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› Power Queen 12.8V 50Ah LiFePO4 Battery User Manual

Power Queen 12.8V50Ah

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Model: 12.8V50Ah

1. INTRODUCTION

This manual provides essential information for the safe and efficient use of your Power Queen 12.8V 50Ah LiFePO4 Battery. Please read these instructions carefully before installation, operation, or maintenance to ensure optimal performance and longevity of your battery.



Image 1.1: The Power Queen 12.8V 50Ah LiFePO4 Battery powering outdoor adventures.

2. SAFETY INSTRUCTIONS

WARNING: Failure to follow these safety instructions may result in electric shock, fire, serious injury, or death.

- Always wear appropriate personal protective equipment (PPE), including safety glasses and insulated gloves, when handling batteries.
- Do not short-circuit the battery terminals. This can cause severe damage to the battery and pose a

fire hazard.

- Do not expose the battery to fire, excessive heat, or direct sunlight.
- Do not immerse the battery in water or other liquids.
- Keep the battery away from children and pets.
- Use only chargers specifically designed for LiFePO4 batteries. Using incompatible chargers can damage the battery and create safety risks.
- Ensure proper ventilation when charging or discharging the battery.
- Do not disassemble, puncture, or modify the battery in any way.
- If the battery is damaged, leaking, or shows signs of overheating, discontinue use immediately and contact customer support.
- This battery is not intended for use as a starting battery for internal combustion engines.

3. PRODUCT OVERVIEW

3.1 Key Features

- **Advanced LiFePO4 Technology:** Utilizes Grade A Lithium Iron Phosphate cells for enhanced safety and performance.
- **Integrated 50A BMS:** Built-in Battery Management System protects against overcharge, over-discharge, over-current, overheating, and short circuits.
- **Long Cycle Life:** Offers 4000+ cycles, providing a lifespan of up to 10 years.
- **Lightweight and Portable:** Weighs approximately 11.57 lbs, making it easy to transport and install.
- **High Usable Capacity:** Delivers 100% of its rated capacity, unlike lead-acid batteries.
- **Fast Charging:** Supports 0.5C (25A) charging, allowing a full charge in approximately 2 hours.
- **Expandable System:** Can be connected in series (up to 48V/51.2V) or parallel (up to 200Ah) for increased voltage or capacity.
- **Versatile Applications:** Suitable for RVs, solar energy systems, trolling motors (up to 45lb thrust), fish finders, mobility scooters, and off-grid setups.
- **UL2271 Certified:** Meets safety standards for micromobility devices.



Image 3.1: Front view of the Power Queen 12.8V 50Ah LiFePO4 Battery.

3.2 What's in the Box

- 1 x Power Queen 12.8V 50Ah LiFePO4 Battery
- 2 x M8*1mm Metric Thread Terminals
- 1 x User Manual (this document)

4. SETUP AND INSTALLATION

4.1 Initial Inspection

Upon receiving your battery, inspect it for any visible damage. If damage is found, contact customer support immediately. Verify that all components listed in Section 3.2 are present.

4.2 Battery Placement

Place the battery in a dry, well-ventilated area, away from direct sunlight, heat sources, and flammable materials. Ensure the battery is secured to prevent movement during operation, especially in mobile applications like RVs or boats. The compact size fits perfectly in Group 24, 27, or 31 battery boxes.

Compact & Lightweight: 12V 50Ah LiFePO4 Battery

Massive Output, Minimal Bulk



Image 4.1: The battery's portable design for easy handling.

4.3 Electrical Connections

Before making any connections, ensure all power sources are disconnected and the battery is turned off (if applicable). Use appropriate gauge cables and connectors for your application to prevent overheating and ensure efficient power transfer.

- **Single Battery Connection:** Connect the positive (+) terminal of the battery to the positive terminal of your load/charger, and the negative (-) terminal of the battery to the negative terminal of your load/charger.
- **Parallel Connection (for increased capacity):** Up to 4 batteries can be connected in parallel. Connect all positive terminals together and all negative terminals together. Ensure all batteries are at a similar state of charge before connecting in parallel.
- **Series Connection (for increased voltage):** Up to 4 batteries can be connected in series to achieve a maximum of 48V (51.2V). Connect the positive terminal of one battery to the negative terminal of the next. Ensure all batteries are at a similar state of charge before connecting in series.

IMPORTANT: When connecting batteries in series or parallel, use identical battery models and ensure all connections are secure and properly insulated.



Image 4.2: Flexible battery system setup for various applications.

5. OPERATING INSTRUCTIONS

5.1 Charging the Battery

Use a LiFePO4 compatible charger with a recommended charging current of 0.5C (25A) for optimal charging speed. The built-in BMS will manage the charging process, protecting against overcharge.

- Connect the charger to the battery terminals, ensuring correct polarity.
- Plug the charger into a power source.
- Monitor the charging indicator on your charger. A full charge typically takes about 2 hours with a 25A charger.
- Disconnect the charger once the battery is fully charged.

5.2 Discharging the Battery

The Power Queen LiFePO4 battery can be discharged to 100% of its capacity. The BMS will protect the battery from over-discharge.

- Connect your load to the battery terminals, observing correct polarity.
- Ensure your load's current draw does not exceed the battery's maximum continuous discharge current (50A).
- The battery is suitable for various applications, including powering trolling motors up to 45lb thrust, fish finders, and other DC appliances.

Recommended Trolling Motors Thrust Not Exceeding 45 lb

Thrust	Max. working current need	Battery Capacity Need	Running time in high-speed	Running time in mid-speed	Running time in low-speed
36lb	30A	50Ah	1.6hrs	3.3hrs	13.3hrs
45lb	42A	50Ah	1.2hrs	2.4hrs	9.5hrs

6. MAINTENANCE

Power Queen LiFePO₄ batteries are designed to be maintenance-free. However, following these guidelines will help ensure maximum lifespan:

- **Regular Inspection:** Periodically check the battery terminals for corrosion or loose connections. Clean terminals with a wire brush if necessary and ensure they are tightened securely.
- **Storage:** If storing the battery for an extended period, ensure it is charged to approximately 50-70% of its capacity. Store in a cool, dry place, away from direct sunlight and extreme temperatures. The low self-discharge rate of LiFePO₄ batteries allows for long-term storage without significant capacity loss.
- **Temperature:** Operate and store the battery within its specified temperature range (see Specifications). Extreme temperatures can affect performance and lifespan.
- **Cleaning:** Keep the battery casing clean and free of dust and debris. Use a dry cloth for cleaning. Do not use solvents or abrasive cleaners.

7. TROUBLESHOOTING

If you encounter issues with your Power Queen LiFePO₄ battery, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Battery not charging	<ul style="list-style-type: none"> • Charger not connected properly • Charger is not LiFePO₄ compatible • Charger is faulty • Battery BMS in protection mode 	<ul style="list-style-type: none"> • Check all connections and polarity • Ensure charger is designed for LiFePO₄ batteries • Test charger with another battery or use a different charger • Disconnect load/charger for a few minutes to reset BMS, then try charging again
Battery not discharging/providing power	<ul style="list-style-type: none"> • Loose connections • Load exceeds battery's maximum discharge current • Battery BMS in protection mode (e.g., over-discharge) • Battery is fully discharged 	<ul style="list-style-type: none"> • Check all cable connections • Reduce the load or use a higher capacity battery • Disconnect load for a few minutes to reset BMS • Charge the battery
Reduced run time	<ul style="list-style-type: none"> • Battery not fully charged • High power draw from load • Operating in extreme temperatures 	<ul style="list-style-type: none"> • Ensure battery is fully charged before use • Reduce power consumption or consider a higher capacity battery • Operate within recommended temperature ranges

Problem	Possible Cause	Solution
Battery is hot	<ul style="list-style-type: none"> Overcharging or over-discharging Short circuit Operating in high ambient temperatures 	<ul style="list-style-type: none"> Immediately disconnect from charger/load. Allow to cool. Check for short circuits in wiring. Ensure adequate ventilation and operate within temperature limits.

If the problem persists after attempting these solutions, please contact Power Queen customer support for further assistance.

8. SPECIFICATIONS

Feature	Specification
Model	12.8V50Ah
Nominal Voltage	12.8V
Nominal Capacity	50Ah
Energy	640Wh
Max Continuous Charge Current	25A (0.5C)
Max Continuous Discharge Current	50A
Peak Discharge Current	100A (5 seconds)
Recommended Charge Voltage	14.4V - 14.6V
Operating Temperature (Discharge)	-4°F to 140°F (-20°C to 60°C)
Operating Temperature (Charge)	32°F to 113°F (0°C to 45°C)
Storage Temperature	14°F to 95°F (-10°C to 35°C)
Dimensions (LWH)	7.7 x 6.5 x 6.6 inches (19.5 x 16.5 x 16.7 cm)
Weight	11.57 lbs (5.25 kg)
Terminal Type	M8
Cycle Life	4000+ cycles (at 100% DoD)
Certifications	UL2271

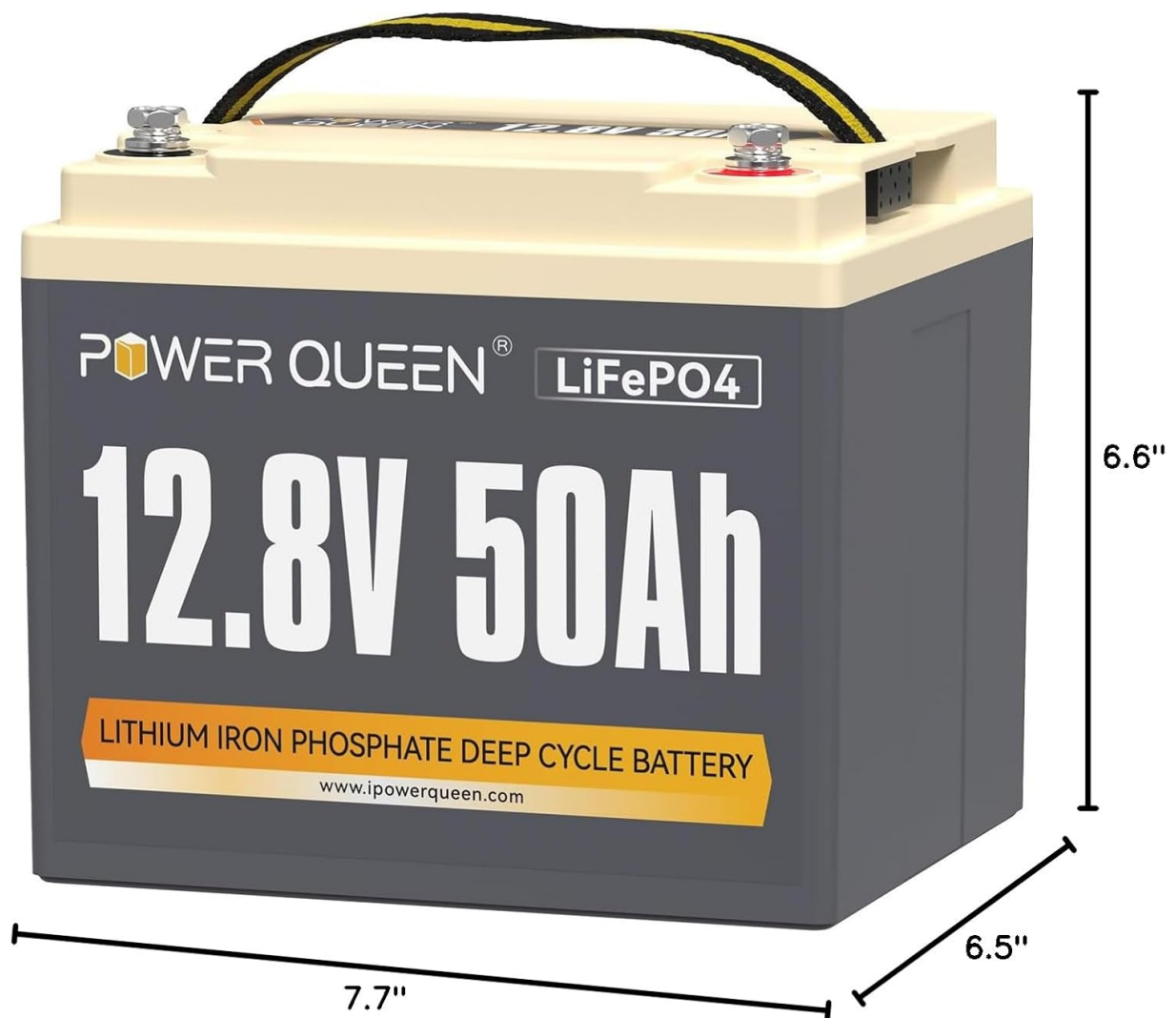


Image 8.1: Physical dimensions of the battery.

9. WARRANTY AND SUPPORT

9.1 Warranty Information

Power Queen LiFePO4 batteries typically come with a manufacturer's warranty. Please refer to the warranty card included with your product or visit the official Power Queen website for detailed warranty terms and conditions. Keep your proof of purchase for warranty claims.

9.2 Customer Support

For technical assistance, troubleshooting, or warranty inquiries, please contact Power Queen customer support through the following channels:

- **Website:** Visit the official Power Queen website for FAQs and contact forms.
- **Email:** Refer to your product packaging or the official website for customer service email addresses.
- **Amazon Seller Page:** You can also reach out to the seller, Power Queen-US, directly through your Amazon order history.

When contacting support, please have your product model (12.8V50Ah) and purchase details ready.

