

Residual current monitor RCM475YM2

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



RCM475YM2

Device features

- Internal measuring current transformer \varnothing 18 mm
- Two separately adjustable response values $I_{\Delta n2}$ 10 mA...10 A (50...60 Hz)
 $I_{\Delta n1}$ 30 mA, 10...80% of $I_{\Delta n2}$ (50...60 Hz)
- Response delay for $I_{\Delta n2}$, adjustable 0...10 s
- Two separately adjustable alarm relays with one changeover contact each
- N/O or N/C operation
- Fault memory behaviour, selectable
- Combined TEST and RESET button
- Connection external TEST and RESET button
- Connection external measuring instrument $I_{\Delta n}$ 0...100 %
- Sealable transparent cover
- Separate supply voltage
- Type A according to IEC 60755

Approvals



Product description

The residual current monitor RCM475YM2 is designed for fault and residual current monitoring in earthed power supply systems (TN and TT systems) where an alarm is to be activated in the event of a fault, but disconnection must be prevented. Two separately adjustable response values and alarm relays allow to distinguish between prewarning and alarm. Since the values are measured with measuring current transformers, the device is nearly independent of the load current and the nominal voltage of the system.

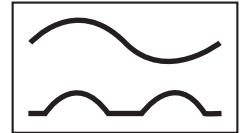
Application

- Two-stage 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.
- Socket-outlet circuits for devices which are operated unattended for a long time and which may not fail.
- Alarm systems, safety devices
- Air conditioning systems, EDP systems
- Cooling equipment with valuable frozen goods
- Canteen kitchen
- Monitoring of earthed power supplies for stray currents, loads of N conductors.

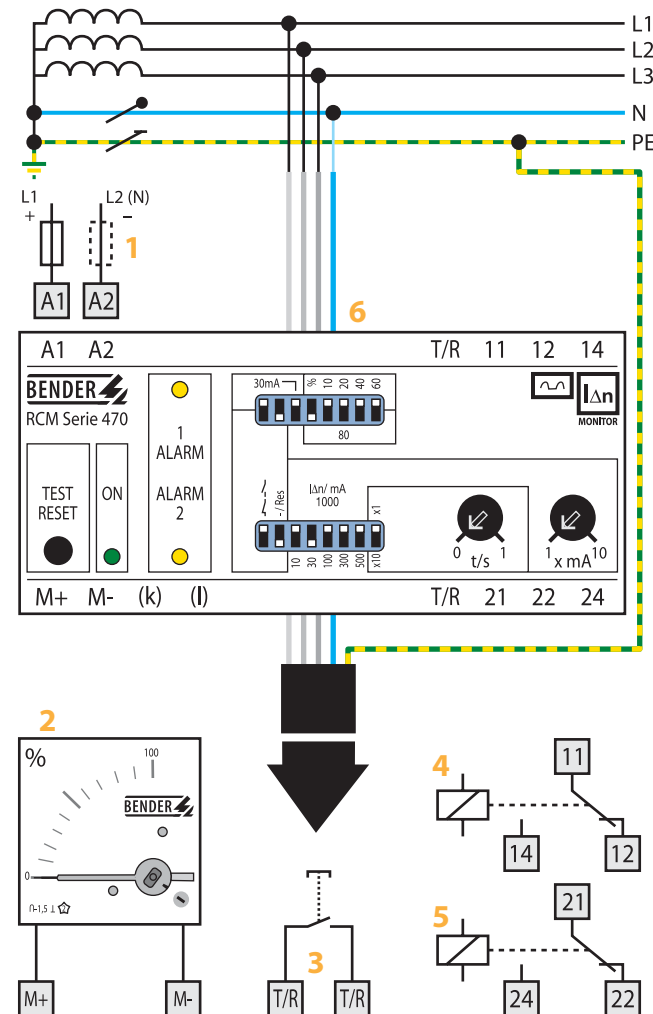
Function

Residual current monitoring takes place via an internal measuring current transformer. When the current respectively the residual current exceeds one or both preset response values, the respective alarm LED lights and the alarm relay switches after the expiry of the set response delay (applies to $I_{\Delta n2}$ only).

The fault messages can be stored. The fault memory can be reset by pressing the RESET button. The device function can be tested using the TEST button.



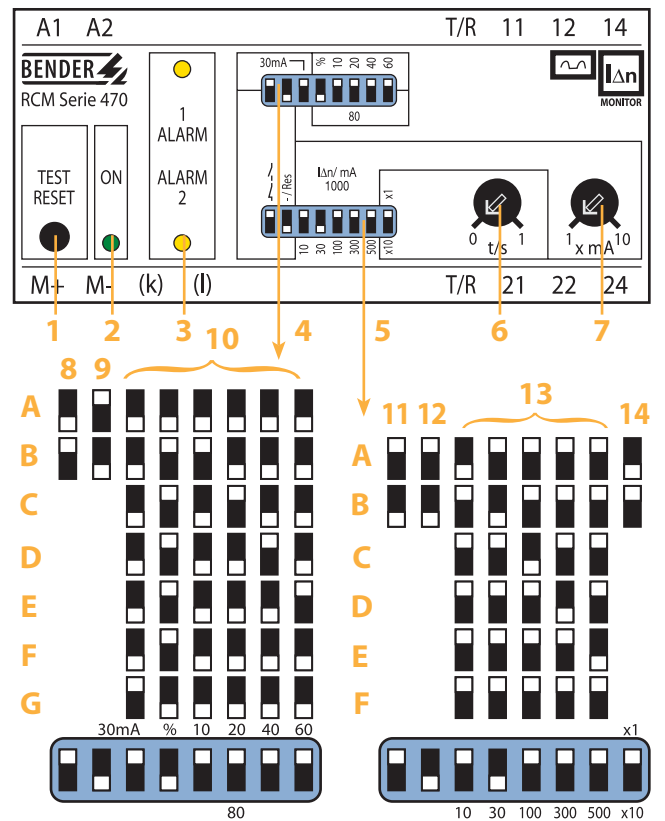
Wiring diagram – system connection, external connections



- 1 - Supply voltage U_S (see ordering information), a 6 A fuse recommended for line protection.
- 2 - External measuring instrument
- 3 - External TEST and RESET button
- 4 - Alarm relay: switches when the fault current exceeds the response value Alarm 1.
- 5 - Alarm relay: switches when the fault current exceeds the response value Alarm 2.
- 6 - Internal measuring current transformer

Note! Do not route the PE conductor through the measuring current transformer!

Wiring diagram – front plate



- 1 - Combined TEST and RESET button: short-time pressing (< 1 s) = RESET, long-time pressing (> 2 s) = TEST
- 2 - Power On LED
- 3 - Alarm LEDs: Alarm1 = prewarning, Alarm 2 = alarm
- 4 - Response range Alarm 1 (prewarning)
- 5 - Response range Alarm 2 (alarm)
- 6 - Potentiometer for setting the response delay (0...1 s)
- 7 - Potentiometer for setting the response value ($I_{\Delta n}/mA \times 1 \dots 10$)

Setting of the DIP switches (white = switch position)
Operating principle and settings of the alarm relay Alarm 1

- 8 - Setting of the operating principle
 - A - N/C operation
 - B - N/O operation
- 9 - Setting of the fault memory behaviour
 - A - Fault memory ON
 - B - Fault memory OFF
- 10 - Setting of the prewarning range
 - A - prewarning OFF
 - B - 10% von $I_{\Delta n2}$
 - C - 20% von $I_{\Delta n2}$
 - D - 40% von $I_{\Delta n2}$
 - E - 60% von $I_{\Delta n2}$
 - F - 80% von $I_{\Delta n2}$
 - G - response value 30 mA

Operating principle and settings of the alarm relay Alarm 2

- 11 - Setting of the operating principle
 - A - N/O operation
 - B - N/C operation
- 12 - Setting of the fault memory behaviour
 - A - Fault memory ON
 - B - Fault memory OFF
- 13 - Setting of the alarm level
 - A - 10...100 mA
 - B - 30...300 mA
 - C - 100...1000 mA
 - D - 300...3000 mA
 - E - 500...9000 mA
 - F - 1...10 A
- 14 - Setting of the response delay
 - A - x 10
 - B - x 1

Technical data RCM475YM2

Insulation coordination acc. to IEC 60664-1		Switching elements	
Rated insulation voltage	AC 250 V	Number of switching elements	2 x 1 changeover contact
Rated impulse voltage / pollution degree	4 kV / 3	Operating principle, adjustable	N / C operation / N / O operation
Voltage ranges		Electrical endurance, number of cycles	12000
Supply voltage U_s	see ordering details	Rated contact voltage	AC 250 V / DC 300 V
Operating range of U_s	0.85...1.1 x U_s	Limited making capacity	AC / DC 5 A
Frequency range of U_s	50...400 Hz	Limited breaking capacity	2 A, AC 230 V, $\cos \phi = 0.4$ 0.2 A, DC 220 V, L / R = 0.04 s
Power consumption	≤ 3 VA	Fault memory behaviour	ON / OFF
Measuring circuit / response values		General data	
Internal measuring current transformer	$\varnothing 18$ mm	EMC immunity	acc. to EN 61543
Load	180 Ω	EMC emission	acc. to EN 61000-6-4
Operating characteristic acc. to IEC 60755	Type A	Shock resistance IEC 60068-2-27 (during operation)	15 g / 11 ms
Rated residual operating current $I_{\Delta n2}$ (Alarm2)	10 mA...10 A	Bumping IEC 60068-2-29 (during transport)	40 g / 6 ms
Rated residual operating current $I_{\Delta n1}$ (Alarm1)	30 mA, 10...80 % von $I_{\Delta n2}$ min. 8 mA	Vibration resistance IEC 60068-2-6 (during operation)	1 g / 10...150 Hz
Response delay t_v , adjustable	0...10 s	Vibration resistance IEC 60068-2-6 (during transport)	2 g / 10...150 Hz
Accuracy of response delay	± 20 %	Ambient temperature, during operation/when stored	-10 °C...+55 °C / -40 °C...+70 °C
Rated frequency	50...60 Hz	Climatic category IEC 60721-3-3	3K5
Relative percentage error	0...25 % of the response value	Operating mode	continuous operation
Hysteresis	approx. 25 % of the response value	Mounting	any position
Response time t_{an} at $I_{\Delta n1}$	≤ 200 ms	Connection	screw terminals
Response time t_{an} at $I_{\Delta n2} = 1 \times I_{\Delta n2}$ ($t_v = 0$ s) / $5 \times I_{\Delta n2}$ ($t_v = 0$ s)	≤ 250 ms / ≤ 20 ms	Connection properties	
Number of measuring channels	1	rigid / flexible	0.2...4 / 0.2...2.5 mm ²
Displays		flexible with ferrules without / with plastic collar	0.25...2.5 mm ²
LEDs	Power On, Alarm	Conductor sizes (AWG)	24...12
Inputs / outputs		Degree of protection, internal components / terminal (IEC 60529)	IP30 / IP20
TEST and RESET button, potential-free	internal / external	Type of enclosure	X475
Cable length external TEST and RESET button	≤ 10 m	Enclosure material	polycarbonate
Current source for external measuring instrument	DC 0...400 μ A	Screw mounting	2 x M4
Load	≤ 12.5 k Ω	DIN rail mounting acc. to	IEC 60715
		Flammability class	UL94V-0
		Standards	IEC 62020
		Instruction leaflet	BP401006
		Weight	≤ 350 g

Ordering information

Type	Response range $I_{\Delta n2} / \Delta n1$	Rated frequency	Time delay	Measuring current transformer, inside diameter	Display	Fault memory behaviour	Supply voltage U_s	Art. No.
RCM475YM2	10 mA...10 A, 30 mA, 10...80 % $I_{\Delta n2}$	50...60 Hz	0...10 s	$\varnothing 18$ mm	external	selectable	AC 230 V	B 9401 2016
RCM475YM2-13	10 mA...10 A, 30 mA, 10...80 % $I_{\Delta n2}$	50...60 Hz	0...10 s	$\varnothing 18$ mm	external	selectable	AC 90...132 V*	B 9401 2036

Other supply voltages on request

* Absolute values of the response range

Accessories

External measuring instrument

Type	Display range	Size (mm)	Art. No.
9604-4241	0...100 %	96 x 96	B 986 807

Measuring converter

Type	Input	Output	Art. No.
RK170	0...400 μ A	0...10 V 0/4...20 mA	B 9804 1500

Dimension diagram X475

Dimensions in mm

