**DALY 4S**

# DALY Smart BMS Li-ion 12V 150A 4S Instruction Manual

Model: 4S | Brand: DALY

## 1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of your DALY Smart BMS Li-ion 12V 150A 4S. This Battery Management System is designed to protect 4-series (4S) lithium-ion battery packs with a nominal voltage of 12V and a maximum continuous discharge current of 150A. It features Bluetooth connectivity for monitoring and parameter adjustment, ensuring optimal performance and extended battery life.

### 1.1 Package Contents

- 3.7V Li-ion BMS (1 unit)
- Bluetooth Module (1 unit)
- NTC Sensor (1 unit)
- Sampling Cable (1 unit)
- UART Cable (1 unit)
- Instruction Manual (1 unit)

Figure 1: Package contents of the DALY Smart BMS, showing the main unit, various cables, and the NTC temperature sensor.

## 2. SAFETY INSTRUCTIONS

Please read and understand all safety instructions before installing or operating the DALY Smart BMS. Failure to follow these instructions may result in injury, damage to the product, or damage to other equipment.

- Always wear appropriate personal protective equipment (PPE), such as safety glasses and insulated gloves, when handling batteries and electrical components.
- Ensure all wiring connections are correct and secure before applying power to prevent damage to the BMS or battery pack. Incorrect wiring can lead to severe hazards.
- Do not short-circuit the battery terminals. This can cause extreme heat, fire, or explosion.
- Keep the BMS away from water, moisture, flammable materials, and extreme temperatures. Operate within the specified environmental conditions.
- Only use the BMS with compatible 4S Li-ion battery packs (rated 3.7V per cell). Using it with incompatible battery types or cell counts can lead to malfunction or damage.
- Consult a qualified professional if you are unsure about any installation steps or encounter unexpected behavior.

- Do not attempt to disassemble or repair the BMS. Refer all servicing to qualified personnel.

# 3. PRODUCT OVERVIEW

## 3.1 Key Features

- **Comprehensive Protection:** Includes overcurrent, overcharge, overdischarge, short circuit, and temperature protection to safeguard your battery pack.
- **Performance Optimization:** Maximizes and optimizes lithium battery performance, significantly extending battery lifetime.
- **Robust Design:** Features double protection through injection patent technology and a patent shell, making it waterproof, dustproof, shockproof, and anti-static.
- **High Accuracy:** Utilizes high-quality components for pressure resistance, durability, and high acquisition accuracy for precise battery monitoring.
- **Smart Functionality:** Allows users to check battery status and modify parameters at any time via a dedicated Bluetooth application or PC software.
- **Easy Installation:** Designed for straightforward setup and integration into your battery system.

## 3.2 Components

The DALY Smart BMS package includes the main BMS unit, a Bluetooth module for wireless communication, an NTC temperature sensor for thermal monitoring, a sampling cable for individual cell voltage monitoring, and a UART cable for PC communication.



Figure 2: Top-down view of the DALY Smart BMS, highlighting its robust design and integrated cooling fans.

Figure 3: Angled view of the DALY Smart BMS, illustrating the B- (battery negative) and P- (common port negative) terminals, along with the NTC and UART communication ports.

## 4. SPECIFICATIONS

The following table details the technical specifications of the DALY Smart BMS Li-ion 12V 150A 4S:
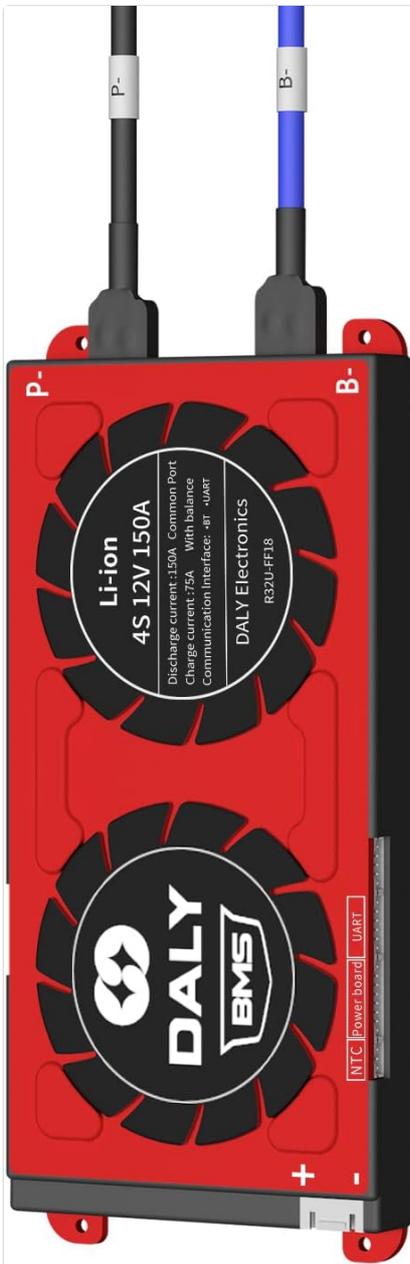
# Specifications

| | |
|---|---|
| Product: | Li-ion 4S 150A common port with balance |
| Communications: | UART |
| Discharge current: | 150A |
| Over-discharge current: | 225A |
| Charge current: | 75A |
| Overcharge current: | 225A |
| Overcharge voltage: | 4.25V±0.05V (any string) |
| Over-discharge voltage: | 2.7V±0.05V (any string) |
| Charge voltage: | S*4.2V |
| Size: | 95*212*20mm |
| Output wire: | 6AWG / 160mm |
| Balance wires: | 22AWG / 600mm |

Figure 4: Detailed technical specifications of the DALY Smart BMS.

| Feature | Specification |
|---|---|
| Product Type | Li-ion 4S 150A Common Port with Balance |
| Communication Interfaces | UART, Bluetooth |
| Continuous Discharge Current | 150A |
| Over-discharge Current | 225A |
| Continuous Charge Current | 75A |
| Overcharge Current | 225A |
| Overcharge Voltage (per string) | 4.25V ± 0.05V |
| Over-discharge Voltage (per string) | 2.7V ± 0.05V |
| Charge Voltage | S*4.2V (where S is the number of series cells, e.g., 4*4.2V for 4S) |

| Feature | Specification |
|---|---|
| Dimensions (L x W x H) | 8.35 x 3.74 x 0.79 inches (212 x 95 x 20 mm) |
| Output Wire Gauge/Length | 6AWG / 160mm |
| Balance Wires Gauge/Length | 22AWG / 600mm |
| Nominal Pack Output Voltage | 12 Volts |
| Item Weight | 2.69 pounds |

## 5. SETUP AND INSTALLATION

Careful wiring is crucial for the correct and safe operation of the BMS. Please follow these instructions precisely.

### 5.1 Wiring Diagram



(schematic diagram of the same pole)
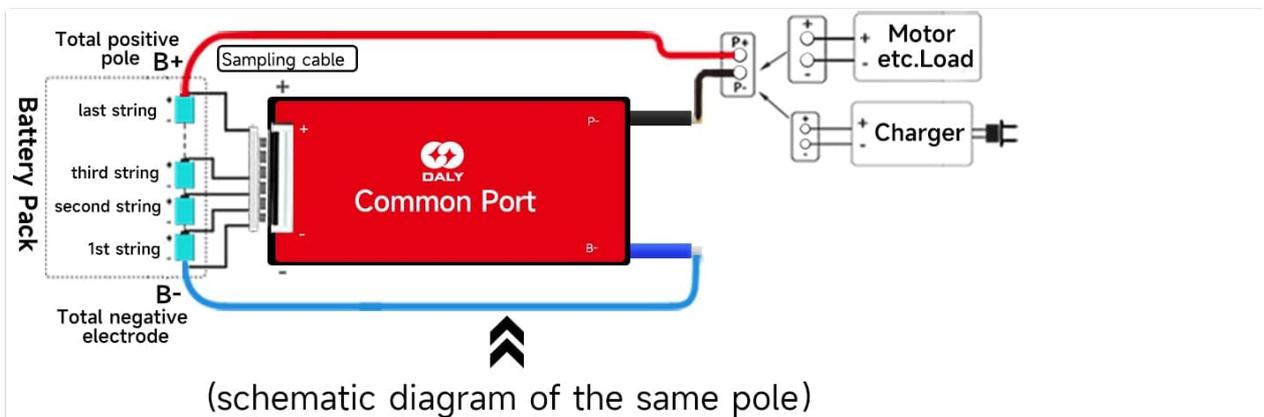
1.The sequence of the protective board connection battery wiring:

※ Special attention: The wire cable of different manufacturers are not same standard, please make sure to use he-matching cables;  the colors of B- and P- lines of different manufacturers are different, please pay attention to the B- and P- marks.

1、Remember！！！When welding sampling wire cable, do not insert the cable into the BMS.

2.The cable connects the total negative electrode B-from the fine black line. The second wire (red wire) is connected to the positive pole of the first string of batteries.Connect the positive electrode of each string of batteries in turn until the last wire cable of the total positive B+.

3.After the cable is connected, do not insert the plug directly into the BMS.First measure the voltage between each two adjacent metal terminals on the back of the plug. If it is a ternary lithium battery, the voltage should be between 3.0~4.15V, and the iron-lithium battery should be 2.5~ Between 3.6V, lithium titanate battery should be between 1.8~2.8V,make sure the voltage is correct before proceeding to the next step.

4.Receive the BMS B-line (blue thick line) to the total battery negative electro-de (B-line length should not exceed 40cm).

2. After the wiring is completed:

1.Measure whether the voltage of battery B+, B- is equal to the voltage of B+ and P- (that is, whether the voltage of the battery pack itself is equal to the voltage after passing through the protection board, if they are equal, the BMS is working normally, which can be used normally. If  not , please follow Re -check the sequence of the wiring above.

2.The positive electrodes of the charging and discharging end are all directly connected to the total positive pole B+ of the battery; the wiring method of the same port BMS is that the charging and discharging negative poles are connected to the P- point of the BMS; the wiring method of the branch BMS is the negative pole of charging Connected to C-, the negative electrode of discharge is connected to P-

3.Finally, if you have any questions, please contact the customer

Figure 5: Schematic diagram illustrating the wiring connections for the DALY Smart BMS (common port configuration).

This diagram shows the connection points for the battery pack (B- and B+), the motor/load, and the charger. Ensure all connections match the diagram for proper functionality.

### 5.2 Wiring Sequence

1. **Important Note:** The wire cables from different manufacturers may not be standard. Always use the matching cables provided with your BMS. Pay close attention to the B- and P- marks, as wire colors may vary.
   **Critical Warning: When welding the sampling wire cable, do not insert the cable into the BMS until all other connections are complete and verified.**

2. Connect the fine black wire of the sampling cable to the total negative electrode (B-) of the battery pack. Connect the second wire (red wire) of the sampling cable to the positive pole of the first series string of batteries. Continue connecting the positive electrode of each subsequent series string of batteries in turn until the last wire of the sampling cable is connected to the total positive (B+) of the battery pack.

3. After all sampling cables are connected to the battery pack,**do not insert the plug directly into the BMS yet.** First, measure the voltage between each two adjacent metal terminals on the back of the sampling cable plug. For a ternary lithium battery, the voltage should be between 3.0V-4.15V. For an iron-lithium battery (LiFePO4), it should be between 2.5V-3.6V. For a lithium titanate battery (LTO), it should be between 1.8V-2.8V. Ensure these voltages are correct before proceeding.

4. Connect the thick blue B- line from the BMS to the total negative electrode of the battery pack. The B- line length should not exceed 40cm.

## 5.3 Post-Wiring Verification

1. After completing all wiring, measure the voltage between the battery's B+ terminal and the BMS's P- terminal. This voltage should be equal to the total voltage of the battery pack itself. If these voltages match, the BMS is functioning correctly. If they do not match, re-check the entire wiring sequence as described above.

2. For a common port BMS, the positive electrodes of both the charging and discharging ends are connected directly to the total positive pole (B+) of the battery. The negative poles for both charging and discharging are connected to the P- point of the BMS.

# 6. OPERATING INSTRUCTIONS

The DALY Smart BMS offers convenient monitoring and parameter adjustment through both Bluetooth and UART interfaces.

## 6.1 Bluetooth App Connectivity

Monitor battery status and modify parameters wirelessly using the dedicated DALY BMS Bluetooth application on your smartphone.

- Ensure the Bluetooth module is securely connected to the BMS.
- Download the official DALY BMS app from your device's app store (e.g., Google Play Store or Apple App Store).
- Enable Bluetooth on your smartphone and search for available devices. Pair with the DALY BMS.
- Open the DALY BMS app and follow the in-app instructions to connect. You can then view real-time data such as total voltage, individual cell voltages, charge/discharge current, temperature, and cell balance status.
- Parameters like overcharge/discharge limits, balance settings, and temperature thresholds can be adjusted through the app interface.
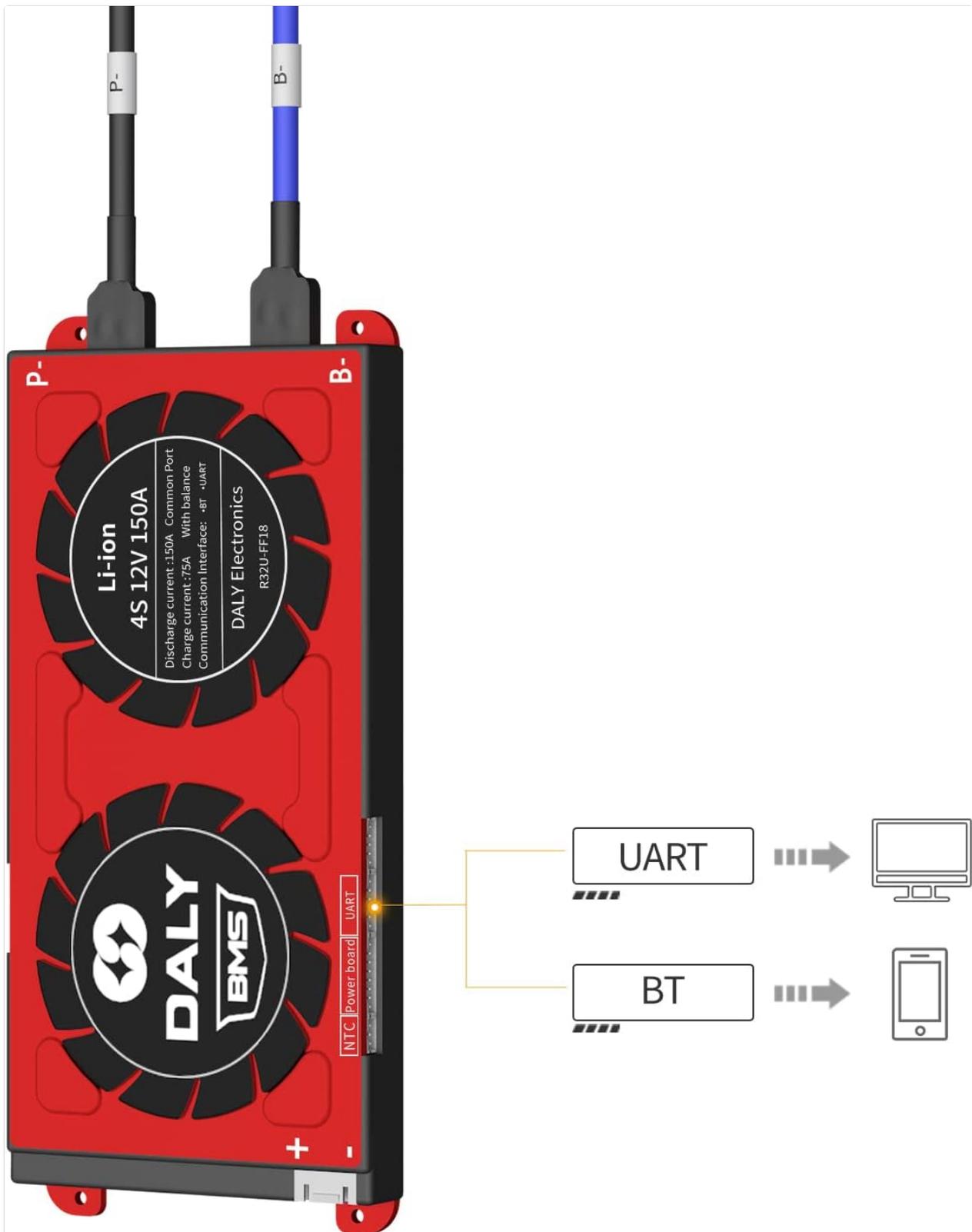
Figure 6: The DALY Smart BMS with its Bluetooth module, demonstrating connectivity to a smartphone running the DALY BMS application for real-time monitoring.

## 6.2 PC Software Connectivity (UART)

For more advanced monitoring, data logging, and configuration, connect the BMS to a computer using the provided UART cable and DALY PC software.

- Connect the UART cable to the UART port on the BMS and to an available USB port on your computer.
- Install the DALY PC software, which can typically be downloaded from the manufacturer's official website.
- Open the software and establish a connection with the BMS. The PC software provides comprehensive data logging, detailed parameter adjustment, and advanced diagnostic capabilities.

Figure 7: Illustration of the DALY Smart BMS communication interfaces, showing connections for both UART (to PC) and Bluetooth (to smartphone).

# 7. TROUBLESHOOTING

This section addresses common issues you might encounter with your DALY Smart BMS.

## 7.1 Common Issues and Solutions

- **BMS not powering on or no output:**

  - Verify all main power wiring connections (B- and P-) are secure and correct.
  - Check the total battery pack voltage to ensure it is within the operational range for a 4S Li-ion pack (typically 10V-16.8V).
  - Ensure the sampling cable is correctly inserted into the BMS and that individual cell voltages are balanced and within acceptable limits.

- **Bluetooth connection issues:**

  - Ensure the Bluetooth module is securely connected to the BMS's designated port.
  - Restart the BMS (by disconnecting and reconnecting the main battery power) and your smartphone's Bluetooth.
  - Confirm you have downloaded and are using the correct official DALY BMS application.

- **Overcharge or Overdischarge protection tripping frequently:**

  - Review your battery pack's specific voltage limits and adjust the BMS parameters accordingly via the Bluetooth app or PC software.
  - Check individual cell voltages for significant imbalance. If cells are severely unbalanced, a dedicated active balancer may be required.
  - Ensure your charger's voltage and current settings are appropriate for a 4S Li-ion pack.

- **BMS overheating:**

  - Ensure adequate ventilation around the BMS. Do not enclose it in a confined space without airflow.
  - Verify that the continuous discharge current of your load does not exceed the BMS's rated capacity (150A).
  - Check for any short circuits or excessive current draw in the connected load.

For further assistance or issues not covered here, please refer to the contact information in the Support section.

# 8. WARRANTY AND SUPPORT

## 8.1 Technical Support

DALY is committed to providing excellent customer service. We offer 24-hour one-on-one customer service and lifetime technical support for our products. If you require assistance with installation, operation, troubleshooting, or have any technical questions, please do not hesitate to contact DALY customer service through the official channels provided by your retailer or on the DALY website.

For customized BMS solutions or bulk orders, please contact the manufacturer directly for specialized assistance.

## 8.2 Quality Assurance

This DALY Smart BMS product is manufactured under strict quality control standards and is ISO/FCC/RoHS/PSE/CE APPROVED. This certification ensures high quality, reliability, and compliance with relevant international safety and environmental standards.

**Related Documents - 4S**

[Daly Smart BMS 8-16S 100-200A Product Specification Approval and Manual](#)
Detailed product specification and user manual for the Daly Smart BMS 8-16S 100-200A, covering technical parameters, protection features, LED indicators, communication protocols, and installation instructions.

**Y系列保护板说明书**

## 一、产品简介

随着物联网技术的飞速发展和智能设备的广泛应用，越来越多的设备需要更高效、更便捷的通信和控制方式，同时新国标对动力设备的智能化和兼容性也提出了更高要求。在这种背景下，采用蓝牙主控实现兼串及一线通功能的解决方案逐渐成为行业的热门选择。

| 产品 | ![YH] | ![YK] | ![YM] |
|---|---|---|---|
| 产品型号 | YH | YK | YM |
| 产品尺寸（装配孔距不含） | 101*65.5*14.2mm | 130*65.5*14.2mm | 180*92.4*17.2mm |
| 串数范围 | | 4-8S 7-17S 7-24S | |
| 持续电流 | 30A/40A/60A | 80A/100A/120A | 150A/200A |

## 二、使用指引

### 1、焊接保护板

**(1)焊接采样排线：**
从细黑排线连接电池B-（总负极）开始，第2根线连接第1串电池正极，后面依次连接每一串电池的正极；最后将B+线也焊接在最后一串（总正极）上（请参考说明书排线示意图）。

*注：焊接采样线时不可拖着保护板，请根据电池实际串数进行焊接，多出的采样线无需焊接（多出的采样线请做好绝缘处理）。

**(2)检测电压：**
使用万能表或线序检测设备测量排线的针孔每串电压是否在正常范围内，如不正常请检查排线是否有错接、虚焊、假焊、漏焊等情况。

**(3)焊接输出线：**
将B-连接线（蓝色粗线）、P-连接线（黑色粗线）用螺丝锁至保护板对应的B-、P-螺母上，建议扭矩为10N·m(牛米)；并把B-线焊接电池总负极。

*注：焊接采样线时不可拖着保护板，请根据电池实际串数进行焊接，多出的采样线无需焊接（多出的采样线请做好绝缘处理）。

**(4)接入保护板配件：**
如温控、电量板、GPS、显示屏等，再把采样线插入保护板自动激活。

### 2、蓝牙APP下载及连接

**(1)下载蓝牙APP**
①通过扫描保护板上的二维码下载；
②应用商店搜索"Smart BMS"；
③登录达锂官网
(https://www.dalybms.com/)下载；
④联系客服获取下载方式并安装手机APP。

**(2)连接蓝牙APP**
打开蓝牙和手机位置信息并进入APP，APP会自动搜索蓝牙序列号，核对保护板上的序列号无误后点击序列号即进入电池管理界面。

### 3、设置参数

首次使用时，需在APP或电脑上位机设置电池类型及容量（出厂默认为铁锂参数）、电池组的容量是需要按电池组的实际容量进行设置。
首次使用时需充满100%作为标定，其他保护参数可以根据自身需求进行设置，APP修改参数的出厂默认认密码为123456，PC上位机修改参数密码为12345678。

*注：在没有充放电的状态下，保护板默认3600秒后休眠，检测到有充放电时会自动唤醒，也可通过APP或PC上位机修改休眠时间，如设置65535则代表不休眠。

### 4、一线通使用说明

在APP或上位机选择对应协议，即可使用。

### 5、特别说明

(1) 不同厂家的排线不通用，请确保使用我们公司配套排线；
(2) 在测试、安装、接触和使用保护板时，要做好防静电措施；
(3) 不要使保护板的散热面直接接触电芯，否则热量会传送到电芯，影响电池的安全；
(4) 不可自行拆卸、更改保护板元器件；
(5) 本公司保护板外壳仍会导电，组装作业中避免与电芯、镍带接触，因静电防护设计需要，外壳与主板共地，测量时有电压属正常现象；
(6) 我司产品进行严格的出厂检验测试，但是因为客户使用的环境不同（特别是在高温、超低温、太阳下、潮湿环境等），难免会出现保护板故障，所以客户在选择和使用保护板时，需要在友好的环境下使用，及选择一定冗余量的保护板进行备用。

## 三、接口定义说明



| 接口名称 | Pin脚 | 标号 | 定义说明 |
|---|---|---|---|
| NTC | 1 | NTC1 | 1#温控线 |
| | 2 | GND | 地GND |
| | 3 | GND | 地GND |
| | 4 | NTC2 | 2#温控线 |
| UART | 1 | GND | 地GND |
| | 2 | 3.3V | 供电源3.3V |
| | 3 | 12V | 供电电源12V |
| | 4 | S1 | 激活开关 |
| | 5 | TX | 通讯发送端 |
| | 6 | RX | 通讯接受端 |
| 一线通/DO | 1 | 12V | 12V×500mA |
| | 2 | GND | 地GND |
| | 3 | YXT | 一线通接口 |
| | 4 | C-GND | |
| | 5 | DO | 3.3V×200mA DO |

## 四、常见串数接线示意图

**(4串接线示意图)**



**(5串接线示意图)**



**(6串接线示意图)**



[DALY Y Series BMS Technical Specifications and Wiring Guide](#)

Detailed technical specifications, wiring diagrams, and interface descriptions for DALY Y Series Battery Management Systems (BMS), including models YH, YK, and YM. Covers cell counts from 4S to 24S and current ratings up to 200A, with information on the Smart BMS mobile application.

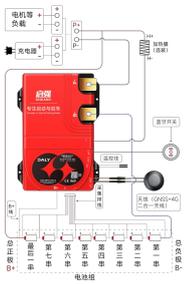[DALY DL-R32U-F012S200ATJ-MM00-S4RV LiFePO4 BMS Technical Specifications](#)

Detailed technical specifications, wiring diagrams, and warranty information for the DALY DL-R32U-F012S200ATJ-MM00-S4RV LiFePO4 12S 36V 200A Battery Management System (BMS) with Balance, UART, and Bluetooth.

**第五代卡车启动保护板**
**操作使用说明书**

## 一、产品简介

随着锂电池的广泛应用，对电池管理系统也提出了高性能、高可靠性及高性价比等要求。

达锂第五代卡车启动保护板是专门针对货车、船舶启动和驻车空调及卡车启动电源电池组而研发设计的一款智能保护板，可承受 3000A 的瞬间大电流，内置加热模块可以直连加热膜，集成滤波模块收卡车电机脉冲高压，且具有一键强启、智能通讯等功能。集成 4G 远程通讯跟高精度北斗定位功能，可通过云平台、APP、小程序实现远程管理、查看实时定位、历史轨迹等智慧功能。

## 二、操作说明



* 请仔细阅读说明书，更改参数（如修改电池容量、电压、电流等）后请酌留保存，方便后面需要如数就。

### 1、保护板连接电池接线顺序：
特别注意：
* 不同厂家的排线不通用，请确保使用达锂配套排线；
  （注意：B- 线内阻在 0.5mR-0.8mR 范围）；
* 切记!!! 焊接采样排线时，接线不要插入保护板；

1.1 排线从烟黑线连接总负极 B- 开始连接，第 2 根线（红线）连接第 1 串电池正极，后面依次连接每一串电池的正极，直到最后一串总正极，B+ 线单接接入电池总正极；
1.2 用排线连接好后插头不要直接插入保护板，先测量插头背面每两个相邻金属端子间的电压，如果是三元聚合物电池电压应该在 3.0~4.15V 之间，铁锂电池应该在 2.5~3.6V 之间，钛酸锂电池应该在 1.8~2.8V 之间，确保电压无误后再进行下一步操作；
1.3 插入NTC 线束（确保保护板NTC接口插入温控线）；
1.4 将保护板B-线(蓝色粗线)接到电池总负极；
1.5 将排线插入保护板；
1.6 将蓝牙开关模块插入UART接口，查看指示灯是否正常亮起 (UART1、UART2 均可)，
1.7 首次上电需要充电、或蓝牙开关按键激活。

### 2、测量电池B+,B-电压与B+,P-电压是否相等(即：电池组本身电压和经过保护板之后的电压是否相等)，相等即保护板正常工作，可以正常使用了。如不相等，请按照上面接线顺序重新检查一遍。

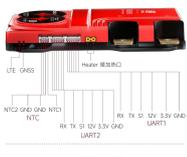### 3、接负载和充电器：
3.1 将负载负极和充电器负极与P-连接。
3.2 将负载正极和充电器正极与电池组总正极连接。

### 4、下载通讯软件(手机端 DALY BMS APP,电脑端上位机)，设置电池组的容量(AH)为正确的容量。
4.1 在手机应用市场搜索DALY BMS,下载并安装。
4.2 打开手机的定位和蓝牙及相关权限功能，
4.3 打开DALY BMS APP 在首界面选择4G设备，注册并绑定设备。
4.4 在界面的右下角有参数设置。点击打开，选择电芯参数,可以看到额定容量，输入自己电池组的实际容量XX, 点击设置，默认密码123456。
4.5 容量设置好后，可以对电池组进行充电，充电触发了过充二级保护，SOC会自动校准为100%。

### 5、天线安装
特别注意：
* 外置天线切勿放置于密闭箱体内，需要将天线外置，注意固定安装，且防水点胶；
5.1 箱体合适位置开孔，开孔建议以13-13.5 mm，最终需结合天线实物判断。

## 三、接口定义说明



LTE GNSS          Header 预加热口
NTC2 GND GND NTC1   RX TX S1 12V 3.3V GND   RX TX S1 12V 3.3V GND
NTC                 UART2                    UART1



B+
B8          S2 B1 B0
接线接口

| 序号 | 功能 | Pin数 | 间距 | 接口描述 | 工艺方式 |
|---|---|---|---|---|---|
| 1 | 电压采集1 | 9 | 2.0 | B0-B8 | 插件带扣 |
| 2 | 电压采集2 | 11 | 2.0 | B0-B10 | 插件带扣 |
| 3 | NTC | 4 | 2.0 | NTC1,GND,GND,NTC2 | 插件带扣 |
| 4 | B+ | 2 | / | B+ | XT-30 |
| 5 | H+ | 2 | / | 接加热口 | XT-30 |
| 6 | UART1 | 6 | 2.0 | GND,3.3V,12V,S1,TX,RX | 插件带扣 |
| 7 | UART2 | 6 | 2.0 | GND,3.3V,12V,S1,TX,RX | 插件带扣 |
| 8 | LTE | 1 | / | 4G通讯天线 | MCX座母头 |
| 9 | GNSS | 1 | / | 北斗定位天线 | MCX座母头 |

## 四、远程管理、蓝牙开关模块使用说明

### 1、小程序/DALY APP远程管理
（1）"启动宝"小程序远程管理
**"启动宝"微信小程序功能：可进行数据监控、一键落启、一键加热、预约加热、实时定位、历史轨迹等功能。
*连接方式一：通过扫描随货二维码，快速连接"启动宝"微信小程序，选择"远程设备"，注册绑定后即可连接保护板实现远程管理。

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