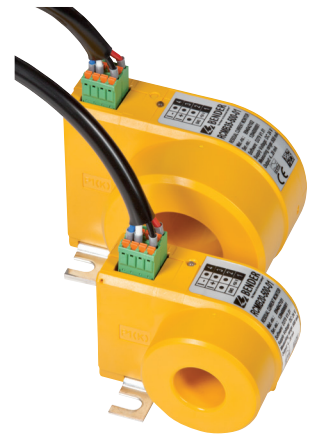


This document is intended as a reference guide for installing and using BENDER RCMB20-500 and RCMB35-500 series ground fault monitoring modules. This document includes installation, setup, and usage instructions. For complete details, including installation, setup, settings, and troubleshooting, refer to the RCMB20/RCMB35-500 user manual, document number TBP404015deen. This document is intended as a supplement and not a replacement to the complete user manual.

Only qualified maintenance personnel shall operate or service this equipment. These instructions should not be viewed as sufficient for those who are not otherwise qualified to operate or service this equipment. This document is intended to provide accurate information only. No responsibility is assumed by BENDER for any consequences arising from use of this document.



### Description and Installation

#### Description

RCMB20-500-01 and RCMB35-500-01 ground fault monitoring modules monitoring for AC and/or DC (0-500 Hz) fault currents. All measuring circuitry is built into the measuring current transformer. A 4-20 mA analog output is available, proportional to the RMS value of the measured fault current (0 - 500 mA). These modules are designed for integration into systems and equipment, such as frequency converters, inverters, and combiner boxes.

#### Mounting

RCMB20-500 and RCMB35-500 series modules are designed to be screw mounted. The intent is to integrate these modules into other equipment (such as frequency converters and inverters) or panels such as combiner boxes in PV systems. When integrating into a frequency converter, the module must be installed and connected on the line (input) side. When installed into a panel such as a combiner box, the device should be mounted and installed at the main input before branching occurs. Use the enclosed mounting feet for screw mounting.

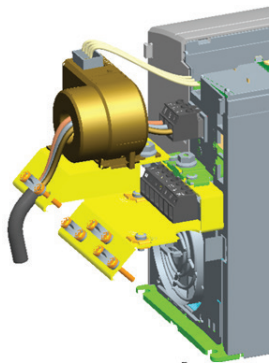


Figure 1 - Example integration of RCMB20/35 module into a frequency converter

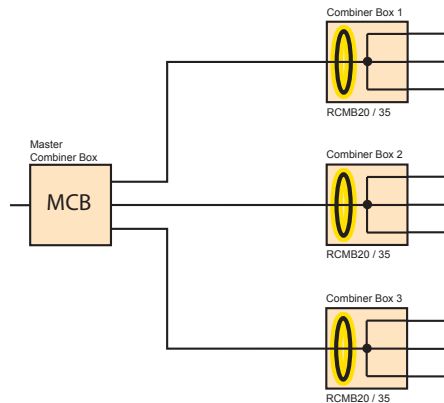


Figure 2 - Example diagram of integrating RCMB20/35 modules into combiner boxes in PV systems

### Dimensions

Dimensions given in inches (mm)

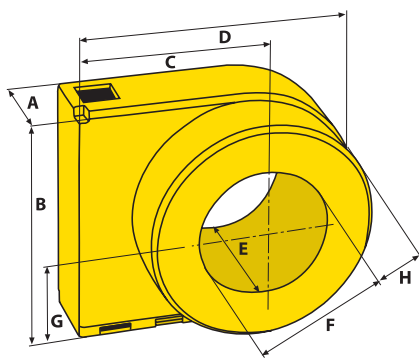


Figure 3 - Main enclosure dimensions

Dimensions (Figure 3)								
Type	A	B	C	D	E	F	G	H
RCMB20	1.18" (30)	2.22" (56.3)	1.97" (50)	3" (76.4)	1.91" (48.5)	∅ 0.79" (∅ 20)	1.17" (29.8)	0.65" (16.4)
RCMB35	1.18" (30)	3.12" (79.2)	2.44" (62)	3.92" (99.5)	2.17" (55)	∅ 1.38" (∅ 35)	1.64" (41.7)	0.79" (20)

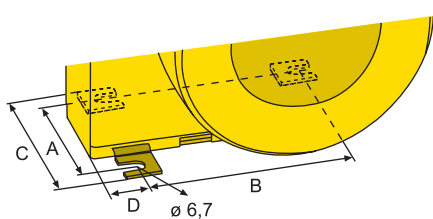


Figure 4 - Dimensions, screw mounting with mounting brackets (diagonal)

Dimensions (Figure 4)				
Type	A	B	C	D
RCMB20	1.85" (47)	1.14" (29)	2.48" (63)	0.8" (20.35)
RCMB35	1.85" (47)	1.91" (48.5)	2.48" (63)	0.51" (12.85)

### Wiring

#### Wiring - Control Cable Connection

RCMB20-500 and RCMB35-500 modules utilize push-wire style connector terminals for wiring. Use the supplied color-coded, insulated wiring for connections. When wiring the connectors, use the connector legend (Table 1) below. Opening force for push wire terminals is 11 lb (50 N).

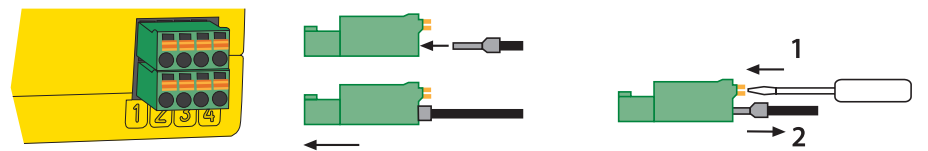


Figure 5 - Terminal positions and conductor connection / disconnection means

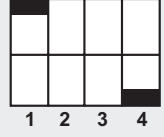
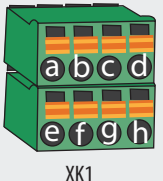
Socket coding	Pluggable push-wire terminal	Terminal	Color	Connection
	 XK1	a	black	GND ( $U_2$ )
		b	-	-
		c	white	DC 4...20 mA
		d	blue	GND (DC 4...20 mA)
		e	red	+24 V ( $U_2$ )
		f	-	-
		g	-	-
		h	-	-

Table 1 - Connection legend for push-wire connectors

#### Wiring - Primary Conductors

Refer to figure 6 below for wiring diagram. All system conductors must be passed through the internal opening of the RCMB20 / RCMB35. **Ensure that a minimum distance of 1" (25 mm) exists between the primary system conductors and the control cabling wiring.** Refer to Table 2 for maximum conductor sizes that will fit through the opening of the device. **These numbers do not include any additional insulation and must be taken into account when calculating sizing.**

**⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Disconnect all power before servicing.
- Observe all local, state, and national codes, standards, and regulations.

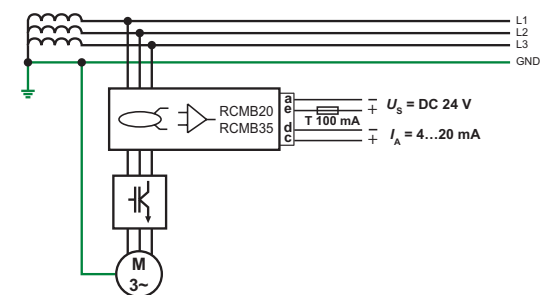


Figure 6 - Sample wiring diagram

Maximum Primary Conductor Sizes			
Type	Four-wire system	Three-wire system	Two-wire system
RCMB20	AWG 10 (6 mm <sup>2</sup> )	AWG 8 (10 mm <sup>2</sup> )	AWG 6 (16 mm <sup>2</sup> )
RCMB35	AWG 2 (35 mm <sup>2</sup> )	AWG 1 (50 mm <sup>2</sup> )	AWG 2/0 (70 mm <sup>2</sup> )

Table 2 - Maximum permissible primary conductor sizes.

### Use

#### Analog output

RCMB20-500 and RCMB35-500 modules utilize a 4-20 mA analog output, proportional to the measured RMS fault current value. The formula for calculating the fault current is shown below:

$$I_{\Delta n} = 31.25 \times (I_{out} - 4)$$

$I_{\Delta n}$  Measured fault current (mA)  
 $I_{out}$  Analog output (mA)

#### LED indication

A multicolor LED is present on the device indicating the operating status. The LED flashes green continuously during normal operation. If the LED flashes red, a device error has occurred. Example device errors include connection, module, or current transformer faults. In the fault condition, the analog output will go to 20 mA.

### Technical Data

Refer to RCMB20-500 / RCMB35-500 series user manual (document TBP404015deen) or RCMB20-500 / RCMB35-500 datasheet (document NAE1042510) for detailed technical information.