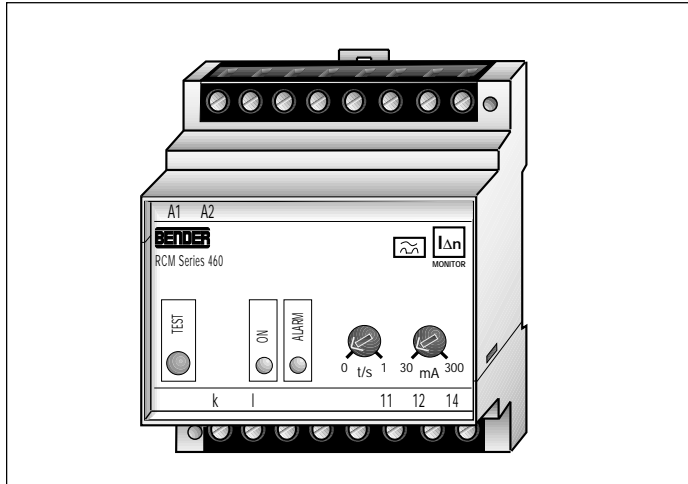
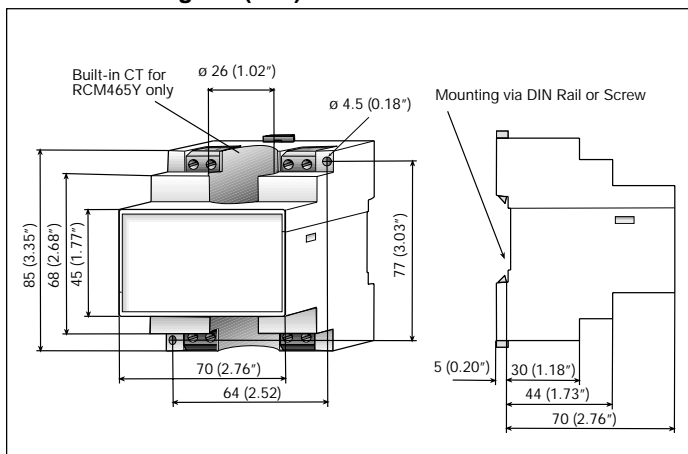




VDE IEC



Dimension Diagram (mm)



- For grounded, high-resistance grounded & ungrounded 1-phase and 3-phase AC systems
- External or internal 26mm current transformer
- Steplessly adjustable alarm set-point 10mA...100mA or 30mA...300mA
- Steplessly adjustable time delay 0..1sec
- Operation and alarm LEDs
- Voltage-free SPDT change-over contact
- CT connection monitoring
- Built-in test button
- No nuisance tripping
- UL and UL-C listed (UL File #: E173157)
- Two-year warranty

Product Description

The ground fault monitors RCM460Y and RCM465Y monitor the insulation level of grounded, high-resistance grounded and ungrounded single and three-phase AC and pulsed DC systems by measuring the ground 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 principle is based on running all the power conductors through the current transformer, regardless of the load balance of the conductors, the vectoral sum of the currents will always be zero under normal operating conditions. When the currents do not vectorially add up to zero, then the missing current is going back to the supply via a ground path. The RCM Series detects this and alarms immediately.

The RCM460Y and RCM465Y have a steplessly adjustable response value $I_{\Delta n}$ from either 10mA...100mA or 30mA...300mA and the delay time can be adjusted between 0 ... 1 sec.

The RCM465Y is equipped with a built-in current transformer with a 26mm ID (approx. 1") where as the RCM460Y are designed for external transformers, like BENDER models W1-S...W5-S. These special UL-listed current transformers have been designed to prevent nuisance tripping.

The devices are suited for installation into standard distribution panels according to DIN 43 871 and for quick assembly onto support DIN Rail #3 EN 50 022 - 35x7.5mm or for screw mounting.

Operational Information

The ground fault current is evaluated by the 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.

When the ground fault current falls below 25% of the alarm set-point value, the ground fault alarm will be automatically reset.

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. The function of the current transformer and measuring circuit as well as the alarm LED and the alarm relay can be checked by pushing the test button.

Technical Data RCM460Y-.. / RCM465Y-..

Insulation

Insulation coordination acc. to IEC60664-1
 Rated impulse withstand voltage/
 contamination level 4 kV/3
 Operation class continuous operation

System Voltage

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

Supply Voltage

Supply voltage U_S see "Ordering Guide"
 Operating range of U_S AC 0.85 ... 1.1 x U_S
 Frequency range at AC 50 ... 60 Hz
 Max. power consumption \approx 0.35 VA

Alarm Response Value

Alarm set-point value $I_{\Delta n1}$
 - Option #1 10...100mA
 - Option #2 30...300mA
 Relative response error 0 ... -20% (3)
 Response time \leq 0.02 s
 Delay time t (adjustable) 0 ... 1 s
 Hysteresis \approx 25% of the response value

Measuring Circuit

Current transformer, internal RCM465Y-..
 Current transformer, external RCM460Y-..
 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)

Alarm Relay

Type 1 voltage-free SPDT contact
 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 Normally De-energized
 (may be special ordered for Normally Energized)

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 IEC418(C6)38 class I
 Bumping acc. to IEC 68-2-29 40g / 6msec
 Vibration strength acc. to IEC 68-2-6 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 (RCM465Y only) 26 mm
 Type of connection screw terminals
 Wire size
 solid 14 AWG
 fine braid 16 AWG
 Rapid mounting DIN #3 Rail EN 50 022 - 35/7.5mm
 Screw mounting 76.8 x 63.7 mm
 Weight approx. 0.5 lb

- 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 transformer should be selected based on ID size needed.
- 3) The relative response error applies to sinusoidal residual currents. For other waveforms the relative response error is in accordance with IEC1008.

Please Note

Please check for correct supply voltage.

The equipment grounding conductor should not be passed through the measuring current transformer except for special cases.

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 (mA)	Article Number
RCM460Y-13	AC 120V	30...300mA	94012031
RCM465Y-13	AC 120V	30...300mA	94012033
RCM460Y-7113	AC 120V	10...100mA	94012046
RCM465Y-7113	AC 120V	10...100mA	94012045
RCM460Y	AC 230V	30...300mA	94012022
RCM465Y	AC 230V	30...300mA	94012023
RCM460Y-71	AC 230V	10...100mA	94012044

Other supply voltages and setpoint ranges may be available on request.

External Current Transformers

Model	Internal Diameter	Article No.
W1-S35	35mm (1-3/8")	911731
W2-S70	70mm (2-3/4")	911732
W3-S105	105mm (4-1/8")	911733
W4-S140	140mm (5-1/2")	911734
W5-S210	210mm (8-1/4")	911735

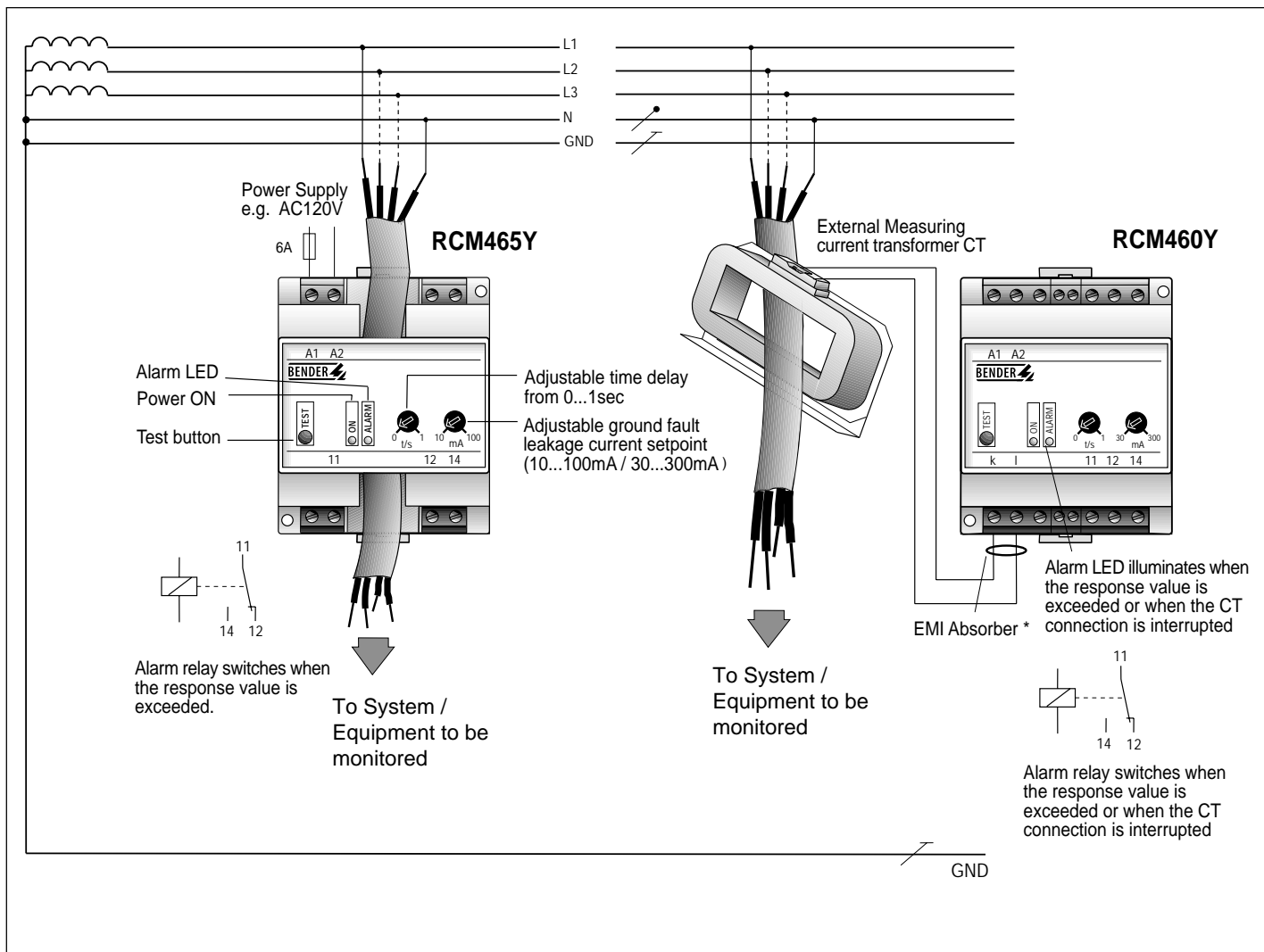
Rectangular Current Transformers

Model	Internal Diameter	Article No.
WR70x175S	70x175mm	911738
WR115x305S	115x305mm	911739
WR150x350S	150x350mm	911740

Split-Core Current Transformers

Model	Internal Diameter	Article No.
WS50x80S	50x80mm	911741
WS80x80S	80x80mm	911742
WS80x120S	80x120mm	911743

Wiring Diagram



Factory Setting:

Response value: 30mA / 10mA
Response delay: 0 sec.

Terminals without markings are not connected.

Instructions for installation of RCM460 and RCM460Y:

The CT terminal connections 'k' and 'l' must be led through the EMI absorber which is included in delivery.

The absorber must be fixed by means of the enclosed cable ties directly in front of the CT connections 'k' and 'l'.