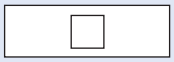
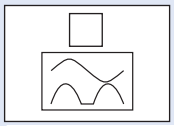
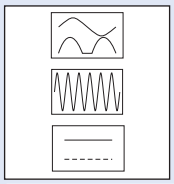
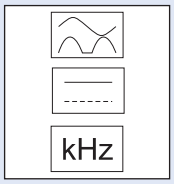
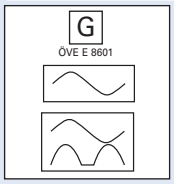
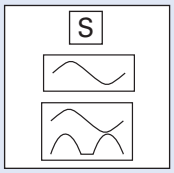
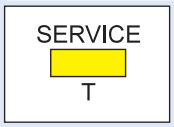
Technical Data

Powering Business Worldwide

Residual Current Devices - General Data

Short description of the most important RCD types:

Symbol	Description
	Eaton/Moeller 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.
	RCD sensitive to pulsating DC for application where residual pulsating DC may occur. Non-selective, instantaneous. Protects only against special forms of residual pulsating DC which have not been smoothed.
	Type B: All-current sensitive RCD switchgear for applications where DC fault currents may occur. Non-selective, non-delayed. Protection against all kinds of fault currents.
	Type B+: All-current sensitive RCD switchgear for applications where DC fault currents may occur. Non-selective, non-delayed. Protection against all kinds of fault currents. Also meets the requirements of the VDE 0664-400 standard (formerly known as VDE V 0664-110) and therefore provides enhanced fire safety.
	RCD of type G (min 10 ms time delay) surge current-proof up to 3 kA. For system components where protection against unwanted tripping is compulsory to avoid personal injury and damage to property (§ 12.1.6 of ÖVE/ÖNORM E 8001-1). Also for systems involving long lines and high line capacity. Some versions are sensitive to pulsating DC. Some versions are available in all-current sensitive design.
	RCD of type S (selective, min 40 ms time delay) surge current-proof up to 5 kA. Mainly used as main switch according to ÖVE/ÖNORM E 8001-1 § 12.1.5, as well as in combination with surge arresters.This is the only RCD suitable for series connection with other types if the rated tripping current of the downstream RCD does not exceed one third of the rated tripping current of the device of type S. Some versions are sensitive to pulsating DC. Some versions are available in all-current sensitive design.
	"X-ray-proof", for avoiding unwanted tripping caused by x-ray devices.
	"Frequency converter-proof", for avoiding unwanted tripping caused by frequency converters, speed-controlled drives, etc.
	Integrated overload protection. Calculating and rating of the back-up temperature fuse to avoid overload on the RCD is not required. Overload fuse = short circuit back-up fuse.
	Press service key when putting the device into operation, and subsequently approximately once per year. Pressing the key once per month is not required any more and can be omitted unless shorter testing intervals are required under any applicable regulations (e.g. on building sites).

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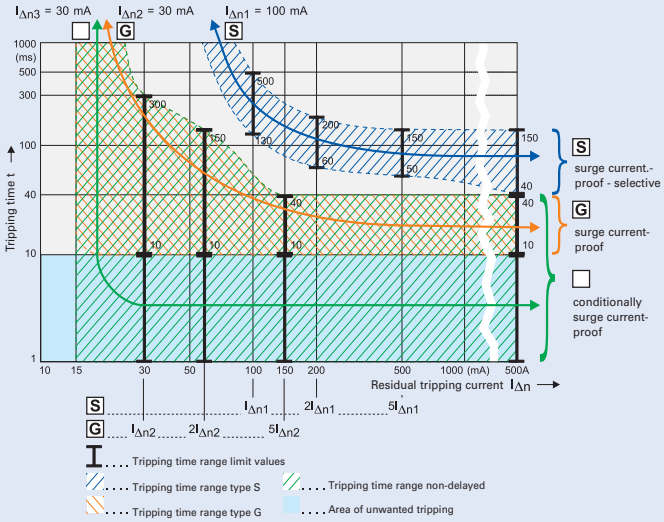
Tripping Characteristics (IEC/EN 61008)

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

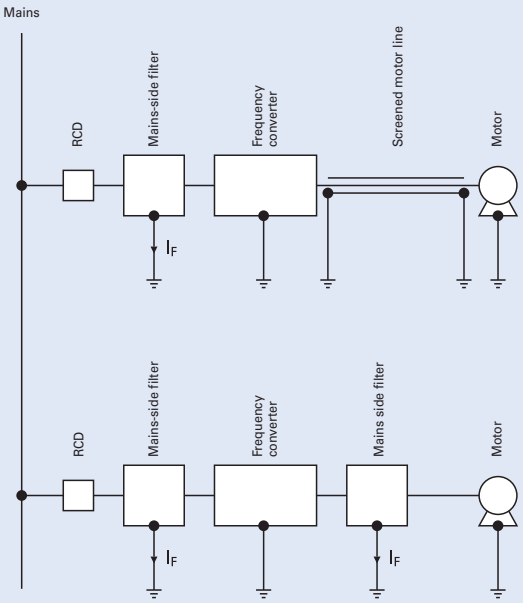


§ 6.1.1 of ÖVE/ÖNORM E 8001-1/A1 deals with **additional protection** and provides essentially the following:
In circuits with **sockets up to 16 A** with fault current/residual current protection by protective earthing, protective multiple earthing or residual current devices (RCDs), additional residual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

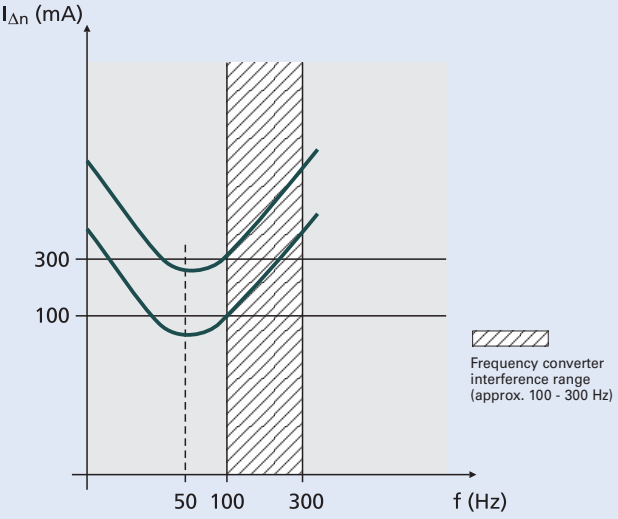
Due to the currents flowing off through the filters (designated IF), the sum of currents through the RCD is not exactly zero, which causes unwanted tripping.



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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Residual Current Devices PFIM

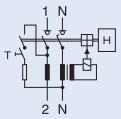
- Residual current devices
- Shape compatible with and suitable for standard busbar connection to other devices of the P-series
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Universal tripping signal switch, also suitable for PLS., PKN., Z-A. can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green
- Delayed types suitable for being used with standard fluorescent tubes with or without electronical ballast (30mA-RCD: 30 units per phase conductor, 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 the meaning of the applicable installation rules
- Mains connection at either side
- The 4-pole device can also be used for 3-pole connection.
  For this purpose use terminals 1-2, 3-4, and 5-6 (+ cable link).
- The 4-pole device can also be used for 2-pole connection.
  For this purpose use terminals 5-6 and N-N.
- The test key "T" must be pressed every month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed)
- 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.
  Special types for X-ray application PFIM-...-R
- **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:

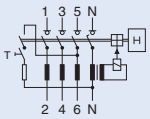
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Tripping signal contact for subsequent installation to the right	Z-NHK	248434
Remote control and automatic switching device	Z-FW/LP	248296
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Sealing cover set	Z-RC/AK-2TE	285385
	Z-RC/AK-4TE	101062
Switching interlock	IS/SPE-1TE	101911

Connection diagrams

2-pole



4-pole



Technical Data

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
	Type S	40 ms delay - with selective disconnecting function
	Type U (only 30 mA)	10 ms delay
	Type U (without 30 mA)	40 ms delay - with selective disconnecting function
Rated voltage U_n		230/400 V, 50 Hz
Rated tripping current $I_{\Delta n}$		10, 30, 100, 300, 500 mA
Sensitivity		AC and pulsating DC
Rated insulation voltage U_i		440 V
Rated impulse withstand voltage U_{imp}		4 kV
Rated short circuit strength I_{nc}		10 kA
Maximum back-up fuse		Short circuit
I_n = 16-63 A		63 A gG/gL
I_n = 80 A		80 A gG/gL
I_n = 100 A		100 A gG/gL
Type PFIM-X:		
I_n = 40A		63 A gG/gL
I_n = 63A		63 A gG/gL
Rated breaking capacity 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
Voltage range of test button	2-pole	184 - 250 V~
	4-pole	184 - 440 V~
Endurance		
electrical comp.		≥ 4,000 operating cycles
mechanical comp.		≥ 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
Deg. of prot. in moisture-proof encl.	IP54
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1.5 - 35 mm^2 single wire 2 x 16 mm^2 multi wire
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2

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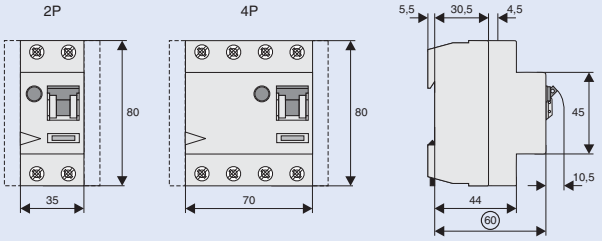
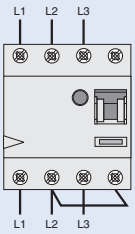
Dimensions (mm)



RCD PFIM in a Three-Phase AC Network without Neutral Conductor



The N-terminal must be connected by a cable link with the phase L2 (or L1), so that the test loop is supplied with current and the RCD is tested correctly.

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

	16A		*25A*		*40A*		*63A*		*80A*		*100A*	
Ambient temperature	***2p***	***4p***	***2p***	***4p***	***2p***	***4p***	***2p***	***4p***	***2p***	***4p***	***2p***	***4p***
40°	16	16	25	25	40	40	63	63	80	80	100	100
45°	14	14	21	22	37	37	59	59	76	76	95	95
50°	11	11	18	19	33	34	55	55	72	72	90	90
55°	9	9	14	16	30	31	50	50	68	68	85	85
60°	– *)	–	–	–	26	27	45	45	64	64	80	80

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

*) not applicable

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Residual Current Devices PF7

- Residual current devices
- Shape compatible with and suitable for standard busbar connection to other devices of the P-series
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Universal tripping signal switch, also suitable for PL., PFL., Z-A. can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green
- Delayed types suitable for being used with standard fluorescent tubes with or without electronical ballast (30mA-RCD: 30 units per phase conductor, 100mA-RCD: 90 units per phase conductor)
  Notes: Depending of the fluorescent lamp ballast manufacturer partly more possible. Symmetrical allocation of the fluorescent lamp ballasts on all phases favourably. Shifting references of the fluorescent lamp ballast manufacturer consider.
- The device functions irrespective of the position of installation
- Tripping is line voltage-independent. Consequently, the RCD is suitable for "fault current/residual current protection" and "additional protection" within the the meaning of the applicable installation rules
- Mains connection at either side
- Types with 80 a 100 A permissible short-circuit back-up fuse (PF7-80, PF7-100): Take into account overload protection
- The 4-pole device can also be used for 3-pole connection.
  For this purpose use terminals 1-2, 3-4, and 5-6 (+ cable link).
- The 4-pole device can also be used for 2-pole connection.
  For this purpose use terminals 5-6 and N-N.
- The test key "T" must be pressed every month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed)
- 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.
  Special types for X-ray application PF7-...-R
- **Type -S**: Selective residual current device sensitive to AC, type -S. Compulsory for systems with surge arresters downstream of the RCD (ÖVE/ÖNORM E 8001-1 § 12.1.5).
- **Type -S/A:** Additionally protects against special forms of residual pulsating 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
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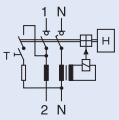
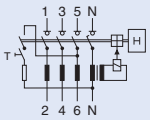
Connection diagrams

2-pole



4-pole



Technical Data

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	10 ms delay	
Type S	40 ms delay - with selective disconnecting function	
Rated voltage U_n	230/400 V, 50 Hz	
Rated tripping current $I_{\Delta n}$	10, 30, 100, 300, 500 mA	
Sensitivity	AC and pulsating DC	
Rated insulation voltage U_i	440 V	
Rated impulse withstand voltage U_{imp}	4 kV	
Rated short circuit strength I_{nc}	10 kA	
Maximum back-up fuse	Overload	Short circuit
I_n = 16-40 A	25 A gG/gL	63 A gG/gL
I_n = 63 A	40 A gG/gL	63 A gG/gL
I_n = 80 A	50 A gG/gL	80 A gG/gL
I_n = 100 A	63 A gG/gL	100 A gG/gL
Rated breaking capacity 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	
Voltage range of test button 2-pole	184 - 250 V~	
4-pole	184 - 440 V~	
Endurance		
electrical comp.	≥ 4,000 operating cycles	
mechanical comp.	≥ 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
Deg. of prot. in moisture-proof encl.	IP54
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1x (1.5 - 35) mm^2 single wire 2x (1.5 - 16) mm^2 multi wire
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2

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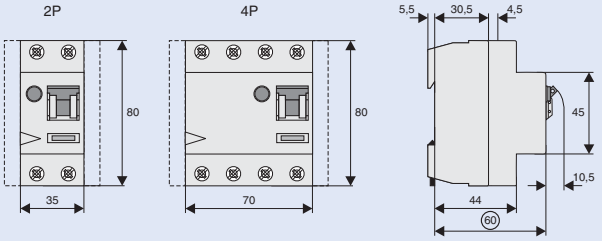
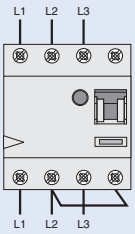
Dimensions (mm)



RCD PF7 in a Three-Phase AC Network without Neutral Conductor



The N-terminal must be connected by a cable link with the phase L2 (or L1), so that the test loop is supplied with current and the RCD is tested correctly.

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

	16A	*25A*		*40A*		*63A*		*80A*	*100A*
Ambient temperature	***2p***	***2p***	***4p***	***2p***	***4p***	***2p***	***4p***	***4p***	***4p***
40°	16	25	25	40	40	63	63	80	100
45°	14	21	22	37	37	59	59	76	95
50°	11	18	19	33	34	55	55	72	90
55°	9	14	16	30	31	50	50	68	85
60°	– *)	–*)	–*)	26	27	45	45	64	80

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

*) not applicable

Powering Business Worldwide

Residual Current Devices PF6

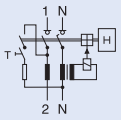
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Universal tripping signal switch, also suitable for PLS., PKN., Z-A. can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green
- Suitable for being used with standard fluorescent tubes with or without electronical ballast (typically up to 20 units per phase conductor)
- The device functions irrespective of the position of installation
- Mains connection at either side
- The 4-pole device can also be used for 3-pole connection. For this purpose use terminals 1-2, 3-4, and 5-6 (+ cable link).
- The 4-pole device can also be used for 2-pole connection. For this purpose use terminals 5-6 and N-N.
- The test key "T" must be pressed every month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed)
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (R_E), or proper checking of the earth conductor condition redundant, which must be performed separately.

Accessories:

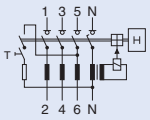
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Tripping signal contact for subsequent installation to the right	Z-NHK	248434
Remote control and automatic switching device	Z-FW/LP	248296
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Sealing cover set	Z-RC/AK-2TE	285385
	Z-RC/AK-4TE	101062
Switching interlock	IS/SPE-1TE	101911

Connection diagrams

2-pole



4-pole



Technical Data

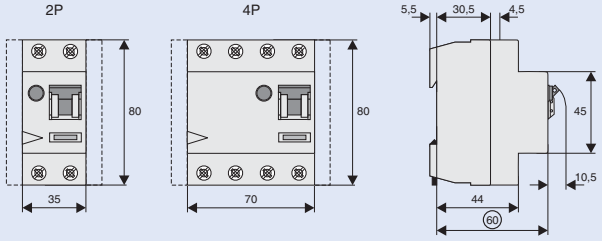
Electrical

Design according to	IEC/EN 61008	
Current test marks as printed onto the device		
Tripping	instantaneous	
Rated voltage U_n	230/400 V, 50 Hz	
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	
Rated short circuit strength I_{nc}	6 kA	
Maximum back-up fuse	Overload	Short circuit
I_n = 25-40 A	25 A gG/gL	63 A gG/gL
I_n = 63 A	40 A gG/gL	63 A gG/gL
Rated breaking capacity I_m or Rated fault breaking capacity $I_{\Delta m}$		
I_n = 16-40 A	500 A	
I_n = 63 A	630 A	
Voltage range of test button 2-pole	184 - 250 V~	
4-pole	184 - 440 V~	
Endurance		
electrical comp.	≥ 4,000 operating cycles	
mechanical comp.	≥ 20,000 operating cycles	

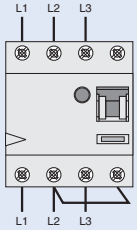
Mechanical

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
Deg. of prot. in moisture-proof encl.	IP54
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1x (1.5 - 35) mm^2 single wire 2x (1.5 - 16) mm^2 multi wire
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2

Dimensions (mm)



RCD PF6 in a Three-Phase AC Network without Neutral Conductor



The N-terminal must be connected by a cable link with the phase L2 (or L1), so that the test loop is supplied with current and the RCD is tested correctly.

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

	25A		*40A*		*63A*
Ambient temperature	***2p***	***4p***	***2p***	***4p***	***4p***
40°	25	25	40	40	63
45°	21	22	37	37	59
50°	18	19	33	34	55
55°	14	16	30	31	50
60°	–*)	–*)	26	27	45

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

*) not applicable

Powering Business Worldwide

Residual Current Relays PFR., Core Balance Transformers Z-WFR.

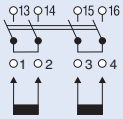
- Residual current relays
- Shape compatible with and suitable for standard busbar connection to other devices of the P-series
- Universal tripping signal switch, also suitable for PLS., PKN., Z-A. can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green
- Delayed types suitable for being used with standard fluorescent tubes with or without electronical ballast (30mA-RCD: 30 units per phase conductor, 100mA-RCD: 90 units per phase conductor)
  Notes: Depending of the fluorescent lamp ballast manufacturer partly more possible. Symmetrical allocation of the fluorescent lamp ballasts on all phases favourably. Shifting references of the fluorescent lamp ballast manufacturer consider.
- The test key "T" must be pressed every month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed)
- **Type -U**: Suitable for speed-controlled drives with frequency converters in household, trade, and industry.
  Unwanted tripping is avoided thanks to a tripping characteristic designed particularly for frequency converters.
  See also explanation "Frequency Converter-Proof RCDs - What for?"
  Application according to ÖVE/ÖNORM E 8001 and Decision EN 219 (1989), VDE 0100, SEV 1000.

Accessories:

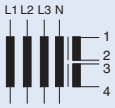
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Tripping signal contact for subsequent installation to the right	Z-NHK	248434
Compact enclosure	KLV-TC-4	276241
Sealing cover set	Z-RC/AK-4TE	101062
Switching interlock	IS/SPE-1TE	101911

Connection diagrams

Relay



Core balance transformer



Technical Data

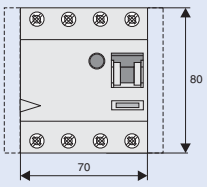
Electrical	
Design according to	IEC/EN 61008
Current test marks as printed onto the device	
Tripping	40 ms delay with selective disconnecting function
Rated voltage U_n	230/400 V; 50 Hz
Rated tripping current $I_{\Delta n}$	(0.1)*), 0.3 and 1 A
Rated current of relay contacts	25 A / 400 V~, 16 A / 230 V AC 15
Maximum nominal current	400 A
Sensitivity	pulsating DC
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Voltage range of test button	184 - 440 V~
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles

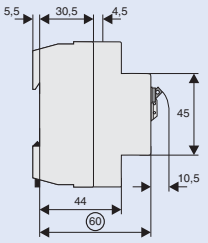
Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	70 mm (4MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1.5 - 35 mm^2 single wire 2 x 16 mm^2 multi wire
Busbar thickness	0.8 - 2 mm
Control line	1.5 - 2.5 mm^2
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2

*) see Important Information for Installation

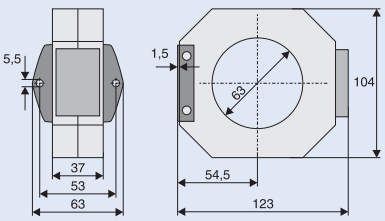
Dimensions (mm)

PFR

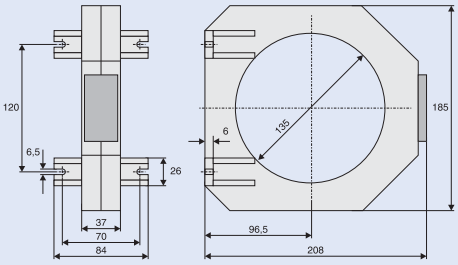




Z-WFR 2-S/A / Z-WFR 2-U



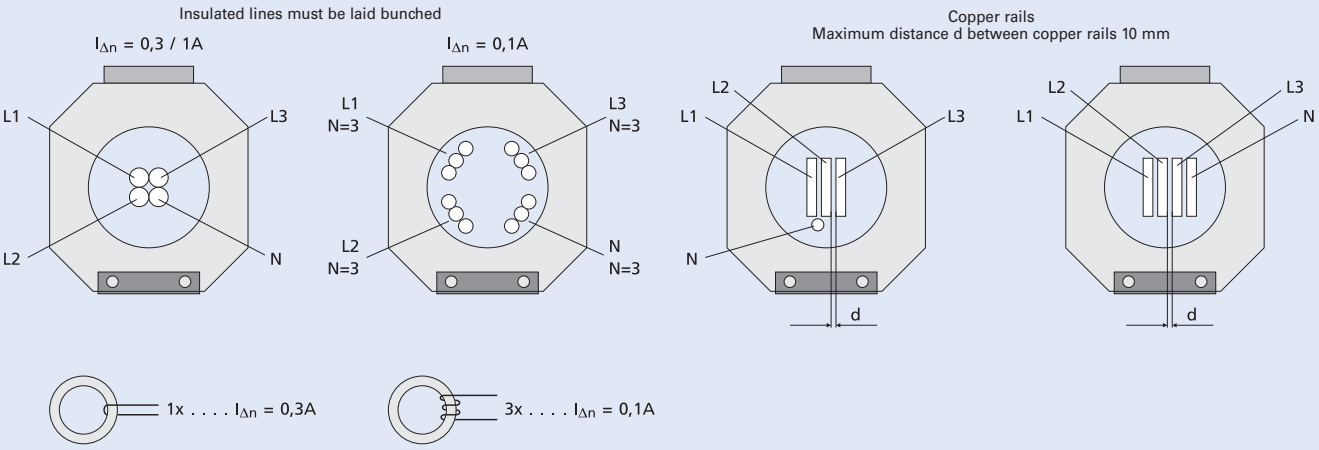
Z-WFR 3-S/A / Z-WFR 3-U



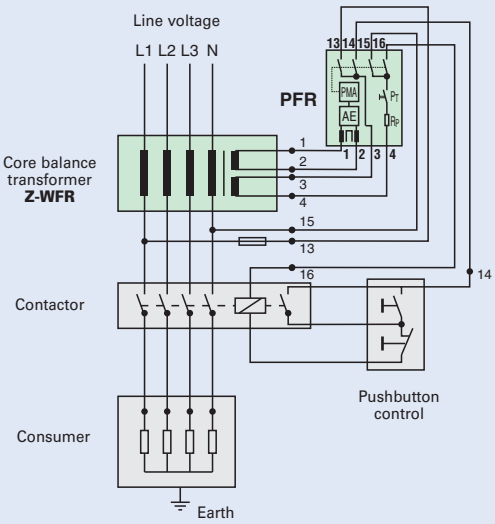
Powering Business Worldwide

Important Information for Installation

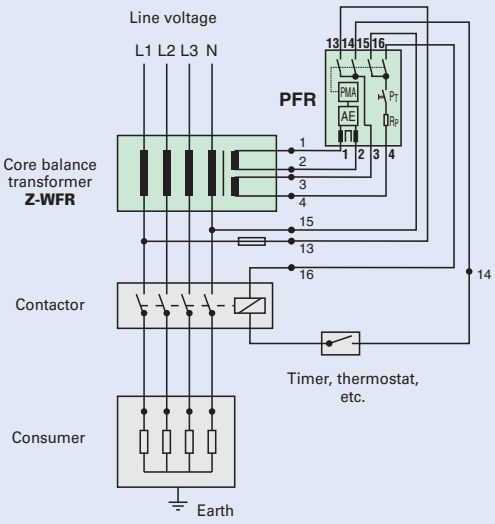
All lines required for operation, L1, L2, and L3 including neutral N, must be routed through the transformer as follows:



Impulse Contact Control



Continuous Contact Control



Two possible switching examples.

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

Rated Tripping Current Matching

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

Residual Current Relay	Transformer	Rated tripping current $I_{\Delta N}$ (A)	Number of primary turns	Maximum cable diameter (mm)	Maximum primary current (A)
PFR2-03-U (S/A)	Z-WFR2	0,1	3	60	150
		0,3	1	60	400
PFR3-03-U (S/A)	Z-WFR3	0,1	3	130	65
		0,3	1	130	400
PFR2-1-U (S/A)	Z-WFR2	1,0	1	60	400
PFR3-1-U (S/A)	Z-WFR3	1,0	1	130	400

EATON
Powering Business Worldwide

Residual Current Devices PFDM

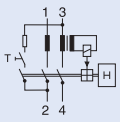
- Residual current devices
- Tripping is line voltage-independent. Consequently, the RCD is suitable for the protection of humans and additional protection (ÖVE/ÖNORM E 8001-1 § 6.1.2)
- Twin-purpose terminal (lift/open-mouthed) above and below
- Not busbar-compatible with other devices of the P-series
- Auxiliary switch Z-HD can be mounted subsequently
- Contact position indicator red - green
- The device functions irrespective of the position of installation
- Tripping is line voltage-independent. Consequently, the RCD is suitable for "fault current/residual current protection" and "additional protection" within the the meaning of the applicable installation rules
- Mains connection at either side
- The test key "T" must be pressed every month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed)
- **Type -A**: Additionally protects against special forms of residual pulsating DC which have not been smoothed.
- **Type -S/A**: Compulsory for systems with surge arresters downstream of the RCD (ÖVE/ÖNORM E 8001-1 § 12.1.5).

Accessories:

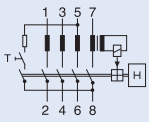
Auxiliary switch for		
subsequent installation to the left	Z-HD	265620

Connection diagrams

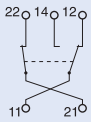
2-pole



4-pole



Z-HD



Technical Data PFDM

Electrical		
Design according to		IEC/EN 61008
Current test marks as printed onto the device		
Tripping		instantaneous
	Typ S/A	40 ms delay - with selective disconnecting function
Rated voltage U_n		230/400 V; 50 Hz
Rated tripping current $I_{\Delta n}$		30, 100, 300, 500 mA
Sensitivity		AC and pulsating DC
Rated short circuit strength I_{nc}		10 kA with back-up fuse
Maximum back-up fuse		Short circuit 125 A gG/gL
Rated breaking capacity I_m or Rated fault breaking capacity $I_{\Delta m}$		1250 A
Voltage range of test button		
2-pole		100 - 250 V~
4-pole		185 - 440 V~
Endurance	electrical comp.	≥ 4,000 operating cycles
	mechanical comp.	≥ 20,000 operating cycles

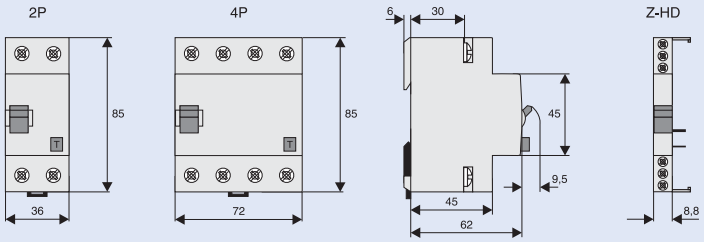
Mechanical	
Frame size	45 mm
Device height	85 mm
Device width	36 mm (2P), 72 mm (4P)
Mounting	quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1.5 - 50 mm^2
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2

Technical Data Auxiliary Switch Z-HD

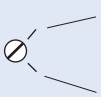
Electrical	
Subsequent installation to the left onto	PFDM
Contacts	1CO + 1NC
Load rating	
AC11	6 A / 230 V AC
DC11	1 A / 230 V DC

Mechanical	
Terminal capacity	up to 2.5 mm^2

Dimensions (mm)



Function Auxiliary Switch



Tripping signal switch: detects if RCD tripping occured by an fault current

Auxiliary switch: shows the contact position of the RCD

EATON Powering Business Worldwide

Residual Current Devices CFI6

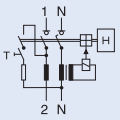
- Residual current devices
- Tripping is line voltage-independent. Consequently, the RCD is suitable for fault current/residual current protection and additional protection (ÖVE/ÖNORM E 8001-1 § 6.1.2)
- Matching with CLS6, CLS4
- Shape compatible with and suitable for standard busbar connection to other devices of the C-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 CLS., CKN., Z-A. can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green (CFI6-4-pole)
- Suitable for being used with standard fluorescent tubes with or without electronical ballast (typically up to 20 units per phase conductor)
- The device functions irrespective of the position of installation
- Tripping is line voltage-independent. Consequently, the RCD is suitable for "fault current/residual current protection" and "additional protection" within the the meaning of the applicable installation rules
- Mains connection at either side
- The 4-pole device can also be used for 3-pole connection. For this purpose use terminals 1-2, 3-4, and 5-6 (+ cable link).
- The 4-pole device can also be used for 2-pole connection. For this purpose use terminals 5-6 and N-N.
- The test key "T" must be pressed every month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed)
- 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:

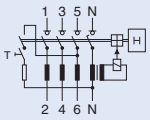
Auxiliary switch for subsequent installation to the left	Z-HK	248432
Remote tripping module	Z-FAM	248293
Switching interlock	IS/SPE-1TE	101911

Connection diagrams

2-pole



4-pole

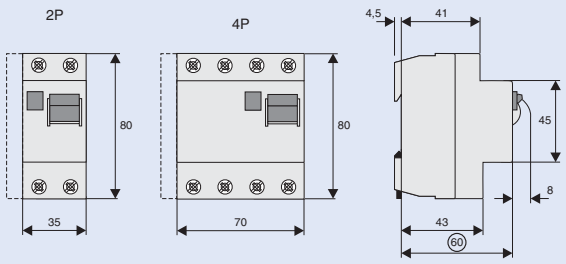


Technical Data

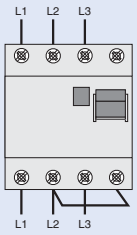
Electrical		
Design according to		IEC/EN 61008
Current test marks as printed onto the device		
Tripping		instantaneous
Rated voltage U_n		230/400 V; 50 Hz
Rated tripping current $I_{\Delta n}$		30, 100, 300, 500 mA
Sensitivity		AC and pulsatory DC
Rated insulation voltage U_i		440 V
Rated peak withstand voltage U_{imp}		4 kV (1.2/50µs)
Rated short circuit strength I_{nc}		6 kA with back-up fuse 63 A gG/gL
Maximum back-up fuse		Short circuit 63 A gG/gL
Rated breaking capacity I_m or Rated fault breaking capacity $I_{\Delta m}$		
I_n = 25-40A		500 A
I_n = 63A		630 A
Voltage range of test button	2-pole	184 - 250 V~
	4-pole	184 - 440 V~
Endurance	electrical comp.	≥ 4,000 operating cycles
	mechanical comp.	≥ 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
Upper terminals	lift terminals
Lower terminals	open-mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1.5 - 35 mm^2 single wire 2 x 16 mm^2 multi wire
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2

Dimensions (mm)



RCD CFI6 in a Three-Phase AC Network without Neutral Conductor



The N-terminal must be connected by a cable link with the phase L2 (or L1), so that the test loop is supplied with current and the RCD is tested correctly.

Powering Business Worldwide

Residual Current Devices dRCM - digital

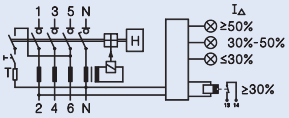
- Residual current devices
- Shape compatible with and suitable for standard busbar connection to other devices of the P-series
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Universal tripping signal switch, also suitable for PLS., PKN., ZP-A. can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green
- Tripping indicator white - blue
- Additional Safety
  - possibility to seal
  - possibility to lock in ON and OFF position
- Delayed types suitable for being used with standard fluorescent tubes with or without electronical ballast (30mA-RCD: 30 units per phase conductor, 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 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. The yearly test interval is only valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environment), it's recommended to test in shorter intervals (e.g. monthly).
  A test is further needed if red and yellow LED are on together.
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (R_E), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Functioning**
  - The green LED becomes active at 0-30% $I_{\Delta n}$
  - The yellow LED becomes active at 30-50% $I_{\Delta n}$
  - The red LED becomes active at >50% $I_{\Delta n}$
- Potential-free relay (NO contact, in parallel with the yellow LED, up to 1 A ohmic load / 230 V~) for external prewarning function. Bistabile, means the warning stays on also when the breaker trips, until reset.
- **Type -A**: Protects against special forms of residual pulsating DC which have 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
Remote control and automatic switching device	Z-FW/LP	248296
Compact enclosure	KLV-TC-4	276241
Sealing cover set	Z-RC/AK-4TE	101062
Switching interlock	IS/SPE-1TE	101911

Connection diagram

4-pole



Technical Data

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 (without 30 mA)	40 ms delay - with selective disconnecting function
Rated voltage U_n	230/400 and 240/415 V AC, 50/60 Hz
Operation voltage electronic	50 – 254V AC
Operation voltage test circuit	184 – 440V AC
Rated tripping current $I_{\Delta n}$	30, 300 mA
Sensitivity	AC and pulsating DC
Rated insulation voltage U_i	440 V
Rated impulse withstand voltage U_{imp}	4 kV (1.2/50 µs)
Rated short circuit capacity I_{nc}	10 kA
Peak withstand current	
Type G, G/A, R, U (30mA)	3 kA (8/20 µs) surge current proof
Type S/A, U (except 30mA)	typ. 5 kA (8/20 µs) selective + surge current proof
Electrical isolation	> 4 mm contact space

Maximum back-up fuse	Short circuit and overload protection
I_n = 16-63A	63 A gG/gL
I_n = 80A	80 A gG/gL
I_n = 100A	100 A gG/gL
Endurance	
electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 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
Deg. of prot. in moisture-proof encl.	IP54
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1.5 - 35 mm^2 single wire 2 x 16 mm^2 multi wire
Terminal screw	M5 (Pozidriv PZ2)
Terminal capacity warning contact(s)	0.25-1.5 mm^2 (plug in terminals)
Terminal torque	2 - 2.4 Nm
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2
Contact position indicator	red / green
Tripping indicator	white / blue

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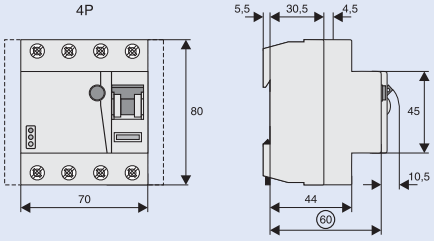
Local Indication RCCB

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

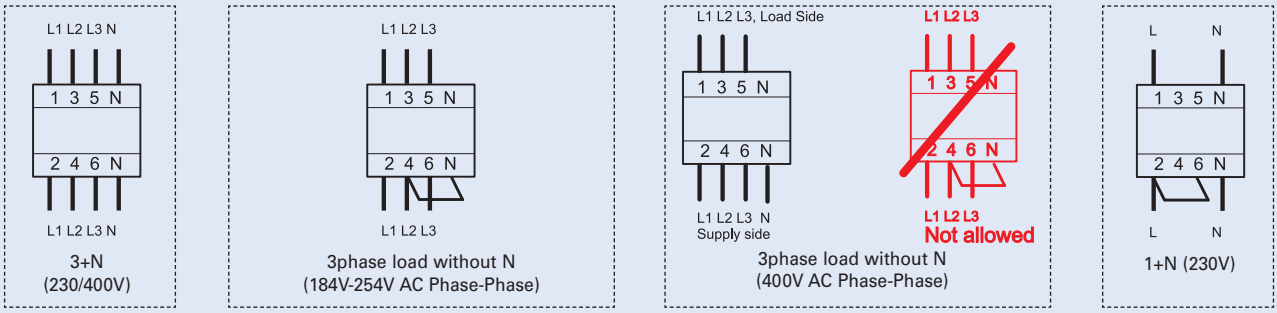
Remote Indication

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

Dimensions (mm)



Correct connection



Test button works within 184V – 440V AC !, Electronic works within 50-254V AC !

Residual Current Devices dRCM - digital, types B and B+

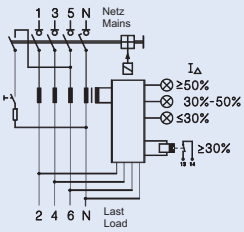
- Residual current devices, all-current sensitive
- Shape compatible with and suitable for standard busbar connection to other devices of the P-series
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Universal tripping signal switch, also suitable for PLS., PKN., ZP-A. can be mounted subsequently
- Auxiliary switch Z-HK can be mounted subsequently
- Contact position indicator red - green
- Tripping indicator white - blue
- Additional Safety
  - possibility to seal
  - possibility to lock in ON and OFF position
- Delayed types (G, S) 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
- 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. The yearly test interval is only valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environment), it's recommended to test in shorter intervals (e.g. monthly).
  A test is further needed if red and yellow LED are on together.
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement (R_E), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Functioning**
  - The green LED becomes active at 0-30% $I_{\Delta n}$
  - The yellow LED becomes active at 30-50% $I_{\Delta n}$
  - The red LED becomes active at >50% $I_{\Delta n}$
- Potential-free relay (NO contact, in parallel with the yellow LED, up to 1 A ohmic load / 230 V~) for external prewarning function. Bistabile, means the warning stays on also when the breaker trips, until reset.
- **Type -G/B und 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 und S/B+:** Selective residual current device. Protection against all types of fault currents.

Accessories:

Auxiliary switch for subsequent installation to the left	Z-HK	248432
Tripping signal contact for subsequent installation to the right	Z-NHK	248434
Remote control and automatic switching device	Z-FW/LP	248296
Compact enclosure	KLV-TC-4	276241
Sealing cover set	Z-RC/AK-4TE	101062
Switching interlock	IS/SPE-1TE	101911

Connection diagram

4-pole



Technical Data

Electrical		
Design according to		IEC/EN 61008 IEC/EN 62423 B+Type acc. to VDE 0664-400 Formerly known as VDE V 0664-110 Type G/B and G/B+ 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		230/400 and 240/415 V AC, 50 Hz
Operation voltage electronic		50 – 254V AC
Operation voltage test circuit		184 – 440V AC
Rated tripping current $I_{\Delta n}$		30, 300 mA
Sensitivity		Alternating, pulsed and direct currents
Rated insulation voltage U_i		440 V
Rated impulse withstand voltage U_{imp}		4 kV (1.2/50 µs)
Rated short circuit capacity I_{nc}		10 kA
Peak withstand current		
Type G/B and G/B+		3 kA (8/20 µs) surge current proof
Type S/B and S/B+		typ. 5 kA (8/20 µs) selective + surge current proof
Electrical isolation		> 4 mm contact space

Maximum back-up fuse	Short circuit and overload protection
I_n = 16-63A	63 A gG/gL
I_n = 80A	80 A gG/gL
Endurance	
electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 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
Deg. of prot. in moisture-proof encl.	IP54
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1.5 - 35 mm^2 single wire 2 x 16 mm^2 multi wire
Terminal screw	M5 (Pozidriv PZ2)
Terminal capacity warning contact(s)	0.25-1.5 mm^2 (plug in terminals)
Terminal torque	2 - 2.4 Nm
Busbar thickness	0.8 - 2 mm
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2
Contact position indicator	red / green
Tripping indicator	white / blue

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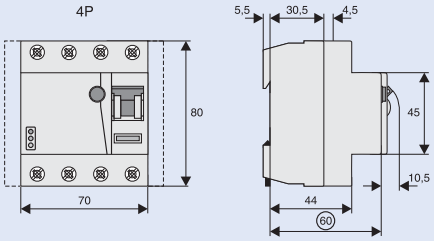
Local Indication RCCB

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

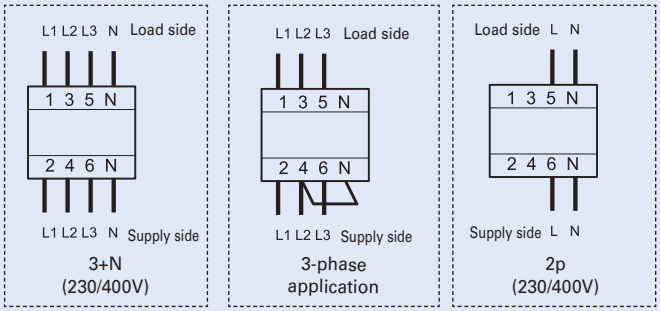
Remote Indication

Version:	1 contact NO up to 230V AC, 2 terminals, 1 A ohmic load
Terminal capacity of contacts:	0.25 - 1.5 mm^2

Dimensions (mm)



Correct connection



Test button works within 184V – 440V AC !

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Residual Current Devices FI-B

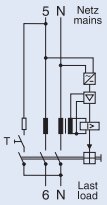
- Residual current devices - all fault-current sensitive
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Not busbar-compatible with other devices of the P series
- Auxiliary switch Z-HD can be 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). 30 VAC are required to identify currents of type B.
- Mains connection is at the top
- The test key “T” must be pressed every month. The system operator must be informed of this obligation and his responsibility in a way that can be proven (self-adhesive RCD-label enclosed)
- 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 high-frequency 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 FI residual current devices of type AC and A will not trip. Residual current devices of type PFDM-B, 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 1 MHz (100 kHz with type S/B) in undulating (mixed) currents.

Accessories:

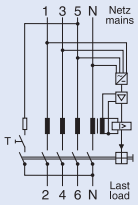
Auxiliary switch for installation on the left		
at a later point in time	Z-HD	265620

Connection diagrams

2-pole



4-pole



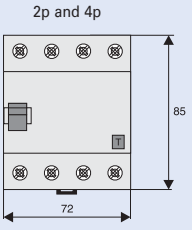
Technical Data

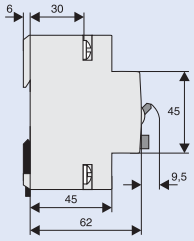
Electrical		
Design according to	IEC/EN 61008	
Current test marks as printed onto the device		
Tripping	short-time delayed	
Type S/B	40 ms delayed - selective switch-off	
Rated voltage U_n	230/400 V; 50 Hz	
Rated tripping current $I_{\Delta n}$	30, 100, 300, 500 mA	
Peak withstand current	0,5µs/100kHz Ring-Wave-Test	
Sensitivity	All types of fault-current	
Rated short circuit strength	10 kA	
Maximum back-up fuse	Overload	Short circuit
I_n = 16A	10 A gG/gL	63 A gG/gL
I_n = 25-40A	25 A gG/gL	63 A gG/gL
I_n = 63A	40 A gG/gL	63 A gG/gL
I_n = 80A	50 A gG/gL	80 A gG/gL
I_n = 100A	63 A gG/gL	100 A gG/gL
Voltage range of test button	185 to 440 V~	
Rated breaking capacity I_m or Rated fault breaking capacity $I_{\Delta m}$		
I_n = 16-40 A	500 A	
I_n = 63-80 A	800 A	
I_n = 125 A	1250 A	
Endurance electrical comp.	≥ 4,000 operating cycles	
mechanical comp.	≥ 10,000 operating cycles	

Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	70 mm (4MU) for 2p and 4p
Mounting	quick fastening with DIN rail EN50022
Degree of protection, built-in	IP40
Upper terminals	lift terminals
Lower terminals	open-mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A.
Terminal capacity	1,5 - 50 mm²
Busbar thickness	0,8 - 2 mm
Admitted ambient temperature range	-25°C to +40°C
Resistance to climatic conditions	according to IEC/EN 61008
Mounting position	any

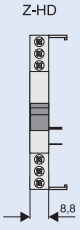
Dimensions (mm)

2p and 4p





Z-HD



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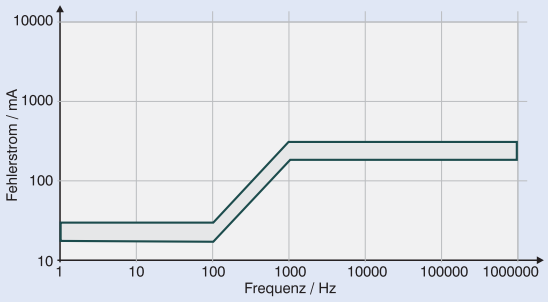
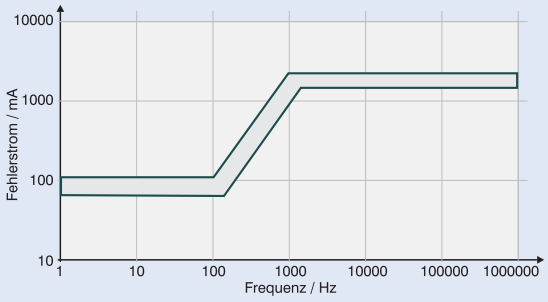
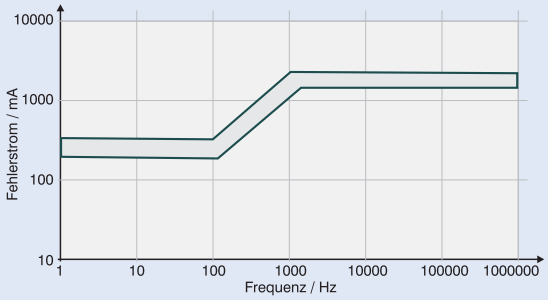
Tripping current frequency response 30 mA



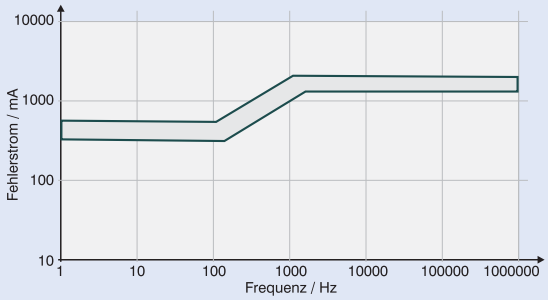
Tripping current frequency response 100 mA



Tripping current frequency response 300 mA



Tripping current frequency response 500 mA



Add-on Residual Current Protection Unit PBSM

- Add-on residual current unit
- Line voltage-independent tripping
- By combining this device with a top-quality miniature circuit breaker type PLS. (exept PLSN.) 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 PLS.-miniature cirvuit breakers which can be connected
- Comrehensive range of accessories suitable for subsequent installation onto PLS.
- **Type -A**: Protect 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-EN1, Part1, §12.14).
- **Type -S**: Selective residual current device, either sensitive to AC, type -S, or sensitive to pulsating DC, type -S/A, for protection against special forms of residual pulsating DC which have not been smoothed. Compulsory for systems with surge arresters downstream of the RCD (ÖVE-EN1, Part 1, §12.15).

Accessories :

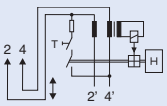
Cover cap for draw-out connection bar	included
Slotted one-way cheese head screw	included

Accessories (on PLS.):

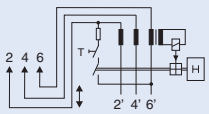
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal contact for subsequent installation	ZP-NHK	248437
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35mm²	Z-HA-EK/35	263960
Switching interlock	IS/SPE-1TE	101911

Connection diagramms

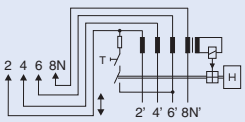
2-pole



3-pole



4-pole



Technical Data

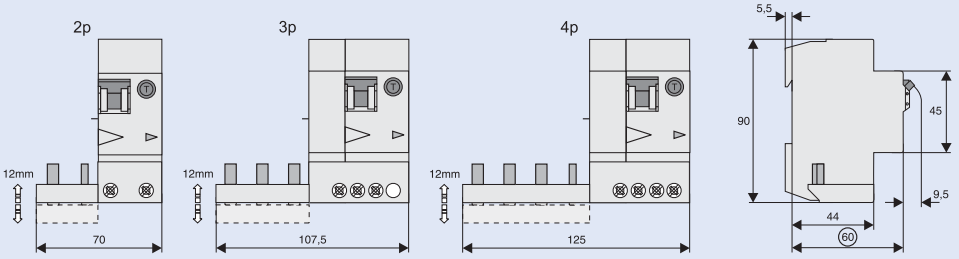
Electrical

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 6kA - with selective disconnecting function
Rated voltage U_n	230/400 V AC
Operational voltage range	196 - 440 V
Rated frequency	50 Hz
Use at 16⅔ Hz	Recesses time between the single switchings increases to 88 s, I_n max. 63 A
Use at 400 Hz	I_n max. 40 A
Rated current I_n	≤ 40 A, ≤ 63 A
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
Service short circuit breaking capacity I_{cs}	same as connected PLS. (7.5 kA)
Rated breaking capacity I_{cn}	same as connected PLS. (10 kA)
Rated fault breaking capacity $I_{\Delta m}$	6 kA (U_n = 230V) 3 kA (U_n = 400V)

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 PLS.
Degree of protection installed device	IP40
Fastening screw	M 2.5 (slotted one-way cheese head screw;
Screw head breaking torque	> 0.6 Nm
Upper and lower terminals	lift terminals
Terminal screws	M 5 (combined Philips/standard head screws according to DIN7962-Z2, Pozidrive)
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	
Rigid conductors	1 x (1 - 25) mm²
Flexible conductors (with wire end sleeve)	1 x (0.75 - 16) mm²
Busbar thickness	0.8 - 2 mm
Permitted ambient temperature range	-25°C to +40°C
Resistance to climatic conditions	acc. to IEC/EN 60068-2 (25..55°C/90..95% relative humidity)

Dimensions (mm)



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Add-on Residual Current Protection Unit PBHT

- By combination with miniature circuit breaker PLHT => RCBO-Unit (MCCB)
- Add-on residual current unit (screw connection) for 80 or 125 A (2-pole and 4-pole)
- High flexibility and ease of installation thanks to variable wiring (400 mm flexible connection wires 2p = 2 units, 4p = 4 units included in the set)
- Free selection of main power supply
- Auxiliary switch 1 NO included as standard in all PBHT versions
- Permits combinations with a variety of characteristics thanks to the different rated currents and characteristics of the miniature circuit breakers PLHT which can be connected
- For trade and industry applications
- For subsequent mounting onto 2, 3, 3+N and 4-pole-miniature circuit breakers PLHT
- Toggle (serves as switch position- and tripping indicator)
- The screw connection to the PLHT-device can be unscrewed at any time. Consequently, in case of modifications of the systems to be protected, the installation can be adapted to new requirements at any time.

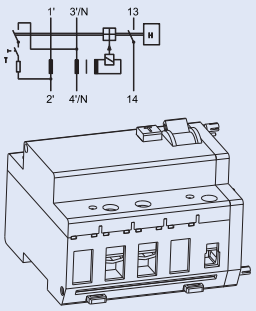
Accessories:

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

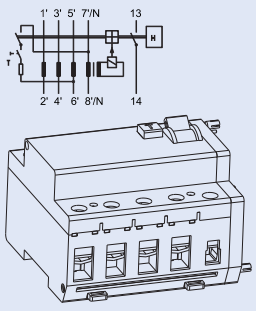
2-pole 80A	2 x 16mm² (400mm each)
4-pole 80A	4 x 16mm² (400mm each)
2-pole 125A	2 x 35mm² (400mm each)
4-pole 125A	4 x 35mm² (400mm each)

Connection diagrams

2-pole



4-pole



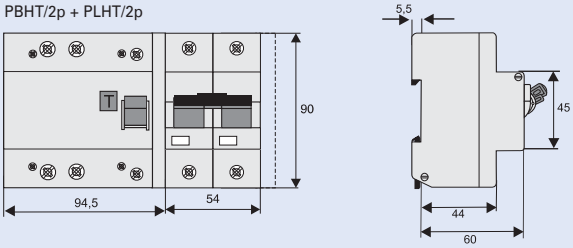
Technical Data

Electrical	
Design according to	IEC/EN 61009
Current test marks as printed onto the device	
Current flow paths	
Rated voltage U_e	230/400 V AC
Operational voltage range	196-440 V
Rated frequency	50 Hz
Rated current I_n	80 A, 125 A
Rated tripping current $I_{\Delta n}$	30, 300, 500, 1000 mA
Rated non-tripping current $I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity	AC and pulsating DC
Tripping characteristic	instantaneous 250A (8/20µs), surge current-proof;
Type S	40 ms delay 6kA (8/20µs) with selective disconnecting function, surge current-proof
Rated service short circuit breaking capacity I_{cn}	same as connected PLHT
Rated ultimate circuit breaking capacity I_{cu}	same as connected PLHT
Rated fault short circuit breaking capacity $I_{\Delta/n}$	= I_{cu}
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Endurance mechanical comp.	
PBHT-80	>10000
PBHT-125	>8000
Endurance electrical comp.	
PBHT-80	>1500
PBHT-125	>1000

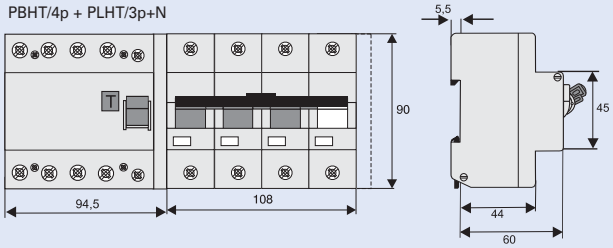
Auxiliary Contact	
Utilisation category AC15	
Rated voltage U_e	250 V AC
Rated operational current I_e	16 A AC
Mechanical	
Frame size	45 mm
Device height	90 mm
Device width	95 mm (5.5MU)
Depth of central body	60 mm
Mounting	screwed onto PLHT 2-, 3-, 4-pole; PBHT-ASA
Upper and lower terminals	lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	
Main conductor	2.5 - 50 mm²
Auxiliary switch	1 - 25 mm²
Degree of protection, built-in	IP40
Permissible ambient temperature range	-25°C to +40°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2

Dimensions (mm)

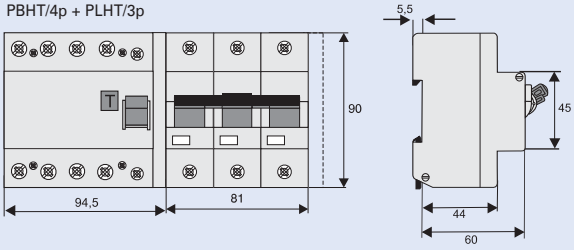
PBHT/2p + PLHT/2p



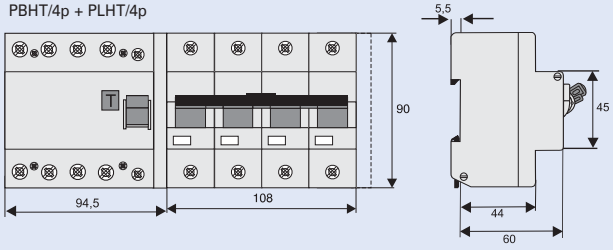
PBHT/4p + PLHT/3p+N



PBHT/4p + PLHT/3p



PBHT/4p + PLHT/4p



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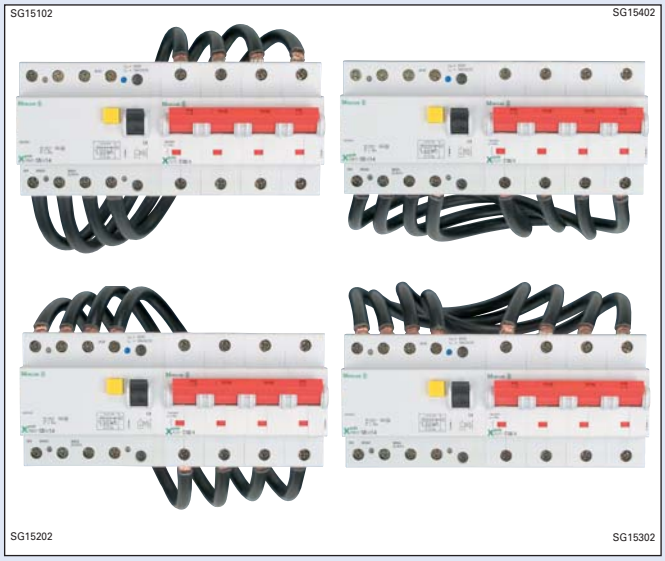
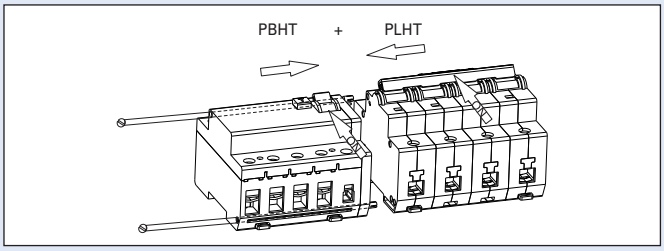
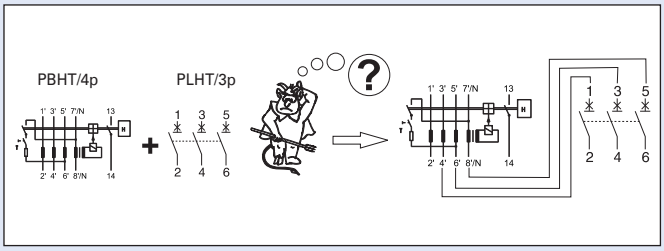
Wiring options



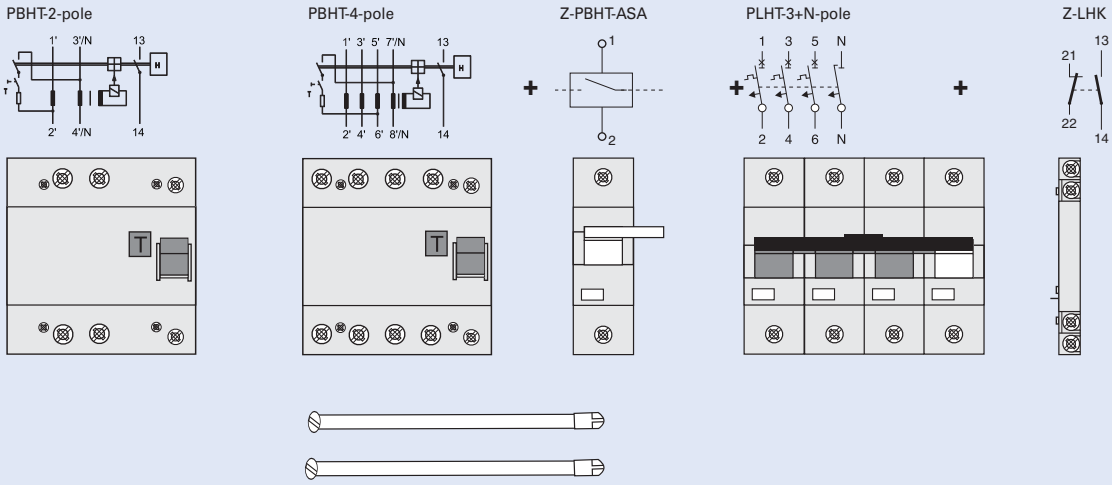
Mounting PBHT + PLHT



Connection PBHT/4p + PLHT/3p



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



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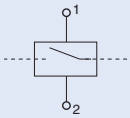
Accessories for PBHT

Shunt Trip Release Z-BHASA

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

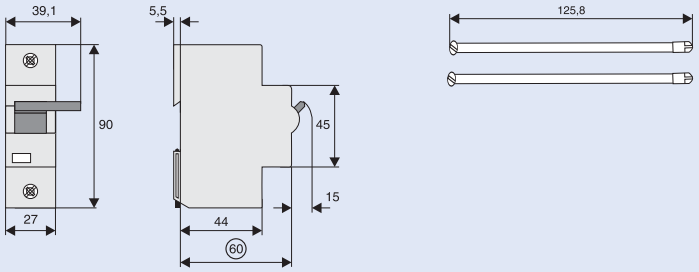
Connection diagram



Technical Data

	Z-BHASA/24	Z-BHASA/230
Electrical		
Minimum pulse duration	15 ms	10 ms
Internal resistance	2 Ω	130 Ω
Duty	100%	100%
Tripping time	< 20 ms	< 20 ms
Peak withstand voltage (1.2/50µs)	2 kV	2 kV
Endurance	>4,000 operating cycles	>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, built-in	IP40	IP40
Upper and lower terminal screws	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

Dimensions (mm)



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PBR Main Protective Device

ATTENTION:

The main protective device does not replace a residual current device (RCD). For protection against residual current or additional protection you still need to install an RCD even if you use a main protective device.

The objective of the PBR main protective device is preventive fire protection only.

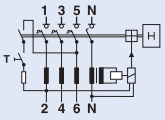
- Tripping current identification ($I_{\Delta n}$) is independent of the line voltage
- **Integrated overload protection** O.L.P.
- Contour and busbar compatible with other devices of the P series
- Double-comfort terminal lift/open-mouthed at top and bottom
- Free selection of the busbar arrangement at top and bottom
- Free terminal space despite the fitted busbar
- Universal Z-NHK tripping signal switch can be retro-fitted
- Auxiliary Z-HK switch can be retro-fitted
- Contact position indicator red - green
- Suitable for use with commercially available standard fluorescent lamps with or without electronic ballast
- The function of the switch is independent of its position
- Mains connection on any side
- The 4-pole switch cannot be used as a 3-pole switch
- The 4-pole switch can also be used as a 2-pole switch
  In this case use terminals 1-2 and N-N (+ wire bridge, see instructions).
- The test button "T" needs to be activated once a year. This fact and responsibility needs to be communicated to the system operator in a provable manner.
- Due to their tripping characteristics the main protective devices feature full selectivity with regard to downstream electromagnetic quick tripping relays of MCBs according to EN 60898-1 and of "general" and "S" types of RCD protective devices according to EN 61008-1.
  Main protective devices are particularly important as fire protection in 3L+PEN ~400/230 V networks (TN-systems).
  Main protective devices are particularly important as back-up protection against electrical shocks in 3L+N ~400/230 V networks (TT-systems)

Accessories:

Auxiliary switch		
for retro-fitting on the left side (4p)	Z-HK	248432
Tripping signal contact		
for retro-fitting on the right side	Z-NHK	248434
Reset device	Z-FW/LP	248296
Small enclosure	KLV-TC-4	276241
Lead-seal set	Z-RC/AK-4TE	101062
Anti-tamper device	IS/SPE-1TE	101911

Connection diagram

4-pole

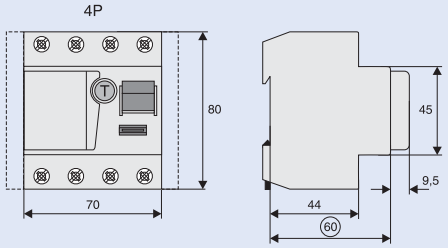


Technical Data

Electrical	
Current test marks as printed onto the device	
Tripping	200 ms delayed selective switch-off
Rated voltage U_n	230/400 V; 50 Hz
Fire protection residual current $I_{\Delta n}$	300 mA
Sensitivity	AC
Rated insulation voltage U_i	440 V
Rated peak withstand voltage U_{imp}	4 kV
Rated short circuit strength I_{nc}	10 kA
Max. back-up fuse as overload and short-circuit protection	63 A gG/gL (max. 63A gG/gL; ÜL/OL+KS/SC)
Rated making and breaking capacity I_m or Rated residual making/breaking cap. $I_{\Delta m}$	630 A
Voltage range of test button	195.5 - 440 V~
Endurance electrical	≥ 4.000 operating cycles
Endurance mechanical	≥ 20.000 operating cycles

Mechanical	
Frame size	45 mm
Device height	80 mm
Installation width	70 mm (4U)
Mounting	Quick fastening with 2 lock-in positions for DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Upper and lower terminals	Open-mouthed/lift terminals
Terminal protection	Finger and hand touch safe acc. to BGV A3, ÖVE-EN 6
Terminal capacity	1.5 - 35 mm^2 single-wired 2 x 16 mm^2 multi-wired
Material thickness of busbar	0.8 - 2 mm
Permitted ambient temperature range	-25°C to +40°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2

Dimensions (mm)



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PDIM Leackage Current Monitor

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

Functioning

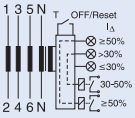
- The green LED becomes active at 0-30% of the preset $I_{\Delta n}$. The yellow LED becomes active at 30-50% of the preset $I_{\Delta n}$. The red LED becomes active at >50% of the preset $I_{\Delta n}$.
- The yellow LED turns off again when the identified residual current is <30% of the preset $I_{\Delta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

Test function

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

Connection diagram

4-pole

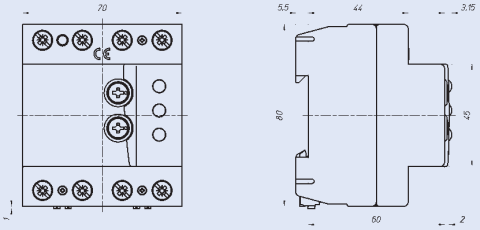


Technical Data

Electrical		
Design similar to		DIN/EN 62020
Current test marks as printed onto the device		
Rated current I_n		40 A, 100 A
Tripping behaviour (adjustable)		instantaneous
	Type G	10 ms delay
	Type S	40 ms delay - selective
Rated voltage U_n		230/400 V, 50/60 Hz 240/415 V, 50/60 Hz
Rated tripping current $I_{\Delta n}$ (adjustable)		30, 100, 300, 500, 1000 mA
Sensitivity		AC and pulsating DC
Rated insulation voltage U_i		440 V
Rated short circuit resistance I_{nc}		10 kA
Max. back-up fuse admitted		Short-circuit Overload
I_n = 40A		63 A gG/gL 40 A gG/gL
I_n = 100A		100 A gG/gL 63 A gG/gL
Switching contacts		potential-free 10 A / 230 V~
Tripping behaviour of the contacts		1: 30-50% $I_{\Delta n}$ 2: >50% $I_{\Delta n}$
Endurance	electrical comp.	≥ 4,000 operating cycles
	mechanical comp.	≥ 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 prot. in splash-proof encl.	IP54
Upper and lower terminals	Open-mouthed/lift terminals
Terminal protection	Protection against accidental contact according to BGV A3, ÖVE-EN 6
Terminal capacity (1, 2, 3, 4, 5, 6, N, N)	1.5 - 35 mm^2 single-wired 2 x 16 mm^2 multi-wired
Terminal capacity of switching contacts	0.25 - 1.5 mm^2
Busbar thickness	0.8 - 2 mm
Admitted ambient temperature range	-25°C to +40°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2

Dimensions (mm)



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Combined RCD/MCB Devices PKNM, 1+N-pole

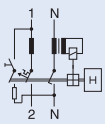
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Comprehensive range of accessories suitable for subsequent installation
- **Type -A**: Protects against special forms of residual pulsating DC which have have not been smoothed
- **Typ -G:** 10 ms time delay in order to avoid unwanted tripping (e.g. during thunderstorms).
  Compulsory in Austria for any circuit where personal injury or damage to property may occur in case of unwanted tripping (§12.1.6 ÖVE/ÖNORM E 8001-1).

Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Tripping module	Z-KAM	248294
Terminal cover cap	KLV-TC-2	276240
Additional terminal 35mm^2	Z-HA-EK/35	263960
Switching interlock	IS/SPE-1TE	101911

Connection diagram

1+N-pole



Technical Data

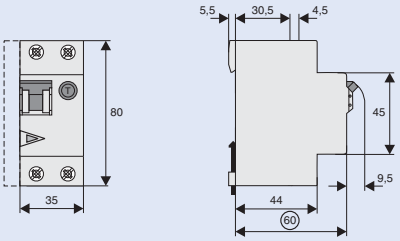
Electrical

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 3kA (8/20µs) surge current-proof
Rated voltage U_e		230 V; 50 Hz
Operational voltage range		196-253 V
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 breaking capacity		10 kA
Rated current		2 - 40 A
Rated peak withstand voltage U_{imp}		4 kV (1.2/50µs)
Characteristic		B, C
Maximum back-up fuse (short circuit)		100 A gL (>10 kA)
Endurance	electrical comp.	≥ 4,000 operating cycles
	mechanical comp.	≥ 20,000 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
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness	0.8 - 2 mm
Degree of protection switch	IP20
Degree of protection, built-in	IP40
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Dimensions (mm)



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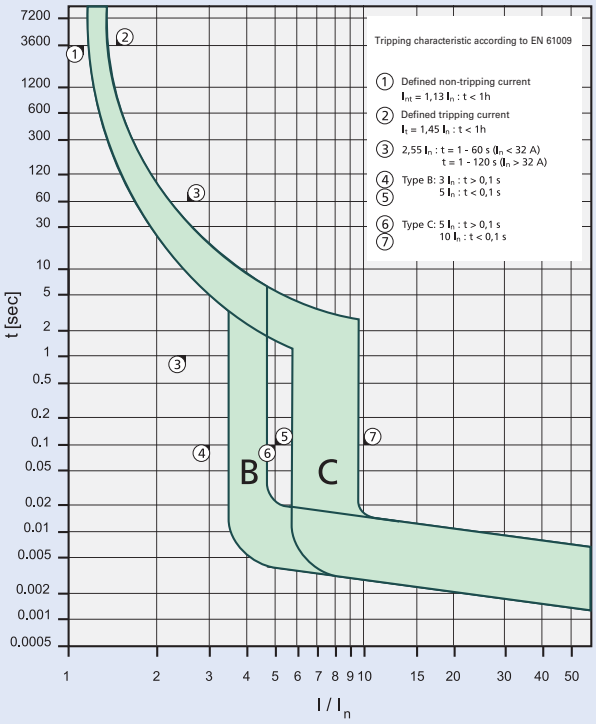
Load Capacity PKNM-../1N/

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
5	6.2	6.0	5.8	5.6	5.4	5.2	5.0	4.9	4.8
6	7.4	7.2	7.0	6.7	6.5	6.3	6.0	5.9	5.8
8	9.9	9.6	9.3	9.0	8.7	8.4	8.0	7.9	7.7
10	12	12	12	11	11	10	10	9.9	9.7
12	15	14	14	13	13	13	12	12	12
13	16	16	15	15	14	14	13	13	13
15	19	18	17	17	16	16	15	15	15
16	20	19	19	18	17	17	16	16	15
20	25	24	23	22	22	21	20	20	19
25	31	30	29	28	27	26	25	25	24
32	40	38	37	36	35	33	32	32	31
40	49	48	47	45	43	42	40	39	39

Tripping Characteristic PKNM-../1N/, Characteristics B a. C



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

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

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

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

PKNM	**DII-DIV gL/gG**								
I_n [A]	**10**	**16**	**20**	**25**	**35**	**50**	**63**	**80**	**100**
2	<0.5[1]	<0.5[1]	2.2	8.5	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]
4	<0.5[1]	<0.5[1]	0.7	1.2	3.7	10.0	10.0[2]	10.0[2]	10.0[2]
6		<0.5[1]	0.7	1.0	2.9	6.9	10.0[2]	10.0[2]	10.0[2]
8		<0.5[1]	0.6	1.0	2.4	5.1	10.0[2]	10.0[2]	10.0[2]
10			0.6	0.9	1.9	3.3	7.0	10.0[2]	10.0[2]
13			0.5	0.7	1.6	2.8	5.7	9.0	10.0[2]
16				0.7	1.4	2.4	4.4	7.0	10.0[2]
20					1.3	2.2	4.0	6.3	10.0[2]
25					1.3	2.1	3.8	5.8	10.0[2]
32						2.0	3.5	5.2	9.5
40							3.1	4.5	8.1

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

PKNM	**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]
5	<0.5[1]	<0.5[1]	0.6	1.1	3.6	7.0	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]
8		<0.5[1]	<0.5	0.9	2.5	4.8	10.0[2]	10.0[2]	10.0[2]
10			<0.5	0.7	1.5	2.6	5.3	9.0	10.0[2]
13					1.4	2.3	4.6	7.6	10.0[2]
16					1.2	1.8	3.4	5.5	10.0[2]
20					1.2	1.7	3.1	5.0	10.0[2]
25						1.6	2.9	4.6	10.0[2]
32							2.3	3.4	7.7
40								2.9	6.2

[1] Selectivity limit current I_s under 0.5 kA

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

Darker areas: no selectivity

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

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

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

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

PKNM	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5[1)]	0.7	1.6	3.3	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
4	<0.5[1)]	<0.5[1)]	0.6	0.9	2.9	10.0	10.0[2)]	10.0[2)]	10.0[2)]
6		<0.5[1)]	0.5	0.8	2.4	8.2	10.0[2)]	10.0[2)]	10.0[2)]
8			0.6	0.8	2.0	6.0	10.0[2)]	10.0[2)]	10.0[2)]
10			0.5	0.8	1.6	3.7	6.0	10.0[2)]	10.0[2)]
13			0.6	0.7	1.4	3.0	4.7	9.0	10.0[2)]
16				0.6	1.2	2.6	3.9	7.0	10.0[2)]
20					1.2	2.5	3.6	6.2	10.0[2)]
25					1.2	2.3	3.3	5.7	10.0[2)]
32						2.3	3.1	5.1	10.0[2)]
40							2.8	4.5	9.5

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

PKNM	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)]
5	<0.5[1)]	<0.5[1)]	<0.5[1)]	0.9	2.9	8.0	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)]
8			<0.5	0.7	2.1	5.5	9.5	10.0[2)]	10.0[2)]
10			<0.5	0.6	1.3	2.9	4.5	8.9	10.0[2)]
13					1.2	2.5	3.9	7.6	10.0[2)]
16					1.0	2.1	3.0	5.5	10.0[2)]
20					1.0	2.0	2.7	5.0	10.0[2)]
25						1.9	2.6	4.5	10.0[2)]
32							2.1	3.4	10.0[2)]
40								3.0	8.7

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

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

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

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

PKNM	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
2	<0.5[1)]	1.1	3.6	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	0.9	1.6	2.8	4.4	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]	10.0[2)]
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)]
8	<0.5[1)]	<0.5[1)]	0.7	1.0	1.9	2.8	5.3	7.8	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)]	

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

PKNM	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)]
5	<0.5[1)]	<0.5[1)]	0.8	1.6	2.7	4.1	7.2	9.7	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)]
8	<0.5[1)]	<0.5[1)]	0.6	1.1	1.9	2.8	5.0	6.7	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)]	10.0[2)]
13				1.1	1.5	2.3	2.9	4.7	10.0[2)]	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)]	10.0[2)]
20				0.9	1.1	1.7	2.2	3.4	8.0	10.0[2)]	10.0[2)]	10.0[2)]
25						1.6	2.1	3.2	7.2	10.0[2)]	10.0[2)]	10.0[2)]
32							1.7	2.6	5.3	9.0	10.0[2)]	
40								2.4	4.5	7.5	10.0	

[1)] Selectivity limit current I_s under 0.5 kA

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

Darker areas: no selectivity

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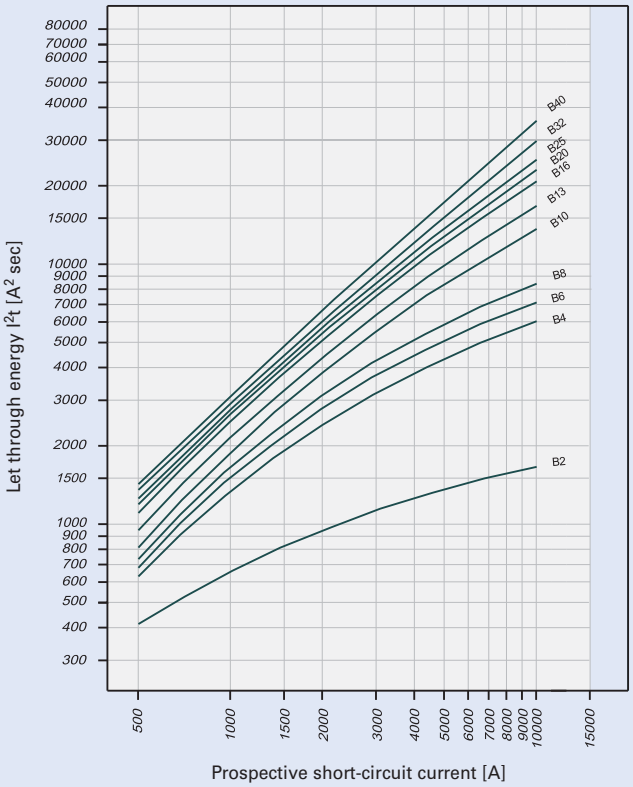
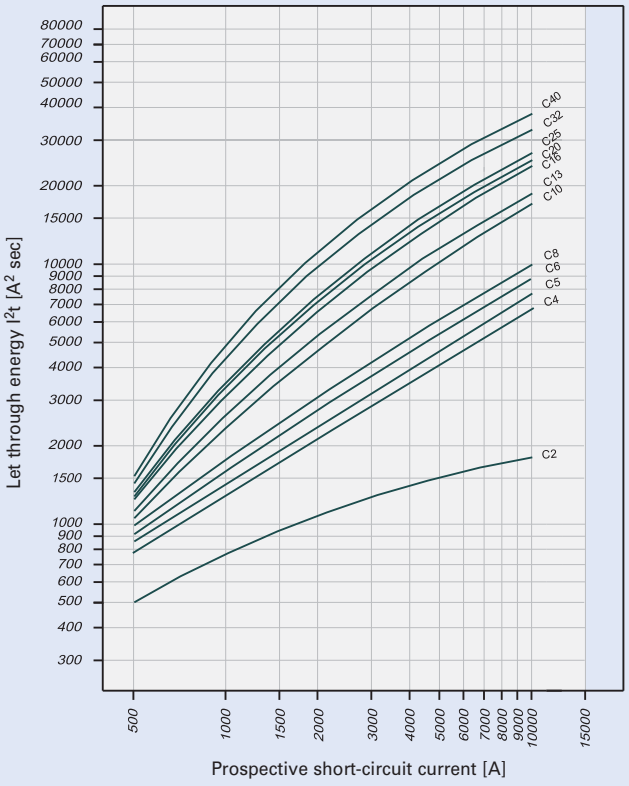
Let-through Energy PKNM-../1N/

Let-through energy PKNM, characteristic B, 1+N-pole



Let-through energy PKNM, characteristic C, 1+N-pole



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Combined RCD/MCB Devices PKN6, 1+N-pole

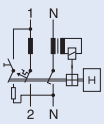
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Comprehensive range of accessories suitable for subsequent installation
- **Type -A**: Protects against special forms of residual pulsating DC which have have not been smoothed
- **Typ -G:** 10 ms time delay in order to avoid unwanted tripping (e.g. during thunderstorms) according to ÖVE E 8601. Compulsory in Austria for any circuit where personal injury or damage to property may occur in case of unwanted tripping (ÖVE-EN1, Part 1, §12.14).

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 cap	KLV-TC-2	276240
Additional terminal 35mm^2	Z-HA-EK/35	263960
Switching interlock	IS/SPE-1TE	101911

Connection diagram

1+N-pole

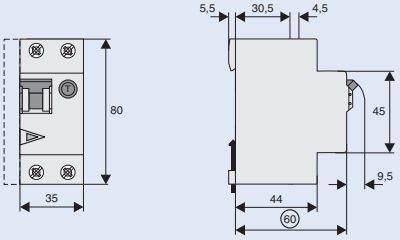


Technical Data

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 3kA (8/20µs) surge current-proof
Rated voltage U_e	230 V; 50 Hz
Operational voltage range	196-253 V
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 breaking capacity	6 kA
Rated current	2 - 40 A
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Characteristic	B, C
Maximum back-up fuse (short circuit)	100 A gL (>6 kA)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 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
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness	0.8 - 2 mm
Degree of protection switch	IP20
Degree of protection, built-in	IP40
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Dimensions (mm)



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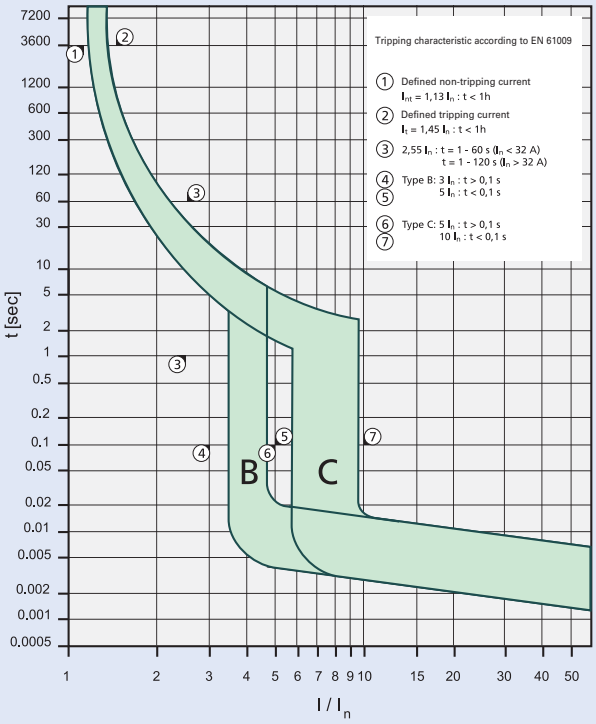
Load Capacity PKN6-../1N/

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
5	6.2	6.0	5.8	5.6	5.4	5.2	5.0	4.9	4.8
6	7.4	7.2	7.0	6.7	6.5	6.3	6.0	5.9	5.8
8	9.9	9.6	9.3	9.0	8.7	8.4	8.0	7.9	7.7
10	12	12	12	11	11	10	10	9.9	9.7
12	15	14	14	13	13	13	12	12	12
13	16	16	15	15	14	14	13	13	13
15	19	18	17	17	16	16	15	15	15
16	20	19	19	18	17	17	16	16	15
20	25	24	23	22	22	21	20	20	19
25	31	30	29	28	27	26	25	25	24
32	40	38	37	36	35	33	32	32	31
40	49	48	47	45	43	42	40	39	39

Tripping Characteristic PKN6-../1N/, Characteristics B a. C



Short Circuit Selectivity PKN6-../1N/ towards DII-DIV fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices PKN6../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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

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

PKN6	**DII-DIV gL/gG**								
I_n [A]	**10**	**16**	**20**	**25**	**35**	**50**	**63**	**80**	**100**
2	<0.5[1]	<0.5[1]	2.2	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
4	<0.5[1]	<0.5[1]	0.7	1.2	3.7	6.0[2]	6.0[2]	6.0[2]	6.0[2]
6		<0.5[1]	0.7	1.0	2.9	6.0[2]	6.0[2]	6.0[2]	6.0[2]
8		<0.5[1]	0.6	1.0	2.4	5.1	6.0[2]	6.0[2]	6.0[2]
10			0.6	0.9	1.9	3.3	6.0[2]	6.0[2]	6.0[2]
13			0.5	0.7	1.6	2.8	5.7	6.0[2]	6.0[2]
16				0.7	1.4	2.4	4.4	6.0[2]	6.0[2]
20					1.3	2.2	4.0	6.0[2]	6.0[2]
25					1.3	2.1	3.8	5.8	6.0[2]
32						2.0	3.5	5.2	6.0[2]
40							3.1	4.5	6.0[2]

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

PKN6	**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[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
4	<0.5[1]	<0.5[1]	0.7	1.3	4.2	6.0[2]	6.0[2]	6.0[2]	6.0[2]
5	<0.5[1]	<0.5[1]	0.6	1.1	3.6	6.0[2]	6.0[2]	6.0[2]	6.0[2]
6		<0.5[1]	0.6	1.0	2.9	5.8	6.0[2]	6.0[2]	6.0[2]
8		<0.5[1]	<0.5	0.9	2.5	4.8	6.0[2]	6.0[2]	6.0[2]
10			<0.5	0.7	1.5	2.6	5.3	6.0[2]	6.0[2]
13					1.4	2.3	4.6	6.0[2]	6.0[2]
16					1.2	1.8	3.4	5.5	6.0[2]
20					1.2	1.7	3.1	5.0	6.0[2]
25						1.6	2.9	4.6	6.0[2]
32							2.3	3.4	6.0[2]
40								2.9	6.0[2]

[1] Selectivity limit current I_s under 0.5 kA

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

Darker areas: no selectivity

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Short Circuit Selectivity PKN6-../1N/ towards D01-D03 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices PKN6../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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

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

PKN6	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5[1)]	0.7	1.6	3.3	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
4	<0.5[1)]	<0.5[1)]	0.6	0.9	2.9	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
6		<0.5[1)]	0.5	0.8	2.4	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
8			0.6	0.8	2.0	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
10			0.5	0.8	1.6	3.7	6.0[2)]	6.0[2)]	6.0[2)]
13			0.6	0.7	1.4	3.0	4.7	6.0[2)]	6.0[2)]
16				0.6	1.2	2.6	3.9	6.0[2)]	6.0[2)]
20					1.2	2.5	3.6	6.0[2)]	6.0[2)]
25					1.2	2.3	3.3	5.7	6.0[2)]
32						2.3	3.1	5.1	6.0[2)]
40							2.8	4.5	6.0[2)]

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

PKN6	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	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
4	<0.5[1)]	<0.5[1)]	<0.5[1)]	0.9	3.4	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
5	<0.5[1)]	<0.5[1)]	<0.5[1)]	0.9	2.9	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
6		<0.5[1)]	<0.5[1)]	0.8	2.3	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
8			<0.5	0.7	2.1	5.5	6.0[2)]	6.0[2)]	6.0[2)]
10			<0.5	0.6	1.3	2.9	4.5	6.0[2)]	6.0[2)]
13					1.2	2.5	3.9	6.0[2)]	6.0[2)]
16					1.0	2.1	3.0	5.5	6.0[2)]
20					1.0	2.0	2.7	5.0	6.0[2)]
25						1.9	2.6	4.5	6.0[2)]
32							2.1	3.4	6.0[2)]
40								3.0	6.0[2)]

Short Circuit Selectivity PKN6-../1N/ towards NH-00 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices PKN6../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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

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

PKN6	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
2	<0.5[1)]	1.1	3.6	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
4	<0.5[1)]	0.5	0.9	1.6	2.8	4.4	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
6	<0.5[1)]	0.5	0.8	1.4	2.2	3.3	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
8	<0.5[1)]	<0.5[1)]	0.7	1.0	1.9	2.8	5.3	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
10		<0.5[1)]	0.7	0.9	1.5	2.1	3.4	4.3	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
13		<0.5[1)]	0.6	0.8	1.4	1.8	2.8	3.6	5.7	6.0[2)]	6.0[2)]	6.0[2)]
16			0.6	0.7	1.2	1.5	2.4	3.0	4.5	6.0[2)]	6.0[2)]	6.0[2)]
20				0.7	1.1	1.5	2.2	2.8	4.2	6.0[2)]	6.0[2)]	6.0[2)]
25				0.7	1.1	1.4	2.1	2.6	4.0	6.0[2)]	6.0[2)]	6.0[2)]
32					1.0	1.4	2.0	2.5	3.7	6.0[2)]	6.0[2)]	6.0[2)]
40							2.3	3.4	6.0[2)]	6.0[2)]	6.0[2)]	

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

PKN6	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	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
4	<0.5[1)]	<0.5[1)]	0.9	1.8	3.2	4.8	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
5	<0.5[1)]	<0.5[1)]	0.8	1.6	2.7	4.1	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
6	<0.5[1)]	<0.5[1)]	0.7	1.3	2.2	3.3	5.9	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
8	<0.5[1)]	<0.5[1)]	0.6	1.1	1.9	2.8	5.0	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
10		0.5	0.8	1.2	1.7	2.7	3.4	5.5	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
13				1.1	1.5	2.3	2.9	4.7	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
16				1.0	1.3	1.8	2.3	3.7	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
20				0.9	1.1	1.7	2.2	3.4	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
25						1.6	2.1	3.2	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
32							1.7	2.6	5.3	6.0[2)]	6.0[2)]	6.0[2)]
40								2.4	4.5	6.0[2)]	6.0[2)]	6.0[2)]

[1)] Selectivity limit current I_s under 0.5 kA

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

Darker areas: no selectivity

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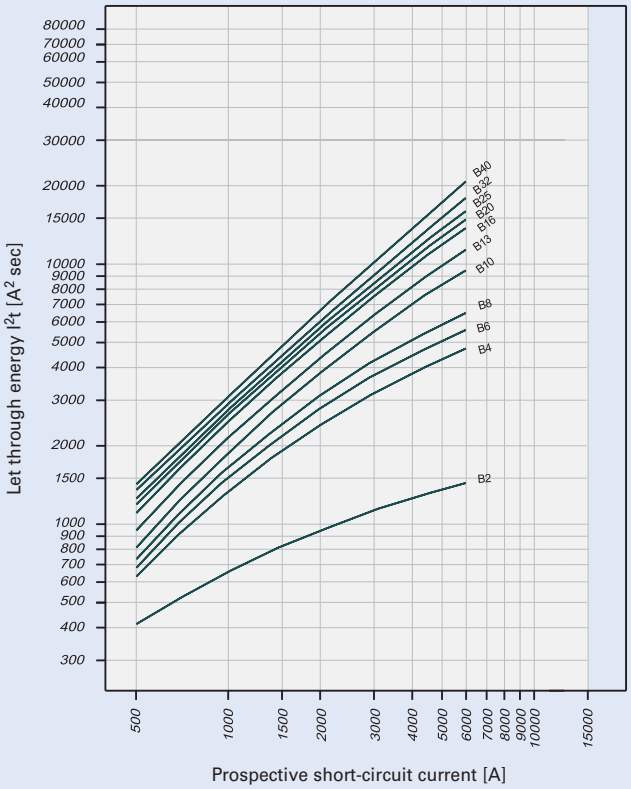
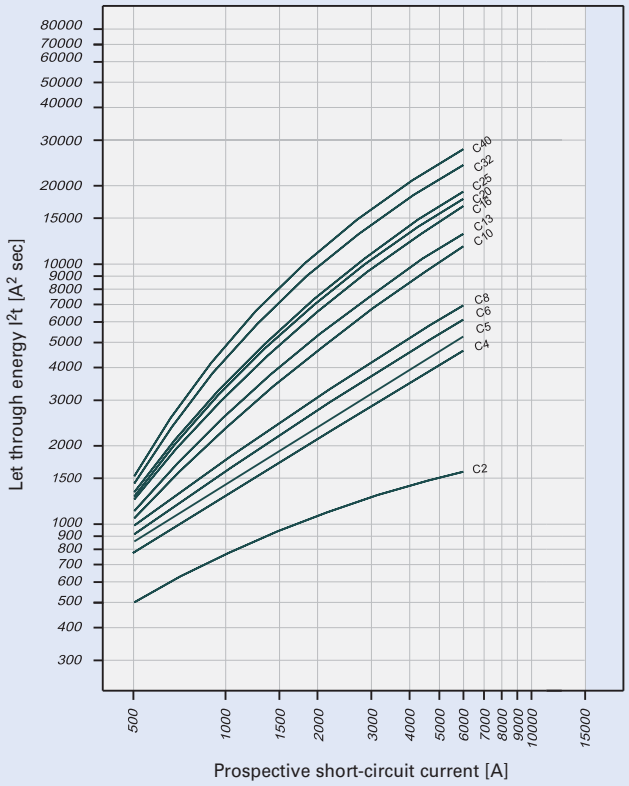
Let-through Energy PKN6-../1N/

Let-through energy PKN6, characteristic B, 1+N-pole



Let-through energy PKN6, characteristic C, 1+N-pole



Powering Business Worldwide

Combined RCD/MCB Devices PKN4, 1+N-pole

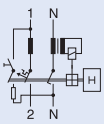
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Comprehensive range of accessories suitable for subsequent installation
- **Type -A**: Protects against special forms of residual pulsating DC which have have not been smoothed
- **Typ -G:** 10 ms time delay in order to avoid unwanted tripping (e.g. during thunderstorms) according to ÖVE E 8601. Compulsory in Austria for any circuit where personal injury or damage to property may occur in case of unwanted tripping (ÖVE-EN1, Part 1, §12.14).

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 cap	KLV-TC-2	276240
Additional terminal 35mm^2	Z-HA-EK/35	263960
Switching interlock	IS/SPE-1TE	101911

Connection diagram

1+N-pole

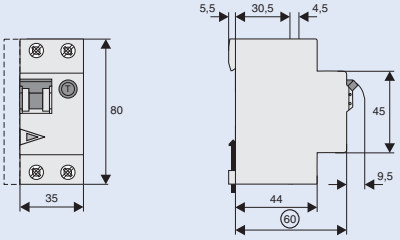


Technical Data

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 3kA (8/20µs) surge current-proof
Rated voltage U_e	230 V; 50 Hz
Operational voltage range	196-253 V
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 breaking capacity	4.5 kA
Rated current	2 - 40 A
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Characteristic	B, C
Maximum back-up fuse (short circuit)	100 A gL (>4,5 kA)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 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
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness	0.8 - 2 mm
Degree of protection switch	IP20
Degree of protection, built-in	IP40
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Dimensions (mm)



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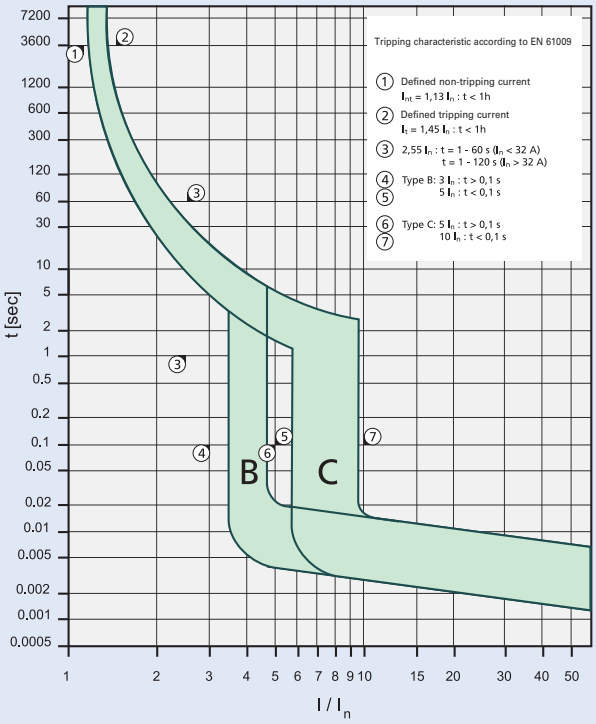
Load Capacity PKN4-../1N/

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
5	6.2	6.0	5.8	5.6	5.4	5.2	5.0	4.9	4.8
6	7.4	7.2	7.0	6.7	6.5	6.3	6.0	5.9	5.8
8	9.9	9.6	9.3	9.0	8.7	8.4	8.0	7.9	7.7
10	12	12	12	11	11	10	10	9.9	9.7
12	15	14	14	13	13	13	12	12	12
13	16	16	15	15	14	14	13	13	13
15	19	18	17	17	16	16	15	15	15
16	20	19	19	18	17	17	16	16	15
20	25	24	23	22	22	21	20	20	19
25	31	30	29	28	27	26	25	25	24
32	40	38	37	36	35	33	32	32	31
40	49	48	47	45	43	42	40	39	39

Tripping Characteristic PKN4-../1N/, Characteristics B a. C



Short Circuit Selectivity PKN4-../1N/ towards DII-DIV fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices PKN4../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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

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

PKN4	**DII-DIV gL/gG**								
I_n [A]	**10**	**16**	**20**	**25**	**35**	**50**	**63**	**80**	**100**
2	<0.5[1]	<0.5[1]	2.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.7	1.2	3.7	4.5[2]	4.5[2]	4.5[2]	4.5[2]
6		<0.5[1]	0.7	1.0	2.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]
8		<0.5[1]	0.6	1.0	2.4	4.5[2]	4.5[2]	4.5[2]	4.5[2]
10			0.6	0.9	1.9	3.3	4.5[2]	4.5[2]	4.5[2]
13			0.5	0.7	1.6	2.8	4.5[2]	4.5[2]	4.5[2]
16				0.7	1.4	2.4	4.4	4.5[2]	4.5[2]
20					1.3	2.2	4.0	4.5[2]	4.5[2]
25					1.3	2.1	3.8	4.5[2]	4.5[2]
32						2.0	3.5	4.5[2]	4.5[2]
40							3.1	4.5[2]	4.5[2]

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

PKN4	**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	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.7	1.3	4.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]
5	<0.5[1]	<0.5[1]	0.6	1.1	3.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]
6		<0.5[1]	0.6	1.0	2.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]
8		<0.5[1]	<0.5	0.9	2.5	4.5[2]	4.5[2]	4.5[2]	4.5[2]
10			<0.5	0.7	1.5	2.6	4.5[2]	4.5[2]	4.5[2]
13					1.4	2.3	4.5[2]	4.5[2]	4.5[2]
16					1.2	1.8	3.4	4.5[2]	4.5[2]
20					1.2	1.7	3.1	4.5[2]	4.5[2]
25						1.6	2.9	4.5[2]	4.5[2]
32							2.3	3.4	4.5[2]
40								2.9	4.5[2]

[1] Selectivity limit current I_s under 0.5 kA

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

Darker areas: no selectivity

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Short Circuit Selectivity PKN4-../1N/ towards D01-D03 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices PKN4../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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

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

PKN4	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5[1]	0.7	1.6	3.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.6	0.9	2.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]
6		<0.5[1]	0.5	0.8	2.4	4.5[2]	4.5[2]	4.5[2]	4.5[2]
8			0.6	0.8	2.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]
10			0.5	0.8	1.6	3.7	4.5[2]	4.5[2]	4.5[2]
13			0.6	0.7	1.4	3.0	4.5[2]	4.5[2]	4.5[2]
16				0.6	1.2	2.6	3.9	4.5[2]	4.5[2]
20					1.2	2.5	3.6	4.5[2]	4.5[2]
25					1.2	2.3	3.3	4.5[2]	4.5[2]
32						2.3	3.1	4.5[2]	4.5[2]
40							2.8	4.5[2]	4.5[2]

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

PKN4	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	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	<0.5[1]	0.9	3.4	4.5[2]	4.5[2]	4.5[2]	4.5[2]
5	<0.5[1]	<0.5[1]	<0.5[1]	0.9	2.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]
6		<0.5[1]	<0.5[1]	0.8	2.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]
8			<0.5	0.7	2.1	4.5[2]	4.5[2]	4.5[2]	4.5[2]
10			<0.5	0.6	1.3	2.9	4.5[2]	4.5[2]	4.5[2]
13					1.2	2.5	3.9	4.5[2]	4.5[2]
16					1.0	2.1	3.0	4.5[2]	4.5[2]
20					1.0	2.0	2.7	4.5[2]	4.5[2]
25						1.9	2.6	4.5[2]	4.5[2]
32							2.1	3.4	4.5[2]
40								3.0	4.5[2]

Short Circuit Selectivity PKN4-../1N/ towards NH-00 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices PKN4../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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

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

PKN4	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
2	<0.5[1]	1.1	3.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	0.5	0.9	1.6	2.8	4.4	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
6	<0.5[1]	0.5	0.8	1.4	2.2	3.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
8	<0.5[1]	<0.5[1]	0.7	1.0	1.9	2.8	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
10		<0.5[1]	0.7	0.9	1.5	2.1	3.4	4.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]
13		<0.5[1]	0.6	0.8	1.4	1.8	2.8	3.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]
16			0.6	0.7	1.2	1.5	2.4	3.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]
20				0.7	1.1	1.5	2.2	2.8	4.2	4.5[2]	4.5[2]	4.5[2]
25				0.7	1.1	1.4	2.1	2.6	4.0	4.5[2]	4.5[2]	4.5[2]
32					1.0	1.4	2.0	2.5	3.7	4.5[2]	4.5[2]	4.5[2]
40							2.3	3.4	4.5[2]	4.5[2]	4.5[2]	

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

PKN4	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	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.9	1.8	3.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
5	<0.5[1]	<0.5[1]	0.8	1.6	2.7	4.1	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
6	<0.5[1]	<0.5[1]	0.7	1.3	2.2	3.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
8	<0.5[1]	<0.5[1]	0.6	1.1	1.9	2.8	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
10		0.5	0.8	1.2	1.7	2.7	3.4	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
13				1.1	1.5	2.3	2.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
16				1.0	1.3	1.8	2.3	3.7	4.5[2]	4.5[2]	4.5[2]	4.5[2]
20				0.9	1.1	1.7	2.2	3.4	4.5[2]	4.5[2]	4.5[2]	4.5[2]
25						1.6	2.1	3.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]
32							1.7	2.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]
40								2.4	4.5[2]	4.5[2]	4.5[2]	4.5[2]

[1] Selectivity limit current I_s under 0.5 kA

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

Darker areas: no selectivity

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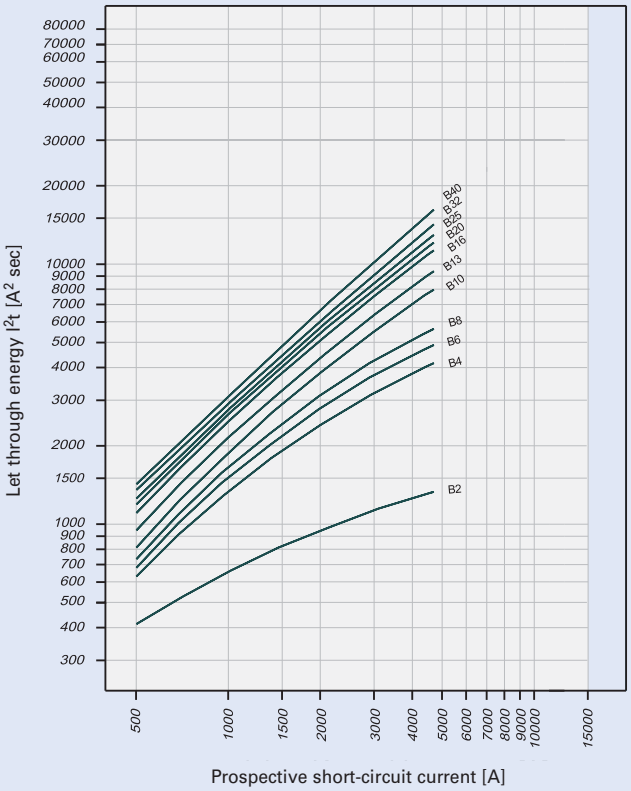
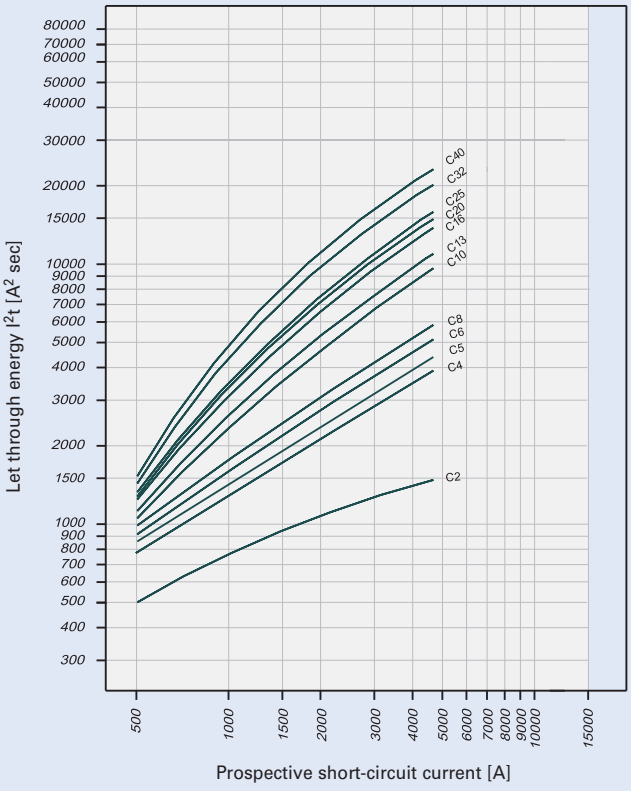
Let-through Energy PKN4-../1N/

Let-through energy PKN4, characteristic B, 1+N-pole



Let-through energy PKN4, characteristic C, 1+N-pole



Powering Business Worldwide

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

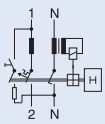
- Combined RCD/MCB device
- Line voltage-independent tripping
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Comprehensive range of accessories suitable for subsequent installation
- **Type -A**: Protects against special forms of residual pulsating DC which have have not been smoothed
- **Typ -G:** 10 ms time delay in order to avoid unwanted tripping (e.g. during thunderstorms).
  Compulsory in Austria for any circuit where personal injury or damage to property may occur in case of unwanted tripping (§12.1.6 ÖVE/ÖNORM E 8001-1).

Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Tripping module	Z-KAM	248294
Terminal cover cap	KLV-TC-2	276240
Additional terminal 35mm^2	Z-HA-EK/35	263960
Switching interlock	IS/SPE-1TE	101911

Connection diagram

1+N-pole

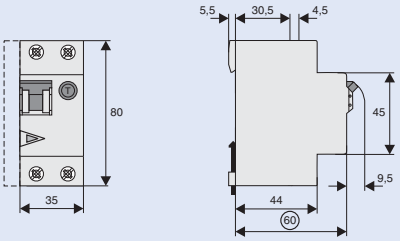


Technical Data

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 3kA (8/20µs) surge current-proof
Rated voltage U_e		230 V; 50 Hz
Operational voltage range		196-253 V
Rated tripping current $I_{\Delta n}$		10, 30, 100, 300, 500 mA
Rated non-tripping current $I_{\Delta no}$		0.5 $I_{\Delta n}$
Sensitivity		AC and pulsating DC
Selectivity class		3
Rated breaking capacity		10 kA
Rated current		6 - 40 A
Rated peak withstand voltage U_{imp}		6 kV (1.2/50µs)
Characteristic		B, C
Maximum back-up fuse (short circuit)		100 A gL (>10 kA)
Endurance	electrical comp.	≥ 4,000 operating cycles
	mechanical comp.	≥ 20,000 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
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness	0.8 - 2 mm
Degree of protection switch	IP20
Degree of protection, built-in	IP40
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Dimensions (mm)



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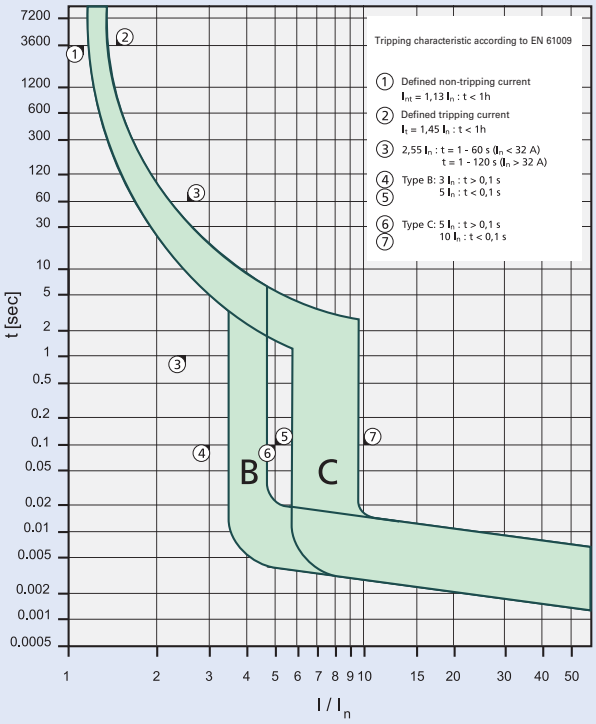
Load Capacity PFL7-../1N/

Effect of ambient temperature (MCB component)

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

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



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

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

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

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

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

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

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

[1] Selectivity limit current I_s under 0.5 kA

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

Darker areas: no selectivity

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

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

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

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

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

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

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

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

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

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

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

PFL7	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
6	<0.5[1]	0.5	0.8	1.4	2.2	3.3	7.0	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]
10		<0.5[1]	0.7	0.9	1.5	2.1	3.4	4.3	7.3	10.0[2]	10.0[2]	10.0[2]
13		<0.5[1]	0.6	0.8	1.4	1.8	2.8	3.6	5.7	10.0[2]	10.0[2]	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]	

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

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

[1] Selectivity limit current I_s under 0.5 kA

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

Darker areas: no selectivity

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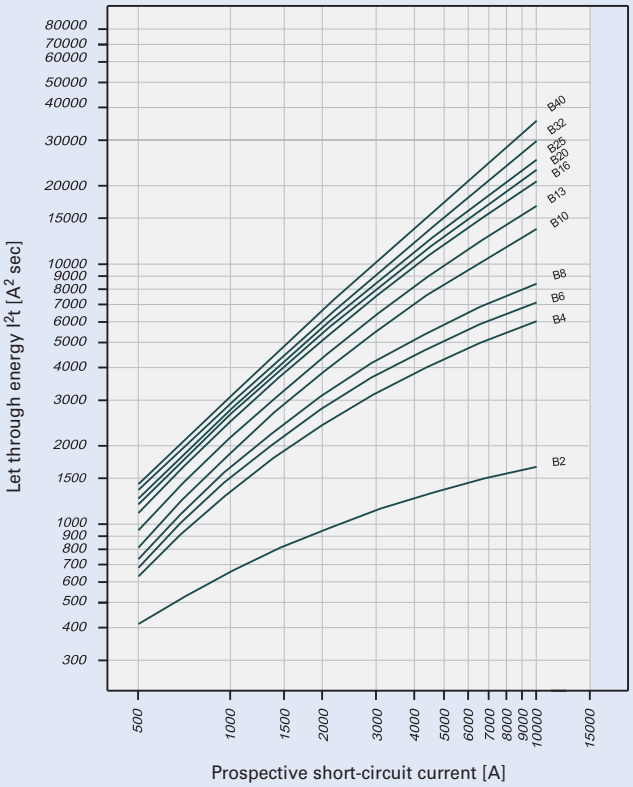
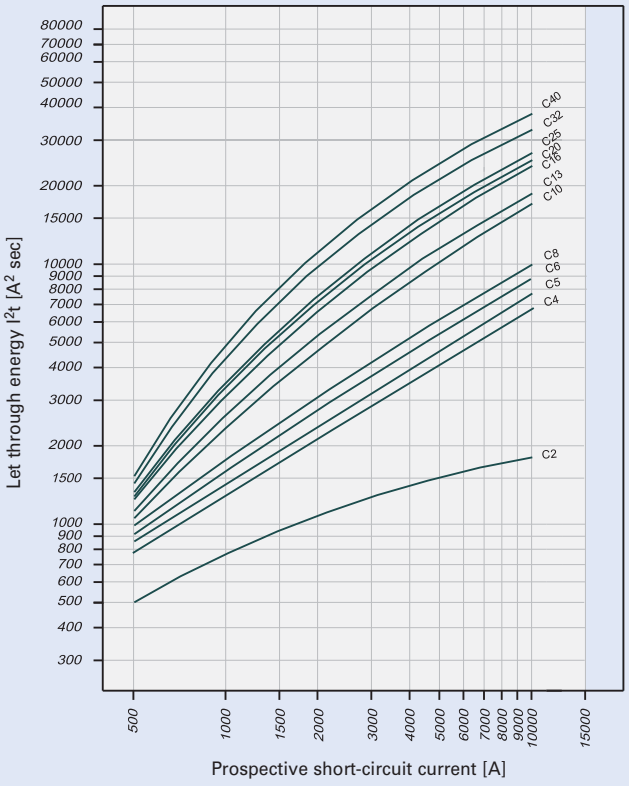
Let-through Energy PFL7-../1N/

Let-through energy PFL7, characteristic B, 1+N-pole



Let-through energy PFL7, characteristic C, 1+N-pole



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

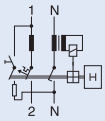
- Combined RCD/MCB device
- Line voltage-independent tripping
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Comprehensive range of accessories suitable for subsequent installation

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 cap	KLV-TC-2	276240
Additional terminal 35mm^2	Z-HA-EK/35	263960
Switching interlock	IS/SPE-1TE	101911

Connection diagram

1+N-pole

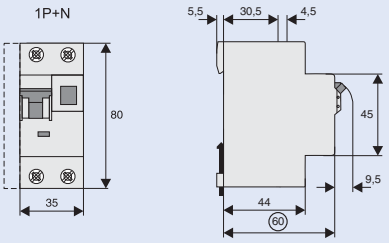


Technical Data

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
Rated voltage U_e	230 V; 50 Hz
Operational voltage range	196-253 V
Rated tripping current $I_{\Delta n}$	30 mA
Rated non-tripping current $I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity	AC
Selectivity class	3
Rated breaking capacity	6 kA
Rated current	6 - 25 A
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Characteristic	B, C
Maximum back-up fuse (short circuit)	100 A gL (>6 kA)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 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
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness	0.8 - 2 mm
Degree of protection switch	IP20
Degree of protection, built-in	IP40
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Dimensions (mm)



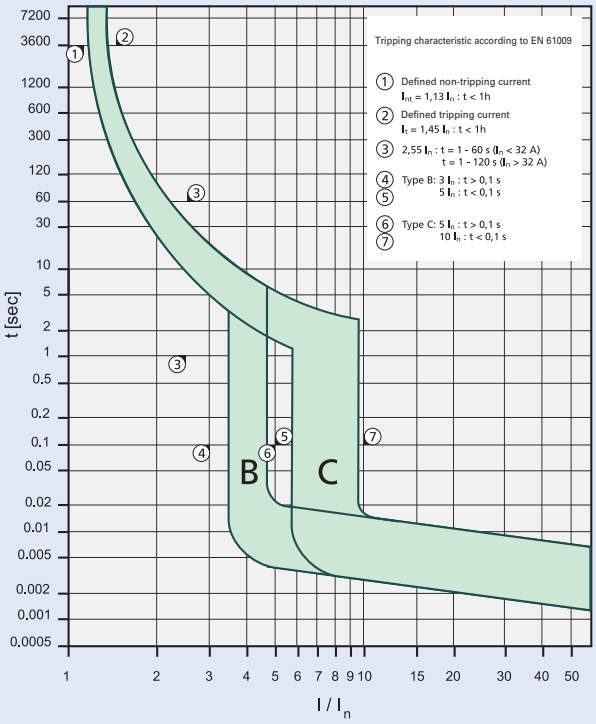
Powering Business Worldwide

Load Capacity PFL6-../1N/

Effect of ambient temperature (MCB component)

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

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



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

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

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

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

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

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

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

[1] Selectivity limit current I_s under 0.5 kA

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

Darker areas: no selectivity

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

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

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

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

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

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

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

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

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

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

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

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

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

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

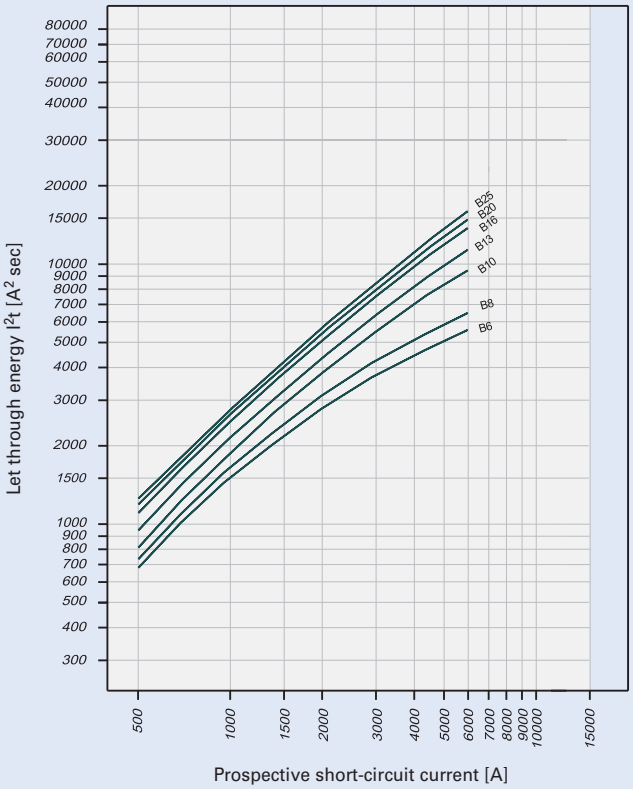
[1] Selectivity limit current I_s under 0.5 kA

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

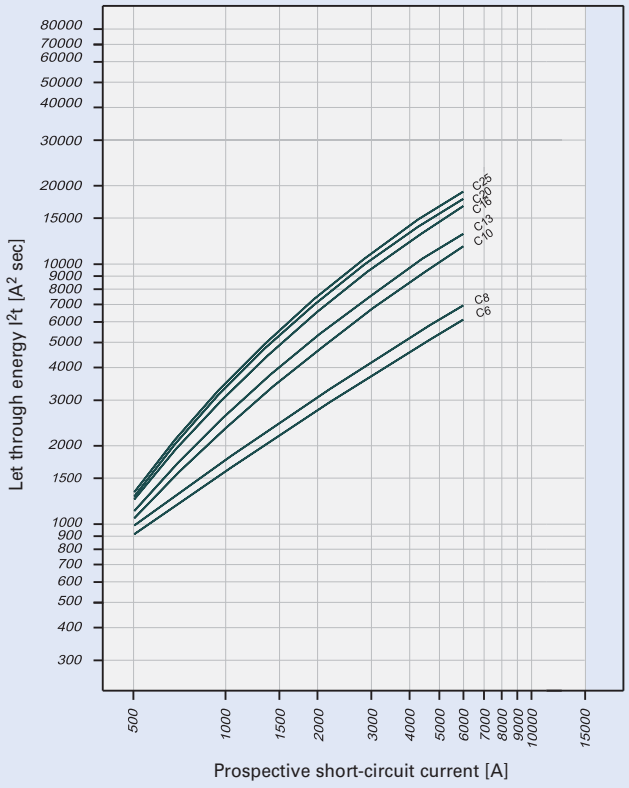
Darker areas: no selectivity

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

Let-through energy PFL6, characteristic B, 1+N-pole



Let-through energy PFL6, characteristic C, 1+N-pole



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Combined RCD/MCB Devices CKN6, 1+N-pole

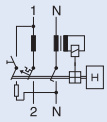
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Contact position indicator red - green
- Comprehensive range of accessories suitable for subsequent installation
- **Type -A**: Protects against special forms of residual pulsating DC which have have not been smoothed

Accessories:

Auxiliary switch for subsequent installation	Z-AHK	248433
Tripping signal switch for subsequent installation	Z-NHK	248434
Shunt trip release	Z-ASA/..	248286, 248287
Tripping module	Z-KAM	248294
Terminal cover cap	KLV-TC-2	276240
Additional terminal 35mm²	Z-HA-EK/35	263960
Switching interlock	IS/SPE-1TE	101911

Connection diagram

1+N-pole



Technical Data

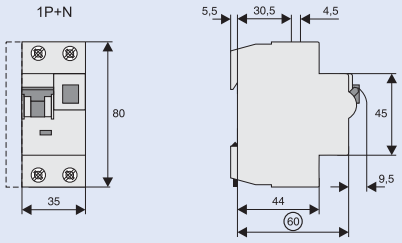
Electrical

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
Rated voltage	230 V; 50 Hz
Operational voltage range	196-253 V
Rated tripping current	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 breaking capacity	6 kA
Rated current	2 - 40 A
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Characteristic	B, C
Maximum back-up fuse (short circuit)	100 A gL (>6 kA)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles

Mechanical

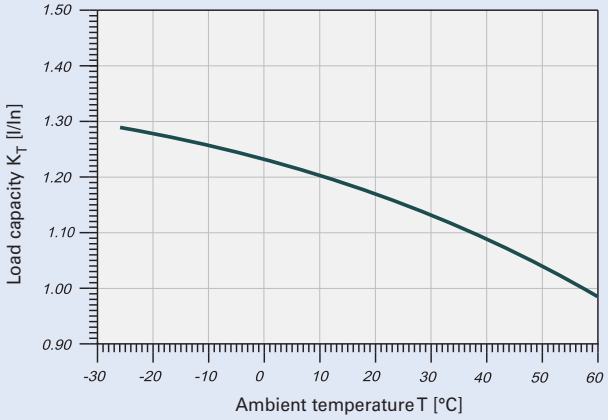
Frame size	45 mm
Device height	80 mm
Device width	35 mm (2MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 25 mm²
Busbar thickness	0.8 - 2 mm
Degree of protection, built-in	IP40
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Dimensions (mm)



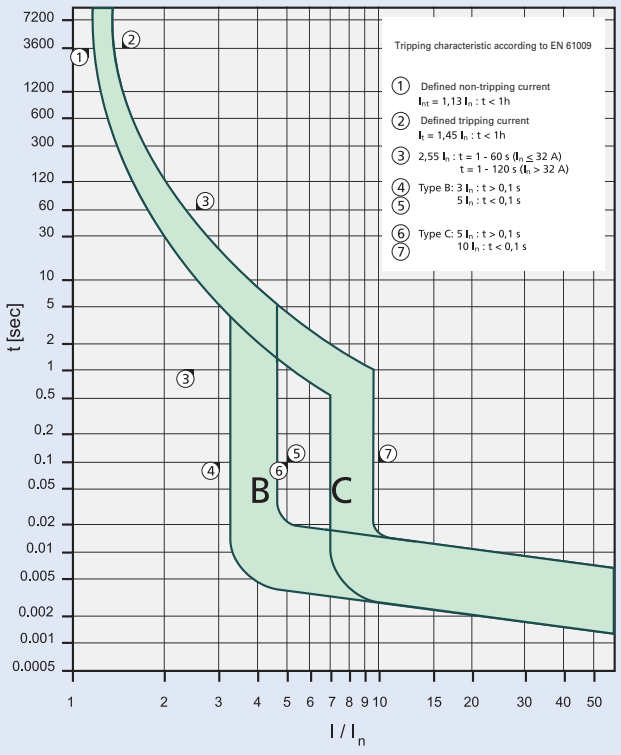
Load Capacity

Effect of ambient temperature (MCB component)



Valid for combined RCD/MCB devices 1+N-pole

Tripping Characteristic CKN6-../1N/, Characteristics B and C



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Short Circuit Selectivity CKN6-../1N/ towards DII-DIV fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices CKN6../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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

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

CKN6	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	0.5	0.6	1.2	2.5	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
4	<0.5[1)]	<0.5[1)]	0.5	0.7	1.7	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
6		<0.5[1)]	0.5	0.7	1.4	3.3	6.0[2)]	6.0[2)]	6.0[2)]
10			0.5	0.7	1.3	2.5	5.7	6.0[2)]	6.0[2)]
13			0.5	0.7	1.3	2.5	5.0	6.0[2)]	6.0[2)]
16				0.6	1.3	2.4	4.7	6.0[2)]	6.0[2)]
20					1.2	2.2	3.0	6.0[2)]	6.0[2)]
25					1.1	2.0	3.8	5.8	6.0[2)]
32						1.8	3.4	4.8	6.0[2)]
40							2.8	4.2	6.0[2)]

Short Circuit Selectivity CKN6-../1N/ towards D01-D03 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices CKN6../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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

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

CKN6	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5[1)]	0.6	1.1	1.9	4.5	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
4	<0.5[1)]	<0.5[1)]	0.5	0.6	1.2	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
6		<0.5[1)]	<0.5[1)]	0.6	1.2	3.2	6.0[2)]	6.0[2)]	6.0[2)]
10			<0.5[1)]	0.6	1.2	2.7	4.3	6.0[2)]	6.0[2)]
13			<0.5[1)]	0.6	1.1	2.5	4.0	5.5	6.0[2)]
16				0.6	1.1	2.4	3.6	5.0	6.0[2)]
20					1.0	2.2	3.3	4.7	6.0[2)]
25					1.0	2.0	3.0	4.2	6.0[2)]
32						1.9	2.7	3.7	6.0[2)]
40							2.5	3.3	6.0[2)]

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

CKN6	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5[1)]	0.5	0.8	1.4	3.3	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
4	<0.5[1)]	<0.5[1)]	0.5	0.7	1.4	6.0[2)]	6.0[2)]	6.0[2)]	6.0[2)]
6		<0.5[1)]	<0.5[1)]	0.6	1.2	3.0	6.0[2)]	6.0[2)]	6.0[2)]
10				0.5	1.0	2.0	3.3	5.5	6.0[2)]
13					1.0	1.9	3.0	4.5	6.0[2)]
16					0.9	1.7	2.6	3.8	6.0[2)]
20					0.9	1.7	2.5	3.7	6.0[2)]
25						1.6	2.3	3.1	6.0[2)]
32							2.1	2.8	6.0[2)]
40								2.6	5.5

[1)] Selectivity limit current I_s under 0.5 kA

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

Darker areas: no selectivity

Short Circuit Selectivity CKN6-../1N/ towards NH-00

In case of short circuit, there is selectivity between the combined RCD/MCB devices CKN6../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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

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

CKN6	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
2	0.5	0.8	1.5	3.1	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
4	<0.5[1]	<0.5[1]	0.5	0.9	1.7	2.6	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
6	<0.5[1]	<0.5[1]	0.5	0.8	1.3	1.8	3.1	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
10		<0.5[1]	0.5	0.8	1.2	1.8	2.5	3.9	5.6	6.0[2]	6.0[2]	6.0[2]
13		<0.5[1]	0.5	0.8	1.2	1.6	2.4	3.6	5.0	6.0[2]	6.0[2]	6.0[2]
16			0.5	0.8	1.2	1.6	2.4	3.3	4.5	6.0[2]	6.0[2]	6.0[2]
20				0.8	1.1	1.4	2.1	3.1	4.2	6.0[2]	6.0[2]	6.0[2]
25				0.7	1.0	1.4	1.9	2.7	3.8	6.0[2]	6.0[2]	6.0[2]
32							1.8	2.5	3.4	6.0[2]	6.0[2]	6.0[2]
40								2.3	3.2	5.5	6.0[2]	6.0[2]

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

CKN6	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
2	0.5	0.6	0.8	2.2	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
4	<0.5[1]	<0.5[1]	0.5	1.0	1.6	2.8	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
6	<0.5[1]	<0.5[1]	0.5	0.8	1.2	1.7	3.0	5.2	6.0[2]	6.0[2]	6.0[2]	6.0[2]
10			<0.5[1]	0.7	1.0	1.3	2.0	3.0	4.6	6.0[2]	6.0[2]	6.0[2]
13					0.9	1.2	1.8	2.6	4.0	6.0[2]	6.0[2]	6.0[2]
16					0.8	1.1	1.6	2.4	3.5	6.0[2]	6.0[2]	6.0[2]
20					0.8	1.1	1.5	2.3	3.3	6.0[2]	6.0[2]	6.0[2]
25							1.4	2.1	3.0	5.8	6.0[2]	6.0[2]
32								1.9	2.7	4.8	6.0[2]	6.0[2]
40									2.6	4.5	6.0[2]	6.0[2]

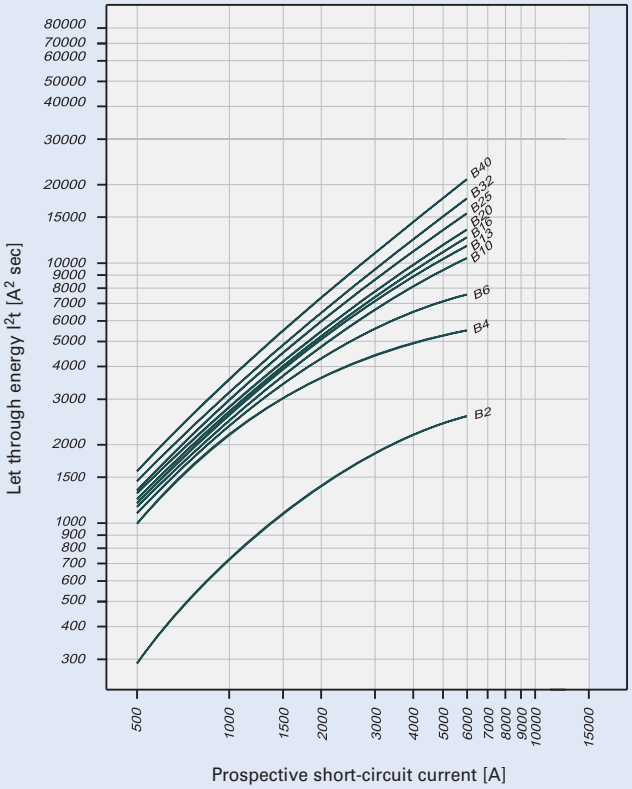
[1] Selectivity limit current I_s under 0.5 kA

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

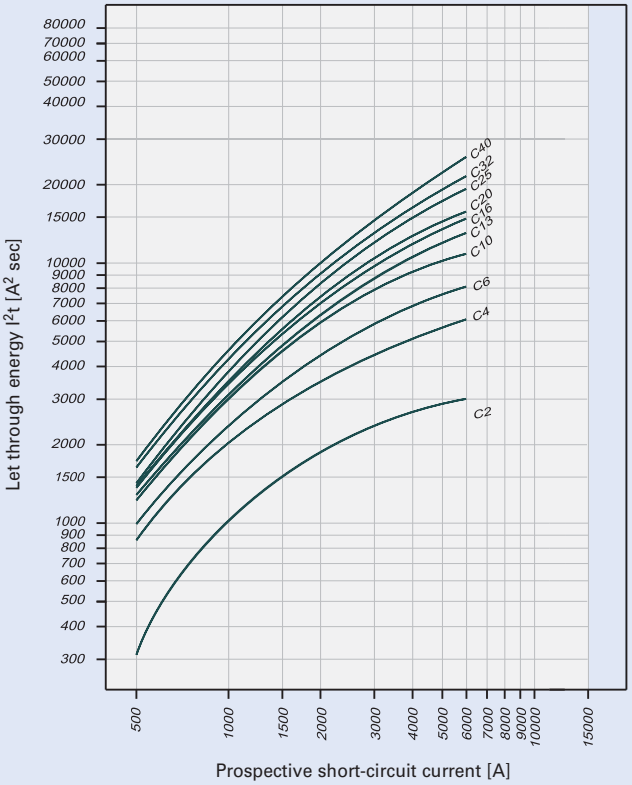
Darker areas: no selectivity

Let-through Energy CKN6-../1N/

Let-through energy CKN6, characteristic B, 1+N-pole



Let-through energy CKN6, characteristic C, 1+N-pole



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Combined RCD/MCB Devices CKN4, 1+N-pole

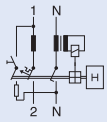
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Contact position indicator red - green
- Comprehensive range of accessories suitable for subsequent installation
- **Type -A**: Protects against special forms of residual pulsating DC which have have not been smoothed

Accessories:

Auxiliary switch for subsequent installation	Z-AHK	248433
Tripping signal switch for subsequent installation	Z-NHK	248434
Shunt trip release	Z-ASA/..	248286, 248287
Tripping module	Z-KAM	248294
Terminal cover cap	KLV-TC-2	276240
Additional terminal 35mm²	Z-HA-EK/35	263960
Switching interlock	IS/SPE-1TE	101911

Connection diagram

1+N-pole



Technical Data

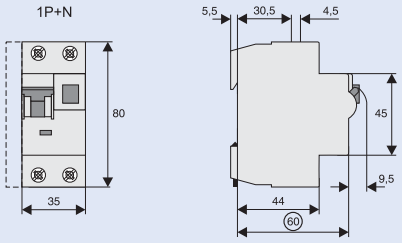
Electrical

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
Rated voltage	230 V; 50 Hz
Operational voltage range	196-253 V
Rated tripping current	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 breaking capacity	4.5 kA
Rated current	2 - 40 A
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Characteristic	B, C
Maximum back-up fuse (short circuit)	100 A gL (>4,5 kA)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles

Mechanical

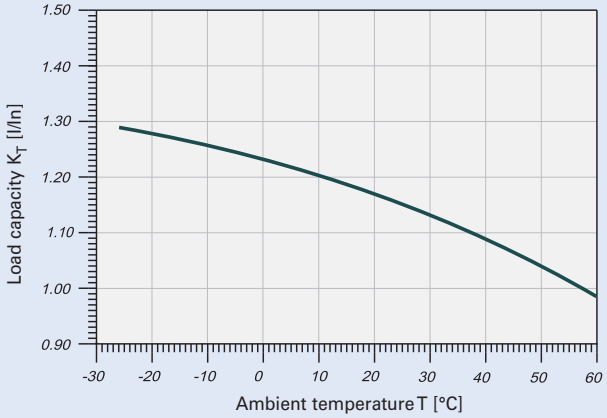
Frame size	45 mm
Device height	80 mm
Device width	35 mm (2MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 25 mm²
Busbar thickness	0.8 - 2 mm
Degree of protection, built-in	IP40
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Dimensions (mm)



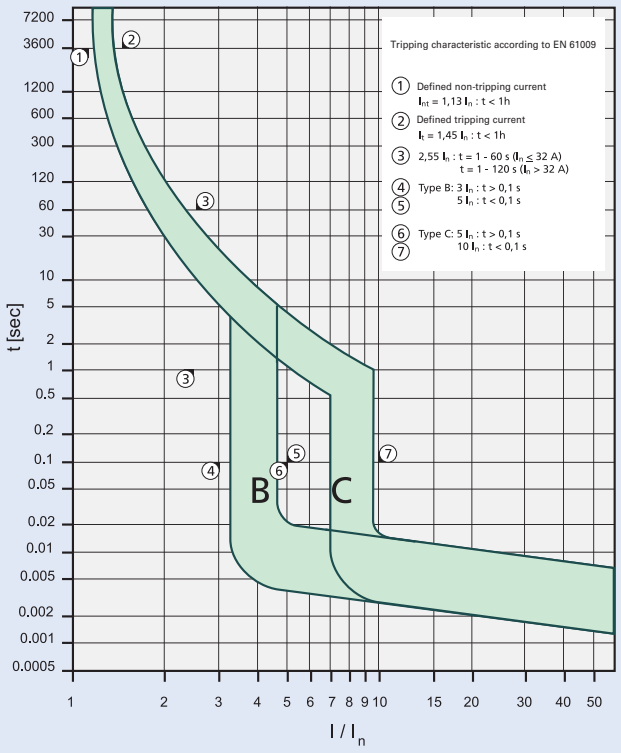
Load Capacity

Effect of ambient temperature (MCB component)



Valid for combined RCD/MCB devices 1+N-pole

Tripping Characteristic CKN4-../1N/, Characteristics B and C



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Short Circuit Selectivity CKN4-../1N/ towards DII-DIV fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices CKN4../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).
*) basically in accordance with EN 60898-1 D.5.2.b

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

CKN4	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	0.5	0.6	1.2	2.5	4.5[2)]	4.5[2)]	4.5[2)]	4.5[2)]	4.5[2)]
4	<0.5[1)]	<0.5[1)]	0.5	0.7	1.7	4.5[2)]	4.5[2)]	4.5[2)]	4.5[2)]
6		<0.5[1)]	0.5	0.7	1.4	3.3	4.5[2)]	4.5[2)]	4.5[2)]
10			0.5	0.7	1.3	2.5	4.5[2)]	4.5[2)]	4.5[2)]
13			0.5	0.7	1.3	2.5	4.5[2)]	4.5[2)]	4.5[2)]
16				0.6	1.3	2.4	4.5[2)]	4.5[2)]	4.5[2)]
20					1.2	2.2	3.0	4.5[2)]	4.5[2)]
25					1.1	2.0	3.8	4.5[2)]	4.5[2)]
32						1.8	3.4	4.5[2)]	4.5[2)]
40							2.8	4.2	4.5[2)]

Short Circuit Selectivity CKN4-../1N/ towards D01-D03 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices CKN4../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).
*) basically in accordance with EN 60898-1 D.5.2.b

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

CKN4	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5[1)]	0.6	1.1	1.9	4.5[2)]	4.5[2)]	4.5[2)]	4.5[2)]	4.5[2)]
4	<0.5[1)]	<0.5[1)]	0.5	0.6	1.2	4.5[2)]	4.5[2)]	4.5[2)]	4.5[2)]
6		<0.5[1)]	<0.5[1)]	0.6	1.2	3.2	4.5[2)]	4.5[2)]	4.5[2)]
10			<0.5[1)]	0.6	1.2	2.7	4.3	4.5[2)]	4.5[2)]
13			<0.5[1)]	0.6	1.1	2.5	4.0	4.5[2)]	4.5[2)]
16				0.6	1.1	2.4	3.6	4.5[2)]	4.5[2)]
20					1.0	2.2	3.3	4.5[2)]	4.5[2)]
25					1.0	2.0	3.0	4.2	4.5[2)]
32						1.9	2.7	3.7	4.5[2)]
40							2.5	3.3	4.5[2)]

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

CKN4	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5[1)]	0.5	0.8	1.4	3.3	4.5[2)]	4.5[2)]	4.5[2)]	4.5[2)]
4	<0.5[1)]	<0.5[1)]	0.5	0.7	1.4	4.5[2)]	4.5[2)]	4.5[2)]	4.5[2)]
6		<0.5[1)]	<0.5[1)]	0.6	1.2	3.0	4.5[2)]	4.5[2)]	4.5[2)]
10				0.5	1.0	2.0	3.3	4.5[2)]	4.5[2)]
13					1.0	1.9	3.0	4.5[2)]	4.5[2)]
16					0.9	1.7	2.6	3.8	4.5[2)]
20					0.9	1.7	2.5	3.7	4.5[2)]
25						1.6	2.3	3.1	4.5[2)]
32							2.1	2.8	4.5[2)]
40								2.6	4.5[2)]

[1)] Selectivity limit current I_s under 0.5 kA
[2)] Selectivity limit current I_s = rated breaking capacity I_{cn} of the RCD/MCB device
Darker areas: no selectivity

Short Circuit Selectivity CKN4-../1N/ towards NH-00

In case of short circuit, there is selectivity between the combined RCD/MCB devices CKN4../1N/ and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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

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

CKN4	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
2	0.5	0.8	1.5	3.1	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.5	0.9	1.7	2.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
6	<0.5[1]	<0.5[1]	0.5	0.8	1.3	1.8	3.1	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
10		<0.5[1]	0.5	0.8	1.2	1.8	2.5	3.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]
13		<0.5[1]	0.5	0.8	1.2	1.6	2.4	3.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]
16			0.5	0.8	1.2	1.6	2.4	3.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]
20				0.8	1.1	1.4	2.1	3.1	4.2	4.5[2]	4.5[2]	4.5[2]
25				0.7	1.0	1.4	1.9	2.7	3.8	4.5[2]	4.5[2]	4.5[2]
32							1.8	2.5	3.4	4.5[2]	4.5[2]	4.5[2]
40								2.3	3.2	4.5[2]	4.5[2]	4.5[2]

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

CKN4	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
2	0.5	0.6	0.8	2.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.5	1.0	1.6	2.8	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
6	<0.5[1]	<0.5[1]	0.5	0.8	1.2	1.7	3.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
10			<0.5[1]	0.7	1.0	1.3	2.0	3.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]
13					0.9	1.2	1.8	2.6	4.0	4.5[2]	4.5[2]	4.5[2]
16					0.8	1.1	1.6	2.4	3.5	4.5[2]	4.5[2]	4.5[2]
20					0.8	1.1	1.5	2.3	3.3	4.5[2]	4.5[2]	4.5[2]
25							1.4	2.1	3.0	4.5[2]	4.5[2]	4.5[2]
32								1.9	2.7	4.5[2]	4.5[2]	4.5[2]
40									2.6	4.5[2]	4.5[2]	4.5[2]

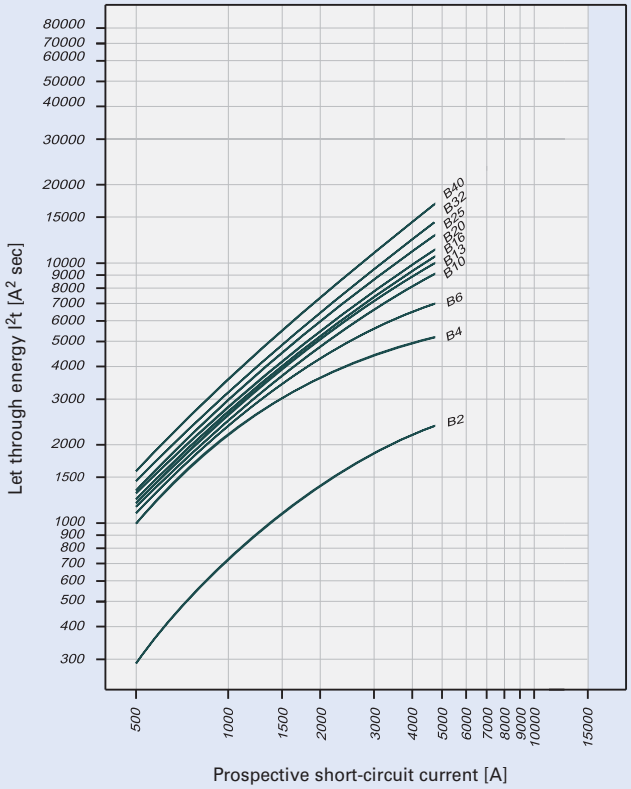
[1] Selectivity limit current I_s under 0.5 kA

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

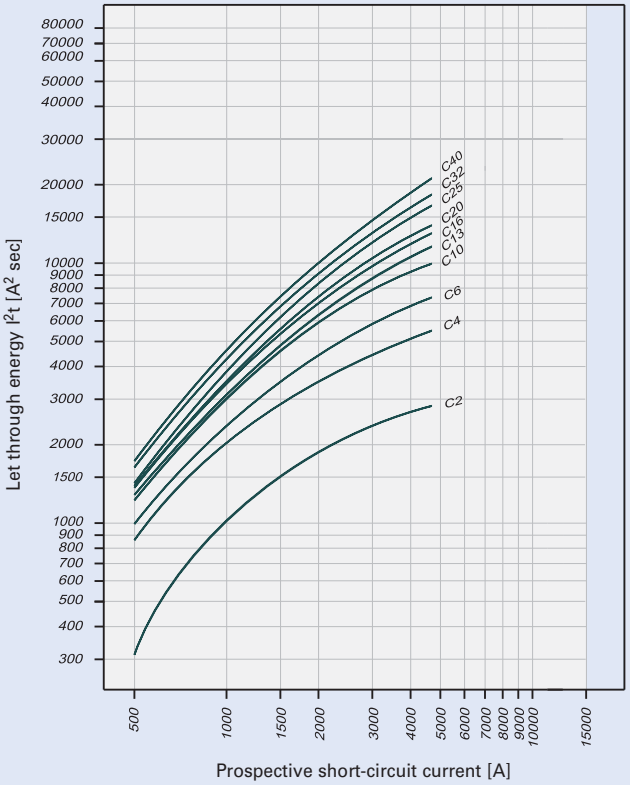
Darker areas: no selectivity

Let-through Energy CKN4-../1N/

Let-through energy CKN4, characteristic B, 1+N-pole



Let-through energy CKN4, characteristic C, 1+N-pole



Electronic Combined RCD/MCB Devices eRBM, 1+N-pole, 1 Module Unit

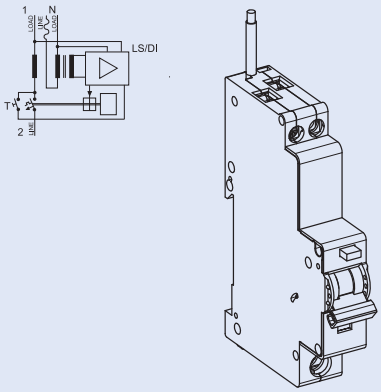
- Electronic residual current device / miniature circuit breaker combination in only 1MU
- Tripping line voltage dependent
- Contact position indicator red - green
- Can be sealed with leads in the on and off position
- Colour coded switching toggle (designating the rated current)
- Permanently connected neutral conductor (950 mm long, blue)
- Special application in British-Standard-Distibution Boxes
- Can be connected to standard busbar (at the lower side)
- Comprehensive range of accessories suitable for subsequent installation

Accessories:

Auxiliary switch for subsequent installation	Z-AHK	248433
Tripping signal switch for subsequent installation	Z-NHK	248434
Shunt trip release	Z-ASA/..	248286, 248287
Tripping module	Z-KAM	248294

Connection diagram

1+N-pole

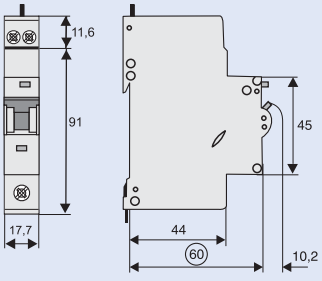


Technical Data

Electrical	
Design according to	BS/EN 61009
Current test marks as printed onto the device	
Number of poles	1+N-pole Pole switched, N led through (solid neutral)
Rated voltage U_n	240 VAC
Rated frequency	50/60 Hz
Rated current I_n	6 - 45 A
Rated tripping current $I_{\Delta n}$	10, 30, 100, 300 mA
Sensitivity	pulsating DC
Tripping Characteristic RCD component:	
Tripping line voltage-dependent	instantaneous
Peak withstand current	250A (8/20µs)
Rated non-tripping current $I_{\Delta no}$	0.5 $I_{\Delta n}$
Voltage range for protective function	184 - 264 V~
Tripping Characteristic MCB component	
Conventional non-tripping current	1.13 I_n
Conventional tripping current	1.45 I_n
Reference temperature	30°C
Characteristic	B, C
Rated breaking capacity	10 kA
Selectivity class	3
Maximum back-up fuse > 6 kA	100 A gL
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles

Mechanical	
Frame size	45 mm
Device height	102.6 mm
Device width	17.7 mm (1MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Upper terminals	lift terminals
Lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness below	0.8 - 2 mm
Degree of protection, built-in	IP40
Perm. ambient temperature range	-25°C to +40°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2

Dimensions (mm)



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Electronic Combined RCD/MCB Devices eRB6, 1+N-pole, 1 Module Unit

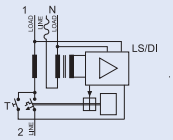
- Electronic residual current device / miniature circuit breaker combination in only 1MU
- Tripping line voltage dependent
- Contact position indicator red - green
- Can be sealed with leads in the on and off position
- Colour coded switching toggle (designating the rated current)
- Permanently connected neutral conductor
  Standard version: 600 mm long, blue
  PT3 version: 300 mm long, blue
- Special application in British-Standard-Distibution Boxes
- Can be connected to standard busbar (at the lower side)
- Comprehensive range of accessories suitable for subsequent installation

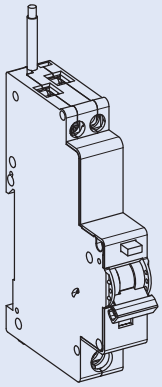
Accessories:

Auxiliary switch for subsequent installation	Z-AHK	248433
Tripping signal switch for subsequent installation	Z-NHK	248434
Shunt trip release	Z-ASA/..	248286, 248287
Tripping module	Z-KAM	248294

Connection diagram

1+N-pole



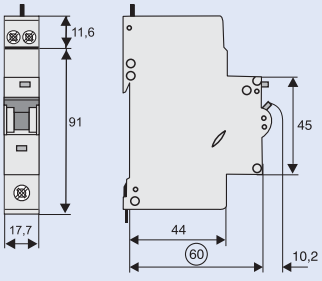


Technical Data

Electrical	
Design according to	BS/EN 61009
Current test marks as printed onto the device	
Number of poles	1+N-pole Pole switched, N led through (solid neutral)
Rated voltage U_n	240 VAC
Rated frequency	50/60 Hz
Rated current I_n	6 - 45 A
Rated tripping current $I_{\Delta n}$	10, 30, 100, 300 mA
Sensitivity	AC
Tripping Characteristic RCD component:	
Tripping line voltage-dependent	instantaneous
Peak withstand current	250A (8/20µs)
Rated non-tripping current $I_{\Delta no}$	0.5 $I_{\Delta n}$
Voltage range for protective function	184 - 264 V~
Tripping Characteristic MCB component	
Conventional non-tripping current	1.13 I_n
Conventional tripping current	1.45 I_n
Reference temperature	30°C
Characteristic	B, C
Rated breaking capacity	6 kA
Selectivity class	3
Maximum back-up fuse > 6 kA	100 A gL
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles

Mechanical	
Frame size	45 mm
Device height	102.6 mm
Device width	17.7 mm (1MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Upper terminals	lift terminals
Lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness below	0.8 - 2 mm
Degree of protection, built-in	IP40
Perm. ambient temperature range	-25°C to +40°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2

Dimensions (mm)



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Electronic Combined RCD/MCB Devices eRBM-ME, 1+N-pole, 1 Module Unit

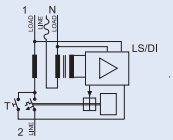
- Electronic residual current device / miniature circuit breaker combination in only 1MU
- Tripping line voltage dependent
- Contact position indicator red - green
- Can be sealed with leads in the on and off position
- Colour coded switching toggle (designating the rated current)
- Permanently connected neutral conductor (950 mm long, black)
- Special application in British-Standard-Distibution Boxes
- Can be connected to standard busbar (at the lower side)
- Comprehensive range of accessories suitable for subsequent installation

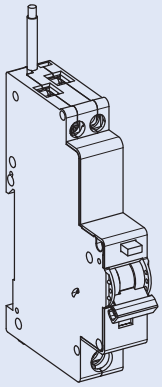
Accessories:

Auxiliary switch for subsequent installation	Z-AHK	248433
Tripping signal switch for subsequent installation	Z-NHK	248434
Shunt trip release	Z-ASA/..	248286, 248287
Tripping module	Z-KAM	248294

Connection diagram

1+N-pole



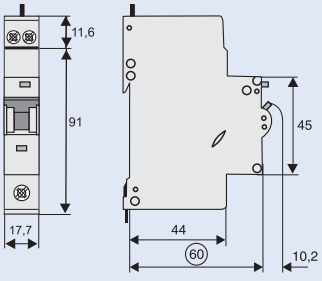


Technical Data

Electrical	
Design according to	IEC 61009
Current test marks as printed onto the device	
Number of poles	1+N-pole Pole switched, N led through (solid neutral)
Rated voltage U_n	240 VAC
Rated frequency	50/60 Hz
Rated current I_n	6 - 45 A
Rated tripping current $I_{\Delta n}$	10, 30, 100, 300 mA
Sensitivity	AC
Tripping Characteristic RCD component:	
Tripping line voltage-dependent	instantaneous
Peak withstand current	250A (8/20µs)
Rated non-tripping current $I_{\Delta no}$	0.5 $I_{\Delta n}$
Voltage range for protective function	184 - 264 V~
Tripping Characteristic MCB component	
Conventional non-tripping current	1.13 I_n
Conventional tripping current	1.45 I_n
Reference temperature	30°C
Characteristic	C
Rated breaking capacity	10 kA
Selectivity class	3
Maximum back-up fuse > 6 kA	100 A gL
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles

Mechanical	
Frame size	45 mm
Device height	102.6 mm
Device width	17.7 mm (1MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Upper terminals	lift terminals
Lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness below	0.8 - 2 mm
Degree of protection, built-in	IP40
Perm. ambient temperature range	-25°C to +40°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2

Dimensions (mm)



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Electronic Combined RCD/MCB Devices eRBM-AU, 1+N-pole, 1 Module Unit

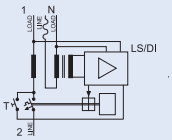
- Electronic residual current device / miniature circuit breaker combination in only 1MU
- Tripping line voltage dependent
- Contact position indicator red - green
- Can be sealed with leads in the on and off position
- Colour coded switching toggle (designating the rated current)
- Permanently connected neutral conductor (950 mm long, black)
- Special application in British-Standard-Distibution Boxes
- Can be connected to standard busbar (at the lower side)
- Comprehensive range of accessories suitable for subsequent installation

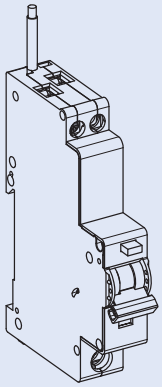
Accessories:

Auxiliary switch for subsequent installation	Z-AHK	248433
Tripping signal switch for subsequent installation	Z-NHK	248434
Shunt trip release	Z-ASA/..	248286, 248287
Tripping module	Z-KAM	248294

Connection diagram

1+N-pole



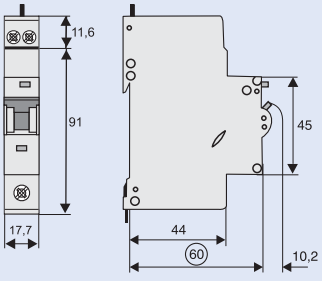


Technical Data

Electrical	
Design according to	IEC 61009
Current test marks as printed onto the device	
Number of poles	1+N-pole Pole switched, N led through (solid neutral)
Rated voltage U_n	240 VAC
Rated frequency	50/60 Hz
Rated current I_n	6 - 45 A
Rated tripping current $I_{\Delta n}$	10, 30, 100, 300 mA
Sensitivity	AC and pulsating DC
Tripping Characteristic RCD component:	
Tripping line voltage-dependent	instantaneous
Peak withstand current	250A (8/20µs)
Rated non-tripping current $I_{\Delta no}$	0.5 $I_{\Delta n}$
Voltage range for protective function	184 - 264 V~
Tripping Characteristic MCB component	
Conventional non-tripping current	1.13 I_n
Conventional tripping current	1.45 I_n
Reference temperature	30°C
Characteristic	C, D
Rated breaking capacity	10 kA
Selectivity class	3
Maximum back-up fuse > 6 kA	100 A gL
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles

Mechanical	
Frame size	45 mm
Device height	102.6 mm
Device width	17.7 mm (1MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Upper terminals	lift terminals
Lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness below	0.8 - 2 mm
Degree of protection, built-in	IP40
Perm. ambient temperature range	-25°C to +40°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2

Dimensions (mm)



Powering Business Worldwide

Electronic Combined RCD/MCB Devices eRB6-AU, 1+N-pole, 1 Module Unit

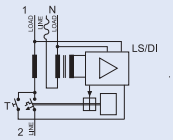
- Electronic residual current device / miniature circuit breaker combination in only 1MU
- Tripping line voltage dependent
- Contact position indicator red - green
- Can be sealed with leads in the on and off position
- Colour coded switching toggle (designating the rated current)
- Permanently connected neutral conductor (950 mm long, black)
- Special application in British-Standard-Distibution Boxes
- Can be connected to standard busbar (at the lower side)
- Comprehensive range of accessories suitable for subsequent installation

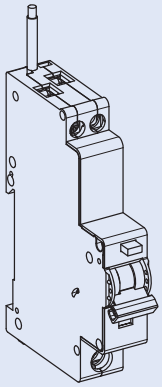
Accessories:

Auxiliary switch for subsequent installation	Z-AHK	248433
Tripping signal switch for subsequent installation	Z-NHK	248434
Shunt trip release	Z-ASA/..	248286, 248287
Tripping module	Z-KAM	248294

Connection diagram

1+N-pole



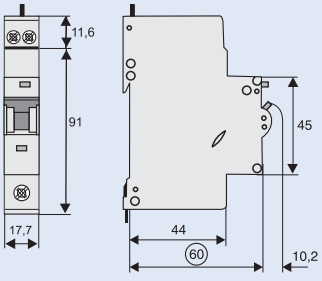


Technical Data

Electrical	
Design according to	IEC 61009
Current test marks as printed onto the device	
Number of poles	1+N-pole Pole switched, N led through (solid neutral)
Rated voltage U_n	240 VAC
Rated frequency	50/60 Hz
Rated current I_n	6 - 45 A
Rated tripping current $I_{\Delta n}$	10, 30, 100, 300 mA
Sensitivity	AC
Tripping Characteristic RCD component:	
Tripping line voltage-dependent	instantaneous
Peak withstand current	250A (8/20µs)
Rated non-tripping current $I_{\Delta no}$	0.5 $I_{\Delta n}$
Voltage range for protective function	184 - 264 V~
Tripping Characteristic MCB component	
Conventional non-tripping current	1.13 I_n
Conventional tripping current	1.45 I_n
Reference temperature	30°C
Characteristic	C, D
Rated breaking capacity	6 kA
Selectivity class	3
Maximum back-up fuse > 6 kA	100 A gL
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles

Mechanical	
Frame size	45 mm
Device height	102.6 mm
Device width	17.7 mm (1MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Upper terminals	lift terminals
Lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness below	0.8 - 2 mm
Degree of protection, built-in	IP40
Perm. ambient temperature range	-25°C to +40°C
Resistance to climatic conditions	25-55°C/90-95% relative humidity acc. to IEC 60068-2

Dimensions (mm)



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Powering Business Worldwide

Combined RCD/MCB Devices PKP.2, 2-pole

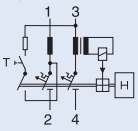
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Comprehensive range of accessories suitable for subsequent installation
- **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
Shunt trip release	ZP-ASA/..	248438, 248439
Switching interlock	IS/SPE-1TE	101911

Connection diagram

2-pole



Technical Data

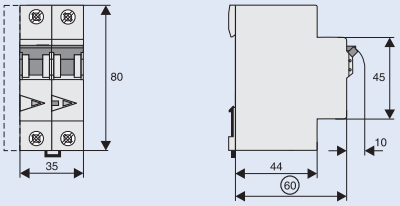
Electrical

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
Rated voltage U_e		230 V; 50 Hz
Operational voltage range		196-253 V
Rated tripping current $I_{\Delta n}$		30, 100, 300 mA
Rated non-tripping current $I_{\Delta no}$		0.5 $I_{\Delta n}$
Sensitivity		AC and pulsating DC
Selectivity class		3
Rated breaking capacity		
	PKP42	4.5 kA
	PKP62	6 kA
	PKPM2	10 kA
Rated current		6 - 40 A
Rated peak withstand voltage U_{imp}		4 kV (1.2/50µs)
Characteristic		B, C
Maximum back-up fuse (short circuit)		100 A gL (>10 kA)
Endurance	electrical comp.	≥ 4,000 operating cycles
	mechanical comp.	≥ 20,000 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
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, VBG4, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness	0.8 - 2 mm
Degree of protection switch	IP20
Degree of protection, built-in	IP40
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Dimensions (mm)



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PKPM2: Influence of ambient temperature on load carrying capacity

- Values = max. allowed current in Ampere at the specific temperature
- Temperature factor (%/K) = 0,5

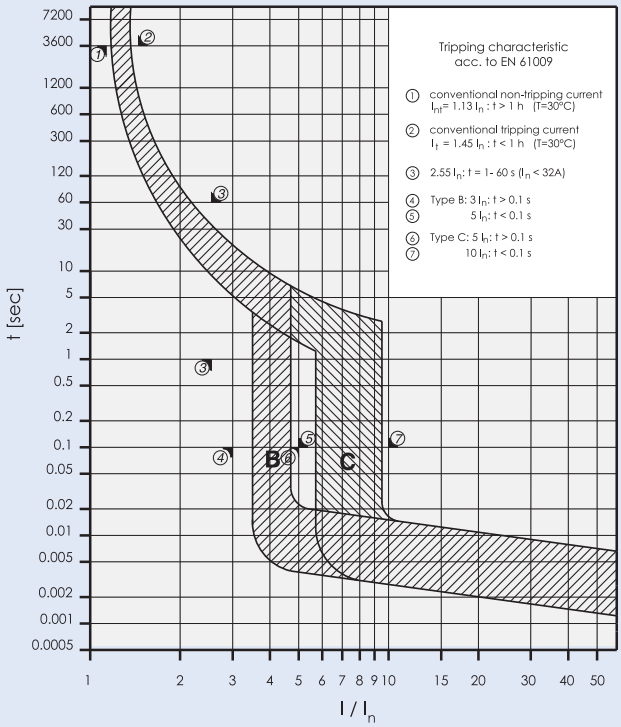
	Ambient temperature / °C									
	-40	**-30**	**-25**	**-20**	**-10**	**0**	**10**	**20**	**30**	**40**
6	8,1	7,8	7,7	7,5	7,2	6,9	6,6	6,3	6,0	5,7
10	13,5	13,0	12,8	12,5	12,0	11,5	11,0	10,5	10,0	9,5
13	17,6	16,9	16,6	16,3	15,6	15,0	14,3	13,7	13,0	12,4
16	21,6	20,8	20,4	20,0	19,2	18,4	17,6	16,8	16,0	15,2
20	27,0	26,0	25,5	25,0	24,0	23,0	22,0	21,0	20,0	19,0

PKP62, PKP42: 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									
	-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
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

Tripping Characteristic PKP.2, Characteristics B and C



Short Circuit Selectivity PKPM2 towards Neozed[1] / Diazed[2] / NH00[3]

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

*Short circuit selectivity **PKPM2** towards fuse link **Neozed** [1]*

PKPM2	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 **PKPM2** towards fuse link **Diazed** [2]*

PKPM2	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 **PKPM2** towards fuse link **NH00** [3]*

PKPM2	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

no selectivity

[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

Short Circuit Selectivity PKP62 towards Neozed[1] / Diazed[2] / NH00[3]

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

*Short circuit selectivity **PKP62** towards fuse link **Neozed** [1]*

PKP62	Neozed [1]									
	16	20	25	32	35	40	50	63	80	100
B10	<0,5	0,5	0,9	2	2,3	3,7	6	6	6	6
B13	<0,5	0,5	0,8	1,7	1,9	3	6	6	6	6
B16		0,5	0,7	1,5	1,7	2,4	4,4	6	6	6
B20			0,7	1,4	1,5	2,2	4	6	6	6
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
C10	<0,5	0,5	0,8	1,7	1,9	3	6	6	6	6
C13	<0,5	0,5	0,7	1,6	1,8	2,8	5,5	6	6	6
C16		<0,5	0,7	1,3	1,5	2,2	4	6	6	6
C20			0,6	1,3	1,4	2,1	3,7	5,6	6	6
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 **PKP62** towards fuse link **Diazed** [1]*

PKP62	Diazed [2]								
	16	20	25	32	35	50	63	80	100
B10	<0,5	0,5	0,9	1,8	2,9	5,6	6	6	6
B13	<0,5	0,5	0,8	1,5	2,4	4,5	6	6	6
B16		0,5	0,8	1,3	2	3,4	6	6	6
B20			0,7	1,3	1,9	3,1	6	6	6
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
C10	<0,5	0,5	0,8	1,5	2,4	4,4	6	6	6
C13	<0,5	0,5	0,8	1,4	2,3	4,2	6	6	6
C16		<0,5	0,7	1,2	1,9	3,2	6	6	6
C20			0,7	1,2	1,8	2,9	6	6	6
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 **PKP62** towards fuse link **NH00** [3]*

PKP62	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	6	6	6	6	6
B13	<0,5	<0,5	0,8	1,3	1,9	2,7	4,4	6	6	6	6	6
B16		<0,5	0,7	1,1	1,6	2,2	3,4	4,8	6	6	6	6
B20			0,6	1	1,4	2	3,1	4,3	6	6	6	6
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
C10	<0,5	<0,5	0,7	1,3	1,9	2,7	4,5	6	6	6	6	6
C13	<0,5	<0,5	0,7	1,2	1,8	2,5	4,1	6	6	6	6	6
C16		<0,5	0,6	1	1,5	2	3,1	4,4	6	6	6	6
C20			0,6	0,9	1,4	1,9	2,9	4,1	6	6	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

no selectivity

[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

Short Circuit Selectivity PKP42 towards Neozed[1] / Diazed[2] / NH00[3]

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

*Short circuit selectivity **PKP42** towards fuse link **Neozed** [1]*

PKP42	Neozed [1]									
	16	20	25	32	35	40	50	63	80	100
B10	<0,5	0,5	0,9	2	2,3	3,7	4,5	4,5	4,5	4,5
B13	<0,5	0,5	0,8	1,7	1,9	3	4,5	4,5	4,5	4,5
B16		0,5	0,7	1,5	1,7	2,4	4,4	4,5	4,5	4,5
B20			0,7	1,4	1,5	2,2	4	4,5	4,5	4,5
B25				1,2	1,3	1,8	3,1	4,7	4,5	4,5
B32					1,2	1,7	2,7	3,8	4,5	4,5
B40						1,3	1,7	2,2	2,7	4,2
C10	<0,5	0,5	0,8	1,7	1,9	3	4,5	4,5	4,5	4,5
C13	<0,5	0,5	0,7	1,6	1,8	2,8	4,5	4,5	4,5	4,5
C16		<0,5	0,7	1,3	1,5	2,2	4	4,5	4,5	4,5
C20			0,6	1,3	1,4	2,1	3,7	4,5	4,5	4,5
C25				1,1	1,3	1,8	2,8	3,9	4,5	4,5
C32					1,2	1,7	2,6	3,6	4,5	4,5
C40						1,3	1,9	3,3	3,2	4,5

*Short circuit selectivity **PKP42** towards fuse link **Diazed** [1]*

PKP42	Diazed [2]								
	16	20	25	32	35	50	63	80	100
B10	<0,5	0,5	0,9	1,8	2,9	4,5	4,5	4,5	4,5
B13	<0,5	0,5	0,8	1,5	2,4	4,5	4,5	4,5	4,5
B16		0,5	0,8	1,3	2	3,4	4,5	4,5	4,5
B20			0,7	1,3	1,9	3,1	4,5	4,5	4,5
B25				1,1	1,5	2,4	4,5	4,5	4,5
B32					1,4	2,1	4,3	4,5	4,5
B40						1,4	2,4	2,9	4,5
C10	<0,5	0,5	0,8	1,5	2,4	4,4	4,5	4,5	4,5
C13	<0,5	0,5	0,8	1,4	2,3	4,2	4,5	4,5	4,5
C16		<0,5	0,7	1,2	1,9	3,2	4,5	4,5	4,5
C20			0,7	1,2	1,8	2,9	4,5	4,5	4,5
C25				1,1	1,5	2,3	4,4	4,5	4,5
C32					1,4	2,2	4,1	4,5	4,5
C40						1,6	2,8	3,6	4,5

*Short circuit selectivity **PKP42** towards fuse link **NH00** [3]*

PKP42	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	4,5	4,5	4,5	4,5	4,5	4,5
B13	<0,5	<0,5	0,8	1,3	1,9	2,7	4,4	4,5	4,5	4,5	4,5	4,5
B16		<0,5	0,7	1,1	1,6	2,2	3,4	4,5	4,5	4,5	4,5	4,5
B20			0,6	1	1,4	2	3,1	4,3	4,5	4,5	4,5	4,5
B25				0,9	1,2	1,6	2,4	3,4	4,5	4,5	4,5	4,5
B32					1,1	1,4	2,1	2,9	4,3	4,5	4,5	4,5
B40							1,4	1,9	2,8	4,1	4,5	4,5
C10	<0,5	<0,5	0,7	1,3	1,9	2,7	4,5	4,5	4,5	4,5	4,5	4,5
C13	<0,5	<0,5	0,7	1,2	1,8	2,5	4,1	4,5	4,5	4,5	4,5	4,5
C16		<0,5	0,6	1	1,5	2	3,1	4,4	4,5	4,5	4,5	4,5
C20			0,6	0,9	1,4	1,9	2,9	4,1	4,5	4,5	4,5	4,5
C25				0,9	1,2	1,6	2,3	3	4,5	4,5	4,5	4,5
C32					1,1	1,5	2,1	2,8	4,3	4,5	4,5	4,5
C40							1,5	2,1	3,1	4,5	4,5	4,5

no selectivity

[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

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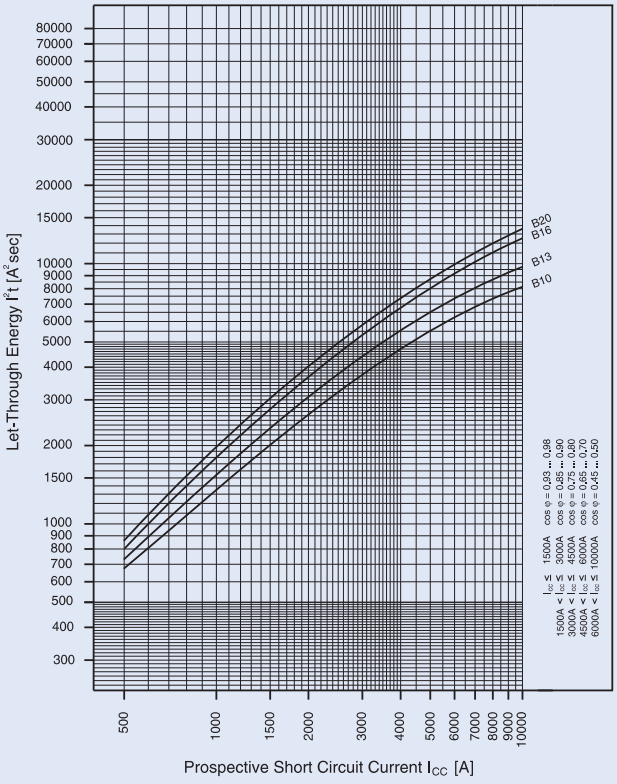
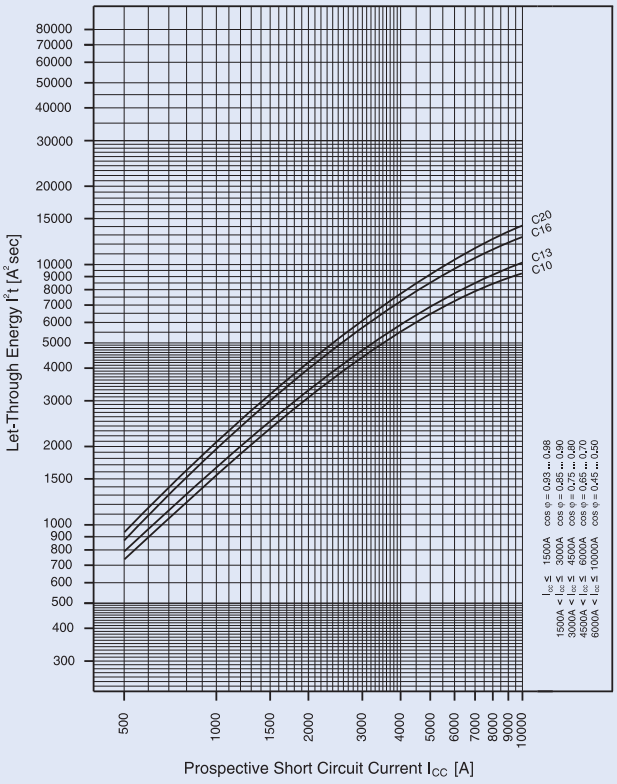
Let-through Energy PKP.2-../2/

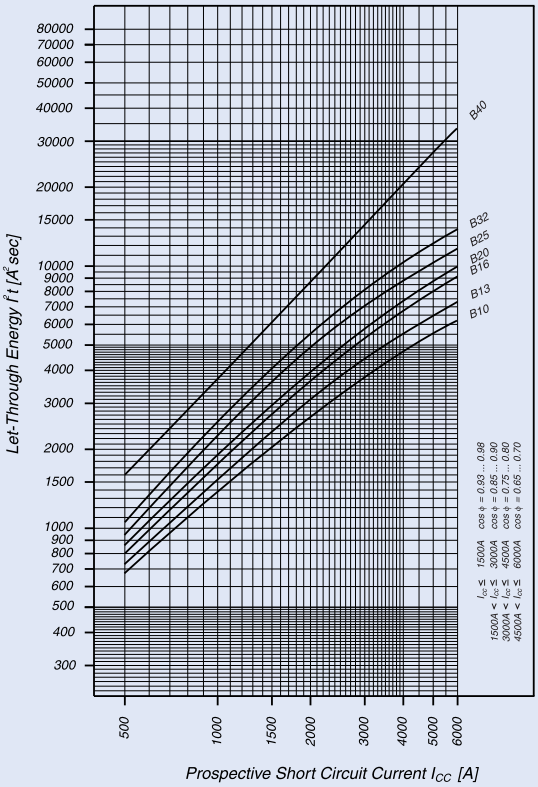
Let-through energy PKPM2, characteristic B, 2-pole



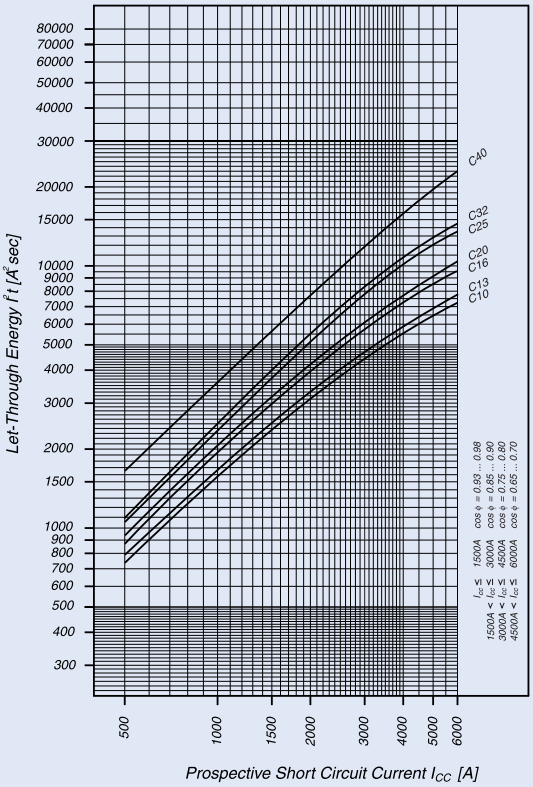
Let-through energy PKPM2, characteristic C, 2-pole



Let-through energy PKP62, characteristic B, 2-pole



Let-through energy PKP62, characteristic C, 2-pole



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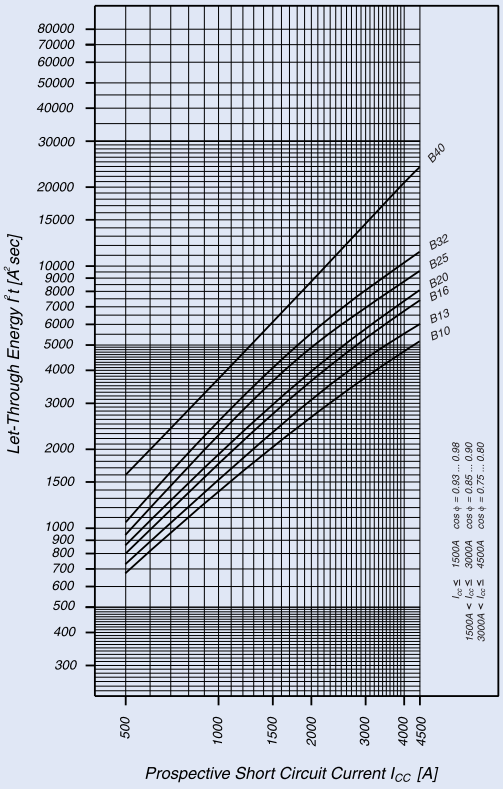
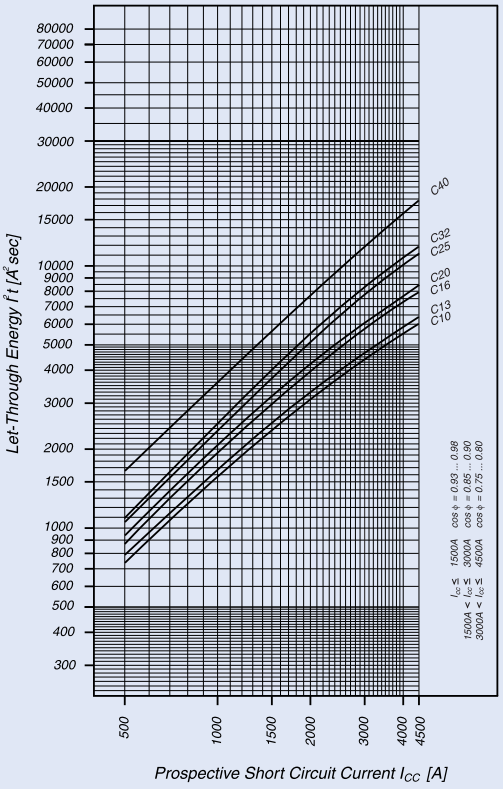
Let-through energy PKP42, characteristic B, 2-pole



Let-through energy PKP42, characteristic C, 2-pole



Powering Business Worldwide

Combined RCD/MCB Devices PKPM3, 3-pole

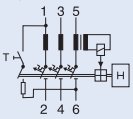
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle in colour designating the rated current
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Comprehensive range of accessories suitable for subsequent installation
- **Type -A**: Protects against special forms of residual pulsating DC which have have not been smoothed
- **Typ -G:** 10 ms time delay in order to avoid unwanted tripping (e.g. during thunderstorms).
  Compulsory in Austria for any circuit where personal injury or damage to property may occur in case of unwanted tripping (§12.1.6 ÖVE/ÖNORM E 8001-1).

Accessories:

Auxiliary switch for		
subsequent installation	ZP-IHK	286052
	ZP-NHK	248437
	ZP-WHK	286053
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA	258288, 248289, 248290
	Z-USD	248292, 248291
Switching interlock	IS/SPE-1TE	101911

Connection diagram

3-pole

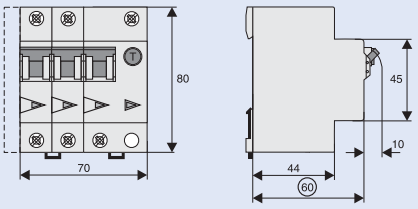


Technical Data

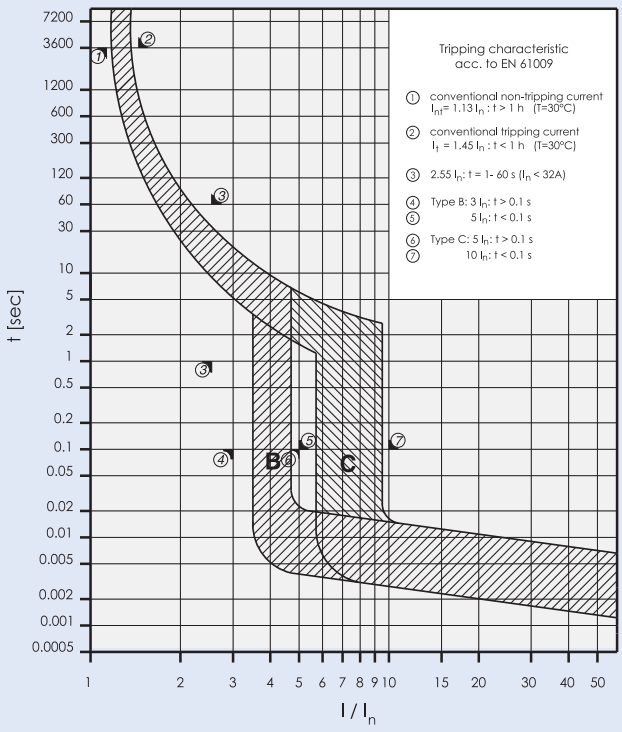
Electrical		
Design according to		IEC/EN 61009
Current test marks as printed onto the device		
Tripping		
line voltage-independent		instantaneous 250A (8/20µs) surge current-proof
Rated voltage U_e		230/400V; 50Hz
Rated tripping current $I_{\Delta n}$		30, 100 mA
Rated non-tripping current $I_{\Delta no}$		0.5 $I_{\Delta n}$
Sensitivity		A (pulsating DC)
Selectivity class		3
Rated breaking capacity		10 kA
Rated current		10 - 20 A
Rated peak withstand voltage U_{imp}		4 kV (1.2/50µs)
Characteristic		B, C
Maximum back-up fuse (short circuit)		100 A gL (>10 kA)
Endurance	electrical comp.	≥ 2,000 operating cycles
	mechanical comp.	≥ 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
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, VBG4, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness	0.8 - 2 mm
Degree of protection switch	IP20
Degree of protection, built-in	IP40
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Dimensions (mm)



Tripping Characteristic PKPM3, Characteristics B and C



Powering Business Worldwide

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

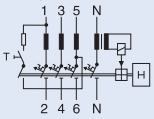
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Comprehensive range of accessories suitable for subsequent installation
- **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-NHK	248437
	ZP-WHK	286053
Shunt trip release	ZP-ASA/..	248438, 248439
Switching interlock	IS/SPE-1TE	101911

Connection diagram

3+N-pole



Technical Data

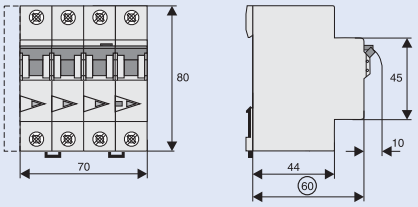
Electrical

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
Rated voltage U_e	230/400V; 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 breaking capacity	
mRB6	6 kA
mRB4	4.5 kA
Rated current	6 - 32 A
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Characteristic	B, C, D
Maximum back-up fuse (short circuit)	100 A gL/gG
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles

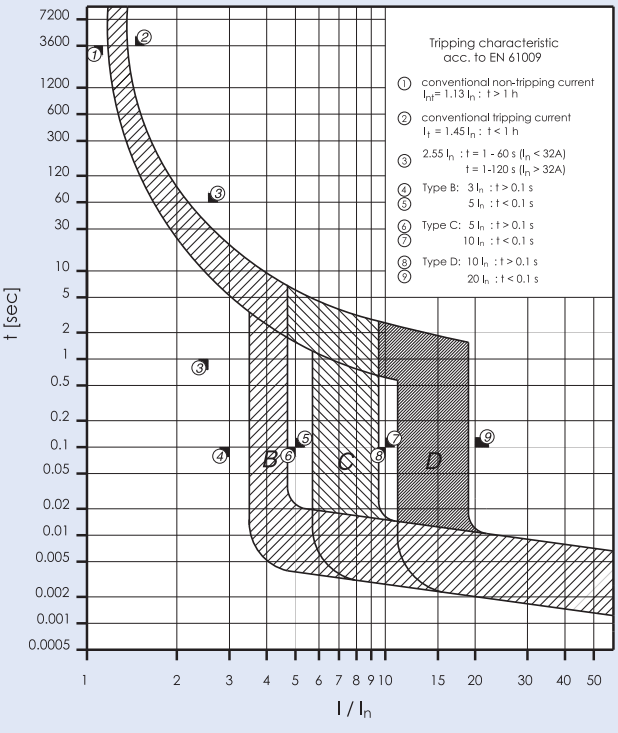
Mechanical

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
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, VBG4, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness	0.8 - 2 mm
Degree of protection switch	IP20
Degree of protection, built-in	IP40
Tripping 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)

Dimensions (mm)



Tripping Characteristic mRB, Characteristics B, C and D



EATON
Powering Business Worldwide

Combined RCD/MCB Devices mRBM4-PT, mRB64-PT, 3+N-pole

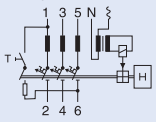
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Comprehensive range of accessories suitable for subsequent installation
- This compact protective device is specific for applications in the BS-distribution produced. Permanently connected neutral conductors (l = 550 mm, Ø = 6 mm^2)

Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-NHK	248437
	ZP-WHK	286053
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA	258288, 248289, 248290
	Z-USD	248292, 248291
Switching interlock	IS/SPE-1TE	101911

Connection diagram

3+N-pole



Technical Data

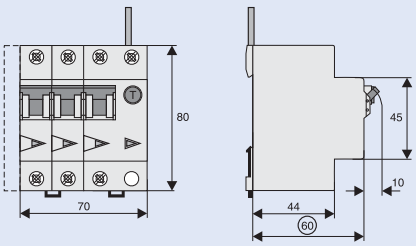
Electrical

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
Rated voltage U_e	240/415V; 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 breaking capacity	
mRBM4-PT	10 kA
mRB64-PT	6 kA
Rated current	6 - 32 A
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Characteristic	B, C, D
Maximum back-up fuse (short circuit)	100 A gL (>10 kA)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 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
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, VBG4, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness	0.8 - 2 mm
Degree of protection switch	IP20
Degree of protection, built-in	IP40
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Dimensions (mm)



EATON
Powering Business Worldwide

Electronic Combined RCD/MCB Devices PKDM, 1+N-pole, 2 Module Units

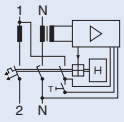
- Electronic residual current device / miniature circuit breaker combination
- Tripping line voltage dependent
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Contact position indicator red - green
- Protects against special forms of residual pulsating DC which have not been smoothed
- Comprehensive range of accessories suitable for subsequent installation

Accessories:

Auxiliary switch for subsequent installation	Z-AHK	248433
Tripping signal switch for subsequent installation	Z-NHK	248434
Shunt trip release	Z-ASA/..	248286, 248287
Tripping module	Z-KAM	248294
Terminal cover cap	KLV-TC-2	276240
Additional terminal 35mm^2	Z-HA-EK/35	263960
Switching interlock	IS/SPE-1TE	101911

Connection diagram

1+N-pole



Technical Data

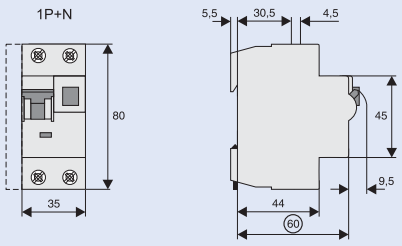
Electrical

Design according to	IEC/EN 61009
Current test marks as printed onto the device	
Tripping	
line voltage-dependent	instantaneous 250A (8/20µs) surge current-proof
Rated voltage	230 V; 50 Hz
Voltage range for protective function	60 - 250 V~
Rated tripping current	30, 300 mA
Rated non-tripping current $I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity	pulsating DC
Selectivity class	3
Rated breaking capacity	10 kA
Rated current	2 - 40 A
Characteristic	B, C, D
Maximum back-up fuse (short circuit)	100 A gL (>10 kA)
Ultimate short circuit breaking capacity I_{cn}	10 kA
Rated short circuit breaking capacity I_{cg}	7.5 kA
Rated fault breaking capacity $I_{\Delta m}$	10 kA
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles

Mechanical

Frame size	45 mm
Device height	80 mm
Device width	35 mm (2MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness	0.8 - 2 mm
Degree of protection, built-in	IP40
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Dimensions (mm)



Powering Business Worldwide

Combined RCD/MCB Devices PKNM-PT, 1+N-pole

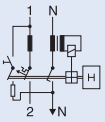
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above
- Busbar positioning optionally above or below
- Contact position indicator red - green
- Comprehensive range of accessories suitable for subsequent installation
- This compact protective device is specific for applications in the BS-distributor produced. Permanently connected neutral conductors (l = 550 mm, Ø = 6 mm^2).

Accessories:

Auxiliary switch for subsequent installation	Z-AHK	248433
Tripping signal switch for subsequent installation	Z-NHK	248434
Shunt trip release	ZP-ASA	248438, 248439
Tripping module	Z-KAM	248294
Terminal cover cap	KLV-TC-2	276240
Additional terminal 35mm^2	Z-HA-EK/35	263960
Switching interlock	IS/SPE-1TE	101911

Connection diagram

1+N-pole



Technical Data

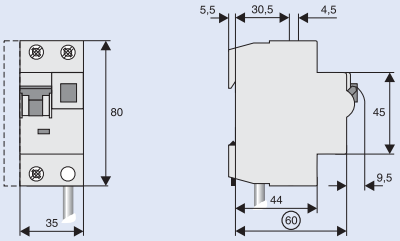
Electrical

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
Rated voltage	230 V; 50 Hz
Operational voltage range	196-253 V
Rated tripping current	30 mA
Rated non-tripping current $I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity	AC
Selectivity class	3
Rated breaking capacity	10 kA
Rated current	6 - 40 A
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Characteristic	B, C
Maximum back-up fuse (short circuit)	100 A gL (>6 kA)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles

Mechanical

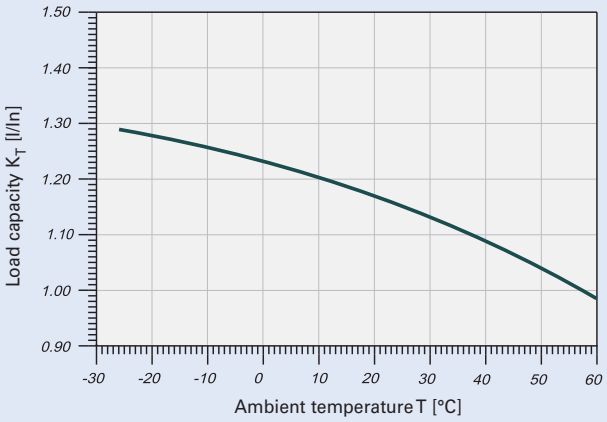
Frame size	45 mm
Device height	80 mm
Device width	35 mm (2MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Upper terminals	2 x open mouthed/lift terminals
Lower terminals	1 x open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 25 mm^2
Busbar thickness above	0.8 - 2 mm
Degree of protection, built-in	IP40
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Dimensions (mm)



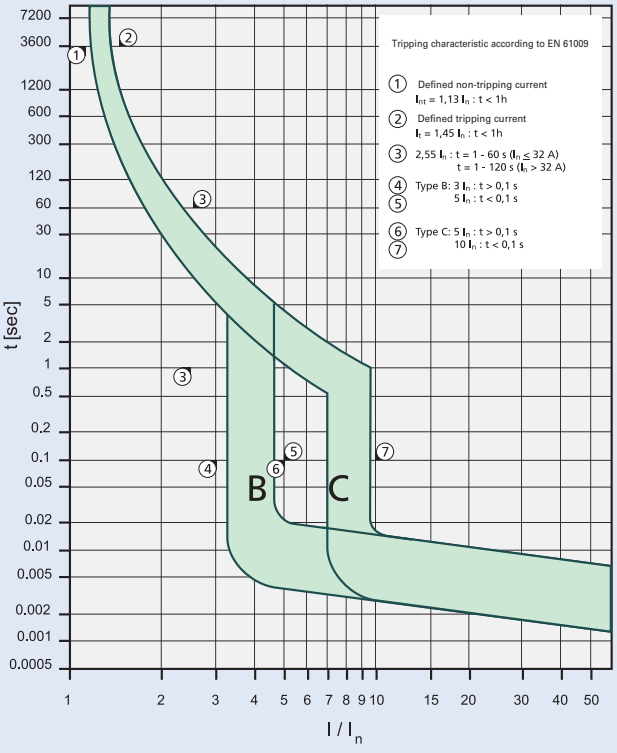
Load Capacity

Effect of ambient temperature (MCB component)



Valid for combined RCD/MCB devices 1+N-pole

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



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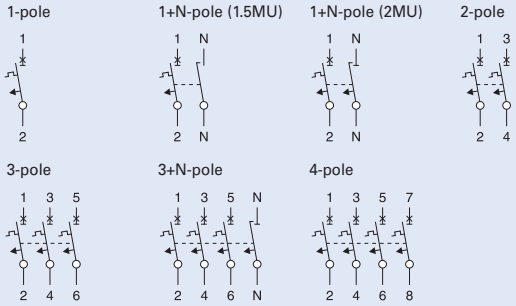
Miniature Circuit Breakers PLS..., PLZ...

- High selectivity between MCB and back-up fuse due to low let-through energy
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for secure isolation
- Suitable for applications up to 48 V DC (use PLS6-DC for higher DC voltages)

Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
Tripping signal contact for subsequent installation	ZP-NHK	248437
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35mm²	Z-HA-EK/35	263960
Switching interlock	Z-IS/SPE-1TE	274418

Connection diagrams

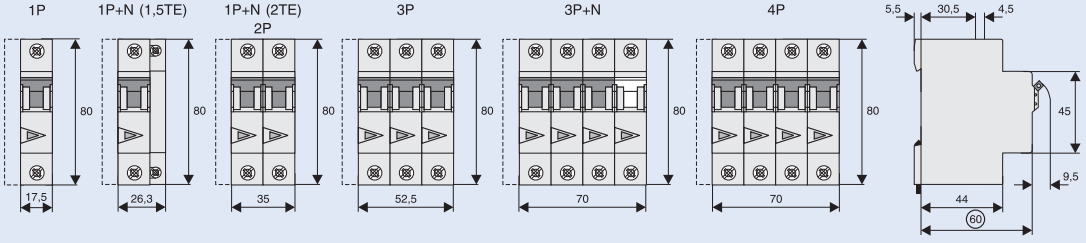


Technical Data

Electrical	
Design according to	IEC/EN 60898-1
Current test marks as printed onto the device	
Rated voltage	AC: 230/400V DC: 48V (per pole, max. 2 poles)
Rated frequency	50/60 Hz
Rated breaking capacity according to IEC/EN 60898-1	
PLSM, PLZM	10 kA
PLS6, PLZ6	6 kA
PLS4, PLZ4	4.5 kA
Characteristic	B, C, D
Back-up fuse	
PLSM	max. 125 A gL
PLS6	max. 100 A gL
PLS4	max. 80 A gL
Selectivity class	3
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles
Line voltage connection	optional (above/below)

Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm per pole (1MU) 26.3 mm: device 1P+N (1.5MU)
Mounting	quick fastening with 3 lock-in positions on DIN rail IEC/EN 60715
Degree of protection	IP20
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity (1p+N, 1.5MU)	1-25 mm² 1-25 mm² / 1-2x10 mm² (N)
Terminal fastening torque (1p+N, 1.5MU)	2-2.4 Nm 2-2.4 Nm / 1,2-1,5 Nm (N)
Busbar thickness	0.8 - 2 mm (except N 0.5 MU)
Mounting	independent of position

Dimensions (mm)



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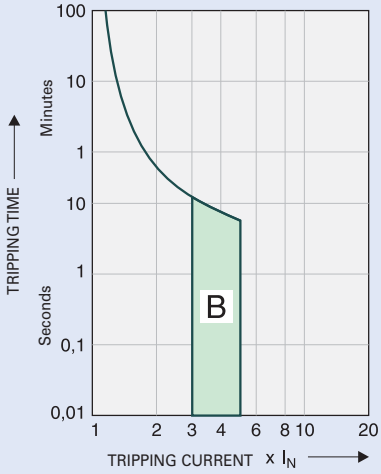
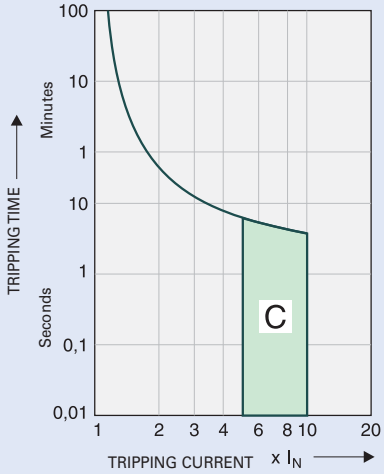
Tripping Characteristics (IEC/EN 60898-1)

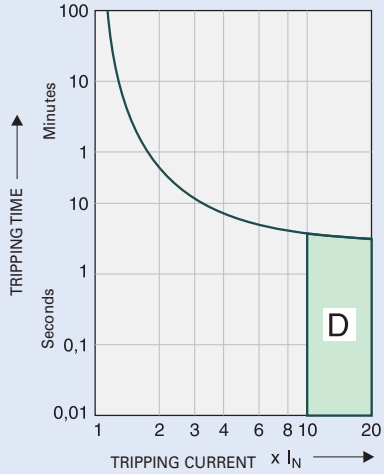
Tripping characteristic B



Tripping characteristic C



Tripping characteristic D



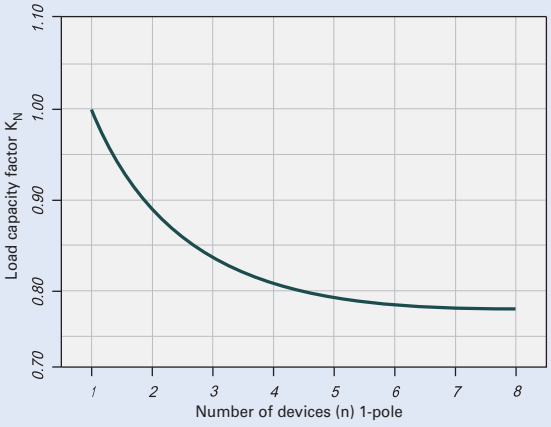
Quick-acting (B), slow (C), very slow (D)

Effect of the Ambient Temperature on Thermal Tripping Behaviour

Adjusted rated current values according to the ambient temperature

	Ambient temperature T [°C]																
I_n [A]	**-25**	**-20**	**-10**	**0**	**10**	**20**	**30**	**35**	**40**	**45**	**50**	**55**	**60**	**65**	**70**	**75**
0.16	0.20	0.19	0.19	0.18	0.17	0.17	0.16	0.16	0.15	0.15	0.15	0.14	0.14	0.14	0.14	0.13
0.25	0.31	0.30	0.29	0.28	0.27	0.26	0.25	0.25	0.24	0.24	0.23	0.23	0.22	0.22	0.21	0.21
0.5	0.61	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.48	0.47	0.46	0.45	0.44	0.43	0.42	0.41
0.75	0.92	0.90	0.87	0.84	0.81	0.78	0.75	0.74	0.73	0.71	0.69	0.68	0.66	0.65	0.64	0.62
1	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.99	0.97	0.95	0.93	0.90	0.89	0.87	0.85	0.83
1.5	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.2
1.6	2.0	1.9	1.9	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3
2	2.4	2.4	2.3	2.2	2.2	2.1	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7
2.5	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1
3	3.7	3.6	3.5	3.4	3.3	3.1	3.0	3.0	2.9	2.8	2.8	2.7	2.7	2.6	2.5	2.5
3.5	4.3	4.2	4.1	3.9	3.8	3.7	3.5	3.4	3.4	3.3	3.2	3.2	3.1	3.0	3.0	2,9
4	4.9	4.8	4.7	4.5	4.3	4.2	4.0	3.9	3.9	3.8	3.7	3.6	3.5	3.5	3.4	3.3
5	6.1	6.0	5.8	5.6	5.4	5.2	5.0	4.9	4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.1
6	7.3	7.2	7.0	6.7	6.5	6.3	6.0	5.9	5.8	5.7	5.6	5.4	5.3	5.2	5.1	5.0
8	9.8	9.6	9.3	9.0	8.7	8.4	8.0	7.9	7.7	7.6	7.4	7.2	7.1	6,9	6,8	6,6
10	12	12	12	11	11	10	10	9.9	9.7	9.5	9.3	9.0	8.9	8.7	8.5	8.3
12	15	14	14	13	13	13	12	12	12	11	11	11	11	10	10	10
13	16	16	15	15	14	14	13	13	13	12	12	12	12	11	11	11
15	18	18	17	17	16	16	15	15	15	14	14	14	13	13	13	12
16	20	19	19	18	17	17	16	16	15	15	15	14	14	14	14	13
20	24	24	23	22	22	21	20	20	19	19	19	18	18	17	17	17
25	31	30	29	28	27	26	25	25	24	24	23	23	22	22	21	21
32	39	38	37	36	35	33	32	32	31	30	30	29	28	28	27	26
40	49	48	47	45	43	42	40	39	39	38	37	36	35	35	34	33
50	61	60	58	56	54	52	50	49	48	47	46	45	44	43	42	41
63	77	76	73	71	68	66	63	62	61	60	58	57	56	55	53	52

Load Capacity of Series Connected Miniature Circuit Breakers



Effect of Power Frequency

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

	Power frequency f [Hz]						
	$16^2/_3$	50	60	100	200	300	400
$I_{MA}(f)/I_{MA}(50Hz)$ [%]	91	100	101	106	115	134	141

xPole

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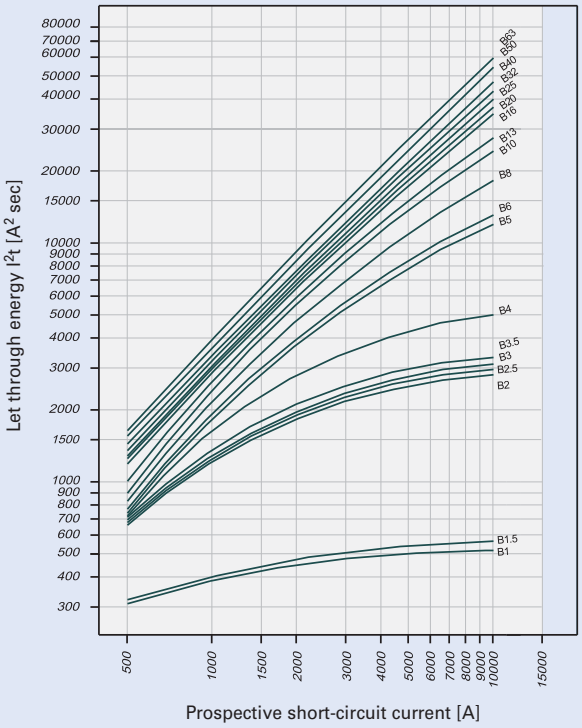
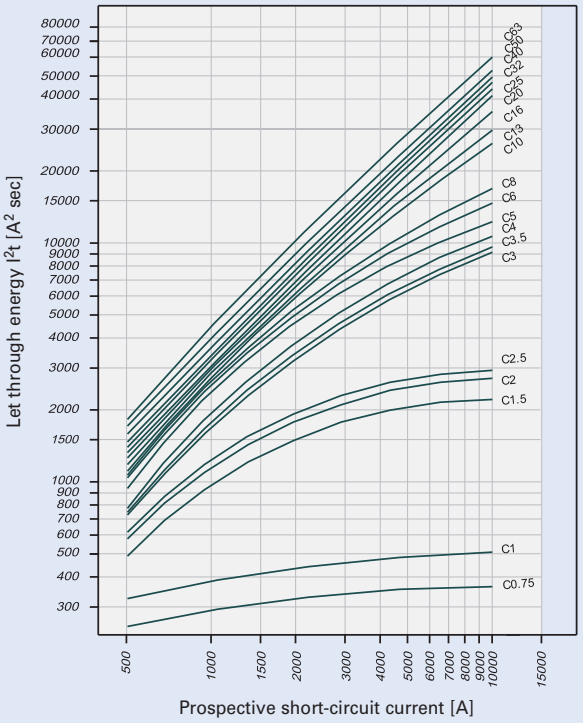
Let-through Energy PLSM

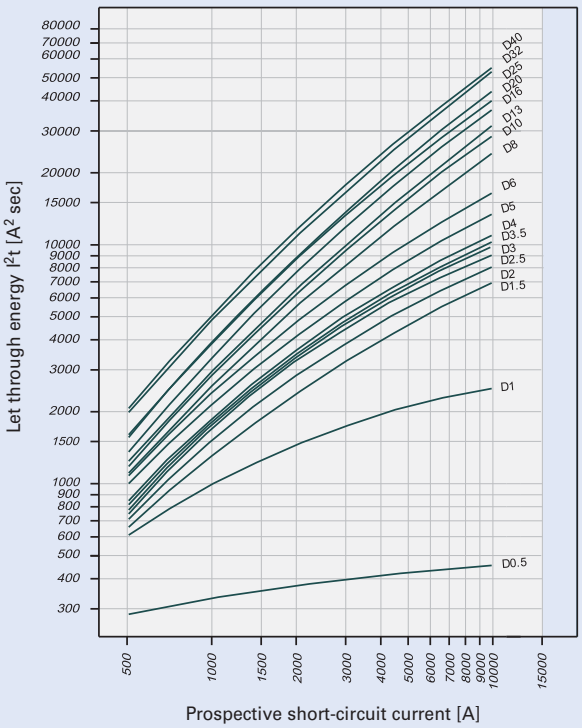
Let-through energy PLSM, characteristic B, 1-pole



Let-through energy PLSM, characteristic C, 1-pole



Let-through energy PLSM, characteristic D, 1-pole



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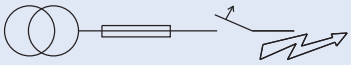
Short Circuit Selectivity PLSM towards DII-DIV fuse link

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

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



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

PLSM	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***)*

PLSM	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***)*

PLSM	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	10.0[2]	10.0[2]	10.0[2]
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 limit current I_s under 0.5 kA

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

no selectivity

xPole

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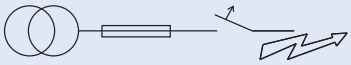
Short Circuit Selectivity PLSM towards D01-D03 fuse link

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

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



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

PLSM	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***)*

PLSM	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***)*

PLSM	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 limit current I_s under 0.5 kA

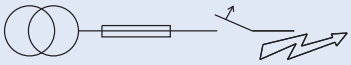
[2] Selectivity limit current I_s = rated breaking capacity I_{cn} of the MCB

no selectivity

Short Circuit Selectivity PLSM towards NH-00 Fuses

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

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



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

PLSM	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***)*

PLSM	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***)*

PLSM	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 limit current I_s under 0.5 kA

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

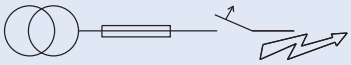
no selectivity

xPole

Short Circuit Selectivity PLSM towards cylindrical fuse links

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

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



*Short circuit selectivity **characteristic B** towards fuse links **CH10x38 gG, CH14x51 gG, CH22x58 gG***)*

PLSM	CH10x38 gG				CH15x51 gG					CH22x58 gG								
I_n [A]	16	20	25	32	20	25	32	40	50	16	20	25	32	40	50	63	80	100
1	0.5	>10	>10	>10	>10	>10	>10	>10	>10	1.2	>10	>10	>10	>10	>10	>10	>10	>10
2	<0.5	0.6	1.2	3.6	0.5	1.0	5.2	>10	>10	<0.5	0.5	1.1	>10	>10	>10	>10	>10	>10
3	<0.5	0.5	0.8	1.4	0.5	0.9	3.7	>10	>10	<0.5	0.5	1.0	8.0	>10	>10	>10	>10	>10
4	<0.5	<0.5	0.7	1.2	<0.5	0.7	1.7	4.0	>10	<0.5	<0.5	0.8	2.3	5.1	>10	>10	>10	>10
6	<0.5	<0.5	0.6	0.9	<0.5	0.7	1.3	2.0	2.7	<0.5	<0.5	0.7	1.5	2.2	2.6	5.6	10	>10
10	<0.5	<0.5	0.6	0.9	<0.5	0.6	1.1	1.5	2.0	<0.5	<0.5	0.6	1.2	1.6	1.9	3.2	4.8	9.0
13	<0.5	<0.5	0.6	0.8	<0.5	0.6	1.0	1.4	1.9	<0.5	<0.5	0.6	1.2	1.5	1.7	3.0	4.3	7.7
16		<0.5	0.5	0.8	<0.5	0.5	1.0	1.4	1.8		<0.5	0.5	1.1	1.4	1.6	2.7	3.8	6.3
20			0.5	0.8		<0.5	0.9	1.3	1.6			0.5	1.1	1.4	1.6	2.6	3.7	6.0
25				0.7			0.9	1.3	1.6				1.0	1.3	1.5	2.5	3.5	5.6
32								1.2	1.5					1.3	1.5	2.4	3.3	5.2
40									1.5						1.4	2.3	3.2	5.0
50																2.1	2.9	4.5
63																	2.8	4.2

no selectivity

*Short circuit selectivity **characteristic C** towards fuse links **CH10x38 gG, CH14x51 gG, CH22x58 gG***)*

PLSM	CH10x38 gG				CH15x51 gG					CH22x58 gG								
I_n [A]	16	20	25	32	20	25	32	40	50	16	20	25	32	40	50	63	80	100
0.5	1.9	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
1	<0.5	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
2	<0.5	0.6	1.2	3.6	0.5	1.0	4.5	>10	>10	<0.5	0.6	1.1	>10	>10	>10	>10	>10	>10
3	<0.5	0.5	0.8	1.4	<0.5	0.7	1.4	2.4	3.7	<0.5	<0.5	0.8	1.8	2.7	3.5	9.3	>10	>10
4	<0.5	<0.5	0.7	1.2	<0.5	0.7	1.2	2.0	2.9	<0.5	<0.5	0.7	1.5	2.2	2.7	6.7	>10	>10
6	<0.5	<0.5	0.6	0.9	<0.5	<0.5	1.0	1.4	2.0	<0.5	<0.5	0.6	1.1	1.6	1.9	4.2	7.0	>10
10	<0.5	<0.5	0.5	0.8	<0.5	<0.5	0.9	1.3	1.7	<0.5	<0.5	0.6	1.1.	1.5	1.8	2.9	4.1	7.5
13	<0.5	<0.5	0.5	0.8	<0.5	<0.5	0.9	1.3	1.7	<0.5	<0.5	0.5	1.0	1.4	1.7	2.7	3.8	6.5
16		<0.5	0.5	0.8	<0.5	<0.5	0.8	1.2	1.6		<0.5	<0.5	1.0	1.3	1.5	2.6	3.5	5.8
20			<0.5	0.7		<0.5	0.8	1.2	1.5			<0.5	0.9	1.2	1.4	2.5	3.3	5.4
25				0.7			0.8	1.1	1.4				0.9	1.2	1.4	2.3	3.2	5.0
32								1.1	1.4					1.1	1.3	2.2	3.0	4.8
40									1.3						1.2	2.0	2.8	4.6
50																1.9	2.6	4.2
63																	2.3	3.7

no selectivity

Powering Business Worldwide

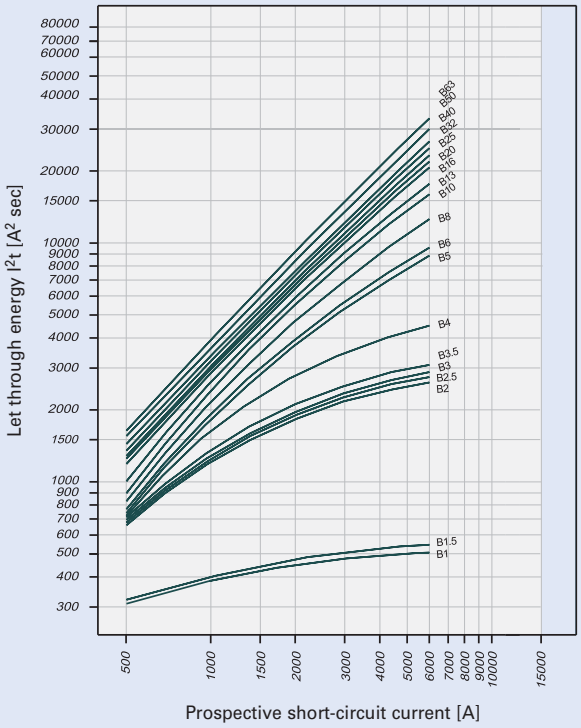
*Short circuit selectivity **characteristic D** towards fuse links **CH10x38 gG, CH14x51 gG, CH22x58 gG***)*

PLSM	CH10x38 gG				CH15x51 gG					CH22x58 gG								
I_n [A]	16	20	25	32	20	25	32	40	50	16	20	25	32	40	50	63	80	100
0.5	0.9	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
1	<0.5	>10	>10	>10	>10	>10	>10	>10	>10	<0.5	0.6	1.5	>10	>10	>10	>10	>10	>10
2	<0.5	0.5	0.6	1.6	<0.5	1.0	1.7	>10	>10	<0.5	0.5	0.8	2.1	3.3	4.3	>10	>10	>10
3	<0.5	<0.5	0.8	1.3	<0.5	0.7	1.4	2.4	3.4	<0.5	<0.5	0.7	1.7	2.5	3.2	8.2	>10	>10
4	<0.5	<0.5	0.7	1.2	<0.5	0.7	1.3	2.0	3.1	<0.5	<0.5	0.7	1.6	2.3	3.0	7.0	>10	>10
6	<0.5	<0.5	0.6	1.0	<0.5	<0.5	1.0	1.6	2.0	<0.5	<0.5	0.6	1.3	1.7	2.1	4.2	7.0	>10
10	<0.5	<0.5	0.6	0.8	<0.5	<0.5	0.9	1.3	1.7	<0.5	<0.5	0.5	1.1	1.4	1.6	2.8	4.1	7.1
13	<0.5	<0.5	0.5	0.8	<0.5	<0.5	0.9	1.3	1.6	<0.5	<0.5	0.5	1.0	1.4	1.6	2.7	3.8	6.5
16		<0.5	0.5	0.7	<0.5	<0.5	0.8	1.1	1.4		<0.5	<0.5	1.0	1.2	1.4	2.3	3.2	5.5
20			<0.5	0.7		<0.5	0.7	1.0	1.3			<0.5	0.8	1.1	1.3	2.1	2.9	4.6
25				0.7			0.7	1.0	1.2				0.8	1.0	1.2	2.0	2.8	4.0
32														0.9	1.0	1.7	2.3	3.8
40															1.0	2.0	2.2	3.6

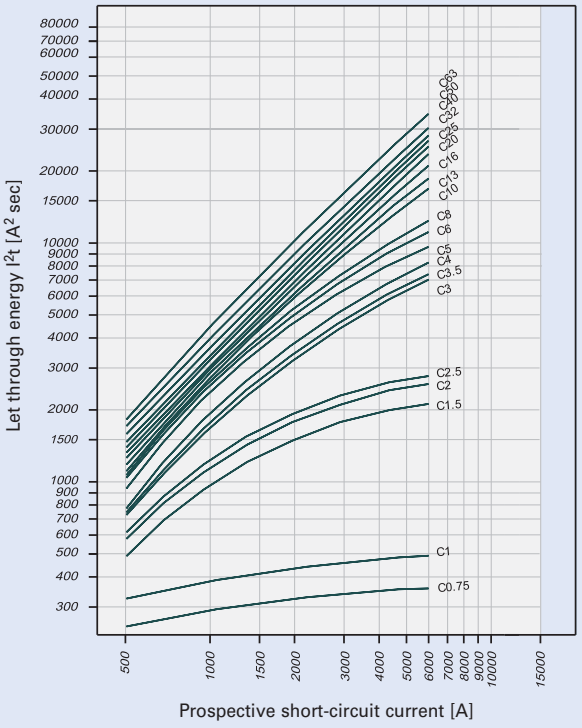
no selectivity

Let-through Energy PLS6

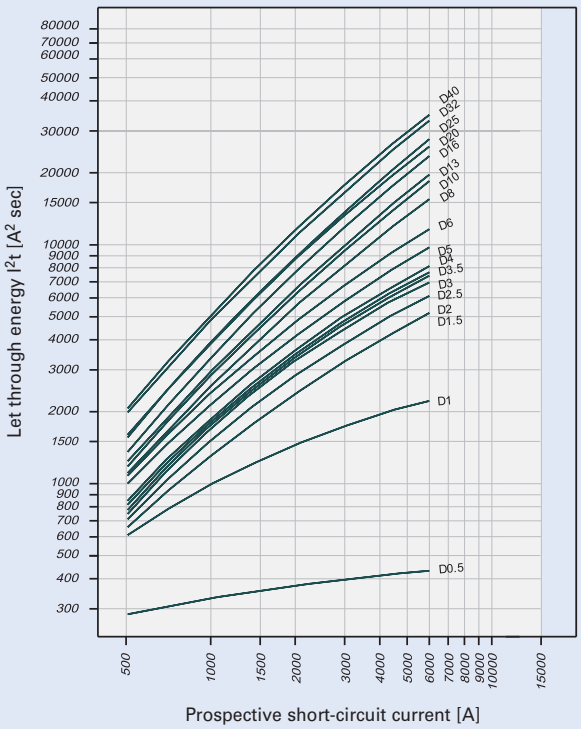
Let-through energy PLS6, characteristic B, 1-pole



Let-through energy PLS6, characteristic C, 1-pole



Let-through energy PLS6, characteristic D, 1-pole



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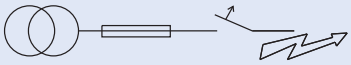
Short Circuit Selectivity PLS6 towards DII-DIV fuse link

In case of short circuit, there is selectivity between the miniature circuit breakers PLS6 and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s, only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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



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

PLS6	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
1.0	<0.5[1]	1.2	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.5	<0.5[1]	1.0	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.0	<0.5[1]	<0.5[1]	0.8	1.6	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.5	<0.5[1]	<0.5[1]	0.8	1.5	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
3.0	<0.5[1]	<0.5[1]	0.8	1.4	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
3.5	<0.5[1]	<0.5[1]	0.7	1.3	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
4	<0.5[1]	<0.5[1]	0.6	1.0	3.6	6.0[2]	6.0[2]	6.0[2]	6.0[2]
5	<0.5[1]	<0.5[1]	0.6	0.9	2.0	3.5	6.0[2]	6.0[2]	6.0[2]
6		<0.5[1]	0.6	0.9	1.8	3.2	6.0[2]	6.0[2]	6.0[2]
8		<0.5[1]	0.5	0.8	1.6	2.6	5.2	6.0[2]	6.0[2]
10			0.5	0.8	1.4	2.2	3.9	6.0[2]	6.0[2]
13			0.5	0.7	1.3	2.0	3.6	5.4	6.0[2]
16				0.6	1.2	1.9	3.2	4.6	6.0[2]
20					1.2	1.8	3.1	4.4	6.0[2]
25					1.2	1.8	3.0	4.2	6.0[2]
32						1.7	2.8	3.9	6.0[2]
40							2.7	3.8	6.0[2]
50							2.5	3.5	5.7
63									5.3

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

PLS6	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
0.75	1.0	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.0	<0.5[1]	1.2	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.5	<0.5[1]	<0.5[1]	1.0	2.2	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.0	<0.5[1]	<0.5[1]	0.8	1.6	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.5	<0.5[1]	<0.5[1]	0.8	1.4	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
3.0	<0.5[1]	<0.5[1]	0.8	0.9	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
3.5	<0.5[1]	<0.5[1]	0.6	0.9	2.2	4.5	6.0[2]	6.0[2]	6.0[2]
4	<0.5[1]	<0.5[1]	0.6	0.8	1.8	3.6	6.0[2]	6.0[2]	6.0[2]
5	<0.5[1]	<0.5[1]	0.6	0.7	1.5	2.7	6.0[2]	6.0[2]	6.0[2]
6		<0.5[1]	0.5	0.6	1.4	2.4	5.5	6.0[2]	6.0[2]
8		<0.5[1]	<0.5[1]	0.6	1.3	2.2	4.7	6.0[2]	6.0[2]
10			<0.5[1]	0.6	1.3	2.0	3.6	6.0[2]	6.0[2]
13					1.3	1.9	3.3	5.0	6.0[2]
16					1.2	1.8	3.2	4.4	6.0[2]
20					1.2	1.8	3.1	4.1	6.0[2]
25						1.7	2.8	3.8	6.0[2]
32							2.7	3.7	6.0[2]
40								3.5	5.9
50									5.5
63									

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

PLS6	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
0.5	0.5	3.0	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.0	<0.5[1]	<0.5[1]	1.0	2.4	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.5	<0.5[1]	<0.5[1]	0.7	1.2	3.5	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.0	<0.5[1]	<0.5[1]	0.6	1.0	2.8	5.8	6.0[2]	6.0[2]	6.0[2]
2.5	<0.5[1]	<0.5[1]	0.6	1.4	2.3	4.6	6.0[2]	6.0[2]	6.0[2]
3.0	<0.5[1]	<0.5[1]	0.6	0.9	2.3	4.3	6.0[2]	6.0[2]	6.0[2]
3.5	<0.5[1]	<0.5[1]	0.6	0.9	2.1	4.0	6.0[2]	6.0[2]	6.0[2]
4		<0.5[1]	0.6	0.9	2.0	3.8	6.0[2]	6.0[2]	6.0[2]
5		<0.5[1]	0.5	0.7	1.7	3.1	6.0[2]	6.0[2]	6.0[2]
6			0.5	0.7	1.5	2.6	5.3	6.0[2]	6.0[2]
8			<0.5[1]	0.7	1.4	2.2	3.9	6.0[2]	6.0[2]
10				0.7	1.2	1.9	3.4	5.0	6.0[2]
13					1.2	1.8	3.2	4.6	6.0[2]
16						1.6	2.7	4.0	6.0[2]
20						1.5	2.5	3.5	6.0[2]
25							2.4	3.4	6.0[2]
32								2.8	5.0
40									4.8

[1] Selectivity limit current I_s under 0.5 kA

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

no selectivity

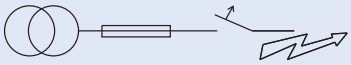
xPole

EATON Powering Business Worldwide

Short Circuit Selectivity PLS6 towards D01-D03 fuse link

In case of short circuit, there is selectivity between the miniature circuit breakers PLS6 and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s, only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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



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

PLS6	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
1.0	<0.5[1]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.5	<0.5[1]	4.1	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.0	<0.5[1]	<0.5[1]	0.6	1.0	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.5	<0.5[1]	<0.5[1]	0.6	1.0	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
3.0	<0.5[1]	<0.5[1]	0.5	1.0	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
3.5	<0.5[1]	<0.5[1]	0.5	0.9	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
4	<0.5[1]	<0.5[1]	0.5	0.9	2.5	6.0[2]	6.0[2]	6.0[2]	6.0[2]
5		<0.5[1]	0.5	0.8	1.7	4.0	6.0[2]	6.0[2]	6.0[2]
6		<0.5[1]	0.5	0.8	1.6	3.6	6.0[2]	6.0[2]	6.0[2]
8			0.5	0.8	1.4	2.8	4.3	6.0[2]	6.0[2]
10			0.5	0.7	1.3	2.4	3.4	6.0[2]	6.0[2]
13			<0.5[1]	0.7	1.2	2.3	3.2	5.3	6.0[2]
16				0.6	1.1	2.2	2.9	4.6	6.0[2]
20					1.1	2.1	2.8	4.4	6.0[2]
25					1.1	2.0	2.7	4.2	6.0[2]
32						2.0	2.6	4.0	6.0[2]
40							2.5	3.8	6.0[2]
50							2.3	3.4	6.0[2]
63									6.0[2]

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

PLS6	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
0.75	<0.5[1]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.0	<0.5[1]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.5	<0.5[1]	0.5	0.6	0.9	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.0	<0.5[1]	<0.5[1]	0.5	0.7	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.5	<0.5[1]	<0.5[1]	0.5	0.7	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
3.0	<0.5[1]	<0.5[1]	<0.5[1]	0.6	1.9	5.2	6.0[2]	6.0[2]	6.0[2]
3.5	<0.5[1]	<0.5[1]	<0.5[1]	0.6	1.8	4.7	6.0[2]	6.0[2]	6.0[2]
4	<0.5[1]	<0.5[1]	<0.5[1]	0.6	1.6	4.0	6.0[2]	6.0[2]	6.0[2]
5		<0.5[1]	<0.5[1]	0.5	1.3	3.1	5.7	6.0[2]	6.0[2]
6		<0.5[1]	<0.5[1]	<0.5[1]	1.2	2.7	4.5	6.0[2]	6.0[2]
8		<0.5[1]	<0.5[1]	<0.5[1]	1.2	2.5	4.0	6.0[2]	6.0[2]
10			<0.5[1]	<0.5[1]	1.2	2.3	3.1	5.4	6.0[2]
13					1.1	2.2	3.0	4.9	6.0[2]
16					1.1	2.1	2.8	4.4	6.0[2]
20					1.0	2.0	2.6	4.0	6.0[2]
25						1.9	2.5	3.8	6.0[2]
32							2.5	3.7	6.0[2]
40								3.5	6.0[2]
50									6.0[2]
63									

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

PLS6	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
0.5	<0.5[1]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.0	<0.5[1]	<0.5[1]	0.7	1.3	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.5	<0.5[1]	<0.5[1]	0.6	0.9	2.8	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.0	<0.5[1]	<0.5[1]	0.6	0.8	2.2	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.5	<0.5[1]	<0.5[1]	0.5	0.7	1.9	5.4	6.0[2]	6.0[2]	6.0[2]
3.0	<0.5[1]	<0.5[1]	0.5	0.7	1.8	4.8	6.0[2]	6.0[2]	6.0[2]
3.5	<0.5[1]	<0.5[1]	0.5	0.7	1.7	4.7	6.0[2]	6.0[2]	6.0[2]
4		<0.5[1]	0.5	0.7	1.7	4.6	6.0[2]	6.0[2]	6.0[2]
5		<0.5[1]	<0.5[1]	0.6	1.5	3.5	5.8	6.0[2]	6.0[2]
6			<0.5[1]	0.5	1.3	2.9	4.5	6.0[2]	6.0[2]
8			<0.5[1]	0.5	1.2	2.4	3.5	6.0[2]	6.0[2]
10				0.5	1.1	2.2	3.0	5.0	6.0[2]
13					1.1	2.1	2.9	4.6	6.0[2]
16						1.9	2.6	3.9	6.0[2]
20						1.7	2.3	3.5	6.0[2]
25							2.2	3.4	6.0[2]
32								2.9	6.0[2]
40									5.7

[1] Selectivity limit current I_s under 0.5 kA

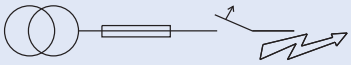
[2] Selectivity limit current I_s = rated breaking capacity I_{cn} of the MCB

no selectivity

Short Circuit Selectivity PLS6 towards NH-00 Fuses

In case of short circuit, there is selectivity between the miniature circuit breakers PLS6 and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s, only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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



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

PLS6	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
1.0	0.9	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.5	0.8	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.0	<0.5[1]	0.5	1.0	2.5	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.5	<0.5[1]	0.5	1.0	2.3	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
3.0	<0.5[1]	0.5	0.9	2.1	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
3.5	<0.5[1]	0.5	0.9	1.8	5.5	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
4	<0.5[1]	<0.5[1]	0.8	1.3	2.3	4.3	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
5	<0.5[1]	<0.5[1]	0.7	1.1	1.6	2.2	3.6	4.8	6.0[2]	6.0[2]	6.0[2]	6.0[2]
6	<0.5[1]	<0.5[1]	0.7	1.1	1.5	2.0	3.3	4.3	6.0[2]	6.0[2]	6.0[2]	6.0[2]
8	<0.5[1]	<0.5[1]	0.6	1.0	1.3	1.7	2.6	3.3	5.2	6.0[2]	6.0[2]	6.0[2]
10		<0.5[1]	0.6	0.9	1.2	1.5	2.2	2.7	4.0	6.0[2]	6.0[2]	6.0[2]
13		<0.5[1]	0.6	0.8	1.1	1.4	2.1	2.6	3.8	6.0[2]	6.0[2]	6.0[2]
16			0.5	0.7	1.0	1.3	1.9	2.4	3.4	6.0[2]	6.0[2]	6.0[2]
20				0.7	1.0	1.3	1.9	2.4	3.3	6.0[2]	6.0[2]	6.0[2]
25				0.7	1.0	1.3	1.8	2.3	3.2	5.7	6.0[2]	6.0[2]
32					0.9	1.2	1.7	2.2	3.1	5.4	6.0[2]	6.0[2]
40								2.1	3.0	5.1	6.0[2]	6.0[2]
50								1.9	2.8	4.7	6.0[2]	6.0[2]
63										4.4	6.0[2]	6.0[2]

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

PLS6	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
0.75	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.0	0.9	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.5	<0.5[1]	0.6	1.3	4.2	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.0	<0.5[1]	0.6	1.0	2.5	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.5	<0.5[1]	0.5	1.0	2.1	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
3.0	<0.5[1]	<0.5[1]	0.7	1.2	1.8	2.6	4.7	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
3.5	<0.5[1]	<0.5[1]	0.7	1.1	1.7	2.4	4.2	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
4	<0.5[1]	<0.5[1]	0.7	1.0	1.5	2.1	3.6	5.0	6.0[2]	6.0[2]	6.0[2]	6.0[2]
5	<0.5[1]	<0.5[1]	0.6	0.8	1.2	1.7	2.8	3.8	6.0[2]	6.0[2]	6.0[2]	6.0[2]
6	<0.5[1]	<0.5[1]	0.5	0.8	1.2	1.5	2.5	3.3	5.7	6.0[2]	6.0[2]	6.0[2]
8	<0.5[1]	<0.5[1]	0.5	0.8	1.1	1.5	2.3	2.9	4.9	6.0[2]	6.0[2]	6.0[2]
10			0.5	0.7	1.0	1.4	2.0	2.5	3.8	6.0[2]	6.0[2]	6.0[2]
13					1.0	1.3	1.9	2.4	3.6	6.0[2]	6.0[2]	6.0[2]
16					1.0	1.3	1.8	2.3	3.3	6.0[2]	6.0[2]	6.0[2]
20					1.0	1.2	1.7	2.2	3.2	5.5	6.0[2]	6.0[2]
25						1.6	2.1	3.0	5.2	6.0[2]	6.0[2]	
32							2.1	2.9	5.0	6.0[2]	6.0[2]	
40								2.8	4.8	6.0[2]	6.0[2]	
50									4.5	6.0[2]	6.0[2]	
63											5.9	6.0[2]

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

PLS6	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
0.5	2.1	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.0	<0.5[1]	0,6	1.4	4.3	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
1.5	<0.5[1]	<0.5[1]	0.9	1.6	2.7	4.0	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.0	<0.5[1]	<0.5[1]	0.8	1.3	2.1	3.1	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
2.5	<0.5[1]	<0.5[1]	0.7	1.2	1.8	2.6	4.8	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
3.0	<0.5[1]	<0.5[1]	0.7	1.1	1.7	2.4	4.3	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
3.5	<0.5[1]	<0.5[1]	0.7	1.1	1.7	2.4	4.2	5.6	6.0[2]	6.0[2]	6.0[2]	6.0[2]
4	<0.5[1]	<0.5[1]	0.7	1.0	1.6	2.2	3.8	5.2	6.0[2]	6.0[2]	6.0[2]	6.0[2]
5		<0.5[1]	0.6	0.9	1.4	1.9	3.2	4.1	6.0[2]	6.0[2]	6.0[2]	6.0[2]
6		<0.5[1]	0.5	0.8	1.2	1.6	2.6	3.3	5.5	6.0[2]	6.0[2]	6.0[2]
8			0.5	0.8	1.1	1.5	2.2	2.7	4.1	6.0[2]	6.0[2]	6.0[2]
10			0.5	0.7	1.0	1.3	1.9	2.5	3.6	6.0[2]	6.0[2]	6.0[2]
13					1.0	1.3	1.9	2.3	3.4	6.0[2]	6.0[2]	6.0[2]
16						1.1	1.6	2.0	3.0	5.5	6.0[2]	6.0[2]
20							1.4	1.8	2.8	5.0	6.0[2]	6.0[2]
25								1.8	2.7	4.8	6.0[2]	6.0[2]
32									2.4	4.1	6.0[2]	6.0[2]
40										4.0	6.0[2]	6.0[2]

[1] Selectivity limit current I_s under 0.5 kA

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

no selectivity

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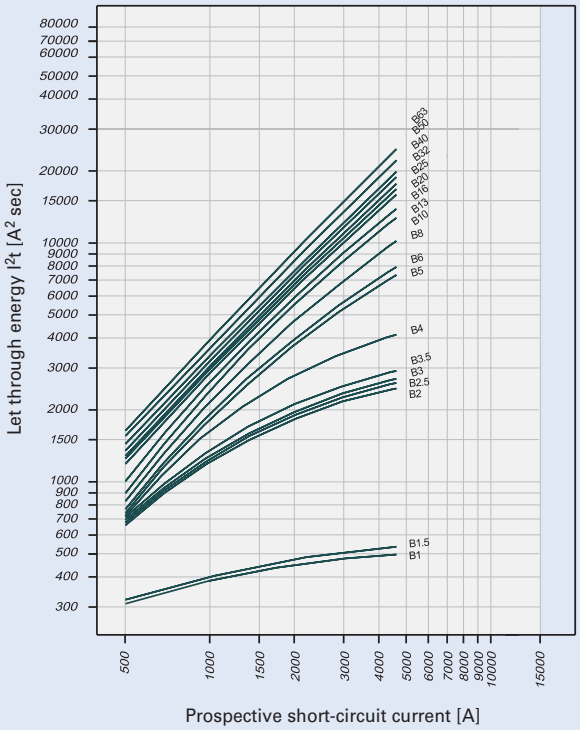
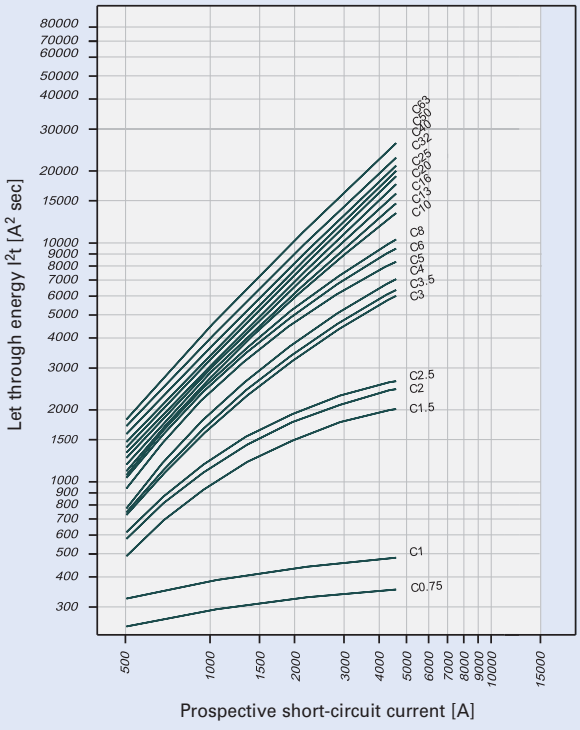
Let-through Energy PLS4

Let-through energy PLS4, characteristic B, 1-pole



Let-through energy PLS4, characteristic C, 1-pole



Short Circuit Selectivity PLS4 towards DII-DIV fuse link

In case of short circuit, there is selectivity between the miniature circuit breakers PLS4 and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s, only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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

[1] Selectivity limit current I_s under 0.5 kA

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

no selectivity

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

PLS4	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
1.0	<0.5[1]	1.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.5	<0.5[1]	1.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.0	<0.5[1]	<0.5[1]	0.8	1.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.5	<0.5[1]	<0.5[1]	0.8	1.5	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.0	<0.5[1]	<0.5[1]	0.8	1.4	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.5	<0.5[1]	<0.5[1]	0.7	1.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.6	1.0	3.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]
5	<0.5[1]	<0.5[1]	0.6	0.9	2.0	3.5	4.5[2]	4.5[2]	4.5[2]
6		<0.5[1]	0.6	0.9	1.8	3.2	4.5[2]	4.5[2]	4.5[2]
8		<0.5[1]	0.5	0.8	1.6	2.6	4.5[2]	4.5[2]	4.5[2]
10			0.5	0.8	1.4	2.2	3.9	4.5[2]	4.5[2]
13			0.5	0.7	1.3	2.0	3.6	4.5[2]	4.5[2]
16				0.6	1.2	1.9	3.2	4.5[2]	4.5[2]
20					1.2	1.8	3.1	4.4	4.5[2]
25					1.2	1.8	3.0	4.2	4.5[2]
32						1.7	2.8	3.9	4.5[2]
40							2.7	3.8	4.5[2]
50							2.5	3.5	4.5[2]
63									4.5[2]

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

PLS4	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
0.75	1.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.0	<0.5[1]	1.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.5	<0.5[1]	<0.5[1]	1.0	2.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.0	<0.5[1]	<0.5[1]	0.8	1.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.5	<0.5[1]	<0.5[1]	0.8	1.4	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.0	<0.5[1]	<0.5[1]	0.8	0.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.5	<0.5[1]	<0.5[1]	0.6	0.9	2.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.6	0.8	1.8	3.6	4.5[2]	4.5[2]	4.5[2]
5	<0.5[1]	<0.5[1]	0.6	0.7	1.5	2.7	4.5[2]	4.5[2]	4.5[2]
6		<0.5[1]	0.5	0.6	1.4	2.4	4.5[2]	4.5[2]	4.5[2]
8		<0.5[1]	<0.5[1]	0.6	1.3	2.2	4.5[2]	4.5[2]	4.5[2]
10			<0.5[1]	0.6	1.3	2.0	3.6	4.5[2]	4.5[2]
13					1.3	1.9	3.3	4.5[2]	4.5[2]
16					1.2	1.8	3.2	4.4	4.5[2]
20					1.2	1.8	3.1	4.1	4.5[2]
25						1.7	2.8	3.8	4.5[2]
32							2.7	3.7	4.5[2]
40								3.5	4.5[2]
50									4.5[2]
63									

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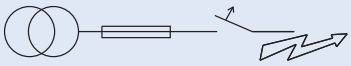
In case of short circuit, there is selectivity between the miniature circuit breakers PLS4 and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s, only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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



[1] Selectivity limit current I_s under 0.5 kA

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

no selectivity

Short Circuit Selectivity PLS4 towards D01-D03 fuse link

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

PLS4	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
1.0	<0.5[1]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.5	<0.5[1]	4.1	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.0	<0.5[1]	<0.5[1]	0.6	1.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.5	<0.5[1]	<0.5[1]	0.6	1.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.0	<0.5[1]	<0.5[1]	0.5	1.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.5	<0.5[1]	<0.5[1]	0.5	0.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.5	0.9	2.5	4.5[2]	4.5[2]	4.5[2]	4.5[2]
5		<0.5[1]	0.5	0.8	1.7	4.0	4.5[2]	4.5[2]	4.5[2]
6		<0.5[1]	0.5	0.8	1.6	3.6	4.5[2]	4.5[2]	4.5[2]
8			0.5	0.8	1.4	2.8	4.3	4.5[2]	4.5[2]
10			0.5	0.7	1.3	2.4	3.4	4.5[2]	4.5[2]
13			<0.5[1]	0.7	1.2	2.3	3.2	4.5[2]	4.5[2]
16				0.6	1.1	2.2	2.9	4.5[2]	4.5[2]
20					1.1	2.1	2.8	4.4	4.5[2]
25					1.1	2.0	2.7	4.2	4.5[2]
32						2.0	2.6	4.0	4.5[2]
40							2.5	3.8	4.5[2]
50							2.3	3.4	4.5[2]
63									4.5[2]

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

PLS4	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
0.75	<0.5[1]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.0	<0.5[1]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.5	<0.5[1]	0.5	0.6	0.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.0	<0.5[1]	<0.5[1]	0.5	0.7	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.5	<0.5[1]	<0.5[1]	0.5	0.7	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.0	<0.5[1]	<0.5[1]	<0.5[1]	0.6	1.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.5	<0.5[1]	<0.5[1]	<0.5[1]	0.6	1.8	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	<0.5[1]	0.6	1.6	4.0	4.5[2]	4.5[2]	4.5[2]
5		<0.5[1]	<0.5[1]	0.5	1.3	3.1	4.5[2]	4.5[2]	4.5[2]
6		<0.5[1]	<0.5[1]	<0.5[1]	1.2	2.7	4.5[2]	4.5[2]	4.5[2]
8		<0.5[1]	<0.5[1]	<0.5[1]	1.2	2.5	4.0	4.5[2]	4.5[2]
10			<0.5[1]	<0.5[1]	1.2	2.3	3.1	4.5[2]	4.5[2]
13					1.1	2.2	3.0	4.5[2]	4.5[2]
16					1.1	2.1	2.8	4.4	4.5[2]
20					1.0	2.0	2.6	4.0	4.5[2]
25						1.9	2.5	3.8	4.5[2]
32							2.5	3.7	4.5[2]
40								3.5	4.5[2]
50									4.5[2]
63									

Short Circuit Selectivity PLS4 towards NH-00 fuse link

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

PLS4	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
1.0	0.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.5	0.8	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.0	<0.5[1]	0.5	1.0	2.5	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.5	<0.5[1]	0.5	1.0	2.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.0	<0.5[1]	0.5	0.9	2.1	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.5	<0.5[1]	0.5	0.9	1.8	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.8	1.3	2.3	4.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
5	<0.5[1]	<0.5[1]	0.7	1.1	1.6	2.2	3.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
6	<0.5[1]	<0.5[1]	0.7	1.1	1.5	2.0	3.3	4.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]
8	<0.5[1]	<0.5[1]	0.6	1.0	1.3	1.7	2.6	3.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]
10		<0.5[1]	0.6	0.9	1.2	1.5	2.2	2.7	4.0	4.5[2]	4.5[2]	4.5[2]
13		<0.5[1]	0.6	0.8	1.1	1.4	2.1	2.6	3.8	4.5[2]	4.5[2]	4.5[2]
16			0.5	0.7	1.0	1.3	1.9	2.4	3.4	4.5[2]	4.5[2]	4.5[2]
20				0.7	1.0	1.3	1.9	2.4	3.3	4.5[2]	4.5[2]	4.5[2]
25				0.7	1.0	1.3	1.8	2.3	3.2	4.5[2]	4.5[2]	4.5[2]
32					0.9	1.2	1.7	2.2	3.1	4.5[2]	4.5[2]	4.5[2]
40								2.1	3.0	4.5[2]	4.5[2]	4.5[2]
50								1.9	2.8	4.5[2]	4.5[2]	4.5[2]
63									4.4	4.5[2]	4.5[2]	

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

PLS4	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
0.75	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.0	0.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.5	<0.5[1]	0.6	1.3	4.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.0	<0.5[1]	0.6	1.0	2.5	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.5	<0.5[1]	0.5	1.0	2.1	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.0	<0.5[1]	<0.5[1]	0.7	1.2	1.8	2.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.5	<0.5[1]	<0.5[1]	0.7	1.1	1.7	2.4	4.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.7	1.0	1.5	2.1	3.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
5	<0.5[1]	<0.5[1]	0.6	0.8	1.2	1.7	2.8	3.8	4.5[2]	4.5[2]	4.5[2]	4.5[2]
6	<0.5[1]	<0.5[1]	0.5	0.8	1.2	1.5	2.5	3.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]
8	<0.5[1]	<0.5[1]	0.5	0.8	1.1	1.5	2.3	2.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]
10			0.5	0.7	1.0	1.4	2.0	2.5	3.8	4.5[2]	4.5[2]	4.5[2]
13					1.0	1.3	1.9	2.4	3.6	4.5[2]	4.5[2]	4.5[2]
16					1.0	1.3	1.8	2.3	3.3	4.5[2]	4.5[2]	4.5[2]
20					1.0	1.2	1.7	2.2	3.2	4.5[2]	4.5[2]	4.5[2]
25						1.6	2.1	3.0	4.5[2]	4.5[2]	4.5[2]	
32							2.1	2.9	4.5[2]	4.5[2]	4.5[2]	
40								2.8	4.5[2]	4.5[2]	4.5[2]	
50									4.5[2]	4.5[2]	4.5[2]	
63										4.5[2]	4.5[2]	

EATON Powering Business Worldwide

Miniature Circuit Breakers PLS6-DC

- High selectivity between MCB and back-up fuse due to low let-through energy
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for secure isolation
- Rated breaking capacity 10 kA according to IEC/EN 60947-2
- Rated voltage up to 250 V (per pole), τ = 4 ms
- Take into account polarity!

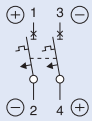
Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
Tripping signal contact for subsequent installation	ZP-NHK	248437
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35mm²	Z-HA-EK/35	263960
Switching interlock	Z-IS/SPE-1TE	274418

Connection diagrams

1-pole

2-pole



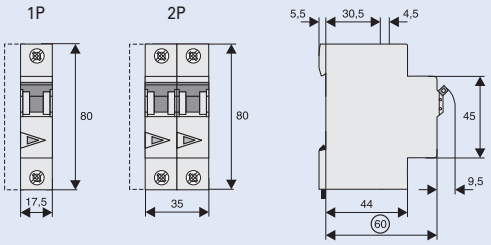
Technical Data

Electrical	
Design according to	IEC/EN 60947-2
Current test marks as printed onto the device	
Rated voltage	
DC	1-2 A type: 220V (per pole) 3-50 A types: 250V (per pole)
Rated breaking capacity according to IEC/EN 60947-2	10 kA
Characteristic	C
Back-up fuse	max. 100 A gL
Selectivity class	3
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles
Line voltage connection	optional (above/below)

Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm per pole (1MU)
Mounting	quick fastening with 3 lock-in positions on DIN rail IEC/EN 60715
Degree of protection	IP20
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1-25 mm²
Terminal fastening torque	2-2.4 Nm
Busbar thickness	0.8 - 2 mm
Mounting	independent of position

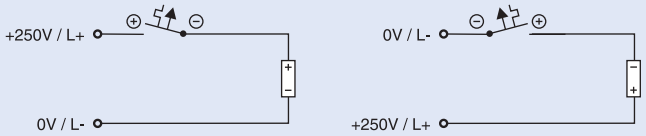
Note: not for PV string protection!

Dimensions (mm)

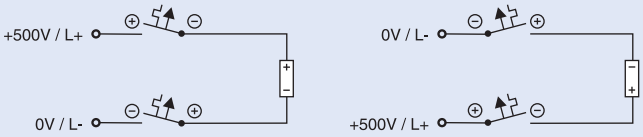


Connection examples

Connection example at 250V=, 1-pole



Connection example at 500V=, 2-pole



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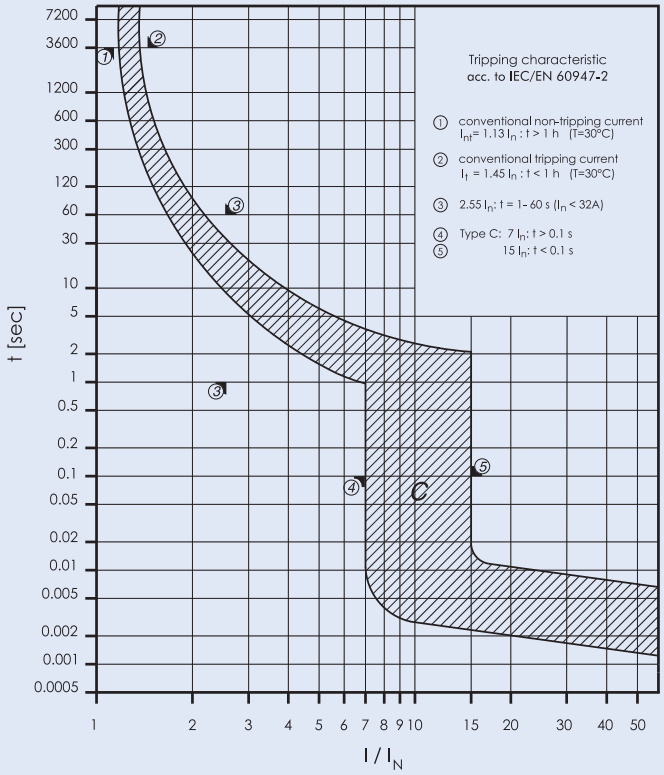
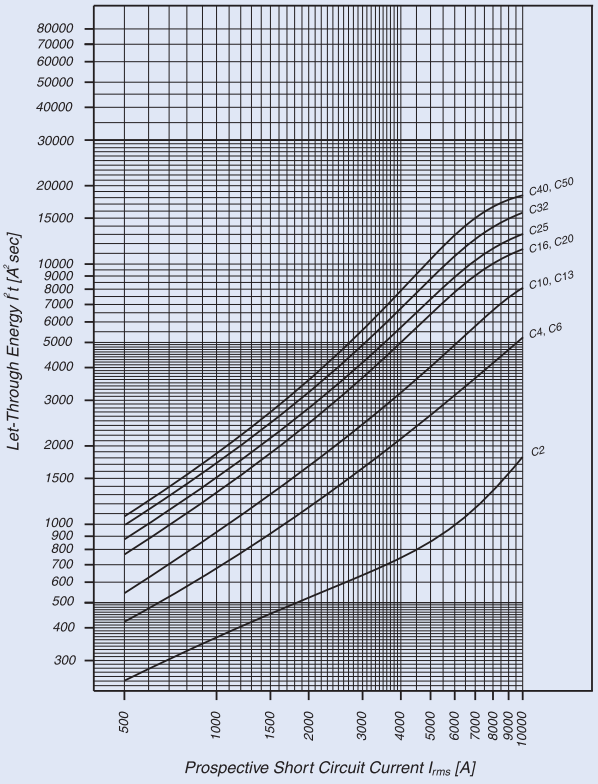
Tripping characteristic PLS6-DC

Type C



Let-through Energy PLS6-DC

Type C, 250 V d.c., τ = 5 ms (acc. to IEC/EN 60947-2)



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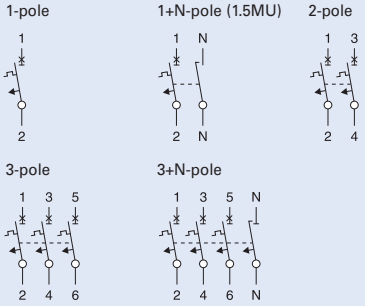
Miniature Circuit Breakers PL7

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

Accessories:

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

Connection diagrams

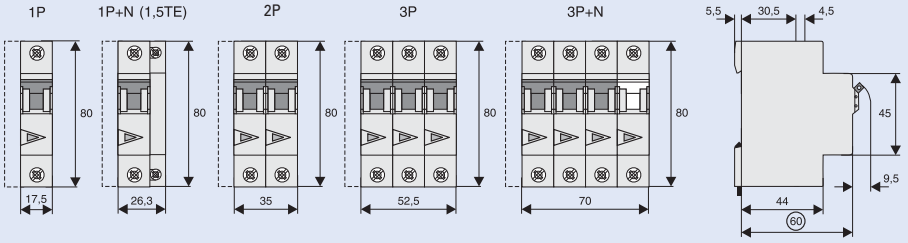


Technical Data

Electrical	
Design according to	IEC/EN 60898-1
Current test marks as printed onto the device	
Rated voltage	AC: 230/400V DC: 48V (per pole, max. 2 poles)
Rated frequency	50/60 Hz
Rated breaking capacity IEC/EN 60898-1	10 kA
Characteristic	B, C, D
Back-up fuse	max. 125 A gL
Selectivity class	3
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles
Line voltage connection	optional (above/below)

Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm per pole (1MU) 26.3 mm: device 1P+N (1.5MU)
Mounting	quick fastening with 3 lock-in positions on DIN rail IEC/EN 60715
Degree of protection	IP20
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity (1p+N, 1.5MU)	1-25 mm^2 1-25 mm^2 / 1-2x10 mm^2 (N)
Terminal fastening torque (1p+N, 1.5MU)	2-2.4 Nm 2-2.4 Nm / 1,2-1,5 Nm (N)
Busbar thickness	0.8 - 2 mm (except N 0.5 MU)
Mounting	independent of position

Dimensions (mm)



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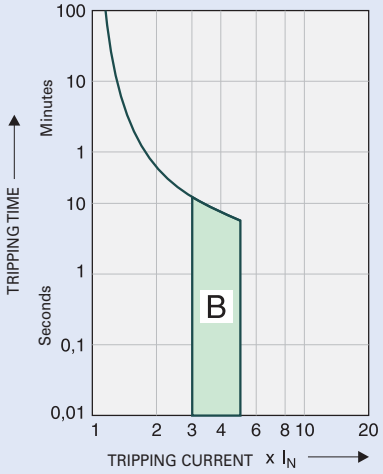
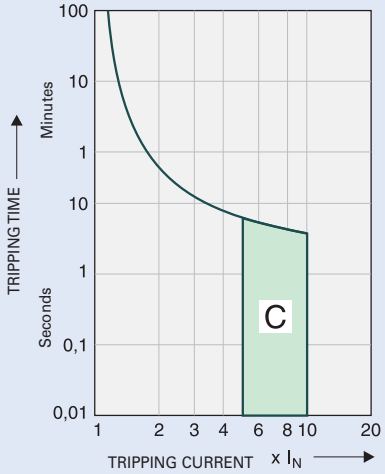
Tripping Characteristics (IEC/EN 60898-1)

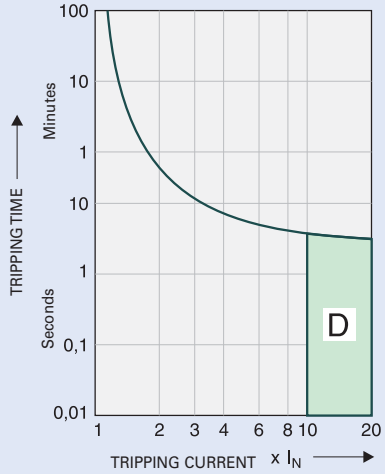
Tripping characteristic B



Tripping characteristic C



Tripping characteristic D



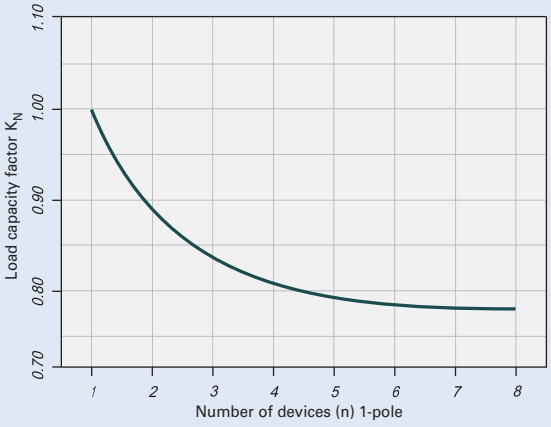
Quick-acting (B), slow (C), very slow (D)

Effect of the Ambient Temperature on Thermal Tripping Behaviour

Adjusted rated current values according to the ambient temperature

	Ambient temperature T [°C]																
I_n [A]	**-25**	**-20**	**-10**	**0**	**10**	**20**	**30**	**35**	**40**	**45**	**50**	**55**	**60**	**65**	**70**	**75**
0.16	0.20	0.19	0.19	0.18	0.17	0.17	0.16	0.16	0.15	0.15	0.15	0.14	0.14	0.14	0.14	0.13
0.25	0.31	0.30	0.29	0.28	0.27	0.26	0.25	0.25	0.24	0.24	0.23	0.23	0.22	0.22	0.21	0.21
0.5	0.61	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.48	0.47	0.46	0.45	0.44	0.43	0.42	0.41
0.75	0.92	0.90	0.87	0.84	0.81	0.78	0.75	0.74	0.73	0.71	0.69	0.68	0.66	0.65	0.64	0.62
1	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.99	0.97	0.95	0.93	0.90	0.89	0.87	0.85	0.83
1.5	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.2
1.6	2.0	1.9	1.9	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3
2	2.4	2.4	2.3	2.2	2.2	2.1	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7
2.5	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1
3	3.7	3.6	3.5	3.4	3.3	3.1	3.0	3.0	2.9	2.8	2.8	2.7	2.7	2.6	2.5	2.5
3.5	4.3	4.2	4.1	3.9	3.8	3.7	3.5	3.4	3.4	3.3	3.2	3.2	3.1	3.0	3.0	2,9
4	4.9	4.8	4.7	4.5	4.3	4.2	4.0	3.9	3.9	3.8	3.7	3.6	3.5	3.5	3.4	3.3
5	6.1	6.0	5.8	5.6	5.4	5.2	5.0	4.9	4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.1
6	7.3	7.2	7.0	6.7	6.5	6.3	6.0	5.9	5.8	5.7	5.6	5.4	5.3	5.2	5.1	5.0
8	9.8	9.6	9.3	9.0	8.7	8.4	8.0	7.9	7.7	7.6	7.4	7.2	7.1	6,9	6,8	6,6
10	12	12	12	11	11	10	10	9.9	9.7	9.5	9.3	9.0	8.9	8.7	8.5	8.3
12	15	14	14	13	13	13	12	12	12	11	11	11	11	10	10	10
13	16	16	15	15	14	14	13	13	13	12	12	12	12	11	11	11
15	18	18	17	17	16	16	15	15	15	14	14	14	13	13	13	12
16	20	19	19	18	17	17	16	16	15	15	15	14	14	14	14	13
20	24	24	23	22	22	21	20	20	19	19	19	18	18	17	17	17
25	31	30	29	28	27	26	25	25	24	24	23	23	22	22	21	21
32	39	38	37	36	35	33	32	32	31	30	30	29	28	28	27	26
40	49	48	47	45	43	42	40	39	39	38	37	36	35	35	34	33
50	61	60	58	56	54	52	50	49	48	47	46	45	44	43	42	41
63	77	76	73	71	68	66	63	62	61	60	58	57	56	55	53	52

Load Capacity of Series Connected Miniature Circuit Breakers



Effect of Power Frequency

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

	Power frequency f [Hz]						
	$16^2/_3$	50	60	100	200	300	400
$I_{MA}(f)/I_{MA}(50Hz)$ [%]	91	100	101	106	115	134	141

xPole

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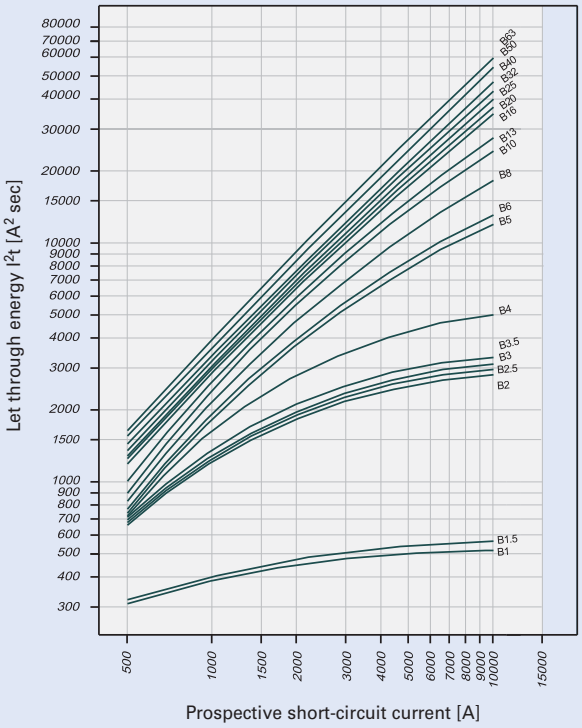
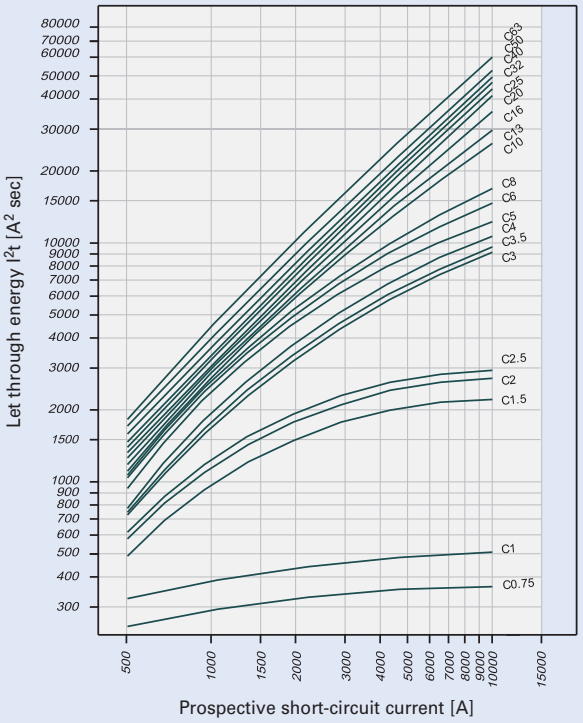
Let-through Energy PL7

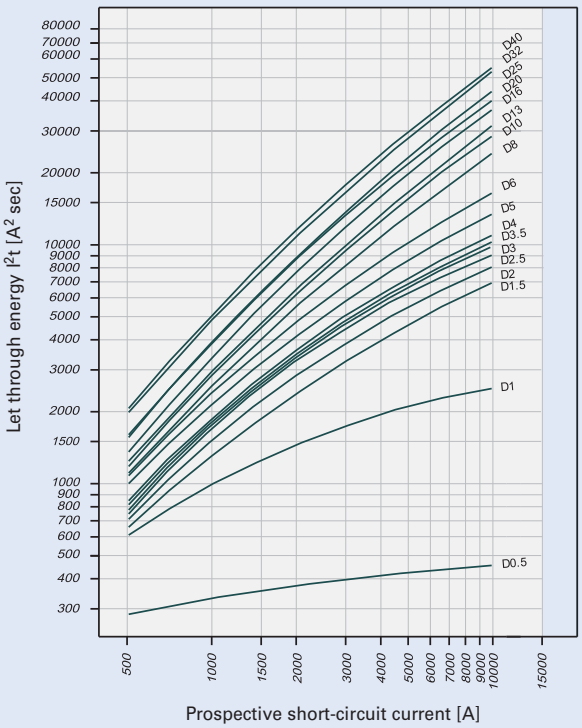
Let-through energy PL7, characteristic B, 1-pole



Let-through energy PL7, characteristic C, 1-pole



Let-through energy PL7, characteristic D, 1-pole



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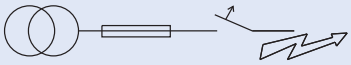
Short Circuit Selectivity PL7 towards DII-DIV fuse link

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

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



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

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

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

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

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

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

[1] Selectivity limit current I_s under 0.5 kA

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

no selectivity

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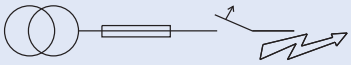
Short Circuit Selectivity PL7 towards D01-D03 fuse link

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

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



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

PL7	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5[1]	<0.5[1]	0.6	1.0	10.0[2]	10.0[2]	10.0[2]	10.0[2]	10.0[2]
4	<0.5[1]	<0.5[1]	0.5	0.9	2.5	10.0[2]	10.0[2]	10.0[2]	10.0[2]
5		<0.5[1]	0.5	0.8	1.7	4.0	7.0	10.0[2]	10.0[2]
6		<0.5[1]	0.5	0.8	1.6	3.6	6.0	10.0[2]	10.0[2]
8			0.5	0.8	1.4	2.8	4.3	8.2	10.0[2]
10			0.5	0.7	1.3	2.4	3.4	6.0	10.0[2]
13			<0.5[1]	0.7	1.2	2.3	3.2	5.3	10.0[2]
16				0.6	1.1	2.2	2.9	4.6	10.0
20					1.1	2.1	2.8	4.4	9.3
25					1.1	2.0	2.7	4.2	8.7
32						2.0	2.6	4.0	8.0
40							2.5	3.8	7.5
50							2.3	3.4	6.7
63									6.2

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

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

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

PL7	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
4		<0.5[1]	0.5	0.7	1.7	4.6	7.7	10.0[2]	10.0[2]
5		<0.5[1]	<0.5[1]	0.6	1.5	3.5	5.8	10.0[2]	10.0[2]
6			<0.5[1]	0.5	1.3	2.9	4.5	9.0	10.0[2]
8			<0.5[1]	0.5	1.2	2.4	3.5	6.0	10.0[2]
10				0.5	1.1	2.2	3.0	5.0	10.0[2]
13					1.1	2.1	2.9	4.6	10.0[2]
16						1.9	2.6	3.9	9.0
20						1.7	2.3	3.5	8.0
25							2.2	3.4	7.5
32								2.9	6.0
40									5.7

[1] Selectivity limit current I_s under 0.5 kA

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

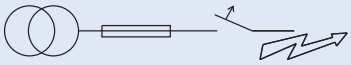
no selectivity

EATON Powering Business Worldwide

Short Circuit Selectivity PL7 towards NH-00 Fuses

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

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



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

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

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

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

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

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

[1] Selectivity limit current I_s under 0.5 kA

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

no selectivity

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Miniature Circuit Breakers PL6

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

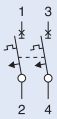
Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal contact for subsequent installation	ZP-NHK	248437
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35mm²	Z-HA-EK/35	263960
Switching interlock	Z-IS/SPE-1TE	274418

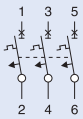
Connection diagrams

1-pole

2-pole



3-pole

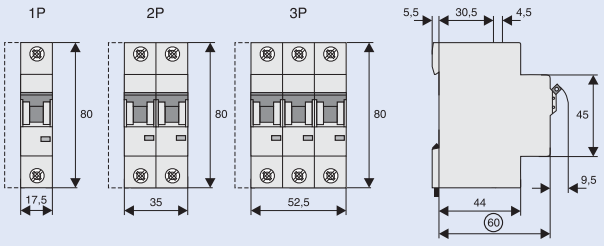


Technical Data

Electrical	
Design according to	IEC/EN 60898-1
Current test marks as printed onto the device	
Rated voltage	AC: 230/400V DC: 48V (per pole, max. 2 poles)
Rated frequency	50/60 Hz
Rated breaking capacity IEC/EN 60898-1	6 kA
Characteristic	B, C, D
Back-up fuse	max. 100 A gL
Selectivity class	3
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles
Line voltage connection	optional (above/below)
Min. voltage	12 V AC/DC

Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm per pole (1MU)
Mounting	quick fastening with 3 lock-in positions on DIN rail IEC/EN 60715
Degree of protection	IP20
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1-25 mm²
Terminal fastening torque	2-2.4 Nm
Busbar thickness	0.8 - 2 mm
Mounting	independent of position

Dimensions (mm)



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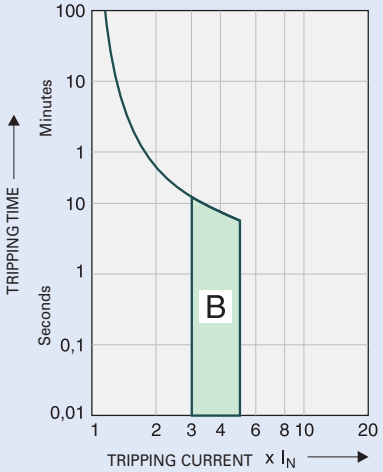
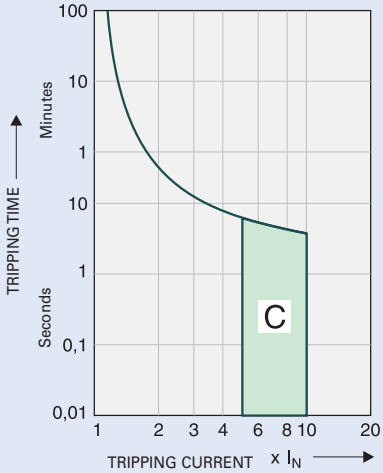
Tripping Characteristics (IEC/EN 60898-1)

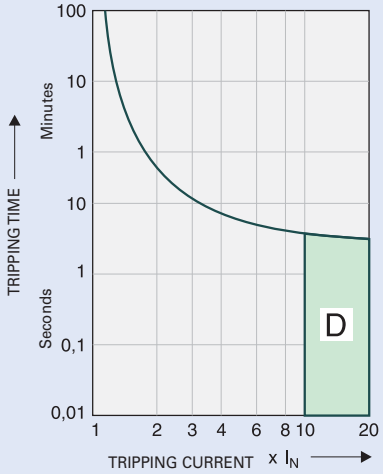
Tripping characteristic B



Tripping characteristic C



Tripping characteristic D



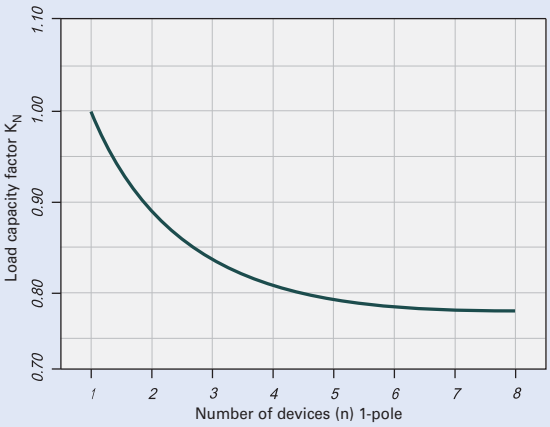
Quick-acting (B), slow (C), very slow (D)

Effect of the Ambient Temperature on Thermal Tripping Behaviour

Adjusted rated current values according to the ambient temperature

	Ambient temperature T [°C]															
I_n [A]	-25	-20	-10	0	10	20	30	35	40	45	50	55	60	65	70	75
0.16	0.20	0.19	0.19	0.18	0.17	0.17	0.16	0.16	0.15	0.15	0.15	0.14	0.14	0.14	0.14	0.13
0.25	0.31	0.30	0.29	0.28	0.27	0.26	0.25	0.25	0.24	0.24	0.23	0.23	0.22	0.22	0.21	0.21
0.5	0.61	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.48	0.47	0.46	0.45	0.44	0.43	0.42	0.41
0.75	0.92	0.90	0.87	0.84	0.81	0.78	0.75	0.74	0.73	0.71	0.69	0.68	0.66	0.65	0.64	0.62
1	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.99	0.97	0.95	0.93	0.90	0.89	0.87	0.85	0.83
1.5	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.2
1.6	2.0	1.9	1.9	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3
2	2.4	2.4	2.3	2.2	2.2	2.1	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7
2.5	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1
3	3.7	3.6	3.5	3.4	3.3	3.1	3.0	3.0	2.9	2.8	2.8	2.7	2.7	2.6	2.5	2.5
3.5	4.3	4.2	4.1	3.9	3.8	3.7	3.5	3.4	3.4	3.3	3.2	3.2	3.1	3.0	3.0	2,9
4	4,9	4.8	4.7	4.5	4.3	4.2	4.0	3.9	3.9	3.8	3.7	3.6	3.5	3.5	3.4	3.3
5	6.1	6.0	5.8	5.6	5.4	5.2	5.0	4.9	4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.1
6	7.3	7.2	7.0	6.7	6.5	6.3	6.0	5.9	5.8	5.7	5.6	5.4	5.3	5.2	5.1	5.0
8	9.8	9.6	9.3	9.0	8.7	8.4	8.0	7.9	7.7	7.6	7.4	7.2	7.1	6,9	6,8	6,6
10	12	12	12	11	11	10	10	9.9	9.7	9.5	9.3	9.0	8.9	8.7	8.5	8.3
12	15	14	14	13	13	13	12	12	12	11	11	11	11	10	10	10
13	16	16	15	15	14	14	13	13	13	12	12	12	12	11	11	11
15	18	18	17	17	16	16	15	15	15	14	14	14	13	13	13	12
16	20	19	19	18	17	17	16	16	15	15	15	14	14	14	14	13
20	24	24	23	22	22	21	20	20	19	19	19	18	18	17	17	17
25	31	30	29	28	27	26	25	25	24	24	23	23	22	22	21	21
32	39	38	37	36	35	33	32	32	31	30	30	29	28	28	27	26
40	49	48	47	45	43	42	40	39	39	38	37	36	35	35	34	33
50	61	60	58	56	54	52	50	49	48	47	46	45	44	43	42	41
63	77	76	73	71	68	66	63	62	61	60	58	57	56	55	53	52

Load Capacity of Series Connected Miniature Circuit Breakers



Effect of Power Frequency

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

	Power frequency f [Hz]						
	$16^2/_3$	50	60	100	200	300	400
$I_{MA}(f)/I_{MA}(50Hz)$ [%]	91	100	101	106	115	134	141

xPole

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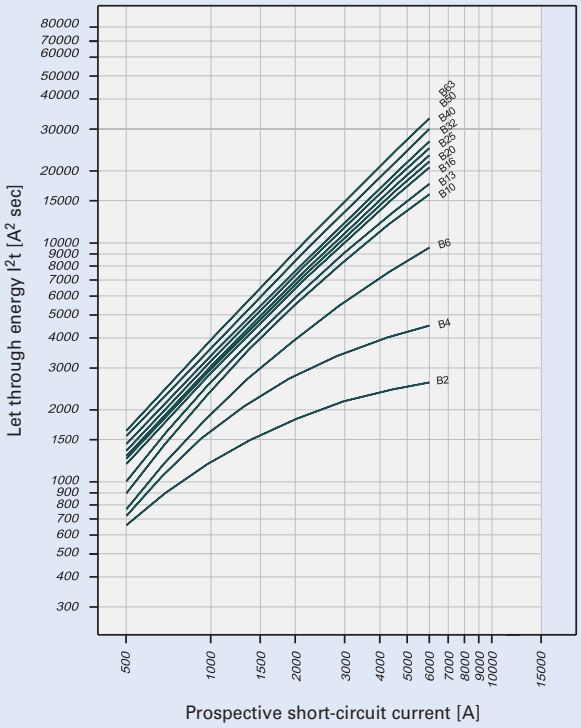
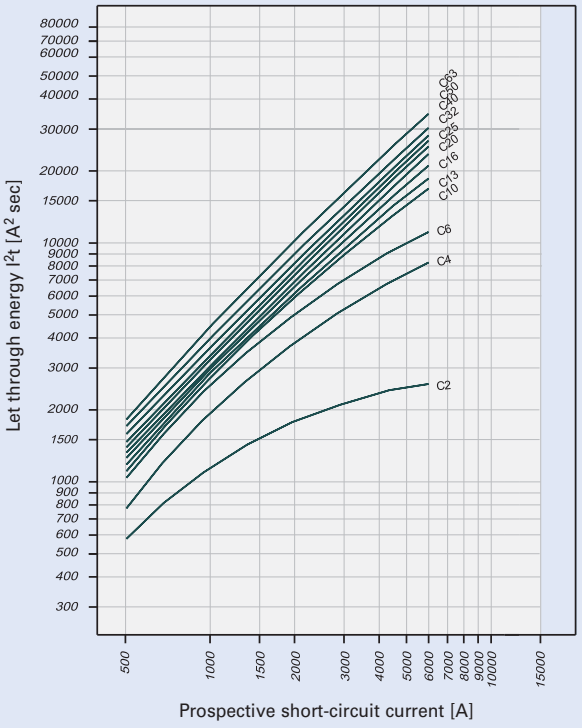
Let-through Energy PL6

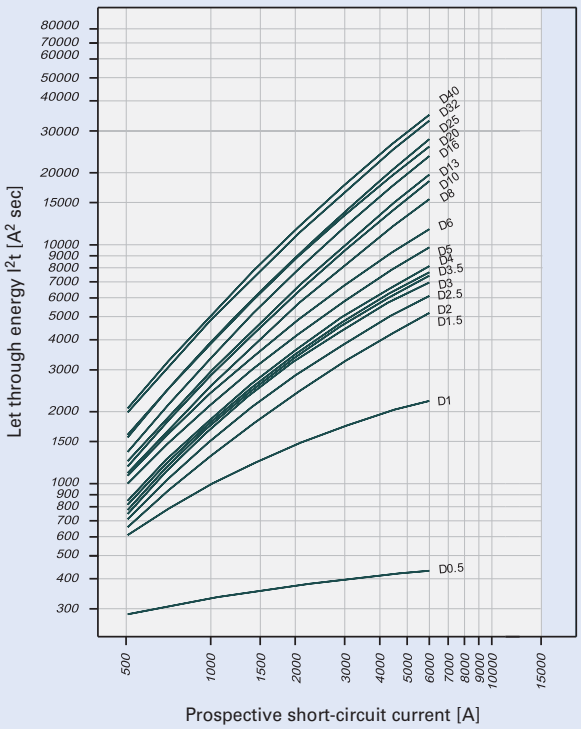
Let-through energy PL6, characteristic B, 1-pole



Let-through energy PL6, characteristic C, 1-pole



Let-through energy PL6, characteristic D, 1-pole

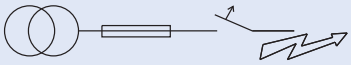


Powering Business Worldwide

Short Circuit Selectivity PL6 towards DII-DIV fuse link

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

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



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

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

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

PL6	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
2	<0.5[1]	<0.5[1]	0.8	1.6	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
4	<0.5[1]	<0.5[1]	0.6	0.8	1.8	3.6	6.0[2]	6.0[2]	6.0[2]
5	<0.5[1]	<0.5[1]	0.6	0.7	1.5	2.7	6.0[2]	6.0[2]	6.0[2]
6		<0.5[1]	0.5	0.6	1.4	2.4	5.5	6.0[2]	6.0[2]
8		<0.5[1]	<0.5[1]	0.6	1.3	2.2	4.7	6.0[2]	6.0[2]
10			<0.5[1]	0.6	1.3	2.0	3.6	6.0[2]	6.0[2]
13					1.3	1.9	3.3	5.0	6.0[2]
16					1.2	1.8	3.2	4.4	6.0[2]
20					1.2	1.8	3.1	4.1	6.0[2]
25						1.7	2.8	3.8	6.0[2]
32							2.7	3.7	6.0[2]
40								3.5	5.9
50									5.5

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

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

[1] Selectivity limit current I_s under 0.5 kA

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

no selectivity

xPole

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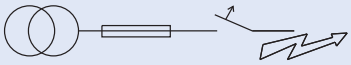
Short Circuit Selectivity PL6 towards D01-D03 fuse link

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

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



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

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

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

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

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

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

[1)] Selectivity limit current I_s under 0.5 kA

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

no selectivity

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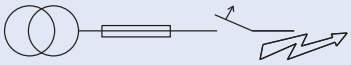
Short Circuit Selectivity PL6 towards NH-00 Fuses

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

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



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

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

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

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

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

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

[1] Selectivity limit current I_s under 0.5 kA

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

no selectivity

EATON Powering Business Worldwide

Miniature Circuit Breakers PL7-DC

- High selectivity between MCB and back-up fuse due to low let-through energy
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for secure isolation
- Rated breaking capacity 10 kA according to IEC/EN 60947-2
- Rated voltage up to 250 V (per pole), τ = 4 ms
- Take into account polarity!

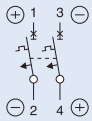
Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
Tripping signal contact for subsequent installation	ZP-NHK	248437
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35mm²	Z-HA-EK/35	263960
Switching interlock	Z-IS/SPE-1TE	274418

Connection diagrams

1-pole

2-pole



Technical Data

Electrical

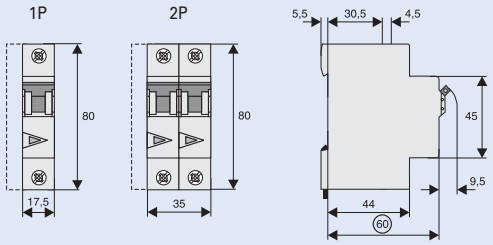
Design according to	IEC/EN 60947-2
Current test marks as printed onto the device	
Rated voltage DC	1-2 A type: 220V (per pole) 3-50 A types: 250V (per pole)
Rated breaking capacity according to IEC/EN 60947-2	10 kA
Characteristic	C
Back-up fuse	max. 100 A gL
Selectivity class	3
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles
Line voltage connection	optional (above/below)

Note: not for PV string protection!

Mechanical

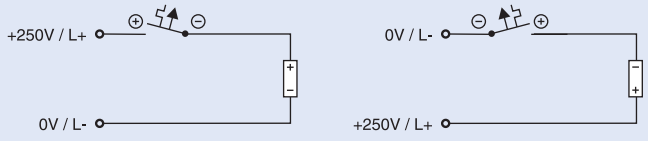
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm per pole (1MU)
Mounting	quick fastening with 3 lock-in positions on DIN rail IEC/EN 60715
Degree of protection	IP20
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1-25 mm²
Terminal fastening torque	2-2.4 Nm
Busbar thickness	0.8 - 2 mm
Mounting	independent of position

Dimensions (mm)

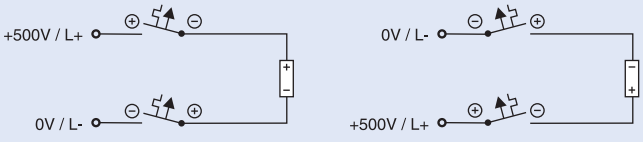


Connection examples

Connection example at 250V=, 1-pole



Connection example at 500V=, 2-pole



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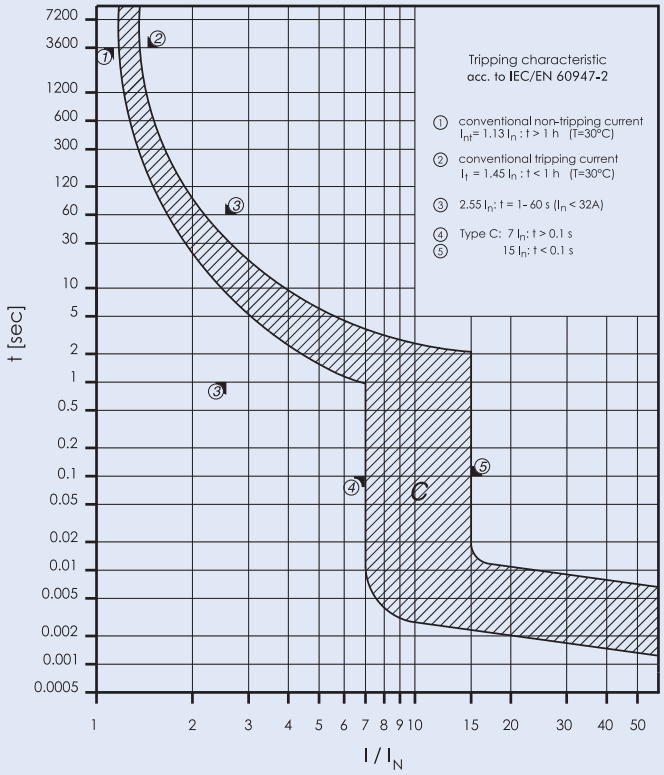
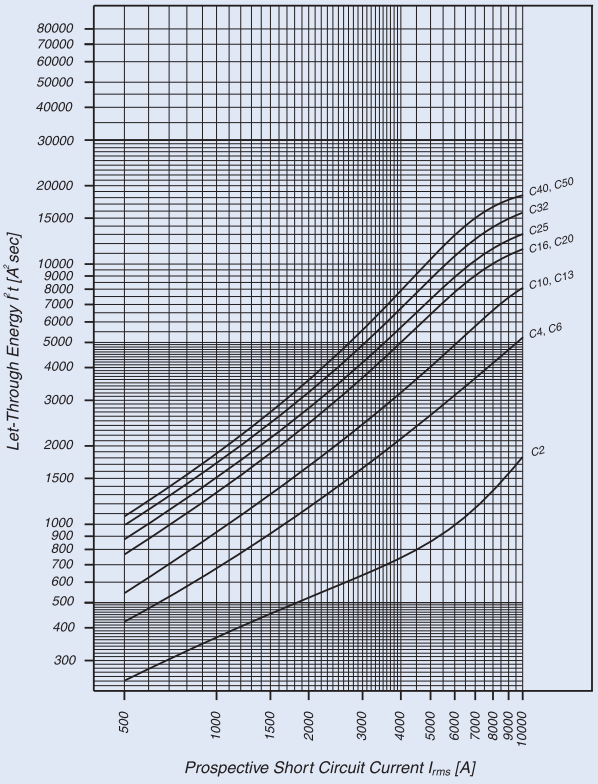
Tripping characteristic PL7-DC

Type C



Let-through Energy PL7-DC

Type C, 250 V d.c., τ = 5 ms (acc. to IEC/EN 60947-2)



Powering Business Worldwide

Miniature Circuit Breakers PL4

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

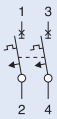
Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal contact for subsequent installation	ZP-NHK	248437
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35mm²	Z-HA-EK/35	263960
Switching interlock	Z-IS/SPE-1TE	274418

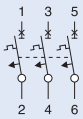
Connection diagrams

1-pole

2-pole



3-pole

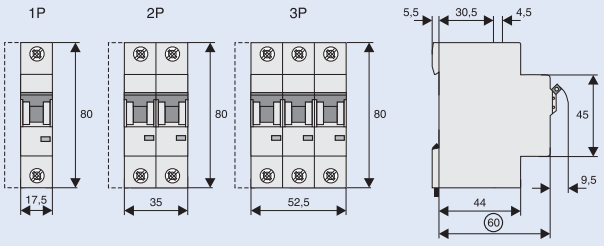


Technical Data

Electrical	
Design according to	IEC/EN 60898-1
Current test marks as printed onto the device	
Rated voltage	AC: 230/400V DC: 48V (per pole, max. 2 poles)
Rated frequency	50/60 Hz
Rated breaking capacity IEC/EN 60898-1	4.5 kA
Characteristic	B, C, D
Back-up fuse	max. 100 A gL
Selectivity class	3
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles
Line voltage connection	optional (above/below)
Min. voltage	12 V AC/DC

Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm per pole (1MU)
Mounting	quick fastening with 3 lock-in positions on DIN rail IEC/EN 60715
Degree of protection	IP20
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1-25 mm²
Terminal fastening torque	2-2.4 Nm
Busbar thickness	0.8 - 2 mm
Mounting	independent of position

Dimensions (mm)



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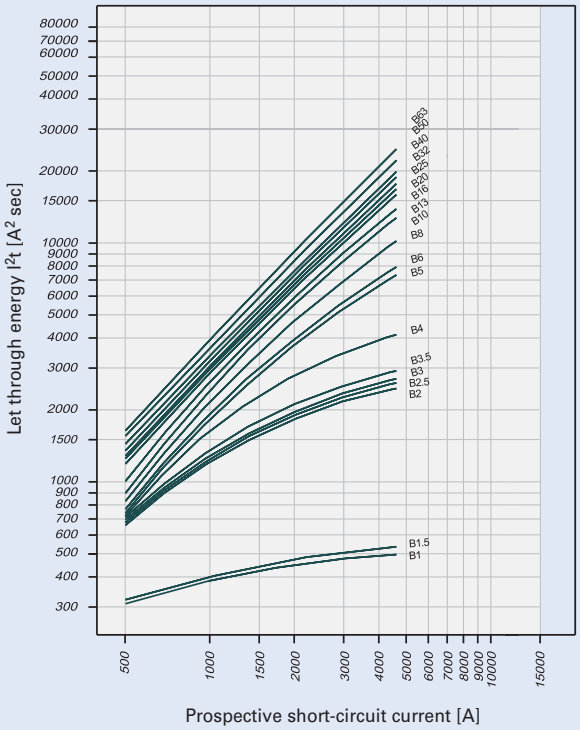
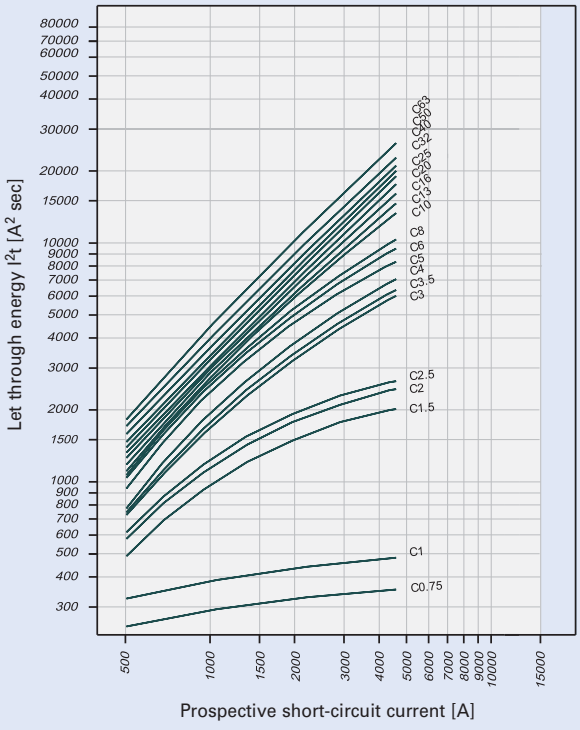
Let-through Energy PL4

Let-through energy PL4, characteristic B, 1-pole



Let-through energy PL4, characteristic C, 1-pole



Short Circuit Selectivity PL4 towards DII-DIV fuse link

In case of short circuit, there is selectivity between the miniature circuit breakers PL4 and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s, only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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

[1] Selectivity limit current I_s under 0.5 kA

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

no selectivity

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

PL4	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
1.0	<0.5[1]	1.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.5	<0.5[1]	1.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.0	<0.5[1]	<0.5[1]	0.8	1.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.5	<0.5[1]	<0.5[1]	0.8	1.5	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.0	<0.5[1]	<0.5[1]	0.8	1.4	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.5	<0.5[1]	<0.5[1]	0.7	1.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.6	1.0	3.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]
5	<0.5[1]	<0.5[1]	0.6	0.9	2.0	3.5	4.5[2]	4.5[2]	4.5[2]
6		<0.5[1]	0.6	0.9	1.8	3.2	4.5[2]	4.5[2]	4.5[2]
8		<0.5[1]	0.5	0.8	1.6	2.6	4.5[2]	4.5[2]	4.5[2]
10			0.5	0.8	1.4	2.2	3.9	4.5[2]	4.5[2]
13			0.5	0.7	1.3	2.0	3.6	4.5[2]	4.5[2]
16				0.6	1.2	1.9	3.2	4.5[2]	4.5[2]
20					1.2	1.8	3.1	4.4	4.5[2]
25					1.2	1.8	3.0	4.2	4.5[2]
32						1.7	2.8	3.9	4.5[2]
40							2.7	3.8	4.5[2]
50							2.5	3.5	4.5[2]
63									4.5[2]

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

PL4	DII-DIV gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
0.75	1.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.0	<0.5[1]	1.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.5	<0.5[1]	<0.5[1]	1.0	2.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.0	<0.5[1]	<0.5[1]	0.8	1.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.5	<0.5[1]	<0.5[1]	0.8	1.4	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.0	<0.5[1]	<0.5[1]	0.8	0.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.5	<0.5[1]	<0.5[1]	0.6	0.9	2.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.6	0.8	1.8	3.6	4.5[2]	4.5[2]	4.5[2]
5	<0.5[1]	<0.5[1]	0.6	0.7	1.5	2.7	4.5[2]	4.5[2]	4.5[2]
6		<0.5[1]	0.5	0.6	1.4	2.4	4.5[2]	4.5[2]	4.5[2]
8		<0.5[1]	<0.5[1]	0.6	1.3	2.2	4.5[2]	4.5[2]	4.5[2]
10			<0.5[1]	0.6	1.3	2.0	3.6	4.5[2]	4.5[2]
13					1.3	1.9	3.3	4.5[2]	4.5[2]
16					1.2	1.8	3.2	4.4	4.5[2]
20					1.2	1.8	3.1	4.1	4.5[2]
25						1.7	2.8	3.8	4.5[2]
32							2.7	3.7	4.5[2]
40								3.5	4.5[2]
50									4.5[2]
63									

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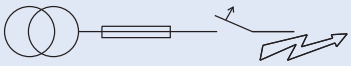
In case of short circuit, there is selectivity between the miniature circuit breakers PL4 and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s, only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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



[1] Selectivity limit current I_s under 0.5 kA

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

no selectivity

Short Circuit Selectivity PL4 towards D01-D03 fuse link

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

PL4	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
1.0	<0.5[1]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.5	<0.5[1]	4.1	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.0	<0.5[1]	<0.5[1]	0.6	1.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.5	<0.5[1]	<0.5[1]	0.6	1.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.0	<0.5[1]	<0.5[1]	0.5	1.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.5	<0.5[1]	<0.5[1]	0.5	0.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.5	0.9	2.5	4.5[2]	4.5[2]	4.5[2]	4.5[2]
5		<0.5[1]	0.5	0.8	1.7	4.0	4.5[2]	4.5[2]	4.5[2]
6		<0.5[1]	0.5	0.8	1.6	3.6	4.5[2]	4.5[2]	4.5[2]
8			0.5	0.8	1.4	2.8	4.3	4.5[2]	4.5[2]
10			0.5	0.7	1.3	2.4	3.4	4.5[2]	4.5[2]
13			<0.5[1]	0.7	1.2	2.3	3.2	4.5[2]	4.5[2]
16				0.6	1.1	2.2	2.9	4.5[2]	4.5[2]
20					1.1	2.1	2.8	4.4	4.5[2]
25					1.1	2.0	2.7	4.2	4.5[2]
32						2.0	2.6	4.0	4.5[2]
40							2.5	3.8	4.5[2]
50							2.3	3.4	4.5[2]
63									4.5[2]

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

PL4	D01-D03 gL/gG								
I_n [A]	10	16	20	25	35	50	63	80	100
0.75	<0.5[1]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.0	<0.5[1]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.5	<0.5[1]	0.5	0.6	0.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.0	<0.5[1]	<0.5[1]	0.5	0.7	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.5	<0.5[1]	<0.5[1]	0.5	0.7	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.0	<0.5[1]	<0.5[1]	<0.5[1]	0.6	1.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.5	<0.5[1]	<0.5[1]	<0.5[1]	0.6	1.8	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	<0.5[1]	0.6	1.6	4.0	4.5[2]	4.5[2]	4.5[2]
5		<0.5[1]	<0.5[1]	0.5	1.3	3.1	4.5[2]	4.5[2]	4.5[2]
6		<0.5[1]	<0.5[1]	<0.5[1]	1.2	2.7	4.5[2]	4.5[2]	4.5[2]
8		<0.5[1]	<0.5[1]	<0.5[1]	1.2	2.5	4.0	4.5[2]	4.5[2]
10			<0.5[1]	<0.5[1]	1.2	2.3	3.1	4.5[2]	4.5[2]
13					1.1	2.2	3.0	4.5[2]	4.5[2]
16					1.1	2.1	2.8	4.4	4.5[2]
20					1.0	2.0	2.6	4.0	4.5[2]
25						1.9	2.5	3.8	4.5[2]
32							2.5	3.7	4.5[2]
40								3.5	4.5[2]
50									4.5[2]
63									

Short Circuit Selectivity PL4 towards NH-00 fuse link

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

PL4	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
1.0	0.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.5	0.8	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.0	<0.5[1]	0.5	1.0	2.5	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.5	<0.5[1]	0.5	1.0	2.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.0	<0.5[1]	0.5	0.9	2.1	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.5	<0.5[1]	0.5	0.9	1.8	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.8	1.3	2.3	4.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
5	<0.5[1]	<0.5[1]	0.7	1.1	1.6	2.2	3.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
6	<0.5[1]	<0.5[1]	0.7	1.1	1.5	2.0	3.3	4.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]
8	<0.5[1]	<0.5[1]	0.6	1.0	1.3	1.7	2.6	3.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]
10		<0.5[1]	0.6	0.9	1.2	1.5	2.2	2.7	4.0	4.5[2]	4.5[2]	4.5[2]
13		<0.5[1]	0.6	0.8	1.1	1.4	2.1	2.6	3.8	4.5[2]	4.5[2]	4.5[2]
16			0.5	0.7	1.0	1.3	1.9	2.4	3.4	4.5[2]	4.5[2]	4.5[2]
20				0.7	1.0	1.3	1.9	2.4	3.3	4.5[2]	4.5[2]	4.5[2]
25				0.7	1.0	1.3	1.8	2.3	3.2	4.5[2]	4.5[2]	4.5[2]
32					0.9	1.2	1.7	2.2	3.1	4.5[2]	4.5[2]	4.5[2]
40								2.1	3.0	4.5[2]	4.5[2]	4.5[2]
50								1.9	2.8	4.5[2]	4.5[2]	4.5[2]
63									4.4	4.5[2]	4.5[2]	

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

PL4	NH-00 gL/gG											
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160
0.75	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.0	0.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
1.5	<0.5[1]	0.6	1.3	4.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.0	<0.5[1]	0.6	1.0	2.5	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
2.5	<0.5[1]	0.5	1.0	2.1	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.0	<0.5[1]	<0.5[1]	0.7	1.2	1.8	2.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
3.5	<0.5[1]	<0.5[1]	0.7	1.1	1.7	2.4	4.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
4	<0.5[1]	<0.5[1]	0.7	1.0	1.5	2.1	3.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
5	<0.5[1]	<0.5[1]	0.6	0.8	1.2	1.7	2.8	3.8	4.5[2]	4.5[2]	4.5[2]	4.5[2]
6	<0.5[1]	<0.5[1]	0.5	0.8	1.2	1.5	2.5	3.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]
8	<0.5[1]	<0.5[1]	0.5	0.8	1.1	1.5	2.3	2.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]
10			0.5	0.7	1.0	1.4	2.0	2.5	3.8	4.5[2]	4.5[2]	4.5[2]
13					1.0	1.3	1.9	2.4	3.6	4.5[2]	4.5[2]	4.5[2]
16					1.0	1.3	1.8	2.3	3.3	4.5[2]	4.5[2]	4.5[2]
20					1.0	1.2	1.7	2.2	3.2	4.5[2]	4.5[2]	4.5[2]
25						1.6	2.1	3.0	4.5[2]	4.5[2]	4.5[2]	
32							2.1	2.9	4.5[2]	4.5[2]	4.5[2]	
40								2.8	4.5[2]	4.5[2]	4.5[2]	
50									4.5[2]	4.5[2]	4.5[2]	
63										4.5[2]	4.5[2]	

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Miniature Circuit Breakers PL6-DC

- High selectivity between MCB and back-up fuse due to low let-through energy
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for secure isolation
- Rated breaking capacity 10 kA according to IEC/EN 60947-2
- Rated voltage up to 250 V (per pole), τ = 4 ms
- Take into account polarity!

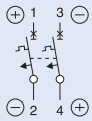
Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
Tripping signal contact for subsequent installation	ZP-NHK	248437
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35mm²	Z-HA-EK/35	263960
Switching interlock	Z-IS/SPE-1TE	274418

Connection diagrams

1-pole

2-pole



Technical Data

Electrical

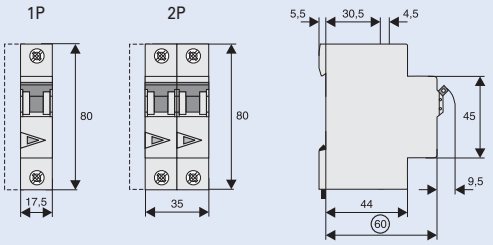
Design according to	IEC/EN 60947-2
Current test marks as printed onto the device	
Rated voltage DC	1-2 A type: 220V (per pole) 3-50 A types: 250V (per pole)
Rated breaking capacity according to IEC/EN 60947-2	6 kA
Characteristic	C
Back-up fuse	max. 100 A gL
Selectivity class	3
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles
Line voltage connection	optional (above/below)

Note: not for PV string protection!

Mechanical

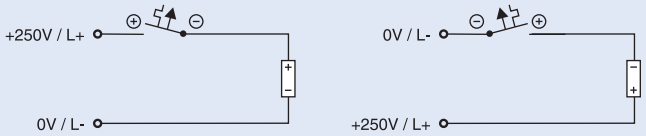
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm per pole (1MU)
Mounting	quick fastening with 3 lock-in positions on DIN rail IEC/EN 60715
Degree of protection	IP20
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1-25 mm²
Terminal fastening torque	2-2.4 Nm
Busbar thickness	0.8 - 2 mm
Mounting	independent of position

Dimensions (mm)

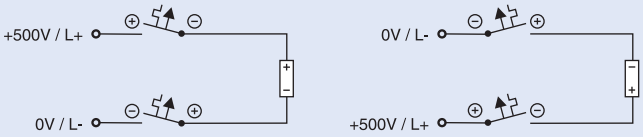


Connection examples

Connection example at 250V=, 1-pole



Connection example at 500V=, 2-pole



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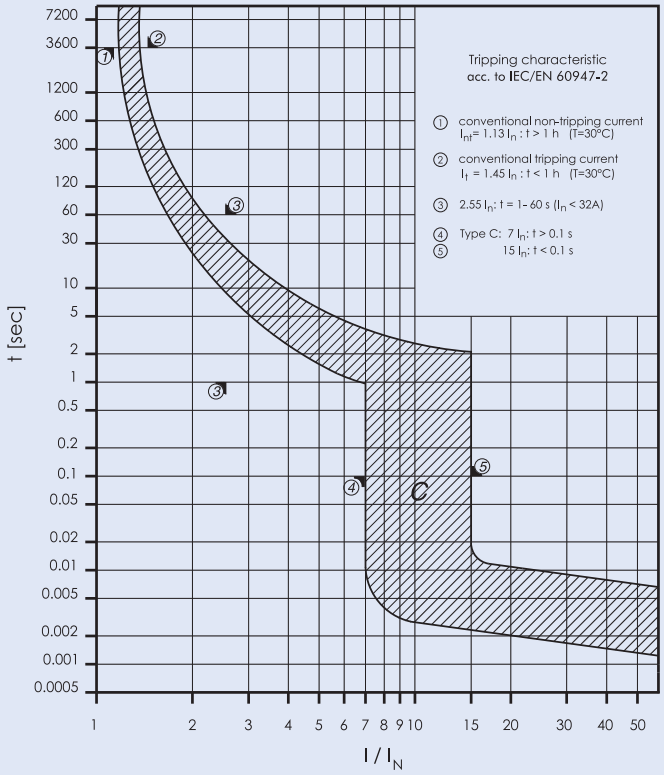
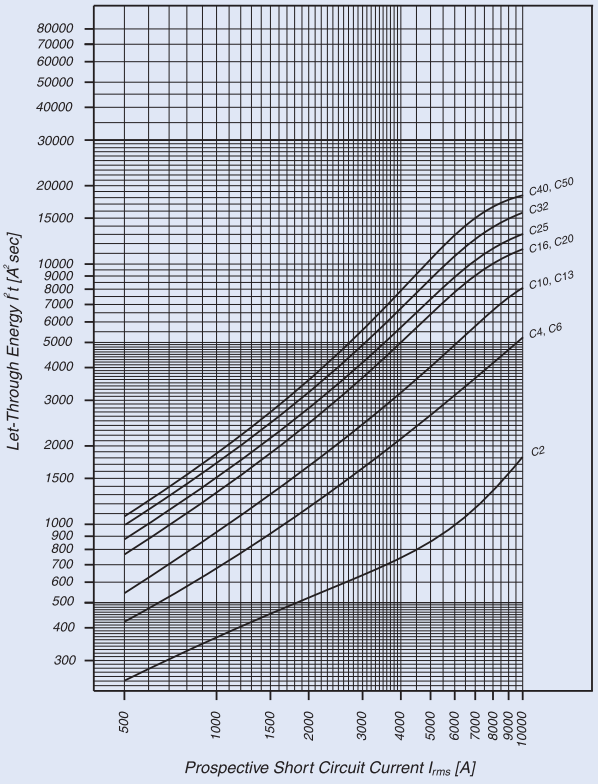
Tripping characteristic PL6-DC

Type C



Let-through Energy PL6-DC

Type C, 250 V d.c., τ = 5 ms (acc. to IEC/EN 60947-2)



xPole

Powering Business Worldwide

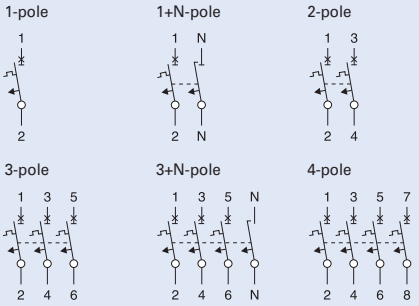
Miniature Circuit Breakers CLS.

- High selectivity between MCB and back-up fuse due to low let-through energy
- Twin-purpose terminal (lift/open-mouthed) above and below
- Compatible with standard busbar
- Meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for secure isolation
- Suitable for applications up to 48 V DC (use CLS6-DC for higher DC voltages)

Accessories:

Auxiliary switch for subsequent installation	Z-AHK	248433
Tripping signal contact for subsequent installation	Z-NHK	248434
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35mm²	Z-HA-EK/35	263960
Switching interlock	Z-IS/SPE-1TE	274418

Connection diagrams

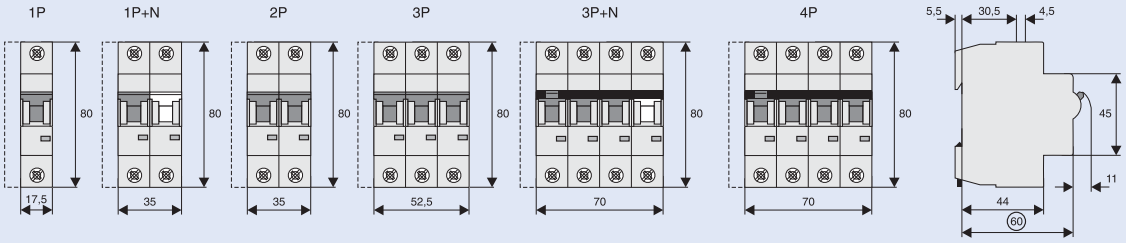


Technical Data

Electrical	
Design according to	IEC/EN 60898-1
Current test marks as printed onto the device	
Rated voltage	AC: 230/400V DC: 48V (per pole, max. 2 Pole)
Rated frequency	50/60 Hz
Rated breaking capacity according to IEC/EN 60898-1	
CLS6	6 kA
CLS4	4.5 kA
Characteristic	B, C, D
Back-up fuse	
>6 kA	max. 100 A gL
>4.5 kA	max. 80 A gL
Selectivity class	3
Endurance	≥ 8,000 operating cycles
Line voltage connection	optional (above/below)

Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm per pole (1MU) 26.3 mm: device 1P+N (1.5MU)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection	IP20
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1-25 mm²
Terminal fastening torque	2-2.4 Nm
Busbar thickness	0.8 - 2 mm

Dimensions (mm)



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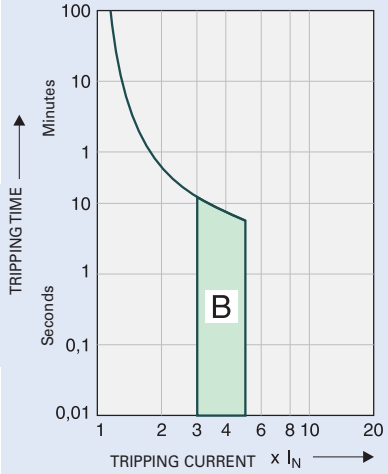
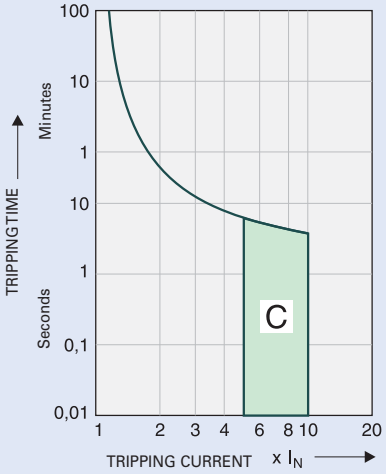
Tripping Characteristics (IEC/EN 60898-1)

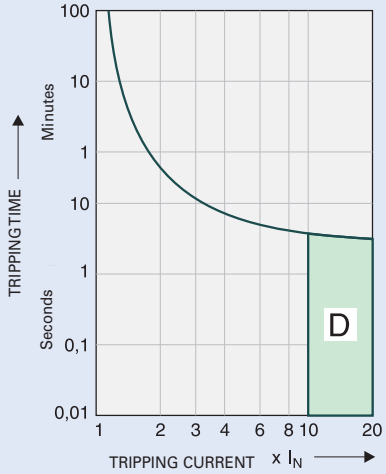
Tripping characteristic B



Tripping characteristic C



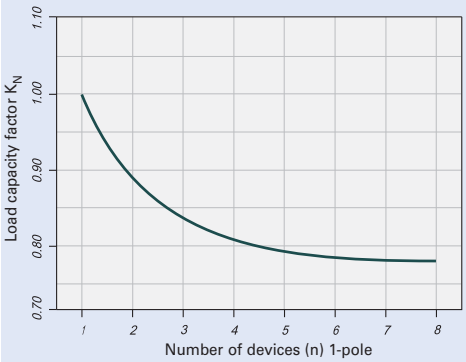
Tripping characteristic D



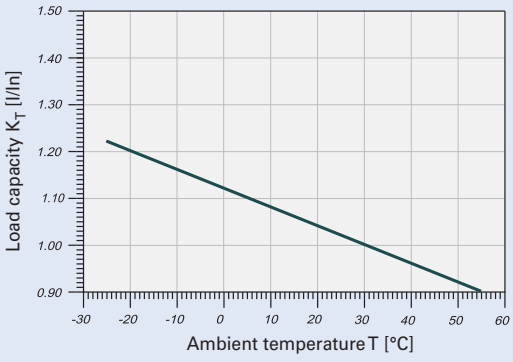
Quick-acting (B), slow (C), very slow (D)

Load Capacity

Load capacity in case of block installation (1-pole)

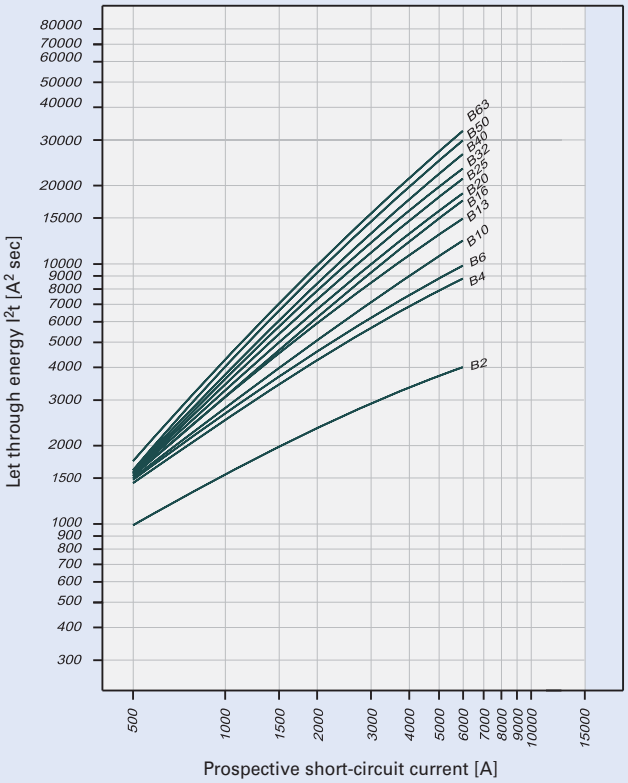


Effect of ambient temperature

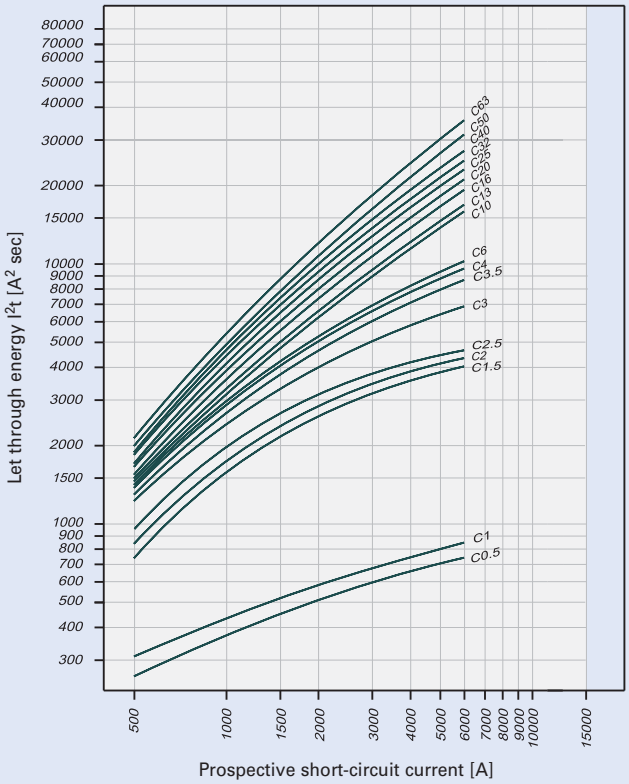


Let-through Energy CLS6

Let-through energy CLS6, characteristic B, 1-pole



Let-through energy CLS6, characteristic C, 1-pole



Determined according to EN 60898-1. Values for characteristic D upon enquiry.

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Short Circuit Selectivity CLS6

- Short circuit selectivity (in kA) between CLS6 and upstream fuse D0 or NH, operating class gL/gG
- 1,4 . . selectivity up to 1.4 kA; [ ] . . . no selectivity

Selectivity towards back-up fuses D01, D02, D03

Rated current I_n of CLS6 in A		Rated current of the back-up fuse in A gL/gG								
		10	**16**	**20**	**25**	**35**	**50**	**63**	**80**	**100**
B- Characteristic	**2**	<0,5	<0,5	0,5	0,8	2,2	6,0	6,0	6,0	6,0
	4	<0,5	<0,5	<0,5	0,5	1,2	3,1	5,5	6,0	6,0
	6		<0,5	<0,5	0,5	1,2	2,7	4,5	6,0	6,0
	10			<0,5	0,5	1,1	2,3	3,6	5,0	6,0
	13			<0,5	0,5	1,0	2,0	3,1	4,3	6,0
	16				0,5	1,0	1,7	2,8	3,8	6,0
	20					0,9	1,6	2,7	3,6	6,0
	25					0,9	1,6	2,5	3,3	6,0
	32						1,6	2,3	3,0	5,8
	40							2,2	2,9	5,3
	50							2,1	2,7	4,8
	63									4,5
C- Characteristic	**0,5**	<0,5	1,1	6,0	6,0	6,0	6,0	6,0	6,0	6,0
	1	<0,5	0,8	3,9	6,0	6,0	6,0	6,0	6,0	6,0
	2	<0,5	<0,5	0,5	0,8	1,7	6,0	6,0	6,0	6,0
	3	<0,5	<0,5	<0,5	0,6	1,3	4,3	6,0	6,0	6,0
	4	<0,5	<0,5	<0,5	0,6	1,2	2,7	4,7	6,0	6,0
	6		<0,5	<0,5	0,6	1,1	2,3	4,0	6,0	6,0
	10			<0,5	0,6	1,1	1,9	2,8	3,9	6,0
	13					1,0	1,8	2,7	3,7	6,0
	16					1,0	1,7	2,5	3,3	6,0
	20					0,9	1,6	2,3	3,1	6,3
	25						1,5	2,2	2,9	5,7
	32							2,1	2,7	5,3
	40								2,6	5,0
	50									4,5
	63									

Selectivity towards back-up fuses NH Gr. 00

Rated current I_n of CLS6 in A		Rated current of the back-up fuse in A gL/gG										
		16	**20**	**25**	**35**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
B- Characteristic	**2**	<0,5	<0,5	0,6	3,2	6,0	6,0	6,0	6,0	6,0	6,0	6,0
	4	<0,5	<0,5	<0,5	1,2	1,8	3,0	4,8	7,2	6,0	6,0	6,0
	6	<0,5	<0,5	<0,5	1,1	1,6	2,6	4,0	5,8	6,0	6,0	6,0
	10		<0,5	<0,5	1,1	1,5	2,2	3,2	4,5	6,0	6,0	6,0
	13		<0,5	<0,5	1,0	1,4	2,0	2,9	4,0	6,0	6,0	6,0
	16			<0,5	0,9	1,3	1,8	2,6	3,5	6,0	6,0	6,0
	20				0,9	1,3	1,7	2,4	3,3	6,0	6,0	6,0
	25				0,9	1,1	1,6	2,3	3,1	5,5	6,0	6,0
	32				0,8	1,1	1,5	2,1	2,9	5,0	6,0	6,0
	40						1,5	2,0	2,8	4,6	6,0	6,0
	50							1,9	2,7	4,2	6,0	6,0
	63									3,9	6,0	6,0
C- Characteristic	**0,5**	0,9	2,7	6,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0
	1	0,7	2,0	1,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0
	2	<0,5	<0,5	0,6	2,2	4,2	6,0	6,0	6,0	6,0	6,0	6,0
	3	<0,5	<0,5	0,5	1,4	2,1	4,0	6,0	6,0	6,0	6,0	6,0
	4	<0,5	<0,5	<0,5	1,1	1,5	2,5	4,0	6,0	6,0	6,0	6,0
	6	<0,5	<0,5	<0,5	1,0	1,4	2,3	3,6	5,3	6,0	6,0	6,0
	10			<0,5	0,9	1,3	1,8	2,6	3,6	6,0	6,0	6,0
	13				0,9	1,3	1,7	2,5	3,5	6,0	6,0	6,0
	16				0,9	1,1	1,6	2,3	3,2	5,8	6,0	6,0
	20				0,8	1,1	1,5	2,1	3,0	5,3	6,0	6,0
	25						1,4	2,0	2,8	4,8	6,0	6,0
	32							1,9	2,6	4,5	6,0	6,0
	40								2,5	4,3	6,0	6,0
	50									4,0	6,0	6,0
	63										6,0	6,0

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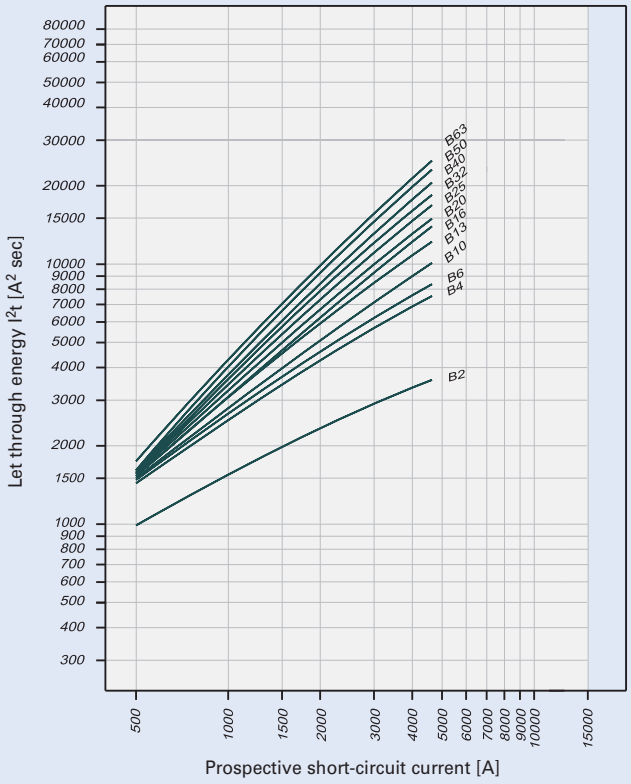
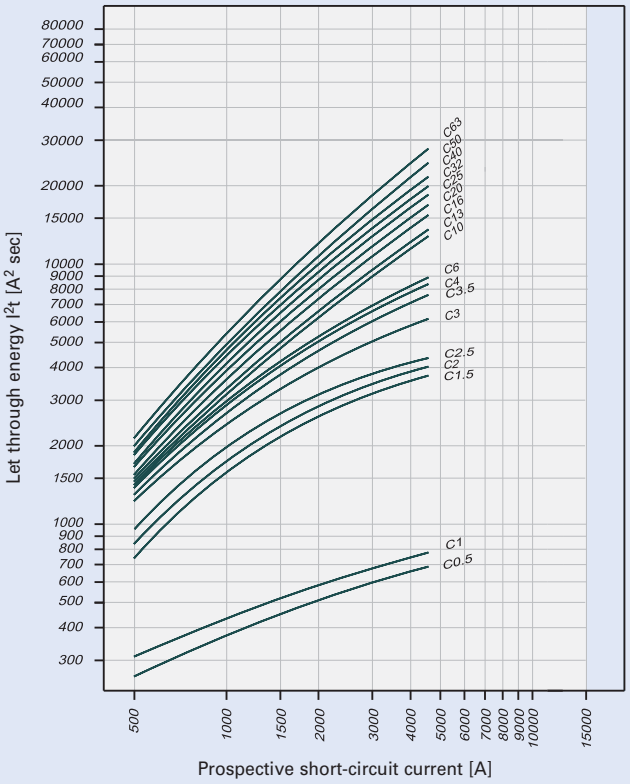
Let-through Energy CLS4

Let-through energy CLS4, characteristic B, 1-pole



Let-through energy CLS4, characteristic C, 1-pole



Determined according to EN 60898-1.

Short Circuit Selectivity CLS4

- Short circuit selectivity (in kA) between CLS4 and upstream fuse D0 NH, operating class gL/gG
- 1,4 . . selectivity up to 1.4 kA; . . . no selectivity

Selectivity towards back-up fuses D01, D02, D03

Rated current I_n of CLS4 in A		Rated current of the back-up fuse in A gL/gG								
		10	**16**	**20**	**25**	**35**	**50**	**63**	**80**	**100**
B-Characteristic	**2**	<0,5	<0,5	0,5	0,8	2,2	4,5	4,5	4,5	4,5
	4	<0,5	<0,5	<0,5	0,5	1,2	3,1	4,5	4,5	4,5
	6		<0,5	<0,5	0,5	1,2	2,7	4,5	4,5	4,5
	10			<0,5	0,5	1,1	2,3	3,6	4,5	4,5
	13			<0,5	0,5	1,0	2,0	3,1	4,3	4,5
	16				0,5	1,0	1,7	2,8	3,8	4,5
	20					0,9	1,6	2,7	3,6	4,5
	25					0,9	1,6	2,5	3,3	4,5
	32						1,6	2,3	3,0	4,5
	40							2,2	2,9	4,5
	50							2,1	2,7	4,5
	63									4,5
C-Characteristic	**0,5**	<0,5	1,1	4,5	4,5	4,5	4,5	4,5	4,5	4,5
	1	<0,5	0,8	3,9	4,5	4,5	4,5	4,5	4,5	4,5
	2	<0,5	<0,5	0,5	0,8	1,7	4,5	4,5	4,5	4,5
	3	<0,5	<0,5	<0,5	0,6	1,3	4,3	4,5	4,5	4,5
	4	<0,5	<0,5	<0,5	0,6	1,2	2,7	4,5	4,5	4,5
	6		<0,5	<0,5	0,6	1,1	2,3	4,0	4,5	4,5
	10			<0,5	0,6	1,1	1,9	2,8	3,9	4,5
	13					1,0	1,8	2,7	3,7	4,5
	16					1,0	1,7	2,5	3,3	4,5
	20					0,9	1,6	2,3	3,1	4,5
	25						1,5	2,2	2,9	4,5
	32							2,1	2,7	4,5
	40								2,6	4,5
	50									4,5
	63									

Short Circuit Selectivity CLS4

- Short circuit selectivity (in kA) between CLS4 and upstream fuse NH, operating class gL/gG
- 1,4 . . selectivity up to 1.4 kA; . . . no selectivity

Selectivity towards back-up fuses NH Gr. 00

Rated current I_n of CLS4 in A		Rated current of the back-up fuse in A gL/gG										
		16	**20**	**25**	**35**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
B- Characteristic	**2**	<0,5	<0,5	0,6	3,2	4,5	4,5	4,5	4,5	4,5	4,5	4,5
	4	<0,5	<0,5	<0,5	1,2	1,8	3,0	4,8	7,2	4,5	4,5	4,5
	6	<0,5	<0,5	<0,5	1,1	1,6	2,6	4,0	5,8	4,5	4,5	4,5
	10		<0,5	<0,5	1,1	1,5	2,2	3,2	4,5	4,5	4,5	4,5
	13		<0,5	<0,5	1,0	1,4	2,0	2,9	4,0	4,5	4,5	4,5
	16			<0,5	0,9	1,3	1,8	2,6	3,5	4,5	4,5	4,5
	20				0,9	1,3	1,7	2,4	3,3	4,5	4,5	4,5
	25				0,9	1,1	1,6	2,3	3,1	4,5	4,5	4,5
	32				0,8	1,1	1,5	2,1	2,9	4,5	4,5	4,5
	40						1,5	2,0	2,8	4,5	4,5	4,5
	50							1,9	2,7	4,2	4,5	4,5
	63									3,9	4,5	4,5
C- Characteristic	**0,5**	0,9	2,7	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5
	1	0,7	2,0	1,0	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5
	2	<0,5	<0,5	0,6	2,2	4,2	4,5	4,5	4,5	4,5	4,5	4,5
	3	<0,5	<0,5	0,5	1,4	2,1	4,0	4,5	4,5	4,5	4,5	4,5
	4	<0,5	<0,5	<0,5	1,1	1,5	2,5	4,0	4,5	4,5	4,5	4,5
	6	<0,5	<0,5	<0,5	1,0	1,4	2,3	3,6	4,5	4,5	4,5	4,5
	10			<0,5	0,9	1,3	1,8	2,6	3,6	4,5	4,5	4,5
	13				0,9	1,3	1,7	2,5	3,5	4,5	4,5	4,5
	16				0,9	1,1	1,6	2,3	3,2	4,5	4,5	4,5
	20				0,8	1,1	1,5	2,1	3,0	4,5	4,5	4,5
	25						1,4	2,0	2,8	4,5	4,5	4,5
	32							1,9	2,6	4,5	4,5	4,5
	40								2,5	4,3	4,5	4,5
	50									4,0	4,5	4,5
	63										4,5	4,5

Powering Business Worldwide

Miniature Circuit Breakers CLS6-DC

- High selectivity between MCB and back-up fuse due to low let-through energy
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for secure isolation
- Rated breaking capacity 10 kA according to IEC/EN 60947-2
- Rated voltage up to 250 V (per pole), τ = 4 ms
- Take into account polarity!

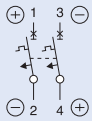
Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
Tripping signal contact for subsequent installation	ZP-NHK	248437
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35mm²	Z-HA-EK/35	263960
Switching interlock	Z-IS/SPE-1TE	274418

Connection diagrams

1-pole

2-pole



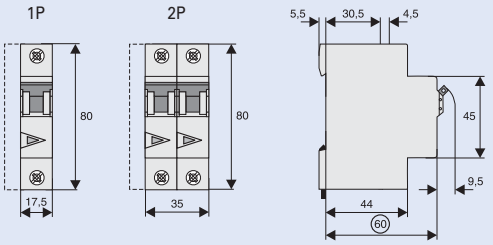
Technical Data

Electrical	
Design according to	IEC/EN 60947-2
Current test marks as printed onto the device	
Rated voltage	
DC	1-2 A type: 220V (per pole) 3-50 A types: 250V (per pole)
Rated breaking capacity according to IEC/EN 60947-2	10 kA
Characteristic	C
Back-up fuse	max. 100 A gL
Selectivity class	3
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles
Line voltage connection	optional (above/below)

Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm per pole (1MU)
Mounting	quick fastening with 3 lock-in positions on DIN rail IEC/EN 60715
Degree of protection	IP20
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1-25 mm²
Terminal fastening torque	2-2.4 Nm
Busbar thickness	0.8 - 2 mm
Mounting	independent of position

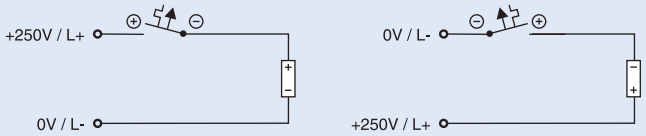
Note: not for PV string protection!

Dimensions (mm)

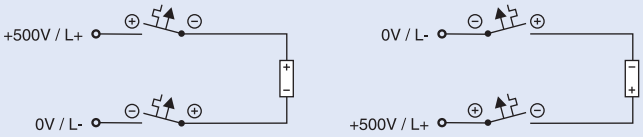


Connection examples

Connection example at 250V=, 1-pole



Connection example at 500V=, 2-pole



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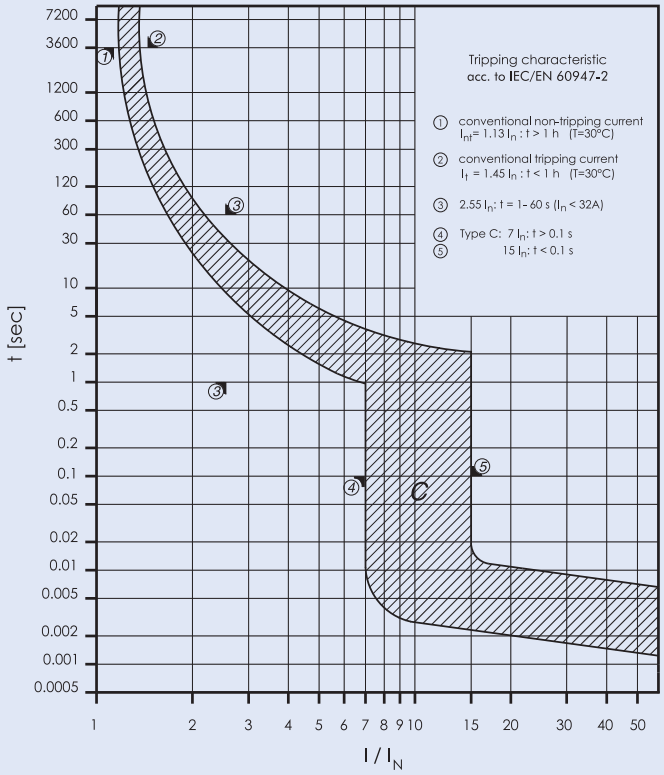
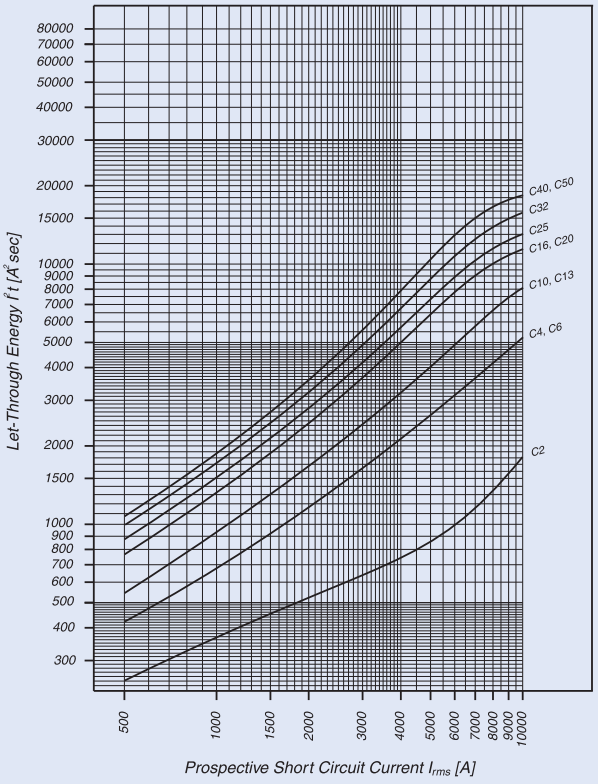
Tripping characteristic CLS6-DC

Type C



Let-through Energy CLS6-DC

Type C, 250 V d.c., τ = 5 ms (acc. to IEC/EN 60947-2)



Powering Business Worldwide

Miniature Circuit Breakers with Plug-in Terminals PLI

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

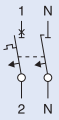
Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal contact for subsequent installation	ZP-NHK	248437
Remote control and automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240
	KLV-TC-4	276241
Additional terminal 35mm²	Z-HA-EK/35	263960
Anti-tamper device	Z-IS/SPE-1TE	274418

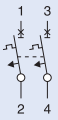
Connection diagrams

1-pole

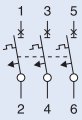
1+N-pole (2MU)



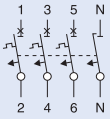
2-pole



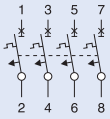
3-pole



3+N-pole



4-pole

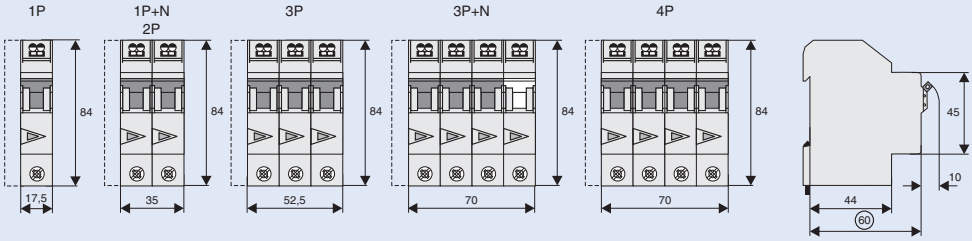


Technical Data

Electrical	
Design according to	IEC/EN 60898-1
Current test marks as printed onto the device	
Rated voltage	AC: 230/400V DC: 48V (per pole)
Rated frequency	50/60 Hz
Rated breaking capacity according to IEC/EN 60898-1	10 kA
Characteristic	B, C, D
Back-up fuse	max. 125 A gL
Selectivity class	3
Endurance	≥ 8,000 operating cycles
Line voltage connection	below

Mechanical	
Frame size	45 mm
Device height	84 mm
Device width	17.5 mm per pole (1MU)
Mounting	quick fastening with 3 lock-in positions on DIN rail EN 50022
Degree of protection	IP20
Upper terminals	twin plug-in terminals
Lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Upper terminal capacity	1-4 mm² with wire end sleeve 1-2.5mm²
Lower terminal capacity	1-25 mm²
Terminal fastening torque	2-2.4 Nm
Busbar thickness	0.8 - 2 mm
Mounting	independent of position

Dimensions (mm)



Powering Business Worldwide

Miniature Circuit Breakers PLN6, PLN4

- High selectivity between MCB and back-up fuse due to low let-through energy
- Busbar positioning optionally above or below
- Compatible with standard busbar
- Switching toggle in colour designating the rated current
- Meets the requirements of insulation co-ordination, distance between contacts ≥ 4 mm, for safety electrical isolation
- 1-pole breaking capacity $I_{cn\ 1}$ = 3 kA

Accessories:

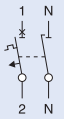
Auxiliary switch		
for subsequent installation	Z-AHK	248433
Tripping signal contact		
for subsequent installation	ZP-NHK	248437
Remote control and		
automatic switching device	Z-FW/LP	248296
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA/..	248288-248291
Compact enclosure	KLV-TC-2	276240

Busbar:

see capter busbar systems

Connection diagram

1+N-pole

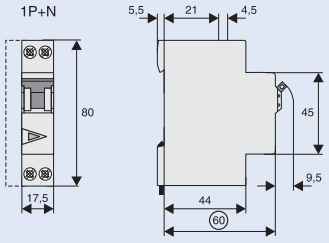


Technical Data

Electrical	
Design according to	IEC/EN 60898-1
Current test marks as printed onto the device	
Rated voltage	230 VAC
Rated frequency	50/60 Hz
Rated breaking capacity	
PLN6	6 kA
PLN4	4.5 kA
Characteristic	B, C
Back-up fuse	
>6 kA	max. 100 A gL/gG
>4.5 kA	max. 80 A gL/gG
Selectivity class	3
Endurance	≥ 8.000 operating cycles

Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17,5 mm (1MU for 1+N)
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection	IP20
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	1 - 16 mm^2

Dimensions (mm)



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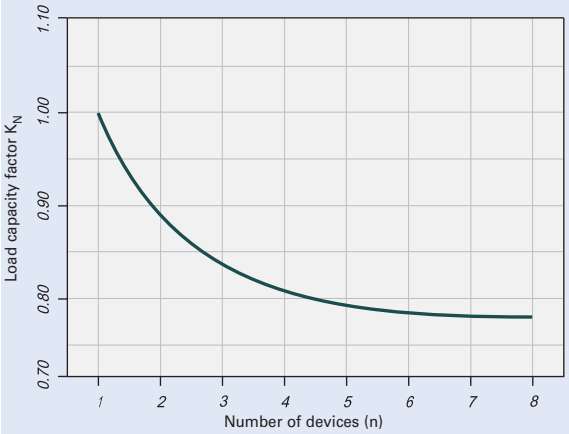
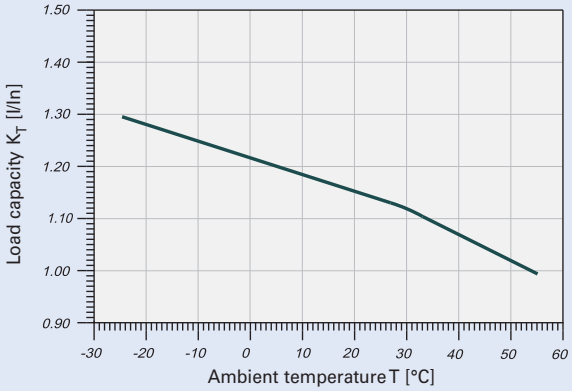
Load capacity PLN6

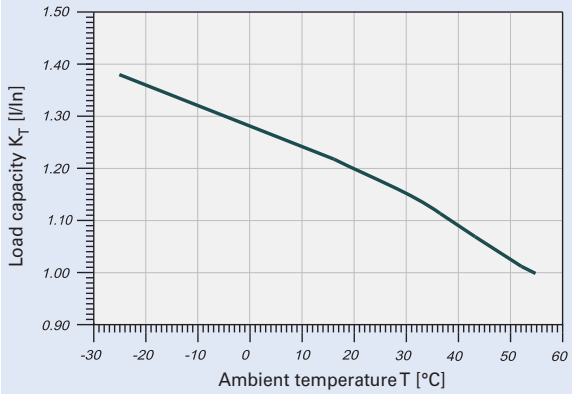
Load capacity in case of MCB block installation



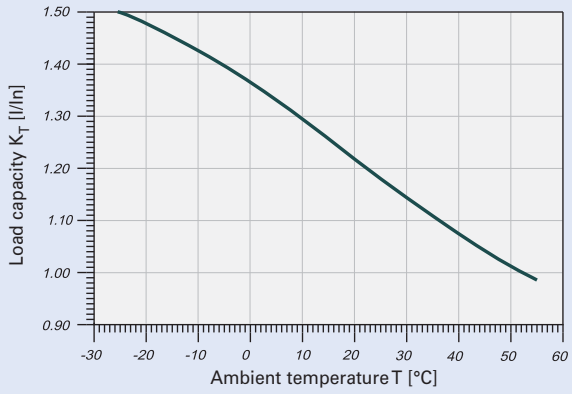
Current carrying capacity at ambient temperature (I_n = 2-13 A)



Current carrying capacity at ambient temperature (I_n = 16-25 A)



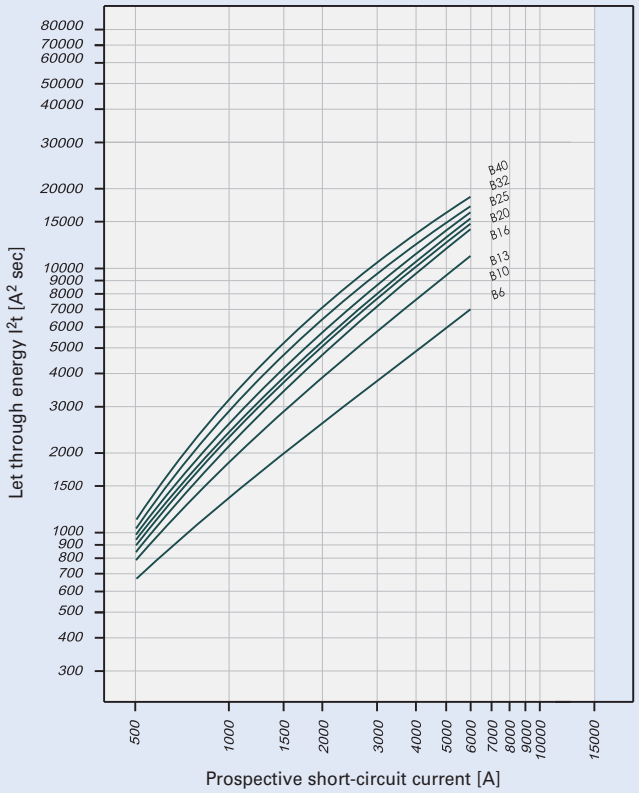
Current carrying capacity at ambient temperature (I_n = 32, 40 A)



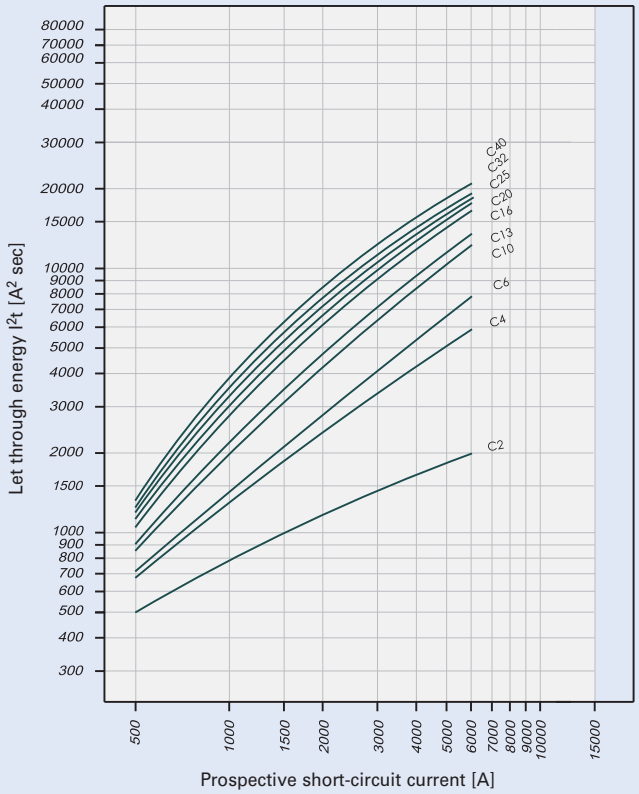
Permitted permanent load at ambient temperature T (°C) with n devices: $I_{DL} = I_n K_T(T) K_N(N)$.

Let-through energy PLN6

Maximum let-through energy PLN6, characteristic B



Maximum let-through energy PLN6, characteristic C



Detemined according to EN 60898-1.

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Short Circuit Selectivity PLN6

In case of short circuit, there is selectivity between the miniature circuit breakers PLN6-.../B,C and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s, only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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

*Short circuit selectivity **PLN6-B/C** towards fuse link **DII-DIV***)*

	DII-DIV gL/gG						
	20	**25**	**35**	**50**	**63**	**80**	**100**
PLN6-B6/1N	0.7	1.2	2.9	4.5	6.0[2]	6.0[2]	6.0[2]
PLN6-B10/1N	0.6	0.9	1.9	3.1	5.7	6.0[2]	6.0[2]
PLN6-B13/1N	0.5	0.7	1.5	2.5	4.5	6.0[2]	6.0[2]
PLN6-B16/1N	0.5	0.7	1.4	2.3	4.3	6.0[2]	6.0[2]
PLN6-B20/1N	0.5	0.7	1.4	2.2	4.0	6.0[2]	6.0[2]
PLN6-B25/1N	0.5	0.6	1.3	2.0	3.8	5.8	6.0[2]
PLN6-B32/1N	0.5	0.6	1.2	1.8	3.4	5.5	6.0[2]
PLN6-B40/1N	<0.5[1]	0.6	1.1	1.7	3.1	5.0	6.0[2]
PLN6-C2/1N	1.5	3.8	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
PLN6-C4/1N	0.7	1.2	3.3	6.0[2]	6.0[2]	6.0[2]	6.0[2]
PLN6-C6/1N	0.7	1.1	2.6	4.5	6.0[2]	6.0[2]	6.0[2]
PLN6-C10/1N	0.5	0.8	1.7	2.8	5.2	6.0[2]	6.0[2]
PLN6-C13/1N	0.5	0.7	1.5	2.5	4.5	6.0[2]	6.0[2]
PLN6-C16/1N	0.5	0.6	1.2	2.0	3.6	5.6	6.0[2]
PLN6-C20/1N	0.5	0.6	1.2	1.8	3.3	5.1	6.0[2]
PLN6-C25/1N	<0.5[1]	0.6	1.1	1.7	3.0	4.8	6.0[2]
PLN6-C32/1N	<0.5[1]	0.6	1.0	1.6	2.8	4.5	6.0[2]
PLN6-C40/1N	<0.5[1]	0.6	1.0	1.5	2.6	4.0	6.0[2]

*Short circuit selectivity **PLN6-B/C** towards fuse link **D01-D03***)*

	D01-D03 gL/gG						
	20	**25**	**35**	**50**	**63**	**80**	**100**
PLN6-B6/1N	0.6	0.9	2.5	5.5	6.0[2]	6.0[2]	6.0[2]
PLN6-B10/1N	0.5	0.8	1.6	3.4	5.0	6.0[2]	6.0[2]
PLN6-B13/1N	0.5	0.7	1.3	2.7	4.0	6.0[2]	6.0[2]
PLN6-B16/1N	0.5	0.6	1.3	2.5	3.8	6.0[2]	6.0[2]
PLN6-B20/1N	<0.5[1]	0.6	1.3	2.4	3.6	6.0[2]	6.0[2]
PLN6-B25/1N	<0.5[1]	0.6	1.2	2.3	3.3	5.8	6.0[2]
PLN6-B32/1N	<0.5[1]	0.6	1.1	2.1	3.0	5.5	6.0[2]
PLN6-B40/1N	<0.5[1]	0.6	1.0	2.0	2.8	4.9	6.0[2]
PLN6-C2/1N	1.1	2.0	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
PLN6-C4/1N	0.6	0.9	2.7	6.0[2]	6.0[2]	6.0[2]	6.0[2]
PLN6-C6/1N	0.6	0.9	2.3	5.0	6.0[2]	6.0[2]	6.0[2]
PLN6-C10/1N	0.5	0.7	1.5	3.0	4.5	6.0[2]	6.0[2]
PLN6-C13/1N	0.5	0.7	1.3	2.7	4.0	6.0[2]	6.0[2]
PLN6-C16/1N	<0.5[1]	0.6	1.1	2.2	3.1	5.5	6.0[2]
PLN6-C20/1N	<0.5[1]	0.6	1.1	2.1	2.9	5.2	6.0[2]
PLN6-C25/1N	<0.5[1]	0.5	1.0	2.0	2.7	4.8	6.0[2]
PLN6-C32/1N	<0.5[1]	0.5	1.0	1.9	2.6	4.5	6.0[2]
PLN6-C40/1N	<0.5[1]	0.5	0.9	1.7	2.3	4.0	6.0[2]

*Short circuit selectivity **PLN6-B/C** towards fuse link **NH-00***)*

	NH-00 gL/gG								
	20	**25**	**32**	**35**	**40**	**50**	**63**	**80**	**100**
PLN6-B6/1N	0.5	0.9	1.5	2.3	3.2	4.9	6.0[2]	6.0[2]	6.0[2]
PLN6-B10/1N	<0.5[1]	0.7	1.2	1.5	2.0	3.1	3.9	5.9	6.0[2]
PLN6-B13/1N	<0.5[1]	0.6	1.0	1.3	1.7	2.5	3.1	4.6	6.0[2]
PLN6-B16/1N	<0.5[1]	0.6	1.0	1.3	1.6	2.4	2.9	4.5	6.0[2]
PLN6-B20/1N	<0.5[1]	0.5	0.9	1.3	1.5	2.3	2.8	4.3	6.0[2]
PLN6-B25/1N	<0.5[1]	0.5	0.9	1.1	1.4	2.1	2.6	4.0	6.0[2]
PLN6-B32/1N	<0.5[1]	0.5	0.8	1.0	1.3	1.9	2.4	3.6	6.0[2]
PLN6-B40/1N	<0.5[1]	0.5	0.8	0.9	1.1	1.7	2.2	3.3	6.0[2]
PLN6-C2/1N	0.7	2.1	6.0	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]	6.0[2]
PLN6-C4/1N	0.5	0.9	1.6	2.6	3.7	6.0	6.0[2]	6.0[2]	6.0[2]
PLN6-C6/1N	0.5	0.8	1.4	2.1	2.9	4.5	5.7	6.0[2]	6.0[2]
PLN6-C10/1N	<0.5[1]	0.6	1.0	1.4	1.9	2.8	3.5	5.2	6.0[2]
PLN6-C13/1N	<0.5[1]	0.6	0.9	1.3	1.7	2.5	3.1	4.7	6.0[2]
PLN6-C16/1N	<0.5[1]	0.5	0.7	1.0	1.3	2.0	2.5	3.8	6.0[2]
PLN6-C20/1N	<0.5[1]	0.5	0.7	0.9	1.2	1.8	2.3	3.5	6.0[2]
PLN6-C25/1N	<0.5[1]	0.5	0.7	0.9	1.1	1.6	2.1	3.3	6.0[2]
PLN6-C32/1N	<0.5[1]	<0.5[1]	0.6	0.8	1.1	1.5	2.0	3.1	6.0[2]
PLN6-C40/1N	<0.5[1]	<0.5[1]	0.6	0.8	1.0	1.4	1.9	2.9	6.0[2]

[1] Selectivity limit current I_s under 0.5 kA

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

xPole

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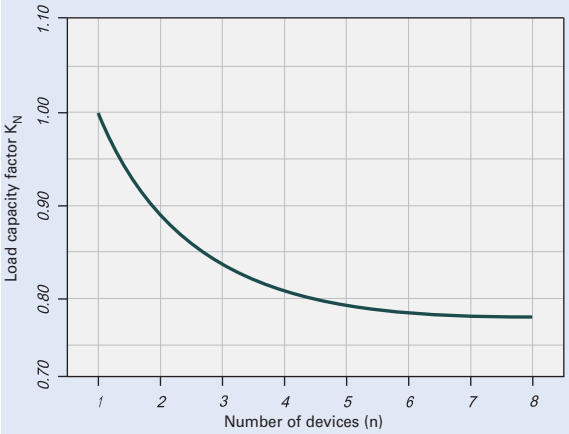
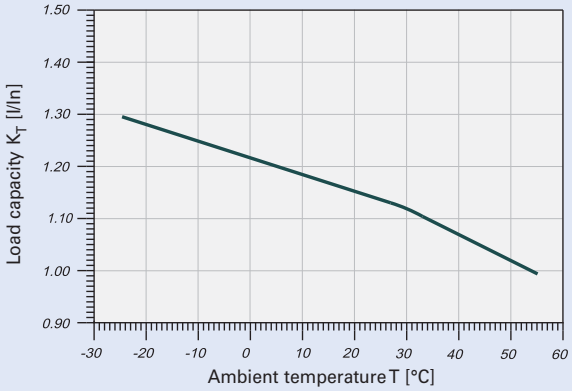
Load capacity PLN4

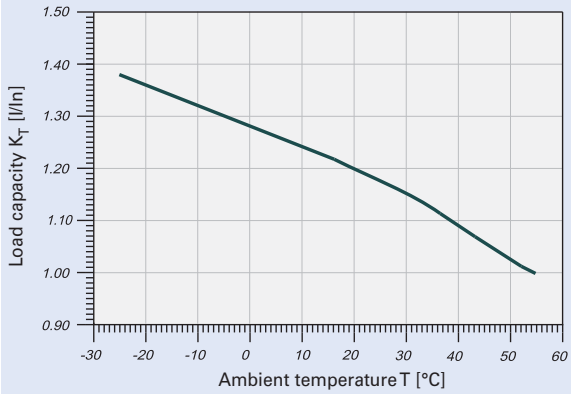
Load capacity in case of MCB block installation



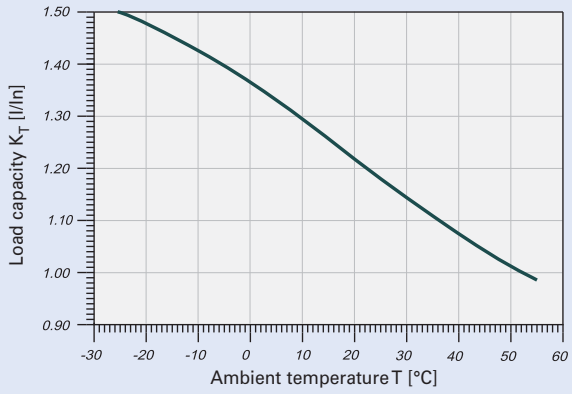
Current carrying capacity at ambient temperature (I_n = 2-13 A)



Current carrying capacity at ambient temperature (I_n = 16-25 A)



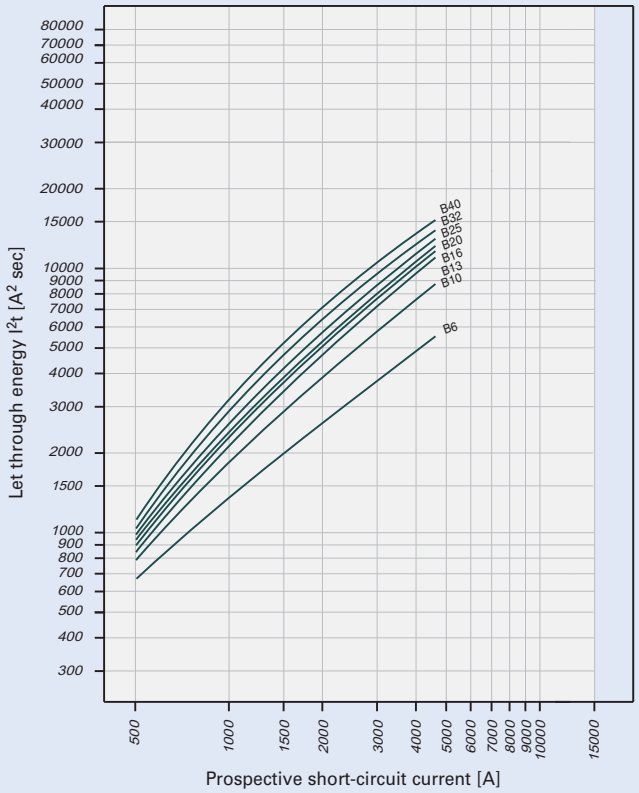
Current carrying capacity at ambient temperature (I_n = 32, 40 A)



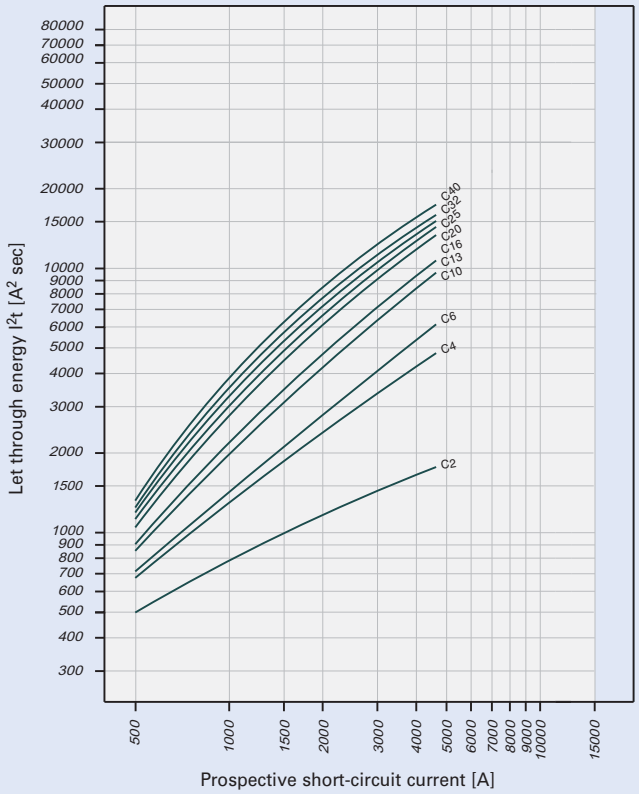
Permitted permanent load at ambient temperature T (°C) with n devices: $I_{DL} = I_n K_T(T) K_N(N)$.

Let-through energy PLN4

Maximum let-through energy PLN4, characteristic B



Maximum let-through energy PLN4, characteristic C



Detemined according to EN 60898-1.

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Short Circuit Selectivity PLN4

In case of short circuit, there is selectivity between the miniature circuit breakers PLN4-.../B,C and the upstream fuses up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s, only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

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

*Short circuit selectivity **PLN4-B/C** towards fuse link **DII-DIV***)*

	DII-DIV gL/gG						
	20	25	35	50	63	80	100
PLN4-B6/1N	0.7	1.2	2.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]
PLN4-B10/1N	0.6	0.9	1.9	3.1	4.5[2]	4.5[2]	4.5[2]
PLN4-B13/1N	0.5	0.7	1.5	2.5	4.5[2]	4.5[2]	4.5[2]
PLN4-B16/1N	0.5	0.7	1.4	2.3	4.3	4.5[2]	4.5[2]
PLN4-B20/1N	0.5	0.7	1.4	2.2	4.0	4.5[2]	4.5[2]
PLN4-B25/1N	0.5	0.6	1.3	2.0	3.8	4.5[2]	4.5[2]
PLN4-B32/1N	0.5	0.6	1.2	1.8	3.4	4.5[2]	4.5[2]
PLN4-B40/1N	<0.5[1]	0.6	1.1	1.7	3.1	4.5[2]	4.5[2]
PLN4-C2/1N	1.5	3.8	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
PLN4-C4/1N	0.7	1.2	3.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]
PLN4-C6/1N	0.7	1.1	2.6	4.5[2]	4.5[2]	4.5[2]	4.5[2]
PLN4-C10/1N	0.5	0.8	1.7	2.8	4.5[2]	4.5[2]	4.5[2]
PLN4-C13/1N	0.5	0.7	1.5	2.5	4.5[2]	4.5[2]	4.5[2]
PLN4-C16/1N	0.5	0.6	1.2	2.0	3.6	4.5[2]	4.5[2]
PLN4-C20/1N	0.5	0.6	1.2	1.8	3.3	4.5[2]	4.5[2]
PLN4-C25/1N	<0.5[1]	0.6	1.1	1.7	3.0	4.5[2]	4.5[2]
PLN4-C32/1N	<0.5[1]	0.6	1.0	1.6	2.8	4.5[2]	4.5[2]
PLN4-C40/1N	<0.5[1]	0.6	1.0	1.5	2.6	4.0	4.5[2]

*Short circuit selectivity **PLN4-B/C** towards fuse link **D01-D03***)*

	D01-D03 gL/gG						
	20	25	35	50	63	80	100
PLN4-B6/1N	0.6	0.9	2.5	4.5[2]	4.5[2]	4.5[2]	4.5[2]
PLN4-B10/1N	0.5	0.8	1.6	3.4	4.5[2]	4.5[2]	4.5[2]
PLN4-B13/1N	0.5	0.7	1.3	2.7	4.0	4.5[2]	4.5[2]
PLN4-B16/1N	0.5	0.6	1.3	2.5	3.8	4.5[2]	4.5[2]
PLN4-B20/1N	<0.5[1]	0.6	1.3	2.4	3.6	4.5[2]	4.5[2]
PLN4-B25/1N	<0.5[1]	0.6	1.2	2.3	3.3	4.5[2]	4.5[2]
PLN4-B32/1N	<0.5[1]	0.6	1.1	2.1	3.0	4.5[2]	4.5[2]
PLN4-B40/1N	<0.5[1]	0.6	1.0	2.0	2.8	4.5[2]	4.5[2]
PLN4-C2/1N	1.1	2.0	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
PLN4-C4/1N	0.6	0.9	2.7	4.5[2]	4.5[2]	4.5[2]	4.5[2]
PLN4-C6/1N	0.6	0.9	2.3	4.5[2]	4.5[2]	4.5[2]	4.5[2]
PLN4-C10/1N	0.5	0.7	1.5	3.0	4.5[2]	4.5[2]	4.5[2]
PLN4-C13/1N	0.5	0.7	1.3	2.7	4.0	4.5[2]	4.5[2]
PLN4-C16/1N	<0.5[1]	0.6	1.1	2.2	3.1	4.5[2]	4.5[2]
PLN4-C20/1N	<0.5[1]	0.6	1.1	2.1	2.9	4.5[2]	4.5[2]
PLN4-C25/1N	<0.5[1]	0.5	1.0	2.0	2.7	4.5[2]	4.5[2]
PLN4-C32/1N	<0.5[1]	0.5	1.0	1.9	2.6	4.5[2]	4.5[2]
PLN4-C40/1N	<0.5[1]	0.5	0.9	1.7	2.3	4.0	4.5[2]

*Short circuit selectivity **PLN6-B/C** towards fuse link **NH-00***)*

	NH-00 gL/gG								
	20	25	32	35	40	50	63	80	100
PLN4-B6/1N	0.5	0.9	1.5	2.3	3.2	4.5[2]	4.5[2]	4.5[2]	4.5[2]
PLN4-B10/1N	<0.5[1]	0.7	1.2	1.5	2.0	3.1	3.9	4.5[2]	4.5[2]
PLN4-B13/1N	<0.5[1]	0.6	1.0	1.3	1.7	2.5	3.1	4.5[2]	4.5[2]
PLN4-B16/1N	<0.5[1]	0.6	1.0	1.3	1.6	2.4	2.9	4.5[2]	4.5[2]
PLN4-B20/1N	<0.5[1]	0.5	0.9	1.3	1.5	2.3	2.8	4.3	4.5[2]
PLN4-B25/1N	<0.5[1]	0.5	0.9	1.1	1.4	2.1	2.6	4.0	4.5[2]
PLN4-B32/1N	<0.5[1]	0.5	0.8	1.0	1.3	1.9	2.4	3.6	4.5[2]
PLN4-B40/1N	<0.5[1]	0.5	0.8	0.9	1.1	1.7	2.2	3.3	4.5[2]
PLN4-C2/1N	0.7	2.1	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]	4.5[2]
PLN4-C4/1N	0.5	0.9	1.6	2.6	3.7	4.5[2]	4.5[2]	4.5[2]	4.5[2]
PLN4-C6/1N	0.5	0.8	1.4	2.1	2.9	4.5[2]	4.5[2]	4.5[2]	4.5[2]
PLN4-C10/1N	<0.5[1]	0.6	1.0	1.4	1.9	2.8	3.5	4.5[2]	4.5[2]
PLN4-C13/1N	<0.5[1]	0.6	0.9	1.3	1.7	2.5	3.1	4.5[2]	4.5[2]
PLN4-C16/1N	<0.5[1]	0.5	0.7	1.0	1.3	2.0	2.5	3.8	4.5[2]
PLN4-C20/1N	<0.5[1]	0.5	0.7	0.9	1.2	1.8	2.3	3.5	4.5[2]
PLN4-C25/1N	<0.5[1]	0.5	0.7	0.9	1.1	1.6	2.1	3.3	4.5[2]
PLN4-C32/1N	<0.5[1]	<0.5[1]	0.6	0.8	1.1	1.5	2.0	3.1	4.5[2]
PLN4-C40/1N	<0.5[1]	<0.5[1]	0.6	0.8	1.0	1.4	1.9	2.9	4.5[2]

[1] Selectivity limit current I_s under 0.5 kA

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

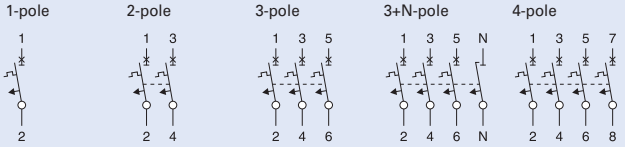
Miniature Circuit Breakers PLHT

- 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
Anti-tamper device	LH-SPL	850000870
Busbar see capter busbar system		

Connection diagrams



Technical Data

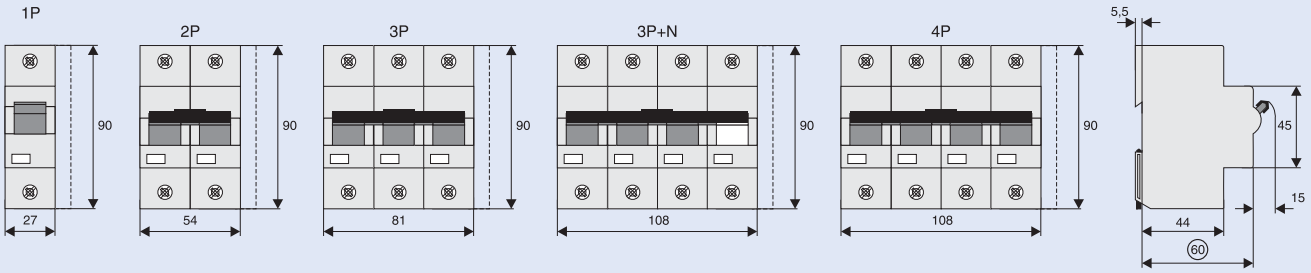
Electrical

Design according to	EN 60947-2	
Current test marks as printed onto the device		
Rated voltage		
AC	230/400V	
DC	60V (per pole, max. 2 poles)	
Ultimate short circuit breaking capacity	acc. to IEC/EN 60947-2	
Characteristics B, C	I_n = 20-63 A	25 kA
	I_n = 80-100 A	20 kA
	I_n = 125 A	15 kA
Characteristic D	I_n = 20-63 A	25 kA
	I_n = 80 A	20 kA
	I_n = 100 A	15 kA
Characteristic	in accordance with characteristics B, C, D	
Back-up fuse	max. 200 A gL	
Rated insulation voltage	440 V	
Peak withstand voltage U_{imp}	4 kV	
Selectivity class	in acc. with class 3	
Endurance	≥ 20,000 operations	

Mechanical

Frame size	45 mm
Device height	90 mm
Device width	27 mm (1.5MU) per pole
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Upper and lower terminals	lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	2.5-50 mm^2

Dimensions (mm)



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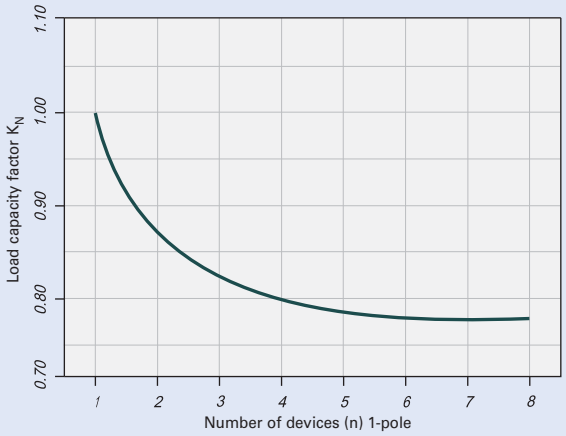
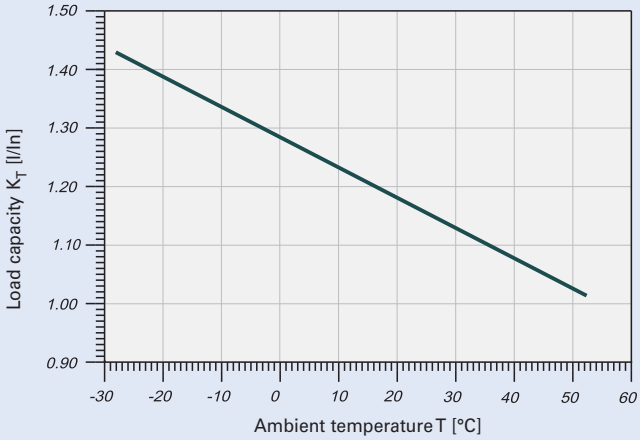
Load Capacity

Load capacity in case of block installation



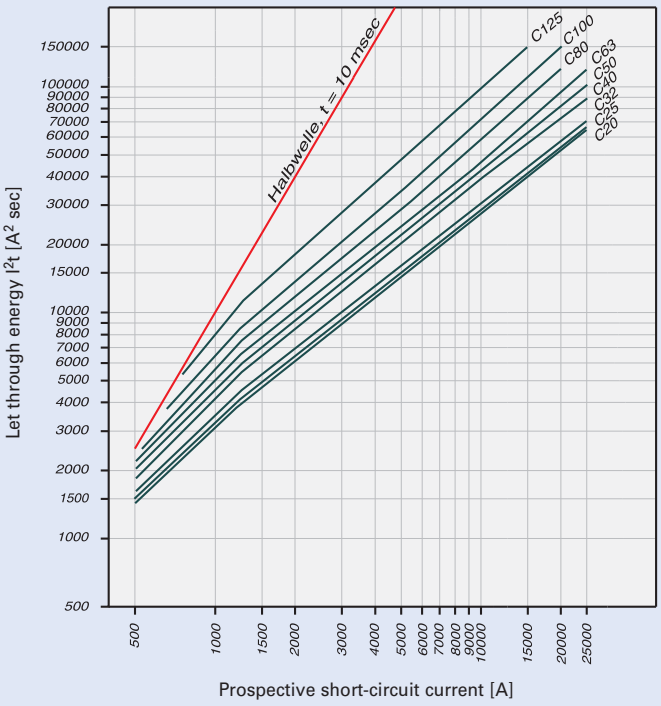
Effect of ambient temperature



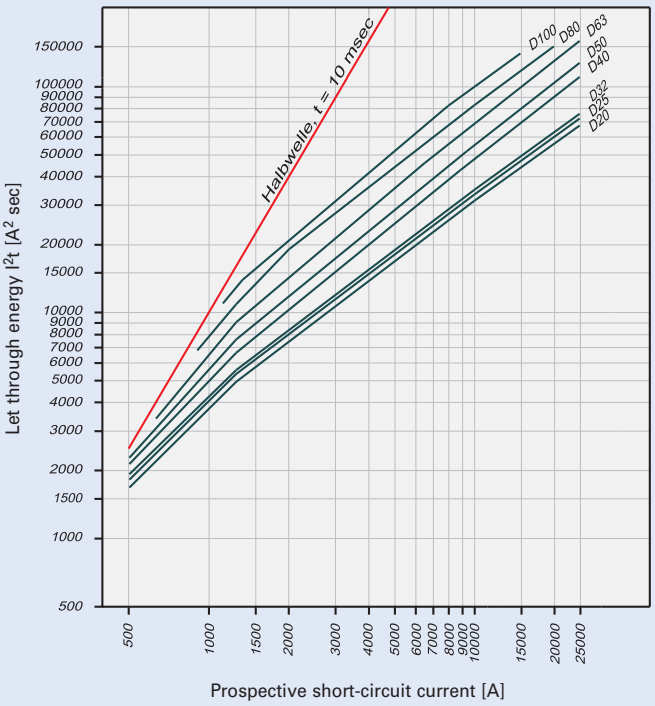
Permitted permanent load at ambient temperature T [°C] with n devices: $I_{DL} = I_n K_T(T) K_N(N)$.

Let-through Energy

Maximum let-through energyPLHT, characteristic C, 1-pole



Maximum let-through energyPLHT, characteristic D, 1-pole



Determined according to EN 60898-1.

xPole

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Short Circuit Selectivity

- Short circuit selectivity (in kA) between PLHT and upstream fuse D0 or NH, operating class gL/gG
- 1,4 . . selectivity up to 1.4 kA; . . . no selectivity

Selectivity towards back-up fuses D01, D02, D03

Rated current I_n PLHT in A		Rated current of the back-up fuse in A					
		25	**35**	**50**	**63**	**80**	**100**
C-Characteristic	**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						
D-Characteristic	**20**	0,5	0,9	1,7	2,5	3,4	6,7
	25		0,9	1,6	2,3	3,2	6,2
	32		0,9	1,5	2,3	3,0	6,0
	40			1,4	2,0	2,6	4,7
	50				1,8	2,3	4,3
	63					2,1	3,7
	80						3,1
	100						

Selectivity towards back-up fuses NH Gr. 00

Rated current I_n PLHT in A		Rated current of the back-up fuse in A								
		25	**35**	**40**	**50**	**63**	**80**	**100**	**125**	**160**	**200**
C-Characteristic	**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
D-Characteristic	**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

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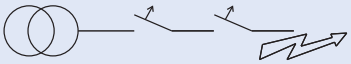
Short Circuit Selectivity PLHT towards NZM 1

In case of short circuit, there is selectivity between the miniature circuit breakers PLHT and the upstream NZM up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s, only the MCB will trip, in case of short circuit currents above this value both protective devices will respond). Overload and short-circuit release unit NZM at max. value.
*) basically in accordance with EN 60898-1 D.5.2.b



*Short circuit selectivity **characteristic C** towards **NZM***)*

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

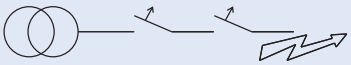
*Short circuit selectivity **characteristic D** towards **NZM***)*

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

no selectivity

Short Circuit Selectivity PLHT towards NZM 2

In case of short circuit, there is selectivity between the miniature circuit breakers PLHT and the upstream NZM up to the specified values of the selectivity limit current I_s [kA] (i. e. in case of short-circuit currents I_{ks} under I_s, only the MCB will trip, in case of short circuit currents above this value both protective devices will respond). Overload and short-circuit release unit NZM at max. value.
*) basically in accordance with EN 60898-1 D.5.2.b



*Short circuit selectivity **characteristic C** towards **NZM***)*

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

*Short circuit selectivity **characteristic D** towards **NZM***)*

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

no selectivity

Miniature Circuit Breakers PLHT-V

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

Accessories:

Auxiliary switch for		
subsequent installation (0.5 MU)	Z-LHK	248440
Shunt trip release for		
subsequent installation (1.5 MU)	Z-LHASA/230	248442
	Z-LHASA/24	248441
Busbar see capter busbar systems		

Connection diagram

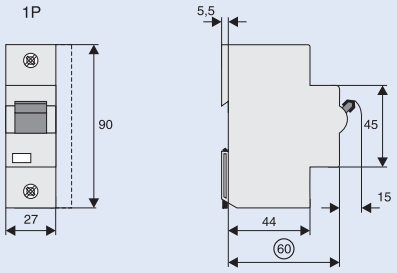
1-pole

Technical Data

Electrical	
Design according to	EN 60947-2
Current test marks as printed onto the device	
Rated voltage	
AC	230/400V
DC	60V (per pole, max. 2 poles)
Rated frequency	50/60 Hz
Ultimate short circuit breaking capacity according to IEC/EN 60947-2	25 kA
Service short circuit breaking capacity	20 kA
Rated breaking capacity	
DC	max. 60V, 1-pole
Characteristic	similar to D
Back-up fuse	max. 200 A gL (>20 kA)
Rated insulation voltage	440 V
Peak withstand voltage Uimp	4 kV
Selectivity class	in acc. with class 3
Endurance	≥ 20,000 operating cycles

Mechanical	
Frame size	45 mm
Device height	90 mm
Device width	27 mm (1.5MU) per pole 30 mm per pole PLHT-V with interlock
Mounting	quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Upper and lower terminals	lift terminals
Terminal protection	finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity	2.5-50 mm^2

Dimensions (mm)



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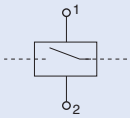
Accessories for PLHT, PLHT-V

Shunt Trip Release Z-LHASA

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

Connection diagram

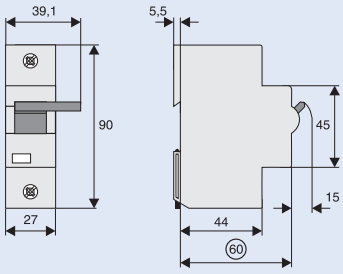


Technical Data

Electrical	
Operational voltage range	
Z-LHASA/230:	110-415 V~
Z-LHASA/24:	12-60 V~
Operational frequency	50-60 Hz
Max. current consumption at point of switching on at U_n	
Z-LHASA/230:	2 A
Z-LHASA/24:	18 A

Mechanical	
Frame size	45 mm
Device height	90 mm
Device width	27 mm
Mounting	quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Upper and lower terminals	lift terminals

Dimensions (mm)



Auxiliary Switch Z-LHK

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

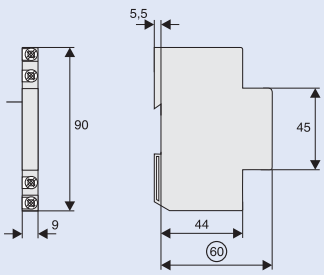
Connection diagram

Technical Data

Electrical	
Rated operational current	(250 V~) 6A/AC13
Minimum operational voltage	24V each line
Rated thermal current	8 A
Rated insulation voltage	440 V~
Maximum back-up fuse	6 A gL or CLS6-4/./B-HS
Contacts	1NO+1NC
Utilisation category AC13	6A/250VAC 2A/440VAC
Utilisation category DC13	4A/60VDC 2A/110VDC 0.5A/230VDC

Mechanical	
Frame size	45 mm
Device height	90 mm
Device width	9 mm
Mounting	mounted onto protective devices
Degree of protection, built-in	IP40
Upper and lower terminals	lift terminals
Terminal capacity	1 x 1mm^2 to 2 x 2.5mm^2

Dimensions (mm)



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Accessories for PLHT-V

Anti-Tamper Device LH-SPE, LH-SPL

- prevents undesired switching ON or OFF

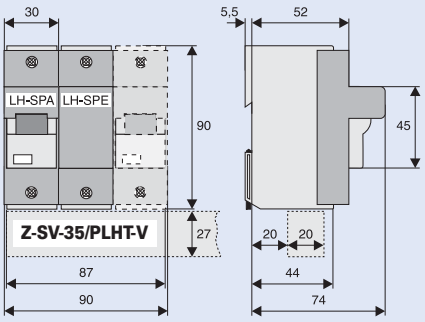
Switchoff Interlock LH-SPA

- prevents undesired switch-OFF

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

- 110/220 A
- Step distance 30 mm

Dimensions (mm)



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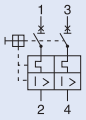
Manual Motor Starters Z-MS

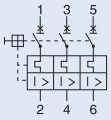
- Reliable protection in case of thermal overload and short circuit
- Suitable for installation in compact distribution boxes
- Contact position indicator red - green
- Main field of application: switching and protection of three-phase AC motors with power ratings up to 15 kW (380/400 V) and other consumers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

Connection diagram

2-pole



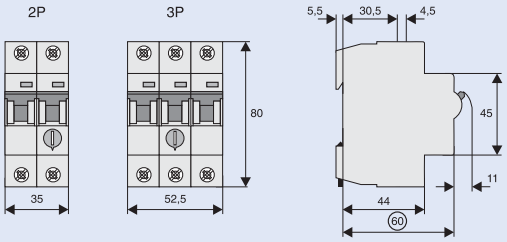
3-pole



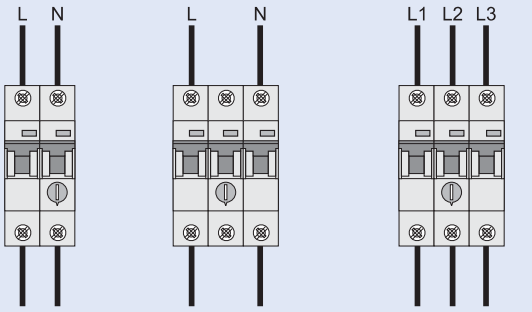
Technical Data

General		
Terminal capacity		1 - 25 mm^2
Busbar thickness		0.8 - 2 mm
Mechanical endurance		20.000 operating cycles
Shock resistance (shock duration 20 ms)		20 g
Ambient temperature	open	-25 ... + 50°C
	hermetically enclosed	-25 ... + 40°C
Resistance to climatic conditions		
- humidity and heat, constant, according to		IEC 68-2-3
- humidity and heat, periodical, according to		IEC 68-2-30
Weight approx.		244/366 g
Degree of protection		IP20
Main Current Paths		
Rated insulation voltage U_i		440 V
Rated peak withstand voltage U_{imp}		4 kV
Rated short circuit breaking capacity I_q		10 kA
Thermal current $I_{thmax} = I_{emax}$		40 A
Electrical endurance AC3 at I_e		6000 operating cycles
Motor switching capacity AC3		400 (415) V
Power loss per contact		2.3W (1.6-10A); 3.3W (16A); 4.5W (25-40A)
Auxiliary switch Z-AHK/Z-NHK		
Rated insulation voltage U_i		440 V
Thermal current I_{th}		8 A
Rated operational current I_e	250 V	6 A
AC 13	440 V	2 A
Max. back-up fuse for short-circuit protection		4 A (gL, gG) CLS6-4/B-HS
Terminal capacity (1 or 2 conductors)		0,75 ... 2.5 mm^2
Moisture-Proof Enclosure 4 MU IP54, Z-MFG		
Reliable power loss of incorporated devices		17W (e.g Z-MS-40/3+Z-USA/230)

Dimensions (mm)

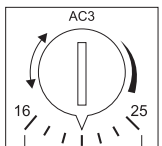


Connection



Ue = 400 V~
Ie = 10 - 16 A
Iq = 10000 A

Z-MS - **25** /3



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

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Selection of Switches for the Protection of Motors

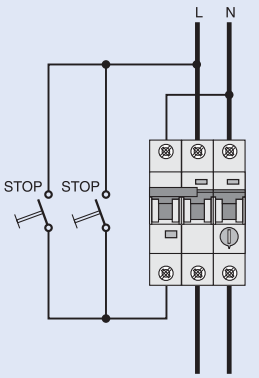
Motor power and current						
1-phase 230 - 240 V		3-phase 230 - 240 V		3-phase 400 - 415 V		Setting ranges of overload release
kW	A	kW	A	kW	A	A
				0,06	0,2	0,16 - 0,25
		0,06	0,4	0,09	0,3	0,25 - 0,4
		0,09	0,5	0,12	0,4	0,4 - 0,63
				0,18	0,6	0,4 - 0,63
0,06	0,7	0,12	0,7	0,25	0,8	0,63 - 1
0,09	0,7					0,63 - 1
0,12	1,3	0,18	1,0	0,37	1,1	1 - 1,6
		0,25	1,4	0,55	1,5	1 - 1,6
0,18	1,9	0,37	2,0	0,75	1,9	1,6 - 2,5
0,25	2,4					1,6 - 2,5
0,37	2,9	0,55	2,7	1,1	2,6	2,5 - 4
		0,8	3,2	1,5	3,6	2,5 - 4
0,55	4,2	1,1	4,6	2,2	5,0	4 - 6,3
0,75	5,6					4 - 6,3
1,1	7,4	1,5	6,3	2,5-3,0	6,6	6,3 - 10
1,5	8,9	2,5	8,7			6,3 - 10
				4,0	8,5	6,3 - 10
2,2	14,5	3,0	11,5	5,5	11,3	10 - 16
				7,5	13,2	10 - 16
3	17,8	4,0	14,8			16 - 20
		5,5	19,6	11,0	21,7	16 - 20
		7,5	26,4	15,0	29,3	25 - 40
		11,0	38,0	18,5	36,0	25 - 40

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

Type	Setting range (A)	max. back-up fuse gL, gG[1] (A) 3 x 230 V	(A) 3 x 400 V	Typical responding currents of short-circuit releases (A)
Z-MS-0,16	0,10 - 0,16	in case of short circuit currents up to the short circuit breaking capacity, no back-up fuse required		1,3 - 1,7
Z-MS-0,25	0,16 - 0,25			2,0 - 2,6
Z-MS-0,40	0,25 - 0,40			3,1 - 4,8
Z-MS-0,63	0,40 - 0,63			4,9 - 6,6
Z-MS-1,00	0,63 - 1,00			10 - 13
Z-MS-1,60	1,0 - 1,6			16 - 21
Z-MS-2,50	1,6 - 2,5			25 - 33
Z-MS-4,00	2,5 - 4,0			40 - 52
Z-MS-6,30	4,0 - 6,3	100	100	63 - 82
Z-MS-10,0	6,3 - 10,0	100	100	78 - 105
Z-MS-16,0	10,0 - 16,0	100	100	160 - 208
Z-MS-25,0	16,0 - 25,0	100	100	250 - 325
Z-MS-40,0	25,0 - 40,0	100	100	400 - 520

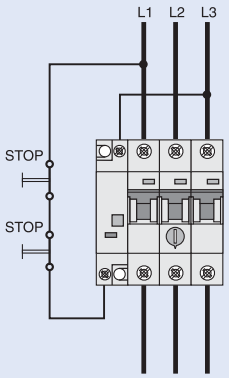
[1] In case of short circuit currents up to the rated breaking capacity, no back-up fuse is required (inherent current withstand capability)

Connection of Shunt Trip Release



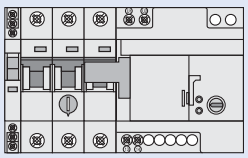
e.g.
Z-MS-2p + ZP-ASA

Connection of Undervoltage Release



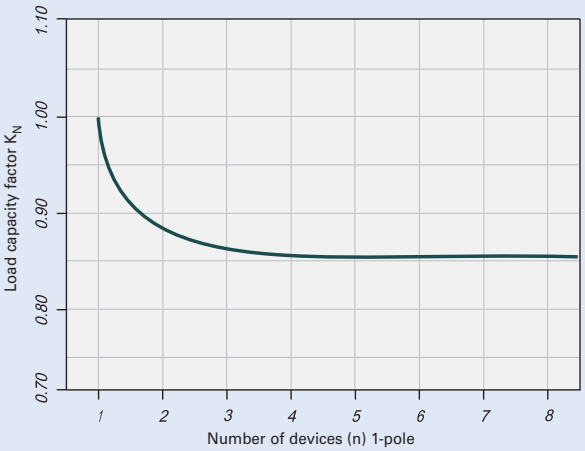
e.g.
Z-MS-3p + Z-USA

Block Diagram with Remote Switching Device



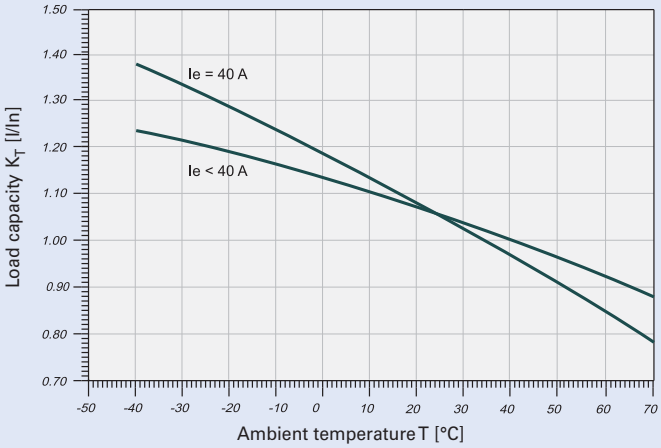
ZP-NHK + Z-MS-3p + Z-FW-LP

Load Capacity in Case of Block Installation



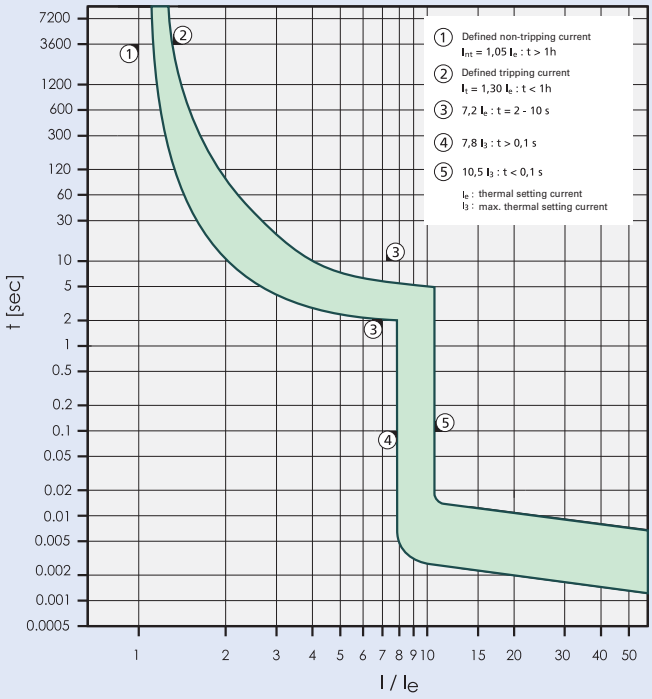
Permitted permanent load at ambient temperature T [°C] with n devices: $I_{DL}(T,n) = I_n K_T(T)\, K_n(_n)$

Effect of the Ambient Temperature on the Load Capacity



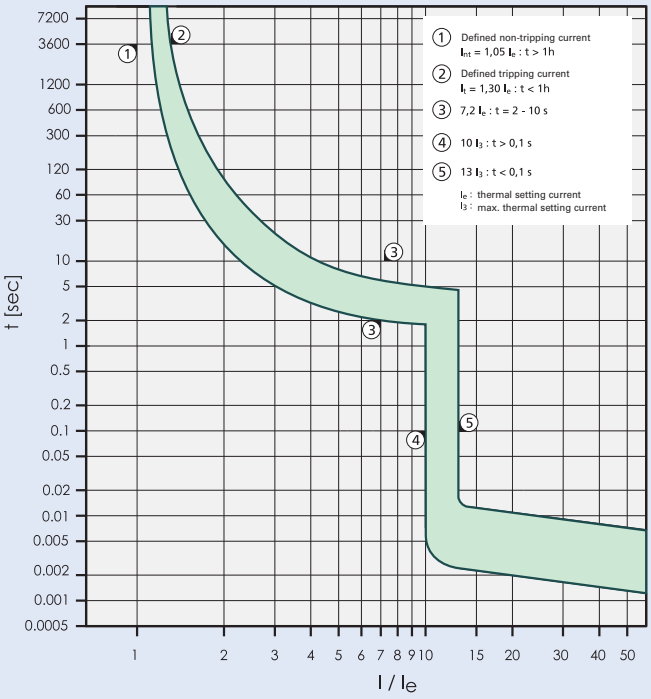
Valid for Z-MS devices, 3-pole, reference ambient temperature 20°C, permitted permanent load at ambient temperature T [°C] with n devices: $I_L(T) = I_n K_T(T)$

Typical Tripping Characteristic MS 0,16/0,25/0,4/0,63/10A



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

Typical Tripping Characteristic MS 1/1,6/2,5/4/6,3/16/25/40A



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

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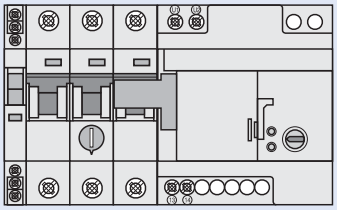
Accessories for Manual Motor Starters

- Accessories for manual motor starters are the same as for PFIM, CLS etc. (releases, auxiliary switches, and busbars
- Shunt trip release ZP-ASA
- Undervoltage releases
  Z-USA: instantaneous
  Z-USD: delayed
- Auxiliary switch ZP-IHK: 1 NO + 1 NC
- Tripping signal switch ZP-NHK: 1 CO + 1 CO
- Remote control and automatic switching device Z-FW
- Moisture-proof enclosure IP54
  Z-MFG
  Z-MFG/NL: with N-led through (solid neutral)
  Z-MFG/NOT: with N-led through (solid neutral) and EMERGENCY OFF key

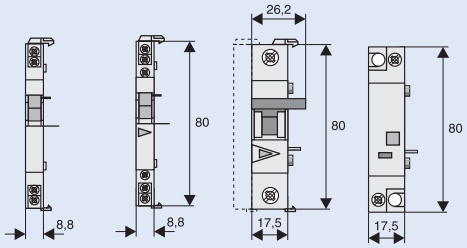
Installation Example



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

Dimensions (mm)

ZP-IHK ZP-NHK ZP-ASA Z-USA, -USD



Moisture-proof Enclosure Z-MFG

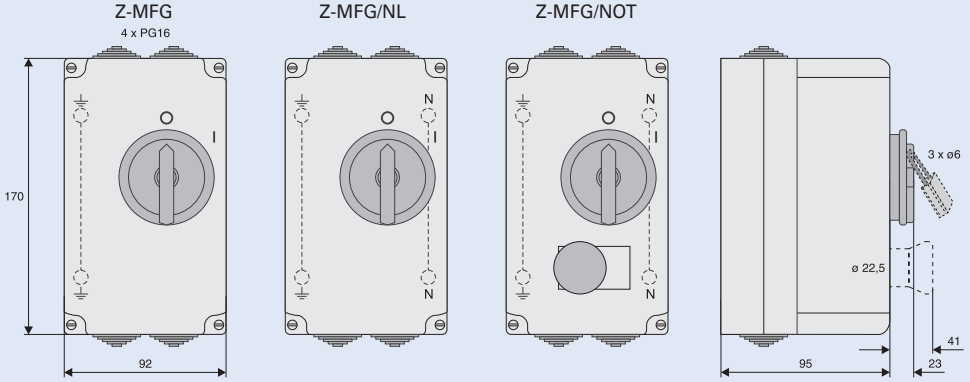
- According to EN 50298
- Suitable for manual motor starters Z-MS, e.g. 3p (+ Z-USA);
  miniature circuit breakers CLS, e.g. 3p (+ Z-USA);
  circuit breakers Z-A40
- Earth conductor connection integrated in all types
- Entries for 4 x PG16 cable glands prepared
- Operation: Turning handle, can be locked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

Technical Data

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

Dimensions (mm)

Z-MFG Z-MFG/NL Z-MFG/NOT



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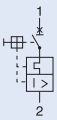
Power Limiter Z-TS

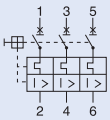
- Design according to EN/IEC 60898-1
- Shape compatible with and suitable for standard busbar connection to e.g. CLS6, Z-A40, Z-MS, PFIM
- Switching device for voluntary or power-authority limitation of power consumption of user systems and equipment
- Approved by the Austrian regional power supply companies,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

Connection diagram

1-pole



3-pole

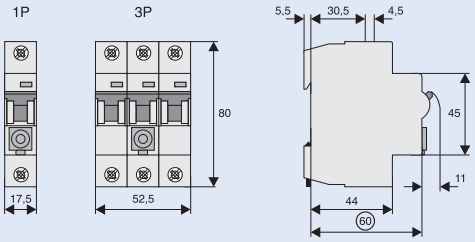


Technical Data

Electrical	
Rated voltage	230/400 VAC
Frequency	50 Hz
Rated breaking capacity	
20-32 A	10 kA
40-63 A	6 kA
Max. back-up fuse, short-circuit	100 A gG
Rated current	
Z-TS20/.	20 A
Z-TS25/.	25 A
Z-TS32/.	32 A
Z-TS40/.	40 A
Z-TS50/.	50 A
Z-TS63/.	63 A
Setting range	
Z-TS20/.	13-20 A
Z-TS25/.	16-25 A
Z-TS32/.	20-32 A
Z-TS40/.	25-40 A
Z-TS50/.	40-50 A
Z-TS63/.	50-63 A

Mechanical	
Frame size	45 mm
Device height	80 mm
Device width	17.5 mm (1P); 52.5 mm (3P)
Mounting	quick fastening on DIN rail IEC/EN 60715
Degree of protection, built-in	IP40
Upper and lower terminals	cage-type terminals
Terminal capacity	1.5-25 mm^2

Dimensions (mm)



Accessories

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

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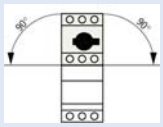
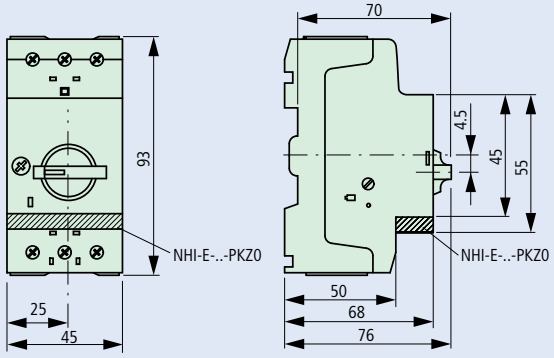
xStart Motor Protectors

Technical data

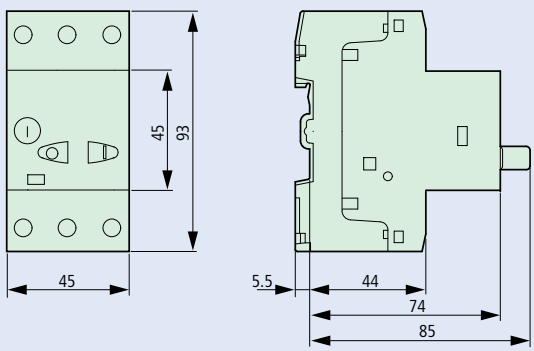
		PKZM01-...	PKZM0-...
General information			
Standards and regulations		IEC/EN 60947, VDE 0660, UL 508, CSA C 22.2 No. 14	
Resistance to climatic conditions		Humidity and heat, constant according to IEC 60068-2-78 Humidity and heat, periodical according to IEC 60068-2-30	
Mounting position			
Power input direction		any	any
Degree of protection			
Device		IP20	IP20
Terminals		IP00	IP00
Protection against accidental contact		finger and hand touch safe	
Shock resistance half-sinusoidal shock 10 ms acc. to IEC 60068-2-27	g	25	25
Mounting height	m	max. 2000	max. 2000
Terminal capacity			
Solid	mm^2	1 x (1-6) 2 x (1-6)	1 x (1-6) 2 x (1-6)
Flexible with ferrule according to DIN 46228	mm^2	1 x (1-6) 2 x (1-6)	1 x (1-6) 2 x (1-6)
Solid or stranded	AWG	18-10	18-10
Tightening torque of terminal screws			
Main contact	Nm	1.7	1.7
Auxiliary contact	Nm	1	1
Main current paths			
Rated peak withstand voltage U_{imp}	V AC	6000	6000
Overvoltage category/Pollution degree		III/3	III/3
Rated operating voltage U_e	V AC	690	690
Rated uninterrupted current I_u = Rated operating current I_e	A	16 or current setting for excess current release	32 or current setting for excess current release
Rated frequency	Hz	40-60	40-60
Current heat loss, 3-pole, operating temperature	W	6	6
Mechanical lifespan	operations x 10^6	0.05	0.1
Electric lifespan (AC-3 at 400 V)	operations x 10^6	0.05	0.1
Max. operating frequency	operations/h	25	40
Short-circuit resistance DC	kA	60	60 (up to PKZM0-16) 40 (PKZM0-20 to PKZM0-32)
Motor switching capacity			
AC-3 (up to 690 V)	A	12	32
DC-5 (up to 250 V)	A	12 (3 current paths in series)	25 (3 current paths in series)
Releases			
Temperature compensation			
according to IEC/EN 60947, VDE 0660	°C	-5/40	-5/40
Operating range	°C	-25 to +55	-25 to +55
Residual fault of temperature compensation for T > 20 °C	%/K	≤ 0.25	≤ 0.25
Setting range for overload release	x I_u	0.6-1	0.6-1
Short-circuit release - fixed setting	x I_u	14	14
Short-circuit release tolerance	%	± 20	± 20
Phase-failure sensitivity		IEC/EN 60947-1-1, VDE 0660 Section 102	

Dimensions (mm)

PKZM0-...



PKZM01-...



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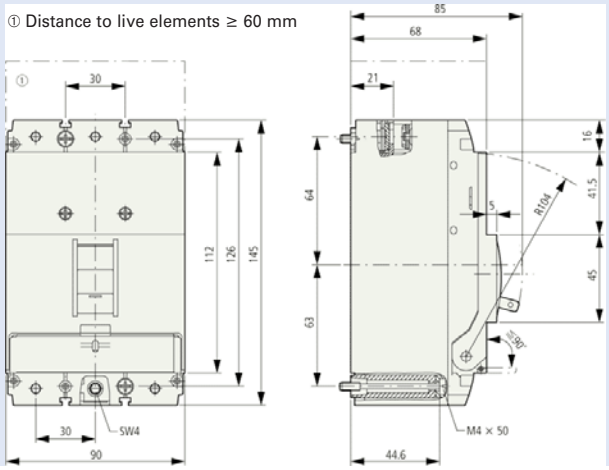
xEnergy Power Circuit-Breaker

Technical data

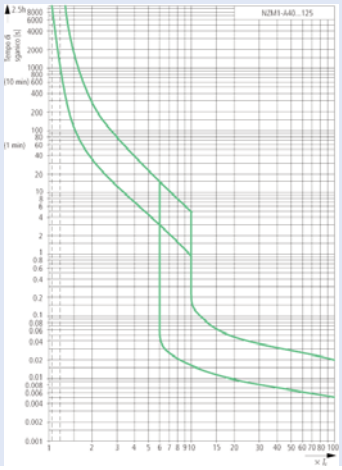
		NZMB1-A
Power circuit-breaker		
Rated uninterrupted current	A	max. 160
Rated peak withstand voltage U_{imp}		
Main current paths	V AC	6000
Auxiliary current paths	V AC	6000
Overvoltage category/Pollution degree		III/3
Rated operating voltage U_e	V AC	690
Switching capacity		
Rated short-circuit making capacity I_{cm}		
240 V	kA	63
400/415 V	kA	53
440 V	kA	53
525 V	kA	30
690 V	kA	–
Rated short-circuit breaking capacity I_{cn}, I_{cu} according to IEC/EN 60947, switching sequence 0-t-C0		
240 V	kA	30
400/415 V	kA	25
440 V	kA	25
525 V	kA	15
690 V	kA	–
Rated short-circuit breaking capacity I_{cn}, I_{cs} according to IEC/EN 60947, switching sequence 0-t-C0-t-C0		
240 V	kA	30
400/415 V	kA	25
440 V	kA	25
525 V	kA	7,5
690 V	kA	–
Switching capacity I_u NA-switch (UL489, CSA 22.2 No. 5.1)		
240 V 60 Hz	kA	35
480 V 60 Hz	kA	25
600 V 60 Hz	kA	–
Category of use		A
Rated making and breaking capacity I_e		
Rated operating current AC-1		
400/415 V	A	160
690 V	A	160
Rated operating current AC-3		
400/415 V	A	160
690 V	A	160
Mechanical lifespan	operations	20000 (max. 50% thereof released through A/U release)
Max. switching capacity	operations/h	120
Electric lifespan		
AC-1 at 400 V	operations	10000
AC-1 at 690 V	operations	7500
AC-3 at 400 V	operations	7500
AC-3 at 690 V	operations	5000
Current heat loss per pole at I_u	W	13
Overload release, temperature compensation acc. to IEC/EN 60947, VDE 0660 Section 101, residual fault in the range of -25°C/+70°C (reference temperature 40°C), thermo-magnetic	%/K	0.7
Total off-duty time in case of a short-circuit	ms	< 10

Dimensions (mm)

① Distance to live elements ≥ 60 mm



Systems and cable protection with NZMB1-A



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