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› Aoleaby JK Smart BMS B2A25S-RP Active Balance Battery Management System User Manual

Aoleaby B2A25S-RP

Aoleaby JK Smart BMS B2A25S-RP User Manual

ACTIVE BALANCE BATTERY MANAGEMENT SYSTEM

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of the Aoleaby JK Smart BMS B2A25S-RP Active Balance Battery Management System. This BMS is designed to protect and optimize the performance of 3S to 25S Li-ion, LiFePO4, and LTO battery packs, featuring active balancing, Bluetooth connectivity, and comprehensive protection functions.

2. Safety Instructions

- Always disconnect the battery pack before performing any wiring or maintenance on the BMS.
- Ensure all connections are correct and secure to prevent short circuits or damage. Incorrect wiring can lead to severe damage to the BMS, battery, or personal injury.
- Wear appropriate personal protective equipment (PPE), including insulated gloves and eye protection, when working with batteries.
- Do not expose the BMS to water, moisture, or extreme temperatures outside its specified operating range.
- Consult a qualified professional if you are unsure about any installation or operation steps.
- Keep out of reach of children.

3. Package Contents

Verify that all items are present in your package:

- Aoleaby JK Smart BMS B2A25S-RP Unit
- Current Shunt (for current measurement)
- Balance Wires/Harnesses
- Temperature Probes (quantity may vary)
- Communication Cables (e.g., RS485, CAN, if included)



Image 3.1: The Aoleaby JK Smart BMS B2A25S-RP unit shown with its accompanying current shunt and various wiring harnesses, illustrating the complete package contents.

4. Setup and Installation

Proper installation is crucial for the safe and effective operation of the BMS. Refer to the following steps and diagrams for guidance.

4.1 Wiring Connections

The BMS requires connections for the main battery terminals, balance wires, temperature probes, and communication interfaces. Ensure all connections are made in the correct sequence and polarity.

- Main Power Connections:** Connect the main positive (B+) and negative (B-) terminals of the battery pack to the corresponding terminals on the BMS. Ensure the relay is correctly integrated for charge/discharge control.
- Balance Wire Connections:** Connect the balance wires from each cell group to the designated ports on the BMS. Start from B0 (negative terminal of the first cell) and proceed sequentially to B1, B2, up to B25 (positive terminal of the last cell). Double-check the voltage of each cell group before connecting.
- Temperature Probe Installation:** Attach the temperature probes to critical areas of the battery pack to monitor cell temperatures. The BMS supports up to 3 temperature probes.
- Shunt Connection:** The current shunt must be installed in series with the main negative battery cable to accurately measure charge and discharge currents. Connect the shunt's signal wires to the designated shunt input on the BMS.
- Communication Interfaces:** Connect RS485, CAN bus, or GPS interfaces as required for external communication or display units.
- Weak Current Switch / ACC Ignition:** Connect the weak current switch or ACC ignition switch if these functions are desired for activating/deactivating the BMS.



Image 4.1: A top-down view of the Aoleaby JK Smart BMS B2A25S-RP, highlighting the various connection ports for balance wires, communication, and power. Labels indicate specific functions for each port.

4.2 Initial Power-Up

After all connections are verified, apply power to the BMS. The unit may perform an initial self-check. Observe any indicator lights for proper operation.

5. Operating Instructions

The JK Smart BMS offers advanced monitoring and control capabilities primarily through its dedicated Bluetooth APP.

5.1 Bluetooth APP Connection

1. Download the official JK BMS APP from your device's app store.
2. Enable Bluetooth on your smartphone or tablet.
3. Open the APP and search for available BMS devices. Select your JK Smart BMS to connect.
4. Once connected, the APP will display real-time battery status.

5.2 APP Functions

The APP provides comprehensive monitoring and configuration options:

- **Status Monitoring:** View total voltage, individual cell voltages, charge/discharge current, battery capacity, temperature, and balance status.
- **Settings Configuration:** Adjust protection parameters such as overcharge/discharge voltage, overcurrent limits, temperature limits, and equalization settings.
- **Active Balancing:** The BMS features active balancing to equalize cell voltages, improving battery life and efficiency. This process is managed automatically by the BMS based on configured parameters.
- **Protection Features:** The BMS provides protection against:
 - Over-charge and Over-discharge
 - Over-current (charge and discharge)
 - Short Circuit
 - High and Low Temperature (charge and discharge)
- **Data Logging:** The APP may offer features to log battery data for analysis.

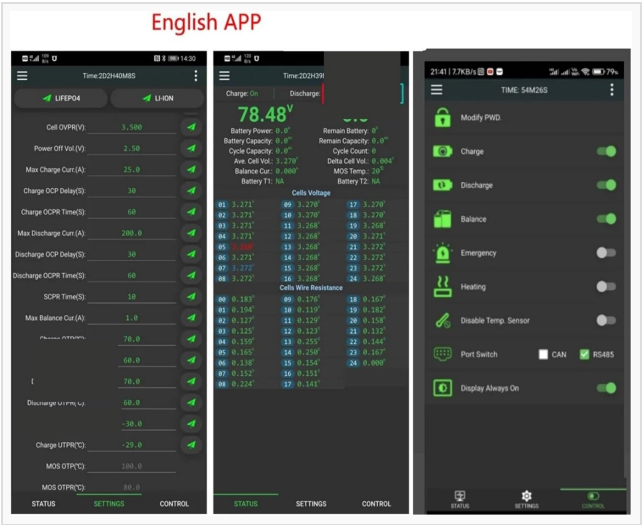


Image 5.1: Multiple screenshots of the JK Smart BMS mobile application, demonstrating the user interface for monitoring battery status, adjusting various settings, and accessing control functions like balance, emergency, and heating.

6. Maintenance

The Aoleaby JK Smart BMS is designed for minimal maintenance. However, periodic checks are recommended:

- **Connection Integrity:** Periodically inspect all wiring connections for tightness and corrosion.
- **Software Updates:** Check the APP for any available firmware updates for the BMS to ensure optimal performance and access to new features.
- **Environmental Conditions:** Ensure the BMS operates within its specified temperature and humidity ranges.

7. Troubleshooting

If you encounter issues with your JK Smart BMS, consider the following:

- **BMS Not Powering On:** Check main power connections (B+ and B-). Ensure the battery voltage is within the BMS operating range.
- **Bluetooth Connection Issues:** Ensure Bluetooth is enabled on your device and the BMS is within range. Restart the APP or the BMS if necessary.
- **Cell Voltage Imbalance:** Verify all balance wires are correctly connected and making good contact. The active balancing feature will work to equalize cells over time.
- **Protection Triggered (e.g., Over-voltage, Under-voltage):** Check individual cell voltages and total pack voltage. Review the BMS settings in the APP to ensure protection thresholds are appropriate for your battery chemistry.
- **No Current Reading:** Verify the shunt is correctly installed in series and its signal wires are properly connected to the BMS.
- **Temperature Alarms:** Ensure temperature probes are correctly installed and not damaged. Check the ambient temperature and battery temperature.

For persistent issues, contact Aoleaby customer support with details of your setup and the problem encountered.

8. Specifications

Feature	Specification
Model	JK-B2A25S-RP
Supported Cell Count	3S to 25S
Supported Battery Types	Li-ion, LiFePO4, LTO
Active Balance Current	0.6A - 2A (adjustable)
Relay Current Support	100A - 1000A (depends on external relay)
Single Cell Voltage Range	1V - 5V (Accuracy: 5mV)
Communication	Bluetooth (APP), RS485, CAN bus, GPS interface
Temperature Probes	Support 3 probes
Operating Temperature	-20°C to 70°C
Power Requirements	16V-100V (battery self-powered or external)
Power Consumption (Max)	1.5W (excluding relay)

Feature	Specification
Power Consumption (Shutdown)	20mW
Cell Undervoltage Protection (LiFePO4)	2.500V (Recovery: 2.650V)
Cell Undervoltage Protection (Li-ion)	2.800V (Recovery: 3.200V)
Cell Overcharge Voltage (LiFePO4)	3.65V (Recovery: 3.6V)
Cell Overcharge Voltage (Li-ion)	4.2V (Recovery: 4.1V)
Charging Overcurrent Protection	100A (Delay: 30s, Release: 60s)
Discharge Overcurrent Protection	400A (or other, depends on relay) (Delay: 30s, Release: 60s)
Short Circuit Protection Release Time	60 seconds
Charging Over Temperature Protection	70°C (Recovery: 60°C)
Discharge Over Temperature Protection	70°C (Recovery: 60°C)
Charging Low Temperature Protection	-20°C

9. Warranty and Support

For warranty information, please refer to the terms and conditions provided by your retailer or contact Aoleaby customer support directly. Keep your proof of purchase for any warranty claims.

For technical assistance, troubleshooting, or further inquiries, please contact the manufacturer or your point of purchase. Provide your product model number (JK-B2A25S-RP) and a detailed description of the issue.

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