

Residual current monitor RCM475DY

Directionally discriminating
residual current monitor for IT AC systems
(AC and pulsating DC currents)



RCM475DY

Product description

The residual current monitor RCM475DY monitors the residual current (AC, DC pulsating) in unearthed AC or 3N AC systems (IT systems). The residual current is evaluated directionally, i.e. only insulation faults detected on the load side are signalled. That allows selective fault location in extended IT systems.

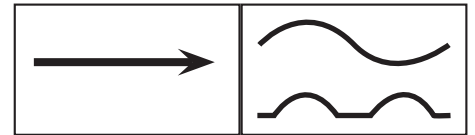
A precondition for the use of the device are sufficient high leakage capacitances upstream the CT so that a residual current higher than the response value can flow. However, a high leakage current is not desirable in many sectors so that principally the value of the maximum permissible leakage current of the IT system and the application field has to be taken into consideration when using directionally discriminating residual current monitors. Also the nominal voltage has to be considered when selecting the appropriate device since the measuring principle requires the neutral point displacement voltage of the IT system to be monitored. Version RCM475DY utilises an internal measuring current transformer, \varnothing 18 mm.

Device features

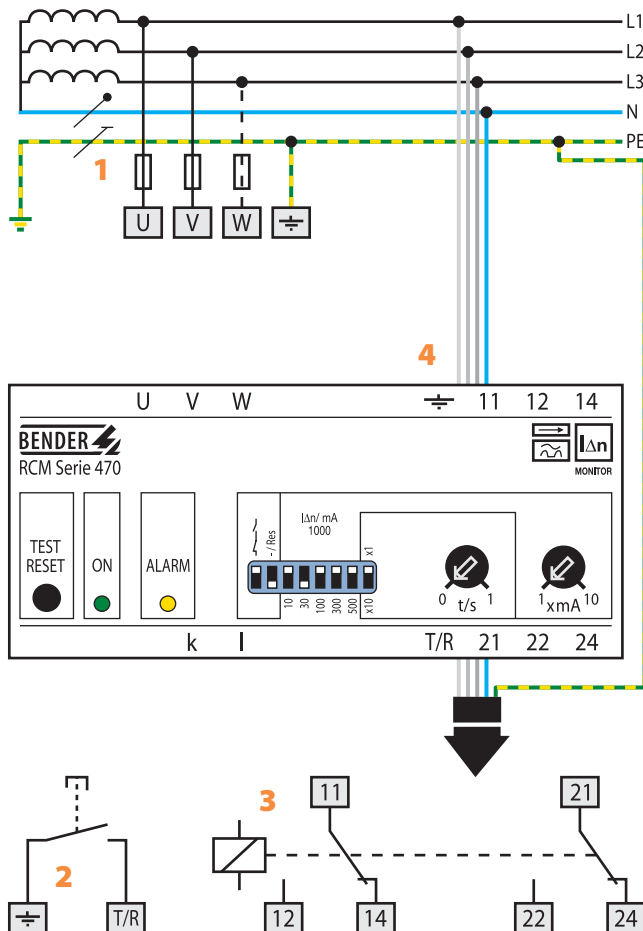
- Internal measuring current transformer \varnothing 18 mm
- Response value, adjustable 10 mA...10 A
- Response delay, adjustable 0...10 s
- Alarm relay with two potential-free changeover contacts
- N / O or N / C operation, selectable
- Fault memory behaviour, selectable
- Internal / external test and reset button
- LEDs: Power On, Alarm
- Sealable transparent cover
- Enclosure for DIN rail mounting and screw mounting
- Type A acc. to IEC 60755

Approvals and certifications





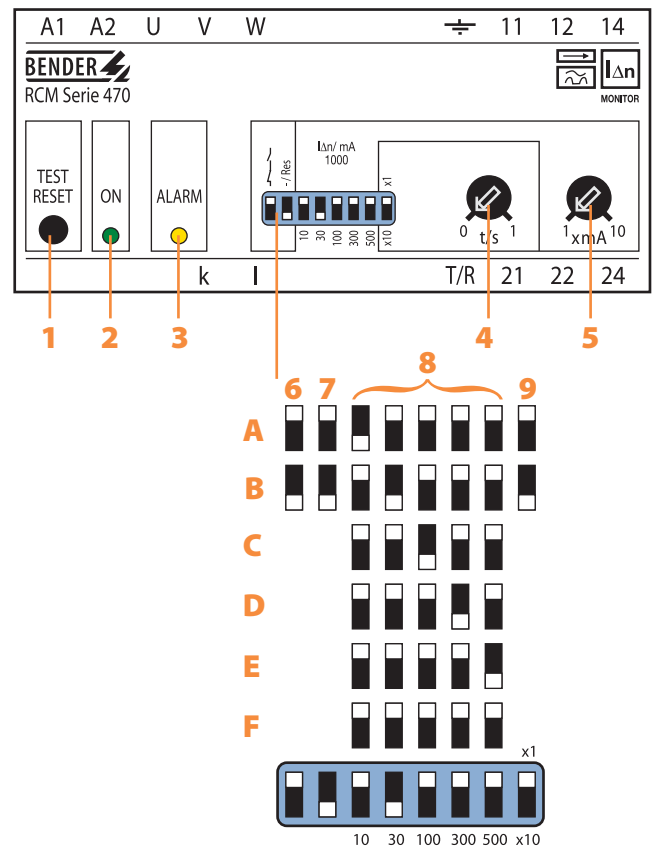
Wiring diagram – RCM475DY system connection



- 1 - A 6 A fuse is recommended
Terminal W is not applied in single-phase systems
- 2 - External test and reset button "T / R"
- 3 - Alarm relay: switches when the fault current exceeds the response value
- 4 - 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 "TEST / RESET"; short-time pressing (< 1 s) = RESET, long-time pressing (> 2 s) = TEST
- 2 - Power On LED "ON"
- 3 - LED "ALARM": lights up when the fault current exceeds the set response value
- 4 - Potentiometer for setting the response delay (0...1 s)
- 5 - Potentiometer for setting the response value (x 1...10 mA)

Response range setting, white = switch position. Check that the system is in de-energized state before changing the functions N / O / N / C operation, response delay x 1 / x 10 and fault memory behaviour!

- 6 - Setting the operating principle of the alarm relay
 - A - N / O operation
 - B - N / C operation
- 7 - Fault memory behaviour relay + LED
 - A - Fault memory ON
 - B - Fault memory OFF
- 8 - Setting of the response range

A - 10 mA	}	x 1...10	D - 300 mA	}	x 1...10
B - 30 mA			E - 500 mA		
C - 100 mA			F - 1000 mA		
- 9 - Setting of the response delay

A - x 1	}	0...1 s
B - x 10		

Technical data RCM475DY

Insulation coordination acc. to IEC 60664-1

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

Voltage ranges

System being monitored U_n	see ordering information
Power consumption	≤ 3 VA

Measuring circuit

Internal measuring current transformer	$\varnothing 18$ mm
Load	180 Ω
Operating characteristics acc. to IEC 60755	Type A
Rated residual operating current $I_{\Delta n}$	10 mA...10 A
Response delay t_v , adjustable	0...10 s
Accuracy of response delay	+ / - 20 %
Rated frequency	50...60 Hz
Relative uncertainty	0...20 %
Hysteresis	approx. 25 % of the response value
Response time t_{an}	≤ 500 ms
Number of measuring channels	1

Displays

LEDs	Power On, Alarm
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Inputs / outputs

Test and reset button	internal / external
Cable length external test and reset button	≤ 10 m

Switching elements

Number of switching elements	1 x 2 changeover contacts
Operating principle, adjustable (factory setting)	N / C operation / N / O 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

General data

EMC immunity	EN 61543
EMC emission	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 class acc. to DIN IEC 60721-3-3	3K5
Operating mode	continuous operation
Mounting	any position
Connection	modular terminals
Connection properties rigid / flexible	0.2...4 / 0.2...2.5 mm ²
	flexible with ferrules without / with plastic sleeve 0.25...2.5 mm ²
Conductor sizes (AWG)	24...12
Degree of protection, internal components (IEC 60529)	IP30
Degree of protection, terminals (IEC 60529)	IP20
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 and DIN EN 62020 (VDE 0663): 2005-11
Operating manual	TBP402002
Weight	≤ 350 g

Ordering information

Type	Response range I_{Δ}	Rated frequency	Time delay	Measuring current transformer inside diameter	Fault memory behaviour	Nominal voltage U_n	Art. No.
RCM475DY	10 mA...10 A	50...60 Hz	0...10 s	$\varnothing 18$ mm	selectable	AC / 3AC 195...253 V*	B 9402 2026
RCM475DY-13	10 mA...10 A	50...60 Hz	0...10 s	$\varnothing 18$ mm	selectable	AC 90...132 V*	B 9402 2028

* The values listed above are absolute values to which the operating range cannot be applied
Other nominal voltages on request

Dimension diagram

Dimensions in mm

