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Renogy Adventurer 30A Solar Charge Controller & Z Brackets User Manual

Model: Adventurer 30A Solar Charge Controller and Z Brackets

Brand: Renogy

1. PRODUCT OVERVIEW

The Renogy Adventurer 30A PWM Solar Charge Controller is designed to manage power flow from your solar panels to your battery bank, ensuring efficient and safe charging. It automatically detects 12V or 24V DC system voltages and is compatible with various battery types, including Sealed, Gel, Flooded, and Lithium batteries. Its unique flush mount design allows for a clean, integrated look, with an included surface mount attachment for versatile installation options. The controller features a backlit LCD display for monitoring system operation and error codes, and incorporates intelligent protection functions against common electrical faults.

Accompanying the charge controller are the Renogy Solar Panel Mounting Z Brackets. These lightweight, corrosion-free aluminum brackets are designed for secure installation of single solar panel units, particularly in off-grid applications such as RV roofs, trailers, boats, or other non-inhabited dwellings. The set includes all necessary fasteners for a straightforward and quick installation.



Figure 1: Renogy Adventurer 30A Solar Charge Controller and Z Brackets. This image shows both the solar charge controller and the set of four Z brackets with their accompanying hardware.

2. SAFETY INFORMATION

Please read all instructions and warnings in this manual before installation and operation. Failure to follow these instructions may result in electric shock, fire, or severe injury. Keep this manual for future reference.

- Ensure all wiring is performed by qualified personnel.
- Disconnect all power sources before installing or servicing the charge controller or solar panels.
- Do not disassemble or attempt to repair the charge controller. Refer to the manufacturer for service.
- The Adventurer 30A is a negative ground controller. Ensure proper grounding to prevent damage and ensure safety.
- Protect against reverse polarity, overcharging, short-circuits, and reverse current. The controller has built-in protections, but proper installation is crucial.
- Wear appropriate personal protective equipment (PPE) during installation, including eye protection and insulated

gloves.

3. PRODUCT COMPONENTS

The package includes the following components:

- Renogy Adventurer 30A PWM Solar Charge Controller
- Surface Mount Attachment (for charge controller)
- 4 x Renogy Solar Panel Mounting Z Brackets
- Mounting Hardware (screws, washers, nuts for Z brackets)



Figure 2: Front view of the Renogy Adventurer 30A Solar Charge Controller, showing the LCD display, USB port, and control buttons.



Figure 3: The four Renogy Solar Panel Mounting Z Brackets along with the complete set of fasteners required for installation.

4. SETUP AND INSTALLATION

4.1. Adventurer 30A Solar Charge Controller Installation

The Adventurer 30A is designed for either flush mounting or surface mounting. Choose the method that best suits your installation needs.

- Mounting Location:** Select a dry, well-ventilated location away from direct sunlight and high temperatures. Ensure sufficient space around the controller for air circulation.
- Flush Mounting:** For a clean, integrated look, cut an opening in your wall or panel according to the controller's dimensions. Secure the controller using appropriate screws.
- Surface Mounting:** If flush mounting is not desired, attach the included Surface Mount Attachment to the back of the controller, then secure the entire unit to the surface.

The Surface Mount Attachment allows

for mounting versatility



Figure 4: The Adventurer 30A Solar Charge Controller shown with its optional Surface Mount Attachment, providing versatility for installation.

4.2. Wiring the Solar Charge Controller

Follow the wiring sequence carefully to prevent damage to the controller or system components. The Adventurer 30A is a negative ground controller, meaning any negative connection on the solar module, battery, and load can be safely earth grounded.

- 1. Connect the Battery:** Connect the battery to the charge controller first. Ensure correct polarity (positive to positive, negative to negative). The controller will automatically detect 12V or 24V system voltage.
- 2. Connect the Solar Panels:** Connect the solar panels to the charge controller. Ensure correct polarity. The controller will begin charging the battery if sufficient solar power is available.
- 3. Connect the DC Load (Optional):** If using a DC load directly from the controller, connect it last.

Note: The controller is equipped with an RS232 port for connecting the Renogy BT-1 Bluetooth module (sold separately). This allows for remote monitoring and adjustment via the Renogy DC Home smartphone app.

4.3. Solar Panel Mounting Z Brackets Installation

The Z brackets are designed for easy and secure mounting of single solar panels.

- 1. Positioning:** Determine the optimal position for your solar panel on the RV roof, trailer, boat, or other surface. Ensure the surface is clean and structurally sound.
- 2. Attach Brackets to Panel:** Secure the Z brackets to the frame of your solar panel using appropriate bolts and nuts (not included with brackets, typically come with solar panel). Ensure they are evenly spaced and provide stable support.
- 3. Attach Panel to Surface:** Position the solar panel with attached Z brackets onto the desired mounting surface. Use the provided fasteners (screws, washers, nuts) to securely attach the brackets to the surface. Pre-drilling pilot holes may be necessary depending on the surface material.
- 4. Verify Security:** After installation, gently test the panel's stability to ensure it is firmly mounted and will withstand environmental conditions.

Corrosion Resistant, Lightweight, Durable



Figure 5: A close-up view of a single Renogy Z Bracket, highlighting its corrosion-resistant, lightweight, and durable aluminum construction.



Figure 6: Detailed dimensions of the Renogy Z Bracket, providing measurements for installation planning.

5. OPERATING INSTRUCTIONS

5.1. LCD Display and Indicators

The Adventurer 30A features a backlit LCD screen and multiple LED indicators to provide real-time information on solar charging and battery operation. The display shows current, voltage, battery state of charge, and can indicate error codes.



Backlit LCD

for displaying operating information and error codes



Figure 7: The Adventurer 30A controller's backlit LCD display, which provides essential operating information and error codes for system monitoring.

5.2. Charging Stages

The controller utilizes a Smart 4-Stage PWM (Pulse Width Modulation) charging algorithm to optimize battery charging and extend battery life:

- **Bulk Charge:** This is the initial stage where the battery is charged at its maximum current until its voltage rises to the Absorption voltage.
- **Boost Charge:** After the Bulk stage, the battery voltage is held constant at the Boost voltage, allowing the battery to absorb more power.
- **Float Charge:** Once the battery is fully charged, the controller reduces the voltage to a lower "float" level to maintain the battery at full charge without overcharging.
- **Equalization:** This stage is typically for flooded batteries and involves a controlled overcharge to balance cell voltages and remove sulfate crystals. The Adventurer 30A supports equalization for compatible battery types.

5.3. Customizable Parameters

The Adventurer 30A allows for customization of various charging parameters, especially important for Lithium batteries. Refer to the detailed user manual (PDF link provided in product listing) for specific instructions on navigating the menu and adjusting settings via the SELECT and ENTER buttons.

6. MAINTENANCE

Regular maintenance ensures optimal performance and longevity of your solar charging system.

- **Charge Controller:**
 - Periodically inspect all wiring connections for tightness and corrosion.
 - Keep the controller clean and free of dust and debris.
 - Ensure adequate ventilation around the unit.
- **Z Brackets:**
 - Inspect the mounting brackets and fasteners periodically for any signs of loosening, wear, or corrosion.
 - Tighten any loose fasteners.
 - Clean the brackets as needed to remove dirt or salt buildup, especially in marine environments.
- **Batteries:** Follow the battery manufacturer's maintenance guidelines for your specific battery type.
- **Solar Panels:** Keep solar panels clean to maximize energy production.

7. TROUBLESHOOTING

The Adventurer 30A controller has a self-diagnostic system that displays error codes on the LCD. Consult the full user manual for a comprehensive list of error codes and their solutions. Below are some common issues and general troubleshooting steps:

Problem	Possible Cause	Solution
Controller display is off / No power	Battery not connected or low voltage; reverse polarity.	Check battery connections and voltage. Ensure battery voltage is above 8V for controller to power on. Correct polarity if reversed.
Battery not charging	Solar panel not connected; insufficient sunlight; solar panel short circuit or open circuit; incorrect battery type setting.	Check solar panel connections. Ensure adequate sunlight. Inspect solar panel wiring. Verify battery type setting on controller matches your battery.
Overcharging	Incorrect battery type setting; controller malfunction.	Verify battery type setting. If issue persists, contact Renogy support.
Load not working	Load overcurrent; load short circuit; battery low voltage disconnect.	Check load current. Inspect load wiring for short circuits. Charge battery.

8. SPECIFICATIONS

8.1. Renogy Adventurer 30A PWM Solar Charge Controller

- **Rated Charge Current:** 30A
- **System Voltage:** 12V/24V Auto-detect (for non-lithium batteries)

- **Battery Compatibility:** Sealed, Gel, Flooded, Lithium (programmable voltage for Lithium)
- **Charging Algorithm:** Smart 4-Stage PWM (Bulk, Boost, Float, Equalization)
- **Grounding:** Negative Ground
- **Display:** Backlit LCD with LED indicators
- **Communication Port:** RS232 (for Renogy BT-1 Bluetooth module)
- **Protection:** Reverse polarity, overcharging, short-circuit, reverse current
- **Mounting:** Flush Mount (with included Surface Mount Attachment)

8.2. Renogy Solar Panel Mounting Z Brackets

- **Material:** Lightweight Aluminum
- **Construction:** Corrosion-Free
- **Application:** Ideal for RVs, Trailers, Boats, Yachts, Wall, and other off-grid roof installations.
- **Quantity:** Set of 4 units
- **Includes:** All fasteners to secure to installation surface.

9. WARRANTY AND SUPPORT

For detailed warranty information regarding your Renogy Adventurer 30A Solar Charge Controller and Z Brackets, please refer to the warranty card included with your product or visit the official Renogy website. Warranty terms and conditions may vary.

For technical support, troubleshooting assistance, or to inquire about replacement parts, please contact Renogy customer service. You can find contact information and additional resources on the official Renogy website: www.renogy.com.

Additional documentation, including a comprehensive user manual in PDF format, may be available for download from the product page or Renogy's support section.