

AIMS Power Warranty Instructions:

This product is designed using the most modern digital technology and under very strict quality control and testing guide lines. If however you feel this product is not performing as it should, please contact us:

techsupport@aimscorp.net or (775)359-6703

We will do our best to resolve your concerns. If the product needs repair or replacement, make sure to keep your receipt/invoice, as that will need to be sent back along with the package and RA# prepaid to AIMS. You have a full 1 year from date of purchase warranty.

This warranty is valid world wide with the exception that freight and duty charges incurred outside the contiguous 48 United States will be prepaid by customer.

Except as provided above, AIMS makes no warranty of any kind, express or implied, including without limitation the implied warranties of merchantability and fitness for a particular purpose. In no event shall AIMS be liable for indirect, special or consequential damages. This warranty only applies to AIMS Power branded products. All other name brand products are warranted by and according to their respective manufacturer. Please do not attempt to return non-AIMS Power branded products to AIMS Power.

For additional products such as:

- Modified sine wave inverters
- Pure sine wave inverters
- Low Frequency Inverters
- Solar Charge Controllers
- Micro Grid Tied Inverters
- Inverter Chargers and Automatic transfer switches
- Converters AC-DC and DC-DC
- Custom cut cables
- Batteries
- Solar Panels & Racks

Please visit our web site: www.aimscorp.net

To find out where to buy any of our products, you may also e-mail: sales@aimscorp.net or call (775)359-6703.

Product Registration Instructions

Please visit our website at www.AIMSCorp.net and click on the product registration link at the top of the page.

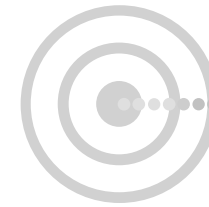
This will validate your warranty with AIMS Power and ensure that you get fast, expedited customer service if you need to repair or exchange your product.

Thank you for choosing



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DC to AC PURE SINE WAVE POWER INVERTER

USER MANUAL

Model number: PWRI200012120S 12V
PWRI300012120S 12V

WARNING : Please read this manual in its entirety before using or connecting this inverter. It includes important instructions and safety tips.

USER MANUAL

Specifications

1. Use of advanced micro processor .
2. Cooling fan with intelligent temperature control.
3. USB power supply.

Item	PWRI200012120S	PWRI300012120S
Continuous power	2000W	3000W
Surge power	4000W	6000W
Input voltage range	9.5-16V DC	
Output voltage	120V, 60HZ	
DC input	12V	
Output wave form	Pure sine wave (THD \leq 3%)	
Efficiency	90%	
USB Output	5 VDC, Max. 2.1A	
Input over-voltage shutdown	16 \pm 0.5VDC	
Input under-voltage shutdown	9.5 \pm 0.5VDC	
Input under-voltage alarm	9.8 \pm 0.3VDC	
Over temperature protection	149 \pm 8°F	
Over-load protection	2200W \pm 200W	3200W \pm 200W
No Load currents	0.9A	1A
Working temperature	32-104°F	
Storage temperature	14-113°F	
Intelligent cooling	The cooling fan will start running when the case temperature reaches about 104°F	
Dimension(LxWxH)	18x9.5x3.8in	21.6x9.5x3.8in
Weight	12 lbs / 14 lbs boxed	16 lbs / 18 lbs boxed
Remote port	Yes	

1. BRIEF:

Our power inverter uses advanced engineering, and it can supply you with AC power converted from a DC power source. It not only can be used in cars, vessels and for camping, but also can be used in emergencies when out of electricity.

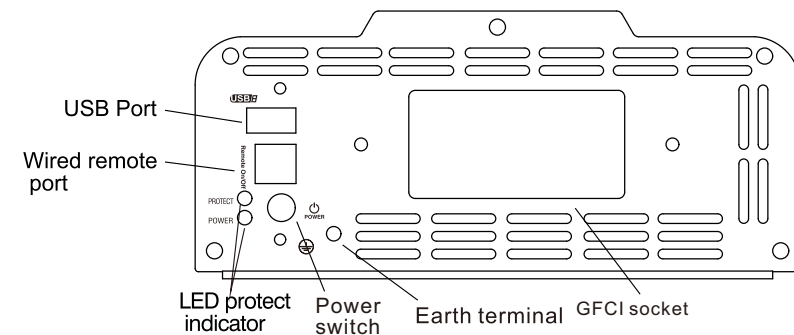
In order to use the inverter efficiently and safely, please install and use it in a proper way. Please read the instructions carefully before installing and using the inverter. Pay special attention to the "WARNING" and "NOTICE" statements in the manual.

2. WARNING AND SAFETY

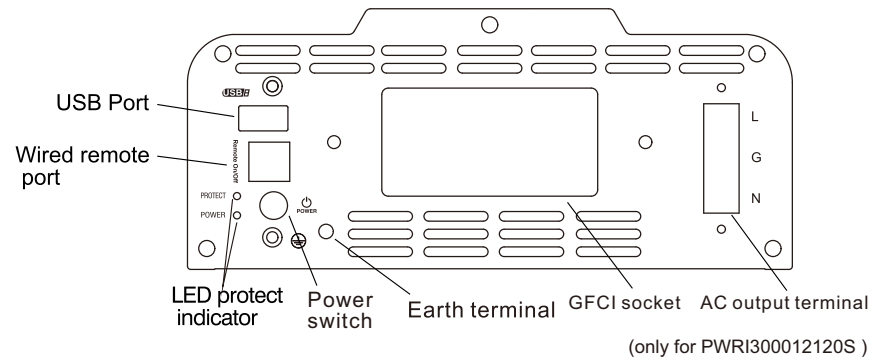
- 1) Read the manual before connecting inverter and keep it for future reference.
- 2) Don't put the inverter in direct sun light, heat source, damp environment.
- 3) The housing of inverter will get hot when using, please avoid touching materials that can't stand high temperature, such as clothes, sleeping bag and carpet, etc.
- 4) The inverter is designed for use with a negative ground electrical system! Don't use it with positive ground electrical systems (The majority of modern automobiles, RVs, trucks and boats are negative ground).
- 5) Do not disassemble the unit as it may cause fire or electric shock.
- 6) Keep children away from inverter and don't allow them to play with the unit.
- 7) The power inverter will output AC power as utility power, please treat the output terminal as carefully as your home AC socket. Don't put any foreign objects into the output terminal except electrical appliance plug. It will cause danger or fire if used improperly .
- 8) Disconnect the battery and inverter when the inverter is not in use.

3. PARTS LIST

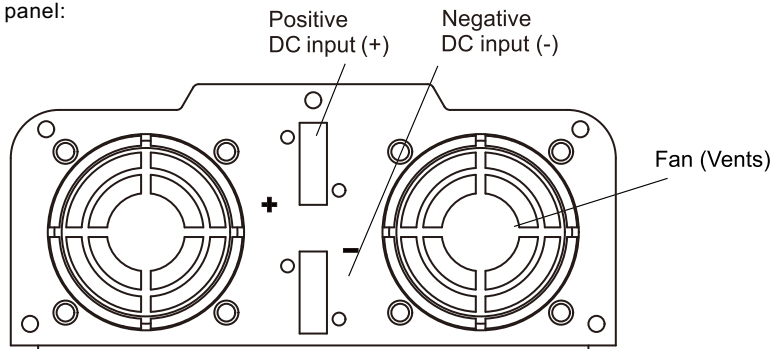
1) Front panel:



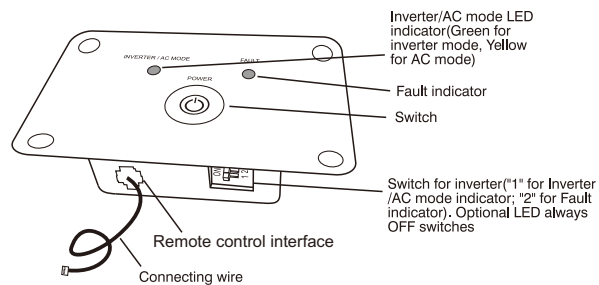
(only for PWRI200012120S)



2) Rear panel:



3) Remote control box (not included)



4. ASSEMBLE

1. Location

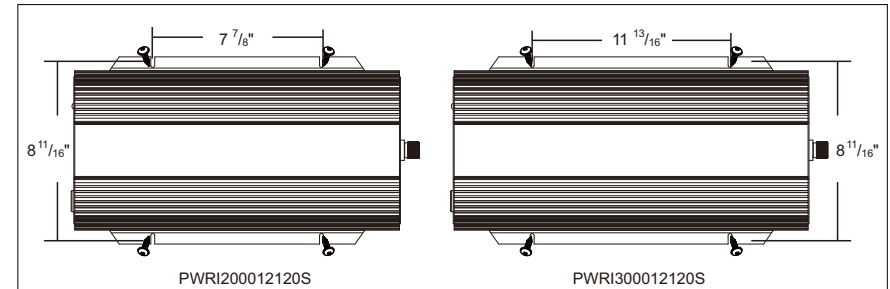
First ensure that there is enough space to install the inverter, while the installation location must meet the following requirements:

- (1) Dryness: Avoid dripping water or other liquids on the inverter.
- (2) Coolness: The operating temperature for the product is 32-104°F, the preferable temperature is 50-77°F, the lower temperature is better within this range.
- (3) Ventilation: There should be a certain distance between inverter and other objects, to avoid blocking the product's vents. Allow 2 inches from openings.

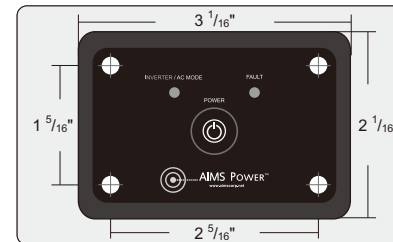
- (4) Cleanliness: Do not install the product around dust, wood chips or other particles. When the cooling fan turns on, the particles will be sucked into the inverter, thus increasing internal temperature.
- (5) When connecting inverters and batteries, it will produce arcs or sparks, so there should not be flammable objects around, such as gasoline, alcohol, etc.

2. Mounting instructions

Mount on a solid platform because of the heavy weight, such as floor, table or stable support. In order to avoid sliding off, the platform should bear the weight of the product, and it is better to attach the product with four screws.



3. Mounting the remote control box (Optional equipment)



- 1) the remote is designed to be mounted on a dash or other surface where a hole should be cut so that it sits flush. This is not a requirement however just a recommendation.
 - 2) The remote cable should be plugged into inverter and the remote before mounted.
- Note: Optional remote is not needed for inverter operation. The main power switch will work the power on / off.

5. Battery

1). Voltage and current of the battery

The battery is designed to supply the unit with DC input voltage and the rated voltage should be in accordance with the rated input voltage of the inverter. Any voltage exceeding the range of the input voltage of the inverter will cause over voltage or under voltage protection.

Also, the battery must supply sufficient current. A small capacity battery cannot drive a large power electrical appliance. In this case, the battery will cause an under voltage protection because of the over-discharge of the battery. The simple calculation method of battery current is: load power divided by battery voltage. Due to the consumption of the inverter itself, the actual current will be about 10% larger. For example, the voltage of a lead acid battery is 12VDC, and load power is 1000W, therefore, the actual current of the battery is about $1000W \div 12V \times 110\% \approx 91.6A$.

2). Battery operating time

Battery operating time depends on battery capacity and current, and the calculation formula of operating time is: battery capacity divided by current, that is, battery capacity divided by the value of the load power divided by battery voltage times 110%. For example, battery specification is 12V, 2000Ah, load power is 1000W, so the total discharge time is $2000Ah \div (1000 \div 12 \div 110\%) \approx 21.8$ hours,

Notice: The result of the formula above is on the basis of discharging rate of 20 hours of the battery, that is, the result is from the discharging current of 2000Ah battery not to exceed 100A. When the charging current exceeds this value, the discharging period will be reduced. And the capacity of the battery may also influence the result. See the specification of the battery manufacturer for more detailed information.

6. Connection

1) Grounding



The power inverter has a terminal on the rear panel marked "Grounding" or " ". This is used to connect the chassis of the power inverter to ground. The ground terminal has already been connected to the ground wire of the AC output receptacle through the inverter.

The ground terminal must be connected to the ground wire, which will vary depending on where the power inverter is installed. In a vehicle, connect the ground terminal to

The chassis of the vehicle. In a boat, connect it to the boat's grounding system. In a fixed location, connect the ground terminal to earth.

Warnings:

- Make sure to tighten all connections. The ground wire must be 14AWG (2.08 mm²) or even larger.
- Do not operate the power inverter without connecting to ground. Electric shock may result.

2) Connect to the lead acid battery or other type within dc input range

(1) Please check all the safety precautions before connecting, and then check whether the battery voltage is in accordance with the input voltage of the inverter. Battery and inverter voltages must match

(2) The connecting wire must bear enough current. These inverters require 1 AWT or larger wire for its battery connections.

Notice:

(1) In practice, thicker wire can be replaced by two thin parallel wires if the total cross-sectional area of the wire meets the requirements. This may however cause an increase in RF.

(2) In high current, the input DC wire may produce a voltage drop, therefore, the operating voltage should be subject to the value on the terminals. If the voltage drop is too large, you can increase the cross-sectional area or reduce the length of the lead.

(3) Connect cathode wire of the battery to the cathode terminal (black) on the rear panel of the inverter and then connect the anode wire of the battery to the anode terminal (red) on the inverter, and tighten them.

Warnings:

- (1) Please wear eye protection and work clothes when working around the battery to protect your eyes and skin from acid and corrosive objects.
- (2) In case acid makes contact with your skin, clean it using soap and water as soon as possible. If the acid splashes into your eyes accidentally, rinse with cold water and go to a hospital.
- (3) Do not put any combustible materials in the location of installation for it will result in a fire hazard.
- (4) Keep good ventilation. The battery may produce a little flammable gas when used, so keep away from the inverter and it is better to install them in a different space.
- (5) Tighten all DC connections, or it will result in over-reduction of the voltage or over-temperature of the inverter.

- (6) Reverse connection of the polarities or short circuit will burn the fuse or result in permanent damage of the internal elements of the inverter.
- (7) Remove all rings and jewelry when working around your inverter.
- (8) Although there is over-voltage protection, it may also cause damage to the inverter if the input voltage is too high.

3) Connecting the load

This inverter provides 2 ways to connect the ac.

This most common method is to simply plug in your equipment into one of the GFCI protected outlets.

This inverter also provides a direct connect terminal block (only for model PWRI300012120S). If you wish to hardwire a piece of equipment or power strip to this inverter you may do so. Please be careful. Make sure inverter is OFF and no power is on the terminal block. We provide a 3 wire connection where black is load or hot, white is neutral and green is ground or earth. Make the 3 connections. Ensure there is no short between any of these connections and that they are secure. Reversing these wires may cause damage to both inverter and your equipment. If you are not sure, you should hire a qualified electrician.

Warnings:

- (1) Make sure that the switches of the inverter and the appliances are in the OFF position before connecting.
- (2) Check the power cord. If it is damaged, don't use.

7. Usage

①. How to use the inverter

- 1) Check the output voltage and capacity of the battery to make sure it is in accord with the requirements of the product.
- 2) Connect the battery and the DC cable of the inverter to ensure that the polarities are not connected reversely and are tight.
- 3) Power on inverter: Press the power switch of inverter or remote for over 0.5s and release. If the indicator light on the inverter or on the remote control box is on, it means that the inverter started to work normally. This method can avoid turning on the unit by mistake due to accidental touch.
- 4) Turn the main power to inverter and appliances OFF. If you are not going to use the ac terminal block, you may plug in your ac equipment into the GFCI sockets and turn the inverter on and then your equipment. They should be operating as if you were plugged into city power.

If you wish to use the terminal block (only for model PWRI300012120S), you should follow these procedures:

- A. You will need a 3 wire (10 Awg recommended Black, White, Green) ac cables

which are not provided with this product. Measure the required length for your Particular application.

B. Connections to the inverter will require you to strip 3/8 inch to bare wire and we prefer those to be soldered to avoid potential short circuit caused by loose strands crossing over. You will wrap the wire around the appropriate bolt (Black to L, White to N, Green to G). You may also use a ULug no wider than 3/16 inch

C. The other end will connect to either a socket, power strip or your load directly.

Now you may turn on the inverter and your equipment as they are ready for use.

- 5) The cooling fans inside the inverter do not work until the case temperature rises up to about 104°F.
- 6) Switch off inverter or remote to turn off. At that time, the indicator lights for both inverter and remote are off. The inverter does not consume current from the battery when it is switched off.

②. How to use USB power supply

This model supplies a USB output, and provides stable voltage at 5V DC, maximum current 2.1A directly to a portable device with USB port.

Notice: Before using the USB power supply, please make sure the device can be charged by USB and the maximum working current is no more than 2.1A.

8. About soft start technology

The output voltage rises up from low to normal when the inverter is turned on. This can reduce high startup currents, which can make startup easier for large inductive loads.

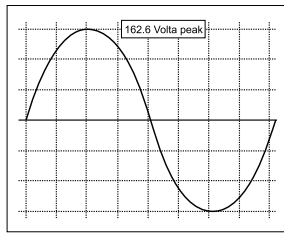
As for the large inductive loads, such as electric tools and capacitive loads, we suggest turning on the switch of the appliance firstly and then the inverter's. The soft start may be enough to power the high startup.

9. The output wave form

The output wave form of this inverter is a Pure Sine Wave, which is similar to utility-supplied AC electricity. Pure sine wave is applicable in most loads, including electrical equipment, such as Linear Adaptor, switching power supply, transformer, motor and so on.

Compared to Modified wave form, for inductive loads such as a refrigerator and electric fans, pure sine wave form can improve its power factor and the battery's efficiency and reduce working noises. For capacitive loads such as adapter of lap-top, pure sine wave can lower the rush current at work and reduce interferences to increase reliability and prolong the life of the product.

Pure Sine Wave Output
(120 VAC Model)



10. Protection Features

1. Input under-voltage alarm: When the input DC voltage is lower than 9.8V , the buzzer will whistle intermittently to remind that the inverter will go into the under voltage protection. Pay attention to save the data if you are using a computer.

2. **Under voltage protection:** The inverter will automatically shut down when the input DC voltage is lower than 9.5V. The buzzer will whistle continuously and the green light is off, red light is on. Please turn off the inverter and use it after recharging the battery.

3. Over voltage protection: The inverter will automatically shut down when the input DC voltage is higher than 16V. The buzzer will whistle continuously and the green light is off, red light is on. Please turn off the inverter and adjust the input voltage to the admissible range.

4. **Overload protection:** The inverter will automatically shut down when the load is higher than the rated power. The buzzer will whistle continuously. Turn off the inverter and resume normal operation after taking away the excessive load.

5. **Short-circuit protection:** The AC output will be automatically shut down when short circuited. It will automatically reset after the problem is solved.

6. **Thermal protection:** The unit will get hot during operation. If the temperature is higher than 149° F, the inverter will automatically shut down. Then the buzzer will whistle continuously and the green light is off, red light is on. Please turn off the inverter, and continue using it after the temperature goes back to normal naturally. Meanwhile find out the factors causing the fault, such as ventilation, ambient temperature, vent, load power and so on. It can avoid similar things from happening again.

Notice:

In the case of over voltage, under voltage and thermal protection, the inverter will shut down automatically after 1 minute if the user doesn't turn it off . When it is in the OFF position, the inverter doesn't consume battery current.

11. Troubleshooting tips

Fault/Display	Cause	Solutions
No output voltage, buzzer whistles continuously	Low input DC voltage	Recharge or replace the battery.
	High input DC voltage	1. Do not use when the battery is charging. 2. Check the rated voltage of the battery and make sure that it is in the allowable range of the input voltage.
	Overload	Reduce the load power.
	Over temperature	1. Cut off the load and allow to cool for 10 to 30 minutes. Restart after it reaches normal temperature. 2. The load power is too large. Reduce the total load power to the range of rated power. 3. Avoid blocking the vent and improve the ventilation condition. 4. Reduce the ambient temperature.
No output voltage	1. The switch is off. 2. Loose connection	1. Turn on the power switch. 2. Check the connections.
Incorrect output voltage	1. Measure using true RMS multimeter. 2. The battery power of RMS Multimeter is low. 3. The input voltage is too high or too low.	1. Use a true RMS multimeter to measure, such as model FLUKE 177/179. 2. Change the battery of the multimeter then test again. 3. Try to maintain the input voltage in the range of rated power.
Cannot power the load	1. Load power is too large, or the actual power of the appliance exceeds nominal power. 2. The starting power of appliance is larger than the rated power (such as motor)	Reduce the load power, or turn the appliance on first, then open the inverter. Use the internal soft-start circuit of the inverter to buffer the start.
When using with TV or audio, there is snowflake on the screen or noise from the audio.	Disturbance	1. Keep the inverter far from antenna. 2. Use screened antenna.

If the unit still doesn't work normally after using all the methods above, it maybe the internal faults of the circuit. Please call or email AIMS power at (775)359-6703 ext 224 customerservice@aimscorp.net.