

Current Sensor

RCM01-02 Series

AC/DC Residual Current Monitor • Mode 2



REACH



Description

The RCM01-02 detects ac and dc residual currents in 50 Hz / 60 Hz AC installations. It is primarily designed for Mode 2 Electric Vehicle In-Cable Control and Protection Devices (IC-CPDs), disconnecting power in the event of a residual current fault.

It also supports dc, single-phase, and multiphase installations. Compact and PCB-mountable, the RCM01-02 complies fully with IEC 62752.

Features & Benefits

FEATURES	BENEFITS
External Test Facility	Ability to verify to correct operation of the device
"Fault" Signal Output	Offloads fault detection from the main control system, simplifying and reducing development time
9 mm ID Aperture	Flexibility to support single or multiphase supply cables

Applications

- Mode 2 EV Charging Stations

Ordering Information

CATALOG #	DESCRIPTION
90103	AC/DC residual current monitor

Current Sensor

RCM01-02 Series

Specifications

Relevant Product Standard	IEC 62752
Rated Residual Operating Current (IΔn)	6 mA dc / 30 mA ac
Rated Non-operating Residual Current (IΔno)	3 mA dc / 15 mA ac
Response Time to residual current fault (time between appearance of fault to output going high)	According to IEC 62955
DC Supply Voltage (V_{cc}):	12 V dc \pm 10%
Power Consumption	60 mW maximum
Rated Load Current - Amps (The RCM modules can accommodate single phase loads up to 63 A or three phase loads up to 32 A)	Single-phase: 63 A; Three-phase: 32 A
Test Function (Externally applied 12 V DC) - Test Current Limit	0.8 mA dc maximum
Fault Signal Output	Active high open drain
Drain Current	100 mA maximum
Pull up Voltage	+12 V dc maximum
Environmental Operating Conditions Absolute Temperature	-40 °C to +85 °C
Weight	22 g
Surge Current Withstand	3000 A

Environmental Conditions

PARAMETER	MIN.	TYP.	MAX.	UNIT
Operating temperature	-40	-	85	°C
Storage temperature	-40	-	85	°C
Altitude	-	-	3000	m

Electrical Specifications

PARAMETER	MIN.	TYP.	MAX.	UNIT
Supply voltage	10.8	12	13.2	V
Supply current with no fault current ¹	-	-	2	mA
Supply current, peak >200 mA DC fault current ¹	-	-	14.5	mA
DC trip threshold	3	-	6	mA dc
AC trip threshold	16	-	28	mA ac
Fault out drain current	-	-	100	mA
Fault out pull up voltage	-	-	24	V
Test input current @12 V	-	0.8	-	mA
Rated load current, 1 phase / 3 phase	-	-	63/32	A

¹Fall Out not connected. External pull up current not included.

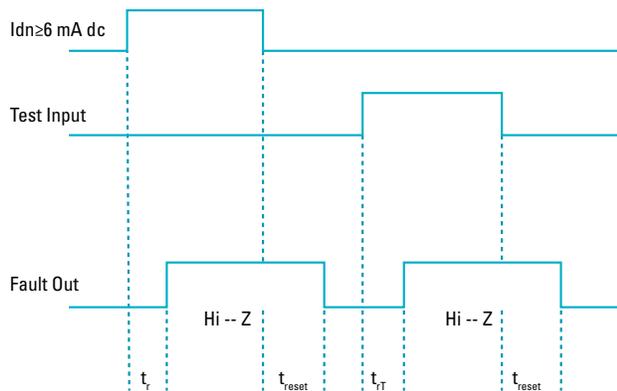
Current Sensor

RCM01-02 Series

Timing Specifications

PARAMETER	MIN.	TYP.	MAX.	UNIT
Fault out response time @ 6 mA dc $t_{r(6mA)}$	-	-	3000	ms
Fault out reset time ² t_{reset}	-	-	800	ms
Fault out response time with test t_{rT}	-	-	3000	ms
Fault out reset time with test ² t_{resetT}	-	-	400	ms
Maximum switching time of external switching device including processing time	-	-	20	ms

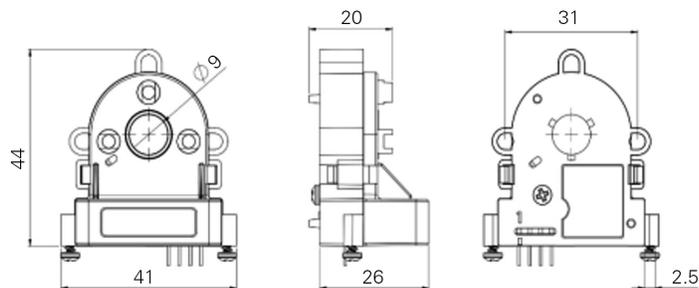
²Time taken for Fault out to return from Hi-Z state after fault removed.



Other

PARAMETER	MIN.	TYP.	MAX.	UNIT
Overvoltage category		III		-
ESD human body model		TBD		kV
IP rating		IP20		-

Dimensional Drawings (Millimeters)



Handling Instructions

Care should be taken to ensure the correct connection of the RCM01-02. Miswiring the product may cause permanent damage.

Current Sensor

RCM01-02 Series

Wiring Diagrams

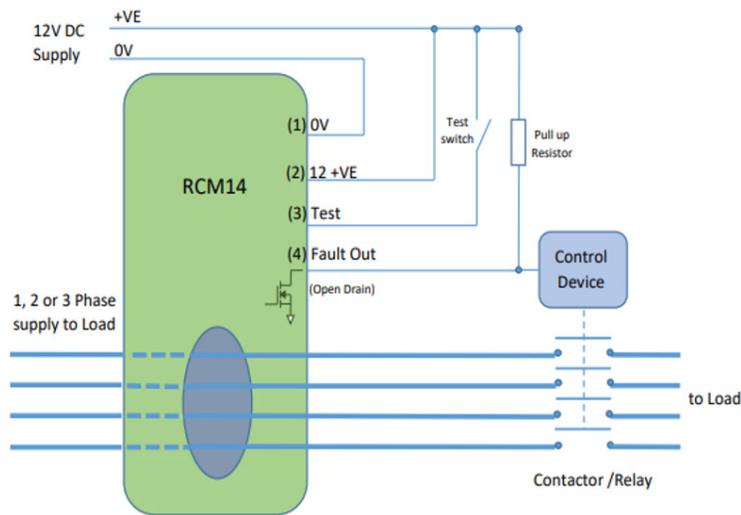


Figure 1. RCM14 Product Connections

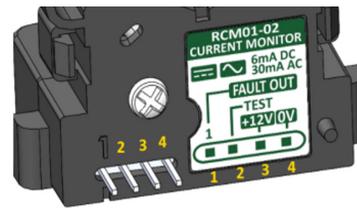


Figure 2. RCM01 Product Connector Pinout

2.5mm pitch connector for PCB mounting - horizontal or vertical mounting options available. Pin numbers are displayed on the RCM next to the connector (see **Figure 2**).

PIN NO.	NAME	DESCRIPTION
4	0 V dc	Ground
3	+12 V dc	Power Supply Input: Requires 12 V dc for proper operation. performance may be affected if the supply voltage falls outside this range.
2	External Test	Test Function: This pin activates the device's test function when 12 V dc is applied. If the test is successful, Pin 1 (Fault Out) goes HIGH. Once 12 V is removed, Fault Out returns LOW. The pin should remain disconnected when not in use. The test input can be triggered manually or remotely, e.g., via microprocessor command. The switch shown in Figure 1 is illustrative only.
1	Fault Signal Output	Open-drain output requiring an external pull-up resistor to the desired signal level (e.g., 12 V). *LOW State (low impedance): Indicates no fault and test function inactive. *HIGH State (high impedance): Triggered when residual fault current exceeds 6 mA or test function is active. To prevent contactor or relay chatter, direct control is not recommended. It is recommended that the control system latches the signal in hardware or software to ensure reliable fault handling.

Current Sensor

RCM01-02 Series

Standards Conformity & Certifications

Product Safety Certifications

Products tested, compliant and certified to the following standards that states the requirements for electrical products to ensure they are safe for consumers to use.

CERTIFICATION BODY MARK	CERTIFICATION BODY NAME	CERTIFICATION DESCRIPTION	STANDARDS COVERED BY THE CERTIFICATION
	IEC	Conformity with the European safety, health, and environmental protection requirements for ac and dc fault current detection requirements of IEC 62752 In-Cable Control and Protection Device for mode 2 charging of electric road vehicles (IC_CPD).	IEC 62752

Environmental Compliance

Products comply to the following environmental standard requirements for electrical products to ensure they are safe for consumers to use.

	STANDARD NAME	STANDARD DESCRIPTION	STANDARD NUMBER
	RoHS	Conformity with the European Restriction of Hazardous Substances in electrical and electronic products.	European Union RoHS 2 Directive 2011/65/EU
	REACH	Conformity with the Registration, Evaluation, Authorization and Restriction of Chemicals regulation to ensure safe use of chemicals.	European Directive 1907/2006

Intended Use

No special start-up procedures or calibration is required for the RCM01-02. Once powered, the system is ready to detect residual faults to IEC 62752.

Related Products

RCM14-01: 6 mA DC Detection to IEC 62955, 14 mm CT Aperture

RCM14-03: 6 mA DC / 30 mA AC Detection to IEC 62955, 14 mm Aperture

RCM14-04: 56 mA DC / 20 mA ac Detection to UL 2231, 14 mm CT Aperture

RCM20-03: 6 mA DC / 30 mA AC Detection to IEC 62955, 19 mm CT Aperture

Disclaimer Notice – Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/product-disclaimer.