

RENOGY

Pro Pure Sine Wave Inverter

12V | 3000W

RIV1230P2-126

VERSION A0
June 26, 2024



USER MANUAL

Before Getting Started

The user manual provides important operation and maintenance instructions for RENOGY 12V 3000W Pro Pure Sine Wave Inverter (hereinafter referred to as inverter).

Read the user manual carefully before operation and save it for future reference. Failure to observe the instructions or precautions in the user manual can result in electrical shock, serious injury, or death, or can damage the inverter, potentially rendering it inoperable.

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Online Manual



User Manual



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1. General Information

1.1. Symbols Used

The following symbols are used throughout the user manual to highlight important information.

-  **WARNING:** Indicates a potentially dangerous condition which could result in injury or death.
-  **CAUTION:** Indicates a critical procedure for safe and proper installation and operation.
-  **NOTE:** Indicates an important step or tip for optimal performance.

1.2. Qualified Personnel

The installation and service of the inverter must be carried out by qualified personnel. Qualified personnel refer to trained and licensed electricians or installers with all the following skills and expertise:

- Knowledge of the functional principles and operation of on-grid and off-grid energy storage system.
- Knowledge of the risks and dangers associated with the installation and service of electrical devices and acceptable mitigation methods.
- Knowledge of the installation and service of electrical devices.
- Knowledge of and adherence to the user manual and all safety precautions and best practices.
- Knowledge of local installation regulations.
- Electrical license for the installation and service of energy storage system required by the county or state.

1.3. Introduction

RENOGY 12V 3000W Pro Pure Sine Wave Inverter converts direct-current power stored in 12V batteries into usable alternating current (AC) power for appliances. Compatible with diverse lithium and lead acid batteries, the inverter delivers two plug-and-play AC outlets and one DIY AC outlet for offgrid applications, providing stable power for applications that are sensitive to AC voltage variations. As a pure sine wave inverter, it is capable of producing cleaner, smoother, quieter, and more reliable electricity to operate tools, fans, lights, and other electronics without any interference.

In addition, the inverter provides multiple protection mechanisms, preventing damage caused by overvoltage, short circuit, and overtemperature. With the built-in Bluetooth module, you can monitor the operating status of the inverter via the DC Home app or Renogy ONE Core. The embedded LEDs and in-app error codes help you effortlessly diagnose faults on the inverter.

You can turn the inverter on or off with the included Remote Control.

1.4. Key Features

- **Powerful DC-AC Conversion**
Effortlessly converts 12V DC power to AC power with up to 90% efficiency, ensuring stable running of appliances.
- **Guaranteed Appliance Protection**
Our pure sine wave technology ensures appliance longevity by delivering a clean sine wave that is comparable to or even better than grid power. Say goodbye to annoying buzzing sounds and enjoy the smooth operation of all your devices.
- **Built-In Bluetooth and RV-C Communication**
The inverter provides an built-in Bluetooth module that allows you to monitor the inverter operating status in the DC Home app or Renogy ONE. The embedded RV-C communication port supports wired connection to other Renogy CAN-enabled devices.

- **Plug-and-Play Output Design**

Offers a built-in 5V/2.1A USB port, two plug-and-play 120V AC outlets (GFCI), and one DIY AC output terminal to meet diverse appliance demands.

- **Multiple protections**

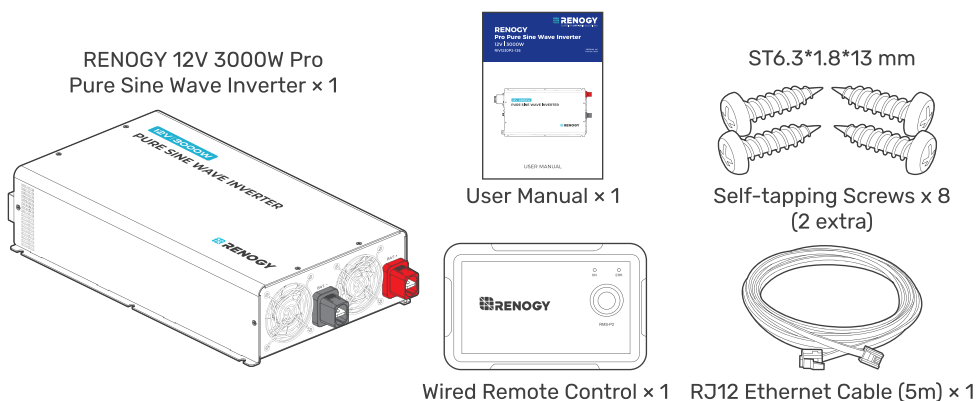
Provides undervoltage, overvoltage, overcurrent, overload, overtemperature, and short circuit protections for enhanced safety.

1.5. SKU

| | |
|--|---------------|
| RENOGY 12V 3000W Pro Pure Sine Wave Inverter | RIV1230P2-126 |
|--|---------------|

2. Get to Know 12V 3000W Pro Pure Sine Wave Inverter

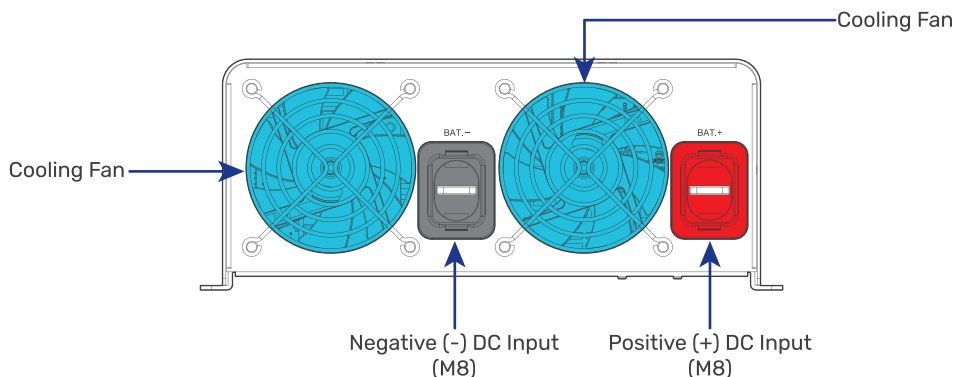
2.1. What's In the Box?



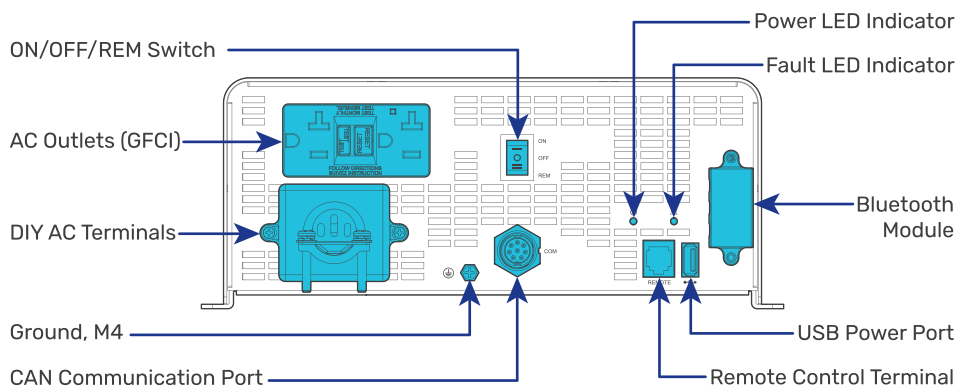
- i** Make sure that all accessories are complete and free of any signs of damage.
- i** The accessories and product manual listed are crucial for the installation, excluding warranty information and any additional items. Please note that the package contents may vary depending on the specific product model.




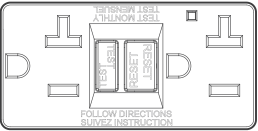
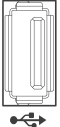
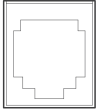
2.2. Product Overview

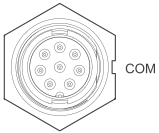
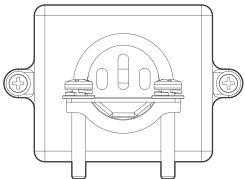
■ DC Side View



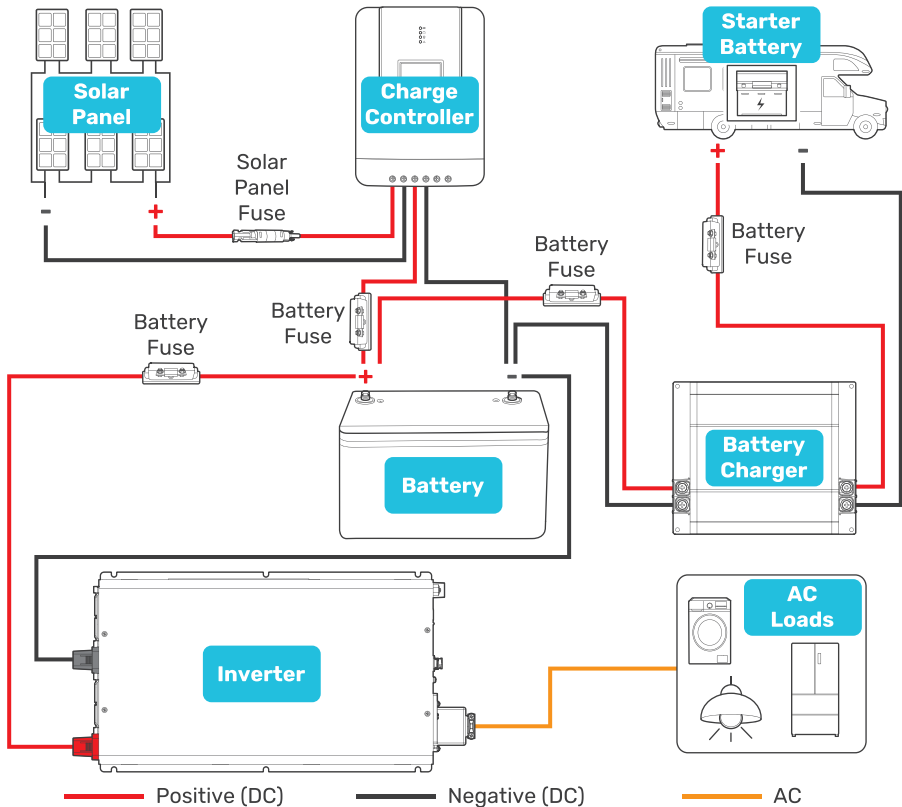
AC Side View



| Part | Description |
|---|---|
|  <p>ON OFF REM</p> | ON/OFF/REM Switch Turns the inverter ON, OFF, or REMOTE. |
|  | Power LED Indicator Indicates the operational status of the inverter. |
|  | Fault LED Indicator Indicates that the inverter shuts down due to overheating, overload, undervoltage, or overvoltage. Solution: Immediately turn off all AC appliances. Allow the inverter to cool down before any actions. Make sure that the cooling fans are not blocked. Ensure all cables are of proper sizes and lengths. |
|  | AC Outlets (GFCI) Single-phase 120V AC, 60 Hz. Up to 20A x 2. |
|  | USB Power Port Supplies 5V/2.1A for charging tablets, smartphones, and other small appliances. |
|  <p>REMOTE</p> | Remote Control Terminal Connects to the Wired Remote Control. |

| Part | Description |
|---|--|
|  | CAN Communication Port Communicate with other Renogy devices supporting CAN communication and monitoring devices through CAN (common area network) bus, also known as RV-C, enabling safe operation, smart control, remote monitoring, and programmable settings. |
|  | DIY AC Terminals Connect to 120V AC devices operating at higher than 25A or distributed wiring with multiple AC outlets. Remove the two screws on the protective cover to access the terminals. Terminal layout (facing the front panel): <ul style="list-style-type: none"> ● Left: Live (L) ● Middle: Neutral (N) ● Right: Ground (G) |

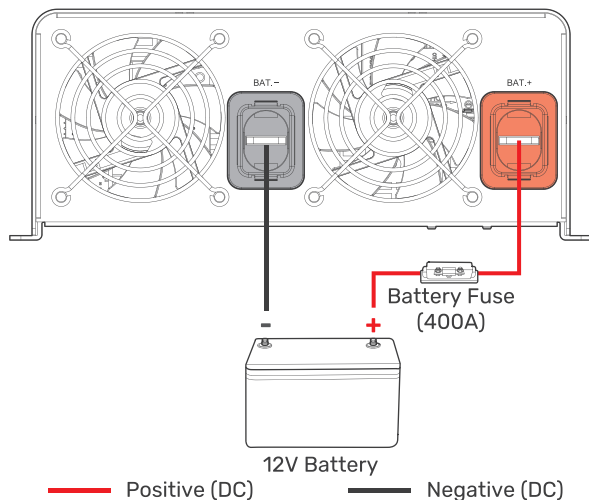
2.3. System Setup



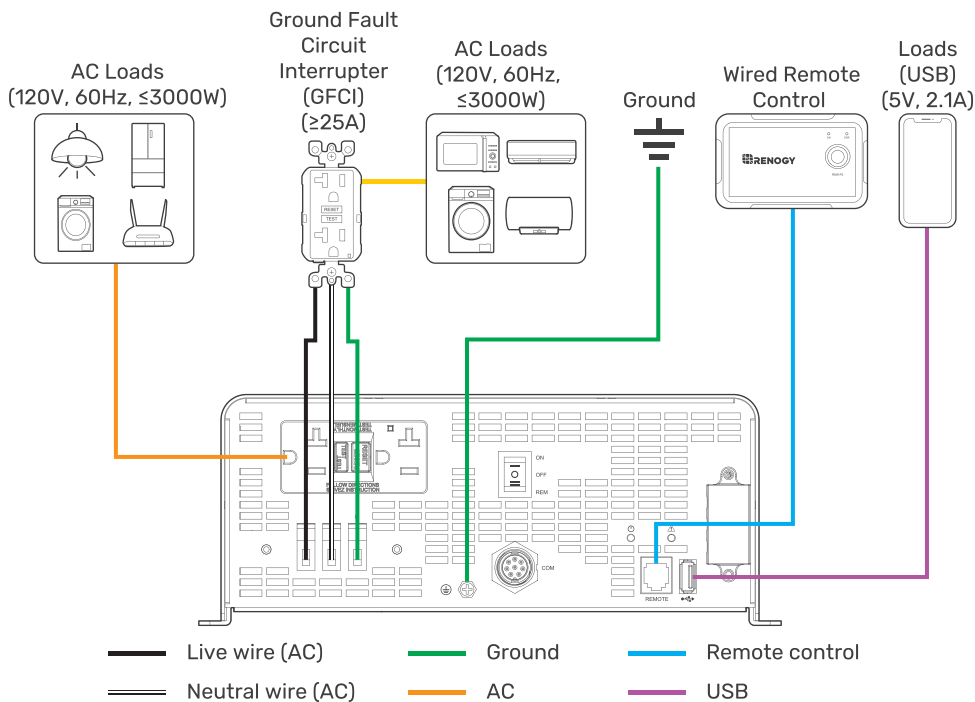
i The wiring diagram only shows the key components in a typical DC-coupled off-grid energy storage system for the illustrative purpose. The wiring might be different depending on the system configuration. Additional safety devices, including disconnect switches, emergency stops, and rapid shutdown devices, might be required. Wire the system in accordance with the regulations at the installation site.

2.4. Inverter Wiring

■ DC Side View



■ AC Side View



i The inverter supports up to 3000W AC output for AC Outlets and DIY AC Terminals combined. Connecting the inverter to AC appliances rating higher than 3000W AC will trigger overload protection, causing the inverter to stop working.

2.5. Size Batteries and Fuses

■ Size a Battery Bank

The inverter is compatible with 12V deep-cycle gel-sealed lead-acid batteries (GEL), flooded lead-acid batteries (FLD), sealed lead-acid batteries (SLD/AGM), or lithium iron phosphate batteries (LI). Battery types and capacity relate to the overall inverter performance. To size a proper battery, you need to identify the loads that you will be utilizing, as well as an estimated duration (hours/day) you will be using the load. Oversizing should be considered due to efficiency losses. Follow the steps below to size a bank specific to your applications. In the steps, a 120V 0.4A fan running for 12 hours per day serves as an example.

Step 1: Determine Your Load Watts (Amps x Volts).

Every electronic device is labeled with watts (W) directly, or with voltage (V) and amperage (A).

You can multiply the voltage and amperage to calculate the watts.

$$\text{Watts (W)} = \text{Volts (V)} \times \text{Amps (A)}$$

$$\text{Example: Fan Watts} = 120\text{V} \times 0.4\text{A} = 48 \text{ Watts}$$

Step 2: Estimate Load Run-Time in Watt-Hours (Wh).

Estimate the run-hours per day you will be using the load and multiply this by your Watts per load.

$$\text{Load Run-Time} = \text{Load Watts} \times \text{Load Run Hours}$$

$$\text{Example: Fan Run-Time} = 48\text{W} \times 12 \text{ hours} = 576 \text{ Wh}$$

Step 3: Determine Theoretical Battery Capacity in Amp-Hour (Ah)

Divide your load run-time by the battery voltage to get the theoretical battery capacity (Ah).

$$\text{Theoretical Battery Capacity (Ah)} = \text{Load Run-Time (Wh)} / \text{Battery Rated Voltage (V)}$$

Use the 576Wh fan as an example. The required battery capacity should be 48 Ah (= 576Wh/12V).

Step 4: Oversize Battery Capacity.

The Theoretical Battery Capacity (Ah) in Step 3 represents the minimum battery capacity to run your load for your intended time. Note that this assumes 100% use of a battery, which is not recommended. Assuming 50% depth of discharge, you need to multiply this Theoretical Battery Capacity by 2 and 1.25 to account for some efficiency losses.

$$\text{Recommended Battery Capacity} =$$

$$\text{Theoretical Battery Capacity} \times \text{Oversize Ratio} \times \text{Efficiency Loss Ratio}$$

Use the fan as an example. Recommended battery capacity = 48Ah x 2 x 1.25 = 120Ah

Therefore, a 120Ah battery bank, or close, will be able to support a 12-hour run time for a 48V fan while also prolonging battery life for the best system size possible.

In scenarios where multiple batteries are connected in series, parallel, or series-parallel, the system capacity varies specific to the battery connection type. The table below lists system capacity involving three batteries.

| Battery Capacity (Ah) | |
|-------------------------------------|-------------------------------------|
| Batteries in Series | Batteries in Parallel |
| System Capacity = $C_1 = C_2 = C_3$ | System Capacity = $C_1 + C_2 + C_3$ |

i In the formula, C represents the system capacity, and 1, 2, or 3 represents the battery number respectively.

■ Size a Battery Fuse

Proper fuse sizing is critical for inverter application, given their high amp draw nature. Calculate the fuse size by referring to the formula below:

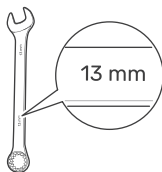
$$\text{Fuse Rating} = \frac{\text{Inverter Rated (Continuous) Output Power (W) / Battery Nominal Voltage (V) / Peak Efficiency} \times 1.25 \text{ (Safety Factor)}}$$

For this inverter, the battery fuse should rate at a minimum of 340 amps = $(3000\text{W}/12\text{V}/0.90 \times 1.25)$. It is recommended that a 400A fuse should be used to accommodate temporary surges or fluctuations in current without blowing unnecessarily.

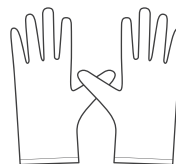
2.6. Required Tools



Phillips Screwdriver (#1)



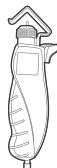
Wrench (17/32 in)



Insulating Gloves



Slotted Screwdriver (1 mm)



Wire Stripper



Prior to installing and configuring the inverter, prepare the recommended tools.

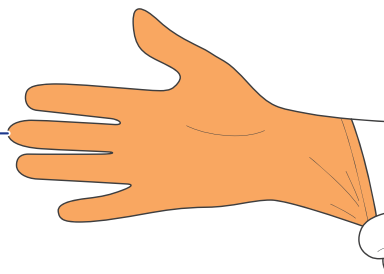
3. Installation

To ensure safe and efficient operation of the inverter and to avoid potential damage or hazards, always follow the installation instructions in the sequence described in this manual.

Step 1. Wear Insulating Gloves



Insulating
Gloves

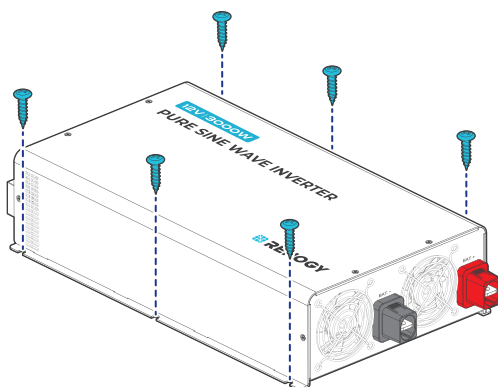



Step 2. Plan a Mounting Site

Follow the guidelines below:

- **Cool, dry, and well-ventilated area**
The inverter must be installed in a site where the fans are not blocked or where they are not hit directly by the sun. The site should be free of any kind of moisture with a clearance of at least 10 inches around the inverter for adequate ventilation.
- **Protection against fire hazard**
The inverter should be away from any flammable material, liquids, or any other combustible material.
- **Close proximity to battery bank**
Put the inverter close to batteries banks to prevent excessive voltage drop. Choose a proper sized wire going from the battery bank to the inverter.
- **Limiting electromagnetic interference (EMI)**
Ensure the inverter is firmly grounded to a building or vehicle. Alternatively, it can be earth grounded. Keep the inverter away from EMI receptors such as TVs, radios, and other audio/visual electronics to prevent damage/interference.






Secure the inverter to the installation site by fixing self-tapping screws through the mounting holes.



 -4°F to 122°F / -20°C to 50°C
(Output power degrading at 104°F/40°C or higher)

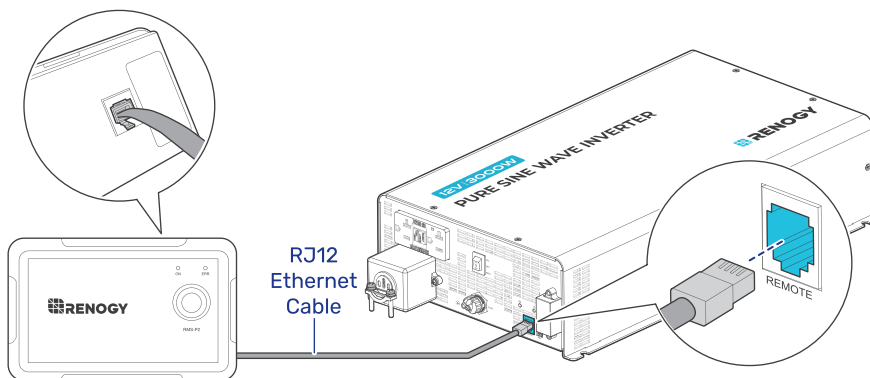
 0% to 95%



-  Make sure that the inverter is installed firmly to prevent it from falling off.
-  Do not over-torque or overtighten the terminals. This could potentially damage the unit.
-  Ensure the inverter is in the OFF position before connecting it to anything.
-  Do not install the inverter in the same compartment as the battery bank because it could serve as a potential fire hazard.
-  Never mount the inverter vertically on a vertical surface since it would present a hazard for the fan opening, undermining cooling the inverter.

Step 3. Install a Wired Remote Control

You can use a Wired Remote Control to power on or off the inverter remotely.
Connect the inverter to a Wire Remote Control via the included RJ12 Ethernet cable.



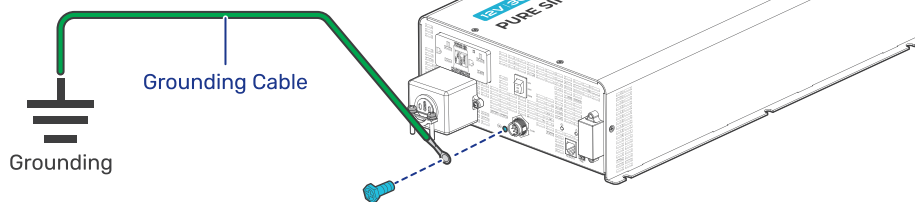
Step 4. Ground the Inverter

Recommended Components



3/16 in (M4)

Grounding Cable (9 AWG)




Grounding Cable

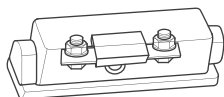
Grounding

Step 5. Connect the Inverter to a Battery

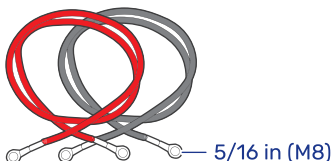
The inverter is suitable for 12V battery bank systems ONLY. Not following the minimum DC requirement will cause irreversible damage to the device.

 Be careful of the positive and negative polarities. Reversing the polarities might cause permanent damage to the inverter and will void the warranty.

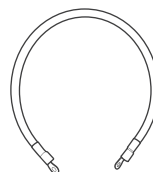
Recommended Components & Accessories



*ANL Fuse (400A)



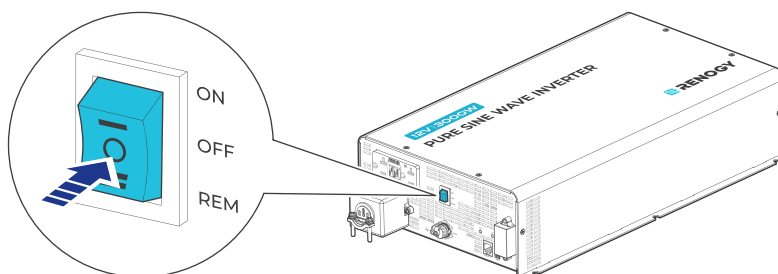
*Battery Adapter Cables (4/0 AWG) × 2



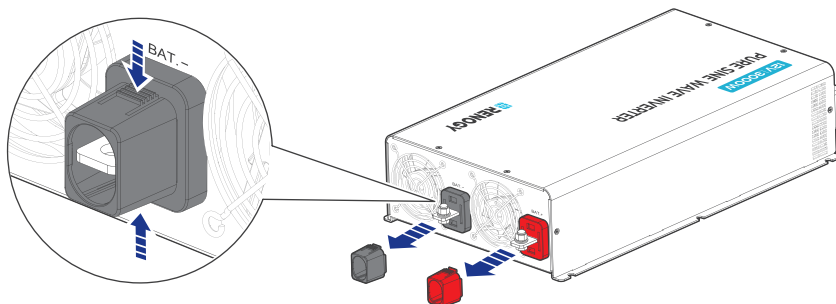
*Fuse Cable (4/0 AWG)

 Components and accessories marked with "*" are available on renogy.com.

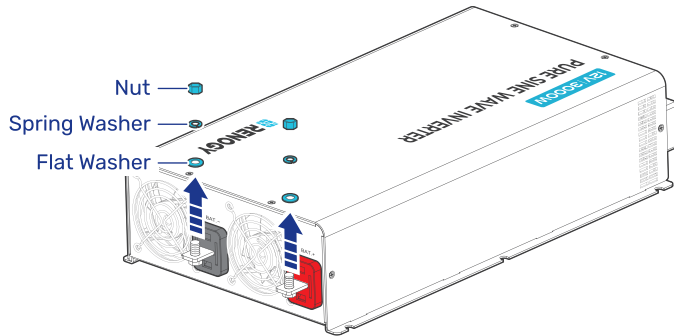
Step 1: On the AC side, set the ON/OFF Switch to the OFF position.



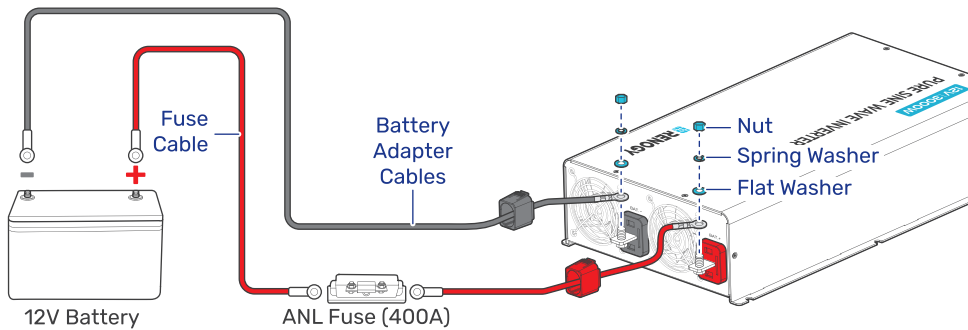
Step 2: On the DC side, press and hold the claps on both the top and bottom of the protection caps of Negative and Positive DC Input terminals, and pull them out vertically.



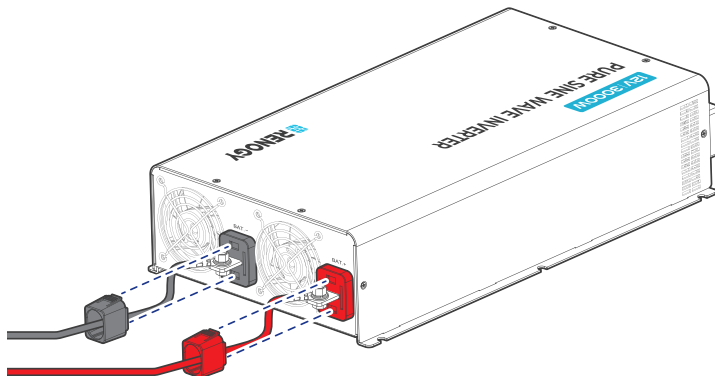
Step 3: Remove the nuts, spring washers and flat washers from the terminals.



Step 4: Run a Negative Battery Adapter Cable through the protection cap of the Negative DC Input terminal, and connect the cable from the Negative DC Input Terminal on the inverter to the negative terminal of a battery. Install the nut, spring washer, and flat washer on the Negative DC Input terminal at a torque of 70.8 in·lbs / 8 N·m). Run a Positive Battery Adapter Cable through the protection cap of the Positive DC Input terminal on the inverter, and connect the cable from the terminal to a ANL fuse (400A). Connect a fuse cable from the ANL fuse to the positive terminal of a battery.



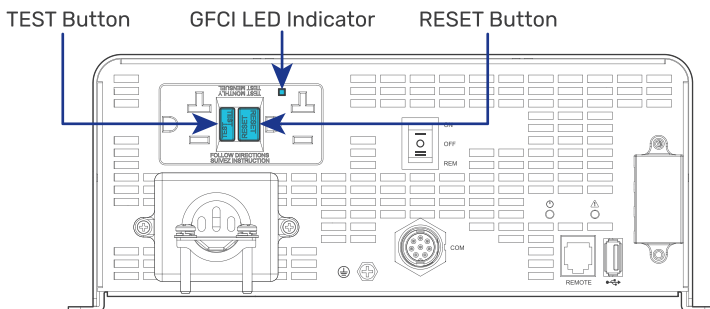
Step 5: Install the protection caps back by aligning the claps on the caps with those on the DC input terminals.



Step 6. Connect the Inverter to AC Loads (Appliances)

■ AC Outlets

The inverter integrates a GFCI outlet for AC output. A ground-fault circuit interrupter (GFCI) is a device that helps protect people from electric shocks by de-energizing a circuit or portion of a circuit within an established period of time when a current to ground exceeds some predetermined value that is less than that required to operate the overcurrent device (circuit breaker or fuse) of the supply circuit.



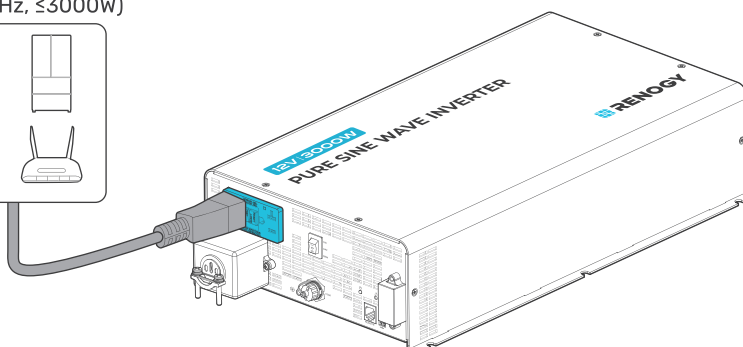
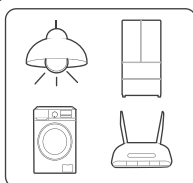
Prior to connecting AC appliances to the GFCI outlet, perform the following to ensure the outlet works properly:

1. Connect a small-power AC appliance such as a light or fan to the GFCI outlet.
2. Set the ON/OFF/REM Switch to the ON position.
3. Push down the RESET Button on the GFCI outlet to turn on the AC output.
4. Turn on the connected AC appliance to check if it works Properly. The GFCI LED indicator should be on. If yes, jump to Step 5. If no, contact [Renogy customer service](#) for help.
5. Push the TEST Button, and the RESET Button automatically pops up. The inverter stops the AC output. Check if the the AC appliance stops working. If the RESET Button does not pop up or the AC appliance continues working, contact [Renogy customer service](#) for help.
6. Set the ON/OFF/REM Switch to the OFF position before further installation or operations.

i The inverter stops outputting AC power when the RESET Button is pushed back to its original position.

After testing, push down the RESET Button, and plug your AC appliances directly to the GFCI outlet.

AC Loads
(120V, 60Hz, ≤3000W)



■ DIY AC Terminals (Optional)

Additionally, you have the option to establish a permanent connection from the AC output by linking it through the DIY AC Terminals to a GFCI, a load sub-panel, or supplementary AC outlets that receive power from the inverter. GFCIs are usually required in wet or damp locations.

The following table lists GFCIs that meet the specifications and will function properly when they are connected to the inverter.

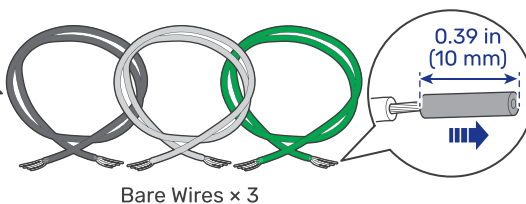
| Tested GFCI Models | |
|--------------------|--------------|
| Manufacturer | Model Number |
| Leviton | GFNT2 |
| Hubbell | GFP1305 |
| Hubbell | GF15WLA |

- ⚠ Risk of electrical shock. Use only ground-fault circuit interrupters [receptacle(s) or circuit breaker(s)] compatible with your inverter.
- ⚡ GFCIs shall be installed in a recreational vehicle's wiring system to protect all branch circuits.
- i For details on how to connect loads and the inverter to the GFCI, read the user manual of the specific GFCI.

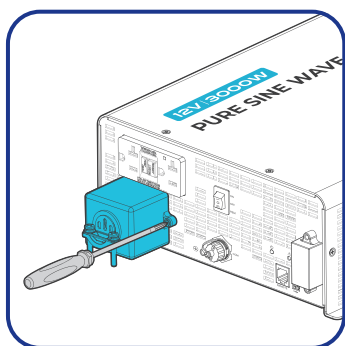
Recommended Components

Recommended Cable Size

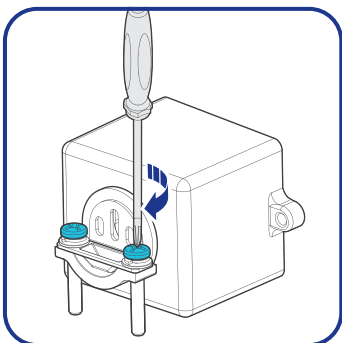
| Cable Length | Cable Size |
|----------------|------------|
| 0 ft to 10 ft | 9 AWG |
| 11 ft to 20 ft | 9 to 7 AWG |
| 21 ft to 30 ft | 7 AWG |



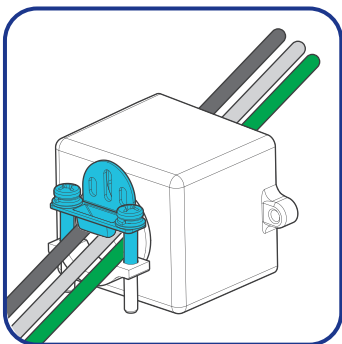
- i In this section, we use a black wire for live, a white wire for neutral, and a green wire for ground.



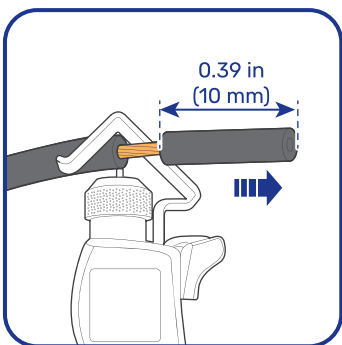
1. Remove the protection cover from the DIY AC Terminals by using a Phillips Screwdriver (#1).



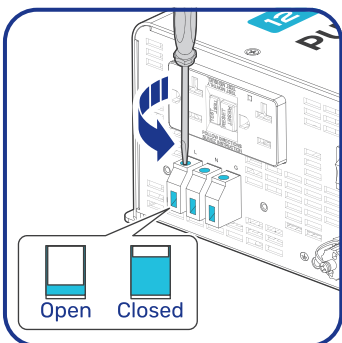
2. Loosen the screws on cable clamp with a Phillips Screwdriver.



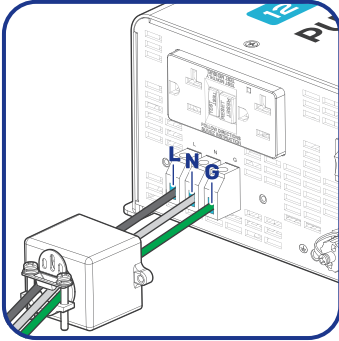
3. Lift the clamp, and run the cables through the clamp.



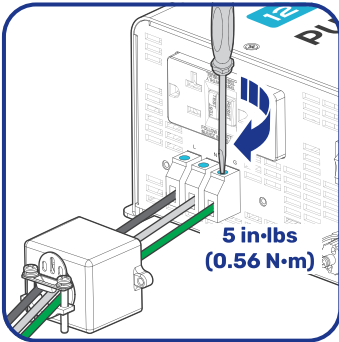
4. Strip approximately 0.39 inches (10 mm) of insulation from one end of each of the three cables using a wire stripper.



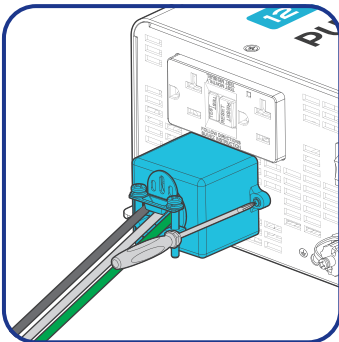
5. Rotate the cable retainers of the L, N, and G terminals counterclockwise with a slotted screwdriver. Make sure the cable retainers are completely open.



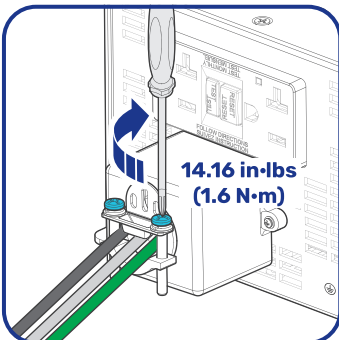
6. Insert the bare ends of the cables into the corresponding L, N, and G. From left to right, the terminal block indicates: Live/ Hot (L), Neutral (N), and Ground (G).



7. Rotate the screws clockwise to clamp the wire down and close the cable retainers. Make sure all connections are tight and secure.

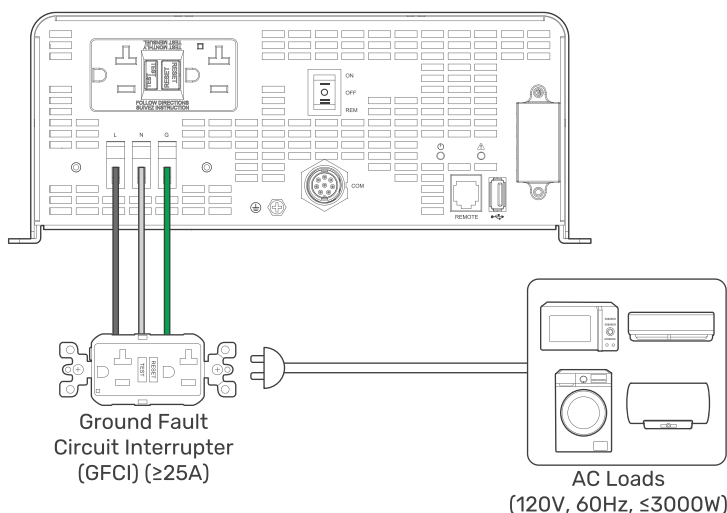


8. Install the protection cover back to the DIY AC Terminals.



9. Secure the clamp by fastening the screws.

10. Connect the other ends of the three cables to a GFCI, a load sub-panel, or supplementary AC outlets that receive power from the inverter. The illustration below is based on a situation where the DIY AC Terminals are connected to a GFCI.



Step 7. CAN Communication Wiring (Optional)

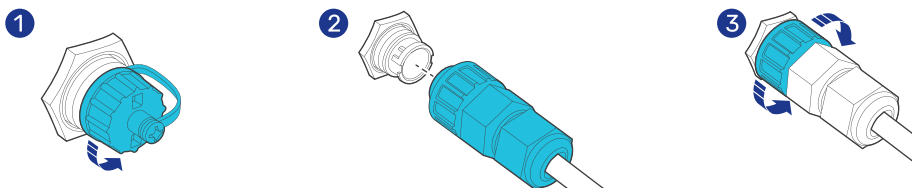
The RENOGY 12V 3000W Pro Pure Sine Wave Inverter can communicate with other Renogy power supply and monitoring devices supporting CAN communication through CAN (common area network) bus, also known as RV-C, enabling safe operation, smart control, remote monitoring, and programmable settings.

i For technical support from Renogy, please contact us through renogy.com/contact-us/.

To properly connect or disconnect the 7-Pin CAN Communication Terminal Plug to or from the inverter, you should

1. Remove the dust cover from the CAN Communication Port on the inverter.
2. Ensure that the plug is oriented vertically toward the CAN Communication Port.
3. Rotate the terminal fixing nut to loosen or secure the plug.

Shaking the terminal plug while plugging or unplugging it is not allowed.

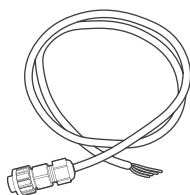


Ensure 120 Ω terminating resistors are installed at both ends of the RV-C bus for successful communication with Renogy devices supporting CAN communication. If the RV user manual does not determine if the RV-C bus has a built-in 120 Ω termination resistor, call the RV manufacturer to confirm.

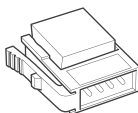
i If the RV-C bus does not have a built-in 120 Ω termination resistor, the inverter will not communicate properly with other Renogy devices supporting CAN communication.

Connect devices to the inverter according to the wiring diagram provided by the RV manufacturer. Choose proper communication cables according to your specific demands.

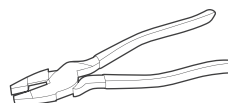
Recommended Tools & Accessories



*7-Pin CAN Communication
Terminal Plug to Bare Drop Cable



Drop Plugs



Split Joint Pliers

- i** Accessories marked with “*” are available on renogy.com.
- i** The 7-Pin CAN Communication Terminal Plug to Bare Drop Cable is only for use with the inverter. Please refer to the user manual of other devices for the communication cable types they require.
- i** The drop cable shall not exceed 19.6 feet (6 m), and the RV-C bus shall not exceed 98.4 feet (30 m).
- i** Choose the appropriate drop plugs that are compatible with the drop sockets used on the RV-C bus. Different RV manufacturers may use different types of drop sockets for inter-device communication connections. If you are unsure about the correct drop plug selection, consult with the RV manufacturer. In this manual, the Mini-Clamp II plug (4-pin) is used as an example.
- i** Different Drop Plugs follow different pinouts. Crimp the Drop Plugs on the Drop Cables following the correct pinout. If you are not sure about the Drop Plug pinout, check with the RV manufacturer.

Step 1: Install the Drop Plugs on the bare end of the 7-Pin CAN Communication Terminal Plug to Bare Drop Cable. The white CAN_H wire goes to pin 2, the blue CAN_L wire goes to pin 3. Leave pin 1 and pin 4 empty.

Step 2: Squeeze the crimp areas of the Drop Plugs with the Split Joint Pliers.

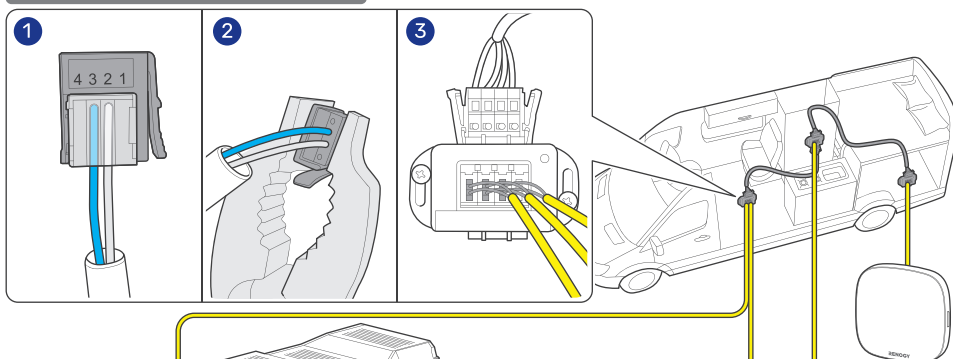
Step 3: Locate the drop tap (not included) on the RV-C bus that is the closest to the installation site of the inverter. The drop taps are usually located above the entry door, in the bathroom, or under the bed in the RV.

Step 4: Connect the Drop Plugs on the drop cables and other Renogy devices supporting CAN communication to the drop sockets on the drop tap.

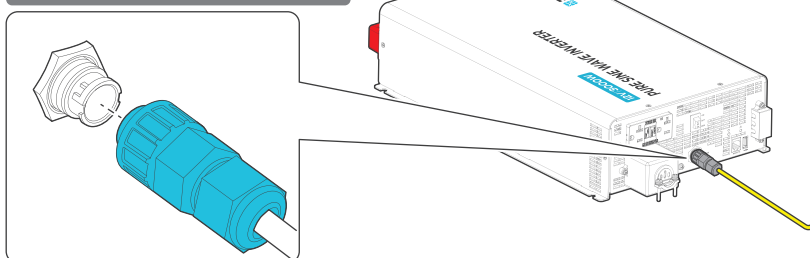
Step 5: Insert the 7-Pin CAN Communication Terminal Plug into the CAN Communication Port of the inverter.

- i** If you fail to locate the drop taps, please contact the RV manufacturer for help.
- i** Different drop taps are used on the RV-C bus by different RV manufacturers. This user manual takes the 4-socket drop tap as an example.

STEP-1 Install Cables on the RV-C bus



STEP-2 Install Cable on the Inverter







4. Power On/Off and LED Indicators

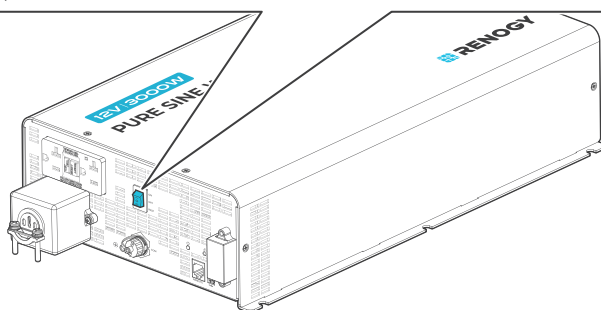
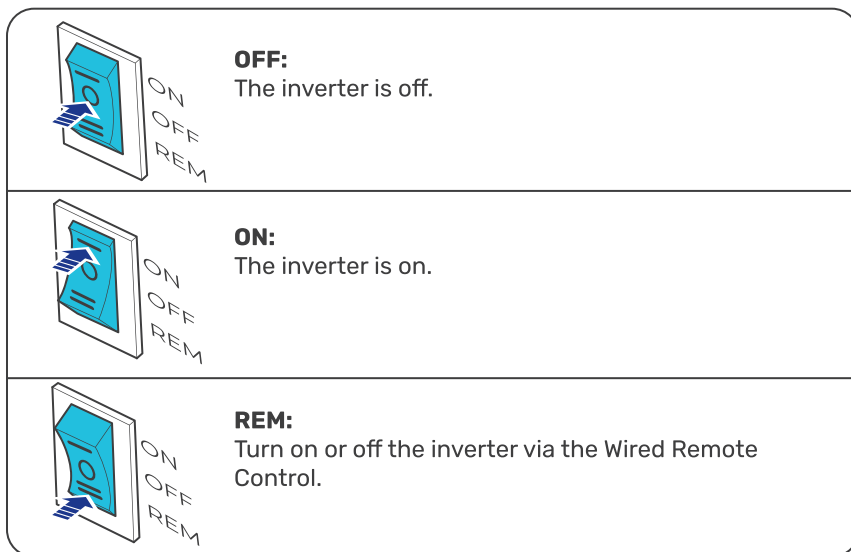
4.1. Power On/Off

After proper battery and AC load connections, you can operate the inverter.

When finishing using the inverter, power off the AC loads first, and then rock the ON/OFF/REM Switch to the OFF position.

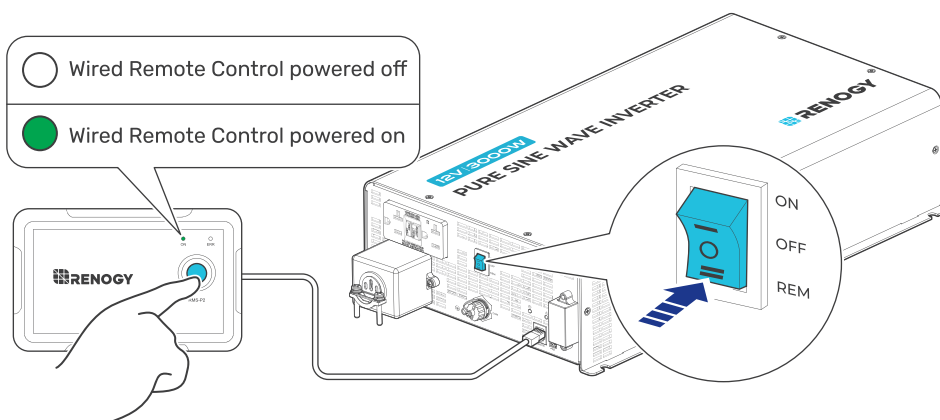
-  The inverter fails to be powered on when the output voltage of the connected battery drops below 10.5V. In such case, charge the battery immediately.
-  When the inverter turns on, it is normal to see the fans run for a second and hear a beep.
-  Avoid powering on the inverter with the load (electronic devices) already switched on. This may trigger an overload since some electronic devices have an initial high power surge to start.
-  When switching off the inverter, turn off the electronic devices first. Although the inverter is off, the terminal capacitors will still have a charge, so the DC and AC terminals must be disconnected if altering the circuitry.

■ Method 1: Through On/Off/Remote Power Switch



■ Method 2: Through Wired Remote Control



Push the ON/OFF/REM Switch to the REM position. Press the RMS-P button to power on or off the inverter.





4.2. LED Indicators

You can locate errors and faults of the inverter by checking the status of relative LEDs and the integrated beeper.



■ Inverter LED Indicators


| Name | Color | Role |
|--|----------------------------------|--|
| Power LED  | Solid green | The inverter is in normal operation. |
| | Flickering green with no beeping | Input OverVolts/UnderVolts alarm |
| Fault LED  | Solid red with beeping | OverTemp Protection, Input OverVolts/UnderVolts ShuntDown, Overload Protection, and Battery Input OverAmps |
| | Off | No error detected |

■ Wired Remote Control LED Indicators

| Name | Color | Role |
|---|-------------|----------------------------------|
| ON LED  | Off | Wired Remote Control powered off |
| | Solid green | Wired Remote Control powered on |
| ERR LED  | Off | No fault |
| | Solid red | System fault |





4.3. Troubleshooting

| LED Status | Beeper Status | Error/Protection | Inverter Status | Solution |
|---|--------------------------------|--|--|---|
|  | Beeping at an interval of 0.5s | Input OverVolts/ UnderVolts alarm triggered | The inverter continues to operate normally. | For UnderVolts alarms, keep input voltage above 11V ($\pm 0.3V$). For OverVolts alarms, keep input voltage below 15.5V ($\pm 0.3V$). |
|  | Beeping | OverTemp Protection triggered | The inverter stops working with no AC output. | 1.Allow the inverter to cool down. 2. Check for adequate ventilation. 3. Reduce the load on the inverter. |
| | | Input OverVolts/ UnderVolts ShuntDown | The inverter stops working with no AC output. | For UnderVolts alarms, keep input voltage above 10.5V ($\pm 0.3V$). For OverVolts alarms, keep input voltage below 16V ($\pm 0.3V$). |
| | | Overload Protection triggered | The inverter pauses AC output and automatically restarts after 5 seconds. Note: Manual restarting is necessary if the auto-restart fails 5 times. | Reduce the load on the inverter, and restart the inverter if necessary. |
| | | Short Circuit Protection triggered | The inverter stops working with no AC output. | Ensure all cables are in good condition and wired properly. |

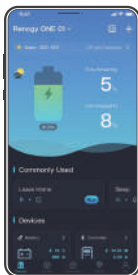
 For further assistance, contact Renogy technical support service at <https://www.renogy.com/contact-us>.

5. Monitor the Inverter

Depending on the specific application, the inverter can establish either short-range or long-range communication connections with monitoring devices. These monitoring devices facilitate real-time monitoring, programming, and complete system management, offering comprehensive control and enhanced flexibility.

-  Make sure the Bluetooth of your phone is turned on.
-  The version of the DC Home app might have been updated. Illustrations in the user manual are for reference only. Follow the instructions based on the current app version.
-  Make sure that the inverter is properly installed and powered on before it is paired with the DC Home app.
-  To ensure optimal system performance, keep the phone within 10 feet (3 m) of the inverter.

Download the DC Home app. Login to the app with your account.



DC Home App



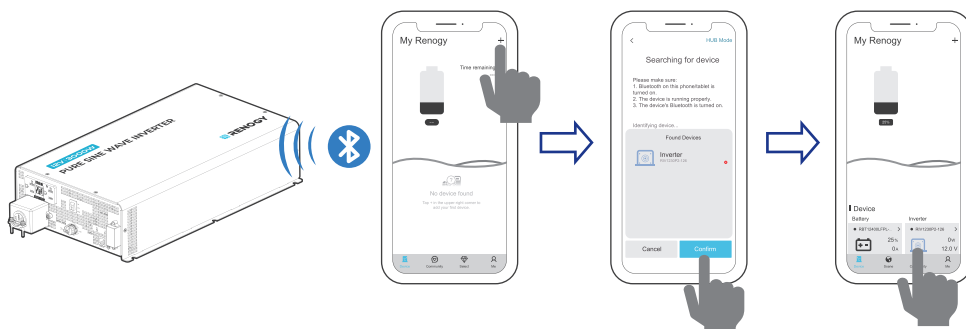
5.1. Short-Range Monitoring via DC Home App

If only short-range monitoring is required, connect the inverter to the DC Home app directly through the Bluetooth of your phone.

Step 1: Open the DC Home app. Tap **+** to search for new devices.

Step 2: Tap **Confirm** to add the newly found device to the device list.

Step 3: Tap the inverter icon to enter the device information interface.







5.2. Wireless Long-Range Monitoring

If long-range communication and programming are required, connect the inverter to Renogy ONE (sold separately) through Bluetooth, and then the Renogy ONE to the DC Home app through Wi-Fi.

Recommended Components



*RENOGY ONE Core

-  Components marked with "*" are available on [renogy.com](https://www.renogy.com).
-  For instructions on Renogy ONE, see [Renogy ONE Core User Manual](#).
-  Make sure that the Renogy ONE is powered on before the connection.
-  Make sure the inverter does not communicate with any other device.

Step 1: Connect the inverter to the Renogy ONE through the Bluetooth of your phone.

Step 2: Pair the Renogy ONE with the DC Home app through Wi-Fi.



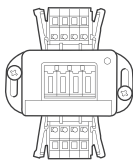
5.3. Wired Long-Range Monitoring (Connect to RV-C Bus)

If long-range communication and programming are required, connect the inverter to Renogy ONE through wires, and then the Renogy ONE to the DC Home app through Wi-Fi.

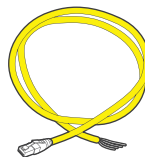
Recommended Components & Accessories



*RENOGY ONE Core



Common Drop Tap

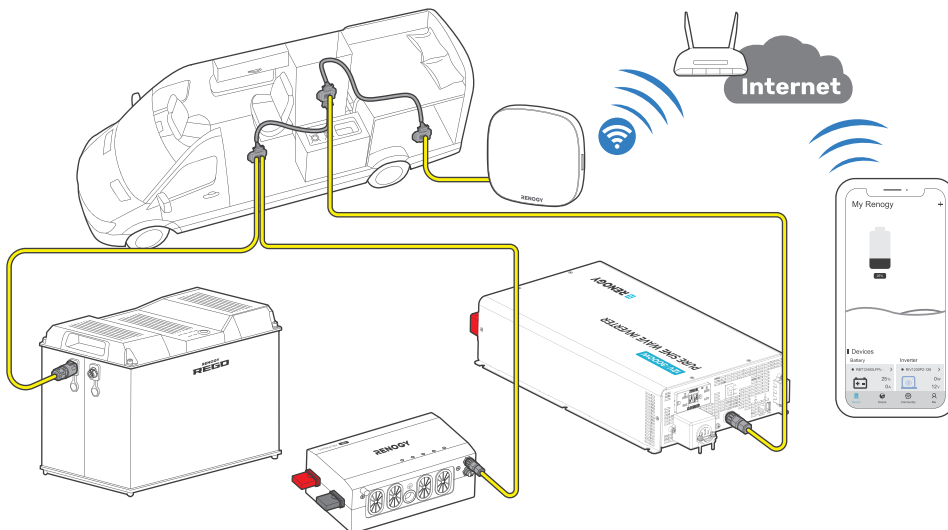


Communication Cable
(RJ45 Plug to Bare Drop Cable)

- i** Components marked with “*” are available on renogy.com.
- i** For instructions on Renogy ONE, see [Renogy ONE Core User Manual](#).
- i** Make sure that the Renogy ONE is powered on before the connection.
- i** Make sure the inverter does not communicate with any other device.
- i** Select the appropriate communication cable (sold separately) according to the distance between devices. The communication cable should be less than 19.6 feet (6 m).
- i** Different terminal block plugs are used on different Common Drop Taps and follow different pinouts. If you are unsure about the pinout of the terminal block plug, contact the RV manufacturer.

Step 1: Replace the terminated drop tap at either end of the RV-C bus with the Common Drop Tap (not included). Secure the bare wires of the Drop Cable (not included) onto the terminal block plug of the Common Drop Tap following the terminal block plug pinout. Plug the Drop Cable to the RJ45 port of Renogy ONE.

Step 2: Monitor and program the complete system on Renogy ONE or the DC Home app.



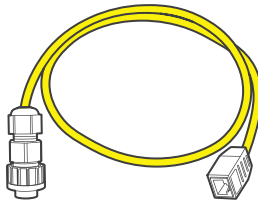
5.4. Wired Long-Range Monitoring (Connect to Inverter)

If long-range communication and programming are required, connect the inverter to Renogy ONE through wires, and then the Renogy ONE to the DC Home app through Wi-Fi.

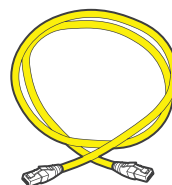
Recommended Components & Accessories



*RENOGY ONE Core



*7-Pin CAN Communication Terminal Plug to RJ45 Port Adapter Cable

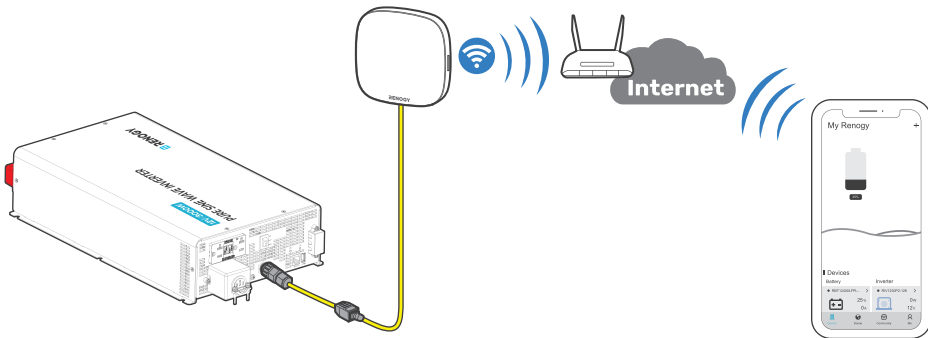


RJ45 Ethernet Cable (CAT5 or above)

- i** Components marked with “*” are available on renogy.com.
- i** For instructions on Renogy ONE, see [Renogy ONE Core User Manual](#).
- i** Make sure that the Renogy ONE is powered on before the connection.
- i** Make sure the inverter does not communicate with any other device.
- i** Select the appropriate communication cable (sold separately) according to the distance between devices. The communication cable should be less than 19.6 feet (6 m).

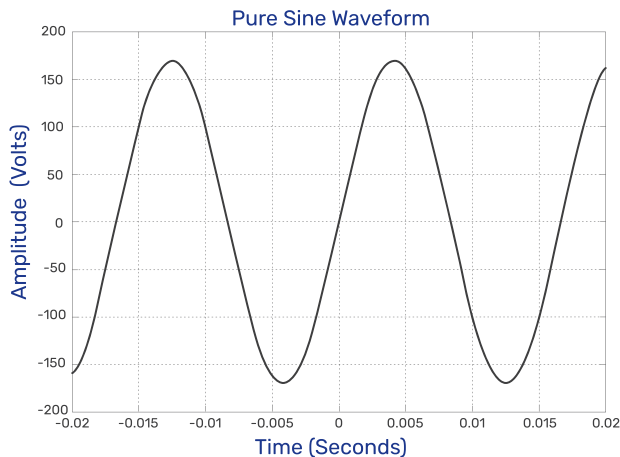
Step 1: Connect the Renogy ONE to the CAN Communication Port on the inverter with the Communication Adapter Cable (sold separately) and RJ45 Ethernet Cable.

Step 2: Pair Renogy ONE with the DC Home app. Monitor and program the complete system on the Renogy ONE or the DC Home app.



6. Pure Sine Wave

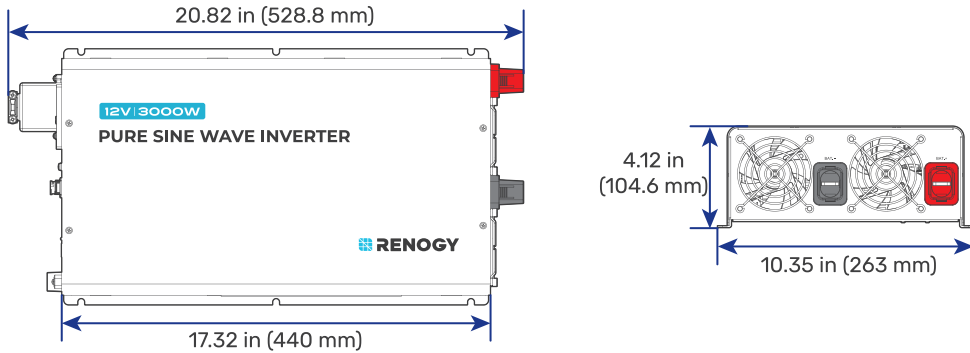
The inverter outputs a pure sine wave similar to the waveform of the grid power. In a pure sine wave, the voltage rises and falls in a smooth fashion with very low harmonic distortion and cleaner utility-like power.



This technology allows the inverter to supply electronic devices that require a high quality waveform with little harmonic distortion. In addition, the technology enables the inverter to be more efficient than traditional ones, allowing you to use less energy to supply more devices. The inverter can provide sufficient, stable power for tools, fans, lights, computers, and other electronics without any interference.

7. Dimensions & Specifications

7.1. Dimensions



i Dimension tolerance: ± 0.2 in (0.5 mm)

7.2. Technical Specifications

| General Data | |
|--------------------------------------|---|
| Model | RIV1230P2-126 |
| Output Waveform | Pure Sine Wave |
| AC Terminals | AC sockets x 2 & AC output terminal block x 1 |
| DC Terminals | M8 |
| Operating Temperature | -4°F to 122°F / -20°C to 50°C (Output power degrading at 104°F/40°C or higher) |
| Storage Temperature | -40°F to 158°F / -40°C to 70°C |
| Humidity | Max 95% RH, non-condensing |
| IP Rating | IP21 |
| Communication | Built-in Bluetooth Modbus & RV-C |
| Cooling | Fans |
| Dimensions (L x W x H) | 20.82 x 10.35 x 4.12 in / 528.8 x 263.0 x 104.6 mm |
| Weight | 13.23 lb / 6 Kg |
| Noise | < 55 dB |
| Regulatory and Safety Specifications | FCC Part 15 Class B |
| Electrical Data | |
| Continuous Output Power | 3000W |
| Peak Output Power (100 ms) | 6000W |

| | |
|--|--|
| Rated AC Output Voltage | 120V AC ($\pm 3\%$) |
| Continuous Output Current | 25A AC |
| Output Frequency | 60Hz ($\pm 0.3\text{Hz}$) |
| Inverter Efficiency | $\geq 90\%$ |
| Full Load Efficiency | $\geq 87\%$ |
| Rated Battery Input Voltage | 12V DC |
| Battery Input Voltage Range | 11.0V to 15.5V DC |
| Total Harmonic Distortion (THD) | $\leq 3\%$ (resistive loads, full load at nominal voltage of 12VDC) |
| Standby Current Draw | $< 2\text{A}$ |
| Overload Capacity | $\geq 1\text{min @ } 120\%$ $\geq 5\text{s @ } 150\%$ $\geq 100\text{ms @ } 200\%$ |
| Battery Overvoltage Shutdown | 16.0V ($\pm 0.3\text{V}$) DC |
| Battery Low Voltage Alarm | 11.0V ($\pm 0.3\text{V}$) DC |
| Battery Low Voltage Shutdown | 10.5V ($\pm 0.3\text{V}$) DC |
| Wired Remote Data | |
| Dimensions | 2.8 x 4.3 x 1.3 in / 70 x 110 x 31.8 mm |
| Wire Length | 16.4 ft / 5 m |

8. General Safety Information

8.1. WARNING

- Have the inverter installed by a qualified technician in accordance with the local and national electric codes (NEC).
- There are no serviceable parts for this inverter. Do not disassemble or attempt to repair the inverter.
- Ensure all connections going into and from the inverter are tight. There may be sparks when making connections; therefore, there should not be flammable materials or gases near the installation site.
- The inverters are suitable for 12V battery banks ONLY.
- Always ensure the inverter is in OFF position and disconnect all AC and DC devices associated with the inverter.
- Never connect the AC output of the inverter directly to an Electrical Breaker Panel or Load Center which is also fed from the utility power or generator.
- Please confirm the polarity of the devices before connection. A reverse polarity contact can cause injury and damage the device.
- Be careful when touching bare terminals of capacitors as they may retain high lethal voltages even after power is removed.
- Do not let the positive (+) and negative (-) terminals of the battery touch each other. Use only deep-cycle sealed lead-acid, flooded, gel, or lithium batteries.
- Risk of explosion! Never install the inverter in a sealed enclosure with flooded batteries! Do not install in a confined area where battery gases can accumulate.
- Be careful when working with large lead acid batteries. Wear eye protection and have fresh water available in case there is contact with the battery acid.
- Overcharging and excessive gas precipitation may damage the battery plates and activate material shedding on them. Too high of an equalizing charge or too long of one may cause damage. Carefully review the requirements of the specific battery in use.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.
- During the charging process, the battery must be placed in a well-ventilated place.

8.2. CAUTION

- Install the inverter in a well-ventilated, cool, and dry environment. Make sure the fans of the inverter and the ventilation holes are not blocked.
- Do not expose the unit to rain, moisture, snow, or liquids of any type.

Renogy Support

To discuss inaccuracies or omissions in this quick guide or user manual, visit or contact us at:

 | renogy.com/support/downloads

 → contentservice@renogy.com



Questionnaire Investigation



To explore more possibilities of solar systems, visit Renogy Learning Center at:

 | renogy.com/learning-center

For technical questions about your product in the U.S., contact the Renogy technical support team through:

 | renogy.com/contact-us



1(909)2877111

For technical support outside the U.S., visit the local website below:

Canada |  | ca.renogy.com

China |  | www.renogy.cn

Australia |  | au.renogy.com

Japan |  | jp.renogy.com

South Korea |  | kr.renogy.com

Germany |  | de.renogy.com

United Kingdom |  | uk.renogy.com

Other Europe |  | eu.renogy.com

FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

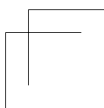
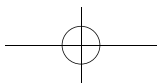
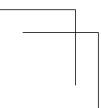
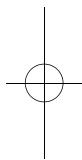
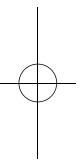
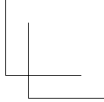
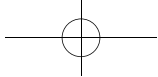
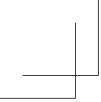
Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- (1) Reorient or relocate the receiving antenna.
- (2) Increase the separation between the equipment and receiver.
- (3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- (4) Consult the dealer or an experienced radio / TV technician for help.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.





Renogy Empowered

Renogy aims to empower people around the world through education and distribution of DIY-friendly renewable energy solutions.

We intend to be a driving force for sustainable living and energy independence.

In support of this effort, our range of solar products makes it possible for you to minimize your carbon footprint by reducing the need for grid power.



Live Sustainably with Renogy

Did you know? In a given month, a 1 kW solar energy system will...



Save 170 pounds of coal from being burned



Save 300 pounds of CO₂ from being released into the atmosphere



Save 105 gallons of water from being consumed



Renogy Power PLUS

Renogy Power Plus allows you to stay in the loop with upcoming solar energy innovations, share your experiences with your solar energy journey, and connect with like-minded people who are changing the world in the Renogy Power Plus community.



@Renogy Solar



@renogyofficial



@Renogy

Renogy reserves the right to change the contents of this manual without notice.



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IC: 20625-MC17
Contains TX FCC ID: 2ACCRMC17

 **RENOGY**