

hobbyant HXYP-5S-B530

hobbyant HXYP-5S-B530 21V 5S Lithium Battery Protection Board Instruction Manual

1. INTRODUCTION

This manual provides essential information for the safe and effective use of the hobbyant HXYP-5S-B530 21V 5S Lithium Battery Protection Board (BMS). This board is designed to manage and protect 5-series (5S) lithium-ion or lithium-polymer battery packs, ensuring their longevity and safe operation by preventing overcharge, over-discharge, and overcurrent conditions, and providing cell equalization and temperature control.

2. PRODUCT OVERVIEW

The HXYP-5S-B530 BMS is a compact and efficient solution for battery pack management. It integrates multiple protection features to safeguard your battery cells.

2.1 Package Contents

- 1 x hobbyant HXYP-5S-B530 5S Lithium Battery Protection Board
- 1 x Connection Cable

2.2 Key Features

- **5-Series Cell Protection:** Specifically designed for 5S lithium battery packs.
- **Overcharge Protection:** Prevents cells from being charged beyond their safe voltage limit.
- **Over-discharge Protection:** Prevents cells from being discharged below their safe voltage limit.
- **Overcurrent Protection:** Limits the maximum discharge current to prevent damage to the battery and load.
- **Cell Equalization:** Balances the voltage of individual cells within the pack, extending battery life.
- **Temperature Control:** Monitors battery temperature to prevent overheating.

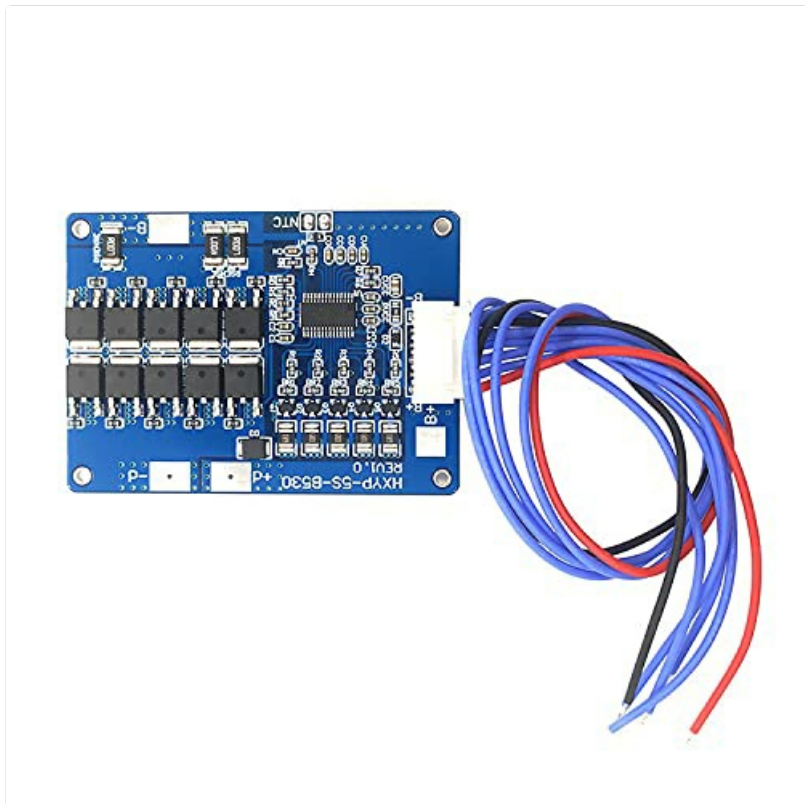


Figure 1: Top view of the HXYP-5S-B530 protection board, showing components and connection points.

3. SPECIFICATIONS

Parameter	Value
Model	HXYP-5S-B530
Overcharge Voltage Range	4.25 ± 0.05V
Over-discharge Voltage Range	2.8 ± 0.05V
Maximum Operating Current	30A
Instantaneous Current Limit	45A
Quiescent Current	<30uA
Charging Voltage	21V
Dimensions	70 x 50 x 7mm
Equalization Current	56mA
Manufacturer	Antkay
Part Number	LZL1815292

4. SETUP

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

4.1 Safety Precautions

- Wear appropriate personal protective equipment (PPE), including safety glasses.
- Ensure all connections are secure and insulated to prevent short circuits.
- Work in a well-ventilated area.
- Verify battery polarity before connecting to the BMS. Incorrect polarity can cause severe damage.

4.2 Wiring Diagram and Connection Steps

Refer to the following diagram and steps for connecting the BMS to your 5S battery pack.

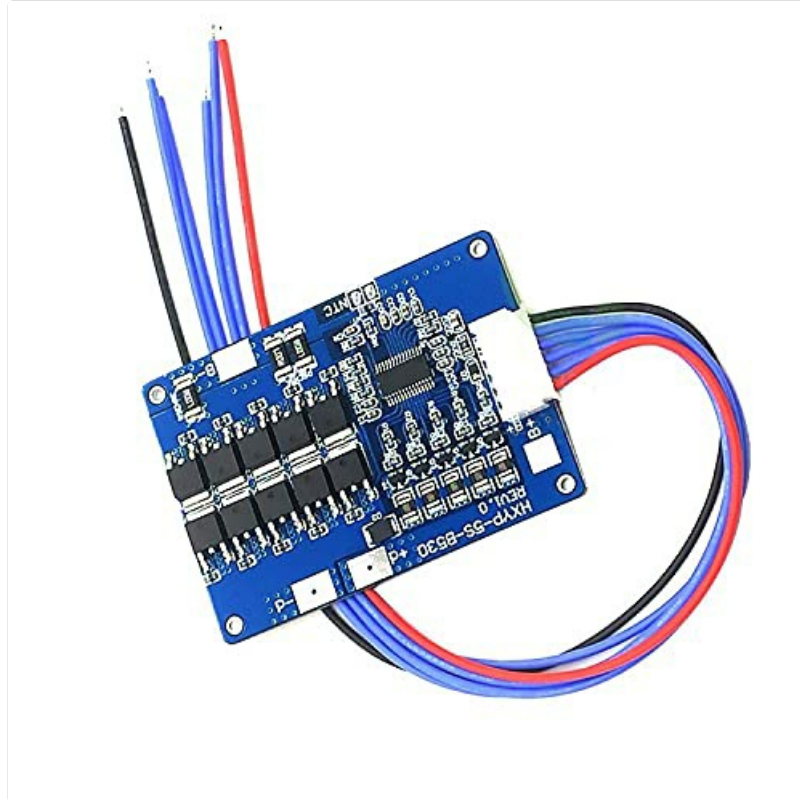


Figure 2: The HXYP-5S-B530 board connected to a 5S battery pack with balance wires.

1. **Connect Balance Wires:** Connect the balance wires from your 5S battery pack to the corresponding terminals on the BMS. Ensure the wires are connected in the correct order, typically starting from B- (negative terminal of the first cell) up to B+ (positive terminal of the fifth cell). The included cable should simplify this connection.
2. **Connect Main Negative (B-):** Connect the main negative terminal of your battery pack to the B- pad on the BMS.
3. **Connect Main Positive (P+):** Connect the main positive terminal of your battery pack to the P+ pad on the BMS. This is typically the charging and discharging positive terminal.
4. **Connect Load/Charger Negative (P-):** Connect the negative terminal of your load and charger to the P- pad on the BMS.
5. **Verify Connections:** Double-check all connections for correct polarity and secure attachment before applying power.

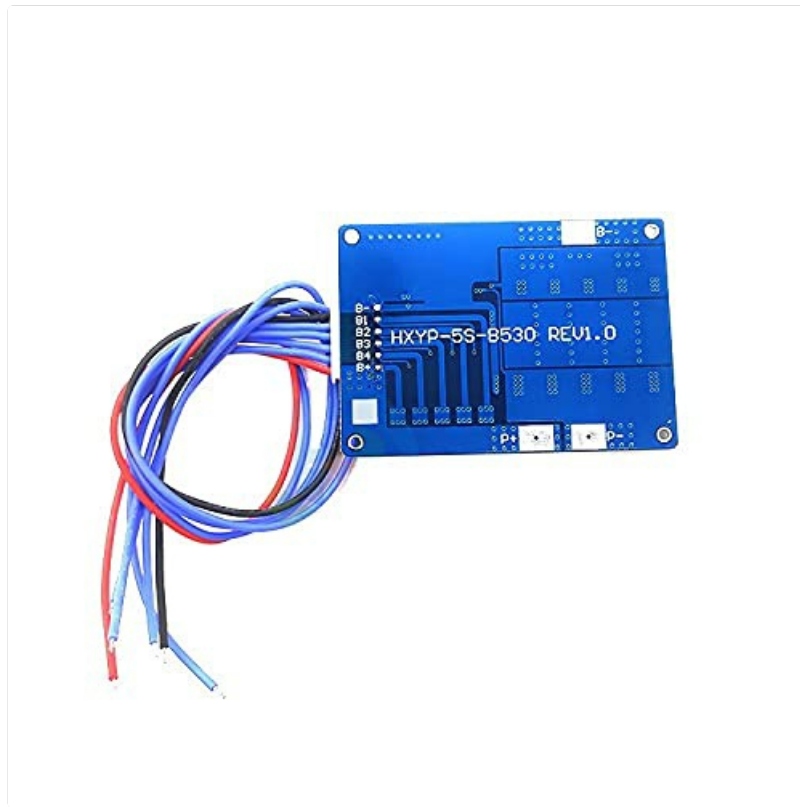


Figure 3: Rear view of the HXYP-5S-B530 board, showing the balance wire connector and main pads.

5. OPERATING INSTRUCTIONS

Once properly installed, the BMS operates automatically to protect your battery pack.

5.1 Charging

- Connect a 21V charger to the P+ and P- terminals of the BMS.
- The BMS will monitor each cell's voltage and terminate charging if any cell reaches the overcharge voltage (4.25V).
- The equalization function will activate during charging to balance cell voltages.

5.2 Discharging

- Connect your load to the P+ and P- terminals of the BMS.
- The BMS will cut off discharge if any cell voltage drops below the over-discharge voltage (2.8V) or if the current exceeds the instantaneous current limit (45A) or continuous operating current (30A).

6. MAINTENANCE

The hobbyant HXYP-5S-B530 BMS requires minimal maintenance. Regular inspection can help ensure optimal performance.

- **Visual Inspection:** Periodically check the board and connections for any signs of damage, corrosion, or loose wires.
- **Cleaning:** If necessary, gently clean the board with a soft, dry brush to remove dust. Do not use liquids or solvents.
- **Storage:** If storing the battery pack with the BMS for an extended period, ensure the battery is charged to a storage voltage (typically 3.7-3.8V per cell) to prevent over-discharge. Store in a cool, dry place.

7. TROUBLESHOOTING

If you encounter issues with your BMS, consider the following common problems and solutions:

- **No Output Voltage:**
 - Check if the battery pack voltage is too low (below over-discharge threshold).
 - Verify all wiring connections, especially B- and P-.
 - Ensure no short circuits are present on the output.
- **Cannot Charge:**
 - Check if any cell voltage is too high (above overcharge threshold).
 - Verify charger functionality and voltage output (should be 21V).
 - Inspect balance wire connections for continuity.
- **Uneven Cell Voltages:**
 - Ensure the battery pack has been fully charged to allow the equalization function to work.
 - Check balance wire connections for proper contact.
 - If a cell is significantly out of balance, it may indicate a faulty cell.
- **BMS Overheating:**
 - Reduce the load current if it consistently approaches or exceeds the maximum operating current.
 - Ensure adequate ventilation around the BMS.

8. SAFETY INFORMATION

Working with lithium batteries and electronic components requires caution. Adhere to the following safety guidelines:

- Do not disassemble or modify the BMS.
- Keep the BMS away from water, moisture, and extreme temperatures.
- Always use the correct voltage and current ratings for your battery pack and charger.
- In case of smoke, fire, or unusual odors, immediately disconnect power and take appropriate safety measures.
- Dispose of faulty batteries and electronic components according to local regulations.

9. WARRANTY AND SUPPORT

Specific warranty information for the hobbyant HXYP-5S-B530 is not provided in this manual. Please refer to your point of purchase or the manufacturer's official website for warranty details and technical support.