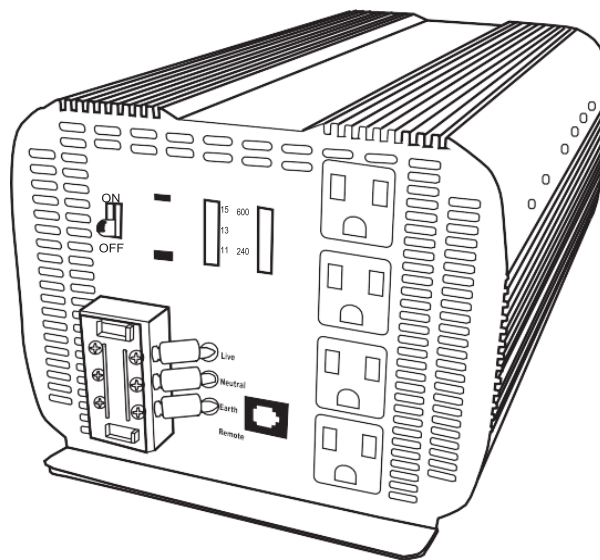




## DC TO AC POWER INVERTER

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|--|--|
| <input type="checkbox"/> PWRINV500012W | <input type="checkbox"/> PWRINV500024W |
| <input type="checkbox"/> PWRINV500036W | <input type="checkbox"/> PWRINV500048W |



## Instruction Manual

## INTRODUCTION

The AIMS Power 5000 Watt inverters are the most advanced line of mobile DC to AC power systems available. AIMS offers the 5000 Watt inverter in 12V, or 24V, or 36V or 48V DC.

This model is used in a wide range of applications including back up power for remote homes, off-grid systems, RVs, boats, commercial vehicles and mobile businesses. The 5000 Watt inverter will operate most pumps, motors, lights, heaters and hand tools.

To get the most out of the power inverter, it must be installed and used properly. Read the instructions in this manual before installing and using this model.

## WARNING AND SAFETY

1. Read the manual before connecting this inverter and keep it for future reference.
2. Do not put the inverter under direct sunlight or near a heating source.
3. The case of the inverter will get hot when used. Do not allow flammable materials to contact the inverter, such as clothing, sleeping bags, carpet or any other flammable materials. The heat from the inverter can damage these items.
4. The power inverter is designed to be used with a negative ground electrical system! Don't use with positive ground electrical systems (the majority of modern automobiles, RVs, trucks and boats are negative ground).
5. Do not disassemble the unit: it may cause fire or electric shock.
6. This device should only be serviced by a qualified technician. This item does not have any serviceable parts.
7. Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerator enclosures during installation.
8. Do not operate the inverter if under the influence of alcohol or drugs. Read warning labels on prescriptions to determine if your judgement or reflexes are impaired while taking drugs. If there is any doubt, do not operate the inverter.
9. People with pacemakers should consult their physician(s) before using this product. Electromagnetic fields in close proximity to a pacemaker could cause interference to or failure of the pacemaker.
10. Keep the inverter well-ventilated. Do not place any objects on top of or next to the inverter or allow anything to cover the cooling fans; doing so can cause the inverter to overheat, causing a potential fire hazard and/or damage to the inverter. Leave adequate ventilation space underneath the inverter as well; thick carpets or rugs can obstruct air flow, causing the inverter to overheat.
11. Avoid unintentional starting. Be sure the switch is in the OFF position when not in use and before plugging in any appliance.
12. Keep inverter away from children. Don't install the inverter where it is accessible to children.
13. The power inverter will output the same AC power as utility power, please treat the AC outlets as carefully as you would your home AC outlets. Do not put anything other than an electrical appliance into the output terminal. It may cause shock or fire.
14. Disconnect the battery and inverter when not in use.

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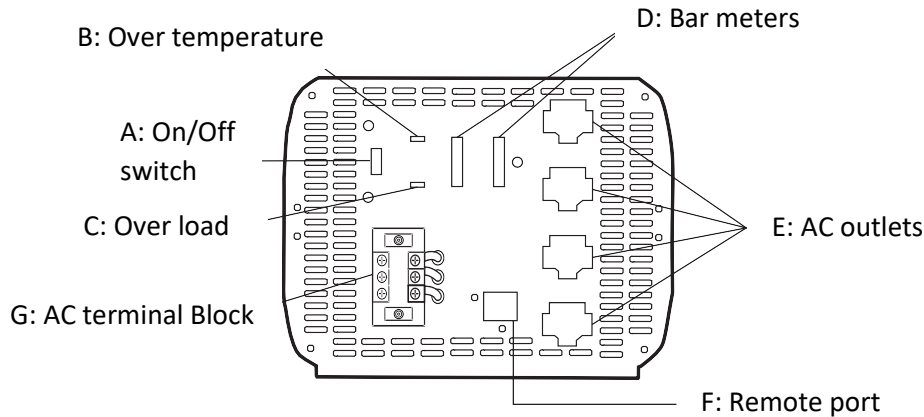
**Note:** Performance of this unit may vary depending on the available battery power or appliance wattage.

**Warning:** The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product and must be supplied by operator. Guard against electric shock. Do not open the metal case; risk of electric shock.



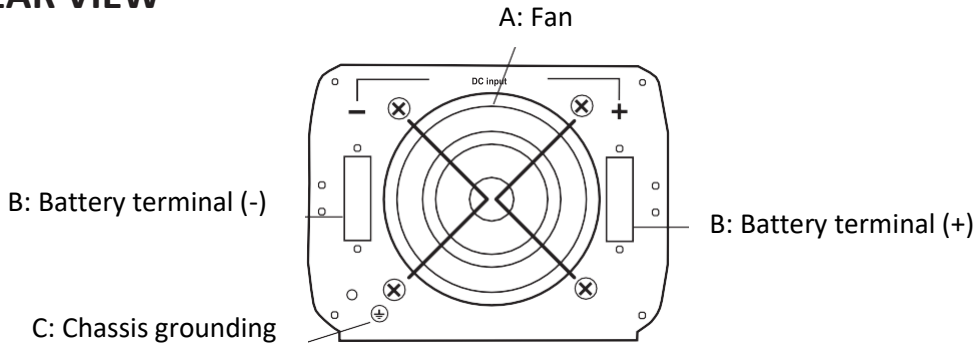
# FUNCTIONS

## FRONT VIEW



- A. On/Off switch: Leave in the OFF position during installation.
- B. Over temperature indicator: Lights when inverter protects itself against overheating. Inverter shuts down while indicator is on. Inverter will restart automatically and indicator will turn off when the inverter cools.
- C. Over load indicator: Lights when inverter shuts down because of overload. Indicator will turn off and inverter will restart when overload is removed.
- D. Bar meters: Displays battery voltage and current. Current should be in the green zone for continuous operation. The inverter will operate for several minutes when the current is in the yellow zone. Operation with battery voltage or current in the red zone of a meter will result in protective shutdown of inverter.
- E. AC outlets: Maximum recommended output per outlet is 1500W.
- F. Remote port: Used with remote switch to turn inverter ON/OFF (sold separately).
- G. AC terminal block: Hard wire block providing inverter's full power.

## REAR VIEW



A: Fan: Do not obstruct, allow at least 12 inches for air flow.

B: Battery terminals: Connect to 12V, or 24V, or 36V, or 48V (depending on inverter model) battery (s) or other DC power source. "+" is positive & "-" is negative. Reverse polarity connection will blow internal fuse and may damage inverter permanently. Make sure you check your input voltage and do not REVERSE POLARITY! **This will void the warranty.**

C: Chassis ground lug: Connect to earth ground or to vehicle chassis using #8 AWG wire.

Warning! Operation of the inverter without a proper ground connection may result in an electrical safety hazard.

## QUICK HOOK-UP AND TESTING

If you would like to quickly hook-up the power inverter and check its performance before going ahead with your installation, please follow these guidelines:

1. Unpack and inspect the power inverter, check to see that the power switch is in the OFF position.
2. Before you connect the battery cables, make sure the power switch is in the off position. Connect Red (+) battery cable to Red (+) inverter terminal. Connect Black (-) battery cable to Black (-) inverter terminal. Connect Red (+) battery cable to Red (+) battery terminal. Connect Black (-) battery cable to Black (-) battery terminal. Alligator clamp cables may be used but only to connect to the battery. Do not use clamps on inverter terminals. Alligator clamps are not a permanent solution. You may see a spark during connection. **Do not reverse the polarity.** This may damage the inverter and void warranty.

**Caution!** Loosely tightened connectors result in excessive voltage drop and may cause overheated wires and melted insulation. Reverse polarity connection will blow a fuse in inverter and may permanently damage the inverter. Damage caused by reverse polarity connection is not covered by our warranty.

Warning! You may observe a spark when you make this connection since current may flow to charge capacitors in the power inverter. Do not make this connection in the presence of flammable fumes, as explosion or fire may result.

3. Set the power switch to the on position. Check the meters and indicators on the front panel of the inverter. The voltage bar graph should indicate 11 to 14 volts depending on the voltage of the power source. If it does not, check your power source and the connections to inverter.

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The other indicators should be off.

4. Set power inverter switch to the OFF position, the indicator lights may blink and the internal alarm may sound momentarily. This is normal. Plug the test load into the AC receptacle on the front panel of the inverter. Leave the test load switch off.

5. Set power inverter switch to the ON position and turn the test load on, the inverter should supply power to the load. If you plan to measure the true output R.M.S. voltage of inverter, a meter such as FLUKE 87A, BACKMAN 4410 or TRIPLETT 4200 must be used.

## INSTALLATION

### 1. Where to install

The power inverter should be installed in a location that meets the following requirements:

- a. Dry - Do not allow water to drip or splash onto the inverter.
- b. Cool - Ambient air temperature should be between 0°C and 40°C, the cooler the better when operating in this range
- c. Ventilation - Allow at least 12 inches of clearance around the inverter for air flow. Ensure the ventilation openings on the rear and bottom of the unit are not obstructed.
- d. Safety - Do not install the inverter in the same compartment as batteries or in any compartment capable of storing flammable liquids such as gasoline.

### 2. Cables

DC to AC inverters require high amperage/low voltage DC power to low amperage/high voltage AC power. To operate properly, connect inverter DC input terminals direct to battery with heaviest wire available see chart below:

12 Volt Model: 1 x set of 4/0 AWG (1 red + 1black) Recommended: 1ANL500KIT-500Amp fuse kit

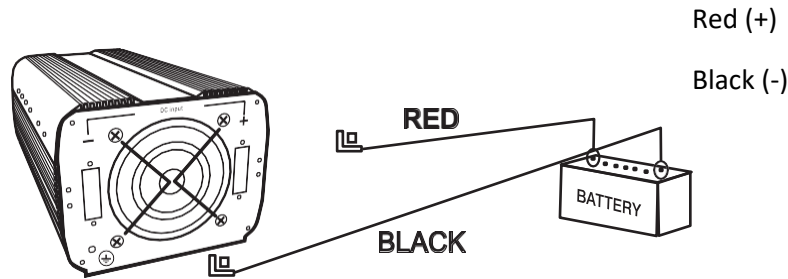
24 Volt Model: 1 x set of 1/0 AWG (1 red + 1black) Recommended: 1ANL300KIT-300Amp fuse kit

36 Volt Model: 1 x set of 4 AWG (1 red + 1black) Recommended: 1ANL150KIT-150Amp fuse kit

48 Volt Model: 1 x set of 6 AWG (1 red + 1black) Recommended: 1ANL150KIT-150Amp fuse kit

### Battery Cables Installation

When connecting the AC inverter to the battery terminals, it is important to connect the "+" wire to the "+" terminal and the "-" wire to the "-" terminal. Do **NOT** reverse the polarity. It will void the warranty. Make sure you connect negative to negative and positive to positive.



### Caution!

**DO NOT** allow the wires to cross or touch each other. Install the cables facing away from each other and screw tightly. When connecting the battery cables to the terminals of the inverter, make sure they do not touch the case.

### 3. Grounding

The power inverter has a lug on the rear panel marked "chassis ground" This is to connect the chassis of the power inverter to the ground.

The ground terminals in the AC outlets on the front panel of the inverter are also connected to the ground lug.

The chassis ground lug must be connected to a grounding point, which will vary depending on where the power inverter is installed. In a vehicle, connect the chassis ground to the chassis of the vehicle. In a boat, connect to the boat's grounding systems in a fixed location, connect the chassis ground lug to an earth point, which will vary depending on where the power inverter is installed.

This high frequency inverter will create 60V on the hot line and 60V on the neutral and measure 180\* out of phase for a total measurement of 120V AC. Because of this you cannot bond the neutral and ground on the output that feeds a breaker panel without causing damage to the inverter. This has been recognized by UL labs and acceptable to pass UL458 standards. Also, using a small three prong outlet tester will show reverse or open ground because of the line to neutral out of phase voltage, the inverter not being connected to a ground rod or bonded neutral to ground by any capacitors or hard line.

**Caution! The Negative DC input of the power inverter is connected to the chassis.** DO not install the power inverter in a positive ground DC system. A positive ground DC system has the positive terminal of the battery connected to the chassis of the vehicle or to the grounding point.

Warning! Do not operate the power inverter without connecting it to ground. Electrical shock hazard may result.

### OPERATION

To operate the power inverter, turn it on using the ON/OFF switch on the front panel. The power inverter is now ready to deliver AC power to your loads. If you are operating several loads from the power inverter, turn on separately after the inverter has been turned on. This will ensure that the power inverter does not deliver starting currents to all of the loads at once.

### 1. Controls and indicators

The ON/OFF switch turns the control circuit in the power inverter on and off. It does not disconnect power from the power inverter.

When the switch is in the OFF position, the power inverter draws no current from battery. When the switch is in the ON position but with no load, the power inverter draws less than 450 mA.

### 2. Battery voltage indicator

The battery voltage bar graph indicates the voltage at the input terminals of the power inverter. At low input current, this voltage is very close to the battery voltage. At high input current, this voltage will be lower than the battery voltage because of the voltage drop across the cable and connections.

Ideally, the voltage should remain in the green area of the bar graph. If the voltage goes into the red area at top or bottom of the graph, inverter may shut-down.

### 3. Battery current indicator

The battery current bar graph indicates the current drawn from the battery by the power inverter, it will not indicate current by other loads also connected to the battery. The indicator only displays DC volts and amps.

For long term operation, the current should be in the green area of the bar graph. Short term operation is possible with current in the orange area. If the current rises to the red area, the inverter will reduce its output voltage to protect itself.

### 4. Over temp indicator

The over temp indicator indicates that the power inverter has shut itself down because it has become overheated. The power inverter may overheat because it has been operated at power levels above its rating, or because it has been installed in a location which does not allow it to dissipate heat properly.

### 5. Over load indicator

The over load indicator indicates that the power inverter has shut itself down because its output circuit has been short circuited or drastically overloaded. Switch the ON/OFF to OFF, correct the fault condition, and then switch the ON/OFF back to ON.

## **THINGS TO CONSIDER REGARDING THE LOAD**

The 5000W inverter will operate most AC loads within its power rating. When determining whether a microwave oven can be operated by the 5000W inverter, remember that the power commonly advertised for microwave ovens is the cooking power (the power delivered to the food) not the power actually consumed by the microwave oven. The microwave oven will consume 40% to 100% more than its advertised cooking power. Check the rating sticker on the back of the oven to determine its actual power draw. The 5000W inverter will operate small microwave ovens (0.2 to 0.3 cubic foot capacity) that draw is about 1700 watts.



Some induction motors used in refrigerators, freezers, pumps, and other motor operated equipment require very high surge currents to start. The power inverter may not be able to start some of these appliances even though their rated current draw is within the rating of the power inverter.

If a motor refuses to start, observe the battery voltage indicator while trying to start the motor. If the battery voltage indicator drops below 10.5V DC while inverter is attempting to start the motor, this may be why the motor won't start.

Make sure that the battery connections are good and that the battery is fully charged. If the connections are good and the battery is charged, but the voltage still drops below 11 volts, you may need a larger battery or larger battery bank.

(\*2 for 24V \*3 for 36V \*4 for 48V)

### **INPUT VOLTAGE**

The power inverter will operate from input voltage ranging from 10V-16V, or 20V-32V, or 30V-45V, or 40V-60V depending on model. If the voltage drops below input range, an audible low battery warning will sound and the voltage indicator will be in the lower red zone. The power inverter will shut down if the input voltage drops below 10V, or 20V, or 30V, or 40V +/- .5V depending on model. This protects your battery from being over discharged.

The power inverter will also shut down if the input voltage exceeds 17V/33V/46V/61V +/- .5V. This protects the inverter against excessive input voltage.

The voltage indicator will be in the upper red zone. Although the power inverter incorporates protection against over voltage, the inverter is at risk of permanent damage if the input voltage is allowed to exceed 17V, or 33V, or 46V, or 61V +/- .5V depending on model.

### **TROUBLESHOOTING**

#### **1.Common problems**

##### **a. Buzz in audio systems:**

Some inexpensive stereo systems and radios will emit a buzzing noise from their loudspeakers when operated from the power inverter. This is because the power supply in the device does not adequately filter the modified sine wave produced by the power inverter. The only solution is to use a sound system that incorporates a higher quality power supply.

##### **b. Television interference:**

Operation of the power inverter can interfere with television reception on some channels. If this situation occurs, the following steps may help to alleviate the problem.

-Make sure that the chassis ground lug on the back of the power inverter is solidly connected to the ground system of your vehicle, boat or home.

-Do not operate high power loads with the power inverter while watching television.


-Make sure that the antenna feeding your television provides an adequate ("snow free") signal and that you are using good quality cable between the antenna and the television.

-Move the television as far away from the power inverter as possible.

-Keep the cables between the battery and the power inverter as short as possible and twist them together with about 2 to 3 twists per foot. This minimizes radiated interference from the cables.

Problem and Symptoms	Possible Cause	Solution
Low output voltage	If using a non-RMS meter, you could possibly get an incorrect reading ranging between 10-30V	Use a true RMS meter
Low output voltage and current indicator in red zone	Overload	Reduce load
No output voltage and voltage indicator in lower red zone	Low input voltage	Recharge battery. Check cable connection.
No output voltage, no voltage indication.	Inverter switched off. No power to the inverter. Internal fuse open. Reverse polarity.	Turn power switch to on position. Check wiring to the inverter. Check polarity.
No output voltage. Voltage in upper red zone.	High input voltage.	Make sure inverter is plugged to correct DC voltage. Check voltage charging system.
Low battery alarm on all of the time. Indicator below 11V.	Poor DC wiring, poor battery conditions.	Use proper cable and make proper connection. Consider new battery.
No output voltage. Over heat indicator on. Load >5000 W.	Thermal shutdown.	Improve ventilation and make sure openings in the inverter are not obstructed. Reduce ambient temp.
No output voltage. Over load indicator on.	Short circuit or wiring error. AC load too large.	Check AC wiring for short circuit or improper polarity. Remove load.

## SPECIFICATIONS

MODEL	PWRINV500012W	PWRINV500024W	PWRINV500036W	PWRINV500048W
DC Input Voltage	12V	24V	36V	48V
Output Wave Form	Modified Sine Wave			
Operating Voltage	10V-16V	20V-32V	30V-45V	40V-60V
Output Power	5000W			
Surge Power Capacity	10,000W for 40 mil secs			
Efficiency	>90%			
No Load Current	Switch on <1 A DC. Switch off <.2mA DC			
Fan	Thermal			
Battery Low Alarm	10.5V +/- .5V- 1.5V	21V +/- .5V-1.5V	31.5V +/- .5V- 1.5V	42V +/- .5V-1.5V
Battery Low Shutdown	10V +/- .5V-1.5V	20V +/- .5V-1.5V	30V +/- .5V-1.5V	40V +/- .5V-1.5V
High Voltage Alarm	17V +/- .5V	33V +/- .5V	46V +/- .5V	61V +/- .5V
Operating Temperature (Automatic Recovery/Shutdown)	30-130°F			
Internal DC Input Fuse	ATC Class 16 40 amp			
Mounting Hole Measurements	3 holes - 2 3/8" center hole to center hole			
Remote Switch Port	Yes			
Recommended Cable Size	4/0 AWG	1/0 AWG	4 AWG	
Power Switch	DC input ON/OFF control			
AC Output Socket - 4				
Dimensions (LxWxH)	16.75" x 7.88" x 6.10"			
Net Weight	18 lb			

**AIMS Corp., Inc. dba AIMS Power Warranty Instructions:**

This product is designed using the most modern digital technology and under very strict quality control and testing guidelines. If, however, you feel this product is not performing as it should, please contact us: [techsupport@aimscorp.net](mailto: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 RMA# prepaid to AIMS. You have a full 1 year warranty from date of purchase.

This warranty is valid worldwide 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 DC-DC
- Custom cut cables
- Batteries
- Solar Panels & Racks

Please visit our web site: [www.aimscorp.net](http://www.aimscorp.net)

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

**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

