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DALY R24TS-500A

DALY Smart Active Balance BMS 500A 8-24S Instruction Manual

Model: R24TS-500A

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of your DALY Smart Active Balance BMS (Battery Management System). This intelligent BMS is designed for Li-ion, LifePO4, and LTO battery packs, supporting 8 to 24 series configurations with a continuous discharge current of 500A. It features built-in Bluetooth, RS485, and CAN communication for comprehensive monitoring and control.

2. PRODUCT FEATURES

- **Smart Active Balancing:** Continuous 1A active balance current with peak current up to 1.2A, ensuring cell voltage equalization for extended battery life.
- **Wide Compatibility:** Supports 8-24S Li-ion, LifePO4, and LTO battery packs.
- **Multi-channel Communication:** Integrated Bluetooth, RS485, and CAN for versatile monitoring and control via PC software or mobile application.
- **Comprehensive Protection:** Protects batteries from overcharge, overdischarge, overcurrent, short circuits, and high-temperature shutdown.
- **Parallel Battery Pack Support:** Designed for safe and efficient parallel connection of battery packs.



Figure 2.1: DALY Smart Active Balance BMS (Model R24TS-500A) showing key specifications like 8-24S battery strings, 500A charge/discharge, 1A balance current, built-in Bluetooth, and UART+RS485+CAN communication.

3. PACKAGE CONTENTS

Verify that all items listed below are included in your package:

1. Smart Active Balance BMS
2. P-&B- cable
3. Screws (2 Pcs)
4. Sampling cable
5. B+ cable
6. NTC (One standard, two optional)
7. User Manual

8. Packaging box
9. RS485/Can port cable



Figure 3.1: Visual representation of the DALY BMS package contents, including the BMS unit, various cables, screws, and the user manual.

4. SETUP AND INSTALLATION

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

4.1. Battery Pack Wiring

When assembling your battery pack, ensure you correctly identify the total positive and total negative terminals. Pay close attention to the B- and P- terminals on the BMS.

1. Connect the black B- wire to the total negative terminal of the battery pack.
2. Connect the red B+ wire to the total positive terminal of the battery pack.

3. Connect the sampling wires in sequence, starting from the negative terminal (B0) and progressing to the positive terminals of each cell string (B1, B2, etc.).
4. *Important:* When soldering the wires, ensure they are soldered in the correct order before plugging them into the BMS. Misfiring protection is limited to 6 strings; incorrect wiring for more than 6 strings can damage your BMS.
5. If using a BMS compatible with more strings than your battery pack (e.g., an 8-17S BMS for an 8S pack), seal the remaining unused sampling cables with insulation tape.



Figure 4.1: Illustration of connecting the sampling wires from battery cells to the BMS.

4.2. Wiring Verification

Before connecting the sampling cable to the BMS, verify the voltage of each wire using a multimeter.

1. Place the black probe of the multimeter on the B0 wire (total negative).
2. Place the red probe on B1, then B2, and so on. The voltage readings should increase incrementally.
3. If the multimeter displays positive voltage readings that increase step by step, the wiring is correct.
4. *Caution:* During testing, do not let the two probes touch each other, as this may cause a cable short circuit.

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Video 4.1: DALY Smart Active Balance BMS introduction and wiring guide. This video demonstrates the correct sequence for connecting the sampling wires to the battery pack and verifying the connections.

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Video 4.2: JKBMS Wiring Tutorial. This video provides a visual guide on how to correctly wire the BMS to a battery pack, including connecting the balance leads and main power cables.

4.3. Final Connections

1. Insert the NTC (temperature sensor) cable into the NTC port on the BMS.
2. Connect the B- wire to the BMS B- terminal.
3. Plug in the sampling cable connector to the corresponding port on the BMS.
4. Connect the B+ wire to the BMS B+ terminal.
5. If the BMS's green light is on, the BMS is working properly.

5. OPERATING INSTRUCTIONS

The DALY Smart Active Balance BMS offers multiple ways to monitor and configure its parameters.

5.1. Mobile Application (APP)

Download the "BalanceBMS" app from your iOS or Android app store. The app allows you to monitor cell voltages, temperatures, and other parameters in real-time. It also supports cloud monitoring and data logging capabilities.

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Video 5.1: JK BMS Android APP Installation Video. This video demonstrates the process of installing the mobile application on an Android device to monitor and control the BMS.

5.2. PC Host Software

For advanced monitoring and configuration, connect the BMS to a PC using the provided UART cable or RS485/CAN port cable. You will need to download the corresponding drivers and PC host software from the DALY website.

1. Download the PC Host software and necessary drivers (CAN or RS485) from the official DALY website.
2. Connect the UART cable to the BMS and your PC.
3. Open the PC Host software. Select the correct communication mode (UART, RS485, or CAN) and port settings.
4. The software allows you to view real-time battery data, including total voltage, current, temperature, SOC, cell voltages, and MOS temperature.
5. You can also modify various parameters such as balance current, sleep time, rated capacity, and protection parameters.
6. The software supports switching between Chinese and English languages.

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Video 5.2: How to connect the 100balance Smart BMS to the PC host. This video guides users through the process of connecting their Smart BMS to a computer and using the PC host software for monitoring and configuration.

5.3. LCD Screen (Optional Accessory)

An optional LCD screen can be connected to the UART or RS485 port to display real-time battery information and allow parameter changes via a 4.3-inch touch screen.

5.4. Key Switch (Optional Accessory)

The optional key switch can be used to switch the discharge MOSFET on and off. Other functions may also be customized.

5.5. Heating Module (Optional Accessory)

A heating module can be used in cold environments to start the BMS, ensuring optimal performance in low temperatures.

6. MAINTENANCE

To ensure the longevity and optimal performance of your DALY Smart Active Balance BMS, consider the following maintenance tips:

- Regularly check all wiring connections for tightness and corrosion.
- Keep the BMS clean and free from dust and debris.
- Avoid exposing the BMS to extreme temperatures or moisture beyond its operating specifications.
- Monitor battery cell balance and overall battery health using the mobile app or PC software.
- Ensure proper ventilation around the BMS, especially for high-current applications.

7. TROUBLESHOOTING

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

Problem	Possible Cause	Solution
BMS not powering on (no green light)	Incorrect B- or B+ wiring; faulty battery connection.	Verify B- and B+ connections to the battery pack. Ensure the battery pack has sufficient voltage.
Incorrect voltage readings in app/software	Incorrect sampling wire connection order; loose sampling wires.	Re-check sampling wire connections and order. Ensure all wires are securely attached and soldered.
BMS not communicating with app/PC	Bluetooth/UART/RS485/CAN connection issue; incorrect drivers/software settings.	Ensure Bluetooth is enabled on your device. Check cable connections. Verify correct COM port and baud rate in PC software. Reinstall drivers if necessary.
Battery cells out of balance	Balancing function disabled; significant cell voltage difference.	Ensure active balancing is enabled in the app/PC software. Allow sufficient time for balancing to occur. Check individual cell health.
BMS triggering protection frequently	Overcharge/overdischarge/overcurrent conditions; incorrect protection parameters.	Review battery usage and charging/discharging limits. Adjust protection parameters in the app/PC software if they are too conservative for your battery type and usage.

8. SPECIFICATIONS

Feature	Detail
Model Number	R24TS-500A
Battery Strings	8-24S (24V-84V)
Continuous Discharge Current	500A
Continuous Charge Current	500A
Active Balance Current	1A (Continuous), up to 1.2A (Peak)
Battery Type Compatibility	Li-ion, LifePO4, LTO
Communication Interfaces	Built-in Bluetooth, RS485, CAN, UART
Product Dimensions	7.72 x 4.29 x 1.02 inches (196 x 109 x 26 mm)
Item Weight	1.46 pounds (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>	 <div data-bbox="954 1272 1401 1326" style="text-align: right;">  </div> <p style="text-align: right;">Note: If you need other specifications, please contact sale person.</p>	

Figure 8.1: DALY BMS size chart, showing dimensions for different current ratings. The 500A model has dimensions of 26*195.8*109.3mm.

9. WARRANTY AND SUPPORT

Your DALY Smart Active Balance BMS comes with an 18-month warranty. For any questions, technical assistance, or warranty claims, please contact our customer service. You can find the "BalanceBMS" app on iOS and Android for monitoring and support.

Additional protection plans are available for purchase:

- 2-Year Protection Plan
- 3-Year Protection Plan

- Complete Protect: One plan covers all eligible past and future purchases.

10. APPLICATION SCENARIOS

The DALY Smart Active Balance BMS is suitable for a wide range of multi-purpose, intelligent multi-string applications, including but not limited to:

- Electric two-wheelers
- Home energy storage systems
- Electric tricycles
- Outdoor energy storage solutions
- Electric bicycles
- Lead-Acid battery upgrades to Lithium
- Electric wheelchairs
- Automated Guided Vehicles (AGV)
- Lease battery swapping stations
- RV energy storage

Application scenarios

Multi-purpose, Intelligent Multi-strings



Electric two-wheelers



Home energy storage



Electric bicycles



Electric tricycle



Outdoor energy storage



Electric wheelchairs



Lead-Acid upgrade to Lithium



AGV



Lease battery swapping



RV Energy Storage

Figure 10.1: Examples of applications where the DALY BMS can be used, such as electric vehicles, home energy storage, and industrial equipment.