DALY 24S 72V 120A LiFePO4 Standard BMS with Cooling Fan

DALY BMS 24S 72V 120A LiFePO4 Battery Protection Module User Manual

Model: 24S 72V 120A LiFePO4 Standard BMS with Cooling Fan

1. Overview

The DALY BMS (Battery Management System) 24S 72V 120A LiFePO4 Battery Protection Module is designed to safeguard your 18650 LiFePO4 battery pack. It provides essential protection against overcurrent, overcharge, overdischarge, short circuits, and temperature fluctuations, thereby optimizing battery performance and extending its lifespan. This standard BMS model includes a cooling fan for enhanced thermal management.

Key Features:

- **Comprehensive Protection:** Guards against overcurrent, overcharge, overdischarge, short circuit, and temperature issues.
- **Enhanced Durability:** Features double protection through injection patent technology and a patent shell, offering waterproof, dustproof, shockproof, and anti-static properties.
- **High-Quality Components:** Constructed with pressure-resistant and durable materials, ensuring high acquisition accuracy.
- **Integrated Cooling Fan:** Maintains optimal operating temperatures for the BMS.

Package Contents:

- 3.2V LiFePO4 BMS (1 unit)
- NTC Sensor (1 unit)
- Sampling Cable (1 unit)
- Instruction Manual (1 unit)

2. Safety Information

Always prioritize safety when working with battery management systems and high-voltage battery packs. Failure to follow safety guidelines can result in serious injury, property damage, or product malfunction.

- **Professional Installation Recommended:** Installation should ideally be performed by qualified

personnel with experience in battery systems.

- **Insulated Tools:** Use insulated tools to prevent accidental short circuits.
- **Disconnect Power:** Always disconnect the battery pack from any power sources before installation or maintenance.
- **Correct Polarity:** Ensure all connections adhere to correct polarity to avoid damage to the BMS and battery.
- **Avoid Short Circuits:** Take extreme care to prevent short circuits during wiring and operation.
- **Ventilation:** Ensure adequate ventilation around the battery pack and BMS.
- **Protective Gear:** Wear appropriate personal protective equipment (PPE), such as insulated gloves and eye protection.

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3. Product Features & Components

The DALY BMS is engineered for robust performance and reliability. Below are visual representations and descriptions of its key features and internal structure.

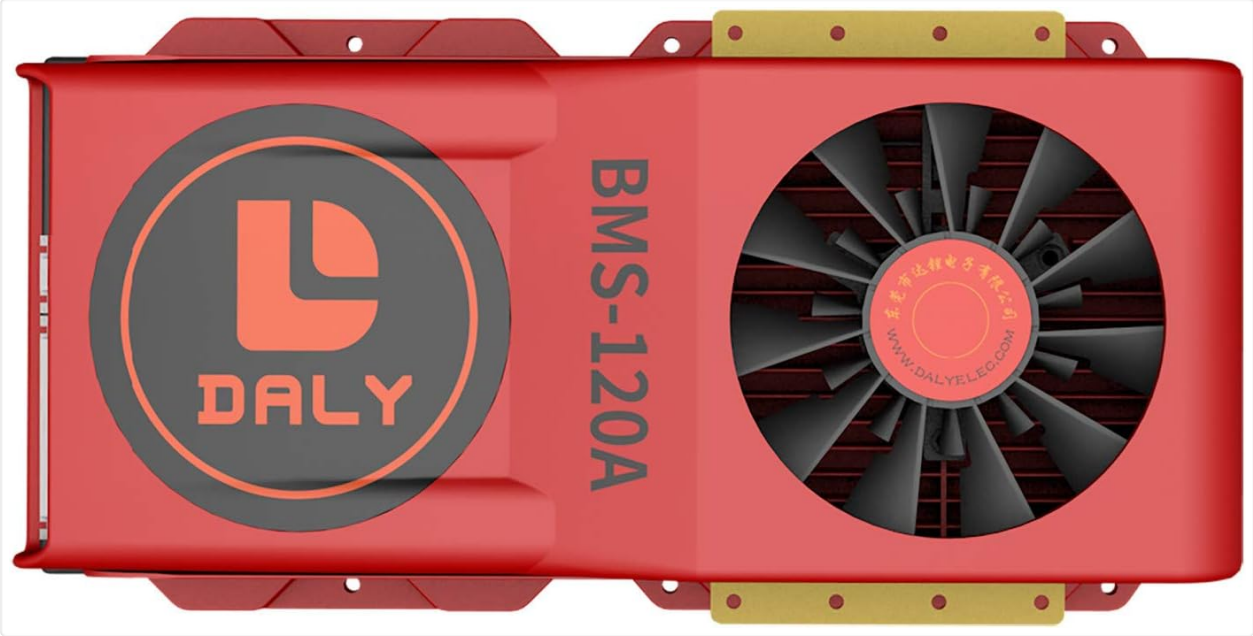

Figure 1: Top view of the DALY BMS 24S 72V 120A LiFePO4 Battery Protection Module, showing the DALY logo and BMS-120A label.

Figure 2: Side view of the DALY BMS, highlighting the cooling fan and connection terminals.

Internal Structure:

The BMS features a multi-layered design for optimal protection and heat dissipation.

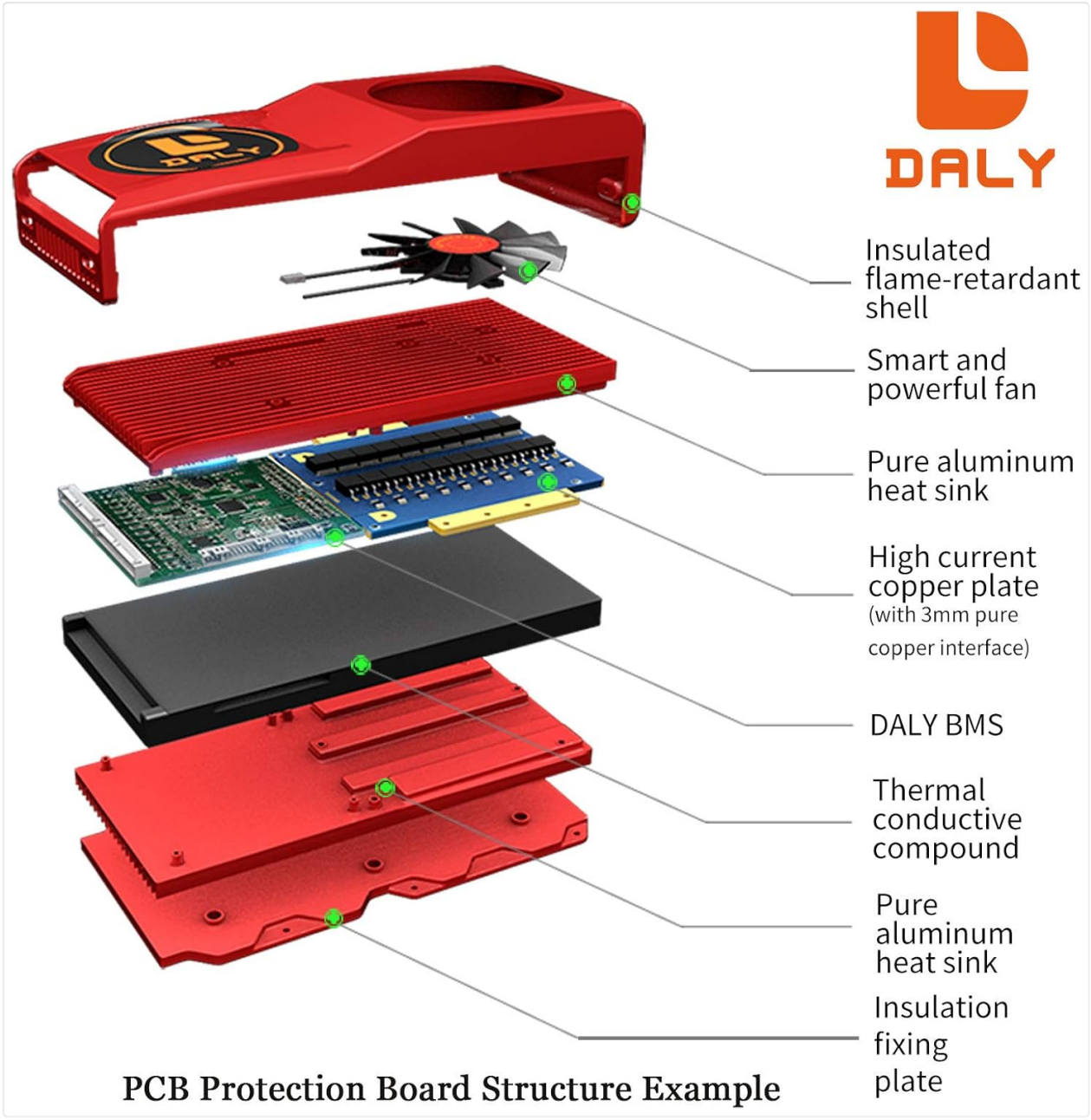

Figure 3: Exploded view illustrating the internal components of the DALY BMS, including the insulated flame-retardant shell, smart cooling fan, pure aluminum heat sinks, high current copper plate, DALY BMS control board, thermal conductive compound, and insulation fixing plate.

Video 1: DALY BMS 80A-500A with Cooling Fan Introduction. This video provides a visual overview of the BMS models with cooling fans and highlights their robust construction and features.

Fan Specifications:

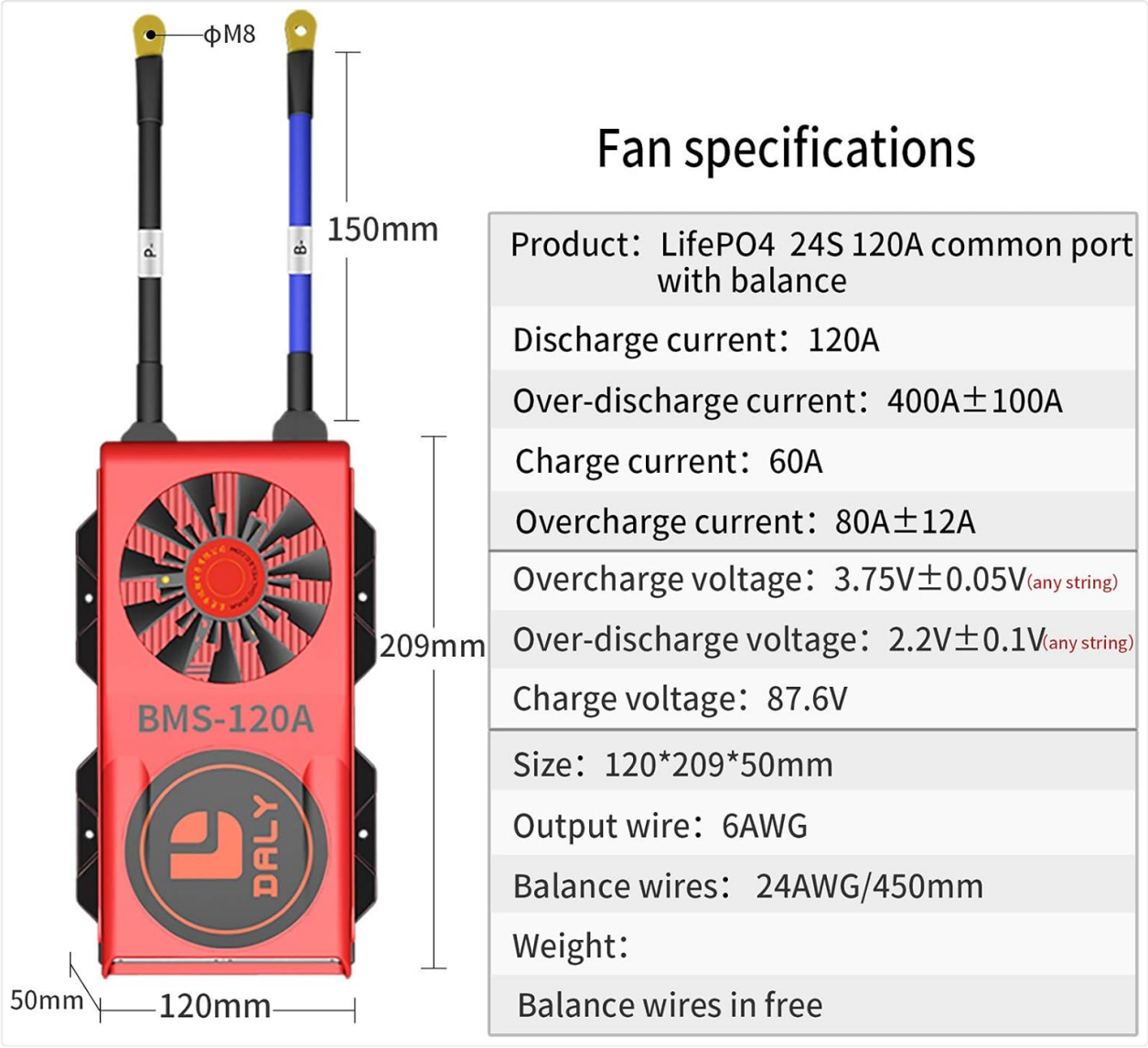

Figure 4: Table detailing the fan specifications for the LiFePO4 24S 120A common port BMS with balance, including discharge current, over-discharge current, charge current, overcharge current, overcharge voltage, over-discharge voltage, charge voltage, size, output wire gauge, balance wire gauge, and weight.

4. Installation & Wiring

Proper installation and wiring are critical for the safe and effective operation of your DALY BMS. Follow these steps carefully.

4.1 Preparing Materials and Tools:

Before beginning the wiring process, ensure you have the following tools and materials:

- Soldering machine (suggested temperature: 662°F/350°C; for novices, about 350°C)
- Ceramic scissors (insulated, for cutting wires)
- Multimeter (for checking voltages)
- Detection board (for verifying wiring accuracy)
- Double-sided tape
- Tin wire

Video 2: Prepare materials before Daly BMS wiring. This video demonstrates the necessary tools and materials for wiring your DALY BMS.

4.2 Sampling Point Determination:

Accurately identifying sampling points on your battery pack is crucial for correct BMS operation.

Video 3: Daly BMS sampling point determination. This video guides you through the process of identifying and marking the correct sampling points on your battery pack using a multimeter.

4.3 Wiring Instructions:

Follow these steps for proper wiring of the BMS to your battery pack:

1. After assembling your LiFePO4 battery pack, mark battery B-, B1, B2, ..., until battery pack B+.
2. Fix balance wires on the battery pack where black wire can reach battery pack B-. The 1st red wire can reach B1, 2nd red wire can reach B2, ..., until the last red wire can reach battery pack B+ with double-sided tape.
3. Cut off excess length with scissors, welding the black wire's end at Battery pack B-, welding the 1st red wire's end at B1, 2nd red wire's end at B2, ..., until the last red wire's end at Battery pack B+.
4. Measure balance wire ends' 2 neighboring metal points voltage. If the voltage range is 2.0V-3.6V, that means wiring is correct.
5. Connect balance wires white end with BMS connection port, use multimeter ohm detection function and turn on the buzzer. Connect multimeter's black test pen with BMS P- and multimeter's red test pen with BMS B-. When there is a beep sound, the BMS circuit conduction is OK and continuous.
6. Use multimeter DC voltage function to measure battery pack's voltage (between Battery B- and Battery B+) and through BMS output voltage (between BMS B- and Battery B+). If they are the same voltage, the BMS can work normally already and fix BMS to avoid poor contact due to severe vibration during use.

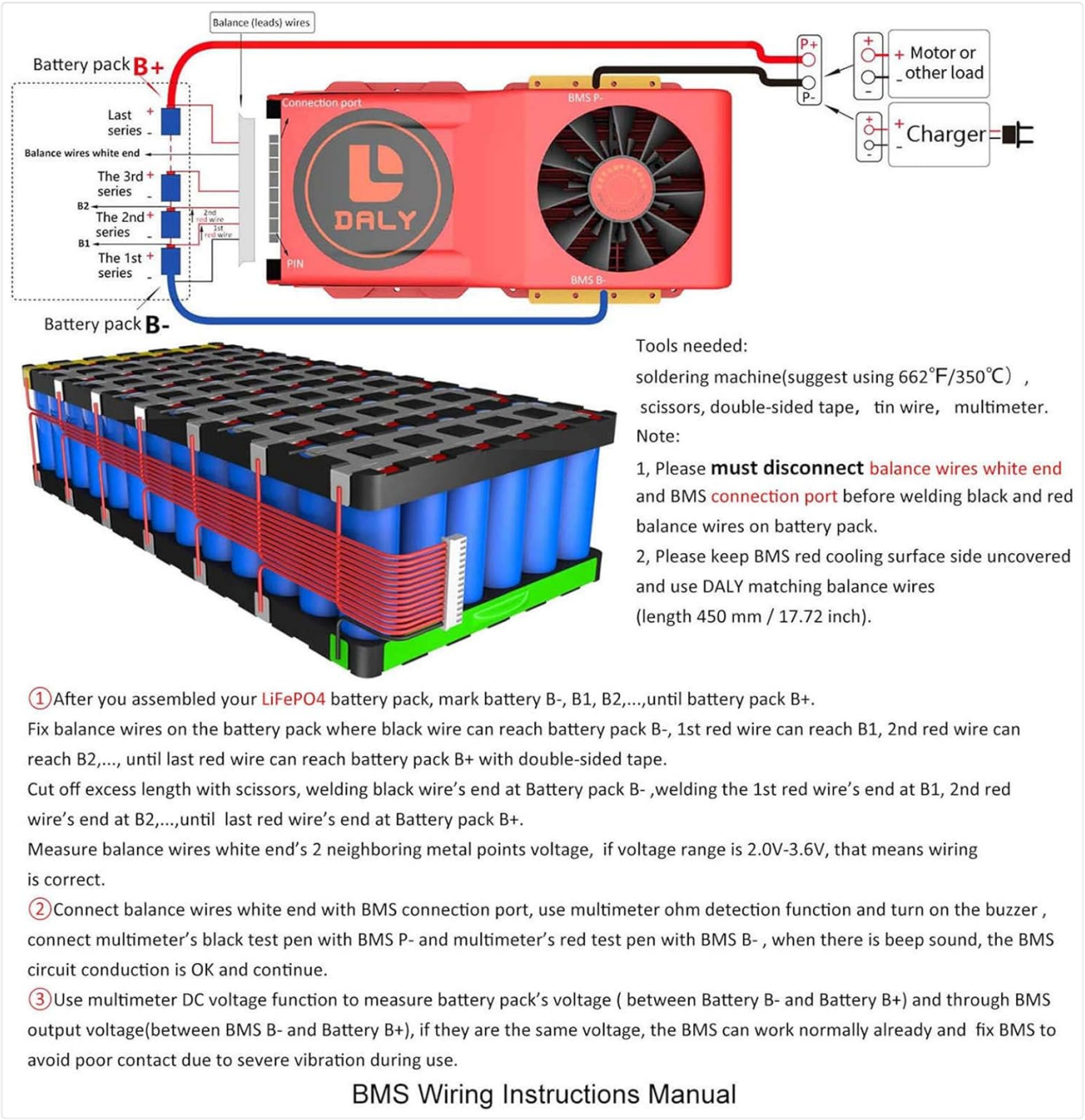

Figure 5: Detailed wiring diagram for the DALY BMS, illustrating connections to the battery pack, motor/load, and charger.

Video 4: Daly BMS Wires Soldering Video. This video demonstrates the correct soldering technique for connecting the balance wires to the battery pack.

4.4 Common Wiring Errors to Avoid:

Understanding common mistakes can prevent damage and ensure proper functionality.

Video 5: Daly BMS Wiring 5 Common Errors Video. This video highlights frequent mistakes made during BMS wiring and explains how to avoid them, covering issues like incorrect wire usage, improper BMS insertion, virtual welding, and incorrect P- and B- line connections.

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5. Operation

This DALY BMS is a standard model, primarily providing essential battery protection functions. It operates automatically to monitor and protect the battery pack based on its programmed parameters.

- **Automatic Protection:** The BMS automatically engages protection features (overcharge, overdischarge,

overcurrent, short circuit, temperature) when thresholds are met.

- **No Communication Functions:** This standard BMS does not include communication features such as Bluetooth, UART, RS485, CAN, LCD, or GPS.
- **Smart BMS Models:** If advanced communication functions or active balancing are required, please consider DALY Smart BMS models. Contact customer service for more information on these variants.

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6. Maintenance

Regular maintenance helps ensure the longevity and reliable performance of your DALY BMS and battery pack.

- **Regular Inspection:** Periodically inspect the BMS and all wiring for any signs of damage, loose connections, or corrosion.
- **Cleanliness:** Keep the BMS and surrounding area clean and free from dust and debris. Use a dry, soft cloth for cleaning.
- **Temperature Management:** Ensure the cooling fan is unobstructed and functioning correctly. Avoid operating the battery pack and BMS in extreme temperatures.
- **Avoid Physical Damage:** Protect the BMS from physical impact or excessive vibration.

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7. Troubleshooting

If you encounter issues with your DALY BMS, refer to the common errors video and these general troubleshooting steps.

Common Issues and Solutions:

- **No Power Output/Charging:**
  - Verify all wiring connections are secure and correct, especially the B- and P- lines.
  - Check individual cell voltages with a multimeter to ensure no cells are critically over-discharged or damaged.
  - Ensure the BMS is correctly inserted into the balance port after all wiring is complete.
- **BMS Overheating:**
  - Check for proper ventilation around the BMS.
  - Ensure the cooling fan is operational and not obstructed.
  - Verify that the load current does not exceed the BMS's rated continuous discharge current.
- **Battery Imbalance:**
  - Confirm that all balance wires are correctly connected to their respective cell taps.
  - Measure the voltage between adjacent balance wire ends to ensure they are within the expected range (2.0V-3.6V for LiFePO4).

For complex issues or if troubleshooting steps do not resolve the problem, please contact DALY customer service for assistance.

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8. Specifications

Specification	Value
Product Dimensions	8.23 x 4.72 x 1.97 inches
Item Weight	3.7 pounds
Input Voltage	72 Volts (DC)
Output Voltage	72 Volts (DC)
Manufacturer	Dongguan Daly Electronics Co., Ltd
Certifications	ISO/ FCC/ RoHS/ PSE/ CE APPROVED

9. Warranty & Support

DALY is committed to providing excellent customer service and support for its products.

- **Customer Service:** We offer 24-hour one-on-one customer service to assist with any inquiries or issues.
- **Technical Support:** Lifetime technical support is provided for all DALY BMS products.
- **Contact Information:** For customized BMS solutions, bulk orders, or technical assistance, please feel free to contact DALY customer service.

Related Documents - 24S 72V 120A LiFePO4 Standard BMS with Cooling Fan

东莞市达锂电子有限公司
DALY Dongguan DALY Electronics Co., Ltd.

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			
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：焊接采样线时不可插着保护板，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，如不正常请检查接线是否有错接、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：焊接采样线时不可插着保护板，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：

如蓝控、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

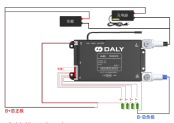
(1) 不同厂家的排线不通用，请确保使用我们公司配套排线；
(2) 在测试、安装、接触和使用保护板时，要做好防静电措施；
(3) 不要使保护板的散热面直接接触电芯，否则热量会传送到电芯，影响电池的安全；
(4) 不可自行拆卸、更改保护板元器件；
(5) 本公司保护板外壳仍会导电，组装作业中避免与电芯、镍带接触，因静电防护设计需要，外壳与主板共地，测量时有电压属正常现象；
(6) 我司产品进行严格的出厂检验测试，但是因为客户使用的环境不同（特别是在高温、超低温、太阳下、潮湿环境等），难免会出现保护板故障，所以客户在选择和使用保护板时，需要在友好的环境下使用，及选择一定冗余量的保护板进行备用。

三、接口定义说明

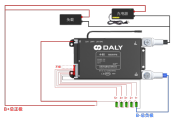
接口名称	Pin脚	标号	定义说明
NTC	1	NTC1	1#温控线
	2	GND	地GND
	3	GND	地GND
	4	NTC2	2#温控线
UART	1	GND	地GND
	2	3.3V	供电电源3.3V
	3	12V	供电电源12V
	4	S1	蓝牙开关
	5	TX	通讯发送端
	6	RX	通讯接受端
一线通/DO	1	12V	12V/500mA
	2	GND	地GND
	3	YXT	一线通接口
	4	C-/GND	
	5	DO	3.3V/<200mA DO

四、常见串数接线示意图

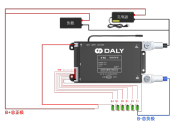
(4串接线示意图)



(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.
	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.
	DALY LiFePO4 8S24V200A BMS with 4G and GNSS - Datasheet

Technical datasheet for the DALY LiFePO4 8S24V200A Battery Management System (BMS) featuring 4G connectivity, GNSS, UART, and NTC temperature sensing. Includes specifications, pinout, and LED status information.

东莞市达锂电子有限公司
DALY Dongguan DALY Electronics Co., Ltd.

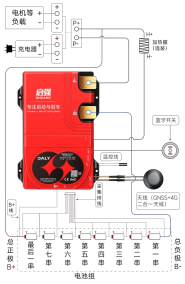
第五代卡车启动保护板 操作使用说明书

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，集成滤波模块吸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）前请截图保存，方便后期原始数据。

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，排线不要插入保护板；

1.1 排线从细黑线连接总负极 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+ 线单独接入电池总正极；

1.2 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，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

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	/	预加热口	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直母头
9	GNSS	1	/	北斗定位天线	MCX直公头

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、一键强启、一键加热、预约加热、实时定位、历史轨迹等功能。

*连接方式一：通过扫描随贵二维码，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。

东莞市达锂电子有限公司
DALY Dongguan DALY Electronics Co., Ltd.

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			
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：焊接采样线时不可插着保护板，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，如不正常请检查接线是否有错接、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：焊接采样线时不可插着保护板，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：

如遥控、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

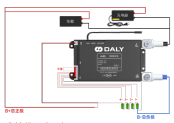
(1) 不同厂家的排线不通用，请确保使用我们公司配套排线；
(2) 在测试、安装、接触和使用保护板时，要做好防静电措施；
(3) 不要使保护板的散热面直接接触电芯，否则热量会传送到电芯，影响电池的安全；
(4) 不可自行拆卸、更改保护板元器件；
(5) 本公司保护板外壳仍会导电，组装作业中避免与电芯、镍带接触，因静电防护设计需要，外壳与主板共地，测量时有电压属正常现象；
(6) 我司产品进行严格的出厂检验测试，但是因为客户使用的环境不同（特别是在高温、超低温、太阳下、潮湿环境等），难免会出现保护板故障，所以客户在选择和使用保护板时，需要在友好的环境下使用，及选择一定冗余量的保护板进行备用。

三、接口定义说明

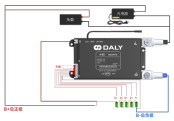
接口名称	Pin脚	标号	定义说明
NTC	1	NTC1	1#温控线
	2	GND	地GND
	3	GND	地GND
	4	NTC2	2#温控线
UART	1	GND	地GND
	2	3.3V	供电电源3.3V
	3	12V	供电电源12V
	4	S1	蓝法开关
	5	TX	通讯发送端
	6	RX	通讯接受端
一线通/DO	1	12V	12V4500mA
	2	GND	地GND
	3	YXT	一线通接口
	4	C-GND	
	5	DO	3.3V4200mA DO

四、常见串数接线示意图

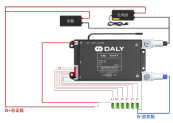
(4串接线示意图)



(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 BMS DL-R24M-FTJ Smart BMS LiFePO4 Product Specification Approval] Product specification approval document for the DALY BMS DL-R24M-FTJ Smart BMS LiFePO4, detailing technical parameters, protection features, interface definitions, and usage guidelines.