

# RCBOs - Residual current circuit breakers with integral overcurrent protection KZS

## Advantages of residual current circuit breakers with integral overcurrent protection KZS - 1M

→ Combining the features of miniature circuit breaker and a residual current circuit breaker, functionally dependent on line voltage (minimum supply voltage 90V)

→ Version with operating temperature down to -35°C also available

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

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

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

→ Sealing possibility

→ 1-module housing (18 mm), with switched neutral line

→ Clearly marked terminals to ensure appropriate connection

→ In case of overcurrent or differential current, the button moves to the "trip" (middle) position. In case of manual turn off, the button moves to the "off" (lowest) position.

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

→ The terminals accept not only wires but also time saving busbars

→ Advanced method of mounting enables an easy removal of single RCBO without disconnecting other units from the busbar

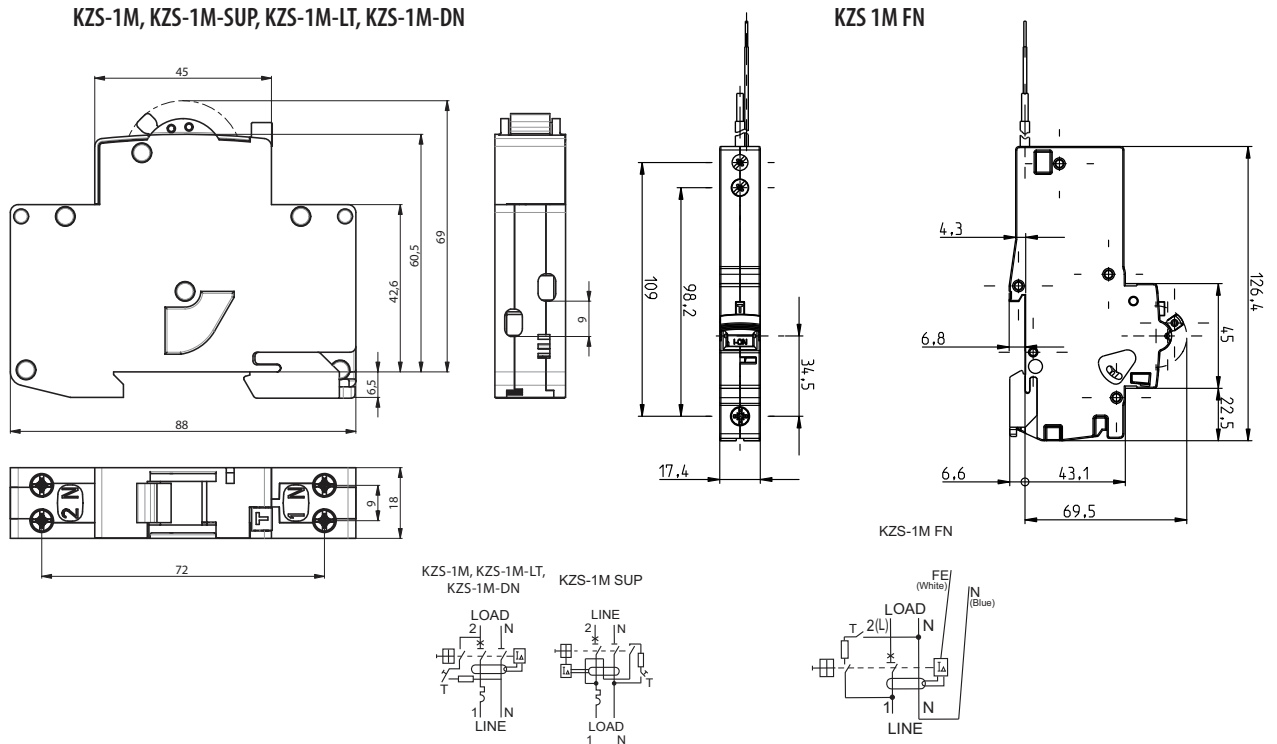


# Residual current circuit breaker with integral overcurrent protection KZS - 1 M

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 <sup>2</sup> , max. 1,5Nm	1-10 mm <sup>2</sup> , max. 1,5Nm	1-25 mm <sup>2</sup> / 1-16 mm <sup>2</sup>
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

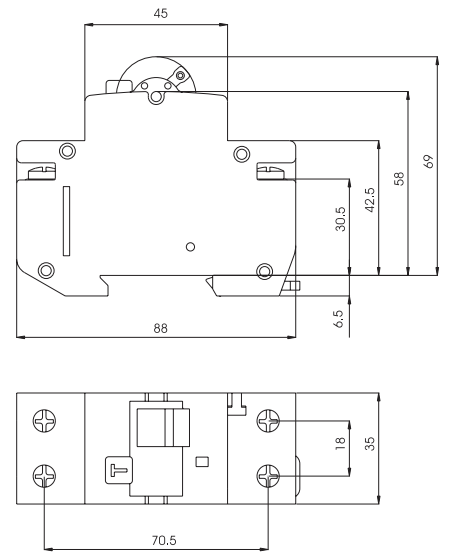
Technical data



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

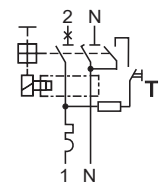
Technical data

Type	INST	G/KV
Rated voltage $U_n$	230 V AC	
Rated current $I_n$	6-40 A	4-40A
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	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 <sup>2</sup> , 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	



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

Conductor cross-section [mm <sup>2</sup> ]	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	✓	✗	✗	✗	✗	✗

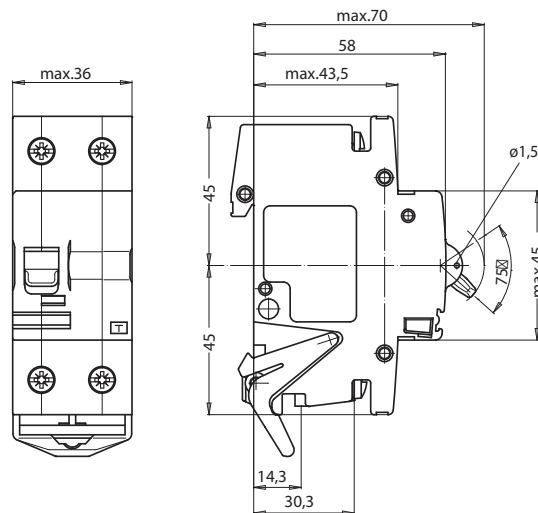


Remark: When you use more than 2 cables you have to be careful how those cables are inserted, due to insure proper pressure on each cable

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

Residual current circuit breaker with integral overcurrent protection KZS-R

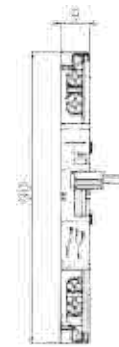
Technical data	
Rated Voltage $U_n$	230 V
Rated Current $I_n$	6-32 A
Rated frequency	50/60 Hz
Rated insulation Voltage $U_i$	240 V
Rated short-circuit capacity	10 kA
Max back-up fuse	gG 100 A
Tripping characteristic	B & C
Type	A
Rated residual current $I_{\Delta n}$	10, 30 mA
Rated residual making and breaking capacity $I_{\Delta m}$	10.000 A
Peak withstand current	250 A (8/20ms) surge current proof
Rated impulse withstand voltage $U_{imp}$	4 kV (1.2/50ms)
Electrical isolation	> 4 mm contact space
Insulating class	VDE 0110
Mechanical endurance (cycles)	> 10.000
Electrical endurance (cycles)	> 3.000
Standards	IEC/EN 61009
Frame size	45 mm
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	1-25 mm <sup>2</sup>
Terminal screw	M5 (Pozidrive PZ2)
Terminal torque	max 2 Nm
Busbar thickness	0.8 - 2 mm
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 <sup>2</sup> , max 0.8Nm
Ambient temperature	max. 35°C
Storage temperature	max. -40°C to +70°C
Contacts	1x NC, 1x NC/NO
Mounting position	any
Standards	EN 62019



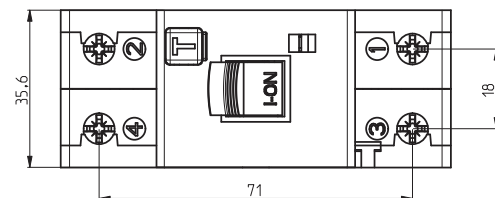
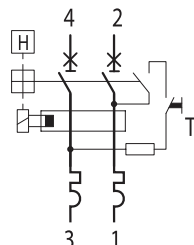
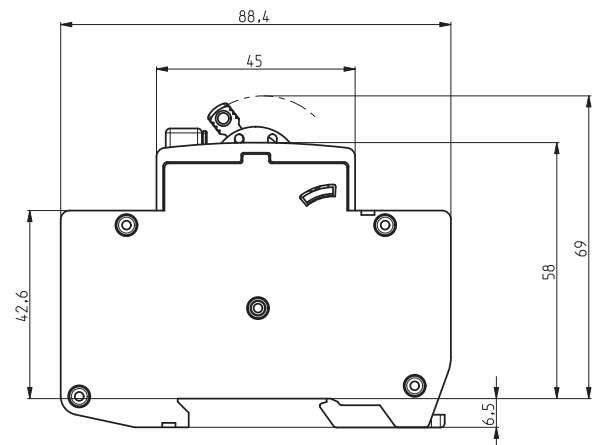
NO - Normally open contact --> during the activation it makes a contact  
 NC - Normally closed contact --> during the activation it brakes the contact  
 1 - contact  
 0 - without a contact

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

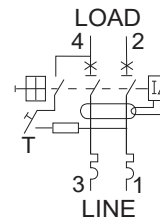
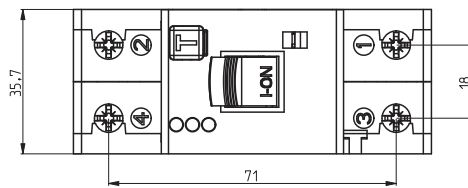
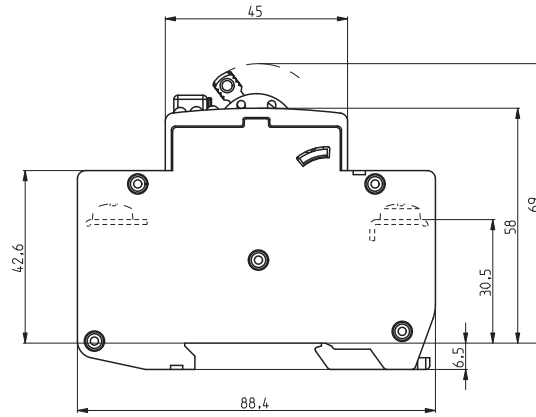
Technical data	
Rated voltage $U_n$	230 V AC
Rated current $I_n$	6-25 A
Rated frequency $f_n$	50 Hz
Rated short-circuit capacity	10.000 A
Back-up fuse	100 A gG
Tripping characteristic	B, C
Type	A
Rated residual current $I_{\Delta n}$	30, 100 mA
Rated residual making and breaking capacity $I_{\Delta m}$	1500A
Terminals	1-25 mm <sup>2</sup> , 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



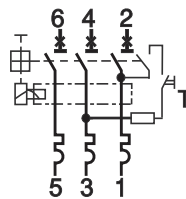
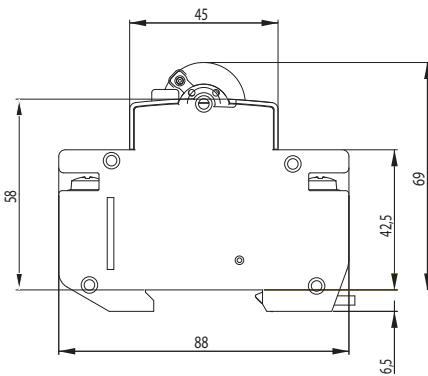
Residual current circuit breaker with integral overcurrent protection with LED status signalisation KZS 2M2p EDI

**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 <sup>2</sup> , 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

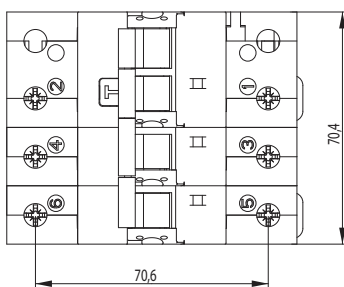


Residual current circuit breaker with integral overcurrent protection KZS-4M 3p



**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 <sup>2</sup> , max. 3 Nm
Terminal screw	M5 (Pozidrive PZ2)
Width	72 mm
Mounting position	any
Standard	EN 61009-1



Conductor cross-section [mm <sup>2</sup> ]	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 <sup>2</sup> ]	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	✓	✗	✗	✗	✗	✗

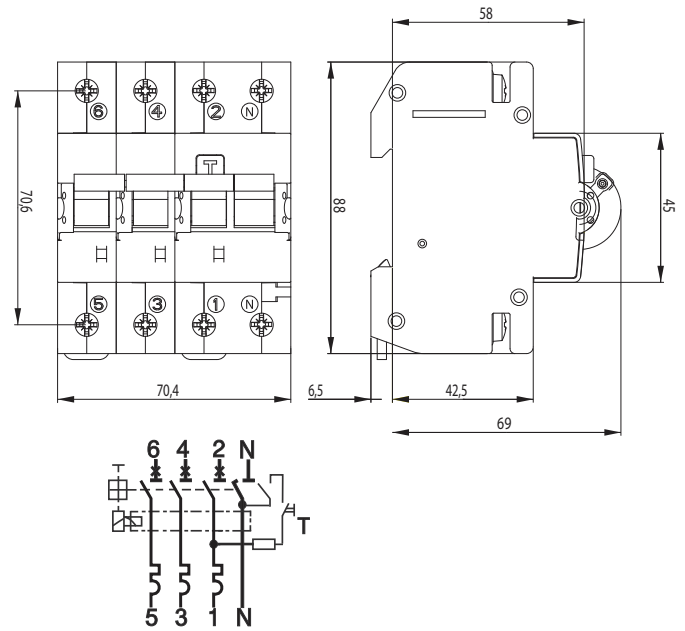
Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

Technical data

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

Technical data

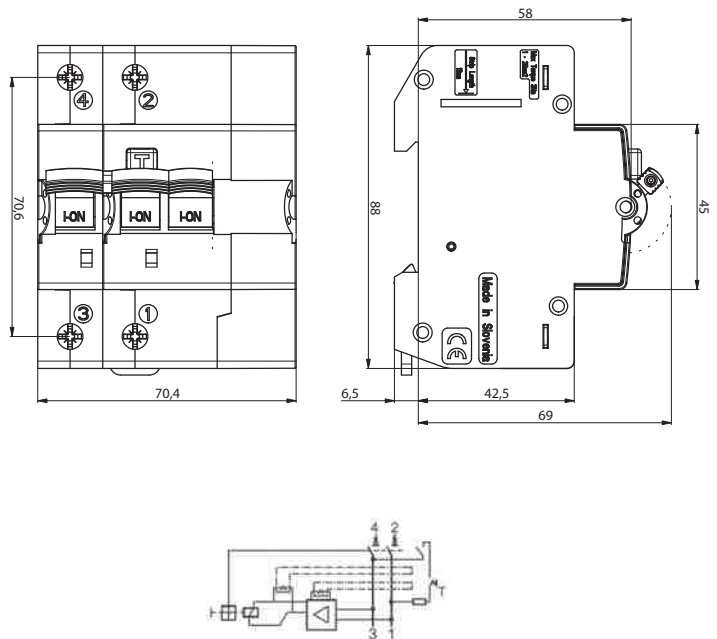
Rated voltage $U_n$	~400 V AC
Rated current $I_n$	6-32 A
Rated frequency $f_n$	50/60 Hz
Rated short-circuit capacity	6.000 A
Back-up fuse	100 A gG
Tripping characteristic	B, C
Type	AC, A
Rated residual current $I_{\Delta n}$	30, 100, 300, 500 mA
Rated residual making and breaking capacity $I_{\Delta m}$	4500A
Terminals	1-25 mm <sup>2</sup> , max. 3 Nm
Terminal screw	M5 (Pozidrive 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 $I_{\Delta n}$	30, 100, 300mA
Rated short-circuit capacity	10kA
Maximum back-up fuse	100A gG
Isolation 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 <sup>2</sup>
Terminal screw	M5 (Pozidrive PZ2)
Terminal torque	max 3,0 Nm
Operating temperature	-25°C ... +60°C
Storage and transport temperature	-40°C ... +70°C
Resistance to climatic conditions	IEC/EN 61009
Contact position indicator	mechanical red/green
Supply possibility	Top or bottom



## 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 <sup>2</sup>
Terminal Screw	M3 PH1
Terminal torque	max 0,5Nm
Ambient temperature	-25°C to +40°C
Storage temperature	-40°C to +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	✗

