Osäfe

Residual Current Protection Unit

Residual Current Protection Unit

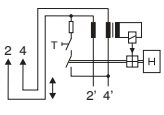
- Add-on residual current unit
- Line voltage-independent tripping
- By combining this device with a miniature circuit breaker a top-quality RCBO unit (combined RCD/MCB device) is formed.
- Rated current 16 and 63 A
- Permits combinations with a variety of characteristics thanks to the different rated currents and characteristics of the miniature circuit breakers which can be connected
- Comrehensive range of accessories suitable for subsequent installation onto PLS.
- The test key “T” must be pressed every 6 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). The test intervall of 6 month is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it’s recommended to test in shorter intervalls (e.g. monthly).
- 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 (RE), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **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
Slotted one-way cheese head screw

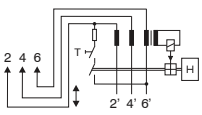
Accessories (on PLS.) :	
Auxiliary switch for	included
subsequent installation	ZP-IHK
	ZP-WHK
Tripping signal contact for subsequent installation	ZP-NHK
Remote control and automatic switching device	Z-FW/LP
Shunt trip release	ZP-ASA/..
Undervoltage release	Z-USA/..
Compact enclosure	KLV-TC-2
	KLV-TC-4
Additional terminal 35mm2	Z-HA-EK/35
Switching interlock	IS/SPE-1TE

Connection Diagrams

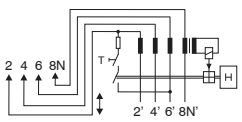
2 pols



3 pols



4 pols

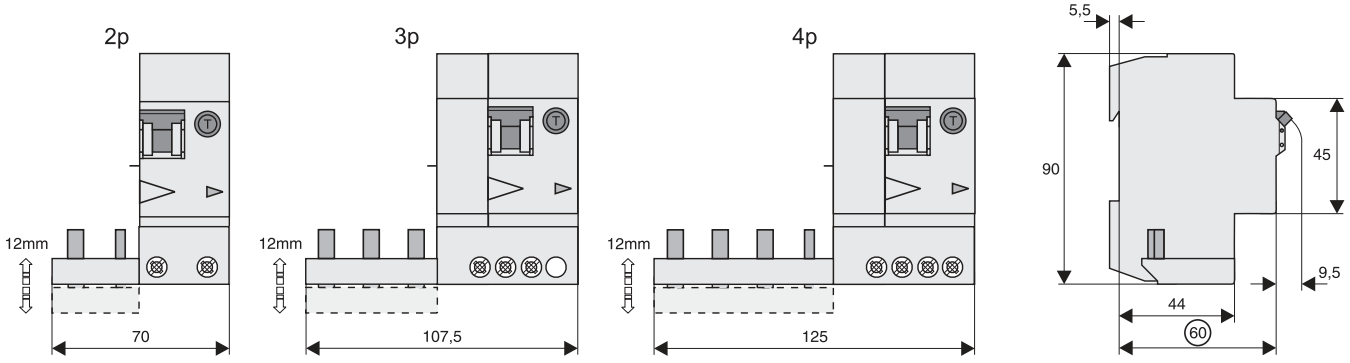


Technical Data

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 $16^{2/3}$ Hz	Recesses time between the single switchings increases to 88 s, I_n max. 63A
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, 300mA
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 IΔm	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	IP20
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) mm^2
Flexible conductors (with wire end sleeve)	1 x (0.75 - 16) mm^2
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)
Rated fault breaking capacity IΔm	6 kA (U_n = 230V)3 kA (U_n = 400V)

Connection Diagrams



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Combined RCD/MCB Devices

Combined RCD/MCB Devices, 1+N-pole

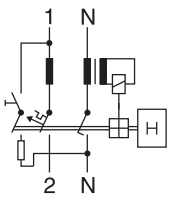
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Comprehensive range of accessories suitable for subsequent installation
- The test key “T” must be pressed every 6 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). The test intervall of 6 month is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it’s recommended to test in shorter intervalls (e.g. monthly).
- 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 (RE), 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 :** 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
	ZP-WHK
Tripping signal switch for subsequent installation	ZP-NHK
Shunt trip release	ZP-ASA/..
Tripping module	Z-KAM
Terminal cover cap	KLV-TC-2
Additional terminal 35mm2	Z-HA-EK/35
Switching interlock	IS/SPE-1TE

Connection Diagrams

1+N pols

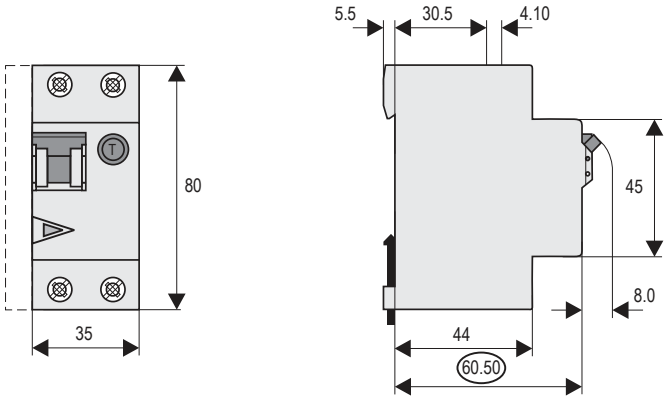


Technical Data

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 ($8/20_{\mu s}$) 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 IΔno	0.5 $I_{\Delta n}$
Rated insulation voltage U_i	440 VAC
Sensitivity	AC and pulsating DC
Selectivity class	3
Rated breaking capacity	10 kA
Rated current	16 - 40 A
Rated peak withstand voltage U_{imp}	4 kV ($1.2/50_{\mu s}$)
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
Rated peak withstand voltage U_{imp}	4 kV ($1.2/50_{\mu s}$)
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

Connection Diagrams



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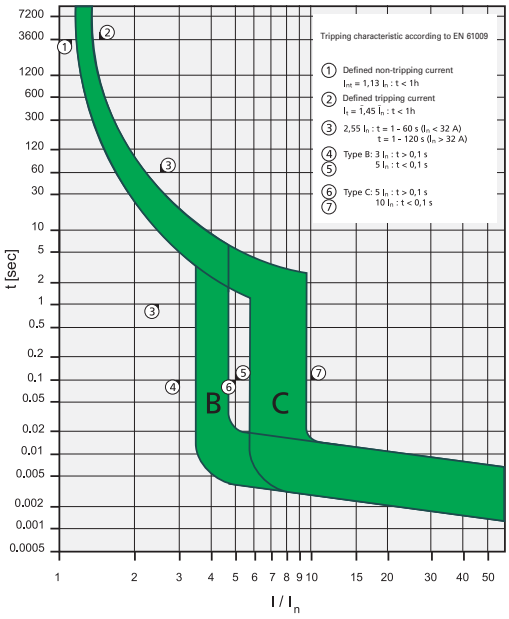
Combined RCD/MCB Devices

Load Capacity -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 -1N/, Characteristics B & C



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

In case of short circuit, there is selectivity between the combined RCD/MCB devices 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 *)*

Rating	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

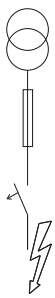
*Short circuit selectivity characteristic C towards fuse link DII-DIV *)*

Rating	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



Protective Devices

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

In case of short circuit, there is selectivity between the combined RCD/MCB devices 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 *)*

Rating	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 *)*

Rating	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 -1N/ towards NH-00 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices 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 *)*

Rating	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 *)*

Rating	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]	
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