



Pure Sine Wave Inverter GP-HS1500



Owner's Manual







Table of Contents

Introduction	3
Specifications	4
Name and Main Function	5
Installation	7
Operation	9
Operating Limits	13
Troubleshooting	13
Maintenance	15
Disclaimer of Liability and Warranty	15

1.0 Introduction

Go Power! Pure Sine Wave Inverters are used in a wide range of applications including remote homes, RVs, sailboats and powerboats. It will operate most televisions and VCRs, personal computers, small appliances and tools such as drills, sanders, grinders, mixers and blenders. The inverter must have a greater power rating than the load it provides power to. To get the most out of the power inverter, it must be installed and used properly. Please read the instructions in this manual before installing and using this model.



2.0 Specifications

2.1 GP-HS1500 watt Inverter

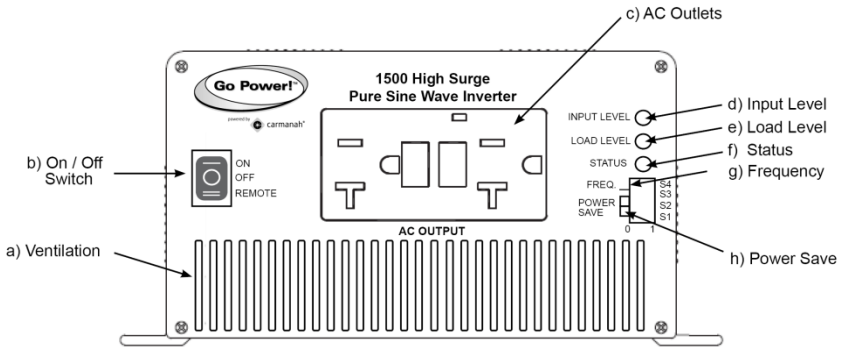
SPECIFICATIONS	GP-HS1500 (12V)	GP-HS1500 (24V)
Continuous Output Power	1500W	
Surge Rating	3000W	
Output Waveform	Pure Sine Wave <3% THD	
Output Voltage \pm 5%	110 VAC RMS	
Input Voltage	10.5 – 15 VDC	21.0-30.0 VDC
Efficiency	88 - 91%	
No Load Current Draw / Powersave	1.45A / 0.28A	0.75A / 0.15A
Protection	Overload, Short Circuit, Reverse Polarity (Fuse), Over / Under Input Voltage, Over Temperature	
Low Battery Alarm \pm 2%	10.7 V	21.4 V
Low Battery Shut-Down \pm 2%	10.3 V	20.6 V
Operating Temperature Range	0 - 40°C / 32°F - 104°F	
Storage Temperature Range	-30°C - 70°C / -22°F - 158°F	
Cooling	Thermostatically Controlled Fan	
AC Receptacle	Dual GFCI	
Remote Port Option	Yes	
Dimensions (L x W x H) in mm	370 x 191 x 88	
Dimensions (L x W x H) in inches	14.6 x 7.5 x 3.5	
Weight	4.8 kg / 10.6 lbs	
Warranty	2 Years	
Inverter Install Kits	GP-DC-KIT3	GP-DC-KIT2
Remotes (Optional)	GP-SWR-A-12 or GP-SWR-B-12	GP-SWR-A-24 or GP-SWR-B-24
UPC	8-39085-00008-3	8-39085-00016-8





3. Name and Main Function

3.1 Front view

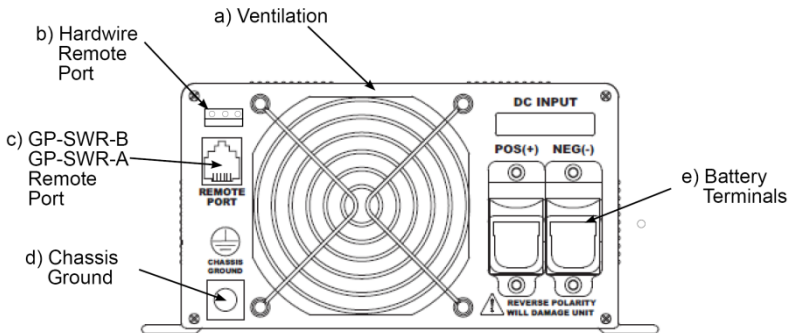


- a. **Ventilation Ports:**
Do not obstruct, allow at least one inch for airflow.
- b. **ON / OFF switch:**
Leave ON/OFF switch in the OFF position during installation. Leave in REMOTE position when using optional remote.
- c. **AC Outlet:**
Ground Fault Protected (GFCI) Outlet sockets available: North America.
- d. **Input Level:**
Displays input voltage. Green indicates normal battery level, yellow indicates mid to low battery level and red indicates under/over voltage.
- e. **Load Level:**
Displays AC load watts. Green indicates normal operation; yellow indicates mid to high operation and red indicates overload levels.
- f. **Status Level:**
The LED display indicates the power status of the inverter; see section **5.0 Operation** for more information.
- | | |
|-------------------------|-----------------------------------|
| Solid Green: | AC power OK |
| Flashing Green | Power Saving Active |
| Fast Red Blink: | Over voltage protection (OVP) |
| Slow Red Blink: | Under voltage protection (UVP) |
| Intermittent Red Blink: | Over temperature protection (OTP) |
| Solid Red: | Over load protection (OLP) |



- g.** Frequency:
Typical North American setting is 60 Hz. Set dip switch S4 to “0” for 50 Hz and “1” for 60 Hz.
- h.** Power Save:
Puts inverter to sleep until a load is present. Adjustable by the dip switches: S1, S2 and S3 on the front panel

3.1.2 Rearview



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

- a.** Ventilation Port:
Do not obstruct, allow at least one inch for airflow.
- b.** Hardwire Remote Port:
Allows the customer to use any 2 wire switch to turn the inverter ON and OFF. Ex. Toggle switch or light switch.
- c.** Remote Port:
Compatible with **GP-SWR-B** and **GP-SWR-A** remote controllers:
Before using the remote, ensure the inverter's main switch is in the REMOTE position and the input voltage is the same as the remote.
- d.** Chassis Ground:
Ground to vehicle chassis using # 8 AWG wire.
- e.** Battery Terminals:
[+] is positive and [-] is negative.
Connect your 12V battery or other 12V power source to your 12 volt inverter. If your inverter is a 24V model, connect only a 24V battery or other 24V power source. Reverse polarity connection will blow the internal fuse and may damage inverter permanently.



4.0 Installation

4.1 Where to install

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



Do not connect this inverter and another AC source (generator or utility power) to the AC wiring or AC loads at the same time. Doing so will destroy the inverter and void the warranty, regardless of the inverter's on or off status. If you are using more than one AC source for the AC wiring or AC loads, it is highly recommended that you install an automatic transfer switch (GP-TS), available from Go-Power.

Dry – Do not allow water to drip or splash on the inverter.

Cool – Ambient air temperature should be between 32 and 104 °F (0 and 40 °C) (the cooler the better).

Ventilated – Allow at least two inches of clearance around the inverter for airflow. Ensure the ventilation openings on the rear and bottom of the unit are not obstructed.

Safe – Do not install the inverter in the same compartment as batteries, or in any compartment capable of igniting flammable liquids such as gasoline.

Inverter should be located within 10 feet (3 m) of the batteries.

4.2 Hook-up and testing



A reverse polarity connection will blow a fuse in the inverter and may permanently damage the inverter. Damage caused by reverse polarity connection is not covered by warranty.

For hook-up, please follow these guidelines:

1. Unpack and inspect your Go Power! Inverter, then check to see that the power switch is in the OFF position. Set up your power output according to Table 2 & 3 in **Section 5.6, Power Save.**
2. Insert DC inverter cables (not included) to the power input terminals on the rear panel of the power inverter. The red terminal is positive (+) and black terminal is negative (-). Connect the cables into the terminals and tighten the terminal screw to clamp the wires securely.
3. Connect the cable from the negative terminal of the inverter to the negative terminal of the battery. Make a secure connection.



Loose connections result in excessive voltage drop and may cause overheated wires and melted insulation.

4. Before proceeding further, carefully check that the cable you have just connected connects from the negative terminal of inverter to the negative terminal of the power source (battery).



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

5. Install inverter fuse (not included) on the positive lead. Fuse should be located within 12" of battery. Ensure all connections are tight and secure.
6. Connect the cable from the positive terminal of inverter to the positive terminal of the battery. Make a secure connection.
7. Set the power switch to the ON position. Check the indicators on the front panel of the inverter. The Input Level LED should be green or yellow, depending on the voltage of the power source. If it is not, check your battery bank and the connections to the inverter.
8. Set the power inverter switch to the OFF position. The indicator lights may blink and the internal alarm may sound momentarily. This is normal. Plug the test load into the AC receptacle on the front panel of the inverter. Leave the test load switch OFF.
9. Set the power inverter switch to the ON position and turn the test load on; the inverter should supply power to the load. If you plan to measure the output voltage of the inverter, a true rms meter must be used for accurate readings.

4.3 Cables



Install the inverter fuse into the positive lead. Fuse should be located within 12" of battery. Ensure all connections are tight and secure.

GP-HS1500-12V: Please use 10 ft or less of #2 Cable with a 200 Amp fuse.

GP-HS1500-24V: Please use 10 ft or less of #4 Cable with a 100 Amp fuse.

A DC install kit is available from Go Power! Use GP-DC-KIT3 for 12V models and GP-DC-KIT2 for 24V models.



4.4 Grounding

The inverter has a chassis ground lug on the rear panel allowing you to connect the chassis of the inverter to ground. The ground terminals in the AC outlets on the front panel of the inverter are internally connected to the chassis ground. If available, the chassis ground lug should 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 the chassis ground lug to the boat's grounding system. In a fixed location, connect the chassis ground lug to an earth ground.

The neutral (common) conductor of the inverter AC output circuit is connected (bonded) to the chassis ground inside the inverter. Therefore, when the chassis is connected to a ground, the neutral conductor is also grounded. These grounding connections conform to national electrical code requirements which state that separately derived AC sources (such as inverters and generators) have their neutral conductors tied (bonded) to ground in the same way that the neutral conductor from the utility line is tied (bonded) to ground in the AC breaker panel of a non-mobile dwelling.

Important:

As per the national electrical code, electrical panels in mobile applications must not have a bonded neutral. If the inverter is supplying power to equipment or a panel where the neutral and ground are connected (bonded), a ground loop will occur. If a ground loop occurs on inverters with GFCI outlets, the GFCI outlet will trip and output power from the inverter will be cut off. If your GFCI repeatedly needs to be reset, this indicates a ground loop somewhere in your system. In this case, please have a qualified service technician inspect your electrical system or equipment.



The negative DC input of the inverter is connected to the chassis. Do not install the inverter in a positive ground DC system. A positive ground DC system has the positive terminal of the battery connected to the chassis of the vehicle or to the grounding point.

5.0 Operation

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

5.1 Operating On/Off Switch

The ON/OFF switch turns the control circuit in the power inverter ON and OFF. It does not disconnect power from the power inverter. When the switch is in the OFF position, the power inverter draws no current from the battery. When the switch is in



the ON position but with no load, the power inverter draws less than 14.4 W from the battery. When in Power Save mode the GP-HS1500 will draw approximately 1.45 W from the battery.

5.2 Input Level (battery voltage) indicator

The Input Level LED changes colour from green to yellow to red as battery voltage decreases from a resting voltage of 12.7 V - 10.5 V (12 V) or 25.4 V – 21V (24 V). The Input Level LED changes colour from green to yellow to red as battery voltage increases from a resting voltage of 12.7V – 15.0 V (12 V) or 25.4 V – 30.0 V (24 V).

5.3 Load Level Indicator

The Load Level LED Indicator changes color from green to yellow to red as the load is increased. The Load Level LED Indicator will be red at peak wattage or peak load.

The Load Level LED Indicator should be green or yellow for long-term operation. Short-term operation is possible with the load indicator in the red area. If the load rises to dangerous levels, the inverter will protect itself and shut down.

5.5 Status Indicator The status LED indicator will display the operating condition of the inverter. A solid green LED is normal. A flashing green LED indicates the inverter is in power save mode (see Power Saving). A red LED, flashing or otherwise, indicates a fault; see Table 1 – Inverter power states.

Table 1: Inverter Power States

State	LED	Description
Over voltage protection	Red LED blinking fast	Over voltage protection indicates that the inverter has shut itself down because its input voltage is over: <ul style="list-style-type: none">• 12 V: 15.0 ~ 16.0 V DC• 24 V: 30.0 ~ 32.0 V DC
Under voltage protection	Red LED blinking slowly	Under voltage protection indicates that the inverter has shut itself down because its input voltage is lower than: <ul style="list-style-type: none">• 12 V: 10.0 ~ 10.5 V DC• 24 V: 20.0 ~ 21.0 V DC



Over temperature protection	Red LED blinking intermittently	<p>Over temperature protection indicates that the inverter has shut itself down because it has become overheated.</p> <p>The inverter may overheat if it has been operated at power levels above its rating or if it has been installed in a location which does not allow it to properly dissipate heat. The inverter automatically restarts once it has cooled down.</p>
Overload protection	Red LED solid	<p>Overload protection indicates that the inverter has shut itself down because its output circuit has been short circuited or drastically overloaded.</p> <p>Switch the ON / OFF switch to OFF, correct the fault condition, and then switch the ON / OFF switch back to ON.</p>

5.6 Power Saving Mode

These Inverters include a power saving mode. When power saving is enabled and there is no load present, the inverter will draw approximately three watts of power.

The LED will be solid green if a load is present, and flashing green once every second if there is no load present. If the inverter has just been powered up and power saving is enabled, the LED will remain solid green for approximately 10 seconds and then start to flash if there is no load present. Power saving is enabled and adjusted through dip switches S1, S2, and S3 on the front of the inverter.

Table 2: Dip Switches

HS1500	Dip Switch		
	S1	S2	S3
Disable	OFF	OFF	OFF
20 W	ON	OFF	OFF
40 W	OFF	ON	OFF
55 W	ON	ON	OFF
75 W	OFF	OFF	ON
95 W	ON	OFF	ON
115 W	OFF	ON	ON



135 W	ON	ON	ON
-------	----	----	----

To disable power saving, leave dip switches S1, S2, and S3 in the OFF or 0 position.

Table 3: Frequency

GP-HS1500

S4	Freq. (Hz)
0	50
1	60

5.7 What is Power Saving?

Power saving mode enables the inverter to be “on” and waiting for a load, yet draw very little power. When power saving is enabled and the inverter senses a load, it may take one second for the load to become active. This one-second wait will be fine for loads that draw continually, such as televisions and stereos.

However, it may not be suitable for loads that are intermittent such as bread makers, power tools or blenders. Power saving will continually draw a small amount of power from the batteries, so if the inverter will not be in use for longer than a day, it is advisable to turn the inverter off using the on/off switch located on the front of the inverter or remote

5.8 Remotes

The GP-HS1500 is available with an optional remote (GP-SWR-B or GP-SWR-A). The remote will turn the inverter on and off and indicate normal operation or any faults that have caused the inverter to shut down. The remote will show battery voltage and power consumption.

The remote will show if the battery voltage is too high and will sound an alarm if the battery voltage falls too low (Under Voltage). The remote will also sound an alarm if the output power is above the inverter specifications (Overload). The Under Voltage and Overload alarm consists of five single beeps every eight seconds.



6.0 Operating limits

6.1 Power output

Some induction motors used in refrigerators, freezers, pumps, and other motor-operated equipment 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 power rating of inverter. Televisions and computer monitors may surge up to four times their rated power on startup, which may result in the inverter showing an overload fault.

6.2 Input voltage

The inverter operates at the following input voltage ranges:

- **12 V:** 10.5 to 15.0 V
- **24 V:** 21.0 to 30.0 V

The inverter shuts down if the input voltage drops below:

- **12 V:** 10.5 V
- **24 V:** 21.0 V

This protects your battery from being over discharged.

The inverter also shuts down if the input voltage exceeds:

- **12 V:** 15.0 V
- **24 V:** 30.0 V

This protects the inverter against excessive input voltage. Although the inverter incorporates protection against over voltage, it may still be damaged if the input voltage is allowed to exceed:

- **12 V:** 20.0 V
- **24 V:** 35.0 V

7.0 Troubleshooting

7.1 Common problems

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

- Make sure that the chassis ground lug on the back of the power inverter is solidly connected to the ground system of your vehicle, boat or home.
- Do not operate high power loads with the power inverter while watching television.
- Make sure that the antenna feeding your television provides an adequate "snow free) signal and that you are using good quality cable between the antenna and the TV.
- Move the television as far away from the power inverter as possible.



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

7.2 Troubleshooting Guide

Problem and Symptoms	Possible Cause	Solution
No output voltage, no voltage indication.	Inverter switched off. No power to inverter	Turn inverter ON. Check wiring to inverter.
	Internal fuse open	Have qualified service technician check and replace.
	Reverse DC polarity	Have qualified service technician check and replace fuse, OBSERVE CORRECT POLARITY.
No output voltage, Over Voltage indicator on	High input voltage	Make sure that inverter is connected to 12 V or 24 V 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. Use new battery. Reduce load.
No output voltage and Under Voltage indicator on	Low input voltage	Recharge battery, check connections and cable.
No output voltage, Over Temp indicator on, load in excess of: 1500 W: 150 A (12V) or 75 A (24 V)	Thermal shutdown	Allow inverter to cool off. Reduce load if continuous operation required.
No output voltage, Over Temp indicator on, load less than: 1500 W: 150 A (12 V) or 75 A (24 V)	Thermal shutdown	Improve ventilation, make sure ventilation openings in inverter are not obstructed, and reduce ambient temperature.
No output voltage, Over Load indicator on.	Short circuit or wiring error.	Check AC wiring for short circuit or improper polarity (hot and neutral reversed).



	Very high power load	Remove or reduce load
--	----------------------	-----------------------

8.0 Maintenance

Very little maintenance is required to keep your inverter operating properly. You should clean the exterior of the unit periodically with a damp cloth to prevent accumulation of dust and dirt. At the same time, tighten the screws on the DC input terminals.

9.0 Disclaimer of Liability & Warranty

Visit gpelectric.com for additional product warranty information. Go Power!™ warrants the GP-SH1500 inverter for 2 years. This warranty is valid against defects in materials and workmanship. It is not valid against defects resulting from, but not limited to:

- Misuse and/or abuse, neglect, or accident
- Exceeding the unit's design limits
- Improper installation, including, but not limited to, improper environmental protection and improper hook-up
- Acts of God, including lightning, floods, earthquakes, fire, and high winds
- Damage in handling, including damage encountered during shipment or installation

9.1 General Warranty Issues

Please visit gpelectric.com for our up-to-date General Warranty Issues.

9.2 Warranty Return Procedure

Visit gpelectric.com to read the "frequently asked questions" section of our website to troubleshoot the problem. If trouble persists:

1. Call your Go Power!™ Technical Support team (1-866-247-6527).
2. Return defective product to place of purchase.



© 2013 GO POWER!™ By Carmanah Technologies

gpelectric.com

Go_Power_MAN_GP_HS1500