Renogy 12V 100Ah Mini

Renogy 12V 100Ah LiFePO4 Lithium Battery Mini Size Instruction Manual

Brand: Renogy | Model: 12V 100Ah Mini

1. Introduction

The Renogy 12V 100Ah LiFePO4 Lithium Battery Mini Size is a compact and safe deep cycle battery designed for a wide range of applications. Featuring a robust 100A Battery Management System (BMS), it provides extensive protection against various electrical conditions, ensuring ultimate safety and peace of mind. Its innovative mini-sized design allows for flexible installation in tight spaces, making it an excellent power solution for RVs, cabins, marine vessels, and off-grid systems. This manual provides essential information for the proper setup, operation, and maintenance of your Renogy battery.

Figure 1.1: Renogy 12V 100Ah LiFePO4 Lithium Battery Mini Size.

2. Key Features

- **Mini-sized Design:** Up to 50% smaller than a Group 31 battery and 13% smaller than other equivalent 12.8V 100Ah mini batteries. This compact size (9.02 x 5.43 x 8.39 inches, Group 22NF) makes it an excellent replacement for lead-acid batteries in tight spaces like teardrop trailers or kayaks.
- **Uncompromising Safety:** Equipped with a 100A BMS that provides extensive protection against low temperature (charging), high temperature, overvoltage, undervoltage, overcurrent, and short-circuits, ensuring reliable and safe operation.
- **Remote Monitoring (Optional):** Compatible with a Renogy 300A Battery Shunt (sold separately), allowing real-time status monitoring via the DC Home app or Renogy ONE monitor, even when the battery is in hard-to-reach locations.
- **Flexible Installation:** Can be mounted in any orientation to fit snugly into limited spaces. (Note: Tipping the battery upside down is not recommended).
- **Towering Outdoor Performance:** Integrated metallic cell spacers keep UL-listed, EV-grade prismatic cells in position, preventing damage or short circuits during travel. The IP65-rated casing offers resistance against splashes, water, and dust.

Figure 2.1: Comparison of Renogy 12V 100Ah Mini battery size against other battery types.

3. Setup and Installation

Proper installation is crucial for the optimal performance and longevity of your Renogy battery. The compact design allows for versatile placement options.

3.1 Battery Placement

The Renogy 12V 100Ah Mini battery can be mounted in various orientations to fit into tight spaces. Ensure the battery is secured to prevent movement during operation. Avoid placing the battery upside down.

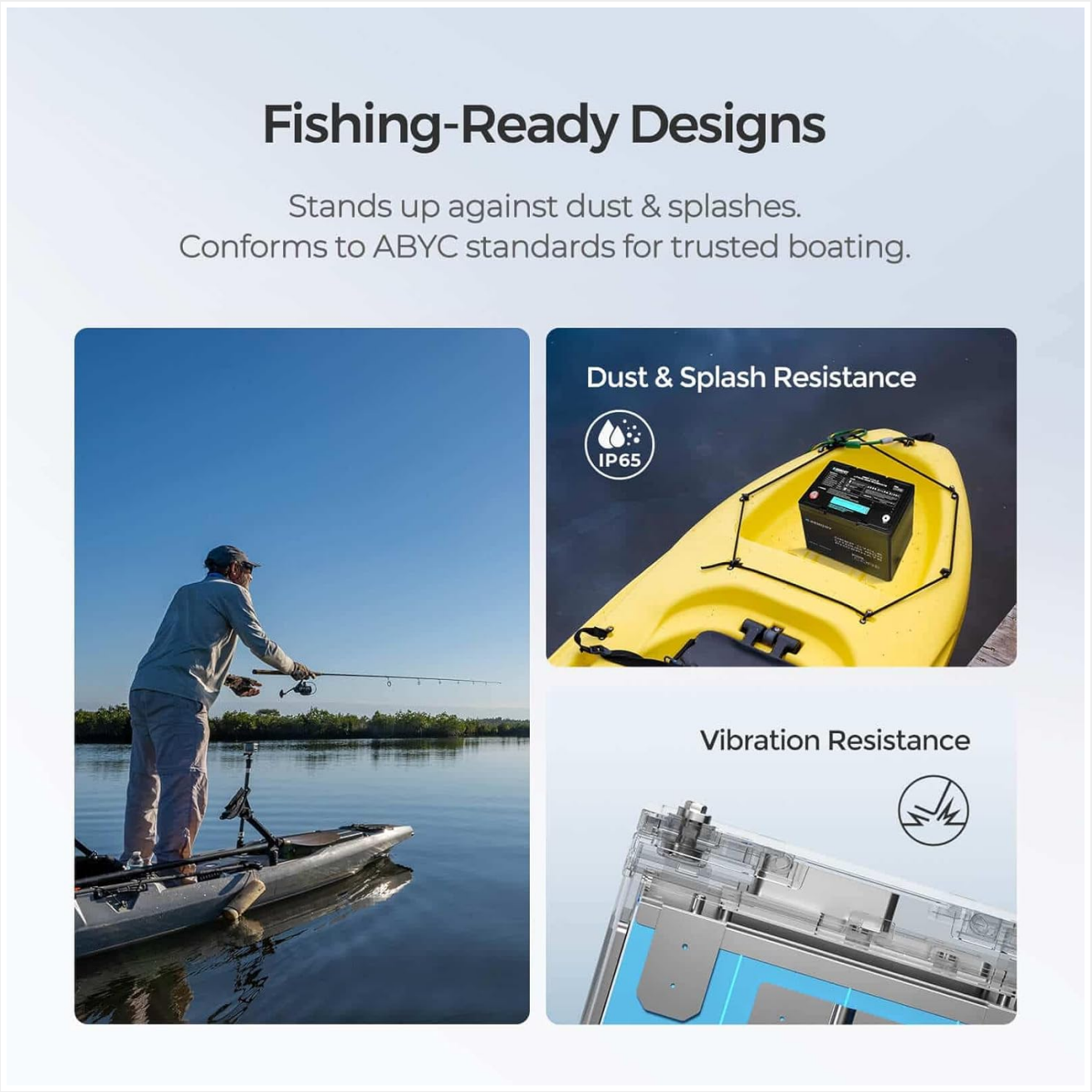

Figure 3.1: Example of flexible battery installation in a confined space.

3.2 Connecting Batteries in Series or Parallel

The manual provides detailed diagrams for connecting multiple batteries in series or parallel configurations. Ensure all connections are secure and follow recommended fusing guidelines to prevent potential damage to the system and ensure safety.
For detailed connection diagrams, refer to the user manual provided with your battery. It is crucial to use appropriate bus bars and ensure proper cable sizing for optimal performance.

4. Operating Instructions

The Renogy 12V 100Ah LiFePO4 battery is designed for deep cycle applications, providing reliable power for extended periods. Adhere to the following guidelines for safe and efficient operation.

4.1 Charging the Battery

The battery features a built-in Battery Management System (BMS) that protects against low-temperature charging. If the battery temperature drops below 32°F (0°C), the BMS will actively prevent charging to ensure the battery cells remain healthy and robust. Charging will resume automatically once the temperature rises above the threshold.

Figure 4.1: Low-Temperature Charging Protection mechanism.

4.2 Remote Monitoring

For optional remote monitoring, connect a Renogy 300A Battery Shunt (sold separately) to your system. This allows you to track the battery's real-time status, including voltage, current, and state of charge, via the Renogy DC Home app or Renogy ONE monitor.

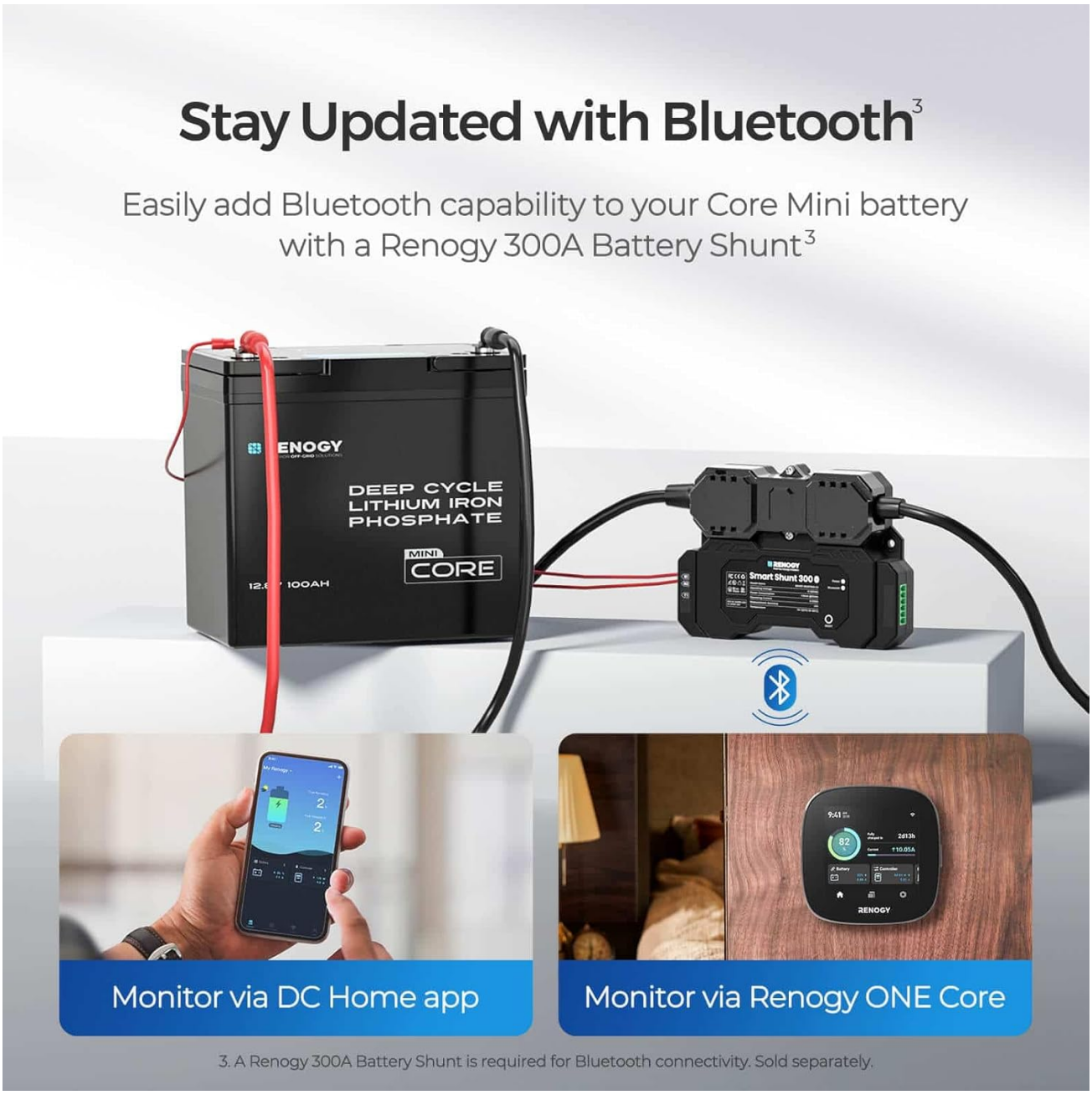

Figure 4.2: Monitoring battery status via the DC Home app or Renogy ONE Core with an optional 300A Battery Shunt.

4.3 Discharge Logic

The battery is designed to safely discharge at a constant current of 50A until the voltage drops to 10V. It can handle surge currents up to 300A for 10 seconds. The BMS provides protection against overcurrent and undervoltage conditions. Ensure your discharge equipment features a low voltage disconnect (LVD) function to prevent over-discharge.

5. Maintenance

To ensure the longevity and optimal performance of your Renogy LiFePO4 battery, regular maintenance is recommended.

- **Periodic Rebalancing:** It is recommended to periodically rebalance the battery voltages every six months. Slight voltage differences can occur among batteries over time due to factors like battery chemistry, capacity, temperature, and usage patterns.
- **Terminal Inspection:** Regularly inspect battery terminals for any signs of corrosion or loose connections. Clean terminals as needed and ensure they are securely fastened.
- **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 away from direct sunlight and extreme temperatures.

6. Troubleshooting

The Battery Management System (BMS) provides comprehensive protection. If the battery is not functioning as expected, refer to the following common issues and their solutions:

Condition	Trigger	Recovery
Overvoltage Protection	Battery Voltage > 14.6V	Battery Voltage < 14.4V
Undervoltage Protection	Battery Voltage < 10.0V	Battery Voltage > 10.2V
Overcurrent Protection (Discharge)	Discharge Current > 110A	Remove the load (Automatic recovery after a delay of 32S)
Low Temperature Charging Protection	Battery Temperature < 32°F (0°C)	Battery Temperature > 41°F (5°C)
High Temperature Protection (Discharge)	Battery Temperature > 149°F (65°C)	Battery Temperature < 131°F (55°C)

If the issue persists after following the recovery steps, please contact Renogy customer support.

7. Specifications

Specification	Value
Brand	Renogy
Size	1PCS
Battery Cell Composition	Lithium Ion
Terminal	Marine Terminal
Automotive Fit Type	Universal Fit
Manufacturer	Renogy
UPC	840315230194
Model	Battery Mini Size, 100A BMS for Ultimate Safety, Deep Cycle w/Remote Monitoring Compatibility,
Item Weight	22.7 pounds
Package Dimensions	10.63 x 10.43 x 7.09 inches
Country of Origin	China
Item model number	12V 100Ah LiFePO4 Lithium
Batteries Required	1 12V battery required.
Manufacturer Part Number	RBT12100LFP-M-US-S

8. Warranty and Support

Renogy provides a **5-Year Warranty** for the 12V 100Ah LiFePO4 Lithium Battery Mini Size, ensuring peace of mind regarding product quality and performance.
For further assistance, technical support, or warranty claims, please contact Renogy directly:

- **Website:** www.renogy.com
- **Contact Us Page:** https://www.renogy.com/contact-us
- **E-Warranty Card:** Register your product online for warranty coverage.

Video Demonstrations (Not Embedded)

The following content describes demonstrations of the Renogy 12V 100Ah LiFePO4 Lithium Battery. Please note that the original videos are not embedded here as they are from third-party creators not affiliated with the seller.

Battery Overview and Initial Tests

A demonstration showcases the physical characteristics of the Renogy 12V 100Ah Mini Core battery, highlighting its compact size (approximately 9x6x9 inches) and lightweight nature (around 21 pounds). The video emphasizes its suitability for small RVs, truck campers, and vans where space is limited. It also notes the self-heating function for cold weather operation.
Initial tests include:

- **Low-Temperature Charging Test:** The battery was placed in a freezer overnight to reach -3°F. Upon connecting a charger, the self-heating pads activated, drawing approximately 110 watts. The battery successfully heated up past 32°F (0°C) within about 20 minutes, allowing the lithium cells to begin charging. This demonstrates the effective functionality of the self-heating feature in cold conditions.
- **Max Discharge Test:** The battery was subjected to a discharge test using a heat gun and an inverter. It successfully handled discharge rates up to 100 amps, with the BMS initiating a shutdown when the current exceeded safe limits (around 125 amps), confirming its robust safety features.

Internal Components Overview

A detailed internal view of the battery reveals its construction. The lid was carefully removed to show the internal wiring and the Battery Management System (BMS) board. The video points out the paralleled 8-gauge wiring connecting to the battery terminals and the heating pad wiring. It also highlights the temperature sensor wire and balance wires connected to the BMS. The internal components are compactly arranged, with various elements held in place by tape and glue, indicating a non-serviceable design for end-users. The BMS board itself is rated for 100 amps.

Capacity Test

A capacity test was performed by running a heater load, drawing approximately 47.3 amps from the fully charged battery. The battery maintained a voltage of 12.4V even after two hours of continuous discharge, demonstrating its robust capacity and ability to sustain significant loads. This real-world test confirms the battery's performance aligns with other premium 100Ah batteries.