HENGSHAN US-EL-80V100A

HENGSHAN AiLi TR16 Battery Monitor Voltmeter Ammeter (Model US-EL-80V100A) User Manual

For 8-80V, 0-100A Battery Systems

1. Introduction

This manual provides comprehensive instructions for the installation, operation, and maintenance of your HENGSHAN AiLi TR16 Battery Monitor. This device is designed to accurately monitor the performance of various battery systems, providing essential information such as voltage, current, remaining capacity, and state of charge. It is suitable for a wide range of applications, including mobile and portable equipment, e-bikes, balance cars, cleaning machines, instruments, UPS systems, and recreational vehicles.
The AiLi TR16 Battery Monitor supports lithium batteries, lithium iron phosphate batteries, lead-acid batteries, and nickel-metal hydride batteries with a working voltage range of 8V to 80V. It features a memory function and is self-powered within its operating voltage range, eliminating the need for an isolated power supply.

2. Product Overview

The HENGSHAN AiLi TR16 Battery Monitor acts as a 'fuel gauge' for your battery bank, offering a clear, at-a-glance display of critical battery parameters. Its integrated functions contribute to more efficient battery usage, extending battery life and reducing the risk of unexpected failures.

Key Features:

- Real-time display of State of Charge (%), remaining battery capacity (AH).
- Real-time display of charge and discharge current (A) and voltage (V).
- Intuitive charging status indicator.
- Wide compatibility with various battery types (Lithium, LiFePO4, Lead-Acid, Ni-MH).
- Self-powered operation (8-80V).
- Memory function to retain settings.

Package Contents:

- 1 x AiLi TR16 Battery Monitor Display Unit
- 1 x Current Sampler (Shunt)

- 1 x 2-meter long connection cable
- 1 x English Operation Manual (this document)

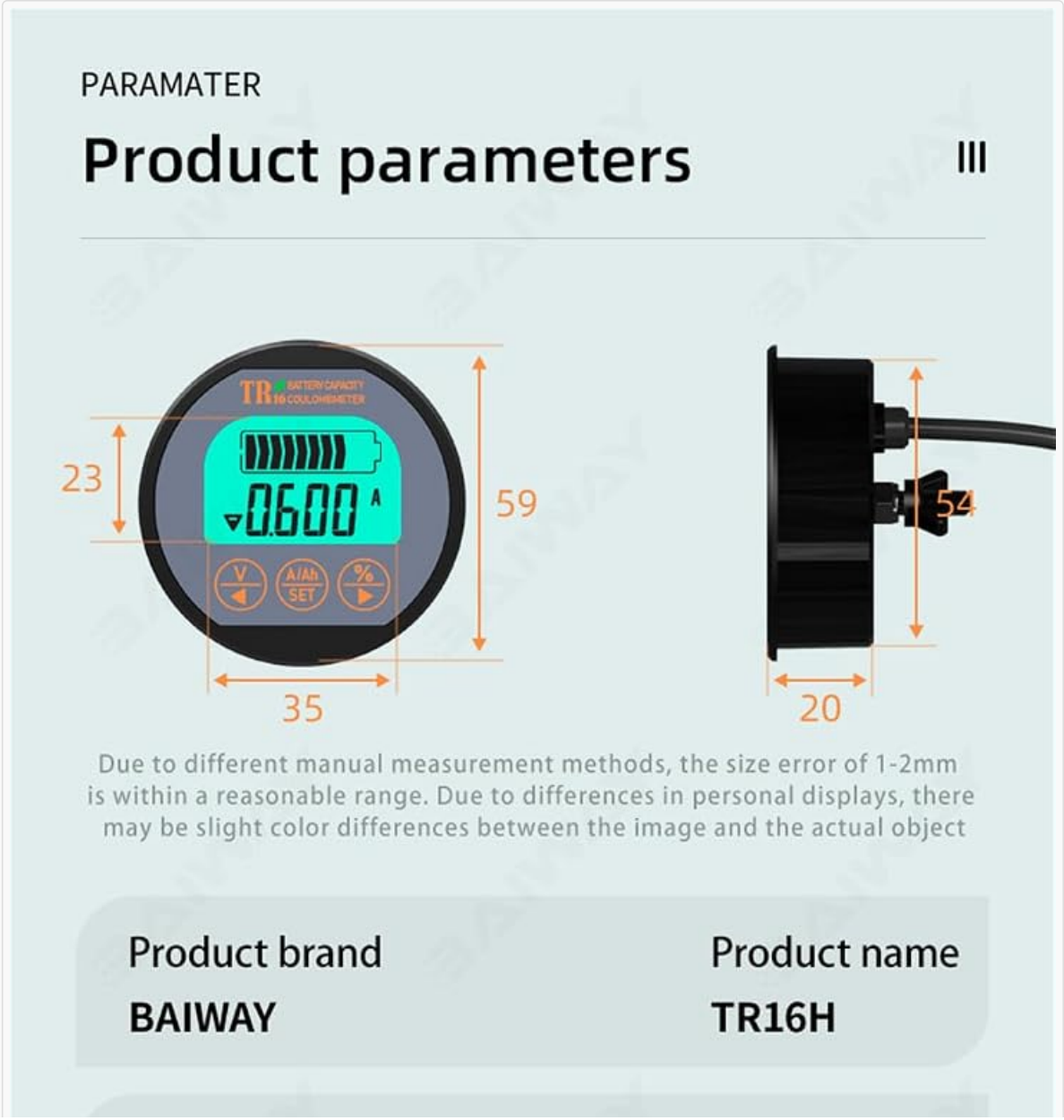


Figure 2.1: Components of the AiLi TR16 Battery Monitor, including the display unit, shunt, mounting bracket, and connection cable.

3. Specifications

Parameter	Value
Working Voltage	8.0 - 80.0 V
Current Range	-100 ~ +100 Amps
Capacity Range	0 - 999 Amp-hours
Working Consumption	10.0 - 12.0 mA
Standby Consumption	0.5 - 0.6 mA
Sleep Consumption	50 - 60 uA
Voltage Accuracy	± 1.0 %

Parameter	Value
Current Accuracy	± 1.0 %
Capacity Accuracy	± 1.0 %
Preset Capacity Value	0.1 - 999 Ah
Temperature Range	0 - 35 ℃
Weight	270g (approx. 7.1 ounces)
Product Dimensions	Ø59mm x 20mm (3.86 x 2.13 x 0.82 inches)
Mounting Hole Diameter	54mm (approx. 2.125 inches)
Material	Plastic (ABS-PC)
Color	Black, Gray
Model Number	US-EL-80V100A
UPC	732140358399



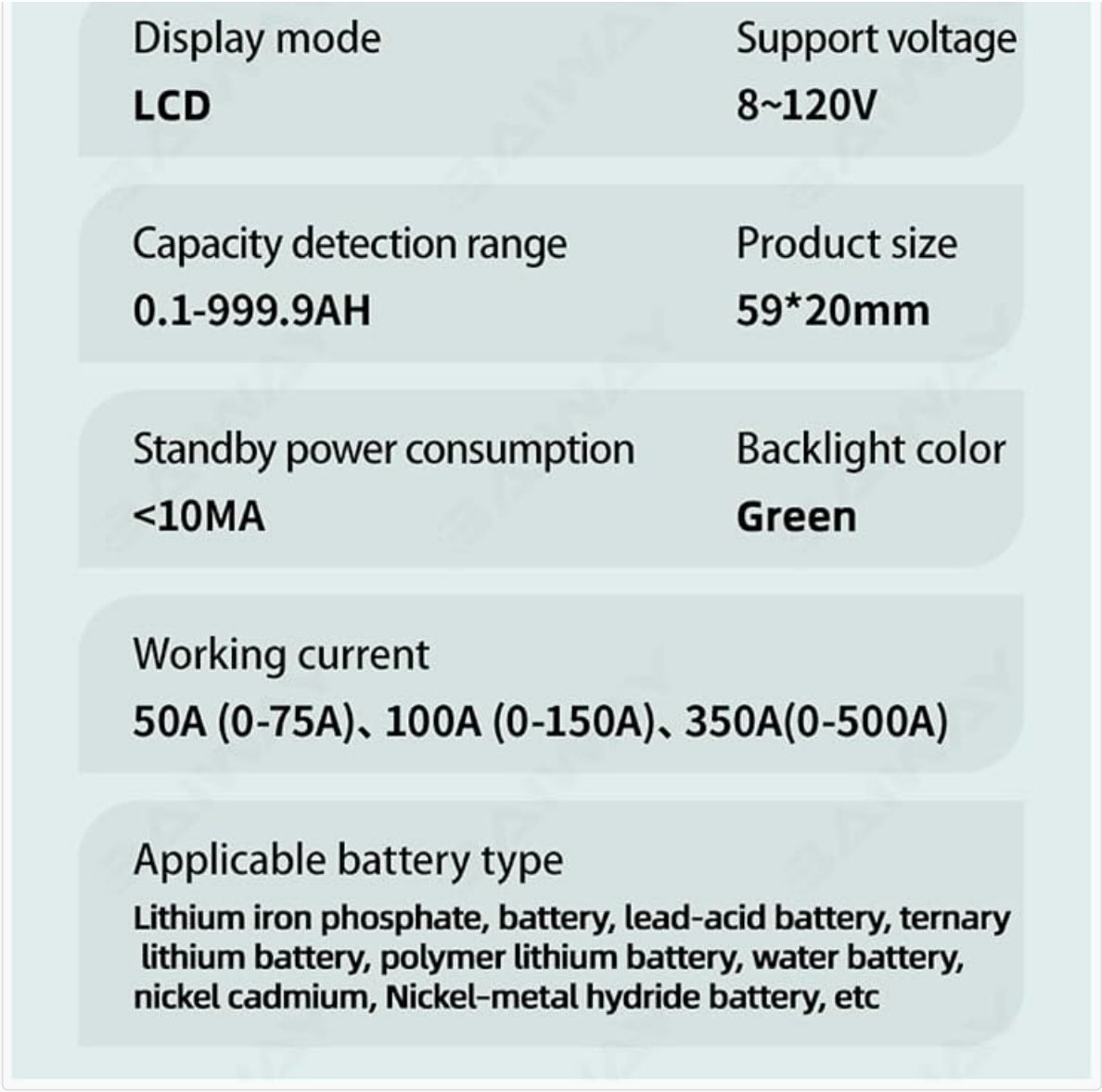


Figure 3.1: Detailed product parameters for the AiLi TR16 Battery Monitor.

4. Setup and Installation

The AiLi TR16 Battery Monitor is designed for straightforward installation. Please follow these steps carefully to ensure correct and safe operation.

4.1 Mounting the Display Unit

1. Select a suitable location for the display unit, ensuring it is easily visible and accessible.
2. Using a **2.125-inch (54mm) hole saw**, cut a mounting hole in the chosen surface.
3. Insert the display unit into the hole. Secure it from the rear using the provided mounting hardware (nut and thumb screw).



Figure 4.1: Side view of the AiLi TR16 Battery Monitor, illustrating its depth and mounting mechanism.

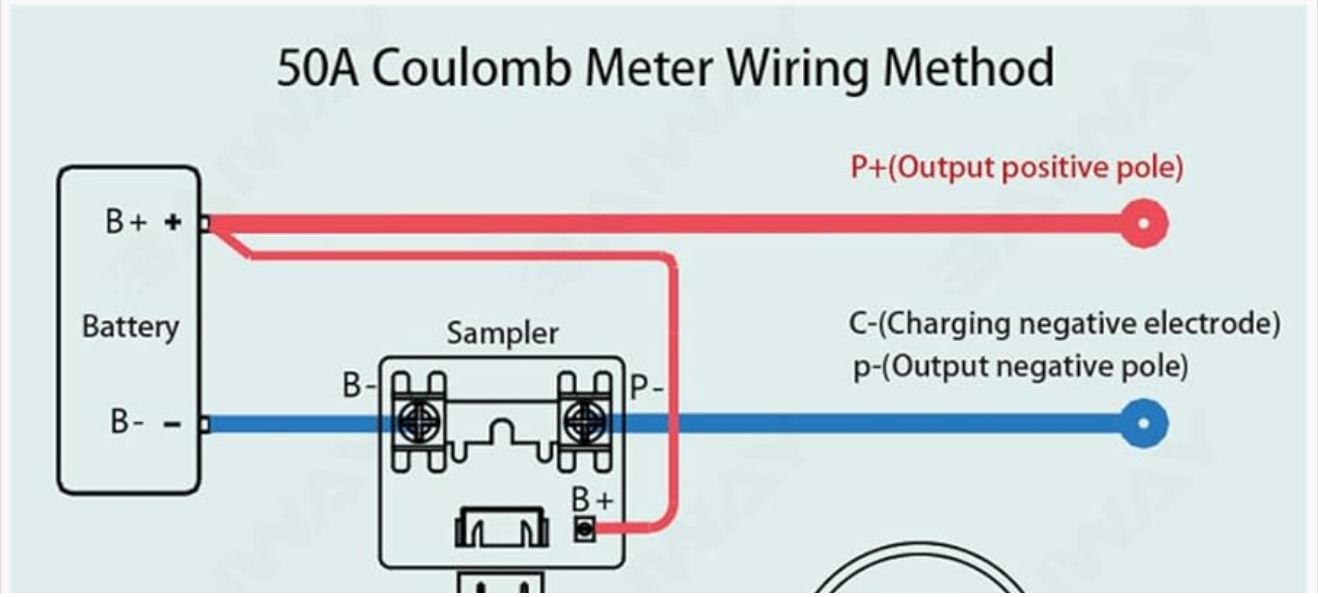


Figure 4.2: Rear view of the AiLi TR16 Battery Monitor, showing the cable connection point.

4.2 Wiring the System

The current sampler (shunt) must be connected in series with the negative circuit of the battery. It is crucial to connect the shunt to the negative side only and never to the positive circuit. The shielding wire connecting the shunt to the display unit should not be lengthened or cut short.

Important Note: A short positive wire (typically 18AWG) is required to connect the shunt's P+ terminal to the battery's positive terminal. This wire is not included in the package and must be supplied by the user.



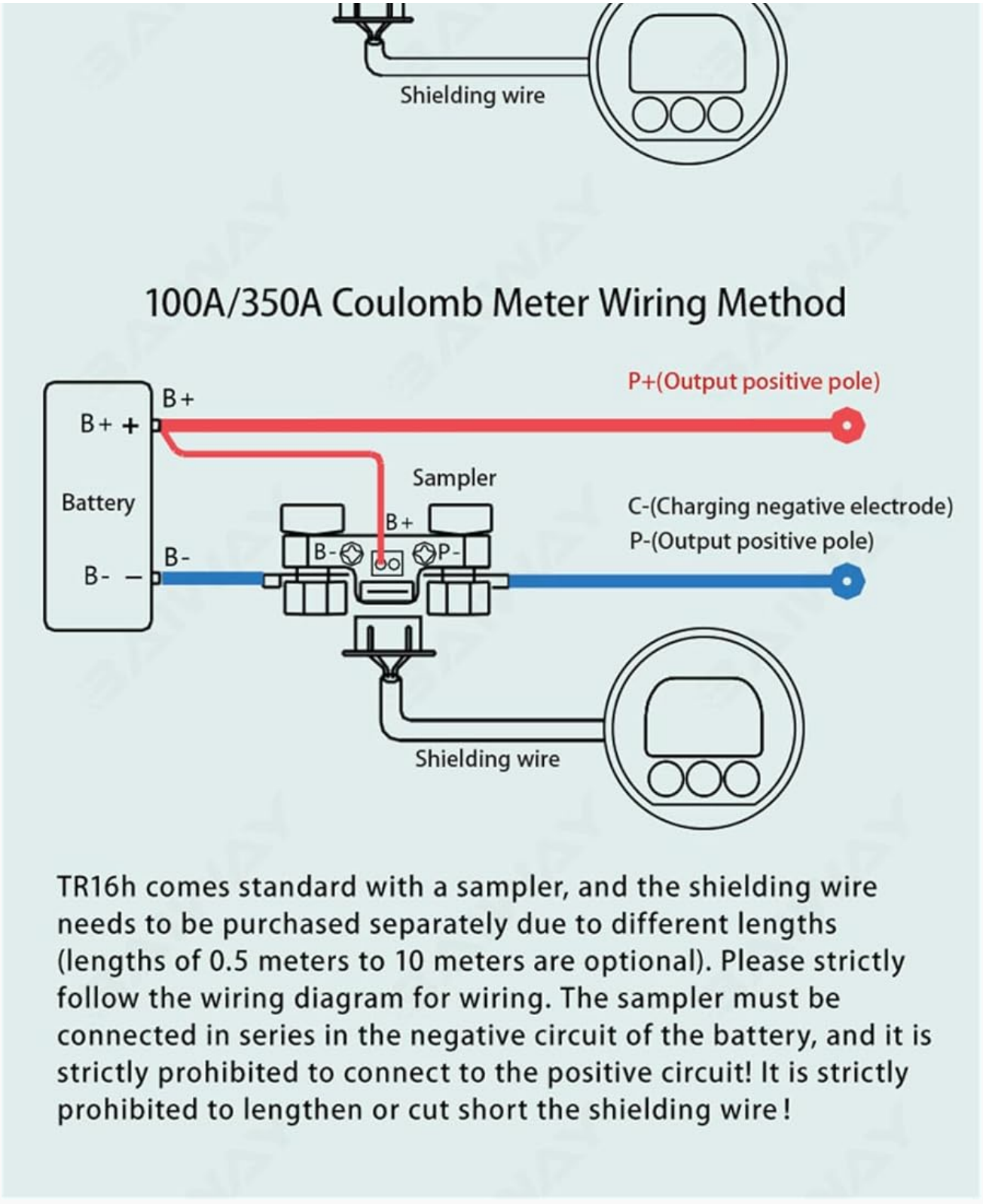


Figure 4.3: Wiring diagrams for the AiLi TR16 Battery Monitor. The top diagram shows the 50A configuration, and the bottom diagram shows the 100A/350A configuration. Both illustrate the series connection of the sampler (shunt) in the negative battery circuit and the connection of the shielding wire to the display unit.

1. Connect the main negative terminal of your battery bank to the **B-** terminal on the current sampler (shunt).
2. Connect the negative load/charger wire to the **P-** terminal on the current sampler (shunt).
3. Connect a user-supplied positive wire (e.g., 18AWG) from the battery's positive terminal to the **P+** terminal on the current sampler (shunt).
4. Connect the provided 2-meter cable from the current sampler to the back of the AiLi TR16 Battery Monitor display unit. Ensure the connector is fully seated.

5. Operating Instructions

Once installed and powered, the AiLi TR16 Battery Monitor will display real-time battery information. The display features three buttons for navigation and settings: **V** (Voltage/Down), **A/Ah SET** (Amps/Amp-hours/Set), and **%** (Percentage/Up).



Figure 5.1: Front view of the AiLi TR16 Battery Monitor display, showing current capacity in Amp-hours and battery icon.

5.1 Display Modes

The monitor can cycle through different display modes by pressing the**V** or **%** buttons. The available modes typically include:

- **Voltage (V):** Real-time display of battery voltage.
- **Current (A):** Real-time display of battery operating current (charge/discharge).
- **Capacity (Ah):** Real-time display of remaining battery capacity in Amp-hours.
- **Percentage (%):** Real-time display of the percentage of remaining battery power.

Four parameters manually switch the display interface

Not content with a single function

All the powerful functions imaginable are as you wish



voltage

Real time display of battery voltage
Supports 8-120V



current

Real time display of battery operating current；Maximum size 0-500A



capacity

Real time display of remaining battery capacity；Supports 0-999Ah



percentage

Real time display of the percentage of remaining battery power

Figure 5.2: The four primary display modes of the AiLi TR16 Battery Monitor: Voltage, Current, Capacity (Ah), and Percentage (%).

5.2 Initial Calibration and Settings

For accurate readings, the monitor requires initial calibration to match your battery's total capacity.

1. **Set Total Battery Capacity:** Press and hold the **A/Ah SET** button to enter the settings menu. Navigate to the capacity setting (usually indicated by 'CAP' or similar) using the **V** or **%** buttons. Adjust the value to your battery's total Amp-hour (Ah) capacity (e.g., 100Ah, 200Ah). Confirm the setting by pressing **A/Ah SET** again.
2. **Synchronize 100% State of Charge:** Fully charge your battery bank until it reaches its maximum voltage and charging current drops to a minimum. Once fully charged, press and hold the **%** button until the display shows 100%. This synchronizes the monitor with your battery's full state of charge.
3. **Set 0% Voltage (Optional but Recommended):** You can set a voltage threshold for 0% state of charge. This helps the monitor provide a more accurate 'fuel gauge' reading. Refer to your battery manufacturer's specifications for the recommended minimum discharge voltage. Access this setting via the **A/Ah SET** menu.

6. Maintenance

The HENGSHAN AiLi TR16 Battery Monitor is designed for durability and requires minimal maintenance. Following these guidelines will help ensure its longevity and accurate performance:

- **Cleaning:** Wipe the display unit with a soft, dry cloth. Avoid using abrasive cleaners or solvents, which can damage the screen or casing.
- **Connections:** Periodically check all wiring connections to ensure they are secure and free from corrosion. Loose connections can lead to inaccurate readings or operational issues.
- **Environment:** Ensure the monitor is not exposed to extreme temperatures outside its specified operating range (0-35°C) or excessive moisture, despite its waterproof features.
- **Recalibration:** If you notice significant discrepancies in readings or after replacing your battery, consider performing a full recalibration as described in Section 5.2.

7. Troubleshooting

If you encounter issues with your AiLi TR16 Battery Monitor, refer to the following common problems and solutions:

7.1 Inaccurate Readings

- **Problem:** Voltage, current, or capacity readings appear incorrect.
- **Solution:**
    - Ensure the monitor has been properly calibrated to your battery's total capacity (see Section 5.2).
    - Check all wiring connections, especially to the shunt, for looseness or corrosion.
    - Verify that the shunt is correctly installed in the negative battery circuit.

7.2 Display Not Working

- **Problem:** The display is blank or not turning on.
- **Solution:**
    - Check the battery voltage to ensure it is within the monitor's operating range (8-80V).
    - Verify that the positive wire from the battery to the shunt's P+ terminal is securely connected.

- Ensure the connection cable between the shunt and the display unit is firmly plugged in at both ends.

7.3 Cable Length Issues

- **Problem:** The provided 2-meter cable is too short for the installation.
- **Solution:** The provided cable is a standard 5-pin JST-XH type. While extending it is possible, it requires careful soldering of a 5-conductor cable. It is generally recommended to use the provided cable length if possible to maintain signal integrity. The shielding wire should not be altered.

8. Warranty and Customer Support

8.1 Limited Warranty

HENGSHAN warrants this product against defects in materials and workmanship for a period of one (1) year from the original date of purchase. This warranty does not cover damage caused by improper installation, misuse, unauthorized modifications, accidents, or natural disasters. Proof of purchase is required for all warranty claims.

8.2 Customer Support

For technical assistance, troubleshooting, or warranty inquiries, please contact your retailer or the manufacturer directly. Please have your product model number (US-EL-80V100A) and purchase date available when contacting support.

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Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question