

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 (1 kHz)
→ 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



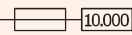




Residual current circuit breakers can be used in TN-S, TN-CS, TT and IT network systems, or with other words, in all systems where neutral and protective conductors are separated. Residual current circuit breakers EFI are used for protection against indirect contact (fault protection) and direct contact (additional protection) of parts under voltage. In the case of protection against indirect contact (fault protection) you can use residual current protective devices with a rated residual current of $I_{\Delta n} \leq 300\text{mA}$. Residual current protective devices with a rated residual current of $I_{\Delta n} \leq 30\text{mA}$ fulfil the conditions for protection against direct contact (additional protection). For protection against fire, according to DIN VDE 0100-482 and IEC 60364-4-482, all cables and conductors in TN and TT systems must be protected by means of residual current protective devices with rated residual current of $I_{\Delta n} \leq 300\text{mA}$. In applications where resistive faults can cause a fire (radiant ceiling heating with panel heating elements), the rated residual current must be $I_{\Delta n} = 30\text{mA}$.









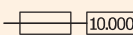




Types

- AC Type: they are sensitive to alternating (sinusoidal) AC residual currents.
- A Type: they are sensitive to alternating (sinusoidal) AC residual currents and pulsating DC residual currents.
- B Type: they are sensitive to alternating (sinusoidal) AC residual currents, pulsating DC residual currents and smooth DC residual currents. Tripping values are defined up to 1kHz.
- B+ Type: they are sensitive to alternating (sinusoidal) AC residual currents, pulsating DC residual currents and smooth DC residual currents. Tripping values are defined up to 20kHz and they are below 420mA.

Classification regarding break time

- Instantaneous: max. break time 40ms (Inst.)
- G/KV-Short time delay: time delayed min. 10ms and max. 40ms (G/KV)
- S-Selective: time delayed min. 40ms and max. 150ms (S)

EFI 2 (2M)		Type AC	Type A		
		Inst.	Inst.	G/KV	S
	For alternating residual current	✓	✓	✓	✓
	For alternating and pulsating direct residual current		✓	✓	✓
	Short-circuit capacity with back-up fuse	✓	✓	✓	✓
	Lower temperature limit of application -25°C	✓	✓	✓	✓
	VDE 0664, part 1 (up to 80 A)		✓		✓
	Short time delayed (10 - 40 ms)			✓	
	Selective (time delayed 40 -150 ms)				✓

EFI 4 (4M)		Type AC	Type A			Type B			Type B+		
		Inst.	Inst.	G/KV	S	Inst.	G/KV	S	Inst.	G/KV	S
	For alternating residual current	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	For alternating and pulsating direct residual current		✓	✓	✓	✓	✓	✓	✓	✓	✓
  	For alternating, pulsating direct and smooth DC residual current (up to 1kHz)					✓	✓	✓	✓	✓	✓
  	For alternating, pulsating direct and smooth DC residual current (up to 20kHz)								✓	✓	✓
	Short-circuit capacity with back-up fuse	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Lower temperature limit of application -25°C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	VDE 0664, part 1 (up to 80 A)		✓		✓	✓		✓	✓		✓
	Short time delayed (10 - 40 ms)			✓			✓			✓	
	Selective (time delayed 40 -150 ms)				✓			✓			✓

Use of AC, A, and B type of RCCB's in case of different fault conditions

			AC	A	B, B+	
Connection						
		Normal mains current				
1	Single phase L N PE			✓	✓	✓
2	Phase control L N PE			✓	✓	✓
3	Burst control L N PE			✓	✓	✓
4	Single phase rectifier L N PE				✓	✓
5	Two-pulse bridge L N PE				✓	✓
6	Two-pulse bridge, half controlled L N PE				✓	✓
7	Two-pulse bridge between phases L ₁ L ₂ N PE				✓	✓
8	Single phase with smoothing L N PE					✓
9	Three-phase star L ₁ L ₂ L ₃ N PE					✓
10	Six-pulse bridge between phases L ₁ L ₂ N PE					✓

A and AC type residual current circuit breaker EFI-2

Rated residual current
0,03 - 0,5 A

Rated current
16 - 80 A

Type
A, AC



16 - 80 A



100 A

EFI-2 Type A, EFI-2 Type AC

I _n [A]	I _{Δn} [A]	Number of poles	Code No. A			Code No. AC	Weight [g]	Packaging [pcs]
			Instantaneous	G/KV-Short time delay	S-Selective			
16	0,03	2	002062521	-	-	002062121	197	1/54
25	0,03	2	002062522	002062727	-	002062122	197	1/54
40	0,03	2	002062523	002062728	-	002062123	197	1/54
63	0,03	2	002062524	002062729	-	002062124	206	1/54
80	0,03	2	002062525	-	-	002062125	208	1/54
100	0,03	2	002062530	-	-	002062531	244	1/54
16	0,1	2	002063521	-	-	002063121	193	1/54
25	0,1	2	002063522	002063727	002063732	002063122	193	1/54
40	0,1	2	002063523	002063728	002063733	002063123	193	1/54
63	0,1	2	002063524	002063729	002063734	002063124	196	1/54
80	0,1	2	002063525	-	-	002063125	198	1/54
100	0,1	2	002062532	-	-	002062533	230	1/54
16	0,3	2	002064521	-	-	002064121	198	1/54
25	0,3	2	002064522	002064727	002064732	002064122	198	1/54
40	0,3	2	002064523	002064728	002064733	002064123	198	1/54
63	0,3	2	002064524	002064729	002064734	002064124	204	1/54
80	0,3	2	002064525	-	-	002064125	208	1/54
100	0,3	2	002062534	-	-	002062535	230	1/54
16	0,5	2	002065521	-	-	002065121	198	1/54
25	0,5	2	002065522	-	-	002065122	198	1/54
40	0,5	2	002065523	-	-	002065123	198	1/54
63	0,5	2	002065524	-	-	002065124	204	1/54
80	0,5	2	002065525	-	-	002065125	208	1/54

A and AC type residual current circuit breaker EFI-4

Rated residual current
0,03 - 0,5 A

Rated current
16 - 80 A

Type
A, AC



16 - 80 A



100 A

EFI-4 Type A, EFI-4 Type AC

I _n [A]	I _{Δn} [A]	Number of poles	Code No. A			Code No. AC	Weight [g]	Packaging [pcs]
			Instantaneous	G/KV-Short time delay	S-Selective			
16	0,03	4	002062541	-	-	002062141	328	1/27
25	0,03	4	002062542	002062747	-	002062142	328	1/27
40	0,03	4	002062543	002062748	-	002062143	328	1/27
63	0,03	4	002062544	002062749	-	002062144	350	1/27
80	0,03	4	002062545	-	-	002062145	385	1/27
100	0,03	4	002062150	-	-	002062151	407	1/27
16	0,1	4	002063541	-	-	002063141	320	1/27
25	0,1	4	002063542	002063747	002063752	002063142	320	1/27
40	0,1	4	002063543	002063748	002063753	002063143	320	1/27
63	0,1	4	002063544	002063749	002063754	002063144	338	1/27
80	0,1	4	002063545	-	-	002063145	380	1/27
100	0,1	4	002062152	-	-	002062153	407	1/27
16	0,3	4	002064541	-	-	002064141	320	1/27
25	0,3	4	002064542	002064747	002064752	002064142	320	1/27
40	0,3	4	002064543	002064748	002064753	002064143	320	1/27
63	0,3	4	002064544	002064749	002064754	002064144	338	1/27
80	0,3	4	002064545	-	-	002064145	380	1/27
100	0,3	4	002062154	-	-	002062155	372	1/27
16	0,5	4	002065541	-	-	002065141	320	1/27
25	0,5	4	002065542	-	-	002065142	320	1/27
40	0,5	4	002065543	-	-	002065143	320	1/27
63	0,5	4	002065544	-	-	002065144	338	1/27
80	0,5	4	002065545	-	-	002065145	380	1/27

* Version with N-pole on the left side is also available.

Features and advantages of UNIVERSAL CURRENT SENSITIVE RCCBs B type and B+ type

APPLICATION

- Fault protection (protection against indirect contact of live parts)
- Additional protection (protection in case of direct contact of live parts, $I_{\Delta n} \leq 30\text{mA}$)
- Fire Protection (for locations exposed to fire hazard)

Residual current sensitivity – UNIVERSAL

AC pure sinus residual current, 50/60Hz

A sinus and pulsating direct current, 50/60Hz

B AC + A + smooth direct current + high frequency (1 kHz)

B+ AC + A + smooth direct current + high frequency (20kHz)

Basic types

according to rated values:

4p B $I_n = 25\text{A}, 40\text{A}, 63\text{A}, I_{\Delta n} = 30\text{mA}, 100\text{mA}, 300\text{mA}$

4p B+ $I_n = 25\text{A}, 40\text{A}, 63\text{A}, I_{\Delta n} = 30\text{mA}, 100\text{mA}, 300\text{mA}$

according to breaking times:

4p B, B+ instantaneous, short time delayed (G/KV), selective (S)

according to the number of poles:

4p, 2p

Standards

IEC/EN 61008-1 basic standard for RCCB's AC and A type

IEC/EN 62423 additional requirements for type B

VDE 0664-400 B+ VDE standard for B+ requirements (20kHz)

Mode of operation

Pure a.c. and pulsating d.c. type residual current sensitivity, A voltage independent

Smooth d.c. current sensitivity: B, B+ voltage dependent

Minimum operating voltage: 50V

Typical applications

Which are vulnerable to smooth d.c. residual currents:

- Frequency converters,
- Photovoltaic systems, a.c side,
- Charging stations for electric vehicles,
- Variable speed machine tools,
- UPS, computer data centres
- Elevator controls,
- Cranes of all kinds
- Electronic equipment on construction sites,
- Test set-ups in laboratories,
- Installation in general where we can expect d.c. smooth direct residual currents, etc.

B type residual current circuit breaker EFI-4 B Instantaneous

Rated residual current **0,03 - 0,3 A** Rated current **25 - 63 A** Type **B (Instantaneous)**



EFI-4 B Instantaneous					
I_n [A]	$I_{\Delta n}$ [A]	Number of poles	Code No	Weight [g]	Packaging [pcs]
25	0,03	4	002062642	335	1/27
40	0,03	4	002062643	335	1/27
63	0,03	4	002062644	340	1/27
25	0,1	4	002063642	335	1/27
40	0,1	4	002063643	335	1/27
63	0,1	4	002063644	340	1/27
25	0,3	4	002064642	335	1/27
40	0,3	4	002064643	335	1/27
63	0,3	4	002064644	340	1/27

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

Rated residual current **0,03 - 0,3 A** Rated current **25 - 63 A** Type **B+ (Instantaneous)**



EFI-4 B+ Instantaneous					
I_n [A]	$I_{\Delta n}$ [A]	Number of poles	Code No	Weight [g]	Packaging [pcs]
25	0,03	4	002062647	335	1/27
40	0,03	4	002062648	335	1/27
63	0,03	4	002062649	340	1/27
25	0,1	4	002063647	335	1/27
40	0,1	4	002063648	335	1/27
63	0,1	4	002063649	340	1/27
25	0,3	4	002064647	335	1/27
40	0,3	4	002064648	335	1/27
63	0,3	4	002064649	340	1/27

B type residual current circuit breaker EFI-4 B G/KV-Short time delay

Rated residual current **0,03 - 0,3 A** Rated current **25 - 63 A** Type **B (G/KV-Short time delay)**



EFI-4 B G/KV-Short time delay					
I_n [A]	$I_{\Delta n}$ [A]	Number of poles	Code No	Weight [g]	Packaging [pcs]
25	0,03	4	002062652	340	1/27
40	0,03	4	002062653	340	1/27
63	0,03	4	002062654	345	1/27
25	0,1	4	002063652	340	1/27
40	0,1	4	002063653	340	1/27
63	0,1	4	002063654	345	1/27
25	0,3	4	002064652	340	1/27
40	0,3	4	002064653	340	1/27
63	0,3	4	002064654	345	1/27

Residual current circuit breakers

B type residual current circuit breaker EFI-4 B S-Selective

Rated residual current 0,1 - 0,3 A	Rated current 25 - 63 A	Type B (S-Selective)
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EFI-4 B S-Selective

I_n [A]	$I_{\Delta n}$ [A]	Number of poles	Code No	Weight [g]	Packaging [pcs]
25	0,1	4	002063662	340	1/27
40	0,1	4	002063663	340	1/27
63	0,1	4	002063664	345	1/27
25	0,3	4	002064662	335	1/27
40	0,3	4	002064663	335	1/27
63	0,3	4	002064664	340	1/27



Accessories for residual current circuit breakers EFI (16 - 80 A)

The PS EFI is fixed to EFI series switches. The width of the device is 9 mm, other dimensions are in compliance with EFI switches. The auxiliary switch PS EFI is used for the remote signalling of the state of contact's condition (closed/open) of EFI switches. During fitting, the EFI must be switched off. PS EFI and DA EFI can not be mounted both together, because both can only be mounted on the right side of EFI.

Auxiliary Switch PS EFI

Type	Contact	Code No.	Weight [g]	Packaging [pcs]
PS EFI - MD	b-contact/a-contact	002069001	50	1/12
PS EFI - 2M	2 x b-contact	002069002	50	1/12
PS EFI - 2D	2 x a-contact	002069003	50	1/12

a - contact = make contact (NO)

b - contact = break contact (NC)

Sealing piece EFI-2

Code No.	Weight [g]	Packaging [pcs]
002069011	2	2

Sealing piece EFI-4

Code No.	Weight [g]	Packaging [pcs]
002069012	3	2

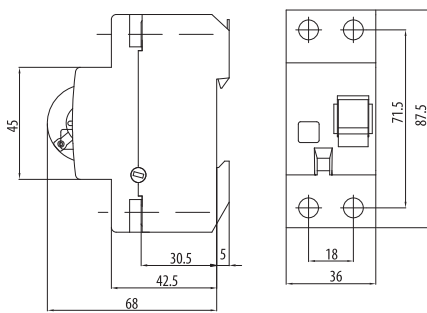
Shunt trip release DA EFI

Type	Code No.	Weight [g]	Packaging [pcs]
DA EFI	002069004	45	1/12

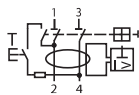


Residual current circuit breaker EFI-2

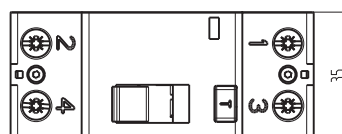
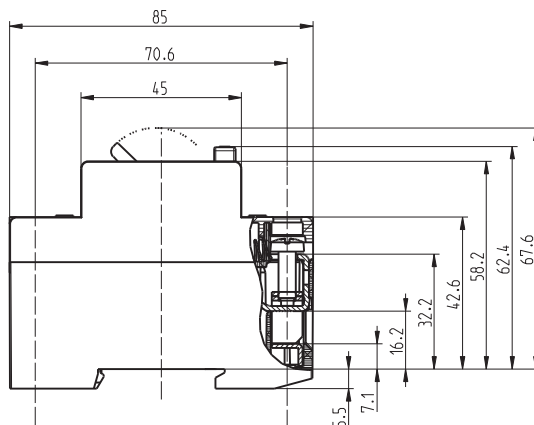
Technical data			
Type	Instantenous	G/KV type	S type
Electrical			
Rated voltage U_n	230/240V AC	230/240V AC	230/240V AC
Rated current I_n	16, 25, 40, 63, 80, 100A	25, 40, 63A	25, 40, 63A
Rated Insulation voltage U_i	440V	440V	440V
Rated frequency f_n	50/60Hz	50/60Hz	50/60Hz
Peak withstand current	-	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 teperature	-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	✓	✗	✗	✗	✗

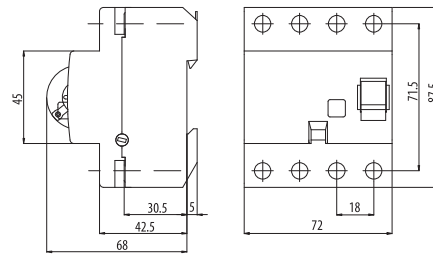
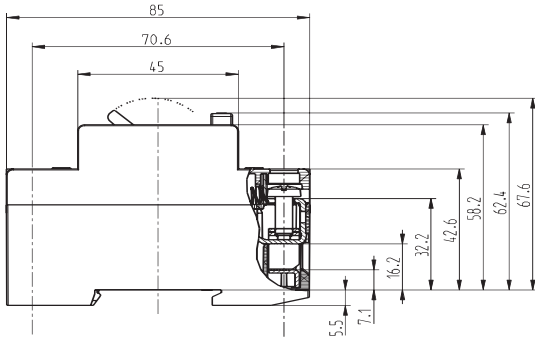
Remark: When you use more than 2 cables you have to be careful how those cables are inserted, due to insure proper pressure on each cable

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	✓	✗	✗	✗	✗	✗

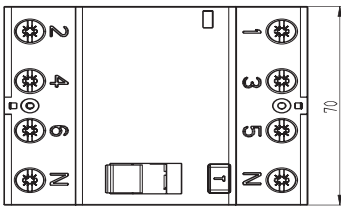
Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

Residual current circuit breaker EFI-4

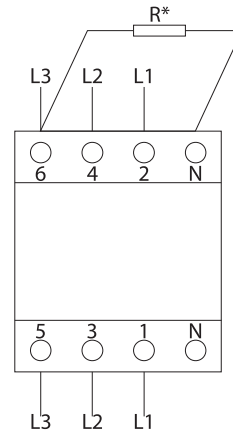
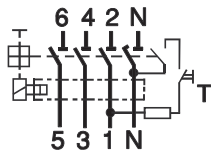
Technical data			
Type	Instantaneous	G/KV type	S type
Electrical			
Rated voltage U_n	400/415V AC	400/415V AC	400/415V AC
Rated current I_n	16, 25, 40, 63, 80, 100A	25, 40, 63A	25, 40, 63A
Rated Insulation voltage U_i	440V	440V	440V
Rated frequency f_n	50/60Hz	50/60Hz	50/60Hz
Peak withstand current	-	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_m	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

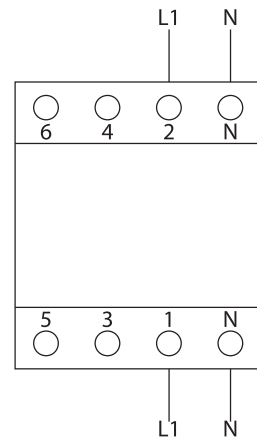
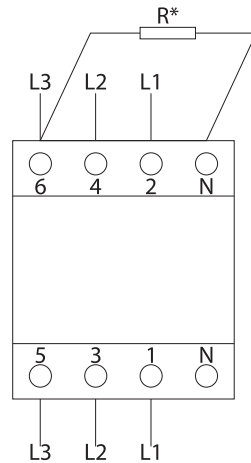
Conductor cross-section [mm ²]	Number of single conductors, flexible Cu conductors without cable ferrule					
	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	✗	✗	✗
10	✓	✓	✗	✗	✗	✗
16	✓	✗	✗	✗	✗	✗
25	✓	✗	✗	✗	✗	✗

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		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 (1.2/50 μ s)	
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 μ s) 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	✓	✗	✗	✗	✗

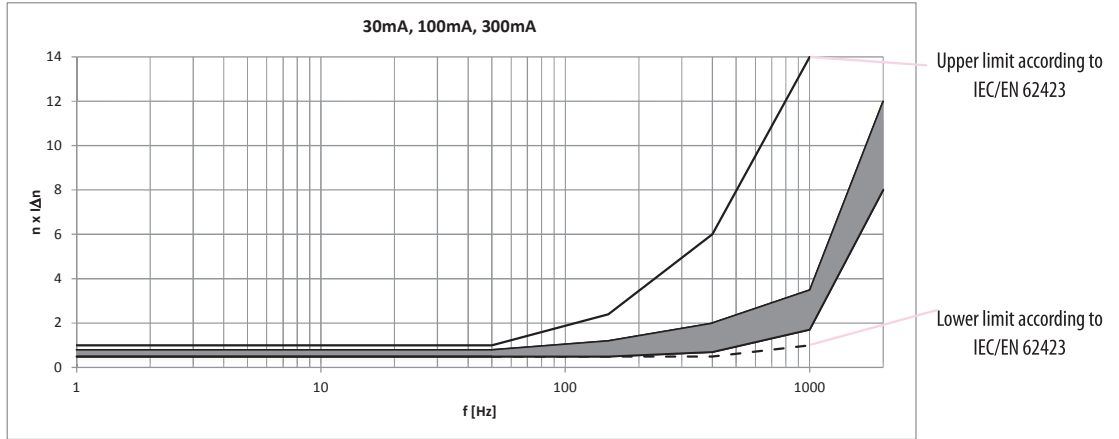
Remark: When you use more than 2 cables you have to be careful how those cables are inserted, due to insure proper pressure on each cable

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	✓	✗	✗	✗	✗	✗

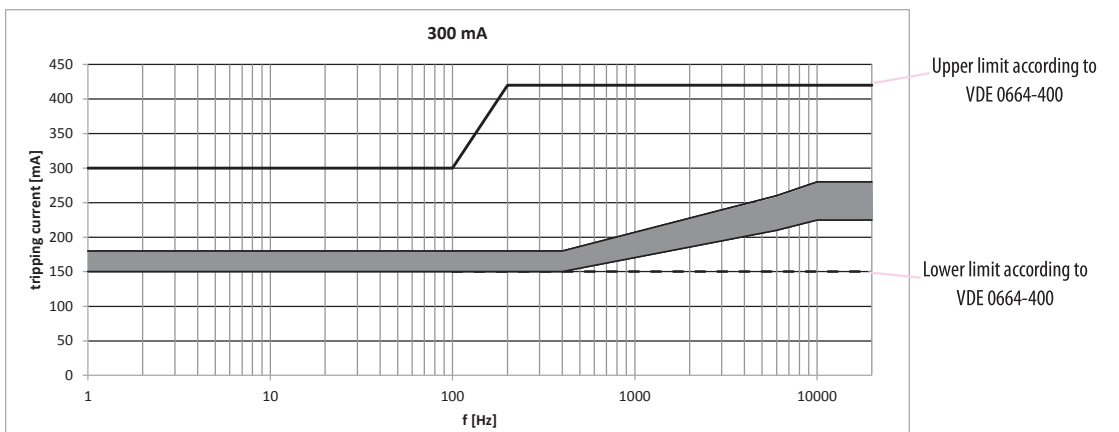
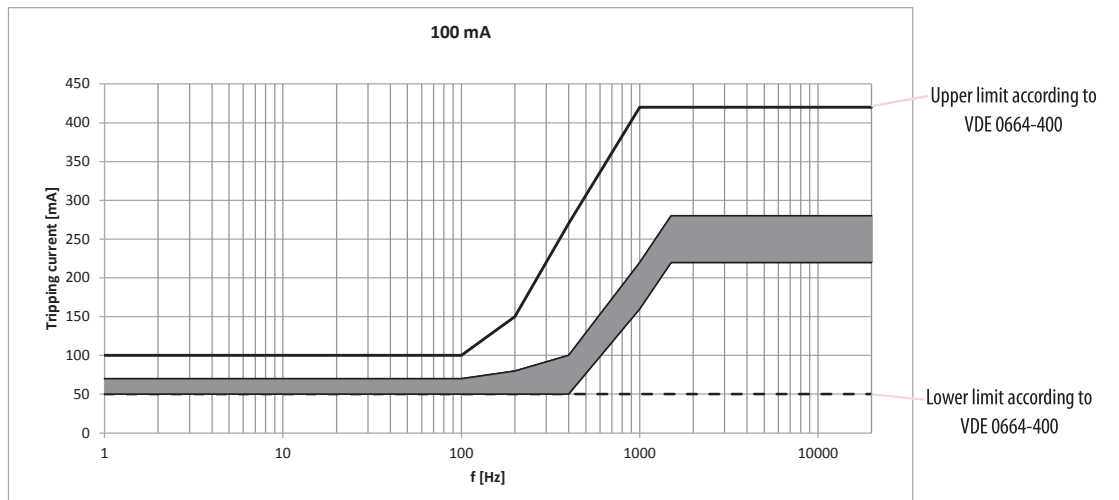
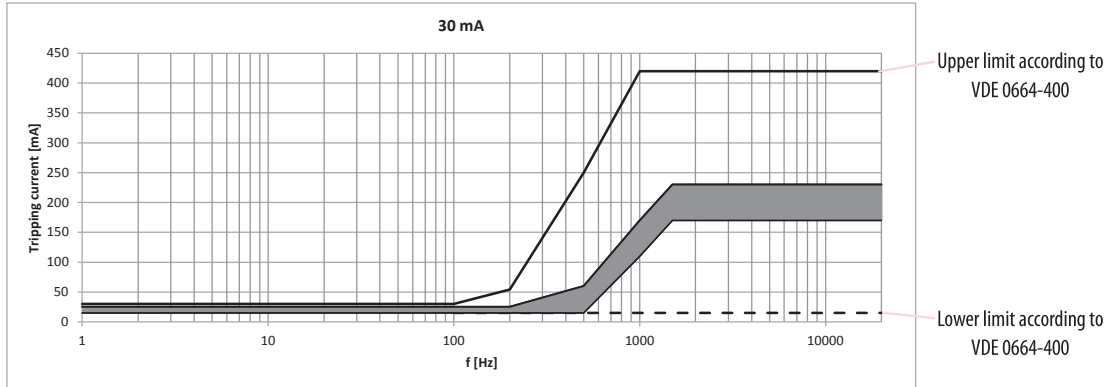
Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

Technical data

EFI B type

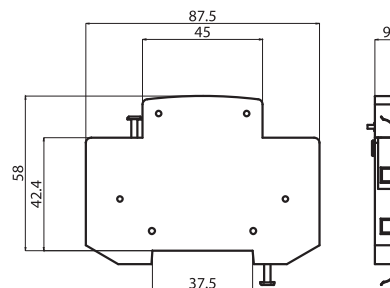


EFI B+ type



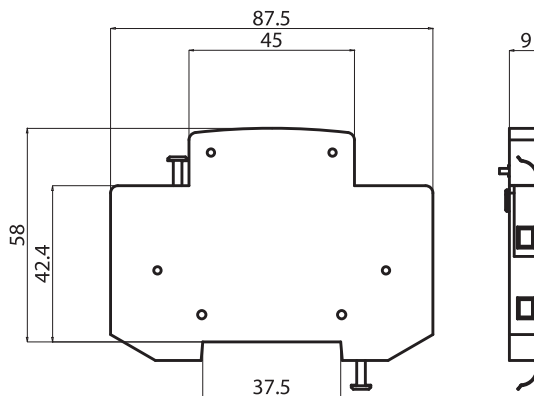
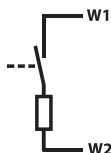
Auxiliary switch PS EFI

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



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 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	