

IR1-1-60M

Insulation resistor test module



OVERVIEW

In the field of new energy vehicles, Battery Management Systems (BMS) require insulation resistance detection for battery clusters. This insulation resistor module can adjust resistance values at 50%, 75%, and 100% of the total battery cluster voltage according to predefined ratios (30Ω/V, 80Ω/V, 100Ω/V, 300Ω/V, 500Ω/V, 1kΩ/V, 2kΩ/V) to validate BMS insulation detection functionality.

Maximum Operating Altitude

3000M

Key Features

- Number of Output Channels: 1
- Output Resistance Range: 100Ω–60MΩ
- Output Resistance Accuracy: 1% ±5Ω
- Minimum Adjustable Step: 100Ω
- Module Operating Voltage: 2000VDC
- Communication Protocol: CAN, 1000kbps
- Two-Wire Output with Calibration Capability

Power Supply Voltage Range

9~16V

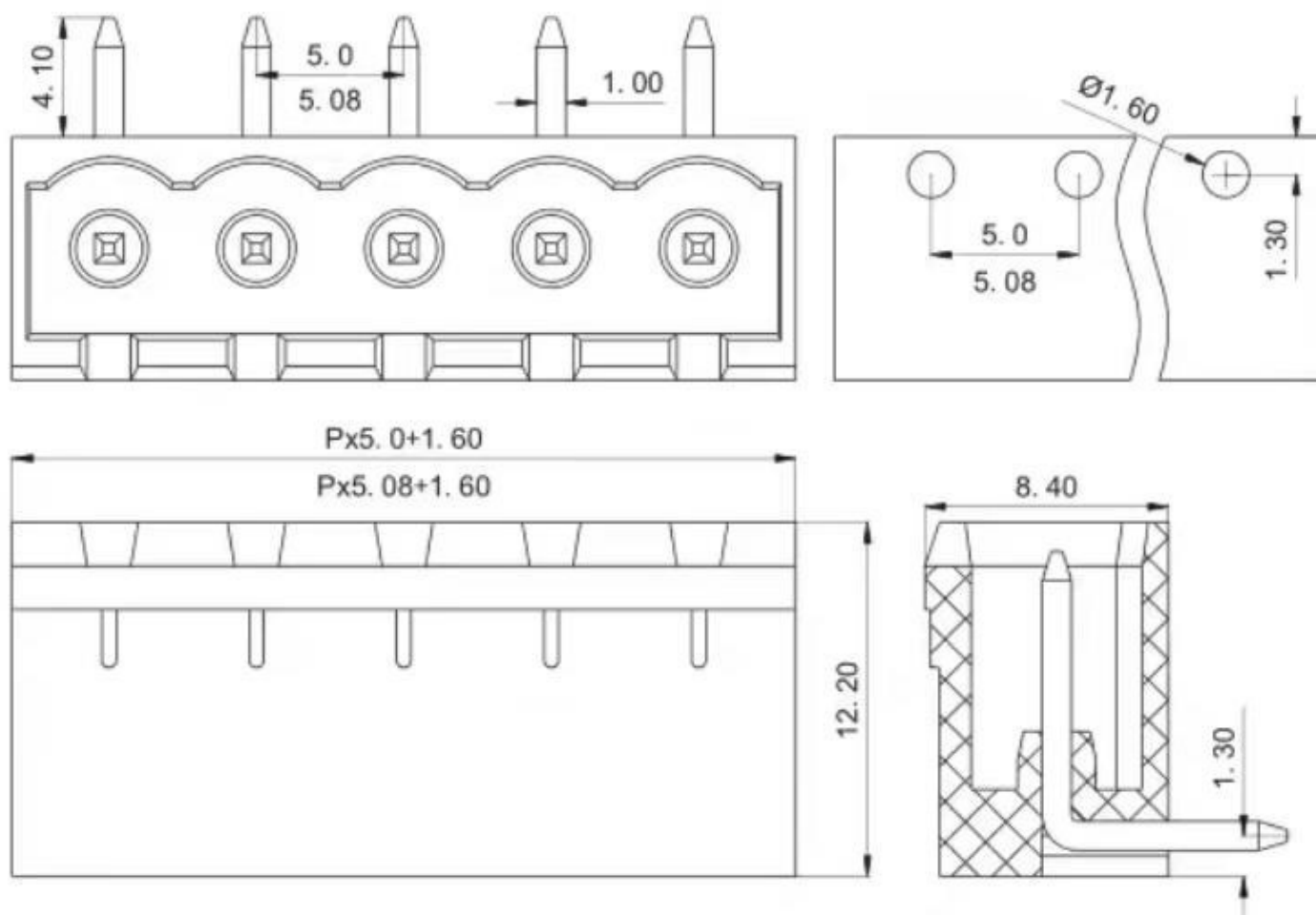
Power Consumption

<6W

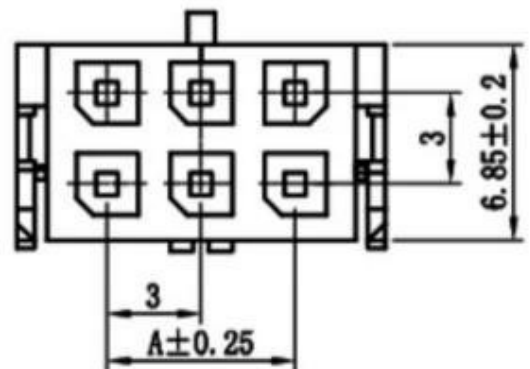
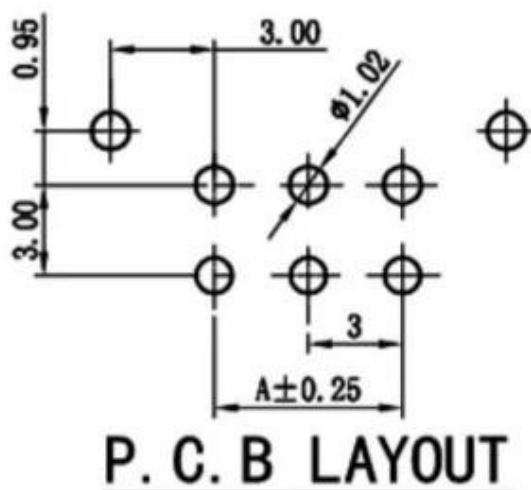
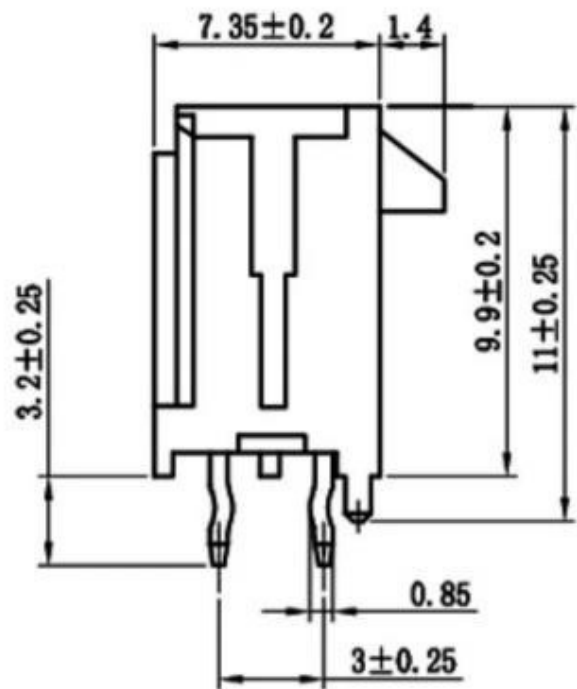
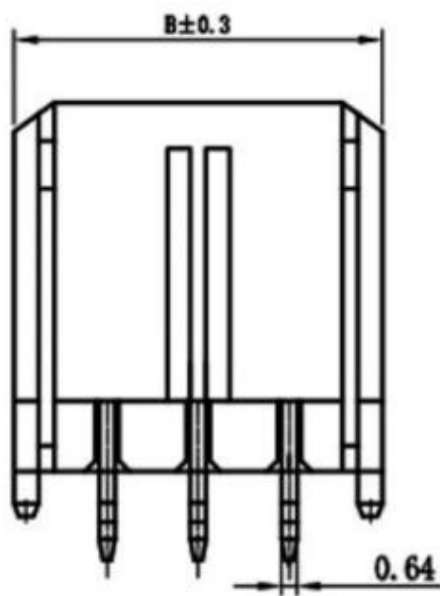
Interface Definitions & Wiring

	Pin	Name	Definition	Remark
Power/Communication Interface	1	SYSGND	12V Power Ground	Baud rate: 1000kbps (configurable), no terminal resistor by default
	2	SYSPWR	12V Power Positive	
	3	CANH	CAN Bus High	
	4	CANL	CAN Bus Low	
Resistor Output Interface	1	Temp+	Resistor Output Positive	
	1	Temp-	Resistor Output Negative	

Connector Specifications (Power/Communication):



Resistor Output Connector Specifications



- PCB Layout Note: Unused pins should be left open.

CAN Communication Protocol

- Standard: CAN 2.0B
- Baud Rate: 1000kbps
- Cable Requirement: Twisted-pair cable.
- Terminal Resistor: 120Ω (not included by default).

Message Name	Byte	Signal Name	bit	Signal Function	Range	Remark
ContrCAN_IS O	0-1	ISOPos_ResK	0-15bit	Positive K Value Setting	0-65535	Range:0-5000K
	2-3	ISOPos_ResK	16-31bit	Negative K Value Setting	0-65535	Range:0-5000K
	4	ISOPos_ResR	32-39bit	Positive R Value Setting	0-255	Range:0-999R
	5	ISOPos_Enable	40-47bit	Positive Enable Setting	0-255	Set to 1
	6	ISONeg_ResR	48-55bit	Negative R Value Setting	0-255	Range:0-999R
	7	ISONeg_Enable	56-63bit	Negative Enable Setting	0-255	Set to 1

Note:

- Positive/Negative-to-ground resistance must exceed 50kΩ.
- Example: If positive-to-ground is set to 1kΩ, negative-to-ground must be >49kΩ.

ENVIRONMENT

Operating Temperature

0°C~45°C

Storage Temperature

0°C~45°C

Operating Humidity

10~90% RH non condensing



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