1	11.4
40	3.2	3.8	7.0	10.4	10.7

* symmetrical load

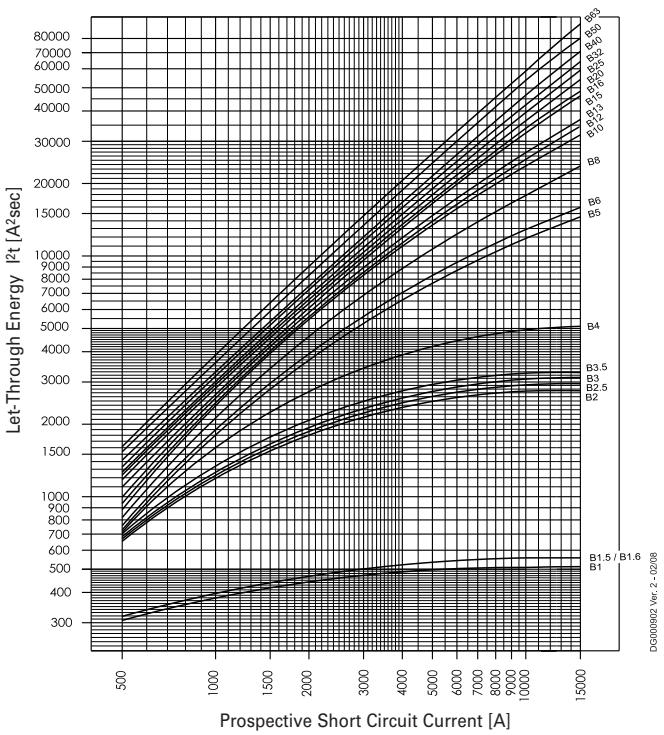
Influence of Ambient Temperature FAZ

On Load Carrying Capacity (temperature derating)

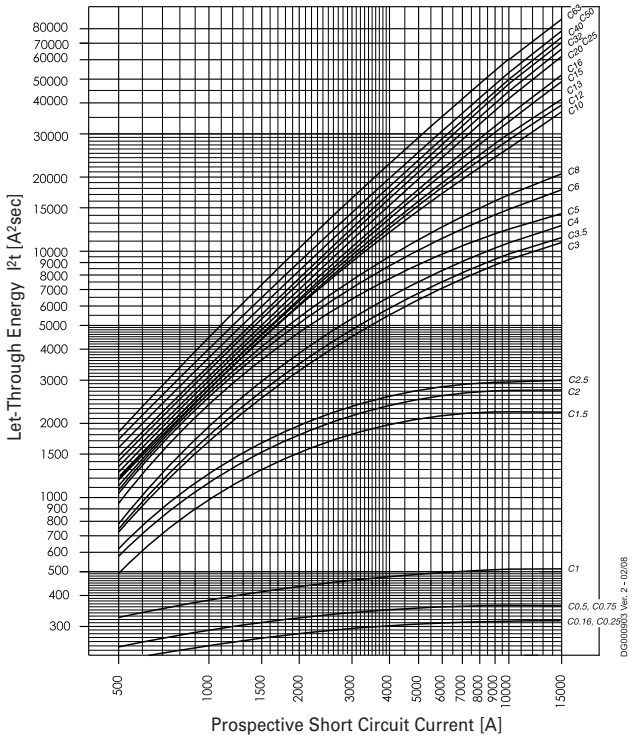
	Ambient temperature T [°C]																
	-40	-30	-20	-10	0	10	20	30	35	40	45	50	55	60	65	70	75
I_n [A]																	
0.16	0.2	0.2	0.19	0.19	0.18	0.17	0.17	0.16	0.16	0.15	0.15	0.15	0.14	0.14	0.14	0.14	0.13
0.25	0.32	0.31	0.3	0.29	0.28	0.27	0.26	0.25	0.25	0.24	0.24	0.23	0.23	0.22	0.22	0.21	0.21
0.5	0.64	0.62	0.6	0.58	0.56	0.54	0.52	0.5	0.49	0.48	0.47	0.46	0.45	0.44	0.43	0.42	0.41
0.75	0.96	0.93	0.9	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	1.3	1.2	1.2	1.2	1.1	1.1	1	1	0.99	0.97	0.95	0.93	0.9	0.89	0.87	0.85	0.83
1.5	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	1.3	1.3	1.3	1.2
1.6	2	2	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	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2	2	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7
2.5	3.2	3.1	3	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	3.8	3.7	3.6	3.5	3.4	3.3	3.1	3	3	2.9	2.8	2.8	2.7	2.7	2.6	2.5	2.5
3.5	4.5	4.4	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	3	2.9
4	5.1	5	4.8	4.7	4.5	4.3	4.2	4	3.9	3.9	3.8	3.7	3.6	3.5	3.5	3.4	3.3
5	6.4	6.2	6	5.8	5.6	5.4	5.2	5	4.9	4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.1
6	7.7	7.5	7.2	7	6.7	6.5	6.3	6	5.9	5.8	5.7	5.6	5.4	5.3	5.2	5.1	5
8	10.2	9.9	9.6	9.3	9	8.7	8.4	8	7.9	7.7	7.6	7.4	7.2	7.1	6.9	6.8	6.6
10	13	12	12	12	11	11	10	10	9.9	9.7	9.5	9.3	9	8.9	8.7	8.5	8.3
12	15	15	14	14	13	13	13	12	12	12	11	11	11	11	10	10	10
13	17	16	16	15	15	14	14	13	13	13	12	12	12	12	11	11	11
15	19	19	18	17	17	16	16	15	15	15	14	14	14	13	13	13	12
16	20	20	19	19	18	17	17	16	16	15	15	15	14	14	14	14	13
20	26	25	24	23	22	22	21	20	20	19	19	19	18	18	17	17	17
25	32	31	30	29	28	27	26	25	25	24	24	23	23	22	22	21	21
32	41	40	38	37	36	35	33	32	32	31	30	30	29	28	28	27	26
40	51	50	48	47	45	43	42	40	39	39	38	37	36	35	35	34	33
50	64	62	60	58	56	54	52	50	49	48	47	46	45	44	43	42	41
63	81	78	76	73	71	68	66	63	62	61	60	58	57	56	55	53	52

Maximum Let-Through Energy FAZ

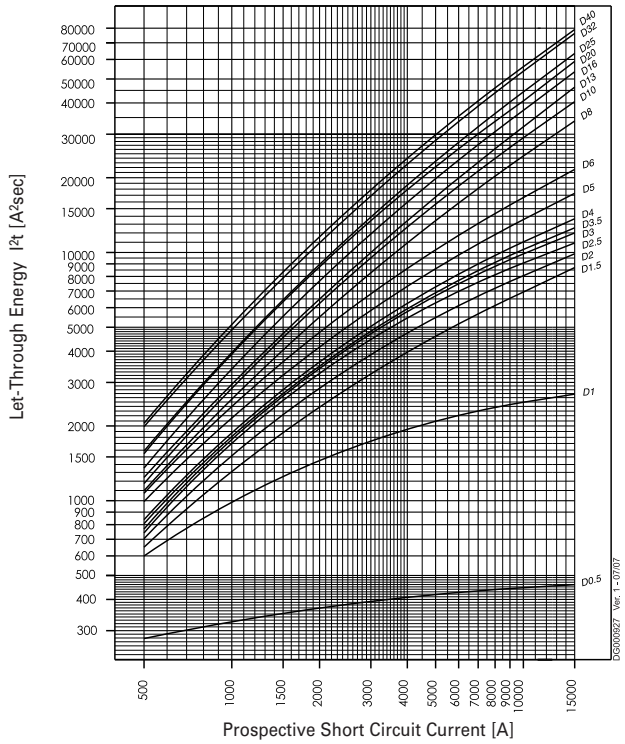
Type B (IEC/EN60947-2)



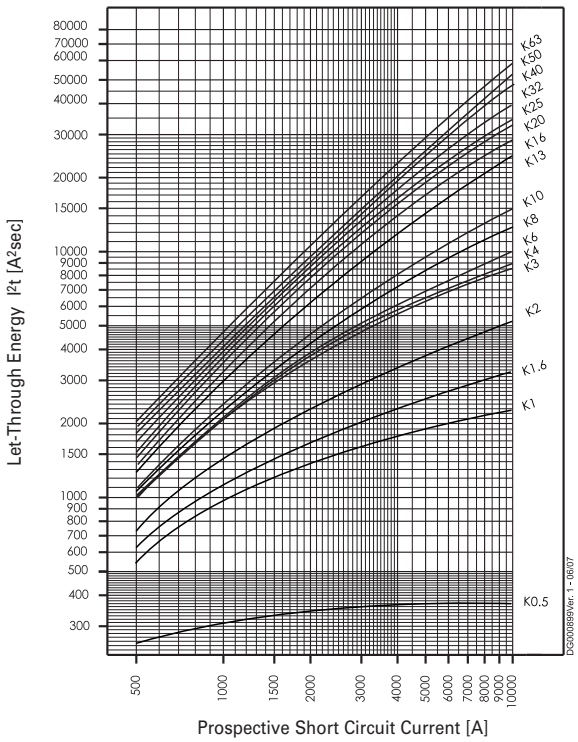
Type C (IEC/EN60947-2)



Type D (IEC/EN60947-2)

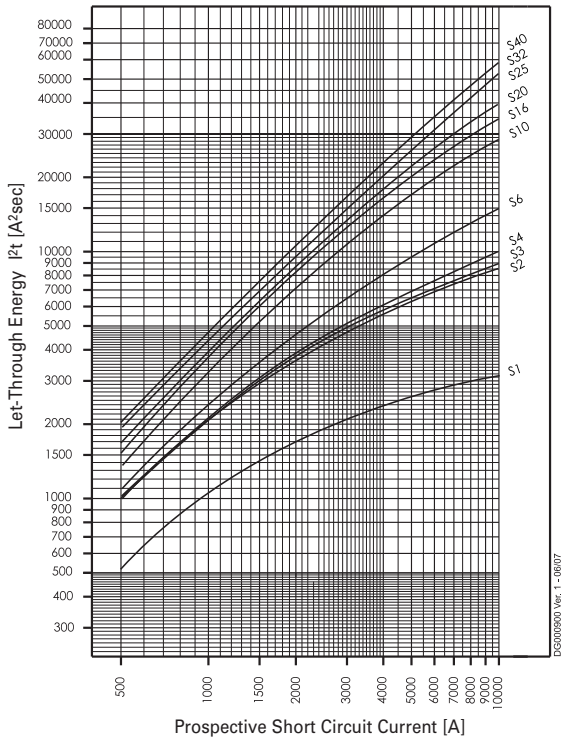


Type K

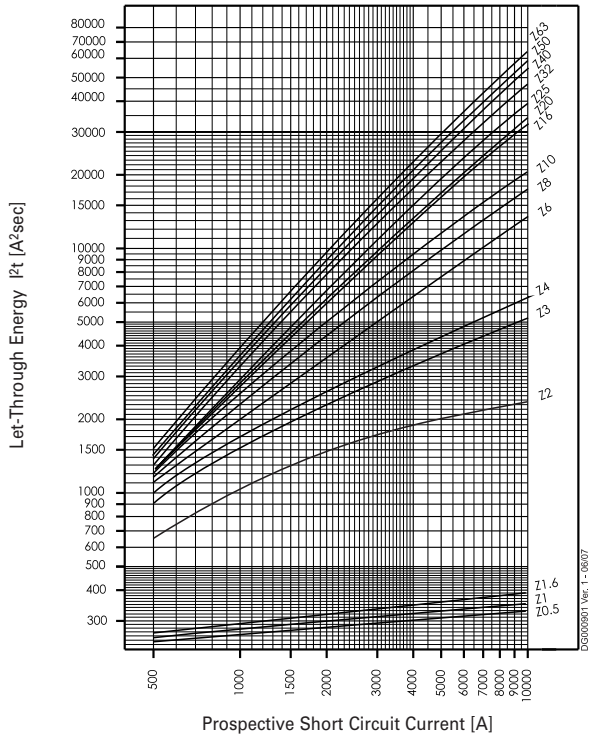


Maximum Let-Through Energy FAZ

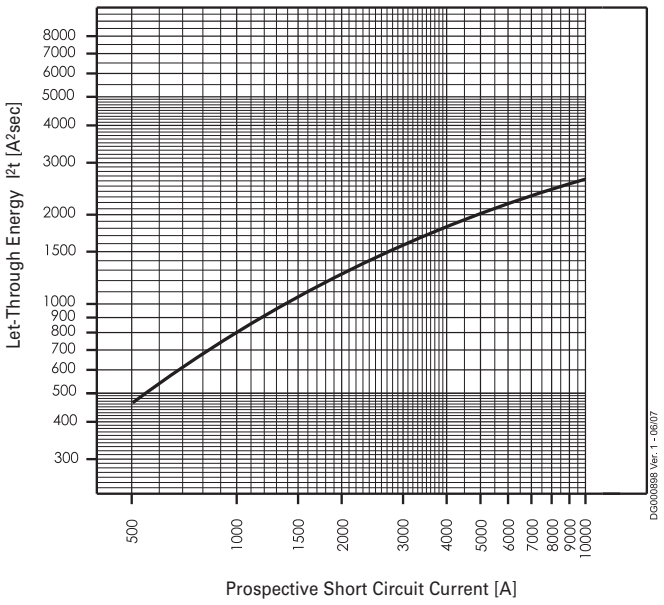
Type S



Type Z

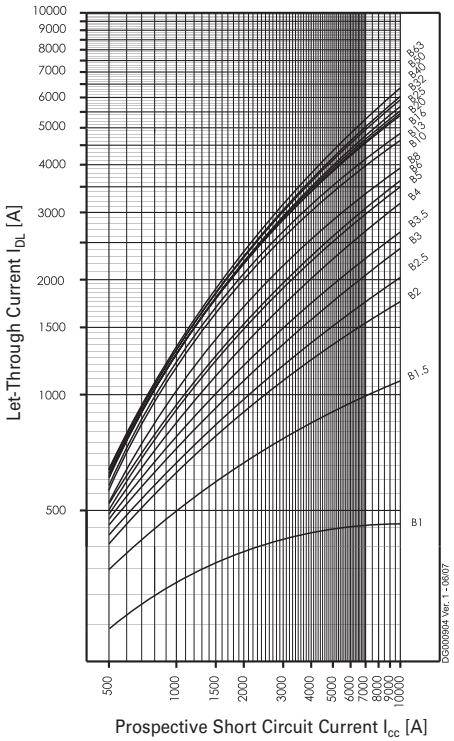


Type FAZ-...-HS

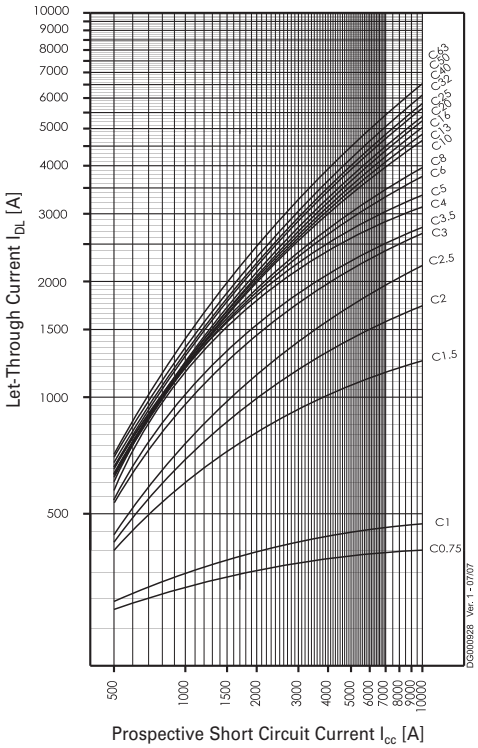


Maximum Let-Through Current FAZ

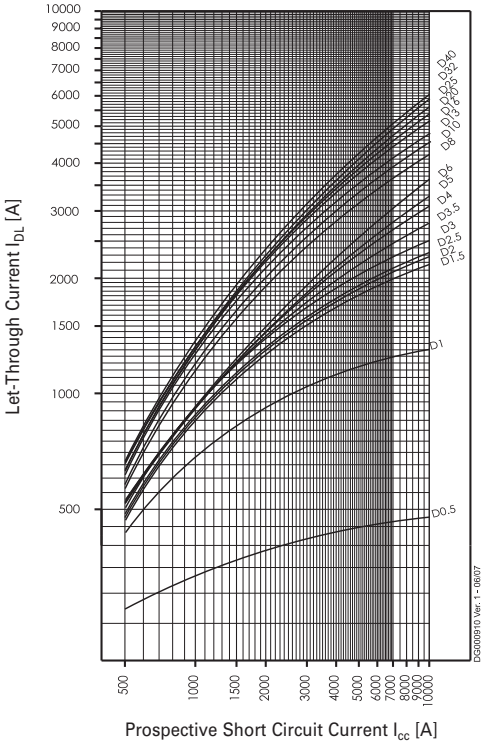
Type B (IEC/EN60898)



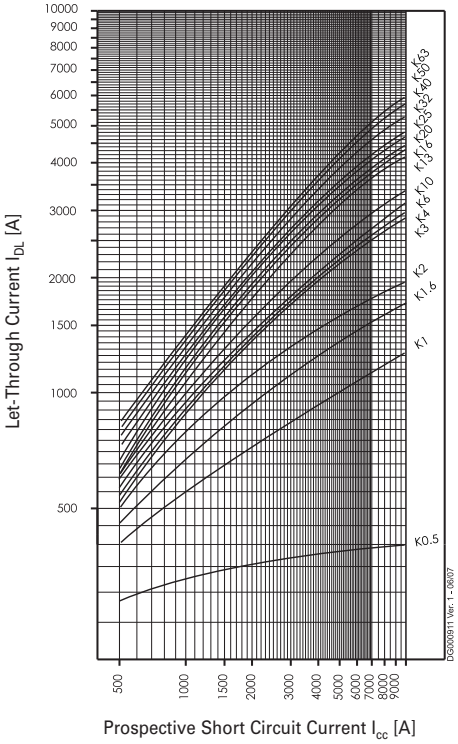
Type C (IEC/EN60898)



Type D (IEC/EN60898)

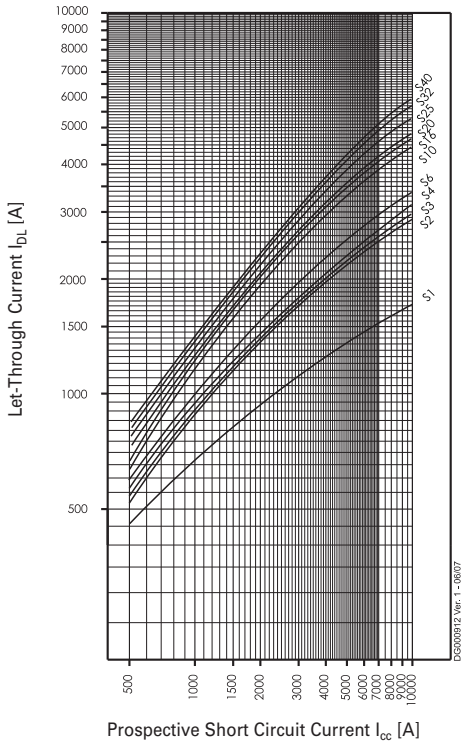


Type K

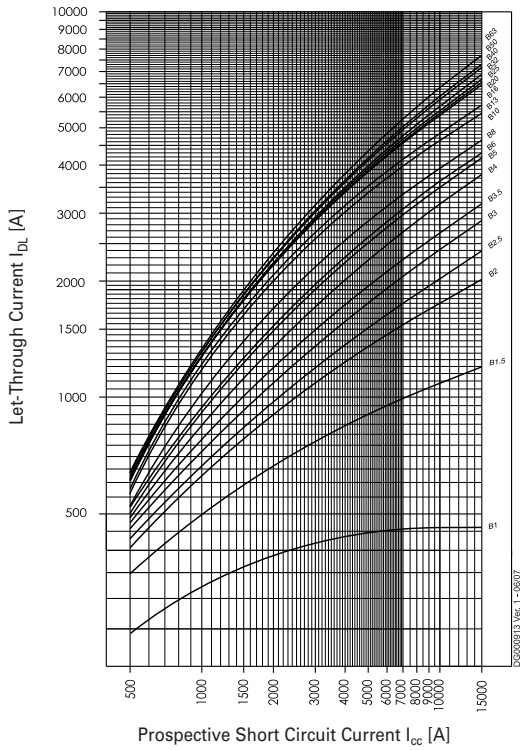


Maximum Let-Through Current FAZ

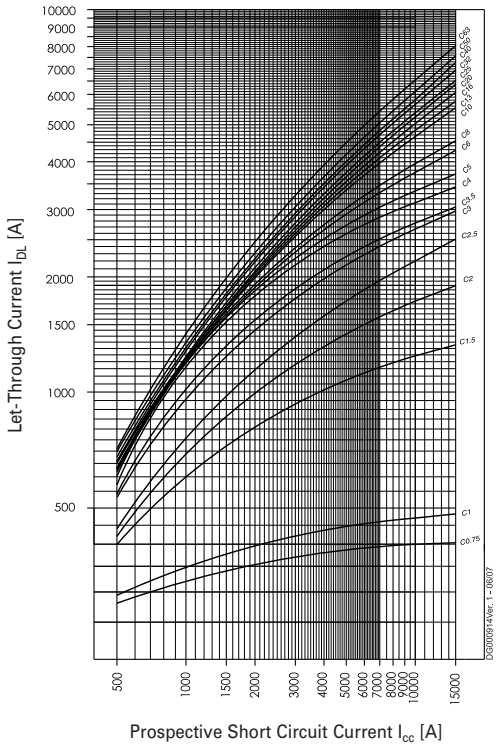
Type S



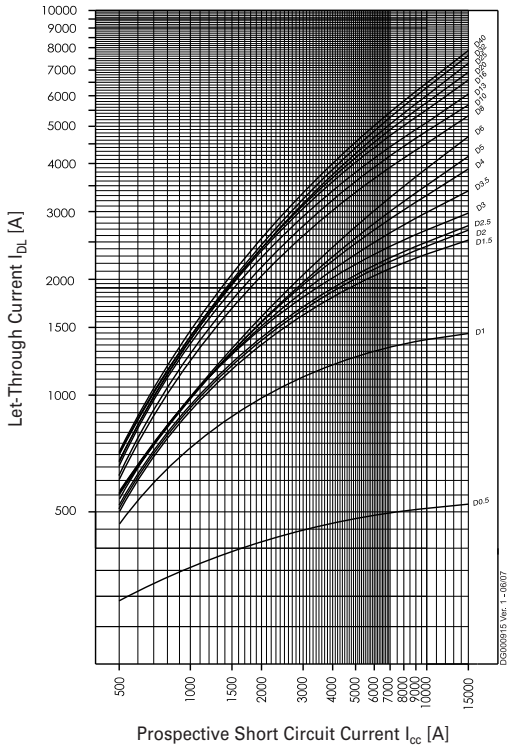
Type B (IEC/EN60947-2)



Type C (IEC/EN60947-2)



Type D (IEC/EN60947-2)



Short Circuit Selectivity FAZ

In case of short circuit, there is selectivity between the miniature circuit breakers FAZ and the upstream protection devices 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

FAZ towards NH-00 Fuses

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

FAZ	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
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]
1.5	0.8	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]
2.0	<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]
2.5	<0.5[1]	0.5	1.0	2.3	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]
3.0	<0.5[1]	0.5	0.9	2.1	8.0	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]
3.5	<0.5[1]	0.5	0.9	1.8	5.5	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***)

FAZ	NH-00 gL/gG											
I_n [A]	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]
1.5	<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	<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]
2.5	<0.5[1]	0.5	1.0	2.1	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]
3.0	<0.5[1]	<0.5[1]	0.7	1.2	1.8	2.6	4.7	6.6	10.0[2]	10.0[2]	10.0[2]	10.0[2]
3.5	<0.5[1]	<0.5[1]	0.7	1.1	1.7	2.4	4.2	6.0	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***)

FAZ	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
0.5	2.1	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]
1.0	<0.5[1]	0,6	1.4	4.3	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]
1.5	<0.5[1]	<0.5[1]	0.9	1.6	2.7	4.0	8.0	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]
2.0	<0.5[1]	<0.5[1]	0.8	1.3	2.1	3.1	6.0	8.6	10.0[2]	10.0[2]	10.0[2]	10.0[2]
2.5	<0.5[1]	<0.5[1]	0.7	1.2	1.8	2.6	4.8	6.9	10.0[2]	10.0[2]	10.0[2]	10.0[2]
3.0	<0.5[1]	<0.5[1]	0.7	1.1	1.7	2.4	4.3	6.0	10.0[2]	10.0[2]	10.0[2]	10.0[2]
3.5	<0.5[1]	<0.5[1]	0.7	1.1	1.7	2.4	4.2	5.6	10.0[2]	10.0[2]	10.0[2]	10.0[2]
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 limiting current I_s under 0.5 kA
[2] Selectivity limiting current I_s = rated breaking capacity I_{cn} of the MCB
Shaded fields: no selectivity

FAZ towards D01-D03 Fuses

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

FAZ	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
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)]
1.5	<0.5[1)]	4.1	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
2.0	<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)]
2.5	<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)]
3.0	<0.5[1)]	<0.5[1)]	0.5	1.0	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
3.5	<0.5[1)]	<0.5[1)]	0.5	0.9	7.0	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***)

FAZ	D01-D03 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)]
1.5	<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	<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)]
2.5	<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)]
3.0	<0.5[1)]	<0.5[1)]	<0.5[1)]	0.6	1.9	5.2	10.0[2)]	10.0[2)]	10.0[2)]
3.5	<0.5[1)]	<0.5[1)]	<0.5[1)]	0.6	1.8	4.7	9.5	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***)

FAZ	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
0.5	<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)]	<0.5[1)]	0.7	1.3	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
1.5	<0.5[1)]	<0.5[1)]	0.6	0.9	2.8	9.0	10.0[2)]	10.0[2)]	10.0[2)]
2.0	<0.5[1)]	<0.5[1)]	0.6	0.8	2.2	6.7	10.0[2)]	10.0[2)]	10.0[2)]
2.5	<0.5[1)]	<0.5[1)]	0.5	0.7	1.9	5.4	10.0[2)]	10.0[2)]	10.0[2)]
3.0	<0.5[1)]	<0.5[1)]	0.5	0.7	1.8	4.8	9.3	10.0[2)]	10.0[2)]
3.5	<0.5[1)]	<0.5[1)]	0.5	0.7	1.7	4.7	8.6	10.0[2)]	10.0[2)]
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 limiting current I_s under 0.5 kA
[2)] Selectivity limiting current I_s = rated breaking capacity I_{cn} of the MCB
Shaded fields: no selectivity

FAZ towards DII-DIV Fuses

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

FAZ	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
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)]
1.5	<0.5[1)]	1.0	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
2.0	<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)]
2.5	<0.5[1)]	<0.5[1)]	0.8	1.5	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
3.0	<0.5[1)]	<0.5[1)]	0.8	1.4	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
3.5	<0.5[1)]	<0.5[1)]	0.7	1.3	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***)

FAZ	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)]
1.5	<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	<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)]
2.5	<0.5[1)]	<0.5[1)]	0.8	1.4	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
3.0	<0.5[1)]	<0.5[1)]	0.8	0.9	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
3.5	<0.5[1)]	<0.5[1)]	0.6	0.9	2.2	4.5	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***)

FAZ	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
0.5	0.5	3.0	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)]	<0.5[1)]	1.0	2.4	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
1.5	<0.5[1)]	<0.5[1)]	0.7	1.2	3.5	7.7	10.0[2)]	10.0[2)]	10.0[2)]
2.0	<0.5[1)]	<0.5[1)]	0.6	1.0	2.8	5.8	10.02)	10.02)	10.02)
2.5	<0.5[1)]	<0.5[1)]	0.6	1.4	2.3	4.6	10.0[2)]	10.0[2)]	10.0[2)]
3.0	<0.5[1)]	<0.5[1)]	0.6	0.9	2.3	4.3	10.0[2)]	10.0[2)]	10.0[2)]
3.5	<0.5[1)]	<0.5[1)]	0.6	0.9	2.1	4.0	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 limiting current I_s under 0.5 kA
[2)] Selectivity limiting current I_s = rated breaking capacity I_{cn} of the MCB
Shaded fields: no selectivity

FAZ-B and NZM 1/2

Selectivity limiting current I_s [kA] for selectivity between FAZ-B and NZM (overload and short-circuit release unit NZM at max. value).

FAZ-B	NZM...1-A... I_{cu} = 25 (50) kA					
	40	50	63	80	100	125
1	15	15	15	15	15	15
2	2	15	15	15	15	15
3	1.2	2	3	3	10	15
4	1.2	2	3	3	8	15
6	1.2	2	2.5	3	5	10
10	1.2	1.5	2	2	4	10
13	1	1.5	2	2	4	10
16	1	1.2	1.5	2	3	8
20	0.8	1.2	1.5	1.5	3	8
25	0.7	1.2	1.5	1.5	3	7
32	-	1.2	1	1.5	2	6
40	-	-	1	1.5	2	5
50	-	-	-	1.2	1.5	4
63	-	-	-	-	1.5	3

FAZ-B	NZM...2-A... I_{cu} = 25 (50)(100)(150) kA								
	40	50	63	80	100	125	160	200	250
1	15	15	15	15	15	15	15	15	15
2	3	15	15	15	15	15	15	15	15
3	1.5	1.5	3	5	15	15	15	15	15
4	1.2	1.5	3	4	15	15	15	15	15
6	1.2	1.5	2.5	3	15	15	15	15	15
10	1	1.5	2.5	3	10	10	10	10	10
13	1	1.2	2	3	10	10	10	10	10
16	1	1.2	1.5	2.5	10	10	10	10	10
20	1	1.2	1.5	1.5	10	10	10	10	10
25	0.8	1	1.5	2	10	10	10	10	10
32	-	1	1.5	2	8	8	8	8	10
40	-	-	1.2	1.5	7	7	7	7	10
50	-	-	-	1.5	6	6	6	6	10
63	-	-	-	-	6	6	6	6	10

FAZ-C and NZM 1/2

Selectivity limiting current I_s [kA] for selectivity between FAZ-C and NZM (overload and short-circuit release unit NZM at max. value).

FAZ-C	NZM...1-A... I_{cu} = 25 (50) kA					
	40	50	63	80	100	125
0.5	15	15	15	15	15	15
1	15	15	15	15	15	15
2	2	15	15	15	15	15
3	1.2	2	3	3	10	15
4	1.2	2	3	3	8	15
6	1.2	2	2.5	3	5	10
10	1.2	1.5	2	2	4	10
13	1	1.5	2	2	4	10
16	1	1.2	1.5	2	3	8
20	0.8	1.2	1.5	1.5	3	8
25	0.7	1.2	1.5	1.5	3	7
32	-	1.2	1	1.5	2	6
40	-	-	1	1.5	2	5
50	-	-	-	1.2	1.5	4
63	-	-	-	-	1.5	3

FAZ-C	NZM...2-A... I_{cu} = 25 (50)(100)(150) kA								
	40	50	63	80	100	125	160	200	250
0.5	15	15	15	15	15	15	15	15	15
1	15	15	15	15	15	15	15	15	15
2	3	15	15	15	15	15	15	15	15
3	1.5	1.5	3	5	15	15	15	15	15
4	1.2	1.5	3	4	15	15	15	15	15
6	1.2	1.5	2.5	3	15	15	15	15	15
10	1	1.5	2.5	3	10	10	10	10	10
13	1	1.2	2	3	10	10	10	10	10
16	1	1.2	1.5	2.5	10	10	10	10	10
20	1	1.2	1.5	1.5	10	10	10	10	10
25	0.8	1	1.5	2	10	10	10	10	10
32	-	1	1.5	2	8	8	8	8	10
40	-	-	1.2	1.5	7	7	7	7	10
50	-	-	-	1.5	6	6	6	6	10
63	-	-	-	-	6	6	6	6	10

FAZ-D and NZM 1/2

Selectivity limiting current I_s [kA] for selectivity between FAZ-D and NZM (overload and short-circuit release unit NZM at max. value).

FAZ-D	NZM...1-A... I_{cu} = 25 (50) kA					
	40	**50**	**63**	**80**	**100**	**125**
0.5	9	15	15	15	15	15
1	0.5	0.7	1.1	1.9	4.2	15
1.5	0.3	0.6	0.8	1.1	1.6	2.6
2	0.3	0.5	0.75	0.95	1.4	2.4
2.5	0.3	0.5	0.75	0.95	1.3	2.3
3	0.3	0.5	0.7	0.9	1.3	2.1
3.5	0.3	0.5	0.7	0.9	1.3	2
4	0.3	0.5	0.7	0.9	1.3	1.9
5	0.3	0.5	0.7	0.9	1.3	1.9
6	0.3	0.5	0.6	0.9	1.3	1.8
8	0.3	0.3	0.6	0.75	1	1.3
10	0.3	0.3	0.6	0.75	0.95	1.2
13	0.3	0.3	0.5	0.7	0.9	1.1
16	-	0.3	0.5	0.65	0.8	1.1
20	-	-	0.5	0.65	0.8	1.1
25	-	-	0.5	0.65	0.8	1.1
32	-	-	-	-	0.8	1.1
40	-	-	-	-	-	1

FAZ-D	NZM...2-A... I_{cu} = 25 (50)(100)(150) kA								
	40	**50**	**63**	**80**	**100**	**125**	**160**	**200**	**250**
0.5	9	15	15	15	15	15	15	15	15
1	0.5	0.7	1.1	1.9	4.2	15	15	15	15
1.5	0.3	0.6	0.8	1.1	1.6	2.6	5	15	15
2	0.3	0.5	0.75	0.95	1.4	2.4	4.5	10	15
2.5	0.3	0.5	0.75	0.95	1.3	2.3	4.2	9	15
3	0.3	0.5	0.7	0.9	1.3	2.1	3.6	7	15
3.5	0.3	0.5	0.7	0.9	1.3	2	3.3	5.6	10
4	0.3	0.5	0.7	0.9	1.3	1.9	3	4.7	8
5	0.3	0.5	0.7	0.9	1.3	1.9	3	4.4	7
6	0.3	0.5	0.6	0.9	1.3	1.8	2.8	4	6
8	0.3	0.3	0.6	0.75	1	1.3	1.8	2.7	4
10	0.3	0.3	0.6	0.75	0.95	1.2	1.7	2.4	3.6
13	0.3	0.3	0.5	0.7	0.9	1.1	1.6	2.2	3.2
16	-	0.3	0.5	0.65	0.8	1.1	1.5	2.1	3
20	-	-	0.5	0.65	0.8	1.1	1.4	2.1	3
25	-	-	0.5	0.65	0.8	1.1	1.4	1.9	2.7
32	-	-	-	-	0.8	1.1	1.4	1.9	2.7
40	-	-	-	-	-	1	1.4	1.8	2.6

Back-up Protection FAZ

The up-stream protective devices will protect the down-stream FAZ up to the short-circuit current specified.

FAZ/C and AZ/C

FAZ/C	AZ/C								
I_n [A]	20	25	32	40	50	63	80	100	125
1	25	25	25	25	25	25	20	20	15 kA
2	25	25	25	25	25	25	20	20	15 kA
4	25	25	25	25	25	25	20	20	15 kA
6	25	25	25	25	25	25	20	20	15 kA
10	25	25	25	25	25	25	20	20	15 kA
13	25	25	25	25	25	25	20	20	15 kA
16	25	25	25	25	25	25	20	20	15 kA
20	1)	25	25	25	25	25	20	20	15 kA
25	1)	1)	25	25	25	25	20	20	15 kA
32	1)	1)	1)	25	25	25	20	20	-
40	1)	1)	1)	1)	25	25	20	20	-
50	1)	1)	1)	1)	1)	25	20	20	-
63	1)	1)	1)	1)	1)	1)	-	-	-

1) I_n (AZ) ≤ I_n (FAZ)

FAZ and CL-PKZ0

Back-up tests acc. to EN/IEC 60947-2, App. A: U = 1.05 U_e, (O - t - W)

FAZ B, C	CL-PKZ0
I_n [A]	U_e = 230/400 V
0.16	25 kA
0.25	25 kA
0.5	25 kA
0.75	25 kA
1	25 kA
1.5	25 kA
2	25 kA
2.5	25 kA
3	25 kA
3.5	25 kA
4	25 kA
5	20 kA
6	20 kA
8	20 kA
10	20 kA
12	20 kA
13	20 kA
15	20 kA
16	20 kA
20	18 kA
25	18 kA
32	18 kA
40	18 kA
50	15 kA
63	15 kA

FAZ and NZM7

FAZ B, C	NZM7-40(...100)
I_n [A]	U_e = 230/400 V
0.16	25 kA
0.25	25 kA
0.5	25 kA
0.75	25 kA
1	25 kA
1.5	25 kA
2	25 kA
2.5	25 kA
3	25 kA
3.5	25 kA
4	25 kA
5	20 kA
6	20 kA
8	20 kA
10	20 kA
12	20 kA
13	20 kA
15	20 kA
16	20 kA
20	18 kA
25	18 kA
32	18 kA
40	18 kA
50	15 kA
63	15 kA

FAZ and NZMB1

U_e = 230/400 V: I_{cu} (FAZ) = 15 kA
U_e = 230/400 V: I_{cu} (NZMB1) = 25 kA
Back-up test acc. to EN/IEC 60947-2, app. A: U = 1.05U_e, (O - t - W)
(Settings NZMB1: I_r, I_{rm} at max. volumes)

FAZ B, C	NZMB1
I_n [A]	U_e = 230/400 V
0.16	25 kA
0.25	25 kA
0.5	25 kA
0.75	25 kA
1	25 kA
1.5	25 kA
2	25 kA
2.5	25 kA
3	25 kA
3.5	25 kA
4	25 kA
5	25 kA
6	25 kA
8	25 kA
10	25 kA
12	25 kA
13	25 kA
15	25 kA
16	25 kA
20	20 kA
25	20 kA
32	20 kA
40	20 kA
50	15 kA
63	15 kA

FAZ and NZMN1

U_e = 230/400 V: I_{cu} (FAZ) = 15 kA
U_e = 230/400 V: I_{cu} (NZMN1) = 25 kA
Back-up test acc. to EN/IEC 60947-2, app. A: U = 1.05U_e, (O - t - W)
(Settings NZM at max. volumes)

FAZ B, C	NZMN1
I_n [A]	U_e = 230/400 V
0.16	25 kA
0.25	25 kA
0.5	25 kA
0.75	25 kA
1	25 kA
1.5	25 kA
2	25 kA
2.5	25 kA
3	25 kA
3.5	25 kA
4	25 kA
5	25 kA
6	25 kA
8	25 kA
10	25 kA
12	25 kA
13	25 kA
15	25 kA
16	25 kA
20	20 kA
25	20 kA
32	20 kA
40	20 kA
50	15 kA
63	15 kA

FAZ and NZMB2

U_e = 230/400 V: I_{cu} (FAZ) = 15 kA
U_e = 230/400 V: I_{cu} (NZMB2) = 25 kA
U_e = 133/230 V: I_{cu} (FAZ) = 20 kA
U_e = 133/230 V: I_{cu} (NZMB2) = 30 kA
Back-up test acc. to EN/IEC 60947-2, app. A: U = 1.05U_e, (O - t - W)
(Settings NZM at max. volumes)

FAZ B, C	NZMB2	
I_n [A]	U_e = 230/400 V	U_e = 133/230 V
0.16	25 kA	30 kA
0.25	25 kA	30 kA
0.5	25 kA	30 kA
0.75	25 kA	30 kA
1	25 kA	30 kA
1.5	25 kA	30 kA
2	25 kA	30 kA
2.5	25 kA	30 kA
3	25 kA	30 kA
3.5	25 kA	30 kA
4	25 kA	30 kA
5	25 kA	25 kA
6	25 kA	25 kA
8	25 kA	25 kA
10	25 kA	25 kA
12	20 kA	25 kA
13	20 kA	25 kA
15	20 kA	25 kA
16	20 kA	25 kA
20	20 kA	25 kA
25	20 kA	25 kA
32	20 kA	25 kA
40	15 kA	20 kA
50	15 kA	20 kA
63	15 kA	20 kA

FAZ and NZMN2

U_e = 230/400 V: I_{cu} (FAZ) = 15 kA
U_e = 230/400 V: I_{cu} (NZMN2) = 50 kA
U_e = 133/230 V: I_{cu} (FAZ) = 20 kA
U_e = 133/230 V: I_{cu} (NZMN2) = 85 kA
Back-up test acc. to EN/IEC 60947-2, app. A: U = 1.05U_e, (O - t - W)
(Settings NZM at max. volumes)

FAZ B, C	NZMN2	
I_n [A]	U_e = 230/400 V	U_e = 133/230 V
0.16	50 kA	85 kA
0.25	50 kA	85 kA
0.5	50 kA	85 kA
0.75	50 kA	85 kA
1	50 kA	85 kA
1.5	50 kA	85 kA
2	50 kA	85 kA
2.5	50 kA	85 kA
3	50 kA	85 kA
3.5	50 kA	85 kA
4	50 kA	85 kA
5	50 kA	80 kA
6	50 kA	80 kA
8	50 kA	80 kA
10	50 kA	80 kA
12	30 kA	60 kA
13	30 kA	60 kA
15	30 kA	60 kA
16	30 kA	60 kA
20	30 kA	60 kA
25	30 kA	60 kA
32	30 kA	60 kA
40	20 kA	40 kA
50	20 kA	40 kA
63	20 kA	40 kA

FAZ and NZMH2

U_e = 230/400 V: I_{cu} (FAZ) = 15 kA
U_e = 230/400 V: I_{cu} (NZMH2) = 150 kA
U_e = 133/230 V: I_{cu} (FAZ) = 20 kA
U_e = 133/230 V: I_{cu} (NZMH2) = 150 kA
Back-up test acc. to EN/IEC 60947-2, app. A: U = 1.05U_e, (O - t - W)
(Settings NZM at max. volumes)

FAZ B, C	NZMH2	
I_n [A]	U_e = 230/400 V	U_e = 133/230 V
0.16	50 kA	85 kA
0.25	50 kA	85 kA
0.5	50 kA	85 kA
0.75	50 kA	85 kA
1	50 kA	85 kA
1.5	50 kA	85 kA
2	50 kA	85 kA
2.5	50 kA	85 kA
3	50 kA	85 kA
3.5	50 kA	85 kA
4	50 kA	85 kA
5	50 kA	80 kA
6	50 kA	80 kA
8	50 kA	80 kA
10	50 kA	80 kA
12	30 kA	60 kA
13	30 kA	60 kA
15	30 kA	60 kA
16	30 kA	60 kA
20	30 kA	60 kA
25	30 kA	60 kA
32	30 kA	60 kA
40	20 kA	40 kA
50	20 kA	40 kA
63	20 kA	40 kA

FAZ and NZML2

U_e = 230/400 V: I_{cu} (FAZ) = 15 kA
U_e = 230/400 V: I_{cu} (NZML2) = 150 kA
U_e = 133/230 V: I_{cu} (FAZ) = 20 kA
U_e = 133/230 V: I_{cu} (NZML2) = 150 kA
Back-up test acc. to EN/IEC 60947-2, app. A: U = 1.05U_e, (O - t - W)
(Settings NZM at max. volumes)

FAZ B, C	NZML2	
I_n [A]	U_e = 230/400 V	U_e = 133/230 V
0.16	50 kA	85 kA
0.25	50 kA	85 kA
0.5	50 kA	85 kA
0.75	50 kA	85 kA
1	50 kA	85 kA
1.5	50 kA	85 kA
2	50 kA	85 kA
2.5	50 kA	85 kA
3	50 kA	85 kA
3.5	50 kA	85 kA
4	50 kA	85 kA
5	50 kA	80 kA
6	50 kA	80 kA
8	50 kA	80 kA
10	50 kA	80 kA
12	30 kA	60 kA
13	30 kA	60 kA
15	30 kA	60 kA
16	30 kA	60 kA
20	30 kA	60 kA
25	30 kA	60 kA
32	30 kA	60 kA
40	20 kA	40 kA
50	20 kA	40 kA
63	20 kA	40 kA

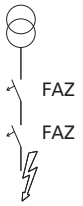
FAZ and NH

U_e = 230 V: I_{cu} (FAZ) = 15 (10) kA (acc. to IEC/EN 60947)
U_e = 500 V: I_{cu} (NH00 125 A gL / gG) = 120kA

FAZ B, C, D	**NH00 125 A gL/gG**
I_n [A]	IT-system U = 230 V
0.5	50 kA
1	50 kA
2	50 kA
3	50 kA
4	50 kA
6	50 kA
10	50 kA
13	50 kA
16	50 kA
20	50 kA
25	50 kA
32	50 kA
40	50 kA
50	50 kA
63	50 kA

Overload Selectivity FAZ

FAZ-B(C)(D) to FAZ-B



Upstream side FAZ, Characteristic B
Downstream side FAZ, Characteristic B, C, D

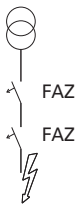
x ... Selectivity range (i.e. only the downstream switch drops in case I< I_s)

		Upstream side ——> FAZ Characteristic B												
Type B Rated current I_n [A]		2	3	4	6	10	13	16	20	25	32	40	50	63
Selectivity limiting current I_s [A]		7	10.5	14	21	35	45.5	56	70	87.5	112	140	175	220.5
<—— Downstream side FAZ Characteristic B	2		x	x	x	x	x	x	x	x	x	x	x	x
	3			x	x	x	x	x	x	x	x	x	x	x
	4				x	x	x	x	x	x	x	x	x	x
	6					x	x	x	x	x	x	x	x	x
	10						x	x	x	x	x	x	x	x
	13							x	x	x	x	x	x	x
	16								x	x	x	x	x	x
	20									x	x	x	x	x
	25										x	x	x	x
	32											x	x	x
	40												x	x
	50													x
	63													

		Upstream side ——> FAZ Characteristic B												
Type B Rated current I_n [A]		2	3	4	6	10	13	16	20	25	32	40	50	63
Selectivity limiting current I_s [A]		7	10.5	14	21	35	45.5	56	70	87.5	112	140	175	220.5
<—— Downstream side FAZ Characteristic C	0.5	x	x	x	x	x	x	x	x	x	x	x	x	x
	1	x	x	x	x	x	x	x	x	x	x	x	x	x
	2			x	x	x	x	x	x	x	x	x	x	x
	3				x	x	x	x	x	x	x	x	x	x
	4					x	x	x	x	x	x	x	x	x
	6						x	x	x	x	x	x	x	x
	8							x	x	x	x	x	x	x
	10								x	x	x	x	x	x
	13									x	x	x	x	x
	16										x	x	x	x
	20											x	x	x
	25												x	x
	32													x
	40													
	50													
	63													

		Upstream side ——> FAZ Characteristic B												
Type B Rated current I_n [A]		2	3	4	6	10	13	16	20	25	32	40	50	63
Selectivity limiting current I_s [A]		7	10.5	14	21	35	45.5	56	70	87.5	112	140	175	220.5
<—— Downstream side FAZ Characteristic D	2					x	x	x	x	x	x	x	x	x
	4							x	x	x	x	x	x	x
	6								x	x	x	x	x	x
	10										x	x	x	x
	13											x	x	x
	16												x	x
	20													x
	25													
	32													
	40													

FAZ-B(C)(D) to FAZ-C



Upstream side FAZ, Characteristic C
Downstream side FAZ, Characteristic B, C, D

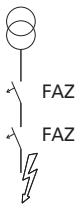
x ... Selectivity range (i.e. only the downstream switch drops in case I< I_s)

	Upstream side ——> FAZ Characteristic C															
Type B Rated current I_n [A]	0.5	1	2	3	4	6	8	10	13	16	20	25	32	40	50	63
Selectivity limiting current I_s [A]	2.85	5.7	11.4	17.1	22.8	34.2	45.6	57	74.1	91.2	114	142.5	182.4	228	285	359.1
<—— Downstream side FAZ Characteristic B																
2				x	x	x	x	x	x	x	x	x	x	x	x	x
3					x	x	x	x	x	x	x	x	x	x	x	x
4						x	x	x	x	x	x	x	x	x	x	x
6							x	x	x	x	x	x	x	x	x	x
10									x	x	x	x	x	x	x	x
13										x	x	x	x	x	x	x
16											x	x	x	x	x	x
20												x	x	x	x	x
25													x	x	x	x
32														x	x	x
40															x	x
50																x
63																

	Upstream side ——> FAZ Characteristic C															
Type B Rated current I_n [A]	0.5	1	2	3	4	6	8	10	13	16	20	25	32	40	50	63
Selectivity limiting current I_s [A]	2.85	5.7	11.4	17.1	22.8	34.2	45.6	57	74.1	91.2	114	142.5	182.4	228	285	359.1
<—— Downstream side FAZ Characteristic C																
0.5		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1			x	x	x	x	x	x	x	x	x	x	x	x	x	x
2				x	x	x	x	x	x	x	x	x	x	x	x	x
3					x	x	x	x	x	x	x	x	x	x	x	x
4						x	x	x	x	x	x	x	x	x	x	x
6							x	x	x	x	x	x	x	x	x	x
8								x	x	x	x	x	x	x	x	x
10									x	x	x	x	x	x	x	x
13										x	x	x	x	x	x	x
16											x	x	x	x	x	x
20												x	x	x	x	x
25													x	x	x	x
32														x	x	x
40															x	x
50																x
63																

	Upstream side ——> FAZ Characteristic C															
Type B Rated current I_n [A]	0.5	1	2	3	4	6	8	10	13	16	20	25	32	40	50	63
Selectivity limiting current I_s [A]	2.85	5.7	11.4	17.1	22.8	34.2	45.6	57	74.1	91.2	114	142.5	182.4	228	285	359.1
<—— Downstream side FAZ Characteristic D																
2						x	x	x	x	x	x	x	x	x	x	x
4							x	x	x	x	x	x	x	x	x	x
6									x	x	x	x	x	x	x	x
10											x	x	x	x	x	x
13												x	x	x	x	x
16													x	x	x	x
20														x	x	x
25															x	x
32																
40																

FAZ-B(C)(D) to FAZ-D



Upstream side FAZ, Characteristic D
Downstream side FAZ, Characteristic B, C, D

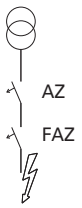
x ...Selectivity range (i.e. only the downstream switch drops in case I< I_s)

		Upstream side ——> FAZ Characteristic D									
Type B Rated current I_n [A]		2	4	6	10	13	16	20	25	32	40
Selectivity limiting current I_s [A]		21	42	63	105	136.5	168	210	262.5	336	420
<—— Downstream side FAZ Characteristic B	2		x	x	x	x	x	x	x	x	x
	3		x	x	x	x	x	x	x	x	x
	4			x	x	x	x	x	x	x	x
	6				x	x	x	x	x	x	x
	10					x	x	x	x	x	x
	13						x	x	x	x	x
	16							x	x	x	x
	20								x	x	x
	25									x	x
	32										x
	40										
	50										
	63										

		Upstream side ——> FAZ Characteristic D									
Type B Rated current I_n [A]		2	4	6	10	13	16	20	25	32	40
Selectivity limiting current I_s [A]		21	42	63	105	136.5	168	210	262.5	336	420
<—— Downstream side FAZ Characteristic C	0.5	x	x	x	x	x	x	x	x	x	x
	1	x	x	x	x	x	x	x	x	x	x
	2		x	x	x	x	x	x	x	x	x
	3		x	x	x	x	x	x	x	x	x
	4			x	x	x	x	x	x	x	x
	6				x	x	x	x	x	x	x
	8				x	x	x	x	x	x	x
	10					x	x	x	x	x	x
	13						x	x	x	x	x
	16							x	x	x	x
	20								x	x	x
	25									x	x
	32										x
	40										
	50										
	63										

		Upstream side ——> FAZ Characteristic D									
Type B Rated current I_n [A]		2	4	6	10	13	16	20	25	32	40
Selectivity limiting current I_s [A]		21	42	63	105	136.5	168	210	262.5	336	420
<—— Downstream side FAZ Characteristic D	2		x	x	x	x	x	x	x	x	x
	4			x	x	x	x	x	x	x	x
	6				x	x	x	x	x	x	x
	10					x	x	x	x	x	x
	13						x	x	x	x	x
	16							x	x	x	x
	20								x	x	x
	25									x	x
	32										x
	40										

FAZ-B(C)(D) to AZ-C



Upstream side AZ, Characteristic C
Downstream side FAZ, Characteristic B, C, D

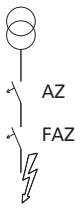
x ... Selectivity range (i.e. only the downstream switch drops in case I< I_s)

		Upstream side ——> AZ Characteristic C								
Type B Rated current I_n [A]		20	25	32	40	50	63	80	100	125
Selectivity limiting current I_s [A]		130	163	208	260	325	410	520	650	813
<—— Downstream side FAZ Characteristic B	2	x	x	x	x	x	x	x	x	x
	3	x	x	x	x	x	x	x	x	x
	4	x	x	x	x	x	x	x	x	x
	6	x	x	x	x	x	x	x	x	x
	10	x	x	x	x	x	x	x	x	x
	13	x	x	x	x	x	x	x	x	x
	16	x	x	x	x	x	x	x	x	x
	20		x	x	x	x	x	x	x	x
	25			x	x	x	x	x	x	x
	32				x	x	x	x	x	x
	40					x	x	x	x	x
	50						x	x	x	x
	63							x	x	x

		Upstream side ——> AZ Characteristic C								
Type B Rated current I_n [A]		20	25	32	40	50	63	80	100	125
Selectivity limiting current I_s [A]		130	163	208	260	325	410	520	650	813
<—— Downstream side FAZ Characteristic C	0.5	x	x	x	x	x	x	x	x	x
	1	x	x	x	x	x	x	x	x	x
	2	x	x	x	x	x	x	x	x	x
	3	x	x	x	x	x	x	x	x	x
	4	x	x	x	x	x	x	x	x	x
	6	x	x	x	x	x	x	x	x	x
	8	x	x	x	x	x	x	x	x	x
	10	x	x	x	x	x	x	x	x	x
	13	x	x	x	x	x	x	x	x	x
	16	x	x	x	x	x	x	x	x	x
	20		x	x	x	x	x	x	x	x
	25			x	x	x	x	x	x	x
	32				x	x	x	x	x	x
	40					x	x	x	x	x
	50						x	x	x	x
	63							x	x	x

		Upstream side ——> AZ Characteristic C								
Type B Rated current I_n [A]		20	25	32	40	50	63	80	100	125
Selectivity limiting current I_s [A]		130	163	208	260	325	410	520	650	813
<—— Downstream side FAZ Characteristic D	2	x	x	x	x	x	x	x	x	x
	4	x	x	x	x	x	x	x	x	x
	6	x	x	x	x	x	x	x	x	x
	10	x	x	x	x	x	x	x	x	x
	13		x	x	x	x	x	x	x	x
	16			x	x	x	x	x	x	x
	20				x	x	x	x	x	x
	25					x	x	x	x	x
	32						x	x	x	x
	40							x	x	x

FAZ-B(C)(D) to AZ-D



Upstream side AZ, Characteristic D
Downstream side FAZ, Characteristic B, C, D

x ... Selectivity range (i.e. only the downstream switch drops in case I< I_s)

		Upstream side ——> AZ Characteristic D							
Type B Rated current I_n [A]		20	25	32	40	50	63	80	100
Selectivity limiting current I_s [A]		230	285	365	450	550	680	850	1020
<—— Downstream side FAZ Characteristic B	2	x	x	x	x	x	x	x	x
	3	x	x	x	x	x	x	x	x
	4	x	x	x	x	x	x	x	x
	6	x	x	x	x	x	x	x	x
	10	x	x	x	x	x	x	x	x
	13	x	x	x	x	x	x	x	x
	16	x	x	x	x	x	x	x	x
	20		x	x	x	x	x	x	x
	25			x	x	x	x	x	x
	32				x	x	x	x	x
	40					x	x	x	x
	50						x	x	x
	63							x	x

		Upstream side ——> AZ Characteristic D							
Type B Rated current I_n [A]		20	25	32	40	50	63	80	100
Selectivity limiting current I_s [A]		230	285	365	450	550	680	850	1020
<—— Downstream side FAZ Characteristic C	0.5	x	x	x	x	x	x	x	x
	1	x	x	x	x	x	x	x	x
	2	x	x	x	x	x	x	x	x
	3	x	x	x	x	x	x	x	x
	4	x	x	x	x	x	x	x	x
	6	x	x	x	x	x	x	x	x
	8	x	x	x	x	x	x	x	x
	10	x	x	x	x	x	x	x	x
	13	x	x	x	x	x	x	x	x
	16	x	x	x	x	x	x	x	x
	20		x	x	x	x	x	x	x
	25			x	x	x	x	x	x
	32				x	x	x	x	x
	40					x	x	x	x
	50						x	x	x
	63							x	x

		Upstream side ——> AZ Characteristic D							
Type B Rated current I_n [A]		20	25	32	40	50	63	80	100
Selectivity limiting current I_s [A]		230	285	365	450	550	680	850	1020
<—— Downstream side FAZ Characteristic D	2	x	x	x	x	x	x	x	x
	4	x	x	x	x	x	x	x	x
	6	x	x	x	x	x	x	x	x
	10	x	x	x	x	x	x	x	x
	13	x	x	x	x	x	x	x	x
	16	x	x	x	x	x	x	x	x
	20		x	x	x	x	x	x	x
	25			x	x	x	x	x	x
	32				x	x	x	x	x
	40					x	x	x	x

Influence of the Line Frequency FAZ

On the Instantaneous Tripping Current I_{MA}

	Line 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

SG56012

Description

FAZ-T

- High-quality miniature circuit breakers for industrial and commercial applications
- Contact position indicator red - green
- Accessories suitable for subsequent installation
- Rated currents up to 40 A
- Tripping characteristics B, C, D
- Rated breaking capacity up to 25 kA according to EN 60947-2

Characteristic B

SG53212

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60898-1 (V)	Breaking capacity acc. to IEC/EN 60898-1 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Type Designation	Article No.	Units per package
1	240	15	240	25	254	15	FAZT-B1/1	240770	12/120
2	240	15	240	25	254	15	FAZT-B2/1	240771	12/120
3	240	15	240	25	254	15	FAZT-B3/1	240772	12/120
4	240	15	240	25	254	15	FAZT-B4/1	240777	12/120
6	240	15	240	25	254	15	FAZT-B6/1	240782	12/120
10	240	15	240	25	254	15	FAZT-B10/1	240787	12/120
12	240	15	240	25	254	15	FAZT-B12/1	240792	12/120
13	240	15	240	25	254	15	FAZT-B13/1	240793	12/120
15	240	15	240	25	254	15	FAZT-B15/1	240794	12/120
16	240	15	240	25	254	15	FAZT-B16/1	240795	12/120
20	240	15	240	25	254	15	FAZT-B20/1	240796	12/120
25	240	15	240	25	254	15	FAZT-B25/1	240797	12/120
32	240	10	240	20	254	15	FAZT-B32/1	141907	12/120
40	240	10	240	20	254	15	FAZT-B40/1	141908	12/120

SG55412

1+N-poles

1	240	15	240	25	254	15	FAZT-B1/1N	240994	1/60
2	240	15	240	25	254	15	FAZT-B2/1N	240995	1/60
3	240	15	240	25	254	15	FAZT-B3/1N	240996	1/60
4	240	15	240	25	254	15	FAZT-B4/1N	240997	1/60
6	240	15	240	25	254	15	FAZT-B6/1N	240998	1/60
10	240	15	240	25	254	15	FAZT-B10/1N	240999	1/60
12	240	15	240	25	254	15	FAZT-B12/1N	241000	1/60
13	240	15	240	25	254	15	FAZT-B13/1N	241001	1/60
15	240	15	240	25	254	15	FAZT-B15/1N	241005	1/60
16	240	15	240	25	254	15	FAZT-B16/1N	241009	1/60
20	240	15	240	25	254	15	FAZT-B20/1N	241015	1/60
25	240	15	240	25	254	15	FAZT-B25/1N	241019	1/60
32	240	10	240	20	254	15	FAZT-B32/1N	142509	1/60
40	240	10	240	20	254	15	FAZT-B40/1N	142510	1/60

SG55212

2-poles

1	415	15	240/415	25	254/440	15	FAZT-B1/2	240820	1/60
2	415	15	240/415	25	254/440	15	FAZT-B2/2	240821	1/60
3	415	15	240/415	25	254/440	15	FAZT-B3/2	240822	1/60
4	415	15	240/415	25	254/440	15	FAZT-B4/2	240823	1/60
6	415	15	240/415	25	254/440	15	FAZT-B6/2	240824	1/60
10	415	15	240/415	25	254/440	15	FAZT-B10/2	240825	1/60
12	415	15	240/415	25	254/440	15	FAZT-B12/2	240826	1/60
13	415	15	240/415	25	254/440	15	FAZT-B13/2	240827	1/60
15	415	15	240/415	25	254/440	15	FAZT-B15/2	240828	1/60
16	415	15	240/415	25	254/440	15	FAZT-B16/2	240829	1/60
20	415	15	240/415	25	254/440	15	FAZT-B20/2	240830	1/60
25	415	15	240/415	25	254/440	15	FAZT-B25/2	240831	1/60
32	415	10	240/415	20	254/440	15	FAZT-B32/2	142485	1/60
40	415	10	240/415	20	254/440	15	FAZT-B40/2	142486	1/60

SG53512

3-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60898-1 (V)	Breaking capacity acc. to IEC/EN 60898-1 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Type Designation	Article No.	Units per package
1	415	15	240/415	25	254/440	15	FAZT-B1/3	240874	1/40
2	415	15	240/415	25	254/440	15	FAZT-B2/3	240875	1/40
3	415	15	240/415	25	254/440	15	FAZT-B3/3	240876	1/40
4	415	15	240/415	25	254/440	15	FAZT-B4/3	240877	1/40
6	415	15	240/415	25	254/440	15	FAZT-B6/3	240878	1/40
10	415	15	240/415	25	254/440	15	FAZT-B10/3	240879	1/40
12	415	15	240/415	25	254/440	15	FAZT-B12/3	240880	1/40
13	415	15	240/415	25	254/440	15	FAZT-B13/3	240881	1/40
15	415	15	240/415	25	254/440	15	FAZT-B15/3	240882	1/40
16	415	15	240/415	25	254/440	15	FAZT-B16/3	240883	1/40
20	415	15	240/415	25	254/440	15	FAZT-B20/3	240884	1/40
25	415	15	240/415	25	254/440	15	FAZT-B25/3	240885	1/40
32	415	10	240/415	20	254/440	15	FAZT-B32/3	142493	1/40
40	415	10	240/415	20	254/440	15	FAZT-B40/3	142494	1/40

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3+N-poles

1	415	15	240/415	25	254/440	15	FAZT-B1/3N	241060	1/30
2	415	15	240/415	25	254/440	15	FAZT-B2/3N	241065	1/30
3	415	15	240/415	25	254/440	15	FAZT-B3/3N	241070	1/30
4	415	15	240/415	25	254/440	15	FAZT-B4/3N	241075	1/30
6	415	15	240/415	25	254/440	15	FAZT-B6/3N	241080	1/30
10	415	15	240/415	25	254/440	15	FAZT-B10/3N	241085	1/30
12	415	15	240/415	25	254/440	15	FAZT-B12/3N	241090	1/30
13	415	15	240/415	25	254/440	15	FAZT-B13/3N	241095	1/30
15	415	15	240/415	25	254/440	15	FAZT-B15/3N	241100	1/30
16	415	15	240/415	25	254/440	15	FAZT-B16/3N	241105	1/30
20	415	15	240/415	25	254/440	15	FAZT-B20/3N	241110	1/30
25	415	15	240/415	25	254/440	15	FAZT-B25/3N	241115	1/30
32	415	10	240/415	20	254/440	15	FAZT-B32/3N	142517	1/30
40	415	10	240/415	20	254/440	15	FAZT-B40/3N	142518	1/30

SG56012

4-poles

1	415	15	240/415	25	254/440	15	FAZT-B1/4	240922	1/30
2	415	15	240/415	25	254/440	15	FAZT-B2/4	240927	1/30
3	415	15	240/415	25	254/440	15	FAZT-B3/4	240930	1/30
4	415	15	240/415	25	254/440	15	FAZT-B4/4	240931	1/30
6	415	15	240/415	25	254/440	15	FAZT-B6/4	240932	1/30
10	415	15	240/415	25	254/440	15	FAZT-B10/4	240933	1/30
12	415	15	240/415	25	254/440	15	FAZT-B12/4	240934	1/30
13	415	15	240/415	25	254/440	15	FAZT-B13/4	240935	1/30
15	415	15	240/415	25	254/440	15	FAZT-B15/4	240936	1/30
16	415	15	240/415	25	254/440	15	FAZT-B16/4	240937	1/30
20	415	15	240/415	25	254/440	15	FAZT-B20/4	240938	1/30
25	415	15	240/415	25	254/440	15	FAZT-B25/4	240939	1/30
32	415	10	240/415	20	254/440	15	FAZT-B32/4	142501	1/30
40	415	10	240/415	20	254/440	15	FAZT-B40/4	142502	1/30

Characteristic C

SG53212

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60898-1 (V)	Breaking capacity acc. to IEC/EN 60898-1 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Type Designation	Article No.	Units per package
1	240	15	240	25	254	15	FAZT-C1/1	240798	12/120
2	240	15	240	25	254	15	FAZT-C2/1	240799	12/120
3	240	15	240	25	254	15	FAZT-C3/1	240800	12/120
4	240	15	240	25	254	15	FAZT-C4/1	240801	12/120
6	240	15	240	25	254	15	FAZT-C6/1	240802	12/120
10	240	15	240	25	254	15	FAZT-C10/1	240803	12/120
12	240	15	240	25	254	15	FAZT-C12/1	240804	12/120
13	240	15	240	25	254	15	FAZT-C13/1	240805	12/120
15	240	15	240	25	254	15	FAZT-C15/1	240806	12/120
16	240	15	240	25	254	15	FAZT-C16/1	240807	12/120
20	240	15	240	25	254	15	FAZT-C20/1	240808	12/120
25	240	15	240	25	254	15	FAZT-C25/1	240809	12/120
32	240	10	240	20	254	15	FAZT-C32/1	141909	12/120
40	240	10	240	20	254	15	FAZT-C40/1	142480	12/120

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1+N-poles

1	240	15	240	25	254	15	FAZT-C1/1N	241022	1/60
2	240	15	240	25	254	15	FAZT-C2/1N	241023	1/60
3	240	15	240	25	254	15	FAZT-C3/1N	241024	1/60
4	240	15	240	25	254	15	FAZT-C4/1N	241025	1/60
6	240	15	240	25	254	15	FAZT-C6/1N	241026	1/60
10	240	15	240	25	254	15	FAZT-C10/1N	241027	1/60
12	240	15	240	25	254	15	FAZT-C12/1N	241028	1/60
13	240	15	240	25	254	15	FAZT-C13/1N	241029	1/60
15	240	15	240	25	254	15	FAZT-C15/1N	241030	1/60
16	240	15	240	25	254	15	FAZT-C16/1N	241034	1/60
20	240	15	240	25	254	15	FAZT-C20/1N	241038	1/60
25	240	15	240	25	254	15	FAZT-C25/1N	241044	1/60
32	240	10	240	20	254	15	FAZT-C32/1N	142511	1/60
40	240	10	240	20	254	15	FAZT-C40/1N	142512	1/60

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2-poles

1	415	15	240/415	25	254/440	15	FAZT-C1/2	240832	1/60
2	415	15	240/415	25	254/440	15	FAZT-C2/2	240833	1/60
3	415	15	240/415	25	254/440	15	FAZT-C3/2	240838	1/60
4	415	15	240/415	25	254/440	15	FAZT-C4/2	240843	1/60
6	415	15	240/415	25	254/440	15	FAZT-C6/2	240850	1/60
10	415	15	240/415	25	254/440	15	FAZT-C10/2	240855	1/60
12	415	15	240/415	25	254/440	15	FAZT-C12/2	240858	1/60
13	415	15	240/415	25	254/440	15	FAZT-C13/2	240859	1/60
15	415	15	240/415	25	254/440	15	FAZT-C15/2	240860	1/60
16	415	15	240/415	25	254/440	15	FAZT-C16/2	240861	1/60
20	415	15	240/415	25	254/440	15	FAZT-C20/2	240862	1/60
25	415	15	240/415	25	254/440	15	FAZT-C25/2	240863	1/60
32	415	10	240/415	20	254/440	15	FAZT-C32/2	142487	1/60
40	415	10	240/415	20	254/440	15	FAZT-C40/2	142488	1/60

SG53512

3-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60898-1 (V)	Breaking capacity acc. to IEC/EN 60898-1 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Type Designation	Article No.	Units per package
1	415	15	240/415	25	254/440	15	FAZT-C1/3	240886	1/40
2	415	15	240/415	25	254/440	15	FAZT-C2/3	240887	1/40
3	415	15	240/415	25	254/440	15	FAZT-C3/3	240888	1/40
4	415	15	240/415	25	254/440	15	FAZT-C4/3	240889	1/40
6	415	15	240/415	25	254/440	15	FAZT-C6/3	240890	1/40
10	415	15	240/415	25	254/440	15	FAZT-C10/3	240891	1/40
12	415	15	240/415	25	254/440	15	FAZT-C12/3	240892	1/40
13	415	15	240/415	25	254/440	15	FAZT-C13/3	240893	1/40
15	415	15	240/415	25	254/440	15	FAZT-C15/3	240894	1/40
16	415	15	240/415	25	254/440	15	FAZT-C16/3	240895	1/40
20	415	15	240/415	25	254/440	15	FAZT-C20/3	240896	1/40
25	415	15	240/415	25	254/440	15	FAZT-C25/3	240897	1/40
32	415	10	240/415	20	254/440	15	FAZT-C32/3	142495	1/40
40	415	10	240/415	20	254/440	15	FAZT-C40/3	142496	1/40

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3+N-poles

1	415	15	240/415	25	254/440	15	FAZT-C1/3N	241120	1/30
2	415	15	240/415	25	254/440	15	FAZT-C2/3N	241125	1/30
3	415	15	240/415	25	254/440	15	FAZT-C3/3N	241130	1/30
4	415	15	240/415	25	254/440	15	FAZT-C4/3N	241135	1/30
6	415	15	240/415	25	254/440	15	FAZT-C6/3N	241140	1/30
10	415	15	240/415	25	254/440	15	FAZT-C10/3N	241145	1/30
12	415	15	240/415	25	254/440	15	FAZT-C12/3N	241150	1/30
13	415	15	240/415	25	254/440	15	FAZT-C13/3N	241155	1/30
15	415	15	240/415	25	254/440	15	FAZT-C15/3N	241160	1/30
16	415	15	240/415	25	254/440	15	FAZT-C16/3N	241165	1/30
20	415	15	240/415	25	254/440	15	FAZT-C20/3N	241170	1/30
25	415	15	240/415	25	254/440	15	FAZT-C25/3N	241175	1/30
32	415	10	240/415	20	254/440	15	FAZT-C32/3N	142519	1/30
40	415	10	240/415	20	254/440	15	FAZT-C40/3N	142520	1/30

SG56012

4-poles

1	415	15	240/415	25	254/440	15	FAZT-C1/4	240940	1/30
2	415	15	240/415	25	254/440	15	FAZT-C2/4	240941	1/30
3	415	15	240/415	25	254/440	15	FAZT-C3/4	240945	1/30
4	415	15	240/415	25	254/440	15	FAZT-C4/4	240949	1/30
6	415	15	240/415	25	254/440	15	FAZT-C6/4	240955	1/30
10	415	15	240/415	25	254/440	15	FAZT-C10/4	240959	1/30
12	415	15	240/415	25	254/440	15	FAZT-C12/4	240962	1/30
13	415	15	240/415	25	254/440	15	FAZT-C13/4	240963	1/30
15	415	15	240/415	25	254/440	15	FAZT-C15/4	240964	1/30
16	415	15	240/415	25	254/440	15	FAZT-C16/4	240965	1/30
20	415	15	240/415	25	254/440	15	FAZT-C20/4	240966	1/30
25	415	15	240/415	25	254/440	15	FAZT-C25/4	240967	1/30
32	415	10	240/415	20	254/440	15	FAZT-C32/4	142503	1/30
40	415	10	240/415	20	254/440	15	FAZT-C40/4	142504	1/30

Characteristic D

SG53212

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60898-1 (V)	Breaking capacity acc. to IEC/EN 60898-1 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Type Designation	Article No.	Units per package
1	240	15	240	25	FAZT-D1/1	240810	12/120
2	240	15	240	25	FAZT-D2/1	240811	12/120
3	240	15	240	25	FAZT-D3/1	240812	12/120
4	240	15	240	25	FAZT-D4/1	240813	12/120
6	240	15	240	25	FAZT-D6/1	240814	12/120
10	240	15	240	25	FAZT-D10/1	240815	12/120
12	240	15	240	25	FAZT-D12/1	240816	12/120
13	240	15	240	25	FAZT-D13/1	240817	12/120
15	240	15	240	20	FAZT-D15/1	240818	12/120
16	240	15	240	20	FAZT-D16/1	240819	12/120
20	240	10	240	20	FAZT-D20/1	142481	12/120
25	240	10	240	15	FAZT-D25/1	142482	12/120
32	240	10	240	15	FAZT-D32/1	142483	12/120
40	240	10	240	15	FAZT-D40/1	142484	12/120

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1+N-poles

1	240	15	240	25	FAZT-D1/1N	241048	1/60
2	240	15	240	25	FAZT-D2/1N	241051	1/60
3	240	15	240	25	FAZT-D3/1N	241052	1/60
4	240	15	240	25	FAZT-D4/1N	241053	1/60
6	240	15	240	25	FAZT-D6/1N	241054	1/60
10	240	15	240	25	FAZT-D10/1N	241055	1/60
12	240	15	240	25	FAZT-D12/1N	241056	1/60
13	240	15	240	25	FAZT-D13/1N	241057	1/60
15	240	15	240	20	FAZT-D15/1N	241058	1/60
16	240	15	240	20	FAZT-D16/1N	241059	1/60
20	240	10	240	20	FAZT-D20/1N	142513	1/60
25	240	10	240	15	FAZT-D25/1N	142514	1/60
32	240	10	240	15	FAZT-D32/1N	142515	1/60
40	240	10	240	15	FAZT-D40/1N	142516	1/60

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2-poles

1	415	15	240/415	25	FAZT-D1/2	240864	1/60
2	415	15	240/415	25	FAZT-D2/2	240865	1/60
3	415	15	240/415	25	FAZT-D3/2	240866	1/60
4	415	15	240/415	25	FAZT-D4/2	240867	1/60
6	415	15	240/415	25	FAZT-D6/2	240868	1/60
10	415	15	240/415	25	FAZT-D10/2	240869	1/60
12	415	15	240/415	25	FAZT-D12/2	240870	1/60
13	415	15	240/415	25	FAZT-D13/2	240871	1/60
15	415	15	240/415	20	FAZT-D15/2	240872	1/60
16	415	15	240/415	20	FAZT-D16/2	240873	1/60
20	415	10	240/415	20	FAZT-D20/2	142489	1/60
25	415	10	240/415	15	FAZT-D25/2	142490	1/60
32	415	10	240/415	15	FAZT-D32/2	142491	1/60
40	415	10	240/415	15	FAZT-D40/2	142492	1/60

SG53512

3-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60898-1 (V)	Breaking capacity acc. to IEC/EN 60898-1 (kA)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Type Designation	Article No.	Units per package
1	415	15	240/415	25	FAZT-D1/3	240898	1/40
2	415	15	240/415	25	FAZT-D2/3	240899	1/40
3	415	15	240/415	25	FAZT-D3/3	240900	1/40
4	415	15	240/415	25	FAZT-D4/3	240901	1/40
6	415	15	240/415	25	FAZT-D6/3	240902	1/40
10	415	15	240/415	25	FAZT-D10/3	240903	1/40
12	415	15	240/415	25	FAZT-D12/3	240904	1/40
13	415	15	240/415	25	FAZT-D13/3	240905	1/40
15	415	15	240/415	25	FAZT-D15/3	240910	1/40
16	415	15	240/415	25	FAZT-D16/3	240915	1/40
20	415	10	240/415	20	FAZT-D20/3	142497	1/40
25	415	10	240/415	15	FAZT-D25/3	142498	1/40
32	415	10	240/415	15	FAZT-D32/3	142499	1/40
40	415	10	240/415	15	FAZT-D40/3	142500	1/40

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3+N-poles

1	415	15	240/415	25	FAZT-D1/3N	241180	1/30
2	415	15	240/415	25	FAZT-D2/3N	241181	1/30
3	415	15	240/415	25	FAZT-D3/3N	241182	1/30
4	415	15	240/415	25	FAZT-D4/3N	241183	1/30
6	415	15	240/415	25	FAZT-D6/3N	241184	1/30
10	415	15	240/415	25	FAZT-D10/3N	241185	1/30
12	415	15	240/415	25	FAZT-D12/3N	241186	1/30
13	415	15	240/415	25	FAZT-D13/3N	241187	1/30
15	415	15	240/415	25	FAZT-D15/3N	241188	1/30
16	415	15	240/415	25	FAZT-D16/3N	241189	1/30
20	415	10	240/415	20	FAZT-D20/3N	142521	1/30
25	415	10	240/415	15	FAZT-D25/3N	142522	1/30
32	415	10	240/415	15	FAZT-D32/3N	142523	1/30
40	415	10	240/415	15	FAZT-D40/3N	142524	1/30

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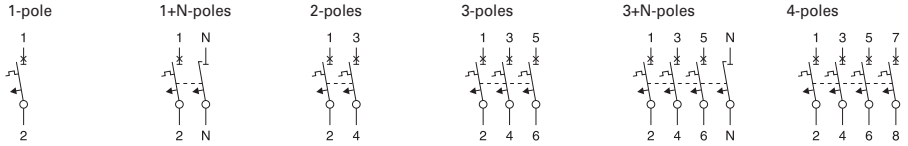
4-poles

1	415	15	240/415	25	FAZT-D1/4	240968	1/30
2	415	15	240/415	25	FAZT-D2/4	240969	1/30
3	415	15	240/415	25	FAZT-D3/4	240970	1/30
4	415	15	240/415	25	FAZT-D4/4	240971	1/30
6	415	15	240/415	25	FAZT-D6/4	240975	1/30
10	415	15	240/415	25	FAZT-D10/4	240979	1/30
12	415	15	240/415	25	FAZT-D12/4	240985	1/30
13	415	15	240/415	25	FAZT-D13/4	240989	1/30
15	415	15	240/415	25	FAZT-D15/4	240992	1/30
16	415	15	240/415	25	FAZT-D16/4	240993	1/30
20	415	10	240/415	20	FAZT-D20/4	142505	1/30
25	415	10	240/415	15	FAZT-D25/4	142506	1/30
32	415	10	240/415	15	FAZT-D32/4	142507	1/30
40	415	10	240/415	15	FAZT-D40/4	142508	1/30

Technical Data

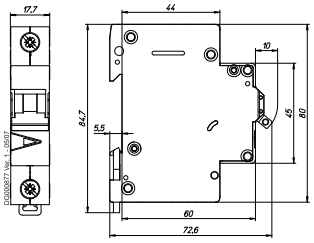
		FAZ-T
Productstandard		IEC/EN 60947-2, IEC/EN 60898-1
Number of poles		1, 1p+N, 2, 3, 3p+N, 4
Mechanical		
Device width		17.7 mm (1p), 27 mm (1p+N), 36 mm (2p), 54 mm (3p), 72 mm (3p+N), 72 mm (4p)
Frame size		45 mm
Device height		80 mm
Device depth		60 mm
Terminals		lift terminal
Terminal capacity rigid solid/stranded wire		1-25 mm^2
Terminal screw		M5 (with slotted screw acc. to EN ISO 4757-Z2, PZ2)
Fastening torque of terminal screws		max. 2.4 Nm
Snap on fixing		tristable (on DIN rail acc. to EN 50022)
Finger proof		acc. to VBG4, ÖVE EN-6
Degree of protection (DIN VDE 0470)		
Surface mounted		IP20
Built-in behind panel		IP40
Contact position indicator		red / green
Electrical		
Rated voltage	U_n	255/440 V AC (Characteristic B, C), 240/415 V AC (Characteristic D) 60 V DC per pole
Rated current	I_n	Type B, C, D: 1, 2, 3, 4, 6, 10, 12, 13, 15, 16, 20, 25, 32, 40 A
Rated insulation voltage	U_i	440 V AC
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50) µsec
Tripping characteristic		
Conventional non-tripping current		$I_{nt} = 1{,}13\ I_n$
Conventional tripping current		$I_t = 1.45\ I_n$
Reference temperature		30 °C
Temperature factor		0.4%/K
Instantaneous tripping current	I_{mt}	Type B: $3\ I_n < I_{mt} = 5\ I_n$:t (I_{mt}) < 0.1 sec Type C: $5\ I_n < I_{mt} = 10\ I_n$:t ($I_{mt}$) < 0.1 sec Type D: $10\ I_n < I_{mt} = 20\ I_n$:t ($I_{mt}$) < 0.1 sec
Rated ultimate short-circuit breaking capacity I_{cu} (IEC/EN 60947-2)	Type B	1-25 A: 25 kA, 32-40 A: 20 kA
	Type C	1-25 A: 25 kA, 32-40 A: 20 kA
	Type D	1p/1p+N/2p - 1-13 A: 25 kA, 15-20 A: 20 kA, 25-40 A: 15 kA 3p/3p+N/4p - 1-16 A: 25 kA, 20 A: 20 kA, 25-40 A: 15 kA
Rated service short-circuit breaking capacity I_{cs} (IEC/EN 60947-2)		for I_{cu} = 25 kA --> I_{cs} = 12.5 kA: 240/415 V AC; I_{cu} = 15 kA: 255/440 V AC for I_{cu} = 20 kA --> I_{cs} = 10 kA: 240/415 V AC; I_{cu} = 15 kA: 255/440 V AC for I_{cu} = 15 kA --> I_{cs} = 7.5 kA
Rated short-circuit breaking capacity I_{cn} (IEC/EN 60898-1)	Type B	1-25 A: 15 kA, 32-40 A: 10 kA
	Type C	1-25 A: 15 kA, 32-40 A: 10 kA
	Type D	1-16 A: 15 kA, 20-40 A: 10 kA
Selectivity class		3 (acc. to EN 60898)
Number of electrical operations		> 4.000 (IEC/EN 60898)
Number of mechanical operations		> 10,000 (IEC/EN 60947)
Climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)
Operating temperature range		-40°C up to +75°C

Connection diagram

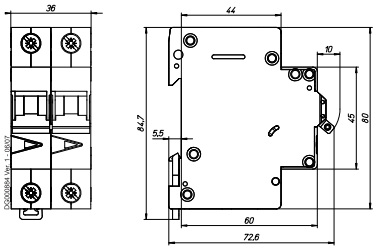


Dimensions (mm) FAZ-T

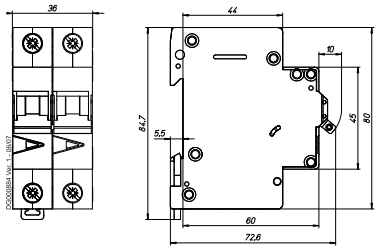
1-pole



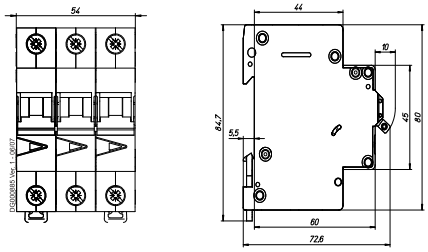
1+N-poles



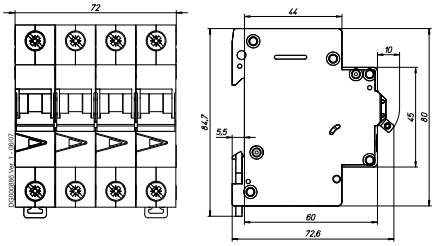
2-poles



3-poles

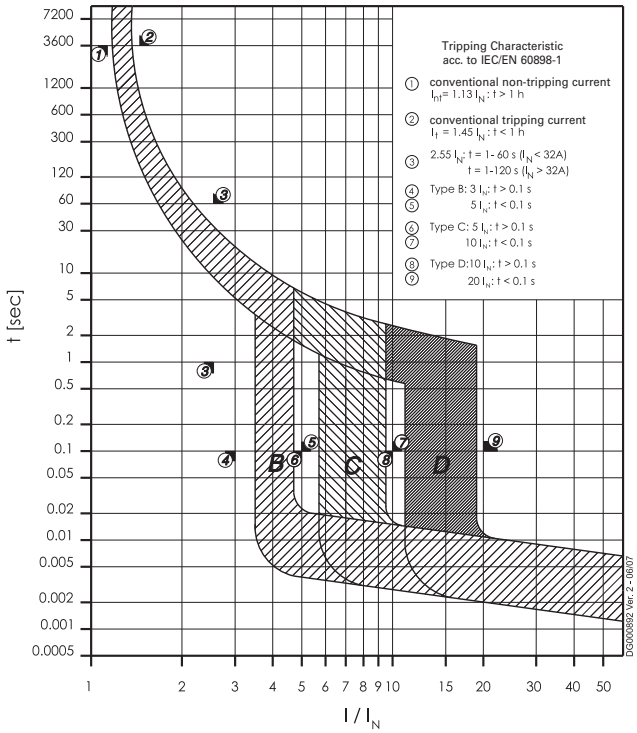


3+N-poles, 4-poles



Tripping Characteristics FAZ-T

Characteristics B, C and D - EN60898



Power Loss at I_n FAZ-T

Type B

I_n [A]	1p P [W]	1pN P [W]	2p P [W]	3p P [W]	3pN* P [W]	4p P [W]
1	1.6	1.7	3.1	4.7	4.8	6.3
2	1.4	1.5	2.8	4.1	4.3	5.5
3	2.5	2.7	5.0	7.6	7.8	10.1
4	1.4	1.6	2.9	4.4	4.5	5.8
6	1.8	2.0	3.6	5.5	5.6	7.3
10	1.9	2.1	3.9	5.9	6.1	7.8
12	2.8	3.2	5.9	8.7	9.0	11.5
13	2.5	2.9	5.3	7.8	8.1	10.3
15	2.1	2.4	4.4	6.5	6.7	8.6
16	2.2	2.6	4.7	6.9	7.2	9.1
20	3.2	3.6	6.6	9.8	10.1	13.0
25	3.0	3.5	6.4	9.4	9.7	12.4
32	3.7	4.4	8.1	12.1	12.5	15.8
40	3.4	4.1	7.5	11.2	11.5	14.6

* symmetrical load

Type C

I_n [A]	1p P [W]	1pN P [W]	2p P [W]	3p P [W]	3pN* P [W]	4p P [W]
1	1.6	1.7	3.1	4.7	4.8	6.3
2	1.4	1.5	2.8	4.1	4.3	5.5
3	1.2	1.3	2.4	3.6	3.7	4.8
4	1.4	1.6	2.9	4.4	4.5	5.8
6	1.5	1.6	2.9	4.4	4.6	5.9
10	1.5	1.7	3.0	4.6	4.7	6.1
12	2.1	2.4	4.4	6.5	6.8	8.6
13	2.5	2.9	5.3	7.8	8.1	10.3
15	2.1	2.4	4.4	6.5	6.7	8.6
16	2.2	2.6	4.7	6.9	7.2	9.1
20	3.2	3.6	6.6	9.8	10.1	13.0
25	3.0	3.5	6.4	9.4	9.7	12.4
32	3.7	4.4	8.1	12.1	12.5	15.8
40	3.4	4.1	7.5	11.2	11.5	14.6

* symmetrical load

Type D

I_n [A]	1p P [W]	1pN P [W]	2p P [W]	3p P [W]	3pN* P [W]	4p P [W]
1	0.8	0.9	1.6	2.4	2.5	3.2
2	1.0	1.1	2.0	3.0	3.1	4.0
3	1.2	1.3	2.4	3.6	3.7	4.8
4	1.4	1.6	2.9	4.4	4.5	5.8
6	1.5	1.6	2.9	4.4	4.6	5.9
10	1.5	1.7	3.0	4.6	4.7	6.1
12	1.7	2.0	3.6	5.3	5.4	7.0
13	1.9	2.2	4.0	5.9	6.1	7.8
15	2.1	2.4	4.4	6.5	6.7	8.6
16	2.2	2.6	4.7	6.9	7.2	9.1
20	2.0	2.2	4.1	6.1	6.2	8.1
25	2.5	2.9	5.2	7.7	7.9	10.2
32	3.4	4.0	7.4	11.1	11.4	14.5
40	3.2	3.8	7.0	10.4	10.7	13.6

* symmetrical load

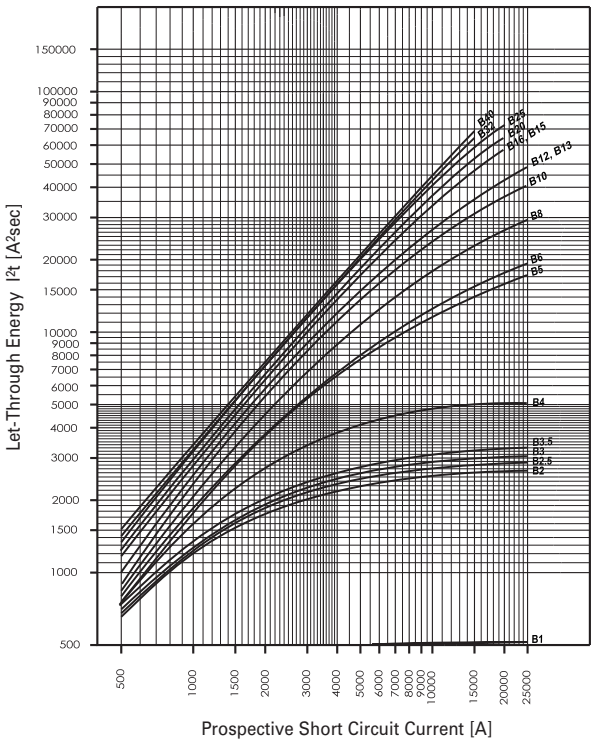
Influence of Ambient Temperature FAZ-T

On Load Carrying Capacity (temperature derating)

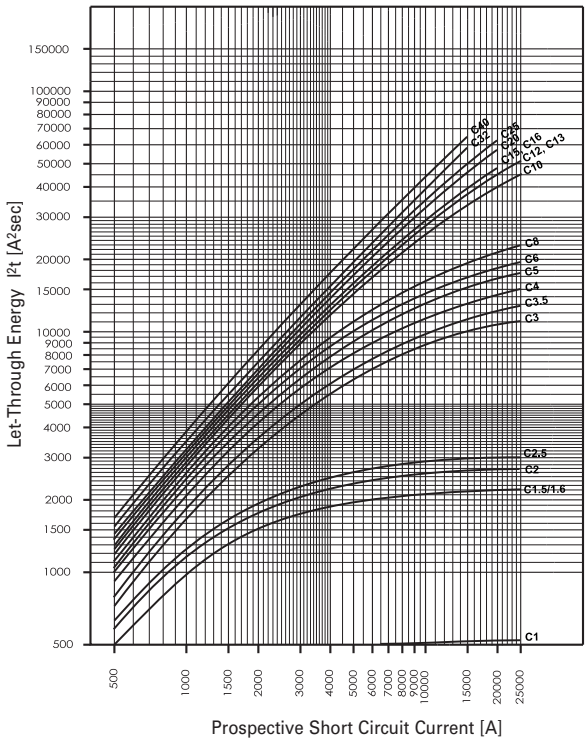
	Ambient temperature T [°C]																
	-40	**-30**	**-20**	**-10**	**0**	**10**	**20**	**30**	**35**	**40**	**45**	**50**	**55**	**60**	**65**	**70**	**75**
I_n [A]																	
1	1.3	1.2	1.2	1.2	1.1	1.1	1	1	0.99	0.97	0.95	0.93	0.9	0.89	0.87	0.85	0.83
2	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2	2	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7
3	3.8	3.7	3.6	3.5	3.4	3.3	3.1	3	3	2.9	2.8	2.8	2.7	2.7	2.6	2.5	2.5
4	5.1	5	4.8	4.7	4.5	4.3	4.2	4	3.9	3.9	3.8	3.7	3.6	3.5	3.5	3.4	3.3
6	7.7	7.5	7.2	7	6.7	6.5	6.3	6	5.9	5.8	5.7	5.6	5.4	5.3	5.2	5.1	5
10	13	12	12	12	11	11	10	10	9.9	9.7	9.5	9.3	9	8.9	8.7	8.5	8.3
12	15	15	14	14	13	13	13	12	12	12	11	11	11	11	10	10	10
13	17	16	16	15	15	14	14	13	13	13	12	12	12	12	11	11	11
15	19	19	18	17	17	16	16	15	15	15	14	14	14	13	13	13	12
16	20	20	19	19	18	17	17	16	16	15	15	15	14	14	14	14	13
20	26	25	24	23	22	22	21	20	20	19	19	19	18	18	17	17	17
25	32	31	30	29	28	27	26	25	25	24	24	23	23	22	22	21	21
32	41	40	38	37	36	35	33	32	32	31	30	30	29	28	28	27	26
40	51	50	48	47	45	43	42	40	39	39	38	37	36	35	35	34	33

Maximum Let-Through Energy FAZ-T

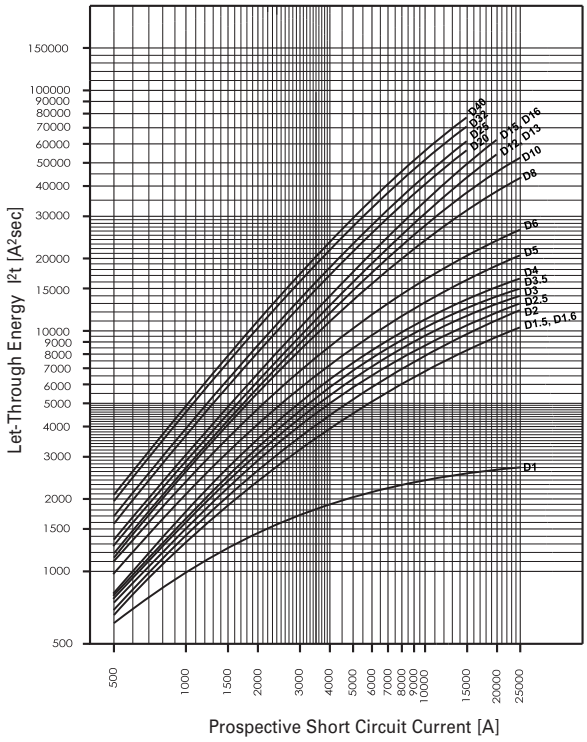
Type B



Type C

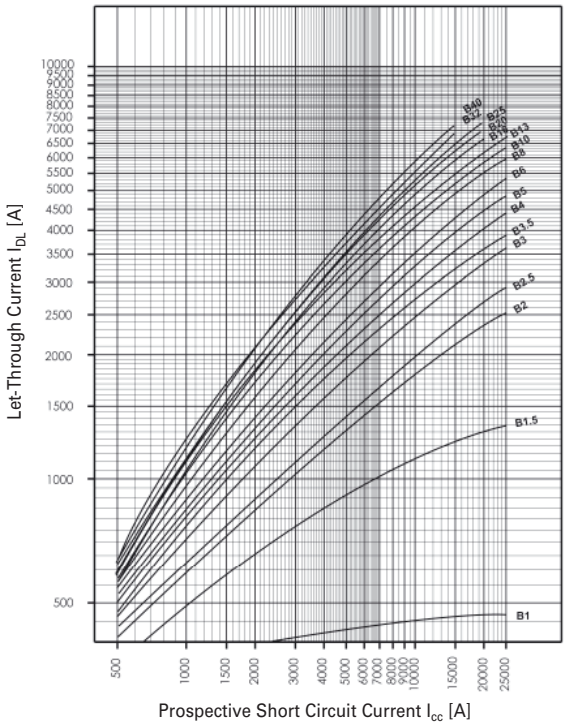


Type D

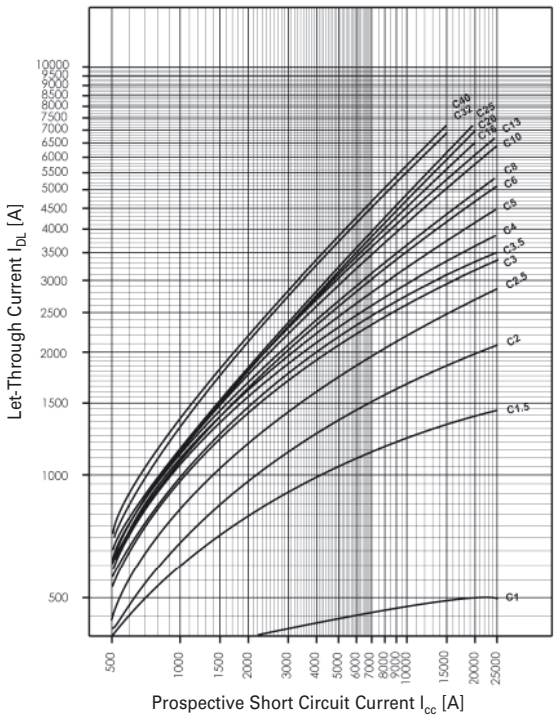


Maximum Let-Through Current FAZ-T

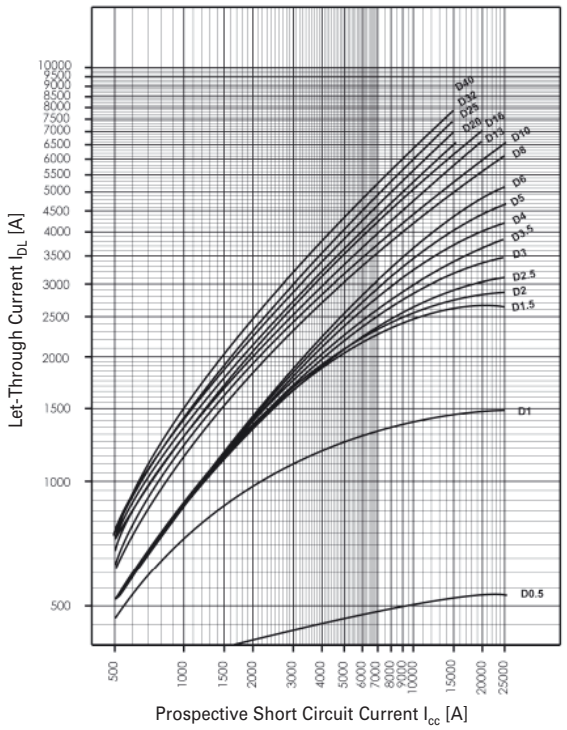
Type B



Type C



Type D

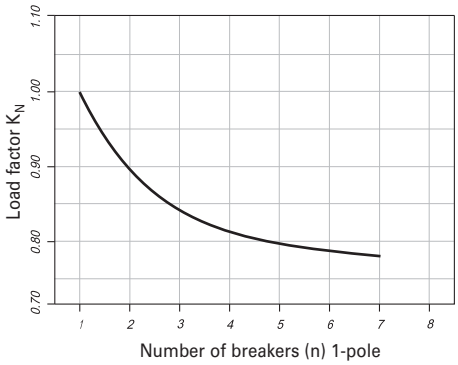


Influence of the Line Frequency FAZ-T

On the Instantaneous Tripping Current I_{MA}

	Line 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

Load rating in case of circuit breakers arranged one next to the otherFAZ-T



Derating table for FAZ/FAZ-T above 2000m sea level

				60898		60947		
				Un 230/400V		Un 230/400V		
				B, C, D ≤63A		B, C ≤63A and D ≤40A	D50, D63	B, C, D ≤63A
above sea level (m)	overvoltage category	disconnect function	I/In	Icn	Ics	Icu		Ics
m	x	x	x	kA	kA	kA	kA	kA
<=2000	III	yes	1	10	7.5	15	10	7.5
>2000-2500	II	no	0.93	6	6	10	6	6
>2500-3000	II	no	0.88	6	6	10	6	6
>3000-3500	II	no	0.83	6	6	10	6	6
>3500-4000	II	no	0.78	6	6	10	6	6

SG53312

Description

FAZ-DC

- High-quality miniature circuit breakers for DC-applications
- Contact position indicator red - green
- Guide for secure terminal connection (not for FAZ-NA)
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- 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

Characteristic C

SG54512

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V DC)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Type Designation	Article No.	Units per package
2	220	10	FAZ-C2/1-DC	279122	12/120
3	250	10	FAZ-C3/1-DC	279123	12/120
4	250	10	FAZ-C4/1-DC	279124	12/120
6	250	10	FAZ-C6/1-DC	279125	12/120
10	250	10	FAZ-C10/1-DC	279126	12/120
13	250	10	FAZ-C13/1-DC	279127	12/120
16	250	10	FAZ-C16/1-DC	279128	12/120
20	250	10	FAZ-C20/1-DC	279129	12/120
25	250	10	FAZ-C25/1-DC	279130	12/120
32	250	10	FAZ-C32/1-DC	279131	12/120
40	250	10	FAZ-C40/1-DC	279132	12/120
50	250	10	FAZ-C50/1-DC	279133	12/120

SG53312

2-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V DC)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Type Designation	Article No.	Units per package
2	440	10	FAZ-C2/2-DC	279134	1/60
3	500	10	FAZ-C3/2-DC	279135	1/60
4	500	10	FAZ-C4/2-DC	279136	1/60
6	500	10	FAZ-C6/2-DC	279137	1/60
10	500	10	FAZ-C10/2-DC	279138	1/60
13	500	10	FAZ-C13/2-DC	279139	1/60
16	500	10	FAZ-C16/2-DC	279140	1/60
20	500	10	FAZ-C20/2-DC	279141	1/60
25	500	10	FAZ-C25/2-DC	279142	1/60
32	500	10	FAZ-C32/2-DC	279143	1/60
40	500	10	FAZ-C40/2-DC	279144	1/60
50	500	10	FAZ-C50/2-DC	279145	1/60

Technical Data

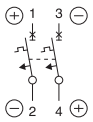
		FAZ-DC *)
Productstandard		IEC/EN 60947-2
Number of poles		1, 2
Mechanical		
Device width		17.7 mm (1p), 36 mm (2p)
Frame size		45 mm
Device height		80 mm
Device depth		60 mm
Terminals		lift terminal
Terminal capacity rigid solid/stranded wire		1-25 mm^2
Terminal screw		M5 (with slotted screw acc. to EN ISO 4757-Z2, PZ2)
Fastening torque of terminal screws		max. 2.4 Nm
Snap on fixing		tristable (on DIN rail acc. to EN 50022)
Finger proof		acc. to VBG4, ÖVE EN-6
Degree of protection (DIN VDE 0470)		
Surface mounted		IP20
Built-in behind panel		IP40
Contact position indicator		red / green
Electrical		
Rated voltage DC	U_n	2 A Type: 220V (per pole) 3-50 A Typen: 250V (per pole)
Rated current	I_n	Type C: 2, 3, 4, 6, 10, 13, 16, 20, 25, 32, 40, 50 A
Rated insulation voltage	U_i	440 V AC
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50) µsec
Tripping characteristic		
Conventional non-tripping current		$I_{nt} = 1{,}13\ I_n$
Conventional tripping current		$I_t = 1.45\ I_n$
Reference temperature		30 °C
Temperature factor		0.4%/K
Instantaneous tripping current	I_{mt}	Type C: $7\ I_n < I_{mt} = 15\ I_n$:t ($I_{mt}$) < 0.1 sec
Rated short-circuit breaking capacity	I_{cn}	10 kA
Selectivity class		3
Number of electrical operations		> 4.000
Number of mechanical operations		> 20.000
Climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)
Operating temperature range		-40°C up to +75°C

*) not for PV string protection!

Connection diagram

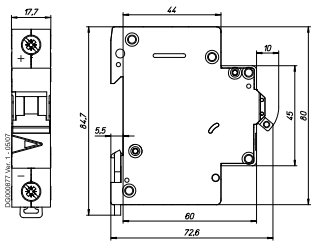
1-pole

2-poles

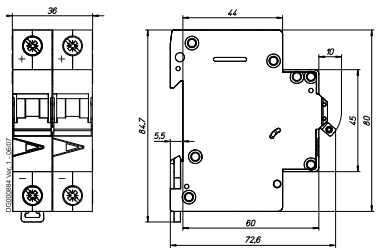


Dimensions (mm) FAZ-...-DC

1-pole

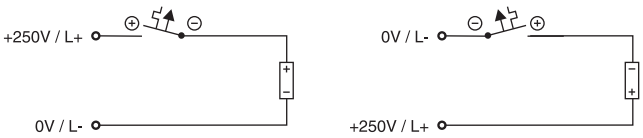


2-poles

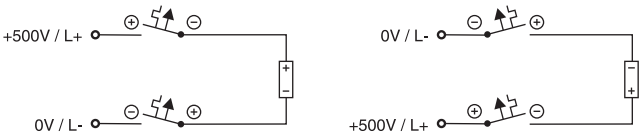


Connection examples FAZ-...-DC

Connection example at 250V=, 1-pole

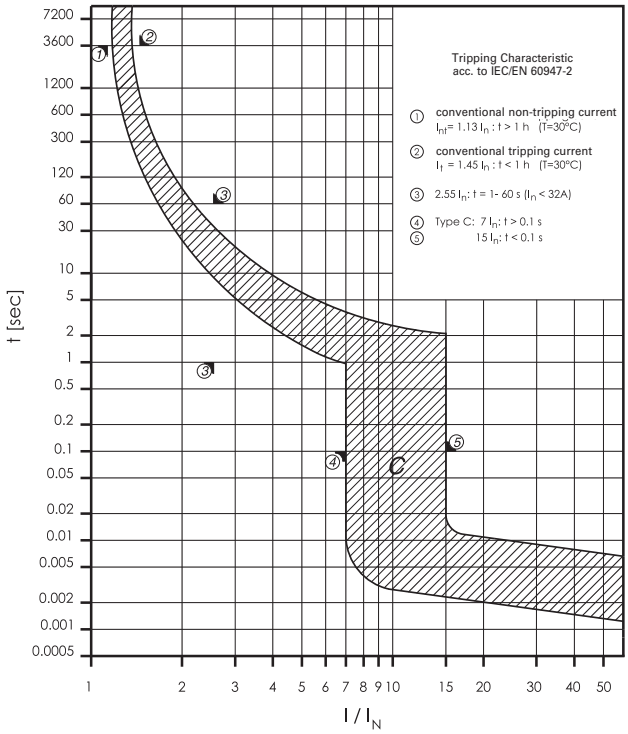


Connection example at 500V=, 2-poles



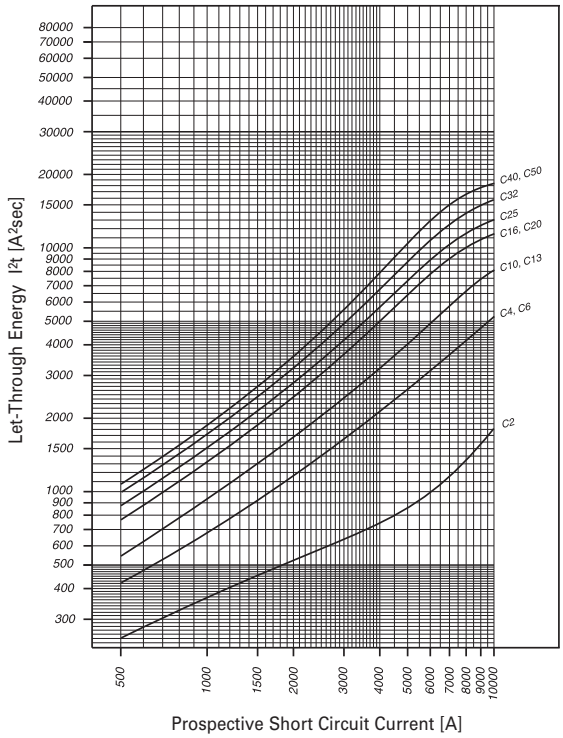
Tripping Characteristics FAZ-...-DC

Characteristics C - IEC/EN 60947-2



Maximum Let-Through Energy FAZ-...-DC

Type C



SG56912

Description

FAZ-NA/-RT

- According to UL 489, CSA C22.2 No. 5 and also IEC 60947-2 standard
- For Applications, wich are permitted for UL 1077 or CSA C22.2 No. 235
- Auxiliary switch and voltage trips suitable for subsequent installation
- Serie with removable terminal screws (Type FAZ-..-RT), for use with ring cable lug
- Contact position indicator red - green
- Easy mounting at DIN-rail

Characteristic B

SG53012

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL489 (V)	Breaking capacity acc. to UL489 (kA)	SWD	NFPA 79	Type Designation	Article No.	Units per package
1	254	15	277	10	SWD	AWG 18	FAZ-B1/1-NA	132414	2/80
1.5	254	15	277	10	SWD	AWG 18	FAZ-B1,5/1-NA	132415	2/80
2	254	15	277	10	SWD	AWG 18	FAZ-B2/1-NA	132416	2/80
3	254	15	277	10	SWD	AWG 18	FAZ-B3/1-NA	132417	2/80
4	254	15	277	10	SWD	AWG 18	FAZ-B4/1-NA	132418	2/80
5	254	15	277	10	SWD	AWG 18	FAZ-B5/1-NA	132419	2/80
6	254	15	277	10	SWD	AWG 18	FAZ-B6/1-NA	132680	2/80
7	254	15	277	10	SWD	AWG 18	FAZ-B7/1-NA	132681	2/80
8	254	15	277	10	SWD	AWG 16	FAZ-B8/1-NA	132682	2/80
10	254	15	277	10	SWD	AWG 16	FAZ-B10/1-NA	132683	2/80
13	254	15	277	10	SWD		FAZ-B13/1-NA	132684	2/80
15	254	15	277	14	SWD		FAZ-B15/1-NA	132685	2/80
16	254	15	277	14	SWD		FAZ-B16/1-NA	132686	2/80
20	254	15	277	14	SWD		FAZ-B20/1-NA	132687	2/80
25	254	15	277	14			FAZ-B25/1-NA	132688	2/80
30	254	15	277	10			FAZ-B30/1-NA	132689	2/80
32	254	15	277	10			FAZ-B32/1-NA	132690	2/80
35	254	15	240	10			FAZ-B35/1-NA	132691	2/80
40	254	15	240	10			FAZ-B40/1-NA	132692	2/80
50	240	15	240	10			FAZ-B50/1-NA	190779	2/80
63	240	15	240	10			FAZ-B63/1-NA	190780	2/80

SG56812

2-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL489 (V)	Breaking capacity acc. to UL489 (kA)	SWD	NFPA 79	Type Designation	Article No.	Units per package
1	440	15	480Y/277	10	SWD	AWG 18	FAZ-B1/2-NA	132693	1/40
1.5	440	15	480Y/277	10	SWD	AWG 18	FAZ-B1,5/2-NA	132694	1/40
2	440	15	480Y/277	10	SWD	AWG 18	FAZ-B2/2-NA	132695	1/40
3	440	15	480Y/277	10	SWD	AWG 18	FAZ-B3/2-NA	132696	1/40
4	440	15	480Y/277	10	SWD	AWG 18	FAZ-B4/2-NA	132697	1/40
5	440	15	480Y/277	10	SWD	AWG 18	FAZ-B5/2-NA	132698	1/40
6	440	15	480Y/277	10	SWD	AWG 18	FAZ-B6/2-NA	132699	1/40
7	440	15	480Y/277	10	SWD	AWG 18	FAZ-B7/2-NA	132700	1/40
8	440	15	480Y/277	10	SWD	AWG 16	FAZ-B8/2-NA	132701	1/40
10	440	15	480Y/277	10	SWD	AWG 16	FAZ-B10/2-NA	132702	1/40
13	440	15	480Y/277	10	SWD		FAZ-B13/2-NA	132703	1/40
15	440	15	480Y/277	14	SWD		FAZ-B15/2-NA	132704	1/40
16	440	15	480Y/277	14	SWD		FAZ-B16/2-NA	132705	1/40
20	440	15	480Y/277	14	SWD		FAZ-B20/2-NA	132706	1/40
25	440	15	480Y/277	14			FAZ-B25/2-NA	132707	1/40
30	440	15	480Y/277	10			FAZ-B30/2-NA	132708	1/40
32	440	15	480Y/277	10			FAZ-B32/2-NA	132709	1/40
35	440	15	240	10			FAZ-B35/2-NA	132710	1/40
40	440	15	240	10			FAZ-B40/2-NA	132711	1/40
50	415	15	240	10			FAZ-B50/2-NA	190783	1/40
63	415	15	240	10			FAZ-B63/2-NA	190784	1/40

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3-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL489 (V)	Breaking capacity acc. to UL489 (kA)	SWD	NFPA 79	Type Designation	Article No.	Units per package
1	440	15	480Y/277	10	SWD	AWG 18	FAZ-B1/3-NA	132712	1/28
1.5	440	15	480Y/277	10	SWD	AWG 18	FAZ-B1,5/3-NA	132713	1/28
2	440	15	480Y/277	10	SWD	AWG 18	FAZ-B2/3-NA	132714	1/28
3	440	15	480Y/277	10	SWD	AWG 18	FAZ-B3/3-NA	132715	1/28
4	440	15	480Y/277	10	SWD	AWG 18	FAZ-B4/3-NA	132716	1/28
5	440	15	480Y/277	10	SWD	AWG 18	FAZ-B5/3-NA	132717	1/28
6	440	15	480Y/277	10	SWD	AWG 18	FAZ-B6/3-NA	132718	1/28
7	440	15	480Y/277	10	SWD	AWG 18	FAZ-B7/3-NA	132719	1/28
8	440	15	480Y/277	10	SWD	AWG 16	FAZ-B8/3-NA	132720	1/28
10	440	15	480Y/277	10	SWD	AWG 16	FAZ-B10/3-NA	132721	1/28
13	440	15	480Y/277	10	SWD		FAZ-B13/3-NA	132722	1/28
15	440	15	480Y/277	14	SWD		FAZ-B15/3-NA	132723	1/28
16	440	15	480Y/277	14	SWD		FAZ-B16/3-NA	132724	1/28
20	440	15	480Y/277	14	SWD		FAZ-B20/3-NA	132725	1/28
25	440	15	480Y/277	14			FAZ-B25/3-NA	132726	1/28
30	440	15	480Y/277	10			FAZ-B30/3-NA	132727	1/28
32	440	15	480Y/277	10			FAZ-B32/3-NA	132728	1/28
35	440	15	240	10			FAZ-B35/3-NA	132729	1/28
40	440	15	240	10			FAZ-B40/3-NA	132730	1/28
50	415	15	240	10			FAZ-B50/3-NA	190787	1/28
63	415	15	240	10			FAZ-B63/3-NA	190788	1/28

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4-poles

1	440	15	480Y/277	10		AWG18	FAZ-B1/4-NA	190899	1/20
1.5	440	15	480Y/277	10		AWG18	FAZ-B1,5/4-NA	190900	1/20
2	440	15	480Y/277	10		AWG18	FAZ-B2/4-NA	190901	1/20
3	440	15	480Y/277	10		AWG18	FAZ-B3/4-NA	190902	1/20
4	440	15	480Y/277	10		AWG18	FAZ-B4/4-NA	190903	1/20
5	440	15	480Y/277	10		AWG18	FAZ-B5/4-NA	190904	1/20
6	440	15	480Y/277	10		AWG18	FAZ-B6/4-NA	190905	1/20
7	440	15	480Y/277	10		AWG18	FAZ-B7/4-NA	190906	1/20
8	440	15	480Y/277	10		AWG16	FAZ-B8/4-NA	190927	1/20
10	440	15	480Y/277	10		AWG16	FAZ-B10/4-NA	190928	1/20
13	440	15	480Y/277	10			FAZ-B13/4-NA	190907	1/20
15	440	15	480Y/277	14			FAZ-B15/4-NA	190908	1/20
16	440	15	480Y/277	14			FAZ-B16/4-NA	190909	1/20
20	440	15	480Y/277	14			FAZ-B20/4-NA	190910	1/20
25	440	15	480Y/277	14			FAZ-B25/4-NA	190911	1/20
30	440	15	480Y/277	10			FAZ-B30/4-NA	190912	1/20
32	440	15	480Y/277	10			FAZ-B32/4-NA	190913	1/20
35	440	15	240	10			FAZ-B35/4-NA	190914	1/20
40	440	15	240	10			FAZ-B40/4-NA	190915	1/20
50	415	15	240	10			FAZ-B50/4-NA	190789	1/20
63	415	15	240	10			FAZ-B63/4-NA	190790	1/20

Characteristic C

SG53012

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL489 (V)	Breaking capacity acc. to UL489 (kA)	SWD	NFPA 79	Type Designation	Article No.	Units per package
0.5	254	15	277	10	SWD	AWG 18	FAZ-C0,5/1-NA	102077	2/80
1	254	15	277	10	SWD	AWG 18	FAZ-C1/1-NA	102078	2/80
1.5	254	15	277	10	SWD	AWG 18	FAZ-C1,5/1-NA	102079	2/80
2	254	15	277	10	SWD	AWG 18	FAZ-C2/1-NA	102080	2/80
3	254	15	277	10	SWD	AWG 18	FAZ-C3/1-NA	102081	2/80
4	254	15	277	10	SWD	AWG 18	FAZ-C4/1-NA	102082	2/80
5	254	15	277	10	SWD	AWG 18	FAZ-C5/1-NA	102083	2/80
6	254	15	277	10	SWD	AWG 18	FAZ-C6/1-NA	102084	2/80
7	254	15	277	10	SWD	AWG 18	FAZ-C7/1-NA	102085	2/80
8	254	15	277	10	SWD	AWG 16	FAZ-C8/1-NA	102086	2/80
10	254	15	277	10	SWD	AWG 16	FAZ-C10/1-NA	102087	2/80
13	254	15	277	10	SWD		FAZ-C13/1-NA	102088	2/80
15	254	15	277	14	SWD		FAZ-C15/1-NA	102089	2/80
16	254	15	277	14	SWD		FAZ-C16/1-NA	102090	2/80
20	254	15	277	14	SWD		FAZ-C20/1-NA	102091	2/80
25	254	15	277	14			FAZ-C25/1-NA	102092	2/80
30	254	15	277	10			FAZ-C30/1-NA	102093	2/80
32	254	15	277	10			FAZ-C32/1-NA	102094	2/80
35	254	15	240	10			FAZ-C35/1-NA	102095	2/80
40	254	15	240	10			FAZ-C40/1-NA	102096	2/80
50	240	15	240	10			FAZ-C50/1-NA	190781	2/80
63	240	15	240	10			FAZ-C63/1-NA	190782	2/80

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2-poles

0.5	440	15	480Y/277	10	SWD	AWG 18	FAZ-C0,5/2-NA	102157	1/40
1	440	15	480Y/277	10	SWD	AWG 18	FAZ-C1/2-NA	102158	1/40
1.5	440	15	480Y/277	10	SWD	AWG 18	FAZ-C1,5/2-NA	102159	1/40
2	440	15	480Y/277	10	SWD	AWG 18	FAZ-C2/2-NA	102160	1/40
3	440	15	480Y/277	10	SWD	AWG 18	FAZ-C3/2-NA	102161	1/40
4	440	15	480Y/277	10	SWD	AWG 18	FAZ-C4/2-NA	102162	1/40
5	440	15	480Y/277	10	SWD	AWG 18	FAZ-C5/2-NA	102163	1/40
6	440	15	480Y/277	10	SWD	AWG 18	FAZ-C6/2-NA	102164	1/40
7	440	15	480Y/277	10	SWD	AWG 18	FAZ-C7/2-NA	102165	1/40
8	440	15	480Y/277	10	SWD	AWG 16	FAZ-C8/2-NA	102166	1/40
10	440	15	480Y/277	10	SWD	AWG 16	FAZ-C10/2-NA	102167	1/40
13	440	15	480Y/277	10	SWD		FAZ-C13/2-NA	102168	1/40
15	440	15	480Y/277	14	SWD		FAZ-C15/2-NA	102169	1/40
16	440	15	480Y/277	14	SWD		FAZ-C16/2-NA	102170	1/40
20	440	15	480Y/277	14	SWD		FAZ-C20/2-NA	102171	1/40
25	440	15	480Y/277	14			FAZ-C25/2-NA	102172	1/40
30	440	15	480Y/277	10			FAZ-C30/2-NA	102173	1/40
32	440	15	480Y/277	10			FAZ-C32/2-NA	102174	1/40
35	440	15	240	10			FAZ-C35/2-NA	102175	1/40
40	440	15	240	10			FAZ-C40/2-NA	102176	1/40
50	415	15	240	10			FAZ-C50/2-NA	190785	1/40
63	415	15	240	10			FAZ-C63/2-NA	190786	1/40

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3-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL489 (V)	Breaking capacity acc. to UL489 (kA)	SWD	NFPA 79	Type Designation	Article No.	Units per package
0.5	440	15	480Y/277	10	SWD	AWG 18	FAZ-C0,5/3-NA	102237	1/28
1	440	15	480Y/277	10	SWD	AWG 18	FAZ-C1/3-NA	102238	1/28
1.5	440	15	480Y/277	10	SWD	AWG 18	FAZ-C1,5/3-NA	102239	1/28
2	440	15	480Y/277	10	SWD	AWG 18	FAZ-C2/3-NA	102240	1/28
3	440	15	480Y/277	10	SWD	AWG 18	FAZ-C3/3-NA	102241	1/28
4	440	15	480Y/277	10	SWD	AWG 18	FAZ-C4/3-NA	102242	1/28
5	440	15	480Y/277	10	SWD	AWG 18	FAZ-C5/3-NA	102243	1/28
6	440	15	480Y/277	10	SWD	AWG 18	FAZ-C6/3-NA	102244	1/28
7	440	15	480Y/277	10	SWD	AWG 18	FAZ-C7/3-NA	102245	1/28
8	440	15	480Y/277	10	SWD	AWG 16	FAZ-C8/3-NA	102246	1/28
10	440	15	480Y/277	10	SWD	AWG 16	FAZ-C10/3-NA	102247	1/28
13	440	15	480Y/277	10	SWD		FAZ-C13/3-NA	102248	1/28
15	440	15	480Y/277	14	SWD		FAZ-C15/3-NA	102249	1/28
16	440	15	480Y/277	14	SWD		FAZ-C16/3-NA	102250	1/28
20	440	15	480Y/277	14	SWD		FAZ-C20/3-NA	102251	1/28
25	440	15	480Y/277	14			FAZ-C25/3-NA	102252	1/28
30	440	15	480Y/277	10			FAZ-C30/3-NA	102253	1/28
32	440	15	480Y/277	10			FAZ-C32/3-NA	102254	1/28
35	440	15	240	10			FAZ-C35/3-NA	102255	1/28
40	440	15	240	10			FAZ-C40/3-NA	102256	1/28
50	415	15	240	10			FAZ-C50/3-NA	190791	1/28
63	415	15	240	10			FAZ-C63/3-NA	190792	1/28

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4-poles

0.5	440	15	480Y/277	10		AWG18	FAZ-C0,5/4-NA	190916	1/20
1	440	15	480Y/277	10		AWG18	FAZ-C1/4-NA	190917	1/20
1.5	440	15	480Y/277	10		AWG18	FAZ-C1,5/4-NA	190918	1/20
2	440	15	480Y/277	10		AWG18	FAZ-C2/4-NA	190919	1/20
3	440	15	480Y/277	10		AWG18	FAZ-C3/4-NA	190920	1/20
4	440	15	480Y/277	10		AWG18	FAZ-C4/4-NA	190921	1/20
5	440	15	480Y/277	10		AWG18	FAZ-C5/4-NA	190922	1/20
6	440	15	480Y/277	10		AWG18	FAZ-C6/4-NA	190923	1/20
7	440	15	480Y/277	10		AWG18	FAZ-C7/4-NA	190924	1/20
8	440	15	480Y/277	10		AWG16	FAZ-C8/4-NA	190925	1/20
10	440	15	480Y/277	10		AWG16	FAZ-C10/4-NA	190926	1/20
13	440	15	480Y/277	10			FAZ-C13/4-NA	190815	1/20
15	440	15	480Y/277	14			FAZ-C15/4-NA	190816	1/20
16	440	15	480Y/277	14			FAZ-C16/4-NA	190817	1/20
20	440	15	480Y/277	14			FAZ-C20/4-NA	190818	1/20
25	440	15	480Y/277	14			FAZ-C25/4-NA	190819	1/20
30	440	15	480Y/277	10			FAZ-C30/4-NA	190820	1/20
32	440	15	480Y/277	10			FAZ-C32/4-NA	190821	1/20
35	440	15	240	10			FAZ-C35/4-NA	190822	1/20
40	440	15	240	10			FAZ-C40/4-NA	190823	1/20
50	415	15	240	10			FAZ-C50/4-NA	190793	1/20
63	415	15	240	10			FAZ-C63/4-NA	190794	1/20

Characteristic D

SG53012

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL489 (V)	Breaking capacity acc. to UL489 (kA)	SWD	NFPA 79	Type Designation	Article No.	Units per package
0.5	240	15	277	10	SWD	AWG 18	FAZ-D0,5/1-NA	102097	2/80
1	240	15	277	10	SWD	AWG 18	FAZ-D1/1-NA	102098	2/80
1.5	240	15	277	10	SWD	AWG 18	FAZ-D1,5/1-NA	102099	2/80
2	240	15	277	10	SWD	AWG 18	FAZ-D2/1-NA	102100	2/80
3	240	15	277	10	SWD	AWG 18	FAZ-D3/1-NA	102101	2/80
4	240	15	277	10	SWD	AWG 18	FAZ-D4/1-NA	102102	2/80
5	240	15	277	10	SWD	AWG 18	FAZ-D5/1-NA	102103	2/80
6	240	15	277	10	SWD	AWG 18	FAZ-D6/1-NA	102104	2/80
7	240	15	277	10	SWD	AWG 18	FAZ-D7/1-NA	102105	2/80
8	240	15	277	10	SWD	AWG 16	FAZ-D8/1-NA	102106	2/80
10	240	15	277	10	SWD	AWG 16	FAZ-D10/1-NA	102107	2/80
13	240	15	277	14	SWD		FAZ-D13/1-NA	102108	2/80
15	240	15	277	14	SWD		FAZ-D15/1-NA	102109	2/80
16	240	15	277	14	SWD		FAZ-D16/1-NA	102110	2/80
20	240	15	277	14	SWD		FAZ-D20/1-NA	102111	2/80
25	240	15	277	10			FAZ-D25/1-NA	102112	2/80
30	240	15	277	10			FAZ-D30/1-NA	102113	2/80
32	240	15	277	10			FAZ-D32/1-NA	102114	2/80
35	240	15	240	10			FAZ-D35/1-NA	102115	2/80
40	240	15	240	10			FAZ-D40/1-NA	102116	2/80

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2-poles

0.5	415	15	480Y/277	10	SWD	AWG 18	FAZ-D0,5/2-NA	102177	1/40
1	415	15	480Y/277	10	SWD	AWG 18	FAZ-D1/2-NA	102178	1/40
1.5	415	15	480Y/277	10	SWD	AWG 18	FAZ-D1,5/2-NA	102179	1/40
2	415	15	480Y/277	10	SWD	AWG 18	FAZ-D2/2-NA	102180	1/40
3	415	15	480Y/277	10	SWD	AWG 18	FAZ-D3/2-NA	102181	1/40
4	415	15	480Y/277	10	SWD	AWG 18	FAZ-D4/2-NA	102182	1/40
5	415	15	480Y/277	10	SWD	AWG 18	FAZ-D5/2-NA	102183	1/40
6	415	15	480Y/277	10	SWD	AWG 18	FAZ-D6/2-NA	102184	1/40
7	415	15	480Y/277	10	SWD	AWG 18	FAZ-D7/2-NA	102185	1/40
8	415	15	480Y/277	10	SWD	AWG 16	FAZ-D8/2-NA	102186	1/40
10	415	15	480Y/277	10	SWD	AWG 16	FAZ-D10/2-NA	102187	1/40
13	415	15	480Y/277	14	SWD		FAZ-D13/2-NA	102188	1/40
15	415	15	480Y/277	14	SWD		FAZ-D15/2-NA	102189	1/40
16	415	15	480Y/277	14	SWD		FAZ-D16/2-NA	102190	1/40
20	415	15	480Y/277	14	SWD		FAZ-D20/2-NA	102191	1/40
25	415	15	480Y/277	10			FAZ-D25/2-NA	102192	1/40
30	415	15	480Y/277	10			FAZ-D30/2-NA	102193	1/40
32	415	15	480Y/277	10			FAZ-D32/2-NA	102194	1/40
35	415	15	240	10			FAZ-D35/2-NA	102195	1/40
40	415	15	240	10			FAZ-D40/2-NA	102196	1/40

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3-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL489 (V)	Breaking capacity acc. to UL489 (kA)	SWD	NFPA 79	Type Designation	Article No.	Units per package
0.5	415	15	480Y/277	10	SWD	AWG 18	FAZ-D0,5/3-NA	102257	1/28
1	415	15	480Y/277	10	SWD	AWG 18	FAZ-D1/3-NA	102258	1/28
1.5	415	15	480Y/277	10	SWD	AWG 18	FAZ-D1,5/3-NA	102259	1/28
2	415	15	480Y/277	10	SWD	AWG 18	FAZ-D2/3-NA	102260	1/28
3	415	15	480Y/277	10	SWD	AWG 18	FAZ-D3/3-NA	102261	1/28
4	415	15	480Y/277	10	SWD	AWG 18	FAZ-D4/3-NA	102262	1/28
5	415	15	480Y/277	10	SWD	AWG 18	FAZ-D5/3-NA	102263	1/28
6	415	15	480Y/277	10	SWD	AWG 18	FAZ-D6/3-NA	102264	1/28
7	415	15	480Y/277	10	SWD	AWG 18	FAZ-D7/3-NA	102265	1/28
8	415	15	480Y/277	10	SWD	AWG 16	FAZ-D8/3-NA	102266	1/28
10	415	15	480Y/277	10	SWD	AWG 16	FAZ-D10/3-NA	102267	1/28
13	415	15	480Y/277	14	SWD		FAZ-D13/3-NA	102268	1/28
15	415	15	480Y/277	14	SWD		FAZ-D15/3-NA	102269	1/28
16	415	15	480Y/277	14	SWD		FAZ-D16/3-NA	102270	1/28
20	415	15	480Y/277	14	SWD		FAZ-D20/3-NA	102271	1/28
25	415	15	480Y/277	10			FAZ-D25/3-NA	102272	1/28
30	415	15	480Y/277	10			FAZ-D30/3-NA	102273	1/28
32	415	15	480Y/277	10			FAZ-D32/3-NA	102274	1/28
35	415	15	240	10			FAZ-D35/3-NA	102275	1/28
40	415	15	240	10			FAZ-D40/3-NA	102276	1/28

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4-poles

0.5	415	15	480Y/277	10		AWG18	FAZ-D0,5/4-NA	190824	1/20
1	415	15	480Y/277	10		AWG18	FAZ-D1/4-NA	190825	1/20
1.5	415	15	480Y/277	10		AWG18	FAZ-D1,5/4-NA	190826	1/20
2	415	15	480Y/277	10		AWG18	FAZ-D2/4-NA	190827	1/20
3	415	15	480Y/277	10		AWG18	FAZ-D3/4-NA	190828	1/20
4	415	15	480Y/277	10		AWG18	FAZ-D4/4-NA	190829	1/20
5	415	15	480Y/277	10		AWG18	FAZ-D5/4-NA	190830	1/20
6	415	15	480Y/277	10		AWG18	FAZ-D6/4-NA	190831	1/20
7	415	15	480Y/277	10		AWG18	FAZ-D7/4-NA	190832	1/20
8	415	15	480Y/277	10		AWG16	FAZ-D8/4-NA	190833	1/20
10	415	15	480Y/277	10		AWG16	FAZ-D10/4-NA	190834	1/20
13	415	15	480Y/277	10			FAZ-D13/4-NA	190835	1/20
15	415	15	480Y/277	14			FAZ-D15/4-NA	190836	1/20
16	415	15	480Y/277	14			FAZ-D16/4-NA	190837	1/20
20	415	15	480Y/277	14			FAZ-D20/4-NA	190838	1/20
25	415	15	480Y/277	14			FAZ-D25/4-NA	190839	1/20
30	415	15	480Y/277	10			FAZ-D30/4-NA	190840	1/20
32	415	15	480Y/277	10			FAZ-D32/4-NA	190841	1/20
35	415	15	240	10			FAZ-D35/4-NA	190842	1/20
40	415	15	240	10			FAZ-D40/4-NA	190843	1/20

Characteristic B

SG56412

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL489 (V)	Breaking capacity acc. to UL489 (kA)	SWD	NFPA 79	Type Designation	Article No.	Units per package
1	254	15	277	10	SWD	AWG 18	FAZ-B1/1-RT	132731	2/80
1,5	254	15	277	10	SWD	AWG 18	FAZ-B1,5/1-RT	132732	2/80
2	254	15	277	10	SWD	AWG 18	FAZ-B2/1-RT	132733	2/80
3	254	15	277	10	SWD	AWG 18	FAZ-B3/1-RT	132734	2/80
4	254	15	277	10	SWD	AWG 18	FAZ-B4/1-RT	132735	2/80
5	254	15	277	10	SWD	AWG 18	FAZ-B5/1-RT	132736	2/80
6	254	15	277	10	SWD	AWG 18	FAZ-B6/1-RT	132737	2/80
7	254	15	277	10	SWD	AWG 18	FAZ-B7/1-RT	132738	2/80
8	254	15	277	10	SWD	AWG 16	FAZ-B8/1-RT	132739	2/80
10	254	15	277	10	SWD	AWG 16	FAZ-B10/1-RT	132740	2/80
13	254	15	277	10	SWD		FAZ-B13/1-RT	132741	2/80
15	254	15	277	14	SWD		FAZ-B15/1-RT	132742	2/80
16	254	15	277	14	SWD		FAZ-B16/1-RT	132743	2/80
20	254	15	277	14	SWD		FAZ-B20/1-RT	132744	2/80
25	254	15	277	14			FAZ-B25/1-RT	132745	2/80
30	254	15	277	10			FAZ-B30/1-RT	132746	2/80
32	254	15	277	10			FAZ-B32/1-RT	132747	2/80
35	254	15	240	10			FAZ-B35/1-RT	132748	2/80
40	254	15	240	10			FAZ-B40/1-RT	132749	2/80
50	240	15	240	10			FAZ-B50/1-RT	190795	2/80
63	240	15	240	10			FAZ-B63/1-RT	190796	2/80

SG56712

2-poles

1	440	15	480Y/277	10	SWD	AWG 18	FAZ-B1/2-RT	132750	1/40
1,5	440	15	480Y/277	10	SWD	AWG 18	FAZ-B1,5/2-RT	132751	1/40
2	440	15	480Y/277	10	SWD	AWG 18	FAZ-B2/2-RT	132752	1/40
3	440	15	480Y/277	10	SWD	AWG 18	FAZ-B3/2-RT	132753	1/40
4	440	15	480Y/277	10	SWD	AWG 18	FAZ-B4/2-RT	132754	1/40
5	440	15	480Y/277	10	SWD	AWG 18	FAZ-B5/2-RT	132755	1/40
6	440	15	480Y/277	10	SWD	AWG 18	FAZ-B6/2-RT	132756	1/40
7	440	15	480Y/277	10	SWD	AWG 18	FAZ-B7/2-RT	132757	1/40
8	440	15	480Y/277	10	SWD	AWG 16	FAZ-B8/2-RT	132758	1/40
10	440	15	480Y/277	10	SWD	AWG 16	FAZ-B10/2-RT	132759	1/40
13	440	15	480Y/277	10	SWD		FAZ-B13/2-RT	132760	1/40
15	440	15	480Y/277	14	SWD		FAZ-B15/2-RT	132761	1/40
16	440	15	480Y/277	14	SWD		FAZ-B16/2-RT	132762	1/40
20	440	15	480Y/277	14	SWD		FAZ-B20/2-RT	132763	1/40
25	440	15	480Y/277	14			FAZ-B25/2-RT	132764	1/40
30	440	15	480Y/277	10			FAZ-B30/2-RT	132765	1/40
32	440	15	480Y/277	10			FAZ-B32/2-RT	132766	1/40
35	440	15	240	10			FAZ-B35/2-RT	132767	1/40
40	440	15	240	10			FAZ-B40/2-RT	132768	1/40
50	415	15	240	10			FAZ-B50/2-RT	190799	1/40
63	415	15	240	10			FAZ-B63/2-RT	190800	1/40

SG57012

3-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL489 (V)	Breaking capacity acc. to UL489 (kA)	SWD	NFPA 79	Type Designation	Article No.	Units per package
1	440	15	480Y/277	10	SWD	AWG 18	FAZ-B1/3-RT	132769	1/28
1,5	440	15	480Y/277	10	SWD	AWG 18	FAZ-B1,5/3-RT	132770	1/28
2	440	15	480Y/277	10	SWD	AWG 18	FAZ-B2/3-RT	132771	1/28
3	440	15	480Y/277	10	SWD	AWG 18	FAZ-B3/3-RT	132772	1/28
4	440	15	480Y/277	10	SWD	AWG 18	FAZ-B4/3-RT	132773	1/28
5	440	15	480Y/277	10	SWD	AWG 18	FAZ-B5/3-RT	132774	1/28
6	440	15	480Y/277	10	SWD	AWG 18	FAZ-B6/3-RT	132775	1/28
7	440	15	480Y/277	10	SWD	AWG 18	FAZ-B7/3-RT	132776	1/28
8	440	15	480Y/277	10	SWD	AWG 16	FAZ-B8/3-RT	132777	1/28
10	440	15	480Y/277	10	SWD	AWG 16	FAZ-B10/3-RT	132778	1/28
13	440	15	480Y/277	10	SWD		FAZ-B13/3-RT	132779	1/28
15	440	15	480Y/277	14	SWD		FAZ-B15/3-RT	132780	1/28
16	440	15	480Y/277	14	SWD		FAZ-B16/3-RT	132781	1/28
20	440	15	480Y/277	14	SWD		FAZ-B20/3-RT	132782	1/28
25	440	15	480Y/277	14			FAZ-B25/3-RT	132783	1/28
30	440	15	480Y/277	10			FAZ-B30/3-RT	132784	1/28
32	440	15	480Y/277	10			FAZ-B32/3-RT	132785	1/28
35	440	15	240	10			FAZ-B35/3-RT	132786	1/28
40	440	15	240	10			FAZ-B40/3-RT	132787	1/28
50	415	15	240	10			FAZ-B50/3-RT	190803	1/28
63	415	15	240	10			FAZ-B63/3-RT	190804	1/28

wa_sg01017

4-poles

1	440	15	480Y/277	10		AWG18	FAZ-B1/4-RT	190844	1/20
1,5	440	15	480Y/277	10		AWG18	FAZ-B1,5/4-RT	190845	1/20
2	440	15	480Y/277	10		AWG18	FAZ-B2/4-RT	190846	1/20
3	440	15	480Y/277	10		AWG18	FAZ-B3/4-RT	190847	1/20
4	440	15	480Y/277	10		AWG18	FAZ-B4/4-RT	190848	1/20
5	440	15	480Y/277	10		AWG18	FAZ-B5/4-RT	190849	1/20
6	440	15	480Y/277	10		AWG18	FAZ-B6/4-RT	190850	1/20
7	440	15	480Y/277	10		AWG18	FAZ-B7/4-RT	190851	1/20
8	440	15	480Y/277	10		AWG16	FAZ-B8/4-RT	190852	1/20
10	440	15	480Y/277	10		AWG16	FAZ-B10/4-RT	190853	1/20
13	440	15	480Y/277	10			FAZ-B13/4-RT	190854	1/20
15	440	15	480Y/277	14			FAZ-B15/4-RT	190855	1/20
16	440	15	480Y/277	14			FAZ-B16/4-RT	190856	1/20
20	440	15	480Y/277	14			FAZ-B20/4-RT	190857	1/20
25	440	15	480Y/277	14			FAZ-B25/4-RT	190858	1/20
30	440	15	480Y/277	10			FAZ-B30/4-RT	190859	1/20
32	440	15	480Y/277	10			FAZ-B32/4-RT	190860	1/20
35	440	15	240	10			FAZ-B35/4-RT	190861	1/20
40	440	15	240	10			FAZ-B40/4-RT	190862	1/20
50	415	15	240	10			FAZ-B50/4-RT	190805	1/20
63	415	15	240	10			FAZ-B63/4-RT	190806	1/20

Characteristic C

SG56412

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL489 (V)	Breaking capacity acc. to UL489 (kA)	SWD	NFPA 79	Type Designation	Article No.	Units per package
0.5	254	15	277	10	SWD	AWG 18	FAZ-C0,5/1-RT	102117	2/80
1	254	15	277	10	SWD	AWG 18	FAZ-C1/1-RT	102118	2/80
1,5	254	15	277	10	SWD	AWG 18	FAZ-C1,5/1-RT	102119	2/80
2	254	15	277	10	SWD	AWG 18	FAZ-C2/1-RT	102120	2/80
3	254	15	277	10	SWD	AWG 18	FAZ-C3/1-RT	102121	2/80
4	254	15	277	10	SWD	AWG 18	FAZ-C4/1-RT	102122	2/80
5	254	15	277	10	SWD	AWG 18	FAZ-C5/1-RT	102123	2/80
6	254	15	277	10	SWD	AWG 18	FAZ-C6/1-RT	102124	2/80
7	254	15	277	10	SWD	AWG 18	FAZ-C7/1-RT	102125	2/80
8	254	15	277	10	SWD	AWG 16	FAZ-C8/1-RT	102126	2/80
10	254	15	277	10	SWD	AWG 16	FAZ-C10/1-RT	102127	2/80
13	254	15	277	10	SWD		FAZ-C13/1-RT	102128	2/80
15	254	15	277	14	SWD		FAZ-C15/1-RT	102129	2/80
16	254	15	277	14	SWD		FAZ-C16/1-RT	102130	2/80
20	254	15	277	14	SWD		FAZ-C20/1-RT	102131	2/80
25	254	15	277	14			FAZ-C25/1-RT	102132	2/80
30	254	15	277	10			FAZ-C30/1-RT	102133	2/80
32	254	15	277	10			FAZ-C32/1-RT	102134	2/80
35	254	15	240	10			FAZ-C35/1-RT	102135	2/80
40	254	15	240	10			FAZ-C40/1-RT	102136	2/80
50	240	15	240	10			FAZ-C50/1-RT	190797	2/80
63	240	15	240	10			FAZ-C63/1-RT	190798	2/80

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2-poles

0.5	440	15	480Y/277	10	SWD	AWG 18	FAZ-C0,5/2-RT	102197	1/40
1	440	15	480Y/277	10	SWD	AWG 18	FAZ-C1/2-RT	102198	1/40
1,5	440	15	480Y/277	10	SWD	AWG 18	FAZ-C1,5/2-RT	102199	1/40
2	440	15	480Y/277	10	SWD	AWG 18	FAZ-C2/2-RT	102200	1/40
3	440	15	480Y/277	10	SWD	AWG 18	FAZ-C3/2-RT	102201	1/40
4	440	15	480Y/277	10	SWD	AWG 18	FAZ-C4/2-RT	102202	1/40
5	440	15	480Y/277	10	SWD	AWG 18	FAZ-C5/2-RT	102203	1/40
6	440	15	480Y/277	10	SWD	AWG 18	FAZ-C6/2-RT	102204	1/40
7	440	15	480Y/277	10	SWD	AWG 18	FAZ-C7/2-RT	102205	1/40
8	440	15	480Y/277	10	SWD	AWG 16	FAZ-C8/2-RT	102206	1/40
10	440	15	480Y/277	10	SWD	AWG 16	FAZ-C10/2-RT	102207	1/40
13	440	15	480Y/277	10	SWD		FAZ-C13/2-RT	102208	1/40
15	440	15	480Y/277	14	SWD		FAZ-C15/2-RT	102209	1/40
16	440	15	480Y/277	14	SWD		FAZ-C16/2-RT	102210	1/40
20	440	15	480Y/277	14	SWD		FAZ-C20/2-RT	102211	1/40
25	440	15	480Y/277	14			FAZ-C25/2-RT	102212	1/40
30	440	15	480Y/277	10			FAZ-C30/2-RT	102213	1/40
32	440	15	480Y/277	10			FAZ-C32/2-RT	102214	1/40
35	440	15	240	10			FAZ-C35/2-RT	102215	1/40
40	440	15	240	10			FAZ-C40/2-RT	102216	1/40
50	415	15	240	10			FAZ-C50/2-RT	190801	1/40
63	415	15	240	10			FAZ-C63/2-RT	190802	1/40

SG57012

3-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL489 (V)	Breaking capacity acc. to UL489 (kA)	SWD	NFPA 79	Type Designation	Article No.	Units per package
0.5	440	15	480Y/277	10	SWD	AWG 18	FAZ-C0,5/3-RT	102277	1/28
1	440	15	480Y/277	10	SWD	AWG 18	FAZ-C1/3-RT	102278	1/28
1,5	440	15	480Y/277	10	SWD	AWG 18	FAZ-C1,5/3-RT	102279	1/28
2	440	15	480Y/277	10	SWD	AWG 18	FAZ-C2/3-RT	102280	1/28
3	440	15	480Y/277	10	SWD	AWG 18	FAZ-C3/3-RT	102281	1/28
4	440	15	480Y/277	10	SWD	AWG 18	FAZ-C4/3-RT	102282	1/28
5	440	15	480Y/277	10	SWD	AWG 18	FAZ-C5/3-RT	102283	1/28
6	440	15	480Y/277	10	SWD	AWG 18	FAZ-C6/3-RT	102284	1/28
7	440	15	480Y/277	10	SWD	AWG 18	FAZ-C7/3-RT	102285	1/28
8	440	15	480Y/277	10	SWD	AWG 16	FAZ-C8/3-RT	102286	1/28
10	440	15	480Y/277	10	SWD	AWG 16	FAZ-C10/3-RT	102287	1/28
13	440	15	480Y/277	10	SWD		FAZ-C13/3-RT	102288	1/28
15	440	15	480Y/277	14	SWD		FAZ-C15/3-RT	102289	1/28
16	440	15	480Y/277	14	SWD		FAZ-C16/3-RT	102290	1/28
20	440	15	480Y/277	14	SWD		FAZ-C20/3-RT	102291	1/28
25	440	15	480Y/277	14			FAZ-C25/3-RT	102292	1/28
30	440	15	480Y/277	10			FAZ-C30/3-RT	102293	1/28
32	440	15	480Y/277	10			FAZ-C32/3-RT	102294	1/28
35	440	15	240	10			FAZ-C35/3-RT	102295	1/28
40	440	15	240	10			FAZ-C40/3-RT	102296	1/28
50	415	15	240	10			FAZ-C50/3-RT	190807	1/28
63	415	15	240	10			FAZ-C63/3-RT	190808	1/28

wa_sg01017

4-poles

0.5	440	15	480Y/277	10		AWG18	FAZ-C0,5/4-RT	190863	1/20
1	440	15	480Y/277	10		AWG18	FAZ-C1/4-RT	190864	1/20
1,5	440	15	480Y/277	10		AWG18	FAZ-C1,5/4-RT	190865	1/20
2	440	15	480Y/277	10		AWG18	FAZ-C2/4-RT	190866	1/20
3	440	15	480Y/277	10		AWG18	FAZ-C3/4-RT	190867	1/20
4	440	15	480Y/277	10		AWG18	FAZ-C4/4-RT	190868	1/20
5	440	15	480Y/277	10		AWG18	FAZ-C5/4-RT	190869	1/20
6	440	15	480Y/277	10		AWG18	FAZ-C6/4-RT	190870	1/20
7	440	15	480Y/277	10		AWG18	FAZ-C7/4-RT	190871	1/20
8	440	15	480Y/277	10		AWG16	FAZ-C8/4-RT	190872	1/20
10	440	15	480Y/277	10		AWG16	FAZ-C10/4-RT	190873	1/20
13	440	15	480Y/277	10			FAZ-C13/4-RT	190874	1/20
15	440	15	480Y/277	14			FAZ-C15/4-RT	190875	1/20
16	440	15	480Y/277	14			FAZ-C16/4-RT	190876	1/20
20	440	15	480Y/277	14			FAZ-C20/4-RT	190877	1/20
25	440	15	480Y/277	14			FAZ-C25/4-RT	190878	1/20
30	440	15	480Y/277	10			FAZ-C30/4-RT	190879	1/20
32	440	15	480Y/277	10			FAZ-C32/4-RT	190880	1/20
35	440	15	240	10			FAZ-C35/4-RT	190881	1/20
40	440	15	240	10			FAZ-C40/4-RT	190882	1/20
50	415	15	240	10			FAZ-C50/4-RT	190809	1/20
63	415	15	240	10			FAZ-C63/4-RT	190810	1/20

Characteristic D

SG56412

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL489 (V)	Breaking capacity acc. to UL489 (kA)	SWD	NFPA 79	Type Designation	Article No.	Units per package
0.5	240	15	277	10	SWD	AWG 18	FAZ-D0,5/1-RT	102137	2/80
1	240	15	277	10	SWD	AWG 18	FAZ-D1/1-RT	102138	2/80
1,5	240	15	277	10	SWD	AWG 18	FAZ-D1,5/1-RT	102139	2/80
2	240	15	277	10	SWD	AWG 18	FAZ-D2/1-RT	102140	2/80
3	240	15	277	10	SWD	AWG 18	FAZ-D3/1-RT	102141	2/80
4	240	15	277	10	SWD	AWG 18	FAZ-D4/1-RT	102142	2/80
5	240	15	277	10	SWD	AWG 18	FAZ-D5/1-RT	102143	2/80
6	240	15	277	10	SWD	AWG 18	FAZ-D6/1-RT	102144	2/80
7	240	15	277	10	SWD	AWG 18	FAZ-D7/1-RT	102145	2/80
8	240	15	277	10	SWD	AWG 16	FAZ-D8/1-RT	102146	2/80
10	240	15	277	10	SWD	AWG 16	FAZ-D10/1-RT	102147	2/80
13	240	15	277	14	SWD		FAZ-D13/1-RT	102148	2/80
15	240	15	277	14	SWD		FAZ-D15/1-RT	102149	2/80
16	240	15	277	14	SWD		FAZ-D16/1-RT	102150	2/80
20	240	15	277	14	SWD		FAZ-D20/1-RT	102151	2/80
25	240	15	277	10			FAZ-D25/1-RT	102152	2/80
30	240	15	277	10			FAZ-D30/1-RT	102153	2/80
32	240	15	277	10			FAZ-D32/1-RT	102154	2/80
35	240	15	240	10			FAZ-D35/1-RT	102155	2/80
40	240	15	240	10			FAZ-D40/1-RT	102156	2/80

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2-poles

0.5	415	15	480Y/277	10	SWD	AWG 18	FAZ-D0,5/2-RT	102217	1/40
1	415	15	480Y/277	10	SWD	AWG 18	FAZ-D1/2-RT	102218	1/40
1,5	415	15	480Y/277	10	SWD	AWG 18	FAZ-D1,5/2-RT	102219	1/40
2	415	15	480Y/277	10	SWD	AWG 18	FAZ-D2/2-RT	102220	1/40
3	415	15	480Y/277	10	SWD	AWG 18	FAZ-D3/2-RT	102221	1/40
4	415	15	480Y/277	10	SWD	AWG 18	FAZ-D4/2-RT	102222	1/40
5	415	15	480Y/277	10	SWD	AWG 18	FAZ-D5/2-RT	102223	1/40
6	415	15	480Y/277	10	SWD	AWG 18	FAZ-D6/2-RT	102224	1/40
7	415	15	480Y/277	10	SWD	AWG 18	FAZ-D7/2-RT	102225	1/40
8	415	15	480Y/277	10	SWD	AWG 16	FAZ-D8/2-RT	102226	1/40
10	415	15	480Y/277	10	SWD	AWG 16	FAZ-D10/2-RT	102227	1/40
13	415	15	480Y/277	14	SWD		FAZ-D13/2-RT	102228	1/40
15	415	15	480Y/277	14	SWD		FAZ-D15/2-RT	102229	1/40
16	415	15	480Y/277	14	SWD		FAZ-D16/2-RT	102230	1/40
20	415	15	480Y/277	14	SWD		FAZ-D20/2-RT	102231	1/40
25	415	15	480Y/277	10			FAZ-D25/2-RT	102232	1/40
30	415	15	480Y/277	10			FAZ-D30/2-RT	102233	1/40
32	415	15	480Y/277	10			FAZ-D32/2-RT	102234	1/40
35	415	15	240	10			FAZ-D35/2-RT	102235	1/40
40	415	15	240	10			FAZ-D40/2-RT	102236	1/40

SG57012

3-poles

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL489 (V)	Breaking capacity acc. to UL489 (kA)	SWD	NFPA 79	Type Designation	Article No.	Units per package
0.5	415	15	480Y/277	10	SWD	AWG 18	FAZ-D0,5/3-RT	102297	1/28
1	415	15	480Y/277	10	SWD	AWG 18	FAZ-D1/3-RT	102298	1/28
1,5	415	15	480Y/277	10	SWD	AWG 18	FAZ-D1,5/3-RT	102299	1/28
2	415	15	480Y/277	10	SWD	AWG 18	FAZ-D2/3-RT	102300	1/28
3	415	15	480Y/277	10	SWD	AWG 18	FAZ-D3/3-RT	102301	1/28
4	415	15	480Y/277	10	SWD	AWG 18	FAZ-D4/3-RT	102302	1/28
5	415	15	480Y/277	10	SWD	AWG 18	FAZ-D5/3-RT	102303	1/28
6	415	15	480Y/277	10	SWD	AWG 18	FAZ-D6/3-RT	102304	1/28
7	415	15	480Y/277	10	SWD	AWG 18	FAZ-D7/3-RT	102305	1/28
8	415	15	480Y/277	10	SWD	AWG 16	FAZ-D8/3-RT	102306	1/28
10	415	15	480Y/277	10	SWD	AWG 16	FAZ-D10/3-RT	102307	1/28
13	415	15	480Y/277	14	SWD		FAZ-D13/3-RT	102308	1/28
15	415	15	480Y/277	14	SWD		FAZ-D15/3-RT	102309	1/28
16	415	15	480Y/277	14	SWD		FAZ-D16/3-RT	102310	1/28
20	415	15	480Y/277	14	SWD		FAZ-D20/3-RT	102311	1/28
25	415	15	480Y/277	10			FAZ-D25/3-RT	102312	1/28
30	415	15	480Y/277	10			FAZ-D30/3-RT	102313	1/28
32	415	15	480Y/277	10			FAZ-D32/3-RT	102314	1/28
35	415	15	240	10			FAZ-D35/3-RT	102315	1/28
40	415	15	240	10			FAZ-D40/3-RT	102316	1/28

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4-poles

0.5	415	15	480Y/277	10		AWG18	FAZ-D0,5/4-RT	190883	1/20
1	415	15	480Y/277	10		AWG18	FAZ-D1/4-RT	190884	1/20
1,5	415	15	480Y/277	10		AWG18	FAZ-D1,5/4-RT	190885	1/20
2	415	15	480Y/277	10		AWG18	FAZ-D2/4-RT	190886	1/20
3	415	15	480Y/277	10		AWG18	FAZ-D3/4-RT	190887	1/20
4	415	15	480Y/277	10		AWG18	FAZ-D4/4-RT	190888	1/20
5	415	15	480Y/277	10		AWG18	FAZ-D5/4-RT	190889	1/20
6	415	15	480Y/277	10		AWG18	FAZ-D6/4-RT	190890	1/20
7	415	15	480Y/277	10		AWG18	FAZ-D7/4-RT	190891	1/20
8	415	15	480Y/277	10		AWG16	FAZ-D8/4-RT	190892	1/20
10	415	15	480Y/277	10		AWG16	FAZ-D10/4-RT	190893	1/20
13	415	15	480Y/277	10			FAZ-D13/4-RT	190894	1/20
15	415	15	480Y/277	14			FAZ-D15/4-RT	190895	1/20
16	415	15	480Y/277	14			FAZ-D16/4-RT	190896	1/20
20	415	15	480Y/277	14			FAZ-D20/4-RT	190897	1/20
25	415	15	480Y/277	14			FAZ-D25/4-RT	190898	1/20
30	415	15	480Y/277	10			FAZ-D30/4-RT	190811	1/20
32	415	15	480Y/277	10			FAZ-D32/4-RT	190812	1/20
35	415	15	240	10			FAZ-D35/4-RT	190813	1/20
40	415	15	240	10			FAZ-D40/4-RT	190814	1/20

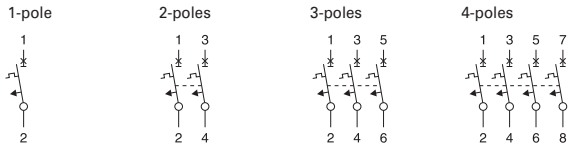
Miniature Circuit Breakers FAZ-...-NA, -RT

Accessories:		
Auxiliary switch for subsequent installation	Z-IHK-NA	113895
Tripping signal contact for subsequent installation	Z-NHK	248434
Shunt trip release	FAZ-XAA-NA12-110V AC	102037
	FAZ-XAA-NA110-415V AC	102036
Switching interlock	Z-IS/SPE-1TE	274418

Technical Data IEC/EN

		FAZ-...-NA, -RT
Productstandard		IEC/EN 60947-2
Number of poles		1, 2, 3, 4
Mechanical		
Device width		17.7 mm (1-pole), 35.4 mm (2-poles), 53.1 mm (3-poles), 70.8 mm (4-poles)
Frame size		45 mm
Device height		105 mm
Device depth		60 mm
Terminals		lift terminal / ring-tongue
Terminal capacity rigid solid/stranded wire		1-25 mm^2
Terminal screw		M5 (with slotted screw Pozidriv PZ2)
Fastening torque of terminal screws		max. 2.4 Nm
Degree of protection (DIN VDE 0470)		
Surface mounted		IP20
Built-in behind panel		IP40
Contact position indicator		red / green
Electrical		
Rated voltage	U_n	Only characteristic B, C (up to 40 A): 254/440 V AC For characteristic B, C (50 and 63 A) and characteristic D: 240/415 V AC
Rated current	I_n	0.5, 1, 1.5, 2, 3, 4, 5, 6, 7, 8, 10, 13, 15, 16, 20, 25, 30, 32, 35, 40, 50, 63 A
Rated insulation voltage	U_i	440 V AC
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50) µsec
Tripping characteristic		
Conventional non-tripping current		$I_{nt} = 1.05\ I_n$
Conventional tripping current		$I_t = 1.30\ I_n$
Reference temperature		40 °C
Temperature factor		0.5%/K
Instantaneous tripping current	I_{mt}	Type B: $3\ I_n < I_{mt} = 5\ I_n$:t (I_{mt}) < 0.1 sec Type C: $5\ I_n < I_{mt} = 10\ I_n$:t ($I_{mt}$) < 0.1 sec Type D: $10\ I_n < I_{mt} = 20\ I_n$:t ($I_{mt}$) < 0.1 sec
Rated short-circuit breaking capacity	I_{cu}	15 kA
Service short circuit capacity	I_{cs}	7.5 kA
Selectivity class		3 (acc. to EN 60898)
Number of electrical operations		> 1,500
Number of mechanical operations		> 10,000
Climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)
Operating temperature range		-40°C up to +75°C
Operating utility frequency		50/60 Hz

Connection diagram

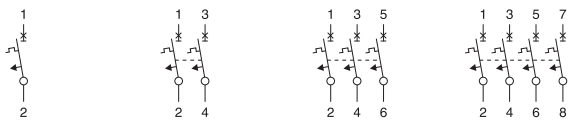


Technical Data UL

		FAZ-...-NA, -RT
Productstandard		UL 489, CSA C22.2 No. 5-02
Number of poles		1, 2, 3, 4
Mechanical		
Device width		0.697 in. (1-pole), 1.394 in. (2-poles), 2.090 in. (3-poles), 2.788 in. (4-poles)
Frame size		1.772 in.
Device height		4.134 in.
Device depth		2.362 in.
Terminals		lift terminal / ring-tongue
Terminal capacity rigid solid/stranded wire		1 Wire: #18-6 AWG (Cu only) 2 Wires: #18-10 AWG (Cu only)
Terminal screw		M5 (with slotted screw Pozidriv PZ2)
Fastening torque of terminal screws		#18-12 AWG: 2.4 Nm (21 lb-in) #10-8 AWG: 2.8 Nm (25 lb-in) #6 AWG: 4 Nm (36 lb-in)
Contact position indicator		red / green
Electrical		
Rated voltage	U_n	0.5-32 A: 480Y/277 V AC, 35-63 A: 240 V AC
Rated current	I_n	0.5, 1, 1.5, 2, 3, 4, 5, 6, 7, 8, 10, 13, 15, 16, 20, 25, 30, 32, 35, 40, 50 (not D), 63 (not D) A
Tripping characteristic		
Conventional non-tripping current		$I_{nt} = 1{,}00\ I_n$
Conventional tripping current		$I_t = 1.35\ I_n$
Reference temperature		40 °C
Temperature factor		0.5%/K
Instantaneous tripping current	I_{mt}	Type B: $3\ I_n < I_{mt} = 5\ I_n$:t (I_{mt}) < 0.1 sec Type C: $5\ I_n < I_{mt} = 10\ I_n$:t ($I_{mt}$) < 0.1 sec Type D: $10\ I_n < I_{mt} = 20\ I_n$:t ($I_{mt}$) < 0.1 sec
Current interrupting rating		
10 kA		B0.5-13A, B30-63A, C0.5-13A, C30-63A, D0.5-10A, D25-40A
14 kA		B15-25A, C15-25A, D13-20A
Current-Limiting		
High interrupt current at 240 V / 10 kA		$I^2t = 42\ kA^2s$ and $I_{peak} = 6.2$ kA
Intermediate interrupt current at 240 V / 5 kA		$I^2t = 24\ kA^2s$ and $I_{peak} = 4.2$ kA
Threshold current at 240 V / 2.6 kA		$I^2t = 18\ kA^2s$ and $I_{peak} = 2.9$ kA
High interrupt current at 480Y/277V / 10 kA		$I^2t = 60\ kA^2s$ and $I_{peak} = 6.2$ kA
High interrupt current at 480Y/277V / 14 kA		$I^2t = 65\ kA^2s$ and $I_{peak} = 7.5$ kA
Intermediate interrupt current at 480Y/277V / 5 kA		$I^2t = 36\ kA^2s$ and $I_{peak} = 4.6$ kA
Threshold current at 480Y/277V / 2.08 kA		$I^2t = 15\ kA^2s$ and $I_{peak} = 2.2$ kA
Selectivity class		3 (acc. to EN 60898)
Number of electrical operations		6,000
Number of mechanical operations		10,000
Climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)
Operating temperature range		-5 °C up to +40 °C
Operating utility frequency		50/60 Hz (B, C, D up to 40 A) 60 Hz (50, 63 A)

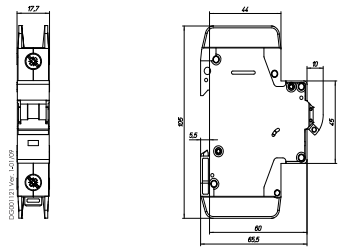
Connection diagram

1-pole 2-poles 3-poles 4-poles

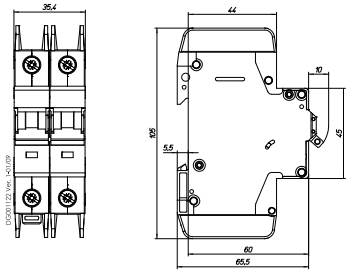


Dimensions (mm) FAZ-...-NA, -RT

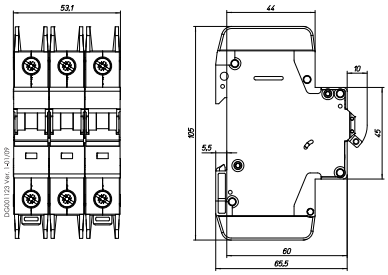
1-pole



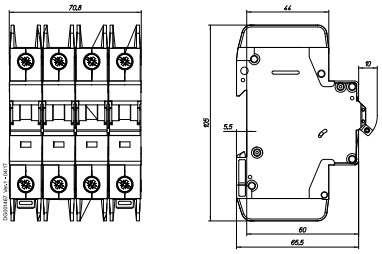
2-poles



3-poles

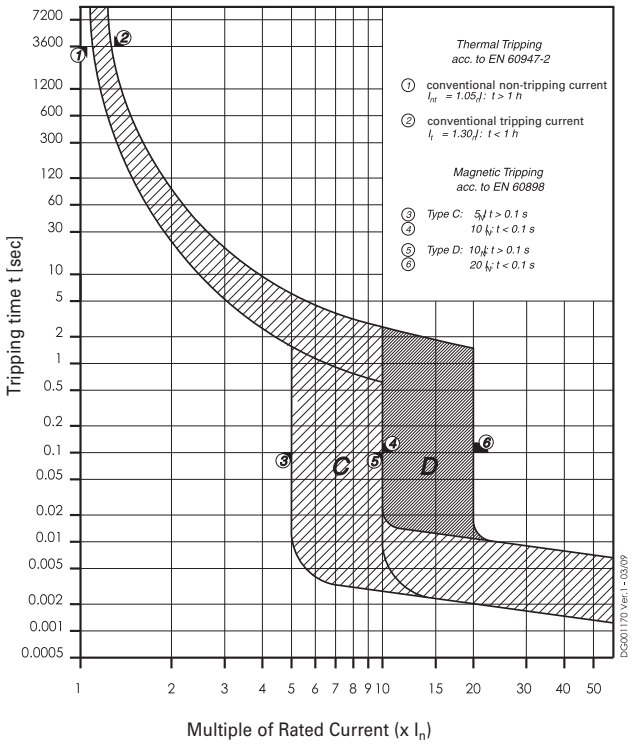


4-poles

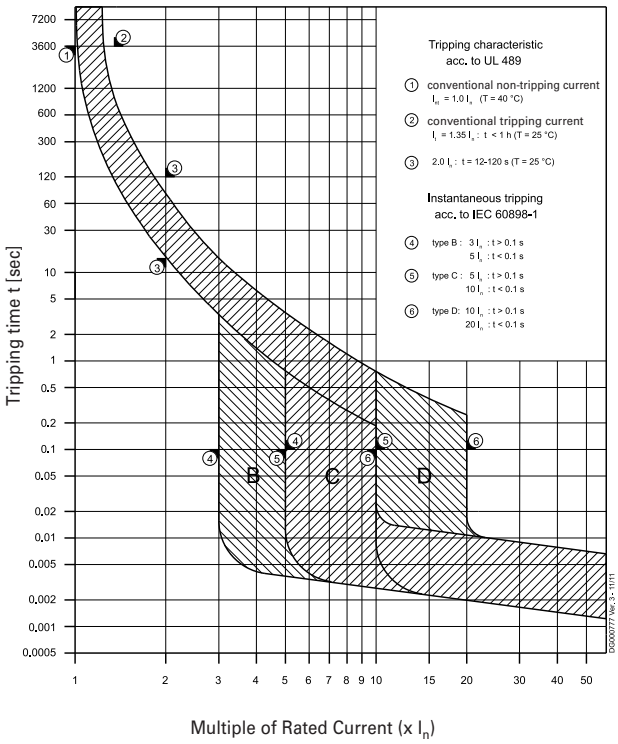


Tripping Characteristics FAZ-...-NA, -RT

Characteristics C and D - EN/IEC 60947-2



Characteristics B, C and D - UL 489



Internal Resistance FAZ-...-NA, -RT

Type B

At room temperature (single pole)

I_n [A]	R* [mΩ]
1	1100
1.5	900
2	350
3	220
4	87
5	72
6	47
7	38
8	30
10	17
13	13
15	8.0
16	8.0
20	6.9
25	3.9
30	2.8
32	3.0
35	2.9
40	1.9
50	1.6
63	1.2

* 50 Hz

Type C

At room temperature (single pole)

I_n [A]	R* [mΩ]
1	1100
1.5	580
2	350
3	130
4	87
5	60
6	32
7	28
8	19
10	14
13	13
15	8.0
16	8.0
20	6.9
25	3.9
30	2.8
32	3.0
35	2.5
40	1.9
50	1.6
63	1.2

* 50 Hz

Type D

At room temperature (single pole)

I_n [A]	R* [mΩ]
1	800
1.5	490
2	260
3	130
4	87
5	58
6	32
7	28
8	19
10	14
13	11
15	8.0
16	8.0
20	4.9
25	3.5
30	2.5
32	2.6
35	2.5
40	1.8
50	1.7
63	1.2

* 50 Hz

Power Loss at In FAZ-...-NA, -RT

Type B

	1p	2p	3p	4p
I_n [A]	P [W]	P [W]	P [W]	P [W]
1	1.2	2.2	3.6	4.8
1.5	2.2	4.4	6.6	8.8
2	1.4	2.8	4.2	5.6
3	2.2	4.4	6.6	8.8
4	1.4	2.8	4.2	5.6
5	1.9	3.8	5.7	7.6
6	1.8	3.6	5.4	7.2
7	2	4	6	8
8	2.1	4.2	6.3	8.4
10	1.8	3.6	5.4	7.2
13	2.5	5	7.5	10
15	2	4	6	8
16	2.3	4.6	6.9	9.2
20	3.3	6.6	9.9	13.2
25	2.8	5.6	8.4	11.2
30	3	6	9	12
32	3.5	7	10.5	14
35	4	8	12	16
40	3.4	6.8	10.2	13.6
50	4.4	8.8	13.2	17.6
63	5.5	11	16.5	22

* 50 Hz

Type C

	1p	2p	3p	4p
I_n [A]	P [W]	P [W]	P [W]	P [W]
1	1.2	2.4	3.6	4.8
1.5	1.3	2.6	3.9	5.2
2	1.4	2.8	4.2	5.6
3	1.2	2.4	3.6	4.8
4	1.5	3	4.5	6
5	1.6	3.2	4.8	6.4
6	1.2	2.4	3.6	4.8
7	1.4	2.8	4.2	5.6
8	1.3	2.6	3.9	5.2
10	1.5	3	4.5	6
13	2.5	5	7.5	10
15	2	4	6	8
16	2.3	4.6	6.9	9.2
20	3.3	6.6	9.9	13.2
25	2.8	5.6	8.4	11.2
30	3	6	9	12
32	3.5	7	10.5	14
35	3.7	7.4	11.1	14.8
40	3.4	6.8	10.2	13.6
50	4.4	8.8	13.2	17.6
63	5.5	11	16.5	22

* 50 Hz

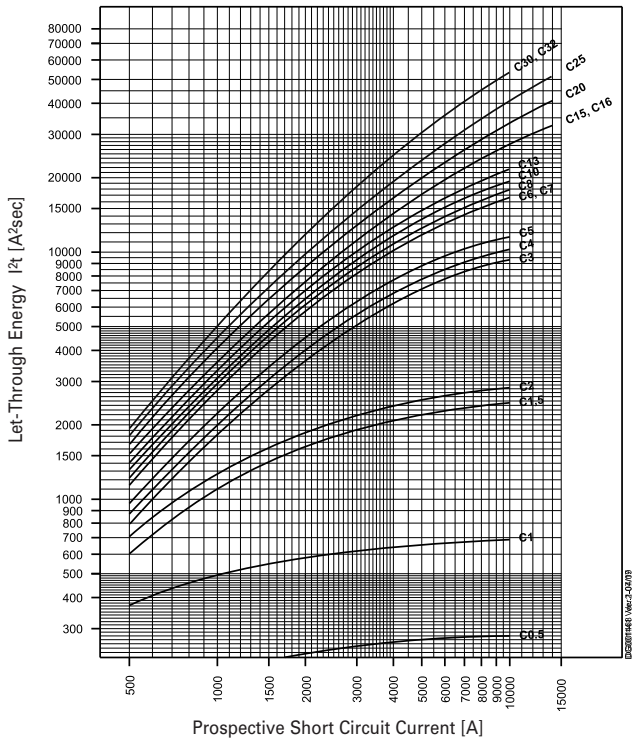
Type D

	1p	2p	3p	4p
I_n [A]	P [W]	P [W]	P [W]	P [W]
1	0.8	1.6	2.4	3.2
1.5	1.1	2.2	3.3	4.4
2	1.1	2.2	3.3	4.8
3	1.2	2.4	3.6	4.8
4	1.5	3	4.5	6
5	1.5	3	5.5	6
6	1.2	2.4	3.6	4.8
7	1.4	2.8	4.2	5.6
8	1.3	2.6	3.9	5.2
10	1.5	3	4.5	6
13	2	4	6	8
15	2	4	6	8
16	2.3	4.6	6.9	9.2
20	2.2	4.4	6.6	8.8
25	2.5	5	7.5	10
30	2.7	5.4	8.1	10.8
32	3	6	9	12
35	3.8	7.6	11.4	15.2
40	3.1	6.2	9.3	12.4
50	4.9	9.8	14.7	19.6
63	5.5	11	16.5	22

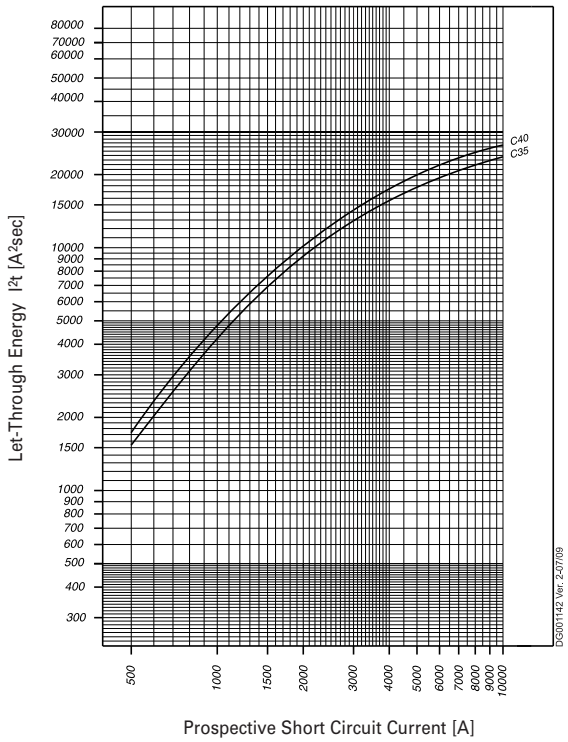
* 50 Hz

Maximum Let-Through Energy FAZ-...-NA, -RT

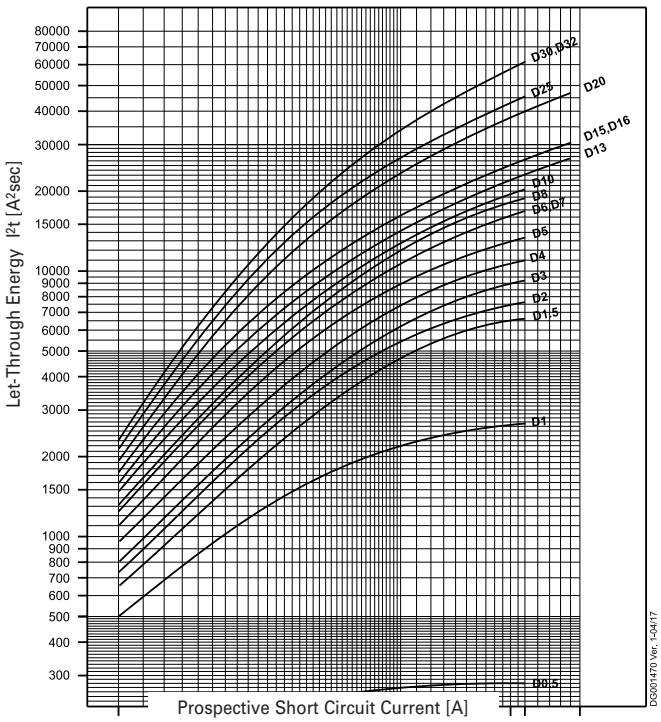
Type C (0.5 - 32 A), 277 V



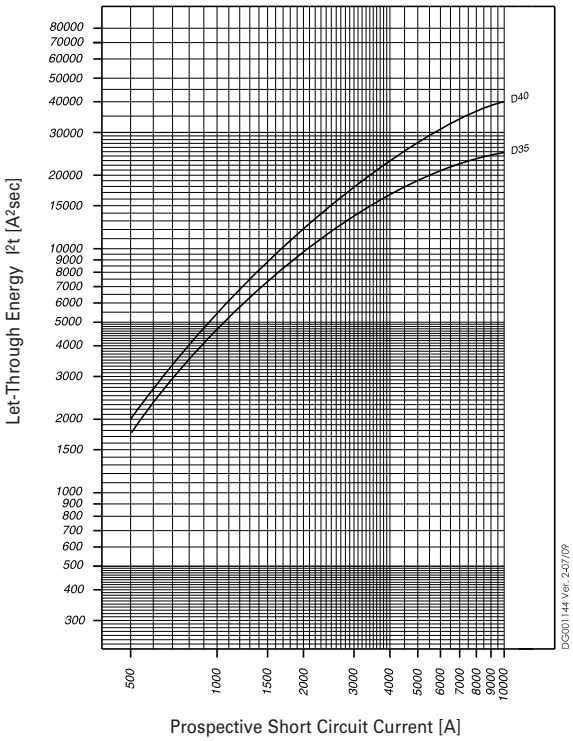
Type C (35 - 40 A), 240 V



Type D (0.5 - 32 A), 277 V

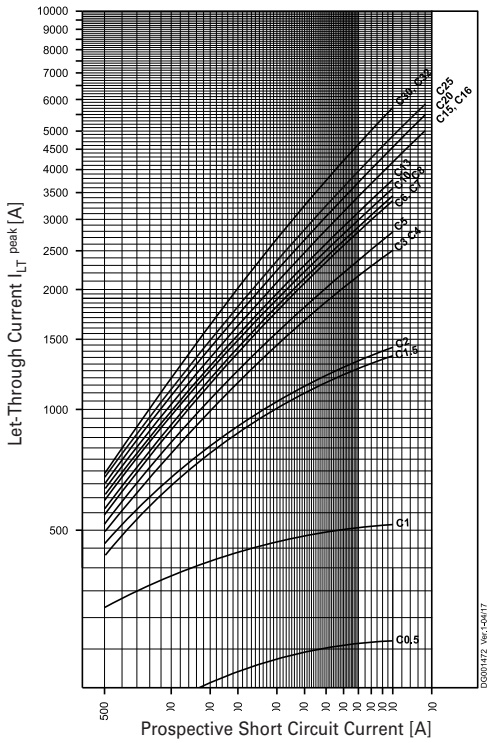


Type D (35 - 40 A), 240 V

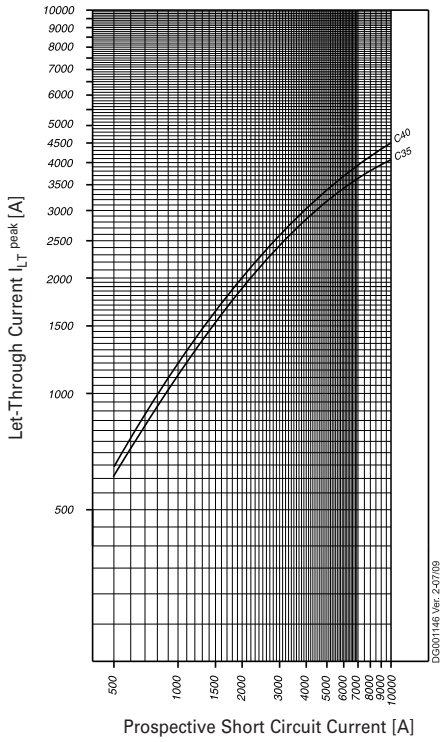


Maximum Let-Through Current FAZ-...-NA, -RT

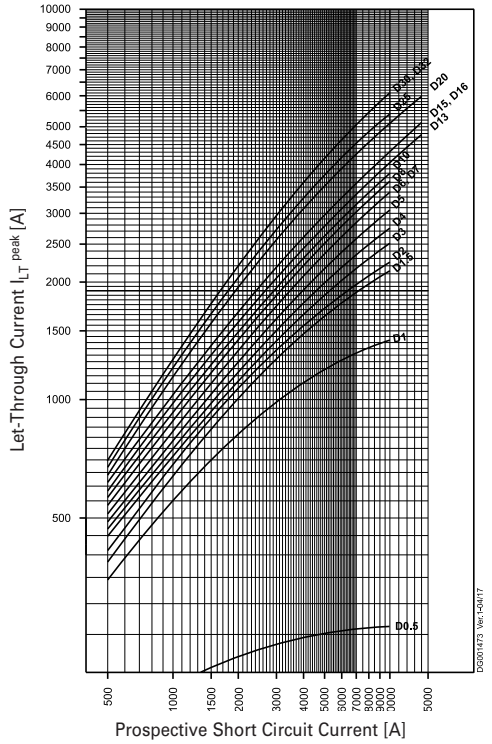
Type C (0.5 - 32 A), 277 V



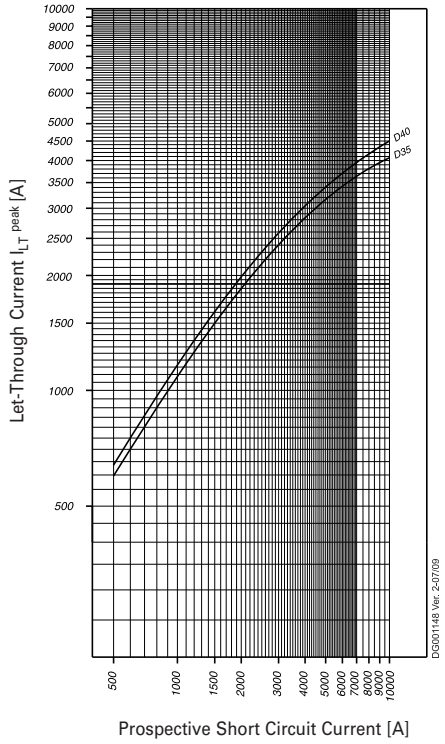
Type C (35 - 40 A), 240 V



Type D (0.5 - 32 A), 277 V



Type D (35 - 40 A), 240 V



SG56612

Description

FAZ-NA-DC

- High-quality miniature circuit breakers for DC-applications
- Contact position indicator red - green
- Guide for secure terminal connection (not for FAZ-NA)
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Rated currents up to 40 A
- Tripping characteristic C
- Rated breaking capacity 10 kA according to IEC/EN 60947-2
- Up to 125 V DC per pole

Characteristic C

SG56512

1-pole

Rated current I_n (A)	Rated voltage acc. to IEC/EN 60947-2 (V)	Breaking capacity acc. to IEC/EN 60947-2 (kA)	Rated voltage acc. to UL489 (V)	Breaking capacity acc. to UL489 (kA)	SWD	NFPA 79	Type Designation	Article No.	Units per package
2	220	10	125	10			FAZ-C2/1-NA-DC	113752	12/120
3	250	10	125	10			FAZ-C3/1-NA-DC	113753	12/120
4	250	10	125	10			FAZ-C4/1-NA-DC	113754	12/120
5	250	10	125	10			FAZ-C5/1-NA-DC	113755	12/120
6	250	10	125	10			FAZ-C6/1-NA-DC	113756	12/120
7	250	10	125	10			FAZ-C7/1-NA-DC	113757	12/120
8	250	10	125	10			FAZ-C8/1-NA-DC	113758	12/120
10	250	10	125	10			FAZ-C10/1-NA-DC	113759	12/120
13	250	10	125	10			FAZ-C13/1-NA-DC	113760	12/120
15	250	10	125	10			FAZ-C15/1-NA-DC	113761	12/120
16	250	10	125	10			FAZ-C16/1-NA-DC	113762	12/120
20	250	10	125	10			FAZ-C20/1-NA-DC	113763	12/120
25	250	10	125	10			FAZ-C25/1-NA-DC	113764	12/120
30	250	10	125	10			FAZ-C30/1-NA-DC	113765	12/120
32	250	10	125	10			FAZ-C32/1-NA-DC	113766	12/120
35	250	10	125	10			FAZ-C35/1-NA-DC	113767	12/120
40	250	10	125	10			FAZ-C40/1-NA-DC	113768	12/120

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2-poles

2	440	10	250	10			FAZ-C2/2-NA-DC	137239	1/60
3	500	10	250	10			FAZ-C3/2-NA-DC	137250	1/60
4	500	10	250	10			FAZ-C4/2-NA-DC	137251	1/60
5	500	10	250	10			FAZ-C5/2-NA-DC	137252	1/60
6	500	10	250	10			FAZ-C6/2-NA-DC	120638	1/60
7	500	10	250	10			FAZ-C7/2-NA-DC	120639	1/60
8	500	10	250	10			FAZ-C8/2-NA-DC	120640	1/60
10	500	10	250	10			FAZ-C10/2-NA-DC	120641	1/60
13	500	10	250	10			FAZ-C13/2-NA-DC	120642	1/60
15	500	10	250	10			FAZ-C15/2-NA-DC	120643	1/60
16	500	10	250	10			FAZ-C16/2-NA-DC	120644	1/60
20	500	10	250	10			FAZ-C20/2-NA-DC	120645	1/60
25	500	10	250	10			FAZ-C25/2-NA-DC	120646	1/60
30	500	10	250	10			FAZ-C30/2-NA-DC	120647	1/60
32	500	10	250	10			FAZ-C32/2-NA-DC	120648	1/60
35	500	10	250	10			FAZ-C35/2-NA-DC	120649	1/60
40	500	10	250	10			FAZ-C40/2-NA-DC	120650	1/60

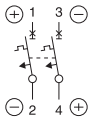
Technical Data

		FAZ-...-NA-DC
Productstandard		UL 489, CSA C22.2 No. 5-02
Number of poles		1, 2
Mechanical		
Device width		1 pole = 0.697 inch, 2 poles = 1.394 inch
Frame size		1.772 inch
Device height		4.134 inch
Device depth		2.362 inch
Terminals		lift terminal / ring-tongue
Terminal capacity rigid solid/stranded wire		1 Wire: #18-6 AWG (Cu only) 2 Wires: #18-10 AWG (Cu only)
Terminal screw		M5 (with slotted screw Pozidriv PZ2)
Fastening torque of terminal screws		#18-12 AWG: 2.4 Nm (21 lb-in) #10-8 AWG: 2.8 Nm (25 lb-in) #6 AWG: 4 Nm (36 lb-in)
Snap on fixing		tristable (on DIN Rail according to IEC/EN 60715)
Finger proof		acc. to VBG4, ÖVE EN-6
Contact position indicator		red / green
Electrical		
Rated voltage	U_n	125 V DC (1p) 250 V DC (2p)
Rated current	I_n	2, 3, 4, 5, 6, 7, 8, 10, 13, 15, 16, 20, 25, 30, 32, 35, 40 A
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50) µsec
Tripping characteristic		
Conventional non-tripping current		$I_{nt} = 1{,}00\ I_n$
Conventional tripping current		$I_t = 1.35\ I_n$
Reference temperature		40 °C
Temperature factor		0.5%/K
Instantaneous tripping current	I_{mt}	$7\ I_n < I_{mt} = 15\ I_n$:t ($I_{mt}$) < 0.1 sec
Current interrupting rating		10 kA
Number of electrical operations		6,000
Number of mechanical operations		10,000
Climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)
Operating temperature range		-25°C up to +55°C

Connection diagram

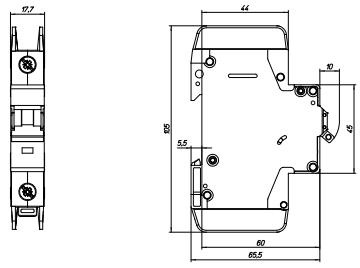
1-pole

2-poles

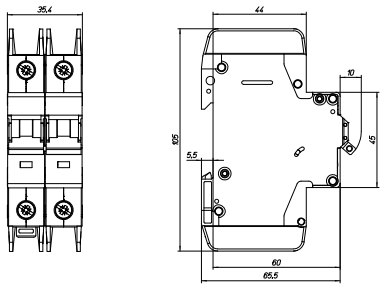


Dimensions (mm) FAZ-...-NA-DC

1-pole

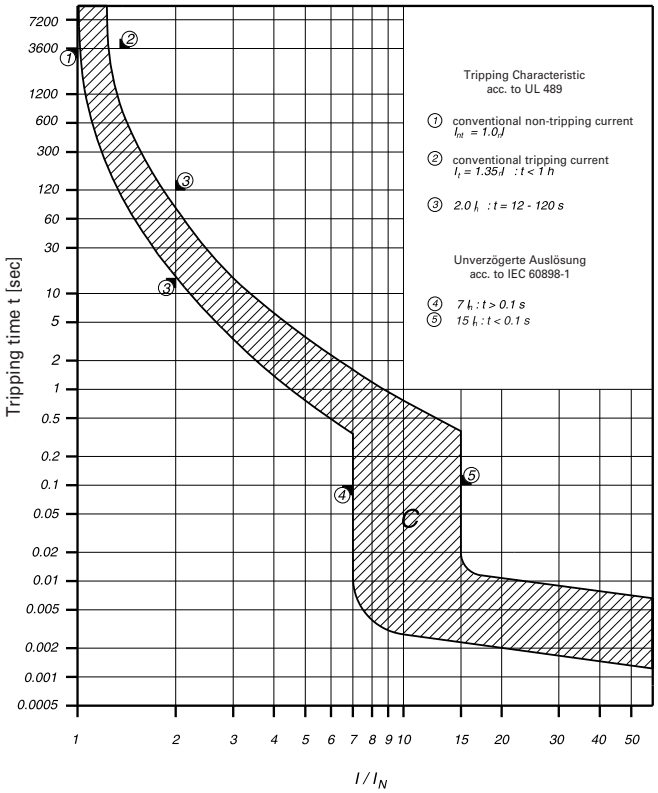


2-poles



Tripping Characteristics FAZ-...-NA-DC

Characteristics C - UL 489



SG08911

Description

- High-quality miniature circuit breakers for industrial applications 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 suitable for subsequent installation
- Rated currents up to 63 A
- Tripping characteristics B, C, D

Characteristic B

SG11911

1-pole

Rated current I_n (A)	Type Designation	Article No.	Units per package
1	FAZ6-B1/1	177373	12/120
1.5	FAZ6-B1,5/1	177374	12/120
1.6	FAZ6-B1,6/1	177375	12/120
2	FAZ6-B2/1	177376	12/120
2.5	FAZ6-B2,5/1	177377	12/120
3	FAZ6-B3/1	177378	12/120
3.5	FAZ6-B3,5/1	177379	12/120
4	FAZ6-B4/1	177380	12/120
5	FAZ6-B5/1	177381	12/120
6	FAZ6-B6/1	239001	12/120
8	FAZ6-B8/1	177382	12/120
10	FAZ6-B10/1	239006	12/120
12	FAZ6-B12/1	177395	12/120
13	FAZ6-B13/1	239011	12/120
15	FAZ6-B15/1	177396	12/120
16	FAZ6-B16/1	239016	12/120
20	FAZ6-B20/1	239023	12/120
25	FAZ6-B25/1	239024	12/120
32	FAZ6-B32/1	239025	12/120
40	FAZ6-B40/1	239026	12/120
50	FAZ6-B50/1	239027	12/120
63	FAZ6-B63/1	239028	12/120

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1+N-poles

1	FAZ6-B1/1N	177494	1/60
1.5	FAZ6-B1,5/1N	177495	1/60
1.6	FAZ6-B1,6/1N	177496	1/60
2	FAZ6-B2/1N	177497	1/60
2.5	FAZ6-B2,5/1N	177498	1/60
3	FAZ6-B3/1N	177499	1/60
3.5	FAZ6-B3,5/1N	177500	1/60
4	FAZ6-B4/1N	177501	1/60
5	FAZ6-B5/1N	177502	1/60
6	FAZ6-B6/1N	239044	1/60
8	FAZ6-B8/1N	177503	1/60
10	FAZ6-B10/1N	239045	1/60
12	FAZ6-B12/1N	177504	1/60
13	FAZ6-B13/1N	239046	1/60
15	FAZ6-B15/1N	177505	1/60
16	FAZ6-B16/1N	239047	1/60
20	FAZ6-B20/1N	239048	1/60
25	FAZ6-B25/1N	239049	1/60
32	FAZ6-B32/1N	239050	1/60
40	FAZ6-B40/1N	239051	1/60
50	FAZ6-B50/1N	239052	1/60
63	FAZ6-B63/1N	239053	1/60

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Rated current I_n (A)	Type Designation	Article No.	Units per package
2-poles			
1	FAZ6-B1/2	177540	1/60
1.5	FAZ6-B1,5/2	177541	1/60
1.6	FAZ6-B1,6/2	177542	1/60
2	FAZ6-B2/2	177543	1/60
2.5	FAZ6-B2,5/2	177544	1/60
3	FAZ6-B3/2	177545	1/60
3.5	FAZ6-B3,5/2	177546	1/60
4	FAZ6-B4/2	177547	1/60
5	FAZ6-B5/2	177548	1/60
6	FAZ6-B6/2	239085	1/60
8	FAZ6-B8/2	177549	1/60
10	FAZ6-B10/2	239086	1/60
12	FAZ6-B12/2	177550	1/60
13	FAZ6-B13/2	239087	1/60
15	FAZ6-B15/2	177551	1/60
16	FAZ6-B16/2	239088	1/60
20	FAZ6-B20/2	239089	1/60
25	FAZ6-B25/2	239090	1/60
32	FAZ6-B32/2	239091	1/60
40	FAZ6-B40/2	239092	1/60
50	FAZ6-B50/2	239093	1/60
63	FAZ6-B63/2	239094	1/60

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3-poles			
1	FAZ6-B1/3	177577	1/40
1.5	FAZ6-B1,5/3	177578	1/40
1.6	FAZ6-B1,6/3	177579	1/40
2	FAZ6-B2/3	177580	1/40
2.5	FAZ6-B2,5/3	177581	1/40
3	FAZ6-B3/3	177582	1/40
3.5	FAZ6-B3,5/3	177583	1/40
4	FAZ6-B4/3	177584	1/40
5	FAZ6-B5/3	177585	1/40
6	FAZ6-B6/3	239110	1/40
8	FAZ6-B8/3	177586	1/40
10	FAZ6-B10/3	239111	1/40
12	FAZ6-B12/3	177587	1/40
13	FAZ6-B13/3	239112	1/40
15	FAZ6-B15/3	177588	1/40
16	FAZ6-B16/3	239113	1/40
20	FAZ6-B20/3	239114	1/40
25	FAZ6-B25/3	239115	1/40
32	FAZ6-B32/3	239116	1/40
40	FAZ6-B40/3	239117	1/40
50	FAZ6-B50/3	239118	1/40
63	FAZ6-B63/3	239119	1/40

SG08911

3+N-poles

Rated current I_n (A)	Type Designation	Article No.	Units per package
1	FAZ6-B1/3N	177446	1/30
1.5	FAZ6-B1,5/3N	177447	1/30
1.6	FAZ6-B1,6/3N	177448	1/30
2	FAZ6-B2/3N	177449	1/30
2.5	FAZ6-B2,5/3N	177450	1/30
3	FAZ6-B3/3N	177451	1/30
3.5	FAZ6-B3,5/3N	177452	1/30
4	FAZ6-B4/3N	177453	1/30
5	FAZ6-B5/3N	177454	1/30
6	FAZ6-B6/3N	239155	1/30
8	FAZ6-B8/3N	177455	1/30
10	FAZ6-B10/3N	239156	1/30
12	FAZ6-B12/3N	177456	1/30
13	FAZ6-B13/3N	239157	1/30
15	FAZ6-B15/3N	177457	1/30
16	FAZ6-B16/3N	239158	1/30
20	FAZ6-B20/3N	239159	1/30
25	FAZ6-B25/3N	239160	1/30
32	FAZ6-B32/3N	239161	1/30
40	FAZ6-B40/3N	239162	1/30
50	FAZ6-B50/3N	239163	1/30
63	FAZ6-B63/3N	239164	1/30

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4-poles

1	FAZ6-B1/4	177420	1/30
1.5	FAZ6-B1,5/4	177421	1/30
1.6	FAZ6-B1,6/4	177422	1/30
2	FAZ6-B2/4	177423	1/30
2.5	FAZ6-B2,5/4	177424	1/30
3	FAZ6-B3/4	177425	1/30
3.5	FAZ6-B3,5/4	177426	1/30
4	FAZ6-B4/4	177427	1/30
5	FAZ6-B5/4	177428	1/30
6	FAZ6-B6/4	239180	1/30
8	FAZ6-B8/4	177429	1/30
10	FAZ6-B10/4	239181	1/30
12	FAZ6-B12/4	177430	1/30
13	FAZ6-B13/4	239182	1/30
15	FAZ6-B15/4	177431	1/30
16	FAZ6-B16/4	239183	1/30
20	FAZ6-B20/4	239184	1/30
25	FAZ6-B25/4	239185	1/30
32	FAZ6-B32/4	239186	1/30
40	FAZ6-B40/4	239187	1/30
50	FAZ6-B50/4	239188	1/30
63	FAZ6-B63/4	239189	1/30

Characteristic C

SG11911

1-pole

Rated current I_n (A)	Type Designation	Article No.	Units per package
0.16	FAZ6-C0,16/1	177397	12/120
0.25	FAZ6-C0,25/1	177398	12/120
0.5	FAZ6-C0,5/1	239029	12/120
0.75	FAZ6-C0,75/1	177383	12/120
1	FAZ6-C1/1	239030	12/120
1.5	FAZ6-C1,5/1	177384	12/120
1.6	FAZ6-C1,6/1	177385	12/120
2	FAZ6-C2/1	239031	12/120
2.5	FAZ6-C2,5/1	177386	12/120
3	FAZ6-C3/1	239032	12/120
3.5	FAZ6-C3,5/1	177387	12/120
4	FAZ6-C4/1	239033	12/120
5	FAZ6-C5/1	177388	12/120
6	FAZ6-C6/1	239034	12/120
8	FAZ6-C8/1	177389	12/120
10	FAZ6-C10/1	239035	12/120
12	FAZ6-C12/1	177390	12/120
13	FAZ6-C13/1	239036	12/120
15	FAZ6-C15/1	177391	12/120
16	FAZ6-C16/1	239037	12/120
20	FAZ6-C20/1	239038	12/120
25	FAZ6-C25/1	239039	12/120
32	FAZ6-C32/1	239040	12/120
40	FAZ6-C40/1	239041	12/120
50	FAZ6-C50/1	239042	12/120
63	FAZ6-C63/1	239043	12/120

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1+N-poles

0.16	FAZ6-C0,16/1N	177506	1/60
0.25	FAZ6-C0,25/1N	177507	1/60
0.5	FAZ6-C0,5/1N	239054	1/60
0.75	FAZ6-C0,75/1N	177508	1/60
1	FAZ6-C1/1N	239055	1/60
1.5	FAZ6-C1,5/1N	177509	1/60
1.6	FAZ6-C1,6/1N	177510	1/60
2	FAZ6-C2/1N	239056	1/60
2.5	FAZ6-C2,5/1N	177511	1/60
3	FAZ6-C3/1N	239057	1/60
3.5	FAZ6-C3,5/1N	177512	1/60
4	FAZ6-C4/1N	239058	1/60
5	FAZ6-C5/1N	177513	1/60
6	FAZ6-C6/1N	239059	1/60
8	FAZ6-C8/1N	177514	1/60
10	FAZ6-C10/1N	239060	1/60
12	FAZ6-C12/1N	177515	1/60
13	FAZ6-C13/1N	239061	1/60
15	FAZ6-C15/1N	177516	1/60
16	FAZ6-C16/1N	239066	1/60
20	FAZ6-C20/1N	239071	1/60
25	FAZ6-C25/1N	239076	1/60
32	FAZ6-C32/1N	239081	1/60
40	FAZ6-C40/1N	239082	1/60
50	FAZ6-C50/1N	239083	1/60
63	FAZ6-C63/1N	239084	1/60

SG08711

2-poles

Rated current I_n (A)	Type Designation	Article No.	Units per package
0.16	FAZ6-C0,16/2	177552	1/60
0.25	FAZ6-C0,25/2	177553	1/60
0.5	FAZ6-C0,5/2	239095	1/60
0.75	FAZ6-C0,75/2	177554	1/60
1	FAZ6-C1/2	239096	1/60
1.5	FAZ6-C1,5/2	177555	1/60
1.6	FAZ6-C1,6/2	177556	1/60
2	FAZ6-C2/2	239097	1/60
2.5	FAZ6-C2,5/2	177557	1/60
3	FAZ6-C3/2	239098	1/60
3.5	FAZ6-C3,5/2	177558	1/60
4	FAZ6-C4/2	239099	1/60
5	FAZ6-C5/2	177559	1/60
6	FAZ6-C6/2	239100	1/60
8	FAZ6-C8/2	177560	1/60
10	FAZ6-C10/2	239101	1/60
12	FAZ6-C12/2	177561	1/60
13	FAZ6-C13/2	239102	1/60
15	FAZ6-C15/2	177562	1/60
16	FAZ6-C16/2	239103	1/60
20	FAZ6-C20/2	239104	1/60
25	FAZ6-C25/2	239105	1/60
32	FAZ6-C32/2	239106	1/60
40	FAZ6-C40/2	239107	1/60
50	FAZ6-C50/2	239108	1/60
63	FAZ6-C63/2	239109	1/60

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3-poles

0.16	FAZ6-C0,16/3	177589	1/40
0.25	FAZ6-C0,25/3	177590	1/40
0.5	FAZ6-C0,5/3	239120	1/40
0.75	FAZ6-C0,75/3	177399	1/40
1	FAZ6-C1/3	239121	1/40
1.5	FAZ6-C1,5/3	177400	1/40
1.6	FAZ6-C1,6/3	177401	1/40
2	FAZ6-C2/3	239122	1/40
2.5	FAZ6-C2,5/3	177402	1/40
3	FAZ6-C3/3	239127	1/40
3.5	FAZ6-C3,5/3	177403	1/40
4	FAZ6-C4/3	239132	1/40
5	FAZ6-C5/3	177404	1/40
6	FAZ6-C6/3	239139	1/40
8	FAZ6-C8/3	177405	1/40
10	FAZ6-C10/3	239144	1/40
12	FAZ6-C12/3	177406	1/40
13	FAZ6-C13/3	239147	1/40
15	FAZ6-C15/3	177407	1/40
16	FAZ6-C16/3	239148	1/40
20	FAZ6-C20/3	239149	1/40
25	FAZ6-C25/3	239150	1/40
32	FAZ6-C32/3	239151	1/40
40	FAZ6-C40/3	239152	1/40
50	FAZ6-C50/3	239153	1/40
63	FAZ6-C63/3	239154	1/40

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Rated current I_n (A)	Type Designation	Article No.	Units per package
3+N-poles			
0.16	FAZ6-C0,16/3N	177458	1/30
0.25	FAZ6-C0,25/3N	177459	1/30
0.5	FAZ6-C0,5/3N	239165	1/30
0.75	FAZ6-C0,75/3N	177460	1/30
1	FAZ6-C1/3N	239166	1/30
1.5	FAZ6-C1,5/3N	177461	1/30
1.6	FAZ6-C1,6/3N	177462	1/30
2	FAZ6-C2/3N	239167	1/30
2.5	FAZ6-C2,5/3N	177463	1/30
3	FAZ6-C3/3N	239168	1/30
3.5	FAZ6-C3,5/3N	177464	1/30
4	FAZ6-C4/3N	239169	1/30
5	FAZ6-C5/3N	177465	1/30
6	FAZ6-C6/3N	239170	1/30
8	FAZ6-C8/3N	177466	1/30
10	FAZ6-C10/3N	239171	1/30
12	FAZ6-C12/3N	177467	1/30
13	FAZ6-C13/3N	239172	1/30
15	FAZ6-C15/3N	177468	1/30
16	FAZ6-C16/3N	239173	1/30
20	FAZ6-C20/3N	239174	1/30
25	FAZ6-C25/3N	239175	1/30
32	FAZ6-C32/3N	239176	1/30
40	FAZ6-C40/3N	239177	1/30
50	FAZ6-C50/3N	239178	1/30
63	FAZ6-C63/3N	239179	1/30

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4-poles			
0.16	FAZ6-C0,16/4	177432	1/30
0.25	FAZ6-C0,25/4	177433	1/30
0.5	FAZ6-C0,5/4	239190	1/30
0.75	FAZ6-C0,75/4	177434	1/30
1	FAZ6-C1/4	239191	1/30
1.5	FAZ6-C1,5/4	177591	1/30
1.6	FAZ6-C1,6/4	177592	1/30
2	FAZ6-C2/4	239192	1/30
2.5	FAZ6-C2,5/4	177593	1/30
3	FAZ6-C3/4	239193	1/30
3.5	FAZ6-C3,5/4	177594	1/30
4	FAZ6-C4/4	239194	1/30
5	FAZ6-C5/4	177595	1/30
6	FAZ6-C6/4	239199	1/30
8	FAZ6-C8/4	177596	1/30
10	FAZ6-C10/4	239204	1/30
12	FAZ6-C12/4	177597	1/30
13	FAZ6-C13/4	239211	1/30
15	FAZ6-C15/4	177598	1/30
16	FAZ6-C16/4	239216	1/30
20	FAZ6-C20/4	239219	1/30
25	FAZ6-C25/4	239220	1/30
32	FAZ6-C32/4	239221	1/30
40	FAZ6-C40/4	239222	1/30
50	FAZ6-C50/4	239223	1/30
63	FAZ6-C63/4	239224	1/30

Characteristic D

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1-pole

Rated current I_n (A)	Type Designation	Article No.	Units per package
0.5	FAZ6-D0,5/1	177392	1/120
1	FAZ6-D1/1	177393	1/120
1.5	FAZ6-D1,5/1	177394	1/120
1.6	FAZ6-D1,6/1	177483	1/120
2	FAZ6-D2/1	177484	1/120
2.5	FAZ6-D2,5/1	177485	1/120
3	FAZ6-D3/1	177486	1/120
3.5	FAZ6-D3,5/1	177487	1/120
4	FAZ6-D4/1	177488	1/120
5	FAZ6-D5/1	177489	1/120
6	FAZ6-D6/1	168061	1/120
8	FAZ6-D8/1	177490	1/120
10	FAZ6-D10/1	168062	1/120
12	FAZ6-D12/1	177491	1/120
13	FAZ6-D13/1	177492	1/120
15	FAZ6-D15/1	177493	1/120
16	FAZ6-D16/1	168063	1/120
20	FAZ6-D20/1	168064	1/120
25	FAZ6-D25/1	168065	1/120
32	FAZ6-D32/1	168066	1/120
40	FAZ6-D40/1	168067	1/120
50	FAZ6-D50/1	168068	1/120
63	FAZ6-D63/1	168069	1/120

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1+N Pole

0.5	FAZ6-D0,5/1N	177517	1/60
1	FAZ6-D1/1N	177518	1/60
1.5	FAZ6-D1,5/1N	177519	1/60
1.6	FAZ6-D1,6/1N	177520	1/60
2	FAZ6-D2/1N	177521	1/60
2.5	FAZ6-D2,5/1N	177522	1/60
3	FAZ6-D3/1N	177523	1/60
3.5	FAZ6-D3,5/1N	177524	1/60
4	FAZ6-D4/1N	177525	1/60
5	FAZ6-D5/1N	177526	1/60
6	FAZ6-D6/1N	177527	1/60
8	FAZ6-D8/1N	177528	1/60
10	FAZ6-D10/1N	177529	1/60
12	FAZ6-D12/1N	177530	1/60
13	FAZ6-D13/1N	177531	1/60
15	FAZ6-D15/1N	177532	1/60
16	FAZ6-D16/1N	177533	1/60
20	FAZ6-D20/1N	177534	1/60
25	FAZ6-D25/1N	177535	1/60
32	FAZ6-D32/1N	177536	1/60
40	FAZ6-D40/1N	177537	1/60
50	FAZ6-D50/1N	177538	1/60
63	FAZ6-D63/1N	177539	1/60

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Rated current I_n (A)	Type Designation	Article No.	Units per package
2-poles			
0.5	FAZ6-D0,5/2	177563	1/60
1	FAZ6-D1/2	177564	1/60
1.5	FAZ6-D1,5/2	177565	1/60
1.6	FAZ6-D1,6/2	177566	1/60
2	FAZ6-D2/2	177567	1/60
2.5	FAZ6-D2,5/2	177568	1/60
3	FAZ6-D3/2	177569	1/60
3.5	FAZ6-D3,5/2	177570	1/60
4	FAZ6-D4/2	177571	1/60
5	FAZ6-D5/2	177572	1/60
6	FAZ6-D6/2	168070	1/60
8	FAZ6-D8/2	177573	1/60
10	FAZ6-D10/2	168071	1/60
12	FAZ6-D12/2	177574	1/60
13	FAZ6-D13/2	177575	1/60
15	FAZ6-D15/2	177576	1/60
16	FAZ6-D16/2	168072	1/60
20	FAZ6-D20/2	168073	1/60
25	FAZ6-D25/2	168074	1/60
32	FAZ6-D32/2	168075	1/60
40	FAZ6-D40/2	168076	1/60
50	FAZ6-D50/2	168077	1/60
63	FAZ6-D63/2	168078	1/60

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3-poles			
0.5	FAZ6-D0,5/3	177408	1/40
1	FAZ6-D1/3	177409	1/40
1.5	FAZ6-D1,5/3	177410	1/40
1.6	FAZ6-D1,6/3	177435	1/40
2	FAZ6-D2/3	177436	1/40
2.5	FAZ6-D2,5/3	177437	1/40
3	FAZ6-D3/3	177438	1/40
3.5	FAZ6-D3,5/3	177439	1/40
4	FAZ6-D4/3	177440	1/40
5	FAZ6-D5/3	177441	1/40
6	FAZ6-D6/3	168079	1/40
8	FAZ6-D8/3	177442	1/40
10	FAZ6-D10/3	168080	1/40
12	FAZ6-D12/3	177443	1/40
13	FAZ6-D13/3	177444	1/40
15	FAZ6-D15/3	177445	1/40
16	FAZ6-D16/3	168081	1/40
20	FAZ6-D20/3	168082	1/40
25	FAZ6-D25/3	168083	1/40
32	FAZ6-D32/3	168084	1/40
40	FAZ6-D40/3	168085	1/40
50	FAZ6-D50/3	168086	1/40
63	FAZ6-D63/3	168087	1/40

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3+N Pole

Rated current I_n (A)	Type Designation	Article No.	Units per package
0.5	FAZ6-D0,5/3N	177469	1/30
1	FAZ6-D1/3N	177470	1/30
1.5	FAZ6-D1,5/3N	177471	1/30
1.6	FAZ6-D1,6/3N	177472	1/30
2	FAZ6-D2/3N	177473	1/30
2.5	FAZ6-D2,5/3N	177474	1/30
3	FAZ6-D3/3N	177475	1/30
3.5	FAZ6-D3,5/3N	177476	1/30
4	FAZ6-D4/3N	177477	1/30
5	FAZ6-D5/3N	177478	1/30
6	FAZ6-D6/3N	177479	1/30
8	FAZ6-D8/3N	177480	1/30
10	FAZ6-D10/3N	177481	1/30
12	FAZ6-D12/3N	177482	1/30
13	FAZ6-D13/3N	177411	1/30
15	FAZ6-D15/3N	177412	1/30
16	FAZ6-D16/3N	177413	1/30
20	FAZ6-D20/3N	177414	1/30
25	FAZ6-D25/3N	177415	1/30
32	FAZ6-D32/3N	177416	1/30
40	FAZ6-D40/3N	177417	1/30
50	FAZ6-D50/3N	177418	1/30
63	FAZ6-D63/3N	177419	1/30

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4-poles

0.5	FAZ6-D0,5/4	177599	1/30
1	FAZ6-D1/4	177600	1/30
1.5	FAZ6-D1,5/4	177601	1/30
1.6	FAZ6-D1,6/4	177602	1/30
2	FAZ6-D2/4	177603	1/30
2.5	FAZ6-D2,5/4	177604	1/30
3	FAZ6-D3/4	177605	1/30
3.5	FAZ6-D3,5/4	177606	1/30
4	FAZ6-D4/4	177607	1/30
5	FAZ6-D5/4	177608	1/30
6	FAZ6-D6/4	168088	1/30
8	FAZ6-D8/4	177609	1/30
10	FAZ6-D10/4	168089	1/30
12	FAZ6-D12/4	177610	1/30
13	FAZ6-D13/4	177611	1/30
15	FAZ6-D15/4	177612	1/30
16	FAZ6-D16/4	168090	1/30
20	FAZ6-D20/4	168091	1/30
25	FAZ6-D25/4	168092	1/30
32	FAZ6-D32/4	168093	1/30
40	FAZ6-D40/4	168094	1/30
50	FAZ6-D50/4	168095	1/30
63	FAZ6-D63/4	168096	1/30

Miniature Circuit Breakers FAZ6

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	258288, 248289, 248290
	Z-USD	248292, 248291

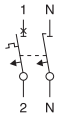
Technical Data

Electrical	B Characteristic	C Characteristic	D Characteristic
Approvals	UR (UL 1077), CSA (CSA 22.2 No. 235), CE, ÖVE, EAC		
Standards	IEC/EN 60947-2, IEC/EN 60898-1		
Short-circuit trip response	3–5 I_n	5–10 I_n	10–20 I_n
Supplementary Protectors-UL/CSA			
Current range	1–63 A	0,16–63 A	0,5–40 A
Maximum voltage ratings - UL/CSA			
Single-pole, single-pole + neutral	277 V AC	277 V AC	277 V AC
	48 V DC	48 V DC	48 V DC
Two-, three-, four-pole and three-pole + neutral	480Y/277 V AC	480Y/277 V AC	480Y/277 V AC
Two poles in series	96 V DC	96 V DC	96 V DC
Thermal tripping characteristics			
Single-pole	< 1 hour @ 1.35 x In @ 40°C	< 1 hour @ 1.35 x In @ 40°C	< 1 hour @ 1.35 x In @ 40°C
Multi-pole	< 1 hour @ 1.45 x In @ 40°C	< 1 hour @ 1.45 x In @ 40°C	< 1 hour @ 1.45 x In @ 40°C
Short-circuit ratings (at max. voltage)			
Single-pole	10 kA (5 kA for 40–63A device)	10 kA (5 kA for 40–63A device)	5 kA
Two-, three-pole	10 kA (5 kA for 40–63A device)	10 kA (5 kA for 40–63A device)	5 kA
Single-pole	10 kA @ 48 V DC	10 kA @ 48 V DC	10 kA @ 48 V DC
Two poles in series	10 kA @ 96 V DC	10 kA @ 96 V DC	10 kA @ 96 V DC
Miniature Circuit Breaker - IEC			
Current range	1–63 A	0.16–63 A	0.5–63 A
Maximum voltage ratings - IEC 60947-2			
Single-pole, single-pole + neutral	230 V AC	230 V AC	230 V AC
	60 V DC	60 V DC	60 V DC
Two-, three-, four-pole and three-pole + neutral	400 V AC	400 V AC	400 V AC
Maximum voltage ratings - IEC 60898			
Single-pole, single-pole + neutral	240 V AC	240 V AC	240 V AC
Two-, three-, four-pole and three-pole + neutral	415 V AC	415 V AC	415 V AC
Thermal tripping characteristics - IEC 60947-2			
	> 1 hour @ 1.05 x In @ 40°C	> 1 hour @ 1.05 x In @ 40°C	> 1 hour @ 1.05 x In @ 40°C
	< 1 hour @ 1.3 x In @ 40°C	< 1 hour @ 1.3 x In @ 40°C	< 1 hour @ 1.3 x In @ 40°C
Interrupt ratings (at max. voltage)			
IEC 60947-2	10 kA	10 kA	10 kA (Type D50 and D63: 10 kA)
IEC 60898	6 kA	6 kA	6 kA (Type D50 und D63: not testet)
Operational switching capacity	7.5 kA	7.5 kA	7.5 kA (Type D50 und D63: 6 kA)
Max. back-up fuse [gL/gG]	100 A	100 A	100 A
Rated impulse withstand voltage - U_{imp}	4000 V AC	4000 V AC	4000 V AC
Rated insulation voltage - U_i	440 V AC	440 V AC	440 V AC
Environmental / General			
Selectivity class	3	3	3
Endurance (operations)	>10000 (1 operation = ON/OFF)	>10000 (1 operation = ON/OFF)	>10000 (1 operation = ON/OFF)
Shock (IEC 68-2-22)	15 g / 20 ms	15 g / 20 ms	15 g / 20 ms
Operating temperature range	-40 up to +75°C	-40 up to +75°C	-40 up to +75°C
Mechanical			
Device height	80 mm	80 mm	80 mm
Terminal protection	Finger and back-of-hand proof	Finger and back-of-hand proof	Finger and back-of-hand proof
Mounting width per pole	17.5 mm	17.5 mm	17.5 mm
Mounting	IEC/EN 60715 top-hat rail	IEC/EN 60715 top-hat rail	IEC/EN 60715 top-hat rail
Degree of protection	IP20	IP20	IP20
Terminals top and bottom	Twin-purpose terminals	Twin-purpose terminals	Twin-purpose terminals
Supply connection	Line or load side	Line or load side	Line or load side
Terminal capacity [mm^2]	1 x 25 / 2 x 10	1 x 25 / 2 x 10	1 x 25 / 2 x 10
Torque of terminals	2.4 Nm	2.4 Nm	2.4 Nm
Thickness of busbar material	0.8 - 2 mm	0.8 - 2 mm	0.8 - 2 mm
Mounting position	As required	As required	As required

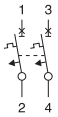
Connection diagram

1-pole

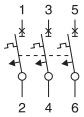
1+N-poles (2MU)



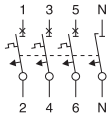
2-poles



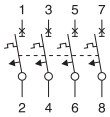
3-poles



3+N-poles

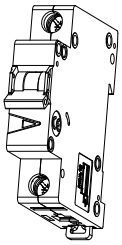


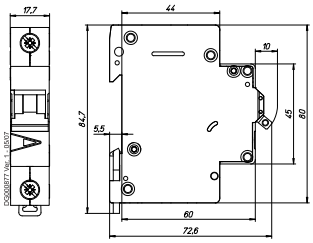
4-poles



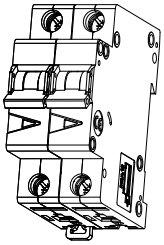
Dimensions (mm) FAZ6

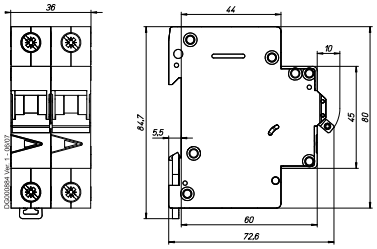
1-pole



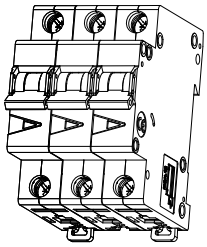


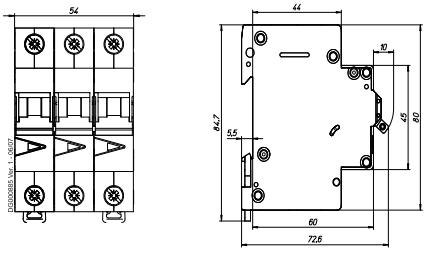
1+N-poles, 2-poles



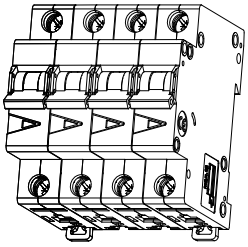


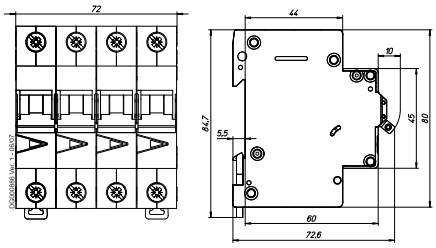
3-poles





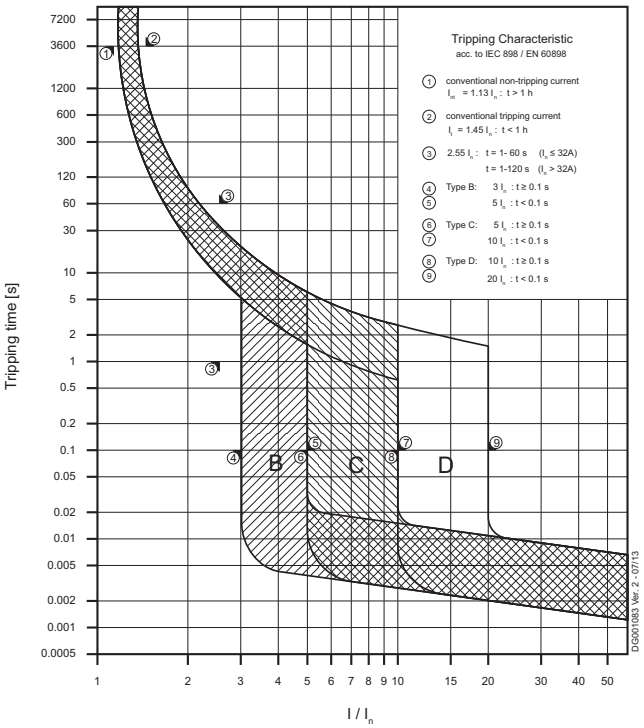
3+N-poles, 4-poles



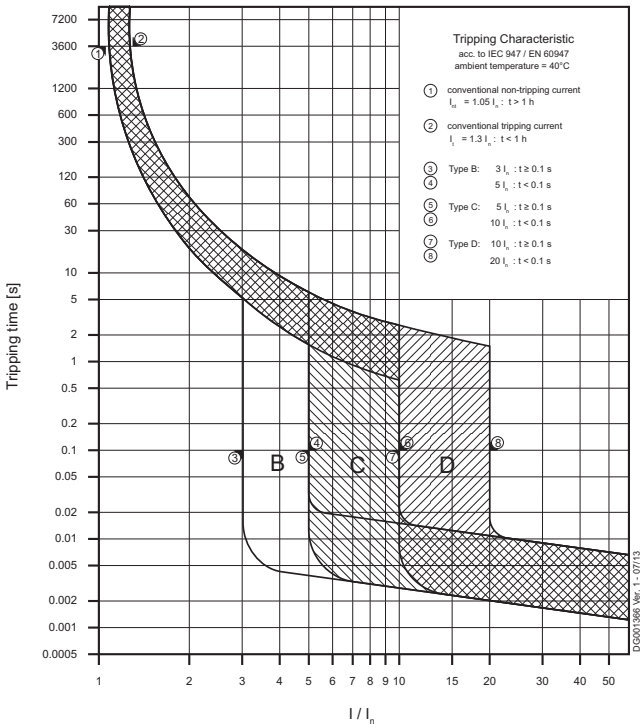


Tripping Characteristics FAZ6

Characteristics B, C and D - IEC 898, EN 60898



Characteristics B, C and D - IEC 947, EN 60947



Internal ResistanceFAZ6

Type B	
At room temperature (single pole)	
I_n [A]	R* [mΩ]
6	46.8
10	17.5
13	13.4
16	8.0
20	7.2
25	5.0
32	3.7
40	2.6
50	2.1
63	2.0
* 50 Hz	

Type C	
At room temperature (single pole)	
0.5	4680
1	1120
2	335
3	131
4	87.7
6	39.3
10	14.1
13	13.4
16	8.0
20	7.2
25	5.0
32	3.7
40	2.6
50	2.1
63	2.0
* 50 Hz	

Type B	
At room temperature (single pole)	
I_n [A]	R* [mΩ]
6	39.3
10	14.1
16	8.0
20	4.9
25	3.9
32	3.5
40	2.7
50	1.9
63	1.5
* 50 Hz	

Power Loss at I_n FAZ6

Type B

I_n [A]	1p P* [W]	1pN P* [W]	2p P* [W]	3p P* [W]	3pN P* [W]
6	1.8	2	3.6	5.5	5.6
10	1.9	2.1	3.9	5.9	6.1
13	2.5	2.9	5.3	7.8	8.1
16	2.2	2.6	4.7	6.9	7.2
20	3.2	3.6	6.6	9.8	10.1
25	3	3.5	6.4	9,4	9.7
32	3.7	4.4	8.1	12.1	12.5
40	34	4.1	7.5	11.2	11.5
50	4.5	5.4	9.9	14.9	15.3
63	5.2	6.3	11.5	17.2	17.7

* 50 Hz

Type C

I_n [A]	1p P* [W]	1pN P* [W]	2p P* [W]	3p P* [W]	3pN P* [W]
0.5	1.2	1.3	2.4	3.5	3.7
1	1.6	1.7	3.1	4.7	4.8
2	1.4	1.5	2.8	4.1	4.3
3	1.2	1.3	2.4	3.6	3.7
4	1.4	1.6	2.9	4.4	4.5
6	1.5	1.6	2.9	4.4	4.6
10	1.5	1.7	3	4.6	4.7
13	2.5	2.9	5.3	7.8	8.1
16	2.2	2.6	4.7	6.9	7.2
20	3.2	3.6	6.6	9.8	10.1
25	3	3.5	6.4	9.4	9.7
32	3.7	4.4	8.1	12.1	12.5
40	3.4	4.1	7.5	11.2	11.5
50	4.5	5.4	9.9	14.9	15.3
63	5.2	6.3	11.5	17.2	17.7

* 50 Hz

Type D

I_n [A]	1p P* [W]	1pN P* [W]	2p P* [W]	3p P* [W]	3pN P* [W]
6	1.5	1.6	2.9	4.4	4.6
10	1.5	1.7	3	4.6	4.7
16	2.2	2.6	4.7	6.9	7.2
20	2	2.2	4.1	6.8	6.2
25	2.5	2.9	5.2	7.7	7.9
32	3.4	4	7.4	11.1	11.4
40	3.2	3.8	7	10.4	10.7
50	4.9	7.5	9.8	14.6	17.3
63	6.8	11.9	13.6	20.4	25.5

* 50 Hz

Influence of Ambient Temperature on Load Carrying Capacity (temperature derating) at I_n IEC 898, FAZ6

Values in the table display the nominal current I_n in ampere depending on the ambient temperature

	Ambient Temperature T [°C]																
	-40	-30	-20	-10	0	10	20	30	35	40	45	50	55	60	65	70	75
I_n [A]																	
0.5	0.64	0.62	0.6	0.58	0.56	0.54	0.52	0.5	0.49	0.48	0.47	0.46	0.45	0.44	0.43	0.42	0.41
1	1.3	1.2	1.2	1.2	1.1	1.1	1	1	0.99	0.97	0.95	0.93	0.9	0.89	0.87	0.85	0.83
2	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2	2	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7
3	3.8	3.7	3.6	3.5	3.4	3.3	3.1	3	3	2.9	2.8	2.8	2.7	2.7	2.6	2.5	2.5
4	5.1	5	4.8	4.7	4.5	4.3	4.2	4	3.9	3.9	3.8	3.7	3.6	3.5	3.5	3.4	3.3
6	7.7	7.5	7.2	7	6.7	6.5	6.3	6	5.9	5.8	5.7	5.6	5.4	5.3	5.2	5.1	5
10	10	12	12	12	11	11	10	10	9.9	9.7	9.5	9.3	9	8.9	8.7	8.5	8.3
13	17	16	16	15	15	14	14	13	13	13	12	12	12	12	11	11	11
16	20	20	19	19	18	17	17	16	16	15	15	15	14	14	14	14	13
20	26	25	24	23	22	22	21	20	20	19	19	19	18	18	17	17	17
25	32	31	30	29	28	27	26	25	25	24	24	23	23	22	22	21	21
32	41	40	38	37	36	35	33	32	32	31	30	30	29	28	28	27	26
40	51	50	48	47	45	43	42	40	39	39	38	37	36	35	35	34	33
50	64	62	60	58	56	54	52	50	49	48	47	46	45	44	43	42	41
63	81	78	76	73	71	68	66	63	62	61	60	58	57	56	55	53	52

Influence of Ambient Temperature on Load Carrying Capacity (temperature derating) at I_n IEC 947, FAZ6

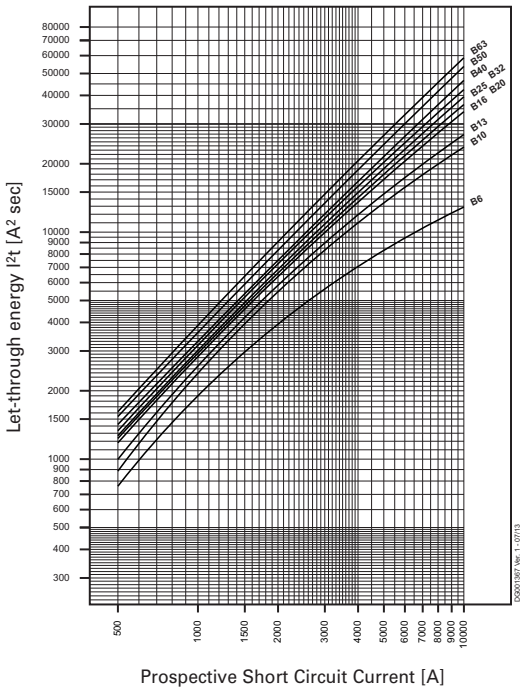
Values in the table display the nominal current I_n in ampere depending on the ambient temperature

	Ambient Temperature T [°C]																
	-40	-30	-20	-10	0	10	20	30	35	40	45	50	55	60	65	70	75
I_n [A]																	
0.5	0.68	0.66	0.64	0.62	0.6	0.58	0.56	0.54	0.52	0.5	0.49	0.48	0.47	0.46	0.45	0.44	0.43
1	1.4	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1	1	0.99	0.97	0.95	0.93	0.9	0.89	0.87
2	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2	2	1.9	1.9	1.9	1.8	1.8	1.7
3	4	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.1	3	3	2.9	2.8	2.8	2.7	2.7	2.6
4	5.4	5.3	5.1	5	4.8	4.7	4.5	4.3	4.2	4	3.9	3.9	3.8	3.7	3.6	3.5	3.5
6	8.2	8	7.7	7.5	7.2	7	6.7	6.5	6.3	6	5.9	5.8	5.7	5.6	5.4	5.3	5.2
10	12	11	10	12	12	12	11	11	10	10	9.9	9.7	9.5	9.3	9	8.9	8.7
13	18	17	17	16	16	15	15	14	14	13	13	13	12	12	12	12	11
16	21	21	20	20	19	19	18	17	17	16	16	15	15	15	14	14	14
20	28	27	26	25	24	23	22	22	21	20	20	19	19	19	18	18	17
25	34	33	32	31	30	29	28	27	26	25	25	24	24	23	23	22	22
32	44	42	41	40	38	37	36	35	33	32	32	31	30	30	29	28	28
40	54	53	51	50	48	47	45	43	42	40	39	39	38	37	36	35	35
50	68	66	64	62	60	58	56	54	52	50	49	48	47	46	45	44	43
63	86	83	81	78	76	73	71	68	66	63	62	61	60	58	57	56	55

Maximum Let-Through Energy IEC 947, FAZ6

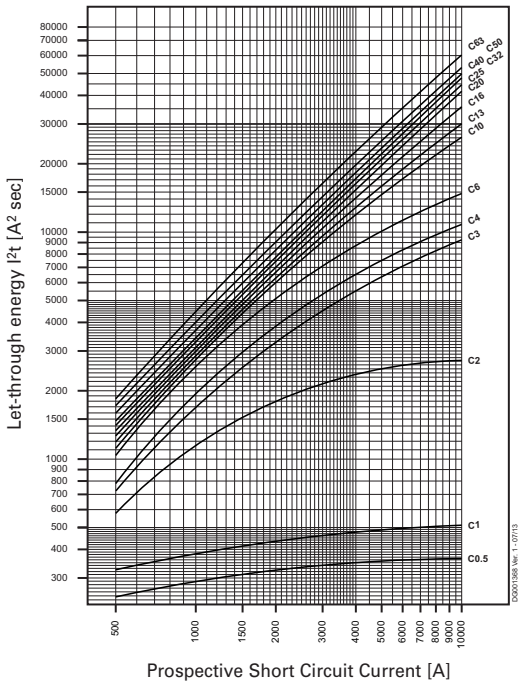
Let-through energy FAZ6, Characteristic B, 1-pole

230 V / 400 V



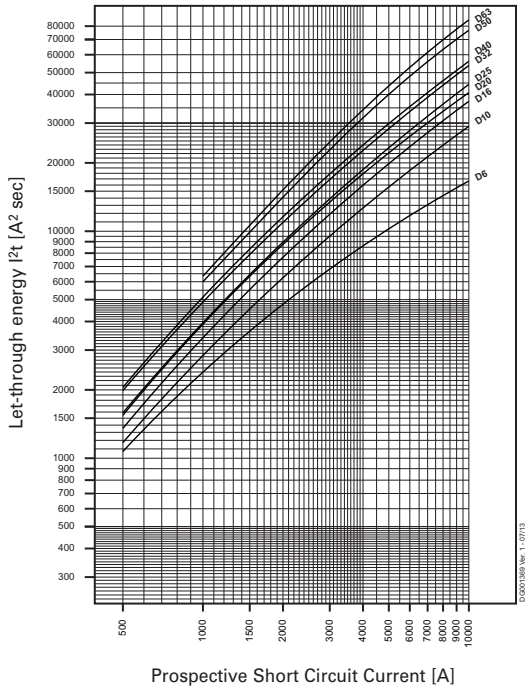
Let-through energy FAZ6, Characteristic C, 1-pole

230 V / 400 V



Let-through energy FAZ6, Characteristic D, 1-pole

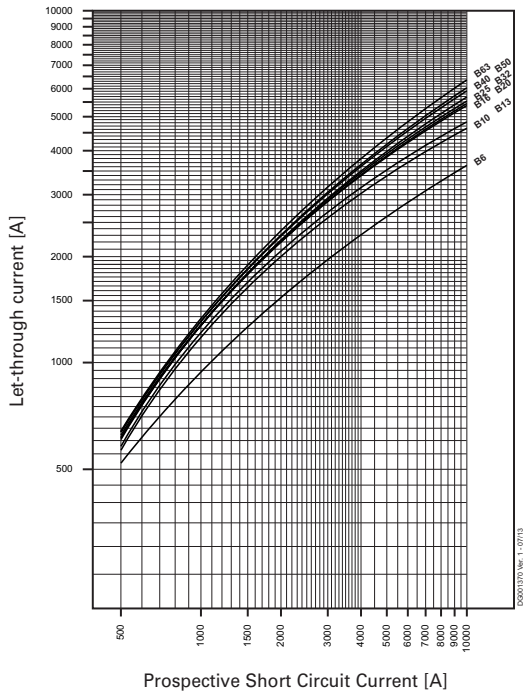
230 V / 400 V



Maximum Let-Through Current IEC 947, FAZ6

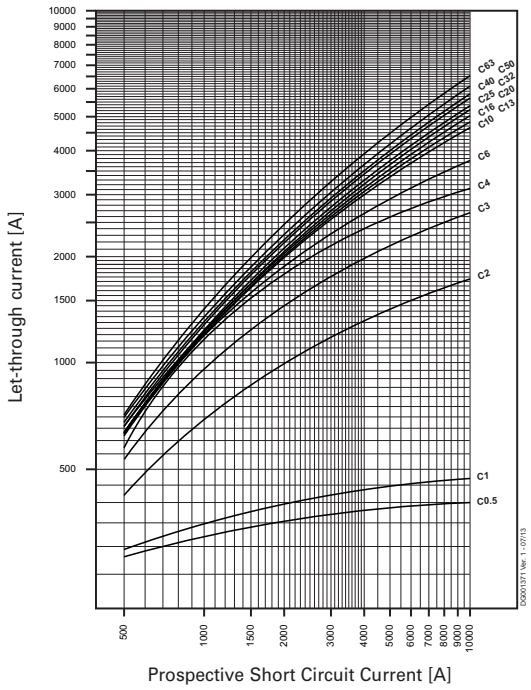
Let-through current FAZ6, Characteristic B, 1-pole

230 V / 400 V



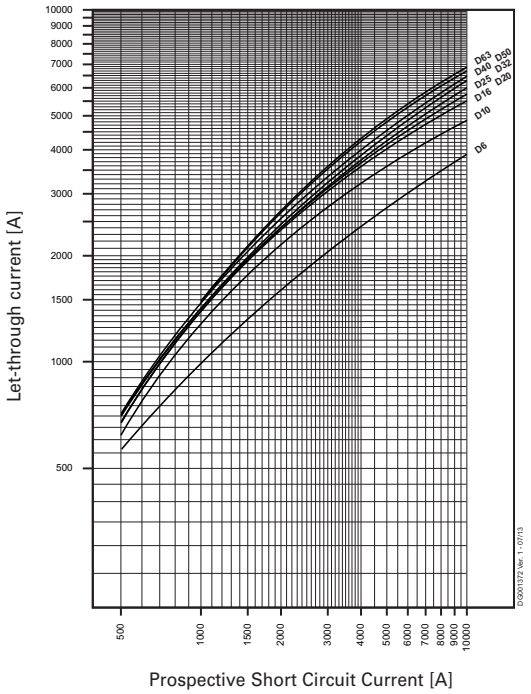
Let-through current FAZ6, Characteristic C, 1-pole

230 V / 400 V



Let-through current FAZ6, Characteristic D, 1-pole

230 V / 400 V

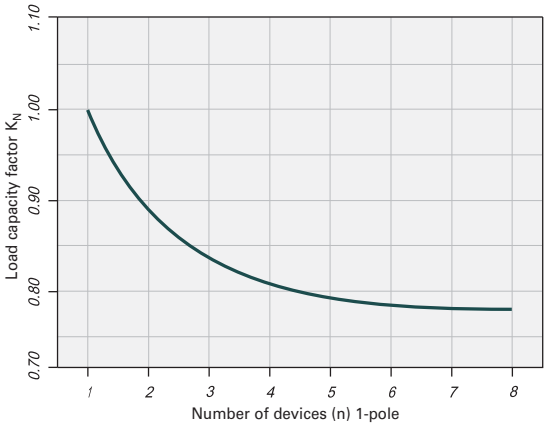


Influence of the Line Frequency FAZ

On the Instantaneous Tripping Current I_{MA}

	Line 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

Load Capacity of Series Connected Miniature Circuit Breakers



SG51412

Description

- High-quality miniature circuit breakers for industrial and commercial 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

Characteristic B

SG51212

1-pole

Rated current I_n (A)	Type Designation	Article No.	Units per package
20	AZ-B20	174480	12
25	AZ-B25	174481	12
32	AZ-B32	174482	12
40	AZ-B40	174483	12
50	AZ-B50	174484	12
63	AZ-B63	174485	12
80	AZ-B80	174486	12
100	AZ-B100	174487	12
125	AZ-B125	174488	12

SG51312

2-poles

Rated current I_n (A)	Type Designation	Article No.	Units per package
20	AZ-2-B20	174493	2
25	AZ-2-B25	174494	2
32	AZ-2-B32	174495	2
40	AZ-2-B40	174496	2
50	AZ-2-B50	174497	2
63	AZ-2-B63	174498	2
80	AZ-2-B80	174499	2
100	AZ-2-B100	174500	2
125	AZ-2-B125	174501	2

wa_sg00314

3-poles

Rated current I_n (A)	Type Designation	Article No.	Units per package
20	AZ-3-B20	174506	1
25	AZ-3-B25	174507	1
32	AZ-3-B32	174508	1
40	AZ-3-B40	174509	1
50	AZ-3-B50	174510	1
63	AZ-3-B63	174511	1
80	AZ-3-B80	174512	1
100	AZ-3-B100	174513	1
125	AZ-3-B125	174514	1

wa_sg00214

3+N-poles

Rated current I_n (A)	Type Designation	Article No.	Units per package
20	AZ-3N-B20	174519	1
25	AZ-3N-B25	174520	1
32	AZ-3N-B32	174521	1
40	AZ-3N-B40	174522	1
50	AZ-3N-B50	174523	1
63	AZ-3N-B63	174524	1
80	AZ-3N-B80	174525	1
100	AZ-3N-B100	174526	1
125	AZ-3N-B125	174527	1

SG51412

4-poles

Rated current I_n (A)	Type Designation	Article No.	Units per package
20	AZ-4-B20	174532	1
25	AZ-4-B25	174533	1
32	AZ-4-B32	174534	1
40	AZ-4-B40	174535	1
50	AZ-4-B50	174536	1
63	AZ-4-B63	174537	1
80	AZ-4-B80	174538	1
100	AZ-4-B100	174539	1
125	AZ-4-B125	174540	1

Characteristic C

SG51212

1-pole

Rated current I_n (A)	Type Designation	Article No.	Units per package
20	AZ-C20	211769	12
25	AZ-C25	211774	12
32	AZ-C32	211779	12
40	AZ-C40	211784	12
50	AZ-C50	211789	12
63	AZ-C63	211794	12
80	AZ-C80	211799	12
100	AZ-C100	211804	12
125	AZ-C125	211809	12

SG51312

2-poles

Rated current I_n (A)	Type Designation	Article No.	Units per package
20	AZ-2-C20	211770	2
25	AZ-2-C25	211775	2
32	AZ-2-C32	211780	2
40	AZ-2-C40	211785	2
50	AZ-2-C50	211790	2
63	AZ-2-C63	211795	2
80	AZ-2-C80	211800	2
100	AZ-2-C100	211805	2
125	AZ-2-C125	211810	2

wa_sg00314

3-poles

Rated current I_n (A)	Type Designation	Article No.	Units per package
20	AZ-3-C20	211771	1
25	AZ-3-C25	211776	1
32	AZ-3-C32	211781	1
40	AZ-3-C40	211786	1
50	AZ-3-C50	211791	1
63	AZ-3-C63	211796	1
80	AZ-3-C80	211801	1
100	AZ-3-C100	211806	1
125	AZ-3-C125	211811	1

wa_sg00214

3+N-poles

Rated current I_n (A)	Type Designation	Article No.	Units per package
20	AZ-3N-C20	211773	1
25	AZ-3N-C25	211778	1
32	AZ-3N-C32	211783	1
40	AZ-3N-C40	211788	1
50	AZ-3N-C50	211793	1
63	AZ-3N-C63	211798	1
80	AZ-3N-C80	211803	1
100	AZ-3N-C100	211808	1
125	AZ-3N-C125	211813	1

SG51412

4-poles

Rated current I_n (A)	Type Designation	Article No.	Units per package
20	AZ-4-C20	211772	1
25	AZ-4-C25	211777	1
32	AZ-4-C32	211782	1
40	AZ-4-C40	211787	1
50	AZ-4-C50	211792	1
63	AZ-4-C63	211797	1
80	AZ-4-C80	211802	1
100	AZ-4-C100	211807	1
125	AZ-4-C125	211812	1

Characteristic D

SG51212

1-pole

Rated current I_n (A)	Type Designation	Article No.	Units per package
50	AZ-D50	211814	12
63	AZ-D63	211818	12
80	AZ-D80	211822	12
100	AZ-D100	211826	12

SG51312

2-poles

Rated current I_n (A)	Type Designation	Article No.	Units per package
50	AZ-2-D50	211815	2
63	AZ-2-D63	211819	2
80	AZ-2-D80	211823	2
100	AZ-2-D100	211827	2

wa_sg00314

3-poles

Rated current I_n (A)	Type Designation	Article No.	Units per package
50	AZ-3-D50	211816	1
63	AZ-3-D63	211820	1
80	AZ-3-D80	211824	1
100	AZ-3-D100	211828	1

wa_sg00214

3+N-poles

Rated current I_n (A)	Type Designation	Article No.	Units per package
50	AZ-3N-D50	211817	1
63	AZ-3N-D63	211821	1
80	AZ-3N-D80	211825	1
100	AZ-3N-D100	211829	1

Description

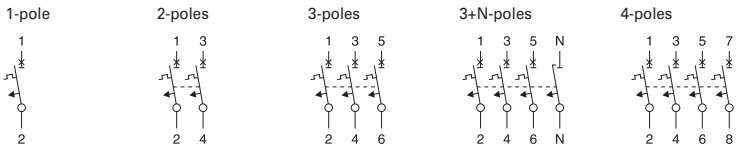
- Independent switching contacts
- With isolator function, meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for secure isolation

Accessories:		
Auxiliary switch for subsequent installation (0.5 MU)	Z-LHK	248440
Shunt Trip Release for subsequent installation (1.5 MU)	Z-LHASA/230	248442
	Z-LHASA/24	248441
Switching interlock	LH-SPL	285752
	LHSP-E	215999
Switchoff interlock	LHSP-A	216000

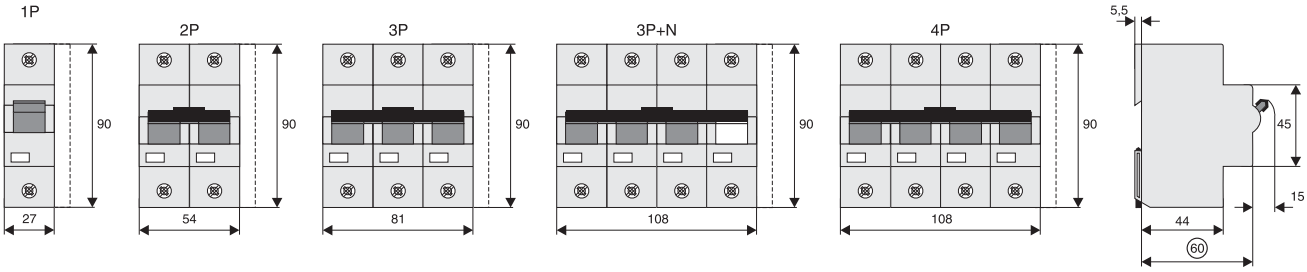
Technical Data

	AZ
Electrical	
Standards	IEC/EN 60947-2
Rated operating voltage	230/400 V AC 60 V DC (per pole)
Limiting breaking capacity according to IEC/EN 60947-2	
Characteristic B	I_n = 20-63 A: 25 kA I_n = 80-100 A: 20 kA I_n = 125 A: 15 kA
Characteristic 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	Similar: B, C, D
Max. back-up fuse	200 A gL/gG
Selectivity class	Compliant with class 3
Endurance	>10,000 Operations
Direction of incoming supply	Any
Mechanical	
Frame size	45 mm
Device height	90 mm
Mounting width per pole	27 mm
Terminal protection	finger and hand touch safe according to BGV A2
Mounting	Top-hat rail to IEC/EN 60715
Terminals top and bottom	Lift terminals
Terminal capacity	2.5 – 50 mm² (solid)

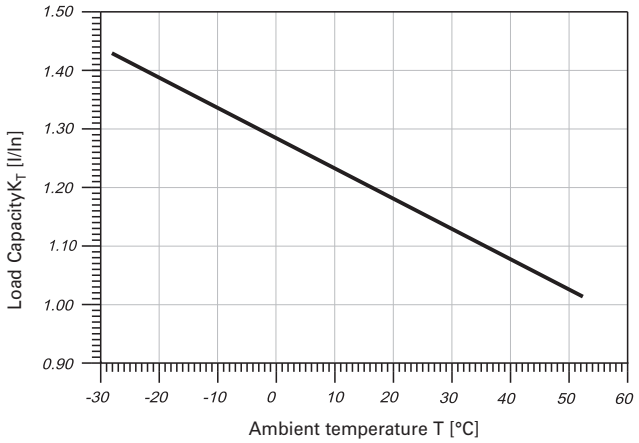
Connection diagram



Dimensions (mm)



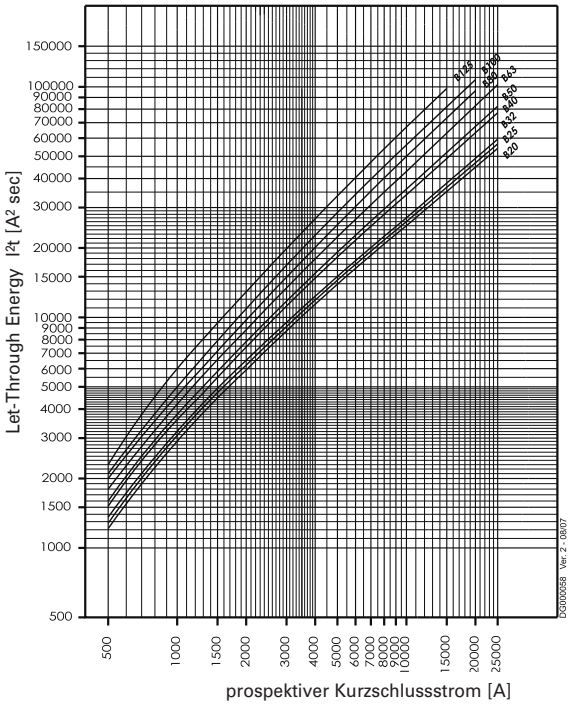
Influence of Ambient Temperature AZ



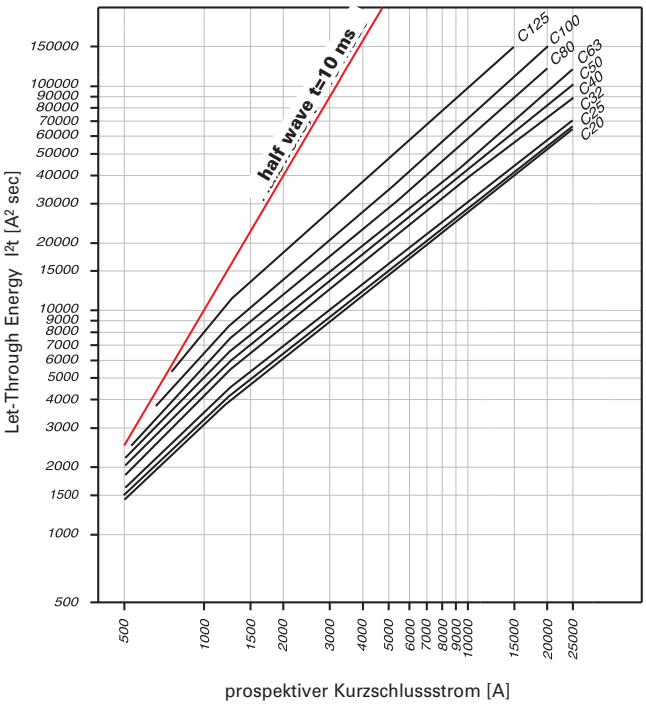
Permitted permanent load at ambient temperature T [°C] and n devices: $I_{DL} = I_n K_T(T) K_N(N)$.

Let-Through Energy AZ

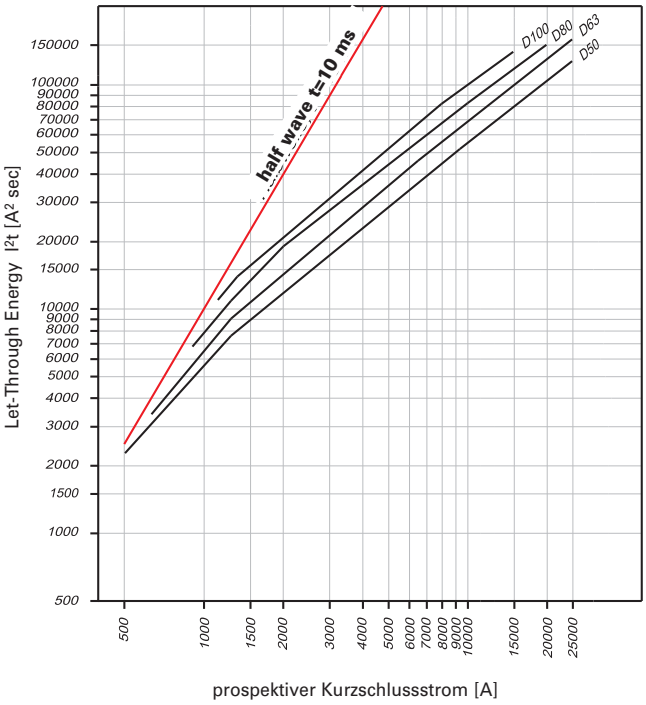
Maximum Let-Through Energy AZ, Characteristic B, 1poles



Maximum Let-Through Energy AZ, Characteristic C, 1poles



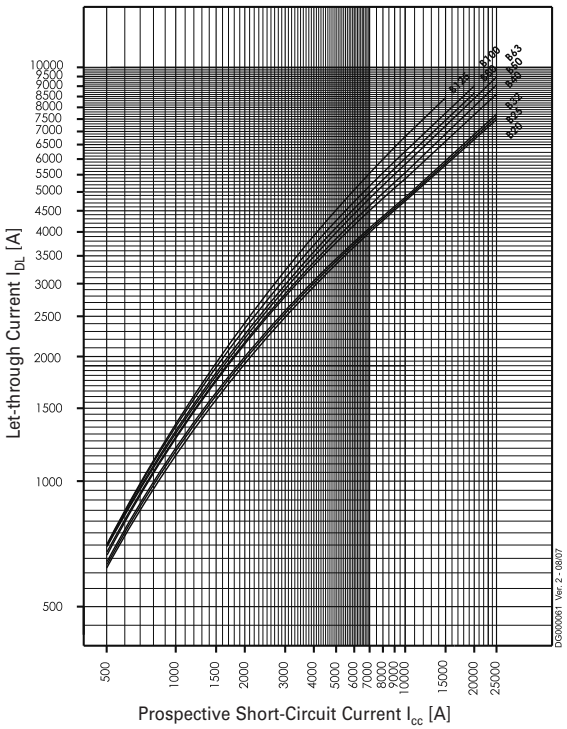
Maximum Let-Through Energy AZ, Characteristic D, 1poles



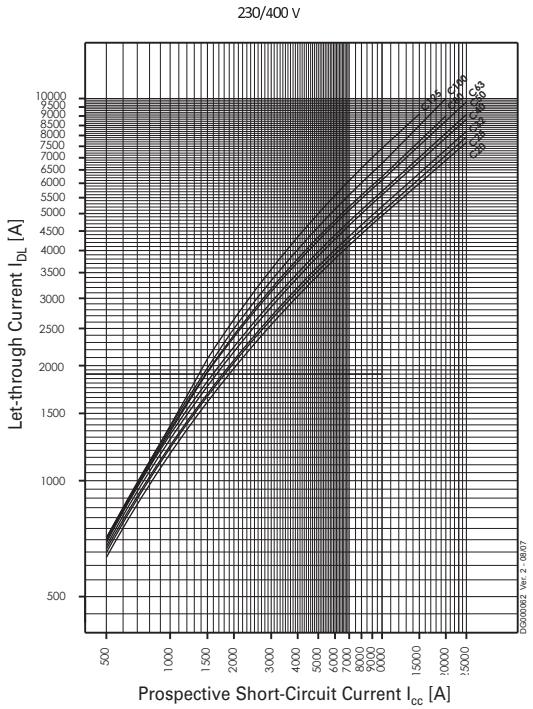
Determined according to EN 60898-1.

Maximum Let-Through Current AZ

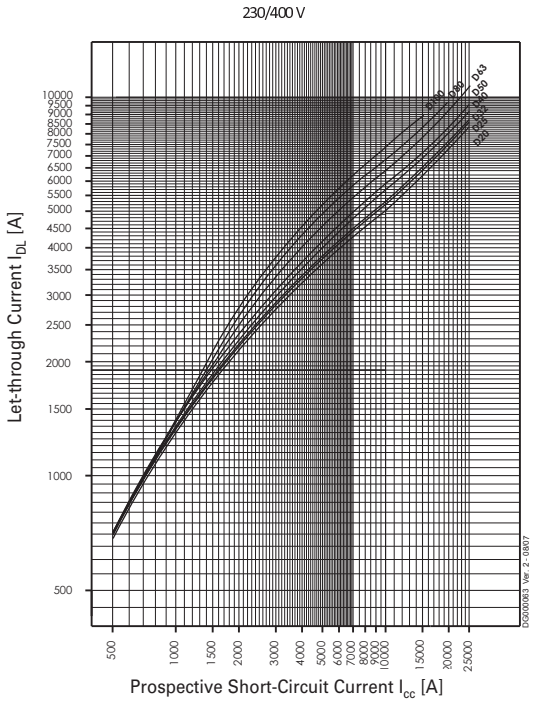
Type B



Type C



Type D



Short Circuit Selectivity AZ

In case of short circuit, there is selectivity between the miniature circuit breakers AZ and the upstream protection devices 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).

AZ towards back-up fuses D01, D02, D03

Characteristic C

AZ	D01. D02. D03					
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

AZ	D01. D02. D03					
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						

AZ towards back-up fuses NH Gr. 00

Characteristic C

AZ	NH Gr. 00									
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

AZ	NH Gr. 00									
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

AZ towards NZM 1

Characteristic C

AZ	NZM...1-A gL/gG					
I_n [A]	40	50	63	80	100	125
20	0.5	1.0	1.3	1.9	2.7	3.7
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						

Characteristic D

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

Shaded fields: no selectivity

AZ towards NZM 2

Characteristic C

AZ	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

Characteristic D

AZ	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									

Shaded fields: no selectivity

Back-up Protection AZ

The up-stream protective devices will protect the down-stream AZ up to the short-circuit current specified.

AZ and NZM(B)(C)(N)(H)1

AZ	NZMB1
I_n [A]	U_e = 230/400 V
20	25 kA
25	25 kA
32	25 kA
40	25 kA
50	25 kA
63	25 kA
80	25 kA
100	25 kA
125	25 kA

AZ	NZMC1
I_n [A]	U_e = 230/400 V
20	36 kA
25	36 kA
32	36 kA
40	36 kA
50	36 kA
63	36 kA
80	36 kA
100	36 kA
125	36 kA

AZ	NZMN1
I_n [A]	U_e = 230/400 V
20	50 kA
25	50 kA
32	50 kA
40	50 kA
50	50 kA
63	50 kA
80	50 kA
100	50 kA
125	50 kA

AZ	NZMH1
I_n [A]	U_e = 230/400 V
20	80 kA
25	80 kA
32	80 kA
40	80 kA
50	80 kA
63	80 kA
80	80 kA
100	80 kA
125	80 kA

AZ and NZM(B)(C)(N)(H)2

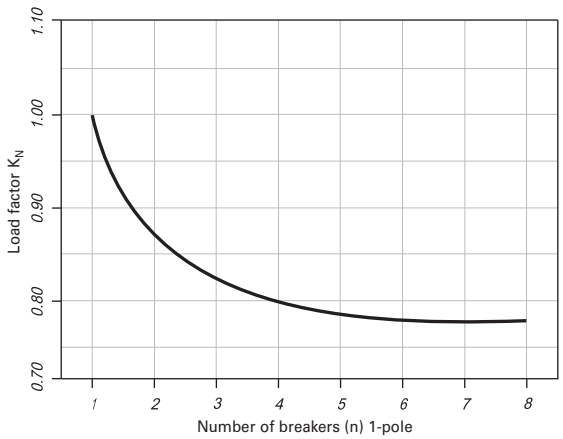
AZ	NZMB2
I_n [A]	U_e = 230/400 V
20	25 kA
25	25 kA
32	25 kA
40	25 kA
50	25 kA
63	25 kA
80	25 kA
100	25 kA
125	25 kA

AZ	NZMC2
I_n [A]	U_e = 230/400 V
20	36 kA
25	36 kA
32	36 kA
40	36 kA
50	36 kA
63	36 kA
80	36 kA
100	36 kA
125	36 kA

AZ	NZMN2
I_n [A]	U_e = 230/400 V
20	50 kA
25	50 kA
32	50 kA
40	50 kA
50	50 kA
63	50 kA
80	50 kA
100	50 kA
125	50 kA

AZ	NZMH2
I_n [A]	U_e = 230/400 V
20	65 kA
25	65 kA
32	65 kA
40	65 kA
50	65 kA
63	65 kA
80	65 kA
100	65 kA
125	65 kA

Load capacity in case of block installation AZ



Derating table for AZ above 2000m sea level

				60947-2			
				Ue 230/400V			
				80/B, C, D and 100/B, C	80, 100/B, C, D	100/D and 125/B, C	100/D and 125/B, C
above sea level (m)	overvoltage category	disconnect function	I/In	Icu	Ics	Icu	Ics
m	x	x	x	kA	kA	kA	kA
<=2000	III	yes	1	20	10	15	7.5
>2000-2500	II	no	0.93	15	7.5	10	6
>2500-3000	II	no	0.88	15	7.5	10	6
>3000-3500	II	no	0.83	15	7.5	10	6
>3500-4000	II	no	0.78	15	7.5	10	6

SG10911

Description

- Load circuit breaker with isolating function
- Highly wear resistant contacts
- Quick make
- Terminal capacity 50 mm^2
- Compatible busbars
- 1-, 2-, 3-, 4-pole

SG10611

SG10711

SG10811

SG10911

Rated Current (A)	Number of Poles	Type Designation	Article No.	Units per package
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

Accessories

SG47812

PHASE OUT

sg01215

Description	Type Designation	Article No.	Units per package
Switching interlock without lock for Isolators, RCDs, combined RCD/MCBs, ...	IS/SPE-1TE	101911	5/30
Terminal cover	Z-IS/AK-1TE	276290	10/600

Switching interlock IS/SPE-1TE

- Without lock
- Also suitable for PFIM, CFI6, PKNM, CKN6

Terminal Cover Caps Z-IS/AK-1TE

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

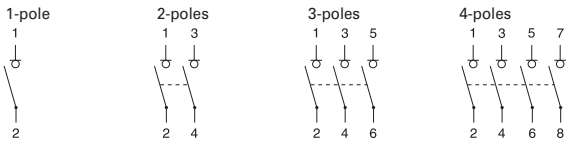
Description

- 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

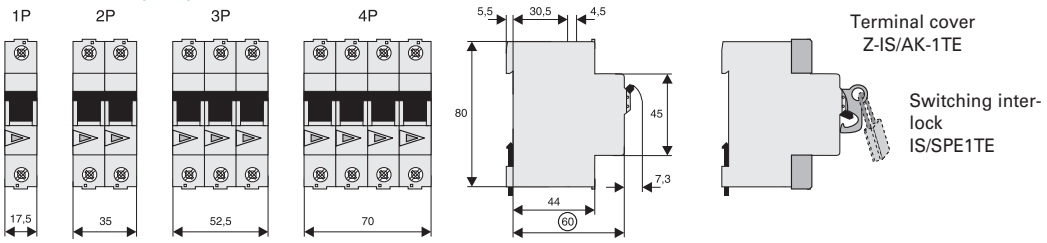
Technical Data

		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 impulse 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 240/415V, 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-poles								
Maximum back-up fuse		125 A gG								
Short circuit 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										
Electrical components operation cycles		≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 3,000	≥ 2.000
Mechanical components operation cycles		≥ 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		17.5 mm/Pol								
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 BGV A3								
Terminals top and bottom		open mouthed/lift terminals								
Terminal capacity		2.5 - 50 mm²								
Busbar thickness		0.8 - 2 mm								
Fastening torque of terminal screws		2.5 - 5 Nm								
Function		irrespective of the position of installation								

Connection diagram



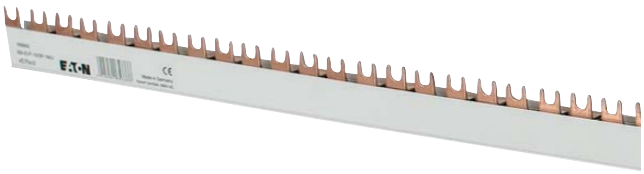
Dimensions (mm)



Derating table for Main Load Disconnector Switch (Isolator) IS above 2000m sea level

60947-3						
Un 240/415						
above sea level (m)	overvoltage category	disconnect function	Un	Ui	Uimp	I/In
m	x	x	V	V	kV	x
<=2000	III	yes	240/415	690	6	1
>2000-2500	III	yes	240/415	415	4	0.93
>2500-3000	III	yes	240/415	415	4	0.88
>3000-3500	III	yes	240/415	415	4	0.83
>3500-4000	III	yes	240/415	415	4	0.78

SG13113



Description

Busbar System xEffect is the modular design system for busbars. xEffect busbars are available as yard goods with 1, 2 or 3 poles. Now, there is a special feature: each bar can easily be extended by one-pole bar as you like. The additional pole can be added completely without tools by easy clamping technique. The lugs or forks in the xEffect bars - available in 10 and 16 mm2 and all common distances - can be broken out at a predetermined breaking point. There is actually no more flexibility available.

Busbar System xEffect saves time and material
The yard good can be cut with a saw of course. However, there is no need neither for deburring nor for cutting the conductor. Just cut to the required dimension and close with the fitting end cap -ready! The end caps have also breakable edges, which enable further connecting of the Busbar System xEffect. By overlapping assembly, doubling the cross section can be achieved.

Busbar System xEffect in use
Busbar System xEffect is especially well suited for solving flexible busbar applications rack-mounted models in series. Fork-pin combinations for 1+N-applications can be realized by individual combinations - for this also the one-pole version with blue isolation is available besides the one with grey isolation. Even different cross sections can be combined in this case.
Accessories, such as feeder terminals and self adhesive phase marking labels will complete the comfortable total package. Existing contact prevention caps can be used.

Busbar System xEffect at a glance:
- Yard goods can be cut
- No cutting back of copper required
- No deburring required
- Almost no waste during cutting
- End capsavailable with 1- to 4-poles, end caps can be broken out for further extensions
- 4-pole end cap molded in pairs (leftand right)
- Overlapping rail extension possible
- Rails can be extended on demand by 1-pole rails (plug-in technology)
- All step distances
- 10 and 16 mm^2
- Fork and stud
- Lugs can be broken out at any predetermined breaking point
- Self adhesive phase indication labels available
- Contact preventing caps (ZV-BS-G) can be used
- Simple, flexible handling
- All assembly requirements can be covered by the Busbar System xEffect
- Low storage space requirements due to modular system
- Less time consuming (no deburring, no cutting back)
- Individual and self configurable
- Fork-pin combination for 1+N application possible, feeding through rail (terminal clamp) not possible.
- Protected technology

Busbar Systems

xEffect Busbar 1m 10mm², 16mm² (Fork) BB-EVF

For MCBs, RCCBs, RCBOs, SPDs

- Delivered without end caps

SG13113

SG13413

10 mm², Rated current 63 A

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
1-phase	17.8	0.22	BB-EVF-10/1P-1MU	168826	10
	27	0.24	BB-EVF-10/1P-1,5MU	168830	10
	36	0.24	BB-EVF-10/1P-2MU	168834	10
2-phase	17.8	0.31	BB-EVF-10/2P-1MU	168838	10
	27	0.36	BB-EVF-10/2P-1,5MU	168840	10
3-phase	17.8	0.46	BB-EVF-10/3P-1MU	168842	10
	27	0.58	BB-EVF-10/3P-1,5MU	168844	10
	36	0.56	BB-EVF-10/3P-2MU	168850	10
3-phase + AUX	3x17.8+1x9	0.58	BB-EVF-10/3P-1MU/AUX	168846	10
	3x17.8+2x9	0.57	BB-EVF-10/3P-1MU/2AUX	168848	10
Neutral	17.8	0.22	BB-EVF-10/N-1MU	168828	10
	27	0.24	BB-EVF-10/N-1,5MU	168832	10
	36	0.24	BB-EVF-10/N-2MU	168836	10

SG13213

SG13613

16 mm², Rated current 80 A

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
1-phase	17.8	0.33	BB-EVF-16/1P-1MU	168827	10
	27	0.36	BB-EVF-16/1P-1,5MU	168831	10
	36	0.32	BB-EVF-16/1P-2MU	168835	10
2-phase	17.8	0.46	BB-EVF-16/2P-1MU	168839	10
	27	0.54	BB-EVF-16/2P-1,5MU	168841	10
3-phase	17.8	0.69	BB-EVF-16/3P-1MU	168843	10
	27	0.87	BB-EVF-16/3P-1,5MU	168845	10
	36	0.84	BB-EVF-16/3P-2MU	168851	10
3-phase + AUX	3x17.8+1x9	0.87	BB-EVF-16/3P-1MU/AUX	168847	10
	3x17.8+2x9	0.86	BB-EVF-16/3P-1MU/2AUX	168849	10
Neutral	17.8	0.33	BB-EVF-16/N-1MU	168829	10
	27	0.36	BB-EVF-16/N-1,5MU	168833	10
	36	0.32	BB-EVF-16/N-2MU	168837	10

xEffect Busbar 1m 10mm², 16mm² (Fork) BB-EVF

For MCBs, RCCBs, RCBOs, SPDs

- Delivered without end caps

SG13113

SG13413

10 mm², Rated current 63 A

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
1-phase	17.8	0.22	BB-EVP-10/1P-1MU	168852	10
	27	0.24	BB-EVP-10/1P-1,5MU	168856	10
	36	0.24	BB-EVP-10/1P-2MU	168860	10
2-phase	17.8	0.31	BB-EVP-10/2P-1MU	168864	10
	27	0.36	BB-EVP-10/2P-1,5MU	168866	10
3-phase	17.8	0.46	BB-EVP-10/3P-1MU	168868	10
	27	0.58	BB-EVP-10/3P-1,5MU	168870	10
	36	0.56	BB-EVP-10/3P-2MU	168876	10
3-phase + AUX	3x17.8+1x9	0.58	BB-EVP-10/3P-1MU/AUX	168872	10
	3x17.8+2x9	0.57	BB-EVP-10/3P-1MU/2AUX	168874	10
Neutral	17.8	0.22	BB-EVP-10/N-1MU	168854	10
	27	0.24	BB-EVP-10/N-1,5MU	168858	10
	36	0.24	BB-EVP-10/N-2MU	168862	10

SG13213

SG13613

16 mm², Rated current 80 A

1-phase	17.8	0.33	BB-EVP-16/1P-1MU	168853	10
	27	0.36	BB-EVP-16/1P-1,5MU	168857	10
	36	0.32	BB-EVP-16/1P-2MU	168861	10
2-phase	17.8	0.46	BB-EVP-16/2P-1MU	168865	10
	27	0.54	BB-EVP-16/2P-1,5MU	168867	10
3-phase	17.8	0.69	BB-EVP-16/3P-1MU	168869	10
	27	0.87	BB-EVP-16/3P-1,5MU	168871	10
	36	0.84	BB-EVP-16/3P-2MU	168877	10
3-phase + AUX	3x17.8+1x9	0.87	BB-EVP-16/3P-1MU/AUX	168873	10
	3x17.8+2x9	0.86	BB-EVP-16/3P-1MU/2AUX	168875	10
Neutral	17.8	0.33	BB-EVP-16/N-1MU	168855	10
	27	0.36	BB-EVP-16/N-1,5MU	168859	10
	36	0.32	BB-EVP-16/N-2 MU	168863	10

Accessories

End Caps BB-EV-EC

wa_sg05612

1-phase	-	-	BB-EV-EC/1P	168878	40
2+3-phase	-	-	BB-EV-EC/2-3P	168823	40
4-phase	-	-	BB-EV-EC/4P	168824	20
Neutral	-	-	BB-EV-EC/N	168879	20

Terminal BB-EV-MU/35

wa_sg05312

-	-	0.04	BB-EV-MU/35	168825	3

Sticker Phase Sequence

SG08713

-		-	BB-S-PS	169831	5

Busbar Tag Shrouds ZV-BS-G

SG05705

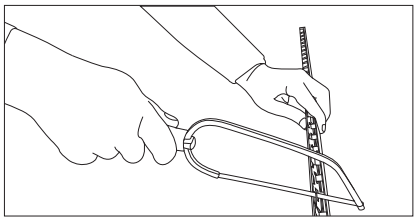
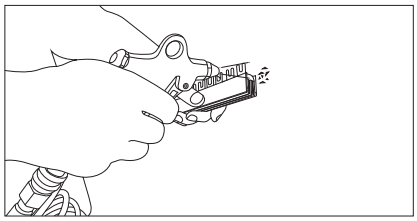
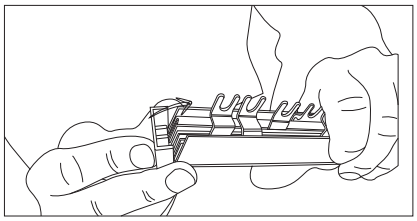
-		-	ZV-BS-G	104903	10/600

Technical Data

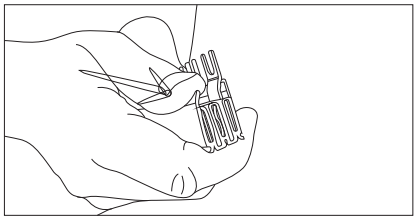
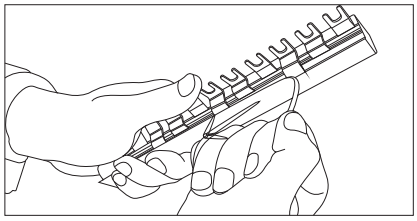
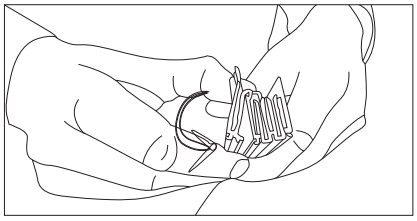
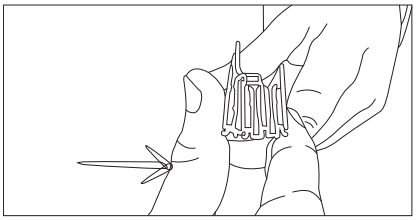
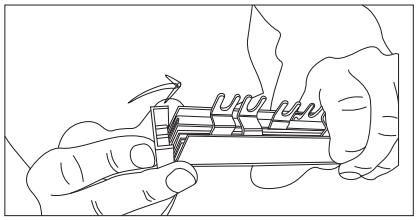
		BB-EV.
General		
Heat deflection temperature		≥ 80°C UL94 V0
Standards		EN 60947-1:2007 / IEC 60947-1:2007 / IEC 60999:2000
Climate stability		according to DIN EN 60068
Insulation coordination		Overvoltage category III / Pollution degree 2
Electrical		
Impulse voltage strenght		≥ 4.5 kV
Min. air distance		>5.5 mm
Min. creeping distance		>5 mm
Max. operating voltage		690 V AC/DC
		1,000 V DC 1-pole only
Max. busbar current	I_s/Phase	
10 mm²		63 A
16 mm²		80 A
Protection class		IP20
Short circuit rating	I_{CC}	25 kA - NH3 355A, gC500V JM
Dielectric strenght		PC - ABS >32 kV / mm

Assembly instruction:

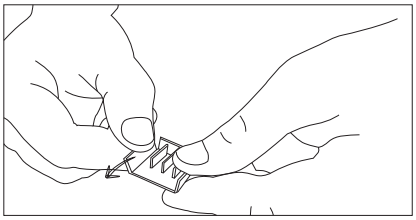
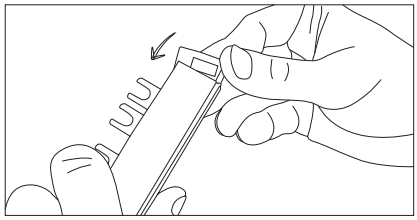
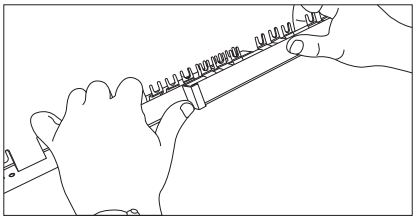
Cutting

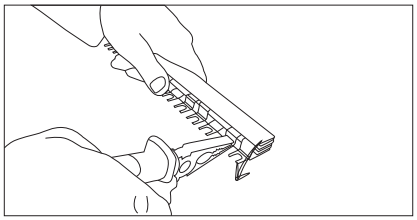
Mounting of an extension busbar

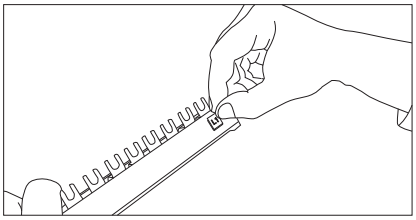
Overlapping mounting or further connection, resp.

Brecking out of connection lugs



Sticking on phase marking



SG13713

Description

- For MCB FAZ-NA/RT
- Sliceable
- 18 and 25 mm^2
- Pin busbar
- Accessories available:

  End cap

  Terminal

  Busbar tag shrouds
- Length 1 m

Busbar Systems

Busbar UL489 sliceable 1m 18mm², 25mm² (Pin), Z-BB/UL

For FAZ-NA/RT

- Delivered without end caps

SG13713

18 mm², Rated current 80 A

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
1-phase	17.6	0.39	Z-BB/UL18/1P1MU/57	171128	10
1-phase + AUX	26.4	0.378	Z-BB/UL18/1P1MU+AUX/37	171134	10
2x 1-phase + AUX	26.4	0.56	Z-BB/UL18/2X1P1MU+AUX/38	171142	10
3x 1-phase + AUX	26.4	0.945	Z-BB/UL18/3X1P1MU+AUX/39	171140	10
2-phase	17.6	0.625	Z-BB/UL18/2P1MU/56	171129	10
2-phase + AUX	17.6 + 26.4	0.625	Z-BB/UL18/2P1MU+AUX/46	171135	10
3-phase	17.6	0.95	Z-BB/UL18/3P1MU/57	171130	10
3-phase + AUX	2x 17.6 + 26.4	0.93	Z-BB/UL18/3P1MU+AUX/48	171136	10

SG14213

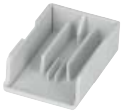
25 mm², Rated current 100 A

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
1-phase	17.6	0.535	Z-BB/UL25/1P1MU/57	171131	10
1-phase + AUX	26.4	0.745	Z-BB/UL25/1P1MU+AUX/37	171137	10
2x 1-phase + AUX	26.4	0.78	Z-BB/UL25/2X1P1MU+AUX/38	171143	10
3x 1-phase + AUX	26.4	1.315	Z-BB/UL25/3X1P1MU+AUX/39	171141	10
2-phase	17.6	0.888	Z-BB/UL25/2P1MU/56	171132	10
2-phase + AUX	17.6 + 26.4	0.87	Z-BB/UL25/2P1MU+AUX/46	171138	10
3-phase	17.6	1.31	Z-BB/UL25/3P1MU/57	171133	10
3-phase + AUX	2x 17.6 + 26.4	1.28	Z-BB/UL25/3P1MU+AUX/48	171139	10

Accessories

End Cap Z-ECUL

SG02514



Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
-	-	-	Z-ECUL	171145	10

Terminal Z-MUUL35

SG03014

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
-	-	0.038	Z-MUUL35	171144	10

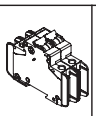
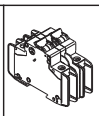
Busbar Tag Shrouds Z-FPUL

SG08613

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
-	-	-	Z-FPUL	171146	10

Busbar UL489 sliceable 1m 18mm², 25mm² (Pin), Z-BB/UL - Technical Data

Description of the Busbar UL489 Z-BB/UL for FAZ-NA, -RT

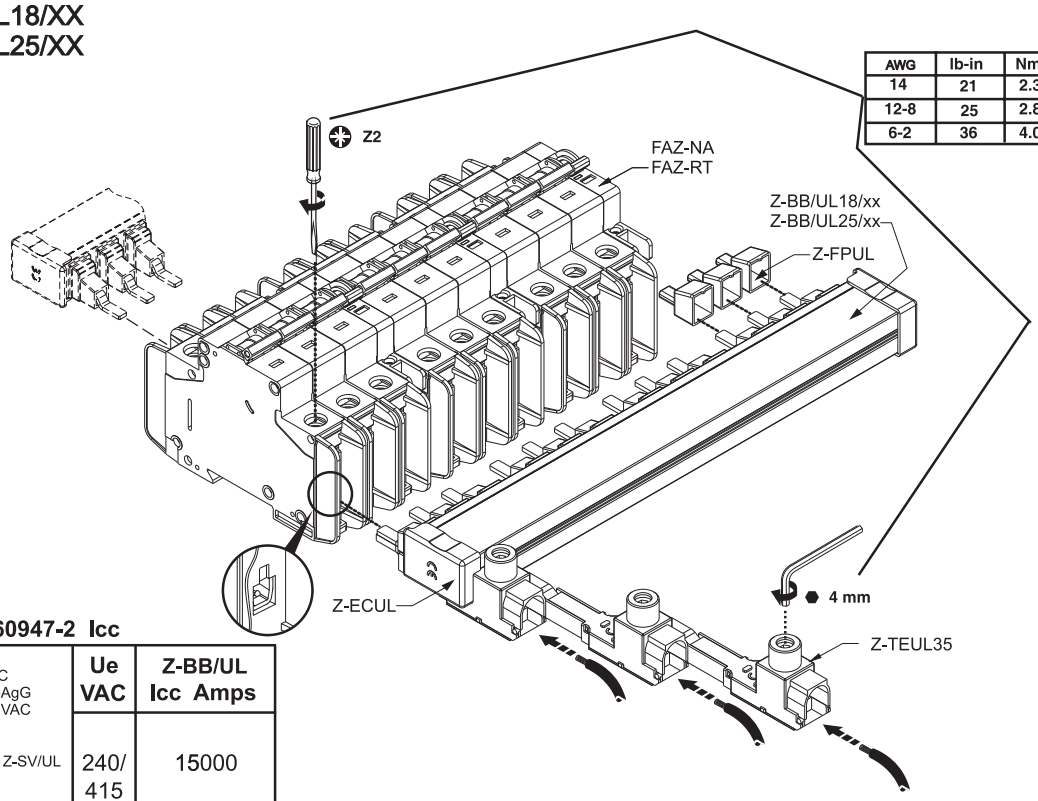
									
Z-BB/UL18/1P1MU/57	171128	57	-	-	-	-	-	-	-
Z-BB/UL18/2P1MU/56	171129	-	56	-	-	-	-	-	-
Z-BB/UL18/3P1MU/57	171130	-	-	57	-	-	-	-	-
Z-BB/UL25/1P1MU/57	171131	57	-	-	-	-	-	-	-
Z-BB/UL25/2P1MU/56	171132	-	56	-	-	-	-	-	-
Z-BB/UL25/3P1MU/57	171133	-	-	57	-	-	-	-	-
Z-BB/UL18/1P1MU+AUX/37	171134	-	-	-	37	-	-	-	-
Z-BB/UL18/2P1MU+AUX/46	171135	-	-	-	-	-	-	46	-
Z-BB/UL18/3P1MU+AUX/48	171136	-	-	-	-	-	-	-	48
Z-BB/UL25/1P1MU+AUX/37	171137	-	-	-	37	-	-	-	-
Z-BB/UL25/2P1MU+AUX/46	171138	-	-	-	-	-	-	46	-
Z-BB/UL25/3P1MU+AUX/48	171139	-	-	-	-	-	-	-	48
Z-BB/UL18/3X1MU+AUX/39	171140	-	-	-	-	-	39	-	-
Z-BB/UL25/3X1MU+AUX/39	171141	-	-	-	-	-	39	-	-
Z-BB/UL18/2X1MU+AUX/38	171142	-	-	-	-	38	-	-	-
Z-BB/UL25/2X1MU+AUX/38	171143	-	-	-	-	38	-	-	-
Z-TEUL35	171144	-	-	-	-	-	-	-	-
Z-ECUL	171145	-	-	-	-	-	-	-	-
Z-FPUL	171146	-	-	-	-	-	-	-	-

Technical Data

		Z-BB/UL
General		
Heat deflection temperature		>100°C - UL94 V0
Standards		UL489, EN 60947-1, IEC 60947-1:2004
Climate stability		according to DIN EN 60068
Insulation coordination		Overvoltage category III / Pollution degree 2
Electrical		
Impulse voltage strenght		≥ 10 kV
Min. air distance		≥ 1" ext.
Min. creeping distance		≥ 2" ext.
Max. operating voltage		
1-pole		1.000 V AC/DC
2-, 3-poles		600 V AC/DC
Max. busbar current	I_s/Phase	
18 mm²		80 A
25 mm²		100 A
Protection class		IP20
Short circuit rating	I_{CC}	10 kA
Dielectric strenght		PA66-V0, >35 kV

Mounting example of busbar UL489 Z-BB/UL for FAZ-NA, -RT

Z-BB/UL18/XX
Z-BB/UL25/XX



AWG	lb-in	Nm
14	21	2.3
12-8	25	2.8
6-2	36	4.0

IEC/EN 60947-2 Icc

Ue	Ue VAC	Z-BB/UL Icc Amps
HRC 315AgG 500VAC; Z-SV/UL	240/ 415	15000

UL SCCR

Ue	FAZ-NA FAZ-RT In Amps	Ue VAC	Z-BB/UL SCCR RMS Sym Amps
Z-SV/UL; FAZ-NA FAZ-RT	0.5-32	480Y/ 277	10000
	35-40	240	10000

SG01914

Description

- For MCB FAZ
- Sliceable
- 18 and 25 mm^2
- Pin busbar
- Accessories available:
  End caps
  Terminals
  Busbar tag shrouds
- Length 1 m

Busbar Systems

Busbar UL508 sliceable 1m 18mm², 25mm² (Pin), BB-UL

For FAZ

- Delivered without end caps

SG01914

18 mm², Rated current 80 A

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
1-phase	17.8	0.33	BB-UL-18/1P-1M/57	121981	10
2-phase	17.8	0.508	BB-UL-18/2P-2M/56	121982	10
3-phase	17.8	0.8	BB-UL-18/3P-3M/57	121983	10
1-phase + AUX	27	0.33	BB-UL-18/1P-1,5M/37	121984	10
2-phase + AUX	17.8 + 26.7	0.52	BB-UL-18/2P+AS-2,5M/46	121987	10
3-phase + AUX	2x 17.8 + 26.7	0.8	BB-UL-18/3P+AS-3,5M/48	121988	10

SG01814

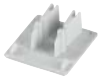
25 mm², Rated current 100 A

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
1-phase	17.8	0.45	BB-UL-25/1P-1M/57	121989	10
2-phase	17.8	0.68	BB-UL-25/2P-2M/56	121990	10
3-phase	17.8	1.07	BB-UL-25/3P-3M/57	121991	10
1-phase + AUX	27	0.45	BB-UL-25/1P-1,5M/37	121992	10
2-phase + AUX	17.8 + 26.7	0.69	BB-UL-25/2P+AS-2,5M/46	121995	10
3-phase + AUX	2x 17.8 + 26.7	1.03	BB-UL-25/3P+AS-3,5M/48	121996	10

Accessories

End Caps BB-UL-EC

SG02114



Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
1-phase	-	-	BB-UL-EC/1	122000	10
3-phase	-	-	BB-UL-EC/3	122001	10

Terminals BB-UL-TE

SG00113

Description	Cu-factor	Type Designation	Article No.	Units per package
6 - 35mm² (single and multi wire)	0.035	BB-UL-TEP/35	121997	10
6 - 50mm²	0.038	BB-UL-TEPA/35	169823	10
6 - 50mm² (single and multi wire)	0.038	BB-UL-TE/50	121998	10

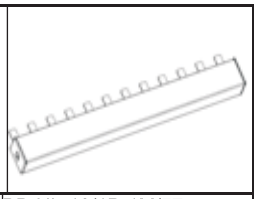
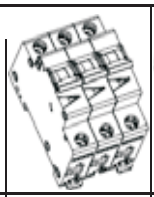
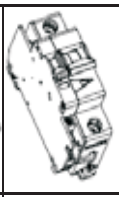
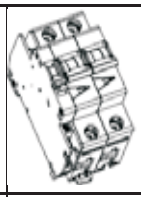
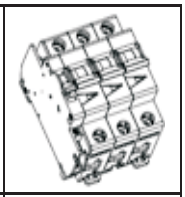
Busbar Tag Shrouds BB-IP/5

SG05705

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
for 5 pins	-	-	BB-IP/5	121999	10

Busbar UL508 sliceable 1m 18mm², 25mm² (Pin), BB-UL - Technical Data

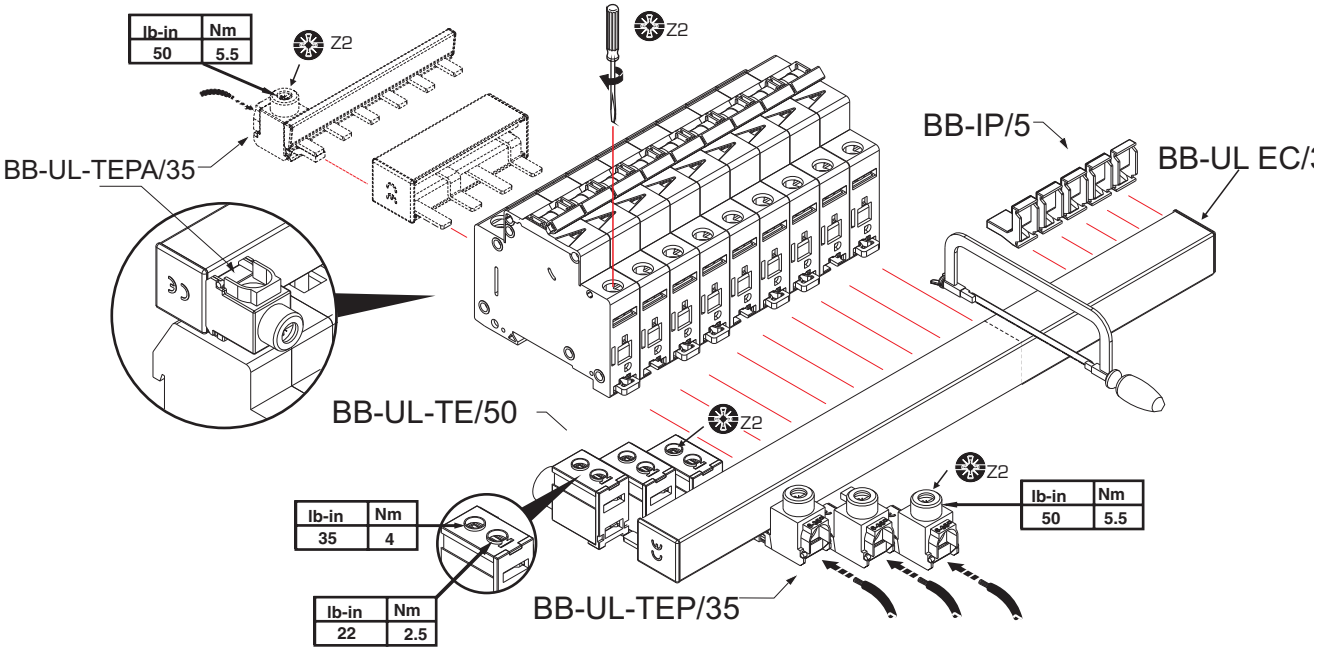
Description of the Busbar UL508 BB-UL for FAZ

Article No.							
121981	BB-UL-18/1P-1M/57	57	-	-	-	-	-
121982	BB-UL-18/2P-2M/56	-	28	-	-	-	-
121983	BB-UL-18/3P-3M/57	-	-	19	-	-	-
121984	BB-UL-18/1P-1,5M/37	-	-	-	37	-	-
121987	BB-UL-18/2P+AS-2,5M/46	-	-	-	-	23	-
121988	BB-UL-18/3P+AS-3,5M/48	-	-	-	-	-	16
121989	BB-UL-25/1P-1M/57	57	-	-	-	-	-
121990	BB-UL-25/2P-2M/56	-	28	-	-	-	-
121991	BB-UL-25/3P-3M/57	-	-	19	-	-	-
121992	BB-UL-25/1P-1,5M/37	-	-	-	37	-	-
121995	BB-UL-25/2P+AS-2,5M/46	-	-	-	-	23	-
121996	BB-UL-25/3P+AS-3,5M/48	-	-	-	-	-	16
121997	BB-UL-TEP/35	-	-	-	-	-	-
169823	BB-UL-TEPA/35	-	-	-	-	-	-
121998	BB-UL-TE/50	-	-	-	-	-	-
121999	BB-IP/5	-	-	-	-	-	-
122000	BB-UL-EC/1	-	-	-	-	-	-
122001	BB-UL-EC/3	-	-	-	-	-	-

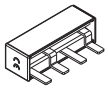
Technical Data

		BB-UL
General		
Heat deflection temperature		125°C - UL94 V0
Standards		DIN EN 60947-2, VDE 0660 - 101 = IEC 60947-2, IEC 60999:2000, UL508, UL486A, CSA C22.2
Climate stability		according to DIN EN 60068
Insulation coordination		Overvoltage category III / Pollution degree 2
Electrical		
Impulse voltage strenght		≥ 9.5 kV
Min. air distance		> 9.5 mm
Min. creeping distance		> 12.7 mm
Max. operating voltage		
1-pole		1.000 V AC/DC
2-, 3-poles		IEC/EN 690 V AC/DC
		600 V AC/DC UL Fuse
		480 V AC/DC UL-SP
Max. busbar current	I_s/Phase	
18 mm²		80 A
25 mm²		100 A
Protection class		IP20
Short circuit rating		10 kA 3 cycles @ 480 V / 100 kA Fuse Class J
		175 A @ 18 mm² - 200 A @ 25 mm²
Dielectric strenght		>32 kV/mm

Mounting example of busbar UL508, BB-UL for FAZ



BB-UL-TE/50			
	**UL508**		**EN/IEC 60947-2**
U_e	480 V AC		240/690V AC
f	50/60 Hz	----------	50/60 Hz
I_e	115 A @ 40°C		160 A @ 30°C
	#1-14 AWG 60/75°C Cu		1.5 – 50 mm² Cu
	0.56 in		14 mm

BB-UL		
	**UL508**	**EN/IEC 60947-2**
U_e	480 V AC	690V AC
f	50/60 Hz	
I_{pk}	10kA	15kA
I_e	18mm²	25mm²
Infeed at the start of the busbar	80A@40 °C	100A@30°C
Infeed at the center of the busbar	160A@40°C	200A@30°C

BB-UL-TEP/35 / BB-UL-TEPA/35			
	**UL508**		**EN/IEC 60947-2**
U_e	480 V AC		240/690V AC
f	50/60 Hz	----------	50/60 Hz
I_e	115 A@40°C		80 A@30°C
	#2-14 AWG 60/75°C Cu		2.5 – 35 mm² Cu
	0.56 in		14 mm

*-UL508 SHORT CIRCUIT RATINGS

-SUITABLE FOR USE ON A CIRCUIT CAPABLE OF DELIVERING NOT MORE THAN 10,000 RMS SYMETRICAL AMPERES, 600 VOLTS MAXIMUM.

-SUITABLE FOR USE ON A CIRCUIT CAPABLE OF DELIVERING NOT MORE THAN 100,000 RMS SYMETRICAL AMPERES, 600 VOLTS MAXIMUM WHEN PROTECTED BY A CLASS J FUSE RATED 175A.

wa_sg03511

Description

- For MCB FAZ-NA/RT
- 16 mm^2
- Pin busbar
- Accessories available:
  Terminals
  Busbar tag shrouds
- Several length

Busbar Systems

Busbar UL489 16mm² (Pin), Z-SV/UL16

For FAZ-NA/RT, not sliceable!!

- Delivered with end caps

wa_sg03511

16 mm², Rated current 80 A

Description	Step Distance (mm)	Cu-factor	Type Designation	Article No.	Units per package
1-phase, 6MU	17.6	0.035	Z-SV/UL-16/1P-1TE/6	104892	10
1-phase, 12MU	17.6	0.07	Z-SV/UL-16/1P-1TE/12	104893	10
1-phase, 18MU	17.6	0.105	Z-SV/UL-16/1P-1TE/18	104894	10
2-phase, 6MU	17.6	0.07	Z-SV/UL-16/2P-2TE/6	104895	10
2-phase, 12MU	17.6	0.14	Z-SV/UL-16/2P-2TE/12	104896	10
2-phase, 18MU	17.6	0.21	Z-SV/UL-16/2P-2TE/18	104897	10
3-phase, 6MU	17.6	0.14	Z-SV/UL-16/3P-3TE/6	104898	10
3-phase, 12MU	17.6	0.221	Z-SV/UL-16/3P-3TE/12	104899	10
3-phase, 18MU	17.6	0.332	Z-SV/UL-16/3P-3TE/18	104900	10

Accessories

Terminals

SG07506

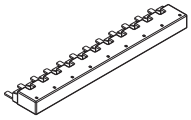
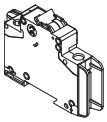
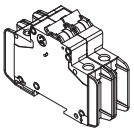
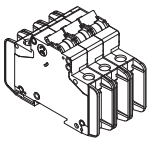
2,5 - 35mm²	-	0.035	Z-EK/35/UL	104901	3
1,5 - 50mm²	-	0.038	Z-EB/50/UL	104902	3

Busbar Tag Shrouds

SG07706

for 3 pins	-	-	ZV-BS-UL	104904	10

Description of the Busbar UL489 Z-SV/UL-16 for FAZ-NA/RT

Article No.				
104892	Z-SV/UL-16/1P-1TE/6	6	-	-
104893	Z-SV/UL-16/1P-1TE/12	12	-	-
104894	Z-SV/UL-16/1P-1TE/18	18	-	-
104895	Z-SV/UL-16/2P-2TE/6	-	3	-
104896	Z-SV/UL-16/2P-2TE/12	-	6	-
104897	Z-SV/UL-16/2P-2TE/18	-	9	-
104898	Z-SV/UL-16/3P-3TE/6	-	-	2
104899	Z-SV/UL-16/3P-3TE/12	-	-	4
104900	Z-SV/UL-16/3P-3TE/18	-	-	6
104901	Z-EK/35/UL	-	-	-
104902	Z-EB/50/UL	-	-	-
104904	ZV-BS-UL	-	-	-

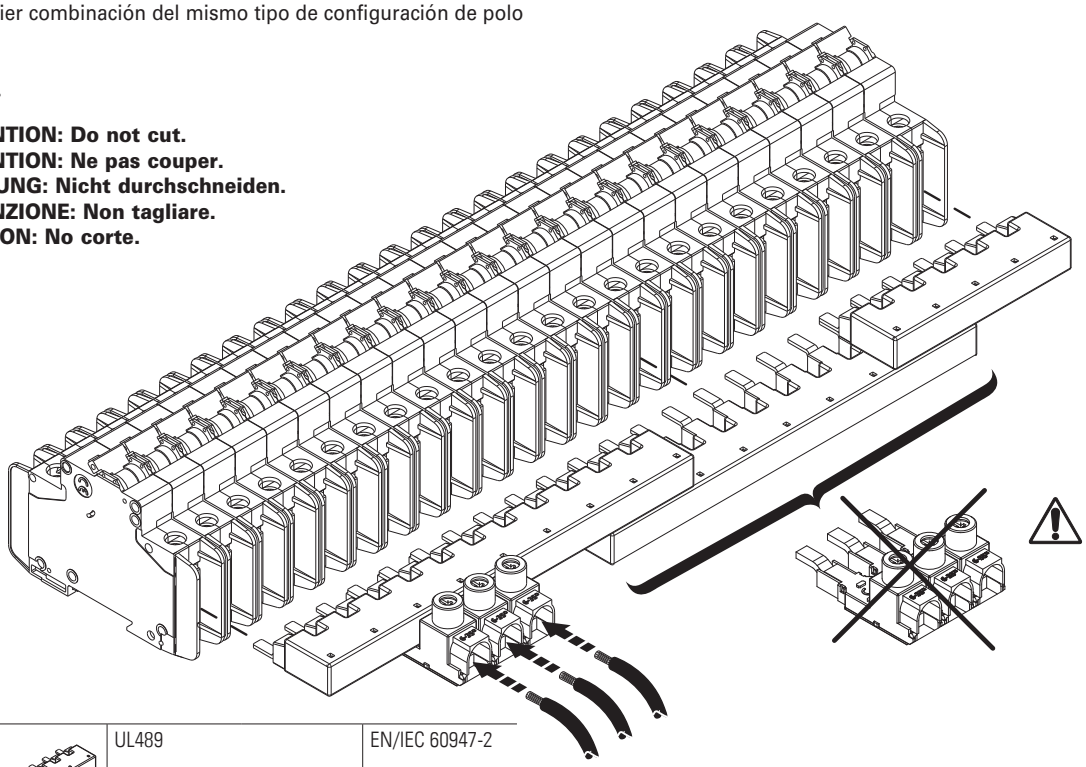
Technical Data

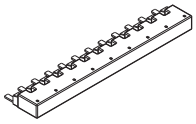
		Z-SV/UL16
General		
Heat deflection temperature		125°C - UL94 V0
Standards		
Busbar		UL489, DIN EN 60947-1, VDE 0660 Teil 100 = IEC 60947-1:2004, IEC 60947-2:2003
Terminal		IEC 60999:2000, UL489, UL486A, CSA C22.2
Climate stability		according to DIN EN 60068
Insulation coordination		Overvoltage category III / Pollution degree 2
Electrical		
Impulse voltage strenght		≥ 9.5 kV (1 kV / mmLS)
Min. air distance		> 9.5 mm/25.4 mm (intern/external)
Min. creeping distance		> 12.7 mm/50.8 mm (intern/external)
Max. operating voltage		
1-, 3-phase		690 V IEC 480Y/277V & 240 V AC
Terminals		1.000 V AC/DC
Max. busbar current	I_s/Phase	80 A
Protection class		IP20
Short circuit rating		15 kA mit NH3 355 A gL 500 V JM / 7.5 kA 3 cycles @ 600 V
Dielectric strenght		>30 kV/mm

Mounting example of busbar UL489 Z-SV/UL-16 for FAZ-NA/RT

ATTENTION: Maximum of 3 commoning links allowed. Any combination of same pole configuration.
ATTENTION: 3 liaisons communes autorisées au maximum. Toute combinaison de configurations de polarité identiques.
ACHTUNG: Maximal 3 Schienenblöcke. Beliebige Kombination gleichpoliger Konfigurationen.
ATTENZIONE: Sono consentiti al massimo 3 pettini di collegamento in qualsiasi combinazione della stessa configurazione di poli.
ATEÖION: Se permite un máximo de 3 enlaces comunes. Cualquier combinación del mismo tipo de configuración de polo

ATTENTION: Do not cut.
ATTENTION: Ne pas couper.
ACHTUNG: Nicht durchschneiden.
ATTENZIONE: Non tagliare.
ATEÖION: No corte.



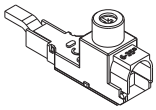
	UL489		EN/IEC 60947-2
U_e	480 V AC	96 V DC	240/415 V AC
f	50/60 Hz	—	50/60 Hz
U_{imp}	—		9,5 kV
I_e	80 A @ 40°C		80 A @ 30°C
Terminal capacity	—		16 mm²

Z-EB/50/UL

	UL489		EN/IEC 60947-2
U_e	480 V AC	96 V DC	240/415 V AC
f	50/60 Hz	—	50/60 Hz
U_{imp}	—		9,5 kV

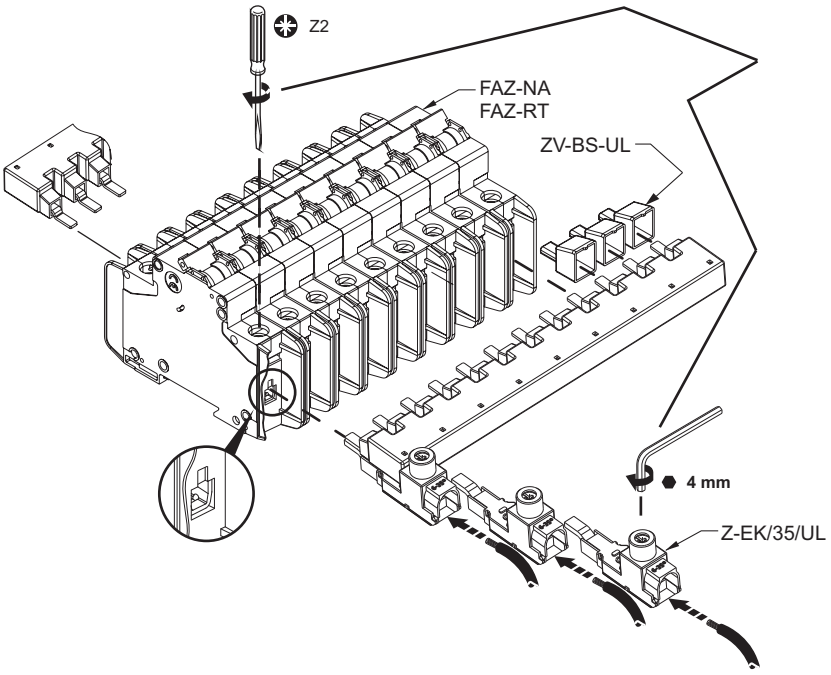
Cross section:			
	U - single wire	K - fine wire (with sleeve)	Torque
	R - multi wire	F - fine wire (with sleeve)	
Max. cross section	50 mm² 1 AWG copper wire	35 mm² 2 AWG copper wire	4 Nm 35 lbf.in
Min. cross section	1,5 mm² 14 AWG copper wire		
Busbar-side	Pin max. 5,5x2 / 0.2"x0.07" Länge min. 12,7 mm / Length min. 0.5"		2,5 Nm 22 lbf.in

Z-EK/35/UL

	UL489		EN/IEC 60947-2
U_e	480 V AC	96 V DC	240/415 V AC
f	50/60 Hz	—	50/60 Hz
U_{imp}	—		9,5 kV

Cross section:			
	U - single wire	K - fine wire (with sleeve)	Torque
	R - multi wire	F - fine wire (with sleeve)	
Max. cross section	35 mm² 2 AWG copper wire		5,5 Nm 50 lbf.in
Min. cross section	2,5 mm² 14 AWG copper wire		

Mounting example of busbar UL489 Z-SV/UL-16 for FAZ-NA/RT

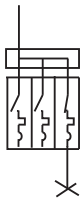


AWG	lb-in	Nm
14	21	2.3
12-8	25	2.8
6-2	36	4.0

IEC/EN 60947-2 I_{cc}

	U_e V AC	Z-SV/UL I_{cc} A
	240/415	15000

UL SCCR

	FAZ-NA FAZ-RT I_n A	U_e V AC	Z-SV/UL SCCR RMS Sym A
	0.5-32	480Y/277	10000
	35-40	240	10000

sg05517


L1
N/Z1
L2/N
L1
Y7-193378
EVG-2PHASI/AFDD
10mm² Uin=240/415V AC
L1
N/Z1
L2/N
L1
L1
N/Z1
L2/N
L1
Eaton Industries (Austria) GmbH
Eugenia 1, 3943 Schrems, Austria
Made in Germany
L1
N/Z1
L2/N
L1

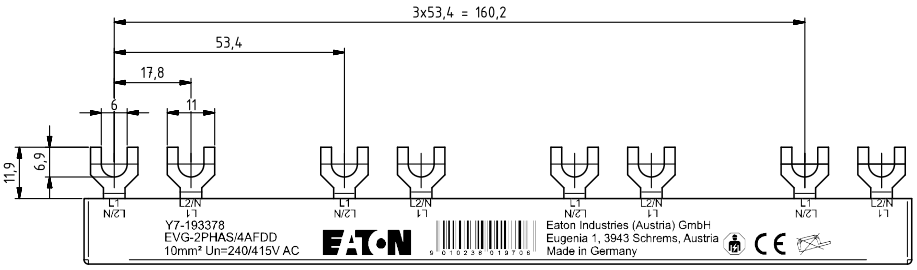
	Phases	Cu-factor	Type Designation	Article No.	Units per package
10 mm²					
	2-phase	0.114	EVG-2PHAS/4AFDD	193378	10

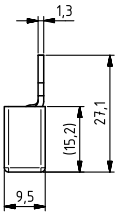
Technical Data

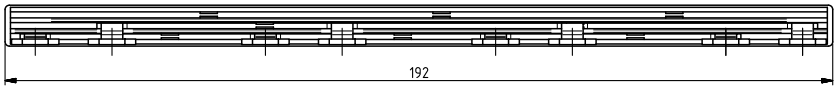
Products are EU comform and correspond to the RoHS of the EU

		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}	≥4,5 kV
Max. operating voltage		
1-, 3-phase		690 V IEC
		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 mm²
Connection cross section		10 mm²

Dimensions (mm)







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

SG00114, sg01515

Description	Type Designation	Article No.	Units per package
SWD Module	MCB-HK-SWD	177175	1
Spare End Cap	SWD4-OS	178150	10

Description Auxiliary SWD Module

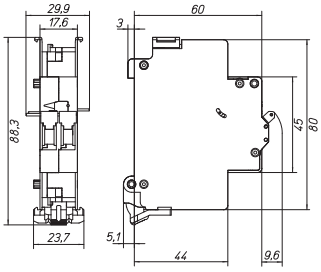
- Auxiliary module for the connection of an MCB, RCCB or RCBO to the SWD line
- Connection to an RCCB on the left side and to an MCB or RCBO on the right side
- Communication of on/off and trip status, trip indicator
- SWD connection on the top and bottom possible
- Integrated SWD-bus LED

Technical Data

	MCB-HK-SWD
Pollution degree	2
Degree of protection	IP20
Power supply	via SWD line
Operation temperature	-25 up to +40°C
Dimensions	W x H x D = 17.5 x 88.3 x 77.3 mm

Combination with the following Types	
RCCB	
Residual Current Devices FRCdM, digital	✔
Residual Current Devices FRCmM	✔
Residual Current Devices FRCmM-NA & NA-110	✔
Residual Current Devices FRCmM-125	–
RCBO	
Combined RCD/MCB Devices FRBdM, digital	✔
FI/LS-RCBO FRBmM, FRBm6, FRBm4	✔
Add-on Residual Current Protection Unit FBSmV	✔ (only on MCB side)
Add-on Residual Current Protection Unit FBHmV	–
MCB	
Miniature Circuit Breaker FAZ	✔
Miniature Circuit Breaker FAZ-PN	✔
Miniature Circuit Breaker FAZ-HS	✔
Miniature Circuit Breaker FAZ-T	✔
Miniature Circuit Breaker FAZ-DC	✔
Miniature Circuit Breaker FAZ-NA, FAZ-RT	–
Miniature Circuit Breaker FAZ-NA-DC	–
Miniature Circuit Breaker AZ	–
Main Load Disconnector Switch (Isolator) IS	–

Dimensions (mm)



	For Protective Device / Function	Type Designation	Article No.	Units per package
	Design: for screwing			
SG34812 	RCCB / 1NO+1NC	Z-HK	248432	4/120
SG60911 	MCB, RCBO (1+N, 3P, 3+N) / 1NO+1NC	Z-AHK	248433	4/120
SG61011 	MCB, RCBO, RCCB / 2CO	Z-NHK	248434	4/120
SG34412 	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!

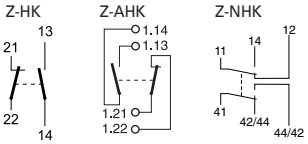
- **Z-AHK, Z-NHK:** Contact function with relative movement (selfcleaning contacts)
- Contact material and design particularly suitable for extra low voltage

- **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”

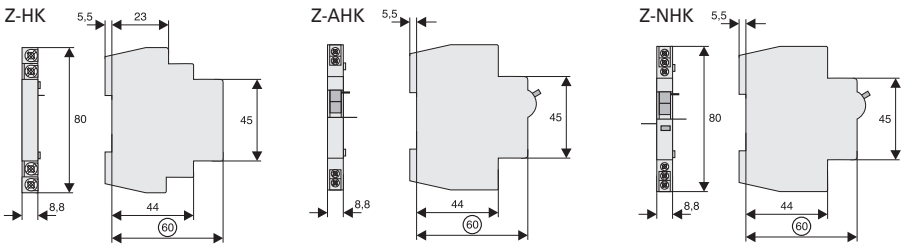
Technical Data

		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	3 A / 250 V AC	3 A / 250 V AC
		2 A / 440 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

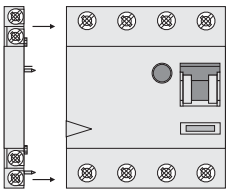
Connection diagram



Dimensions (mm)

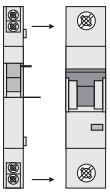


Example: Z-HK+FI



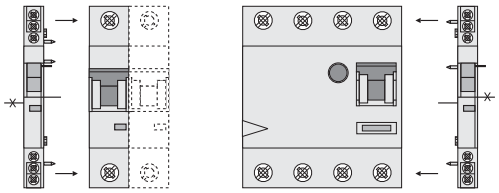
1NO+1NC 24V 50mA min.

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

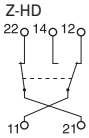
Tripping signal switch: detects if RCD tripping occured by an fault current

Auxiliary switch: shows the contact position of the RCD

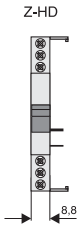
Technical Data

	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

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)

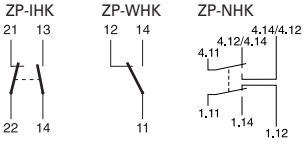
- **ZP-NHK:** The function of one of the two change-over contacts can be switched from “auxiliary switch” to „tripping signal switch“
- Tripping signal contact transmits message of electric tripping, not mechanical switch-off

- **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

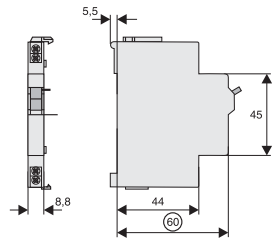
		ZP-IHK	ZP-WHK	ZP-NHK
Electrical				
Contact function		1NO + 1NC	1CO	2CO
Rated voltage		250 V	250 V	250 V
Frequency		50/60 Hz	50/60 Hz	50/60 Hz
Rated current		6 A	6 A	4 A
Rated thermal current	I_{th}	6 A	6 A	4 A
Utilisation category AC13				
Rated operational current	I_e	3 A / 250 V AC	3 A / 250 V AC	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 (1,2/50µ)	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	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 mm²	0.5-2.5 mm²	0.5-2.5 mm²
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

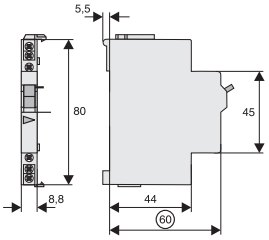


Dimensions (mm)

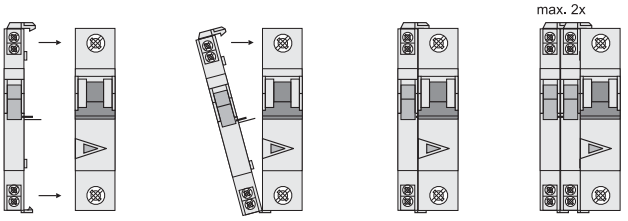
ZP-IHK, ZP-WHK



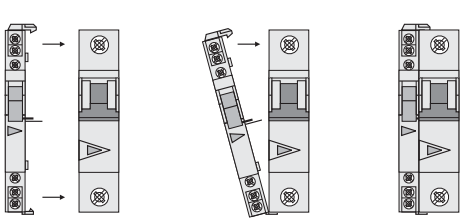
ZP-NHK



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



Example: ZP-NHK+LS



	For Protective Device	Type Designation	Article No.	Units per package
SG16011 	RCCB	Z-FAM	248293	1/60
SG16211 	RCBO	Z-KAM	248294	1/60

Description RCCB Tripping Module Z-FAM, Z-KAM

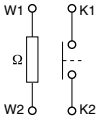
- For remote switch-off of RCCBs, standard and electronic combined RCD/MCB devices
- Remote switch-off by one or several parallel potential-free contacts, e.g. pushbutton max. rated current 3 A at 250 V, take into account maximum pushbutton voltage
- Remote tripping test by means of remote testing module 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

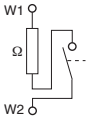
		Z-FAM	Z-KAM
Electrical			
Rated voltage		230(400) V AC	230(400) V AC
Frequency		50/60 Hz	50/60 Hz
Rated tripping current	$I_{\Delta n}$	0.01 - 0.3 A	0.01 - 0.3 A
Function		1NO	1NO
Mechanical			
Tripping module for		RCCB	RCBO
Frame size		45 mm	45 mm
Device height		80 mm	80 mm
Device width		8.8 mm (0.5MU)	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 mm²	1 - 2x2.5 mm²

Connection diagram

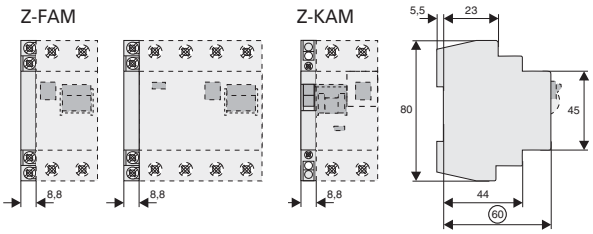
Z-FAM



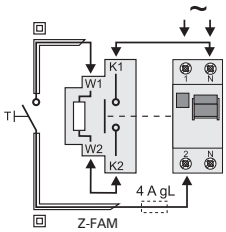
Z-KAM



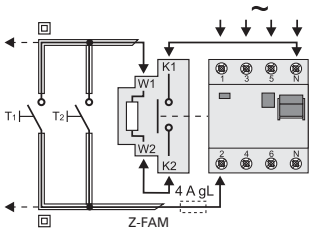
Dimensions (mm)



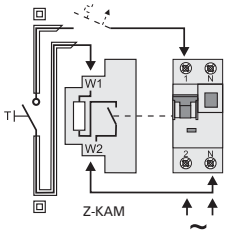
Connection examples: Lay lines to the switching devices with double insulation and overload protection, e.g. 4A gL or CLS6-4..-HS



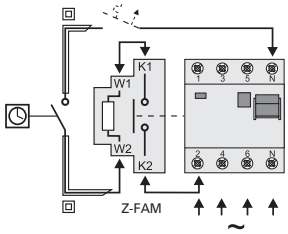
Connection diagram:
RCCB-2p, RCCB feed above



Connection diagram:
RCCB-4p, RCCB feed above



Connection diagram:
RCBO-2p, RCBO feed below



Connection diagram:
RCCB-4p, RCCB feed below

SG00712

Operational voltage range (V~)	Type Designation	Article No.	Units per package
To be glued on			
12-110	Z-ASA/24	248286	1/60
110-415	Z-ASA/230	248287	1/60

SG00212

To be snapped on			
12-110	ZP-ASA/24	248438	1/60
110-415	ZP-ASA/230	248439	1/60

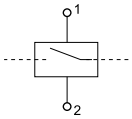
Description Shunt Trip Release Z-ASA, ZP-ASA

- 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

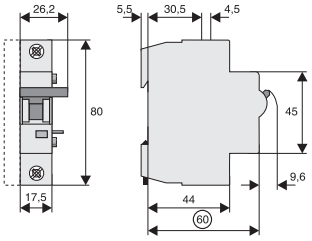
	Z-ASA24	Z-ASA230	ZP-ASA24	ZP-ASA230
Electrical				
Minimum pulse duration	15 ms	10 ms	15 ms	10 ms
Internal resistance	2,2 Ω	215 Ω	2,2 Ω	215 Ω
Duty cycle	100%	100%	100%	100%
Tripping time	< 20 ms	< 20 ms	< 20 ms	< 20 ms
Rated peak withstand voltage (1.2/50µs)	2.5 kV	2.5 kV	2.5 kV	2.5 kV
Endurance	>4000 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

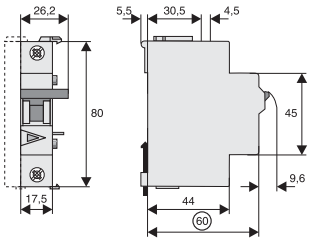


Dimensions (mm)

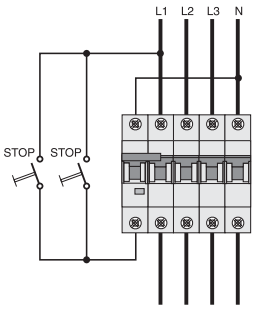
Z-ASA



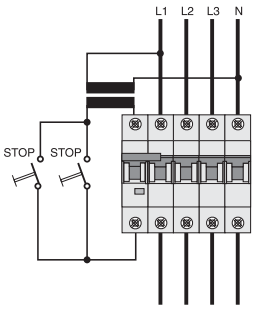
ZP-ASA



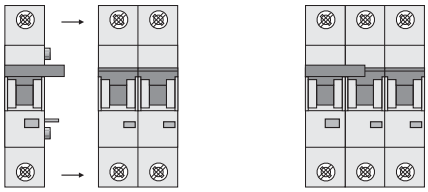
Connection Example 230 V



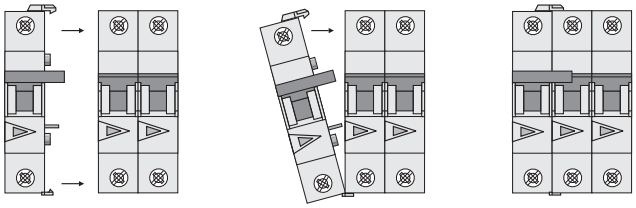
Connection Example 24 V



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

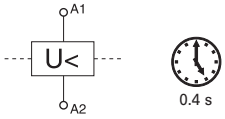
Description Undervoltage Release Z-USA, Z-USD

- 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, PXK, FAZ

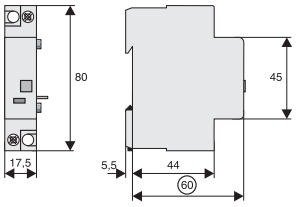
Technical Data

		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 mm²	1 - 2x2.5 mm²	1 - 2x2.5 mm²

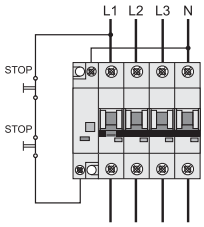
Connection diagram



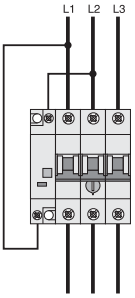
Dimensions (mm)



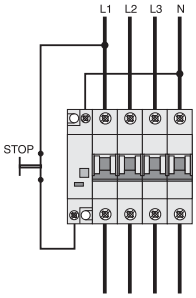
Connection Example Release



Connection Examplee 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	Switching interlock without lock for Isolators, RCDs, combined RCD/MCBs, ...	IS/SPE-1TE	101911	5/30
		Switching interlock without lock for MCBs and Circuit Breaker ZP-A	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

SG09411

Operational voltage range (V~)	Type Designation	Article No.	Units per package
Shunt Trip Release Kit Z-BHASA			
110-415	Z-BHASA/230	248445	8
12-60	Z-BHASA/24	248444	8

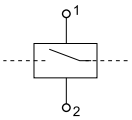
Description Shunt Trip Release Kit Z-BHASA

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

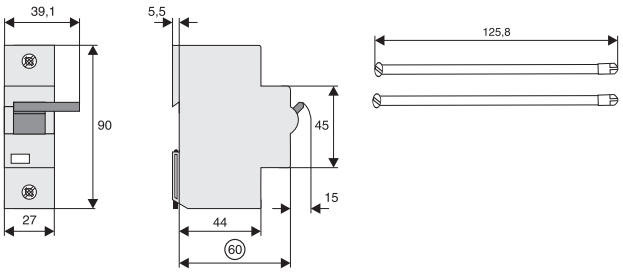
Technical Data

	Z-BHASA/24	Z-BHASA/230
Electrical		
Minimum pulse duration	15 ms	10 ms
Internal resistance	2 Ω	130 Ω
Duty cycle	100%	100%
Tripping time	< 20 ms	< 20 ms
Rated peak withstand voltage (1.2/50µs)	2 kV	2 kV
Endurance	>4000 operating cycles	>4000 operating cycles
AC voltage range		
Operating limit	8 V	70 V
Operational voltage range	12-60 V	110-415 V
Maximum current consumption during switch-on	14 A	3.4 A
Current flow time at max. current consumption	4.0 ms	4.0 ms
DC voltage range		
Operating limit	11 V	90 V
Operational voltage range	12-60 V	110-230 V
Maximum current consumption during switch-on	23.5 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
Terminals above/below	Lift terminals	Lift terminals
Terminal capacity	2.5-30 mm^2	2.5-30 mm^2
Fastening torque of terminal screws	4 Nm	4 Nm

Connection diagram



Dimensions (mm)



SG09311

Operational voltage range (V~)	Type Designation	Article No.	Units per package
Shunt Trip Release Z-LHASA			
110-415	Z-LHASA/230	248442	8
12-60	Z-LHASA/24	248441	8

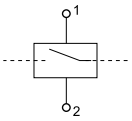
Description Shunt Trip Release Z-LHASA

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

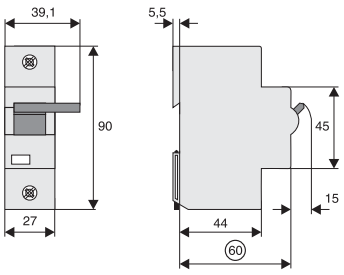
Technical Data

	Z-LHASA/24	Z-LHASA/230
Electrical		
Minimum pulse duration	15 ms	10 ms
Internal resistance	2 Ω	130 Ω
Duty cycle	100%	100%
Tripping time	< 20 ms	< 20 ms
Rated peak withstand voltage (1.2/50µs)	2 kV	2 kV
Endurance	>4000 operating cycles	>4000 operating cycles
AC voltage range		
Operating limit	8 V	70 V
Operational voltage range	12-60 V	110-415 V
Maximum current consumption during switch-on	14 A	3.4 A
Current flow time at max. current consumption	4.0 ms	4.0 ms
DC voltage range		
Operating limit	11 V	90 V
Operational voltage range	12-60 V	110-230 V
Maximum current consumption during switch-on	23.5 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
Terminals above/below	Lift terminals	Lift terminals
Terminal capacity	2.5-30 mm^2	2.5-30 mm^2
Fastening torque of terminal screws	4 Nm	4 Nm

Connection diagram



Dimensions (mm)



SG16111

Function	Type Designation	Article No.	Units per package
Auxiliary Switch Z-LHK			
1NO+1NC	Z-LHK	248440	10/100

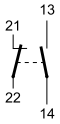
Description Auxiliary Switch Z-LHK

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

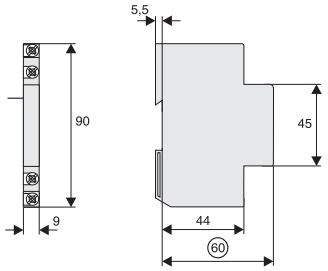
Technical Data

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

Connection diagram



Dimensions (mm)



	Function	Type Designation	Article No.	Units per package
	Switching Interlock LH-SP			
SG02214 	Switching interlock	LH-SPL	285752	1
SG01014 	Switching interlock	LHSP-E	215999	1
SG01114 	Switchoff interlock	LHSP-A	216000	1

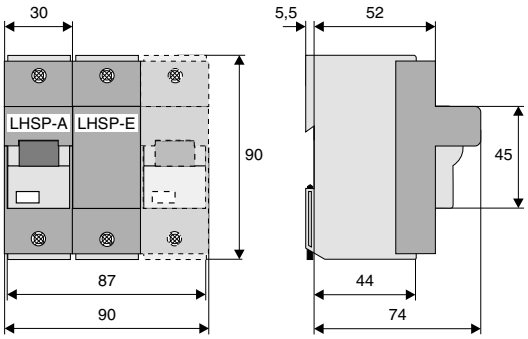
Description Switching Interlock LHSP-E, LH-SPL

- Prevents undesired switching ON or OFF

Description Switchoff interlock LHSP-A

- Prevents undesired switch-OFF

Dimensions (mm)



SG60711

Operational voltage range V~	Type Designation	Article No.	Units per package
Auxiliary Switch Z-IHK-NA			
250	Z-IHK-NA	113895	1

Description Auxiliary Switch Z-IHK-NA

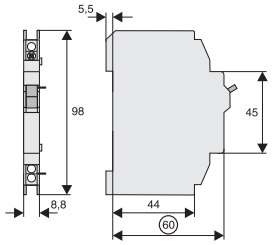
- Design according to IEC/EN 60947-5-1, IEC/EN 62019
- Field installable
- The specified minimum voltages are per contact—take into account particularly in case of series connection
- Self-cleaning contacts
- Contact material and design particularly suitable for extra low voltage
- Tripping signal contact transmits message of electric tripping, not mechanical switch-off
- Test key for contact function “electrical tripping”
- Will allow for > 480Y/277 VAC rating

Technical Data

		Z-IHK-NA
Electrical		
Contact function		1NO + 1NC
Rated voltage		250 V
Rated current		6 A
Rated thermal current	I_{th}	6 A
Utilisation category AC13		
Rated operational current	I_e	3 A / 250 V AC
Utilisation category AC15		
Rated operational current	I_e	2 A / 250 V AC
Utilisation category DC12		
Rated operational current	I_e	0.5 A / 110 V DC 0.25 A / 220 VDC
Rated insulation voltage	U_I	250 V AC
Minimum operational voltage per contact	U_{min}	5 V DC
Minimum operational current	I_{min}	10 mA AC/DC
Rated impulse withstand voltage (1,2/50µ)	U_{imp}	4 kV
Conditional short circuit current with back-up fuse 6 A or FAZ-B4-HS		1 kA
Max. back-up fuse, overload and short circuit		6 A gL / FAZ-4/../B-HS
Mechanical		
Tripping indicator “electrical tripping”		–
Frame size		45 mm
Device height		80 mm
Device width		8.8 mm (0.5MU)
Mounting		onto switching device
Degree of protection, built-in		IP40
Terminal protection		finger and hand touch safe according to DGUV VS3, EN 50274
Terminals		Lift terminals
Terminal capacity		0.5-2.5 mm^2
Terminal screws		M4 (Pozidrive Z2)
Fastening torque of terminal screws		max. 1.2 Nm

Connection diagram

Dimensions (mm)



SG13511

Operational voltage range	Type Designation	Article No.	Units per package
Shunt Trip Release FAZ-XAA-NA			
12–110 V AC, 12–60 V DC	FAZ-XAA-NA12-110VAC	102037	1
110–415 V AC, 110–230 V DC	FAZ-XAA-NA110-415VAC	102036	1

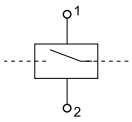
Description Shunt Trip Release FAZ-XAA-NA

- Remote release for subsequent mounting onto FAZ-NA
- Additional installation of standard auxiliary switch is possible
- Position indicator red–green

Technical Data

	FAZ-XAA-NA12-110VAC	FAZ-XAA-NA110-415VAC
Electrical		
Can be mounted onto	FAZ-NA / FAZ-NA-DC / FAZ-RT	FAZ-NA / FAZ-NA-DC / FAZ-RT
Operational voltage range	12–110 V AC 12–60 V DC	110–415 V AC 110–230 V DC
Frequency	50/60 Hz	50/60 Hz
Function	1NO	1NO
Mechanical		
Frame size	45 mm	45 mm
Device height	105 mm	105 mm
Device width	17.5 mm	17.5 mm
Mounting	Quick fastening with two lock-in positions on EN 50022	
Degree of protection, built-in	IP40	IP40
Terminal protection	finger and hand touch safe according to DGUV VS3, EN 50274	
Terminals	open mouthed/lift	open mouthed/lift
Terminal capacity, one and two wires	18–10 AWG	18–10 AWG

Connection diagram



Terminal Covers for RCDs

SG82011

Description	Type Designation	Article No.	Units per package
2-poles	Z-RC/AK-2TE	285385	10
4-poles	Z-RC/AK-4TE	101062	10

Terminal Covers for Add-on Device

SG02614

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

Terminal Covers for MCB, RCBO

SG02314

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

Remote Control Device Z-FW

SG30811

Function	Type Designation	Article No.	Units per package
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

Pre-mounted sets Z-FW

Automatic restoring + remote control

SG31311

Operational voltage range	Type Designation	Article No.	Units per package
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

Remote Testing Module Z-FW

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

SG12111

Rated Fault Current	Type Designation	Article No.	Units per package
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

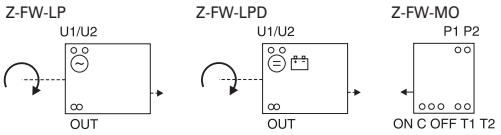
Description Remote Testing Module and Remote Control Device Z-FW

- 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

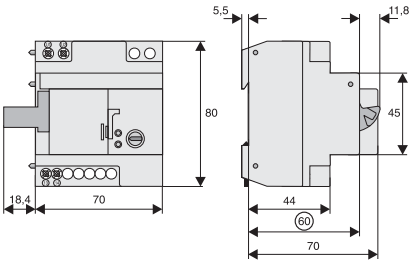
	Z-FW-LP	Z-FW-LPD	Z-FW-MO
Electrical			
Possible operating voltages	220-240 V AC	24-48 V DC	–
Frequency	50/60 Hz	–	–
Testing module (0.5MU) for remote testing of RCDs	Z-FW...	Z-FW...	–
Control voltage for remote control	–	–	24-230 V AC/DC
Relay output for tripping test with Z-FW	–	–	400 V AC max.
Relay 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 mm² or 1 x 2.5 mm²	2 x 1.5 mm² or 1 x 2.5 mm²	4 x 1,5 mm² or 2 x 2.5 mm²
Scope of delivery	–	–	Coupling plug

Connection diagram

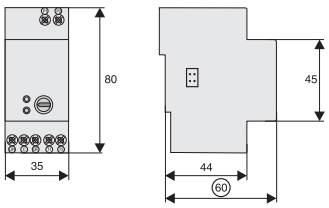


Dimensions (mm)

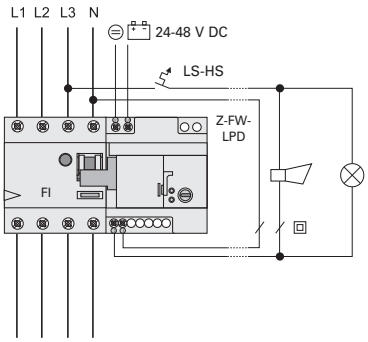
Z-FW-LP, -LPD, -LPE, -LPS

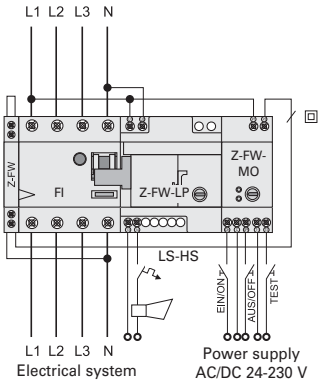


Z-FW-MO



Connection Example





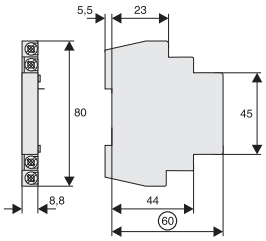
Description Remote Testing Module Z-FW (for Z-FW-LP)

- 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

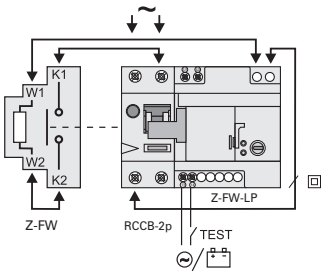
Technical Data

	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

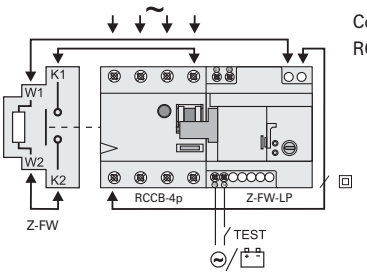
Dimensions (mm)



Connection Examplee



Connection diagram:
RCCB-2p, RCD feed above



Connection diagram:
RCCB-4p, RCD feed above

Approvals and shipping classifications for world markets

In their basic version, the Moeller-branded Eaton devices are approved for use throughout the world, including the USA and Canada. As such, they can be used without restriction as devices for world markets.
The standard versions of some devices, such as circuit breakers, can be used worldwide except in the USA and Canada.
For export to North America, numerous devices are available in special UL- and CSA-approved versions.
For currently available approvals, see our website:
https://wss.moeller.net/approbationen/step1.do

Eaton's Moeller-branded low-voltage switchgear and switchgear assemblies conform to national and international specifications, making it possible to construct control systems that will conform to the national and international specifications of any country in the world.
This, of course, means that due consideration must be given to the national standards of the respective country, such as those concerning installation, operation, installation materials and methods, as well as any pertaining to circumstances such as severe environmental conditions.
The device rating data given in this catalog for 220 – 240 V, 380 – 440 V, 500 V, 600 V, and 690 V covers virtually all existing three-phase systems worldwide.
Deviating requirements for the USA and Canada are given in detail in each chapter of this catalog. Read also the detailed description "Switchgear for North America" from Page 22/13.
For the worldwide use of switchgear, special installation standards and approval requirements must also be observed in addition to the widely differing system conditions:
Where screw fuses are used in a control system, some European countries – such as Denmark, Finland, the Netherlands, Norway and Sweden – require gage screws. In this case, "FORM P" fuse bases must be used. Switzerland no longer requires the use of gage screws, but they are still often requested by customers.
The majority of countries permit the import of switchgear assemblies and devices on the manufacturer's undertaking that they have been constructed in accordance with the pertinent specifications. In some countries, such as the USA and Canada, however, there is a legal obligation to obtain official approval. In these countries, devices and enclosures – sometimes even complete control systems – are tested and approved by independent bodies.
In Scandinavia and in Switzerland, an official approval for low-voltage switchgear and controlgear had to be sought to some extent. For industrial switchgear, this legal obligation has now been abolished, provided the devices have been manufactured and tested in accordance with harmonized European standards (such as IEC/EN 60947). There is then no longer a requirement for them to carry their country's own approval mark. Eaton develops switchgear to international standards, such as IEC/EN 60947 and applies the corresponding marks.
Devices that conform to the European Low-Voltage Directive and are sold within the European Union must contain the CE mark.

Europe, Conformité Européen (CE)

The CE mark indicates that the device corresponds with all relevant requirements and standards. Mandatory marking allows unrestricted use of marked devices within the European economic area.
Devices sold within the European union must comply with the Electromagnetic Compatibility (EMC) Directive. Eaton has performed the required tests for all Moeller-branded products subject to this Directive and applied the CE mark, which demonstrates compliance with the EMC Directive.
Because devices bearing the CE mark comply with the harmonized standards, approval and the associated marking is no longer required in the following countries: Belgium, Denmark, Finland, France, the Netherlands, Norway, Sweden, and Switzerland.

An exception is installation material. In some areas, miniature circuit breakers and residual current device must still be labeled and therefore carry the corresponding approval mark.

Belgien, Comité Electrotechnique Belge/Belgisch Elektrotechnisch Comité (CEBEC)

Germany, Verband Deutscher Elektrotechniker (VDE)

France, Union Technique de l'Electricité (UTE)

Austria, Österreichischer Verband für Elektrotechnik (ÖVE)

Switzerland, Schweizerischer Elektrotechnischer Verein (SEV)

Devices for export to the USA and Canada have either additional UL and CSA approval or are available in a separate version with UL and CSA approval.

USA, Underwriters Laboratories (UL) - Listing

USA, Underwriters Laboratories (UL) - Recognition

Canada, Canadian Standards Association (CSA)

Approval for electrical products is also required in Argentina, China, Russia, South Africa, and the Ukraine. Marking is partly mandatory for these countries. As in other European countries, the IEC rating data is accepted here.
Romania requires that components that are to be used in public buildings must be approved by the Romanian test authority ICECON.

Russia
Devices for Russia must bear the appropriate marking.

Russia, Goststandart (GOST-R)

Ukraine
Devices for the Ukraine must bear the appropriate marking.

Ukraine, Goststandart (Ukrain-GOST)

China
Devices for China must bear the appropriate marking.

China, China Compulsory Certification (CCC)

South Africa
In South Africa approval is mandatory for circuit breakers and busbar trunking systems: These devices must bear the appropriate marking.

South Africa, South African Bureau of Standards (SABS)

Argentina
In Argentina, mandatory approval is based on Resolution 92/98. From April 01, 2001, miniature circuit breakers and residual-current circuit breakers are subject to mandatory approval. As of this date, circuit breakers up to Ie = 63 A and Ue max = 440 V must carry the following marks:

Argentinien, Instituto Argentino de Normalización y Certificación (IRAM)

Selection of devices
In addition to the required approvals and conformance with applicable regulations, the design of devices and systems themselves must be suitable for the target market.
Points to keep in mind when selecting switchgear for export include:

Motor-protective circuit breakers
Use auto-protected circuit breakers, which are capable of controlling the highest prospective fault levels at the point of installation without the need for back-up protection.

Advantages
Can be positioned anywhere and are fully independent of the local circuit-protection
system; no spare part
problems

Circuit-breakers
Use makes with visible contacts, and quick-make and quick-break operation as standard. For high short-circuit levels, use current-limiting circuit breakers. Selective switches are recommended for the selective graduation of networks.

Advantages
Independence from local accident prevention regulations requiring visible contacts, and safety from faults caused by inexperienced operating personnel. The effects of shortcircuits are kept to a minimum.
Fuseless installations offer greater safety and reliability in plant operation. In the event of a fault, only the faulty section of the system is isolated.

Contactors
Use contactors whose entire range provides consistently reliable operation in the event of voltage drops (80% Un should be aimed for) and whose contact system will not assume an indeterminate position on closing or opening under these conditions.

Advantages
During the electrification work in areas such as Africa and the Middle East, an insufficient voltage stability is – at least for a certain time – likely in many applications (for example due to long spur lines or small local generators).
The use of devices that fulfil the above requirements will eliminate one of the main failure causes related to contactors.

Enclosures
Use insulated enclosures with transparent covers (i.e. "totally insulated" enclosures).

Approvals and shipping classifications for world markets

Advantages
Total insulation is the best possible protective measure from the user's point of view, avoiding, reliance on the possibly doubtful skills of unknown installation personnel. Furthermore, protective measures based on grounding are often extremely difficult, if not impossible (in the Middle East, for example, due to the dryness of the ground).
Insulated enclosures completely eliminate the need for any additional protection against corrosion. The transparent covers contribute significantly to the correct operation of a system, because switchgear operation can be monitored even with the doors or covers closed, thus virtually eliminating the possibility of these being left open through carelessness. The transparent cover is an important contribution to safety, especially where exports to areas of uncertain skills are concerned.

Overcurrent protection devices
Always use circuit breakers or motor-protective circuit breakers and avoid fuses wherever possible.

Advantages
The operational reliability of a system is especially important for export contracts. Circuit-breakers and motor-protective circuit breakers provide this reliability in full measure since they can be immediately reclosed once a fault has been cleared, they disconnect all poles, they have ideal protection through high tripping accuracy and they can be used for selective operation. Because they have no fuses or other consumables, they also greatly reduce the problem of obtaining replacement parts. The advantages of fuseless design for export are especially evident in this case. No complicated investigation is needed to find out which fusing system is used in the respective location and which specifications have to be followed to select the correct fuses. Often several different fuse systems with widely varying characteristics are used side-by-side in the same country. For the uninitiated, it may be almost impossible to find the right fuse in these circumstances.
These problems do not arise where a circuit-breaker is used.

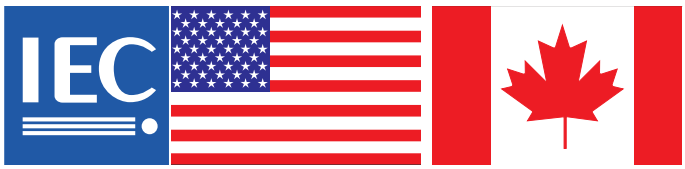
Main switch and safety switch
Use devices with positive contact separation and clear switch position indication.

Advantages
The mechanical coupling of the actuating element with the contacts ensures that the Off position is indicated only when all main contacts are separated by the prescribed distance, and only in this position can the switch be padlocked. This ensures safety when carrying out maintenance and repair work on the installation or machinery.

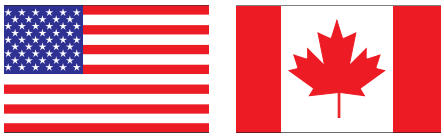
Shipping classifications
Many Moeller-branded Eaton devices are approved by all important shipping associations: Germanischer Lloyd, Lloyd's Register of Shipping, Bureau Veritas, Russian Maritime Register of Shipping, Registro Italiano Navale, Det Norske Veritas, Polski Rejestr Statków, etc.
Because the status of currently valid shipping approvals is subject to significant variations, this Catalog does not provide an overview, as this would quickly be out of date.

Please see our corresponding, up-to-date information on the Internet.
https://wss.moeller.net/approbationen/schiff.do

Switchgear for the global market and for North America:



Information relevant for export to North America



Product Standards	IEC/EN 60947-5; UL 508, CSA-C22.2 No. 14; CE marking
UL File No.	E29184
UL CCN	NKCR
CSA File No.	12528
CSA Class No.	3211-03
NA Certification	UL Listed, CSA Certified
Degree of Protection	IEC: IP65, UL/CSA Type 3R, 4X (indoor use only), 12, 13

Practically all devices can be used in compliance with IEC norms.

The selection pages of this catalogue indicate the products that have been approved for the North American market with the USA and Canadian flags. This does not mean these devices are exclu-sively for North America! Approval for North America has been granted special emphasis due to the strong export share of these devices and because standards deviate from IEC/EN norms, selection and and processing requirements must be highlighted. The article "Switchgear for North America" in the appendix of this catalogue contains everything you need to know about this subject. A glossary in the appendix explains the specifically American technical terms.

Example for such an instruction.

The Std. pack column on the order pages also uses flags to indicate the articles for which the UL/CSA notes apply.

Selecting a technically appropriate device also opens information to help you document suitability for use in North America on your own with a minimum of research (see above).

Eaton Online Catalog – find product details quickly and efficiently!

You can find comprehensive up-to-date product information at http://ecat.moeller.net

Lookup

You can search by keywords, product names, article numbers, technical data: The search understands everything and takes you straight to the product you're looking for.

Graphical navigation

Graphical representation of the fields of application and product groups.

Selection aids

Tailored to the typical expert's approach, this search aid helps you quickly find the product you need.

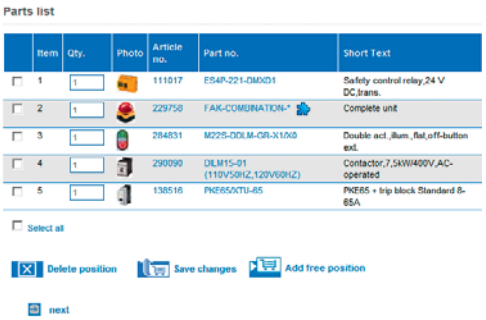
Data sheets

For every article the catalog can generate a technical data sheet, which you can convert to a PDF file for printing or saving with a single click.

Parts lists

From your search results you can create a parts list that you can then send to your Eaton sales partner as a query.

HTML data sheet; can be saved as PDF file.



Parts list, e.g. for queries to Eaton Sales.

You can find comprehensive up-to-date information about Eaton's automation products and switchgear in our Online Catalog.

Eaton is a power management company with 2017 sales of $20.4 billion. We provide energy-efficient solutions that help our customers effectively manage electrical, hydraulic and mechanical power more efficiently, safely and sustainably. Eaton is dedicated to improving the quality of life and the environment through the use of power management technologies and services. Eaton has approximately 96,000 employees and sells products to customers in more than 175 countries.

For more information, visit **Eaton.com.**

To contact us please visit **http://www.eaton.eu/Europe/Electrical/CustomerSupport/ContactDetails/index.htm**

For Technical support please get in contact with **techsupportemea@eaton.com**

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