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WENKESAMZI 7-24S40A

WENKESAMZI JBD Smart BMS 7-24S 40A Battery Management System User Manual

Model: 7-24S40A

1. Introduction

This manual provides comprehensive instructions for the installation, operation, and maintenance of the WENKESAMZI JBD Smart Battery Management System (BMS) model 7-24S40A. This Smart BMS is designed to manage Li-ion, LiFePO4, and LTO battery packs ranging from 7 to 24 series cells, offering robust protection and balancing functions. Please read this manual thoroughly before using the product to ensure safe and optimal performance.



Figure 1: Front view of the WENKESAMZI JBD Smart BMS 7-24S 40A.

2. Key Features

- **Wide Cell Compatibility:** Supports 7 to 24 series Li-ion, LiFePO4, and LTO battery types.
- **Multiple Protection Functions:** Includes overcharge, over-discharge, overcurrent, short circuit, and temperature protection.
- **Integrated Bluetooth Functionality:** Allows for real-time monitoring and parameter adjustment via a dedicated mobile application.
- **Passive Balancing:** Features a 100mA balance current for cell voltage equalization.
- **Temperature Monitoring:** Equipped with 1 internal and 2 external temperature sensors for comprehensive thermal management.
- **Sustained Current:** 40A continuous discharge current with a peak of 120A.

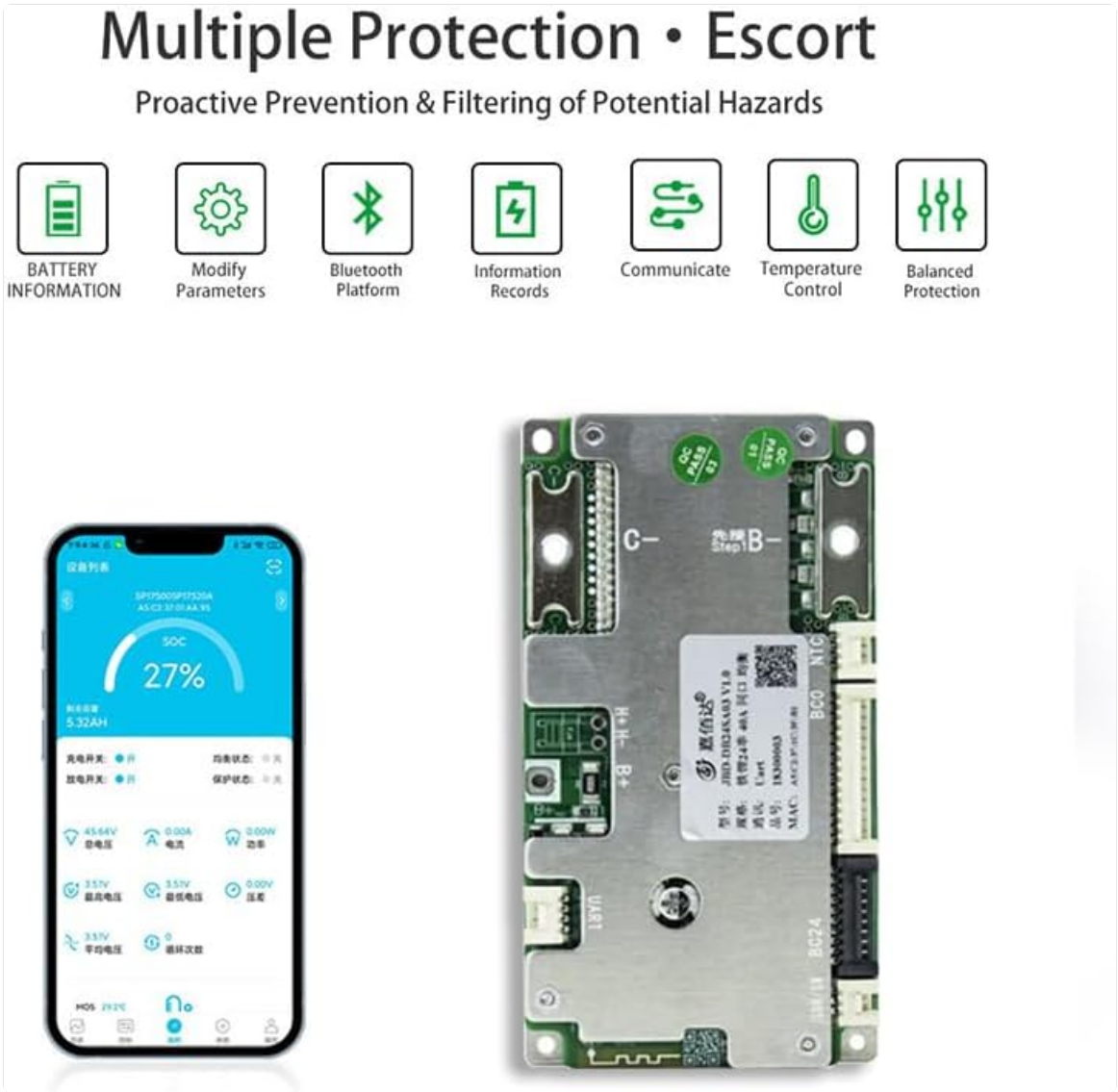


Figure 2: Overview of the multiple protection and monitoring features, including battery information, parameter modification, Bluetooth platform, information records, communication, temperature control, and balanced protection.

3. Specifications



*Figure 3: Key specifications of the 40A JBD Smart BMS, highlighting 40A continuous and 120A peak current, 7S-24S battery string compatibility, dimensions (128*70*15mm), Li-ion/LiFePO4/LTO battery type support, and built-in Bluetooth.*

Table 1: Technical Specifications

Parameter	Value
Model	7-24S40A
Applicable Battery Type	Li-ion, LiFePO4, LTO Battery
Supported Series (S)	7S to 24S (Automatically identified)
Sustained Discharge Current	40A
Peak Discharge Current	120A
Balance Current	100mA (Passive Equalization)
Temperature Sensors	1 Internal, 2 External
Communication Port	UART
Bluetooth	Built-in Bluetooth
Dimensions	128mm * 70mm * 15mm

4. Setup and Wiring

Proper wiring is critical for the safe and correct operation of the BMS. Please follow the instructions carefully. Incorrect wiring can damage the BMS, battery pack, or connected equipment.

4.1 General Wiring Principles

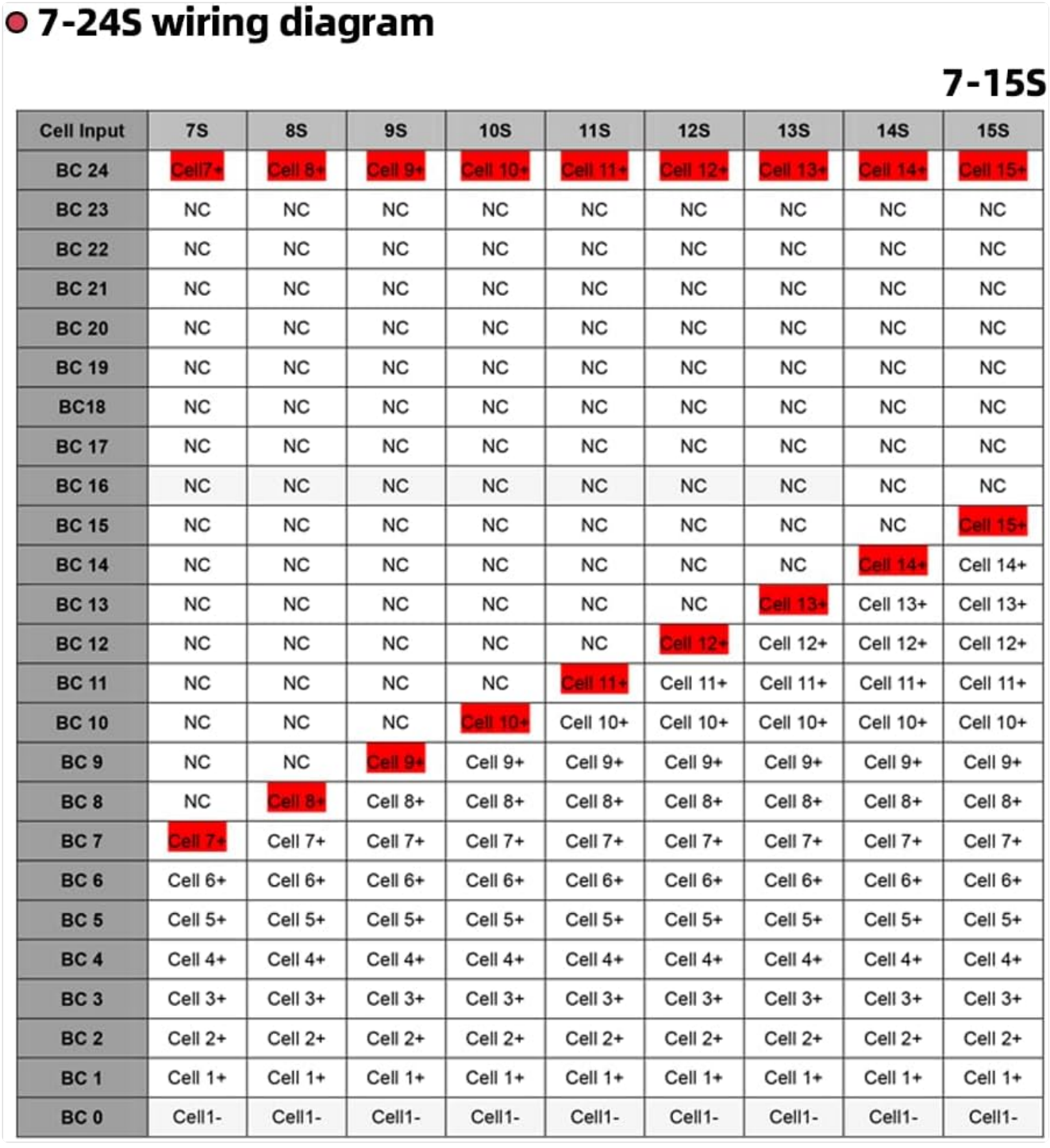
1. Always connect the B- (negative terminal of the battery pack) to the BMS first.
2. Connect the balance wires from the battery cells to the BMS balance port, starting from the lowest cell voltage

(B0 or Cell 1-) to the highest (Cell N+).

3. Ensure all balance wires are connected in the correct order and polarity.
4. Connect the C- (charge negative) and P- (discharge negative) terminals from the BMS to your charger and load, respectively.
5. Double-check all connections before applying power.

4.2 Balance Wire Connection Diagram (7-15S)

The following diagram illustrates the correct connection of balance wires for battery packs ranging from 7 to 15 series cells. Each "Cell X+" corresponds to the positive terminal of cell X, and "Cell X-" corresponds to the negative terminal of cell X. BC0 is typically connected to the main negative terminal of the battery pack (B-).



Cell Input	7S	8S	9S	10S	11S	12S	13S	14S	15S
BC 24	Cell7+	Cell 8+	Cell 9+	Cell 10+	Cell 11+	Cell 12+	Cell 13+	Cell 14+	Cell 15+
BC 23	NC	NC	NC	NC	NC	NC	NC	NC	NC
BC 22	NC	NC	NC	NC	NC	NC	NC	NC	NC
BC 21	NC	NC	NC	NC	NC	NC	NC	NC	NC
BC 20	NC	NC	NC	NC	NC	NC	NC	NC	NC
BC 19	NC	NC	NC	NC	NC	NC	NC	NC	NC
BC18	NC	NC	NC	NC	NC	NC	NC	NC	NC
BC 17	NC	NC	NC	NC	NC	NC	NC	NC	NC
BC 16	NC	NC	NC	NC	NC	NC	NC	NC	NC
BC 15	NC	NC	NC	NC	NC	NC	NC	NC	Cell 15+
BC 14	NC	NC	NC	NC	NC	NC	NC	Cell 14+	Cell 14+
BC 13	NC	NC	NC	NC	NC	NC	Cell 13+	Cell 13+	Cell 13+
BC 12	NC	NC	NC	NC	NC	Cell 12+	Cell 12+	Cell 12+	Cell 12+
BC 11	NC	NC	NC	NC	Cell 11+	Cell 11+	Cell 11+	Cell 11+	Cell 11+
BC 10	NC	NC	NC	Cell 10+	Cell 10+	Cell 10+	Cell 10+	Cell 10+	Cell 10+
BC 9	NC	NC	Cell 9+	Cell 9+	Cell 9+	Cell 9+	Cell 9+	Cell 9+	Cell 9+
BC 8	NC	Cell 8+	Cell 8+	Cell 8+	Cell 8+	Cell 8+	Cell 8+	Cell 8+	Cell 8+
BC 7	Cell 7+	Cell 7+	Cell 7+	Cell 7+	Cell 7+	Cell 7+	Cell 7+	Cell 7+	Cell 7+
BC 6	Cell 6+	Cell 6+	Cell 6+	Cell 6+	Cell 6+	Cell 6+	Cell 6+	Cell 6+	Cell 6+
BC 5	Cell 5+	Cell 5+	Cell 5+	Cell 5+	Cell 5+	Cell 5+	Cell 5+	Cell 5+	Cell 5+
BC 4	Cell 4+	Cell 4+	Cell 4+	Cell 4+	Cell 4+	Cell 4+	Cell 4+	Cell 4+	Cell 4+
BC 3	Cell 3+	Cell 3+	Cell 3+	Cell 3+	Cell 3+	Cell 3+	Cell 3+	Cell 3+	Cell 3+
BC 2	Cell 2+	Cell 2+	Cell 2+	Cell 2+	Cell 2+	Cell 2+	Cell 2+	Cell 2+	Cell 2+
BC 1	Cell 1+	Cell 1+	Cell 1+	Cell 1+	Cell 1+	Cell 1+	Cell 1+	Cell 1+	Cell 1+
BC 0	Cell1-	Cell1-	Cell1-	Cell1-	Cell1-	Cell1-	Cell1-	Cell1-	Cell1-

Figure 4: Detailed wiring diagram for 7S to 15S battery configurations, showing connections for each cell input (BC0 to BC24).

4.3 Balance Wire Connection Diagram (16-24S)

This diagram shows the balance wire connections for battery packs with 16 to 24 series cells. Pay close attention to the cell input numbering and ensure each wire corresponds to the correct cell voltage.

16-24S

Cell Input	16S	17S	18S	19S	20S	21S	22S	23S	24S
BC 24	Cell 16+	Cell 17+	Cell 18+	Cell 19+	Cell 20+	Cell 21+	Cell 22+	Cell 23+	Cell 24+
BC 23	NC	NC	NC	NC	NC	NC	NC	Cell 23+	Cell 23+
BC 22	NC	NC	NC	NC	NC	NC	Cell 22+	Cell 22+	Cell 22+
BC 21	NC	NC	NC	NC	NC	Cell 21+	Cell 21+	Cell 21+	Cell 21+
BC 20	NC	NC	NC	NC	Cell 20+	Cell 20+	Cell 20+	Cell 20+	Cell 20+
BC 19	NC	NC	NC	Cell 19+	Cell 19+	Cell 19+	Cell 19+	Cell 19+	Cell 19+
BC18	NC	NC	Cell 18+	Cell 18+	Cell 18+	Cell 18+	Cell 18+	Cell 18+	Cell 18+
BC 17	NC	Cell 17+	Cell 17+	Cell 17+	Cell 17+	Cell 17+	Cell 17+	Cell 17+	Cell 17+
BC 16	Cell 16+	Cell 16+	Cell 16+	Cell 16+	Cell 16+	Cell 16+	Cell 16+	Cell 16+	Cell 16+
BC 15	Cell 15+	Cell 15+	Cell 15+	Cell 15+	Cell 15+	Cell 15+	Cell 15+	Cell 15+	Cell 15+
BC 14	Cell 14+	Cell 14+	Cell 14+	Cell 14+	Cell 14+	Cell 14+	Cell 14+	Cell 14+	Cell 14+
BC 13	Cell 13+	Cell 13+	Cell 13+	Cell 13+	Cell 13+	Cell 13+	Cell 13+	Cell 13+	Cell 13+
BC 12	Cell 12+	Cell 12+	Cell 12+	Cell 12+	Cell 12+	Cell 12+	Cell 12+	Cell 12+	Cell 12+
BC 11	Cell 11+	Cell 11+	Cell 11+	Cell 11+	Cell 11+	Cell 11+	Cell 11+	Cell 11+	Cell 11+
BC 10	Cell 10+	Cell 10+	Cell 10+	Cell 10+	Cell 10+	Cell 10+	Cell 10+	Cell 10+	Cell 10+
BC 9	Cell 9+	Cell 9+	Cell 9+	Cell 9+	Cell 9+	Cell 9+	Cell 9+	Cell 9+	Cell 9+
BC 8	Cell 8+	Cell 8+	Cell 8+	Cell 8+	Cell 8+	Cell 8+	Cell 8+	Cell 8+	Cell 8+
BC 7	Cell 7+	Cell 7+	Cell 7+	Cell 7+	Cell 7+	Cell 7+	Cell 7+	Cell 7+	Cell 7+
BC 6	Cell 6+	Cell 6+	Cell 6+	Cell 6+	Cell 6+	Cell 6+	Cell 6+	Cell 6+	Cell 6+
BC 5	Cell 5+	Cell 5+	Cell 5+	Cell 5+	Cell 5+	Cell 5+	Cell 5+	Cell 5+	Cell 5+
BC 4	Cell 4+	Cell 4+	Cell 4+	Cell 4+	Cell 4+	Cell 4+	Cell 4+	Cell 4+	Cell 4+
BC 3	Cell 3+	Cell 3+	Cell 3+	Cell 3+	Cell 3+	Cell 3+	Cell 3+	Cell 3+	Cell 3+
BC 2	Cell 2+	Cell 2+	Cell 2+	Cell 2+	Cell 2+	Cell 2+	Cell 2+	Cell 2+	Cell 2+
BC 1	Cell 1+	Cell 1+	Cell 1+	Cell 1+	Cell 1+	Cell 1+	Cell 1+	Cell 1+	Cell 1+
BC 0	Cell1-	Cell1-	Cell1-	Cell1-	Cell1-	Cell1-	Cell1-	Cell1-	Cell1-

Figure 5: Detailed wiring diagram for 16S to 24S battery configurations, showing connections for each cell input (BC0 to BC24).

5. Operating Instructions

The JBD Smart BMS features built-in Bluetooth for convenient monitoring and parameter adjustment via a smartphone application.

5.1 Smart Bluetooth APP

1. **Download the App:** Search for "JBD Tools" or "Smart BMS" in your device's app store (available for iOS and Android).
2. **Connect via Bluetooth:**
    - Ensure Bluetooth is enabled on your smartphone.

- Open the JBD Smart BMS app.
- The app will scan for nearby BMS devices. Select your BMS from the device list.
- Once connected, the app will display real-time battery data.

3. **Monitoring Functions:** The app provides detailed information including:
    - Total voltage and individual cell voltages.
    - State of Charge (SOC) and remaining capacity.
    - Charge/discharge current.
    - Temperature readings from internal and external sensors.
    - Protection status (e.g., overcharge, over-discharge, overcurrent).
    - Cycle count and historical data.
4. **Parameter Adjustment:** The app allows you to modify various BMS parameters, such as:
    - Overcharge/over-discharge voltage thresholds.
    - Overcurrent thresholds.
    - Temperature protection limits.
    - Balancing settings.

    Caution: Modifying parameters without proper understanding can lead to battery damage or unsafe conditions. Consult an expert if unsure.

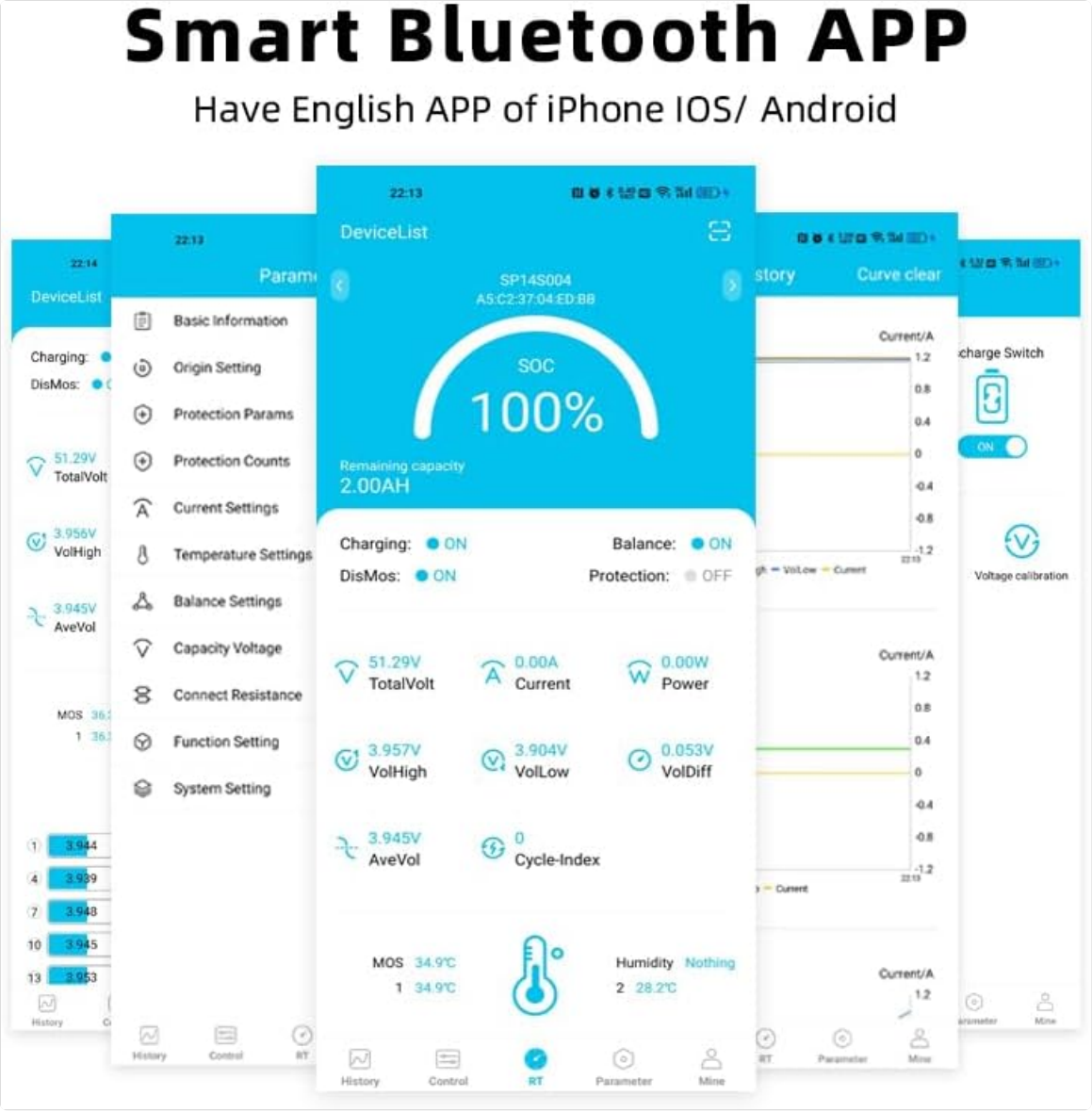


Figure 6: Screenshots of the JBD Smart BMS Bluetooth application interface, demonstrating real-time monitoring of battery parameters, protection status, and settings. The app supports English for iOS and Android devices.

6. Maintenance

The JBD Smart BMS is designed for reliable operation with minimal maintenance. However, periodic checks can help ensure longevity and optimal performance.

- **Visual Inspection:** Periodically inspect the BMS and wiring for any signs of damage, corrosion, or loose connections.
- **Software Updates:** Check the app store for any available updates to the JBD Smart BMS application to ensure you have the latest features and bug fixes.
- **Environmental Conditions:** Ensure the BMS operates within its specified temperature range and is protected from moisture and excessive dust.
- **Battery Health Monitoring:** Regularly monitor battery cell voltages and overall pack health via the Bluetooth app. Address any significant cell imbalances promptly.

7. Troubleshooting

If you encounter issues with your JBD Smart BMS, refer to the following common troubleshooting steps.

- **BMS Not Powering On:**
  - Check all main power connections (B-, P-, C-) for secure contact and correct polarity.
  - Verify that the battery pack voltage is within the operational range for a 7-24S configuration.
  - Ensure the balance wires are correctly connected and not damaged.
- **Bluetooth Connection Issues:**
  - Confirm Bluetooth is enabled on your smartphone.
  - Ensure the BMS is powered on.
  - Try restarting the app and your phone's Bluetooth.
  - Make sure you are within close proximity to the BMS.
- **Cell Imbalance Warnings:**
  - Check individual cell voltages via the app.
  - Ensure the balance wires are securely connected to each cell.
  - Allow the BMS to balance the cells over time. If imbalance persists, inspect individual cells for degradation.
- **Protection Triggered (e.g., Overcurrent, Overvoltage):**
  - Identify the specific protection triggered via the app's fault log.
  - For overcurrent, reduce the load or check for short circuits.
  - For overvoltage/undervoltage, check charger settings or battery cell health.
  - For temperature protection, ensure adequate ventilation and check external sensor placement.

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

8. Application Scenarios

The WENKESAMZI JBD Smart BMS is versatile and suitable for a wide range of applications requiring reliable battery management.

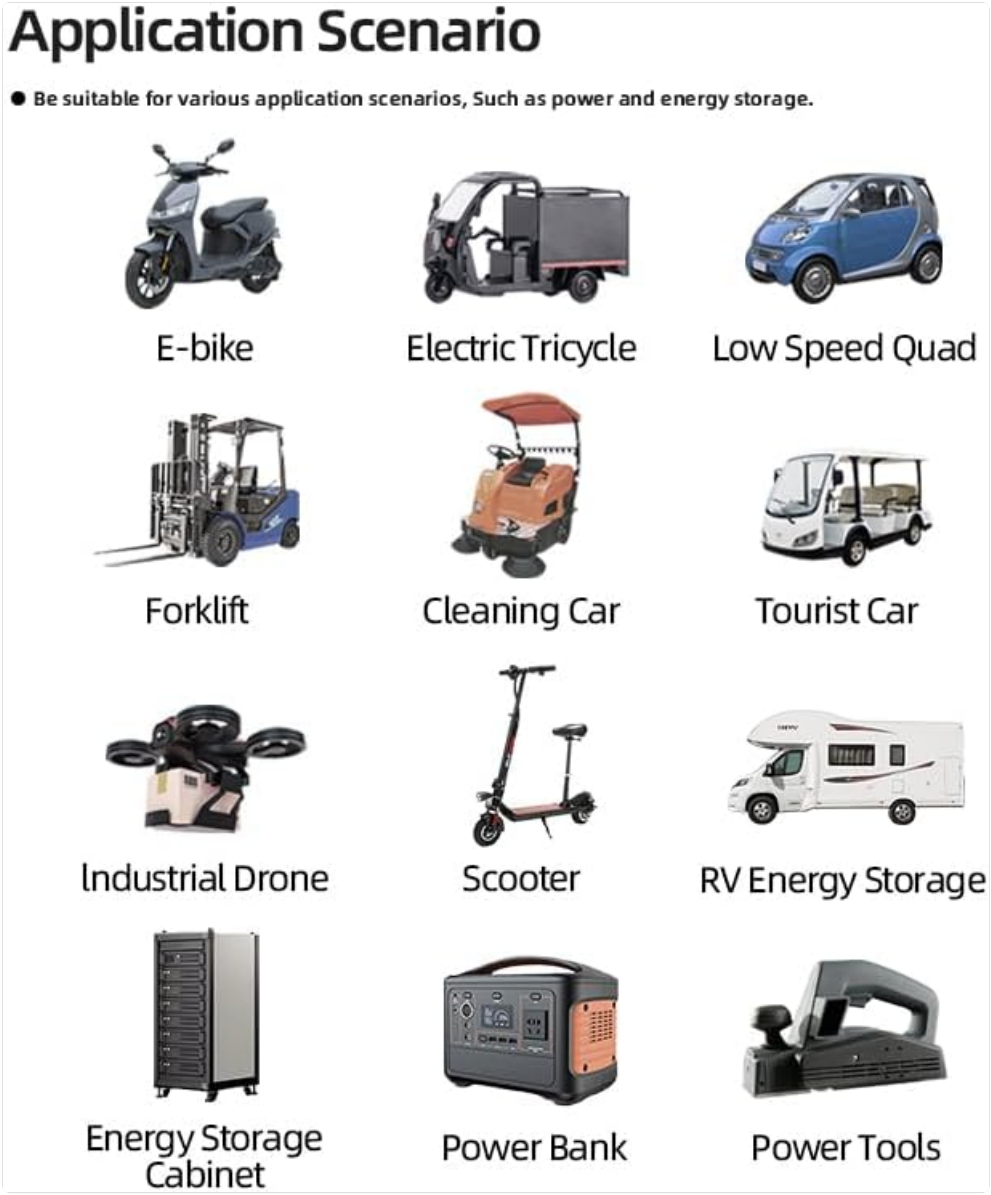


Figure 7: Examples of application scenarios for the JBD Smart BMS, including E-bikes, Electric Tricycles, Low Speed Quads, Forklifts, Cleaning Cars, Tourist Cars, Industrial Drones, Scooters, RV Energy Storage, Energy Storage Cabinets, Power Banks, and Power Tools.

- Electric Vehicles (E-bikes, Electric Motorcycles, Electric Scooters, Electric Tricycles, Low Speed Quads, Tourist Cars)
- Industrial Equipment (Forklifts, Cleaning Cars, Industrial Drones)
- Energy Storage Systems (RV Energy Storage, Energy Storage Cabinets, Power Banks)
- Portable Power Tools
- Other custom battery pack applications

9. Warranty and Support

WENKESAMZI is committed to providing high-quality products. This product comes with a standard manufacturer's warranty against defects in materials and workmanship. For specific warranty terms and conditions, please refer to the product packaging or contact your retailer.
For technical support, troubleshooting assistance, or warranty claims, please contact WENKESAMZI customer service through the contact information provided with your purchase or on the official WENKESAMZI website.

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