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Battery Management System

Slave BMS with Active Balancing - Slave BMS

(BMU) Specification

Active Balance 2A

Zhuhai Xiwang Electronic Co., Ltd

Version Information				
No.	Version	Date	Description	Revised by
1	V1.0	2026/4/10	Initial Release	XMH

Introduction

Thank you for choosing the TOPBMS Battery Management System (hereinafter referred to as BMS).

Please read this manual carefully before installing, commissioning, maintaining or repairing the product. The installation, operation, maintenance and commissioning of the Battery Management System require certain professional expertise. Our company shall not be held liable for product failure or injury caused by improper operation.



Safety Precautions

Operations must be performed by qualified electrical professionals or trained technicians.

Ensure the high-voltage power switch is in the OFF (disconnected) state during installation.

Carefully inspect all components before installation. If any parts are missing or damaged, do NOT proceed with the installation.

The installation location must be waterproof, moisture-proof and provide good heat dissipation.

Insulated gloves must be worn during installation. Do not wear large or long metal jewelry. Metal tools must be tightly wrapped with insulating tape before use to avoid short-circuit risks.

Strictly avoid touching the battery's positive and negative main terminals simultaneously during installation, to prevent electric shock from high voltage.

Do not allow debris or foreign objects to fall into the battery module during installation, as this may cause module failure or unstable system operation.

Power-on testing is permitted only after all modules are correctly connected. Do NOT plug or unplug any connectors while the system is powered, to prevent module damage or electric shock.

Unauthorized personnel must NOT disassemble the module housing or touch the internal circuit board, to avoid component damage or electric shock.

Without confirmation from the manufacturer's technical staff, it is

forbidden to modify the system or use it in other applications, so as to avoid accidents.

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I. Overview

This specification describes the application scope, performance parameters and dimensions of the BMU with active balancing manufactured by Zhuhai Xiwang Electronic Co., Ltd.

Features

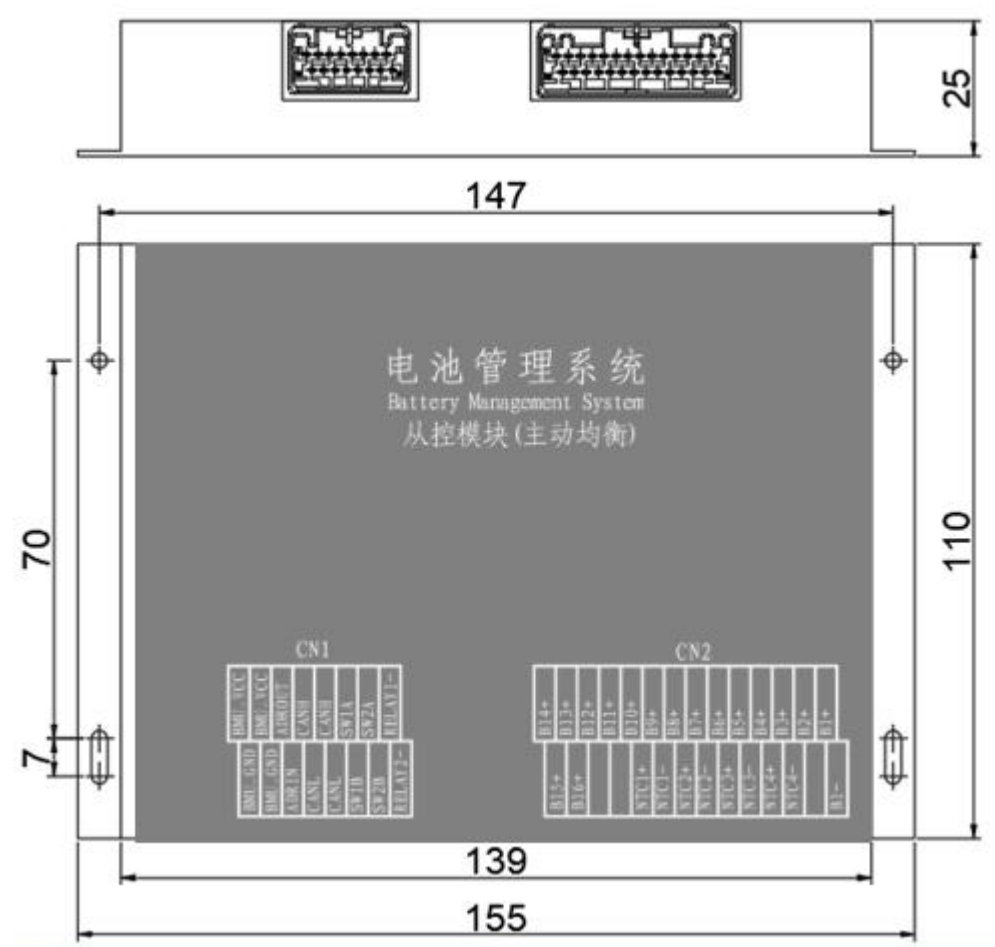
- Wide-voltage power supply: 9 - 30 V, nominal 12 V
- Acquires voltages of 16 cell strings and temperatures of 4 cells
- 2 A active balancing (independent of cell voltage difference)
- Supports both manual and automatic address assignment
- Communication interface: 1 CAN channel
- 2 relay driver outputs (2 low-side drivers)
- Provides 2 isolated DI detection inputs
- Supports OTA online upgrade

II. BMU

2.1 BMU Appearance



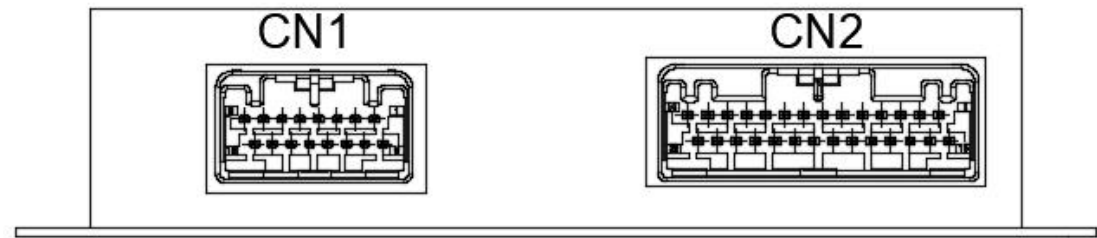
2.2 BMU Dimensions



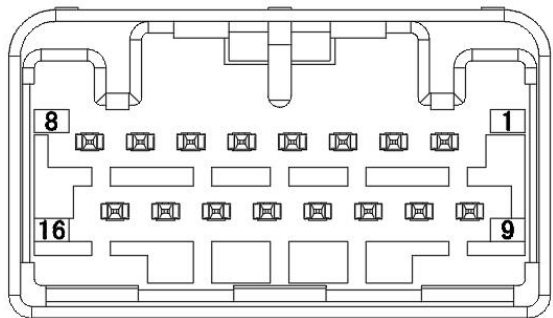
2.3 BMU Parameters

Operating Voltage	9 V DC – 32 V DC (nominal: 12 V DC)	
Operating Ambient	-35 °C – 85 °C	
Operating Humidity	5% – 90% RH, non-condensing	
Cell Voltage Acquisition	Acquisition Range	0 V – 5 V
	Cell Acquisition	7–16 strings
	Acquisition Accuracy	0 V – 5.0 V, accuracy < 5
Battery Temperature Acquisition	Acquisition Range	-40 °C – +120 °C
	Temperature	4 channels
	Acquisition Accuracy	Error < 2 °C
Active Balancing	Activation Condition	2.0 – 4.5 V, cell voltage
	Balancing Current	> 2 A
External Interfaces	CAN Baud Rate	250 kbps

2.4 BMU Pin Definition

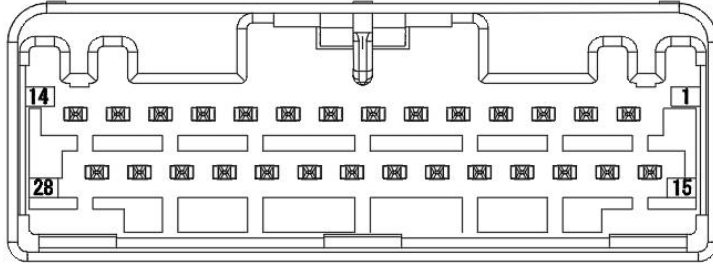


CN1:



Pin	Pin Name	Description	Pin	Pin Name	Description
1	RELAY1-	Relay 1 Negative	9	RELAY2-	Relay 2 Negative
2	SW2A	Isolated Input 2 Positive	10	SW2B	Isolated Input 2 Negative
3	SW1A	Isolated Input 1 Positive	11	SW1B	Isolated Input 1 Negative
4	CANH	CAN High	12	CANL	CAN Low
5	CANH	CAN High	13	CANL	CAN Low
6	ADROUT	Auto-encoding Output	14	ADRIN	Auto-encoding Input
7	BMU_VCC	Power Supply Positive	15	BMU_GND	Power Supply Negative
8	BMU_VCC	Power Supply Positive	16	BMU_GND	Power Supply Negative

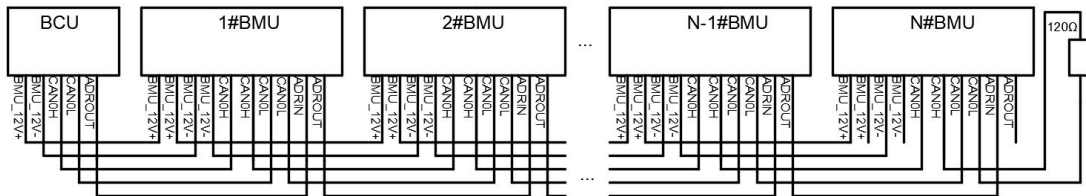
CN2:



Pin	Pin Name	Description	Pin	Pin Name	Description
1	B1+	Cell 1 Positive	15	B1-	Cell 1 Negative
2	B2+	Cell 2 Positive	16	\	\
3	B3+	Cell 3 Positive	17	NTC4-	NTC4 Negative
4	B4+	Cell 4 Positive	18	NTC4+	NTC4 Positive
5	B5+	Cell 5 Positive	19	NTC3-	NTC3 Negative
6	B6+	Cell 6 Positive	20	NTC3+	NTC3 Positive
7	B7+	Cell 7 Positive	21	NTC2-	NTC2 Negative
8	B8+	Cell 8 Positive	22	NTC2+	NTC2 Positive
9	B9+	Cell 9 Positive	23	NTC1-	NTC1 Negative
10	B10+	Cell 10 Positive	24	NTC1+	NTC1 Positive
11	B11+	Cell 11 Positive	25	\	\
12	B12+	Cell 12 Positive	26	\	\
13	B13+	Cell 13 Positive	27	B16+	Cell 16 Positive
14	B14+	Cell 14 Positive	28	B15+	Cell 15 Positive

III. BMU Automatic Address Encoding

The BMU connected to the BCU' s ADROUT goes to ADRIN of BMU #1. The BMU connected to BMU #1' s ADROUT goes to ADRIN of BMU #2. After daisy-chaining in sequence, the BMUs can use automatic address assignment.



BMU Automatic Encoding Wiring Diagram

Notes:

1. The BCU has a built-in 120 Ω terminating resistor; the CAN bus of the last BMU must also be terminated with a 120 Ω resistor.

2. When system interference is significant or the CAN bus run is long, shielded twisted-pair cable must be used for the CAN wiring, with the shield grounded.

IV. BMS Installation Precautions

1. Prevent electrostatic damage to the BMS during installation.
Properly ground your body or discharge static electricity before installation, and ensure power tools are well grounded.
2. During installation and transportation, protect the BMS from water, moisture and excessive pressure to prevent damage.
3. In the event of a fault, please contact professional personnel for inspection and maintenance.