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> Power Queen 12V 280Ah LiFePO4 Lithium Battery User Manual

Power Queen 12V280Ah LTP

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Model: 12V280Ah LTP

1. INTRODUCTION

Thank you for choosing the Power Queen 12V 280Ah LiFePO4 Lithium Battery. This manual provides essential information for the safe and efficient use of your battery. Please read it thoroughly before installation and operation.

The Power Queen 12V 280Ah LiFePO4 battery is engineered for extreme performance and extended lifespan, offering an exceptional energy capacity of 3584Wh. It is designed for a wide range of applications including cabins, marine vessels, RV solar systems, and UPS. With a robust 200A Battery Management System (BMS) and advanced low-temperature protection, this battery ensures reliable performance even in challenging environments.



Image 1.1: Power Queen 12V 280Ah LiFePO4 Lithium Battery.

2. SAFETY INFORMATION

Always adhere to the following safety guidelines to prevent injury or damage to the battery and connected equipment:

- Do not disassemble, puncture, or modify the battery.
- Avoid short-circuiting the battery terminals.
- Keep the battery away from fire, heat sources, and direct sunlight.
- Do not immerse the battery in water or other liquids.
- Use only compatible chargers and charging methods as specified in this manual.
- Ensure proper ventilation during charging and discharging.
- Wear appropriate personal protective equipment (PPE) such as gloves and eye protection when handling the battery.
- In case of fire, use a Class D fire extinguisher. Water can exacerbate lithium fires.

3. PRODUCT OVERVIEW

The Power Queen 12V 280Ah LiFePO4 battery features a compact design and robust IP65 protection, making it suitable for various environments. Its advanced 200A BMS provides comprehensive protection against overcharge, over-discharge, over-current, and short-circuiting, including a 30-second auto-recovery from overloads.

BMS 200A avancé pour une protection complète

Dites au revoir à la panne de batterie!



Image 3.1: Advanced 200A BMS for complete protection.

The battery is designed with low-temperature charging protection, allowing it to operate reliably in cold conditions down to -20°C for discharge. It also features anti-corrosion properties against salt fog, enhancing its durability in marine applications.

4. INSTALLATION

Proper installation is crucial for the performance and longevity of your battery. Ensure the installation environment is dry, well-ventilated, and within the recommended temperature range.

4.1 Physical Installation

The battery's compact dimensions (52.2 x 24.0 x 21.8 cm) allow for flexible placement. Secure the battery firmly to prevent movement or vibration during operation, especially in mobile applications like RVs or marine vessels.



Image 4.1: Compact installation in an RV compartment.

4.2 Electrical Connections

The battery is equipped with M8 terminals. Use appropriate cables and connectors that can handle the maximum current draw of your system. Ensure all connections are tight and secure to prevent arcing and overheating.



Image 4.2: Example of secure battery terminal connections.

4.3 Series and Parallel Configurations

The Power Queen 12V 280Ah battery supports versatile configurations. You can connect up to 16 identical batteries to meet your power requirements:

- **Parallel Connection:** For increased capacity (e.g., 12.8V 1120Ah with 4 batteries). Connect positive terminals together and negative terminals together.
- **Series Connection:** For increased voltage (e.g., 51.2V 280Ah with 4 batteries). Connect the positive terminal of one battery to the negative terminal of the next.

Always ensure all batteries in a series or parallel bank are of the same model, capacity, and state of charge before connecting them.

1 Solution de Batterie: grande capacité, gain de place, moins de connexions

Maintenir une tension stable et prolonger le temps de fonctionnement en simplifiant les réglages



Problèmes de gestion de plusieurs batteries?

Pas assez d'espace pour plusieurs batteries?

Image 4.3: Illustration of managing multiple batteries for expanded capacity.

5. OPERATION

This section details the operational aspects of your Power Queen LiFePO4 battery, including charging and typical applications.

5.1 Charging

The battery supports efficient and rapid charging. A recommended charging current of 56A (0.2C) will fully charge the battery to 100% capacity in approximately 5 hours. The battery can be charged using various methods:

- Dedicated Battery Charger (0.2C recommended)
- Generator with a DC to DC Charger
- Solar Panel with a compatible Controller

Ensure your charging system is compatible with LiFePO4 batteries and provides the correct voltage and current.



Image 5.1: Example of an RV power system utilizing solar panels for charging.

5.2 Temperature Considerations

The battery is designed to operate across a wide temperature range:

- **Charge Temperature:** 0°C to 50°C (32°F to 122°F)
- **Discharge Temperature:** -20°C to 60°C (-4°F to 140°F)
- **Storage Temperature:** -10°C to 50°C (14°F to 122°F)

The integrated low-temperature protection ensures safe charging even in cold environments by preventing charging below 0°C.

5.3 Typical Applications

This battery is highly versatile and suitable for various power needs:

- **RV & Camping:** Powering appliances like coffee makers, refrigerators, and air conditioners.
- **Marine:** Ideal for trolling motors, electric outboards, and fish finders, with IP65 water resistance and salt fog corrosion protection.
- **Solar Systems:** Providing reliable energy storage for off-grid cabins and residential solar installations.
- **Trucks & Commercial Vehicles:** Suitable for 24V auxiliary power units, reducing fuel consumption and emissions.

Extrêmement puissant, compatible avec tous les Onduleurs

Fourniture sûre et fiable de tous les équipements

Énergie
3584Wh

12.8V 280Ah
LTCP LIFEPO4 LOW-TEMP POWER QUEEN Trolling Motor

Appliance	Power (W)	Runtime (H)
Machine à café	1500W	2,2 H
Réfrigérateur	50W	64,5 H
Four électromagnétique	1500W	2,2 H
Climatiseur	1000W	3,2 H

Entièrement compatible avec toutes les marques originales d'onduleurs sur le marché.

Image 5.2: Powering various appliances inside an RV.

Performance stable et durable pour votre vie à bord

IP65
Étanchéité

Anti-scorrosion
par brouillard salin



Moteur à la traîne



Stern Hors-bord
électrique



Détecteur de poissons



Ustensiles de vie

Image 5.3: The battery's suitability for marine and RV environments.

57344Wh Max. 4P4S Capacité étendue

Énergie environnementale sans fin pour votre maison



Image 5.4: The battery providing energy storage for a home solar system.

6. MAINTENANCE & STORAGE

LiFePO4 batteries require minimal maintenance compared to other battery types. However, proper care ensures optimal performance and lifespan.

6.1 General Maintenance

- Regularly inspect battery terminals for corrosion or loose connections. Clean terminals as needed.
- Keep the battery clean and free from dust and debris.
- Ensure the battery is not exposed to extreme physical shock or vibration.

6.2 Storage

For long-term storage, ensure the battery is charged to approximately 50% of its capacity. Store the battery in a cool, dry place within the recommended storage temperature range of -10°C to 50°C (14°F to 122°F). Avoid storing in direct sunlight or areas with high humidity.

7. TROUBLESHOOTING

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

- **Battery Not Charging:** Verify that the charger is correctly connected and compatible with LiFePO4 batteries. Check the charging temperature; the BMS will prevent charging below 0°C.
- **No Power Output:** Check all cable connections for tightness and proper polarity. The BMS may have activated a protection mode (e.g., over-discharge, short-circuit). Disconnect the load, wait 30 seconds for auto-recovery, and then reconnect.
- **Reduced Performance:** Ensure the battery is fully charged. Check for any excessive loads that might be drawing too much current. Verify that the operating temperature is within the specified range.
- **Unusual Odor or Swelling:** Immediately disconnect the battery from all loads and chargers. Do not attempt to use it. Contact customer support.

If the problem persists after following these steps, please contact Power Queen customer support for assistance.

8. TECHNICAL SPECIFICATIONS

Attribute	Specification
Manufacturer	Power Queen
Model Number	12V280Ah LTP
Battery Composition	Lithium Iron Phosphate (LiFePO4)
Nominal Voltage	12.8 Volts
Capacity	280Ah
Energy	3584Wh
BMS Continuous Discharge Current	200A
Peak Discharge Current	1000A (for 1 second)
Item Weight	26.8 Kilograms
Product Dimensions (L x W x H)	52.2 x 24.0 x 21.8 cm
Number of Cells	4
Terminal Type	M8
Cycle Life (100% DOD)	4000+ cycles
Cycle Life (80% DOD)	6000+ cycles
Cycle Life (60% DOD)	15000+ cycles
Ingress Protection (IP) Rating	IP65

Mise à Niveau vers une 12V 280Ah Batterie

plus petit, plus léger et plus stable



Image 8.1: Physical dimensions of the Power Queen 12V 280Ah battery.

9. WARRANTY & CUSTOMER SUPPORT

Power Queen stands behind the quality of its products.

9.1 Warranty Information

This Power Queen 12V 280Ah LiFePO4 battery comes with a **5-year warranty**. The battery is designed for a long service life of up to 10 years under normal operating conditions.

9.2 Customer Support

For any questions, technical assistance, or warranty claims, please contact Power Queen customer service. We offer 24/7 online customer support to ensure you receive timely help.

Email: service@powerqueen.com

Please have your model number (12V280Ah LTP) and purchase details ready when contacting support.

