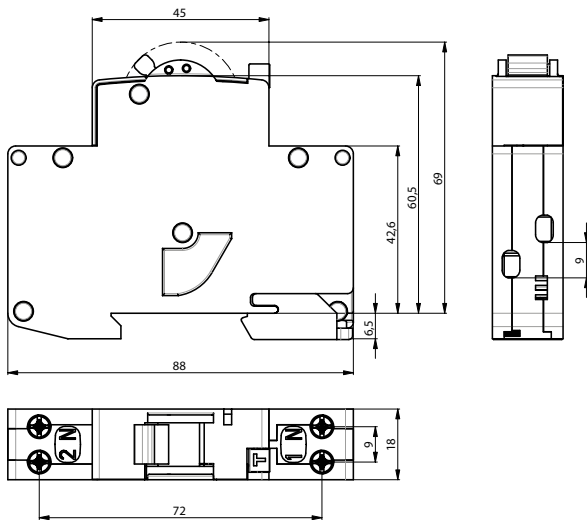


Residual current circuit breaker with integral overcurrent protection KZS -1M

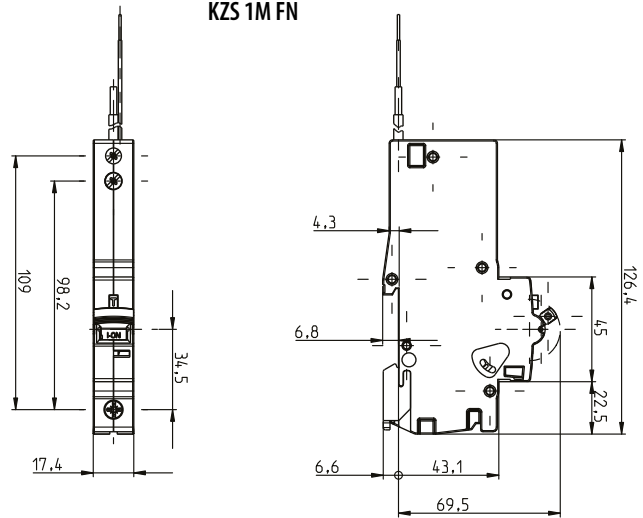
Technical data			
Type	KZS 1M	KZS 1M DN	KZS 1M FN
Rated voltage U_n		230 V AC	
Rated current I_n	6-25 A	6-25 A	6-45 A
Minimal supply voltage U_{min}		90 V	
Rated frequency f_n		50 Hz	
Rated short-circuit capacity	6.000 A	6.000 A	10.000 A
Back-up fuse		100 A gG	
Tripping characteristic		B, C	
Rated residual current $I_{\Delta n}$	10, 30, 100 mA	30 mA	30, 100 mA
Type of residual release		A, AC	
Rated residual making and breaking capacity $I_{\Delta m}$	1500A	1500A	4500A
Terminals	1-10 mm ² , max. 1,5Nm	1-10 mm ² , max. 1,5Nm	1-25 mm ² / 1-16 mm ²
Terminal screw	M4 (Pozidrive PZ2)	M4 (Pozidrive PZ2)	M5 (Pozidrive PZ2)
Width		18 mm	
Mounting position		any	
Standard	IEC 61009	IEC 61009, EN 50550	IEC 61009-1 / 61009-2
Length of neutral conductor	-	-	600 mm
Operating temperature		-25°C ... +40°C	

Voltage [V]	KZS 1M DN
	Tripping time [s]
255	/
275	3s < t < 15s
300	1s < t < 5s
350	0,25s < t < 0,75s
400	0,07s < t < 0,20s

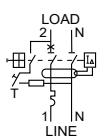
KZS-1M, KZS-1M-SUP, KZS-1M-LT, KZS-1M-DN



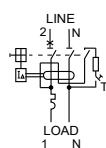
KZS 1M FN



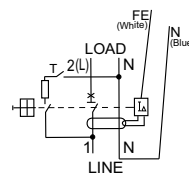
KZS-1M, KZS-1M-LT,
KZS-1M-DN



KZS-1M SUP



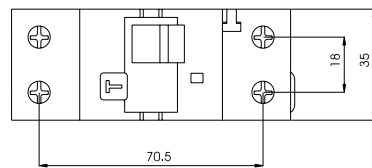
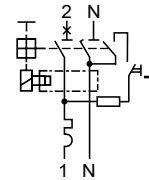
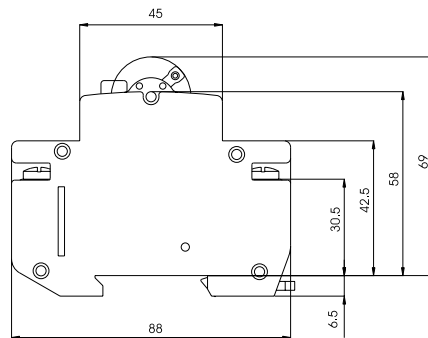
KZS-1M FN



Technical data

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

Technical data		
Type	INST	G/KV
Rated voltage U_n	230/240 V AC	
Rated current I_n	6-40 A	
Rated frequency f_n	50 Hz	
Rated impulse withstand voltage U_{imp}	4 kV	
Rated short-circuit capacity	10.000 A	
Back-up fuse	100 A gG	
Tripping characteristic	B, C	
Energy limiting class	3	
Type	A, AC	
Rated residual current $I_{\Delta n}$	10, 30, 100, 300, 500 mA	30 mA
Peak withstand current	250 A	3 kA
Rated residual making and breaking capacity $I_{\Delta m}$	10.000A	
Terminals	1-25 mm ² , max. 3Nm	
Terminal screw	M5 (Pozidrive PZ2)	
Width	36 mm	
Mounting position	any	
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)	
Standard	IEC 61009, EN 61009	



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

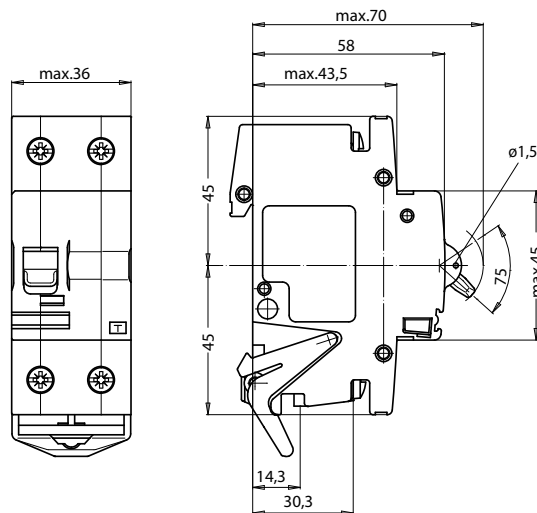
Remark: When you use more than 2 cables you have to be careful how those cables are inserted, due to insure proper pressure on each cable

Conductor cross-section [mm ²]	Number of single conductors, flexible Cu conductors without cable ferrule					
	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	✗	✗	✗
10	✓	✓	✗	✗	✗	✗
16	✓	✗	✗	✗	✗	✗
25	✓	✗	✗	✗	✗	✗

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

Residual current circuit breaker with integral overcurrent protection KZS-R

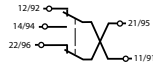
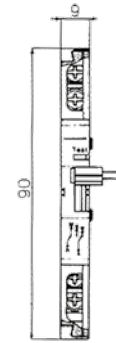
Technical data	
Rated Voltage U_n	230 V
Rated Current I_n	6-32A
Rated frequency	50/60Hz
Rated insulation Voltage U_i	240V
Rated short-circuit capacity	10kA
Max back-up fuse	gG 100A
Tripping characteristic	B & C
Type	A
Rated residual current $I_{\Delta n}$	10, 30mA
Rated residual making and breaking capacity $I_{\Delta m}$	10.000 A
Peak withstand current	250A (8/20ms) surge current proof
Rated impulse withstand voltage U_{imp}	4kV (1.2/50ms)
Electrical isolation	> 4mm contact space
Insulating class	VDE 0110
Mechanical endurance (cycles)	> 10.000
Electrical endurance (cycles)	> 3.000
Standards	IEC/EN 61009
Frame size	45mm
Device height	70 mm (DIN rail acc to EN60715)
Device width	36 mm (2 Module units)
Degree of protection	IP 20
Upper and lower terminals	open mounted/lift terminals
Terminal capacity	1-25mm ²
Terminal screw	M5 (PoziDrive PZ2)
Terminal torque	max. 2Nm
Busbar thickness	0.8 - 2mm
Operating temperature	- 25°C ... + 40°C
Storage and transport temperature	- 40°C ... + 70°C
Resistance to climatic conditions	IEC/EN 61009
Contact position indicator	mechanical red/green
Supply possibility	top or bottom



Technical data

Auxiliary signal switch PS/SS KZS-R

Technical data	
Rated voltage	230V AC/DC, 110V DC
Rated current	6A (230V AC); 1A (110V DC); 0,5A (220V DC)
Rated frequency	50/60Hz, DC
Index of protection	IP 20 (IP 40)
Terminals	max. 1.5mm ² , max 0.8Nm
Ambient temperature	max. 35°C
Storage temperature	max. -40°C ... +70°C
Contacts	1x NC, 1x NC/NO
Mounting position	any
Standards	EN 62019



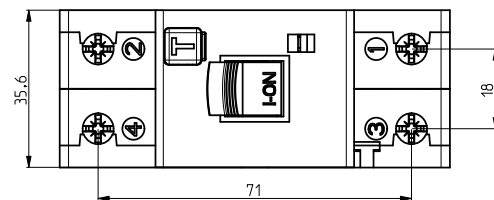
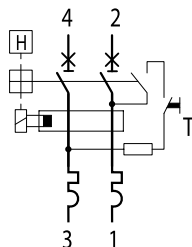
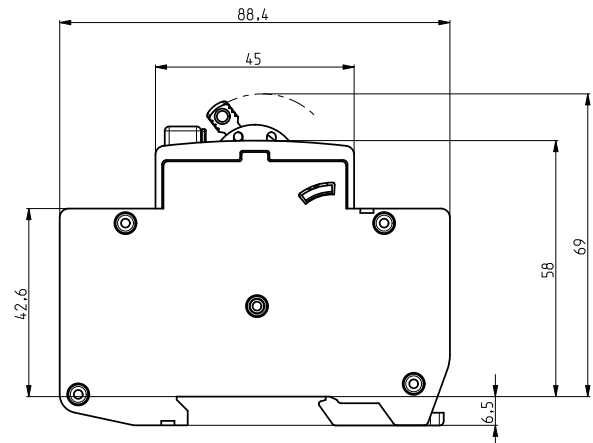
NO - Normally open contact --> during the activation it makes a contact
 NC - Normally closed contact --> during the activation it brakes the contact
 1 - contact
 0 - without a contact

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

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

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

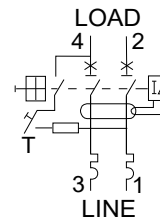
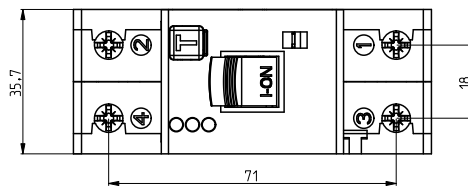
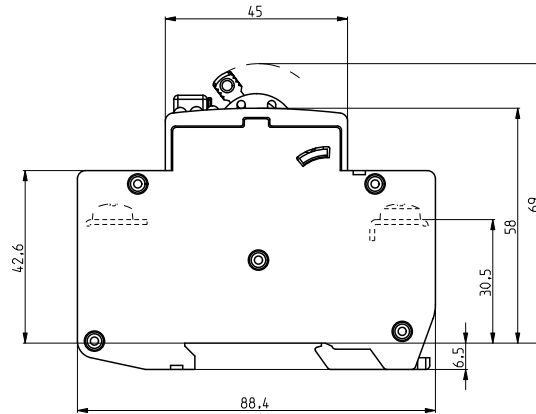
Technical data	
Rated voltage U_n	230 V AC
Rated current I_n	6-25 A
Rated frequency f_n	50 Hz
Rated short-circuit capacity	10.000 A
Back-up fuse	100 A gG
Tripping characteristic	B, C
Type	A
Rated residual current $I_{\Delta n}$	30, 100 mA
Rated residual making and breaking capacity $I_{\Delta m}$	1500A
Terminals	1-25 mm ² , max. 3Nm
Terminal screw	M5 (Poqidrive PZ2)
Width	36 mm
Mounting position	any
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)
Standard	IEC 61009, EN 61009



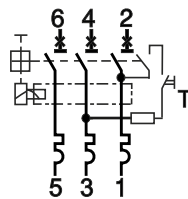
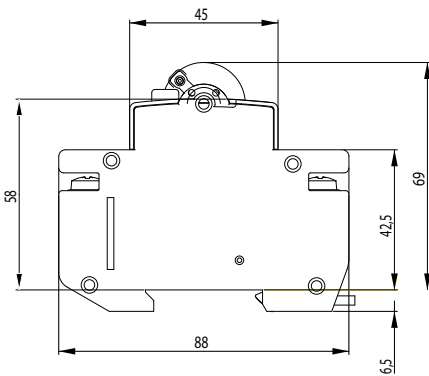
Residual current circuit breaker with integral overcurrent protection with LED status signalisation KZS 2M2p EDI

Technical data

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

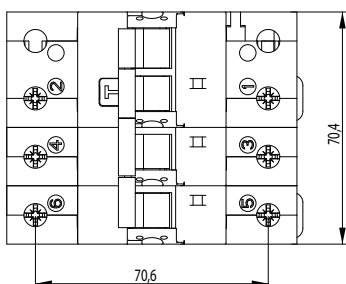


Residual current circuit breaker with integral overcurrent protection KZS-4M 3p



Technical data

Rated voltage U_n	~400 V AC
Rated current I_n	6-32 A
Rated frequency f_n	50/60 Hz
Rated short-circuit capacity	10.000 A
Back-up fuse	100 A gG
Tripping characteristic	B, C
Type	AC, A
Rated residual current $I_{\Delta n}$	30, 100, 300, 500 mA
Rated residual making and breaking capacity $I_{\Delta m}$	4500A
Terminals	1-25 mm ² , max. 3 Nm
Terminal screw	M5 (Pozidrive PZ2)
Width	72 mm
Mounting position	any
Standard	EN 61009-1



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

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

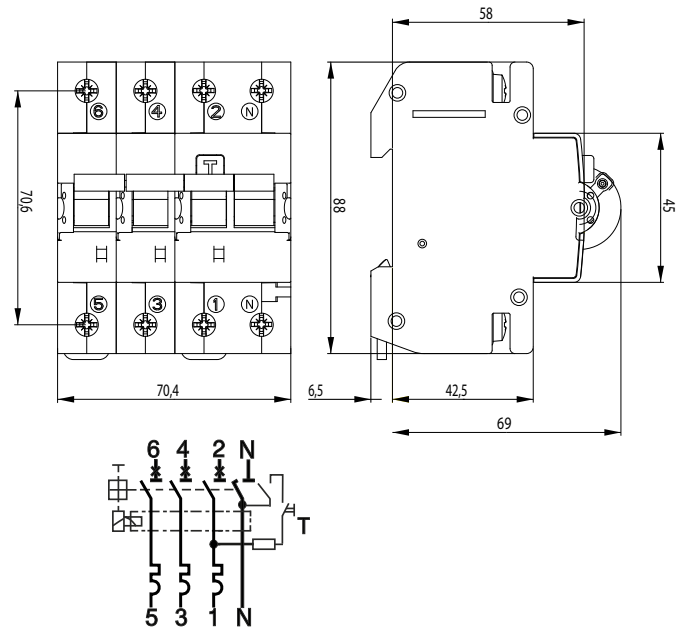
Conductor cross-section [mm ²]	Number of single conductors, flexible Cu conductors without cable ferrule					
	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	✗	✗	✗
10	✓	✓	✗	✗	✗	✗
16	✓	✗	✗	✗	✗	✗
25	✓	✗	✗	✗	✗	✗

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

Technical data

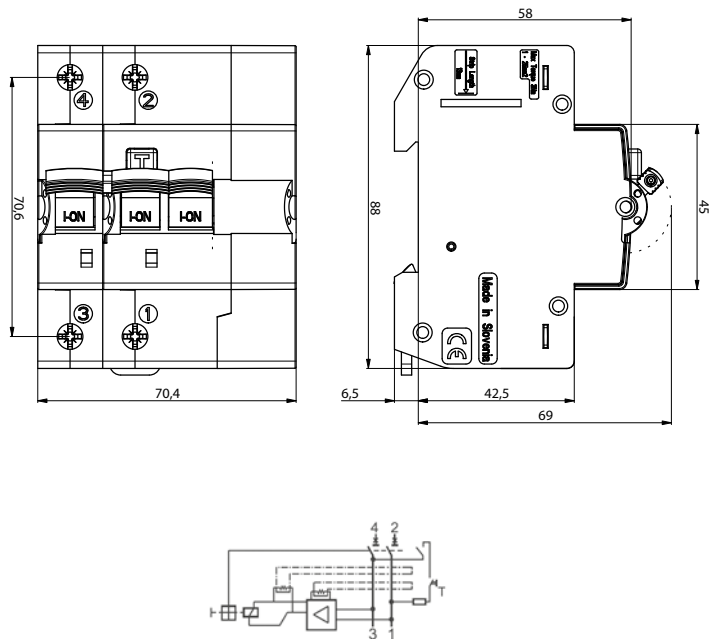
Residual current circuit breaker with integral overcurrent protection KZS-4M 3p+N

Technical data	
Rated voltage U_n	400/415V AC
Rated current I_n	6-32 A
Rated frequency f_n	50/60 Hz
Rated impulse withstand voltage U_{imp}	4 kV
Rated short-circuit capacity	6.000 A
Back-up fuse	100 A gG
Tripping characteristic	B, C
Energy limiting class	3
Type	AC, A
Rated residual current I_{dn}	30, 100, 300, 500 mA
Rated residual making and breaking capacity I_{dm}	4500A
Terminals	1-25 mm ² , max. 3 Nm
Terminal screw	M5 (Poqidrive PZ2)
Width	70 mm
Mounting position	any
Standard	EN 61009-1



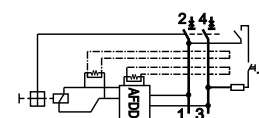
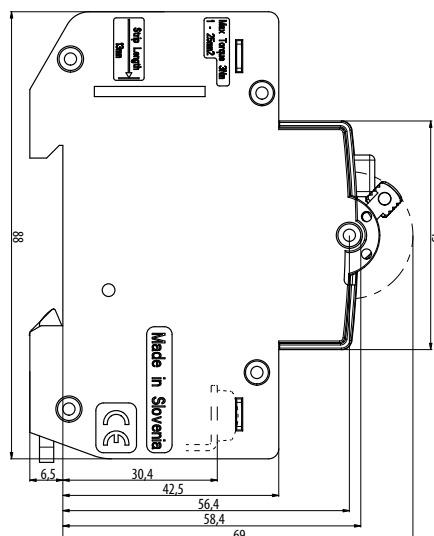
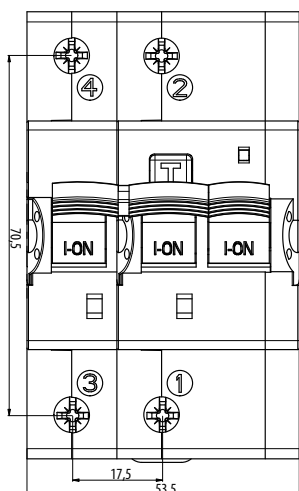
Residual current circuit breaker with integral overcurrent protection KZS-4M 2p B-type

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



Arc Fault Detection Device AFDD

Technical data KZS - AFDD 3M2p	
Electrical	
Rated Voltage U_n	240 V AC
Rated current I_n	6, 10, 13, 15, 16, 20, 25, 32 A
Rated residual operating current $I_{\Delta n}$	30 mA
Rated frequency f_n	50Hz
Type	A
Tripping characteristic	B, C
Rated short-circuit capacity	10kA
Rated insulation voltage U_i	440 V
Rated impulse withstand voltage U_{imp}	4kV (1,2/50 μ s)
Peak withstand current	3kA (8/20 μ s) surge current proof
Voltage range test circuit	135-264V
Min operating voltage for AFDD function	180V
Rated residual making and breaking capacity $I_{\Delta m}$	4500A
Electrical isolation	> 4mm contact space
Max back-up fuse	100A gG
Insulating class	B
Standards	IEC/EN 61009-1, IEC/EN 62606
Mechanical Endurance (cycles)	20.000
Electrical endurance (cycles)	10.000
Mechanical	
Frame size	45mm
Device height	69 mm
Device width	53.5 mm
Degree of protection	IP20
Upper and lower terminals	open mounted/lift terminals
Terminal capacity	1-25 mm ²
Terminal screw	M5 (Pozidrive PZ2)
Terminal torque	max 3,0 Nm
Operating temperature	-25°C ... +50°C
Storage and transport temperature	-40°C ... +70°C
Resistance to climatic conditions	IEC/EN 61009-1
Shock resistance acc. to	IEC/EN 61009-1
Resistance to vibrations acc. to IEC60068-2-7	5g (10,60 & 500Hz)
Contact position indicator	mechanical red/green
Supply possibility	Top or bottom
Mounting on the rail	35mm acc to EN60715
Mounting position	any



Technical data

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

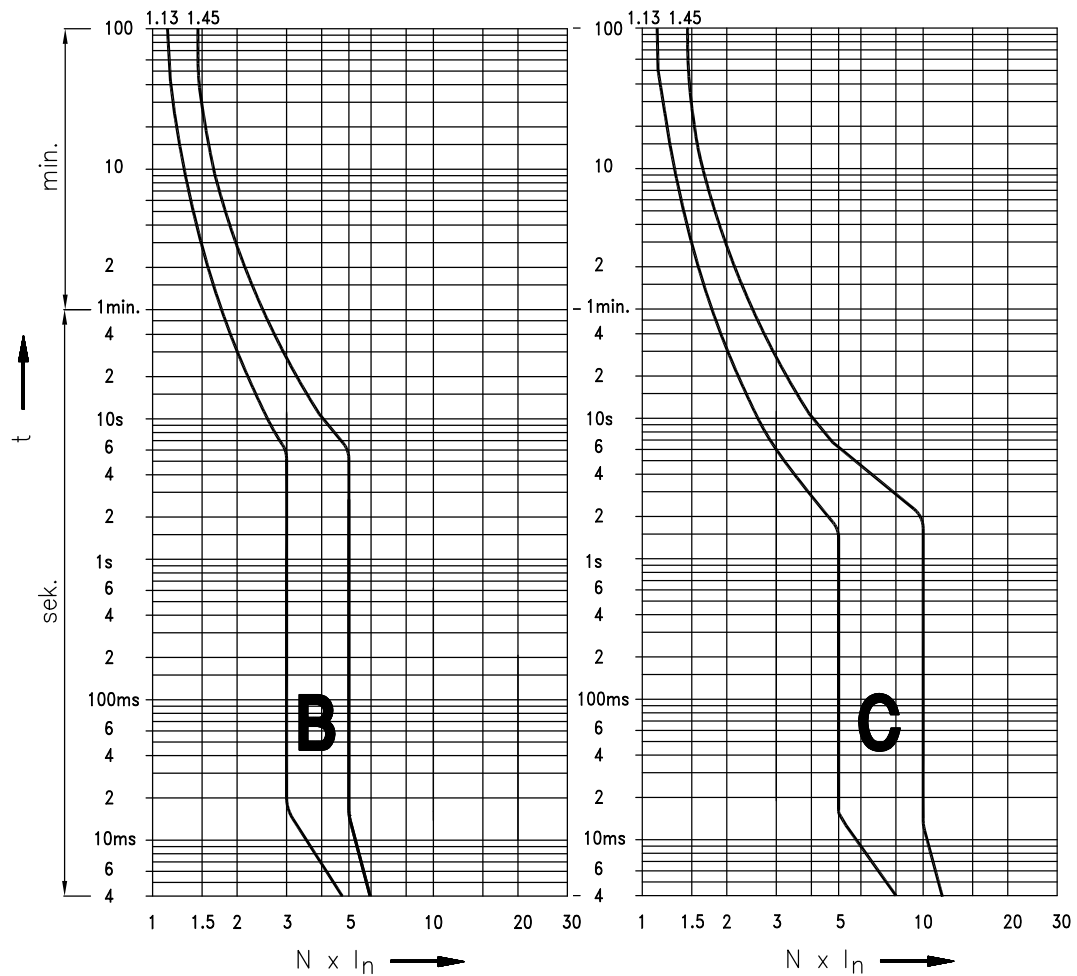
Voltage [V]	Tripping time [s]
255	/
275	$5s < t < 15s$
300	$1s < t < 5s$
350	$0,3s < t < 0,8$
400	$0,1s < t < 0,2s$

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

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

conductor cross-section [mm ²]	Number of single conductors, flexible Cu conductors					
	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	✗	✗	✗
10	✓	✓	✗	✗	✗	✗
16	✓	✗	✗	✗	✗	✗
25	✓	✗	✗	✗	✗	✗

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



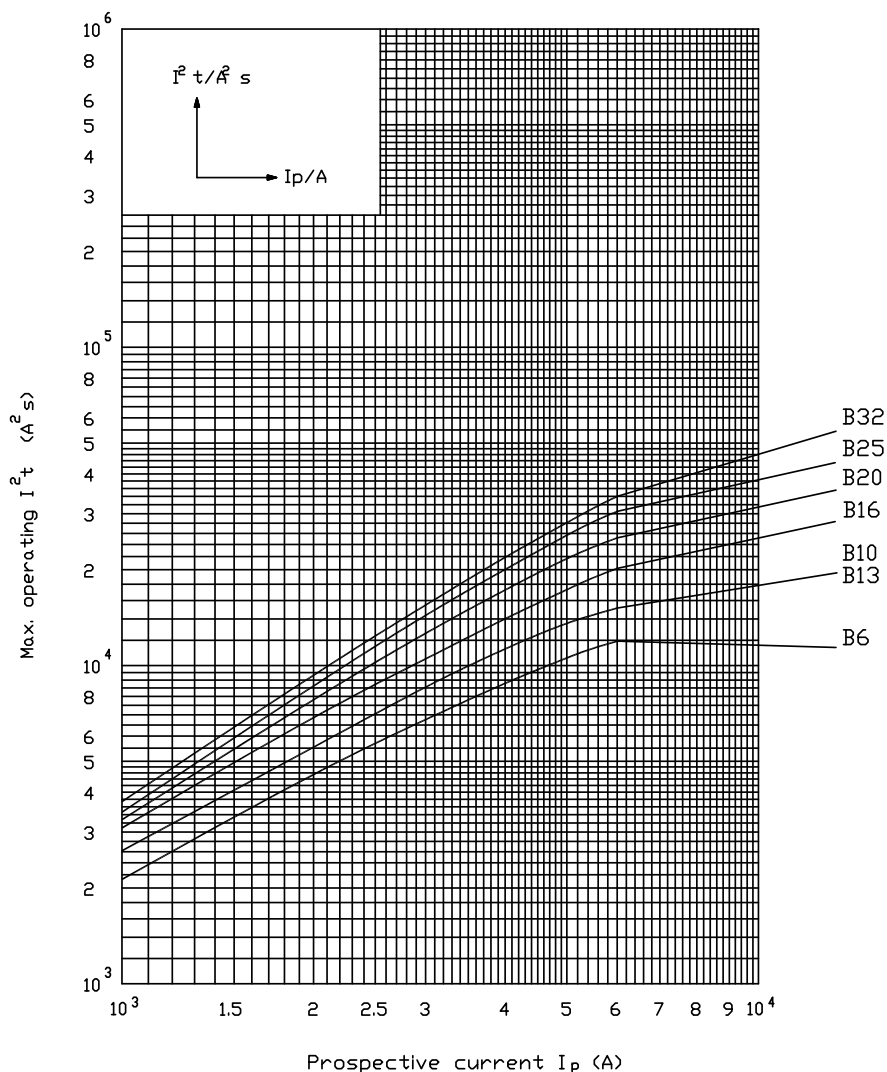
Self-Test function explanation

- How often does Self-test function perform on the AFDD?

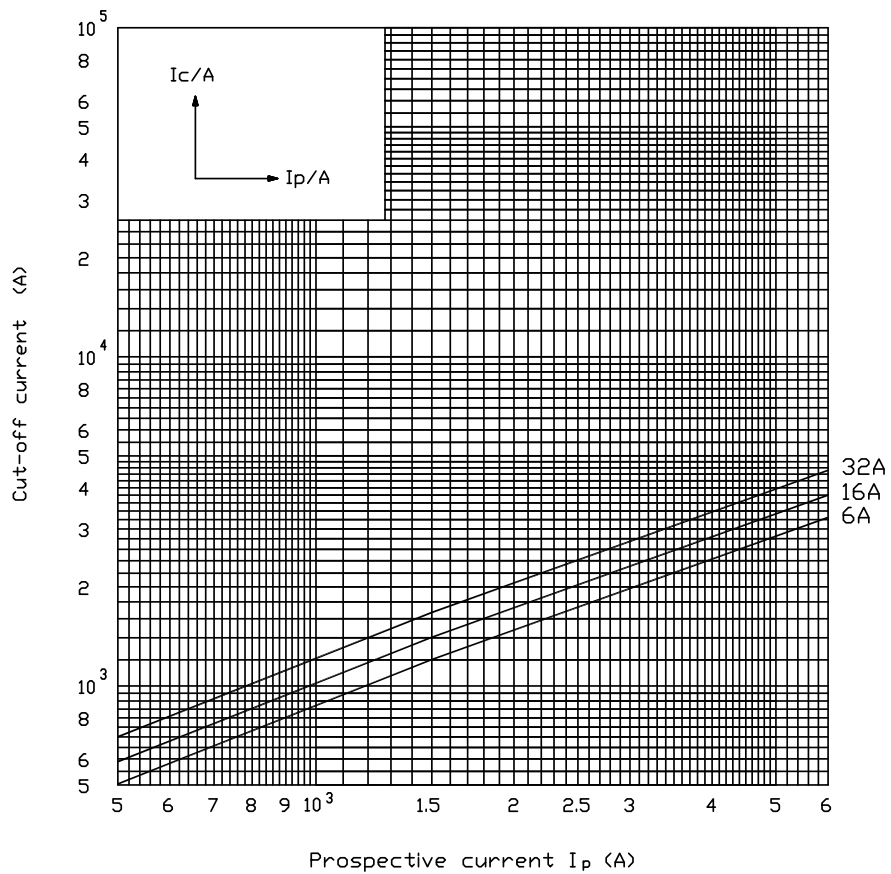
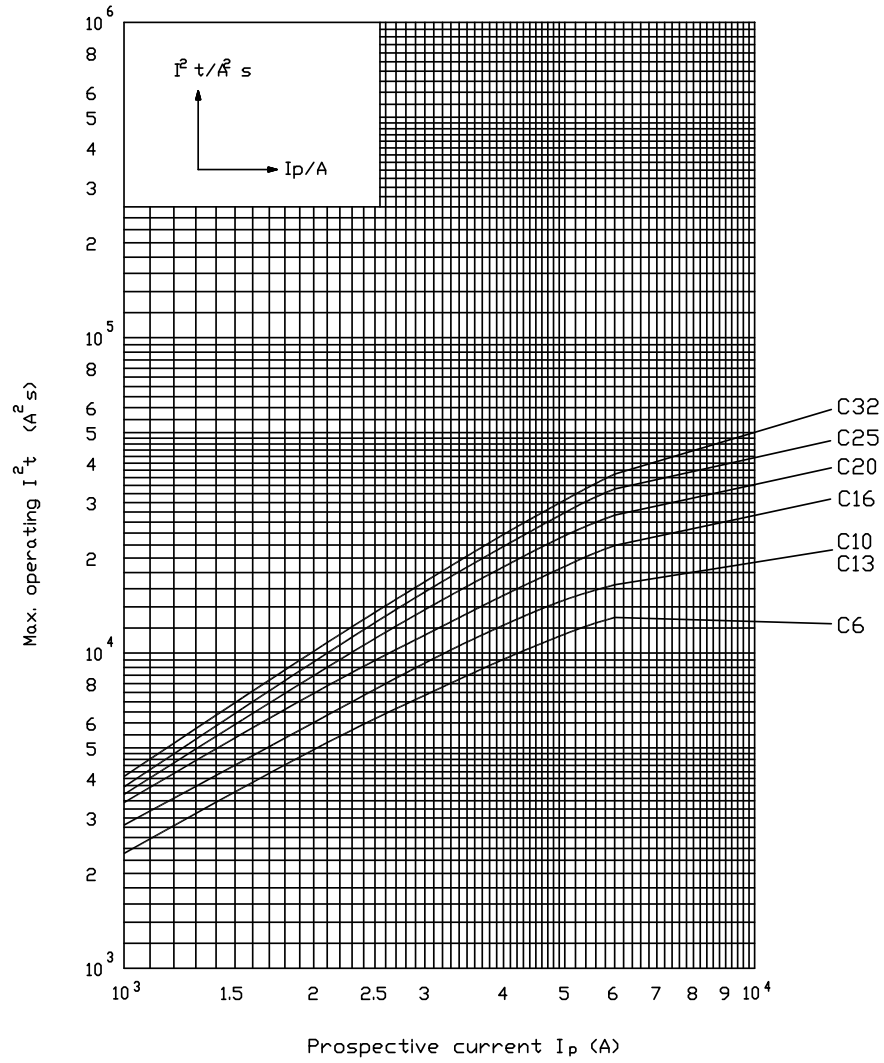
Every time it is powered and then once every minute while powered.
- What happens in the case that Self-test function is not positive, so if it fails this test, the AFD function does not work anymore?

If the self-test (automatically initiated test function) fails then the AFDD outputs a trip command. The self test checks the AFD function so if it fails then the AFD function is not operating correctly.
- In the case of failing Self-test fault what happens further: Does the AFDD trip immediately or does it trip after relatching the switch, or does not trip and just signalizes?

After a self-test failure the device will trip. Upon re-latching the AFDD signals the self-test fault by flashing the LED as described for the self-test fault below, it then does a self-test and if the result is a fail it will trip. If the AFDD cannot trip due because the tripping means is compromised (e.g. damaged PMR) it will continuously flash the LED (self-test fault) as long as it remains powered. If the self-test is a pass after re-latching then the flashing LED will cancel after 25 seconds.

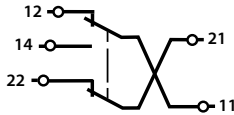


Technical data



Auxiliary switch PS KZS-2M/4M

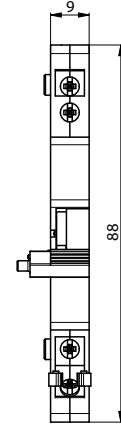
Technical data	
Function	Auxiliary Switch
Rated voltage	230V AC/DC, 110V DC
Rated current	6A (230V AC); 1A (110V DC); 0,5A (220V DC)
Rated frequency	50/60Hz, DC
Index of protection	IP 20 (IP 40)
Terminal capacity	1,5mm ²
Terminal Screw	M3 PH1
Terminal torque	max 0,5Nm
Ambient temperature	-25°C ... +40°C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



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

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

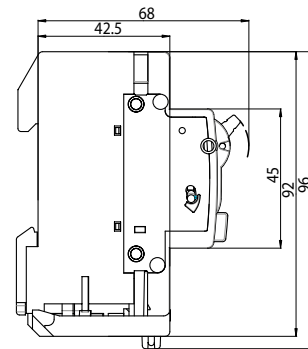
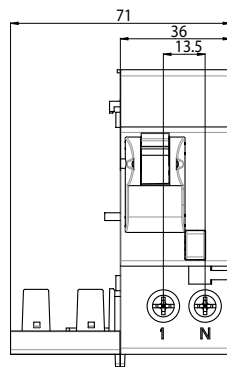
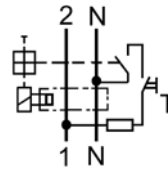
Suitable for use with:	
Type	Suitable
KZS-1M	✗
KZS 1M-FN	✗
KZS-2M	✓
KZS-2M2p	✗
KZS-4M 3p	✓
KZS-4M 3p+N	✓
KZS-4M2p	✗
KZS-R	✗
AFDD	✗



Add-on block for residual current protection DIFO

DIFO2

Technical data	
Rated voltage U_n	230/400 V AC
Rated current I_n	≤32 A ≥ 40 A
Rated frequency f_n	50 / 60 Hz
Rated residual current $I_{\Delta n}$	30, 100, 300 mA
Type of residual current tripping	AC, A
Terminals	1 – 25 mm ² , max. 3 Nm
Terminal screw	M5 (Pozidrive PZ2)
Mounting position	any
Standards	IEC 61009, EN 61009



DIFO4

