

Youmile JK-YM-323

Youmile 5S 20A 18V 21V Li-Ion Lithium Battery Charger Protection Board User Manual

Model: JK-YM-323

1. PRODUCT OVERVIEW

The Youmile 5S 20A 18V 21V Li-Ion Lithium Battery Charger Protection Board (BMS) is designed for 5-series lithium-ion battery packs, primarily used in power tools. It integrates a specialized IC to monitor real-time voltage, charge/discharge current, and ambient temperature for each battery cell. This board ensures the longevity and safety of your battery pack by providing multiple protection functions.

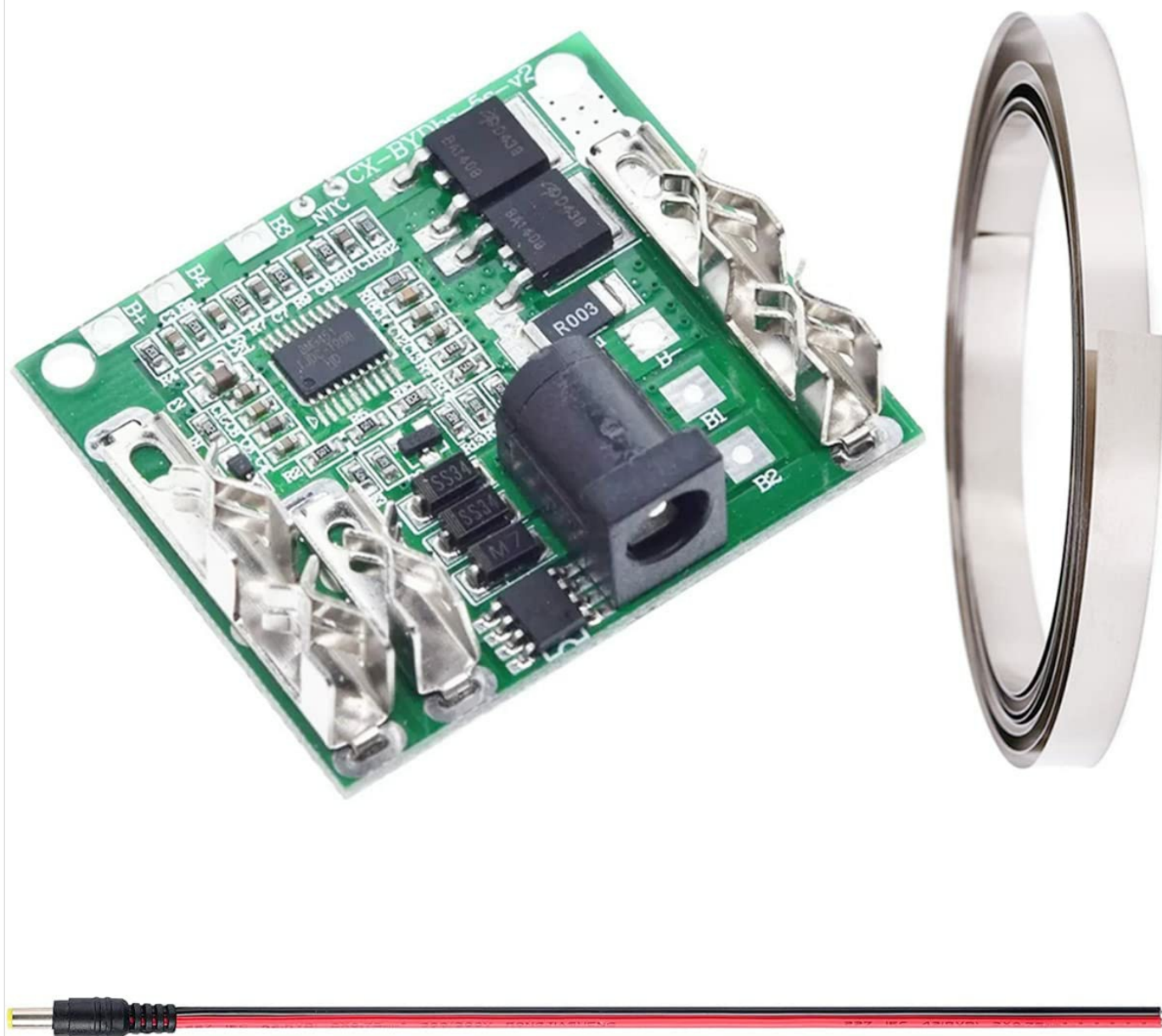


Figure 1: The Youmile 5S 20A BMS board, accompanied by a nickel strip and a DC male cable, as included in the package.

2. PACKAGE CONTENTS

- 1 x 5S Lithium Battery Charging Protection Board
- 1 x 39-inch (1m) Nickel Strip
- 1 x DC Male Cable

3. SPECIFICATIONS

Parameter	Value
Charge Voltage	18V / 21V
Working State Current	25 μ A (at 25°C)

Parameter	Value
Stand-by State Current	6μA (at 25°C)
Single Cell Charge Voltage	3.8V / 4.25V
Storage Temperature	-40°C to 125°C (RH≤75%)
Operating Temperature	-40°C to 85°C (RH≤75%)
Continuous Discharge Current	8-20A
Discharge Main Circuit Internal Resistance	30 ± 5mΩ
Protection Temperature	70 ± 5°C
Recovery Temperature	55 ± 5°C
Dimensions (approx.)	46mm x 40mm (1.81in x 1.57in)

Specifications:

Charge Voltage: 18/21V

Working State: 25uA (25°C)

Stand-by State: 6uA(25°C)

Single Cell Charge Voltage: 3.8/4.25V

Store Temperature: -40°C-125°C RH≤75%

Operating Temperature: -40°C-85°C RH≤75%

Current Continuous Discharge Current: 8-20A

Discharge Main Circuit Internal Resistance: $30\pm 5\text{m}\Omega$

Protection Temperature: $70\pm 5^\circ\text{C}$

Recovery Temperature: $55\pm 5^\circ\text{C}$

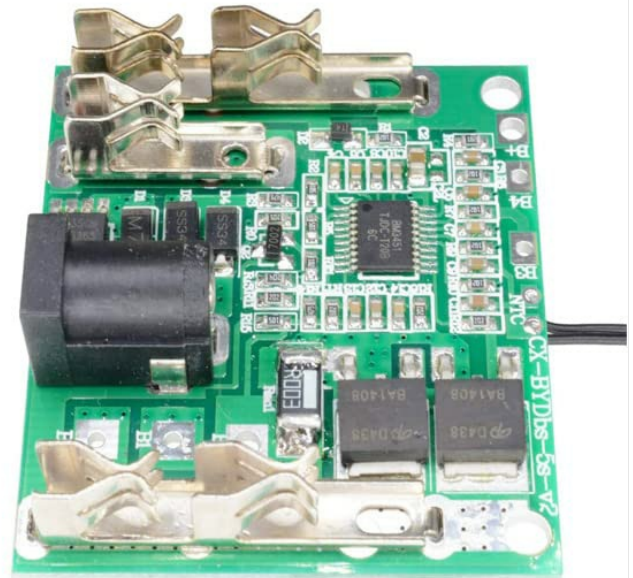


Figure 2: Approximate dimensions of the BMS board.

4. SETUP AND INSTALLATION

Proper wiring is crucial for the correct and safe operation of the BMS board. Always ensure power is disconnected before making any connections.

Wiring Diagram

Refer to the wiring diagram below for connecting the battery cells to the BMS board. The board is designed for 5-series lithium-ion batteries.

SIZE

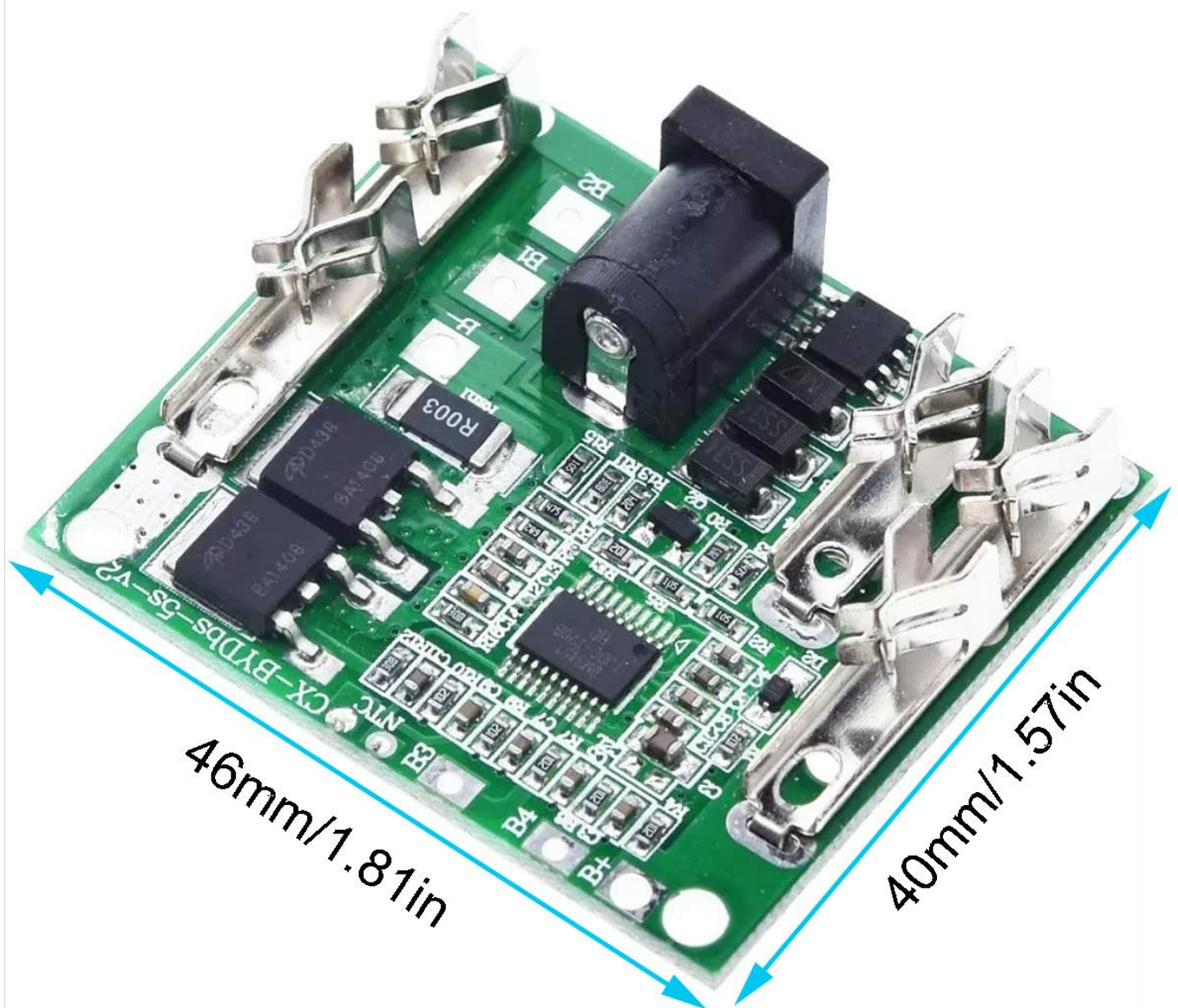


Figure 3: Detailed wiring diagram for connecting the 5-series battery cells to the BMS board. Ensure correct polarity and sequence for each cell connection.

Connection Points:

- **B+**: Battery Positive (Overall positive terminal of the battery pack)
- **B-**: Battery Negative (Overall negative terminal of the battery pack)
- **B1**: Connection point for the positive terminal of the 1st battery cell.
- **B2**: Connection point for the positive terminal of the 2nd battery cell.
- **B3**: Connection point for the positive terminal of the 3rd battery cell.
- **B4**: Connection point for the positive terminal of the 4th battery cell.

The provided nickel strip can be used for making robust connections between battery cells and to the BMS terminals. The DC male cable is for connecting a charger to the board's DC input jack.

Wiring diagram

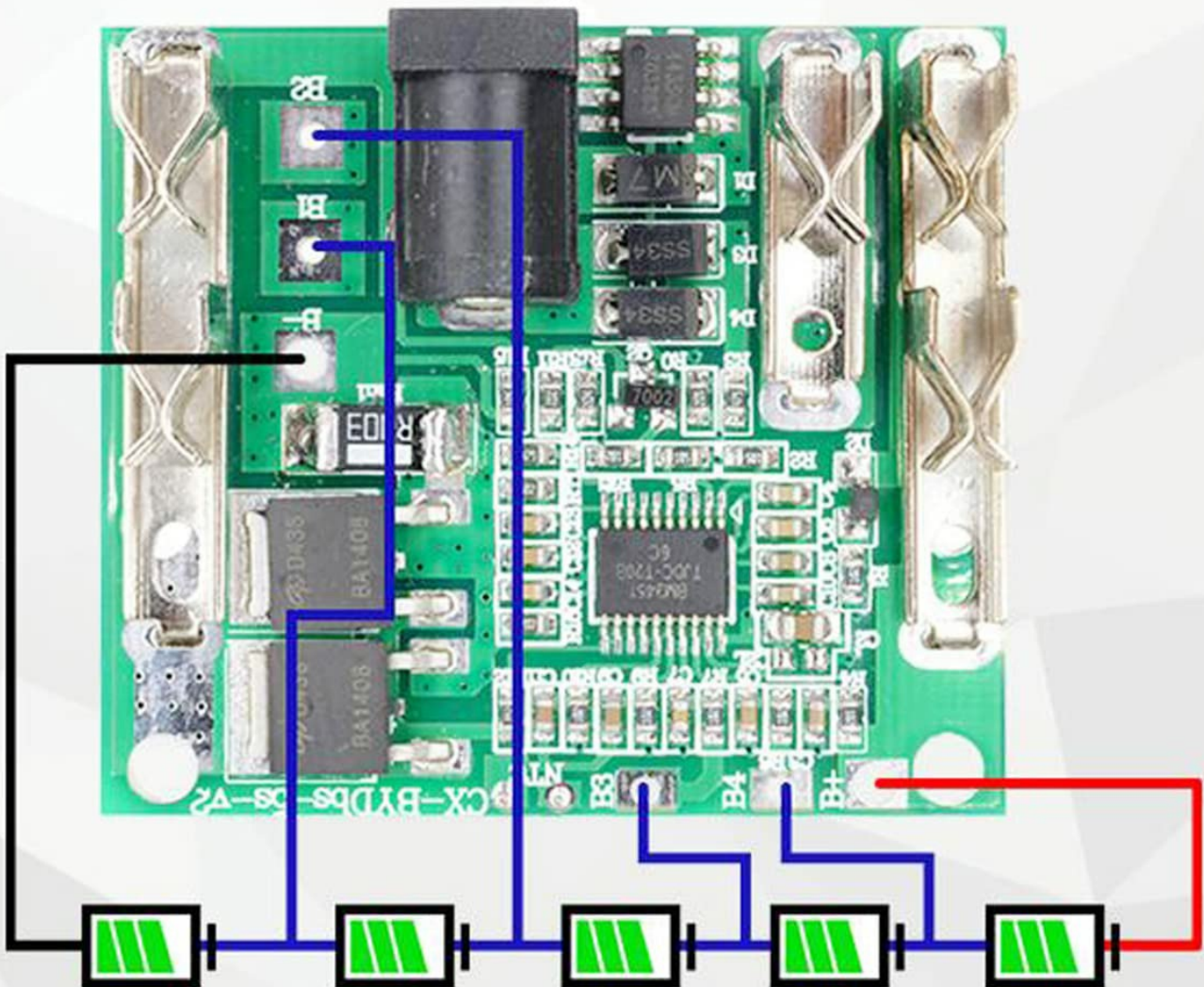


Figure 4: An example of the BMS board integrated into a battery pack for a power tool, demonstrating the wired connections to individual battery cells.

Important Safety Note: Incorrect wiring can damage the BMS board, battery cells, or connected devices, and may pose a fire hazard. If you are unsure about the wiring process, seek assistance from a qualified professional.

5. OPERATION

Once properly installed, the BMS board operates automatically to protect your battery pack during charging and discharging cycles. Its primary functions include:

- **Overcharge Protection:** Prevents individual cells from being charged beyond their safe voltage limit, extending battery life.
- **Over-discharge Protection:** Stops discharge when cells reach their minimum safe voltage, preventing deep discharge damage.
- **Over-current Protection:** Limits the current drawn from the battery pack to prevent damage from excessive loads.
- **Short Circuit Protection:** Immediately cuts off power in the event of a short circuit, protecting the battery and

connected equipment.

- **Over Temperature Protection:** Monitors the board's temperature and shuts down operation if it exceeds safe limits ($70 \pm 5^{\circ}\text{C}$), resuming when it cools down ($55 \pm 5^{\circ}\text{C}$).

The low power consumption of the board (working current approx. $25\mu\text{A}$, stand-by current approx. $6\mu\text{A}$) ensures minimal drain on the battery when not in active use.

6. MAINTENANCE

The Youmile BMS board is designed for reliable operation with minimal maintenance. To ensure optimal performance and longevity:

- Keep the board clean and free from dust and debris.
- Avoid exposing the board to excessive moisture or extreme temperatures outside its specified operating range.
- Regularly inspect all wiring connections for looseness or corrosion, especially if the battery pack is subjected to vibrations or frequent handling.
- Store the battery pack with the BMS in a cool, dry place when not in use.

7. TROUBLESHOOTING

If you encounter issues with your BMS board or battery pack, consider the following troubleshooting steps:

No Charge/Discharge:

- **Check Wiring:** Verify all connections (B+, B-, B1, B2, B3, B4) are secure and correctly wired according to the diagram. Incorrect wiring is a common cause of malfunction.
- **Battery Cell Voltage:** Measure the voltage of each individual battery cell. If any cell is significantly out of balance or below its minimum voltage, the BMS may enter a protection state.
- **Over-current/Short Circuit:** Disconnect the load and charger. Check for any short circuits in the wiring or the connected device. The BMS may have activated its over-current or short-circuit protection.

Overheating:

- **Load Check:** Ensure the continuous discharge current does not exceed the specified 20A. Excessive load can cause the board to overheat.
- **Ventilation:** Ensure adequate airflow around the BMS board, especially if it's enclosed within a battery pack.
- **Internal Resistance:** High internal resistance in battery cells or poor connections can lead to heat generation.


If the issue persists after performing these checks, it may indicate a faulty BMS board or battery cells. Professional assistance may be required.

8. WARRANTY AND SUPPORT

For information regarding returns or specific product support, please refer to the purchase platform or contact the seller directly. The standard return policy for this product is 14 days from the date of purchase.

For technical inquiries or further assistance, please reach out to YoumileDirect, the seller of this product.

Related Documents - JK-YM-323

<div><div>产品规格书</div><div>Product specification</div><div>锂电池主动均衡保护板</div><div>Lithium battery active balancing protection board</div><div>JK-BD4A24S-4P</div><div>版本: 1.0.3</div><div>成都极空科技有限公司</div><div>Chengdu Jikong Technology Co., LTD</div></div>	<div>JK-BD4A24S-4P Lithium Battery Active Balancing Protection Board User Manual</div> <div>Detailed user and maintenance manual for the JK-BD4A24S-4P Lithium Battery Active Balancing Protection Board by Chengdu Jikong Technology Co., LTD. Covers product overview, features, selection guide, functions, parameters, interface definition, installation, and APP operation.</div>
<div><div>产品规格书</div><div>Product specification</div><div>锂电池主动均衡保护板</div><div>Lithium battery active balancing protection board</div><div>JK-B2A24S-30P</div><div>版本: 1.1.1</div><div>成都极空科技有限公司</div><div>Chengdu Jikong Technology Co., LTD</div></div>	<div>JIKONG JK-B2A24S-30P Lithium Battery Active Balancing Protection Board Manual</div> <div>Comprehensive maintenance and user manual for the JIKONG JK-B2A24S-30P Lithium Battery Active Balancing Protection Board. Details product overview, functional characteristics, selection guides, detailed function descriptions, main parameters, interface definitions, installation methods, and APP operation instructions. Supports various lithium battery chemistries and configurations.</div>
<div><div>产品规格书</div><div>Product specification</div><div>锂电池主动均衡保护板</div><div>Lithium battery active balancing protection board</div><div>JK-BxA8S-20P</div><div>版本: 1.1.1</div><div>成都极空科技有限公司</div><div>Chengdu Jikong Technology Co., LTD</div></div>	<div>JK-BxA8S-20P Lithium Battery Active Balancing Protection Board User Manual</div> <div>This document provides a comprehensive user manual for the JK-BxA8S-20P Lithium Battery Active Balancing Protection Board manufactured by Chengdu Jikong Technology Co., LTD. It covers product overview, functional characteristics, selection guides, detailed function introductions, main parameters, interface definitions, and APP operation instructions.</div>
<div><div> 极空</div><div>Smart BMS with Active-Balancer</div><div>(JK-B2A25S-RP)</div><div>Specifications and operation manual</div><div>AKMS Technology Co., Ltd</div></div>	<div>JKBMS Smart BMS with Active-Balancer (JK-B2A25S-RP) - Specification and Operation Manual</div> <div>This document provides comprehensive specifications and operational guidance for the JKBMS Smart BMS with Active-Balancer, model JK-B2A25S-RP. It details product features, technical parameters, connector definitions, installation procedures, app operation, safety precautions, transportation and storage guidelines, default parameter settings, and troubleshooting FAQs for various lithium battery types.</div>
<div><div>产品规格书</div><div>Product specification</div><div>锂电池主动均衡保护板</div><div>Lithium battery active balancing protection board</div><div>JK-BxA8S-20P</div><div>版本: 1.1.1</div><div>成都极空科技有限公司</div><div>Chengdu Jikong Technology Co., LTD</div></div>	<div>JK-BxA8S-20P Lithium Battery Active Balancing Protection Board - Product Specification and Manual</div> <div>Detailed product specification and user manual for the JIKONG JK-BxA8S-20P Lithium Battery Active Balancing Protection Board. Covers features, parameters, interface definitions, installation, and APP operation.</div>
<div><div>产品规格书</div><div>Product specification</div><div>锂电池主动均衡保护板</div><div>Lithium battery active balancing protection board</div><div>JK-BD6A8S-10P</div><div>版本: 1.0.1</div><div>成都极空科技有限公司</div><div>Chengdu Jikong Technology Co., LTD</div></div>	<div>JK-BD6A8S-10P Lithium Battery Active Balancing Protection Board - Jikong Technology</div> <div>Detailed product specification and maintenance manual for the JK-BD6A8S-10P Lithium Battery Active Balancing Protection Board by Chengdu Jikong Technology Co., LTD. Features include active equalization, overcharge/discharge protection, temperature monitoring, and APP control.</div>

