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> Renogy Rover 40A MPPT Solar Charge Controller and 100Ah Deep Cycle AGM Battery User Manual

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Renogy Rover 40A MPPT Solar Charge Controller and 100Ah Deep Cycle AGM Battery User Manual

Model: Rover 40A MPPT Charge Controller & 12V 100Ah Deep Cycle AGM Battery

INTRODUCTION

This manual provides detailed instructions for the safe and efficient operation of your Renogy Rover 40 Amp MPPT Solar Charge Controller and Renogy 12 Volt 100Ah Deep Cycle AGM Battery. Please read this manual thoroughly before installation and use to ensure optimal performance and longevity of your solar power system components.



Figure 1: Renogy Rover 40A MPPT Solar Charge Controller and 100Ah Deep Cycle AGM Battery.

SAFETY INFORMATION

Always observe the following safety precautions to prevent personal injury and damage to the equipment:

- Ensure all connections are tight and correct to avoid loose connections that may cause excessive heat.

- Do not disassemble, repair, or modify the charge controller or battery. Refer to qualified personnel for service.
- Wear appropriate personal protective equipment, including eye protection, when working with batteries.
- Install the charge controller in a well-ventilated area, away from flammable materials.
- Avoid short-circuiting the battery terminals.
- Do not charge the AGM battery in a gas-tight container.
- Keep children and unauthorized persons away from the solar power system.

PRODUCT OVERVIEW

Renogy Rover 40A MPPT Solar Charge Controller

The Renogy Rover 40A MPPT Charge Controller is designed to maximize power harvest from your solar panels and efficiently charge your battery bank. It features advanced Maximum Power Point Tracking (MPPT) technology, ensuring high tracking and conversion efficiency. The controller automatically detects 12V/24V DC system voltages for lead-acid batteries and supports various battery types including Gel, Flooded, Sealed, and Lithium (manual setting required for 24V Lithium). An integrated LCD provides real-time system information.



Figure 2: Front view of the Renogy Rover 40A MPPT Solar Charge Controller, showing the LCD display and control buttons.

Renogy 12V 100Ah Deep Cycle AGM Battery

The Renogy 12V 100Ah Deep Cycle AGM Battery is a maintenance-free, leak-proof power solution suitable for various applications including RVs, boats, and off-grid systems. Manufactured with Absorbent Glass Mat (AGM) separators and

valve-regulated technology, it offers a low self-discharge rate and reliable performance across a wide temperature range. This battery is designed for cyclic use and provides a dependable energy storage solution.

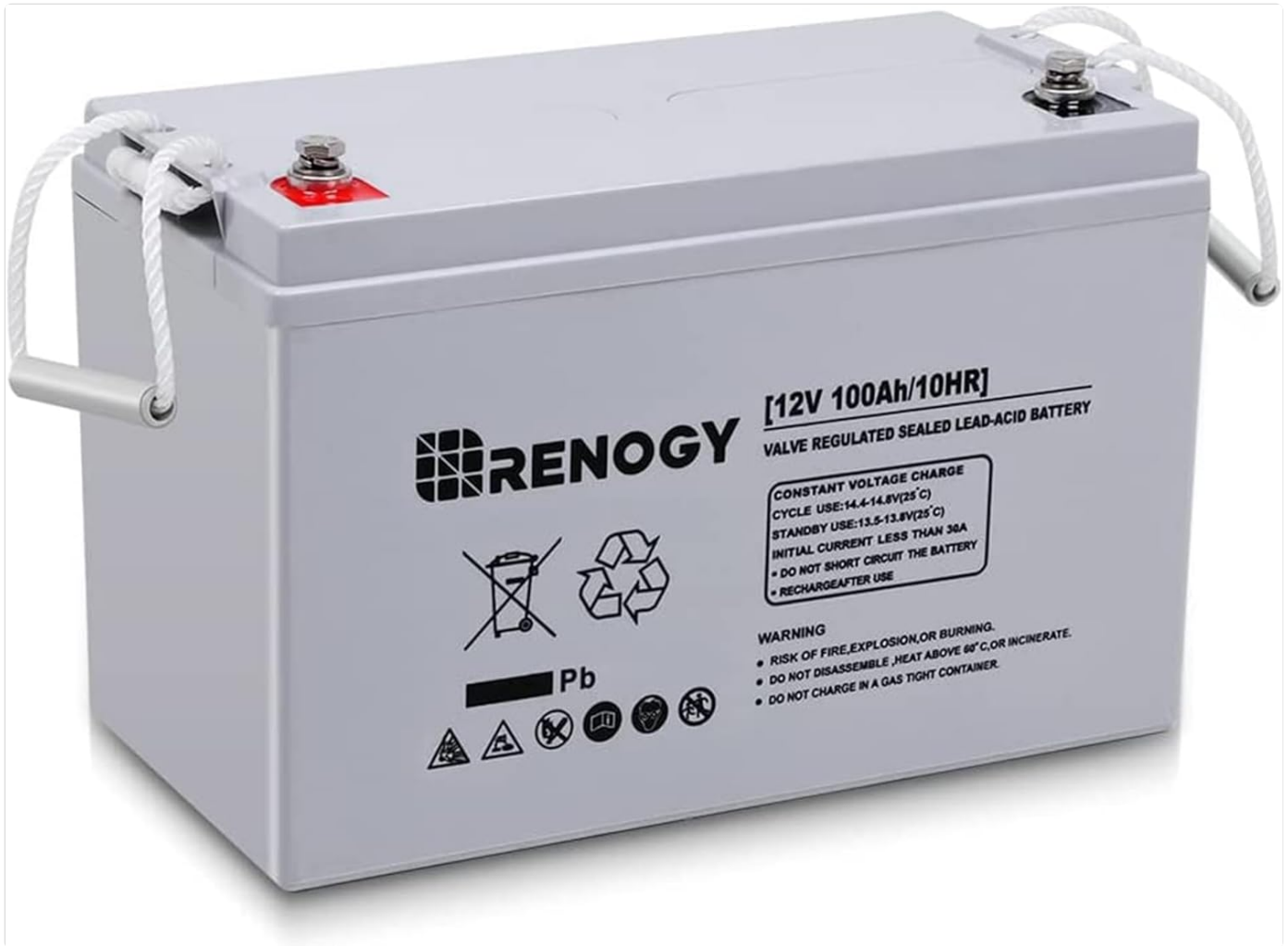


Figure 3: Renogy 12V 100Ah Deep Cycle AGM Battery, highlighting its robust design and terminals.

SETUP AND INSTALLATION

Follow these steps for proper installation of your Renogy solar charge controller and battery:

1. Site Selection and Mounting (Charge Controller)

1. Choose a dry, well-ventilated location, protected from direct sunlight, high temperatures, and water.
2. Mount the controller vertically on a non-flammable surface to allow for proper heat dissipation.
3. Ensure there is sufficient clearance around the controller for air circulation.

2. Wiring Sequence

Important: Connect components in the following order to prevent damage:

1. **Connect the Battery:** Connect the battery cables to the charge controller's battery terminals. Ensure correct polarity (positive to positive, negative to negative). The controller LCD should illuminate.
2. **Connect the Solar Panels:** Connect the solar panel cables to the charge controller's PV terminals. Ensure correct polarity. The controller will begin charging if sufficient sunlight is available.
3. **Connect the DC Load (Optional):** If using a DC load, connect it to the load terminals on the charge controller.

Always ensure all connections are secure before applying power.

3. Battery Type and System Voltage Settings

The Rover 40A automatically detects 12V/24V system voltages for lead-acid batteries. For specific battery types (Gel, Flooded, Sealed, Lithium), you may need to adjust settings via the controller's interface or the Renogy DC Home app (with BT-1 module). For 24V Lithium batteries, manual setting is required.

OPERATING INSTRUCTIONS

LCD Display and Buttons

The LCD screen on the Rover 40A displays critical system information. Use the navigation buttons (**UP**, **DOWN**, **ENTER**) to cycle through display screens and adjust parameters.

- **PV Voltage/Current/Power:** Shows input from solar panels.
- **Battery Voltage/Current/State of Charge (SOC):** Displays battery status.
- **Load Current/Power:** Shows output to DC loads.
- **Error Codes:** Indicates system faults.

Charging Stages (Charge Controller)

The Rover 40A employs a multi-stage charging algorithm to optimize battery life and performance:

- **Bulk Charge:** Charges the battery at maximum current until voltage rises to the Absorption voltage.
- **Absorption Charge:** Charges at a constant voltage, reducing current as the battery approaches full charge.
- **Float Charge (Lead Acid only):** Maintains the battery at a constant, lower voltage to compensate for self-discharge.
- **Equalization (Lead Acid only):** Periodically overcharges the battery to balance cell voltages and prevent sulfation.
- **Lithium Reactivation:** Special function for lithium batteries to reactivate a deeply discharged battery.

Monitoring with Renogy BT-1 Module and DC Home App

For real-time system performance monitoring and parameter adjustments, connect the Renogy BT-1 Bluetooth Module (sold separately) to your Rover 40A and use the Renogy DC Home app on your smartphone or tablet. This allows for convenient remote access to your system data.

MAINTENANCE

Regular maintenance ensures the longevity and efficiency of your Renogy products.

Charge Controller Maintenance

- Periodically inspect all wiring connections for tightness and corrosion.
- Clean the controller's exterior with a dry cloth to remove dust and debris. Ensure ventilation openings are clear.
- Check for any signs of physical damage or overheating.

AGM Battery Maintenance

- The Renogy Deep Cycle AGM Battery is maintenance-free; it does not require water refilling or acid level checks.
- Keep battery terminals clean and free of corrosion. Use a wire brush and a mixture of baking soda and water if necessary.
- Ensure the battery is kept in a cool, dry, and well-ventilated area.
- For optimal lifespan, avoid deep discharges and keep the battery charged, especially during periods of non-use. The low self-discharge rate (below 3% per month at 77°F / 25°C) helps maintain charge.

TROUBLESHOOTING

This section addresses common issues you might encounter.

Problem	Possible Cause	Solution
Controller LCD is off	No power from battery or solar panels; reverse polarity.	Check battery connections and polarity. Ensure solar panels are receiving sunlight and connected correctly.
Battery not charging	Insufficient solar input; incorrect wiring; battery type setting mismatch.	Verify solar panel connections and sunlight. Check all wiring for looseness or damage. Confirm battery type setting on controller.
Low power output to load	Overload; low battery voltage; faulty load connection.	Reduce load. Check battery voltage. Inspect load wiring.
Controller displaying error code	Various system faults (e.g., over-voltage, short circuit).	Refer to the controller's specific error code definitions (usually in a separate detailed manual or online) and address the underlying issue.

SPECIFICATIONS

Renogy Rover 40A MPPT Solar Charge Controller

Feature	Specification
System Voltage	12V/24V Auto Recognition
Rated Charge Current	40A
Max. PV Input Voltage	(Not explicitly stated in provided data, typical for 40A Rover is 100VDC)
MPPT Tracking Efficiency	Up to 99%
Peak Conversion Efficiency	98%
Battery Types Supported	Gel, Sealed, Flooded, Lithium
Display Type	LCD
Operating Temperature	5°F (-15°C) to 122°F (50°C) (from battery spec, assuming similar for controller)

Renogy 12V 100Ah Deep Cycle AGM Battery

Feature	Specification
Nominal Voltage	12V
Rated Capacity	100Ah
Max Discharge Current	1100A
Self-Discharge Rate	Below 3% per month (at 77°F / 25°C)
Operating Temperature Range	5°F (-15°C) to 122°F (50°C)

Feature	Specification
Maintenance	Maintenance-Free

WARRANTY AND SUPPORT

Warranty Information

The Renogy 12V 100Ah Deep Cycle AGM Battery comes with a **2-year material and workmanship warranty**. For warranty details regarding the Renogy Rover 40A MPPT Solar Charge Controller, please refer to the product packaging or the official Renogy website.

Customer Support

For technical assistance, troubleshooting beyond this manual, or warranty claims, please contact Renogy Customer Support. Visit the official Renogy website for contact information and additional resources.

Note: Product specifications and features are subject to change without notice.