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› Bolisila JK-B1A24S15P Active Balance Battery Management System User Manual

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Model: JK-B1A24S15P

1. INTRODUCTION

This manual provides essential information for the safe and efficient operation of your Bolisila JK-B1A24S15P Active Balance Battery Management System (BMS). This device is designed to manage and protect battery packs, ensuring their longevity and optimal performance through active balancing and various protection features.

Please read this manual thoroughly before installation and use, and retain it for future reference.

2. SAFETY INSTRUCTIONS

WARNING: Failure to follow these safety instructions may result in electric shock, fire, or other serious injury or damage.

- Always disconnect the battery pack from any power source before installing or servicing the BMS.
- Ensure all wiring connections are secure and correctly polarized to prevent short circuits.
- Do not operate the BMS in wet or damp conditions.
- Do not attempt to open or modify the BMS unit. Refer all servicing to qualified personnel.
- Wear appropriate personal protective equipment (PPE), including insulated gloves and eye protection, when working with batteries.
- Verify battery cell voltage and configuration (e.g., 8S, 16S, 20S, 24S) match the BMS specifications before connection.

3. PRODUCT OVERVIEW

The Bolisila JK-B1A24S15P is an active balance Battery Management System designed for various battery chemistries, including LiFePO4. It features real-time active energy transfer equalization, enhancing battery consistency and extending battery life. The BMS provides comprehensive protection against common battery issues.

Key Features:

- **Active Balance:** Real-time active energy transfer equalization with supercapacitor as the medium, achieving 1A continuous balanced current.
- **Wide Voltage Range:** Single cell voltage range 1V~5V, with equalization accuracy of $\pm 5\text{mV}$.
- **Comprehensive Protection:** Protects against over-charge, over-discharge, over-current, short circuit, and low temperature charging cutoff.
- **Scalability:** Supports balanced cascading, suitable for battery packs with more than 24 cells.
- **Monitoring & Control:** Features an associated APP for BMS settings and real-time battery status display via communication (e.g., RS485).
- **Versatile Application:** Suitable for 12V/4S, 24V/8S, 48V/16S, 72V/24S LiFePO4 battery systems with 100A-350A max current.

Typical Applications:

JK SMART BMS

Active Balance



E-bike



Electric Tricycle



Low Speed Quad



Forklift



Cleaning Car



Tourist Car



Industrial Drone



Scooter



RV Energy Storage



Energy Storage Cabinet



Power Bank



Power Tools

Figure 1: Typical applications for the JK Smart BMS. This image illustrates the wide range of vehicles and energy storage solutions where the BMS can be utilized, from electric bikes and scooters to industrial drones, forklifts, RVs, and power tools.

4. SPECIFICATIONS

The following table details the technical specifications of the Bolisila JK-B1A24S15P BMS.

ITEM	Product Specifications											
	BD4A17S4P	BD4A20S4P	BD4A24S4P	BD6A17S6P	BD6A20S6P	BD6A24S6P	BD6A17S8P	BD6A20S8P	BD6A24S8P	BD6A20S10P	BD6A24S10P	B1A17S12P
Li-ion String supported	7-17S	7-20S	7-24S	7-17S	7-20S	7-24S	7-17S	7-20S	7-24S	7-20S	7-24S	7-17S
LiFePo4 String supported	8-17S	8-20S	8-24S	8-17S	8-20S	8-24S	8-17S	8-20S	8-24S	8-20S	8-24S	8-17S
LTO String supported	12-17S	12-20S	12-24S	12-17S	12-20S	12-24S	12-17S	12-20S	12-24S	12-20S	12-24S	12-17S
Balance method	Active balancer (Full State On)											
Active balanced current	0.4A			0.6A								1A
Inner resistance of mainchip	2.8mΩ	2.8mΩ	2.8mΩ	1.53mΩ	1.53mΩ	1.53mΩ	1.2mΩ	1.2mΩ	1.2mΩ	1mΩ	1mΩ	0.65mΩ
Continuous charge current	40A			60A			80A			100A	100A	120A
Continuous discharge current	40A			60A			80A			100A	100A	120A
MAX discharge current(2X)	60A			100A			150A			200A	200A	250A
Overcharge current limit (A.DJ)	10-40A			10-60A			10-80A			10-100A	10-100A	10-100A
Other Interface (Default)	RS485											
Other Interface (Customized)	CANBUS/HEAT											
Dimension (L*M*H MM)	110*73*18		116*83*18	133*81*18						162*102*20		
Wiring diagram	Common Port											
ITEM	Product Specifications											
	B1A20S12P	B1A20S15P	B1A24S15P	B2A24S15P	B2A20S20P	B2A24S20P	BD4A8S4P	B1A8S10P	B1A8S20P	B2A8S20P	B2A25SRP	B5A25S60P
Li-ion String supported	7-20S	7-20S	7-24S	7-24S	7-20S	7-24S	3-8S	3-8S	3-8S	3-8S	8-25S	8-25S
LiFePo4 String supported	8-20S	8-20S	8-24S	8-24S	8-20S	8-24S	4-8S	4-8S	4-8S	4-8S	8-25S	8-25S
LTO String supported	12-20S	12-20S	12-24S	12-24S	12-20S	12-24S	6-8S	6-8S	6-8S	6-8S	12-25S	12-25S
Balance method	Active balancer (Full State On)											
Active balanced current	1A			2A			0.4A	1A		2A	2A	5A
Inner resistance of mainchip	0.65mΩ			0.47mΩ			2.8mΩ	0.3mΩ			/	/
Continuous charge current	120A	150A			200A		40A	100A	200A		1000A	500A
Continuous discharge current	120A	150A			200A		40A	100A	200A		1000A	500A
MAX discharge current(2X)	250A	300A			350A		60A	200A	350A		/	/
Overcharge current limit (A.DJ)	10-100A	10-150A			10-200A		10-40A	10-100A	10-200A		10-1000A	10-600A
Other Interface (Default)	RS485										RS485 CANBUS	RS485 CANBUS
Other Interface (Customized)	CANBUS/HEAT										/	/
Dimension (L*M*H MM)	162*102*20						110*73*18	153*136*18			189*94*24	234*134*32
Wiring diagram	Common Port										Split Port	
Single cells voltage supported	1-5V											
Voltage acquisition accuracy	±5mV											
Overcharge protection voltage	1.2-4.35V Adjustable											
Overcharge release voltage	1.2-4.35V Adjustable											
Overcurrent release delay time	2-120S Adjustable											
Overdischarge protection voltage	1.2-4.35V Adjustable											
Overdischarge release voltage	1.2-4.35V Adjustable											
Tempreture sensor	3pcs											
Tempreture protection	YES											
Short circuit protection	YES											
Coulometer	YES											
Blueteeth supported												

Figure 2: Detailed Product Specifications Table. This table provides specific technical data for various JK BMS models, including the JK-B1A24S15P, covering parameters such as supported cell count (Li-ion/LTO), active balance current, internal resistance, continuous and peak discharge currents, overcurrent limits, communication interfaces (RS485, CANBUS, HEAT), and physical dimensions.

General Specifications:

- **Model:** JK-B1A24S15P
- **Active Balance Current:** 1A (continuous)
- **Cell Voltage Range:** 1V - 5V

- **Equalization Accuracy:** $\pm 5\text{mV}$
- **Supported Cell Count:** 8S to 24S (LiFePO₄, Li-ion, LTO)
- **Max Continuous Discharge Current:** Up to 150A (model dependent, refer to Figure 2)
- **Communication Interface:** RS485 (for JK-B1A24S15P RS485 variant)
- **Dimensions:** Refer to Figure 2 for specific model dimensions.
- **Weight:** Approximately 1.1 pounds (0.5 kg)

5. SETUP AND INSTALLATION

Proper installation is crucial for the safe and effective operation of the BMS. Always ensure the battery pack is fully disconnected before beginning installation.

5.1 Pre-Installation Checks:

1. Verify that the battery pack voltage and cell count (e.g., 24S for 3.2V cells) are compatible with the JK-B1A24S15P BMS.
2. Inspect all battery cells for damage or swelling. Ensure all cells are at a similar state of charge before connecting the BMS.
3. Gather all necessary tools: insulated wrenches, screwdrivers, multimeter, wire cutters/strippers, and heat shrink tubing.

5.2 Wiring Diagram (General Guidance):

A detailed wiring diagram specific to your battery configuration should be followed. The general connection sequence is as follows:

1. Connect the balance wires from each cell to the corresponding balance ports on the BMS, starting from the lowest voltage cell (B-) to the highest (B+). Ensure correct order and polarity.
2. Connect the main negative terminal of the battery pack (B-) to the designated B- terminal on the BMS.
3. Connect the load/charger negative terminal (P-) to the designated P- terminal on the BMS.
4. Connect the main positive terminal of the battery pack (B+) directly to the positive terminal of the load/charger. The BMS typically only controls the negative path.
5. If applicable, connect the RS485 communication module to the BMS and to your monitoring device.

CAUTION: Incorrect wiring can severely damage the BMS, battery, and connected equipment. Double-check all connections before applying power.

6. OPERATING INSTRUCTIONS

Once the BMS is correctly installed and connected, it will begin monitoring and managing the battery pack.

6.1 Initial Power-Up:

1. After all connections are secure, apply power to the battery pack.
2. Observe the BMS indicator lights (if present) for normal operation.
3. Use a multimeter to verify the total battery pack voltage and individual cell voltages.

6.2 Using the APP (if applicable):

The Bolisila JK-B1A24S15P BMS supports an associated mobile application for advanced monitoring and configuration. Refer to the separate APP user guide for detailed instructions on downloading, connecting, and using the application.

- **Real-time Monitoring:** View individual cell voltages, total pack voltage, current, temperature, and state of charge.
- **Parameter Configuration:** Adjust protection thresholds for over-voltage, under-voltage, over-current, and temperature.
- **Balance Control:** Monitor active balancing status and potentially initiate or adjust balancing parameters.

6.3 Normal Operation:

During normal operation, the BMS continuously monitors the battery cells. It will automatically initiate active balancing when cell voltage differences are detected. If any protection thresholds are exceeded, the BMS will disconnect the load or charger to prevent damage to the battery pack.

7. MAINTENANCE

The Bolisila JK-B1A24S15P BMS is designed for low maintenance. However, periodic checks are recommended to ensure optimal performance and safety.

- **Visual Inspection:** Periodically inspect the BMS and all wiring for any signs of damage, corrosion, or loose connections.
- **Cleaning:** Keep the BMS unit clean and free from dust and debris. Use a dry, soft cloth for cleaning. Do not use liquids.
- **Firmware Updates:** Check the manufacturer’s website or APP for any available firmware updates. Follow the provided instructions carefully for any update procedures.
- **Battery Health Check:** Regularly monitor battery cell voltages and temperatures via the APP to identify any potential issues early.

8. TROUBLESHOOTING

This section provides solutions to common issues you might encounter with your BMS. For problems not listed here, contact customer support.

Problem	Possible Cause	Solution
BMS not powering on / No output	Incorrect wiring, blown fuse, battery voltage too low, BMS in protection mode.	• Check all wiring connections for correctness and security. • Verify battery pack voltage is within the operational range. • Check for any blown fuses in the system. • If in protection mode, identify and resolve the fault (e.g., over-discharge, short circuit).

Problem	Possible Cause	Solution
Cell voltage imbalance	Initial cell voltage differences, high discharge/charge rates, faulty cell.	• Allow the BMS sufficient time to perform active balancing. • Ensure cells are balanced before initial BMS connection. • Reduce charge/discharge current if imbalance persists. • Inspect individual cells for degradation if imbalance is severe and persistent.
BMS frequently enters protection mode	Over-current, over-voltage, under-voltage, or over-temperature conditions.	• Check load current to ensure it does not exceed BMS limits. • Verify charger voltage and current are within battery specifications. • Monitor battery temperature during operation. • Adjust protection parameters via the APP if necessary and safe to do so.
APP connection issues	Bluetooth/RS485 module not connected, incorrect APP settings, interference.	• Ensure the communication module (e.g., RS485) is correctly installed and powered. • Restart the APP and your mobile device. • Check APP permissions and settings. • Reduce distance between BMS and mobile device.

9. WARRANTY AND SUPPORT

Bolisila products are manufactured to high-quality standards. For warranty information and customer support, please refer to the purchase documentation or contact your retailer.

For technical assistance or inquiries, please visit the official Bolisila website or contact their customer service department. When contacting support, please have your product model (JK-B1A24S15P) and purchase details available.

Online Resources: www.bolisila.com (Example link, replace with actual if available)

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