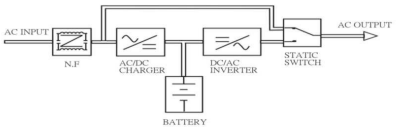
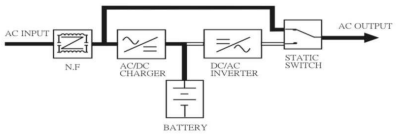
ABOUT THE BYPASS SYSTEM

INVERTER System Block Diagram



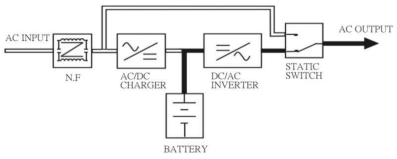
Normal Operation

There are two main loops when AC utility is normal: the AC loop and the battery charging loop. The AC output power comes from AC utility input and passes through static switch to support power to the load, The battery charging voltage comes from AC utility input and converted by AC/DC charger to support battery-charging power.



AC Utility Failure (Battery Mode)

The AC output comes from battery, passing through DC/AC inverter and static switch within the battery backup time.



INVERTER SPECIFICATIONS

Name	Description
Model No	PWRIC300012W
Input	12V (10–16V) DC
Output	120V AC ± 10%
Frequency	60 Hz
Output Waveform	Modified Sine Waveform
Continuous Power	3000 watts
Surge Power	6000 watts
Efficiency	Approximately 90%
No load Switch ON Switch OFF	 <1.0A DC <0.2mA DC
Low Battery Alarm	10.5 ± 0.5V DC
Low Battery Shutdown	9.5 ± 0.5V DC
Over Temp Shutdown	140°F ± 9°F (60°C ± 5°C)
AC output sockets	2 US standard
Power switch	DC input ON/OFF control
Dimensions (L × W × H)	12.8 × 7.2 × 6.8 inches (495 × 178 × 166 mm)
Net Weight	8.2 Kg approximately or 18 Lbs

CHARGER SPECIFICATION

AC input voltage	AC 110~125V
DC charging current	DC 30A ± 5A
DC charging voltage	DC 15.2 ± 0.2V
Shut down current when fully charged	DC 5A ± 2A
Battery capacity available	DC 12V 60-300AH
Battery error connection protection	YES
Charger status	green LED lit in charging green LED not lit after battery full
Charger fault	Red LED lit when over temperature

BYPASS SPECIFICATION

Transfer time	< 3 sec.
Transfer current	25A (3000W) max.

NOTE

All specifications are typical at nominal line, half load, and 77°F (25°C) unless otherwise noted. Specifications are subject to change without notice.

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

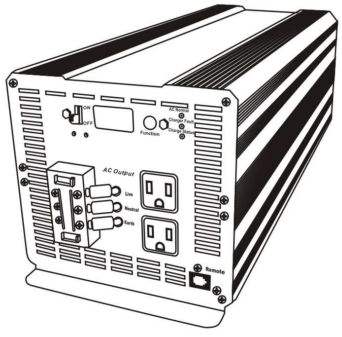
Please visit our web site: www.aimscorp.net

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

AIMS Power™
a Division of the AIMS Corporation

Automatic Power Inverter and Charger Output Power: 3000W

Part# PWRIC300012W



Instruction Manual

Thank you for purchasing this 3000 Watt Automatic inverter and charger
With minimal care and proper treatment it will provide years of reliable service. Carefully read, understand and comply with all instructions before use. Keep this manual for future reference.

GENERAL INSTRUCTIONS:

- Keep the inverter away from any direct heat source or combustible materials.
- Keep well ventilated – this device generates heat.
- Keep the inverter away from combustible fuel or battery gases.
- Do not continuously operate any equipment over 3000 Watts.
- This inverter operates from a 12 volt DC power source only.
- Do not attempt to connect the inverter to any other power source, including any AC power source.
- Incorrect battery polarity will damage the inverter and void the warranty.
- Keep this inverter in a dry environment.
- Do not open the inverter; there are no user serviceable parts inside.

ABOUT THE INVERTER

This power inverter converts 12 volts, direct current (12V DC) to 115 volts alternating household current (115V AC). It easily powers TV/VCR combinations, microwave ovens, refrigerators and small air conditioners. It also operates at the highest efficiency (up to 90%) that results in longer running times and extended battery life compared to other inverters with this level of power output.

This inverter has the highest surge capability in its class. Superior surge capability allows the inverter to start most difficult motorized loads. Advanced circuitry runs cooler and is more reliable than competing units.

LOAD CONSIDERATIONS

When an appliance with a motor starts, it requires a momentary surge of power. This surge of power is the "starting load" or "peak load". Once started, the appliance requires less power to continue to operate. This is known as the "continuous load". It is important to know starting loads and continuous loads of appliances that will be powered by the inverter.

Appliance power is rated in watts. This information is usually stamped or printed on most appliances and equipment. In some cases, a tool will be rated in amperes. To convert from amps to watts, multiply: AMPS × 115 (AC voltage) = WATTS. This formula yields an approximation of the continuous wattage load of that appliance.

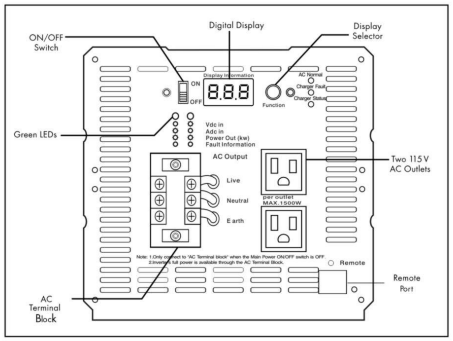
The startup load of an appliance is a major factor of whether this inverter can power it. Startup load is momentary. With many appliances, it is approximately twice the continuous load but some appliance startup loads can be as high as eight times the continuous load. To determine if an appliance or tool will operate with this inverter, run a test. This inverter will automatically shut down in the event of an output overload, so there is no danger of damaging either the inverter or the equipment.

This inverter may not properly operate some appliances with either speed control features or dimmer controls. Some appliance GFCI power cords will not operate properly while powered by this inverter. The only way to be sure of proper operation is to try it.

SAFETY WARNING: THE INVERTER OUTPUT CAN BE LETHAL. IMPROPER USE OF THIS INVERTER MAY RESULT IN PROPERTY DAMAGE, PERSONAL INJURY OR LOSS OF LIFE.

FRONT PANEL

The Front Panel contains the inverter's ON/OFF Switch, Digital Indicators, direct wiring High Current Terminals, Two AC Outlets and a Remote Switch Connector for connecting an optional Remote Switch cable.



On/Off Switch

This switch turns the inverter on and off.

Digital Display, Function Button, and Green LEDs

The inverter is equipped with a digital display to monitor input DC volts, DC amps, AC output watts and error codes. A Display Selector button allows the user to advance the display readout to the next readout. The lit/unlit status of two green LEDs show which function is being shown on the Digital Display

The display and button are used to help diagnose problems if they occur.

Green LEDs Status (Shows Display Mode, ☼ = Lit, ○ = Unlit)

LEFT LED	RIGHT LED	DISPLAY Information	Error code
○	☼	Vdc in	
☼	○	Adc in	
☼	☼	Power Out (kW)	
○	○	Fault Information	E01 Overload

Volts Readout – Digital Display (left LED unlit, right LED Lit)

The volts display is the measurement of the voltage at the DC terminals of the inverter, not actual battery voltage. During high wattage applications the display may show a lower voltage level than the battery because of a voltage drop that can occur between the DC input cables and the battery. This voltage drop should not be greater than 0.25 to 0.5 volts, as a greater voltage will seriously reduce run time. This inverter will operate with input voltage ranging from 10 to 16 volts of direct current (DC). If the inverter input voltage level falls to 10.5 volts DC, an audible alarm will sound. When the voltage drops below 10 volts DC, the inverter will automatically shut down.

During charging from a generator, solar panel or AC powered charger the battery voltage will be higher than when it is resting. This inverter will automatically shutdown if the input voltage is 17 volts or higher. Voltages greater than 16 may cause damage to the inverter. Damage caused by excessive voltage input is not covered under the warranty.

Amps Readout – Digital Display (left LED lit, right LED unlit)

This readout indicates actual DC amperes of current being drawn from the battery bank. Note that for a 120 amp reading the inverter should be powering 1200 watts of AC load.

Watts Readout – Digital Display (both left LED and right LED lit)

The Watts readout shows AC watts delivered to the connected operating AC appliance load.

Diagnostic Error Code – Digital Display E01

When both left and right Green LED are unlit, the user will see one "Error Code" designated as E01 for Overload on Display Information.

AC Terminal Block

There are three insulated terminals on the front panel of the inverter. These terminals are for connecting 115 volt AC devices that require more than 15 amps to operate. Other uses are for connection to distributed wiring that has multiple AC outlets. Any wiring that is directly connected must be 10 gauge or larger. Facing the Front Panel, the terminals are:

Bottom	Middle	Top
(Green) Ground	(White) Neutral	(Black) Hot

Neutral and Ground are bonded inside the inverter to comply with the National Electric Code (NEC) requirement that any AC source must have a Neutral to Ground connection.

Remote Port

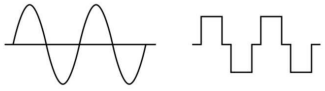
Actual Remote sold separately.

Two 115V AC Outlets

Each outlet will supply up to 15 amps 115V AC maximum, for powering appliances. Greater than 1650 watts continuous power from an outlet may cause damage to the inverter and cause possible injury. Use the high output terminals for appliance loads greater than 15 amps.

Power Inverter Output Waveform

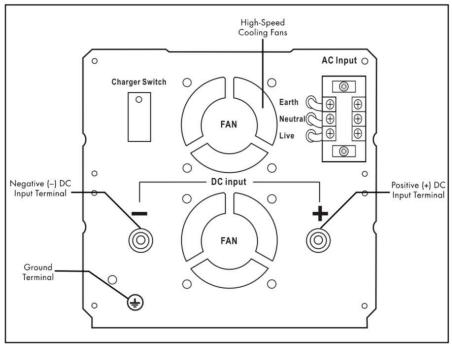
This inverter's AC output is a modified sine wave (MSW) 115 volts AC. The comparison of modified sine wave and household AC is shown in the figure below.



Sine Wave Modified Sine Wave (MSW)

This modified sine wave has a root mean square (RMS) voltage of 115 volts. Most ordinary AC voltmeters are calibrated to read "average" voltage and assume that the AC waveform will be a pure sine wave. These meters will not correctly read MSW voltage, and will display about 20 to 30 volts too low. Any multi-meter identified as "TRUE RMS" will accurately read MSW correctly.

REAR PANEL



Ground Terminal

This connection is located on the lower left of the rear panel. It is for attaching a 6 gauge insulated safety ground wire. This safety wire is for protecting personnel if there is an unlikely failure in either the cabling or enclosure insulation. Do not directly connect this ground connection to the negative DC terminal. This safety wire is to be connected to the vehicle frame or earth ground. This is described in the installation procedure.

Negative DC (–) Input and Positive DC (+) Input Terminals

DC input terminals are used to connect the inverter to heavy duty cables from the battery or battery bank. For connection information, refer to the sections on installation.

1/0 Awg minimum wire size is required to operate inverter properly.

High-Speed Cooling Fans

The fans in this inverter are thermally controlled. They will only turn on when inverter gets hot.

Charger Switch

The Charger Switch allows the battery charger to be turned off when another charging source is used. This may be a vehicle alternator or an external charging source. In case another charger is used make sure the charger switch is in the OFF position. Using ac in and Charger Switch ON may damage your charger if some other external charger is also used. Charger Switch in RESET mode will charge batteries using our internal 30 Amp smart charger.

PLANNING THE INVERTER SYSTEM

Any large wattage inverter system requires planning before installation. There are several steps to the planning process so the user must determine the following:

- Maximum inverter wattage required
- Operating time (run time) needed between battery recharges
- Battery bank capacity in amp-hours
- Charger requirement to charge batteries within a practical time.
- Distance between battery bank and inverter.

DETERMINING MAXIMUM APPLIANCE WATTAGE

Maximum AC appliance wattage is the first factor in planning battery and charging systems.

Some background: Large microwave oven specifications list cooking power (watts) and appliance power. Appliance power is the AC load the inverter has to supply.

Most other electrical tools, appliances and audio/video equipment have labels that list the unit's power requirements in watts. If the tool or device is rated in amps, multiply the amps by 115 (115V AC) to determine the watts. For example, a power tool rated at 4 amps will draw 460 watts.

Determine the wattage of each appliance you need to simultaneously operate. Add all of the appliance wattages to obtain an estimated "total watts" number. Remember to consider the startup surge that motorized appliances will cause. Do not exceed the surge rating of this inverter (6000 watts). This can cause an immediate overload shutdown.

At 3000 watts continuous output, this inverter requires a DC power supply (battery bank) that can continuously supply 300 amps at 12V DC for the duration of the run time.

CONFIGURING THE BATTERY BANK

To determine the minimum battery ampere-hour rating that you will need to operate appliances from the inverter, and any DC appliances powered by the battery bank. Follow these steps:

1. List the maximum continuous wattage that the inverter has to supply.

2. Estimate the number of hours the appliances will be in use between battery recharges. This will vary depending on appliances. For example, a typical home use coffeemaker draws 500 watts during its brew time of 5 minutes. It maintains the temperature of the pot, requiring 100 watts. Typical use of a microwave oven is only for a few minutes. Some longer operating time appliances are lamps, TVs, computers and refrigerator/freezers.
3. Determine the total watt-hours of energy needed. This is done by multiplying average power consumption in watts by hours of run time. For example: 1500 watts for 10 hours = 15,000 watt hours.

   To get an estimate of the maximum current (in amps) that a battery bank must be capable of delivering to the inverter, divide the load watts by ten. For example a 1500 watt appliance load will need 150 amps at 12 volts DC.

   Using the 1500 watts (or 150 Amps) for 10 hours example as above, then 150 amps is needed for 10 hours. This provides us with the basic amp-hours (AH) of battery that is required. Ten hours at 150 amps equals 1500 amp-hours (AH). This answer is just a beginning because there are additional factors that determine actual run time. These include:

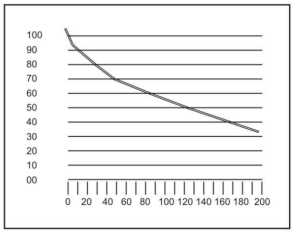
   - AC appliance load and time in use (basic AH)
   - Cable gauge and length (cable losses)
   - Charge level of the batteries (between use, chargers have to be able to fully charge the batteries)
   - Temperature of the batteries (colder batteries provide fewer amps)
   - Age and condition of the batteries (older batteries lose AH capacity)
   - Compliance with turning off unnecessary AC loads.
   - Use of DC appliances and compliance with turning off unnecessary DC loads.

DERATING THE BATTERY BANK

Most lead-acid batteries have a rating expressed in amp-hours (AH). The most common rating of AH is "at the 20 hour rate".

NOTE: Despite several Internet explanations, here is no relationship between Cold Cranking Amps (CCA) and Ampere Hours (AH).

For example; if a 20AH battery is discharged at a 1 amp rate, is will take 20 hours to discharge that battery. The terms "charged" and "discharged" relate to actual battery voltage. This means that the output voltage of a nominal 12 volt battery starts at 13.2 volts (fully charged) then drops to 10.6 volts (discharged). If the load on the battery causes the battery to discharge faster than the 20 hour rate, the capacity (AH) of the battery is measurably reduced (derated). Derating is a major run time factor. The curve in the following chart can help to determine what the battery bank can deliver under load. The results are used to estimate how much additional battery capacity is needed to achieve the desired run time.



The left vertical numbers of the curve represents percentage of the battery capacity at the 20 hour rate. In this example, the user needs a one hour run time. If the example battery is 220AH (20 hour rate), and the load is 220 amps that is 100 percent (horizontal number) of the AH (20 hour rate). Starting at the 100 percent horizontal point and looking up to the curve the results are that only 56 percent of the battery capacity is available. This means that a higher battery capacity is required to get the desired run time, one hour. The curve also shows that a load of 200 percent of the 20 hour rate yields only 31 percent of the battery capacity. The installer must carefully plan the capacity of battery bank or the run time may be seriously affected. To the inexperienced installer, several trial battery capacities may be required to make sure a large enough battery capacity is available to achieve the desired run time.

The curve can be applied to any lead acid battery under load providing that it has an AH rating at the 20 hour rate.

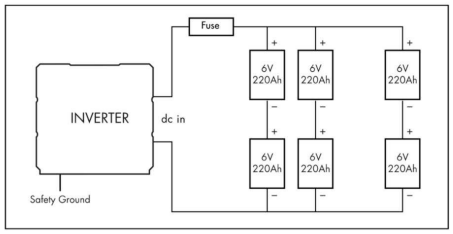
Continuing with the example above: The 150 amp load will need to run for 10 hours, so we begin configuration with a 1500 AH battery. If the vertical is 1500 and the horizontal is 150 amps, the percentage of load on the battery is 10 percent. The curve shows that the 1500 AH is derated to 90 % of maximum. This means that the battery will have to be 16500 AH for the full 10 hour run time. It is important to add some extra battery capacity, because as the batteries age, they will lose AH capacity.

CONFIGURING THE BATTERY BANK

Six volt, 220 AH "golf cart" batteries were selected for these illustrations because they are generally readily available and relatively inexpensive. They are deep-cycle type and with regular recharging they have a relatively long life. These batteries are "flooded" type; they freely vent hydrogen and oxygen while under charging and heavy discharge. They must be vented to outside air to prevent accumulation of explosive gases.

BATTERY BANK DIAGRAM

The diagram below shows inverter connections to a battery bank with recommended fuse protection.



FUSING REQUIREMENTS

NOTE: It is important that this 3000 watt inverter has one ANL 300 ampere or equivalent main battery fuse added to the Positive (+) battery cable as close as possible to the battery bank's positive terminal. The fuse amperage rating must be sized to allow simultaneous operation of all the AC appliances to be powered, allowing for the momentary high startup current requirements of inductive loads. Use the recommended fuse block (fuse holder) and fuse, or an electrical equivalent. ANL type fuses and fuse holders are readily available from marine supply dealers.

The 300 amp battery protection fuse is very important to protect equipment, batteries and personnel. The fuses protect against battery explosion if the cables that connect to the inverter accidentally short.

READ AND COMPLY WITH THE WARNING BELOW.

WARNING

EXPLODING BATTERIES CAN SPRAY MOLTEN LEAD, HOT SULFURIC ACID AND OTHER METAL AND PLASTIC FRAGMENTS. BATTERIES THAT ARE CHARGING OR UNDER HIGH DISCHARGE RATES PRODUCE EXPLOSIVE HYDROGEN GAS INTO THE SURROUNDING AREA. BE SAFE—FUSE THE BATTERY BANK AND MAKE SURE THE BATTERIES ARE PROPERLY VENTILATED.

Recommend: sealed AGM or Gel deep cycle batteries. Contact AIMS Power For help finding a supplier.

DC Cable Gauge

Minimize cable losses by using the thickest wire available, and the shortest practical length. If the inverter and the battery are positioned within four feet of each other, a minimum of 1/0

gauge insulated copper wire should be used to make the connections. If the round trip distance is longer than 4 feet, heavier wire will be required. Aluminum wire is not recommended and would require a heavier gauge.

AC input Cable Gauge

AIMS Power recommends the use of a 10 Awg copper stranded wire for the ac input terminal block. For the earth ground on the ac in terminal block we recommend 8 Awg. Only connect when the Main ON/OFF power switch is OFF and the inverter is disconnected from the battery bank. Ensure the other ends of the wires connecting to ac in terminal block are not plugged in.

Built-In Battery Charger

The AIMS Power PWRIC300012W inverter has a built-in battery charger. It is a smart charger that charges at a maximum rate of 30 Amps per Hour. It will switch to maintenance mode automatically once the batteries are fully charged. It is recommended to check with the battery manufacturer of your particular batteries and find out what the maximum rate of charge per battery is. If it is 5 Ah then we recommend using 6 batteries.

CONNECTING THE INVERTER

General information

Loose connections will result in a severe voltage drop that can cause damage to connectors, conductors, and insulation and can cause sparking. Make sure all cables are the proper gauge and plan to have the ANL fuse holder within one foot of the battery bank's Positive (+) terminal. All cable ends need to be stripped of insulation for approximately ¾ of an inch to have appropriate sized ring terminals crimped onto the bare cable ends. Appropriately sized socket wrenches should be used to carefully tighten the retaining nuts on the terminals of the battery bank, fuse holder and DC terminals on the back panel of the inverter.

Contact AIMS Power for help finding a supplier of assembled cables.

CAUTION: Reverse polarity connection will blow the fuses in the inverter and can permanently damage the inverter. Damage caused by reversed polarity will void the warranty.

Procedure

1. Connect the Negative (–) cable ring terminal to the Negative (–) Battery Terminal.
2. Install the ANL fuse in the Fuse holder Positive (+) cable.
3. Make sure the ON/OFF switch located on the front panel of the inverter is in the OFF position. Disconnect any remote switch from the connector on the front panel.
4. Locate the Ground Lug Terminal at the rear of the inverter. Connect an insulated 6 gauge copper wire to the terminal. The other end of the ground wire is connected to a "proper" grounding point. Use the shortest practical length of wire. Connect this wire to the chassis of your vehicle or to the grounding system in your boat. In a city, the ground wire can connect to a metal cold water pipe that goes underground. In remote locations, the ground wire can be connected to an "earth ground". This can be an attachment to a 6 foot long copper clad metal rod driven into the ground. In the unlikely event of a short circuit, operating the inverter without proper grounding can result in electrical shock. Do not directly connect this ground

wire to the Negative DC Terminal. You can connect the ground wire to the negative battery terminal.

NOTE: The cable ends need to be stripped of insulation for approximately ¾ of an inch at both ends. The battery ends or fuse end needs to have ring terminals crimped onto the bare cable ends.

5. Use a socket wrench to loosen and remove the Positive (+) and Negative (–) cable connector retaining nuts. Place the Negative (–) cable ring terminal onto the Negative (–) DC terminal. Place the retaining nut on the terminal stud. Use the socket wrench to make a good, secure connection.
6. Recheck and make sure the DC cable fuse is installed in the fuse holder.
7. Attach the Positive (+) DC cable to the Positive (+) terminal on the battery. Avoid shorting the socket wrench and carefully tighten the retaining nut.

   CAUTION: Making an initial connection between the positive cable and the inverter's positive terminal may cause a spark. This is a normal and is a result of capacitors in the inverter starting to charge. Because of the possibility of sparking, it is extremely important that both the inverter and the battery bank be positioned away from any source of flammable fumes or gases. Failure to heed this warning can result in fire or explosion. Do not make the positive terminal connection immediately after the batteries have been charging. Allow time for the battery gasses to vent to outside air.

8. Attach the positive cable ring terminal to the Positive (+) DC connector stud on the inverter. Replace the retaining nut and carefully tighten. Make sure the connection is tight and secure.
9. Turn on the inverter. Advance the Digital Display to the Voltage display (right green LED lit) by pressing the FUNCTION button. The display on the front panel should show 10.5 to 13.2 volts depending on the voltage of the power source. When the voltage reading does not fall within this range, check the connections of the wires to the terminals on the battery bank and the inverter to make sure they are secure. Also check the voltage of the power source. Advance the Digital Display to the Diagnostic Error Codes (green LEDs not lit). Look for code E03: Low Voltage Shutdown. If this code is present, then check for loose connections or discharged batteries.
10. Turn off the inverter. The audible alarm may sound a short "chirp". This is also normal.
11. When you have confirmed that the appliance to be operated is turned off, plug the appliance into one of the two AC outlets on the front panel of the inverter.
12. Turn the inverter on.
13. Turn the appliance on.
14. The Remote On/Off switch (if purchased) should be placed in a location convenient to the user. Insert the cable plug into the front panel connector. The inverter's Front Panel On/Off Switch must be On for the Remote Switch to operate. A lit LED indicator on the Remote Switch indicates when DC power is applied to the inverter. Pressing the momentary button controls On/Off operation of the inverter. Note: If an extension cord is used from the inverter to the appliance, limit the extension cord length to 50 feet or less. Make sure that the cord is properly rated to carry the appliance load.

CHARGING THE BATTERY BANK

It is not the purpose of this Inverter User's Guide to provide detailed information regarding battery charging systems. However, the user should try to augment any charging system with either wind power or solar power. These can continue to operate during power outages and they also reduce recharge time. If automatic AC powered battery chargers do not provide enough charging current for a larger battery bank, it may be permissible to have two automatic battery chargers connected to the battery bank depending on chargers.

The charger built in this inverter is not intended for use with multiple chargers. Never allow this charger to operate while other charger(s) are present. If other charger(s) are in use, please turn the CHARGER switch to OFF when the inverter is OFF. If you remove foreign charger(s) then you may turn the built-in charger on by pressing RESET on the dc input of the inverter. This should again be done when the inverter is OFF.

REGULAR LOSS OF COMMERCIAL POWER

If the inverter system is used during commercial power outages that occur daily, configure the charger system to replace energy during the time that commercial power is available. Replacement of battery energy always requires more than was taken from the battery (typically 130 percent). In the example used earlier in this document, the AC load ran for 10 hours. If commercial power is available, there are approximately 14 hours left in the day to do the recharging. The following is an example of what is necessary to recharge a battery bank that has 16500 AH of capacity (as in the example above) and has been discharged to 10.5 volts (discharged). The charger has to replace 2145 AH (1650x 1.3 AH) in 14 hours, so the charger must charge at a rate of 153 amps for 14 hours. As this charge current is distributed among the batteries in the battery bank, the current received by an individual battery is within its charge rating. Be sure that the battery is well vented as the area will likely have accumulations of an explosive mixture of hydrogen and oxygen. Follow all recommendations for use that are contained in the battery charger manual.

WARNING

THERE IS DANGER OF AN EXPLOSION. DO NOT CONNECT OR DISCONNECT CHARGER CABLES DIRECTLY AFTER BATTERY DISCHARGE OR RECHARGE — MAKE SURE THAT THE BATTERY BANK AREA IS WELL VENTED BEFORE ATTACHING OR REMOVING CABLES.

If flooded lead acid batteries are used, as examples given in this document, be sure that periodic checks of battery electrolyte levels are done. Follow battery manufacturer's instructions in keeping the electrolytes at the proper level. Be sure to use pure distilled water when replacing evaporated electrolyte liquid.

AIMS Power strongly recommends the use of sealed AGM or Gel deep cycle batteries. Contact us for help finding a supplier..

ABOARD A VESSEL OR VEHICLE.

Manufacturer supplied engine driven alternators can usually be replaced with one that can continuously deliver higher amperage. This should be done at the outset. Keep the batteries

charging when the vessel or vehicle engine is operating. In the case of a vessel, make sure that shore power is used to recharge the batteries whenever possible.

OPERATING ISSUES

Television and Audio Suggestions

Although all inverters are shielded and filtered to minimize signal interference, some interference with your television picture may be unavoidable, especially with weak signals. However, here are some suggestions that may improve reception.

- First, make sure that the television antenna produces a clear signal under normal operating conditions (i.e. at home plugged into a standard 110/120V AC wall outlet). Also ensure that the antenna cable is properly shielded and of good quality.
- Change the position of the inverter, antenna cables and television power cord.
- Isolate the television, its power cord and antenna cables from the 12 volt power source by running an extension cord from the inverter to the television set.
- Coil the television power cord or install a clamp-on ferrite choke (available from electronic parts suppliers).

Note: Some inexpensive audio systems may have a slight "buzzing" sound when operated with the inverter. This is caused by insufficient filtering in the audio system. The only solution to this problem is to get a sound system with a higher quality power supply.

TROUBLESHOOTING

PROBLEM: Inverter shutdown

Reason	**Solution**
Battery voltage below 10 volts.	Recharge or replace battery.
Equipment being operated draws too much power. (Codes E01)	Use a higher capacity inverter or do not use this equipment.
Inverter is too hot: thermal shutdown.	Allow inverter to cool. Check for adequate ventilation. Reduce the load on the inverter to rated continuous power output.
Unit may be defective.	See warranty and call customer service.

PROBLEM: Low or no output voltage

Reason	**Solution**
Poor contact with battery terminals.	Clean terminals thoroughly.
Using incorrect type of voltmeter to test output voltage.	Use true RMS reading meter.

PROBLEM: Low battery alarm on all the time

Reason	**Solution**
Input voltage below 10.5 volts.	Keep input voltage above 10.5 volts to maintain regulation.
Poor or weak battery condition.	Recharge or replace battery.
Inadequate power being delivered to the inverter or excessive voltage drop.	Use larger gauge wire. Keep wire length as short as possible.

PROBLEM: TV does not work

Reason	**Solution**
TV does not turn on.	Contact TV manufacture to see if the TV is compatible with a modified sine wave.

PROBLEM: TV interference

Reason	**Solution**
Electrical interference from the inverter.	Add a ferrite data line filter on to the TV power cord.

About The charger there are some important safety and operating instructions.

⚠ Notes for possible hazards:

1.Please connect the correct AC input voltage for the charger.
2.The charger is designed for charging DC 12V batteries only. Please do not use on batteries of other different voltages or for other purposes.
Note: this will cause the charger to overheat, burn or even cause the battery to explode.
3.The input voltage of the charger is specified as in SPECIFICATION please do not connect with other voltage power for charging or use for other purposes.
Note: This will cause the charger to overheat, burn or electric shock.
4.Please do not operate the charger with wet hands.
Note: This will cause the charger to overheat, burn or electric shock.
5.Please use the charger in a non-smoking area or in a well ventilated place
Note: smoke in the air or air-tightness will cause burn or fire.
6.Please do not use the charger when smoke or strange smell is coming out of the charger.
Note:this will cause burning or fire.
7.Please use the charger in an area that is out of reach or touch from children or babies.
Note: this will cause hurt or electrical shock.
8.Please do not use the charger in an airtight area.
Note:there is a possibility for unexpected accidents.

⚠ Note:
1.please do not use the charger at the following places:
Note: This will cause heat, fire and damage!

- ☆ a place that has high humidity.
- ☆ a place that is easy to fall off.
- ☆ a place that has high temperature.
- ☆ a place that is close to walls, furniture and columns.
- ☆ a place that is possibly dampened by rain, water or snow.
- ☆ a place that may come in contact with salt, dust, chemicals or gas.
- ☆ a place that is easily besieged by quake or vibration.
- ☆ a place that is under a heavy-weighted stuff.
- ☆ a place that is an air-tight enclosure.
- ☆ a place that is close to materials like woodchips, cloth or
- ☆ gasoline that can possibly cause a fire.

2.please do not keep the charger in the following places:
Note: This will cause heat, fire, electricity leakage or damage to the machine.

- ☆ a place that is in high humidity.
- ☆ a place that is easy to fall off.
- ☆ a place that has high temperature.
- ☆ a place that is possibly dampened by rain, water or snow.
- ☆ a place that is easily contacted by salt, dust, chemicals or gas.
- ☆ a place that is easily besieged by quake or vibration.
- ☆ a place that is under heavy weighted stuff.

3.When the charger is working. That will cause frequency interference to radio, stereo speakers or T.V. monitors.
4.When connecting the charger clips with battery polarity, fire will spurt out and make a sound.
This is the phenomenon for momentary touch of charger clips and battery polarity.
The current from the battery start to flow into the charger and begin to work.
This is not caused from mistake of operation order or a defection of the product.

⚠ WARNING-RISK OF EXPLOSIVE GASES

Working in vicinity of a lead-acid battery is dangerous. Batteries generate explosive gases during normal battery operation. For this reason, it is of utmost importance that each time before using your charger, you read this manual and follow the instructions exactly.

To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary markings on these products.

- Read all instructions and cautions printed on the battery charger, battery, or equipment using battery.
- Use charger only on lead-acid type rechargeable batteries. This charger is not intended to supply power to a low voltage electrical system other than in a starter-motor application.
- Never use charger for charging dry cell batteries that are commonly used with home appliances like radios, stereos, remote controls, etc. These batteries may burst and cause personal injury.
- Do not disassemble charger. Take it to a qualified service professional if service or repair is required. Incorrect assembly may result in fire or electrical shock.
- To reduce risk of electrical shock, unplug the charger from the outlet before attempting any maintenance or cleaning.
- Always charge battery in a well-ventilated area.
  WARNING:Battery chargers get hot during operation and must have proper ventilation. Air needs
- to flow around entire charger. Do not set charger on flammable materials like carpeting,
- upholstery, paper, card- board, etc. Charger may damage leather, plastic and rubber.

HELP US HELP YOU—

Remember: Place charger as far away from the battery being charged as the charger cables will permit.

Do not expose charger to rain or snow.

Never charge a frozen battery. If battery fluid (electrolyte) becomes frozen, bring battery into a warm area to allow to thaw before you begin charging.

Never allow battery acid to drip on charger when reading specific gravity or filling battery.

Never set a battery on top of charger.

Never place charger directly above battery being charged. The gases from the battery will corrode and damage the charger.

Never touch the battery clamps together when the charger is on. You could cause a spark.

Never operate charger if it has received a hard blow, been dropped, or otherwise damaged. Take it to a qualified professional for inspection and repair. Bo sure to position the charger power cord to prevent it from being stepped on, tripped over, or damaged.

Do not operate the charger if it has a damaged power cord or plug. Have the cord replaced.

PERSONAL SAFETY PRECAUTIONS

- Wear complete eye and clothing protection when working with lead- acid batteries.
- Make sure that someone is within range of your voice to come to your aid if needed while you work with or are near a lead-acid battery.
- Have plenty of fresh water and soap nearby for use in case battery acid contacts your eyes, skin, or clothing. If this happens, wash immediately with soap and water. Then get medical attention.
- Avoid touching your eyes while working with a battery. Acid particles (corrosion) may get into your eyes. If this occurs, flush eyes immediately with running cold water for at least 10 minutes. Then immediately get medical attention.
- Never charge a frozen battery.
- Remove all personal metal items from your body such as rings, bracelets, necklaces and watches, while working with a lead-acid battery. A battery can produce a short circuit current high enough to weld a ring (or the like) to metal, causing a severe burn.
- Take care not to drop any metal tool or metal object onto the battery. This may result in a spark or short circuit across the battery or another electrical device that may cause an explosion.
- Always operate the battery charger in an open, well-ventilated area.
- Never smoke or allow a spark or flame in the vicinity of the battery. Batteries generate explosive gases.
- Neutralize any acid spills thoroughly with baking soda before attempting to clean up.

PREPARING YOUR BATTERY TO BE CHARGED

It is important that you read and follow these guidelines while you are preparing to charge the battery.

- Make sure that you have a 12 volt lead-acid battery.
- Clean the battery terminals. Be careful to keep corrosion from getting in or around your eyes.
- Wear safety glasses. See additional Personal Safety Precautions on page 18.
- For batteries with removable vent caps, if required, add distilled water to each cell until the battery acid reaches the level recommended by the manufacturer. This will help purge excessive gases from the cells. Be careful not to overfill. If you have a sealed battery with non-removable vent caps, no action is necessary.
- Take time to read all of the battery manufacturer's specific precautions, such as removing or not removing vent caps while charging, and recommended rates of charge.
- Be sure that the area around the battery is well ventilated while it is being charged. Gas can be forcefully blown away by using a piece of cardboard or other nonmetallic material as a fan.

OPERATING INSTRUCTIONS

IMPORTANT: Follow all safety instructions and precautions when charging your battery. Wear complete eye protection and clothing protection. Charge your battery in a well-ventilated area.

1. Note the polarity of the battery posts by checking the identifilfcation marks on the battery: POSITIVE (POS, P or +) and NEGATIVE (NEG, N or -). The positive post is usually larger than the negative post.
2. Connect the red (POSITIVE) output clamp to the POSITIVE battery post. Rock and twist the clamp back and forth to be sure a solid electrical connection is made.
3. Connect the black (NEGATIVE) output clamp to the NEGATIVE battery post. Rock and twist the clamp back and forth to be sure a solid electrical connection is made.
4. Plug the power cord into an AC outlet. Push on the charger switch of the front panel and then it will charge the battery.
5. The green LED will light when charging, and green LED will not light after battery is full.
6. The charger will stop charging when fully charged until the battery voltage drops to about 12V, then the charger will begin to charge the battery automatically.