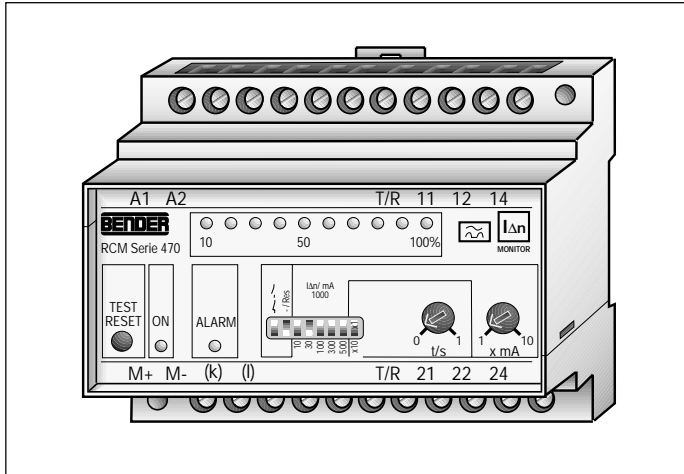
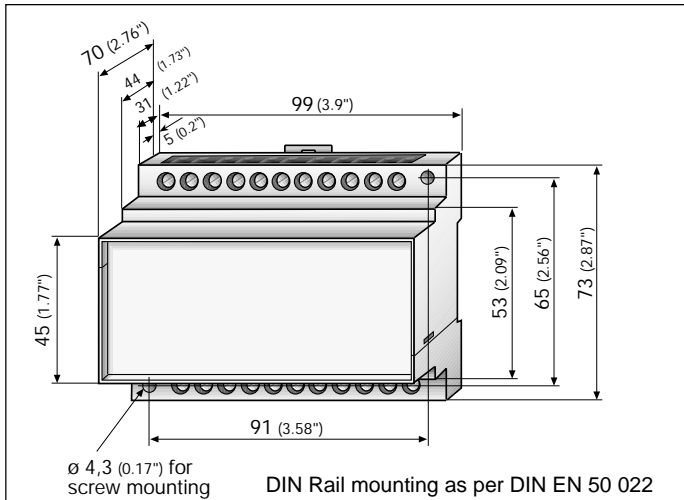




VDE IEC



### Dimension Diagram (mm/inch)



- For grounded, high-resistance grounded & ungrounded 1-phase and 3-phase AC systems
- Internal or external current transformer
- Steplessly adjustable alarm set-point value from 6mA...600mA or 10mA..10A
- Steplessly adjustable time delay 0...10 sec
- Operation and alarm LEDs
- Two SPDT voltage-free change-over contacts
- CT Connection monitoring
- Combined test / reset button
- Alarm relay, normally energized / de-energized mode
- Fault memory, selectable
- No nuisance tripping
- Two-year warranty

### Product Description

The ground fault monitors RCM470LY and RCM475LY monitor the insulation level of grounded, high-resistance grounded and ungrounded single and three-phase systems by measuring the ground fault leakage current. Ungrounded systems require special consideration when using RCM or RCD units.

The BENDER RCM series is specially designed to provide advanced warning of developing faults without the problems associated with high sensitivity nuisance tripping. The RCM470LY and RCM475LY are IEC755 Type A Ground Fault Monitors that can detect sinusoidal AC ground fault currents and pulsating DC ground fault currents.

The response value  $I_{\Delta n}$  is steplessly adjustable between 6mA...600mA or 10mA...10A and the delay time can be adjusted between 0...10sec. The relay is equipped with a LED bar graph indicator. An external analog meter can be connected and by using an optional external transducer, a 4..20mA signal is available. Meter indication is from 10...100% where 100% is equal to the alarm set-point value.

RCM475LY is equipped with a built-in current transformer where as the RCM470LY is designed for external transformers, like BENDER standard models W1-S...W5-S. These special current transformers have been designed to prevent nuisance tripping and are UL-listed.

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.

### Operational Information

The ground fault current is evaluated by a special current transformer and converted into a measuring signal.

When the ground fault current exceeds the alarm set-point value, the alarm LED illuminates and the alarm relay switches after the adjusted time delay. The alarm relay can be selected to be in the normally energized or normally de-energized mode and with or without latching (fault memory).

The fault memory can be reset by pushing the [Test / Reset] button located at the front plate or an external button (N.O. contact), provided that the ground leakage current is 25% below the alarm set-point value.

The ground leakage current is indicated on the LED bar graph indicator and the external meter in percent related to the alarm set-point value.

The connection to the external current transformer is continuously monitored. An open circuit within the current transformer is indicated by a flashing alarm LED and alarm relay (RCM470LY). The function of the current transformer and measuring circuit as well as the alarm LED and the alarm relay can be checked by pushing either the internal or external test button.

## Technical Data RCM470LY/RCM475LY

### Insulation

Insulation coordination acc. to IEC60664-1	
Rated impulse withstand voltage/ contamination level	4V/3
Voltage test according to IEC255-5	3kV
Operation class	continuous operation

### Supply Voltage

Supply voltage $U_S$	see "Ordering Guide"
Operating range of $U_S$ AC	0.85 ... 1.1 x $U_S$
Operating range of $U_S$ DC	0.8 ... 1.4 x $U_S$
Frequency range at AC	50 ... 60 Hz
Max. power consumption	2.3 VA

### System Voltage

System voltage $U_N$	Not a factor (1)
Max. Load Current	Not a factor (2)

### Alarm Response Value

Alarm set-point value $I_{\Delta n1}$	6mA ... 600mA or 10mA ... 10A
Relative response error	0 ... -20% (3)
Response time (5 x $I_{\Delta n}$ )	≤ 0.03 s
Delay time t (adjustable)	0 ... 10 s
Hysteresis	25% of the response value

### Measuring Circuit

Current transformer, internal	RCM475LY
Current transformer, external	RCM470LY
Distance from RCM to Current Transformer	
- Single wires	< 3 feet (1 m)
- Twisted pair cable	up to 30 feet (10 m)
- Shielded twisted pair cable	up to 80 feet (25 m)
LED bar graph indicator (leakage current)	10 ... 100%

### Outputs

Current output / max. load	0 ... 400 $\mu$ A / 12.5 k $\Omega$
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### Alarm Relay

Type	2 voltage-free SPDT contacts
Rated contact voltage	AC 250 V/DC 300 V
Rated current	UC 5 A
Breaking capacity AC 230 V and p.f. = 0.4	AC 2 A
Breaking capacity DC 220 V and L/R = 0.04 s	DC 0.2 A
Operating mode	N.E. or N.D. mode
Adjustment by factory	Normally Deenergized mode

### Testing

Dielectric test: Test Voltage	2kV
Impulse voltage test acc. to IEC255-5	class III
Electrical disturbance test acc. to IEC255-5	class III
Shock resistance acc. to IEC68-2-27	15g / 11sec
Bumping acc. to IEC 68-2-29	40g / 11msec
Vibration strength acc. to IEC 68-2-6	10..150Hz / 0.15mm - 2g

### Environmental Conditions

Ambient temperature, during operation	-10°C ... +55°C
Storage temperature range	-40°C ... +70°C

### General Data

Mounting	as desired
Internal CT opening (RCM475LY only)	18 mm
Type of connection	screw terminals
Wire size	
solid	14 AWG
fine braid	16 AWG
Rapid mounting	DIN RAIL 35/15
Screw mounting	90.7 x 64.8 mm
Weight approx.	1 lb

## Please Note

Please check for correct supply voltage.

The ground conductor should not be passed through the measuring current transformer.

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

Electrical equipment shall only be installed by qualified personnel in consideration of the current safety regulations.

## Ordering Guide

Model	Supply Voltage	Setpoint Range	Article Number
RCM470LY-13	AC 120V	10mA..10A	94012019
RCM475LY-13	AC 120V	10mA..10A	94012035
RCM470LY	AC 230V	10mA..10A	94012017
RCM475LY	AC 230V	10mA..10A	94012018
RCM470LY-11	AC 24V	10mA..10A	94012025
RCM475LY-11	AC 24V	10mA..10A	94012047
RCM470LY-7113	AC 120V	6...600mA	94012051
RCM475LY-71	AC 230V	6...600mA	94012052
RCM470LY-7121	DC10-84V	6...600mA	94012050

- Other supply voltages & setpoint ranges are available on request.
- 400Hz versions are available on request

## External Current Transformers

Model	Internal Diameter mm (inches)	Art. No.
W1-S35	35mm (1-3/8")	911710
W2-S70	70mm (2-3/4")	911726
W3-S105	105mm (4-1/8")	911727
W4-S140	140mm (5-1/2")	911728
W5-S210	210mm (8-1/4")	911729

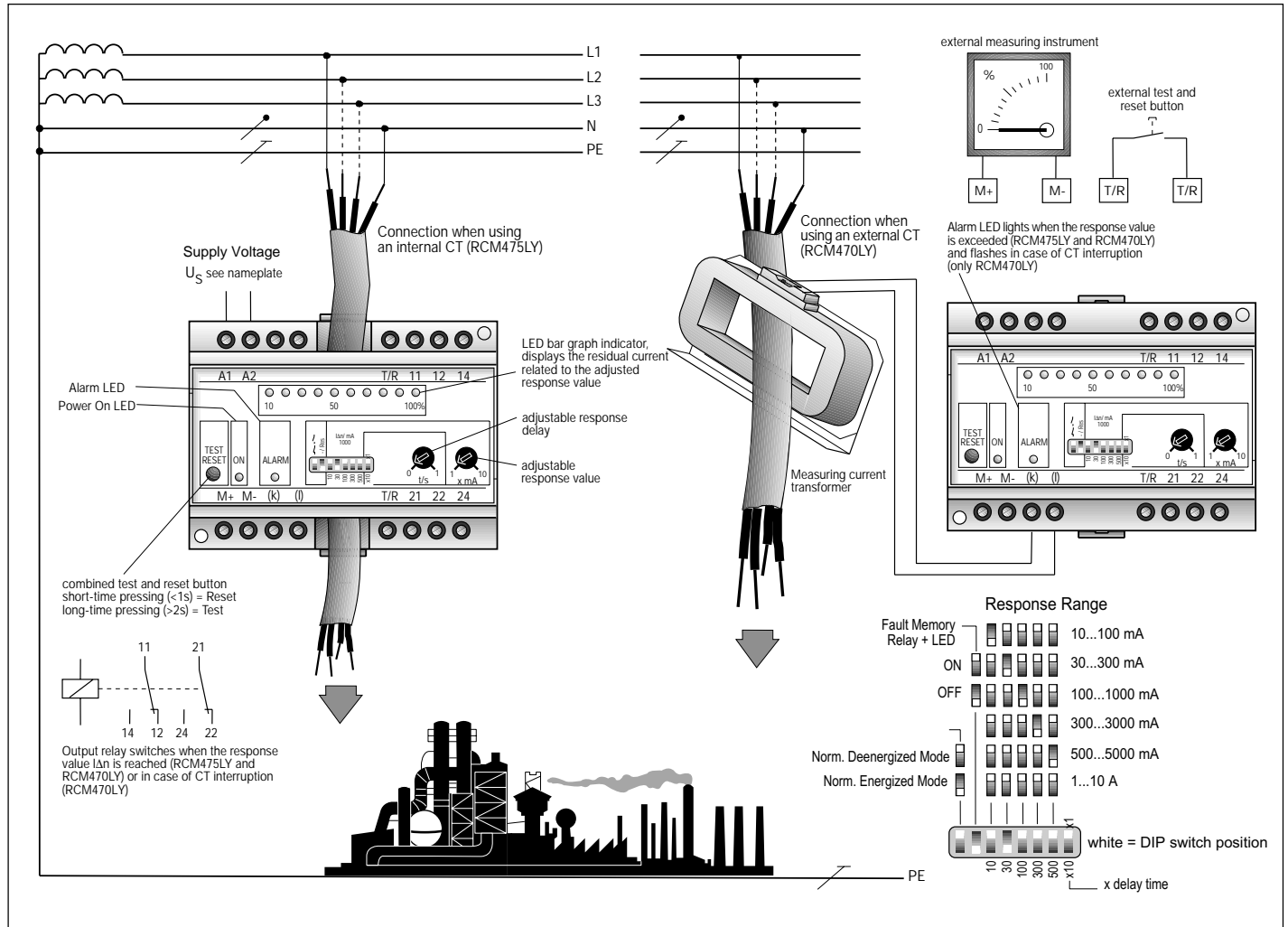
- Split-core & rectangular current transformers are also available

## External Meters

Model	Scale	Art. No.
7204-4241 (72 x 72mm)	0 - 100%	986805
9604-4241 (96 x 96mm)	0 - 100%	986807

- (1) Not a factor since there is no connection to system conductors; however, circuit conductors enclosed by CT should be insulated
- (2) Not a factor since the monitor is looking at the zero-sequence current which is normally zero. Current transformers should be selected based on ID (internal diameter) size needed.
- (3) The relative response error applies to sinusoidal residual currents. For other waveforms the relative response error is in accordance with IEC1008.

## Wiring Diagram



A1-A2 supply voltage. Please check for correct supply voltage

### Factory Setting:

Response range: 6mA...60mA (-7 version) / 30 ... 300 mA  
 Response value: 6mA (-7 version) / 30 mA  
 Delay time: x1, 0 s  
 Fault memory: no fault memory  
 Relay: Normally De-energized

### Please Note:

N.D. / N.E. mode, with / without fault memory settings may 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.

### DIP-Switch Settings for -7 version (6...600mA)

