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› [Renogy Rover 40 Amp 12V/24V DC Input MPPT Solar Charge Controller Auto Parameter Adjustable LCD Display Solar Panel Regulator fit for Gel Sealed Flooded and Lithium Battery 40A](#)

Renogy RNG-CTRL-RVR40

Renogy Rover 40 Amp MPPT Solar Charge Controller

Model: RNG-CTRL-RVR40 | Brand: Renogy

INTRODUCTION AND OVERVIEW

The Renogy Rover 40 Amp MPPT Solar Charge Controller is engineered for efficient and reliable solar power management in various applications, including RVs, off-grid systems, and marine setups. Its advanced Maximum Power Point Tracking (MPPT) technology ensures optimal energy harvesting from your solar panels, even in challenging conditions like partial shading.

- **Dual-Peak 40A MPPT Charge Controller:** Masters shading/clouds with 99.9% multi-peak efficiency. Full compatibility with gel/sealed/flooded/lithium batteries.
- **Storm-Ready Solar Charge Controller:** Features smart -40°F to 149°F compensation. Auto-adjusts charging, TVS blocks 6kV lightning + reverse polarity/overload protection.
- **40A MPPT Charge Controller with Lithium Recovery:** Utilizes 4-stage charging (Bulk/Absorption/Float/Equalization) and exclusive tech to revive deeply discharged lithium batteries. Auto-detects 12V/24V systems.
- **Advanced LCD Charge Controller:** Tracks real-time voltage/current/errors via backlit display. 365-day data logging optimizes efficiency. Modbus protocol for smart home/remote monitoring.
- **Smart 40A MPPT Charge Controller:** Directly powers DC loads (fans/lights/pumps) & handles surges. Schedule loads via timer. Add BT-1/BT-2 (sold separately) for app monitoring: real-time alerts & performance tracking.



Figure 1: Front view of the Renogy Rover 40 Amp MPPT Solar Charge Controller, showing the LCD display and control buttons.

WHAT'S IN THE BOX

Your Renogy Rover 40 Amp MPPT Solar Charge Controller package includes the following items:

- 1 x 40A MPPT Charge Controller
- 1 x Remote Temperature Sensor
- 4 x Mounting Brackets



Figure 2: All components included in the Renogy Rover 40 Amp MPPT Charge Controller package.

SETUP

Proper setup is crucial for optimal performance and safety. Follow these general steps for installation and wiring:

1. **Mounting:** Securely mount the Rover controller in a well-ventilated area, away from direct sunlight and high temperatures. Ensure at least 6 inches (150mm) of clearance above and below for proper airflow.
2. **Battery Connection:** Connect the battery cables to the controller first. Ensure correct polarity (positive to positive, negative to negative).
3. **Solar Panel Connection:** Connect the solar panel cables to the controller. Ensure correct polarity.
4. **Load Connection:** Connect your DC loads (e.g., lights, fans) to the load terminals.
5. **Temperature Sensor:** Connect the included remote temperature sensor to the designated port on the controller and place the sensor near the battery for accurate temperature compensation.

Advanced Ultra Fast Maximum Power Point Tracking

Improves Performance in Cloudy Conditions



Figure 3: Basic wiring diagram showing connections from solar panel to controller and controller to battery.



Figure 4: Close-up view of the terminal connections on the Renogy Rover 40A, illustrating how to properly insert and secure wires.

Video 1: An overview of the Renogy Rover 30 Amp MPPT Solar Charge Controller, demonstrating its features and basic setup for battery regulation and LCD display. This video provides a general understanding of the Rover series installation.

OPERATING

The Rover 40 Amp MPPT Charge Controller offers various operating modes and features to optimize your solar system's performance.

- **Battery Compatibility:** The controller is compatible with Gel, Sealed (SLD), Flooded (FLD), and Lithium (LI) batteries. It automatically identifies 12V/24V systems for most battery types, but Lithium batteries require manual voltage setting.
- **4-Stage Charging:** Features Bulk, Absorption, Float, and Equalization stages for rapid, efficient, and safe charging, prolonging battery lifespan.
- **Advanced LCD Display:** The backlit LCD provides real-time data including voltage, current, and error codes.

It also stores 365 days of operational data for performance analysis.

- **Smart Load Output:** The 20A load output can directly power DC appliances like fans, lights, and pumps. It supports various load modes including Timer Mode, Manual Mode, Test Mode, Always-On Mode, and Auto-On/Off Mode (Dawn-to-Dusk).
- **App Monitoring:** With the optional BT-1/BT-2 Bluetooth module (sold separately), you can connect to the Renogy DC Home APP for real-time monitoring, custom charging parameter adjustments, and alerts.

Working with All Popular Battery Types



Lithium Battery Activation
12V/24V Automatically Detect



Figure 5: The Rover 40A is compatible with Lithium, Sealed, Flooded, Gel, and AGM battery types.

4-Stage Charging

Rapid, Efficient, and Safe Charging

High Tracking
Efficiency Up to
99%



Peak Conversion
Efficiency of
98%



Figure 6: The 4-stage charging process ensures high tracking efficiency up to 99% and peak conversion efficiency of 98%.

Intelligent Charging Protection



Temperature Compensation



Overcharging Protection



Over-discharging Protection



Overload Protection



Short-circuiting Protection



Reverse Polarity Protection



Reverse Current Protection

Figure 7: The advanced LCD display provides clear readings of system voltage and other parameters.



Figure 8: Monitor your system and customize settings remotely using the Renogy DC Home app with the optional Bluetooth module.

MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your Renogy Rover 40 Amp MPPT Solar Charge Controller.

- **Temperature Compensation:** The included external temperature sensor helps the Rover 40A track battery temperature, preventing under-charging in cold climates (down to -40°F) and overcharging in hot weather (up to 149°F).
- **Efficient Heat Dissipation:** Made of robust die-cast aluminum, the heat sink effectively dissipates heat away from critical components, ensuring maximum charging efficiency and safety.
- **Lithium Battery Recovery:** The controller can activate dead lithium batteries with a small current to bring them out of protection mode triggered by the Battery Management System (BMS).

Incredibly Easy to Install and Maintain



Figure 9: The external temperature sensor ensures accurate temperature compensation for battery charging.



Figure 10: The robust die-cast aluminum heat sink ensures efficient heat flow for optimal performance and safety.



Figure 11: The controller can activate deeply discharged lithium batteries, bringing them back to life.

TROUBLESHOOTING

The Renogy Rover 40 Amp MPPT Solar Charge Controller is equipped with 8 electronic protections to ensure safe and efficient operation. If you encounter issues, refer to the user manual for detailed troubleshooting steps.

- **Intelligent Charging Protection:** Includes safeguards against temperature extremes, overcharging, over-discharging, overload, short-circuiting, reverse polarity, and reverse current.
- **TVS Blocks 6kV Lightning:** Provides robust protection against lightning strikes.



Figure 12: The Rover 40A features 8 electronic protections for efficient and safe battery charging.

SPECIFICATIONS

Specification	Detail
Model Number	RNG-CTRL-RVR40
Product Dimensions	6.81"L x 2.85"W x 9.37"H
Item Weight	2.43 Pounds
Voltage	12 Volts (DC)
Material	Aluminum
Color	Black
Manufacturer	Renogy

WARRANTY & SUPPORT

For detailed warranty information, troubleshooting guides, and technical support, please refer to the official Renogy website or the user manual provided with your product.

You can download the full user manual in PDF format for comprehensive instructions and support [Renogy Rover User Manual \(PDF\)](#)