

DAOKAI DE-DA-005

DAOKAI 1S 3.7V 4A Lithium Battery Protection Board (BMS) User Manual

Model: DE-DA-005

1. INTRODUCTION

This manual provides essential information for the safe and effective use of the DAOKAI 1S 3.7V 4A Lithium Battery Protection Board (BMS). This module is designed to protect single-cell 18650 lithium-ion batteries from common issues such as overcharge, overdischarge, short circuits, and overcurrent, ensuring the longevity and safety of your battery applications. Please read these instructions carefully before installation and operation.

2. PRODUCT OVERVIEW

The DAOKAI 1S 3.7V 4A BMS is a compact and efficient battery management system for single-cell lithium batteries. It integrates critical protection circuits to safeguard the battery during charging and discharging cycles. The board features DW01 and 8205A IC components for reliable performance.

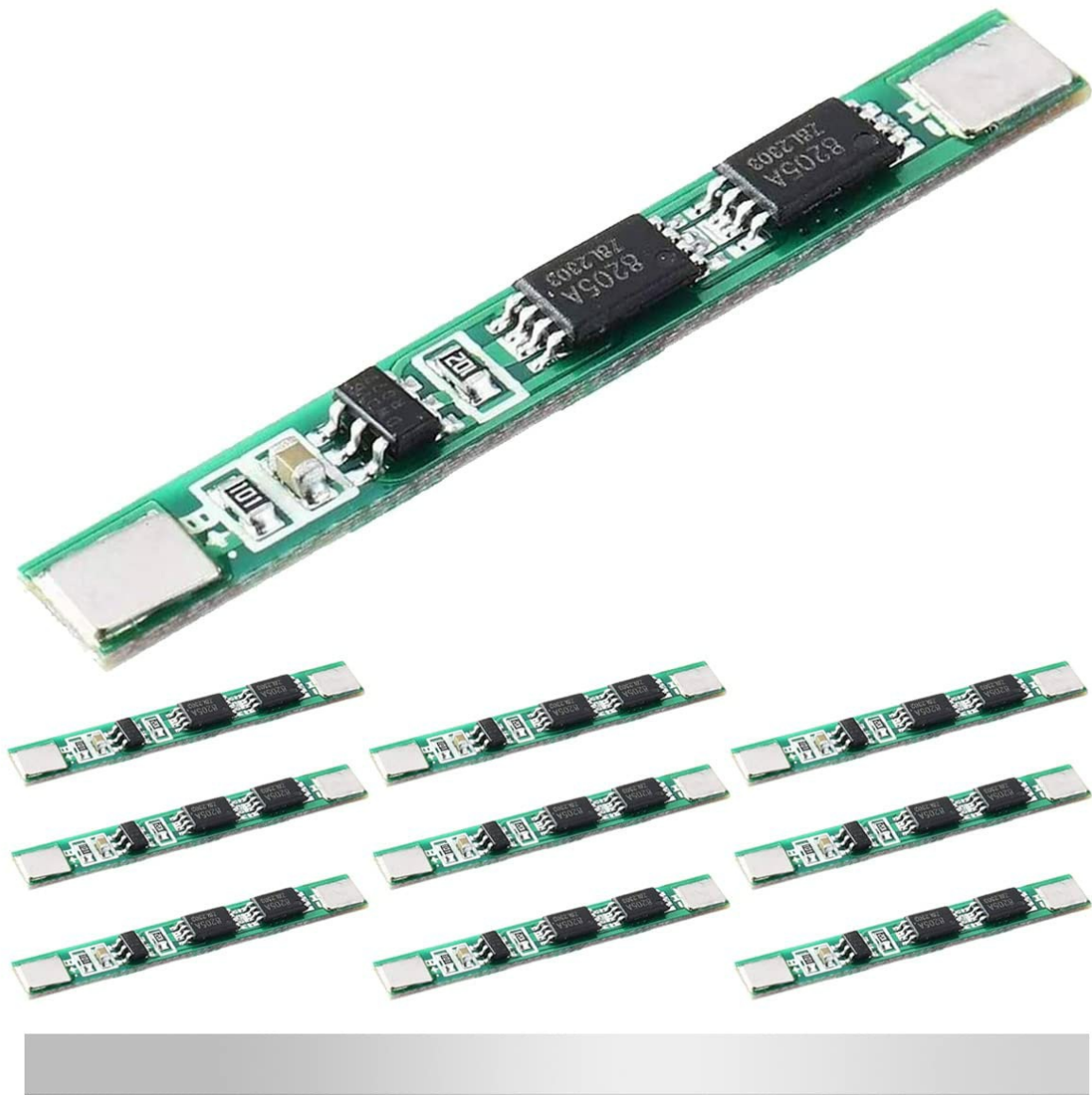
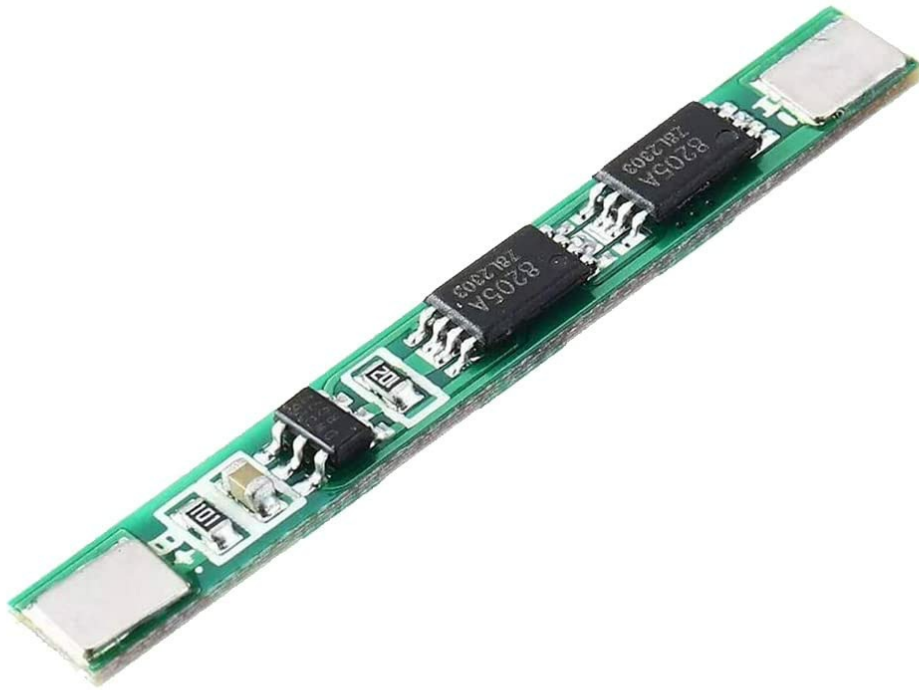


Figure 2.1: General view of the DAOKAI 1S 3.7V 4A Lithium Battery Protection Board.

DESCRIPTION



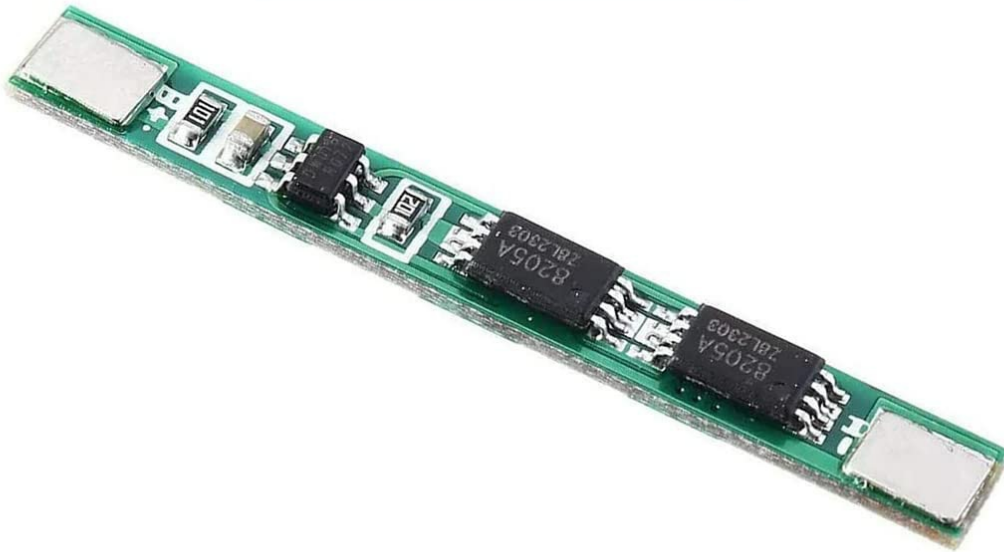
Overcharge detection voltage: $4.25 \pm 0.05\text{V}$
Overcharge release voltage: $4.23 \pm 0.05\text{V}$
Over discharge detection voltage: $2.45 \pm 0.1\text{V}$
Upper limit continuous current: 4A
Overcurrent detection current: 5A
Charging voltage: 4.2V

Figure 2.2: Close-up view of the protection board, highlighting its compact design and integrated components.

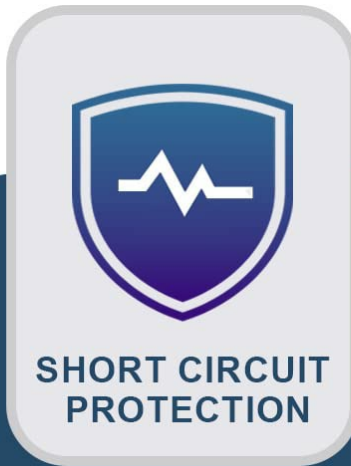
3. KEY FEATURES

- **Overcharge Protection:** Prevents battery damage from excessive charging voltage.
- **Overdischarge Protection:** Safeguards the battery from being discharged below a safe voltage level.
- **Short Circuit Protection:** Automatically cuts off power in case of a short circuit.
- **Overcurrent Protection:** Limits the current draw to prevent damage to the battery and connected devices.

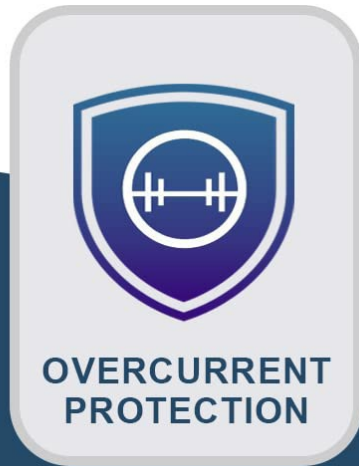
PROTECTION



**OVERCHARGE
PROTECTION**



**SHORT CIRCUIT
PROTECTION**



**OVERCURRENT
PROTECTION**

Figure 3.1: Visual representation of the integrated protection features.

4. SPECIFICATIONS

Parameter	Value
Overcharge Detection Voltage	4.25 ± 0.05 V
Overcharge Release Voltage	4.23 ± 0.05 V
Overdischarge Detection Voltage	2.45 ± 0.1 V
Continuous Discharge Current	4 A (MAX)
Overcurrent Detection Current	5 A
Charging Voltage	4.2 V
Dimensions (L x W x H)	35 x 4 x 2.2 mm
IC Components	DW01 + 8205A x 2
Model Number	DE-DA-005

SIZE

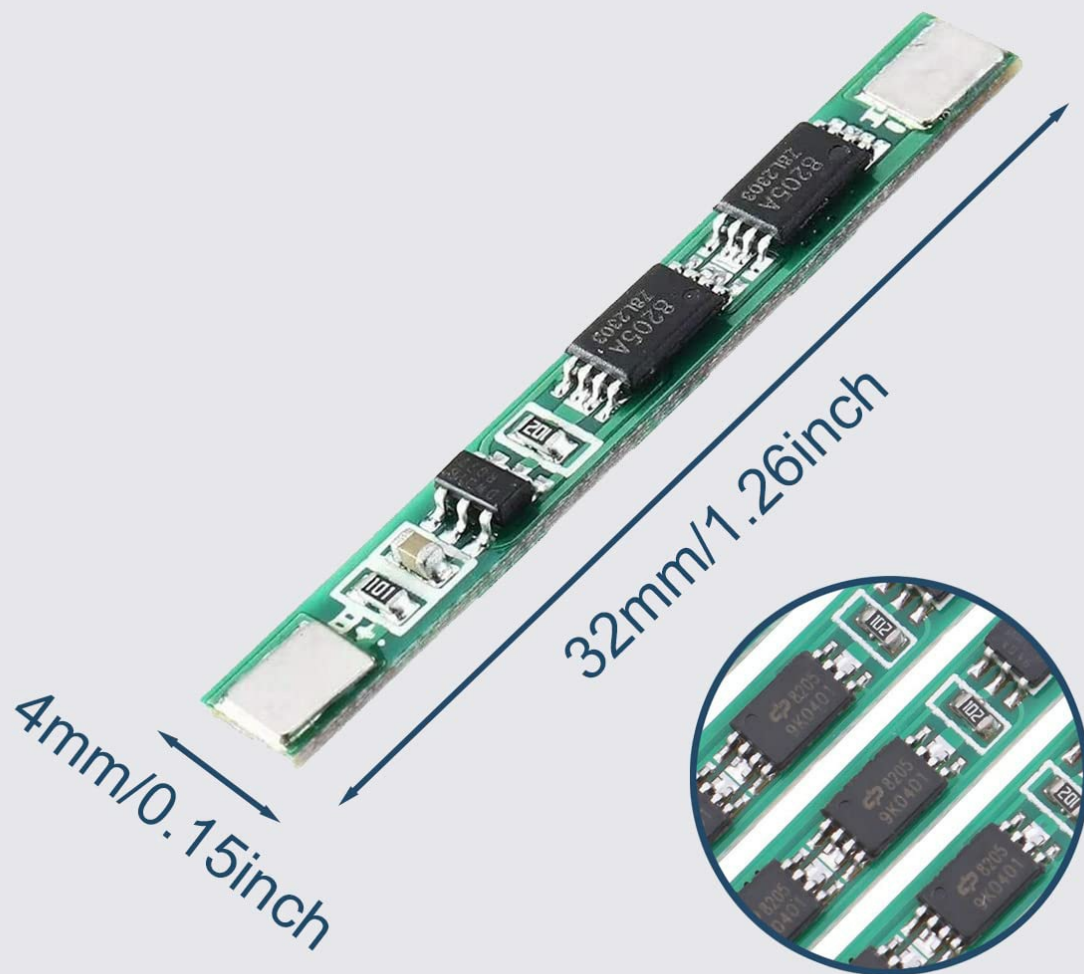


Figure 4.1: Physical dimensions of the BMS board.

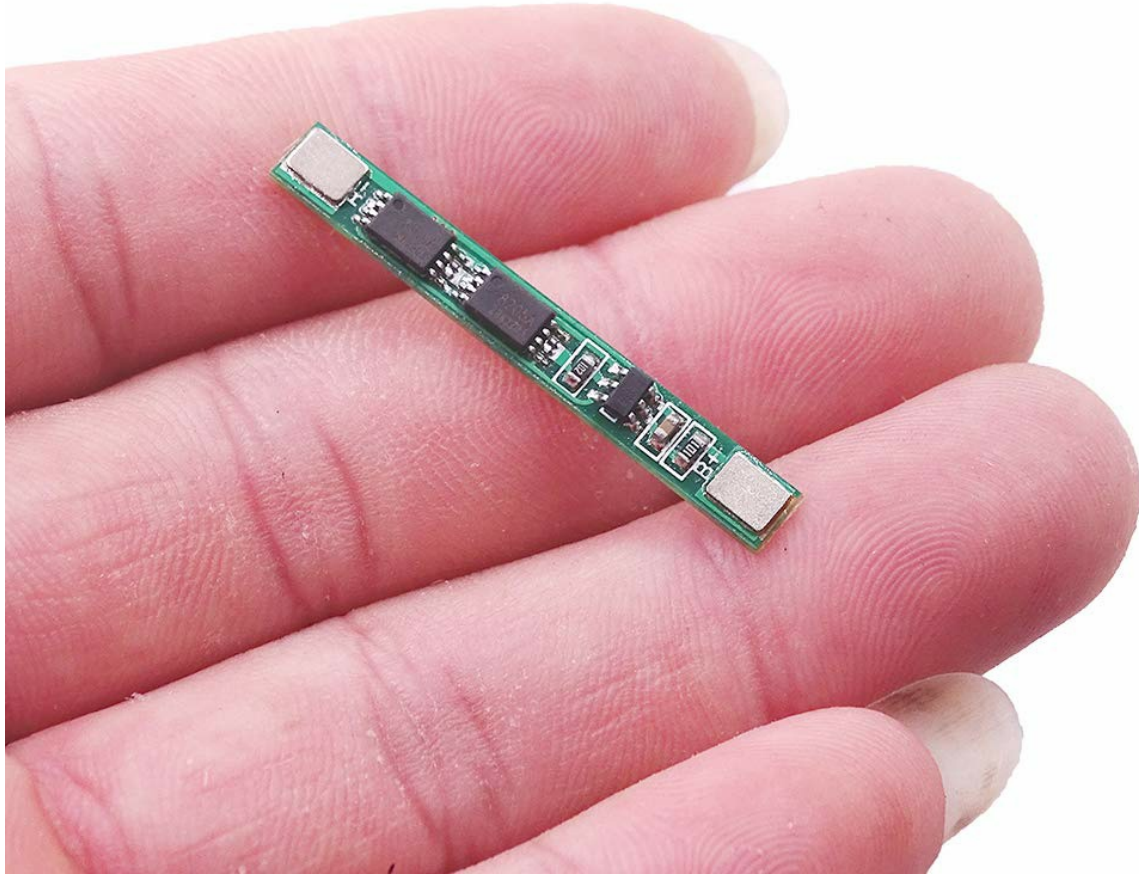


Figure 4.2: The protection board's compact size, shown in hand for scale.

5. SAFETY INFORMATION

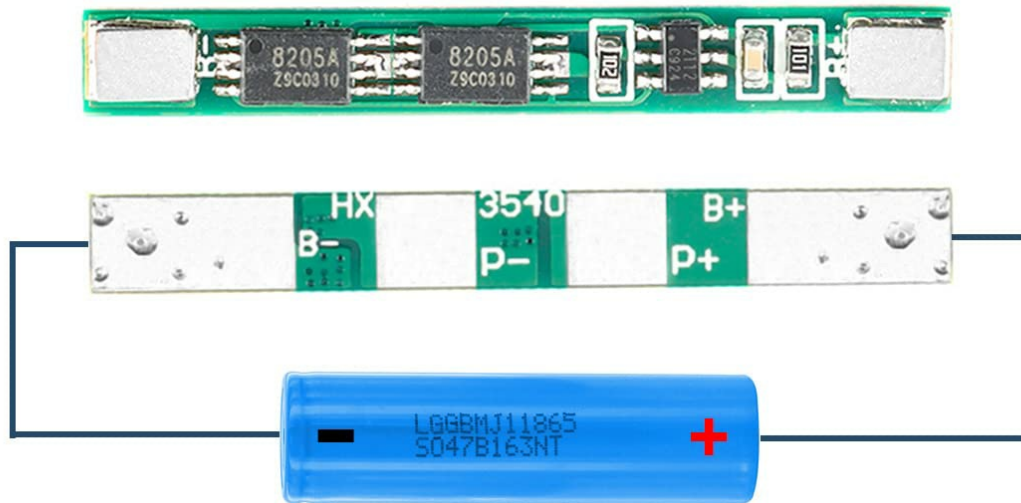
Always observe the following safety precautions when working with lithium batteries and protection circuits:

- Ensure correct polarity when connecting the battery to the BMS. Incorrect connections can cause damage to the board, battery, or connected devices.
- Do not exceed the specified maximum continuous discharge current (4A) or overcurrent detection current (5A).
- Use appropriate charging voltage (4.2V) for 1S lithium batteries.
- Avoid short-circuiting the output terminals.
- Handle the board with care to prevent electrostatic discharge (ESD) damage.
- Keep out of reach of children.
- If the board shows signs of damage or malfunction, discontinue use immediately.

6. INSTALLATION AND WIRING

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

WIRING DIAGRAM



INSTRUCTIONS

B+ : Connected to the battery positive.

B- : Connected battery negative.

P+ : for the battery pack output input positive

P- : for the battery pack output input negative

Figure 6.1: Wiring Diagram for 1S 3.7V Lithium Battery Protection Board.

Wiring Instructions:

1. **B+**: Connect this terminal to the **positive (+)** terminal of your 3.7V lithium battery.
2. **B-**: Connect this terminal to the **negative (-)** terminal of your 3.7V lithium battery.
3. **P+**: This is the **positive (+)** terminal for the battery pack's output and charging input. Connect your load or charger positive here.
4. **P-**: This is the **negative (-)** terminal for the battery pack's output and charging input. Connect your load or charger negative here.

Ensure all connections are secure and properly insulated to prevent accidental short circuits.

APPLICATION



Suitable for lithium batteries with nominal voltage of 3.7V and full voltage of 4.2V electronics product backup power supply.

Figure 6.2: Example application of the protection board in a battery pack.

7. OPERATION

Once correctly wired, the BMS operates automatically to protect the connected lithium battery. During charging, it monitors the battery voltage to prevent overcharge. During discharge, it ensures the battery does not drop below its safe minimum voltage and limits current to prevent overcurrent conditions. In case of a short circuit, the protection circuit will activate, temporarily cutting off the output.

8. MAINTENANCE

The DAOKAI BMS board requires minimal maintenance. To ensure optimal performance and longevity:

- Keep the board clean and free from dust and moisture.
- Avoid exposing the board to extreme temperatures or direct sunlight.
- Periodically inspect connections for any signs of corrosion or loosening.
- Do not attempt to modify or repair the board yourself. Contact qualified personnel if issues arise.

9. TROUBLESHOOTING

- **No Output Voltage:** Check all wiring connections for correct polarity and secure contact. Verify the battery voltage is within the operational range (above overdischarge detection voltage). A short circuit might have triggered protection; remove the short and reconnect.
- **Battery Not Charging:** Ensure the charging voltage is 4.2V. Check connections to P+ and P-. The battery might be fully charged, or overcharge protection has been activated.
- **Output Cuts Off Under Load:** This indicates overcurrent protection. Reduce the load or ensure the continuous discharge current does not exceed 4A. Check for any partial short circuits in the load.

10. PACKAGE CONTENTS

The package includes:

- 10 x DAOKAI 1S 4A 3.7V 18650 Lithium Battery Protection Boards
- 1 x 1m Nickel Strip

11. WARRANTY AND SUPPORT

DAOKAI products are manufactured to high-quality standards. For any technical support or warranty inquiries, please refer to your purchase documentation or contact the seller directly. Keep your proof of purchase for warranty claims.