

Specifications | Combined RCD/MCB Devices NmRB., 2-pole

Description

- Combined RCD/MCB Devices
- 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
- Fault current tripping indicator white - blue
- Comprehensive range of accessories can be mounted subsequently
- The test key "T" must be pressed every 6 months. 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 interval of 6 months is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervals (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 (R_E), 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 not been smoothed
- **Type -G:** 10 ms time delay to avoid unwanted tripping (e.g. during thunderstorms).
- **Type -F:** Sensitive to pulsating DC residual current and detection of multi-frequency residual currents up to 1 kHz
 - Increased protection due to the detection of mixed frequencies
 - Higher load rating with DC residual currents up to 10mA
 - Reduction of nuisance tripping thanks to time delayed tripping and increased current withstand capability of 3kA
 Recommended for washing machines, dish washers, or motor applications with single-phase drives.
- **-OL Types:** Specifically designed to fulfil (Br. E) the tripping characteristic requirements of $I_2 \leq I_z$ in the Norwegian electrotechnical standard NEK 400-8-823.

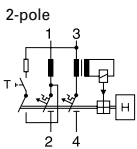
Accessories:

Tripping signal switch for subsequent installation	ZP-IHK	286052
Shunt trip release	ZP-ASA/..	248438, 248439

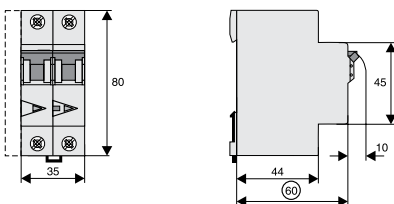
Technical Data

		NmRB... 2-pole
Electrical		
Design according to		IEC/EN 61009, IEC/EN 62423
Current test marks as printed onto the device		Type G acc. to ÖVE E 8601
Line voltage-independent tripping		250 A (8/20 µs), conditionally surge current proof (type A) surge current proof 3kA (8/20µs) (type F,- G/A)
Rated voltage	U_e	230 V AC; 50 Hz
Operational voltage range		196-253 V
Rated tripping current	$I_{\Delta n}$	30, 100 mA
Rated non-tripping current	$I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity		AC and pulsating DC, Type F frequency mixtures up to 1 kHz
Selectivity class		3
Rated breaking capacity	I_{cn}	
NmRBM		10 kA
NmRB6		6 kA
Rated current		6 - 40 A
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50 µs)
Characteristic		B, C, B(-OL), C(-OL)
Maximum back-up fuse (short circuit)		100 A gL (>10 kA)
Endurance		
electrical components		≥ 4,000 switching operations
mechanical components		≥ 20,000 switching operations
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
Degree of protection, switch		IP20
Degree of protection, built-in		IP40
Upper and lower terminals		open mouthed/lift terminals
Terminal protection		finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity		1 - 25 mm ²
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Operating temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		according to IEC/EN 61009

Connection diagram



Dimensions (mm)



NmRBM: Influence of ambient temperature on load carrying capacity

- Values = max. allowed current in Ampere at the specific temperature
- Temperature factor (%/K) = 0.5

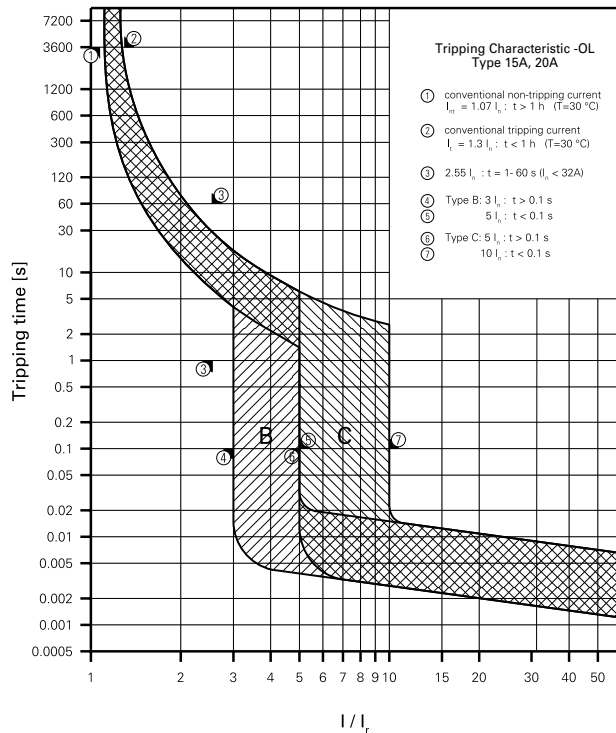
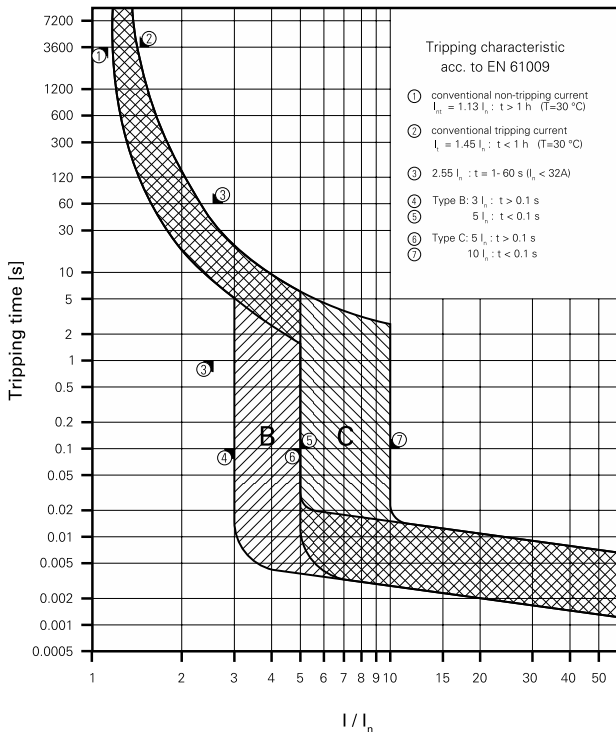
I_n [A]	Ambient temperature / °C									
	-40	-30	-25	-20	-10	0	10	20	30	40
6	8.1	7.8	7.7	7.5	7.2	6.9	6.6	6.3	6.0	5.7
10	13.5	13.0	12.8	12.5	12.0	11.5	11.0	10.5	10.0	9.5
13	17.6	16.9	16.6	16.3	15.6	15.0	14.3	13.7	13.0	12.4
15-OL	20.0	19.3	18.9	18.6	17.9	17.1	16.4	15.7	15.0	14.3
16	21.6	20.8	20.4	20.0	19.2	18.4	17.6	16.8	16.0	15.2
20	27.0	26.0	25.5	25.0	24.0	23.0	22.0	21.0	20.0	19.0
20-OL	26.7	25.7	25.2	24.8	23.8	22.5	21.9	21.0	20.0	19.0

NmRB6: Influence of ambient temperature on load carrying capacity

- Values = max. allowed current in Ampere at the specific temperature
- Temperature factor (%/K) = 0.5

I_n [A]	Ambient temperature / °C									
	-40	-30	-25	-20	-10	0	10	20	30	40
25	33.8	32.5	31.9	31.3	30.0	28.8	27.5	26.3	25.0	23.8
32	43.2	41.6	40.8	40.0	38.4	36.8	35.2	33.6	32.0	30.4
40	54.0	52.0	51.0	50.0	48.0	46.0	44.0	42.0	40.0	38.0

Tripping Characteristic NmRB., Characteristics B and C



Short Circuit Selectivity NmRBM towards Neozed¹⁾ / Diazed²⁾ / NH00³⁾

Short circuit currents in kA, rated currents of fuses in A

Short circuit selectivity **NmRBM** towards **Neozed** ¹⁾

NmRBM	Neozed ¹⁾									
	16	20	25	32	35	40	50	63	80	100
B10/B10-OL	<0.5	0.5	0.9	2	2.3	3.7	8	10	10	10
B13/B13-OL	<0.5	0.5	0.8	1.7	1.9	3	6	10	10	10
B16/B15-OL		0.5	0.7	1.5	1.7	2.4	4.4	6.8	10	10
B20/B20-OL			0.7	1.4	1.5	2.2	3.9	6	9.2	10
C10/C10-OL	<0.5	0.5	0.8	1.7	1.9	3	6.1	10	10	10
C13/C13-OL	<0.5	0.5	0.7	1.6	1.8	2.8	5.5	9.5	10	10
C16/C15-OL		<0.5	0.7	1.3	1.5	2.2	4	6.2	10	10
C20/C20-OL			0.6	1.3	1.4	2.1	3.7	5.6	8.5	10

Short circuit selectivity **NmRBM** towards **Diazed** ²⁾

NmRBM	Diazed ²⁾									
	16	20	25	32	35	50	63	80	100	
B10/B10-OL	<0.5	0.5	0.9	1.8	2.9	5.6	10	10	10	
B13/B13-OL	<0.5	0.5	0.8	1.5	2.4	4.5	10	10	10	
B16/B15-OL		0.5	0.8	1.3	2	3.4	8	10	10	
B20/B20-OL			0.7	1.3	1.9	3.1	7.1	10	10	
C10/C10-OL	<0.5	0.5	0.8	1.5	2.4	4.4	10	10	10	
C13/C13-OL	<0.5	0.5	0.8	1.4	2.3	4.2	10	10	10	
C16/C15-OL		<0.5	0.7	1.2	1.9	3.2	7.6	10	10	
C20/C20-OL			0.7	1.2	1.8	2.9	6.5	9.7	10	

Short circuit selectivity **NmRBM** towards **NH00** ³⁾

NmRBM	NH00 ³⁾											
	16	20	25	32	35	40	50	63	80	100	125	160
B10/B10-OL	<0.5	<0.5	0.8	1.5	2.3	3.2	5.7	9.1	10	10	10	10
B13/B13-OL	<0.5	<0.5	0.8	1.3	1.9	2.7	4.4	6.5	10	10	10	10
B16/B15-OL		<0.5	0.7	1.1	1.6	2.2	3.4	4.8	8	10	10	10
B20/B20-OL			0.6	1	1.4	2	3.1	4.3	7	10	10	10
C10/C10-OL	<0.5	<0.5	0.7	1.3	1.9	2.7	4.5	6.9	10	10	10	10
C13/C13-OL	<0.5	<0.5	0.7	1.2	1.8	2.5	4.1	6.1	10	10	10	10
C16/C15-OL		<0.5	0.6	1	1.5	2	3.1	4.4	7.5	10	10	10
C20/C20-OL			0.6	0.9	1.4	1.9	2.9	4.1	6.5	10	10	10

Darker areas: no selectivity

¹⁾ SIEMENS Type 5SE2; Size: D01, D02, D03; Operating class gG; Rated voltage: AC 400 V/DC 250 V

²⁾ SIEMENS Type 5SB2, 5SB4, 5SC2; Size: DII, DIII, DIV; Operating class gG; Rated voltage: AC 500 V/DC 500 V

³⁾ SIEMENS Type 3NA3 8, 3NA6 8, 3NA7 8; Size: 000, 00; Operating class gG; Rated voltage: AC 500 V/DC 250 V

Short Circuit Selectivity NmRB6 towards Neozed¹⁾ / Diazed²⁾ / NH00³⁾

Short circuit currents in kA, rated currents of fuses in A

Short circuit selectivity **NmRB6** towards **Neozed¹⁾**

NmRB6 Neozed¹⁾										
I_n [A]	16	20	25	32	35	40	50	63	80	100
B25				1.2	1.3	1.8	3.1	4.7	6	6
B32				1.2	1.7	2.7	3.8	5.5	6	
B40					1.3	1.7	2.2	2.7	4.2	
C25				1.1	1.3	1.8	2.8	3.9	5.6	6
C32					1.2	1.7	2.6	3.6	5.1	6
C40						1.3	1.9	3.3	3.2	5.8

Short circuit selectivity **NmRB6** towards **Diazed¹⁾**

NmRB6 Diazed²⁾										
I_n [A]	16	20	25	32	35	50	63	80	100	
B25					1.1	1.5	2.4	5.5	6	6
B32						1.4	2.1	4.3	6	6
B40							1.4	2.4	2.9	5.1
C25					1.1	1.5	2.3	4.4	6	6
C32						1.4	2.2	4.1	5.6	6
C40							1.6	2.8	3.6	6

Short circuit selectivity **NmRB6** towards **NH00³⁾**

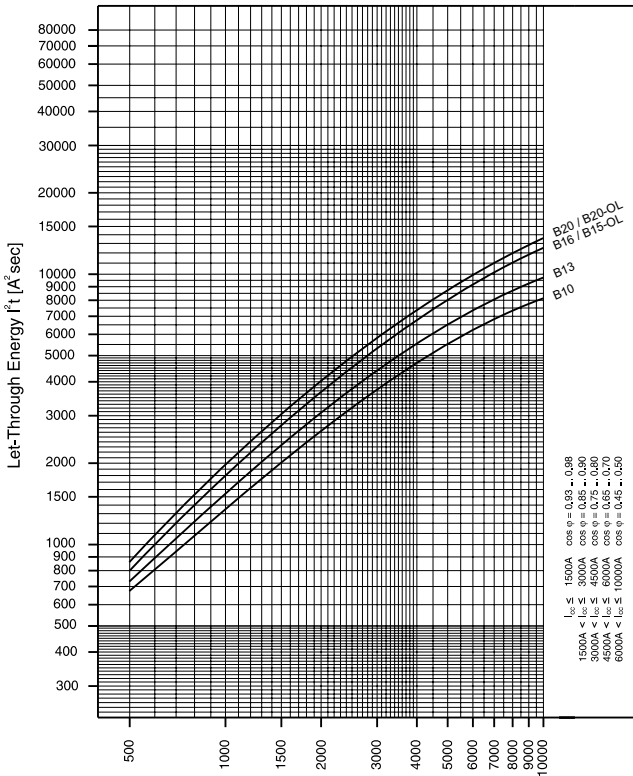
NmRB6 NH00³⁾														
I_n [A]	16	20	25	32	35	40	50	63	80	100	125	160		
B25				0.9	1.2	1.6	2.4	3.4	5.5	6	6	6		
B32					1.1	1.4	2.1	2.9	4.3	6	6	6		
B40							1.4	1.9	2.8	4.1	6	6		
C25				0.9	1.2	1.6	2.3	3	4.6	6	6	6		
C32					1.1	1.5	2.1	2.8	4.3	6	6	6		
C40							1.5	2.1	3.1	5.4	6	6		

Darker areas: no selectivity

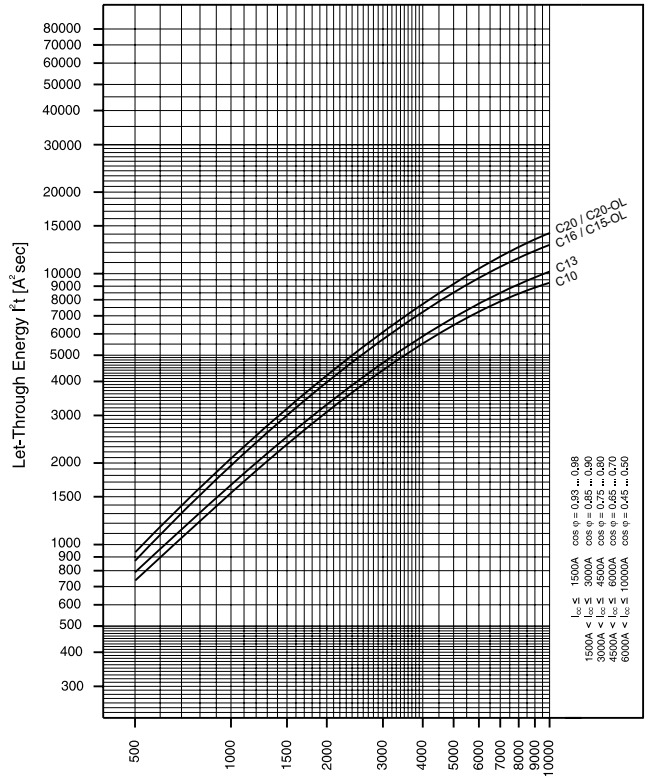
- ¹⁾ SIEMENS Type 5SE2; Size: D01, D02, D03; Operating class gG; Rated voltage: AC 400 V/DC 250 V
- ²⁾ SIEMENS Type 5SB2, 5SB4, 5SC2; Size: DII, DIII, DIV; Operating class gG; Rated voltage: AC 500 V/DC 500 V
- ³⁾ SIEMENS Type 3NA3 8, 3NA6 8, 3NA7 8; Size: 000, 00; Operating class gG; Rated voltage: AC 500 V/DC 250 V

Let-through Energy NmRB.../2/

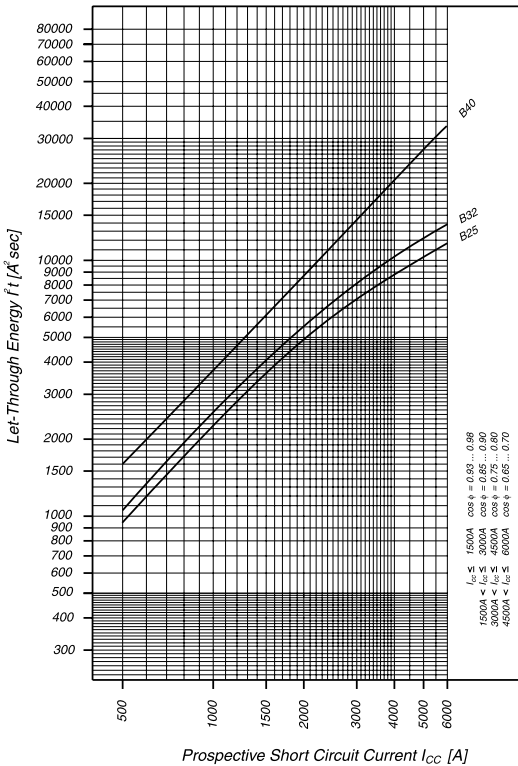
Let-through Energy NmRB, Characteristic B, 2-pole



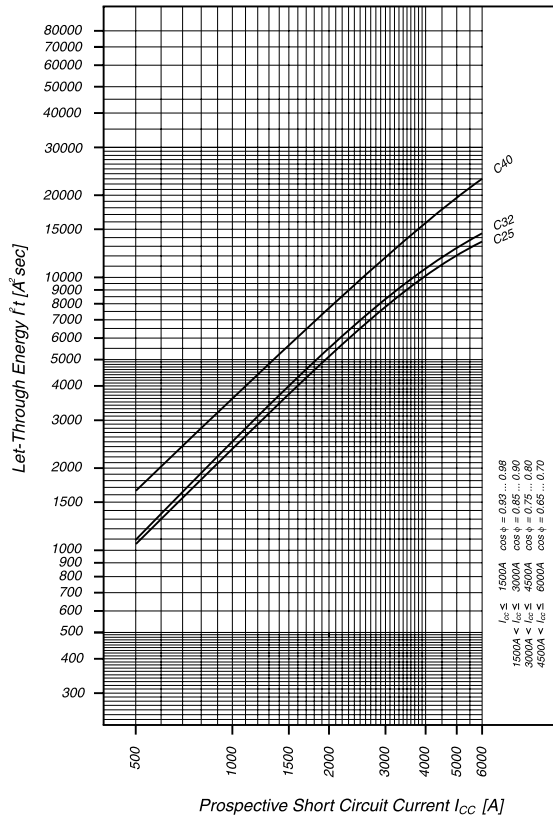
Let-through Energy NmRB, Characteristic C, 2-pole



Let-through Energy NmRB6, Characteristic B, 2-pole



Let-through Energy NmRB6, Characteristic C, 2-pole



Specifications | Combined RCD/MCB Devices NmRBM, 3-pole

Description

- Combined RCD/MCB Devices
- 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
- Fault current tripping indicator white - blue
- Comprehensive range of accessories can be mounted subsequently
- The test key "T" must be pressed every 6 months. 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 interval of 6 months is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervals (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 (R_E), 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 not been smoothed
- **Type -Li/A:** As Type -A, but in addition it is short-time delayed. Highly reliable against unwanted tripping.

Accessories:

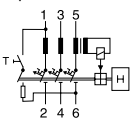
Tripping signal switch for subsequent installation	ZP-IHK	286052
	ZP-NHK	248437
	ZP-WHK	286053
Shunt trip release	ZP-ASA/..	248438, 248439

Technical Data

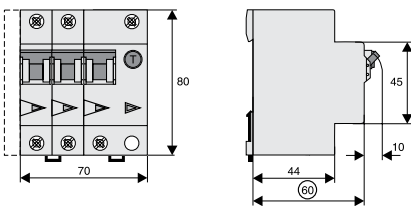
		NmRBM, 3-pole
Electrical		
Design according to		IEC/EN 61009
Current test marks as printed onto the device		
Line voltage-independent tripping		250 A (8/20 μ s), conditionally surge current proof
Rated voltage	U_e	30 mA types: 230 V AC; 50 Hz 100 mA types: 230/400 V AC; 50 Hz
Rated tripping current	$I_{\Delta n}$	30, 100 mA
Rated non-tripping current	$I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity		AC and pulsating DC
Selectivity class		3
Rated breaking capacity	I_{cn}	10 kA
Rated current		10 - 32 A
Short-circuit breaking capacity acc. to IEC/EN 60947-2		
Rated ultimate short-circuit breaking capacity	I_{cu}	15 kA
Rated service short-circuit breaking capacity	I_{cs}	6 kA
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50 μ s)
Characteristic		B, C
Maximum back-up fuse (short circuit)		100 A gL (>10 kA)
Endurance		
electrical components		\geq 2,000 switching operations
mechanical components		\geq 10,000 switching operations
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		70 mm (4MU)
Mounting		3-position DIN rail clip, permits removal from existing busbar system
Degree of protection, switch		IP20
Degree of protection, built-in		IP40
Upper and lower terminals		open mouthed/lift terminals
Terminal protection		finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity		1 - 25 mm ²
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Operating temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		according to IEC/EN 61009

Connection diagram

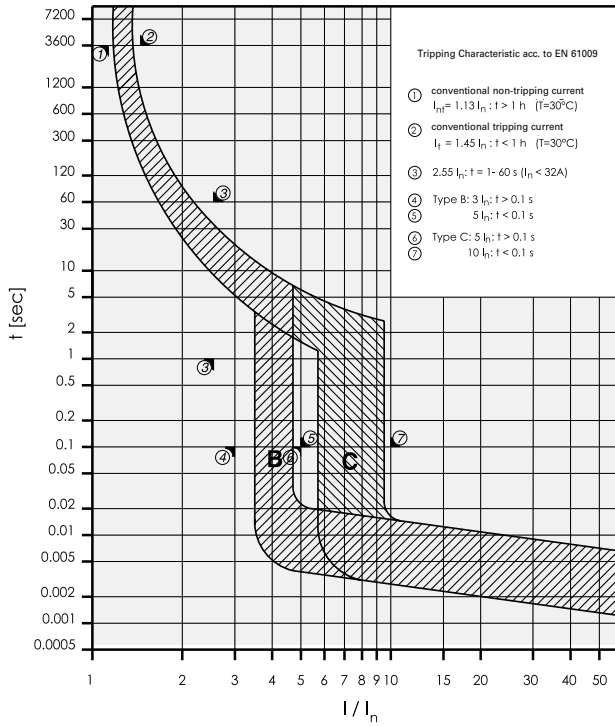
3-pole



Dimensions (mm)



Tripping Characteristic NmRBM, Characteristics B and C



Specifications | Combined RCD/MCB Devices NmRB., 3+N-pole

Description

- Combined RCD/MCB Devices
- 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
- Fault current tripping indicator white - blue
- Comprehensive range of accessories can be mounted subsequently
- The test key "T" must be pressed every 6 months. 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 interval of 6 months is valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environments), it's recommended to test in shorter intervals (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 (R_E), 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 not been smoothed

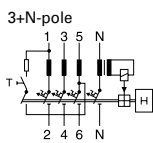
Accessories:

Tripping signal switch for subsequent installation	ZP-IHK	286052
	ZP-NHK	248437
	ZP-WHK	286053
Shunt trip release	ZP-ASA/..	248438, 248439

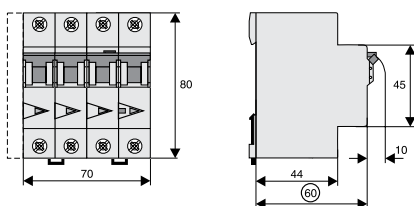
Technical Data

		NmRB., 3+N-pole
Electrical		
Design according to		IEC/EN 61009
Current test marks as printed onto the device		
Line voltage-independent tripping		250 A (8/20 μ s), conditionally surge current proof
Rated voltage	U_e	230/400 V; 50 Hz
Rated tripping current	$I_{\Delta n}$	30, 100, 300 mA
Rated non-tripping current	$I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity		AC and pulsating DC
Selectivity class		3
Rated breaking capacity	I_{cn}	
NmRB6		6 kA
NmRB4		4.5 kA
Rated current		6 - 32 A
Short-circuit breaking capacity acc. to IEC/EN 60947-2		
Rated ultimate short-circuit breaking capacity	I_{cu}	for mrb6 6 kA
Rated service short-circuit breaking capacity	I_{cs}	for mrb6 3 kA
Rated ultimate short-circuit breaking capacity	I_{cu}	for mrb4 4.5 kA
Rated service short-circuit breaking capacity	I_{cs}	for mrb4 3 kA
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50 μ s)
Characteristic		B, C, D
Maximum back-up fuse (short circuit)		100 A gL/gG
Endurance		
electrical components		\geq 4,000 switching operations
mechanical components		\geq 20,000 switching operations
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		70 mm (4MU)
Mounting		3-position DIN rail clip, permits removal from existing busbar system
Degree of protection, switch		IP20
Degree of protection, built-in		IP40
Upper and lower terminals		open mouthed/lift terminals
Terminal protection		finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity		1 - 25 mm ²
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Operating temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Resistance to climatic conditions		according to IEC/EN 61009

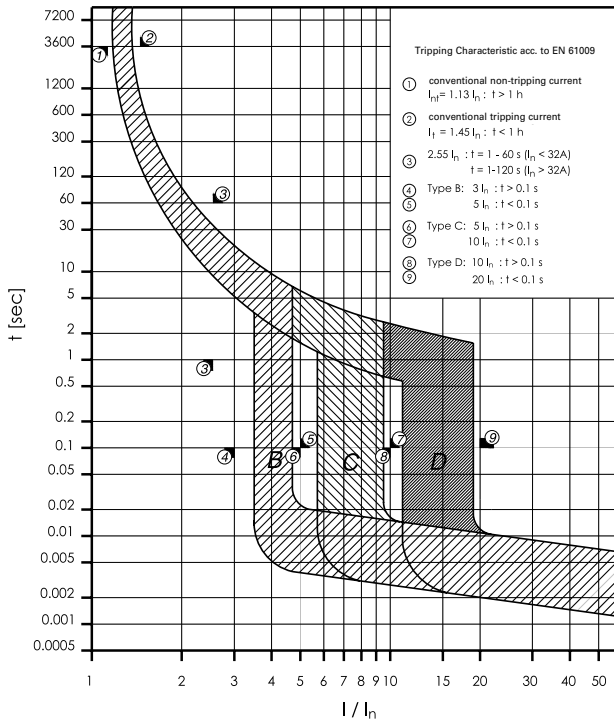
Connection diagram



Dimensions (mm)



Tripping Characteristic NmRB., Characteristics B, C and D



Back-up Protection between NmRB. and NZM1

Short circuit currents in kA.

NmRB4/NmRB6	NZMB1(C1)(N1)(H1)-A...		
	$U_e = 415$ V		
	B	C	D
6	-	20	20
10	-	20	20
13	20	20	20
16	20	20	20
20	-	20	20
25	-	20	-

$U_e = 415$ V: I_{cn} (NmRB4) = 4.5 kA (acc. to IEC/EN 61009)
 $U_e = 415$ V: I_{cn} (NmRB6) = 6 kA (acc. to IEC/EN 61009)
 $U_e = 400/415$ V: I_{cu} (NZMB1) = 25 kA (acc. to IEC/EN 60947-2)
 $U_e = 400/415$ V: I_{cu} (NZMC1) = 36 kA (acc. to IEC/EN 60947-2)
 $U_e = 400/415$ V: I_{cu} (NZMN1) = 50 kA (acc. to IEC/EN 60947-2)
 $U_e = 400/415$ V: I_{cu} (NZMH1) = 100 kA (acc. to IEC/EN 60947-2)

Back-up Protection between NmRB. and NZM2

Short circuit currents in kA.

NmRB4/NmRB6	NZMB2(C2)(N2)(H2)-A...		
	$U_e = 415$ V		
	B	C	D
6	-	20	20
10	-	20	20
13	20	20	20
16	20	20	20
20	-	20	20
25	-	20	-

$U_e = 415$ V: I_{cn} (NmRB4) = 4.5 kA (acc. to IEC/EN 61009)
 $U_e = 415$ V: I_{cn} (NmRB6) = 6 kA (acc. to IEC/EN 61009)
 $U_e = 400/415$ V: I_{cu} (NZMB2) = 25 kA (acc. to IEC/EN 60947-2)
 $U_e = 400/415$ V: I_{cu} (NZMC2) = 36 kA (acc. to IEC/EN 60947-2)
 $U_e = 400/415$ V: I_{cu} (NZMN2) = 50 kA (acc. to IEC/EN 60947-2)
 $U_e = 400/415$ V: I_{cu} (NZMH2) = 150 kA (acc. to IEC/EN 60947-2)

Back-up Protection between NmRB. and PLSM-OV63

Short circuit currents in kA.

NmRB4/NmRB6	PLSM-OV63		
	$U_e = 400$ V		
	B	C	D
6	-	10	10
10	-	10	10
13	10	10	10
16	10	10	10
20	-	10	10
25	-	10	-

$U_e = 415$ V: I_{cn} (NmRB4) = 4.5 kA (acc. to IEC/EN 61009)
 $U_e = 415$ V: I_{cn} (NmRB6) = 6 kA (acc. to IEC/EN 61009)
 $U_e = 400$ V: I_{cu} (PLSM-OV) = 10 kA (acc. to IEC/EN 60947-2)

Back-up Protection between NmRB. and PLHT-OV80

Short circuit currents in kA.

NmRB4/NmRB6	PLHT-OV80		
	$U_e = 400$ V		
	B	C	D
6	-	20	20
10	-	20	20
13	20	20	20
16	20	20	20
20	-	20	20
25	-	20	-

$U_e = 415$ V: I_{cn} (NmRB4) = 4.5 kA (acc. to IEC/EN 61009)
 $U_e = 415$ V: I_{cn} (NmRB6) = 6 kA (acc. to IEC/EN 61009)
 $U_e = 400$ V: I_{cu} (PLHT-80) = 20 kA (acc. to IEC/EN 60947-2)