AIMS Operating Corp., Inc, 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)762-5400

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 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 particulat purpose. In no event shall AIMS be liable for indirect, special or consequential damages.

For additional products such as:

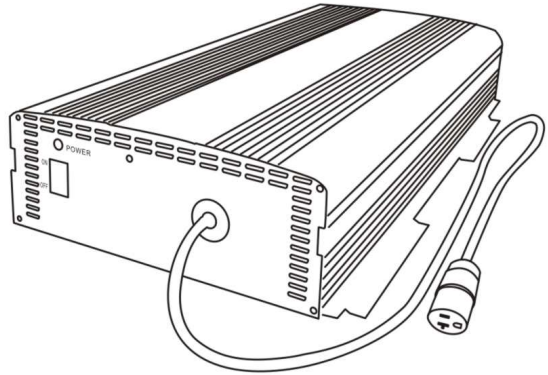
- Modified sine wave inverters
- Pure sine wave inverters
- Power controllers
- Automatic transfer switch controllers
- Custom cut cables

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

a Division of the AIMS Corporation

DC TO AC POWER INVERTER
OUTPUT POWER: 2500W
Part # BCT010009D



Instruction Manual

	3. Internal fuse open. 4. Reverse DC polarity.	3. Have qualified service technician check and replace. 4. Have qualified service technician check and replace fuse, OBSERVE CORRECT POLARITY.
No output voltage	High input voltage.	Make sure that INVERTER is connected to 12V battery, check regulation of charging system.
Low battery alarm on all the time	Poor DC wiring, poor battery condition	Use proper cable and make solid connections. Change battery or use new battery.
No output voltage	Thermal shutdown	Allow INVERTER to cool off. Reduce load if continuous operation required.
No output voltage	Thermal shutdown	Improve ventilation, make sure ventilation openings in INVERTER are not obstructed, reduce ambient temperature.
No output voltage	1. Short circuit or wiring error. 2.Very high power load.	1. Check AC wiring for short circuit or improper polarity (hot and neutal reversed) 2. Remove or reduce load.

Your new 2500W INVERTER is a member of the most advanced line of dc to ac inverters available today.
It will give you years of dependable service in your boat, RV, service vehicle or remote home.

To get the most out of your 2500W INVERTER it must be installed and used properly. Please read the in- stallation and operating instructions in this manual carefully before installing and using your INVERTER. Pay special attention to the CAUTION and WARNI NG statements in this manual and on the INVERTER. CAUTION statements identify conditions or practices which could result in damage to your INVERTER or to other equipment. WARNING statements identify conditions or practices that could result in personal injury or loss of life.

2 How Your INVERTER Works

An inverter is an electronic device that converts low voltage DC (direct current) electricity from a battery or other power source to standard 115 volt AC (alternating current) household power. In designing the INVERTER, we have used power conversion technology previously employed in computer power supplies to give you an inverter that is smaller, lighter, and easier to use than inverters based on older technology.

2.1 Principle of Operation

The INVERTER converts power in two stages. The first stage is a DC-to-DC converter which raises the low voltage DC at the inverter input to 145 volts DC. The second stage is the actual inverter stage. It converts high voltage DC into 115 volts, 60 Hz AC.

The DC-to-DC converter stage uses modern high frequency power conversion techniques that eliminate the bulky transformers found in inverters based on older technology. The inverter stage uses advanced power MOSFET transistors in a full bridge configuration. This gives you excellent overload capability and the ability to operate tough reactive loads like lamp ballasts and induction motors.

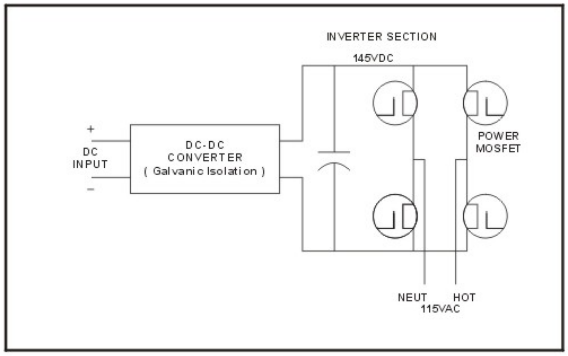


Figure 1. 3000W INVERTER-Principle of operation

2.2 INVERTER Output Waveform

The AC output waveform of the INVERTER is called a" quasi-sine wave " or a "modified sine wave." (See Figure 2). It is a stepped waveform that is designed to have characteristics similar to the sine wave shape of utility power. A waveform of this type is suitable for most AC loads, including linear and switching power supplies used in electronic equipment, transformers, and motors. This waveform is much superior to the square wave produced by many other dc to ac inverters.

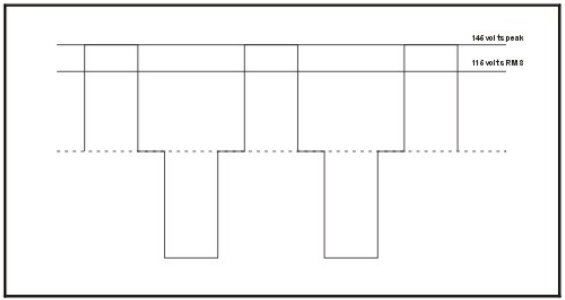


Figure 2.Modified Sine Wave

Television Interference

Operation of the INVERTER can interfere with television reception on some channels. If this situation occurs, the following steps may help tp alleviate the problem:

1. Make sure that the chassis ground lug on the rear panel of the INVERTER is solidly connected to the ground system of your vehicle, boat, or home.

2. Do not operate high power loads with the INVERTER while watching television.

3. 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.

4. Move the television as far away from the INVERTER as possible.

5. Keep the cables between the battery and INVERTER as short as possible and twist them together with as many twists per foot as is possible. This minimizes radiated interference from the cables.

7.2 Troubleshooting Guide

Problem and symptoms	Possible Cause	Solution
Low output voltage (96 VAC to 104 VAC)	Using an average reading voltmeter	Use true RMS reading meter. See section 2.2 of manual
Low output voltage	Overload	Reduce load.
No output voltage	Low input voltage	Recharge battery, Check connections and cable.

while the 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 to use a larger battery. See Battery Sizing notes in Section 4.2.

Input Voltage

The INVERTER will operate from input voltages between 10 volts and 16 volts. However, optimum performance is achieved with input voltages between 12.0 volts and 14.0 volts. If the voltage drops below 10.7 volts, the low battery warning will sound. The INVERTER will shut down if the input voltage drops below 10 volts. This protects your battery from being over-discharged. The INVERTER will not restart unless the input voltage exceeds 11 volts.

The INVERTER will also shut down if the input voltage exceeds 16 volts This protects the inverter against excessive input voltage. Although the INVERTER incorporates protection against overvoltage, it may sti11 be damaged if the input voltage exceeds 17 volts.

7 Troubleshooting

7.1 Common Problems

Buzz in Audio Systems

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

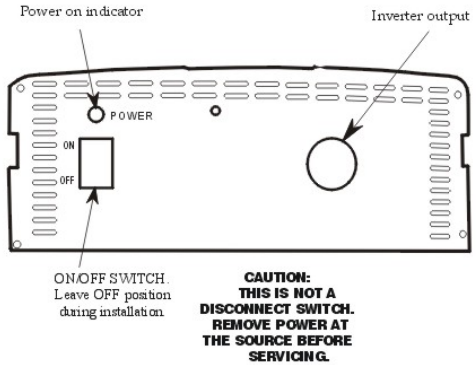
CAUTION:RECHARGEABLE APPLIANCES

Certain rechargers for small nickel cadmium batteries can be damaged if connected to the INVERTER .
Two particular types of equipment are prone to this problem:
1) small battery operated appliances such as flashlights, razors, and night lights that can be plugged directly into an ac receptacle to recharge.
2) certain battery chargers for battery packs used in hand power tools. These chargers will have a warning label stating thah dangerous voltages are present at the battery terminals.

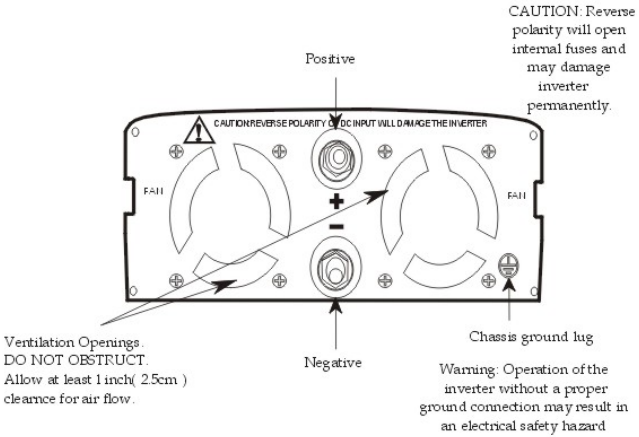
DO NOT USE INVERTER WITH THE ABOVE EQUIPMENT.

This problem does not occur with the vast majority of battery operated equipment. Most of this equipment uses a separate charger or transformer that is pluggged into the ac receptacle and produces a low voltage output. If the label on the ac adapter or charger states that adapter or charger produces a low voltage ac or dc output (less than 30 volts), will have no trouble powering this charger or adapter safely.

The modified sine wave produced by the INVERTER is designed to have an RMS (root mean square) voltage of 115 volts, the same as standard household power. Most AC voltmeters (both digital and analog), are sensitive to the average value of the waveform rather than the RMS value. They are calibrated for RMS voltage under the assumption that the waveform measured will be a pure sine wave. These meters will not read the RMS voltage of a modified sine wave correctly. They will read about 2 to 20 volts low when measuring the output of the INVERTER. For accurate measurement of the output voltage of the INVERTER, a true RMS reading voltmeter, such as a Fluke 87, Fluke 8060A, Beckman 4410, or Triplett 4200, must be used.



REAR PANEL



a) .OVERTEMP condition
b) Low Battery Voltage (<10.7V for the INVERTER).
c) Low Voltage Shutdown (<10.0V for the INVERTER).

6.2 Operating Limits

Power Output

The INVERTER will deliver 2500 watts or 20 amperes continuously. The wattage rating applies to resistive loads such as heaters while the current rating applies to reactive loads such as motors.

The INVERTER will operate most AC loads within these ratings. Some induction motors require very high surge currents to start. The INVERTER may not be able to start some of these motors even though their rated current draw is within the INVERTER limits. The INVERTER will normally start single phase induction motors rated at 1HP or less.

If a motor refuses to start, observe the battery voltage indicator while trying to start the motor. If the battery voltage indicator drops below 11 volts

supplied to the load, the INVERTER draws less than 600 milliamperes from the battery. This is alow current draw, but is battery dependent. It would take more than a week to discharge a 100 ampere-hour battery at this current, so you don't have to worry about excessive drain on your battery if you leave the INVERTER switched on for a few days. Do switch the INVERTER off if you are not planning to recharge your battery within a week or so.

.

Warning: The ac power cord is designed to handle 20 Amps. Ensure any additional extension cords are also rated at 20 Amps. Do not under size extension cords or a hazardous condition will exist.

Your INVERTER was designed with a logical and efficient back to front flow in mind. Power is applied to the large terminals on the rear of the unit and flows forward to the AC output receptacle on the front panel. All of the indicators, controls, and output connections that you will need to access after a permanent installation are conveniently located on the front panel (See Figure 3), See Section 5.1, Front Panel Controls and Indicators, for a detailed explanation of the functions of the various controls and indicators on your INVERTER.

Forced air cooling is sucked in from the front/bottom of inverter and blown out the back (dc input)..

NOTE: Although there are no air intakes on the sides of the unit, it is still important to provide an adequate airspace around these surfaces to allow for convection cooling. See Section 5.1 for installation notes.

4 Quick Operational Check

This section will give you the information you need to quickly hook-up your INVERTER and check its performance before going ahead with permanent installation. You will need the following:

a) a 12 volt DC power source
b) two cables to connect the DC power source to the INVERTER
c) a test load of 100-1000 Watts.

4.1 DC power Source

The power source must provide between 11 and 16 volts DC and must be able to supply sufficient current to operate the test load. As a rough guide, divide the wattage of the test load by 10 to obtain the current (in amperes) the power source must deliver.

Example: Test load is rated at 250 watts. Power supply must be able to deliver 250 ÷ 10 = 25 Amperes.

Use a fully-charged 12 volt (nominal) battery that can deliver the required current while maintaining its voltage above 11 volts. A fully-charged 12 volt automobile battery is capable of delivering up to 50 amperes without an excessive voltage drop.

DC Power Supply

Use a well regulated DC power supply that has an output voltage between 11 volts and 16 volts and can deliver the required current. If the supply is adjustable, make sure that the output voltage is adjusted to be between 11 volts and 16 volts. The inverter may shut down if the voltage is outside these limits and may be damaged if the voltage is above 16 volts. Also ensure that any current limit control is set so that the power supply can deliver the required current.

4.2 DC Cables

Your cables must be as short as possible and large enough to handle the required current This is to minimize the voltage drop between the power source and the inverter when the inverter is drawing large currents from he power source. If the cables introduce an excessive voltage drop, the inverter may shut down when drawing higher currents because the voltage at the inverter drops below 10 volts. Also; longer and/or thinner cables will reduce the efficiency of the overall system, since excessive power will be dissipated in the cabling.

For temporary operation at reduced power levels, the guidelines below (Table 1) may be followed, or you can use the cable sizes in Table 5 on page 16.

Max. Test Load Power Consumption For Short Term Test	Minimum Cable Size 12V INVERTER
100 watts	# 16AWG copper
250 watts	# 12AWG copper
500 watts	# 8AWG copper

Table 1. Temporary load wire gauge chart

connection.

STEP 5 - Connect the cable from the positive (red) terminal of the inverter to the positive terminal of the battery Main Fuse, or to the battery selector switch, if you are using one. Make a secure connection.

You may observe a spark when you make this connection since current may flow to charge capacitors in the INVERTER.

STEP 6 - If you are using a battery selector switch, switch it to select one of the batteries. Set the ON/OFF switch on the INVERTER to the ON position. Check the led on the front panel of the INVERTER. It should be on.

6 Operation

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

6. 1 Front Panel Controls and Indicators (See figure 3)

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

DC Wiring

STEP 1 - Ensure that the ON/OFF switch on the INVERTER is in the OFF position. If you are using a battery selector switch, switch it off as well

STEP 2 - Connect the cables to the power input terminals on the rear panel of the INVERTER. The red terminal is positive (+) and the black terminal is negative (-). Tighten the wire connections securely.

STEP 3 - Connect the cable from the negative (black) INVERTER to the negative terminal of the battery. Make a secure connection.

CAUTION! Loose connectors result in excessive voltage drop and may cause overheated wires and melted insulation.

STEP 4 - Before proceeding further, carefully check that the cable you have just attached connects the negative terminal of the INVERTER to the negative terminal of the battery. Power connections to the INVERTER must be positive to positive and negative to negative.

CAUTION! Reverse polarity connection (positive to negative) will blow the fuses in the INVERTER and may permanently damage the INVERTER. Damage caused by reverse polarity connection is not covered by your warranty.

CAUTION! We recommend a Main Fuse in the battery positive cable to protect against dc wiring short circuits (external to the inverter). The fuse should be as close to the battery as possible. We recommend an approved class R or class J fuse, such as Bussman's JJN or FRN, Littelfuse's JLLN or FLN or equivalent. The specific fuse ampere rating should be sized to allow operation of all your dc powered equipment and to properly protect your battery cables.

Ideally, the cables should be no more than 4 ft (1.5 m) long. See table 2 for a pictorial representation of the wire gauges.

Strip approximately 1/2 inch (1.25cm) of insulation from the ends of the cables being connected to the inverter. Attach 5/16 inch ring terminals to the ends of the wires to be attached to the DC terminals on the INVERTER. The ring terminals should be crimped with a proper crimping tool.

The other ends of the cables, which are connected to the power source, must be terminated with lugs or other connectors that allow a secure, low resistance connection to be made to the power source. For instance, if the power source is a battery, the cables must be terminated with battery terminals that clamp to the posts on the battery.

Remember! ***A solid, low resistance connection to the DC power source is essential for proper operation of the INVERTER.***

4.3 Test Loads

Use only equipment rated for 110-120 volt, 60 Hz AC operation that has a power consumption of 500 watts or less. We recommend that you start with a relatively low power load, such as a 100 watt lamp, to verify your test set-up before trying high power loads. We recommend you use a test load which is easily connected to your INVERTER AC output. For example, use a test load with an AC plug.

Wire Size (AWG)	Overall Outside Diameter (inches/mm)	Size
#6AWG	0.35/8.89	
#4AWG	0.42/10.70	
#2AWG	0.48/12.19	
#1AWG	0.52/13.21	
#1/OAWG	0.58/14.77	
#2/OAWG	0.64/16.26	
#3/OAWG	0.70/17.78	
#4/OAWG	0.82/20.83	

Table 2. Wire size Chart

parts suppliers). The bare cable end can then be inserted into the lug terminal.

The other ends of the cables, which are connected to the battery, must be terminated with battery terminals that clamp to the posts on the battery.

Remember! **A solid, low resistance connection to the DC power source is essential for proper operation of INVEATER.**

Remember! **Do not tin the cable ends with solder. Doing so will result in a poor long-term connection.**

5.4 Connections

Ground Wiring

The INVERTER has a lug on the rear panel. This is to connect the chassis of the INVERTER, and therefore the inverter's AC output ground, to your AC distribution system ground. The ground wire in the AC junction box on the front panel of the INVERTER is connected to the chassis.

The chassis ground lug must be connected to a grounding point, which will vary depending on where the 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 system. In a fixed location, connect the chassis ground lug to earth ground by connecting to a ground rod (a metal rod pounded into the earth), or other proper service entrance ground. Use a # 8 AWG or larger copper wire (preferably with green/yellow insulation) to connect the chassis ground lug to the grounding point.

5.3 Battery Cables

Proper wire and wiring is very important for the safe and proper operation of the INVERTER. Because the INVERTER has a low voltage, high current input, low resistance wiring between the battery and the INVERTER is essential to deliver the maximum amount of usable energy to your load. Don't waste the investment you have made in batteries and a highly efficient inverter by using undersized wires.

Use only copper wire. Aluminum wire has about 1/3 more resistance than copper wire of the same size and it is more difficult to make good, low-resistance connections to aluminum wire. We recommend 1/0 Awg copper cable (90 degrees C insulation rating), as the minimum size for connections between the battery and the INVERTER. Keep the cable length as short as possible, no longer than 10 Ft (3 meters). This will keep the overall system efficiency as high as possible, and will keep the voltage drop between the battery and INVERTER to a minimum.

Remember! **Lower efficiency means shorter run-times.**

If the battery cables introduce an excessive voltage drop, the inverter may shut down when drawing higher currents because the voltage at the inverter drops below 10 volts. If you must use longer cables, then choose larger cable. (See Table 5 below.)

Length of each Cable Up to....	2500W/12V INVERTER	
	Minimum Cable Size if Using Single Cables	Minimum Cable Size if Using Double Cables
10ft. (3m)	1/0 AWG	2x4 AWG
longer	4/0 AWG	2x1/0 AWG

Table 5 . Recommended DC Cable Sizes for Permanent Installation, for voltage drop less than 0.5 V dc total. Based on 90°C cable.

Strip approximately 1/2" (1.25cm) of insulation from the ends of the DC cables being connected to the inverter. Attach 5/16 inch ring terminals to the ends of the wires to be attached to the DC terminals on the INVERTER. The ring terminals should be crimped with a proper crimping tool.

AIMS Power is happy to recommend a source to buy cables made specifically for use with inverters.

4.4 Connections to the INVERTER

Follow the connection sequence described below:

STEP 1- Ensure that the ON/OFF switch on the INVERTER is in the OFF position. If the power source is a DC power supply, switch it off as well.

STEP 2- Connect the DC cables to the power input terminals on rear panel of the INVERTER The Red terminal is positive (+) and the Black terminal is negative (-) Tighten the wire connections securely. (See figure 4).

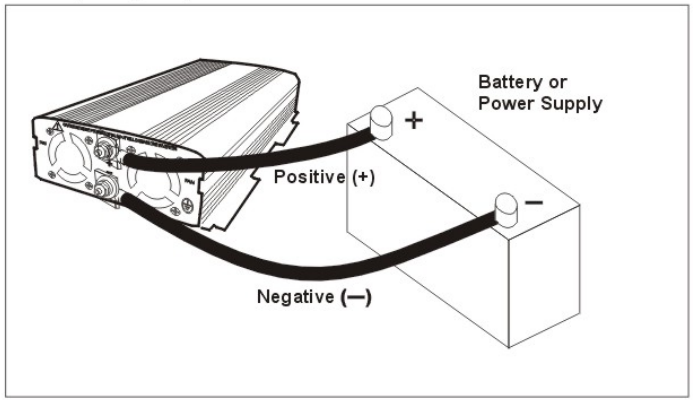


Figure 4. Connections to the INVERTER

STEP 3- Connect the cable from the negative (Black) terminal of the INVERTER to the negative terminal of the power source (Battery or Power Supply). Make a secure connection

Recommendation: AIMS Power advises the use of a 300 Amp fuse in line with the positive (red) battery cable. It should be located as near the battery + terminal as possible.

Use of gas free deep cycle AGM or Gel batteries is very strongly recommended.

STEP 4 - Before proceeding further, carefully check that the cable you have just attached connects the negative terminal of INVERTER to the negative output terminal of the power source. Power connections to the INVERTER must be positive to positive and negative to negative.

CAUTION! Reverse polarity connection (positive to negative) will blow the fuses in the INVERTER and may permanently damage the INVERTER. Damage caused by reverse polarity connection is not covered by your warranty.

WARNINC! You may observe a spark when you make the following connection since current may flow to charge capacitors in the INVERTER. Do not make this connection in the presence of flammable fumes. Explosion or fire may result.

STEP 5 - Connect the cable from the positive (Red) terminal of the INVERTER to the positive terminal of the power source. Make a secure connection.

STEP 6 - If you are using a DC power supply as the power source, switch it on. Set the ON/OFF switch on the 3000W INVERTER to the ON position. Check the indicators on the front panel of the INVERTER. **you should hear 1 beep and green LED should be on.**

STEP 7 - Set the INVERTER ON/OFF switch to the OFF position. The indicator lights may blink and the internal alarm may sound momentarily. This is normal. Plug in the test load now, but make sure that it is first switched off.

A typical engine alternator (12 Volt) may not be able to meet these requirements if large capacity batteries are used. Alternators are typically rated for the current they can deliver when they are cold. In actual use, alternators heat up and their output current capability drops by as much as 25%. Thus standard alternators with ratings of 40 amperes to 105 amperes will only deliver a maximum of 30 to 80 amperes in actual use and will deliver even less as battery voltage rises. Many alternators cannot produce more than 13.6 volts when they are hot. As a result, a standard alternator may not be able to charge a large battery quickly and completely.

One solution is to install an alternator controller that will bypass the voltage regulator and boost the alternator's output voltage during charging. This will increase the alternator's charging rate at higher battery voltages and ensure more rapid and complete charging. Alternator controllers are available from marine product dealers.

Another solution is to install a high-output alternator. Heavy-duty alternators rated from 100 amperes to 140 amperes are available from RV and marine dealers, and auto parts suppliers. These alternators are designed to directly replace standard alternators but produce the higher current and higher voltage required to charge multiple battery systems.

When recharging from AC power, use a good quality marine battery charger or RV converter that meets the requirements specified above. Do not use chargers intended for occasional recharging of automotive starting batteries; these chargers are not intended for continuous use. Contact AIMS Power for a complete line of battery chargers.

Your batteries may also be recharged from alternative energy sources such as solar panels, wind, or hydro systems. Make sure that you use the appropriate battery charge controller for your energy source.

Do not operate the INVERTER directly from a charging source such as an alternator or solar panel. INVERTER must be connected to a battery or a well-regulated, high-current DC power supply to work properly.

should be periodically recharged even if they are not being used.

4. If your batteries are not the "maintenance-free" type, check the electrolyte fluid level at least once a month. Use only distilled water to replenish the electrolyte fluid. Excessive fluid loss is a sign of overcharging.

5. Connections to battery posts must be made with permanent connectors that provide a reliable, low resistance connection. Do not use " alligator " clips. Clean the connections regularly and prevent corrosion by using an insulating spray coating or vaseline.

6. Battery state of charge can be measured with a hydrometer or, more easily, with a voltmeter. Use a digital voltmeter that can display tenths or hundredths of a volt when measuring 10 to 30 volts. Make your measurements after the (12 volt) battery has not been charged or discharged for several hours. For a deep-cycle lead acid battery at 25°C (77°F), the following table may be used:

Battery Voltage	State-of-Charge
12.7-12.9	100%
12.5-12.6	80%
12.3-12.4	60%
12.1-12.2	40%
11.9-12.0	20%

Table 4. Battery Charge State.

Alternators and Charging Systems

A good charging system is important for the health of your batteries. Poor recharging methods can quickly damage your batteries. When possible, recharge your batteries when they are about 50% discharged. This will give you much longer battery cycle life than recharging when the batteries are almost completely discharged.

Note: Since battery designs differ, it is best to charge according to the battery manufacturer's recommendations. Below is intended as a charging guide line.

The charging system should be capable of delivering a charging current equal to 25% of the ampere-hour capacityof your battery. For instance, if you have a 200 ampere-hour battery, the charging system should be able to deliver 50 amperes. The charging

plan to measure the output voltage of the INVERTER, refer to Section 2.2 of this manual.

5 Permanent Installation

5.1 Where to InstaII

After the INVERTER has passed the Quick Operational Check, you may proceed with permanent installation. The INVERTER should be installed in a location that meets the following requirements:

a) Dry- Do not allow water to drip or splash on the INVERTER.

b) Cool - Ambient air temperature should be between 0°C and 25°C (32°F and 77°F). The cooler the better.

c) Ventilated - Ensure that the unit is in a compartment that is ventilated, and that you allow at least linch (2.5cm) of clearance around the INVERTER for air flow. Ensure that ventilation openings on the front and rear of the unit are not obstructed.

d) Safe- Do not install INVERTER in the same compartment as batteries or in any compartment capable of storing flammable liquids such as gasoline. (See warning below)

e) Colse to Battery- Install as close to the battery as possible in order to minimize the length of cable required to connect the inverter to the battery, but not in the same compartment. It is better and cheaper to run longer AC wires than longer DC cables, because of the much lower current in the AC wires.

CAUTION! To reduce fire hazard,do not cover or obstruct ventilation openings. Do not install INVERTER in a zero-clearance compartment. Overheating may result.

in compartments containing batteries or flammable materials or in locations which require ignition protected equipment.

Mount the inverter on a flat surface using the mounting flanges on the side panels. Mounting hardware should be corrosion resistant and # 10 or larger, may be mounted horizontally or vertically.

5.2 Battery

The battery you use strongly affects the performance you can expect from your INVERTER. It is important to connect the INVERTER to the correct size and type of battery. The following information will help you select the appropriate batteries for your application.

Battery type

The lead-acid battery which is probably most familiar is the starting battery in your automobile. An automotive starting battery is designed to deliver a large amount of current for a short period of time (so it can start your engine). Only a small portion of the battery's capacity is used when starting the engine and it is quickly recharged by the running engine. It is not designed for repeated charge-discharge cycles where the battery is almost completely discharged and then recharged. If it is used in this kind of deep discharge service, it will wear out very rapidly.

Deep-cycle lead-acid batteries are designed for deep discharge service where they will be repeatedly discharged and recharged. They are marketed for use in recreational vehicles, boats, and electric golf carts so you may see them referred to as RV batteries, marine batteries, or golf cart batteries.

For most applications of the INVERTER, we recommend that you use one or more deep-cycle batteries that are separated from the starting battery in your vehicle by a battery isolator. A battery isolator is a solid-state electronic circuit which allows equipment to be operated from an auxiliary battery without danger of discharging the

between two banks of batteries, or use both in parallel, or disconnect both from the load. (See Figure 8.)

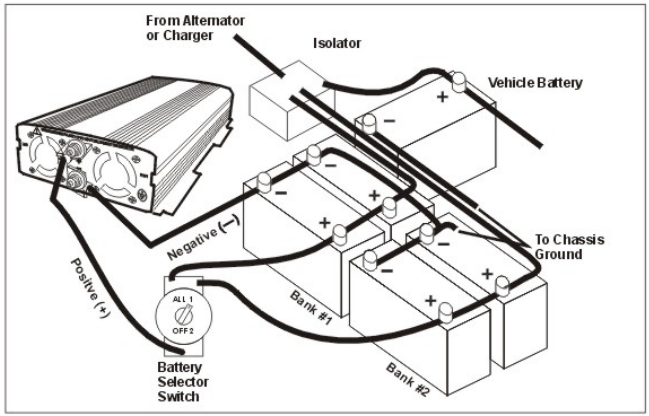


Figure 8.Recommended Battery Configuration for heavy-duty Applications

Battery Tips

1. With the exception of sealed, gel cell and sealed AGM batteries, lead-acid batteries emit hydrogen and oxygen gases, and sulfuric acid fumes when recharging. Vent the battery compartment to prevent accumulation of these gases, and do not install electronic or electrical equipment in the battery compartment. Do not smoke or carry an open flame when working around batteries.

2. The capacity of lead-acid batteries is temperature sensitive. Battery capacityis rated at 25°C (77° F). At - 20°C (0°F) the ampere-hour capacitywill be about half the rated capacity.

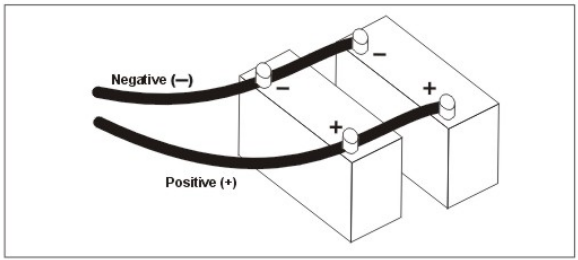
50	STEREO SYSTEM	OPERATING TIME	9 HOURS	14 HOURS	20 HOURS	40 HOURS	80 HOURS
100	19"COLOUR TV	OPERATING TIME	4 HOURS	6 HOURS	10 HOURS	20 HOURS	40 HOURS
200	COMPUTER SYSTEM	OPERATING TIME	2 HOURS	3 HOURS	4.5 HOURS	10 HOURS	20 HOURS
300	BLENDER	OPERATING TIME	1.3 HOURS	2.2 HOURS	3 HOURS	6 HOURS	12 HOURS
400	POWER DRILL	OPERATING TIME	1 HOURS	1.5 HOURS	2 HOURS	4.5 HOURS	10 HOURS
600	SMALL COFFEE MAKER	OPERATING TIME	N.R.	N.R.	1 HOURS	2.5 HOURS	6 HOURS
800	SMALL MICROWVE OVER	OPERATING TIME	N.R.	N.R.	N.R.	1.5HOURS	4 HOURS
1000	TOASTER	OPERATING TIME	N.R.	N.R.	N.R.	1 HOURS	3 HOURS
1500	FULL SIZE MICROWAVE	OPERATING TIME	N.R.	N.R.	N.R.	0.5 HOURS	2 HOURS
3000	HAIR DRYER & WASHING MACHINE	OPERATING TIME	N.R.	N.R.	N.R.	0.2 HOURS	0.8 HOURS

Table 3. 12 Volt Battery Sizing Chart

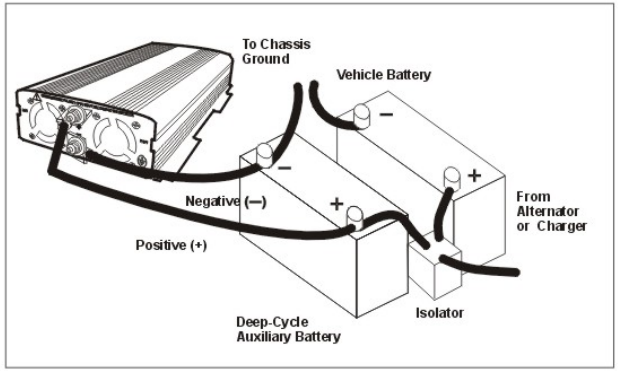
When sizing your battery, be conservative. More capacity is better since you will have more reserve capacity, and your battery won't be discharged as deeply. Battery life is directly dependent on how deeply the battery is discharged. The deeper the discharge, the shorter the battery life. Ideally, the number of ampere-hours consumed by your loads before recharging the battery should be no more than 50% of the battery's rated capacity.

Using Multiple Batteries

To obtain sufficient battery capacity you may need to use more than one battery. Two identical batteries can be connected (+) to (+) and (-) to (-) in a parallel system that doubles capacity and maintains the voltage of a single battery. Do not connect batteries from different manufacturers, or with different amp-hr ratings, in parallel-decreased battery life may result. See Figure 7.



Figyre 7.Parallel Batteries



Figue 5.Recommended Battery Configuation for Medium-Duty Applications

If your application involves relatively low power loads (i.e. power consumption of 300 watts or less) and relatively short operating times before recharging (one hour or less), you may connect 3000W INVERTER directly to the vehicle starting battery.

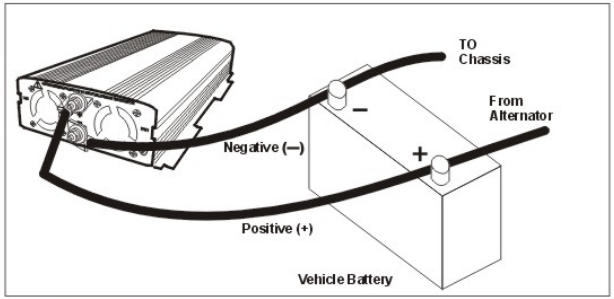


Figure 6. 3000W INVERTER Connected Directly to Engine Battery for Light-Duty Applications

output voltage of 12 volts. INVERTER will not operate from a 6 volt battery, and will be damaged if it is connected to a 24 volt battery.

Battery Sizing

There are a number of different standards for rating battery energy storage capacity. Automotive starting batteries are normally rated by cranking amps. This is not a relevant rating, for continuous use. Deep-cycle batteries are rated either by **reserve capacity** in minutes or by **ampere-hour** capacity.

Battery reserve capacity is a measure of how long a battery can deliver a certain amount of current-usually 25 amperes. For instance, a battery with a reserve capacity of 180 minutes can deliver 25 amperes for 180 minutes before it is completely discharged.

Ampere-hour capacity is a measure of how many amperes a battery can deliver for a specified length of time-usually 20 hours. For example, a typical marine or RV battery rated for 100 ampere-hours can deliver 5 amperes for 20 hours (5 amperes x 20 hours= 100 amp-hrs).

Actual battery capacity decreases as discharge current increases. A battery rated at 100 ampere-hours which can deliver 5 amperes for 20 hours, may deliver 20 amperes for only 4 hours, resulting in an actual capacity of 80 ampere-hours. For this reason, it is difficult to compare rated ampere-hour capacity with battery reserve capacity. For example a barrery with a reserve capacity of 180 minutes has the following calculated ampere-hour capacity.

180 min. ÷ 60 = 3 hr.,3 hr. X 25 amps= 75 amp-hrs

However its actual ampere-hour rating will be closer to 100 ampere-hours because it is rated at the discharge current required to get 20 hours of operation (about 5 amperes).

To determine the battery capacity you require, follow these steps:

determine how many watts it consumes. This can normally be found on a label on the product. If only the current draw is given, multiply the current draw by 115 to get the power consumption in watts.

STEP 2 - For each piece of equipment you will be operating from INVERTER, estimate how many hours it will operate between battery charging cycles.

STEP 3 - Calculate total watt-hours of energy consumption, total hours running time, and average power consumption as in the following example.

STEP 4 - Using the chart below (Table 3), find the battery size that will give you the required operating time at the calculated average power oinsumption. For instance, from the example below,

the required operating time is 6 hours and the average power consumption is 387 watts. From the chart, the smallest battery size which will give more than 6 hours of operation at a power level between 300 and 400 watts are two 400 amp-hr. batteries in parallel, which offers between 10 amd 12 hours of operating time.

Equipment	Power Consumption	operating Time	Watt Hours (Power x Operating Time)
TV & VCR	115 watts	3 hours	345
Sewing Machine	150 wans	1 hours	150
Waterpik	90 watts	0.25 hour	22.5
Blender	300 watts	0.25 hour	75
Coffee Maker	750 watts	0.3 hour	225
Coffee Grinder	100 watts	0.2 hour	20
Microwave Oven	1500 watts	0.5 hour	750
Washing Machine	1500 watts	0.5 hour	750
Totals		6 hours	2337.5 watt-hours

Average Power Consumption = 2337 watt-hrs ÷ 6 hours = 390 watts
12 volt Ampere-Hours Consumed = Watt-hours ÷ 10 = 2337 ÷ 10 = 234 ampere-hours

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9 Specifications

You should clean the exterior of the unit periodically with a damp cloth to prevent accumulation of dust and dirt. The air intake on the rear panel and air exhaust slots on the Front/bottom panel are especially prone to dust and dirt accumulation. A regular maintenance check is recommended, and the screws on the DC input terminals should be tightened periodically.

9 Specifications

Model	BCT010009D
DC Input voltage	12V (10-16V)
AC Output voltage	120Vac
Output frequency	60Hz
Output power	2500 watts
Over load	2501 ~ 3500 w
Output voltage	AC RMS +/- 5%
Output waveform	Modified sine wave,phase corrected
Output frequency	+/- 1Hz
Input voltage	10 to 16 VDC
Low battery alarm	audible, 10.7 VDC
Low battery cutout	10 VDC
Efficiency	approx. 85-90%
No-load current draw Switch ON Switch OFF	 at 12.5Vdc and higher< 0.6 Amps 10.5-12.5Vdc< 3.6 Amps <0.2 mAmps
Dimensions (LxWxH)	486x235x90mm or 19.13"x9.25"x3.5"
weight	6.6 KGS or 14.5LBS