



Go Power! Manual

GP-SW1500 Inverter



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1. Introduction

The Go Power! Sine Wave series models 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 is providing 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.

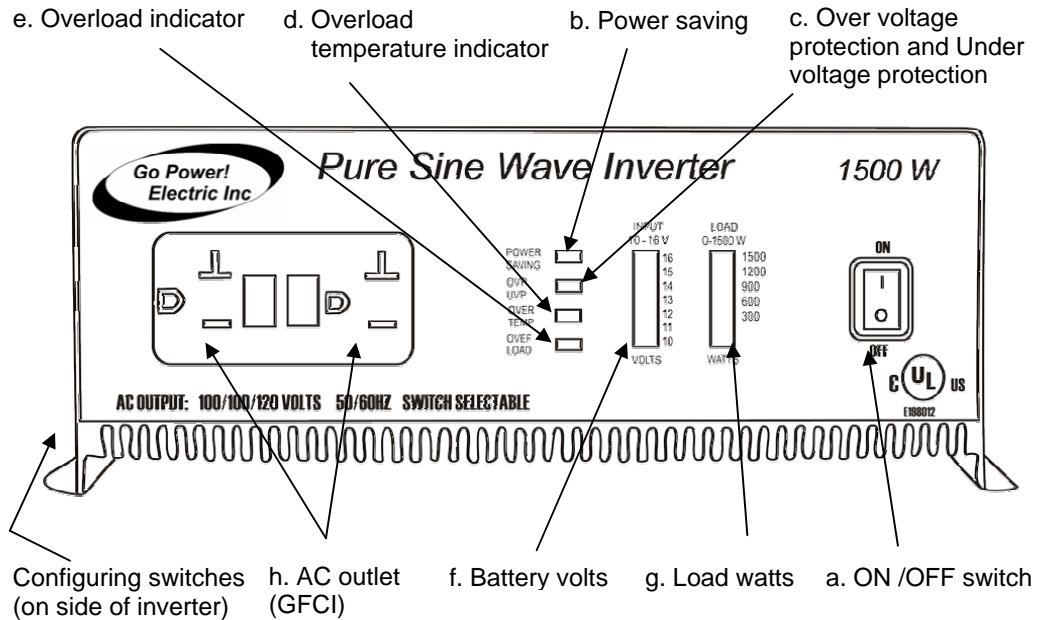
2. Specifications

2.1 GP-SW1500 W Inverter

| | | |
|----------------------------------|--|------------------|
| Model No. | GP-SW1500 – 12 V | GP-SW1500 – 24 V |
| Continuous Output Power | 1500 W | |
| Surge Rating | 2000 W | |
| Output Waveform | Sine Wave <3% THD | |
| Output Voltage \pm 3% | 115 VAC RMS | |
| Output Frequency \pm 0.05% | 50 / 60 Hz adjustable | |
| Input Voltage | 10.5-15 VDC | 21.0-30.0 VDC |
| Efficiency | 85 - 90% | |
| No Load Current Draw / Powersave | 1.0 A / 0.1 A | 0.65 A / 0.05 A |
| Protection | Overload, Short Circuit, Reverse Polarity (Fuse), Over / Under Voltage, Over Temperature | |
| Low Battery Alarm \pm 2% | 10.5 V | 21.0 V |
| Low Battery Shut-Down \pm 2% | 10.0 V | 20.0 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 | |
| Dimensions (LxWxH) mm | 419 x 279 x 102 | |
| inches | 16.3 x 10.9 x 4.1 | |
| Weight kg / lbs | 7.7 / 17 | |
| Warranty | 2 Years | |
| Inverter Install Kit | GP-DC Kit 3 | GP-DC Kit 2 |

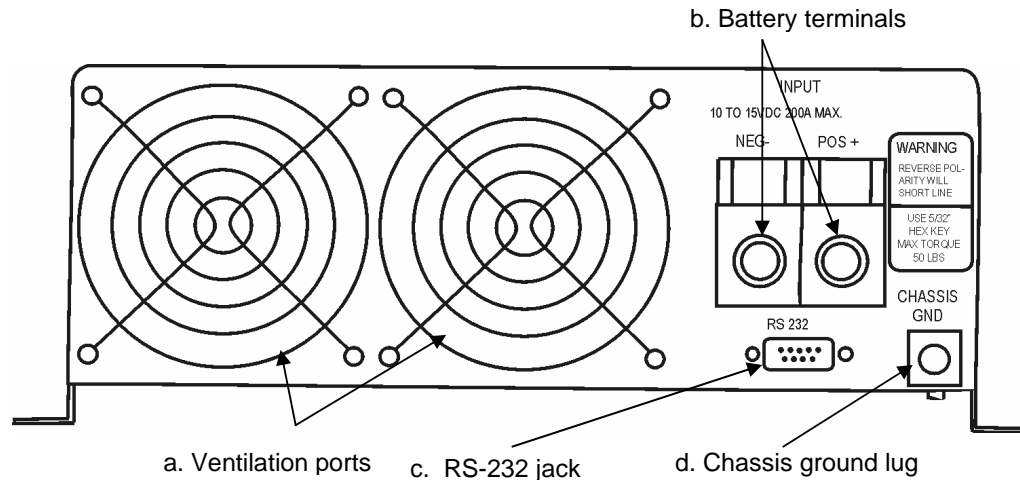
3. Name and main function

3.1 Front view GP-SW1500:



- a) ON / OFF switch:
Power ON/OFF switch, leave in the OFF position during installation.
- b) Power Saving: No load draw <math>< 1.0 W</math>
- c) OVP: over voltage protection.
UVP: under voltage protection
- d) OTP: over temperature protection.
- e) OLP: over load protection.
- f) BATT. VOLTS: display battery voltage.
- g) LOAD WATTS: display AC load watts.
- h) AC outlet: Ground fault protected (GFCI)
Outlet sockets available: North America

3.2 Rear view GP-SW1500:



Warning!

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

- a) Ventilation ports:
Do not obstruct, allow at least 1 inch for airflow.
- b) Battery terminals:
Connect to 12V / 24V battery or other 12V / 24V power source: [+] is positive [-] is negative. Reverse polarity connection will blow the internal fuse and may damage inverter permanently.
- c) RS-232 jack. For Optional Remote
- d) Chassis ground or to vehicle chassis using # 8 AWG wire.

4. Installation

4.1 Where to install

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

Caution

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 whether the inverter is switched on or off. 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 Electric Inc.

- a) Dry - Do not allow water to drip or splash on the inverter.
- b) Cool - Ambient air temperature should be between 0°C and 40°C (the cooler the better).
- c) 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.
- d) Safe - Do not install the inverter in the same compartment as batteries or in any compartment capable of igniting flammable liquids such as gasoline.
- e) Inverter should be located within 10 feet of the batteries.

4.2 Hook-up and testing

To hook-up please follow these guidelines:

1. Unpack and inspect your Go Power! Inverter, check to see that the power switch is in the OFF position. Set up your power output according to Section 10, Configuring your Sine Wave.
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. Caution! 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).
5. Install inverter fuse (not included) in positive lead. Fuse should be located within 12" of battery. Ensure all connections are tight and secure. (See 4.3)
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 meters and indicators on the front panel of the inverter. The voltage indicator should indicate 11 to 14 volts. If it is does 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.

Caution!

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 our warranty.

Warning!

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

4.3 Cables

GP-SW1500: Please use 10 ft or less of #2 Cable with a 200 Amp fuse. A GP-DC Kit 3 is also available from Go Power Inc. The fuse should be located within 12" of battery. Ensure all connections are tight and secure.

4.4 Grounding

The power inverter has a lug on the rear panel [chassis ground]. This is to connect the chassis of the power inverter to ground. The ground terminals in the AC outlets on the front panel of the inverter are also connected to the ground lug. The chassis ground lug must be connected to a grounding point, which will vary depending on where the power inverter is installed. In a vehicle, connect the chassis ground to the chassis of the vehicle. In a boat, connect to the boat's grounding systems. In a fixed location, connect the chassis ground lug to earth. 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 ground, the neutral conductor will also be grounded. This conforms to national electrical code requirements that separately derived AC sources (such as inverters and generators) have their neutral tied to ground in the same way that the neutral conductor from the utility line is tied to ground at AC breaker panel.

Important

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, the GFCI outlet will trip and output power from the inverter will be cut off. If your GFCI repeatedly needs to be reset, this would indicate a ground loop somewhere in your system. In this case, please have a qualified person inspect your electrical system or equipment.

Caution!

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

Warning!

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

5. 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 0.65 Amps in normal mode and 0.07 Amps in power saving mode from the battery.

5.2 Battery voltage indicator

The battery voltage bar graph on the GP-SW1500 indicates the voltage at the input terminals of the power inverter. At low input current, this voltage is very close to the battery voltage. At high input current, this voltage will be lower than the battery voltage because of the voltage drop across the cable and connections. Ideally, the voltage should remain in the green area of the bar graph. If the voltage goes into the red area at the top and bottom of the graph, the inverter may shutdown.

5.3 Load watt indicator

The AC load watt bar graph on the GP-SW1500 indicates the power drawn from the power inverter. It will indicate the wattage required by the loads. For long-term operation, the wattage should be in the green and orange area of the bar graph.

Short-term operation is possible with the load watt indicator in the red area. If the load rises to dangerous levels, the inverter will shut down.

5.4 Power Saving Indicator

The GP-SW1500 Inverter includes a "Power Saving" mode. When power saving is enabled and there is no load present, the inverter will draw less than one watt of power. If the GP-SW1500 Inverter is being used with a remote, then refer to the SW Remote instructions for the power saving mode. When the inverter is on, power saving is enabled if the power saving LED is lit on the front of the inverter. The LED will be solid green if a load is present, and flashing green if there is no load present. If the inverter has just been powered up and the power saving is enabled, the LED will remain solid green for 20 seconds and then starts to flash if there is no load present.

If the GP-SW1500 is being used without a remote, switching between enabled and disabled states of power saving may be done through the on/off switch. To toggle the inverter to the opposite state of what the power saving LED indicates, switch off all loads and turn off the inverter. Turn the inverter on, there will be two beeps and the green power saving LED will flash quickly for three seconds. During the three seconds of flashing, turn the inverter off and quickly back on again. If the inverter was in power saving mode, power saving mode should now be disabled and visa versa.

5.5 What is Power Saving?

Power saving mode enables the inverter to be "on" and waiting for a load, yet draw very little power (approx. 0.07 A). This is equal to 1.7 Ahrs a day. When power saving is enabled and the inverter senses a load, it will take approximately five seconds for the load to become active. This five-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 not work with small loads, usually under 30 watts. Power Saving will continually draw a small amount of power from the batteries, so if the inverter will not be in use for more than a week, it is advisable to turn the inverter off using the on/off switch located on the front of the inverter.

5.6 Resetting Faults

Any of the inverters protection faults can be re-set by turning the inverter off for five seconds and then turning the inverter on again. The GP-SW1500 can also re-set any of its protection faults using the optional remote on/off switch to turn the inverter off and then on again.

5.7 Over voltage indicator (solid red)

The GP-SW1500 over voltage indicator (solid red) indicates that the power inverter has shut itself down because its input voltage has been over 16.0 VDC for the 12 V and 32.0 VDC for the 24 V.

5.8 Under voltage indicator (flashing red)

The GP-SW1500 under voltage indicator (flashing red) indicates that the power inverter has shut itself down because its input voltage has been lower than 10.0 VDC for the 12 V and 20.0 VDC for the 24 V.

5.9 Over temp indicator

The GP-SW1500 over temp indicator indicates that the power inverter has shut itself down because it has become overheated. The power inverter may overheat because it has been operated at power levels above it's rating, or because it has been installed in a location which does not allow it to dissipate heat properly. The power inverter will restart automatically once it has cooled off.

5.10 Overload indicator:

The GP-SW1500 overload indicator indicates that the power inverter has shut itself down because its output circuit has been short circuited or drastically overloaded. During overload, the load watt indicator will be in the upper red zone and flashing. Five double beeps will sound, AC power will disconnect and the OLP LED will show solid red. Switch the ON/OFF switch to OFF, correct the fault condition, and then switch the ON/OFF switch back to ON.

5.11 Configuring switches

The configuring switches are used to configure the AC output of the inverter. In North America the output is typically configured to 120 VAC and 60 Hz. Please note that switches S4, S5 and S6 are currently disabled and have no effect on the operation of the inverter.

5.12 Remote

If the GP-SW1500 remote is being used, please refer to the GP-SW remote manual for operation.

6. Operating limits

6.1 Power output:

The GP-SW1500 W inverter will operate most AC loads within its power rating. When determining whether the 1500 W inverter can operate a microwave oven, remember that the power commonly advertised for microwave ovens is the cooking power (the power delivered to the food) not the power actually consumed by the microwave oven. The microwave oven will consume 40% to 100% more than its advertised cooking power. Check the rating sticker on the back of the oven to determine its actual power draw. The 1500 W inverter will operate a small microwave oven (0.2 to 3.0 cubic foot capacity) that draws up to 1500 watts. Cooking time will depend on battery capacity and the state of battery.

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

If the motor refuses to start, observe the battery voltage indicator while trying to start the motor. If the battery voltage indicator drops below 11 volts 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 the battery is charged, but if the voltage still drops below 11 volts, you may need to use a larger battery.

6.2 Input voltage:

The power inverter will operate from input voltage ranging 10.5 V – 16 V (12V) or 21 V- 32 V (24 V) If the voltage drops below 10.5 V (12 V) or 21 V (24 V), the GP-SW1500 voltage indicator will begin flashing red and the low battery alarm will sound (5 single beeps every eight seconds). If the voltage drops below 10 V (12 V) or 20 V (24 V), five double beeps will sound, AC power will disconnect and the OVP/UVP LED will show solid red. This protects your battery from being over discharged. The power inverter will also shut down if the input voltage exceeds 16 V (12 V) or 32 V (24 V). This protects the inverter against excessive input voltage. If the voltage exceeds 15 V (12 V) or 30 V (24 V), the GP-SW1500 voltage indicator will be in the upper red zone. If the voltage exceeds 16 V, the GP-SW1500 voltage indicator will begin flashing red, five double beeps will sound, AC power will disconnect and the OVP/UVP LED will begin flashing. Although the power inverter incorporates protection against over voltage, it may still be damaged if the input voltage is allowed to exceed 20 V (12 V) or 40 V (24 V).

7. 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 2 to 3 twists per foot. This minimizes radiated interference from the cables.

7.2 Troubleshooting guide

| Problem and Symptoms | Possible Cause | Solution |
|--|---|---|
| Low output voltage and current indicator in red zone. | Overload | Reduce load |
| No output voltage and voltage indicator in lower red zone. | Low input voltage | Recharge battery, check connections and cable. |
| 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, voltage indicator in upper red zone. | 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, voltage indicator below 11 V. | Poor DC wiring, poor battery condition. | Use proper cable and make solid connections. Use new battery. |
| No output voltage, Over Temp indicator on, load in excess of: 1500 W: 150 A 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, 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 load |

8. 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. Warranty

We warrant this product against defects in materials and workmanship for a period of two years from the date of purchase and will repair or replace any defective Go Power! Inverter when directly returned, postage prepaid, to manufacturer. This warranty will be considered void if the unit has suffered any obvious physical damage or alteration either internally or externally and does not cover damage arising from improper use such as plugging the unit into an unsuitable power sources, attempting to operate products with excessive power consumption requirements, reverse polarity, or use in unsuitable climates.

This is the only warranty and the company makes no other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose. Repair or replacement are your sole remedies and shall not be liable for damages, whether direct, incidental, special or consequential, even though caused by negligence or other fault.

10. Configuring your GP-SW1500

Switches are located on the rear left side. Please note that switches S4, S5 and S6 are currently disabled and have no effect on the operation of the inverter. Later versions of the GP-SW1500 may utilize these switches for adding additional features.

Note: For a typical North American system, set all Dip Switches to "Off"

Dip Switch (110 V)

| S1 | S2 | V out (VAC) | S3 | Freq. (Hz) | S4 | n/a | S5 | S6 | Baud Rate |
|-----|-----|-------------|-----|------------|----|-----|-----|-----|-----------|
| On | On | 100 | On | 50 | - | - | On | On | 1200 |
| Off | On | 110 | Off | 60 | - | - | Off | On | 2400 |
| On | Off | 115 | - | - | - | - | On | Off | 4800 |
| Off | Off | 120 | - | - | - | - | - | - | - |

Dip Switch (220 V)

| S1 | S2 | V out (VAC) | S3 | Freq. (Hz) | S4 | n/a | S5 | S6 | Baud Rate |
|-----|-----|-------------|-----|------------|----|-----|-----|-----|-----------|
| On | On | 200 | On | 50 | - | - | On | On | 1200 |
| Off | On | 220 | Off | 60 | - | - | Off | On | 2400 |
| On | Off | 230 | - | - | - | - | On | Off | 4800 |
| Off | Off | 240 | - | - | - | - | - | - | - |