

MODIFIED SINE WAVE INVERTER

GP-225/400/800/1000HD

User Manual



CONFORMS TO
UL STD. 458
CERTIFIED TO
CSA STD.
C22.2 No. 107.1

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Worldwide Technical Support and Product Information gpelectric.com

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80690_MANUAL_GP-225-400-800-1000-HD_RevC





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2. GENERAL INFORMATION

2.1 CAUTIONS / WARNINGS

This document contains important safety instructions for the products produced by Go Power! Read all instructions and cautionary markings on the product and on any accessories or additional equipment included in the installation. Failure to follow these instructions could result in severe shock or possible electrocution. Use extreme caution at all times to prevent accidents.

All electrical work must be performed in accordance with local and national electrical codes. These instructions are for use by qualified personnel who meet all local and governmental code requirements for licensing and training for the installation of electrical power systems with AC and DC voltage up to 600 volts.

Installation, maintenance, and connection of inverters must be performed by qualified personnel, in compliance with local electrical standards, wiring rules, and the requirements of local power authorities and/or companies.

Safety regulations relevant to the location shall be followed during installation, operation and maintenance. Improper operation may have a risk of electric shock or damage to equipment and property.



WARNING!
Hazard to Human Life

This type of notation indicates that the hazard could be harmful to human life.



WARNING!
Shock Hazard

Danger of shock or electrocution.



WARNING!
Burn / Fire Hazard

Danger of hot surface and/or fire.



CAUTION!
Hazard to Equipment

This type of notation indicates that the hazard may cause damage to the equipment.



IMPORTANT

This type of notation indicates that the information provided is important to the installation, operation and/or maintenance of the equipment. Failure to follow the recommendations in such a notation could result in annulment of the equipment warranty.

General Safety

WARNING!
Limitations on Use

This equipment is NOT intended for use with life support equipment or other medical equipment or devices.

CAUTION!
Equipment Damage

This product is designed for indoor/compartments installation. It must not be exposed to any liquids, moisture of any type.

Only use components or accessories recommended or sold by Go Power! or its authorized agents.

IMPORTANT

Do not attempt to install this equipment if it appears to be damaged in any way. See the Warranty section for instructions on returning the equipment.

Personal Safety

Use safe lifting techniques when lifting this equipment as recommended by the Occupational Safety and Health Association (OSHA) or other local codes.

Use standard safety equipment when working on this equipment, such as safety glasses, ear protection, steel-toed safety boots, safety hard hats, etc.

Use standard safety practices when working with electrical equipment. (Remove all jewelry, use insulated tools, wear cotton clothing, etc.)

Never work alone when installing or servicing this equipment. Have someone nearby that can assist if necessary.

Ensure that children, pets, and other animals are kept away from the inverter, solar arrays, battery bank, and utility grid components.



WARNING!
Personal Injury

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

People with pacemakers should consult their physician(s) before use. Electromagnetic fields in close proximity to heart pacemakers could cause pacemaker interference or pacemaker failure.

The brass components of this product contain lead, a chemical known to the State of California to cause birth defects or other reproductive harm.

This product contains or, when used, produces a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

The warnings, precautions, and instructions in this manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

Equipment Safety



WARNING!
Lethal Voltage

Review the system configuration to identify all possible sources of energy. Ensure ALL sources of power are disconnected before performing any installation or maintenance on this equipment. Confirm that the terminals are de-energized using a validated voltmeter (rated for a minimum 1000 VAC and 1000 VDC) to verify the de-energized condition.

Do not perform any servicing other than that specified in the installation instructions unless qualified to do so, or have been instructed to do so by Go Power! Technical Support personnel.

To avoid electric shock, disconnect the DC input and AC input of the inverter at least 5 minutes before performing any installation or maintenance.

Do not tighten the AC and DC terminals or pull on the AC and DC wiring when the inverter is running.



WARNING!
Fire Hazard

Do not keep combustible or flammable materials in the same room with the equipment. Some products contain relays with moving parts and are not ignition-protected.

Ensure AC, DC, and ground cable sizes conform to local codes. See product manuals for minimum size requirements.

Ensure all conductors are in good condition.

Do not operate the unit with damaged or substandard cabling.



CAUTION!
Equipment Damage

When connecting cables from the inverter to the battery terminals, ensure the proper polarity is observed. Connecting the cables incorrectly can damage or destroy the equipment and void the product warranty.

Thoroughly inspect the equipment prior to energizing. Verify that no tools or equipment have been inadvertently left behind.

Keep all vents clear of obstructions that can prevent proper air flow around, or through, the unit.

CAUTION!
Equipment Damage

Static electricity may damage electronic components. Take appropriate steps to prevent such damage to the inverter; otherwise the warranty may be annulled.

Battery Safety

**WARNING!**

Explosion, Electrocution,
or Fire Hazard

Ensure the cables (conductors) are properly sized.

Ensure clearance requirements are strictly enforced around the batteries.

Ensure the area around the batteries is well ventilated and clean of debris.

Never smoke, or allow a spark or flame near, the batteries.

Always use insulated tools. Avoid dropping tools onto batteries or other electrical parts.

Never charge a frozen battery.

Never use old or untested batteries. Check each battery's label for age, type, and date code to ensure all batteries are identical.

If a battery must be removed, always remove the grounded terminal from the battery first. Make sure all devices are de-energized or disconnected to avoid causing a spark.

**IMPORTANT**

Use the battery types recommended by Go Power! Follow the battery manufacturer's recommendations for installation and maintenance.

Insulate batteries as appropriate against freezing temperatures. A discharged battery will freeze more easily than a charged one.

If a remote or automatic generator control system is used, disable the starting circuit and/or disconnect the generator from its starting battery while performing maintenance to prevent accidental starting.

Wear complete eye and clothing protection when working with batteries. Avoid touching bare skin or eyes while working near batteries.

Keep plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.

If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters the eye, immediately flood it with running cold water for at least 20 minutes and get medical attention as soon as possible.

**CAUTION!**
Equipment Damage

When connecting cables from the inverter to the battery terminals, ensure the proper polarity is observed. Connecting the cables incorrectly can damage or destroy the equipment and void the product warranty.

Thoroughly inspect the equipment prior to energizing. Verify that no tools or equipment have been inadvertently left behind.

Ensure clearance requirements are strictly enforced.

Keep all vents clear of obstructions that can prevent proper air flow around, or through, the unit.

CAUTION!
Equipment Damage

Static electricity may damage electronic components. Take appropriate steps to prevent such damage to the inverter; otherwise the warranty may be annulled.

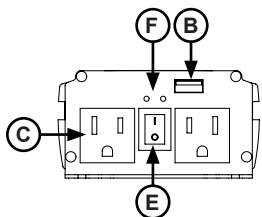


2.2 DISCLAIMERS

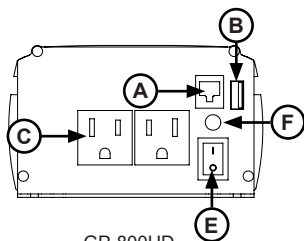
IMPORTANT: Please follow installation and wiring instructions exactly as outlined to ensure safety. We recommend installation by an RV/marine technician or professional electrician to ensure adherence to relevant electrical codes. We have made every reasonable effort to ensure the accuracy of the instructions in this manual, but Go Power! does not guarantee that the information is error free, nor do we make any other representation, warranty or guarantee that the information is accurate, correct, reliable or current. The specifications in this manual are for reference purposes only and are subject to change without notice. For additional information please see www.gpelectric.com.

DISCLAIMER: Go Power! disclaims liability for any direct, indirect or incidental damages caused by, or in case of, installation not performed following the instructions and cautions in this manual. Go Power! will refuse requests for exchanges or returns, resulting from the purchase and installation of items which do not comply with local codes. To avoid such concerns Go Power! recommends installation by a professional electrician or RV technician. Examples that are shown within this manual are for illustrative purposes only.

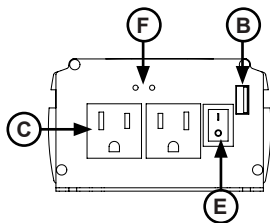
2.3 MODIFIED HD FEATURES



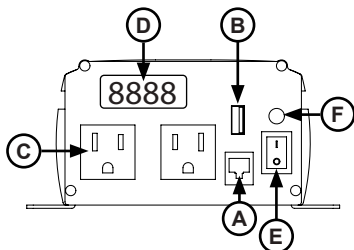
GP-225HD



GP-800HD

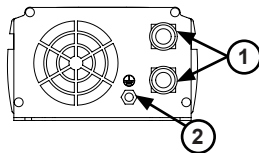


GP-400HD

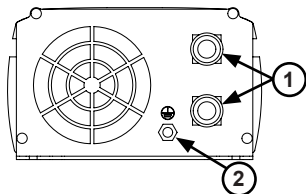


GP-1000HD

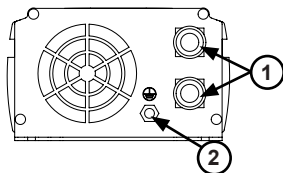
(A)	Remote port - Use this port to connect the optional remote control unit to the Inverter.
(B)	USB port - Use this port to connect a USB device.
(C)	Standard outlet - Use these sockets to connect AC loads to the Inverter.
(D)	Digital display - This display shows battery voltage and wattage.
(E)	ON / OFF - Use this button to turn the inverter ON or OFF.
(F)	Function LEDs - For 225/400 watt Inverters, there are two LEDs, one for Power (green) and another for Fault Condition (red). For 800/1000 watt Inverters, a single LED indicates Power (green) or Fault Condition (red).



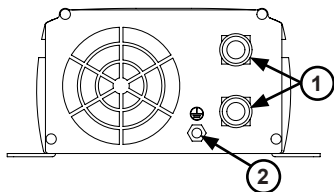
GP-225HD



GP-800HD



GP-400HD



GP-1000HD

①

DC input connector - Use these connection points to secure the battery bank negative and positive cables to the Inverter. Always ensure the DC terminal covers are used to protect the terminals.

②

Chassis ground - Use this connection to ground the exposed chassis of the inverter to the chassis ground.



3. SPECIFICATIONS

Electrical	Specification Item	Model No.
		GP-225HD
Input Characteristics	Voltage Range	10.5 - 16 VDC
	Input Over Voltage Protection	16.5 VDC
	Input Under Voltage Protection	10 ± 0.5 VDC
	No Load Current	≤0.7 A
Output Characteristics	Continuous Output Wattage	225 W
	Maximum Surge Rating	450 W
	Frequency	60 Hz ± 3 Hz
	Output Voltage	120 VAC RMS +5/-15
	Efficiency	≥80%
	Short-Circuit Protection	System Shutdown
	USB Output Voltage	4.75 - 5.25 VDC / 2.1 A
	Output Waveform	Modified Sine Wave
	AC Output Connections	2 Standard North American Outlets
USB Connections	1 USB Ports	
Protection	Input Protection	Over / Under Voltage
	AC Output Protection	Short-Circuit, Overload
	Others	Over / Under Temperature Protection
Environment	Operating Temp.	32° F - 104° F (0° C - 40° C)
	Storage Temp.	14° F - 122° F (-10° C - 50° C)
	Storage Temp. & Humidity	10 - 95% RH
Dimension (L x W x H)		5.27" x 3.86" x 2.05" (134 mm x 98 mm x 52 mm)
Weight		1.01 lbs (0.46 kg)
Cooling		Thermostatically Controlled Fan



SPECIFICATIONS

Electrical	Specification Item	Model No.
		GP-400HD
Input Characteristics	Voltage Range	10.5 - 16 VDC
	Input Over Voltage Protection	16.5 VDC
	Input Under Voltage Protection	10 ± 0.5 VDC
	No Load Current	≤0.7 A
Output Characteristics	Continuous Output Wattage	400 W
	Maximum Surge Rating	800 W
	Frequency	60 Hz ± 3 Hz
	Output Voltage	120 VAC RMS +5/-15
	Efficiency	≥80%
	Short-Circuit Protection	System Shutdown
	USB Output Voltage	4.75 - 5.25 VDC / 2.1 A
	Output Waveform	Modified Sine Wave
	AC Output Connections	2 Standard North American Outlets
USB Connections	1 USB Ports	
Protection	Input Protection	Over / Under Voltage
	AC Output Protection	Short-Circuit, Overload
	Others	Over / Under Temperature Protection
Environment	Operating Temp.	32° F - 104° F (0° C - 40° C)
	Storage Temp.	14° F - 122° F (-10° C - 50° C)
	Storage Temp. & Humidity	10 - 95% RH
Dimension (L x W x H)		6.30" x 4.25" x 2.64" (160 mm x 108 mm x 66 mm)
Weight		1.54 lbs (0.70 kg)
Cooling		Thermostatically Controlled Fan



SPECIFICATIONS

Electrical	Specification Item	Model No.
		GP-800HD
Input Characteristics	Voltage Range	10.5 - 16 VDC
	Input Over Voltage Protection	16.5 VDC
	Input Under Voltage Protection	10 ± 0.5 VDC
	No Load Current	≤0.8 A
Output Characteristics	Continuous Output Wattage	800 W
	Maximum Surge Rating	1600 W
	Frequency	60 Hz ± 3 Hz
	Output Voltage	120 VAC RMS +5/-15
	Efficiency	≥80%
	Short-Circuit Protection	System Shutdown
	USB Output Voltage	4.75 - 5.25 VDC / 2.1 A
	Output Waveform	Modified Sine Wave
	AC Output Connections	2 Standard North American Outlets
USB Connections	1 USB Ports	
Signal and Control	Remote Controller Panel Unit	GP-REMOTE (optional)
Protection	Input Protection	Over / Under Voltage
	AC Output Protection	Short-Circuit, Overload
	Others	Over / Under Temperature Protection
Environment	Operating Temp.	32° F - 104° F (0° C - 40° C)
	Storage Temp.	14° F - 122° F (-10° C - 50° C)
	Storage Temp. & Humidity	10 - 95% RH
Dimension (L x W x H)		7.48" x 4.88" x 2.95" (190 mm x 124 mm x 75 mm)
Weight		2.31 lbs (1.05 kg)
Cooling		Thermostatically Controlled Fan



SPECIFICATIONS

Electrical	Specification Item	Model No.
		GP-1000HD
Input Characteristics	Voltage Range	10.5 - 16 VDC
	Input Over Voltage Protection	16.5 VDC
	Input Under Voltage Protection	10 ± 0.5 VDC
	No Load Current	≤0.8 A
Output Characteristics	Continuous Output Wattage	1000 W
	Maximum Surge Rating	2000 W
	Frequency	60 Hz ± 2.5 Hz
	Output Voltage	120 VAC RMS +5/-15
	Efficiency	≥80%
	Short-Circuit Protection	System Shutdown
	USB Output Voltage	4.75 - 5.25 VDC / 2.1 A
	Output Waveform	Modified Sine Wave
	AC Output Connections	2 Standard North American Outlets
USB Connections	1 USB Ports	
Signal and Control	Remote Controller Panel Unit	GP-REMOTE (optional)
Protection	Input Protection	Over / Under Voltage
	AC Output Protection	Short-Circuit, Overload
	Others	Over / Under Temperature Protection
Environment	Operating Temp.	32° F - 104° F (0° C - 40° C)
	Storage Temp.	14° F - 122° F (-10° C - 50° C)
	Storage Temp. & Humidity	10 - 95% RH
Dimension (L x W x H)		9.44" x 4.88" x 2.95" (240 mm x 124 mm x 75 mm)
Weight		3.11 lbs (1.41 kg)
Cooling		Thermostatically Controlled Fan



4. INSTALLATION

4.1 INSTALLATION PRECAUTIONS

1. **Do not install the Inverter into a building's electrical system. The Inverter is a vehicular accessory. It is not designed to be safely used in a building's electrical system and has not been evaluated to meet building wiring codes. Improper application may create a fire or electric shock hazard.**
2. To allow proper cooling, install in an indoor well-ventilated area and do not cover ventilation openings or cooling fans. Do not install in engine compartment. **Avoid placing the Inverter on carpets and rugs; they are not only flammable, but they also obstruct vents underneath the Inverter.**
3. Keep combustible materials and gases away from the Inverter. The Inverter produces sparks and heat during operation and could start a fire.
4. Connect to a 12 VDC power supply only. A power supply with lower voltage will not operate the Inverter correctly, and higher voltage could damage the Inverter.
5. Connect input polarity properly. Incorrect connection will damage the Inverter and void warranty.
6. **Do not use in a marine application.** This Inverter is not intended to withstand the highly corrosive conditions in marine applications and would quickly be rendered inoperable or unsafe.
7. Keep the Inverter dry and clean. Do not expose to rain, snow, spray, bilge water, or dust.
8. Use cables that are thick enough. The more power (amps) or the longer the cables, the thicker they need to be to prevent overheating and fire.
9. Install the Inverter as close to the DC source as possible, but not in a closed area with vented lead-acid batteries. Vented lead-acid batteries release explosive hydrogen gas that can be ignited by the Inverter.
10. Mount the Inverter horizontally.
11. Verify that the installation surface has no hidden utility lines before drilling or driving screws.
12. This product is not a toy. Keep it out of reach of children.
13. Do not use with positive ground electrical systems (most automobiles, trucks, and RVs have negative ground systems).
14. The positive (+) battery on the Inverter must be the last connection made, and must be connected before the Inverter is turned on. There may be a small spark during the final connection. This is normal.
15. Properly ground the Inverter's case as explained in this manual.



4.2 INVERTER SHUTDOWN

The Inverter has a number of shutdown points, for the safety of the operator, the Inverter, and the devices being used with it.

- If the DC input voltage drops too low, the alarm on the Inverter will sound. If the input voltage drops further, the Inverter will shut down automatically to prevent permanent battery damage. Recharge the battery as soon as possible.
- If the DC input voltage exceeds 16 VDC, the Inverter will shut down automatically.
- If the output load power rises higher than the rating power of the Inverter, the Inverter may shut down automatically.
- The Inverter may automatically shut down if its internal temperature gets too high.

Note: even though this Inverter has built-in mechanisms to minimize damage, these situations should be avoided because they can still damage the Inverter or battery.

4.3 WHERE TO INSTALL

Your Inverter should be installed in a location that meets the following requirements:

1. **Dry:** do not allow water to drip or splash on the Inverter.
2. **Cool:** ambient air temperature should be between 0°C and 40°C (the cooler the better).
3. **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.
4. **Safe:** do not install the Inverter in the same compartment as batteries or in any compartment capable of igniting flammable liquids such as gasoline.
5. The Inverter should be located within 10 feet of the batteries.

4.4 GP-225HD: INSTALLATION AND TESTING

IMPORTANT: most North American car lighters are rated between 10-15 Amps DC and are fused in the automobile fuse box.



CAUTION! Equipment Damage.

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 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, TS-30, or TS-50), available from Go Power!

Please consult your automobile owner's manual for the fuse rating of your lighter. It is recommended that you DO NOT exceed the load capability your vehicles electrical system, or modify the size of the fuses installed by the manufacturer.

1. Unpack and inspect your Inverter, and make sure the power switch is in the OFF position.
2. Insert DC input plug into any 12 VDC car lighter receptacle.
3. Set the Inverter switch to the ON position. The power status LED should be green.
4. Set the Inverter switch to the OFF position. The indicator lights may blink and the internal alarm may sound momentarily. This is normal.
5. Ensure the test load switch is OFF. Plug the test load into the AC receptacle on the front panel of the Inverter.
6. Set the Inverter switch to the ON position and turn the test load on; the Inverter should supply power to the load.

Note: if you plan to measure the output voltage of the Inverter, a true RMS meter must be used for accurate readings.



4.5 GP-400/800/1000HD: INSTALLATION AND TESTING

Battery Type Selection:

- Use only deep cycle lead-acid batteries with this Inverter, such as 12 volt marine/RV deep-cycle batteries. Do not use automotive, engine starting (SLI), or maintenance-free wet cell batteries with this Inverter; they are designed for repeated, shallow discharge and will wear out quickly.
- Gel and AGM (Absorbed Glass Mat) batteries can be used with this Inverter, but they require special charging procedures. Refer to battery supplier's instructions.

1. Unpack and inspect the Inverter, and make sure the power switch is in the OFF position.

Note: we recommend using Go Power! DC Install Kits when installing a Go Power! Inverter (sold separately). Check section 4.7 DC WIRING SIZE to determine what Install Kits works for your Inverter.

2. Connect the DC Inverter cables into the power input terminals on the back of the Inverter. Remember, the (+) terminal is positive and the (-) terminal is negative. Place the lug connector between the washers and tighten the terminal screw or nut to clamp the wires securely. Ensure connections are tight.
3. Connect the ground cable to the appropriate location; see section 4.8 GROUNDING.



CAUTION! Equipment Damage.

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

4. First, connect the DC Inverter cables from the negative terminal of the Inverter to the negative terminal of the battery. Make sure the connection is secure.
5. Before proceeding further, carefully check that the cable you just connected is going from the negative terminal of the Inverter to the negative output terminal of the battery.
6. Install the Inverter fuse into the positive lead. The fuse should be located within 12" (31 cm) of the battery. Ensure all connections are tight and secure.
7. Connect the cable of the positive terminal of the Inverter to the positive terminal of the battery. Make a secure connection. Check your polarity.



WARNING! Fire/explosion Hazard.

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



CAUTION! Equipment Damage.

This Inverter cannot supply power to any AC distribution wiring or AC loads in which the neutral and ground are connected (bonded). Doing so will destroy the unit and void the warranty. If you do not understand neutral to ground bonding, please have a professional install your system for you. See section 4.8 GROUNDING for more information.

8. Set the power switch to the ON position. Check the meters and indicators on the front panel of the Inverter. The Function LEDs should be green showing the Inverter is ON. If it does not, check your battery bank and the connections to the Inverter. The other indicators should be OFF.
9. Set the 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.
10. Set the 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.

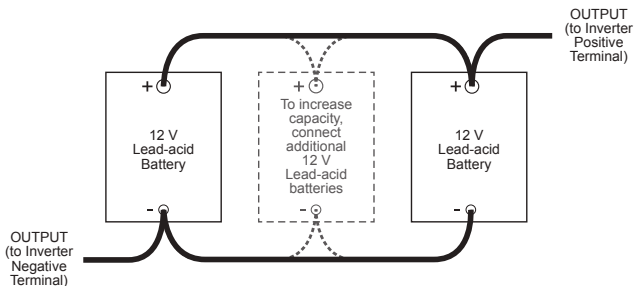


4.6 BATTERY PRECAUTIONS

- 1. Wear splash-resistant ANSI-approved safety goggles and electrically-insulated gloves while working near batteries.**
2. Charge, store, and maintain batteries according to supplier's instructions.
3. Locate batteries in a clean, well-ventilated area, away from ignition sources and flammable materials. Vented lead-acid batteries release explosive hydrogen gas while charging.
4. Only connect similar batteries together. Do not connect old and new batteries together, flooded and gel cells together, or batteries of different capacities together.
- 5. Use only 12 V batteries with this Inverter. It will not operate from a 6 V or 24 V battery. Do not attempt to connect the Inverter to any other power source other than a battery with a nominal output voltage of 12 volts or damage to the Inverter may occur and will void the warranty.**
- 6. Connect batteries in parallel ONLY (negative terminals together to one cable; positive terminals together to the other cable).**
- 7. Install a properly rated fuse on the positive output of the battery bank.**

The following points must be observed for the DC Wiring.

- The DC positive and negative cables connected to the Inverter from the battery bank should be linked together with zip ties or electrical tape every 6". This helps to reduce radio frequency interference and reduces the effects of inductance both of which improve the Inverter waveform and reduces the wear of the Inverters filter capacitors.
- To ensure optimum Inverter performance the number of connections between the battery bank and the Inverter unit should be minimized except from the over-current and battery disconnect devices. All additional connection points will cause extra voltage drops.
- The Battery bank voltage must match the DC voltage required by the Inverter, which is 12V.
- All DC cable wire terminations should use a crimped and sealed copper ring terminal lugs.
- Make sure all cables have a smooth bend radius and no kinks are present.
- Colour code all DC Cables coming to/from the battery bank. Use coloured electrical tape or heat shrink tubing. Red for positive (+), Black for negative (-) and Green for DC ground.



4.7 DC WIRING SIZING

The distance between the battery bank and the Inverter should be as short as possible to achieve maximum efficiency and to reduce fire hazards. The size of the cable should be thick enough to limit the voltage drop to less than 2% when carrying the maximum input current to prevent frequent low-input voltage warnings and shutdown. Only use high quality copper wire.

The cables should be as short as possible and the overall length of both cables added together should be less than 10 ft (3 m) to comply with code requirements. Keeping your wire runs as short as possible helps to prevent: low voltage shutdowns and nuisance tripping of the DC breaker because of increased current draw. The table below shows the recommended DC cable size, fuses/circuit breakers and DC grounding cable sizes for the Inverter (note: these values are correct for cables in free air, not conduit).

Model	Wire AWG	Inline Fuse / Circuit Breaker
GP-400HD	#10	F-80
GP-800HD	#6	F-110
GP-1000HD	#4	F-110



We recommend using a Go Power! Inverter Fuse and Cable Install Kit when installing your Go Power! Inverter (sold separately). Our Install Kits include 10' of large gauge battery cables and tie downs, as well as the appropriate inverter fuse and fuse block—everything you need to properly connect your Inverter to your batteries. The table below shows which Install Kit will work with your Inverter.

Model	Go Power! Inverter Fuse and Cable Install Kit (GP-DC-KITS)
GP-225HD	Adapter included
GP-400HD	Adapter included
GP-800HD	GP-DC-KIT2
GP-1000HD	GP-DC-KIT2

4.8 DC GROUNDING

To protect against electrical shock hazards, the Inverter metal chassis must be connected to the DC grounding system. The DC grounding system is sometimes referred to as the Earth ground or another designated ground. For example on an RV, the metal frame of the RV is designated as the negative DC ground / RV ground.

The DC ground wire connection on the Inverter is used to connect the exposed chassis of the Inverter to the DC grounding system. Use copper wire that is either bare or provided with green insulation. The size of this conductor should be coordinated with the size of the over-current devices used.

DC grounding involves proper grounding of the negative of the battery, the DC panel and the DC side of the Inverter. The DC panel is normally used to connect the batteries and distribute DC power to the Inverter and to the other DC loads.

A common earth ground should be used to bond the Inverter, negative bus bar and the negative battery terminal. All connections must be tight against bare metal. Use star washers to penetrate paint and corrosion.



5.1 OPERATING PRECAUTIONS

1. Multiple outlet power strips with switches and circuit breakers only interrupt power to the "hot" receptacle terminals. The "neutral" terminals remain powered with respect to the "ground" terminals. So the strip switch may be off, but part of the device may still be powered.
2. Inspect supply connections before use to ensure they are tight and that insulation is not damaged.
3. Do not use this Inverter to power sensitive devices such as medical devices or computers. Do not use in ignition protected areas.
4. Some rechargeable devices can damage the Inverter. Check the temperature of the device several times when it is charging. If the device becomes extremely hot; turn the power, remove the device, and do not use with the Inverter.
5. Check for breakage of parts and any other condition that may affect the Inverter's operation. If damaged, have it repaired before use.
6. Do not attempt to power a device, or combination of devices, that will require more than the rated output of this Inverter. This may damage the Inverter or the attached devices.
7. Appliances such as microwave ovens will normally draw more than their rated current. For example, a typical 800 watt microwave oven will drawn approximately 1,200 watts.
8. Do not attach a battery charger if the charger carries a warning that dangerous voltages are present at the battery terminals.
9. Some fluorescent lamps may not operate properly with this type of Inverter. If the bulb appears to be too bright, or fails to light, do not use the lamp with this Inverter.
10. Some fans with synchronous motors may slightly increase in speed when powered by the Inverter. This is not harmful to the fan or to the Inverter.
11. The Inverter will consume some power while on, even without loads attached. Turn the Inverter off after use.



5.2 CONNECTING AC LOADS

1. Plug 120 V device(s) into the receptacles. Make sure all devices are turned off, and that they do not use more than the rated wattage during continuous operation, otherwise they may overload the Inverter.
2. Set the power switch to the ON position.
3. Turn the device(s) on, one at a time. If the alarm sounds, turn off the device(s). Unplug the device(s) from the Inverter. Check the wattage of the device(s), and if plugging in multiple devices, discontinue use of one or more. If a single device sets the alarm off, it is not appropriate for use with the Inverter.
4. If the Inverter is powered by a vehicle's starting battery, be careful not to discharge the battery to the point that it will no longer start the engine. If needed, operate the engine periodically to maintain the batteries charge. Do not operate a vehicle's engine in an enclosed space.

5.3 CONTROLS AND INDICATORS

The ON/OFF switch turns the control circuit in the Inverter ON and OFF. It does not disconnect power from the Inverter.

When the switch is in the OFF position, the Inverter draws no current from the battery. When the switch is in the ON position but with no load, the power idle current is approximately 0.7-0.8 A (see product specifications for the exact current draw).

5.4 OPTIONAL ON/OFF REMOTE

The optional remote switch (sold separately) can be used to turn the Inverter on and off from a location up to 25 ft (8 m) away. (for the GP-800HD and GP-1000HD only). The Inverter should be OFF when plugging remote in. Once the remote is installed, the Inverter ON/OFF switch must be in the ON position.



5.5 POWER OUTPUT

The Inverter will operate most AC loads within its power rating. When determining whether a microwave oven can be operated by the Inverter, 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.

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 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 V while the Inverter is attempting to start the motor, this may be why the motor will not start. Make sure that the battery connections are good and that the battery is fully charged. If the connections are good and battery is charged, but the voltage still drops below 11 V, you may need to use a larger battery.

The following table shows the typical power consumption of common devices. Actual device wattage requirements will vary. Some devices listed may require a pure sine wave Inverter instead or proper operation.

Device	Wattage	Device	Wattage	Device	Wattage
Laptop	50	Belt Sander	350	Chest Freezer	800
Stereo	200	3/8" Drill	350	Coffee Maker	850
Mixer	200	Blender	350	Iron	1050
Table Fan	200	Laser Printer	400	Mini Microwave	1200
Computer	250	Food Processor	400	Hair Dryer	1200
Small Refrigerator	350	Reciprocating Saw	600	10" Saw	1350
Jigsaw	350	Vacuum	750		



5.6 INPUT VOLTAGE

The Inverter will operate from input voltage ranging 10.5 V - 16 V. If the voltage drops below 10.5 V, an audible low battery warning will sound and the voltage indicator will be in the lower red zone. The Inverter will shut down if the input voltage drops below 10 V. This protects your battery from being over discharged.

The Inverter will also shut down if the input voltage exceeds 16 V. This protects the Inverter against excessive input voltage. The voltage indicator will be in the upper red zone. Although the power inverter incorporates protection against overvoltage, it may still be damaged if the input voltage is allowed to exceed 20 V.

5.7 OVERTEMP

The fault LED will come on when the Inverter has shut itself down because the Inverter has become overheated. The Inverter may overheat because it has been operated at power levels above its rating, or because it has been installed in a location that does not allow it to dissipate heat properly. The power inverter will restart automatically once it has cooled off.

5.8 OVERLOAD

The fault LED will come on when the Inverter has shut itself down because its output circuit has been short-circuited or drastically overloaded. Switch the ON/OFF switch to OFF, correct the fault condition, and then switch the ON/OFF switch back to ON.

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

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 will not start. Make sure that the battery connections are good and that the battery is fully charged. If the connections are good and the battery is charged, but the voltage still drops below 11 volts, you may need to use a larger battery.

6.1 TROUBLESHOOTING GUIDE

Problem	Possible Causes	Probable Solutions
Inverter shuts off during use.	<ol style="list-style-type: none"> Excessive load at output. Internal temperature is too high. 	<ol style="list-style-type: none"> Reduce load to less than rated power. Let the Inverter cool down for at least 30 minutes. Make sure that the fan is not blocked and that the Inverter has sufficient ventilation.
No output voltage.	<ol style="list-style-type: none"> Cords not connected properly. Fuse on battery bank open. Internal fuse(s) open. Low input voltage. Loose or corroded connection. High input voltage. 	<ol style="list-style-type: none"> Check and secure connections. Check battery bank fuse and replace as needed. Have technician check internal fuses and replace as needed. Only a qualified technician should open housing. Recharge or replace battery. Clean and tighten connection. Remove charging source and make sure correct battery is being used and connected correctly.
Output voltage is incorrect.	Input voltage is too high or too low.	Maintain input voltage at required level.
Could not drive load.	<ol style="list-style-type: none"> Load power is too large. The AWG of the wire is too low. Start power of a device is up to twice the rated power. 	<ol style="list-style-type: none"> Lower load level. Use appropriately-sized wire connections. Reduce load, or change devices.
Motor-operated device operates at incorrect speed.	Load is only inductive.	Operate a lamp or heater at the same time to provide a more balanced load.
Television picture is full of static or speakers make a buzz.	<ol style="list-style-type: none"> Television or radio interference. Incompatible device. 	<ol style="list-style-type: none"> Move Inverter away from antenna and/or use a shielded antenna cable. Contact device supplier to make sure that the device can operate on a Modified Sine Wave Inverter.



7. MAINTENANCE

7.1 SERVICING PRECAUTIONS

1. **DO NOT OPEN HOUSING.** Contains no user-serviceable parts. **Internal parts may be electrified, even with Inverter off and power disconnected.**
2. Maintain labels and nameplates on the Inverter. These carry important safety information. If unreadable or missing, contact Go Power! for a replacement.
3. **Have your Inverter serviced by a qualified repair person using only identical replacements. This will ensure that the safety of the Inverter is maintained.**
4. **Fuses must be replaced with fuses of the same type and rating only.**

7.2 MAINTENANCE

Very little maintenance is required to keep your Inverter operating properly.

Keep the exterior of the Inverter clean and dry. Unplug the Inverter before cleaning. Periodically clean the outside of the Inverter with a soft, dry cloth to prevent accumulation of dust and dirt; never use water or water cleaners.

When cleaning the Inverter, confirm the screws on the DC input terminals are tight.

8. WARRANTY RETURN PROCEDURE

The Go Power! warranty is valid against defects in materials and workmanship for the specific product warranty period. 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

A warranty shall be considered void if the warranted product is in any way opened or altered. The warranty will be void if any eyelet, rivets, or other fasteners used to seal the unit are removed or altered, or if the unit's serial number is in any way removed, altered, replaced, defaced, or rendered illegible.

Warranty Return Procedure

Before contacting Go Power! customer service department, please 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) or
2. Return defective product to place of purchase

Unless approved by Go Power! Management, all product shipped collect to Go Power! will be refused. Test items or items that are not under warranty, or units that are not defective, will be charged a minimum bench charge of (\$50.00 US) plus taxes and shipping. A 15% restocking charge will be applied on goods returned and accepted as "new" stock.

An RMA number (Return Materials Authorization number) from Go Power! Customer Service is required prior to returning any Go Power! Products. Go Power! reserves the right to refuse any items sent to Go Power! without an associated RMA number. To obtain an RMA number, please contact customerservice@gpelectric.com or Telephone 1-250-380-0052 or Fax 1-250-380-0062 worldwide – or Toll Free for US & Canada 1-866-247-6527.

Out of Warranty

Go Power! electronic products are non-repairable, and Go Power! does not perform repairs on its products nor does it contract out those repairs to a third party. Go Power! does not supply schematics or replacement parts for any of its electronic products.





Product E.O.L (End of life) Information

This product required the extraction and use of natural resources. It may contain substances that could be harmful to the environment or human health if improperly handled at the product's end of life. In order to avoid release of such substances into the environment and to reduce the use of natural resources, we encourage you to recycle the Inverter in an appropriate way that will ensure most of the materials are reused or recycled appropriately.

DO NOT DISPOSE OF THIS PRODUCT WITH NORMAL GARBAGE

The easiest way to recycle the Inverter is to take the unit to a local **certified** e-waste (electronics waste) recycling centre. Knowing for sure if your appliances are being recycled properly is tricky. If you're in doubt just ask. Recyclers that are certified should gladly show you their certification. If the re-cycler is certified, chances are very high that they are recycling responsibly.

To find your local e-waste centre please contact your local municipality. The following website also has information on local recycling centres: www.earth911.com/recycling-center-search-guides

If you have no local certified e-waste recycling centre, the Inverter can be dis-assembled manually and recycled responsibly. A Phillips screwdriver is required to disassemble the Inverter. Note: the Inverter should only be disassembled at the end of its service life. Go Power! provides no spare parts for the Inverter.



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