



# DC to AC Power Inverter

## USER'S MANUAL

### Product Registration Instructions

Please visit our website at [www.AIMSCorp.net](http://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

Model: PWRINV200012W

**Warning:** The manual includes important information of safety and operation. Please read it carefully before use it.



## 1. Description

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This power inverter is an advanced power conversion tool. It is designed to supply AC power converted from a DC power source. Typical applications include automotive, marine, RV, and off grid cabins. It also may be used as an emergency backup for small appliances when power fails.

In order to use the inverter effectively and safely please read all the instructions carefully before installation and operation. Please pay special attention to all warnings and notices used in this manual.

## 2. Warnings and safety

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- 1) Read the manual before using this inverter and keep it for future reference.
- 2) Do not expose the inverter to direct sunlight. Keep it out of direct heat, liquid and moisture.
- 3) The inverter will become very warm when in use. Please avoid direct contact with materials that cannot withstand high temperatures, such as clothes, sleeping bags and carpet.
- 4) Notice! Do not use together with an anode (positive) ground electrical system! This inverter is designed to be used in the cathode (negative) ground electrical system. Most vehicle and marine applications use a cathode (negative) ground.
- 5) Do not disassemble the inverter. Electric shock or fire will occur.
- 6) Keep out of reach from children.
- 7) Please treat the output socket as you would typical household AC receptacles. Do not put anything other than appropriate AC plug into this device. Damage to the inverter and shocking will occur.
- 8) Be aware of inverter status during operation. Do not operate the appliance alone for the first time to ensure proper operation. Disconnect the inverter when not in use. Make sure to take caution when handling live battery cables to avoid shock and fire.

## AIMS Operating Corp. Inc. Aims Power warranty instructions.

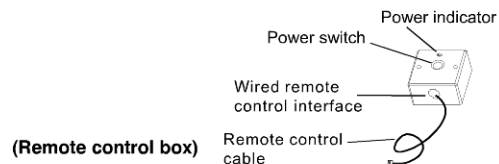
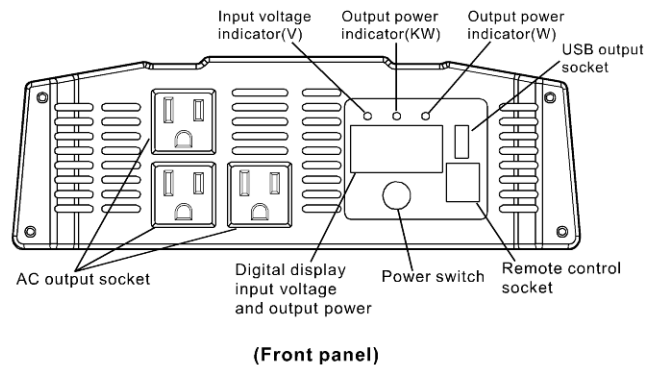
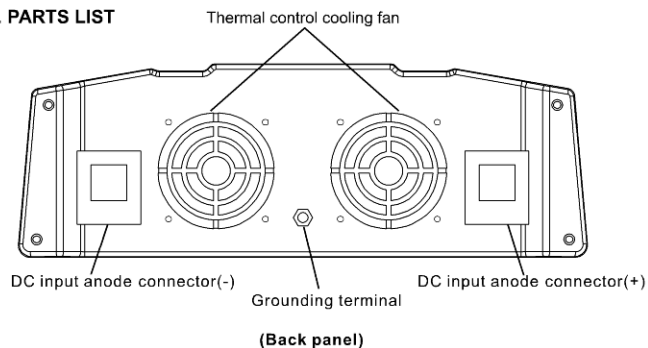
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This product is designed and under very strict quality control and testing guidelines. If you feel this product is not performing as it should, please contact us: [Techsupport@aimscorp.net](mailto:Techsupport@aimscorp.net) or (775) 359-6703 Ex227. We will do our best to resolve any of 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 RMA# to AIMS Power. You have a full 1 year warranty from the date of purchase. This warranty is valid world-wide with the exception that freight and duty charges incurred outside the continuous 48 States. User is responsible for return shipping. 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.

### 14. Troubleshooting tips the inverter and shocking will occur.

Fault/Display	Cause	Solution
No output voltage, the buzzer whistle	Low input DC voltage	Recharge or replace the battery.
	High input DC voltage	Don't use it when the battery is charging. Make assure that the rating voltage is in the range of the input voltage.
	Overload	Reduce the load power.
	Over temperature	Cut the load and keep it cool for 10 to 30minutes. Restart it after it resume to normal temperature. The load power is too large and reduces the total load power to the range of rating power. Avoid the obstruction of the vent and improve the ventilation condition. Reduce the ambient temperature.
No output voltage	Do not turn on the switch. The battery lead don't connect well	Turn on the power switch. Check the joint and screw it.
Incorrect output voltage	Measured by untrue effective meter. The input voltage is too high or too low.	Use the true effective meter to measure, such as the model FLUKE177/179. Try to keep the input voltage approximate to the rating voltage.
Cannot drive the load.	Load power is too large, or the actual power of the appliance exceeds nominal power.	Reduce the load power.
	The acreage of the lead section is not enough or the joint is loose. The starting power is larger than rating power.	Use proper wire and check the joints, see part 6.  Use soft start to start it or change to other load.
There is snowflake on the screen There is noise in the sound.	Disturbance.	Separate the inverter and antenna. Use screened antenna.

### 3. PARTS LIST



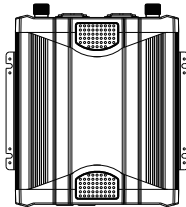
## 4 INSTALLATION

1. Please make sure there is adequate space for the intended installation location of the inverter and should comply with the following requirements.

- 1) Never install in a location where any liquid may drip, spill or splash on the inverter.
- 2) The ambient temperature for operation should be 32°F-104°F. The ideal operating range is 50°F-77°F.
- 3) Please allow plenty of clearance around the inverter for ventilation and cooling fans to operate correctly. Any obstructions will result in overheating.
- 4) Avoid installing in an area that is dusty or dirty and where particles may be brought into the internals of the inverter by way of the cooling fan. This will cause overheating and internal shorting.
- 5) Do not place combustibles materials such as gasoline, alcohol and aerosol containers. The inverter will create sparks and cause fire or explosions.

### Mounting

The inverter is able to mount vertical or horizontal on a floor or wall. Do not mount upside down it will cause overheating. Please ensure the platform to be mounted to is secure and stable and the inverter is affixed at all four mounting points.



PWRINV200012W

**2 Low voltage protection:** The inverter will automatically shut down when the supplied DC voltage is lower than 10V. The alarm will sound and the

## 13 PARAMETER

Item	PWRINV200012W
Continuous output frequency	2000W
Peak power	4000W
Input voltage range	10-16VDC
Input lower voltage activation	10.5VDC
Input lower voltage protection	10VDC
Input over voltage protection	16VDC
Output voltage	110V~120VAC 10%
Output waveform	Modified sine wave
Conversion efficiency	90%
Overload protection	yes
Thermal protection	yes
UAB output	5VDC 500mA
Display	Input voltage/output power/protection code
Fuse(internal)	40A×8
Dimension(L×W×H)mm	295X235X80
Weight	3Kg
Operating temperature	32°F-104°F
Storage temperature	14°F-113°F

## 11. Operating instructions

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The LED display will alternate between DC voltage and AC output power during operation. When the inverter is in protection mode the LED display may show one of the following statuses.

- 1) DC input voltage.
- 2) Output load in "KW" (kilowatts).
- 3) Output load in "W" (watts).
- 4) Low DC voltage is displayed in "LO".
- 5) High DC voltage is displayed in "HI".
- 6) If the inverter is overloaded the display will indicate "OL".
- 7) If the inverter has shut down due to over temperature the display will indicate "OH".

## 12. Inverter protection

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**Low voltage alarm trip:** When the DC voltage is lower than 10.5V the alarm will sound intermittently. This acts as a reminder to the user that the inverter will go into **Low voltage shutdown**. The battery bank must be charged.

## 5.BATTERY

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### Voltage and current.

In most applications a battery is the supply for the inverter's DC input. The DC input must follow the operating specs of this inverter. Any variance of the inverter's operating specs will cause an **over voltage** or **under voltage** resulting in inverter failure.

The battery or DC supply to the inverter must also be able to support the high current load of the AC device. Small capacity batteries such as automotive batteries can only handle small AC loads for a short amount of time. **We recommend using a deep cycle battery for stand alone systems.**

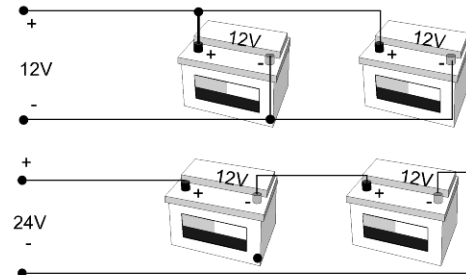
The mathematical calculation to determine **voltage, current and power** is OHM's law.

- Watts (power) ÷ volts = Current
- Volts X current = Watts (power)

**Ex.**  $1000W \div 12V = 83.33A$  1000 watts of power on a 12V battery uses 83.33 Amps an hour. **OR**  $8.4A AC \times 120V AC = 1008 \text{ watts.}$

### Parallel and series battery connection.

When connecting to multiple batteries the desired voltage can be achieved in two ways **series** or **parallel**. Installing batteries in series will increase the voltage and installing batteries in parallel will increase the capacity (Amps).



**Warnings:**

- 1) It is never recommended to use multiple types of batteries and capacities. Always use the same type of battery and the same amp hour (Ah) capacity.
- 2) Please seek the advice of a professional before connecting multiple batteries. Any improper connections will result in inverter failure and battery malfunction.

**Battery operation:**

The battery operating time is dependent on the its capacity and the inverters output load. Using OHM's law if your load is 1000 watts and using a battery that is at 12.5 volts with an Ah rating of 100. ( $1000W \div 12.5V = 80A$ ). You will be discharging the battery at 80% depth of discharge for 1 hour. **We recommend only discharging a battery at 50% unless it is an emergency.** The ideal run time would be 45 minutes.

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**6. Connections**

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**Grounding:**

The inverter has a terminal on the back panel marked "grounding" or "⊕". This is used to connect the chassis of the inverter to an earth ground. The AC output grounds are tied to this chassis ground internally.

The ground terminal must be used for safety precautions. In a vehicle the terminal must be connected to the frame or chassis. Marine applications it must be connected to the grounding system and in a fixed location must be connected to earth ground.

**Warnings: the ground terminal must be connected to ground with 8 AWG wire or larger. Do not operate the inverter without connecting to ground. Electric shock or fire may result.**

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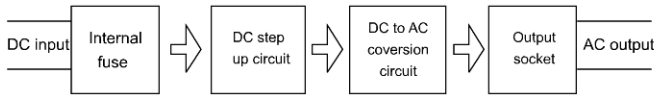
**10. OPERATIONG**

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- 1) Set the inverter switch to off and the AC devices to the off setting
- 2) Connect the battery , electrical devices and grounding as mentioned in part 4 (installation) and part 6 (connection).
- 3) Press the power switch on the inverter (long press) or external remote more than 1 second then release. The power indicator LED on the inverter and or the remote are on indicating the inverter is working.
- 4) Turn on the AC devices and can now be used normally.
- 5) After the AC devices are on the cooling fan will operate for 3 seconds then stop. The fan will resume operation when the inverter temperature reaches 104° F or the load power is greater than 1000 watts.
- 6) The LED display will alternate showing DC voltage and output power during operation.
- 7) Turn off the inverter when not being used. The inverter will consume less battery current.
- 8) The USB output is 5V DC and support 500mA **MAX.**

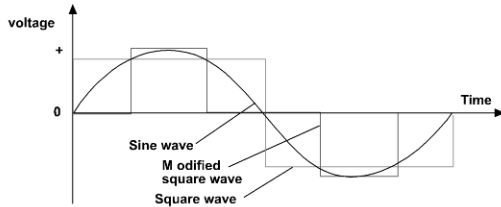
**Notice:**

- The rated power of the electrical devices will be marked on the devices. Please check this before using.
- The most suitable load is resistive load such as incandescent lamps. For inductive loads such as motors and pumps initial power is required to start them. This is usual 3 to 6 times the rated power marked on the device. Make sure this surge is not higher than the output of the inverter. There are factors the will limit the use of this inverter such as DC input voltage, high startup surge of AC devices and temperature. Please refer to part 11.



## 7 OUTPUT WAVEFORM

The output waveform of the inverter is a "quasi-sine-wave" or "modified sine wave" this kind of waveform is suitable for most electrical appliances such as linear and switching power supplies, transformers and electric motors. Since the output waveform is different than that of grid power and typical multi meter cannot be used to measure the AC voltage and you will need to use an RMS meter.



## 8. Soft start technology

This inverter has the latest soft start technology. The output voltage gradually increases to the normal output voltage after it is turned on. There are several advantages to this.

- It can reduce the large current surge and help to start larger loads.
- Help Cold start larger power loads. The inverter may shut down due to large amount of current needed to start motors.

For large inductive loads such as electric motors turn the AC device on then turn on the inverter to allow the inverters soft start to operate correctly.

### Battery conection:

- 1) Please make all safety measures before connecting batteries. After connecting batteries please measure the voltage to ensure battery bank is in operating specs of the inverter.
- 2) The battery cables must be able to support the current load of the inverters

### MAX output.

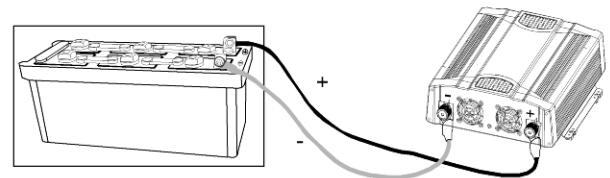
Rated voltage of inverter	Current max. load power	Max. current of lead	Specification of lead
12V	2000W	200A	1AWG

### Notice:

1) The above table is only for reference. One larger cable may be replaced with 2 smaller cables but must still be able to carry the current load.

2) With the high current demand of the AC device, the DC input may suffer a voltage drop. Please ensure the battery voltage is the same at the inverter as it is from the DC source. The 12-voltage drop may be due to inadequate cable size or excessive length.

Connect the negative leads first to the battery then the inverter. Then connect the positive lead to the battery then to the inverter. Make sure all connections are securely fastened.



**Warnings:**

- 1) Please wear eye protection and proper work clothes when working on or around batteries. That acid from batteries is very corrosive and can harm skin and clothes.
- 2) Do not place combustible materials such as gasoline, alcohol and aerosol containers. The inverter will create sparks and cause fire or explosions.
- 3) Keep in a well-ventilated area. Batteries normally produce flammable gasses so installing the battery in a separate location from the inverter is best.
- 4) Make sure all DC connections are properly tightened. Loose connections will result in voltage loss and over temperature of cables resulting in inverter damage and possible fire.
- 5) Reverse connection of battery cables will result in damage to the inverter and is **NOT** covered under warranty.
- 6) The inverter has an over voltage shut down but applying an over voltage may result in damage to the inverter.


**3 AC connection**

- 1) Put only the proper plug into the AC receptacle of the inverter. Do not alter any plug to attempt to fit it into the inverter.

**Warnings:**

- Make sure that the AC device and the inverter are both in the “off” position before making any connections.
- Inspect all cables before using. If any cables have damage they must be replaced before operating the inverter.

- Each outlet has a current rating of 15A. Please make sure your device does not exceed this rating or damage will occur.

Output socket type	AC output voltage	single socket max. output current	single socket max. output power
	110~120VAC	15A	1500W

**Remote control connection**

Connect the wired remote control on the inverter first before powering on.

**7. Principles**

The unit converts DC power to AC power. The power is created in two steps: step one is the inverter raises the low DC voltage input to a higher voltage. The second step it to pass the high DC voltage through a transformer and convert it to desired AC voltage.

The switching circuits use advanced high frequency conversion rather than a low frequency conversion making the inverter smaller and lighter in weight.