

RCCBs - Residual current circuit breakers EFI

Features of residual current circuit breakers EFI

→ Rated conditional short-circuit current : 10 kA

→ AC - pure sinus residual current,
→ A - AC + pulsating direct current
→ B - AC + A + smooth direct current + high frequency (1kHz)
→ B+ - AC + A + smooth direct current + high frequency (20kHz)

→ Real contact position indication for easier contact status identification

→ Test button enables user to check residual functionality

→ Various quality marks

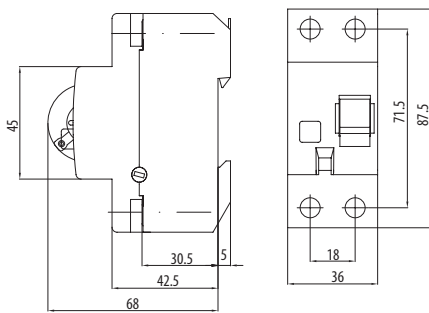
→ RCCBs can be supplied with single phase and three phase busbars

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

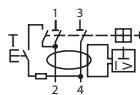
→ Supply is possible both from top and bottom terminals

Residual current circuit breaker EFI-2

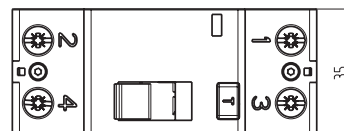
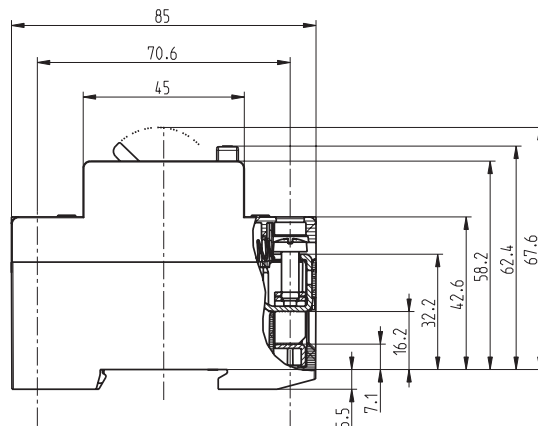
Technical data			
Type	Instantenous	G/KV type	S type
Electrical			
Rated voltage U_n	230/240V AC	230/240V AC	230/240V AC
Rated current I_n	16, 25, 40, 63, 80, 100A	25, 40, 63A	25, 40, 63A
Rated Insulation voltage U_i	440V	440V	440V
Rated frequency f_n	50/60Hz	50/60Hz	50/60Hz
Peak withstand current	-	3kA (8/20ms) surge current proof	5kA (8/20ms) surge current proof
Electrical isolation	> 4mm contact space	> 4mm contact space	> 4mm contact space
Rated residual operating current $I_{\Delta n}$	0,03; 0,1 & 0,3A	0,03; 0,1 & 0,3A	0,1 & 0,3A
Rated conditional short-circuit current I_{cn}	10kA	10kA	10kA
Rated making and breaking capacity I_m	800A	630A	630A
Maximum back-up fuse	100A gG	80A gG	80A gG
Isolation class	B	B	B
Standard	IEC/EN 61008	IEC/EN 61008, OVE E 8601	IEC/EN 61008
Mechanical endurance (op. c.)	> 4000	> 4000	> 4000
Electrical endurance (op. c.)	> 2000	> 2000	> 2000
Mechanical			
Frame size	45mm	45mm	45mm
Device height	68mm (DIN rail acc to EN60715)	68mm (DIN rail acc to EN60715)	68mm (DIN rail acc to EN60715)
Device width	36mm (2 x Module units 18mm)	36mm (2 x Module units 18mm)	36mm (2 x Module units 18mm)
Degree of protection	IP20	IP20	IP20
Upper and lower terminals	open mounted/lift terminals	open mounted/lift terminals	open mounted/lift terminals
Terminal capacity	1-25mm ²	1-25mm ²	1-25mm ²
Terminal screw	M5 (Pozidrive PZ2)	M5 (Pozidrive PZ2)	M5 (Pozidrive PZ2)
Terminal torque	2-2,5Nm	2-2,5Nm	2-2,5Nm
Busbar thickness	0,8 - 2 mm	0,8 - 2 mm	0,8 - 2 mm
Operating temperature	-25°C ... +55°C	-25°C ... +55°C	-25°C ... +55°C
Storage and transport temperature	-40°C ... +70°C	-40°C ... +70°C	-40°C ... +70°C
Resistance to climatic conditions	IEC/EN 61008	IEC/EN 61008	IEC/EN 61008
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)	5g (10,60 & 500Hz)	5g (10,60 & 500Hz)
Contact position indicator	mechanical red/green	mechanical red/green	mechanical red/green
Supply possibility	Top or bottom	Top or bottom	Top or bottom
Mounting position	any	any	any



EFI-2 16-80 A



EFI-2 100 A



EFI-2 100 A

Technical data

I_n	Powerlost EFI-2 G/KV & S type
	P / pole (W)
25A	1,29-1,43
40A	2,80 - 3,05
63A	4,28 - 5,34

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	✓	✗	✗	✗	✗

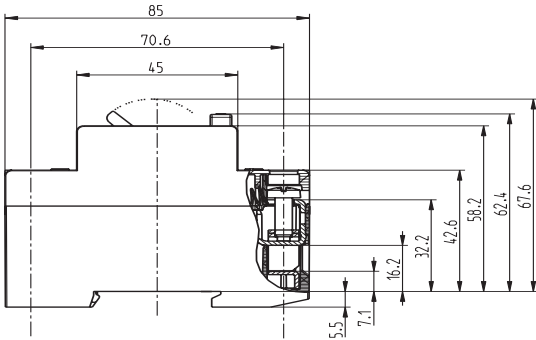
Remark: When you use more than 2 cables you have to be careful how those cables are inserted, due to insure proper pressure on each cable

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	✓	✗	✗	✗	✗	✗

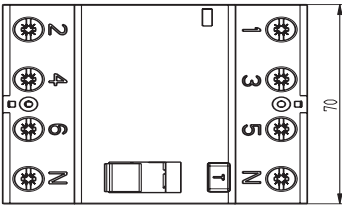
Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

Residual current circuit breaker EFI-4

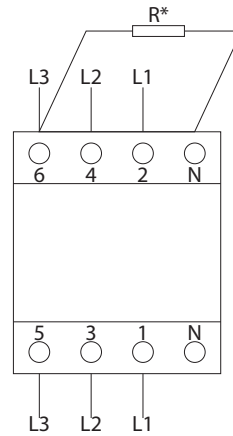
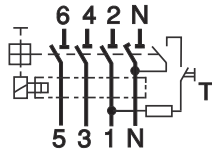
Technical data			
Type	Instantaneous	G/KV type	S type
Electrical			
Rated voltage U_n	400/415V AC	400/415V AC	400/415V AC
Rated current I_n	16, 25, 40, 63, 80, 100A	25, 40, 63A	25, 40, 63A
Rated Insulation voltage U_i	440V	440V	440V
Rated frequency f_n	50/60Hz	50/60Hz	50/60Hz
Peak withstand current	-	3kA (8/20ms) surge current proof	5kA (8/20ms) surge current proof
Electrical isolation	> 4mm contact space	> 4mm contact space	> 4mm contact space
Rated residual operating current $I_{\Delta n}$	0,03; 0,1 & 0,3A	0,03; 0,1 & 0,3A	0,1 & 0,3A
Rated conditional short-circuit current I_{cn}	10kA	10kA	10kA
Rated making and breaking capacity I_m	800A	630A	630A
Maximum back-up fuse	100A gG	80A gG	80A gG
Isolation class	B	B	B
Standard	IEC/EN 61008	IEC/EN 61008, OVE E 8601	IEC/EN 61008
Mechanical endurance (op. c.)	> 4000	> 4000	> 4000
Electrical endurance (op. c.)	> 2000	> 2000	> 2000
Mechanical			
Frame size	45mm	45mm	45mm
Device height	68mm (DIN rail acc to EN60715)	68mm (DIN rail acc to EN60715)	68mm (DIN rail acc to EN60715)
Device width	72mm (4 x Module units 18mm)	72mm (4 x Module units 18mm)	72mm (4 x Module units 18mm)
Degree of protection	IP20	IP20	IP20
Upper and lower terminals	open mounted/lift terminals	open mounted/lift terminals	open mounted/lift terminals
Terminal capacity	1-25mm ²	1-25mm ²	1-25mm ²
Terminal screw	M5 (Pozidrive PZ2)	M5 (Pozidrive PZ2)	M5 (Pozidrive PZ2)
Terminal torque	2-2,5Nm	2-2,5Nm	2-2,5Nm
Busbar thickness	0,8 - 2 mm	0,8 - 2 mm	0,8 - 2 mm
Operating temperature	-25°C ... +55°C	-25°C ... +55°C	-25°C ... +55°C
Storage and transport temperature	-40°C ... +70°C	-40°C ... +70°C	-40°C ... +70°C
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)	5g (10,60 & 500Hz)	5g (10,60 & 500Hz)
Resistance to climatic conditions	IEC/EN 61008	IEC/EN 61008	IEC/EN 61008
Contact position indicator	mechanical red/green	mechanical red/green	mechanical red/green
Supply possibility	Top or bottom	Top or bottom	Top or bottom
Mounting position	any	any	any



EFI-4 16-80 A



EFI-4 100 A



RCD EFI-4 Type in 3-phase system without neutral conductor:

- 30mA: R=4k7/1W (500V)
- 100mA: R=1k/1W (500V)
- 300mA: R=1k6/1W (500V)
- 500mA: R=1k6/1W (500)

* Resistor (R) has to be connected between N and L3 as to ensure proper functionality of the test button.

I_n	Powerlost EFI-4 G/KV & S type	
	P / pole (W)	
25A	1,40-1,61	
40A	2,73 - 4,11	
63A	4,76 - 5,69	

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

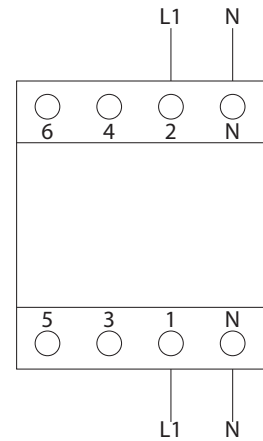
Conductor cross-section [mm ²]	Number of single conductors, flexible Cu conductors without cable ferrule					
	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	✗	✗	✗
10	✓	✓	✗	✗	✗	✗
16	✓	✗	✗	✗	✗	✗
25	✓	✗	✗	✗	✗	✗

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

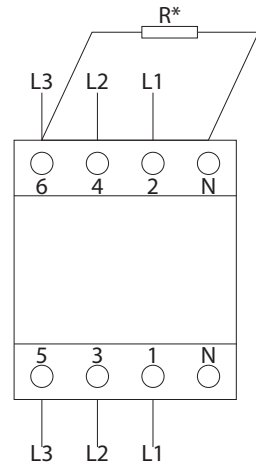
Technical data

B and B+ type residual current circuit breaker EFI-4

Technical data		
Type	B & B+	
Electrical		
Design according to	IEC/EN 61008, IEC/EN 62423 B+ -> VDE 0664-400	
Current test marks as printed onto the device		
Rated voltage U_n	230/400 V AC	
Rated frequency f_n	50/60Hz	
Mode of operation	"A type functionality: voltage independent B and B+ type functionality: voltage dependent"	
Operation voltage electronic	50 – 253V AC	
Voltage range test circuit	196 – 253V AC	
Rated residual operating current $I_{\Delta n}$	Instantaneous	30, 100, 300 mA
	K - short time delayed	30, 100, 300 mA
	S - selective	100, 300 mA
Sensitivity	Alternating, pulsed and smooth direct currents	
Rated insulation voltage U_i	440 V	
Rated impulse withstand voltage U_{imp}	4 kV (1.2/50µs)	
Rated conditional short-circuit current I_{cn}	10 kA	
Rated making and breaking capacity I_m	800 A	
Peak withstand current	3 kA (8/20 µs) surge current proof	
Electrical isolation	> 4 mm contact space	
Maximum back-up fuse $I_n = 25-63A$	Short circuit and overload protection 100 A gG/gL	
Endurance (operating cycles)	electrical components	≥ 2000
	mechanical components	≥ 4000
Mechanical		
Frame size	45 mm	
Device height	68 mm (DIN rail acc to EN60715)	
Device width	72 mm (4xModule Units 18mm)	
Degree of protection	IP20	
Upper and lower terminals	open mounted/lift terminals	
Terminal protection finger and hand touch safe	IEC/EN 61008	
Terminal capacity	1 - 25 mm ²	
Terminal screw	M5 (Pozidrive PZ2)	
Terminal torque	2 - 2.5 Nm	
Busbar thickness	0.8 - 2 mm	
Operating temperature	-25°C ... +55°C	
Storage- and transport temperature	-40°C ... +70°C	
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)	
Resistance to climatic conditions	IEC/EN 61008	
Contact position indicator	mechanical red / green	
Supply possibility	top or bottom	
Mounting position	any	



RCD ETI Type B & B+ in 1-phase system $U_n=230V$



RCD ETI Type B & B+ in 3-phase system without neutral conductor - $U_n=400V$
 30mA: R=2k7/1W (500V)
 100mA: R=7k5/1W (500V)
 300mA: R=2k7/1W (500V)

* Resistor (R) has to be connected between N and L3 as to ensure proper functionality of the test button.

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	✓	✗	✗	✗	✗

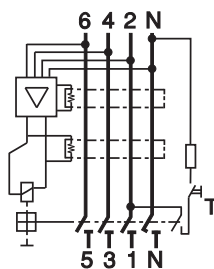
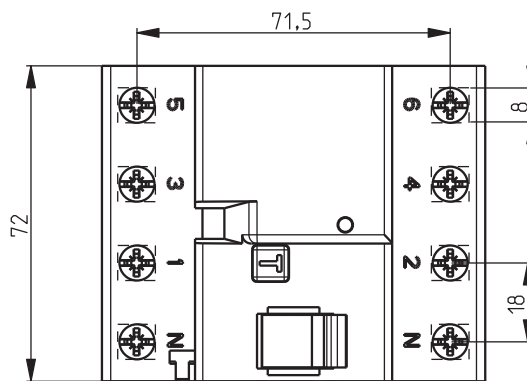
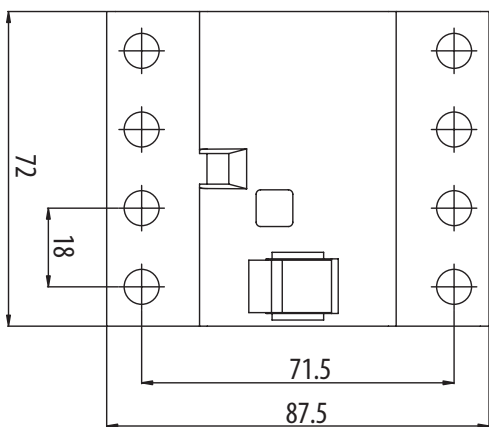
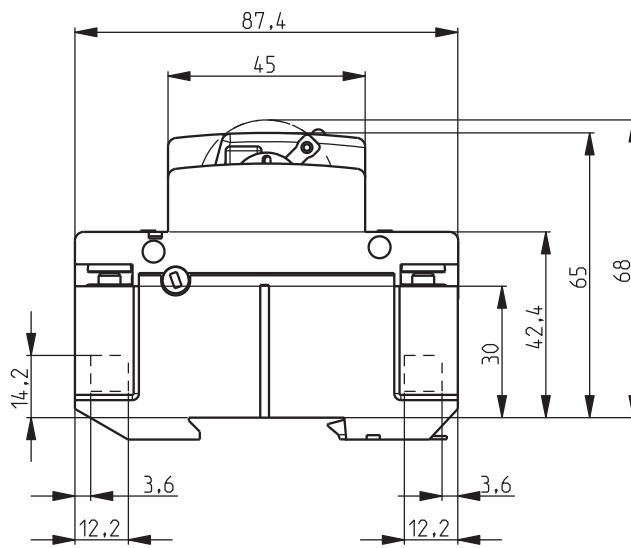
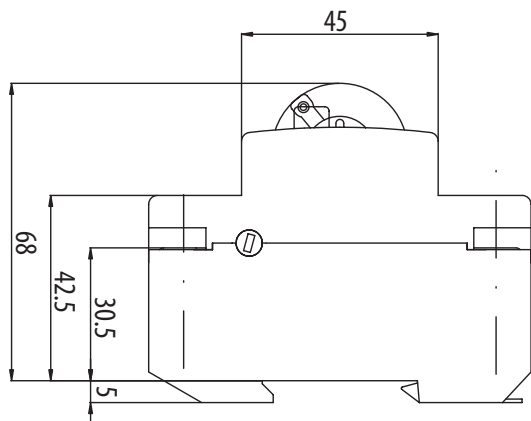
Remark: When you use more than 2 cables you have to be careful how those cables are inserted, due to insure proper pressure on each cable

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

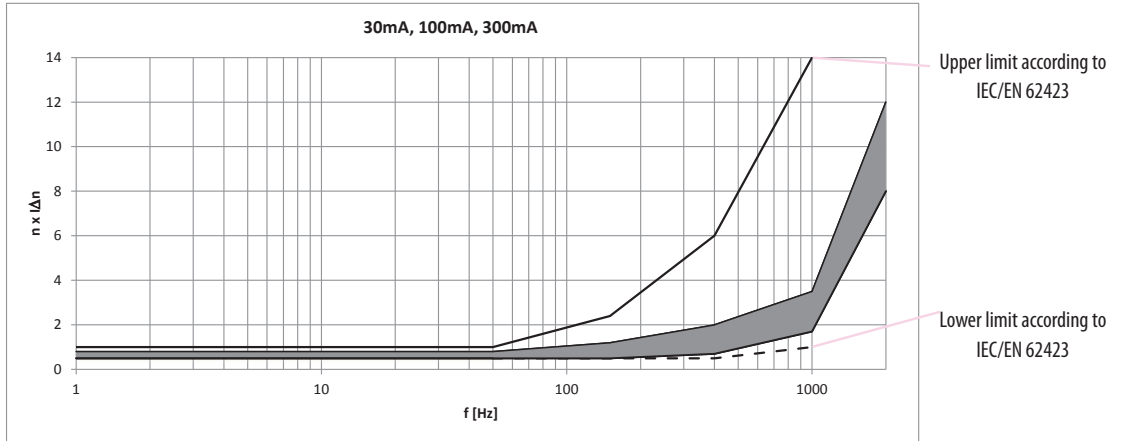
K-Short time delay, S-Selective

Instantaneous

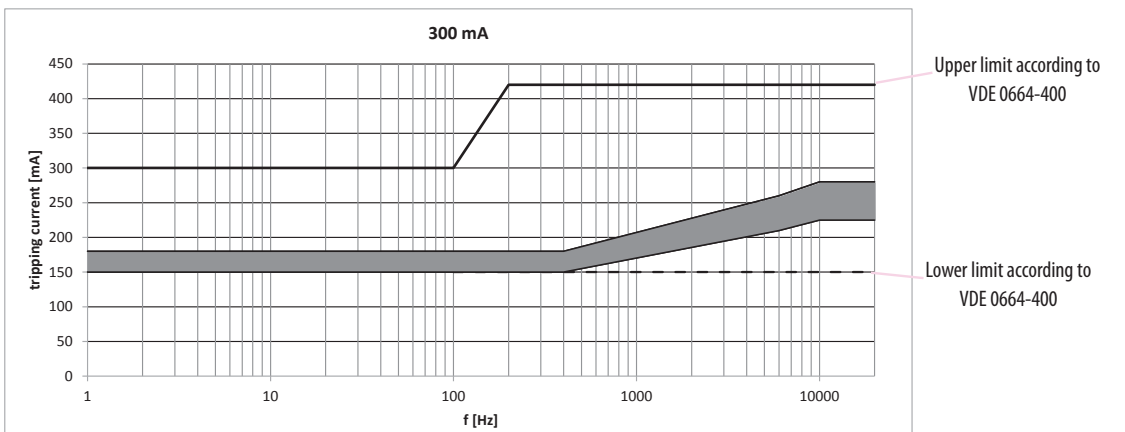
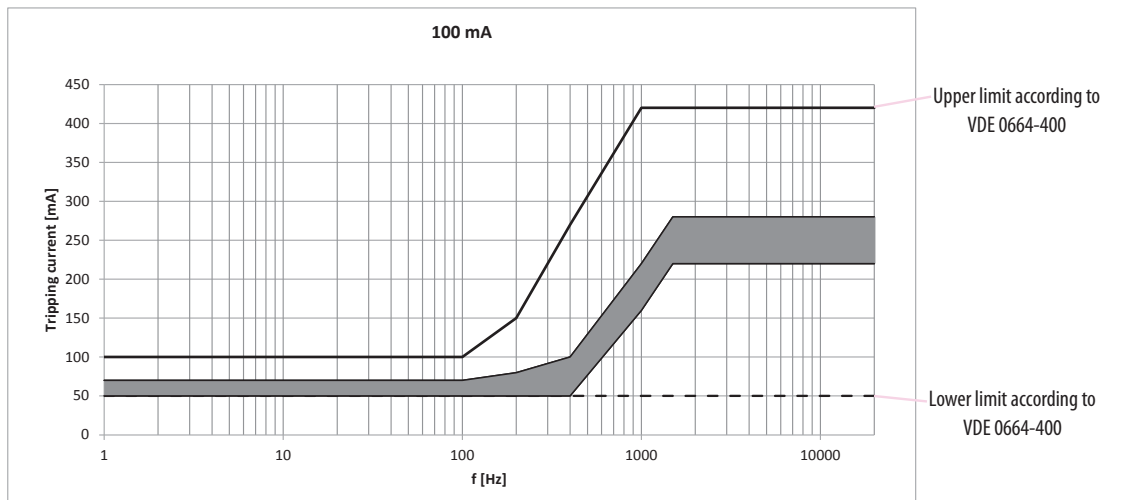
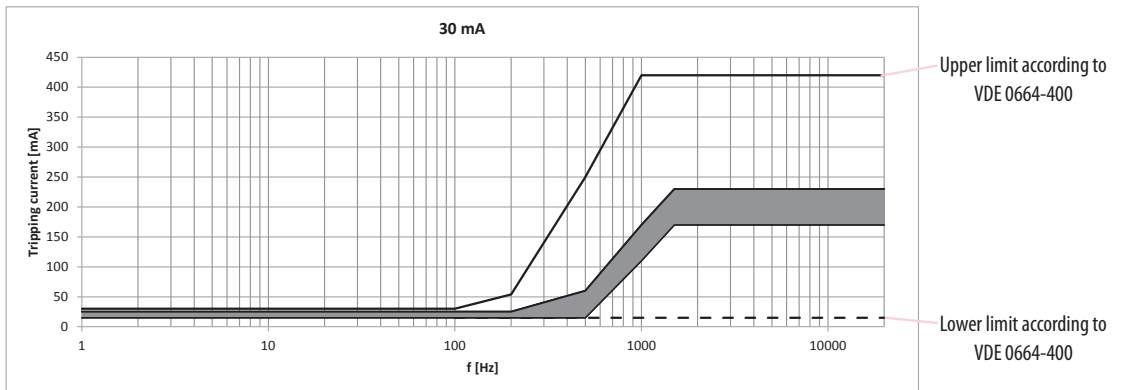


Technical data

EFI B type



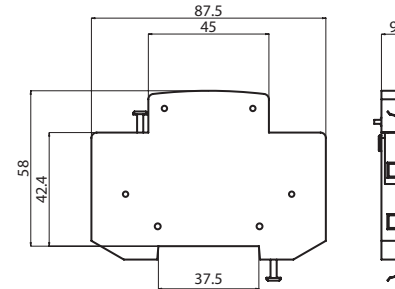
EFI B+ type



Auxiliary switch PS EFI

Technical data

Rated current I_n	6 A (230 V AC), AC 12, 1 A (110 V DC), DC 12
Conditional short-circuit current	1 kA with fuse-link 20 A
Terminals	1-2,5mm ² , max 0,5Nm
Terminal Screw	M3 (PH1)
Mounting position	any
Standards	EN 62019



Shunt trip release DA EFI

Technical data

Rated voltage	230V AC
Rated frequency	50/60Hz
Max inrush current	0,8A
Terminals	1-2,5mm ² , max 0,5Nm
Terminal Screw	M3 (PH1)
Build-in width	9mm
Mounting position	any

