

## daier E880

# daier 14.8V 4S 30A 18650 Lithium Battery BMS PCB Protection Board User Manual

Model: E880 | Brand: daier

## 1. OVERVIEW

The daier 14.8V 4S 30A 18650 Lithium Battery BMS PCB Protection Board is designed to manage and protect 4-series (4S) lithium-ion battery packs, typically composed of 18650 cells. This Battery Management System (BMS) ensures the safe and efficient operation of your battery pack by providing essential protection functions and cell balancing.

### Key Features:

- **Over Charge Protection:** Prevents cells from being charged beyond their safe voltage limit (detection at  $4.28V \pm 0.05V$ , release at  $4.08V \pm 0.1V$ ).
- **Over Discharge Protection:** Safeguards cells from being discharged below their minimum safe voltage (detection at  $2.55V \pm 0.08V$ ).
- **Over Current Protection:** Limits the discharge current to prevent damage to the battery and BMS (over current at  $75A \pm 5A$ ).
- **Short Circuit Protection:** Automatically disconnects the load in case of a short circuit, with self-recovery upon load removal.
- **Cell Balancing:** Balances individual cell voltages during charging to prolong battery life (balanced current:  $60mA \pm 5mA$ ).
- **Working Current:** Supports a continuous working current of 30A.

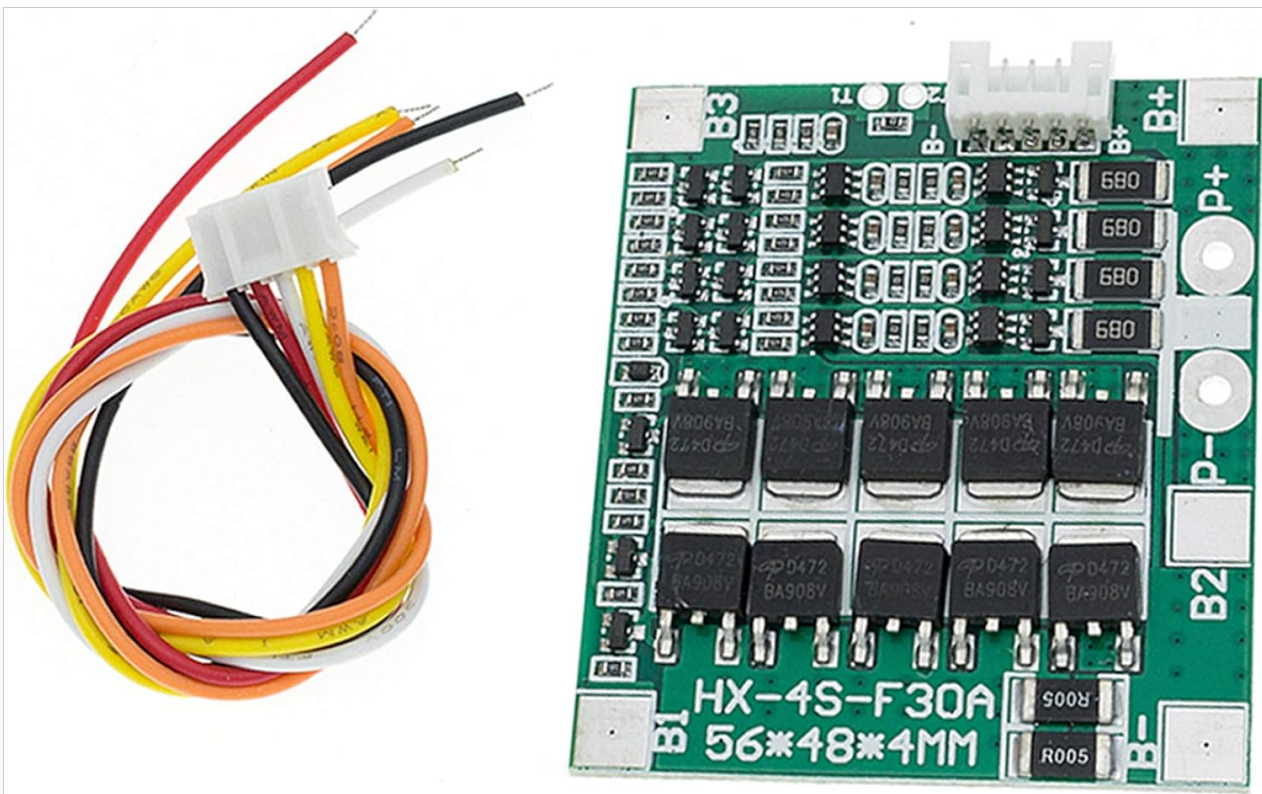


Image 1.1: The daier 14.8V 4S 30A 18650 Lithium Battery BMS PCB Protection Board, showing the main board and the included wiring harness for cell connections.

## 2. SAFETY INFORMATION

Please read and understand all safety instructions before installing or operating the BMS board. Failure to follow these guidelines may result in battery damage, personal injury, or fire.

- **Professional Installation Recommended:** Installation of this BMS board requires knowledge of electronics and battery systems. If you are unsure, seek professional assistance.
- **Correct Polarity:** Always ensure correct polarity when connecting the battery cells and load to the BMS. Incorrect connections can cause irreversible damage to the BMS and battery pack.
- **Voltage Compatibility:** This BMS is designed for 4S (14.8V nominal) lithium-ion battery packs. Do not use it with battery packs of different cell counts or chemistries.
- **Current Limits:** Do not exceed the specified working current (30A) or overcurrent (75A) limits. Exceeding these limits can lead to overheating and damage.
- **Avoid Short Circuits:** While the BMS has short-circuit protection, intentionally shorting the output terminals should be avoided.
- **Environmental Conditions:** Operate the BMS within the specified temperature range (-30°C to +80°C). Keep the board dry and away from conductive materials.
- **Incompatible Applications:** This BMS is **not** suitable for high-power applications such as xenon lamps, hand drill battery packs, power tool battery packs, vacuum cleaners, sweepers, electric bicycle battery packs, baby car battery packs, or motors with power ratings of 550W or more. Using it in such applications may lead to malfunction or failure.

## 3. SETUP AND WIRING

Proper wiring is crucial for the correct function of the BMS. Refer to the diagram below for connection points.

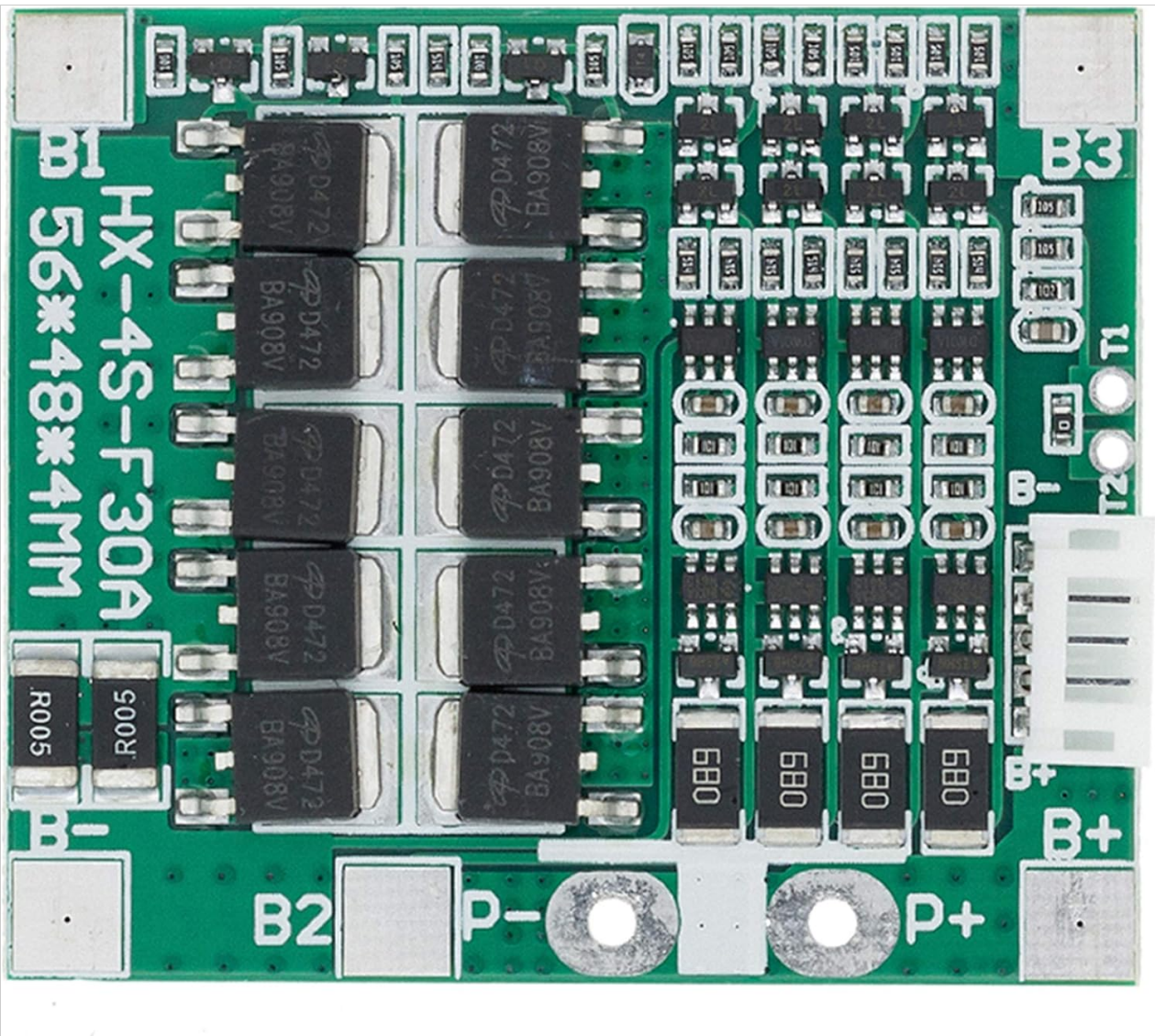


Image 3.1: Detailed wiring diagram for the 4S BMS board, illustrating connections for battery cells and charge/discharge terminals.

### Wiring Steps:

1. **Connect B- (Battery Negative):** Connect the main negative terminal of your 4S battery pack to the B- pad on the BMS board.
2. **Connect Balance Wires:** Use the provided wiring harness to connect the individual cell voltages. The harness typically has wires for B-, B1, B2, B3, and B+.
  - Connect the B- wire of the harness to the main negative terminal of the battery pack (same as the main B- connection).
  - Connect B1 to the positive terminal of the first cell (Cell 1+).
  - Connect B2 to the positive terminal of the second cell (Cell 2+).
  - Connect B3 to the positive terminal of the third cell (Cell 3+).
  - Connect B+ to the positive terminal of the fourth cell (Cell 4+), which is also the main positive terminal of the battery pack.
3. **Connect P- (Load/Charger Negative):** The P- pad serves as both the negative charging port and the negative discharge port. Connect the negative terminal of your charger and your load to the P- pad.
4. **Connect P+ (Load/Charger Positive):** The P+ pad serves as both the positive charging port and the positive discharge port. Connect the positive terminal of your charger and your load to the main positive terminal of the battery pack (which is also connected to B+).

**Important Note:** Ensure all connections are secure and properly insulated to prevent accidental short circuits. Double-



check all polarities before applying power.

## Setup Video Guide

Your browser does not support the video tag.

Video 3.2: This video demonstrates the wiring process for a 4S 30A 18650 Lithium Battery BMS PCB, showing how to connect the battery cells and output terminals. It provides a visual aid for the setup instructions.

Your browser does not support the video tag.

Video 3.3: Another instructional video illustrating the connection of multiple 4S 30A 18650 Lithium Battery BMS PCB units. This can be helpful for understanding the physical board and its connection points.

## 4. OPERATING INSTRUCTIONS

---

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

- **Charging:** Connect a compatible 16.8V (for 4S Li-ion) charger to the P+ and P- terminals. The BMS will manage overcharge protection and cell balancing. For optimal balancing, a 17V power supply with a current capacity of 0.2 times the battery capacity (self-stop current less than 30mA) is recommended.
- **Discharging:** Connect your load to the P+ and P- terminals. The BMS will monitor the discharge current and cell voltages to prevent over-discharge and over-current conditions.
- **Protection Activation:** If an over-charge, over-discharge, or over-current event occurs, the BMS will temporarily cut off the output to protect the battery.
- **Short Circuit Recovery:** In case of a short circuit, the BMS will disconnect the load. To restore operation, remove the short circuit, and the BMS will typically self-recover.

## 5. MAINTENANCE

---

Minimal maintenance is required for the BMS board, but regular checks can ensure longevity and reliable performance.

- **Visual Inspection:** Periodically inspect the board for any signs of physical damage, corrosion, or loose connections.
- **Cleanliness:** Keep the board free from dust, dirt, and moisture. Use a soft, dry brush or compressed air for cleaning if necessary.
- **Connection Integrity:** Ensure all wiring connections remain secure. Loose connections can lead to intermittent operation or arcing.
- **Battery Health:** Monitor the overall health of your battery pack. While the BMS provides protection, it cannot compensate for severely degraded cells.

## 6. TROUBLESHOOTING

---

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

- **No Output Voltage:**
  - Check all wiring connections for proper polarity and secure contact.
  - Verify that the battery pack voltage is within the operational range (above over-discharge voltage).
  - If the BMS entered a protection state (e.g., due to a short circuit or over-discharge), it might require a reset.

Apply a charging voltage to the P+ and P- terminals to reactivate the output.

- **Charging Not Initiating:**

- Ensure the charger is connected correctly and providing the appropriate voltage (e.g., 16.8V for 4S).
- Check if any cell is severely over-discharged, which might prevent charging.

- **BMS Overheating:**

- Reduce the load current to ensure it does not exceed the continuous working current of 30A.
- Ensure adequate ventilation around the BMS board.

- **Unreliable Operation with Inductive Loads:**

- This BMS may not operate reliably with inductive loads such as motors. If experiencing issues, consider if your application falls into this category. This BMS is not recommended for motors 550W or above.

- **Balancing Issues:**

- Ensure the balance wires are correctly connected to each cell.
- For effective balancing, ensure the charging voltage is stable and sufficient.

## 7. SPECIFICATIONS

Parameter	Value
Model Number	E880
Battery Type	4S 18650 Lithium-Ion
Over Charge Detection Voltage	4.28V $\pm$ 0.05V
Over Charge Release Voltage	4.08V $\pm$ 0.1V
Over Discharge Detection Voltage	2.55V $\pm$ 0.08V
Working Current	30A
Over Current Protection	75A $\pm$ 5A
Short Circuit Protection	Yes (Self-recovery)
Balanced Current	60mA $\pm$ 5mA
Temperature Range	-30°C to +80°C
Product Dimensions	56mm x 45mm x 3mm (2.2 x 1.77 x 0.12 inches)
Item Weight	0.81 ounces (0.02 Kilograms)
Output Voltage (DC)	14.4 Volts (Nominal)

## 8. WARRANTY AND SUPPORT

For warranty information or technical support regarding your daier 14.8V 4S 30A 18650 Lithium Battery BMS PCB

Protection Board, please contact the seller or manufacturer directly through your purchase platform. Ensure you have your order details and model number (E880) available for faster assistance.