

## Aideepen 70127595

# Aideepen 2S 10A 18650 BMS Lithium Battery Protection Board User Manual

Model: 70127595

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## 1. INTRODUCTION

This manual provides detailed instructions for the proper use, installation, and maintenance of the Aideepen 2S 10A 18650 BMS Lithium Battery Protection Board. This board is designed to protect 2-cell (2S) Li-ion/Lipo battery packs, ensuring their longevity and safe operation by managing overcharge, over-discharge, and short-circuit conditions. Please read this manual thoroughly before use.

## 2. SAFETY INFORMATION

### Important Safety Warnings:

- This protection board is **not suitable** for lithium iron phosphate batteries, hernia lamps, hand drill battery packs, electric fish battery packs, electric bicycle battery packs, 775 (4A) motors, or 1W fish eye LED lights.
- Ensure that the battery pack's voltage, capacity, and internal resistance are well-matched for optimal performance and safety.
- The battery voltage should be approximately 3.7V (rated voltage) for proper operation.
- If the battery pack does not output voltage after assembly, it can be charged with an 8.4V charger to activate the protection board.
- Always observe correct polarity when connecting the board to batteries and charging/discharging circuits. Incorrect wiring can damage the board and batteries.
- Handle with care to avoid electrostatic discharge, which can damage electronic components.

## 3. PRODUCT OVERVIEW

The Aideepen 2S 10A BMS is a compact circuit board designed to provide essential protection for 2-cell series lithium-ion or lithium-polymer battery packs. It includes features such as overcharge protection, over-

discharge protection, and short-circuit protection, along with a balance function to maintain cell voltage equality.

### Package Contents:

- 5 x Aideepen 2S 10A BMS Protection PCB Boards

### Key Features:

- Overcharge Protection
- Over-discharge Protection
- Short Circuit Protection (requires charge recovery)
- Balance Function for cell voltage equalization
- Compact design for easy integration

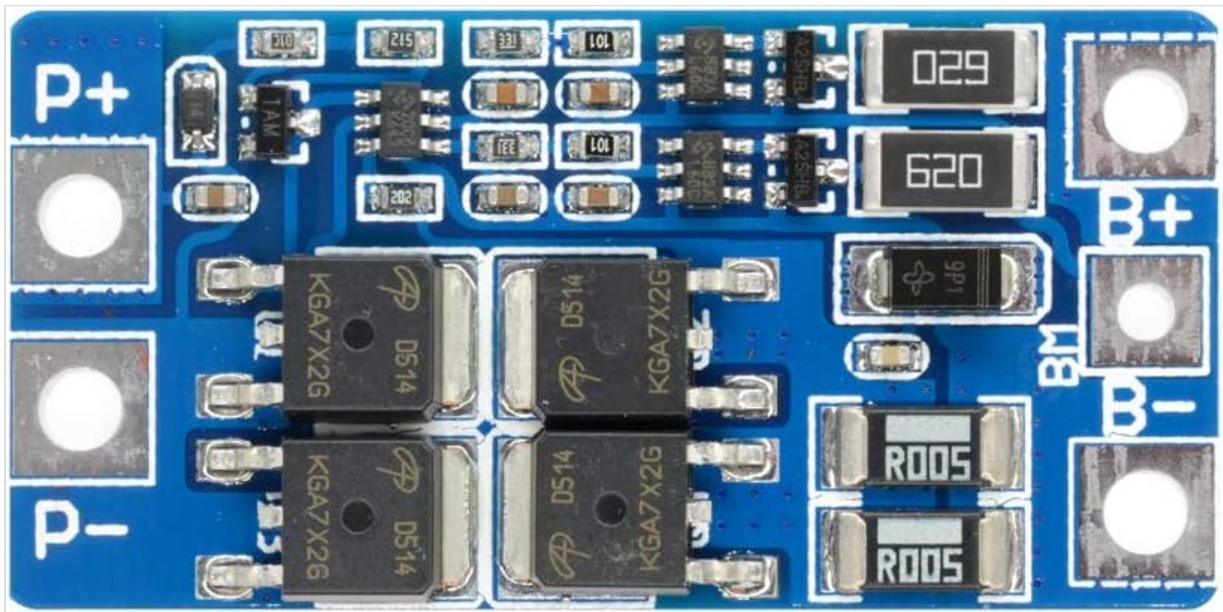


Figure 3.1: Top-down view of the Aideepen 2S 10A BMS board, showing components and connection points.

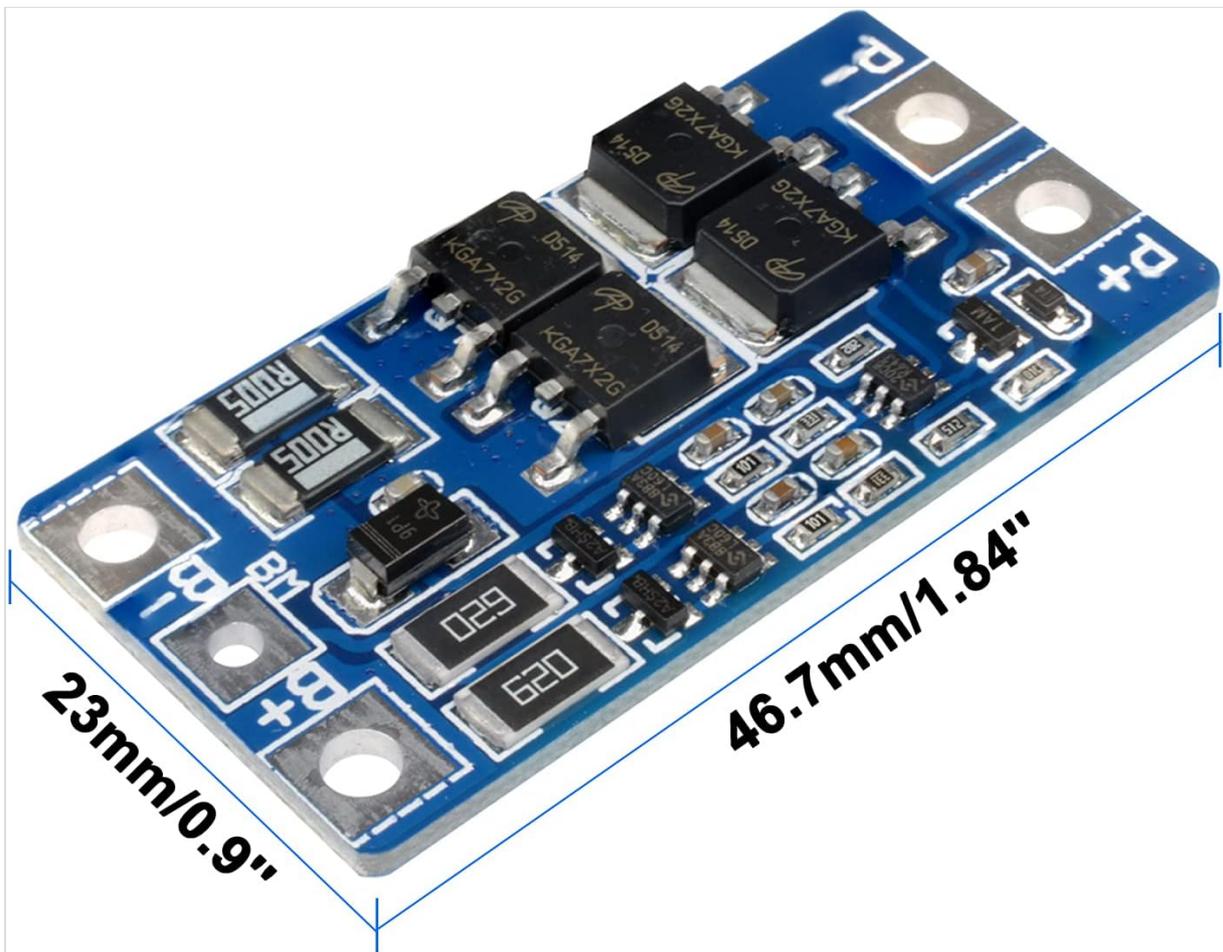


Figure 3.2: Physical dimensions of the BMS board, measuring 46.7mm (1.84 inches) in length and 23mm (0.9 inches) in width.

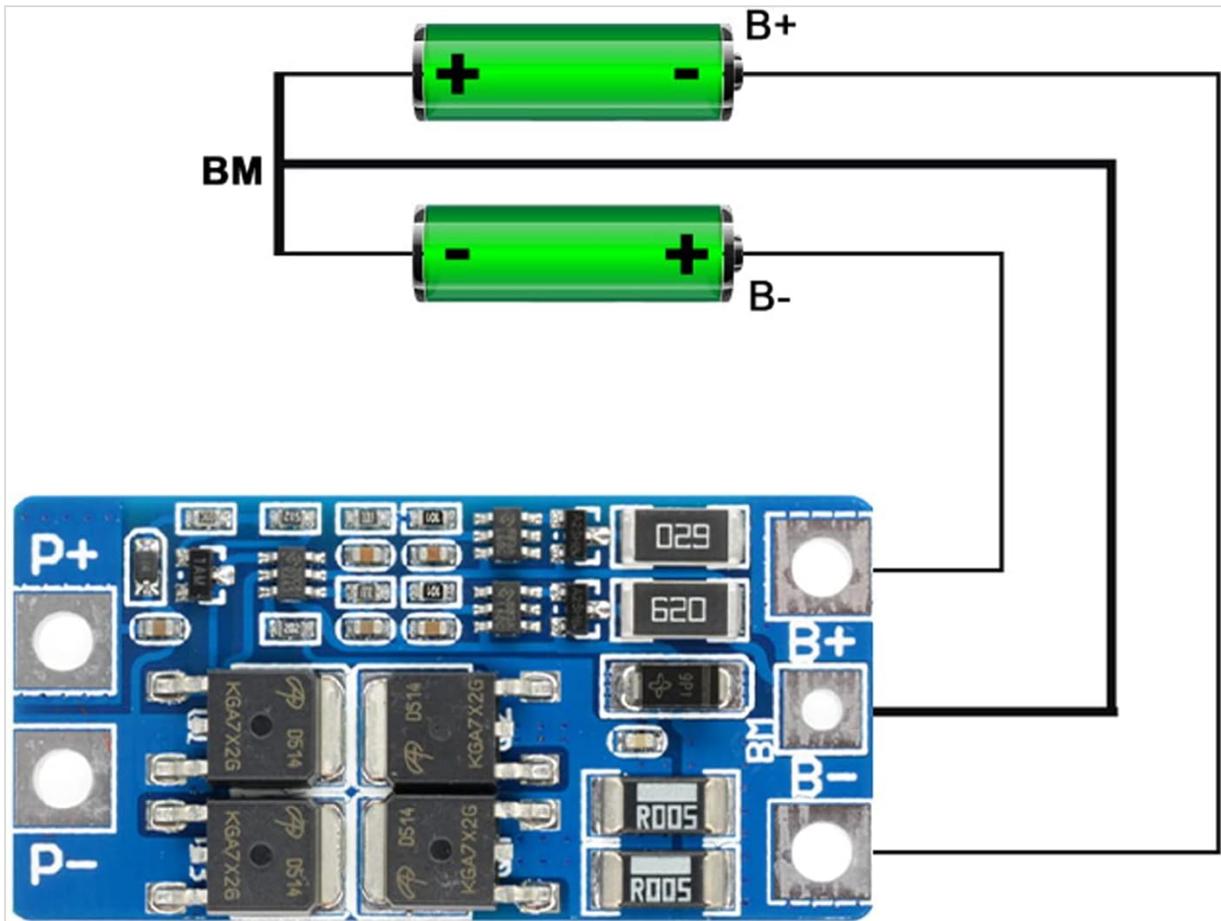
## 4. SPECIFICATIONS

Parameter	Value
Overcharge Voltage Range	4.25-4.35V $\pm$ 0.05V
Over-discharge Voltage Range	2.5-3.0V $\pm$ 0.05V
Upper Working Current	10A
Upper Limit Instantaneous Current	20A
Quiescent Current	Less than 10 $\mu$ A
Internal Resistance	Less than 300m $\Omega$
Charging Voltage	8.4V-9V
Operating Temperature	-40°C to +50°C
Storage Conditions	-40°C to +80°C
Effective Life	More than 50,000 hours
Dimensions	46.7 x 23 x 3.15 mm

## 5. SETUP & INSTALLATION

Careful wiring is essential for the correct and safe operation of the BMS board. Follow the diagram and descriptions below precisely.

### Wiring Diagram:



(P+ P- Input and output at the same time)

Figure 5.1: Diagram illustrating the connection of two 18650 cells to the BMS board.

### Welding Point Description:



Figure 5.2: Close-up view of the BMS board highlighting the welding points and their corresponding connections.

- **B+**: Connect to the positive terminal of the battery pack.
- **B-**: Connect to the negative terminal of the battery pack.
- **BM**: Connects to the connection point between Battery 1 and Battery 2 (for balancing).
- **P+**: Connect to the positive terminal of the charge/discharge circuit (shared).
- **P-**: Connect to the negative terminal of the charge/discharge circuit (shared).

**Note:** Ensure all connections are secure and properly insulated to prevent short circuits. Double-check polarity before applying power.

## 6. OPERATING INSTRUCTIONS

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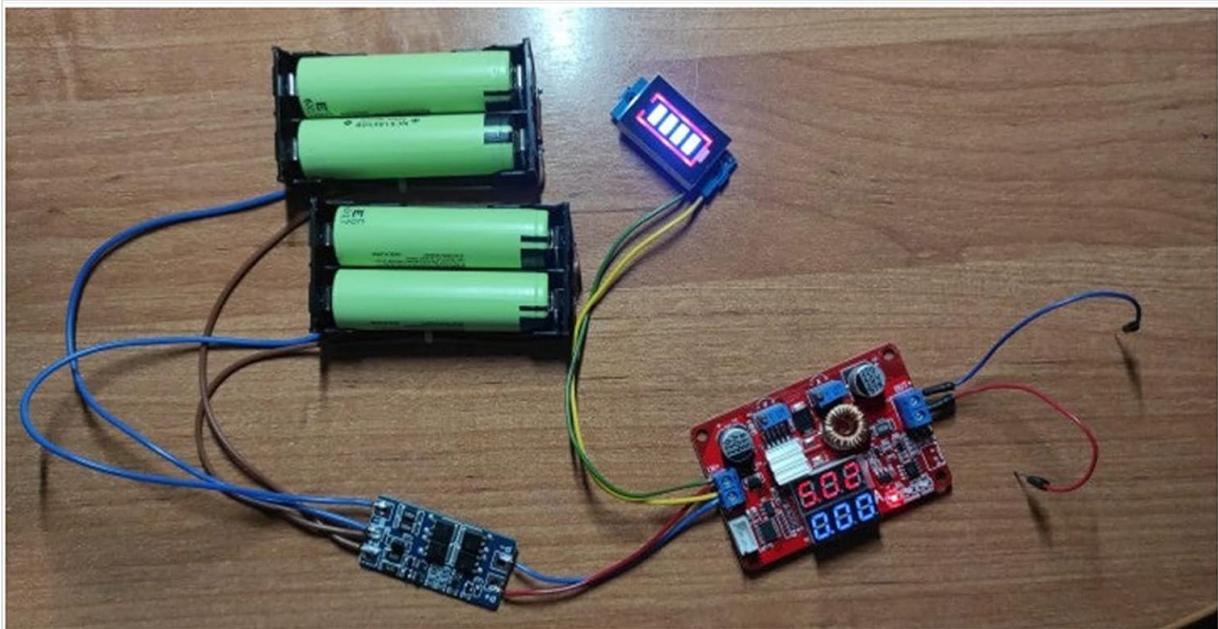
Once the BMS board is correctly wired to your 2S battery pack, it will automatically manage the charging and discharging processes, providing protection against common battery issues.

### Charging:

- Connect an appropriate 8.4V-9V charger to the P+ and P- terminals.
- The BMS will monitor the individual cell voltages and terminate charging if any cell reaches the overcharge voltage range (4.25-4.35V).
- The balance function will work to equalize the voltage between the two cells during charging.

### Discharging:

- Connect your load to the P+ and P- terminals.
- The BMS will cut off discharge if any cell reaches the over-discharge voltage range (2.5-3.0V) to prevent battery damage.
- The maximum continuous discharge current is 10A, with an instantaneous peak of 20A. Exceeding these limits may trigger protection.



## Welding point Description:

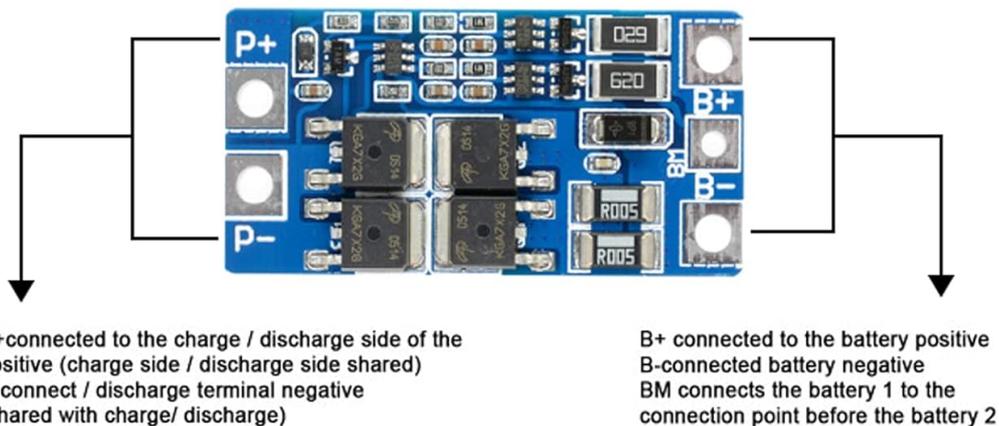


Figure 6.1: An example setup showing the BMS board connected to a 2S battery pack and a charging module with a display.

## 7. TROUBLESHOOTING

- **No Output Voltage after Assembly:**

If the battery pack does not show output voltage after initial assembly, connect an 8.4V charger to the P+ and P- terminals. This will typically activate the protection board and restore output.

- **Short Circuit Protection Triggered:**

If a short circuit occurs, the board will cut off output. To recover, remove the short circuit and then connect a charger to the P+ and P- terminals to reset the protection.

- **Battery Pack Not Charging/Discharging Properly:**

Verify all wiring connections, especially B+, B-, BM, P+, and P-. Ensure that the battery cells are healthy and their voltage, capacity, and internal resistance are matched. Check if the charging voltage is within the specified 8.4V-9V range.

- **Overcharge/Over-discharge Protection Constantly Triggering:**

This could indicate an issue with the battery cells themselves (e.g., unbalanced cells, degraded capacity) or an incorrect charging/discharging setup. Check individual cell voltages and ensure they are within safe operating limits.

## 8. MAINTENANCE

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- Keep the BMS board clean and free from dust and moisture.
- Avoid exposing the board to extreme temperatures outside its operating and storage ranges.
- Regularly inspect wiring for any signs of damage or loose connections.
- Store the board in a dry, anti-static environment when not in use.

## 9. WARRANTY & SUPPORT

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For technical support or warranty inquiries, please contact Aideepen customer service through your original point of purchase. Please have your model number (70127595) and purchase details ready.