

## Renogy Wanderer Li 30A PWM Charge Controller

# Renogy Wanderer Li 30A 12V PWM Negative Ground Solar Charge Controller User Manual

Model: Wanderer Li 30A PWM Charge Controller

Brand: Renogy

## 1. INTRODUCTION

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This manual provides detailed instructions for the installation, operation, and maintenance of your Renogy Wanderer Li 30A 12V PWM Negative Ground Solar Charge Controller. Please read this manual thoroughly before installation and operation to ensure proper and safe use of the product. This controller is designed to optimize charging for various battery types in off-grid solar power systems.

## 2. KEY FEATURES

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- **12V Universal Solar Charge Controller:** Optimizes charging for Lithium, AGM, Gel, and Flooded batteries.
- **Smart PWM Technology:** Automatically selects the perfect charging curve (Bulk/Boost/Float/Equalization) for your battery type.
- **4-Stage PWM Charging:** Maximizes performance with Bulk Charge (fast charging), Boost Charge (voltage stabilization), Float Charge (micro-current maintenance), and auto Equalization.
- **Full Protection:** Built-in safeguards prevent reverse polarity, overcharging, overload, and short circuits.
- **Ultra-Compact & Waterproof:** Designed for tight spaces with an IP32-rated waterproof casing and corrosion-resistant materials.
- **Multi-Battery Support & Temp Sensing:** Delivers chemistry-specific optimization for various battery types. Temperature compensation is available with an optional BT-1 module.
- **Real-Time Bluetooth Monitoring:** Unlock advanced capabilities by pairing the BT-1 module (sold separately) to monitor solar input, battery SOC, and fault alerts via the DC Home App.

## 3. SAFETY INFORMATION

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- Always connect the battery first, then the solar panel, and finally the load. Disconnect in reverse

order.

- Ensure all wiring is correctly polarized and securely connected to prevent damage.
- Do not disassemble or attempt to repair the controller. Contact Renogy for service.
- Install the controller in a well-ventilated area, away from flammable materials.
- Use appropriate wire gauges for your system to prevent overheating.

## 4. PRODUCT OVERVIEW

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The Renogy Wanderer Li 30A PWM Charge Controller is a compact and robust device designed to efficiently manage power flow from your solar panels to your battery bank.



*Image: Front view of the Renogy Wanderer Li 30A PWM Charge Controller, showing the PV, BATT, and Temp. Sensor terminals, RS232 port, and LED indicators.*

### Components:

- **PV Terminals:** Connect to solar panels (+ and -).
- **BATT Terminals:** Connect to battery bank (+ and -).
- **Temp. Sensor Port:** For optional temperature sensor.
- **RS232 Port:** For optional Bluetooth module (BT-1).
- **LED Indicators:** Display charging status and selected battery type (Green: Sealed, Orange: GEL, Red: Flooded, Blue: Li).

## 5. SETUP

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### Mounting the Controller:

The Wanderer Li 30A is designed for easy installation. It features pre-drilled mounting holes for secure attachment to a flat surface. Ensure the mounting location is dry, well-ventilated, and protected from direct sunlight and extreme temperatures.

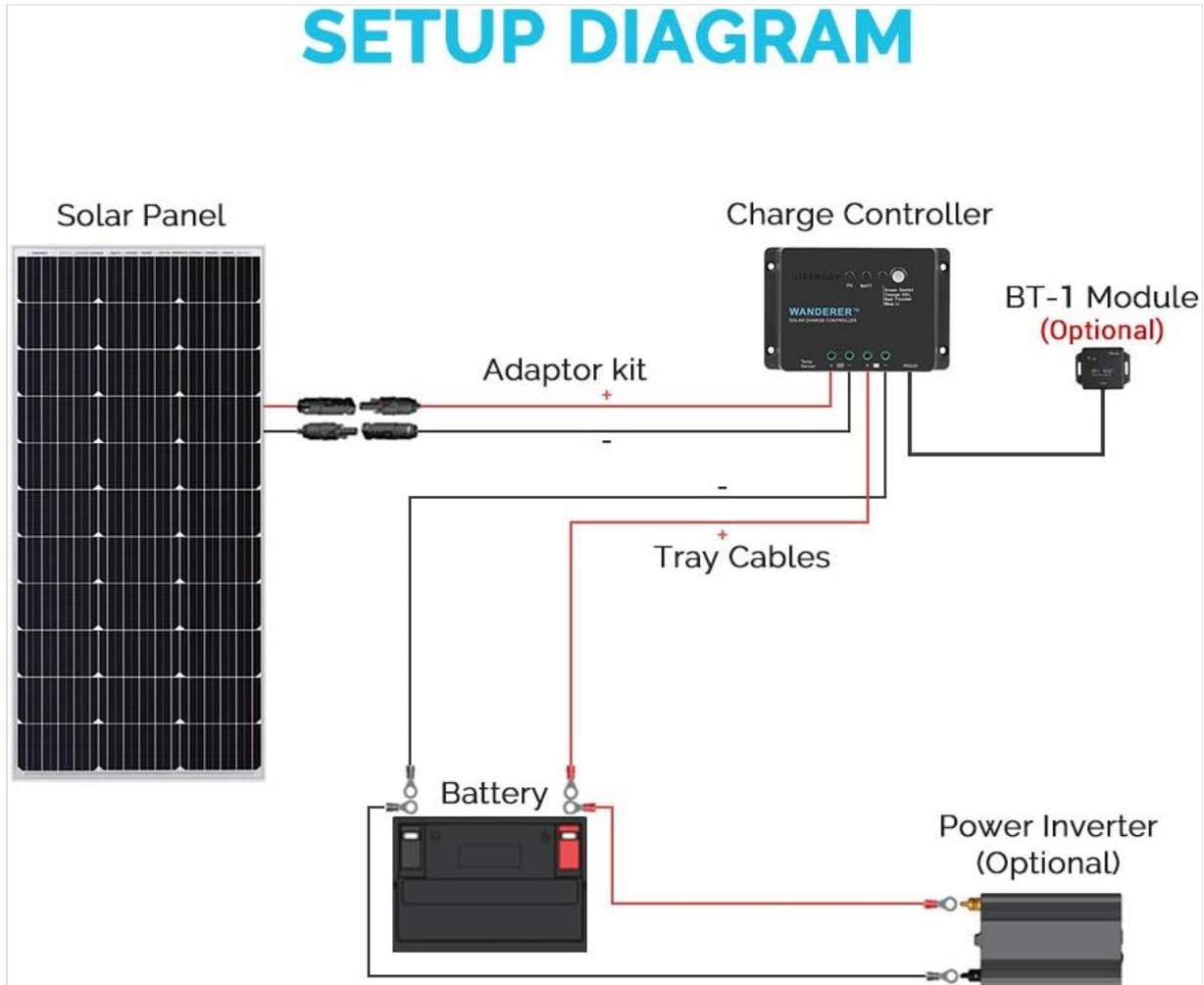


Image: A detailed wiring diagram showing the connections between the solar panel, charge controller, battery, and optional power inverter and BT-1 module.

### Wiring Sequence:

Follow this sequence carefully to prevent damage to the controller or other components:

1. **Connect the Battery:** Connect the positive (+) and negative (-) battery cables to the BATT terminals on the charge controller. Ensure correct polarity. The controller will power on.
2. **Connect the Solar Panel:** Connect the positive (+) and negative (-) solar panel cables to the PV terminals on the charge controller. Ensure correct polarity.
3. **Connect the Load (Optional):** If using the load terminals, connect your DC load to the LOAD terminals. (Note: This model does not feature dedicated load terminals for direct connection, but rather manages battery charging for external loads connected directly to the battery.)
4. **Connect Temperature Sensor (Optional):** Plug the temperature sensor into the Temp. Sensor port. This allows for accurate temperature compensation.
5. **Connect Bluetooth Module (Optional):** Plug the BT-1 Bluetooth module into the RS232 port for wireless monitoring via the Renogy DC Home App.

## 6. OPERATING INSTRUCTIONS

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### LED Indicators:

The LED indicators on the controller provide visual feedback on the charging status and selected battery type:

- **PV LED:** Indicates solar panel activity.
- **BATT LED:** Indicates battery charging status and battery type.

### Battery Type Selection:

The controller automatically detects 12V systems. To select the battery type, press the button on the controller. The BATT LED will change color to indicate the selected battery type:

- **Green:** Sealed Battery
- **Orange:** GEL Battery
- **Red:** Flooded Battery
- **Blue:** Lithium (LiFePO4) Battery



Deep Cycle Sealed, Gel, Flooded and Lithium battery options

*Image: The Renogy Wanderer Li 30A PWM Charge Controller shown with icons representing Sealed, Gel, Flooded, and Lithium battery types, highlighting its compatibility.*

### 4-Stage PWM Charging:

The controller employs an intelligent 4-stage charging algorithm to maximize battery lifespan and performance:

# SMART 4 STAGE PWM CHARGE CONTROLLER



100% return of capacity and longer battery life

*Image: Diagram illustrating the four stages of PWM charging: Bulk Charge, Boost Charge, Float Charge, and Equalization Charge, with battery icons showing increasing charge levels.*

1. **Bulk Charge:** Rapidly charges the battery to approximately 80% capacity.
2. **Boost Charge:** Continues charging at a higher voltage to ensure full charge absorption.
3. **Float Charge:** Maintains the battery at a full charge by providing a small, constant current.
4. **Equalization Charge:** (For Flooded batteries only) Periodically overcharges the battery to balance cell voltages and prevent sulfation.

## Lithium Battery Activation:

The Wanderer Li 30A can activate dormant lithium batteries by sending a low current to trigger the Battery Management System (BMS).

# LITHIUM BATTERY ACTIVATION



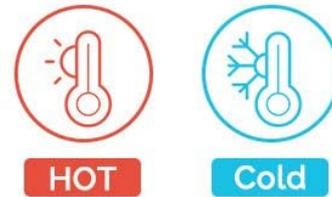
*Image: A visual representation of the lithium battery activation process, showing a dormant battery, the Wanderer Li controller sending a low current, and the battery reactivating.*

## 7. ADVANCED FEATURES

### Accurate Temperature Compensation:

When the optional temperature sensor is connected, the controller precisely measures battery temperature and adjusts charging parameters automatically. This extends battery lifespan by preventing undercharge in cold conditions and overcharge in hot conditions.

# ACCURATE TEMPERATURE COMPENSATION



Temperature compensation and correcting the charging and discharging parameters automatically to extend battery lifespan

*Image: The Wanderer Li 30A PWM Charge Controller with an optional temperature sensor connected to a battery, illustrating how it compensates for hot and cold temperatures.*

## Wireless Monitoring (with BT-1 Module):

For enhanced control and monitoring, connect the optional Renogy BT-1 Bluetooth module to the RS232 port. This allows you to wirelessly monitor your solar system's performance, including solar input, battery State of Charge (SOC), and fault alerts, directly from your smartphone via the Renogy DC Home App.

# WIRELESS MONITOR PV SYSTEM



Wirelessly monitor and control compatible solar charge controllers via Bluetooth

*Image: A diagram showing the Renogy Wanderer Li 30A PWM Charge Controller connected to an optional BT-1 Bluetooth module, which then wirelessly communicates with a smartphone displaying the DC Home App interface for system monitoring.*

## 8. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your solar charge controller:

- **Check Connections:** Periodically inspect all wiring connections to ensure they are tight and free from corrosion.
- **Clean Controller:** Keep the controller clean and free of dust and debris. Use a dry cloth for cleaning.
- **Inspect for Damage:** Check for any physical damage to the casing, wires, or terminals.
- **Monitor Performance:** Regularly check the LED indicators and, if applicable, the DC Home App for normal operation.

## 9. TROUBLESHOOTING

If you encounter issues with your Renogy Wanderer Li 30A PWM Charge Controller, refer to the following common problems and solutions:

- **No Power/LEDs Off:**

- Check battery connections and ensure they are secure and correctly polarized.
- Verify battery voltage is above 8V.
- **No Charging (PV LED Off):**
  - Check solar panel connections and polarity.
  - Ensure sufficient sunlight is reaching the solar panels.
  - Verify solar panel voltage is within the controller's operating range.
- **Battery Not Fully Charged:**
  - Confirm correct battery type is selected on the controller.
  - Check for shading on solar panels.
  - Ensure the solar panel array size is adequate for your battery bank.
- **Overcharge Protection:**
  - The controller will automatically stop charging when the battery is full. This is normal operation.

For persistent issues, please refer to the full user manual PDF or contact Renogy customer support.

## 10. SPECIFICATIONS

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Attribute	Value
Brand	Renogy
Model Number	Charge Controller
Item Weight	4.8 ounces (0.3 Pounds)
Product Dimensions	6.5"L x 4.3"W x 1.8"H (6.45 x 4.31 x 1.76 inches)
Voltage	12 Volts
Display Type	LED
Material	Lithium (referring to battery compatibility)
Color	black
Charging Port Type	MC4 or similar solar panel connector
UPC	816360027676

## 11. WARRANTY AND SUPPORT

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For warranty information, technical support, or to purchase accessories, please visit the official Renogy website or contact their customer service department. Keep your purchase receipt for warranty claims.

**Renogy Official Website:** [www.renogy.com](http://www.renogy.com)