ECI Power ECI125

ECI Power 12V 5Ah LiFePO4 Battery User Manual

Model: ECI125

1. Introduction

Thank you for choosing the ECI Power 12V 5Ah Lithium LiFePO4 Deep Cycle Rechargeable Battery. This manual provides essential information for the safe and efficient use of your battery. Please read it thoroughly before installation and operation. This battery is designed for various applications requiring reliable, long-lasting power.

2. Safety Information

Always prioritize safety when handling batteries. Improper use can lead to damage, injury, or fire.

General Safety Guidelines:

- Do not short-circuit the battery terminals.
- Do not immerse the battery in water or expose it to excessive moisture.
- Do not expose the battery to fire or extreme heat.
- Use only compatible LiFePO4 chargers.
- Keep out of reach of children.
- Ensure proper ventilation during charging and discharge.

Built-in Battery Management System (BMS):

The ECI Power LiFePO4 battery features a unique built-in BMS that provides comprehensive protection:

- **Overcharge Protection:** Prevents charging beyond safe voltage levels.
- **Deep Discharge Protection:** Prevents discharge below safe voltage levels, preserving battery life.
- **Overloading Protection:** Safeguards against excessive current draw.
- **Overheating Protection:** Monitors internal temperature and prevents operation at unsafe temperatures.

- **Short Circuit Protection:** Automatically disconnects the battery in case of a short circuit.
- **Low-Temperature Cut-Off:** Prevents charging when the battery temperature is below 23 °F (-5 °C) to avoid damage.

The battery utilizes UL1642 listed LiFePO4 Grade-A cells for enhanced safety and reliability.

3. Product Features

The ECI Power 12V 5Ah LiFePO4 battery offers several advantages:

- **High Energy Density:** Provides significant power in a compact form factor.
- **Eco-Friendly:** Lithium Iron Phosphate chemistry is a safer and more environmentally conscious option.
- **Ultra Powerful:** Delivers consistent and strong power output.
- **Extreme Longevity:** Offers 2000-5000 life cycles, translating to a potential 10-year lifetime with proper maintenance.
- **Lightweight:** Weighs only 1.5 lbs, making it easy to handle and transport.
- **100% Usable Capacity:** Allows for full discharge without damaging the battery.
- **Low Self-Discharge:** Maintains charge for up to 1 year in storage without maintenance.
- **Stable Voltage:** Provides a consistent voltage output throughout the discharge cycle.
- **Climate Tolerant:** Designed to perform across a range of temperatures.



Internal components of the ECI Power LiFePO4 battery, highlighting its robust design for long-term performance.



The integrated Battery Management System (BMS) board, providing comprehensive protection for the battery.



Visual summary of key features including energy density, cycle life, and built-in safety.



Performance comparison illustrating the superior usable capacity and stable voltage of LiFePO4 batteries compared to traditional SLA batteries.

4. Specifications

Specification	Value
Model Number	ECI125
Voltage	12 Volts
Amperage	5 Amps (5Ah)
Battery Capacity	5 Milliamp Hours
Item Weight	1.5 Pounds
Product Dimensions	0.79 x 2.36 x 3.54 inches
Battery Cell Composition	Lithium Ion (LiFePO4)
Number Of Cells	4



Front view of the ECI Power 5Ah LiFePO4 battery, showing its model number and key electrical ratings.

5. Setup

Initial Inspection:

Upon receiving your battery, inspect it for any visible damage. If damage is found, do not attempt to use or charge the battery and contact customer support immediately.

Connecting Batteries:

The ECI Power LiFePO4 battery supports expansion up to 4 batteries. You can connect them in either series or parallel configurations:

- **Series Connection:** Up to 4 batteries can be connected in series to achieve 48V 5Ah. Connect the positive terminal of one battery to the negative terminal of the next.
- **Parallel Connection:** Up to 4 batteries can be connected in parallel to achieve 12V 20Ah. Connect positive terminals to positive terminals and negative terminals to negative terminals.

Important: Series-Parallel connections (a combination of both) are not recommended for this battery model.



Diagram showing multiple ECI Power LiFePO4 batteries connected in a configuration to expand power capacity.

6. Operating

Once properly installed and charged, your ECI Power LiFePO4 battery is ready for use. Ensure your application's voltage and current requirements are within the battery's specifications.

Recommended Operating Conditions:

- **Discharge Temperature:** -4°F to 140°F (-20°C to 60°C)
- **Charge Temperature:** 32°F to 113°F (0°C to 45°C)
- Avoid operating the battery in direct sunlight or extremely hot environments.

7. Maintenance

Charging:

Use a dedicated LiFePO4 battery charger that is compatible with 12V lithium iron phosphate batteries. Do not use chargers designed for lead-acid batteries, as this can damage the LiFePO4 battery.

- The built-in BMS will prevent overcharging.
- Charging is automatically cut off below 23 °F (-5 °C) to protect the battery.

Storage:

For long-term storage, ensure the battery is charged to approximately 50% of its capacity. Store the battery in a cool, dry place away from direct sunlight and extreme temperatures. The low self-discharge rate allows for up to 1 year of maintenance-free storage.

8. Troubleshooting

If you encounter issues with your ECI Power LiFePO4 battery, consider the following common troubleshooting steps:

- **Battery Not Charging:** Verify that the charger is specifically designed for LiFePO4 batteries and is properly connected. Check for any tripped circuit breakers or blown fuses in your charging setup. Ensure the ambient temperature is above 23 °F (-5 °C).
- **Low Power Output:** Check all connections for tightness and corrosion. Ensure the battery is fully charged. If multiple batteries are in use, verify all connections are correct (series or parallel as intended).
- **Battery Shuts Off:** The BMS may have activated a protection feature (e.g., over-discharge, over-current, over-temperature). Allow the battery to rest, check the load, and ensure operating conditions are within specified limits.

If problems persist after following these steps, please contact customer support.

9. Warranty and Support

The ECI Power LiFePO4 battery is designed for a long service life, offering 2000-5000 cycles and a potential 10-year lifetime. For warranty information, technical assistance, or any product-related inquiries, please contact ExpertPower Direct, the manufacturer.

Contact information can typically be found on the product packaging or the seller's website.

10. Product Video

Your browser does not support the video tag.

Official product video showcasing the features and benefits of ECI Power LiFePO4 batteries.