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› ExpertPower 12V 200Ah Lithium LiFePO4 Deep Cycle Rechargeable Battery User Manual

ExpertPower EP12200

ExpertPower 12V 200Ah Lithium LiFePO4 Deep Cycle Rechargeable Battery User Manual

Model: EP12200

INTRODUCTION

This manual provides essential information for the safe and efficient operation, installation, and maintenance of your ExpertPower 12V 200Ah Lithium LiFePO4 Deep Cycle Rechargeable Battery (Model EP12200). This battery is designed for deep cycle applications, offering a long lifespan and reliable performance for various uses including RVs, campers, solar systems, marine applications, overland vehicles, and off-grid setups.

Key features of your ExpertPower LiFePO4 battery include:

- **Advanced Prismatic Cell Technology:** Utilizes Grade A+ prismatic cells for enhanced safety, efficiency, and a longer lifespan compared to cylindrical cells.
- **Integrated Battery Management System (BMS):** A proprietary BMS optimizes cell performance, protects against overcharge, deep discharge, overloading, overheating, low temperatures, and short circuits, ensuring maximum useful life.
- **Bluetooth Connectivity:** Built-in Bluetooth allows convenient monitoring of battery level and BMS status via a dedicated smartphone application.
- **High Cycle Life:** Offers 4000 to 7000 cycles and an expected 10-year lifetime, significantly outperforming traditional lead-acid batteries.
- **Scalable Design:** Supports expansion up to 4 batteries in series for 48V 200Ah configurations, or up to 10 batteries in parallel for 12V 2000Ah systems.



Figure 1: ExpertPower 12V 200Ah LiFePO4 Deep Cycle Battery. This image shows the top and side view of the blue battery unit with positive and negative terminals clearly visible, along with the ExpertPower branding and battery specifications.

SAFETY INFORMATION

Adhering to safety guidelines is paramount when handling and operating lithium iron phosphate batteries. Please read and understand all safety instructions before use.

- **Temperature Ranges:**

- Discharge Temperature: -4°F to 140°F (-20°C to 60°C)
- Charge Temperature: 32°F to 140°F (0°C to 60°C)
- Storage Temperature: 32°F to 86°F (0°C to 30°C)

Note: Operating or charging outside these ranges can severely damage the battery and void the warranty. Moving the battery indoors can help control temperatures, especially in extreme climates.

- **Battery Management System (BMS):** The integrated BMS provides critical protection against overcharge, deep discharge, overloading, overheating, low temperatures, and short circuits. Do not attempt to bypass or modify the BMS.
- **Physical Integrity:** ExpertPower LiFePO4 cells undergo rigorous testing for resistance against puncturing, fire, short circuit, impact, and liquid exposure. However, always handle the battery with care to prevent physical damage.
- **Ventilation:** While LiFePO4 batteries do not produce explosive hydrogen gas like lead-acid batteries, ensure adequate ventilation around the battery, especially during charging and discharging, to prevent heat buildup.
- **Charging Compatibility:** Only use chargers specifically designed for LiFePO4 batteries. Do not use chargers intended for lead-acid batteries, as they have different charging profiles and can damage the LiFePO4 battery.
- **Connection Safety:** Ensure all connections are secure and properly insulated to prevent short circuits. Use appropriate gauge wiring for your application to minimize voltage drop and heat generation.



Figure 2: Illustration of ExpertPower's Safety 1st Design and Prismatic Cells. This image highlights the robust construction and rigorous testing of the battery cells against various forms of damage, including puncture, short circuit, incendiary, impact, and liquid.

SETUP AND INSTALLATION

Proper installation is crucial for the performance and longevity of your ExpertPower LiFePO4 battery. Follow these guidelines for a successful setup.

1. Unpacking and Inspection

Upon receiving your battery, carefully inspect the packaging and the battery itself for any signs of damage. Report any damage to your supplier immediately.

2. Terminal Connections

The battery is equipped with F12M8 terminals. Ensure you use appropriate connectors and tighten them securely. Loose connections can lead to resistance, heat buildup, and reduced performance.

Cycles (50% DOD):



Weight:



Cost Per Cycle:



Life time

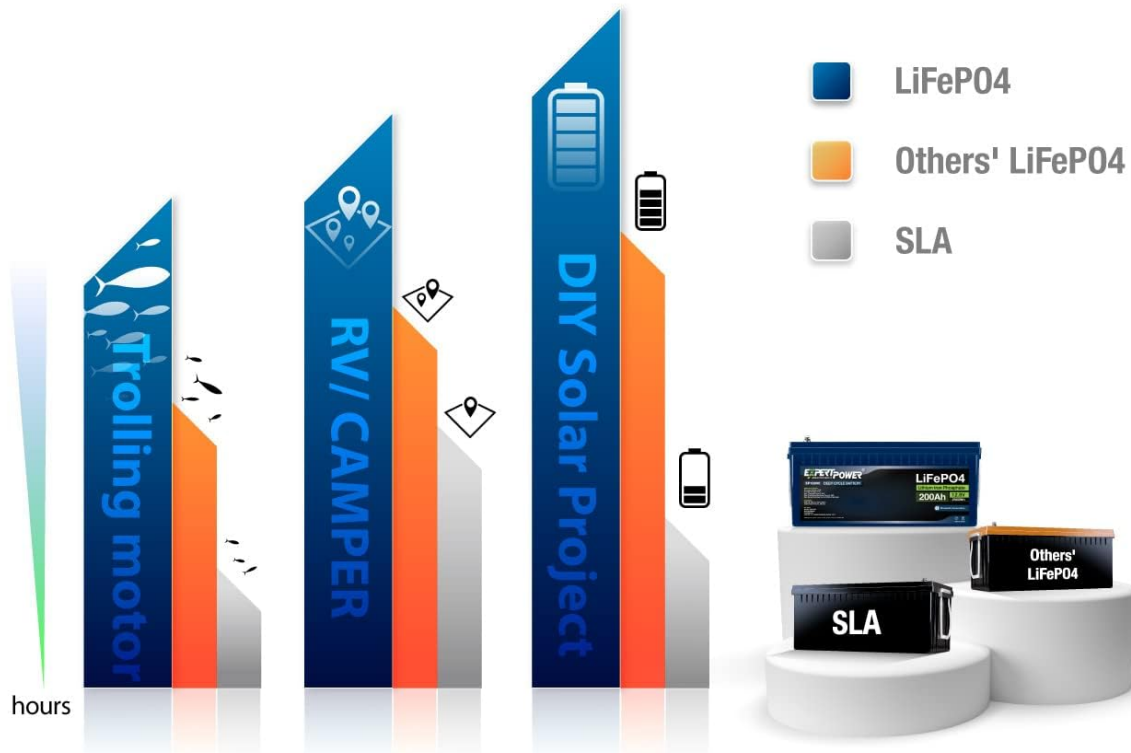


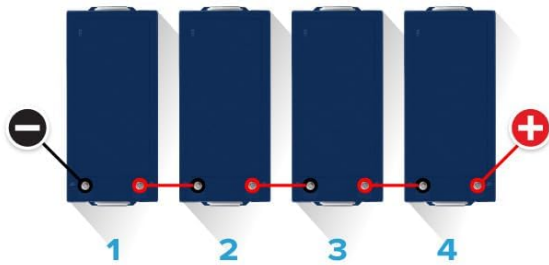
Figure 3: Detailed dimensions and terminal specifications of the ExpertPower 12V 200Ah LiFePO4 battery. This image provides top and front views with measurements in inches, and a close-up of the M8 terminal.

3. Series and Parallel Connections

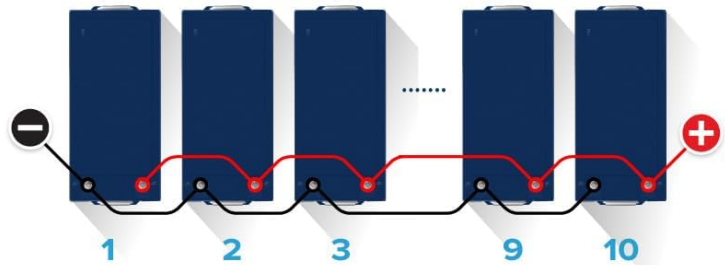
The ExpertPower 12V 200Ah battery supports both series and parallel configurations to meet various power requirements:

- **Series Connection:** Up to 4 batteries can be connected in series to achieve a 48V 200Ah system. Ensure all batteries are of the same model and state of charge before connecting in series.
- **Parallel Connection:** Up to 10 batteries can be connected in parallel to achieve a 12V 2000Ah system. When connecting in parallel, use cables of equal length and gauge for each battery to ensure balanced current distribution.

4 In Series 48V 200Ah

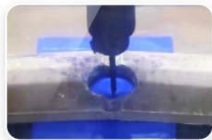


10 In Parallel 12V 2000Ah



Safety 1st Design

All of our cells are rigorously tested and have proven well against a variety of damage* like:



Puncture



Short Circuit



Incendiary



Impact



Liquid

*For complete testing, please visit our website: expertpower.us

Figure 4: Diagram illustrating how to connect ExpertPower LiFePO4 batteries in series (4 batteries for 48V 200Ah) and in parallel (10 batteries for 12V 2000Ah). This visual guide helps in understanding proper wiring for system expansion.

4. Charging System Compatibility

It is critical to use a charging system compatible with LiFePO4 batteries. Standard lead-acid chargers have different charging profiles (e.g., voltage and absorption stages) that are not suitable for LiFePO4 batteries and can cause damage or reduce lifespan.

- **Dedicated LiFePO4 Charger:** Always use a charger specifically designed for LiFePO4 batteries.
- **DC-DC Chargers:** For charging from a vehicle's alternator, a DC-DC charger designed for LiFePO4 batteries is highly recommended. Direct connection to a vehicle's 12V circuit via a trailer connector may not provide adequate charging, especially for multi-day trips or off-grid camping.
- **Solar Charging:** When using solar panels, ensure your solar charge controller is compatible with LiFePO4 batteries and set to the correct charging parameters.

Solar Charging

- Renewable energy source
- Cost-effective
- Resistant to high
- Temperatures



AC Adapter

- Convenience
- Fast charging
- Versatility



***Only use with LiFePO4 compatible chargers and controllers. Do not use with SLA chargers**

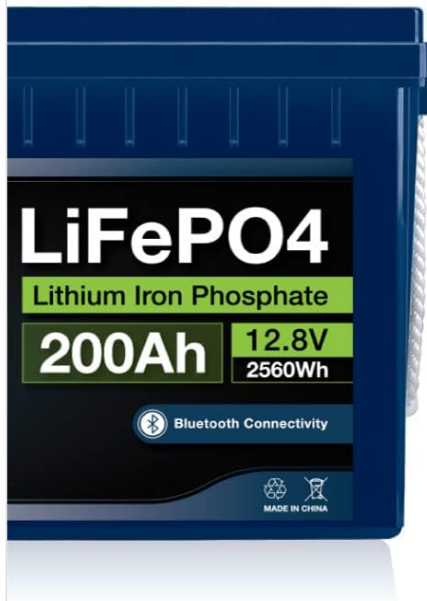


Figure 5: Visual representation of charging options for the ExpertPower LiFePO4 battery, including solar charging with panels and an AC adapter. This image emphasizes the need for LiFePO4 compatible chargers and controllers.

OPERATING INSTRUCTIONS

Your ExpertPower LiFePO4 battery is designed for ease of use and reliable performance. Follow these instructions for optimal operation.

1. Initial Charge

It is recommended to fully charge the battery before its first use to ensure optimal performance and cell balancing.

2. Bluetooth Monitoring

The battery features built-in Bluetooth connectivity, allowing you to monitor its status via a smartphone application. The "XiaoXiang Electric" app is available on both Apple App Store and Google Play Store.

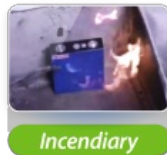
Through the app, you can track:

- Battery State of Charge (SOC)
- Battery Voltage
- Charge Current
- Discharge Current
- Battery Temperature
- Protection Status
- BMS Parameters
- Individual Cell Status

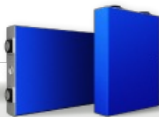
Don't settle for anything less than A+ Grade Prismatic Cells

All of our cells are rigorously tested and have proven well against a variety of damage* like:









PRISMATIC CELLS

- ✓ The strong aluminium housing has a long lifespan.
- ✓ Large volume and fewer components minimise points of failure.
- ✓ Simple design and manufacturing process produces highly reliable cells.



POUCH CELLS

- ✗ Aluminium plastic film shell conducts high temperatures more easily.
- ✗ More prone to swelling and deformation means useful life is reduced over time.
- ✗ The soft shell is fragile and requires more components for protection.



CYLINDRICAL CELLS

- ✗ Cylindrical shape is less space efficient than prismatic cells.
- ✗ Multiple cells add complexity and more points of failure to the system.
- ✗ More difficult to monitor and manage for BMS.

* For complete testing, please visit our website: expertpower.us

Figure 6: Screenshots of the Bluetooth monitoring application interface, demonstrating how users can track various battery parameters such as SOC, voltage, current, and temperature in real-time.

3. Discharge Characteristics

LiFePO₄ batteries exhibit a very flat discharge voltage profile, meaning the voltage remains relatively stable throughout most of the discharge cycle until it is nearly depleted, at which point the voltage drops rapidly. A simple voltmeter may not accurately indicate the remaining capacity; therefore, using the Bluetooth app or a dedicated battery monitor is recommended for precise state-of-charge readings.

MAINTENANCE

The ExpertPower LiFePO₄ battery is designed for minimal maintenance due to its robust construction and integrated BMS. However, following these simple guidelines will help maximize its lifespan.

1. Regular Monitoring

Periodically check the battery's status using the Bluetooth app to ensure all parameters are within normal operating ranges. The BMS actively balances cells and protects against abnormal conditions, but regular checks provide peace of mind.

2. Terminal Inspection

Inspect battery terminals and connections regularly for corrosion or looseness. Clean any corrosion with a wire brush and ensure all connections are tight.

3. Storage

For long-term storage, ensure the battery is charged to approximately 50-80% of its capacity. LiFePO4 batteries have a very low self-discharge rate (approximately 3% per month), allowing them to hold a charge for up to a year when stored at recommended temperatures (32°F to 86°F / 0°C to 30°C). Disconnect the battery from all loads and charging sources during storage.

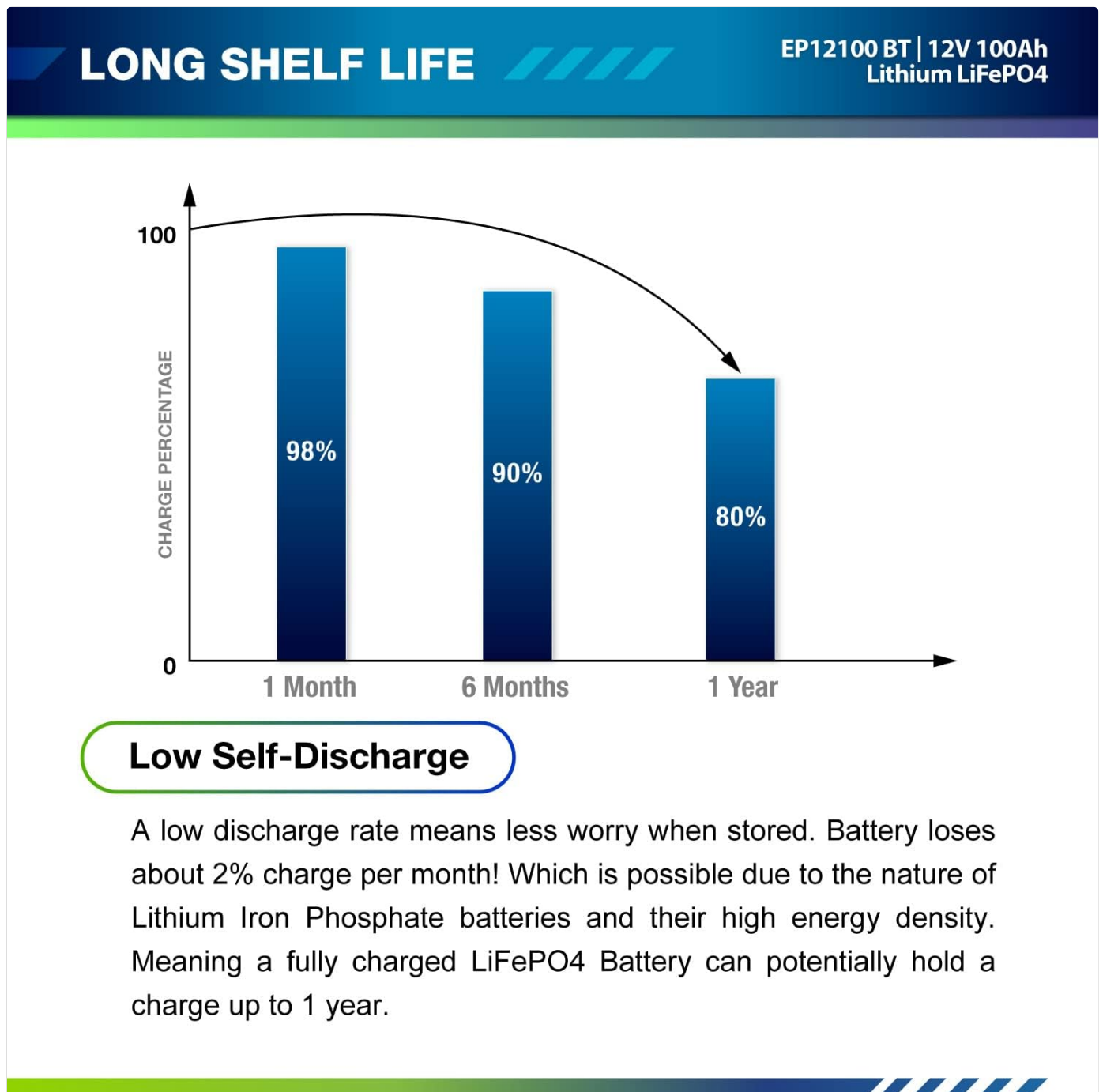


Figure 7: Graph illustrating the low self-discharge rate of ExpertPower LiFePO4 batteries. The chart shows charge retention over time, indicating that a fully charged battery can hold a significant charge for up to one year.

4. Cleaning

Keep the battery casing clean and free of dust and debris. Use a dry cloth for cleaning. Do not use harsh chemicals or

abrasive cleaners.

TROUBLESHOOTING

This section addresses common issues you might encounter with your ExpertPower LiFePO4 battery. For problems not listed here, please contact ExpertPower technical support.

Problem	Possible Cause	Solution
Battery not charging or BMS shuts off charging.	• Incompatible charger (e.g., lead-acid charger). • Cells are unbalanced (BMS protection). • Temperature outside charging range. • Over-voltage or under-voltage protection activated.	• Ensure you are using a LiFePO4 compatible charger. • Allow the battery to rest; the BMS may rebalance cells over time. If persistent, a dedicated LiFePO4 charger with a balancing function may help. • Move the battery to an environment within the recommended charging temperature range (32°F to 140°F). • Check system voltage and ensure it's within the battery's operating limits.
Battery cuts out or system goes into fail mode when powering an inverter.	• Inverter surge current tripping the BMS.	• Some inverters, especially those with high surge capabilities, can cause the BMS to trip upon initial power-up. Consider using a pre-charge resistor in the negative line when first connecting the inverter to mitigate the initial surge. A two-step resistor process may be required for some setups.
Battery voltage drops rapidly under load.	• Battery is near end of discharge cycle. • Overload condition. • Internal cell issue (rare).	• This is normal behavior for LiFePO4 batteries when capacity is low. Recharge the battery. • Reduce the load on the battery. Ensure your application's power draw does not exceed the battery's continuous discharge current rating. • If persistent and not related to load or state of charge, contact technical support.

SPECIFICATIONS

Attribute	Specification
Brand	ExpertPower
Model Number	EP12200
Nominal Voltage	12V
Capacity	200Ah
Energy	2560Wh
Cycle Life	2500-7000 cycles (depending on depth of discharge)
Expected Lifetime	10 Years
Terminal Type	F12M8
Product Dimensions (L x W x H)	20.6 x 9.5 x 8.6 inches (52.3 x 24.1 x 21.8 cm)
Item Weight	48.3 pounds (21.9 kg)
Bluetooth	Yes, built-in for monitoring via app
Built-in BMS	Yes, with overcharge, deep discharge, overloading, overheating, low-temperature, and short-circuit protection.

Warranty and Support

ExpertPower is committed to providing high-quality products and excellent customer service. Your ExpertPower LiFePO4 battery comes with an unwavering warranty and world-class technical support.

Warranty Information

Specific warranty terms and duration are provided at the time of purchase and typically cover manufacturing defects. Please refer to your purchase documentation or the official ExpertPower website for detailed warranty policy information.

Technical Support

For any technical questions, troubleshooting assistance, or warranty claims, please contact ExpertPower's dedicated technical support team. Contact information can typically be found on the ExpertPower official website or your product packaging.

When contacting support, please have your product model number (EP12200) and purchase details readily available to expedite assistance.

ExpertPower has a legacy of 36 years in the industry, known for dependable energy solutions and customer trust.