Current Sensor
RCM14-04

Ac/Dc Residual Current Monitor, Level 1 & 2

Description

The RCM14-04 is a compact residual current monitor designed to detect ac and dc residual currents in 60 Hz ac installations.

It is primarily intended for use in CCID20-compliant Electric Vehicle charging stations, where it disconnects power to the EV in the event of an ac and/or dc residual current fault.

The device supports detection in dc, single-phase, and multiphase systems. It features a panel-mountable design and a JST connector for easy integration.

Fully compliant with the detection requirements of UL 2231-2.

Features & Benefits

FEATURES	BENEFITS
JST XH 2.5 mm Pitch Connector JST:B4B-XH-A (LF)(SN)	Provides easy installation
LED Indication for "On" and "Fault"	At-a-glance function and fault indication
Large 14 mm ID aperature	Flexibility to support single or 3-phase supply cables

Applications

- Level 1 & 2 EV Charging Stations

Ordering Information

CATALOG #	DESCRIPTION
90148	AC/DC residual current monitor

Revised: 11/12/2025

Specifications

Relevant Product Standard	UL 2231-2 (CCID20)
Rated Residual Operating Current - (IΔn)	56 mA dc / 20 mA ac
Rated Non-operating Residual Current - (IΔno)	15 mA ac
Response Time to residual current fault (time between appearance of fault to output going high)	According to UL2231-2
Dc Supply Voltage (Vcc): **Supply current (no fault present)** **Supply current (fault current >264 mA)**	12 V dc ± 10% 3.5 mA Maximum 40 mA Maximum
Rated Load Current (single or 3 phase)	125 A maximum (the absolute maximum temperature of the conductors through the CT must not exceed 105 °C)
Test Function (Externally applied 12 V dc) - Test Current Limit	3 mA dc
Fault Signal Output **Drain Current** **Pull up Voltage**	Active High Open Drain 100mA maximum 24V dc maximum
Environmental Operating Conditions Absolute Temperature	-40 °C to +85 °C
Weight	45 g
Recommended screw type	M3 x 6 (2 pcs.)
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

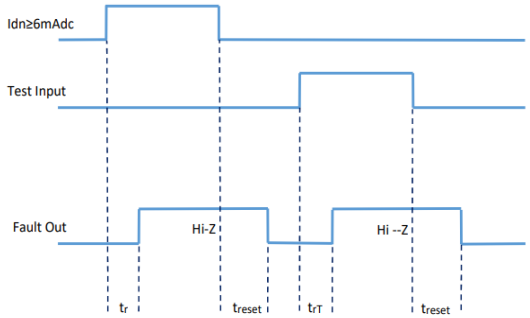
Electrical Specifications

PARAMETER	MIN.	TYP.	MAX.	UNIT
Supply voltage	10.8	12	13.2	V dc
Supply current, no fault current[1]	-	-	4	mA dc
Dc trip level	-	23	56	mA dc
Ac trip level	25	-	20	mA dc
Fault Out drain current	-	-	100	mA
Fault Out pull up voltage	-	-	24	V dc
Test input current @12 V	-	3	-	mA
Rated load current, single / 3 phase[2]	-	-	125	A

1. Fault Out external pull up current not included .
2. At rated current, the absolute maximum temperature of the conductors through the CT must not exceed 105 °C.

Timing Specification

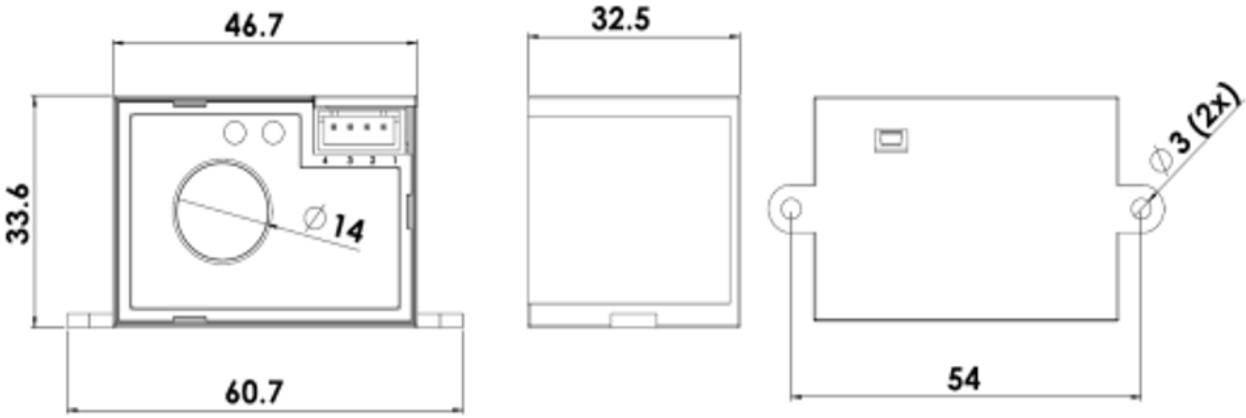
PARAMETER	MIN.	TYP.	MAX.	UNIT
Fault Out response time @ 56 mA dc, $t_{r(56mA)}$	-	-	800	ms
Fault Out response time @ 20 mA dc, $t_{r(20mA)}$	-	112	-	ms
Fault Out response time @ ≥264 mA dc, $t_{r(\geq 264mA)}$	-	7	-	ms
Max switching time of external switching device incl. processing time	-	-	20	ms



Other

PARAMETER	MIN	TYP.	MAX	UNIT
Overvoltage category		III		-
ESD Human body model		TBD		kV

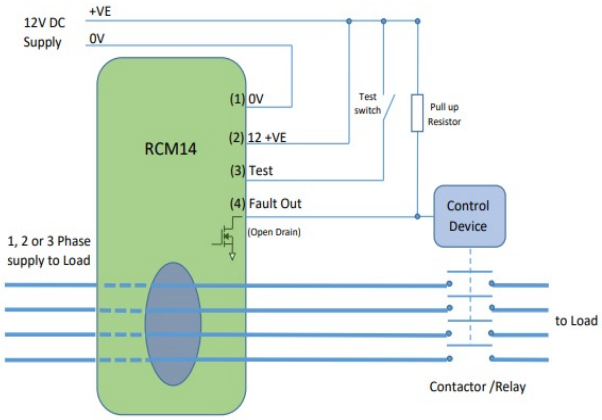
Product Dimensions (Millimeters)



Handling Instructions

Care should be taken to ensure the correct connection of the RCM14-04. Miswiring the product may cause permanent damage.

Wiring Diagram



PIN NO.	NAME	DESCRIPTION
1	0 V dc	Ground
2	+12 V dc	Power Supply Input: Requires 12 V dc for proper operation. The 'ON' LED will illuminate green when voltage is present. Performance may be affected if the supply voltage falls outside this range.
3	External Test	**Test Function:** To verify correct device positioning, apply +VE (e.g., 12 V dc) to the test input. When activated, Pin 4 (Fault Out) goes HIGH if the test passes. Once +VE is removed, Fault Out returns to LOW. The test input should remain disconnected when not in use. Activation can be done via a test switch or a control device.
4	Fault Signal Output (Active High Open Drain)	Open-drain output requiring an external pull-up resistor to the desired signal level (e.g., +VE). ***LOW State (low impedance):** Indicates no fault and test function inactive. 'FAULT' LED is off. ***HIGH State (high impedance):** Triggered when residual fault current exceeds the trip level or the test function is active. 'FAULT' LED lights red. *The pin resets to LOW once the fault is cleared and test is inactive, turning off the LED. *To prevent contactor/relay chatter, do not connect this pin directly to such devices. *Use hardware or software latching in the control system to capture fault signals reliably.

Note:
RCM14 product connector:JST XH 2.5mm Pitch Connector: B4B-XH-A (LF)(SN)
Recommended Mating connector: The mating connector is assembled from a housing and 4 x crimps with suitable wires.
Recommended Mating connector housing: JST XHP-4
Recommended Crimps: JST SXH-001T-P0.6
Pre-crimped wires are also available from JST for ease of assembly.

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
c ЯUs No. UL-CA-2202976-0	cЯUus	Approved by UL 2231 to provide ac and dc fault current detection, following the requirements of CCID20 for use in EV Charging Stations.	**UL 2231** American Standard of Safety for Electric Vehicle Circuits

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

Intended Use

The RCM14-04 is designed to be integrated with the appropriate switching device, e.g. relay or contactor, and will provide the 56 mA dc and 20 mA dc detection requirements defined by UL 2231 for use in a 60 Hz electric vehicle charging station.

No special start-up procedures or calibration is required for the RCM14-04. Once powered the system is ready to detect residual faults to UL 2231.

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 62752, 14 mm CT Aperture
RCM14-04 System	56 mA dc / 20 mA ac detection to UL 2231-2, 14 mm CT Aperture, PCB Mount Sensor Board + CT