Renogy RBT12100LFP-H

Renogy 12V 100Ah Lithium LiFePO4 Battery with Self-Heating (Model RBT12100LFP-H) Instruction Manual

Brand: Renogy | **Model:** RBT12100LFP-H

1. Introduction

This manual provides comprehensive instructions for the safe installation, operation, maintenance, and troubleshooting of the Renogy 12V 100Ah Lithium LiFePO4 Battery, featuring DuoHeat Technology and a built-in 100A Battery Management System (BMS). Please read this manual thoroughly before using the product to ensure proper function and safety.

2. Safety Information

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 eye protection 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 proper ventilation when installing and operating the battery to prevent heat buildup.
- Do not expose the battery to open flames, excessive heat, or direct sunlight.
- Keep the battery away from water and other liquids unless specifically rated for such environments. This battery has an IP65 rating, offering protection against dust and low-pressure water jets.
- Do not disassemble, puncture, or modify the battery. Internal components are dangerous.
- Use only compatible chargers and charging methods specified by Renogy.
- Store the battery in a cool, dry place, away from flammable materials.
- In case of fire, use a Class D fire extinguisher. Water can exacerbate lithium battery fires.

3. Product Overview

The Renogy 12V 100Ah Lithium LiFePO4 Battery is designed for deep cycle applications, offering reliable power for RVs, cabins, ice fishing, and off-grid systems. It features advanced self-heating technology for cold weather performance and a robust Battery Management System (BMS) for enhanced safety and longevity.

Key Features:

- **Faster Heating:** Dual internal heating pads (110W) warm the battery 40% faster than standard models, ensuring reliable performance in freezing conditions.
- **Compact Design:** 45% smaller than comparable models, featuring a Group 22NF size for flexible, space-saving installation.
- **Wide Temperature Range:** Operates reliably from -22°F to 131°F (-30°C to 55°C) with a weatherproof IP65-rated casing.
- **Reliable & Safe:** Equipped with over 25 safety features and a 100A BMS for secure and efficient operation.
- **Long-lasting Performance:** Uses Grade-A cells to deliver over 5000 cycles at 80% Depth of Discharge (DOD).

Components Included:

- 1x Renogy 12V 100Ah Lithium LiFePO4 Battery
- 2x M8 x 1.25 x 12 mm Terminal Bolts
- 2x Insulating Sleeves

Figure 3.1: Renogy 12V 100Ah Lithium LiFePO4 Battery. This image shows the overall appearance of the battery unit with its terminals and branding.

Figure 3.2: Comparison highlighting the battery's compact size, faster heating capability, and enhanced features. The image displays the battery in a snowy environment with text indicating "45% Smaller", "40% Faster Heating", and "5+ Stronger Features".

4. Setup and Installation

Proper installation is crucial for the safe and efficient operation of your Renogy LiFePO4 battery. Follow these guidelines carefully.

4.1 Pre-Installation Checklist:

- Verify that all components listed in Section 3.2 are present.
- Ensure the installation area is clean, dry, and well-ventilated.
- Confirm that your charging system (solar charge controller, inverter charger, etc.) is compatible with LiFePO4 batteries and has appropriate voltage and current settings.
- Have necessary tools ready: insulated wrenches, multimeter, wire cutters/crimpers, and appropriate gauge cables.

4.2 Connecting the Battery:

1. **Cable Sizing:** Use appropriately sized cables for your application to minimize voltage drop and prevent overheating. Refer to electrical codes and guidelines for proper sizing.
2. **Terminal Connections:**
    - Connect the positive (+) terminal of the battery to the positive (+) terminal of your load/charger.
    - Connect the negative (-) terminal of the battery to the negative (-) terminal of your load/charger.
    - Ensure connections are tight using the provided M8 terminal bolts and insulating sleeves. Loose connections can cause resistance and heat buildup.
3. **Parallel Connections:** If connecting multiple batteries in parallel for increased capacity, ensure all batteries are at a similar state of charge before connecting. Use identical battery models and cable lengths for optimal performance.
4. **Mounting:** Secure the battery in a stable position to prevent movement or damage during operation. The compact size (Group 22NF) allows for flexible installation in tight spaces.

Figure 4.1: The battery's compact dimensions (L 9.02 in / 229mm, W 5.43 in / 138mm, H 8.39 in / 213mm) and weight (21.38 lbs / 9.7 kg), illustrating its space-saving design compared to a larger standard battery.

5. Operating Instructions

The Renogy LiFePO4 battery is designed for ease of use, but understanding its operational characteristics, especially the self-heating function, is important.

5.1 Charging:

- **Recommended Charge Voltage:** Typically 14.2V - 14.6V for LiFePO4 batteries. Refer to your charger's manual for specific settings.
- **Charge Current:** Do not exceed the maximum recommended charge current (100A for this model).
- **Self-Heating Function (DuoHeat Tech):**
  - The internal heating pads activate automatically when the battery temperature drops below 41°F (5°C) and a charging current of more than 10A is applied.
  - Heating stops when the internal temperature reaches 50°F (10°C), allowing the battery to then accept a full charge.
  - This feature ensures safe charging even in sub-zero conditions down to -22°F (-30°C).

Figure 5.1: Illustration of the self-heating function. The battery begins heating below 41°F (5°C) and stops at 50°F (10°C). A comparison chart shows Renogy DuoHeat Tech warming from -22°F in 60 minutes, versus other batteries warming from -4°F in 100 minutes.

Figure 5.2: Diagram showing the internal structure of the battery with upper and lower heating pads, illustrating the Duo Heating Pad Technology.

5.2 Discharging:

- **Discharge Current:** Do not exceed the maximum continuous discharge current (100A for this model).
- **Low Temperature Cut-off Protection:** The BMS will automatically cut off discharge if the battery temperature falls below -4°F (-20°C) to protect the cells. Charging is enabled down to -22°F (-30°C) due to the self-heating function.
- **Depth of Discharge (DOD):** LiFePO4 batteries can be safely discharged to 80% DOD or more, offering more usable capacity than lead-acid batteries.

Figure 5.3: The battery in a cold, snowy outdoor setting, indicating that charging is active from -22°F to 131°F, and discharge is off from -4°F to 140°F, demonstrating its low-temperature protection.

6. Maintenance

Minimal maintenance is required for LiFePO4 batteries, but periodic checks ensure optimal performance and longevity.

- **Regular Inspection:** Periodically check the battery for any physical damage, loose connections, or corrosion on the 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. Avoid extreme temperatures.
- **BMS Monitoring:** The built-in BMS continuously monitors the battery's health. If any issues arise, the BMS will activate protections.

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 battery temperature is within the acceptable charging range. If below 41°F (5°C), ensure a charging current of >10A is applied to activate the self-heating function.
  - The BMS may have activated a protection mode (e.g., over-voltage, under-voltage). Disconnect the load/charger, wait a few minutes, and try again.
- **Battery Not Discharging/No Power Output:**
  - Check all cable connections and ensure the load is properly connected.
  - Verify the battery's State of Charge (SOC). If it's too low, the BMS may have initiated low-voltage cut-off protection.
  - Ensure the battery temperature is above -4°F (-20°C) for discharge.
  - The BMS may have activated over-current or short-circuit protection. Disconnect the load, wait, and reconnect.
- **Unusual Odor or Swelling:** Immediately disconnect the battery from all loads and chargers. Contact Renogy customer support. Do not attempt to use or repair the battery.

Figure 7.1: An X-ray style view of the battery highlighting the internal Battery Management System (BMS) and indicating "25+ Safety Features for Unmatched Battery Security".

8. Specifications

Detailed technical specifications for the Renogy 12V 100Ah Lithium LiFePO4 Battery.

Attribute	Value
Model Number	RBT12100LFP-H
Nominal Voltage	12V
Nominal Capacity	100Ah
Battery Chemistry	Lithium Iron Phosphate (LiFePO4)

Attribute	Value
Built-in BMS	100A
Cycle Life	5000+ cycles at 80% DOD
Operating Temperature (Charge)	-22°F to 131°F (-30°C to 55°C) (with self-heating)
Operating Temperature (Discharge)	-4°F to 140°F (-20°C to 60°C)
Self-Heating Activation	Below 41°F (5°C) with >10A charging current
Self-Heating Stop	Above 50°F (10°C)
Terminal Type	M8
Dimensions (L x W x H)	9.02 x 5.43 x 8.39 inches (229 x 138 x 213 mm)
Weight	21.38 lbs (9.7 kg)
IP Rating	IP65
UPC	840315236783

Figure 8.1: A comparison table highlighting the Renogy LiFePO4 battery's superior specifications, including operating temperature, maximum power, BMS protection, cycle life, and lifespan, against a standard battery.

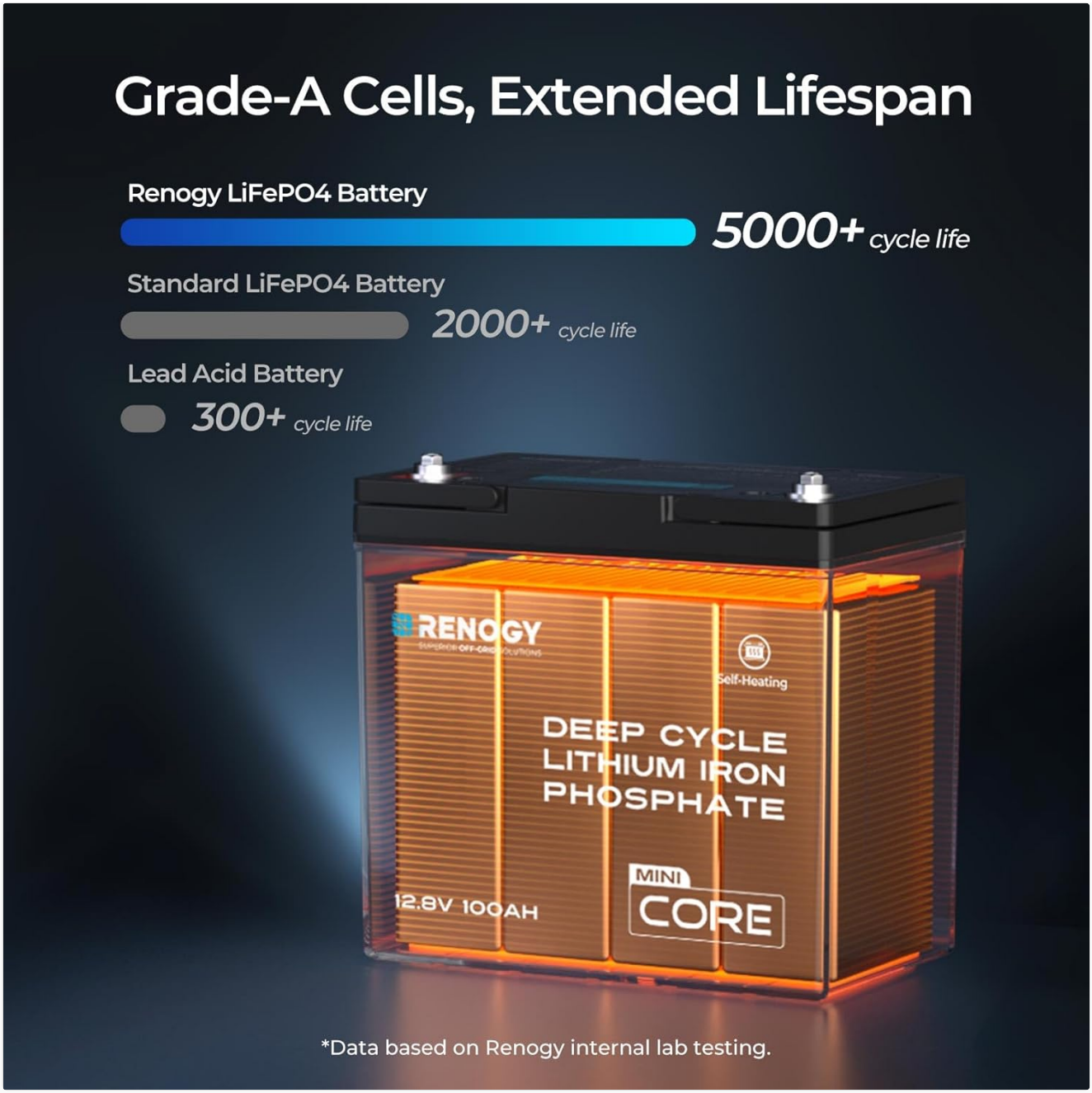


Figure 8.2: Visual representation of the extended lifespan provided by Grade-A cells in Renogy LiFePO4 batteries (5000+ cycles) compared to standard LiFePO4 (2000+ cycles) and Lead Acid batteries (300+ cycles).

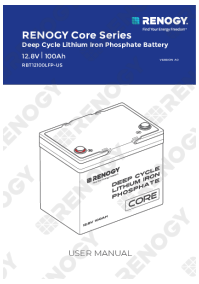
Figure 8.3: Image displaying various certifications for the Renogy battery, including CE, PSE, FC, and UKCA, indicating compliance with international safety and quality standards.

9. Warranty and Support

Renogy stands behind the quality of its products.

- **Warranty:** The Renogy 12V 100Ah Lithium LiFePO4 Battery comes with a 5-year warranty, ensuring long-lasting performance and peace of mind. Please refer to the official Renogy website for detailed warranty terms and conditions.
- **Customer Support:** For technical assistance, warranty claims, or any questions regarding your product, please contact Renogy customer support. Contact information can be found on the official Renogy website.

Related Documents - RBT12100LFP-H

	Renogy Core Series 12.8V 100Ah Deep Cycle Lithium Iron Phosphate Battery User Manual Comprehensive user manual for the Renogy Core Series 12.8V 100Ah Deep Cycle Lithium Iron Phosphate Battery (Model: RBT12100LFP-US). Covers installation, operation, maintenance, safety guidelines, troubleshooting, and technical specifications for optimal performance and longevity.
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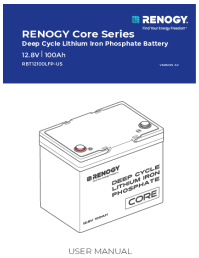
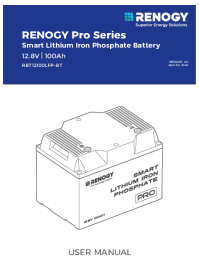
	Renogy Core Series 12.8V 100Ah Deep Cycle Lithium Iron Phosphate Battery User Manual Comprehensive user manual for the Renogy Core Series 12.8V 100Ah Deep Cycle Lithium Iron Phosphate Battery, covering installation, operation, maintenance, safety, and troubleshooting for optimal performance and longevity.

	Renogy Pro Series 12.8V 100Ah Smart Lithium Iron Phosphate Battery User Manual Comprehensive user manual for the Renogy Pro Series 12.8V 100Ah Smart Lithium Iron Phosphate Battery (RBT12100LFP-BT), covering installation, operation, maintenance, safety, troubleshooting, and specifications for RV and off-grid applications.
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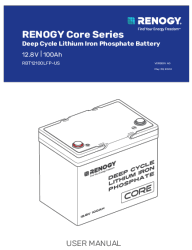	Renogy Core Series 12.8V 100Ah Deep Cycle Lithium Iron Phosphate Battery User Manual Comprehensive user manual for the Renogy Core Series 12.8V 100Ah Deep Cycle Lithium Iron Phosphate Battery, covering installation, operation, maintenance, safety, and troubleshooting.

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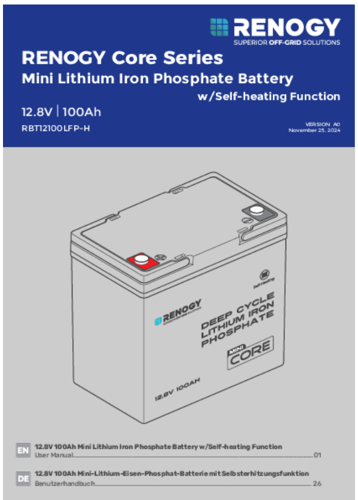

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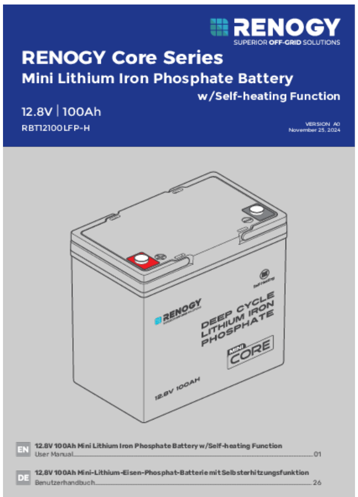

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