



PI1500X Power Inverter User's Manual



featuring

SONIC  ***COMPRESSION***

▲WARNING



Failure to follow instructions may cause damage or explosion, always shield eyes. **Read entire instruction manual before use.**

Warning: This product contains chemicals, including lead, known to the State of California to cause cancer, birth defects and other reproductive harm. ***Wash hands after handling.***

Congratulations! You have just purchased the finest quality power inverter on the market. We have taken numerous measures in our quality control and in our manufacturing processes to ensure that your product arrives in top condition and that it will perform to your satisfaction.

In the rare event that your **SOLAR** power inverter contains a damaged item, is missing any specific item or requires warranty service, please call Technical Service at (913) 310-1050. *Save your purchase receipt, it is required for warranty service.*

SAFETY SUMMARY

⚠ WARNING	
	Read these instructions completely before using the SOLAR power inverter and save them for future reference. Before connecting the SOLAR power inverter to a car, truck, boat or to power any equipment, read these instructions and the instruction manual/safety information provided by the car, truck, boat or equipment manufacturer. Following all manufacturers' instructions and safety procedures will reduce the risk of accident.
	Working around lead-acid batteries may be dangerous. Lead-acid batteries release explosive gases during normal operation, charging and jump starting. Carefully read and follow these instructions for safe use. All lead-acid batteries (car, truck and boat) produce hydrogen gas which may violently explode in the presence of fire or sparks. Do not smoke, use matches or a cigarette lighter while near batteries. Do not handle the battery while wearing vinyl clothing because static electricity sparks are generated when vinyl clothing is rubbed.
	Always wear eye protection, appropriate protective clothing and other safety equipment when working near lead-acid batteries. Do not touch eyes while working on or around lead-acid batteries.
	Inverters bodies may become extremely hot during operation. Take extreme caution when handling the unit and when determining it's location for use.
	Use extreme care while working within the engine compartment, because moving parts may cause severe injury. Read and follow all safety instructions published in the vehicle's Owner's Manual.
	Vehicle batteries contain liquid acids which are hazardous if spilled.

IMPORTANT SAFETY INSTRUCTIONS

Never open the inverter case – severe shock hazard!

Your power inverter is designed to operate from a 12 Volt DC power source only. NEVER attempt to connect your **SOLAR** power inverter to any other power source, including any AC power source.

Your power inverter is designed to be connected to the 12 Volt power source using the connection cables provided. Do not attempt to modify the provided connection cables or use other means of connecting to the 12 Volt power source.

Do not operate the **SOLAR** power inverter in the vicinity of flammables, such as gasoline, etc. Do not operate the inverter in areas where fumes or gases may accumulate, such as battery compartments.

Do not operate the power inverter if you, the inverter, the device being powered or any other surfaces that may come into contact with the 12 Volt power source are wet. Do not expose your power inverter to rain or moisture.

Keep your **SOLAR** power inverter well ventilated when in operation. When in use, maintain several inches of clearance around the top and sides of the power inverter. Avoid placing the power inverter near sources of heat, such as heat vents and radiators, or in direct sunlight.

Loose connections can result in a severe decrease in voltage, and may cause damage to the wires and insulation in the power inverter. Always check that all connections are correct and secure prior to powering the inverter or any device connected to it.

When connecting device/appliance power cords to the inverter, pull on the plug and **never on the wire** when disconnecting. Do not operate a device/appliance with a damaged power cord.

To avoid battery drain, always disconnect your **SOLAR** power inverter when not in use.

PERSONAL PRECAUTIONS

Someone should always be within range of your voice or close enough to come to your aid when you work near a lead-acid battery.

Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing or eyes. Protective eyewear should always be worn when working near lead-acid batteries.

If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.

Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short circuit battery or other electrical part that may cause explosion.

Remove personal metal items such as rings, bracelets, necklaces and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal causing a severe burn.

NEVER connect your **SOLAR** power inverter to a frozen battery.

While some of our smaller units are designed to plug into a 12 Volt vehicle outlet, larger models must be properly connected to a battery. Extreme care must be taken to follow all applicable codes when working with electricity.

OPERATION AND MAINTENANCE

Assessing the Capacity of Your **SOLAR Power Inverter to Power a Specific Device**

When you first switch on a powered tool or appliance that utilizes a motor, that device requires an initial surge of power. This initial surge of power required to start the device is referred to as the “peak power”. After initial start-up the device then requires less power to operate, which is referred to as its “continuous power”.

It is important that you determine both the “peak power” and “continuous power” demands of any device you plan to operate using your power inverter. The power demands of any particular device are usually stamped or printed on the device and are usually expressed in either Wattage (Watts) or Amperes (Amps). If this information is not indicated on the device, reference that device’s owner’s manual or contact the manufacturer to ensure that it is compatible with a modified sine wave power source.

To determine the power needs of a particular device, use the following formulas:

Amps Indicated x 110 (AC Voltage) = Watts

(This Wattage amount is roughly equivalent to the “continuous power” demand.)

Watts x 2 = “Peak Power”

(This is roughly equivalent to the initial “peak power” demand of the device at start-up.)

In most cases, the “peak power” demand of the device is the determining factor in whether your power inverter has the capacity to power that device. To determine whether your inverter has the capacity to power a specific device, test that device using your power inverter.

Your **SOLAR** power inverter is designed to automatically shut down in the event of a power overload. This feature protects the inverter in the event that you attempt to power a device with a power demand exceeding the inverter’s capacity.

If a specific device that is close to the maximum operating range of your power inverter will not power properly using the power inverter, turn the inverter power switch ON (I), OFF (O) and ON (I) again in quick succession. If this procedure is not successful, it is likely that your power inverter does not have the capacity to operate that particular device.

In the event the automatic shut down protection occurs or the inverter sounds a continuous audible alarm, turn OFF the power inverter immediately. Do not re-start the **SOLAR** power inverter until the source of the problem has been identified and corrected.

How Power Inverters Work

Power inverters utilize a two-step method to convert 12 Volt direct current (DC) power into 110 Volt AC power. In the first step, the power inverter uses a DC to DC converter to increase the DC voltage from the original 12 Volts DC to 145 Volts DC. In the second step, the power inverter converts high voltage DC power into 110 Volt AC power using advanced micro-circuitry which we refer to as *Sonic Compression* technology.

It is this *Sonic Compression* technology that enables **SOLAR** power inverters to accommodate strenuous “peak power” and “continuous power” demands, while at the same time, providing the assurance of automatic overload protection.

The modified sine wave produced using our *Sonic Compression* technology has a root mean square (RMS) voltage of 110 Volts. Most AC voltmeters are calibrated to measure the RMS voltage of a pure sine wave. For this reason, most voltmeters will not measure the output voltage of your power inverter correctly, typically showing an output about 20-30 Volts below the actual output. To accurately measure the the output voltage of your **SOLAR** power inverter, use only a voltmeter identified as a “True RMS” reading voltmeter.

Connecting Your **SOLAR** Power Inverter

1. Make sure the ON/OFF power switch on the power inverter is in the OFF (O) position.
2. Connect the 12 Volt adapter to the 12 Volt outlet in the vehicle or on the 12 Volt power source.
3. Turn the inverter power switch to the ON (I) position. The LED Indicator Light should light green, indicating that there is power coming to the inverter.
4. Turn the inverter power switch to the OFF (O) position. (The LED Indicator Light may blink or the internal audible alarm may sound briefly. This is normal.)
5. Ensuring that the device to be powered is turned OFF, plug the device into the 110 Volt AC receptacle on the power inverter.

6. Turn the inverter power switch to the ON (I) position. Then, turn the device to be powered on. **Always use this sequence when powering devices using your SOLAR power inverter. Never connect a device when its power switch is in the on position.**

Things to remember when operating your **SOLAR** power inverter:

Loose connections can result in a severe decrease in voltage and may cause damage to the wires and insulation in the power inverter. Always check that all connections are correct and secure prior to powering the inverter and any device connected to it.

When attempting to power any device using your inverter, monitor the temperature of the device for approximately 10 minutes. If the device being powered becomes abnormally warm, disconnect it from the power inverter immediately.

When using an automobile or marine battery to power the inverter, start the vehicle's engine every 30 to 60 minutes and let it run for approximately 10 minutes to recharge the vehicle's battery. We recommend that the device being powered by the inverter, as well as the inverter itself, be turned OFF before starting the vehicle's engine.

When your power inverter is not in use and turned OFF, it draws a very low amperage from the 12 Volt power source when connected. As a result, we recommend that you disconnect the power inverter from the 12 Volt power source when not in use.

Use of an extension cord between the **SOLAR** power inverter and the device being powered will not significantly decrease the power generated by the power inverter. For best results, do not use an extension cord longer than 50 ft.

Suggestions When Using Your **SOLAR** Power Inverter to Power Television and Audio Devices:

Although your **SOLAR** power inverter is shielded and filtered to minimize signal interference, some interference with your television and audio equipment may be unavoidable, particularly when they have weak signals. Here are a few suggestions to improve your reception under these circumstances:

1. Make sure the television/audio antenna on the device produces a clear signal under normal operating conditions (when plugged into a standard 110 Volt AC outlet). Also, ensure that the antenna is properly shielded and of good quality.
2. Change the positions of the power inverter, antenna, and tv/audio power cord to see if a change of their relative positions improves your reception.
3. Isolate the television/audio device, its power cord and antenna cables from the power inverter and 12 Volt power source by running an extension cord from the television/audio device power cord to the inverter.
4. Coil the television power cord and the power cables running from the 12 Volt power source to the power inverter.
5. Attach a “Ferrite Data Line Filter”, available at most electronic supply stores, to the television/audio device power cord. More than one filter may be required.

SOLAR Power Inverter Safety Features

Your **SOLAR** power inverter is equipped with automatic shut off protection which will be activated if any of several unsafe operating conditions exist. In the event that any of the following conditions occurs, the power inverter will shut down:

1. The power input from the 12 Volt power source drops to 9.5 Volts. (When the power from the 12 Volt power source drops to 10.5 Volts, an extended audible alarm will sound, warning you that your power source is low.)
2. The power input from the 12 Volt power source exceeds 15.5 Volts.
3. The “continuous power” demand from the powered device exceeds the continuous power rating of your power inverter.
4. The “peak power” demand from the powered device exceeds the peak power rating of your power inverter.
5. The circuit temperature within the power inverter exceeds 165°F.

Note: *Your power inverter is equipped with a cooling fan, which is designed to run continuously when the inverter is in use. Automatic shut down caused by high circuit temperature will occur when the cooling fan is unable to maintain a cool enough temperature for safe operation of the power inverter.*

In the event the automatic shut down protection occurs or the inverter sounds a continuous audible alarm, turn OFF the power inverter immediately. Do not re-start the power inverter until the source of the problem has been identified and corrected.

SOLAR Power Inverter Maintenance – Replacing Blown fuses

Your **SOLAR** power inverter is equipped with fuses of specific amperage rating and physical design. In most cases, the fuses should not need to be replaced. If you require replacement fuses, it is important that you purchase and install the correct replacement fuse(s). Please reference the chart below to determine the correct fuse(s) for your product.

Model No.	No. of Fuses	Fuse Rating	Fuse Type
PI1500X	1	15 Amp	Spade Type

ALWAYS disconnect your **SOLAR** power inverter from the 12 Volt power source prior to attempting to replace the fuse(s). ALWAYS use the proper replacement fuse(s) as indicated in the chart above. Make sure to address the root source of the overload that caused the blown fuse prior to using your power inverter again.

TROUBLESHOOTING

- Problem:** Low or no output voltage from the power inverter
- Answer:** Check connections between the 12 Volt power source and the power inverter as detailed in Connecting Your Power Inverter.
- Answer:** Using the incorrect type of voltmeter to test the output voltage. To accurately measure the the output voltage of your SOLAR Power Inverter, use only a voltmeter identified as a “True RMS” reading voltmeter.
- Problem:** Red LED ON
- Answer:** The voltage of the 12 Volt power source may have dropped below 9.5 Volts – check 12 Volt power source voltage and recharge as needed.
- Answer:** The device being powered is placing a power demand on the inverter that is beyond its operating capacity – use a higher capacity power inverter or cease powering that device using your power inverter.
- Answer:** The inverter is too hot – allow the inverter to cool. Check for adequate ventilation. If problem persists, reduce the the load on the power inverter to the rated continuous power.
- Problem:** Low Battery Alarm on Continuously
- Answer:** The voltage of the 12 Volt power source may have dropped below 10.5 Volts – check 12 Volt power source voltage and recharge as needed.
- Answer:** Poor or weak 12 Volt power source – recharge or replace the battery.
- Answer:** Inadequate power delivery from the 12 Volt power source – check the connections between the 12 Volt power source and the power inverter.
- Problem:** Poor Television/Audio Device Reception
- Answer:** Refer to “Suggestions When Using Your Power Inverter to Power Television and Audio Devices” section within this Operator’s Manual.

Specifications

Electrical Specifications

Maximum continuous AC power

Surge capacity (peak)

Surge Capacity Peak Seconds

Peak efficiency

No load current draw

DC Low Voltage Alarm

DC Low Voltage Shut-Down

DC Over Voltage Shut-Down

Over Temperature Protection

Cooling Fan

Overload Protection

Input voltage range

AC output frequency

AC output voltage

Output waveform

150 W

150

300

1

90%

<0.3 A

YES

YES

YES

YES

YES

YES

10 - 15 VDC

60 +/-4 Hz

115 VAC RMS +/-10%

Modified sine wave

General Specifications

AC receptacle

DC connection

Recommended DC fuse

Dimensions (H x W x L)

Weight

Warranty

Output temperature range

LED indicators

150 W

Triple

Hardwire

15A

TBA

1.25 lb (0.56Kg)

One year

"32° F to 104° F (0° C to 40° C)"

Power on and fault

WARRANTY

SOLAR Power Inverters are guaranteed to be free from defects in materials and workmanship for one (1) year from the original date of purchase – original purchase receipt required to obtain warranty.

This warranty is not extended to products which, in Clore Automotive's sole judgement, have been misused, abused or modified from their original state.

The foregoing warranty is in lieu of all other warranties, whether oral, written, expressed, implied or statutory, including, but not limited to, implied warranties of fitness for a particular purpose or merchantability.

To obtain service under this warranty, return your **SOLAR** Power Inverter to the place of purchase, along with your dated sales receipt, for an exchange. Your product can also be sent back to Clore Automotive for exchange – visit www.cloreautomotive.com for shipping address.

This manual is available in a multilingual version (English, Spanish, French) on our web site at:

http://www.cloreautomotive.com/site_prod.asp?sku_pk=328

Este manual está disponible en una versión multilingüe (inglés, español, francés) en nuestro sitio web en:

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