

## Residual current monitor RCM471LY

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



### Device features

- External flexible measuring current transformer
- Response values, adjustable 300 mA...10 A 40...400 Hz
- Response delay, adjustable 0...10 s
- Alarm relay with two potential-free changeover contacts
- N/O or N/C operation
- Fault memory behaviour, selectable
- Combined TEST and RESET button
- Connection external TEST / RESET button
- LED bar graph indicator  $I_{\Delta n}$  0...100 %
- Connection external measuring instrument  $I_{\Delta n}$  0...100 %
- CT connection monitoring
- Sealable transparent cover
- Separate supply voltage
- Type A according to IEC 60755

### Approvals



### Product description

The residual current monitor RCM471LY 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. In addition, the device can be used to monitor single conductors, such as PE conductors, N-PE connections and PE-PAS connections.

Since the values are measured with flexible measuring current transformers, the device is nearly independent of the load current and the nominal voltage of the system. The device can also be used for busbar systems, the measuring current transformer can be retrofitted.

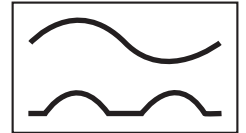
### Application

- Residual current monitoring in earthed two, three or four conductor 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.

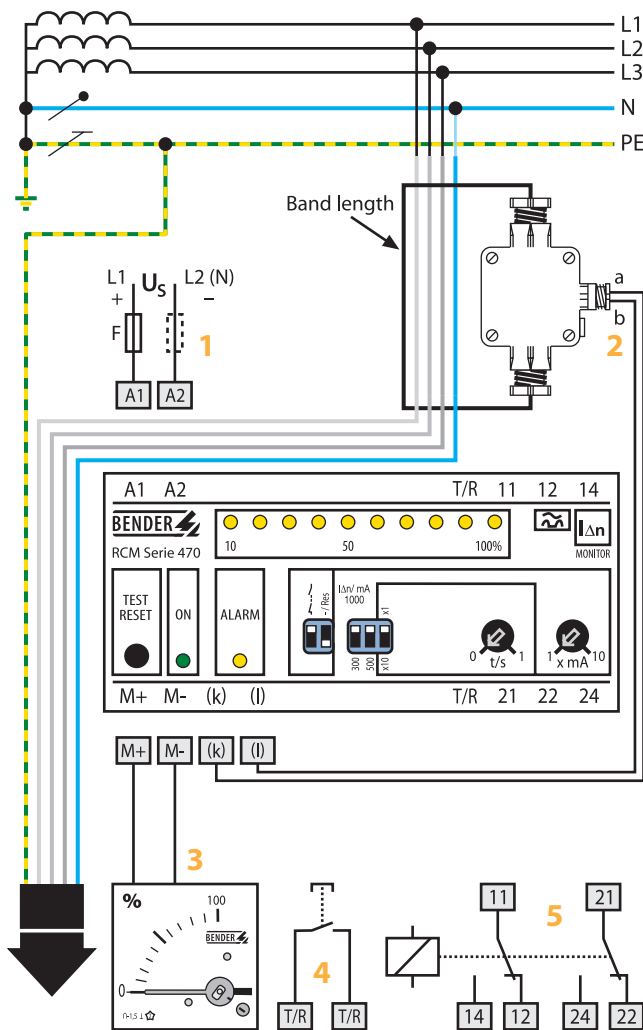
### Function

Residual current monitoring takes place via a flexible 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 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.

The currently measured value in per cent related to the set response value is shown on the LED bar graph indicator. The CT circuit is continuously monitored. In case of wire breakage, the alarm relay switches and the alarm LED flashes.



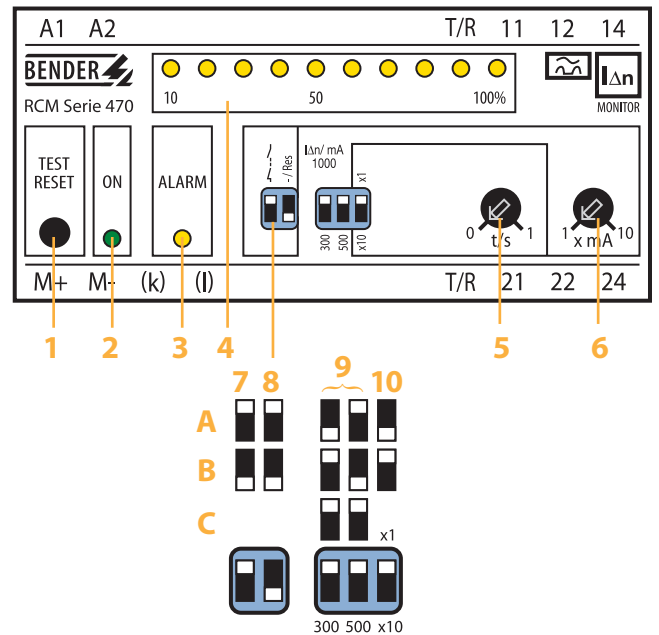
**Wiring diagram – system connection, external connections**



- 1 - Supply voltage  $U_s$  (see ordering information), a 6 A fuse recommended for line protection.
- 2 - External flexible measuring current transformer (refer to table "External measuring current transformers")
- 3 - External measuring instrument
- 4 - External TEST and RESET button
- 5 - Alarm relay: switches when the fault current exceeds the response value and in case of interruption of the CT connection.

**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 ( $< 1s$ ) = RESET; long-time pressing ( $> 2s$ ) = TEST
  - 2 - Power On LED
  - 3 - Alarm LED: lights when the fault current exceeds the preset response value and flashes in case of interruption of the CT connection after the expiry of the set response delay.
  - 4 - LED bar graph indicator: shows the measuring value in per cent related to the preset response value.
  - 5 - Response delay, adjustable 0...1 s
  - 6 - Response value, adjustable (x 1...10 mA)
- Setting of the DIP switches (white = switch position)

- 7 - Operating principle of the alarm relay
  - A - N/O operation
  - B - N/C operation
- 8 - Fault memory behaviour relay + LED
  - A - Fault memory ON
  - B - Fault memory OFF
- 9 - Setting of the response range
  - A - 300 mA
  - B - 500 mA
  - C - 1000 mA
 } x 1...10
- 10 - Setting of the response delay
  - A - x 10
  - B - x 1
 } 0...1 s

## Technical data residual current monitor RCM471LY

### Insulation coordination acc. to IEC 60664-1

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

### Voltage ranges

Supply voltage $U_s$	see ordering details
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

External measuring current transformers	W500...W1000
Load	5.6 k $\Omega$
Operating characteristic acc. to IEC 60755	Type A
Rated residual operating current $I_{\Delta n}$	300 mA...10 A
Response delay $t_v$ , adjustable	0...10 s
Rated frequency	40...400 Hz
Relative percentage error	0...-50 % of the response value
Hysteresis	approx. 25 % of the response value
Response time $t_{an}$ at $I_{\Delta n} = 1 \times I_{\Delta n}$ ( $t_v = 0$ s)	< 250 ms
Response time $t_{an}$ at $I_{\Delta n} = 5 \times I_{\Delta n}$ ( $t_v = 0$ s)	≤ 20 ms

### Displays

LED bar graph indicator	0...100 %
LEDs	Power On, Alarm

### Inputs / outputs

TEST and RESET button	internal/external
Cable length external TEST and RESET button	≤ 10 m
Current source for external measuring instrument / max. load	DC 0...400 $\mu$ A / 12.5 k $\Omega$

### Cable lengths for measuring current transformers

Single wire $\geq 0.75$ mm <sup>2</sup>	0...1 m
Single wire, twisted $\geq 0.75$ mm <sup>2</sup>	0...10 m
Shielded cable $\geq 0.5$ mm <sup>2</sup>	0...40 m
Recommended cable (shielded, shield on one side connected to terminal L of the RCM, not connected to earth)	J-Y(ST)Y min. 2 x 0.8

### Switching elements

Switching elements	2 changeover contacts
Operating principle, adjustable	N / C operation / N / O operation
Electrical endurance, number of cycles	12000
Rated contact voltage	AC 250 V / DC 300 V
Limited 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 behaviour	ON / OFF

### General data

EMC immunity	acc. to EN 61543
EMC emission	acc. to 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 °C...+55 °C
Ambient temperature, when stored	-40 °C...+70 °C
Climatic category IEC 60721-3-3	3K5
Operating mode	continuous operation
Mounting	any position
Connection	screw terminals
Connection properties	
rigid / flexible	0.2...4 / 0.2...2.5 mm <sup>2</sup>
flexible with ferrules without / with plastic collar	0.25...2.5 mm <sup>2</sup>
Conductor sizes (AWG)	24...12
Protection class, internal components (IEC 60529)	IP30
Protection class, terminals (IEC 60529)	IP20
Type of enclosure	X470
Enclosure material	polycarbonate
Screw mounting	2 x M4
DIN rail mounting acc. to	IEC 60715
Flammability class	UL94V-0
Standards	IEC 62020
Instruction leaflet	BP401007
Weight	≤ 350 g

## Ordering information residual current monitor RCM471LY

Type	Response range $I_{\Delta n}$	Rated frequency	Response delay	Measuring current transformers	Display	Fault memory behaviour	Supply voltage $U_s$	Art. No.
RCM471LY	300 mA...10 A	40...400 Hz	0...10 s	W500...W1000	internal / external	selectable	AC 230 V	B 9401 2054

**Accessories**

**External measuring current transformers**

Type	Band length (mm)	Art. No.
W500	500	B 911 707
W600	600	B 911 708
W700	700	B 911 709
W800	800	B 911 712
W900	900	B 911 713
W1000	1000	B 911 711

Other measuring current transformer types on request.

**External measuring instrument**

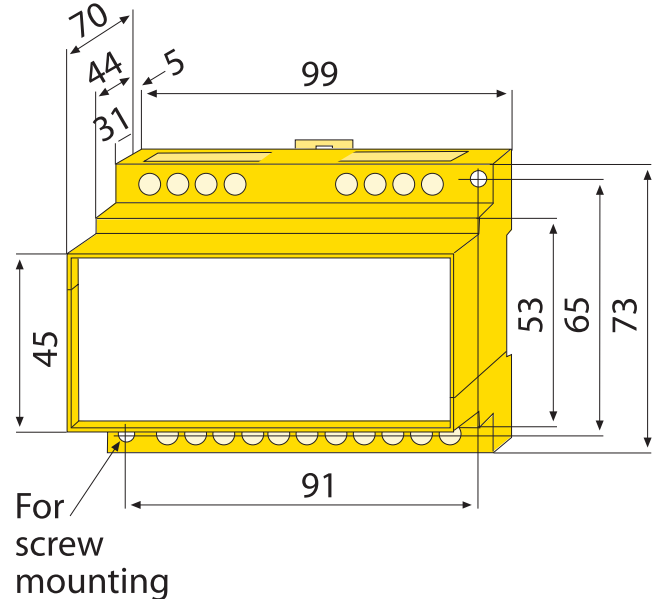
Type	Display range	Size (mm)	Art. No.
9604-4241	0...100 %	96 x 96	B 986 807

**Measuring converter**

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

**Dimension diagram X470**

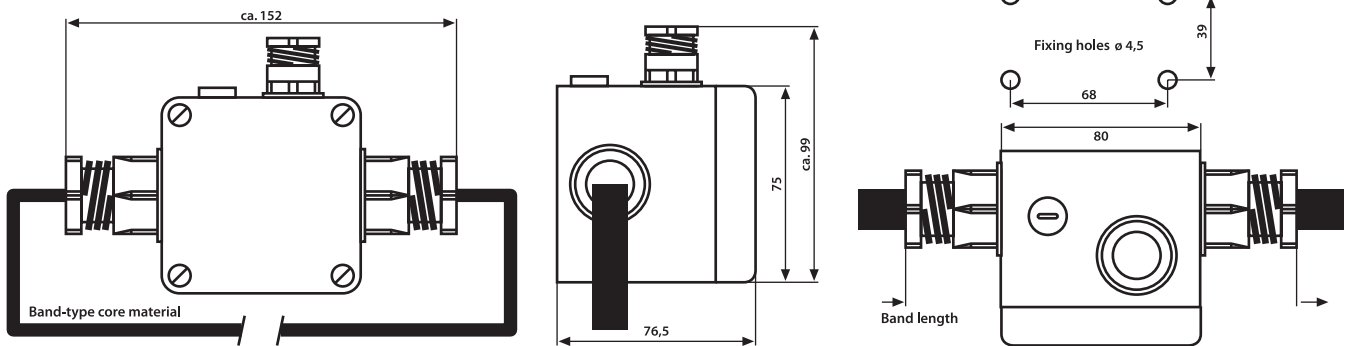
Dimensions in mm



**4.1**

**Dimension diagram measuring current transformer W1000**

Dimensions of the band lengths and other dimensions in mm.



CT type	W500	W600	W700	W800	W900	W1000
Band lengths / mm	500	600	700	800	900	1000