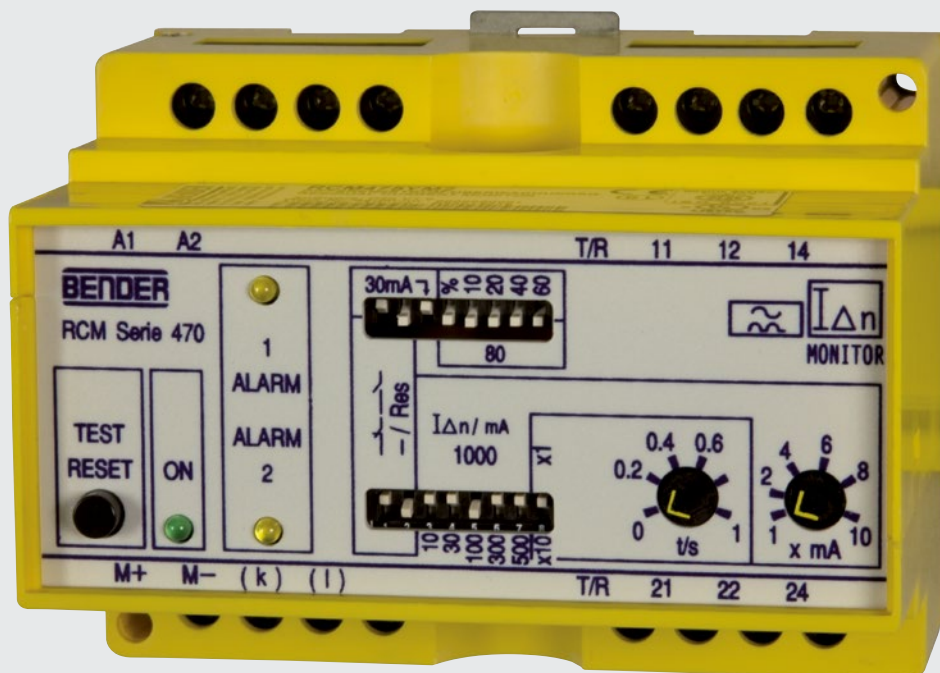


Residual current monitor RCM475YM2

for TN and TT systems (AC and pulsating DC currents)



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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 separate alarm relays with one changeover contact each
- N/O or N/C operation, selectable
- Fault memory behaviour, selectable
- Combined test/reset button
- Connection external test and reset button
- Connection external measuring instrument
 $I_{\Delta n}$ 0...100 %
- Sealable transparent cover
- External supply voltage
- Type A acc. to IEC/TR 60755

Approvals and certifications



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-energised 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 kitchens
- Monitoring of earthed power supplies for stray currents, impact on N conductors

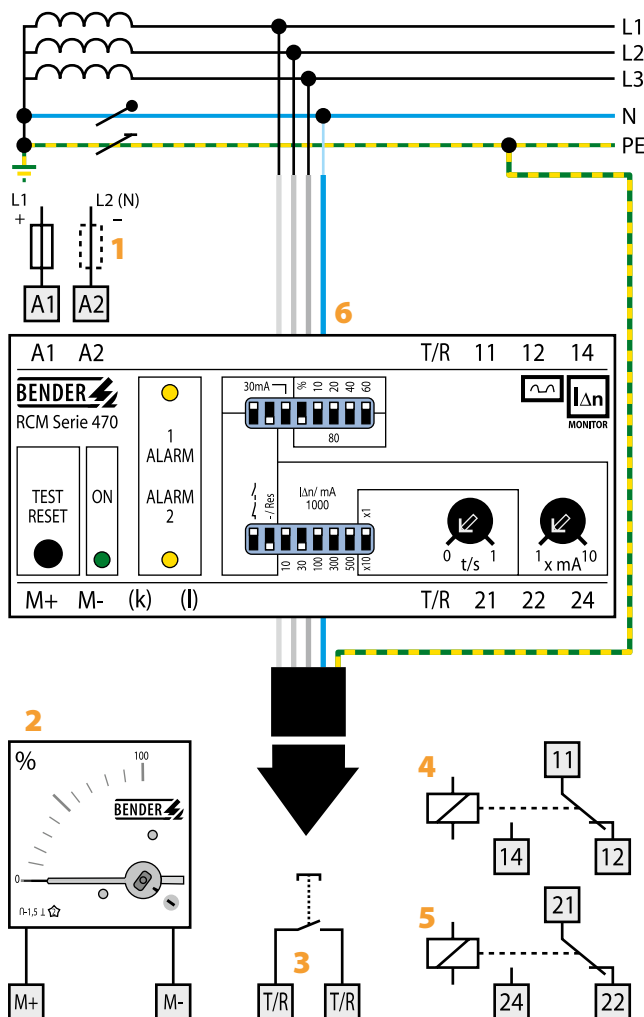
Function

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 (applies to $I_{\Delta n2}$ only) and the alarm relay switches after the expiry of the set response delay.

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.



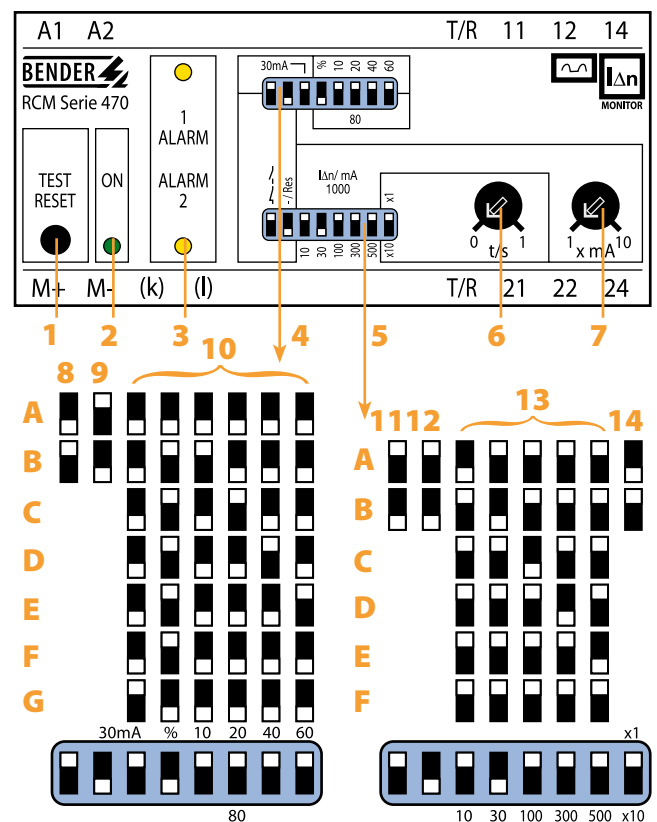
Wiring diagram- system connection, external connections



- 1 - Supply voltage U_s , see ordering information, 6 A fuse recommended.
- 2 - External measuring instrument
- 3 - External test and reset button "T/R"
- 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/reset button "T/R": short-time pressing (< 1 s) = RESET, long-time pressing (> 2 s) = TEST
- 2 - Power On LED "ON"
- 3 - Alarm LEDs: Alarm 1 = 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 ($I_{\Delta n}/mA \times 1...10$)

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 - Fault memory behaviour relay + LED
 - A - Fault memory ON B - Fault memory OFF
- 10 - Setting of the prewarning range
 - A - prewarning OFF E - 60 % of $I_{\Delta n2}$
 - B - 10 % of $I_{\Delta n2}$ F - 80 % of $I_{\Delta n2}$
 - C - 20 % of $I_{\Delta n2}$ G - response value 30 mA
 - D - 40 % of $I_{\Delta n2}$

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 - Fault memory behaviour relay + LED
 - A - Fault memory ON B - Fault memory OFF
- 13 - Setting of the alarm level
 - A - 10...100 mA D - 300...3000 mA
 - B - 30...300 mA E - 500...9000 mA
 - C - 100...1000 mA F - 1...10 A
- 14 - Setting of the response delay
 - A - x 10 B - x 1

Technical data

Insulation coordination acc. to IEC 60664-1

| | |
|--|----------|
| Rated insulation voltage | AC 250 V |
| Rated impulse withstand voltage/pollution degree | 4 kV/3 |

Voltage ranges

| | |
|--------------------------|--------------------------|
| Supply voltage U_S | see ordering information |
| Operating range of U_S | 0.85...1.1 x U_S |
| Frequency range of U_S | 50...400 Hz |
| Power consumption | ≤ 3 VA |

Measuring circuit/response values

| | |
|---|---|
| Internal measuring current transformer | ∅ 18 mm |
| Load | 180 Ω |
| Operating characteristics acc. to IEC/TR 60755 | Type A |
| Rated residual operating current $I_{\Delta n2}$ (alarm2) | 10 mA...10 A |
| Rated residual operating current $I_{\Delta n1}$ (alarm1) | 30 mA, 10...80 % of $I_{\Delta n2}$ min. 8 mA |
| Response delay t_v , adjustable | 0...10 s |
| Accuracy of response delay | ± 20 % |
| Rated frequency | 50...60 Hz |
| Relative uncertainty | 0...-25 % of the response value |
| Hysteresis | approx. 25 % of the response value |
| Response time t_{an} at $I_{\Delta n1}$ | ≤ 200 ms |
| Response time t_{an} at $I_{\Delta n2} = 1 \times I_{\Delta n2} (t_v = 0 \text{ s}) / 5 \times I_{\Delta n2} (t_v = 0 \text{ s})$ | ≤ 250 ms/≤ 20 ms |
| Number of measuring channels | 1 |

Displays

| | |
|------|-----------------|
| LEDs | Power On, Alarm |
|------|-----------------|

Inputs/outputs

| | |
|--|-------------------|
| Test and reset button, potential free | internal/external |
| Cable length for external test and reset button | ≤ 10 m |
| Current source for external measuring instrument | DC 0...400 μA |
| Load | ≤ 12,5 kΩ |

Switching elements

| | |
|--|---|
| Number of switching elements | 2 x 1 changeover contact |
| Operating principle, adjustable | N/C operation/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 |
| Fault memory | on/off |

Environment/EMC

| | |
|---|-----------------|
| EMC immunity | EN 61543 |
| EMC immunity | EN 61000-6-4 |
| Shock resistance IEC 60068-2-27 (during operation) | 15 g/11 ms |
| Bumping IEC 60068-2-29 (during transport) | 40 g/6 ms |
| Vibration resistance IEC 60068-2-6 (during operation) | 1 g/10...150 Hz |
| Vibration resistance IEC 60068-2-6 (during transport) | 2 g/10...150 Hz |
| Ambient temperature, during operation | -10...+55 °C |
| Ambient temperature for storage | -40...+70 °C |
| Climatic class acc. to DIN IEC 60721-3-3 | 3K5 |

Connection

| | |
|--|-----------------------------------|
| Connection type | modular terminals |
| Connection properties | |
| rigid/flexible | 0.2...4/0.2...2.5 mm ² |
| flexible with ferrules without/with plastic collar | 0.25...2.5 mm ² |
| Conductor sizes (AWG) | 24...12 |

Other

| | |
|--|--|
| Operating mode | continuous operation |
| Mounting | any position |
| Degree of protection, internal components (IEC 60529) | IP30 |
| Degree of protection, terminals (IEC 60529) | IP30 |
| Type of enclosure | X475 |
| Enclosure material | polycarbonate |
| Screw mounting | 2 x M4 |
| DIN rail mounting acc. to | IEC 60715 |
| Installation into standard distribution panels acc. to | DIN 43871 |
| Flammability class | UL94V-0 |
| Product standards | IEC 62020: 2003-11, DIN EN 62020 (VDE 0663): 2005-11 |
| Operating manual | TBP401006 |
| Weight | ≤ 350 g |

Ordering information

| Response range $I_{\Delta n2}/\Delta n1$ | Rated frequency | Time delay | Measuring current transformer inside diameter | Displays | Fault memory behaviour | Supply voltage U_s | | Type | Art. No. |
|---|-----------------|------------|---|----------|------------------------|--------------------------|---------------|-------------|----------|
| | | | | | | AC | | | |
| 10 mA...10 A, 30 mA, 10...80 % $I_{\Delta n2}$ | 50...60 Hz | 0...10 s | ø 18 mm | external | selectable | 230 V | RCM475LYM2 | B 9401 2016 | |
| | | | | | | 90...132 V ¹⁾ | RCM475LYM2-13 | B 9401 2036 | |

Other supply voltages on request

¹⁾ Absolute values of the operating range

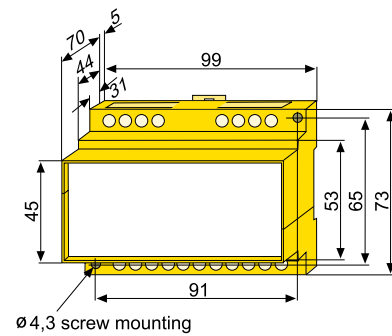
Accessories

| External measuring instruments | | | |
|--------------------------------|-----------|-----------|-----------|
| Displays | Size (mm) | Type | Art. No. |
| 0...100 % | 96 x 96 | 9604-4241 | B 986 807 |

| Measuring converter | | | |
|---------------------|----------------------|-------|-------------|
| Input | Output | Type | Art. No. |
| 0...400 µA | 0...10 V 0/4...20 mA | RK170 | B 9804 1500 |

Dimension diagram X470

Dimensions in mm





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