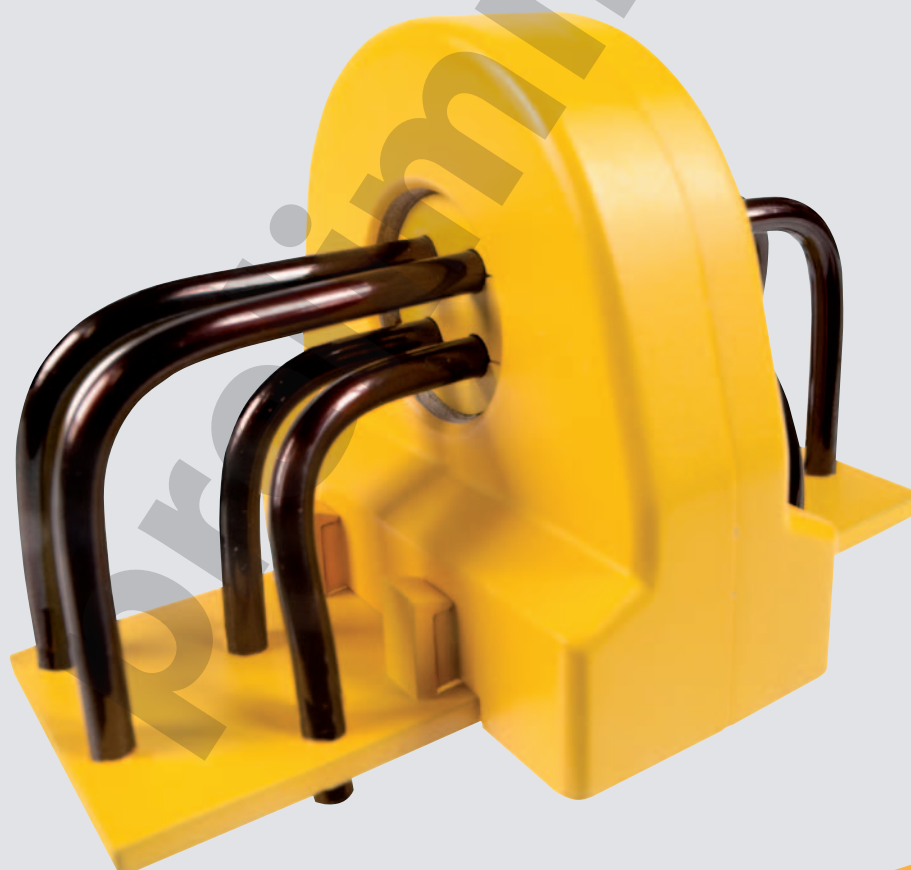


RCMB120 Series

AC/DC Ground Fault Current Module

For Electric Vehicles (EV) and Electric Vehicle Chargers (EVSE)

Preliminary datasheet



RCMB120 Series

AC/DC Ground Fault Current Module for Electric Vehicles (EV) and Electric Vehicle Chargers (EVSE)



RCMB120-41

Features

- Ground fault detection for electric vehicles and electric vehicle chargers
- Detects both AC and DC faults
- 6 mA alarm setpoint (AC/DC)
- Prewired versions (2-conductor 4-conductor)
- Version with through-hole only for user configurable wiring
- Fully shielded core immune to load current fluctuations
- Connection monitoring
- Test winding
- Compact design, easily integratable
- Open collector output
- Optional switched or analog output

Approvals

UL pending approval

Description

RCMB120 series ground fault current modules are designed for seamless integration into the electrical safety circuits of electric vehicles (EV) and electric vehicle charging stations (EVSE). The RCMB120 detects both AC and DC ground faults, and will provide a trigger signal once the setpoint of 6 mA has been reached. The RCMB120's AC and DC capability renders it unaffected by the problems associated with conventional class A detection circuits and small DC currents.

The RCMB120 has a fully shielded core and is highly resistant to EMI and load current fluctuations. It operates over a wide temperature range.

Models RCMB120-21 and RCMB120-41 are pre-wired with conductors through the opening to provide simple wiring. Model RCMB120-1 provides the opening only for user configurable wiring.

Applications

- Electric vehicles
- Electric vehicle charging stations

Function

The ground fault current measurement is conducted via a toroidal current sensor. A measurement of 6 mA or greater will trigger the open collector output X1. A functional test on the RCMB120 may be carried out by applying a test signal on terminals T1/T2. X1 will also trigger in case of a system fault or connection test failure.

Ordering Information

Part No.	Qty. Prewired Conductors	Ordering No.
RCMB120-1	None (user configurable wiring)	B 9404 2103
RCMB120-21	2 conductors	B 9404 2104
RCMB120-41	4 conductors	B 9404 2105

Technical Data

Insulation coordination

Rated insulation voltage	AC 300 V
Overvoltage category	3
Pollution degree	2
Related standards	EN50178, IEC 60664-1, IEC 61010

Supply voltage

Supply voltage U_s	DC 5 V
Voltage tolerance U_s	+/- 5 %
Ripple tolerance U_s	< 40 mV
Current draw	≤ 50 mA
Power consumption	≤ 250 mW

Nominal (system) ratings when using pre-wired versions

Nominal voltage U_n	3 N AC 400 V
Nominal frequency	50 Hz / 60 Hz
Nominal load current	max. 32 A

Current transformer

Frequency range $f(I_{\Delta n})$	DC
Alarm setpoint DC $I_{\Delta n}$	6 mA
Percent error DC	0... - 25 %

Output

Contact output X1 (Open collector)

low:	No alarm
high:	Alarm active
Max. contact current X1	DC 50 mA
Max. contact voltage X1	DC 24 V

Optional, available on request

Contact output X2 (Open collector)

low:	No alarm
high:	Alarm active
Max. contact current X2	DC 50 mA
Max. contact voltage X2	DC 24 V

Response values

Response time (X1) $I_{\Delta n1}$ (6 mA)	≤ 20 ms
Startup time after voltage return	< 500 ms

Test circuit (T1/T2)

Test circuit, quantity of windings	20
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Environmental / EM

Temperature range during operation	- 13 °F... + 185 °F (- 25 °C... + 85 °C)
Temperature range, storage	- 40 °F... + 185 °F (- 40 °C... + 85 °C)
Temperature range, transport	- 40 °F... + 185 °F (- 40 °C... + 85 °C)
Mech. classification, stationary use	3M4
Mech. classification, storage	3M4
Mech. classification, transport	3M4

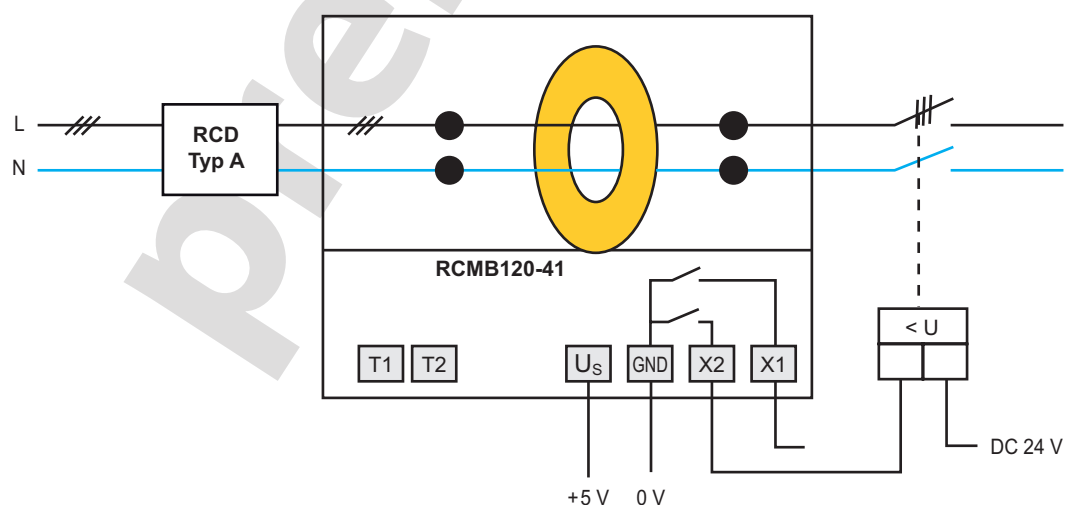
Physical data, housing

Connection pins	0.7 mm x 0.7 mm
Dimensions	See drawing "Dimensions"

Physical data, wiring when using pre-wired versions

Wire size	2.8 mm
Wire gauge	AWG 10 (6 mm ²)

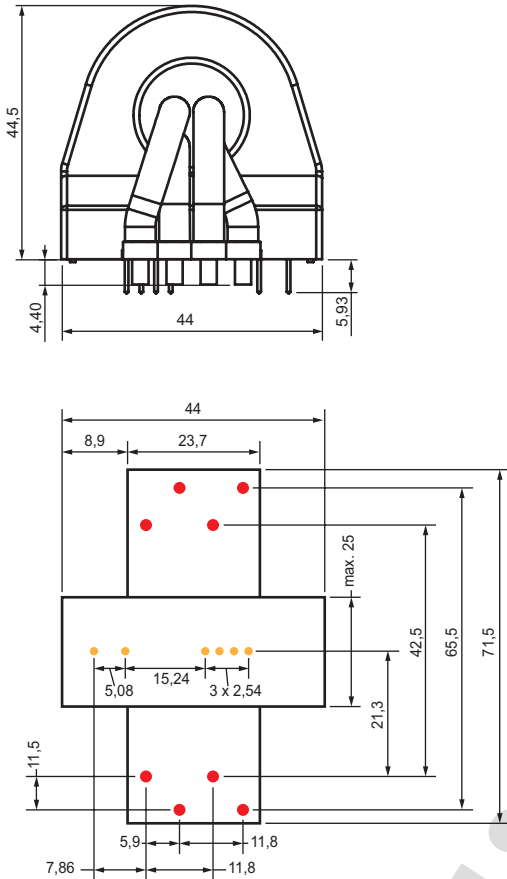
Sample wiring diagram: RCMB120-41



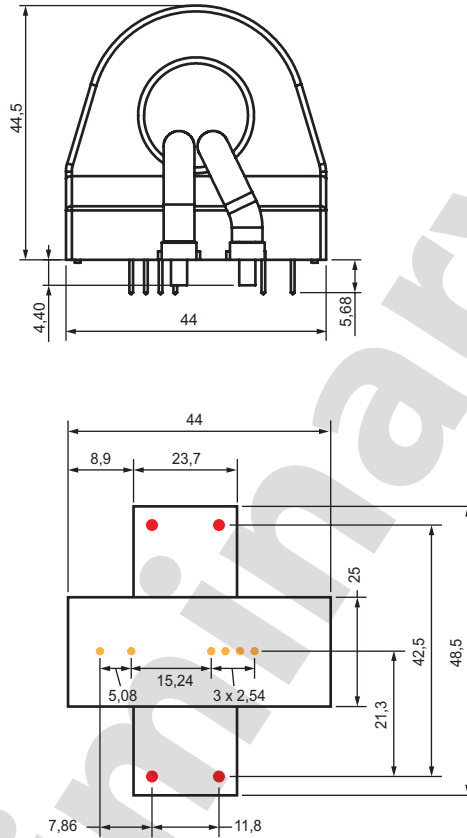
Dimensions

Dimensions in mm

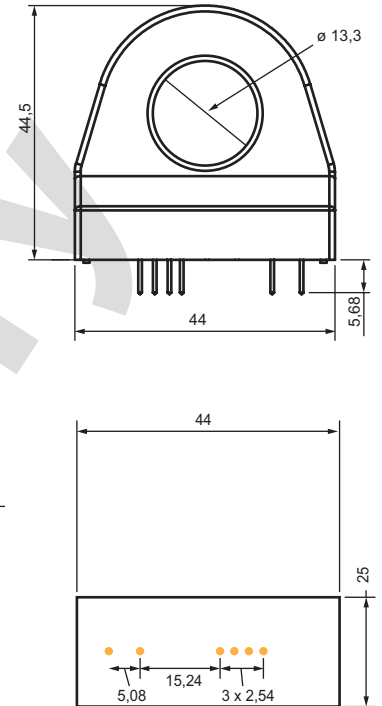
RCMB120-41



RCMB120-21



RCMB120-1



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