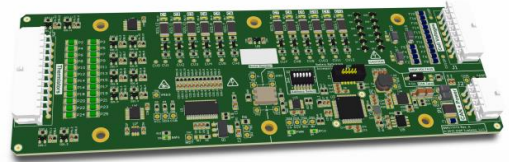


BMS1101S Battery Monitor Datasheet

Features

- 12 Cell Battery Monitor with Passive Balancing
- Switchable 22Ω Shunt Resistor for Each Cell
- 12 Thermistor Input Channels
- 12/24V Nominal Compatible Power Input
- CAN 2.0B Communication Port
- DIP Switch for Setting Stack Address
- DIP Switch to Enable CAN Termination Resistor
- 1000V Isolation Between Accessory and Cell Voltage Domains
- Convenient Narrow Form Factor



Applications

- Electric and Hybrid Electric Vehicles
- Stationary Energy Storage Systems
- Backup Battery Systems

Description

The BMS1101S Battery Monitor is designed to be used within an array of other BMS1101S Monitors and a Master BMS Controller to form a high accuracy Battery Management System. Data and commands are transmitted and received via CAN 2.0B interface which connects these units.

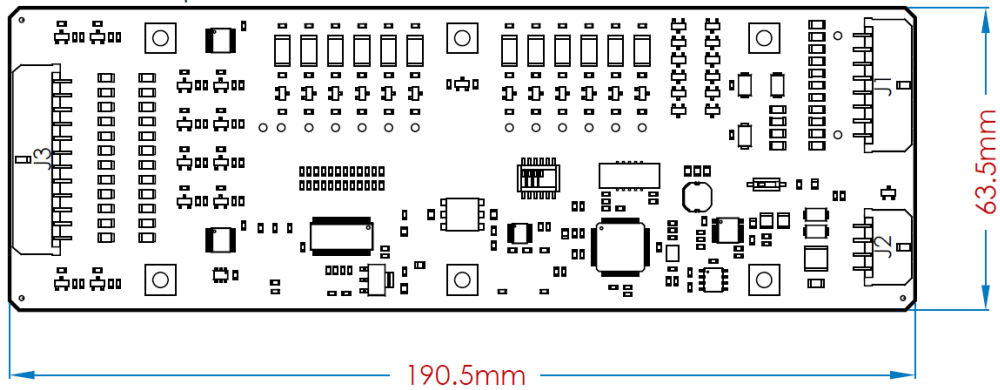
The BMS1101S Battery Monitor measures the voltages of 6 – 12 series connected battery cells, and can apply a 22Ω shunt resistor across each battery cell to bleed off excess charge (passive balancing). The BMS1101S also measures the resistance of up to 12 thermistors to determine cell temperatures.

Specifications

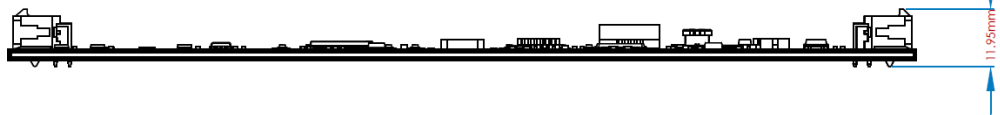
Parameter	Conditions	Min	Typical	Max	Units
Input Power Specifications					
System 12V/24V Input Voltage		7	12 / 24	32	V
System 12V/24V Input Current	Active Mode	10	15	25	mA
Battery Monitoring Specifications					
Cell Voltage		0		4.75	V
12 Cell Stack Voltage		14		57	V
Quiescent Battery Current	Input Power Off		3.6	10	μA
Cell Voltage Measurement Error				1.4	mV
General System Specifications					
Accessory – Battery Domain Isolation Voltage				1000	V
Operating Temperature		-35		80	°C

Mechanical Drawing

View from Top side

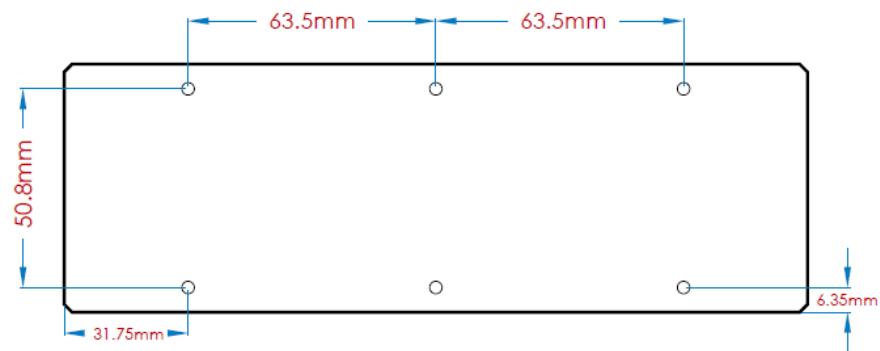


View from Front side

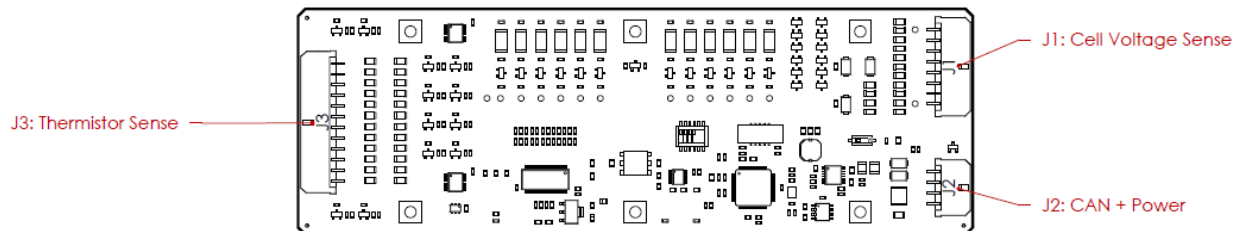


Mounting Holes

Use 6 #4 machine screws to secure board to mounting surface. Standoff height must be greater than 2mm for sufficient bottom side clearance.



Connector Positions



Pin Diagram

Connectivity to the battery cells, thermistors and rest of the battery management system is provided via Molex Microfit 3.0 right-angle board headers. Signals on the Power and Communications Connector (J2) are mirrored for on the top and bottom rows for ease of system wiring.

16 Pin Cell Voltage Sense Connector (J1)

(Mates with Molex 43025-1600)

9 NC	10 C1	11 C3	12 C5	13 C7	14 C9	15 C11	16 C12_PWR
1 C0_PWR	2 C0	3 C2	4 C4	5 C6	6 C8	7 C10	8 C12

8 Pin Power and Communication Connector (J2)

(Mates with Molex 43025-0800)

5 CANH	6 CANL	7 PWR	8 GND
1 CANH	2 CANL	3 PWR	4 GND

24 Pin Thermistor Connector (J3)

(Mates with Molex 43025-2400)

13 T1	14 T2	15 T3	16 T4	17 T5	18 T6	19 T7	20 T8	21 T9	22 T10	23 T11	24 T12
1 TR1	2 TR2	3 TR3	4 TR4	5 TR5	6 TR6	7 TR7	8 TR8	9 TR9	10 TR10	11 TR11	12 TR12

Signal Description

A description of the device pins is listed below:

C0 - C12	Cell Voltage Sense Inputs	Allows Voltage Sensing of Each Cell
NC	No Connect	Leave Pin Disconnected
C12_PWR	Stack Positive Connection	Power Connection to Positive Stack Terminal
C0_PWR	Stack Negative Connection	Power Connection to Negative Stack Terminal
T1 - T12	Thermistor Input	Thermistor Sense Connection
TR1 – TR12	Thermistor Return	Thermistor Ground Return
CANH, CANL	CAN Interface Pins	CAN2.0B Port CANH and CANL Pins
PWR	Accessory Power	12/24V System Power
GND	Accessory Ground	12/24V System Ground

Monitor Addressing

Each BMS Monitor must be given a unique address within each battery pack. This enables the BMS Master Controller to associate where each monitor resides within the battery voltage stack. The monitor connected to the lowest voltage cells in the pack must be given the address 0, and the next monitor up in the stack must be given address 1... etc. up to N-1.

Addresses are set via a DIP switch on the board. Addresses are input in binary format, with the Most Significant Bit on the left and the Least Significant Bit on the right.

For example, to set a monitor board address to 3, the DIP switch should look like:



CAN Termination Resistor

To improve signal integrity, a 120Ω CAN termination resistor must be enabled on the last monitor in the CAN network. The topology of the CAN network does not need to follow the voltage stacking of the pack. To ensure correct operation, only one monitor should have the CAN termination resistor enabled.

The CAN termination resistor is enabled by sliding the 1 position DIP switch towards the left, as shown in the picture below:



Connecting to Less Than 12 Series Cells

The BMS1101S can be used to monitor between 6 and 12 series connected cells. To monitor 6-11 cells, unused cell inputs must be connected to another cell input as shown in the diagrams below.

