ECO-WORTHY 12.8V150AH

ECO-WORTHY 12V 150AH Bluetooth LiFePO4 Lithium Battery User Manual

Model: 12.8V150AH (L13080202113-1)

1. Introduction

This manual provides comprehensive instructions for the safe and efficient use of your ECO-WORTHY 12V 150AH Bluetooth LiFePO4 Lithium Battery. Designed for various applications including trolling motors, boats, RVs, camping, and home energy storage, this battery features advanced LiFePO4 technology, a built-in Battery Management System (BMS), and Bluetooth connectivity for real-time monitoring.

Figure 1.1: ECO-WORTHY 12V 150AH LiFePO4 Lithium Battery

2. Product Features

- **Bluetooth Real-Time Monitoring:** Equipped with Bluetooth 5.0, allowing users to monitor battery voltage, current, capacity, and remaining working life directly from a smartphone application. This feature enhances confidence and prevents unexpected power loss during use.
- **Lightweight and High Energy Density:** Measuring approximately 13.03"D x 6.81"W x 8.66"H and weighing 34.61 lbs, this battery offers a significantly higher energy density compared to traditional lead-acid batteries, being about 1/3 lighter and providing 8 times higher mass energy density.
- **Low-Temperature Protection:** Features an integrated low-temperature cut-off protection system that automatically stops charging when the cell temperature drops below -7°C (19.4°F), safeguarding the battery cells from damage in cold environments. Charging resumes when the temperature rises above 0°C (32°F).
- **Advanced 120A BMS and Grade-A Cells:** Manufactured with automotive-grade lithium iron phosphate cells, ensuring stable performance, high power output, and extended lifespan. The built-in 120A Battery Management System (BMS) provides comprehensive protection against overcharge, over-discharge, over-current, over-

temperature, low-temperature, and short circuits. Cells are UL, IEC, CE, and RoHS certified for safety.

- **Flexible System Configuration and Easy Troubleshooting:** Supports 4S4P configurations, allowing for system expansion up to 30.72kWh. The mobile application facilitates quick identification and troubleshooting of issues within a battery bank, eliminating guesswork.

Figure 2.1: Grade A Cells and Extended Cycle Life

Figure 2.2: Internal Anti-Swollen Fixture and BMS

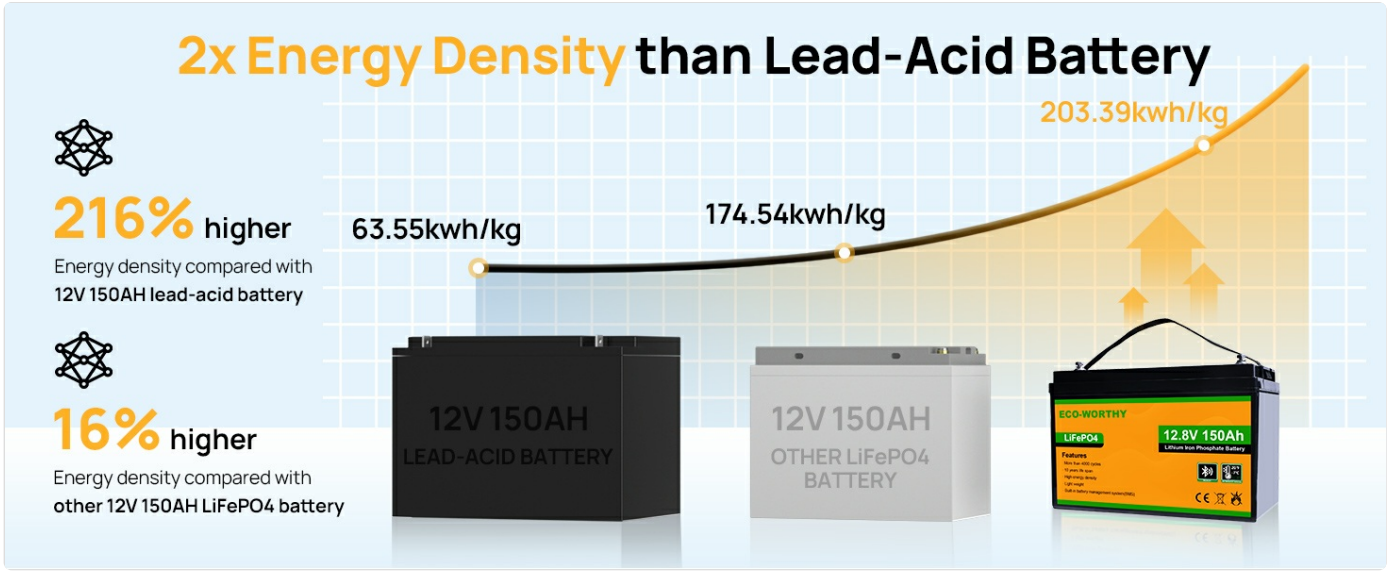

Figure 2.3: Energy Density Comparison

3. Specifications

Attribute	Value
Brand	ECO-WORTHY
Model	12.8V150AH (L13080202113-1)
Nominal Voltage	12V
Capacity	150AH
Product Dimensions (L x W x H)	13.03" x 6.81" x 8.66" (33.1cm x 17.3cm x 22cm)
Item Weight	34.61 lbs (15.7 kg)
Terminal Type	M8
Built-in BMS	120A
Low-Temperature Charging Cut-off	-7°C (19.4°F)

Low-Temperature Charging Recovery	0°C (32°F)
Cycle Life	Up to 15,000 cycles
Certifications	UL, IEC, CE, RoHS

Figure 3.1: Battery Dimensions and Terminal Type

4. Setup and Installation

4.1 Unpacking and Inspection

Upon receiving your ECO-WORTHY LiFePO4 battery, carefully unpack it and inspect for any signs of damage during transit. Verify that all components listed in the packaging are present. If any damage or missing parts are found, contact customer support immediately.

4.2 Safety Precautions

- Always wear appropriate personal protective equipment (PPE), including insulated gloves and eye protection, when handling batteries.
- Ensure the battery is disconnected from any load or charging source before installation or maintenance.
- Do not short-circuit the battery terminals.
- Install the battery in a well-ventilated area, away from direct sunlight, heat sources, and flammable materials.
- Avoid dropping or subjecting the battery to severe impacts.

4.3 Connection Guidelines

Connect the battery to your system using appropriate M8 terminals and cables. Ensure all connections are secure and properly torqued to prevent loose connections, which can lead to overheating and damage.

- **Single Battery Connection:** Connect the positive (+) terminal of the battery to the positive input of your load/inverter/charger, and the negative (-) terminal to the negative input.
- **Parallel Connection (4S4P Support):** For increased capacity, multiple batteries can be connected in parallel. Ensure all batteries have similar voltage levels before connecting them in parallel. Connect all positive terminals together and all negative terminals together. Use appropriately sized cables for parallel connections to handle the combined current.
- **Series Connection:** This battery supports series connection for higher voltage systems. For example, two 12V batteries in series create a 24V system. Connect the positive terminal of one battery to the negative terminal of the next. Ensure all batteries in a series string are of the same model and capacity.

Figure 4.1: Example of a Multi-Battery System Setup

5. Operating Instructions

5.1 Initial Use

Before first use, it is recommended to fully charge the battery. Refer to the charging section for details on compatible chargers and methods.

5.2 Bluetooth Monitoring App

The ECO-WORTHY 12V 150AH battery features integrated Bluetooth 5.0 for real-time monitoring. Download the official ECO-WORTHY app from your smartphone's app store (iOS/Android). Once installed, open the app and follow the on-screen instructions to connect to your battery. The app will display critical information such as:

- Battery Voltage
- Current (Charge/Discharge)

- State of Charge (SOC) / Remaining Capacity
- Battery Temperature
- Remaining Working Time
- Cycle Count
- BMS Status and Fault Codes (for troubleshooting)

Figure 5.1: Real-Time Battery Monitoring via Bluetooth App

Figure 5.2: Monitoring Remaining Working Time for Outdoor Activities

5.3 Low-Temperature Protection Operation

The battery's built-in BMS will automatically prevent charging if the internal cell temperature falls below -7°C (19.4°F). This protects the battery from damage. Charging will automatically resume once the temperature rises above 0°C (32°F). This feature ensures safe operation in cold climates, making it suitable for RVs, cabins, off-grid systems, and marine use in winter.

Figure 5.3: Low-Temperature Protection in Cold Environments

5.4 Powering Your Needs

With a 1920Wh energy capacity, this battery can power various appliances for extended periods. The actual runtime will depend on the power consumption of your devices.

Figure 5.4: Estimated Appliance Runtimes

5.5 Trolling Motor Application

The ECO-WORTHY 12V 150AH battery is ideal for trolling motors. The table below provides estimated running times based on motor thrust and speed settings.

Thrust	Battery Capacity Need	Running time in High-speed	Running time in Mid-speed	Running time in Low-speed
12V 55lbs	150AH	1.9hrs	4.0hrs	12hrs
12V 62lbs	150AH	1.7hrs	3.5hrs	10hrs
24V 86lbs	150AH*2	2.0hrs	4.0hrs	12hrs

Figure 5.5: Trolling Motor Running Time Estimates

6. Charging

The ECO-WORTHY 12V 150AH LiFePO4 battery can be charged using various methods. Always use a charger specifically designed for LiFePO4 batteries to ensure optimal performance and safety. The built-in 120A BMS manages the charging process, protecting against overcharge.

6.1 Recommended Charging Methods

- **Dedicated LiFePO4 Battery Charger:** Use a 12V LiFePO4 smart charger. For a 20A charger, a full charge typically takes approximately 7.5 hours.
- **Solar Panel System:** Connect to a compatible solar charge controller and solar panel array. A 400W solar panel system can charge the battery in approximately 4.8 hours under optimal sunlight conditions.
- **Generator with Charger:** A generator equipped with a 20A charger can also be used, with charging times similar to a dedicated charger (approx. 7.5 hours).

Figure 6.1: Various Charging Methods

6.2 Charging Considerations

- Ensure the charger's voltage and current settings are appropriate for a 12V LiFePO4 battery.
- Avoid charging the battery in temperatures below -7°C (19.4°F) to prevent damage, as the BMS will automatically cut off charging in such conditions.
- Monitor the charging process, especially during initial charges, using the Bluetooth app.

7. Maintenance and Storage

7.1 General Maintenance

- Regularly inspect the battery terminals for corrosion or loose connections. Clean terminals as needed and ensure they are securely fastened.
- Keep the battery clean and dry. Wipe down the casing with a damp cloth if necessary.
- Periodically check the battery's state of charge using the Bluetooth app, especially if it's not in regular use.

7.2 Long-Term Storage

For long-term storage, it is recommended to store the battery at approximately 50% State of Charge (SOC) in a cool, dry place, away from direct sunlight and extreme temperatures. Disconnect the battery from all loads and charging sources. Periodically check the SOC (every 3-6 months) and recharge if it drops significantly to prevent deep discharge.

8. Troubleshooting

The ECO-WORTHY Bluetooth app is a valuable tool for diagnosing common issues. Refer to the app's fault code section for specific error messages.

Problem	Possible Cause	Solution
Battery not charging	◦ Temperature below -7℃ (19.4℉) ◦ Charger not connected or faulty ◦ BMS protection activated (over-voltage, over-current) ◦ Loose connections	◦ Move battery to warmer environment (above 0℃/32℉) ◦ Check charger connection and functionality ◦ Check app for BMS fault codes; disconnect and reconnect battery ◦ Tighten all terminal connections
No power output	◦ Battery discharged ◦ BMS protection activated (low voltage, over-current, short circuit) ◦ Loose connections	◦ Recharge the battery ◦ Check app for BMS fault codes; disconnect load and reconnect ◦ Tighten all terminal connections
Bluetooth app not connecting	◦ Bluetooth disabled on phone ◦ Battery too far from phone ◦ App issue	◦ Enable Bluetooth on your device ◦ Move closer to the battery ◦ Restart the app or reinstall it

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

9. Warranty and Support

ECO-WORTHY provides a warranty for its products, ensuring quality and reliability. For specific warranty terms, duration, and claim procedures, please refer to the warranty card included with your product or visit the official ECO-WORTHY website. Keep your purchase receipt as proof of purchase.
For technical support, troubleshooting assistance, or any inquiries regarding your ECO-WORTHY 12V 150AH LiFePO4 battery, please contact ECO-WORTHY customer service. Contact information can typically be found on the product packaging, the official website, or within the ECO-WORTHY mobile application.
ECO-WORTHY Customer Service: Visit ECO-WORTHY Contact Page