Residual current monitor RCM460Y

Residual current monitor for TN and TT systems (AC and pulsating DC currents)

RCM460Y

Device features

- External measuring current transformer
- Response values, adjustable 30 mA…300 mA (40…400 Hz)
- Time delay, adjustable 0…1 s
- Alarm relay with one voltage free changeover contact
- N / O operation
- Test button
- Transparent dust cover for ingress protection
- Separate supply voltage
- Type A according to IEC 60755

Approvals

c UL us LISTED

Product description

The residual current monitor RCM460Y is designed for fault current respectively residual current monitoring in small earthed systems (TN and TT systems) or for individual loads. It can also be used for monitoring single conductors, such as PE conductors, N-PE and PE-PAS (equipotential bonding bar) connections.

Since the measuring values are detected via measuring current transformers, the device is nearly independent of load current and nominal voltage of the installation and is also suitable for busbar systems.

Application

- Residual current monitoring in earthed two, three or four conductor systems (TN and TT systems)
- Current monitoring of single conductors de-energized under normal conditions
- Monitoring of smaller socket outlet circuits
- Monitoring of individual loads

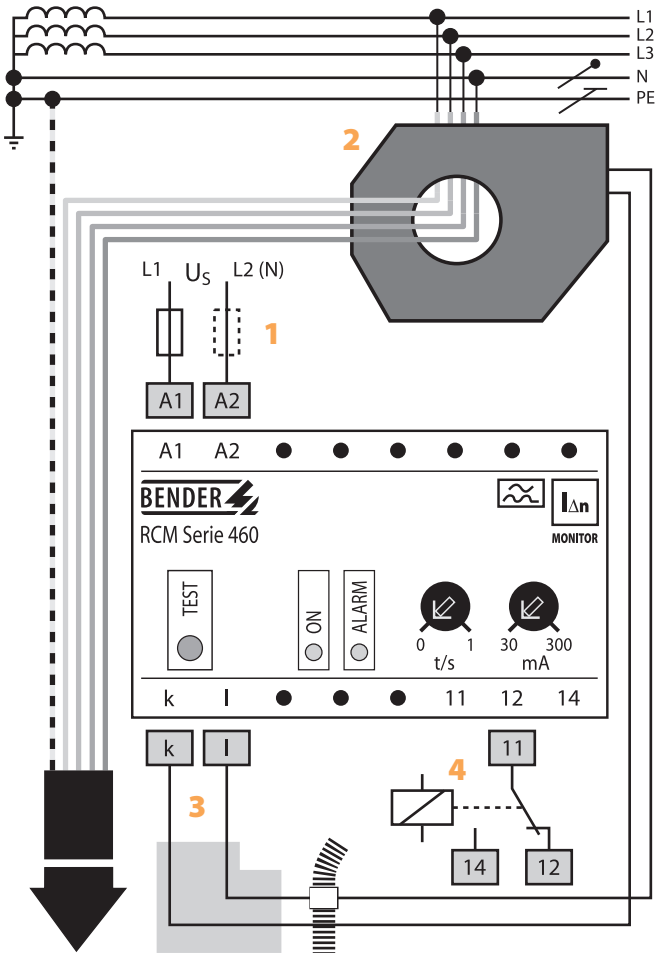
Function

Residual current measurement is carried out via an external measuring current transformer. When the residual current respectively the current exceeds the set response value, the alarm LED lights and the alarm relay switches after the expiration of the set response delay. The function of the device can be tested by pressing the test button.

Standards and regulations

The residual current monitor RCM460Y complies with the requirements of DIN EN 62020 (VDE 0663): 1999-07, IEC 62020: 2003-11.

Wiring diagram – connection to the supply, external connections



1 - Supply voltage U_S see ordering details, a 6 A fuse is recommended

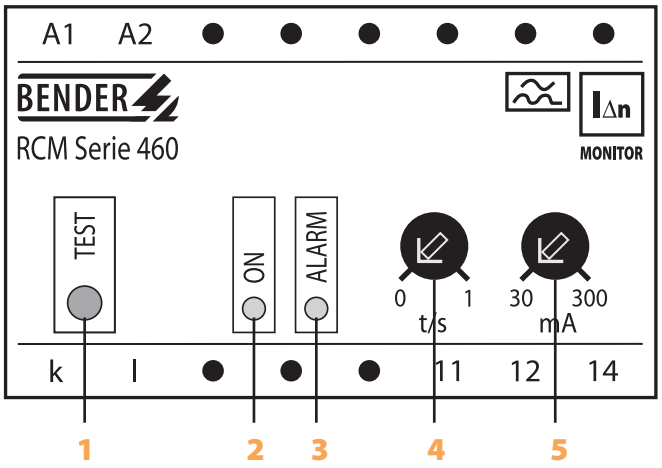
2 - External measuring current transformer (see table "External measuring current transformers")

3 - The CT connecting leads k and l must be led through the EMI absorber included in delivery. The EMI absorber has to be fixed directly before the terminals k and l by using the accompanying cable ties.

4 - Alarm relay: switches when the set response value is reached and in case of interruption of the CT connection.

Do not lead the PE conductor through the measuring current transformer!

Wiring diagram – frontplate



1 - Test button

2 - Power On LED

3 - Alarm LED lights up when the residual current exceeds the set response value and in case of CT interruption

4 - Potentiometer for setting the response delay (0…1 s)

5 - Potentiometer for setting the response value (30 mA…300 mA)

Technical data residual current monitor RCM460Y

Insulation coordination according to IEC 60664-1:

Rated voltage	AC 250 V
Rated impulse voltage / pollution degree	4 kV / 3

Voltage ranges

Supply voltage Us	see ordering details
Operating range of Us	0.85…1.1 x Us
Frequency range Us	50…400 Hz
Max. power consumption	2.6 VA

Measuring circuit / response values

Type of external CT	W…, WR…, WS…
Load	220 Ω
Operating characteristics acc. to IEC 60755	type A
Rated residual operating current $I_{\Delta n1}$ (Alarm 1)	30…300 mA
Response delay t_v, adjustable	0…1 s
Rated frequency	40…400 Hz
Relative percentage error	0…- 25 % of the response value
Hysteresis	approx. 25 % of the response value
Response time t_{an} at $I_{\Delta n} = 1$ x $I_{\Delta n}$ ($t_v = 0$ s)	< 300 ms
Response time t_{an} at $I_{\Delta n} = 5$ x $I_{\Delta n}$ ($t_v = 0$ s)	≤ 40 ms
Accuracy of response delay	+/- 20 %
Number of measuring channels	1

Displays and LEDs

LEDs	Power On, alarm

Inputs / outputs

Test button	internal

Interfaces

Connection to CT:	single wire ≥ 0.75 mm²; 0…1 m
	single wire twisted ≥ 0.75 mm²; 1…10 m
	shielded cable ≥ 0.6 mm², cable type e. g. J-Y(ST)Y 2 x 0.6: 10…40 m
	(shield on one side connected to PE)

Switching elements

Switching elements, alarm relay	1 x 1 changeover contact
Operating principle, adjustable	N/O operation
Electrical endurance / number of cycles	12000
Rated contact voltage	AC 250 V / DC 300 V
Making capacity	AC / DC 5 A
Breaking capacity	2 A, AC 230 V, cos phi = 0.4
	0.2 A, DC 220 V, L / R = 0.04 s

General data

EMC immunity	acc. to EN 61543
EMC emission	acc. to EN 61000-6-4
Shock resistance IEC 60068-2-27 (device in operation)	15 g / 11 ms
Bumping IEC 60068-2-29 (during transport)	40 g / 6 ms
Vibration resistance IEC 60068-2-6 (device in operation)	1 g / 10…150 Hz
Vibration resistance IEC 60068-2-6 (device out of operation)	2 g / 10…150 Hz
Ambient temperature (during operation)	- 10 °C…+ 55 °C
Storage temperature range	- 40 °C…+ 70 °C
Climatic class according to DIN IEC 60721-3-3	3K5
Operating mode	continuous operation
Position	any position
Connection	screw terminals
Cross sectional area of connecting cable	
Rigid / flexible	0.2…4 mm² / 0.2…2.5 mm²
Flexible with ferrules without/with plastic collar	0.25…2.5 mm²
Conductor sizes (AWG)	24…12
Degree of protection, internal components (DIN EN 60529)	IP30
Degree of protection, terminals (DIN EN 60529)	IP20
Enclosure	X460
Enclosure, material	polycarbonate
Screw fixing	2 x M4
DIN rail mounting according to	DIN EN 60715 / IEC 60715
Installation into standard distribution panels acc. to	DIN 43871
Flammability class	UL94V-0
Instruction leaflet No.	401001
Weight	approx. 180 g

Ordering details

Type	Response range	Rated frequency	Time delay	Measuring current transformer	Supply voltage U_S	Art. No.
RCM460Y	30 mA…300 mA	40…400 Hz	0…1 s	W, WR, WS	AC 230 V	B 9401 2022
RCM460Y-13	30 mA…300 mA	40…400 Hz	0…1 s	W, WR, WS	AC 90…132 V*	B 9401 2031

Other supply voltages on request

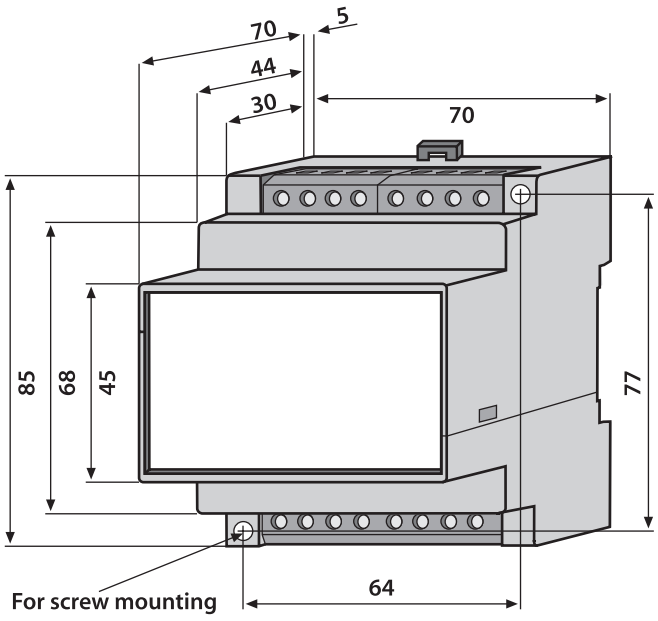
*absolute values of the operating range

Accessories

External measuring current transformers

Type	Internal diameter (mm)	Art. No.
W10/600	ø 10 mm	B 911 761
W0-S15	ø 15 mm	B 911 753
W1-S35	ø 35 mm	B 911 731
W2-S70	ø 70 mm	B 911 732
W3-S105	ø 105 mm	B 911 733
W4-S140	ø 140 mm	B 911 734
W5-S210	ø 210 mm	B 911 735
WR50x175	50 x 175	B 911 770
WR70x150	70 x 150	B 911 771
WR70x175S	70 x 175	B 911 738
WR115x305S	115 x 305	B 911 739
WR150x350S	150 x 350	B 911 740
WR200x500	200 x 500	B 911 763
WS50x80S	50 x 80	B 911 741
WS80x80S	80 x 80	B 911 742
WS80x120S	80 x 120	B 911 743
WS80x160S	80 x 160	B 911 755

Dimension diagram, enclosure X460



Dimensions in mm