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DALY R24TS-400A

DALY Smart Active Balance BMS 400A (4S-8S) User Manual

Model: R24TS-400A

1. INTRODUCTION

The DALY Smart Active Balance BMS is a sophisticated Battery Management System designed to protect and optimize the performance of Li-ion, LiFePO₄, and LTO battery packs. This model supports 4 to 8 series cells (4S-8S) with a 400A charge/discharge current and features 1A active balancing. It includes built-in Bluetooth for monitoring and communication interfaces like RS485 and CAN, ensuring comprehensive battery management and data accessibility.

Smart Active Balance BMS

Battery Strings: **4~8S**

Charge/Discharge: **400A**

Balance Current: **1A**

Function: **Build-In Bluetooth**

Battery Type: **Li-ion/LifePO4/LTO**

Communication: **UART+RS485+CAN**



Image 1.1: DALY Smart Active Balance BMS highlighting 4S-8S, 400A, 1A balance, Bluetooth, UART+RS485+CAN.

2. SAFETY INFORMATION

Please read and understand all safety instructions before installing or operating the DALY Smart Active Balance BMS. Failure to follow these instructions may result in electric shock, fire, or serious injury.

- Always disconnect power from the battery pack before performing any installation, maintenance, or wiring changes.
- Ensure correct polarity when connecting the BMS to the battery pack. Incorrect wiring can cause severe damage to the BMS and battery.
- Do not short-circuit the battery terminals or the BMS connection points.
- Install the BMS in a well-ventilated area, away from flammable materials and direct sunlight.
- Avoid exposing the BMS to moisture, dust, or extreme temperatures.
- Consult a qualified professional for installation if you are unsure about any steps.
- Use appropriate personal protective equipment (PPE) such as insulated gloves and safety glasses during installation.

3. PRODUCT OVERVIEW

The DALY Smart Active Balance BMS provides comprehensive protection and management for your battery system. Key features include:

- **Cell Compatibility:** Supports 4 to 8 series (4S-8S) Li-ion, LiFePO₄, and LTO battery types.
- **High Current Capacity:** Rated for 400A continuous charge and discharge current.
- **Active Balancing:** Features 1A active balancing to equalize cell voltages, extending battery life and performance.
- **Smart Monitoring:** Integrated Bluetooth for real-time monitoring via a mobile application.
- **Communication Interfaces:** Equipped with UART, RS485, and CAN ports for versatile system integration and data logging.
- **Multiple Protections:** Includes overcharge, over-discharge, overcurrent, short circuit, and high-temperature shutdown protections.



Image 3.1: Diagram illustrating the DALY BMS's support for multi-channel communication including PC Host (CAN, RS485, UART), Mobile APP (Bluetooth, WiFi module), GPS module, Key switch, Buzzer, Heating Module, and DIO for temperature control.

4. PACKING LIST

Please verify that all items listed below are included in your package:

1. Smart Active Balance BMS (1 unit)
2. P-&B- cable (1 set)
3. Screws (2 Pcs)
4. Sampling cable (1 set)
5. B+ cable (1 unit)
6. NTC Temperature Sensor (One standard, two optional)
7. User Manual (1 copy)
8. Packaging box (1 unit)
9. RS485/CAN port cable (1 unit)



Image 4.1: Visual representation of the DALY BMS package contents, including the BMS unit, various cables, screws, NTC sensor, and user manual.

5. SETUP AND INSTALLATION

Proper installation is crucial for the safe and efficient operation of your BMS. Follow these steps carefully:

5.1 Pre-Installation Checks

- Ensure your battery pack matches the BMS specifications (4S-8S, Li-ion/LiFePO4/LTO).
- Verify all battery cells are balanced and within a healthy voltage range before connecting the BMS.
- Gather all necessary tools and components.

5.2 Wiring Connections

Important: Connect the balance wires first, then the main power cables. Disconnect in reverse order.

1. **Balance Wire Connection:** Connect the sampling cable to each cell's positive terminal, starting from B- (0V) up to B+ (total voltage). Ensure the sequence is correct.
2. **B- Connection:** Connect the main negative terminal of the battery pack to the B- port on the BMS.
3. **P- Connection:** Connect the negative terminal of your load/charger to the P- port on the BMS.
4. **B+ Connection:** Connect the main positive terminal of the battery pack to the B+ port on the BMS.
5. **Communication Ports:** Connect RS485, CAN, or UART cables as required for external communication or monitoring.
6. **NTC Sensor:** Attach the NTC temperature sensor to a central cell or area within the battery pack to monitor temperature.

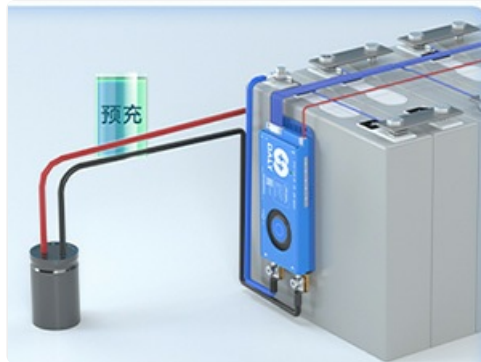


Image 5.1: Wiring diagram for BMS pre-charge protection, showing connections to the battery pack.



Image 5.2: Illustration of BMS misconnection protection, highlighting correct balance wire connections.



Image 5.3: Diagram showing how to connect multiple BMS units in parallel for increased capacity.



Image 5.4: Comprehensive wiring diagram for all-in protection, including main power and balance connections.

5.3 App Installation

Download the "BalanceBMS" app from your device's app store (available on iOS and Android) to monitor and configure your BMS via Bluetooth.

6. OPERATING INSTRUCTIONS

Once installed, the DALY Smart Active Balance BMS operates automatically to protect your battery. For monitoring and advanced settings, use the mobile application or a PC connection.

6.1 Bluetooth Monitoring (Mobile App)

1. Ensure Bluetooth is enabled on your smartphone.
2. Open the "BalanceBMS" application.
3. The app will scan for nearby DALY BMS devices. Select your BMS from the list to connect.
4. Once connected, you can view real-time data such as individual cell voltages, total battery voltage, charge/discharge current, temperature, and battery state of charge (SOC).
5. The app also allows for basic parameter adjustments and viewing of protection status.

6.2 PC Monitoring and Configuration (UART/RS485/CAN)

For detailed configuration and data logging, connect the BMS to a PC using a compatible UART, RS485, or CAN adapter. DALY provides dedicated PC software for these connections, allowing for:

- Advanced parameter settings (e.g., over-voltage, under-voltage thresholds, balancing current).
- Detailed data logging and analysis.
- Firmware updates.

7. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your DALY BMS and battery pack.

- **Visual Inspection:** Periodically inspect all wiring and connections for signs of wear, corrosion, or looseness. Ensure all screws are tightened.
- **Monitoring:** Regularly check battery parameters via the "BalanceBMS" app or PC software. Pay attention to cell voltage differences, temperatures, and any active protection alerts.
- **Cleaning:** Keep the BMS unit clean and free from dust and debris. Use a dry, soft cloth for cleaning. Do not use liquids or abrasive cleaners.
- **Environment:** Ensure the BMS is operating within its specified temperature range and in a dry environment.

8. TROUBLESHOOTING

If you encounter issues with your DALY Smart Active Balance BMS, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
BMS not powering on / No output	Main power cables incorrectly connected or loose. Battery voltage too low.	Check B- and P- connections. Verify battery voltage is above the under-voltage protection threshold.
Cells are not balancing	Balance wires incorrectly connected or damaged. Balancing function disabled in settings.	Inspect balance wire connections for correct sequence and integrity. Check BMS settings via app/PC software to ensure active balancing is enabled.
Bluetooth connection issues	Bluetooth disabled on phone. App not installed correctly. BMS too far from device.	Ensure phone Bluetooth is on. Reinstall "BalanceBMS" app. Move closer to the BMS. Restart BMS (if possible) and phone.
Overcharge/Over-discharge protection triggered frequently	Charger voltage too high/low. Load drawing too much current. Battery capacity degradation.	Verify charger voltage and current settings. Reduce load. Check individual cell health. Adjust protection parameters via app/PC software if appropriate for your battery type.
BMS gets hot during operation	High current draw. Poor ventilation. Internal fault.	Ensure adequate ventilation around the BMS. Reduce continuous current if possible. If overheating persists at normal loads, contact support.

If the problem persists after attempting these solutions, please contact DALY customer support for further assistance.

9. SPECIFICATIONS

Detailed technical specifications for the DALY Smart Active Balance BMS 400A (4S-8S):

Feature	Specification
Brand	DALY
Model Number	R24TS-400A
Battery Series Support	4S-8S
Battery Type Compatibility	Li-ion, LiFePO4, LTO
Continuous Charge/Discharge Current	400A
Active Balance Current	1A
Input Voltage Range	12V-24V (Nominal, dependent on cell configuration)
Communication Interfaces	Built-in Bluetooth, UART, RS485, CAN
Item Dimensions (L x W x H)	7.72 x 4.29 x 1.02 inches
Item Weight	660 Grams
Manufacturer	Dongguan Daly Electronics Co., Ltd

Applicable to 4S-24S

Product dimensions are width*length*thickness, dimensional data tolerance range: +0.5mm.

<p>100A</p> <p>Current: 40~100A</p> <p>Size: 65*167*15mm</p> <p>B-P-: 10AWG 100mm</p> <p>Cable: 24AWG 300~450mm</p>		
<p>150A/200A</p> <p>Current: 150A</p> <p>Size: 66*176.7*16mm</p> <p>B-P-: 4AWG 150mm</p> <p>Cable: 24AWG 300~450mm</p>		 <p>Current: 200A</p> <p>Size: 66*176.7*21mm</p> <p>B-P-: 4AWG 150mm</p> <p>Cable: 24AWG 300~450mm</p>
<p>250~500A</p> <p>Current: 250A/300A/400A/500A</p> <p>Size: 26*195.8*109.3mm</p> <p>B-P-: 4AWG*2 / 1AWG*2 200mm</p> <p>Cable: 24AWG 300~450mm</p>		 <p>Note: If you need other specifications, please contact sale person.</p>

Image 9.1: Table showing various DALY BMS models with their current ratings, sizes, and cable specifications, applicable for 4S-24S configurations.

10. WARRANTY AND SUPPORT

10.1 Manufacturer's Warranty

The DALY Smart Active Balance BMS 400A (4S-8S) comes with a **3-Year Manufacturer Warranty**. This warranty covers defects in materials and workmanship under normal use. Please retain your proof of purchase for warranty claims.

10.2 Customer Support

For technical assistance, troubleshooting, or warranty inquiries, please refer to the following resources:

- **Mobile Application:** The "BalanceBMS" app often contains helpful guides and FAQs.
- **Online Resources:** Visit the official DALY website for product documentation and support.

- **Contact Customer Service:** For direct support, please reach out to DALY customer service. Contact information can typically be found on the product packaging or the official DALY website.