**DALY 16S 60V 60A**

# DALY Smart BMS Li-ion 16S 60V 60A User Manual

Model: 16S 60V 60A

## 1. INTRODUCTION

This manual provides essential information for the safe and effective installation, operation, and maintenance of the DALY Smart Battery Management System (BMS) for Li-ion 16S 60V 60A battery packs. Please read this manual thoroughly before using the product to ensure proper functionality and to prevent damage.

## 2. SAFETY INFORMATION

Adherence to the following safety guidelines is crucial to prevent injury, damage to the BMS, or the battery pack.

- Always disconnect the battery pack from any load or charger before installing or servicing the BMS.
- Ensure all wiring connections are correct and secure. Incorrect wiring can lead to severe damage or fire.
- Wear appropriate personal protective equipment (PPE), including insulated gloves and eye protection, when working with battery systems.
- Avoid short-circuiting battery terminals or BMS connection points.
- Do not expose the BMS to water, excessive moisture, or extreme temperatures.
- Only use the BMS with compatible Li-ion 16S 60V battery packs.
- If any abnormal behavior is observed, immediately disconnect the battery pack and consult technical support.

## 3. PRODUCT FEATURES AND PACKAGE CONTENTS

### 3.1 Key Features

- Integrated protection against overcurrent, overcharge, overdischarge, short circuit, and temperature fluctuations.
- Designed to optimize lithium battery performance and extend battery lifespan.
- Features a robust, double-protected casing with injection patent technology and a patent shell, offering waterproof, dustproof, shockproof, and anti-static properties.
- Utilizes high-quality components for pressure resistance, durability, and high acquisition accuracy.
- Smart functionality allows battery status monitoring and parameter modification via Bluetooth application or PC software.

### 3.2 Package Contents

The standard package includes the following items:

- DALY 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)

# Packing Example



**Figure 1:** Example of the DALY Smart BMS packaging, showing the BMS unit, various cables (sampling cable, UART cable), Bluetooth module, NTC sensor, and instruction manual included in the box.

## 4. TECHNICAL SPECIFICATIONS

| Specification | Value |
| --- | --- |
| Product Dimensions (L x W x H) | 5.04 x 2.6 x 0.51 inches (128 x 66 x 13 mm) |
| Item Weight | 13.4 ounces |
| Input Voltage (Rated Cell) | 3.7 Volts (per cell) |
| Output Voltage (System) | 60 Volts (for 16S configuration) |
| Continuous Discharge Current | 60 Amperes |
| Continuous Charge Current | 30 Amperes |
| Communication Interface | Bluetooth, UART |

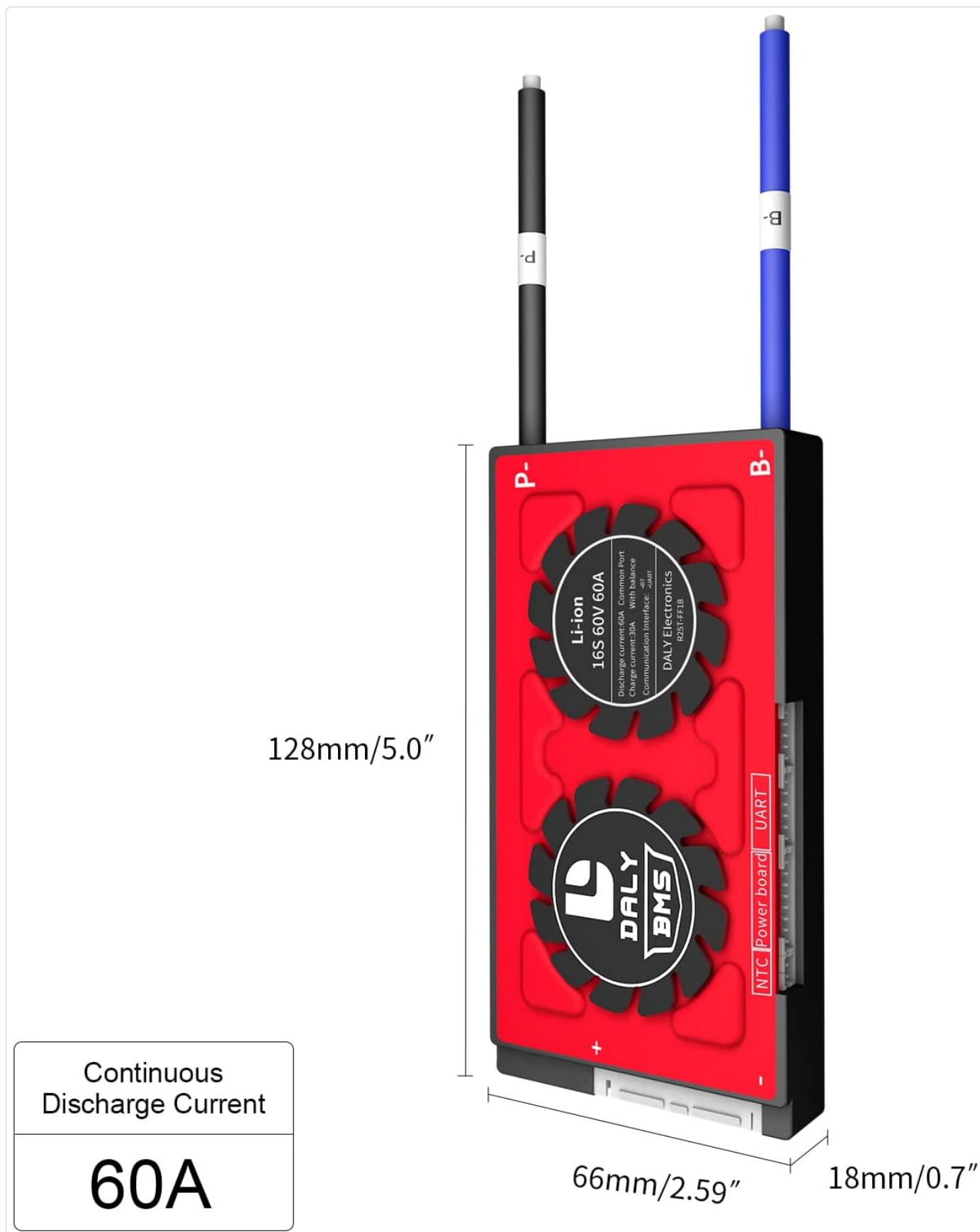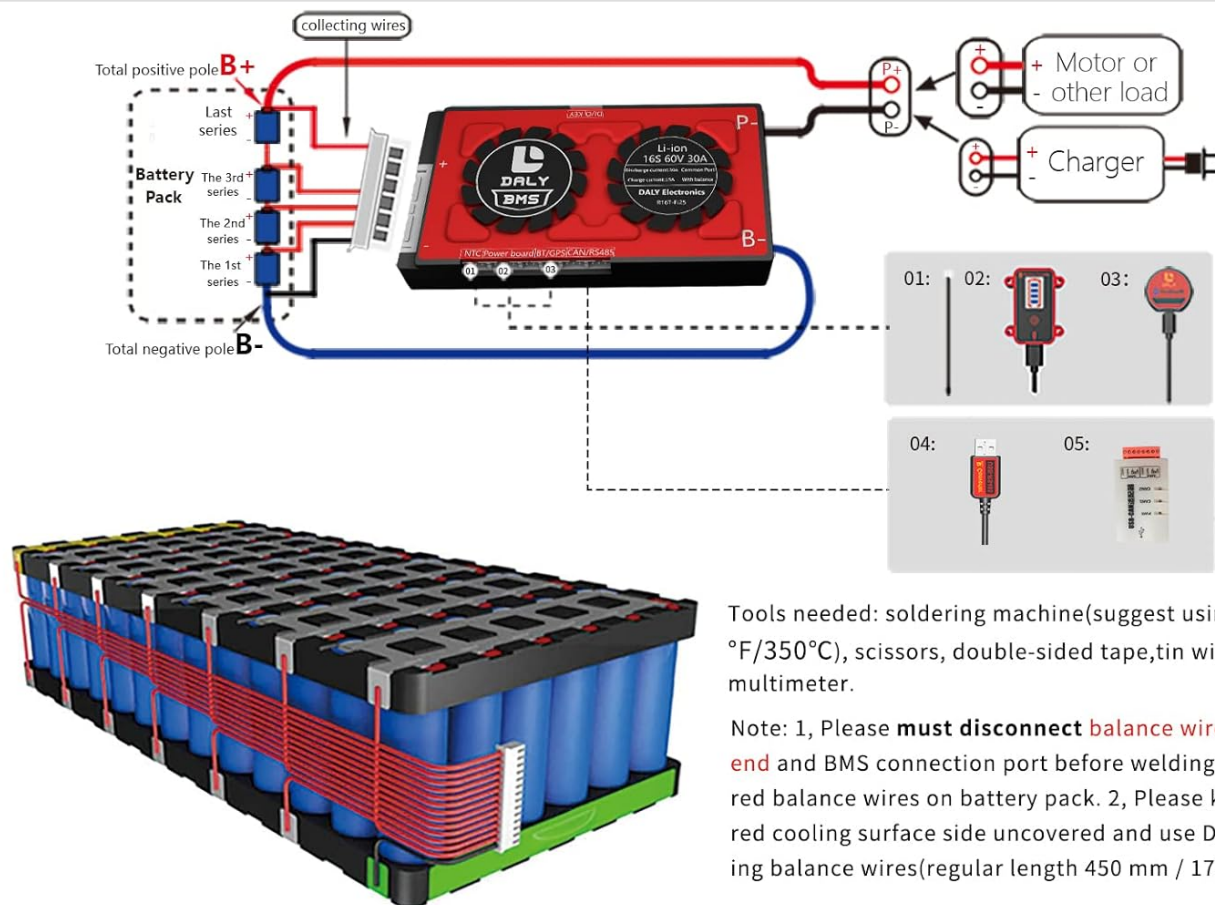## 4.1 Dimensions

**Continuous Discharge Current**

**60A**

**Figure 2:** Diagram illustrating the physical dimensions of the DALY Smart BMS, including length (128mm/5.0"), width (66mm/2.59"), and thickness (18mm/0.7"). The continuous discharge current is rated at 60A.

## 5. INSTALLATION GUIDE

Careful installation is critical for the proper functioning and safety of your battery system. Follow these steps precisely.

### 5.1 Wiring Diagram

Tools needed: soldering machine(suggest using 662 °F/350℃), scissors, double-sided tape,tin wire, multimeter.

Note: 1, Please **must disconnect** balance wires white end and BMS connection port before welding black and red balance wires on battery pack. 2, Please keep BMS red cooling surface side uncovered and use DALY matching balance wires(regular length 450 mm / 17.72 inch).

After confiming that the balance wires are welded correctly and installed the accessories (such as: UART/Bluetooth/ RS485/ CAN on BMS),connect balance wires and BMS connection port Pls refer to daly website link  smart bms Tutorial Video https://www.dalyelec.cn/newsshow.php?cid=25&id=78&lang=1 including:

1. Daly Smart BMS Touch screen Connection Tutorial

2. Daly Smart BMS SOC light board Connection Tutorial

3. Daly Smart BMS PC screen Connection Tutorial

4. Daly Smart BMS CANBUS Connection Tutorial

5. Daly Smart BMS Bluetooth APP Connection Tutorial

6 Daly Smart BMS UART、RS485 Connection Tutorial

Two methods①: press activation button on the battery board ②: by charging to activate BMS for the first use.
The serial number of BMS and the protection parameters(Li-ion,LiFePO4) have default values at the factory, but the capacity of the battery pack needs to be set according to the actual capacity AH of the battery pack.If the capacity AH is not set correctly, The percentage of remaining power will be inaccurate.Other parameters can also be set to your needs.
Initial password of smart board APP to change parameters is: 123456.

**Figure 3:** Comprehensive wiring diagram for the DALY Smart BMS, illustrating connections for a 16S Li-ion battery pack, motor/load, and charger. It details the connection of the balance wires, B- (total negative pole), and P- (discharge negative pole).

## 5.2 Wiring Steps

1. **Preparation:** Before connecting any wires, ensure the battery pack is fully discharged or at a safe voltage level.**Important: Disconnect the white end of the balance wires and the BMS connection port before welding the black and red balance wires to the battery pack.**

2. **Connect B- Wire:** Connect the thick black wire (B-) from the BMS to the total negative pole of your battery pack.

3. **Connect P- Wire:** Connect the thick blue wire (P-) from the BMS to the negative terminal of your load (motor) and charger.

4. **Connect Balance Wires:** Connect the balance wires to each cell of the battery pack, starting from B0 (negative terminal of the first cell) up to B16 (positive terminal of the last cell). Ensure the order is correct.

5. **Connect NTC Sensor:** Attach the NTC temperature sensor to a central cell or location within the battery pack to monitor temperature.

6. **Connect Communication Modules:** Plug in the Bluetooth module or UART cable into their respective ports on the BMS.

7. **Final Check:** Double-check all connections for correctness and security before applying power.

## 5.3 Initial Activation

After confirming all wiring is correct, activate the BMS using one of the following methods:

- **Method 1:** Press the activation button on the BMS board.
- **Method 2:** Connect the charger to the battery pack. The charging process will activate the BMS.

The initial password for the Smart APP is 123456. The BMS protection parameters (Li-ion, LiFePO4) have default values. The capacity of the battery pack needs to be set according to the actual capacity (Ah) of the battery pack. If the capacity Ah is not set correctly, the percentage of remaining power will be inaccurate. Other parameters can also be set to your needs.

## 6. OPERATION AND DATA MONITORING

The DALY Smart BMS allows for real-time monitoring and parameter adjustment via a dedicated smartphone application or PC software.

### 6.1 Bluetooth App Connection



**Figure 4:** Image showing the DALY Smart BMS connected via a Bluetooth module to a smartphone displaying the monitoring application interface. The app provides real-time data such as voltage, current, and state of charge.

1. Ensure the Bluetooth module is correctly connected to the BMS.
2. Download the DALY Smart BMS application from your smartphone's app store.

3. Enable Bluetooth on your smartphone and open the DALY BMS app.

4. The app will scan for available BMS devices. Select your BMS from the list.

5. Enter the default password (123456) if prompted.

6. Once connected, you can view real-time battery data and adjust parameters as needed.

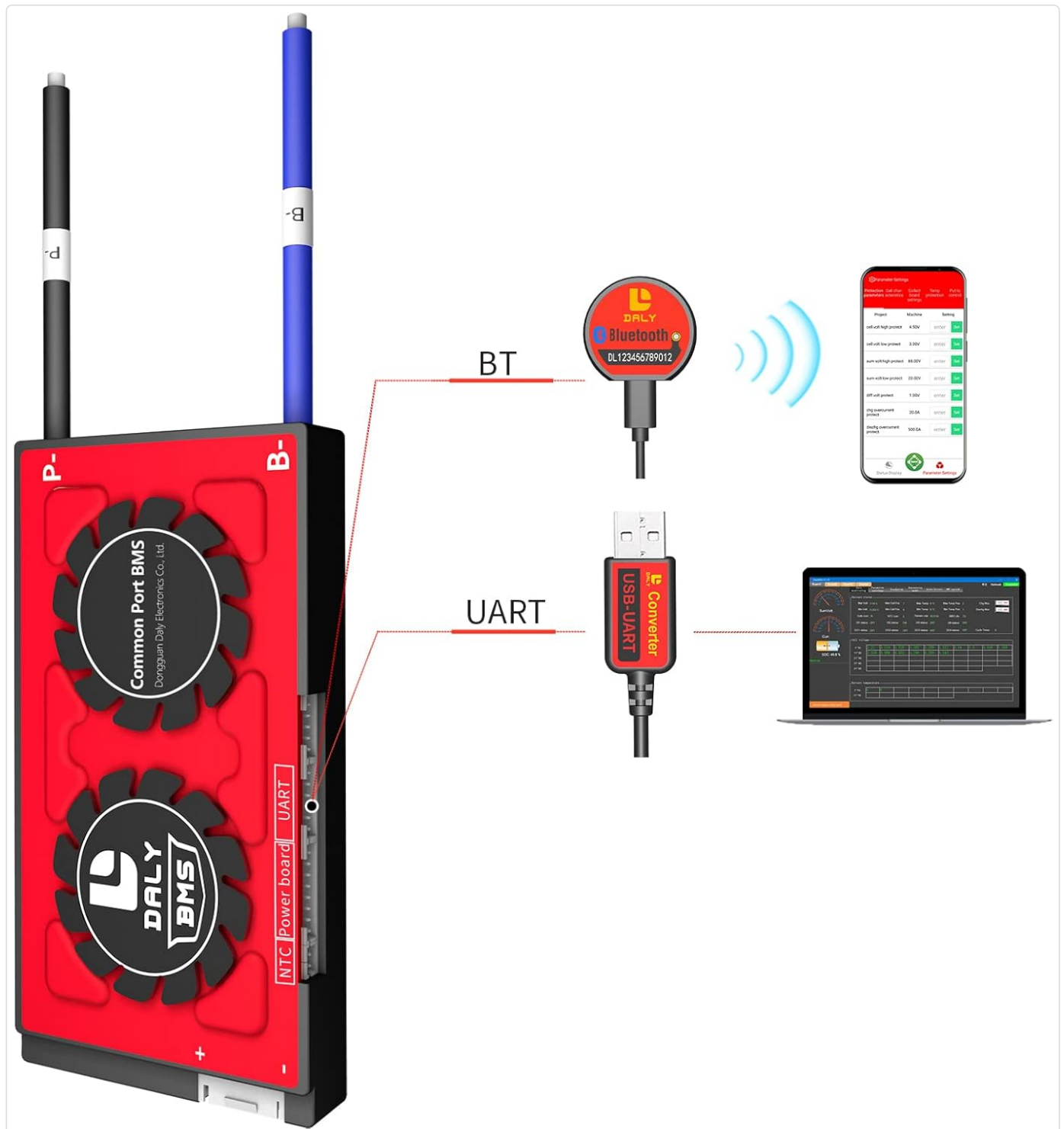## 6.2 UART Communication and PC Software



**Figure 5:** Diagram illustrating connection methods for the DALY Smart BMS. It shows the Bluetooth module connecting to the BMS and a smartphone, and the UART module connecting to the BMS and a computer for data monitoring and parameter modification.

1. Connect the UART cable to the UART port on the BMS and to a USB port on your computer.

2. Install the DALY BMS PC software on your computer.

3. Open the PC software and select the correct COM port for the UART connection.

4. Establish communication to access detailed battery data, logs, and advanced parameter settings.

# 7. MAINTENANCE GUIDELINES

Regular maintenance helps ensure the longevity and optimal performance of your DALY Smart BMS.

- **Visual Inspection:** Periodically inspect the BMS and all wiring for any signs of damage, corrosion, or loose connections.
- **Cleaning:** Keep the BMS clean and free from dust and debris. Use a dry, soft cloth for cleaning. Do not use liquid cleaners.
- **Temperature Monitoring:** Regularly check the battery and BMS temperature, especially during charging and discharging cycles, to ensure they remain within safe operating limits.
- **Firmware Updates:** Check the official DALY website or app for any available firmware updates for the BMS to ensure you have the latest features and bug fixes.

# 8. TROUBLESHOOTING COMMON ISSUES

If you encounter issues with your DALY Smart BMS, refer to the following troubleshooting steps:

- **BMS Not Activating:** Ensure all wiring is correct, especially the B- and P- connections. Try activating the BMS by pressing the activation button or connecting a charger.
- **Bluetooth Connection Failure:** Verify the Bluetooth module is securely connected to the BMS. Ensure Bluetooth is enabled on your smartphone and the app has necessary permissions. Try restarting the app or your phone.
- **UART/PC Software Not Connecting:** Check the UART cable connection to both the BMS and the computer. Ensure the correct COM port is selected in the PC software. Reinstall the PC software or drivers if necessary.
- **Protection Triggered (Overcurrent, Overvoltage, Undervoltage):** The BMS will trigger protection if battery parameters exceed safe limits. Check the battery voltage, current draw, and individual cell voltages. Reduce the load or adjust charging parameters if necessary.
- **Inaccurate State of Charge (SOC):** Ensure the battery pack's actual capacity (Ah) is correctly set in the BMS parameters via the app or PC software.

If the issue persists after attempting these steps, contact customer support for further assistance.

# 9. CUSTOMER SUPPORT AND WARRANTY

DALY is committed to providing high-quality products and support.

- **Customer Service:** We offer 24-hour one-on-one customer service for any inquiries or technical assistance.
- **Technical Support:** Lifetime technical support is provided for all DALY BMS products.
- **Quality Assurance:** Our products are ISO, FCC, RoHS, PSE, and CE approved, ensuring high standards of quality and safety.
- **Contact:** For support, please refer to the contact information provided with your product or visit the official DALY website.

## Related Documents - 16S 60V 60A

[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.

## 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，同时制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 | | | |
|---|---|---|---|
| 产品型号 | YH | YK | YM |
| 产品尺寸 | 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（请参考说明书接线示意图）。

*注：焊接采样排时不可插叠保护板，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：焊接采样排时不可插叠保护板，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密码为123456，PC上位机修改参数密码为123456789。

*注：在没有充放电的状态下，保护板默认3600秒后休眠，检测到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，因原电防护设计需要，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，所以请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。
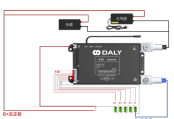
## 三、接口定义说明



DO  C-GND  YXT  GND  12V          NTC2  GND  GND  NTC1
                 RX  TX  S1  12V/3.3V  GND

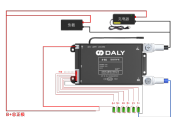| 接口名称 | Pin脚 | 标号 | 定义说明 |
|---|---|---|---|
| NTC | 1 | NTC1 | 1#温控线 |
| | 2 | GND | 地GND |
| | 3 | GND | 地GND |
| | 4 | NTC2 | 2#温控线 |
| UART | 1 | GND | 地GND |
| | 2 | 3.3V | 供电电源3.3V |
| | 3 | 12V | 供电电源12V |
| | 4 | S1 | 激活开关 |
| | 5 | TX | 通讯发送端 |
| | 6 | RX | 通讯接受端 |
| 一线通/DO | 1 | 12V | 12V*500mA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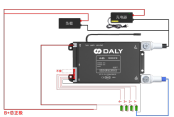


**（5串接线示意图）**



**（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流加热防冻，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）后请勿保存，方便您调用查看数据。
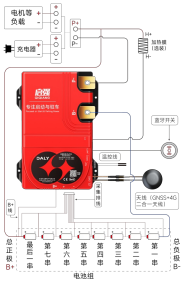
### 1、保护板连接电池接线顺序：
特别注意：
- 不同厂家的排线不通用，请确保使用达锂配套排线；
  （注意：B- 线内阻在 0.5mR-0.8mR 范围）；
- 切记!!! 焊接采样排线时，接线不要插入保护板；
1.1 排线从烟黑线连接总负极 B- 开始连接，第 2 根线（红线）连接第 1 串电池正极，后面依次连接每一串电池的正极，直到最后一串总正极，B+ 线串加接入电池总正极；
1.2 排线连接好后插头不要直接接入保护板，先测量插头里面每两个相邻金属端子间的电压，如果是三元聚合物电池电压应在在 3.0~4.15V 之间，铁锂电池应该在 2.5~3.6V 之间，钛酸锂电池应该在 1.8~2.8V 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。

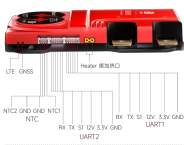### 3、接负载和充电器：
3.1 将负载负极和充电器负极与 P-连接。
3.2 将负载正极和充电器正极与电池组总正极连接。

### 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，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 13-13.5 mm，最终需结合天线实物判断。

## 三、接口定义说明



LTE  GNSS

NTC2 GND GND NTC1
NTC

RX TX SI 12V 3.3V GND        RX TX SI 12V 3.3V GND
UART2                        UART1



B+

B8 • • • • • • • • B2  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 | 插针带扣 |
| 2 | 电压采集2 | 11 | 2.0 | B0-B10 | 插针带扣 |
| 3 | NTC | 4 | 2.0 | NTC1,GND,GND,NTC2 | 插针带扣 |
| 4 | B+ | 2 | / | B+ | XT-30 |
| 5 | H+ | 2 | / | 接加热口 | XT-30 |
| 6 | UART1 | 6 | 2.0 | GND,3.3V,12V,SI,TX,RX | 插针带扣 |
| 7 | UART2 | 6 | 2.0 | GND,3.3V,12V,SI,TX,RX | 插针带扣 |
| 8 | LTE | 1 | / | 4G通讯天线 | IPEX座母头 |
| 9 | GNSS | 1 | / | 北斗定位天线 | IPEX座公头 |

## 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、一键落后、一键加热、预约加热、实时定位、历史轨迹查询功能。
"连接方式——通过扫描隐货二维码，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。