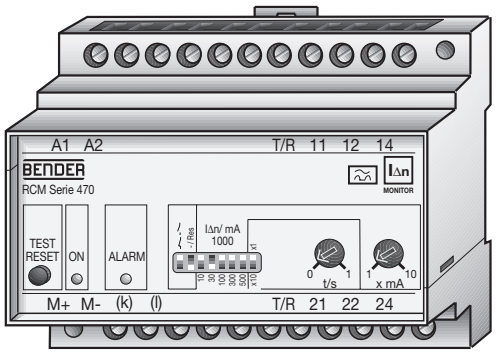
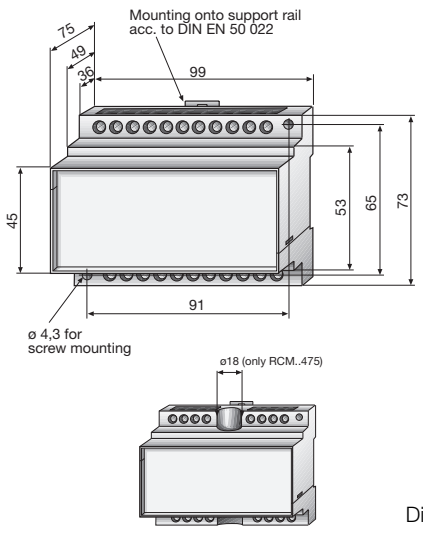
Residual current monitor RCM470YM RCM475YM

for TN- and TT AC Systems (earthed systems)



- residual current measurement in TN- and TT AC systems (earthed systems)
- Internal or external measuring transformer
- continuously adjustable alarm point
- Adjustable response delay
- power On and alarm LED
- CT connection monitoring
- Combined test/reset button
- N/O or N/C operation, selectable
- Fault memory, selectable
- remote indication of fault current level
- transparent dust cover for ingress protection

Dimension diagram



Dimensions in mm

Intended usage

RCM470YM and RCM475YM are residual current monitors which continuously monitor and indicate the level of the residual current in earthed AC systems (TN- and TT systems).

The devices can also be used in high-resistance earthed systems. For this purpose, it has to be verified by measurements or calculations whether the system conditions (system leakage capacitance or impedance to earth) allow the use, respectively the desired selectivity.

Product description

The residual current generated by an insulation fault is detected by an internal (RCM475YM) respectively an external measuring current transformer and is converted into a signal which is processed by the RCM.

When the residual current exceeds the set response value for a period exceeding the response time and additionally the set delay time, the alarm LED lights and the alarm relay is activated. The residual current is indicated on an external meter from 0 to 100% related to the set response value.

The connection to the measuring current transformer is continuously monitored and in the event of its disconnection, the RCM will switch to alarm mode.

The response can be delayed by up to 10 seconds.

The RCM is sensitive to sinusoidal as well as pulsating DC currents (Type A according to IEC 1008-1).

The devices are suited for installation into standard distribution panels according to DIN 43 871 and for quick assembly onto support rail according to DIN EN 50 022 or for screw mounting.

Basic application principles and advantages

Residual current monitors are used for preventive maintenance and monitoring of electrical equipment, supplementary to the protective devices according to IEC 364-4-41.

Early recognition of insulation faults is necessary to meet the continuity of service, helps to avoid service interruptions and finally results in cost reduction.

Due to a wide setting range of response value and response time, residual current monitors are individually adaptable to the requirements of the existing system conditions.

RCMs in combination with a contactor or trip circuit breaker may also be used as RCDs according to IEC1008-1. In that case, the switching time of the contactor or trip circuit breaker must be <20 ms.

Standards

The RCMs comply with international standard draft of IEC1008-3 "Residual Current Monitors for Household and Similar Uses."

Technical data RCM470YM/RCM475YM

Insulation coordination according to IEC 664-1:	
Rated insulation voltage	AC 250 V
Rated impulse withstand voltage/ contamination level	4 kV/3
Voltage test according to IEC 255-5	2 kV
Supply voltage	
Supply voltage U_S	see ordering details resp. nameplate
Operating range of U_S AC	0.85 ... 1.1 x U_S
Frequency range at AC	50 ... 60 Hz
Max. power consumption	≈ 3 VA
Response values	
Response value IΔn	10 mA ... 10 A
Relative response error	0 ... 20% [1]
Response time (5 x $I_{\Delta n}$)	≤20 ms
Delay time t (adjustable)	0 ... 10 s
Hysteresis	25% of the response value
Inputs	
Measuring transformer, internal	RCM475YM
Measuring transformer, external	RCM470YM
Single wire 2 x 0.75 mm²	< 1 m
Single wire 2 x 0.75 mm² , twisted	up to10 m
Shield bonding lead 2 x 0.75 mm² (shield to PE)	up to 25 m
Outputs	
Meter output	0 ... 100%
Measuring instrument ext./ max. load	0 ... 400 µA (12.5 kΩ)
Contact circuit	
Switching components	2 change over contacts
Contact class acc. to DIN IEC 255 Teil 0-20	IIB
Rated contact voltage	AC 250 V/DC 300 V
Admissible number of operations	12000 cycles
Limited making capacity	UC 5 A
Limited breaking capacity	
AC 230 V and cos phi = 0.4	AC 2 A
DC 220 V and L/R = 0.04 s	DC 0.2 A
Operating principle	N/O or N/C operation
Pre-set by factory	N/O operation
Type tests	
Test of the Electromagnetic Compatibility (EMC):	
Immunity against electromagnetic interferences according to EN 61543 as well as EN 50082-2:	
Emissions according to EN 50081:	
Emissions according to EN 55011/CISPR11	class B[2]
Mechanical tests:	
Shock resistance acc. to IEC 68-2-27	15 g/11 ms
Bumping acc. to IEC 68-2-29	40 g/6 ms
Vibration strength acc. to IEC 68-2-6	10 ... 150 Hz/0.15 mm - 2 g
Environmental conditions	
Ambient temperature, during operation	-10°C ... +55°C
Storage temperature range	-40°C ... +70°C
Climatic class acc. to IEC 721	3K5, except condensation and formation of ice
General data	
Operation class	permanent operation
Mounting	as desired
Internal CT opening	18 mm
Type of connection	screw terminals
Wire cross section	
single wire	0.2...4 mm²
fine braid	0.2...2.5 mm² (AWG 24 - 12)
Rapid mounting	DIN EN 50 022
Screw mounting	90.7 x 64.8 mm
Protection class acc. to EN 60529	
Internal components	IP 30
Terminals	IP 20
Type of casing	X 470
Flammability class	UL94V-0
Weight approx.	350 g

Ordering details

Type	Supply voltage U_S	Art. No.
RCM470YM	AC 230 V	94012013
RCM475YM	AC 230 V	94012014

Other supply voltages on request

Ordering details for the external meter

Type	Scale	Art. No.
9604-4241	0 .... 100%	986 807

Ordering details for external measuring current transformers

Type	Internal diameter	Art. No.
circular type		
W1 - S35	35 mm,	911 731
W2 - S70	70 mm	911 732
W3 - S105	105 mm	911 733
W4 - S140	140 mm	911 734
W5 - S210	210 mm	911 735
rectangular type		
WR 70 x 175S	70 x 175 mm	911 738
WR 115 x 305S	115 x 305 mm	911 739
WR 150 x 350S	150 x 350 mm	911 749
split-core type		
WS 50 x 80S	50 x 80 mm	911 741
WS 80 x 80S	80 x 80 mm	911 742
WS 80 x 120S	80 x 120 mm	911 743

1) The response values for sinusoidal and other waveforms comply with IEC 1008-1.

2) Class B devices are suitable for household and industrial use.

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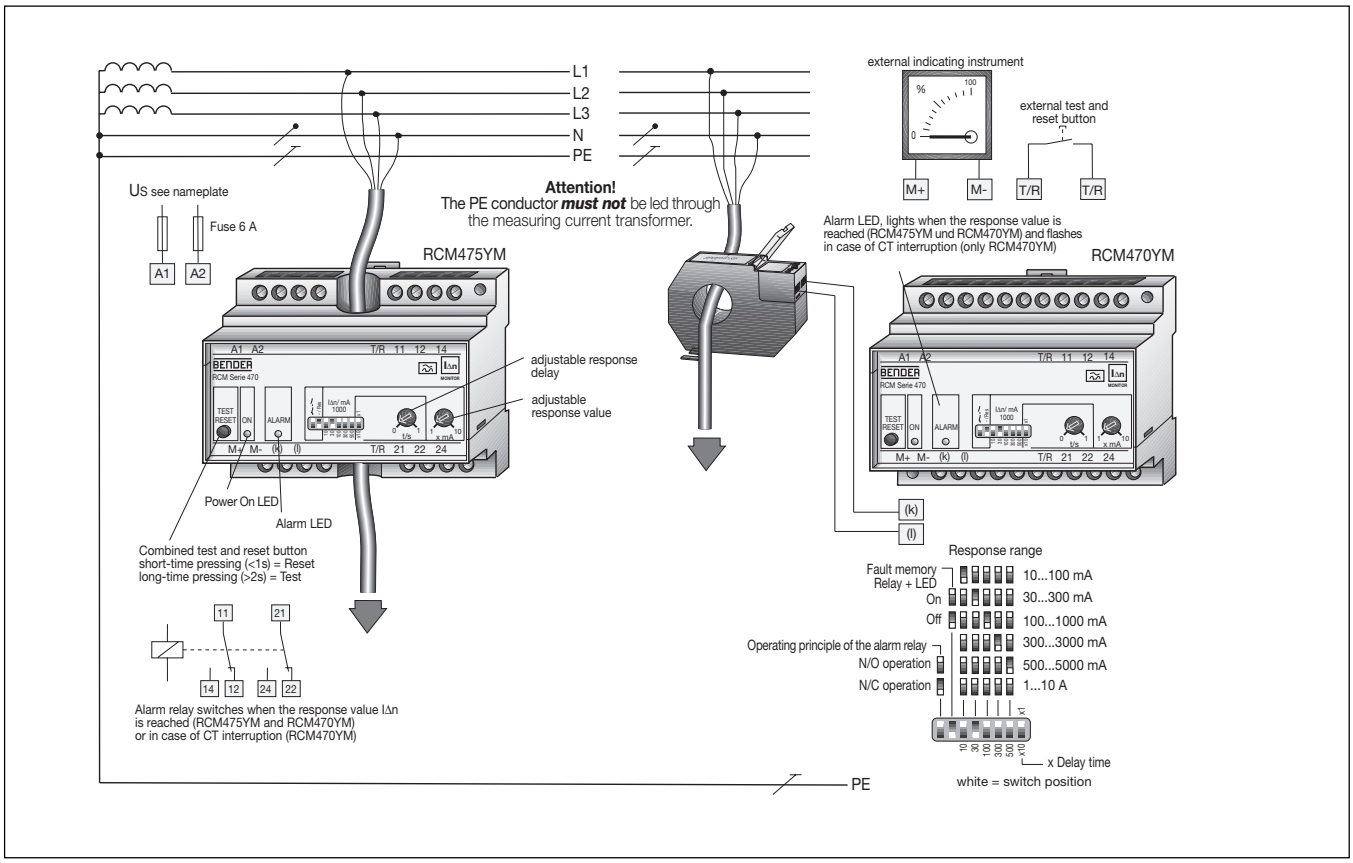
Wiring diagram



Safety instructions

Please check for correct mains voltage !

The PE conductor must not be passed through the current transformer !

In order to check the proper connection of the device, it is recommended to carry out a functional test using a genuine earth fault, e.g. via a suitable resistance, before using the RCM.

When insulation or voltage tests are to be carried out, the device must be isolated from the system for the test period.

Warning

Electrical equipment shall only be installed by qualified personnel in accordance with relevant safety regulations.

For short-circuit protection, the connection to the supply voltage has to be equipped with a protective device according to IEC 364-4-473 /A fuse of 6 A is recommended).

Important notes:

Changing the functions:
-N/O operation-/N/C operation, -with-/without fault memory-, -delay time x1 / x10-,shall only be carried out in de-energized state. If the function has to be changed during operation, the internal or external test-/reset button has to be pushed afterwards.

Factory setting:
Response range: 30 ... 300 mA
Response value: 30 mA
Delay time: x1, 0 s
Fault memory: without
Relay: N/O operation