

PRODUCT SPECIFICATION

Product Model: PGY-157 PGY-141 8-24S 40-200A with Temperature Control & Bluetooth

Customer Name:

Customer Model:

Item	Specification	Item	Specification
Series Cell Count	8~24S	RS485 Interface	Not available
Applicable Cell Chemistry	NMC (ternary lithium) / LiFePO ₄	Balance Harness	15P + 11P connectors, 500 mm
Continuous Discharge Current	60A, 80A, 100A, 150A, 200A	Communication	Supported
Control IC	Integrated solution	Discharge Switch	Supported
GPS positioning	Not supported	Pre-heating	External heating control; supports up to 15A charging-assisted heating
Balancing Method	Automatic passive balancing (resistor-based discharge balancing)	Pre-discharge Function	Supported; anti-spark protection; optional configuration (not supported by battery display screen)
Current Measurement	Internal current sensing supported, up to 1000A		
Display Interface	Supported	Battery Temperature Sensing	2 × NTC temperature sensors

In the event of any discrepancy between the following descriptions and the above configuration table, the configuration table shall take precedence.

PREPARED BY	CHECKED BY	APPROVED BY

CUSTOMER APPROVED

Approval Comments:

Customer Stamp/ Seal:

Date:

Shenzhen Dandelion Internet of Things Technology Co.,Ltd

Address: Room 312, 3rd Floor, Block B, Launch Tech Industrial Park, No. 4012 Wuhe Avenue, Bantian Street, Longgang District, Shenzhen, China

Notes:

Upon receipt of the samples and this specification, the customer is requested to provide confirmation in a timely manner.

If no response is received within 7 days, the customer shall be deemed to have accepted the parameters specified herein as well as the delivered samples.

The images contained in this specification are for reference only and represent general product models.

Actual samples may differ slightly.

Upon confirmation by both parties, this specification shall become effective and shall be restricted to internal use by the manufacturer and the customer only.

This document may not be disclosed or provided to any third party without prior written authorization from the manufacturer.

The manufacturer reserves the final right of interpretation of this specification.

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1. Overview

This specification applies to the lithium battery protection boards manufactured by Shenzhen Pugeying Internet of Things Technology Co., Ltd.

The product strictly complies with RoHS requirements.

With the widespread application of lithium batteries, increasing demands have been placed on battery management systems (BMS) in terms of performance, reliability, and cost-effectiveness.

The BMS, commonly referred to as the battery management unit, is responsible for the real-time acquisition, processing, and storage of critical operating data of the battery pack, as well as information exchange with external devices such as the main controller.

The BMS is designed to address key aspects of the lithium battery system, including safety, availability, usability, and service life.

Its primary functions are to improve battery utilization efficiency, prevent overcharge and over-discharge, extend battery lifespan, and monitor the real-time operating status of the battery.

This BMS protection board adopts an integrated system design, combining data acquisition, management, and communication functions into a single platform.

2. Product Functional Features

- Supports **cell voltage and pack voltage monitoring**, including over-voltage and under-voltage alarm and protection functions.
- Supports **charge and discharge over-current detection**, alarm, and protection.
- Supports **real-time temperature monitoring** of battery cells and MOSFETs, including:
 - Cell high-temperature and low-temperature alarm and protection
 - MOSFET high-temperature alarm and protection
- Supports **output short-circuit detection and protection**.
- Supports **automatic passive balancing**, enabling balancing of unbalanced cells during charging.
- Supports **software-based parameter configuration via a platform application**.
- Supports **current integration (coulomb counting)** for capacity estimation.
- SOC estimation based on a **combined algorithm of coulomb counting and open-circuit voltage (OCV)**.
- Supports **cell voltage open-wire detection**, individual cell voltage monitoring, and total pack voltage monitoring.
- Provides **battery abnormal status alerts**, including low-voltage alerts.
- Supports **real-time monitoring** of:
 - Battery voltage
 - State of Charge (SOC)
 - Charge/discharge cycle count
 - Battery temperature
 - BMS board temperatureEnabling **dual-layer protection mechanisms**.

- Supports **multiple sleep and wake-up modes**.
- Supports **firmware OTA upgrade**.

3. Electrical Characteristics (Ta = 25 °C)

3.1. Rated Specifications

Item		Specifications			Unit	Remarks
		Min	Typ	Max		
Charge Current		-	/	-	A	Optional: 40A–150A
Discharge Current		-	/	-	A	Optional: 40A–150A
Operating Current (Active Mode)		-	20	25	mA	BMS in operating state
Standby Current (Sleep Mode)		-	10	15	mA	BMS in standby state
Quiescent Current (Power-off)		-	10	20	μ A	BMS powered-off state
Operating Environment	Operating Temperature	-20	-	+70	°C	Normal operating temperature range
	Operating Humidity	0%	-	90%	RH	RH ≤ 90%, non-condensing
Storage Environment	Storage Temperature	-40	-	+85	°C	Normal storage temperature range
	Storage Humidity	0%	-	90%	RH	RH ≤ 90%, non-condensing
Coulomb Counting	SOC estimation accuracy	<5%				
	Current measurement	Sampling interval < 250 ms; accuracy ±5%				
RS485 interface		Not supported				
Bluetooth		Bluetooth enables rapid diagnostics and analysis of battery health status.				
Cell voltage open-wire detection		Supported				
Individual cell voltage measurement		Supported; range: 1.0 V to 5.0 V				
Pack voltage measurement		Range: 0 to 80 V				
Supported Battery Types		3.7 V Lithium-ion (NMC) 3.2 V Lithium Iron Phosphate (LiFePO ₄)				Configurable parameters
Battery Pack Configuration		8-24 S				Selectable cell count

Note: Prolonged operation under overload conditions may damage the protection board and reduce its service life.

3.2. Basic Functional Parameters

(Note: Unless otherwise specified, the following parameters are tested at an ambient temperature of 25 °C)

Functional Item		Recommended Setting	Configurable	Remarks
Overcharge Protection (Single Cell)	Single-cell Overcharge Protection Voltage	4.25 V (NMC) / 3.65 V (LiFePO ₄)	Yes	±20mV
	Single-cell Overcharge Protection Delay Time	1000mS	No	± 500mS
	Single-cell Overcharge Release Voltage	4.15 V (NMC) / 3.5 V (LiFePO ₄)	Yes	±20mV
	Single-cell Overcharge Release Condition	Automatic recovery when cell voltage drops below the release threshold or upon discharge		/
Overdischarge Protection (Single Cell)	Single-cell Overdischarge Protection Voltage	2.75 V (NMC) / 2.2 V (LiFePO ₄)	Yes	±20mV
	Single-cell Overdischarge Protection Delay Time	1500mS	Yes	± 500mS
	Single-cell Overdischarge Release Voltage	3.0 V (NMC) / 2.9 V (LiFePO ₄)	Yes	±20mV
	Overdischarge Release Condition	Recovery when the charger is connected or when the cell voltage rises above the release threshold		/
Overcharge Protection (Pack Level)	Pack Overcharge Protection Voltage	Number of cells × 4.225 V (NMC) Number of cells × 3.6 V (LiFePO ₄)	Yes	±1V
	Pack Overcharge Protection Delay Time	1000mS	No	± 500mS
	Pack Overcharge Release Voltage	Number of cells × 4.1 V (NMC) Number of cells × 3.5 V (LiFePO ₄)	Yes	±1V
	Pack Overcharge Release Condition	Automatic recovery when pack voltage drops below the release threshold or upon discharge		/
Overdischarge Protection (Pack Level)	Pack Overdischarge Protection Voltage	Number of cells × 2.8 V (NMC) Number of cells × 2.5 V (LiFePO ₄)	Yes	±1V
	Pack Overdischarge Protection Delay Time	1500mS	No	± 500mS
	Pack Overdischarge Release Voltage	Number of cells × 3.1 V (NMC) / Number of cells × 2.9 V (LiFePO ₄)	Yes	±1V
	Charge Release Condition	Recovery when the charger is connected or when pack voltage rises above the release threshold		/

Balancing Function	Balancing Start Voltage	3.9 V (NMC) / 3.3 V (LiFePO ₄)	Yes	±20mV
	Balancing Start Voltage Difference	>20mV	No	/
	Balancing Current	30~80 mA	No	/
Cell Voltage Difference Protection	Cell Voltage Difference Protection Threshold	>1000mV	Yes	±20mV
Internal Resistance	Discharge Path Internal Resistance	<40 mΩ	/	/
Capacity Default Settings	Low State-of-Charge Warning	SOC < 10%; no warning during charging	Yes	/
	Nominal Capacity	40 Ah; configuration required	Yes	/
	Low SOC Mode	Selectable; hidden capacity mode is recommended. Refer to low SOC mode description for details.	Yes	/

Functional Item		Recommended Setting				Configurable	Remarks
Short-circuit Protection	Short-circuit Protection Current	60A: 900A±15% 80A: 1200A±15%				Yes	/
	Short-circuit Protection Delay Time	200~800μS				Yes	/
	Short-circuit Protection Action	Load disconnection; due to the extremely high short-circuit current, in order to avoid potential hazards, it is recommended that customers perform short-circuit testing with caution.					/
Charge Overcurrent Protection	Charge Overcurrent Protection	Current Threshold		Duration			/ /
	Software-based Charge Overcurrent Protection	30A±2A	40A±2A	1S		Yes	/
	Charge Overcurrent Protection	42A±2A	56A±2A	1S		Yes	/
	Charge Overcurrent Protection Release	Automatic recovery after delay					/
Discharge Overcurrent Protection	Discharge Overcurrent Protection	Current Threshold		Duration	Remarks		/ /
	Discharge Overcurrent Level 3	66A±2A	88A±2A	1S	After overcurrent protection is triggered, the load must be disconnected or charging must be applied to enable recovery.	Yes	/
	Discharge Overcurrent Level 2	75A±2A	100A±2A	1S		Yes	/
	Discharge Overcurrent Release	Automatic recovery after delay					/ /
MOS Temperature Protection	MOS Overtemperature Protection Threshold	75°C				Yes	±3°C
	MOS Overtemperature Release Temperature	60°C				Yes	±3°C
Cell Temperature Protection	Charge Overtemperature Protection Threshold	60°C				Yes	±4°C
	Charge Overtemperature Release Temperature	50°C				Yes	±4°C
	Charge Undertemperature Protection Threshold	-15°C				Yes	±4°C

	Charge Undertemperature Release Temperature	-10°C	Yes	±4°C
	Discharge Overtemperature Protection Threshold	65°C	Yes	±4°C
	Discharge Overtemperature Release Temperature	55°C	Yes	±4°C
	Discharge Undertemperature Protection Threshold	-20°C	Yes	±4°C
	Discharge Undertemperature Release Temperature	-15°C	Yes	±4°C

Note: The above data are measured at an ambient temperature of **25 ° C**.

If testing is performed at temperatures other than 25 ° C, measurement deviations may occur.

The BMS protection parameters include the above-mentioned functions.

Parameters may be subject to adjustment or updates without prior notice; actual settings shall prevail.

Any modification of protection parameters requires a formal application to the BMS manufacturer.

3.3. Low Power Consumption and Wake-up

3.3.1. Sleep Mode and Wake-up

When the protection board detects that the battery remains stationary for **30 seconds**, it enters **standby sleep mode** to reduce power consumption.

When battery discharge activity is detected, the protection board **automatically wakes up** and resumes normal operation.

3.3.2. Deep Sleep Mode and Wake-up

Method 1:

When the battery voltage drops to a low level

(single-cell voltage: $\text{LiFePO}_4 < 2.1 \text{ V}$, $\text{NMC} < 2.5 \text{ V}$),

the protection board powers off and enters **deep sleep mode** to prevent complete depletion of the battery and avoid battery damage.

Method 2:

For long-term transportation or storage, a **manual shutdown command** can be issued to power off the protection board and place it into **deep sleep mode**, thereby preserving battery capacity.

Wake-up Method:

Before the battery is put into use, the protection board must be powered on by **charging the battery** or by using the **power-on wake-up button** to resume normal operation.

3.4. Display Function

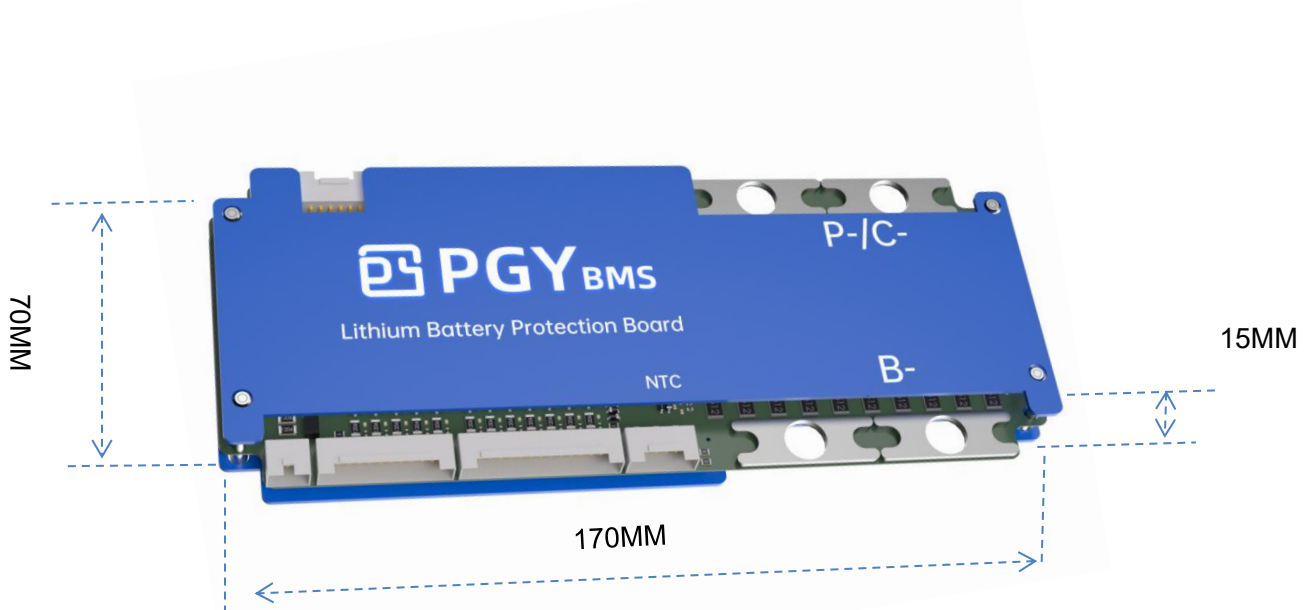
This intelligent BMS board uses **Bluetooth** to display battery pack status information, including **battery voltage, current, individual cell voltage, temperature**, and other related battery parameters.

4. Communication Description

4.1. Bluetooth Communication

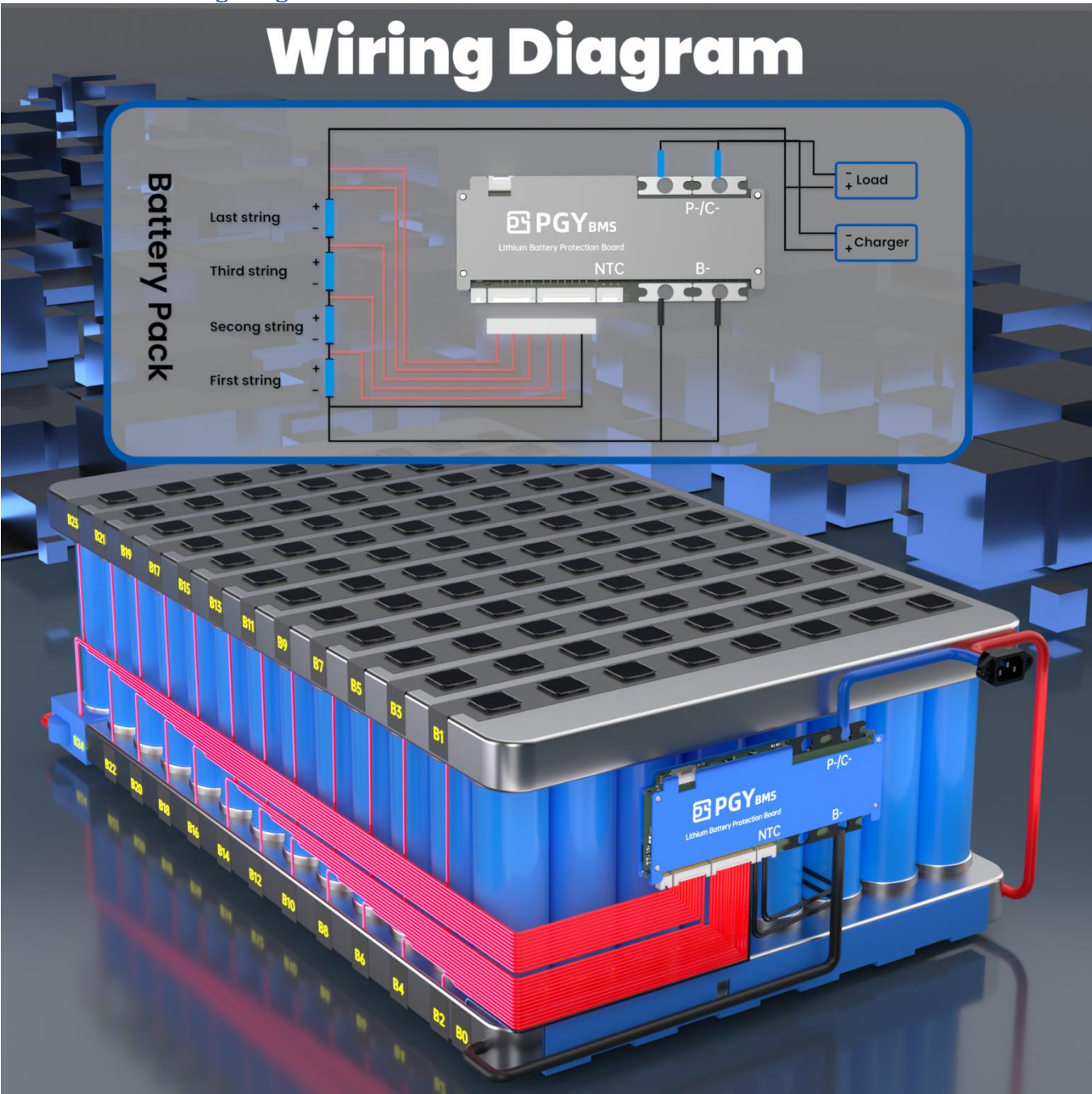
The BMS supports communication via **Bluetooth**, enabling users to view various battery parameters and operating information through a dedicated **application (APP) platform**.

5. BMS Dimensions: 170 mm (L) × 70 mm (W) × 15 mm (H)



6. Reference Drawings and Installation Instructions

6.1. BMS Wiring Diagram



PGY-157 Connector Details and Pin Description			
	Connector Type	Signal Function Description	Connector Type
Discharge Switch	HY2.0, with latch, 2P	Temperature Sensor Cable (2 wires)	HY2.0, with latch, 4P
	HY2.0, with latch, 2P	Voltage Sampling Cable	HY2.0, with latch, 15P + 12P

Notes: The routing and arrangement of the voltage sampling harness should not be excessively tight, in order to prevent loosening or detachment during operation. The connection between the main board connector and the wiring harness should be secured with adhesive.

⚠ Important Notice

When soldering the wiring harness, do NOT insert the harness into the BMS protection board during soldering.

After the wiring harness is properly connected, it must NOT be directly connected to a balancer for balancing operation.

★ Description of Parallel Connection Methods

BMS Side	Battery Side							
Definition	24S	20S	19S	17S	16S	15S	14S	13S
B0-	B0-	B0-	B0-	B0-	B0-	B0-	B0-	B0-
B1+	B1+	B1+	B1+	B1+	B1+	B1+	B1+	B1+
B2+	B2+	B2+	B2+	B2+	B2+	B2+	B2+	B2+
B3+	B3+	B3+	B3+	B3+	B3+	B3+	B3+	B3+
B4+	B4+	B4+	B4+	B4+	B4+	B4+	B4+	B4+
B5+	B5+	B5+	B5+	B5+	B5+	B5+	B5+	B5+
B6+	B6+	B6+	B6+	B6+	B6+	B6+	B6+	B6+
B7+	B7+	B7+	B7+	B7+	B7+	B7+	B7+	B7+
B8+	B8+	B8+	B8+	B8+	B8+	B8+	B8+	B8+
B9+	B9+	B9+	B9+	B9+	B9+	B9+	B9+	B9+
B10+	B10+	B10+	B10+	B10+	B10+	B10+	B10+	B10+
B11+	B11+	B11+	B11+	B11+	B11+	B11+	B11+	B11+
B12+	B12+	B12+	B12+	B12+	B12+	B12+	B12+	B12+
B13+	B13+	B13+	B13+	B13+	B13+	B13+	B13+	B13+
B14+	B14+	B14+	B14+	B14+	B14+	B14+	B14+	总+
B15+	B15+	B15+	B15+	B15+	B15+	B15+	总+	
B16+	B16+	B16+	B16+	B16+	B16+	总+		
B17+	B17+	B17+	B17+	B17+	总+			
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B19+	B19+	B19+	B18+					
B20+	B20+	B19+	总+					
B21+	B21+	总+						
B22+	B22+							
B23+	B23+							
B24+	B24+							
B25+	总+							
B26+B27	总+	总+	B总+	B总+	B总+	B总+	B总+	B总+

■ Note: The colored areas indicate that multiple voltage sampling harnesses are connected in parallel.

Description:

On the BMS side, B0 – B14 correspond to a 15-pin connector, and B16 – B+ correspond to a 12-pin connector.

Wires No. 26 and No. 27 of the wiring harness are power lines and should be directly connected to the battery pack positive terminal (B+).

6.2. Installation and Connection Instructions

Warning

When connecting the BMS protection board to the battery cells, or when removing the protection board from the battery pack, the specified connection sequence and procedures must be strictly followed. Failure to follow the prescribed sequence may damage the electronic components of the protection board, resulting in loss of cell protection functionality and potentially serious consequences.

A. Steps for Connecting the BMS Protection Board

Preparation

First, connect the **voltage sampling harness** to the battery cell group and verify that all connections are correct.

Important: Do NOT insert the sampling harness into the BMS protection board and then connect the wires to the battery cells one by one.

Connection Steps

1. Connect the **negative terminal of the battery pack (B-)**.
2. Connect the **negative terminal of the load output (P-)**.
3. Connect the **battery pack voltage sampling harness**:
 - **First connect the low-voltage sampling wires** (*with black insulation*),
 - Then connect the **high-voltage sampling wires** (*with red insulation*).
4. After all connections are properly completed, connect the **charger** to activate and power on the protection board.
Confirm that the total battery voltage is equal to the output voltage of the protection board.

B. Steps for Disconnecting the BMS Protection Board

1. Disconnect the load or the charger.
2. Remove the battery pack voltage sampling harness:
 - First disconnect the high-voltage sampling wires (*with red insulation*),
 - Then disconnect the low-voltage sampling wires (*with black insulation*).
3. Disconnect the battery pack negative terminal (B-) connection.

Important Notice

During all installation and disconnection procedures, electrostatic discharge (ESD) protection must be observed.

Special attention should be paid to preventing soldering leakage current issues during manufacturing.

6.3. BMS Activation and Power-On Instructions

6.3.1. Newly Assembled Battery Pack

First, connect all wiring correctly according to the corresponding series configuration wiring diagram described above, and verify that all connections are correct.

For newly assembled battery packs with the BMS connector accessible, the protection board can be activated and powered on using the power-on wake-up method.

When the **red indicator LED on the board flashes**, it indicates that the protection board has been successfully powered on.

6.3.2. Battery Pack After Final Assembly and Sealing

If the BMS protection board enters a powered-off state due to cell voltage dropping below the protection threshold or as a result of a shutdown command, the protection board must be activated by charging the battery pack (*charging current* > 1 A) in order to resume normal operation.

After the protection board is successfully powered on, its operating status can be verified using PC-based software, a mobile APP, or a computer platform.



APP Download Instructions

iOS System

For iOS devices, please open the App Store, search for “蒲公英 BMS”, and download and install the application directly.

Android System

For Android devices, please follow the official “蒲公英 BMS” public account to download the installation package, or contact the company’s sales representative directly to obtain the Android installation package.

Note

For long-term transportation or storage, a **shutdown command** may be issued to power off the protection board and place it into **low-power mode**.

Before putting the battery pack into service, the protection board must be **activated by charging** in order to power on and operate normally.

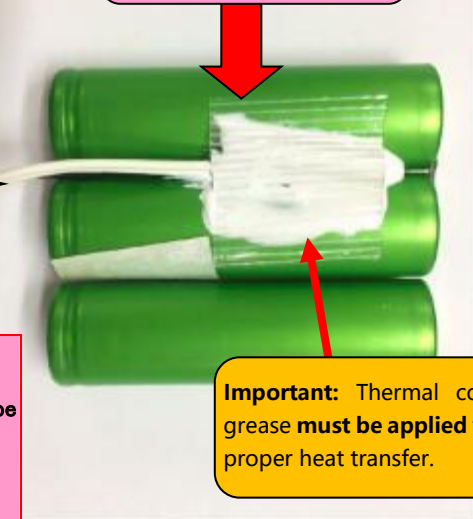
7. Temperature Sensor Installation Precautions

Temperature Sensor: The temperature sensor should be **secured in the groove between adjacent battery cells**. It **must not be compressed at any time** in order to prevent damage.

Function: Used to **monitor the battery temperature in real time**.



Temperature Sensor Installation Diagram



⚠ Special Attention:

1. The **sensing head** of the temperature sensor **must not be compressed**.
2. **All wiring harnesses must be routed without being pinched or compressed**.
3. The routing of **temperature control wiring** should **not be too tight**, in order to prevent loosening or detachment during operation.
The **connector interface to the main board must be secured with adhesive**.

Important: Thermal conductive grease **must be applied** to ensure proper heat transfer.

■ Key Installation Safety Notes

To prevent **charging fire hazards caused by a short circuit between B+ and P-**, it is recommended that an **overcurrent fuse** be installed on the **B+ line outside the battery enclosure**, providing additional protection.

■ The following table is provided as a reference for selecting silicone insulated flexible wire and conductor size:

Current	Wire Gauge	Cross-sectional Area
≤ 15 A	14AWG	2.0mm ²
20-25A	12AWG	3.4mm ²
30-45A	10AWG	5.3mm ²
50-70A	8AWG	8.3mm ²
80A	7AWG	12mm ²
100-120A	6AWG	16mm ²

Important Note

The wire size must be selected according to the actual discharge current.

The conductor cross-sectional area must not be undersized; otherwise, excessive

temperature rise may occur during discharge, which can lead to overheating of the BMS protection board and adversely affect its performance and service life.

8. Precautions for Use

8.1 Before installing the protection board, all cells in the battery pack must be properly matched:

Cell voltage difference $\leq 0.05\text{ V}$

Internal resistance difference $\leq 5\text{ m}\Omega$

Capacity difference $\leq 30\text{ mAh}$

8.2 When connecting the protection board for the first time, ensure that the cell voltage is within an appropriate range:

LiFePO₄ cells: 2.8 V to 3.4 V

Li-ion polymer cells: 3.0 V to 4.0 V

Excessively high or low cell voltage may trigger protection and prevent normal operation. If the battery is fully charged, discharge it to the specified range before connection.

8.3 The balance wire corresponding to B0 is the first wire (black wire, connected to B-).

The second wire (white wire) shall be connected to the positive terminal of the first cell.

Subsequent wires shall be connected sequentially to the positive terminals of each cell, ending with B+ (red wire, connected to B+).

Do not solder the balance wires while they are plugged into the protection board.

Wiring must be performed strictly in sequence. Incorrect wiring may result in damage to the protection board or abnormal operation.

8.4 After completing the balance wire connections, do not insert the connector immediately. Measure the voltage between each pair of adjacent metal terminals on the rear side of the connector, and confirm that the voltage difference between each cell is $\leq 0.05\text{ V}$.

8.5 For protection boards with 15 series cells or more, ensure that the two balance connectors are not inserted in reverse. Reverse insertion will cause immediate damage to the protection board.

Insert the low-voltage balance connector (with black B- wire) first, followed by the high-voltage balance connector (with red B+ wire).

8.6 After all wiring is completed, the total battery pack voltage shall be equal to the protection board output voltage. Only under this condition is the wiring considered correct, and charge/discharge operation may begin.

8.7 During use, prevent lead wires, soldering irons, solder splashes, or other conductive objects from contacting components on the PCB, as this may damage the protection board.

8.8 When soldering battery leads, incorrect or reverse connections are strictly prohibited. If misconnection is confirmed, the protection board may already be damaged and must be fully tested and verified before reuse.

8.9 During assembly, the protection board shall not directly contact the cell surface, to avoid damage to the cells. The assembly must be firm and secure.

8.10 During battery pack assembly, do not place aluminum heat sinks close to the cell surface, as heat transfer to the cells may compromise battery pack safety.

8.11 After assembling the battery pack and protection board, if no output voltage is detected or charging is not possible during initial power-on, check whether all wiring connections are correct.

8.12 Appropriate ESD (electrostatic discharge) protection measures shall be taken during testing, installation, handling, and use of the protection board.

8.13 During charge and discharge testing of a battery pack with the protection board installed, do not use a battery aging cabinet to measure individual cell voltages, as this may damage the protection board and cells.

8.14 This protection board does not support 0 V charging. If a cell reaches 0 V, severe degradation or permanent damage may occur.

For battery packs with a capacity greater than 2 Ah that are stored for more than 3 months, periodic

recharging is required.

After discharge protection is triggered, the battery pack must be recharged within 12 hours to prevent self-discharge from reducing cell voltage to 0 V.

8.15 This protection board does not provide reverse charging protection. Do not reverse the charger polarity during use, as this may damage the protection board and battery pack.

8.16 Use only chargers that comply with the specifications in this specification. Using a charger with a DC voltage exceeding the maximum allowable charging voltage may damage the protection board. Chargers with end-of-charge trickle current cut-off are strongly recommended. Chargers without this function are typically designed for lead-acid batteries and are not suitable for lithium batteries.

8.17 The protection board must be operated strictly within the design parameters and operating conditions specified in this specification. Exceeding these limits may damage the protection board and the battery pack.

8.18 If any abnormal condition occurs during use, stop operation immediately and return the product to the manufacturer or have it serviced by qualified personnel.

8.19 Do not connect two or more protection boards in series or in parallel.

8.20 This protection board has undergone extensive reliability testing; however, to minimize risk, only qualified cells shall be used.

8.21 Relationship between battery pack capacity and continuous discharge current:

It is recommended to select a protection board with a continuous discharge current rating (A) equal to the battery pack capacity (Ah).

Example: A 50 Ah battery pack should use a protection board with a continuous discharge current rating of at least 50 A.

Note: Long-term operation under overload conditions will damage the protection board and reduce its service life.

9. List of Main Components

No.	Type	Part Number
1	Protection IC	DVC1124
2	Charge MOSFET	PGT10N027/BLP021N11
3	Discharge MOSFET	PGT10N027/BLP021N11

Important Notice

Please note that during mass production and shipment of protection boards, MOSFETs of different brands or models may be substituted for different production batches, provided that all electrical performance specifications listed in this specification are fully met.

10. Product Revision History

Revision	Description of Change	Prepared by	Date	Remark	Note
V1.0	Initial release	Liu	25 Nov 2024		

FCC Warning

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE 1: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.