

Aoleaby BD6A20S12P

Aoleaby JK Smart BMS BD6A20S12P / BD6A24S12P User Manual

Comprehensive Guide for Battery Management System Installation and Operation

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1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of the Aoleaby JK Smart Battery Management System (BMS) models BD6A20S12P and BD6A24S12P. This Smart BMS is designed to manage and protect Li-Ion, LiFePO4, and LTO battery packs, ensuring their longevity and safe operation through active balancing and comprehensive protection features. Please read this manual thoroughly before using the product.

2. PRODUCT OVERVIEW

The Aoleaby JK Smart BMS is an advanced battery management system featuring Bluetooth communication, active balancing, and multiple protection functions. It is suitable for various battery configurations, including 8S to 24S setups, with a charge/discharge current capacity of up to 120A. The system includes integrated Bluetooth for real-time monitoring via a dedicated mobile application.



Figure 2.1: Front view of the Aoleaby JK Smart BMS, showing the main unit with power terminals and a QR code for app access.



Figure 2.2: The JK-BD6A20S12P model with highlighted specifications: BT/RS485 function, 0.6A balancing current, 8S-20S battery strings support, 120A charge/discharge, and compatibility with Li-ion/LiFePO4/LTO battery types.



Figure 2.3: Rear view of the Smart Active Balance BMS, displaying the product label with model type (JK-B1A20S20P-C), battery type

3. KEY FEATURES

- **JK Own Development APP:** Access real-time battery status and configure BMS settings via a dedicated mobile application with Bluetooth communication.
- **JK Active Balance:** Actively balances voltage differences between battery cells, enhancing battery usage efficiency up to 99% and extending battery lifespan.
- **Full Functionality Protection:** Provides comprehensive protection against over-charge, over-discharge, over-current, short circuit, and includes low-temperature charging cutoff.
- **Safety Design:** Unique design ensures reliable protection, crucial for the longevity and safe operation of your battery systems.
- **Wide Compatibility:** Supports 12V/4S, 24V/8S, 48V/16S, 72V/24S LiFePO4 battery systems, with 100A-350A max current and 0.6-2A active balance current, suitable for various DIY systems.

4. PACKAGE CONTENTS

Upon opening the package, verify that all components are present and undamaged. The standard package includes:

- JK Smart BMS unit (with built-in Bluetooth)
- Temperature Sensor (40cm length)
- Balance Wires (75cm length)
- Active Switch (15cm length)
- Heating Cable (Only included with BMS models featuring heat function)
- Optional: CANBUS chip (for BMS models with CANBUS functionality)



Figure 4.1: The JK Smart BMS unit displayed alongside its standard accessories, including the NTC temperature sensor, active switch, and connection cables.

5. SETUP AND INSTALLATION

Proper installation is critical for the safe and efficient operation of your battery system. Always ensure power is disconnected before making any connections. Consult a qualified professional if you are unsure about any steps.

5.1. Safety Precautions

- Wear appropriate personal protective equipment (PPE), including safety glasses and insulated gloves.
- Ensure the work area is dry and well-ventilated.
- Disconnect all power sources from the battery pack before beginning installation.
- Avoid short-circuiting battery terminals or BMS connections.

5.2. Connection Steps

1. **Connect Balance Wires:** Carefully connect the balance wires (75cm) to the corresponding cell terminals on your battery pack and then to the BMS balance port. Ensure the correct order (B-, B1, B2, ..., B+). Incorrect connection can damage the BMS or battery.
2. **Connect Temperature Sensor:** Attach the temperature sensor (40cm) to a central location on your battery pack to accurately monitor battery temperature. Plug the sensor into the designated port on the BMS.
3. **Connect Active Switch:** Connect the active switch (15cm) to the BMS. This switch is typically used to activate or deactivate the BMS.

4. **Connect Main Power Cables:** Connect the main negative battery terminal (B-) to the BMS B- port. Connect the main negative load/charger terminal (P-) to the BMS P- port. Ensure these connections are secure and use appropriate gauge wiring for your current requirements.
5. **Heating Cable (If applicable):** If your BMS has a heat function, connect the green 5PIN cable of the heating cable to the heating pad. The remaining black and red cables should be linked to a smart charger. The smart charger, after linking to the BMS, will use the BMS's temperature data to automatically monitor and control the battery's charging status and heating.



Figure 5.1: Side view of the BMS, illustrating the various connection ports for balance wires, temperature sensor, and other peripherals.

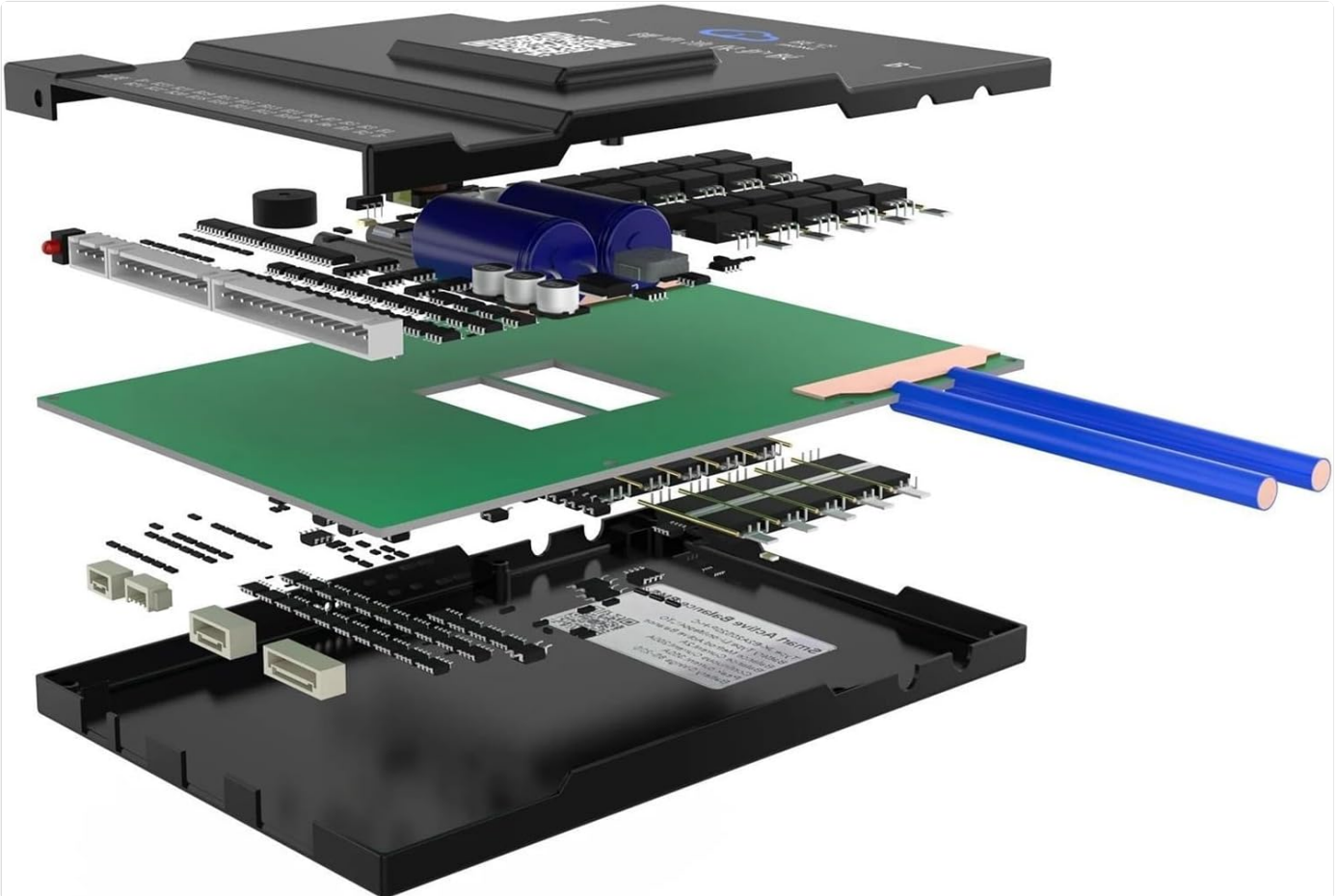


Figure 5.2: An exploded view of the BMS, showing the internal circuit board, power components, and connection points, providing insight into its construction.

6. OPERATING INSTRUCTIONS

Once the BMS is correctly installed and connected, you can begin operating your battery system and monitoring its status.

6.1. Activating the BMS

After all connections are made, activate the BMS using the active switch. The BMS should power on, and you may observe indicator lights.

6.2. Using the Mobile Application

1. **Download the App:** Scan the QR code on the BMS unit or search for the "JK BMS" application in your device's app store.
2. **Connect via Bluetooth:** Enable Bluetooth on your mobile device. Open the JK BMS app and search for available BMS devices. Select your BMS to connect.
3. **Monitor Battery Status:** The app will display real-time data such as individual cell voltages, total voltage, current, temperature, state of charge (SOC), and protection status.
4. **Configure Settings:** Use the app to adjust various BMS parameters, including protection thresholds, balancing settings, and other advanced features. Refer to the in-app help or manufacturer's website for detailed parameter explanations.

6.3. Active Balancing

The JK Smart BMS features active balancing, which automatically works to equalize the voltage across all cells in the battery pack. This process occurs continuously and helps maintain cell health and overall pack performance. You can monitor the balancing status through the mobile application.

7. MAINTENANCE

Regular maintenance helps ensure the longevity and optimal performance of your Aoleaby JK Smart BMS and battery pack.

- **Visual Inspection:** Periodically inspect all connections for signs of corrosion, loose wiring, or damage. Ensure all cables are securely fastened.
- **Cleanliness:** Keep the BMS unit clean and free from dust and debris. Use a dry, soft cloth for cleaning. Do not use liquids or abrasive cleaners.
- **Firmware Updates:** Check the manufacturer's website or the mobile application for any available firmware updates for your BMS. Follow update instructions carefully.
- **Battery Health Monitoring:** Regularly monitor battery cell voltages and temperatures via the app. Address any significant discrepancies or abnormal readings promptly.
- **Environmental Conditions:** Ensure the BMS and battery pack are operated within their specified temperature and humidity ranges to prevent damage.

8. TROUBLESHOOTING

This section addresses common issues you might encounter with your Aoleaby JK Smart BMS. For problems not listed here, please contact customer support.

Problem	Possible Cause	Solution
BMS not powering on	Loose main power connections (B-, P-), active switch not engaged, or incorrect balance wire connection.	Verify all main power and balance wire connections are secure and correctly wired. Ensure the active switch is in the "ON" position.

Problem	Possible Cause	Solution
Cannot connect via Bluetooth app	Bluetooth on mobile device is off, app permissions not granted, BMS is out of range, or BMS is not powered.	Ensure Bluetooth is enabled on your phone. Grant necessary app permissions. Move closer to the BMS. Confirm the BMS is powered on. Restart the app or your phone.
Cell voltage imbalance persists	Significant initial cell voltage difference, faulty balance wires, or BMS balancing current is insufficient for the imbalance.	Allow more time for active balancing to work. Check balance wire connections for continuity. If imbalance is severe, manual top balancing may be required before BMS installation.
Over-charge/discharge protection trips frequently	Protection parameters set too aggressively, or battery pack is frequently pushed to its limits.	Review and adjust protection parameters in the app if appropriate for your battery chemistry and usage. Ensure your charger/load is compatible with the battery pack.

9. SPECIFICATIONS

The following table outlines the key specifications for the Aoleaby JK Smart BMS BD6A20S12P / BD6A24S12P models.

Feature	Detail
Model Numbers	BD6A20S12P, BD6A24S12P
Supported Battery Types	Li-Ion, LiFePO4, LTO
Supported Cell Count	8S-24S (e.g., 12V/4S, 24V/8S, 48V/16S, 72V/24S)
Max Continuous Current	120A (BD6A20S12P) / 120A (BD6A24S12P)
Active Balance Current	0.6A - 2A (depending on model variant)
Communication	Bluetooth (built-in), RS485 (optional), CANBUS (optional)
Protection Functions	Over-charge, Over-discharge, Over-current, Short Circuit, Low Temperature Charging Cutoff
Dimensions (Approx.)	1.18 x 0.79 x 0.39 inches (Package Dimensions)
Item Weight (Approx.)	2.2 pounds
Manufacturer	Aoleaby

10. WARRANTY AND SUPPORT

Aoleaby products are manufactured to high-quality standards. For warranty information, technical support, or service inquiries, please refer to the official Aoleaby website or contact your point of purchase. Please have your product model number and purchase date available when contacting support.

For the latest information and resources, visit: [www.aoleaby.com](#) (Note: This is a placeholder URL, please replace with the actual manufacturer's support page if available.)

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