

Renogy RBT2425LFP-CA

Renogy 24V 25Ah LiFePO4 Deep Cycle Battery Instruction Manual

Model: RBT2425LFP-CA

1. INTRODUCTION

This manual provides essential information for the safe and efficient use of your Renogy 24V 25Ah LiFePO4 Deep Cycle Battery. This battery is designed for various applications including trolling motors, RVs, camping, wheelchairs, kayak motors, marine vessels, and off-grid systems. Please read this manual thoroughly before installation and operation to ensure optimal performance and longevity of your battery.



Figure 1: Renogy 24V 25Ah LiFePO4 Deep Cycle Battery highlighting its features.

2. SAFETY INFORMATION

WARNING: Failure to follow these safety instructions may result in serious injury, property

damage, or death.

- **Do NOT string these batteries in series.** These batteries are designed ONLY for wiring in parallel using identical batteries. Connecting in series can lead to overvoltage and damage to the battery and connected equipment.
- Ensure battery terminals are screwed in tightly. Loose battery terminals can cause heat build-up, leading to damage to the battery and potential fire hazards.
- Avoid short-circuiting the battery terminals. Use insulated tools and wear appropriate personal protective equipment (PPE) during installation.
- Do not expose the battery to open flames, high temperatures, or direct sunlight for prolonged periods.
- Do not puncture, drop, crush, or disassemble the battery.
- In case of fire, use a Class D fire extinguisher. Water may not be effective and can worsen the situation.
- Keep the battery away from children and pets.



Figure 2: The advanced Built-in Battery Management System (BMS) provides multiple layers of protection.

3. PRODUCT OVERVIEW AND FEATURES

The Renogy 24V 25Ah LiFePO4 Deep Cycle Battery offers a reliable and long-lasting power solution with advanced features:

- **Exceptional Lifespan:** Over 2000 cycles at 80% Depth of Discharge (DOD), significantly outperforming lead-acid batteries.
- **Wide Operating Temperature:** Discharging temperature range from -20°C to 60°C (-4°F to 140°F).
- **IP65 Waterproof Rating:** Provides protection against dust and water jets, suitable for marine environments.
- **Advanced BMS:** Built-in Battery Management System protects against over-charge, over-discharge, over-current, high temperature, and short circuits.
- **Energy Saving Mode:** Automatically switches to energy-saving mode after 30 seconds of no charging or discharging activity, reducing self-discharge to less than 3% per month.
- **Auto-Balancing Function:** Ensures optimal charging efficiency and extends battery lifespan when multiple batteries are connected in parallel.
- **Lightweight and Compact:** Designed for space-saving and easy handling, offering a higher energy

density compared to traditional lead-acid batteries.

- **Certified Performance:** Complies with UN 38.3, UKCA, CE, FC, PSE, and MSDS standards.

Figure 3: Advantages of Renogy LiFePO4 over conventional lead-acid batteries.



Figure 4: The battery's energy-saving mode activates after 30 seconds of inactivity.



Figure 5: The IP65 rating ensures durability in various conditions.

Figure 6: The battery is light and compact for easy integration.

4. SETUP AND INSTALLATION

Follow these guidelines for proper setup and installation of your Renogy LiFePO4 battery:

1. **Unpacking:** Carefully remove the battery from its packaging. Inspect for any visible damage.
2. **Terminal Connection:** Connect the battery to your system using appropriate cables and ensure the M8 terminal bolts are securely tightened. Loose connections can cause resistance and heat.
3. **Parallel Connection:** Up to 8 identical 24V Renogy LiFePO4 batteries can be connected in parallel to expand capacity. Ensure all batteries are at a similar state of charge before connecting them in parallel. **Do NOT connect in series.**
4. **System Integration:** Integrate the battery into your 24V power system. This battery offers a

seamless upgrade from lead-acid batteries due to its higher energy density and usable capacity.



Figure 7: Parallel connection of multiple batteries for increased capacity.

Figure 8: The 24V battery offers space optimization and simplified wiring.

5. OPERATING INSTRUCTIONS

To operate your Renogy LiFePO₄ battery effectively:

- **Charging:** The recommended charge voltage is 29.0V \pm 0.2V. The maximum charge current is 25A. Use a compatible LiFePO₄ charger.
- **Discharging:** The battery provides 100% usable capacity. Ensure your load does not exceed the continuous discharge current rating to prevent BMS activation.
- **Energy Saving:** The battery automatically enters energy-saving mode after 30 seconds of inactivity. This feature helps conserve power during periods of non-use.

Figure 9: Quick charge capabilities of the Renogy LiFePO₄ battery.

6. MAINTENANCE

Proper maintenance ensures the longevity and performance of your battery:

- **Temperature Management:** Operate the battery within its specified temperature ranges. Discharging: -20°C to 60°C (-4°F to 140°F). Charging: 0°C to 55°C (32°F to 131°F).
- **Storage:** For long-term storage, ensure the battery is in its energy-saving mode. The self-discharge rate is less than 3% per month. Store in a cool, dry place.
- **Regular Inspection:** Periodically check battery terminals for tightness and corrosion. Clean as necessary.



Figure 10: The battery is designed to adapt to extreme temperatures.

7. TROUBLESHOOTING

If you encounter issues with your Renogy LiFePO₄ battery, consider the following:

- **BMS Tripping:** If the battery unexpectedly shuts off under load, the Built-in Management System (BMS) may have activated due to over-current, over-voltage, under-voltage, or high temperature. Reduce the load or check the charging parameters. Ensure the continuous discharge current does not exceed the battery's rated capacity.
- **No Power Output:** Check all cable connections for tightness. Verify that the battery is adequately charged. If connected in parallel, ensure all batteries are properly balanced.
- **Charging Issues:** Confirm the charger is compatible with LiFePO₄ batteries and provides the correct voltage (29.0V ±0.2V). Check for proper connection between the charger and the battery. Ensure the ambient temperature is within the charging range (0°C to 55°C).
- **Reduced Performance:** Over time, extreme operating conditions or improper charging/discharging can affect performance. Review your usage patterns against the specifications.

8. SPECIFICATIONS

Characteristic	Value
Nominal Voltage	25.6 V
Rated Capacity	25 Ah
Charge Voltage	29.0V ±0.2V
Maximum Charge Current	25A
Cycle Life	>2000 Cycles (0.2C, 25°C, 80% DOD, 80% EOL)
Self-Discharge Rate	<3%/Month (Shelf Mode)
Protection Rating	IP65

Characteristic	Value
Dimensions (L x W x H)	7.7 x 6.5 x 6.6 inches (197 x 166 x 168 mm)
Weight	13.2 lbs (6 kg)
Battery Cell Composition	Lithium Iron Phosphate (LiFePO4)
Number of Cells	4
Terminal Type	Marine Terminal (M8)

9. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries, please contact Renogy customer service directly. Refer to the official Renogy website or your purchase documentation for the most up-to-date contact details and warranty terms.

Manufacturer: Renogy

Manufacturer Reference: RBT2425LFP-CA

Place of Business: ONTARIO, CA, 91761 US