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DALY 4S 12V 60A

DALY Smart BMS Li-ion 4S 12V 60A Battery Management System User Manual

Model: 4S 12V 60A

1. Introduction

The DALY Smart BMS Li-ion 4S 12V 60A is a sophisticated Battery Management System designed for 4-series lithium-ion battery packs. It provides essential protection functions and smart monitoring capabilities, ensuring the safety and longevity of your battery system. This BMS is suitable for various applications, including off-grid power systems and solar energy storage.

Key features include overcurrent, overcharge, over-discharge, short circuit, and temperature protection. The integrated Bluetooth module allows for real-time battery status monitoring and parameter modification via a dedicated mobile application or PC software.

2. Package Contents

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

- 3.7V Li-ion BMS (1 unit)
- Bluetooth Module (1 unit)
- NTC Sensor (1 unit)
- Sampling Cable (1 unit)
- UART Cable (1 unit)
- Instruction Manual (1 unit)



Figure 2.1: DALY Smart BMS Package Contents

3. Product Overview

The DALY Smart BMS features a robust design with clearly labeled connection points for easy installation. It includes various communication interfaces for comprehensive monitoring and control.



Figure 3.1: DALY Smart BMS Unit

The BMS is equipped with multiple communication interfaces, including UART, RS485, CAN, and Bluetooth, allowing for flexible integration with various monitoring systems and devices.

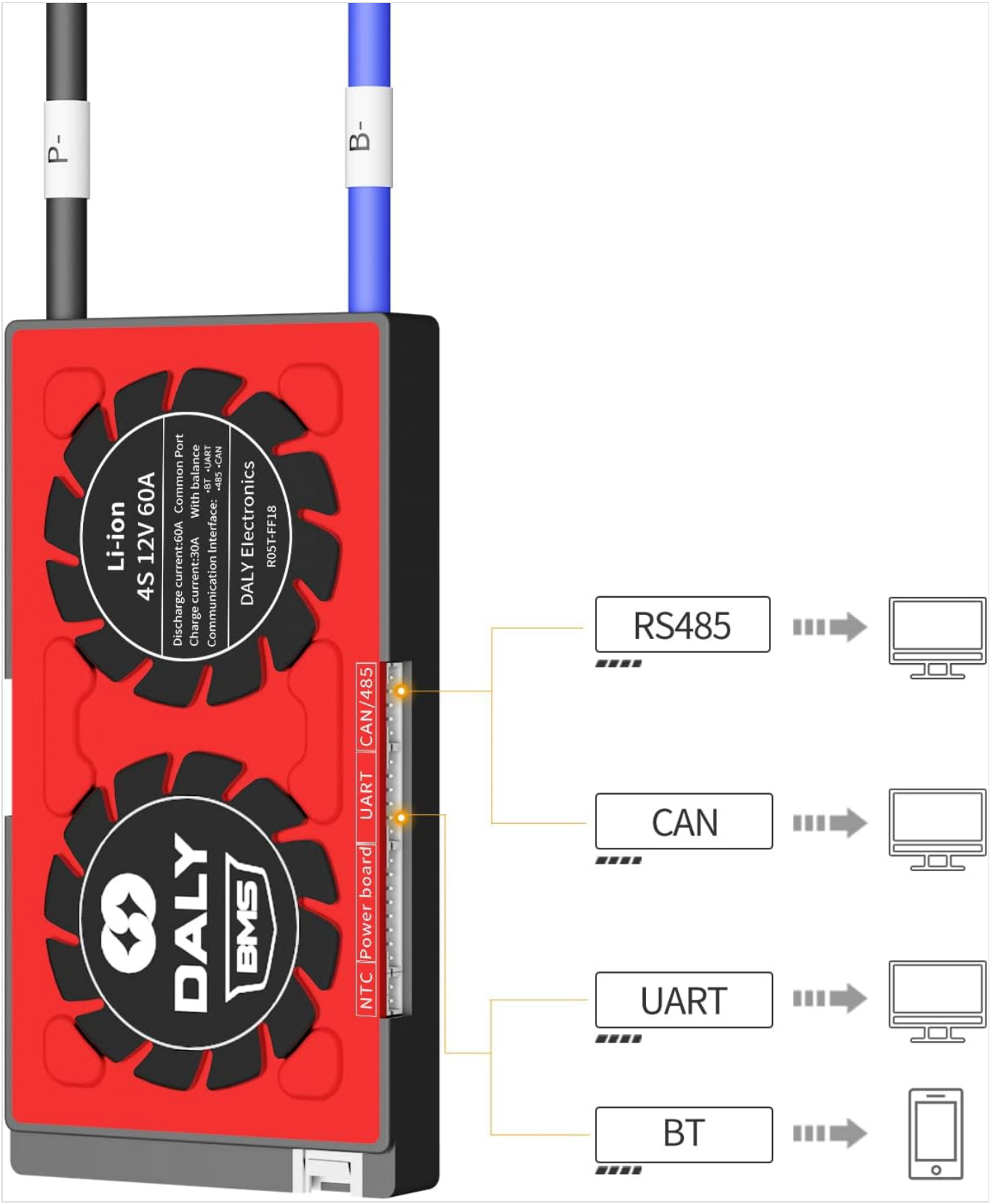

Figure 3.2: Communication Interfaces

4. Installation and Wiring

Important Safety Note: Always ensure the battery pack is disconnected from any power source before beginning installation. Use appropriate safety gear. The wiring sequence is critical for proper operation and to prevent damage to the BMS or battery pack.

4.1. Wiring Sequence

1. **Prepare Cables:** Ensure you use matching cables for your battery pack. Note that wire colors for B- and P- lines may vary between manufacturers.
2. **Connect Sampling Cable (Balance Wires):**
    - **Do not insert the sampling cable plug into the BMS yet.**
    - Connect the thin black wire (B-) to the total negative electrode of the battery pack.
    - Connect the subsequent red wires to the positive electrode of each battery cell string in ascending order (1st string positive, 2nd string positive, up to the last string positive, which connects to the total positive B+).
3. **Pre-insertion Voltage Check:** After connecting the sampling cable wires to the battery pack, but before plugging it into the BMS, measure the voltage between each two adjacent metal terminals on the back of the sampling cable plug. Ensure the voltages are within the correct range for your battery chemistry:
    - **Ternary Lithium Battery:** 3.0V - 4.15V
    - **Iron-Lithium Battery (LiFePO4):** 2.5V - 3.6V
    - **Lithium Titanate Battery (LTO):** 1.8V - 2.8V

    Proceed only if all voltages are correct.
4. **Connect BMS B- Line:** Connect the thick blue B- line from the BMS to the total negative electrode of the battery pack. Ensure the B- line length does not exceed 40cm.
5. **Insert Sampling Cable:** Once all other connections are secure and voltages verified, carefully insert the sampling cable plug into the designated port on the BMS.
6. **Connect P- Line:** Connect the P- line from the BMS to the negative terminal of your load (motor, inverter, etc.) and charger.
7. **Connect B+ Line:** The total positive electrode (B+) of the battery pack connects directly to the positive terminals of your load and charger.

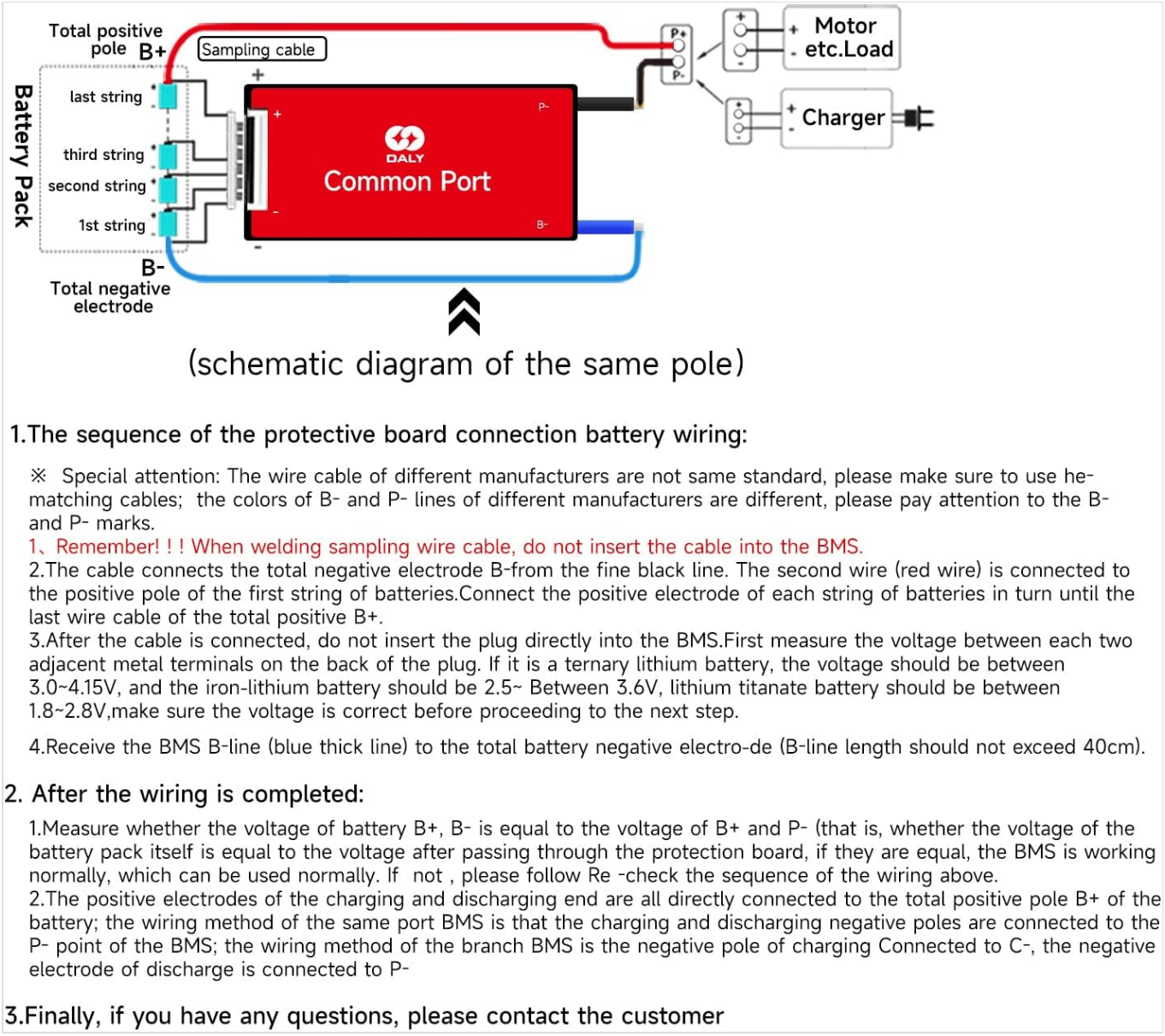

Figure 4.1: BMS Wiring Diagram (Common Port)

4.2. Post-Wiring Verification

1. Measure the voltage between the battery's total positive (B+) and negative (B-) terminals. Then, measure the voltage between B+ and the BMS's P- terminal. These two voltage readings should be equal. If they are not, re-check the entire wiring sequence carefully.
2. For a common port BMS (as this model), both charging and discharging negative poles connect to the P- point of the BMS. The positive electrodes of the charging and discharging ends are directly connected to the total positive pole B+ of the battery.

5. Operation

The DALY Smart BMS allows for convenient monitoring and parameter adjustment via Bluetooth or PC software.

5.1. Bluetooth App Monitoring

Connect the included Bluetooth module to the BMS. Download the official DALY BMS application on your smartphone. The app provides real-time data on battery voltage, current, temperature, cell balance, and protection status. You can also modify various BMS parameters through the app interface.



Figure 5.1: Bluetooth Connectivity and App Interface

5.2. PC Software

For more advanced configuration and detailed data logging, connect the BMS to a computer using the UART cable and the appropriate PC software. This allows for in-depth analysis and precise parameter tuning.

6. Maintenance

To ensure optimal performance and longevity of your DALY Smart BMS, follow these maintenance guidelines:

- **Regular Inspection:** Periodically check all wiring connections for tightness and signs of corrosion or damage.
- **Cleanliness:** Keep the BMS unit clean and free from dust and debris. Use a dry, soft cloth for cleaning.
- **Environmental Conditions:** Ensure the BMS operates within its specified temperature and humidity ranges to prevent premature failure.
- **Firmware Updates:** Check the manufacturer's website for any available firmware updates for your BMS model to ensure you have the latest features and bug fixes.

7. Troubleshooting

If you encounter issues with your DALY Smart BMS, consider the following troubleshooting steps:

- **No Power Output:**
  - Verify all wiring connections are correct and secure, especially the B- and P- lines.
  - Check the battery pack voltage. If it's too low, the BMS may have triggered under-voltage protection.
  - Use the Bluetooth app or PC software to check for any active protection alarms (e.g., over-discharge, short circuit).
- **Charging Issues:**
  - Ensure the charger is functioning correctly and its voltage/current output matches the battery pack requirements.
  - Check for overcharge protection or high-temperature protection alarms via the app.
- **Balancing Issues:**
  - Monitor cell voltages through the app. If significant discrepancies persist, ensure the sampling cable is correctly connected and individual cell voltages are within acceptable ranges.
- **Communication Failure (Bluetooth/UART/CAN/RS485):**
  - Ensure the communication module (Bluetooth, UART cable) is correctly connected to the BMS.
  - Verify that the correct app or PC software is installed and updated.
  - Check device settings (e.g., Bluetooth pairing on your phone).

If the problem persists after performing these checks, please contact DALY technical support.

8. Specifications

The following table details the technical specifications for the DALY Smart BMS Li-ion 4S 12V 60A:

Parameter	Value
Product Type	Li-ion 4S 60A BMS (Common Port with Balance)
Battery Cell Composition	Lithium Ion
Communication Interfaces	UART, RS485, CAN, Bluetooth
Continuous Discharge Current	60A
Peak Discharge Current	90A
Continuous Charge Current	30A
Peak Charge Current	90A
Overcharge Voltage (per string)	4.25V ± 0.05V
Over-discharge Voltage (per string)	2.7V ± 0.05V
Charge Voltage	S*4.2V (S = number of series cells)
Dimensions (L x W x H)	66 x 128 x 18 mm (2.6 x 5.04 x 0.71 inches)

Parameter	Value
Output Wire Gauge / Length	10AWG / 130mm
Balance Wires Gauge / Length	24AWG / 300mm
Manufacturer	Dongguan Daly Electronics Co., Ltd
UPC	768655919831
ASIN	B0B8NF7JZC

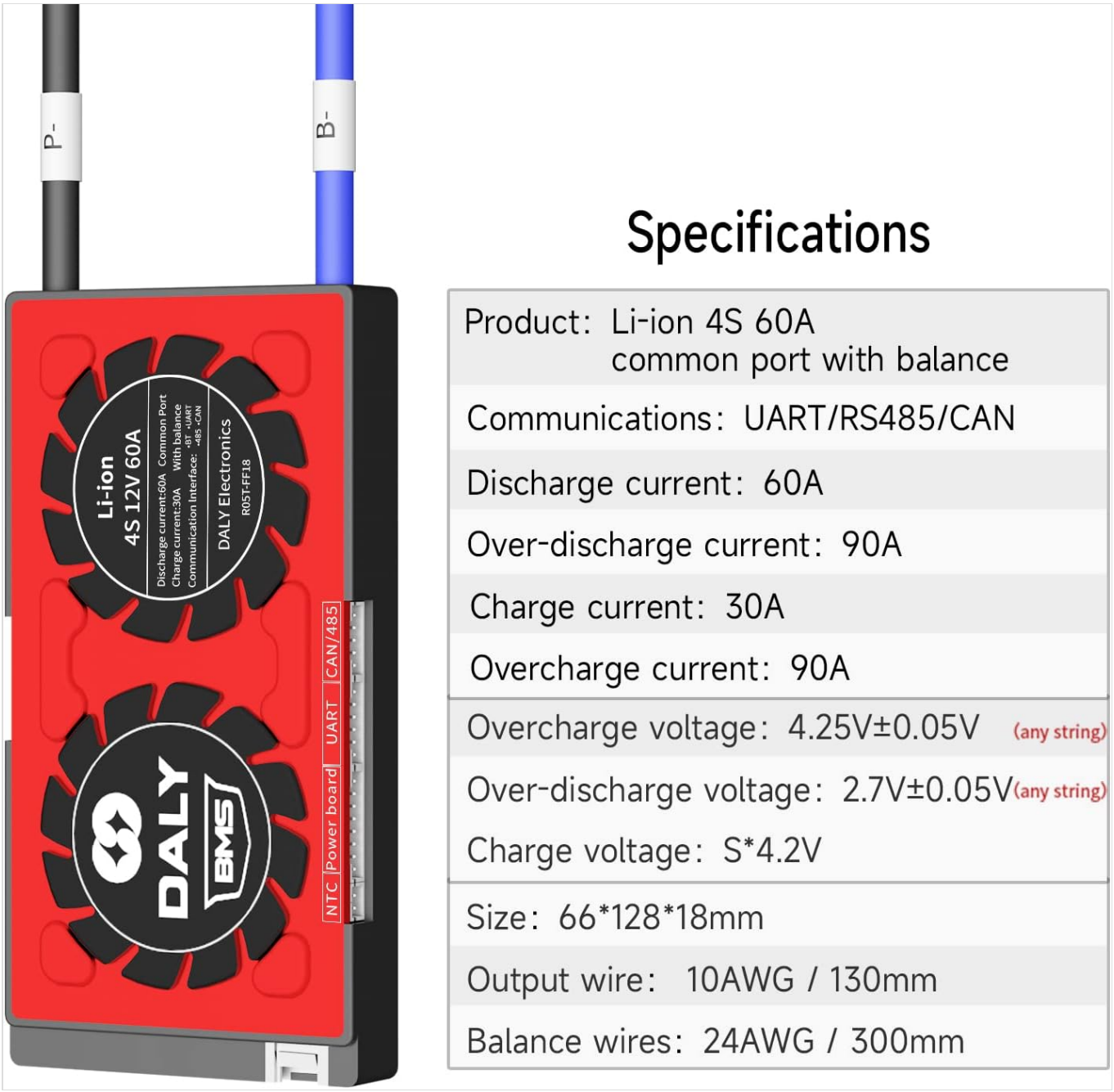

Figure 8.1: DALY Smart BMS Specifications

9. Support and Warranty

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

9.1. Technical Support

We offer 24-hour one-on-one customer service and lifetime technical support for the DALY Smart BMS. If you have any questions regarding installation, operation, or troubleshooting, please do not hesitate to contact our support team.

9.2. Warranty Information

For detailed warranty terms and conditions, please refer to the official DALY website or contact customer service. Our products are ISO/FCC/RoHS/PSE/CE approved, ensuring high quality and reliability.

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