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› DALY BMS 48V 300A 1A Active Balance Battery Management System User Manual

DALY R24TS

DALY 48V 300A 1A Active Balance Battery Management System User Manual

Model: R24TS

1. INTRODUCTION

The DALY 1A Active Balance Battery Management System (BMS) is designed for 16S 48V 300A LiFePO4 battery packs. This system integrates advanced battery protection with an active balancer, all controllable via a dedicated mobile application. It ensures the safety and extends the lifespan of your battery by managing cell balancing, voltage cutoffs, short-circuit protection, and temperature monitoring. Its compact design and robust construction make it suitable for various demanding applications.

2. SAFETY INFORMATION

- Always ensure correct wiring polarity. Incorrect connections can damage the BMS and battery.
- Do not attempt to disassemble or modify the BMS.
- Install the BMS in a well-ventilated area, away from flammable materials.
- Ensure all connections are secure to prevent loose contacts and potential hazards.
- Refer to the detailed wiring diagram provided in the manual for proper installation.
- In case of any malfunction, disconnect the battery immediately and consult a qualified technician.

3. PACKING LIST

Verify that all items are present in the package:

- Smart Active Balance BMS (16S 48V 300A) x 1
- Sampling Cable x 1
- P-&B-&B+ Cable x 1
- NTC (Temperature Sensor) x 1

- Operation Manual x 1
- Screws (for mounting)
- Packaging Box

Packing List

- | | | |
|----------------------------|---------------------|--------------|
| ① Smart active balance BMS | ② P-&B-cable (Gift) | ③ Screws |
| ④ Sampling cable | ⑤ B+ Cable (Gift) | ⑥ NTC (Gift) |
| ⑦ Manual card | ⑧ Packaging box | |



Figure 3.1: Contents of the DALY BMS package. The image displays the main BMS unit, a set of P-&B-&B+ cables, a sampling cable, an NTC temperature sensor, mounting screws, and a manual card, all neatly arranged next to the product packaging box.

4. PRODUCT FEATURES

- **Enhanced Battery Safety:** Provides comprehensive protection including cell balancing, low voltage cutoff, high voltage cutoff, short-circuit protection, and temperature protection.
- **Active Balance Function:** Features 1A active balancing current with FLYBACK technology for DC balance, extending battery life by maintaining cell voltage consistency.
- **Extra Protection Features:** Includes pre-charge protection, wrong connection or missing wire detection, parallel connection current limiting, and continuous cell balancing.
- **Compact Size:** Designed for tight applications, maximizing battery space with built-in Bluetooth and low power consumption.
- **Easy Connection & Monitoring:** Manage your battery via an Android or iOS mobile app using Bluetooth connectivity. Monitor battery status, adjust settings, and control charge/discharge processes.

- **Robust Construction:** Adopts an injection molding sealing process for dustproof, shockproof, waterproof, and anti-accumulation protection.
- **Parallel System Support:** Supports multiple parallel systems for increased capacity and power.

1A Balance Current Extended Battery Life



Peak Current

1A

Auto Balance



FLYBACK technology
DC Balance

Figure 4.1: Illustration of 1A Active Balance Current. The image shows a conceptual diagram of battery cells with varying voltages before balancing (e.g., 3.99V, 3.75V, 3.67V, 3.64V, 3.91V, 3.78V) and after balancing (all cells at 3.85V), demonstrating how the 1A peak current and FLYBACK technology achieve DC balance over 24 hours.

Compact Size Saves Battery Space

Small and no extra Bluetooth module required,
maximizing battery space.



Figure 4.2: Compact Size and Integrated Bluetooth. This image depicts the DALY BMS unit, emphasizing its small form factor and the absence of a separate Bluetooth module. It highlights features like built-in Bluetooth, low power consumption, and no UART occupation, indicating efficient space utilization.

5. SPECIFICATIONS

Index	Specification	Index	Specification
Cell sampling voltage range	1.5V-4.9V	Temp Protection	Yes
Operating voltage range	>10V	Short Circuit protection	Yes
Active Balance Current	1A	Coulomb Counter	Yes
Working power consumption	1.25W	Indicator light	Green:works properly Red:Alarm or protection
Sleep current	<0.025mA	Support communication port	UART
Working temperature	-40°C-85°C	Customizable communication port	CAN/485
Quantity of Temperature Detection	4	Dimensions (L x W x H)	7.72 x 1.02 x 4.29 inches

Protection Specifications:

- Single cell over-charging voltage protection (second level): $3.75V \pm 0.05V$
- Single cell over-charging voltage protection recover (second level): $3.65V \pm 0.05V$
- Total voltage over-charging protection (second level): 59.2V
- Total voltage over-charging protection recover (second level): 57.6V
- Single cell over-discharging voltage protection (second level): $2.2V \pm 0.05V$
- Short circuit protection conditions: External load short circuit

Product Parameters

【4~24S Auto identify | 4~8/8~17/8~24s | 40~100A】

*Li-ion:4~8/8~17/8~20s | Lifepo4:4~8/8~17/8~24 | LTO:6~8/8~17/8~24s



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Quantity of Temperature Detection	4		

Figure 5.1: Product Parameters and Dimensions. The image displays different DALY BMS models (4-24S Auto identify, 4-24S 40-100A, 4-24S 250-500A) with their respective physical dimensions. A table below provides detailed specifications such as cell sampling voltage range, active balance current, working power consumption, temperature protection, and communication port support.

6. SETUP AND INSTALLATION

Proper installation is crucial for the safe and efficient operation of your DALY BMS. Always refer to the detailed wiring diagram provided with your product for specific connections.

General Installation Steps:

- 1. Prepare the Battery Pack:** Ensure your 16S LiFePO4 battery pack is assembled correctly and all individual cells are within a healthy voltage range.
- 2. Connect B- Cable:** Connect the main negative terminal (B-) of the battery pack to the B- port on the BMS.
- 3. Connect P- Cable:** Connect the main negative output terminal (P-) for the load/charger to the P- port on the BMS.
- 4. Connect B+ Cable:** Connect the main positive terminal (B+) of the battery pack to the B+ port on the BMS.

5. **Connect Sampling Cables:** Carefully connect the individual cell voltage sampling wires from your battery pack to the corresponding ports on the BMS. Ensure each wire is connected to the correct cell voltage tap, starting from B0 (negative) up to B16 (positive). Incorrect connection of sampling wires can lead to BMS malfunction or damage.
6. **Connect NTC (Temperature Sensor):** Attach the NTC temperature sensor to a central location on your battery pack to monitor its temperature effectively.
7. **Verify Connections:** Double-check all connections for correctness and security before applying power.

Note: For parallel systems, ensure proper current limiting and follow specific guidelines for connecting multiple BMS units.

7. OPERATING INSTRUCTIONS

Bluetooth App Connection:

1. **Download the App:** Search for the 'DALY BMS' app on your Android or iOS device's app store.
2. **Enable Bluetooth:** Ensure Bluetooth is enabled on your mobile device.
3. **Power On BMS:** Once the BMS is correctly installed and connected to the battery, it will power on automatically.
4. **Connect to BMS:** Open the DALY BMS app. The app should automatically detect nearby DALY BMS devices. Select your BMS from the list to connect.
5. **Monitor and Control:** Once connected, you can monitor real-time battery status, individual cell voltages, temperature, charge/discharge current, and adjust various protection parameters as needed.

Indicator Light Status:

- **Green Light:** Indicates the BMS is operating normally.
- **Red Light:** Indicates an alarm or protection event has been triggered. Check the app for details on the specific protection activated.

8. MAINTENANCE

- **Regular Monitoring:** Periodically check the battery status via the mobile app to ensure optimal performance and identify any potential issues early.
- **Cleanliness:** Keep the BMS unit clean and free from dust and debris. The injection molding sealing provides protection, but excessive dirt can hinder heat dissipation.
- **Connection Checks:** Annually inspect all wiring connections to ensure they remain tight and free from corrosion.
- **Firmware Updates:** Check the DALY official website or app for any available firmware updates for your BMS model to ensure you have the latest features and bug fixes.

9. TROUBLESHOOTING

- **BMS Not Powering On:** Verify all main power connections (B-, P-, B+) and ensure the battery pack has sufficient voltage. Check the sampling cable connections.
- **Red Indicator Light:** This indicates a protection event. Connect to the mobile app to identify the specific protection (e.g., over-voltage, under-voltage, over-current, over-temperature, short circuit). Address the root cause before resuming operation.
- **Bluetooth Connection Issues:** Ensure Bluetooth is enabled on your device and the BMS is powered on. Try restarting the app or your device. Ensure no other devices are interfering with the Bluetooth signal.
- **Cell Voltage Imbalance:** The 1A active balance feature works continuously. If significant imbalance persists, check individual cell health and sampling wire connections.

- **No Output Power:** Check for short-circuit protection activation (red light). Ensure the load is within the BMS's current limits. Verify all connections to the load.

10. APPLICATION

The DALY 48V 300A 1A Active Balance BMS is suitable for a wide range of applications requiring robust battery management for 16S LiFePO4 battery packs:

- Golf Carts
- Electric Vehicles (Low Speed Vehicles)
- Solar Energy Storage Systems
- Home Solar & Power Walls
- Marine Applications
- Fish Finders & Flashers
- Boating Electronics
- Off-Grid Homes
- Portable Power Stations
- RV Storage & Accessories
- Trolling Motors

Application

One BMS for multiple uses



E-Bike



E-Trike



Golf cart



RV energy storage



+More

Figure 10.1: Diverse Applications of DALY BMS. The image illustrates the versatility of the DALY BMS, showcasing its use in E-Bikes, E-Trikes, Golf Carts, and RV energy storage systems, indicating its broad applicability across various electric and power storage solutions.

11. WARRANTY AND SUPPORT

This DALY BMS product comes with a **5-Year Extended Warranty**.

For technical support, warranty claims, or further inquiries, please contact DALY customer service through their official channels or the retailer from whom the product was purchased. Refer to the contact information provided in the packaging or on the official DALY website.