

DALY 16S 48V 30A

DALY Smart BMS 16S 48V 30A LifePO4 Protection Board User Manual

Model: 16S 48V 30A

1. INTRODUCTION

This manual provides essential information for the installation, operation, and maintenance of your DALY Smart BMS 16S 48V 30A LifePO4 PCB Protection Board. This Battery Management System (BMS) is designed to protect 16-cell, 48-volt Lithium Iron Phosphate (LifePO4) battery packs, ensuring their safety and extending their lifespan. It includes features such as overcurrent, overcharge, overdischarge, short circuit, and temperature protection, along with a wireless Bluetooth module for monitoring and parameter modification.

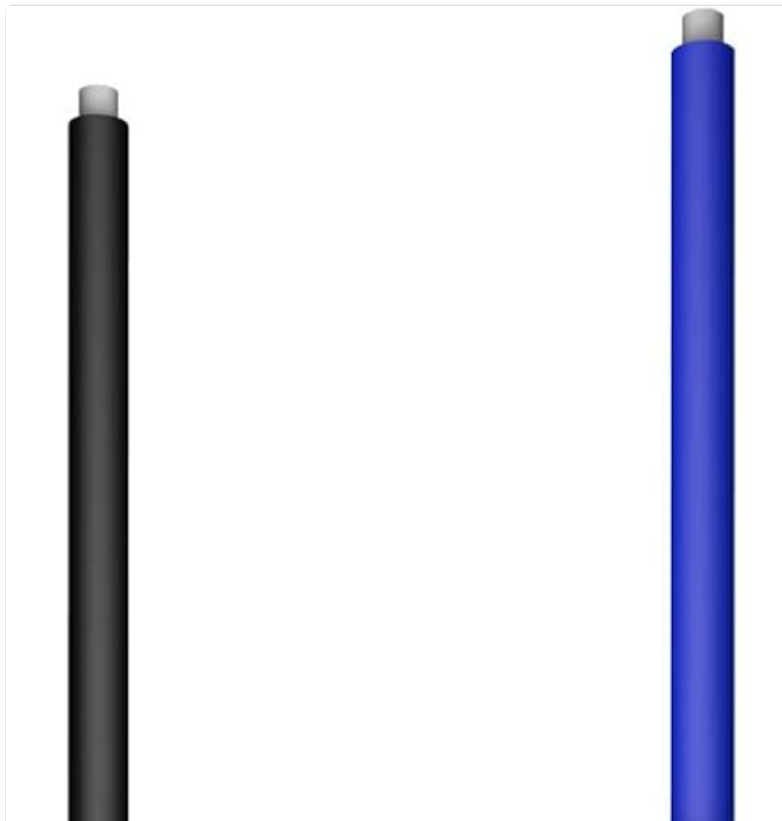




Figure 1: Front view of the DALY Smart BMS 16S 48V 30A LifePO4 Protection Board.

2. KEY FEATURES

- **Comprehensive Protection:** Includes overcurrent, overcharge, overdischarge, short circuit, and temperature protection to safeguard your battery pack.
- **Smart Monitoring:** Wireless Bluetooth module allows real-time monitoring of battery status and modification of parameters via a smartphone application or PC software.
- **Robust Design:** Features double protection through injection patent technology and a patent shell, offering waterproof, dustproof, shockproof, and anti-static properties.

- **High Accuracy:** Utilizes high-quality components for precise acquisition of battery data.
- **Easy Installation:** Designed for straightforward integration into your battery system.



Figure 2: DALY Smart BMS connected to a smartphone application for real-time data display.

3. PACKAGE CONTENTS

Upon unpacking, please verify that all items listed below are present:

- 3.2V LifePO4 BMS (1 unit)
- Bluetooth Module (1 unit)
- NTC Sensor (1 unit)
- Sampling Cable (1 unit)
- UART Cable (1 unit)
- Instruction Manual (1 unit)

4. SETUP AND INSTALLATION

Proper installation is crucial for the safe and effective operation of the BMS. Please follow these steps carefully.

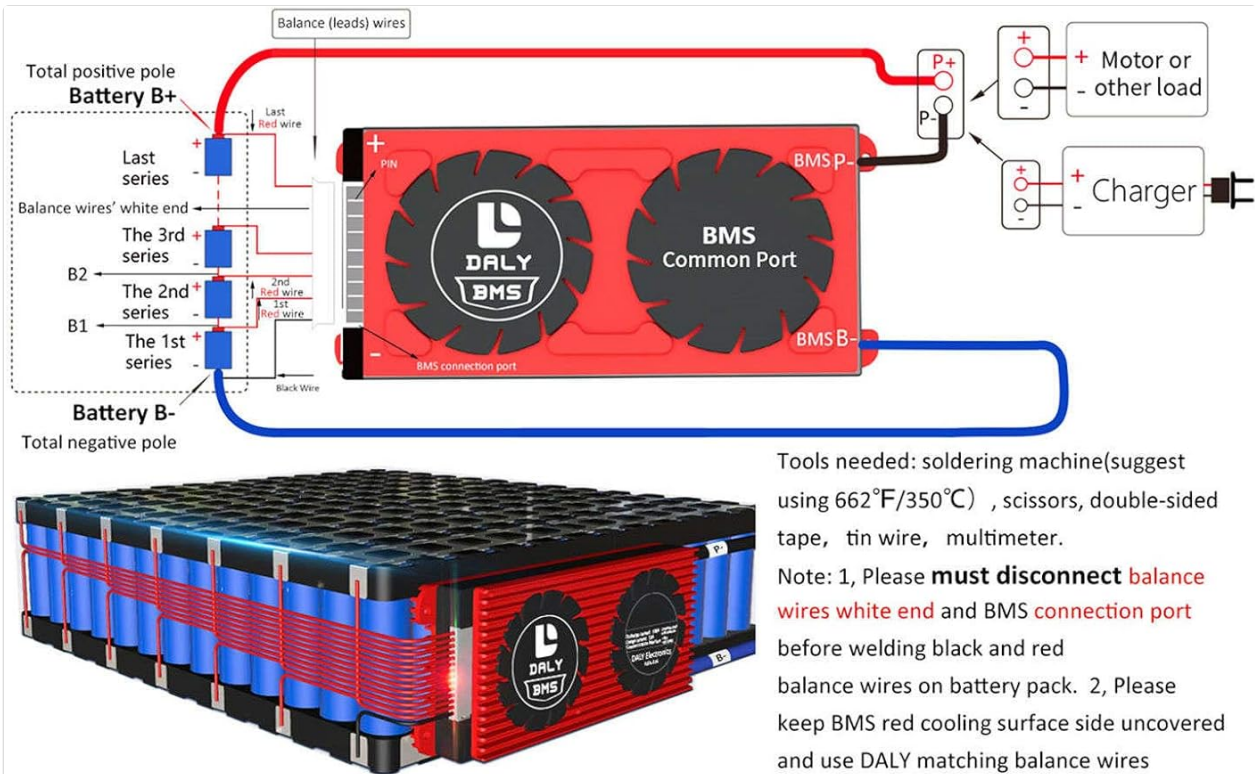
4.1 Tools Required

- Soldering machine (suggested temperature: 662°F / 350°C)
- Scissors
- Double-sided tape
- Tin wire
- Multimeter

4.2 Wiring Instructions

Note: Always disconnect balance wires and the BMS connection port before welding black and red balance wires on the battery pack. Ensure the BMS cooling surface remains uncovered.

1. After assembling your LifePO4 battery pack, mark battery B-, B1, B2,..., until the last red wire reaches battery pack B+.
2. Connect balance wires to the BMS connection port. Use a multimeter in ohm detection function and turn on the buzzer. Connect the multimeter's black test pen to BMS P- and the red test pen to BMS B-. A beep sound indicates the BMS circuit connection is correct.
3. Use a DC voltage function multimeter to measure the battery pack's voltage (between Battery B- and Battery B+) and through the BMS output voltage (between BMS B- and Battery P+). If these voltages are the same, the BMS can work normally.



① After you assembled your LiFePO4 battery pack, mark battery B-, B1, B2,...,until battery pack B+.

Fix balance wires on the battery pack where black wire can reach battery pack B-, 1st red wire can reach B1, 2nd red wire can reach B2,..., until last red wire can reach battery pack B+ with double-sided tape.

Cut off excess length with scissors, welding 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 last red wire's end at Battery pack B+.

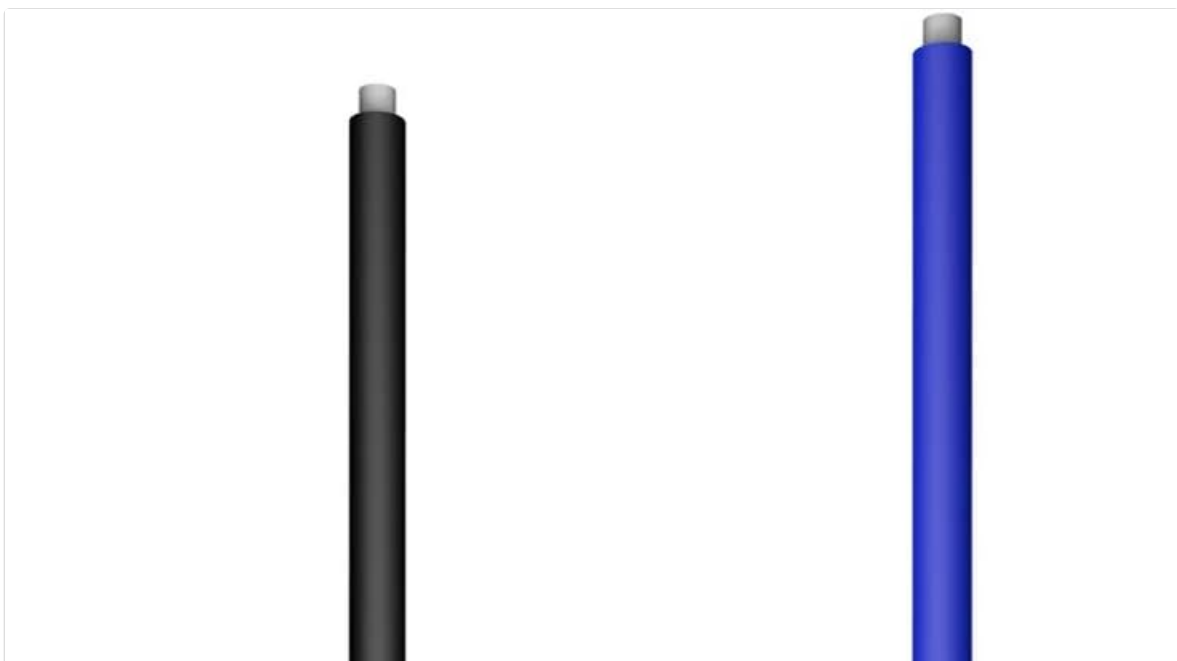
Measure balance wires white end's 2 neighboring metal points voltage, if voltage range is 2.0V-3.6V, that means wiring is correct.

② 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 beep sound, the BMS circuit conduction is OK and continue.

③ 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.

BMS Wiring Instructions Manual

Figure 3: Detailed wiring diagram for connecting the DALY Smart BMS to a 16S LifePO4 battery pack.



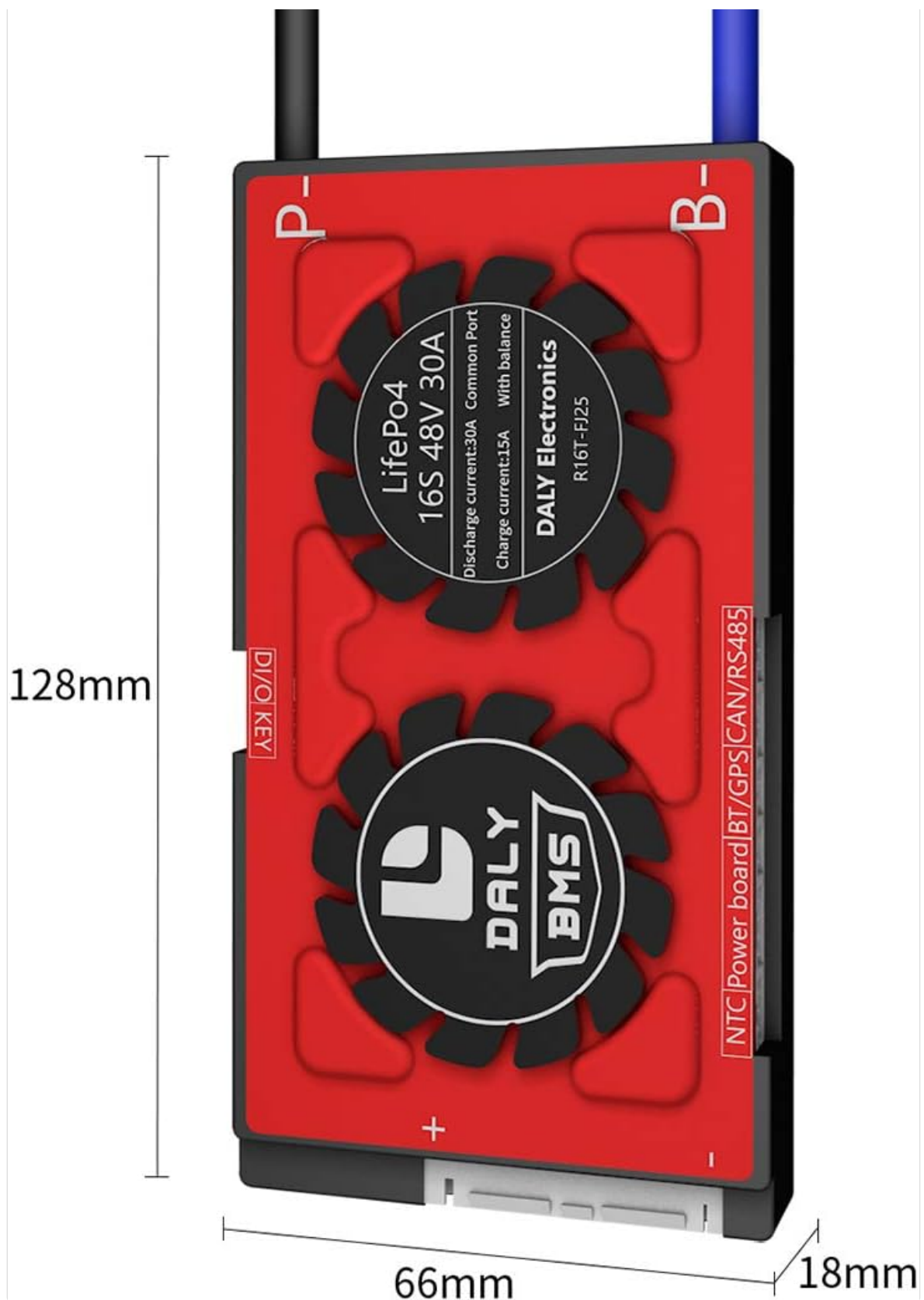


Figure 4: Physical dimensions of the DALY Smart BMS 16S 48V 30A.

5. OPERATION

The DALY Smart BMS offers advanced monitoring and control capabilities through its integrated Bluetooth module and compatible software.

5.1 Bluetooth App / PC Software

Utilize the dedicated Bluetooth application (for smartphones) or PC software to:

- Monitor real-time battery parameters such as voltage, current, temperature, and State of Charge (SOC).
- View fault alarms and protection status.
- Modify various BMS parameters to optimize performance for specific applications.

Lifepo4 16S (Smart BMS)

Description	Description	Specification													Unit
		30A	40A	50A	60A	80A	100A	120A	150A	200A	250A	300A	400A	500A	
Discharge	Continue discharge current	30	40	50	60	80	100	120	150	200	250	300	400	500	A
	Over discharge current detect voltage	45	60	75	90	120	150	180	225	300	375	450	600	750	A
Inner Resistance	Main Circuit Conduct Inner resistance	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	mΩ
Charge	Charge voltage	LifePO4: S*3.65 Li-ion: S*4.2 LTO: S*2.8													V
	Charge current	15	20	25	30	40	50	60	75	100	125	150	200	250	A
	Over Charge current detect delay	45	60	75	90	120	150	180	225	300	375	450	600	750	A
Over charge protection	Over charge detect voltage	3.75±0.05													V
	over charge protection delay	1													S
	over charge release voltage	3.55±0.05													V
Balance	Balance detect Voltage	3.2													V
	Balance release voltage	3.2													V
	Balance current	30±5													mA

Figure 5: Example of DALY Smart BMS integration with a battery system and remote monitoring via a smartphone application.

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Video 1: Demonstration of DALY Smart BMS features and functionality, including app connectivity and data display.

6. SPECIFICATIONS

6.1 General Specifications

Attribute	Value
Brand	DALY
Model	16S 48V 30A (Smart BMS+RS485+CAN)
Input Voltage	48 Volts
Item Weight	300 g
Dimensions (L x W x H)	5.03 x 2.6 x 0.51 inches (128 x 66 x 18 mm)
Manufacturer	Dongguan Daly Electronics Co., Ltd

6.2 Electrical Parameters (LifePO4 16S Smart BMS)

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Innovative Intelligent Technology, Create and Enjoy the Green Energy World.



Figure 6: Detailed electrical parameters for DALY Smart BMS LifePO4 16S models.

Refer to Figure 6 for detailed electrical parameters including discharge current, charge current, overcharge protection, overdischarge protection, balance voltage, short circuit protection, and temperature protection ranges. Note that the 30A model's specific values are listed within the table.

7. TROUBLESHOOTING

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

7.1 BMS Shutting Off

If the BMS frequently disconnects the battery from the bus or shuts off unexpectedly, consider the following:

- **Wiring Check:** Re-verify all wiring connections, especially the balance leads and main power connections, for secure and correct placement. Loose connections can cause intermittent operation.
- **Parameter Settings:** Ensure that the protection parameters (e.g., overcurrent, undervoltage) configured in the Bluetooth app or PC software are appropriate for your battery pack and load. Incorrect settings can trigger premature protection.
- **Load Current:** Confirm that the continuous discharge current of your application does not exceed the BMS's rated 30A capacity. Sustained overcurrent will activate protection.
- **Temperature:** Check the operating temperature of the BMS. Excessive heat can trigger thermal protection. Ensure adequate ventilation around the BMS.
- **Cell Imbalance:** Significant voltage differences between individual cells can cause the BMS to trigger balance or protection functions. Monitor cell voltages via the app.

If the issue persists after checking these points, contact customer support for further assistance.

8. MAINTENANCE

To ensure the longevity and optimal performance of your DALY Smart BMS:

- **Regular Inspection:** Periodically inspect all wiring and connections for signs of wear, corrosion, or looseness.
- **Cleanliness:** Keep the BMS free from dust and debris. While the unit is dustproof, a clean environment helps maintain optimal thermal performance.
- **Software Updates:** Check for any available firmware or software updates for the Bluetooth app or PC software to ensure you have the latest features and bug fixes.
- **Environmental Conditions:** Operate the BMS within its specified temperature and humidity ranges to prevent damage.

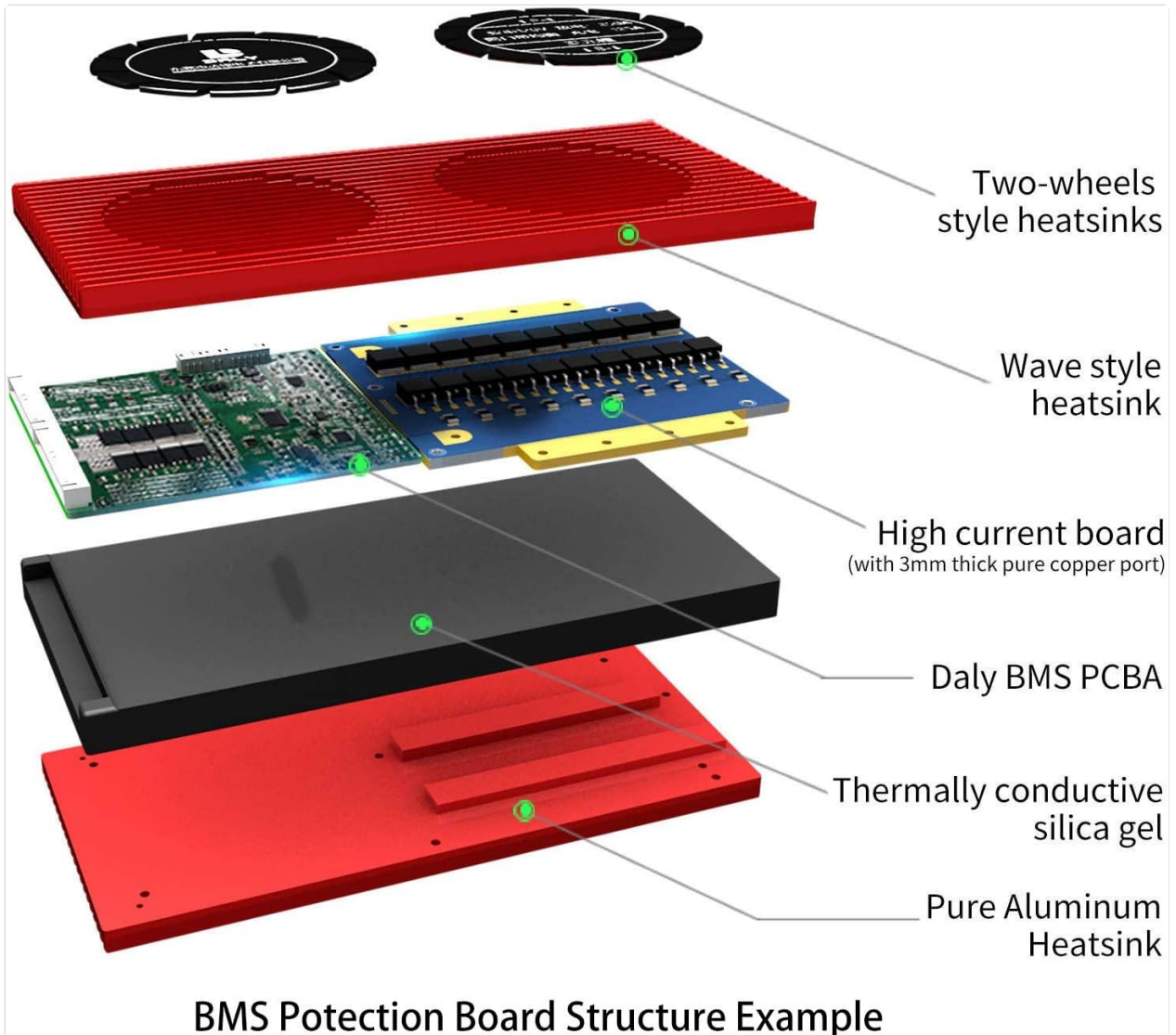


Figure 7: Exploded view illustrating the internal structure and components of the DALY BMS, highlighting its robust design.

9. APPLICATIONS

The DALY Smart BMS is suitable for a wide range of applications requiring reliable battery management for 16S 48V LifePO4 battery packs.

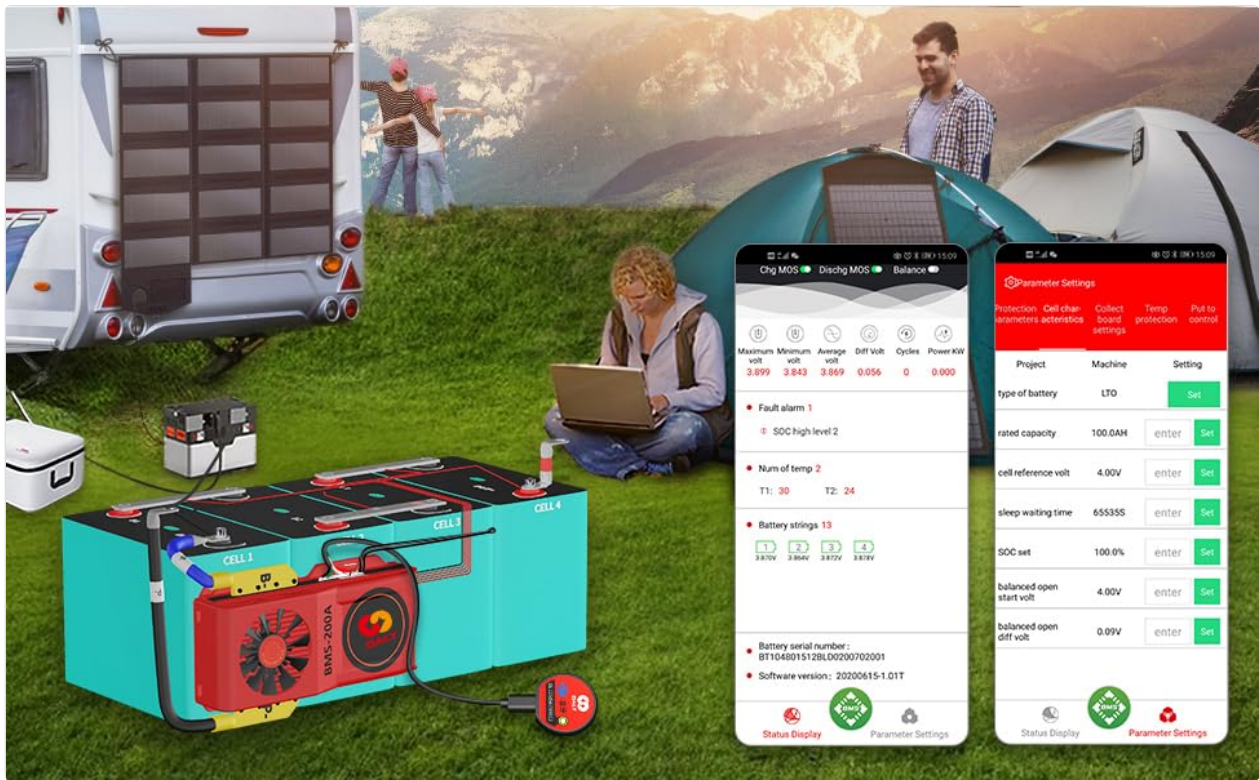


Figure 8: Examples of diverse applications for DALY BMS products.

10. WARRANTY AND SUPPORT

DALY provides comprehensive customer support for its products.

- **Customer Service:** 24-hour one-on-one customer service is available for inquiries and assistance.
- **Technical Support:** Lifetime technical support is offered for all DALY BMS products.
- **Accessories:** If you require additional accessories such as an active balancer or parallel module, please contact customer service.