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› JK Smart BMS B1A8S10P User Manual

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JK Smart BMS B1A8S10P User Manual

ACTIVE BALANCE BATTERY MANAGEMENT SYSTEM

1. PRODUCT OVERVIEW

The JK Smart BMS B1A8S10P is an advanced active balance battery management system designed to optimize the performance and extend the lifespan of various battery types, including Li-Ion, LiFePO4, and LTO. It features real-time monitoring, active energy transfer equalization, and comprehensive protection functions.



Image: Front view of the JK Smart BMS B1A8S10P, showing the main terminals and QR code for app download.

Applications

This BMS is suitable for a wide range of applications requiring reliable battery management, including:

- E-bikes and Electric Tricycles
- Low Speed Quads and Forklifts
- Cleaning Cars and Tourist Cars
- Industrial Drones and Scooters
- RV Energy Storage and Energy Storage Cabinets
- Power Banks and Power Tools

Application Scenario



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



Image: Visual representation of various applications where the JK Smart BMS can be utilized, such as electric vehicles and energy storage systems.

2. KEY FEATURES

- **Active Balance:** Real-time active energy transfer equalization with supercapacitor as the medium, ensuring battery consistency and extending lifespan.
- **High Balance Current:** Capable of 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.
- **Mobile App Connectivity:** Equipped with mobile phone Bluetooth communication and a dedicated app for real-time battery status monitoring (Android and iOS compatible).
- **Scalability:** Supports balanced cascading for up to 24 battery packs.

- **Battery Type Compatibility:** Suitable for lithium iron phosphate, ternary lithium, lithium titanate, and other battery types.



Image: Diagram highlighting key features and specifications of the B1A8S10P model, including balance current, battery strings supported, and charge/discharge current.

Security Protection

The JK Smart BMS incorporates six essential security protections to ensure the safe operation and longevity of your battery system:

- **Overcharge Protection:** Prevents over-charging, which can affect battery life.
- **Short Circuit Protection:** Automatic protection when a short circuit is detected.
- **Over-discharge Protection:** Prevents the battery from running out completely.
- **Over-current Protection:** Prevents the current from exceeding the battery's safe range.
- **All-in Protection:** Designed to prevent cable drop or poor contact.
- **Over-temperature Protection:** Prevents the battery from overheating.

SIX SECURITY PROTECTION



Over charge Protection

Prevent over-charging
Affects battery life



Short circuit Protection

Automatic protection
when short circuit protection



Over charge Protection

Prevent the battery
from running out



Over charge Protection

Prevent the current
from exceeding
the battery range



ALL-IN Protection

Prevent cable drop
or poor contact



Over temp Protection

Prevent the battery
from over heating

Image: Visual representation of the six security protection features, showing how the BMS safeguards the battery against various hazards.

3. PACKAGE CONTENTS

Upon opening the package, please verify that all the following components are included:

- 1 x BMS with BT built-in
- 1 x Temperature sensor (NTC 40cm)
- 1 x Balance wires (70cm)
- 1 x Active switch (50cm)
- 1 x Heating cable (Only for BMS with Heat Function)
- 1 x Operate manual

Package List

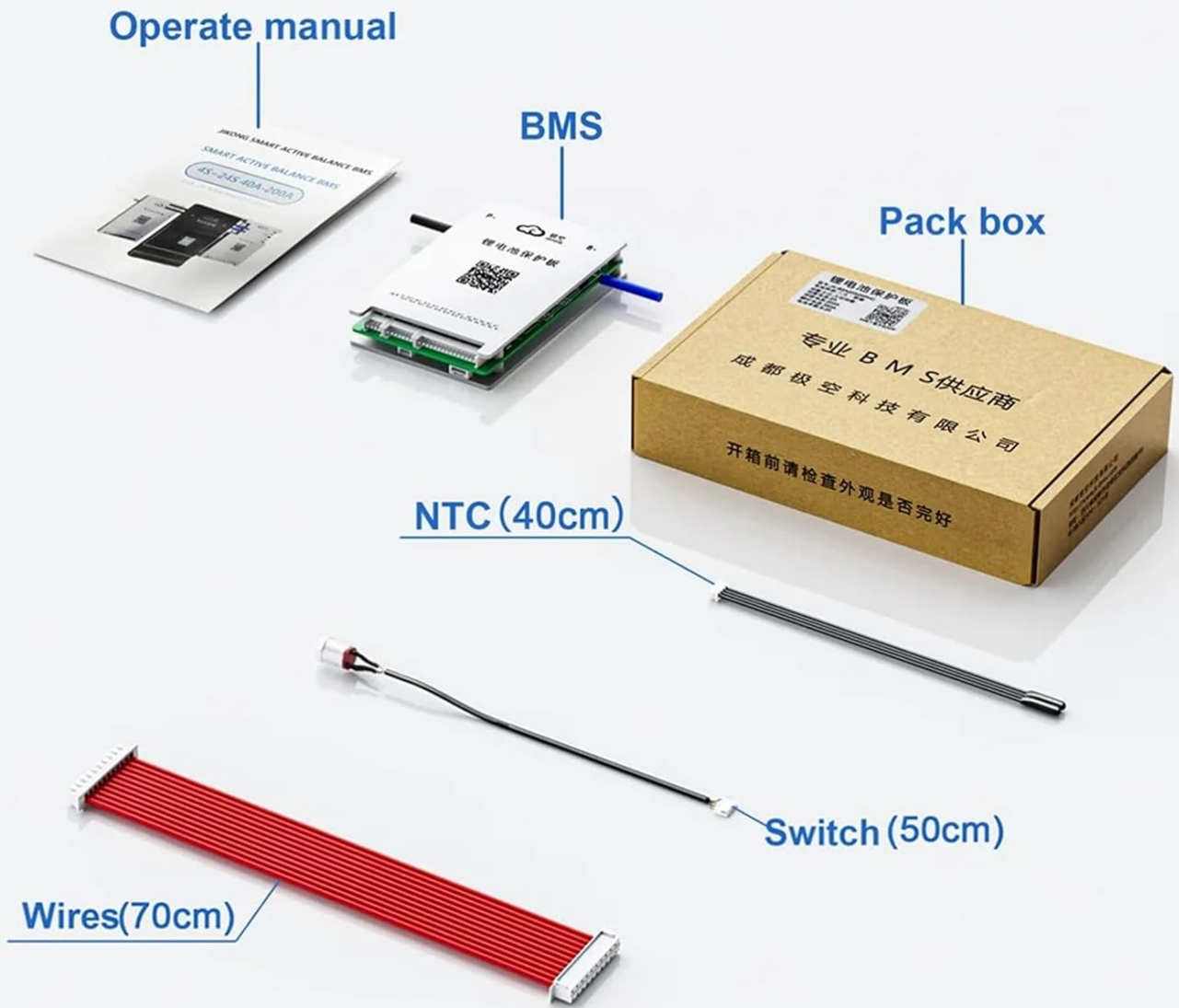


Image: A visual breakdown of the package contents, including the BMS unit, wires, switch, temperature sensor, and manual.

4. SETUP AND INSTALLATION

General Connection Guidelines

Connect the balance wires to the corresponding battery cells, ensuring correct polarity and sequence. The main battery positive (B+) and negative (B-) terminals should be connected to the BMS. The active switch is used to activate or deactivate the BMS. Refer to the wiring diagram provided in the included operate manual for detailed connection instructions specific to your battery configuration.

Heating Cable Installation (If applicable)

For BMS models with the heating function, follow these steps:

1. The green 5PIN cable of the heating cable needs to be linked to the heating pad.

2. The black and red cables are linked to the smart charger.
3. After the smart charger links the BMS, it detects the temperature of the battery through the BMS, automatically monitoring the charging status of the battery.

5. OPERATION GUIDE

Mobile Application (APP) Usage

The JK Smart BMS features a dedicated mobile application for real-time monitoring and parameter adjustment. The app is available for both Android and iOS operating systems.

- **Monitor Data:** View real-time battery data, including voltage, current, temperature, and cell balance status.
- **Modify Parameters:** Adjust various BMS settings to suit your specific battery requirements.
- **Control Balance Switch:** Remotely control the BMS balance function.

To download the official JK Smart BMS APP, scan the QR code found on the product or visit the following link:

<http://qr17.cn/BApbC0>

Smart BT APP

Monitor the battery data in real time

Support to modify related parameters

Control BMS balance switch

Support Android IOS system



Image: A visual representation of the Smart BT APP interface, showing real-time battery data monitoring and control options.

Heating Function Operation

The heating function is designed to protect your battery in cold environments:

- If the battery temperature falls below the low-temperature charge protection threshold (settable within the app), charging will be turned off, and heating will be activated.
- The heating power depends on the battery voltage and the resistance value of the heating film.
- The system uses 1 internal and/or 2 external temperature sensors to detect battery temperature.

Parallel Use of BMS

The BMS supports parallel use for increased capacity or power. Refer to the detailed instructions in the included manual for proper configuration when connecting multiple BMS units in parallel.

6. MAINTENANCE

To ensure the longevity and optimal performance of your JK Smart BMS and battery system, consider the following maintenance tips:

- Regularly monitor battery cell consistency through the mobile application.
- Ensure all connections are secure and free from corrosion.
- Keep the BMS unit clean and free from dust or debris.
- Avoid exposing the BMS to extreme temperatures or moisture beyond its operating specifications.
- Periodically check for firmware updates through the app to ensure you have the latest features and bug fixes.

7. TROUBLESHOOTING

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

- **No Power/No Indication:** Check all power connections (B+, B-, P-). Ensure the active switch is in the ON position.
- **App Connection Issues:** Verify Bluetooth is enabled on your mobile device. Ensure the BMS is powered on and within range. Restart the app or your phone.
- **Unbalanced Cells:** The active balance feature should address minor imbalances. If significant imbalance persists, check balance wire connections to individual cells.
- **Protection Triggered (Over-voltage, Under-voltage, Over-current):** The BMS will cut off power to protect the battery. Check the app for specific fault codes or warnings. Address the root cause (e.g., reduce load, check charger).
- **Heating Function Not Working:** Ensure the heating cable is correctly connected to both the heating pad and the smart charger. Verify the low-temperature charge protection setting in the app.

For persistent issues, refer to the detailed troubleshooting section in the full manual or contact customer support.

8. TECHNICAL SPECIFICATIONS

The following table provides detailed technical specifications for the JK Smart BMS B1A8S10P and related models:

Item	BD4A17S4P	BD4A20S4P	BD6A17S6P	BD6A20S6P	BD6A24S6P	BD6A24S8P	BD6A20S10
Li-Ion String supported	7-20S	7-24S	7-20S	7-24S	7-24S	7-24S	7-20S
LiFePO4 String supported	8-17S	8-20S	8-17S	8-20S	8-20S	8-20S	8-17S
LTO String supported	12-17S	12-20S	12-17S	12-20S	12-20S	12-20S	12-17S
Active balance current	0.4A	0.4A	0.6A	0.6A	0.6A	0.6A	0.6A
Inner resistance of main chip	2.8mΩ	2.8mΩ	1.53mΩ	1.53mΩ	1.2mΩ	1.2mΩ	1mΩ
Continuous discharge current	40A	60A	60A	80A	80A	100A	100A
Continuous charge current	40A	60A	60A	80A	80A	100A	100A
Peak discharge current (2X)	80A	100A	150A	150A	200A	200A	250A
Over current limit (ADJ)	10-40A	10-60A	10-60A	10-80A	10-80A	10-100A	10-100A
Other interface (Default)	RS485						
Other interface (Customized)	CANBUS/HEAT						
Overall dimension (L*W*H mm)	110*73*18	116*83*18	133*81*18			162*102*20	



Item	B1A20S12P	B1A20S15P	B1A24S15P	B2A20S20P	B2A24S20P	BD4A8S4P	B1A8S20P	B1A24S15P
Li-Ion String supported	7-20S	7-20S	7-24S	7-20S	7-24S	3-8S	3-8S	3-24S
LiFePO4 String	8-20S	8-20S	8-24S	8-20S	8-24S	4-8S	4-8S	4-24S

Item	B1A20S12P	B1A20S15P	B1A24S15P	B2A20S20P	B2A24S20P	BD4A8S4P	B1A8S20P	B1A8S40P
LTO String supported	12-20S	12-20S	12-24S	12-20S	12-24S	6-8S	6-8S	6-12S
Active balance current	1A	1A	2A	0.4A	0.4A	1A	2A	2A
Inner resistance of main chip	0.65mΩ	0.65mΩ	0.47mΩ	0.47mΩ	0.47mΩ	2.8mΩ	0.3mΩ	0.3mΩ
Continuous charge current	120A	150A	200A	40A	100A	20A	100A	100A
Continuous discharge current	120A	150A	200A	40A	100A	20A	100A	100A
MAX discharge current (2X)	250A	300A	350A	60A	200A	350A	/	/
Over current limit (ADJ)	10-100A	10-150A	10-200A	10-40A	10-100A	10-20A	10-100A	10-100A
Other interface (Default)	RS485					RS485		
Other interface (Customized)	CANBUS/HEAT					CANBUS/HEAT		
Overall dimension (L*W*H mm)	162*102*20		162*102*20	110*73*18		153*136*18		
Wiring diagram	Common Port							
Single cell voltage supported	1-5V							
Voltage equalization accuracy	±5mV							
Overcharge protection voltage	1.2-4.35V Adjustable							
Overcharge release	1.2-4.35V Adjustable							

voltage Item	B1A20S12P	B1A20S15P	B1A24S15P	B2A20S20P	B2A24S20P	BD4A8S4P	B1A8S20P	B1A8S20P
Overcurrent release delay time	2-120S Adjustable							
Over- discharge protection voltage	1.2-4.35V Adjustable							
Over- discharge release voltage	1.2-4.35V Adjustable							
Temperature sensor	3pcs							
Temperature protection	YES							
Short circuit protection	YES							
Coulometer	YES							
Bluetooth	YES							
LCD supported	YES							
RS485 supported	YES							



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 (ADJ)	10-40A			10-60A			10-80A			10-100A	10-100A	10-100A
Other Interface (Default)	RS485											
Other Interface (Customized)	CANBUS/HEAT											
Dimension (L*W*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 (ADJ)	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*W*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											
Temperature sensor	3pcs											
Temperature protection	YES											
Short circuit protection	YES											
Coulometer	YES											
Bluetooth supported	IOS / Android											

Image: A comprehensive table detailing the technical specifications for various JK Smart BMS models, including string support, balance current, and protection features.

General Product Specifications

- **Package Dimensions:** 1.18 x 0.79 x 0.39 inches
- **Item Weight:** 1.76 pounds
- **Manufacturer:** Aoleaby

- **Country of Origin:** China
- **Item Model Number:** Aoleaby (B1A8S10P variant)

9. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the documentation included with your purchase or contact the seller directly. Ensure you have your product model number (B1A8S10P) and purchase details ready when seeking assistance.

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Example: How do I reset this device or fix this error?

Details

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