ACEIRMC 16512

ACEIRMC 6S 15A 24V Li-ion 18650 Battery BMS Protection Board User Manual

Model: 16512

1. Product Overview

The ACEIRMC 6S 15A 24V Battery Protection Board (BMS) is designed for Li-ion Lithium 18650 battery packs. It provides essential protection functions to ensure the safety and longevity of your battery cells. This board is suitable for 6-string (6S) battery configurations, offering a continuous discharge current of 15A.

Key Features:

- Designed for 6-string (6S) 22V/24V Li-ion battery packs.
- High continuous discharge current of 15A.
- Compact and lightweight design.
- High-accuracy voltage detection circuit.
- Integrated overcharge protection.
- Integrated over-discharge protection.
- Integrated short-circuit protection.

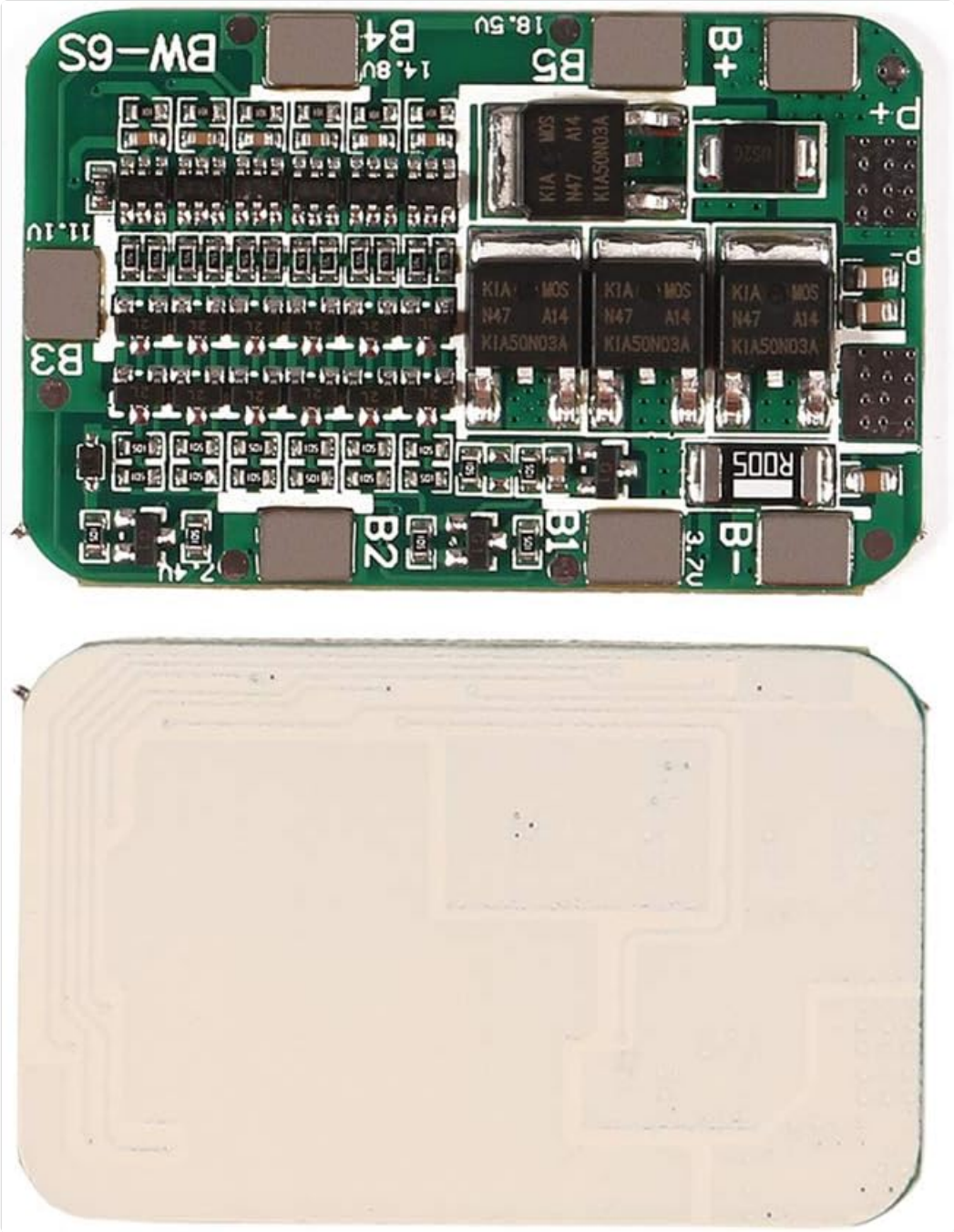

Figure 1: Top view of the ACEIRMC 6S 15A 24V BMS Protection Board, highlighting its compact design and component layout.

2. Technical Specifications

Specification	Value
Size	Approx. 50 x 30 x 2 mm (1.97 x 1.18 x 0.08 inches)
Lampshift Maximum Discharge Current	15A
Instantaneous Discharge Current	25A
Charging Voltage	25.5V

Specification	Value
Charging Current (MAX)	15A
Overcharge Detection Voltage	4.28 ± 0.05V
Overcharge Protection Delay	0.1S
Overcharge Release Voltage	4.08 ± 0.05V
Over-discharge Detection Voltage	2.55 ± 0.08V
Over-discharge Detection Delay	0.1S
Over-discharge Release Voltage	2.9 ± 0.1V
Overcurrent Detection Voltage	150mV
Overcurrent Detection Delay	9MS
Overcurrent Protection Current	30 ± 3A
Short Circuit Detection Delay	250uS
Main Circuit Conduction Resistance	≤20mΩ
Working Current	≤30uA
Sleep Current (Battery Over-discharge)	≤10uA
Temperature Range	-30°C to +80°C

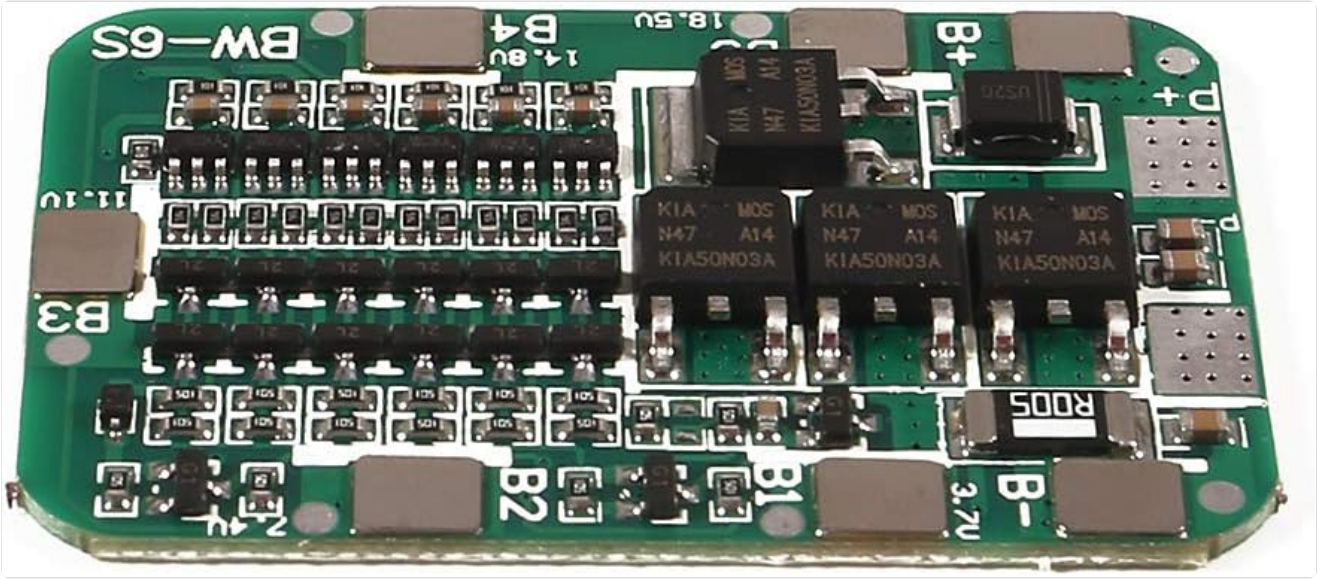

Figure 2: Close-up view of the BMS board, illustrating the integrated circuits and connection pads.

3. Setup and Wiring Instructions

Proper wiring is crucial for the correct operation and safety of the BMS board and your battery pack. Please follow

these instructions carefully.

Wiring Diagram:

Connect the battery cells to the BMS board according to the diagram below. Ensure all connections are secure and correctly polarized.

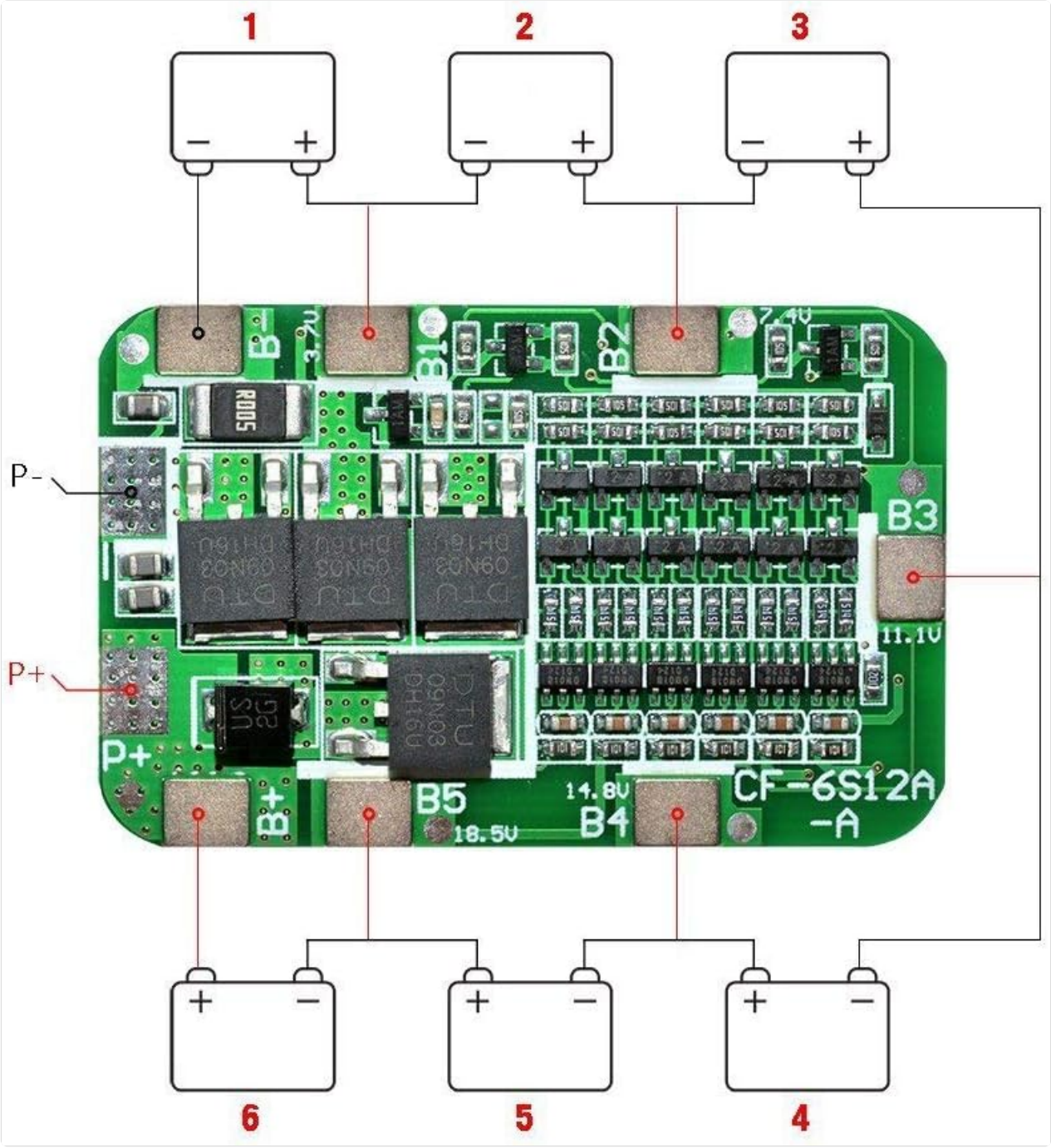

Figure 3: Wiring diagram for connecting six 18650 Li-ion cells to the BMS board. B- is the negative terminal of the first cell, and B+ is the positive terminal of the last cell. P+ and P- are the output terminals for charging and discharging.

1. **Connect B- (Battery Negative):** Connect the negative terminal of the first battery cell to the B- pad on the BMS board.
2. **Connect B1, B2, B3, B4, B5:** Connect the balance wires from the positive terminal of each cell (after the first) to the corresponding B1, B2, B3, B4, B5 pads. For example, B1 connects to the positive of cell 1, B2 to the positive of cell 2, and so on, up to B5.
3. **Connect B+ (Battery Positive):** Connect the positive terminal of the sixth battery cell to the B+ pad on the BMS board.

4. **Connect P- (Output Negative):** This is the negative terminal for both charging and discharging.
5. **Connect P+ (Output Positive):** This is the positive terminal for both charging and discharging.

Important Safety Note: Always connect the balance wires (B1-B5) and the main battery negative (B-) and positive (B+) terminals in the correct sequence. Incorrect wiring can damage the BMS board and/or the battery cells. Ensure all cells are balanced or at similar voltage levels before connecting to the BMS for the first time.

4. Operation

Once the BMS board is correctly wired to your 6S Li-ion battery pack, it will automatically manage the charging and discharging processes, providing protection against various electrical faults.

Charging:

- Connect your 25.5V charger to the P+ and P- terminals of the BMS board.
- The BMS will monitor each cell's voltage and prevent overcharging by cutting off the charge current if any cell reaches the overcharge detection voltage (4.28V ± 0.05V).
- The BMS also provides cell balancing during charging to ensure all cells reach full capacity evenly.

Discharging:

- Connect your load to the P+ and P- terminals of the BMS board.
- The BMS will monitor the total pack voltage and individual cell voltages.
- It will prevent over-discharging by cutting off the discharge current if any cell drops below the over-discharge detection voltage (2.55V ± 0.08V).
- Overcurrent protection will activate if the discharge current exceeds 30A ± 3A.

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Video 1: An overview of Lithium Battery Protection, demonstrating the principles behind BMS operation. This video is provided by the seller and offers general information relevant to the product's function.

5. Maintenance and Care

The ACEIRMC BMS board is designed for durability and requires minimal maintenance. However, following these guidelines can help ensure its long-term performance:

- **Keep Dry:** Avoid exposing the board to moisture or liquids, as this can cause short circuits and damage.
- **Temperature:** Operate and store the board within its specified temperature range (-30°C to +80°C). Extreme temperatures can affect performance and lifespan.
- **Cleanliness:** Keep the board free from dust and debris. If cleaning is necessary, use a soft, dry brush or compressed air. Do not use solvents or harsh chemicals.
- **Physical Protection:** Protect the board from physical impact or bending, which could damage components or

solder joints.

- **Regular Inspection:** Periodically inspect the wiring and connections for any signs of wear, corrosion, or loose contacts.

6. Troubleshooting

If you encounter issues with your BMS board, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
No output voltage (P+ and P- terminals)	• Incorrect wiring. • Battery pack voltage too low (over-discharged). • Short circuit protection activated. • Overcurrent protection activated.	• Verify all wiring connections against the diagram (Figure 3). • Charge the battery pack using a compatible charger. The BMS should reset once voltage is restored. • Disconnect the load, check for short circuits in the load, and reconnect. • Disconnect the load, reduce the load current, and reconnect.
Battery not charging	• Charger not connected correctly. • Charger voltage/current incompatible. • Overcharge protection activated (cells already full).	• Ensure charger is connected to P+ and P- and is functioning. • Use a charger with a 25.5V output and a maximum current of 15A. • Check individual cell voltages. If cells are near 4.28V, charging will stop.
BMS board gets hot during operation	• Excessive discharge current. • Poor connections or high resistance.	• Reduce the load to stay within the continuous 15A limit. • Inspect all solder joints and connections for quality and tightness.

If the problem persists after attempting these solutions, please contact customer support for further assistance.

7. Warranty and Support

For warranty information and technical support, please refer to the seller's policies on the platform where the product was purchased. Keep your purchase receipt as proof of purchase.

For additional resources or to contact ACEIRMC directly, please visit the official ACEIRMC store page:

Visit the ACEIRMC Store