Renogy 12V 300Ah Mini Size

Renogy 12V 300Ah Mini Size LiFePO4 Lithium Battery User Manual

1. Introduction

This manual provides essential information for the safe and efficient use of your Renogy 12V 300Ah Mini Size LiFePO4 Lithium Battery. Please read this manual thoroughly before installation and operation. Retain this manual for future reference.

The Renogy 12V 300Ah Mini Size LiFePO4 Lithium Battery is designed for deep cycle applications, offering a reliable and long-lasting power solution for various off-grid systems, including RVs, cabins, marine vessels, and home backup storage.

Image 1.1: The Renogy 12V 300Ah Mini Size LiFePO4 Lithium Battery, showcasing its compact design and M8 terminals.

2. Safety Instructions

Adhering to these safety guidelines is crucial for preventing personal injury and damage to the battery or connected equipment.

- 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.
- Ensure all connections are tight and secure to prevent loose connections, which can lead to overheating.
- Do not disassemble, puncture, or modify the battery. Internal components are not user-serviceable.
- Avoid exposing the battery to extreme temperatures, direct sunlight, or sources of heat.
- The built-in Battery Management System (BMS) includes a low-temperature cut-off feature. Charging will pause if the cell temperature drops below 32°F (0°C) to prevent damage. Discharging will pause below -4°F (-20°C).
- Keep the battery away from children and pets.
- In case of fire, use a Class D fire extinguisher. Water can exacerbate lithium battery fires.
- Properly dispose of the battery according to local regulations at the end of its lifespan.

3. Product Features

The Renogy 12V 300Ah Mini Size LiFePO4 Lithium Battery offers several advanced features for optimal performance and safety:

- **Lightweight & Ultra-Compact Design:** Weighing only 55.1 lbs (25 kg), this battery is significantly lighter than comparable lead-acid batteries, making it easier to handle and install. Its compact dimensions (15.12 × 7.64 × 9.96 inches) optimize space utilization.

Image 3.1: Visual comparison highlighting the 14% lighter weight of the Renogy 12V 300Ah Mini battery compared to other batteries.

- **Advanced Battery Management System (BMS):** A built-in 200A BMS provides comprehensive protection against overcharging, over-discharge, charge over-current, discharge over-current, and short circuits. It also features cell voltage self-balancing.
- **Low-Temperature Cut-Off:** The BMS automatically pauses charging when the cell temperature drops below 32°F (0°C) and pauses use below -4°F (-20°C) to prevent damage in cold environments.

Image 3.2: Diagram illustrating the low-temperature cut-off mechanism, where charging stops when the temperature falls below 32°F (0°C).

- **Grade-A Prismatic Cells:** Manufactured with high-quality Grade-A prismatic cells, ensuring enhanced safety and an extended lifespan of over 5,000 cycles at 80% Depth of Discharge (DOD).
- **High Storage Capacity:** Offers a real storage capacity of 3840Wh, capable of powering a 1 kWh device for nearly 4 hours.

Image 3.3: Graphic demonstrating the 3840Wh storage capacity and potential run times for various appliances.

- **Expandability:** Supports configurations of up to 4 batteries in series and 4 batteries in parallel (Max 4S4P), allowing for the creation of larger battery systems, such as a 48V (51.2V) 1200Ah system.

Image 3.4: Illustration showing various series and parallel configurations for expanding battery capacity and voltage.

4. Setup and Installation

Proper installation is critical for the performance and longevity of your battery. Consult a qualified professional if you are unsure about any steps.

4.1 Unpacking and Inspection

- Carefully remove the battery from its packaging.
- Inspect the battery for any visible damage. If damage is found, contact Renogy customer support immediately.
- Verify that all included accessories (e.g., M8 terminal bolts) are present.

4.2 Mounting Location

- Choose a clean, cool, and dry location that is protected from direct sunlight, heat, and moisture.
- Ensure adequate ventilation around the battery.
- Mount the battery securely to prevent movement or vibration. The compact size allows it to fit in various battery boxes.

Image 4.1: The compact design of the Renogy 12V 300Ah Mini battery allows it to fit into standard 4D and 6D battery boxes.

4.3 Electrical Connections

- Use appropriate gauge cables for your application to minimize voltage drop and ensure safe operation.
- Connect the positive (+) terminal of the battery to the positive (+) terminal of your system, and the negative (-) terminal to the negative (-) terminal.
- Ensure all connections are tight using the provided M8 terminal bolts. Over-tightening can damage the terminals.
- For multiple batteries, connect them in series or parallel as required by your system design. Refer to the diagram below for general guidance.

Image 4.2: Comparison showing the simplicity of connecting a single 300Ah battery versus multiple 100Ah batteries, highlighting fewer cables needed.

1. **Parallel Connection:** Connect positive to positive and negative to negative to increase capacity while maintaining the same voltage.
2. **Series Connection:** Connect the positive of one battery to the negative of the next to increase voltage while maintaining the same capacity.

Always ensure proper polarity to avoid damage to the battery or connected devices. Install appropriate fusing for circuit protection.

5. Operating Instructions

To maximize the performance and lifespan of your Renogy LiFePO4 battery, follow these operating guidelines:

5.1 Charging

- Use a LiFePO4 compatible charger with appropriate voltage and current settings.
- Ensure the charging voltage is within the recommended range (typically 14.2V - 14.6V).
- The BMS will protect against overcharging. However, using a compatible charger is essential for optimal battery health.
- Avoid charging the battery below 32°F (0°C). The BMS will automatically cut off charging in these conditions.

5.2 Discharging

- The battery can be discharged up to 100% Depth of Discharge (DOD), but for extended lifespan, it is recommended to operate at no more than 80% DOD.
- The BMS will protect against over-discharge.
- Avoid discharging the battery below -4°F (-20°C). The BMS will automatically cut off discharging in these conditions.

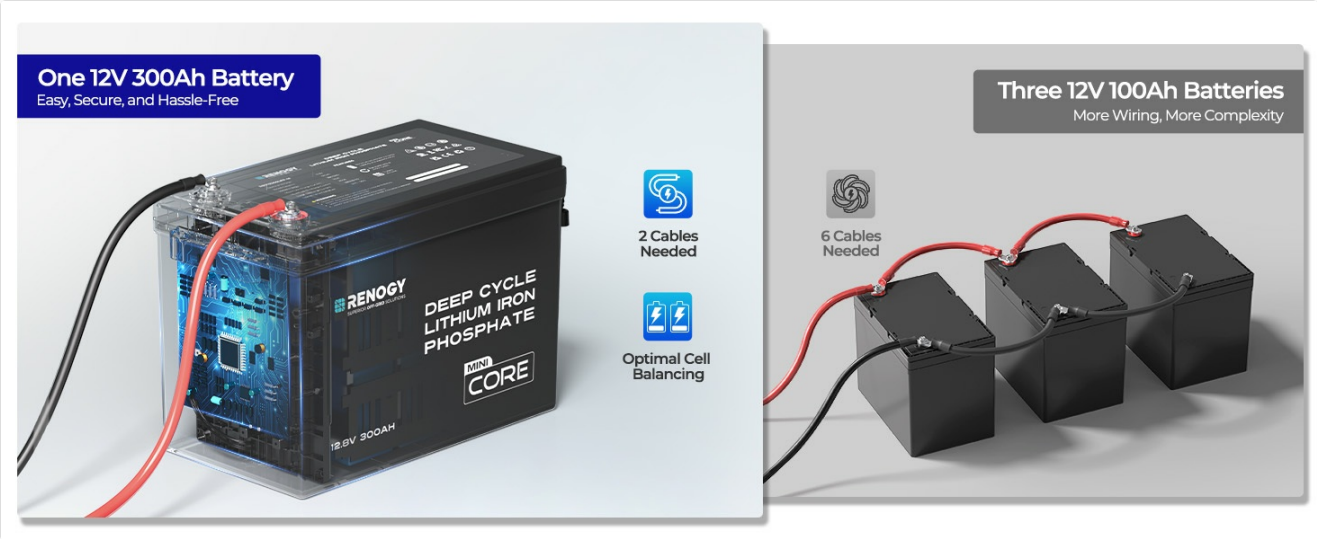


Image 5.1: The battery's low-temperature cut-off feature ensures safe operation even in cold environments, preventing damage.

6. Maintenance

LiFePO4 batteries require minimal maintenance, but following these steps can help ensure optimal performance and longevity:

- **Regular Inspection:** Periodically check the battery and its connections for any signs of damage, corrosion, or loose terminals.
- **Cleaning:** Keep the battery terminals clean and free of dirt or debris. Use a dry cloth to wipe down the battery case. Do not use solvents or harsh chemicals.
- **Storage:** If storing the battery for an extended period, ensure it is charged to approximately 50% State of Charge (SOC) and stored in a cool, dry place. Disconnect it from all loads.
- **Avoid Deep Discharges:** While the battery can handle deep discharges, consistently operating within 20-80% SOC can further extend its cycle life.

7. Troubleshooting

If you encounter issues with your Renogy LiFePO4 battery, refer to the following common troubleshooting steps:

- **Battery Not Charging:**
  - Check all cable connections for tightness and proper polarity.
  - Verify that the charger is compatible with LiFePO4 batteries and is functioning correctly.
  - Ensure the ambient temperature is above 32°F (0°C) to allow charging.
  - Check the charger's output voltage and current.
- **Battery Not Discharging/No Power Output:**
  - Check all cable connections for tightness and proper polarity.
  - Verify that the load is connected correctly and is not drawing excessive current.
  - Ensure the ambient temperature is above -4°F (-20°C) to allow discharging.
  - The BMS may have activated a protection mode (e.g., over-discharge, over-current). Disconnect the load and attempt to charge the battery to reset the BMS.

- **Unusual Odor or Swelling:**
    - Immediately disconnect the battery from all loads and charging sources.
    - Move the battery to a safe, well-ventilated area away from flammable materials.
    - Contact Renogy customer support immediately. Do not attempt to use or repair the battery.

For issues not resolved by these steps, please contact Renogy customer support.

8. Specifications

Specification	Value
Brand	Renogy
Model	12V 300Ah Mini Size
Nominal Voltage	12V
Capacity	300Ah
Energy Storage	3840Wh
Battery Type	LiFePO4 (Lithium Iron Phosphate)
BMS Continuous Discharge Current	200A
Low-Temperature Charge Cut-Off	32°F (0°C)
Low-Temperature Discharge Cut-Off	-4°F (-20°C)
Dimensions (L x W x H)	15.12 × 7.64 × 9.96 inches
Item Weight	55.1 lbs (25 kg)
Terminal Type	M8
Cycle Life	5,000+ cycles at 80% DOD
Max Series/Parallel Configuration	4S4P
Certifications	MSDS, UN38.3, FCC, CE, PSE, RCM, UKCA, ABYC standards

9. Warranty and Support

Renogy stands behind the quality of its products.

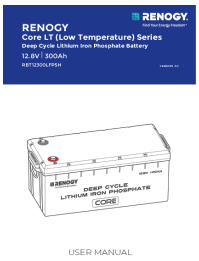
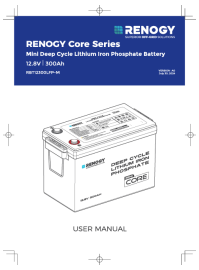
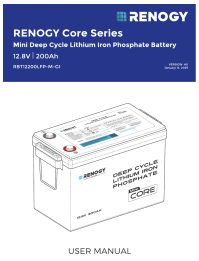
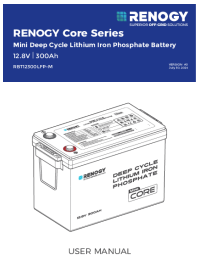
9.1 Warranty Information

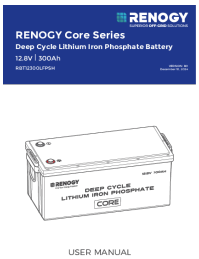
This Renogy 12V 300Ah Mini Size LiFePO4 Lithium Battery includes a**5-year service plan**. Please retain your proof of purchase for warranty claims. The warranty covers defects in materials and workmanship under normal use and service conditions.

9.2 Customer Support

For technical assistance, warranty claims, or any questions regarding your Renogy product, please contact Renogy Customer Support. You can find contact information on the official Renogy website or through your purchase platform.
Please have your model number (12V 300Ah Mini Size) and UPC (840315230200) available when contacting support.

Related Documents - 12V 300Ah Mini Size

	Renogy Core LT 12.8V 300Ah Deep Cycle Lithium Iron Phosphate Battery User Manual Comprehensive user manual for the Renogy Core LT (Low Temperature) Series 12.8V 300Ah Deep Cycle Lithium Iron Phosphate Battery, covering installation, operation, maintenance, safety, and specifications. Learn about key features, connection methods, charging logic, and troubleshooting.
	Renogy 12V 300Ah Core Mini Lithium Battery - User Manual & Specifications Comprehensive guide to the Renogy 12V 300Ah Core Mini Lithium Iron Phosphate (LiFePO4) Battery (Model RBT12300LFP-M-G1). Features, specifications, installation, safety, and warranty information for RV, caravan, and off-grid applications.
	Renogy Core Series 12.8V 200Ah LiFePO4 Battery User Manual User manual for the Renogy Core Series 12.8V 200Ah Mini Deep Cycle Lithium Iron Phosphate (LiFePO4) Battery. Details installation, operation, safety, maintenance, troubleshooting, and specifications for off-grid and RV applications.
	Renogy Core Series 12.8V 300Ah Lithium Iron Phosphate Battery User Manual Comprehensive user manual for the Renogy Core Series 12.8V 300Ah Mini Deep Cycle Lithium Iron Phosphate Battery, covering installation, operation, maintenance, safety, and specifications.

	[Renogy Core Series 12.8V 300Ah Deep Cycle Lithium Iron Phosphate Battery User Manual] Comprehensive user manual for the Renogy Core Series 12.8V 300Ah Deep Cycle Lithium Iron Phosphate Battery (RBT12300LFPSH). Includes installation, operation, maintenance, safety, and troubleshooting guides.
	[Renogy 12V 100Ah Smart Lithium Iron Phosphate Battery Manual] This manual provides comprehensive instructions for the Renogy 12V 100Ah Smart Lithium Iron Phosphate Battery (LiFePO4), covering installation, operation, safety, maintenance, troubleshooting, and technical specifications. It details features like auto-balance and the integrated Battery Management System (BMS).