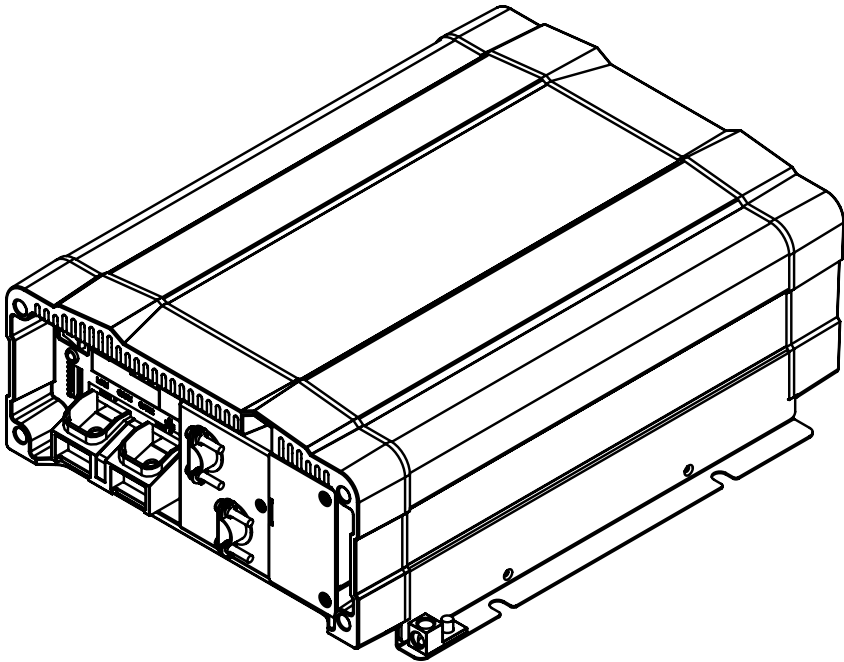


PURE SINE WAVE INVERTER

GP-SW1500TS

User Manual

GP-SW1500TS



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Worldwide Technical Support and Product Information gpelectric.com

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79570_MAN_GP-SW1500TS_RevB





GP-SW1500TS is new generation power inverter equipped and AC transfer switch.
GP-SW1500TS is suitable for RV, Marine and Emergency appliances

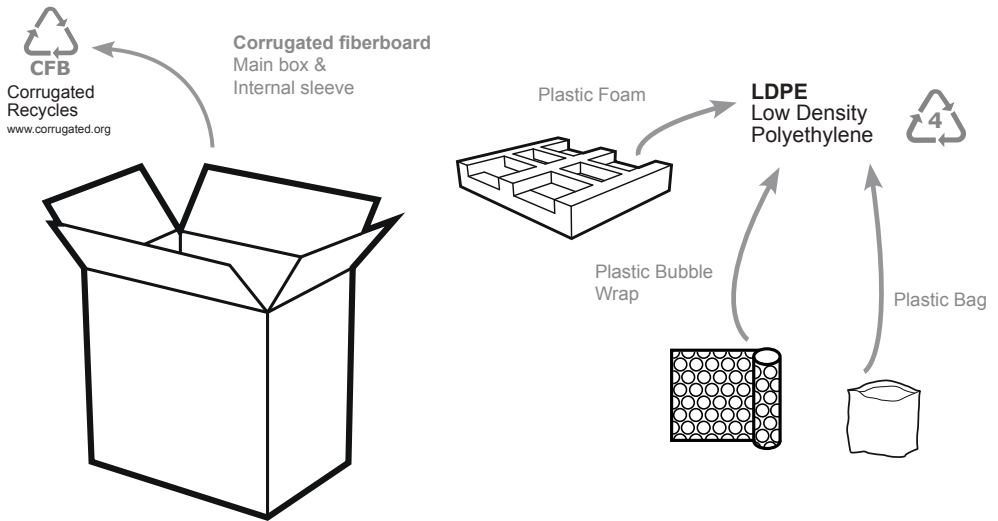
- User-friendly remote control
- Automatic master mechanism to eliminate single point failure and optimize reliability
- Built-in ATS (Automatic Transfer Switch) and AC circuit breaker
- Input & output fully isolation
- Output voltage / power saving mode is selectable by DIP switch
- Input Protection: Reverse Polarity (Fuse) / Under Voltage / Over Voltage Protection
- Output Protection: Short Circuit / Overload / Over Temperature / Over Voltage Protection

To get the most out of the power inverter, it must be installed and used properly. Please read the instructions in this manual before installation and operation of this model.



Product Packaging

Please safely store the packaging the GP-SW1500TS was delivered in or please recycle the packaging components as outlined below;



Local recycling centres can be found here;
www.earth911.com/recycling-center-search-guides



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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/compartment 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



WARNING!
Personal Injury

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.

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

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.

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



IMPORTANT

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 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.

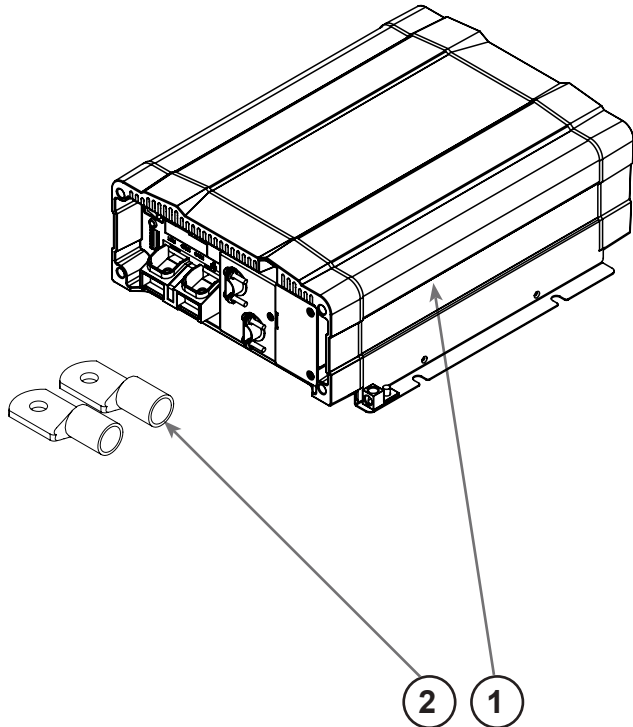
DISCLAIMER: Go Power! disclaims liability for any direct, indirect or incidental damages caused by, or in case of, installation not performed following the instructions and cautions in this manual. Go Power! will refuse requests for exchanges or returns, resulting from the purchase and installation of 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 GP-SW1500TS KIT PARTS

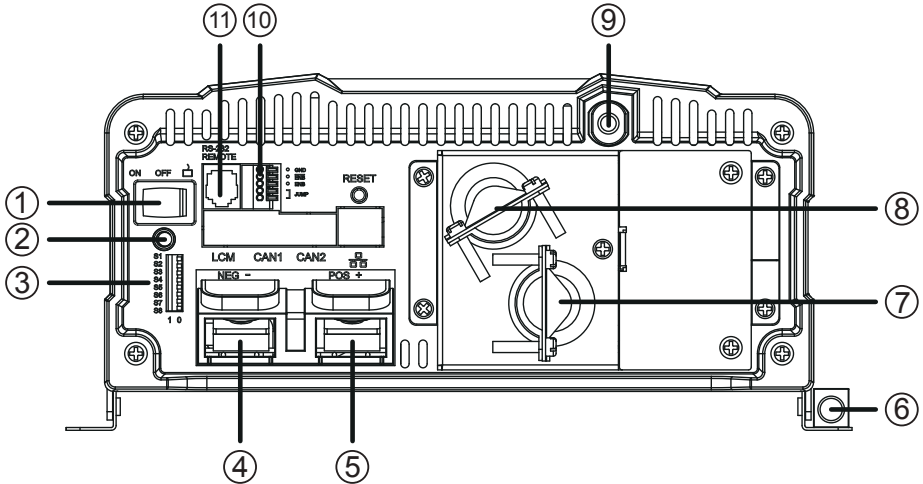
Please unpack and make sure all parts shown in the list below are included in the kit. If any parts are missing please contact Go Power!'s customer service team at customerservice@gpelectric.com or 1.866.247.6527.

2.3.1 PARTS CHECKLIST

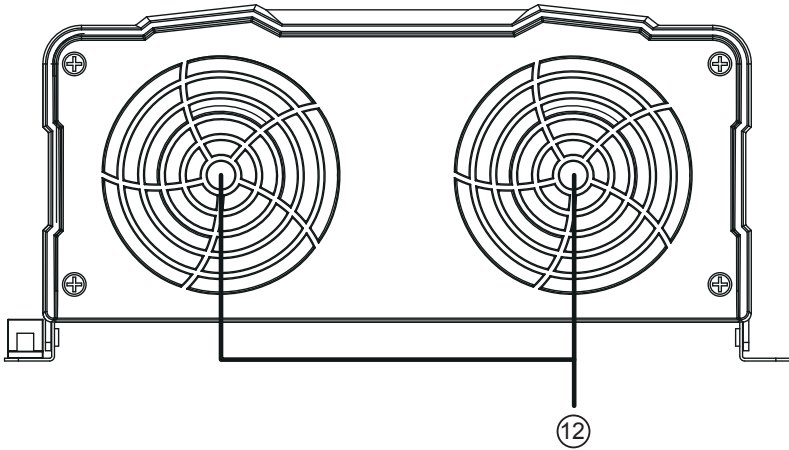
ITEM #	DESCRIPTION	
01	GP-SW1500TS Unit	1
02	Ring lugs	2



2.4 GP-SW1500TS FEATURES



<p>①</p>	<p>ON / OFF / REMOTE- Use this button to turn the inverter ON, OFF or to switch the inverter into REMOTE MODE.</p>
<p>②</p>	<p>Status LED - This LED is used to display (1) Input Voltage Level, (2) Output Load Level, (3) Fault Conditions (see page 30).</p>
<p>③</p>	<p>Function Switch - This dip switch controls output voltage, output frequency, power saving parameters (see page 31).</p>
<p>④</p>	<p>DC Negative Input Connector - Use these connection points to secure the battery bank negative cable to the Inverter.</p>
<p>⑤</p>	<p>DC Positive Input Connector - Use these connection points to secure the battery bank positive cable to the Inverter.</p>
<p>⑥</p>	<p>Chassis Ground - Use this connection to ground the exposed chassis of the inverter to the chasis ground with wire # 8 AWG.</p>
<p>⑦</p>	<p>AC Output - Use these terminals to connect the AC loads (appliances) to the Inverter.</p>
<p>⑧</p>	<p>By-pass AC Input - Use these terminals to connect the AC shore power to the Inverter.</p>

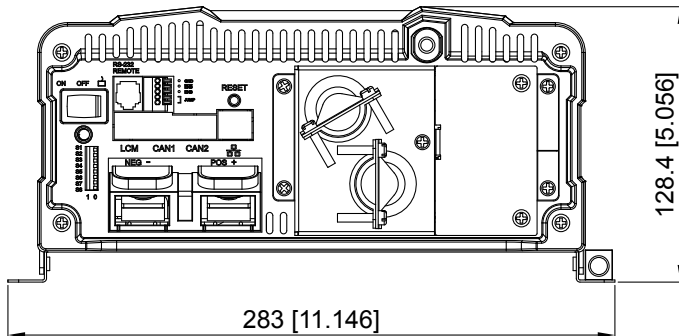
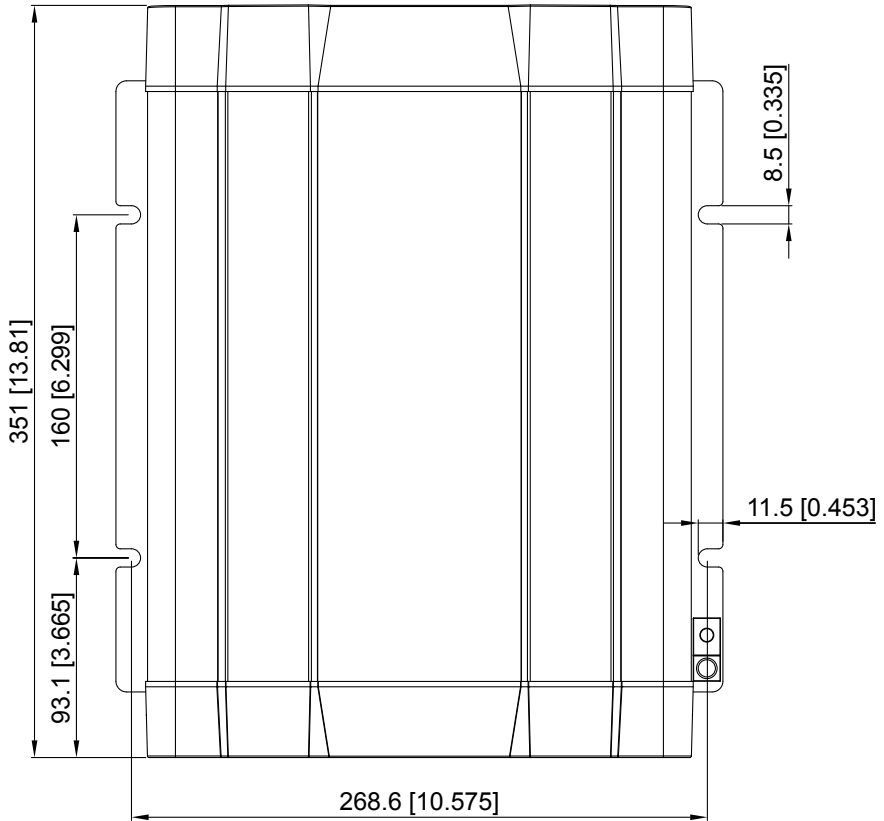


<p>9</p>	<p>AC Input Circuit Breaker. The AC input circuit breaker protects the model from overload. When an overload condition exists, the circuit breaker stops supplying output AC grid power. To reset it, push the circuit breaker switch then the model will be back in normal operation. The source fault should be corrected before you reset it.</p>
<p>10</p>	<p>Remote control green terminal</p>
<p>11</p>	<p>Remote port - Use this port to connect the optional remote control unit to the Inverter.</p>
<p>12</p>	<p>Fan - The rear panel must keep the distance at least 1 inch from any surrounding items.</p>



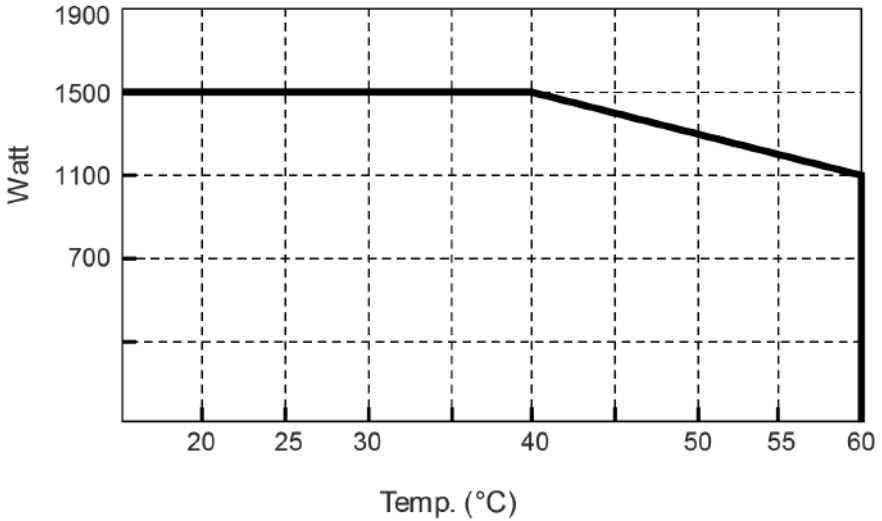
Main switch ON / OFF does not control AC Grid input. Therefore when performing maintenance please remove the AC Grid connection to prevent damage to the GP-SW1500TS, then ensure the Main switch is in the OFF position.

2.5 UNIT DIMENSIONS





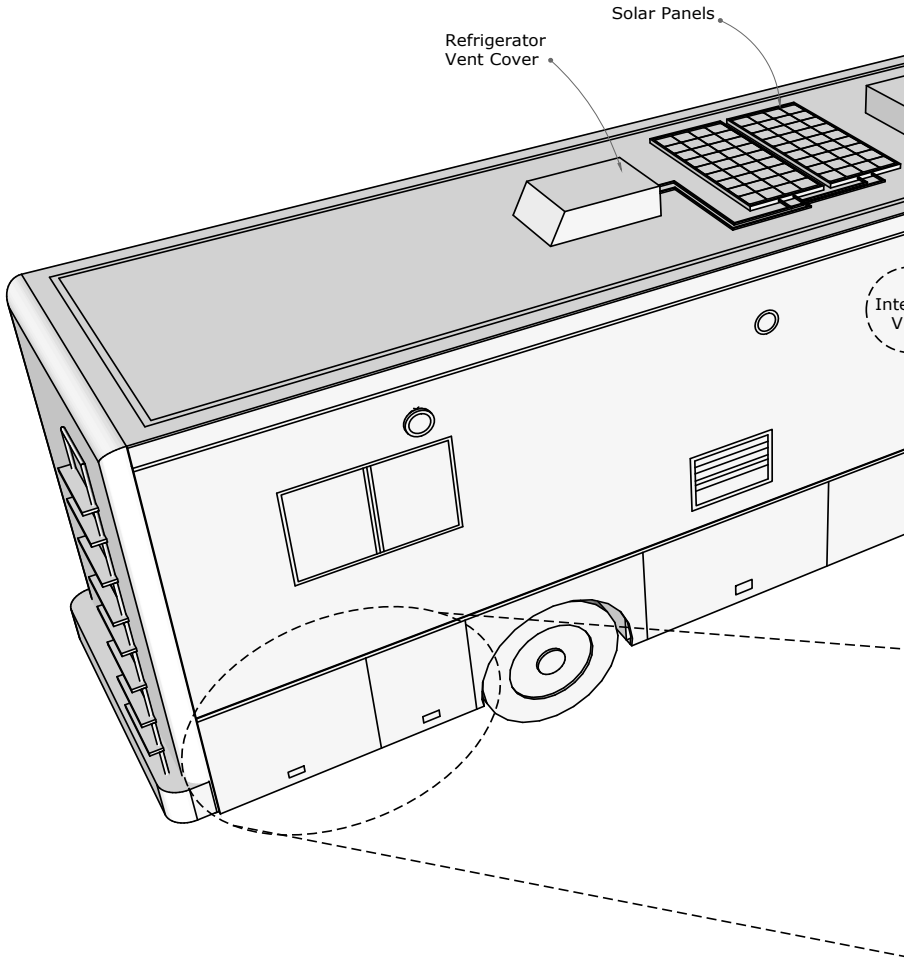
2.6 POWER DE-RATING CURVE AND TRANSFER TIME

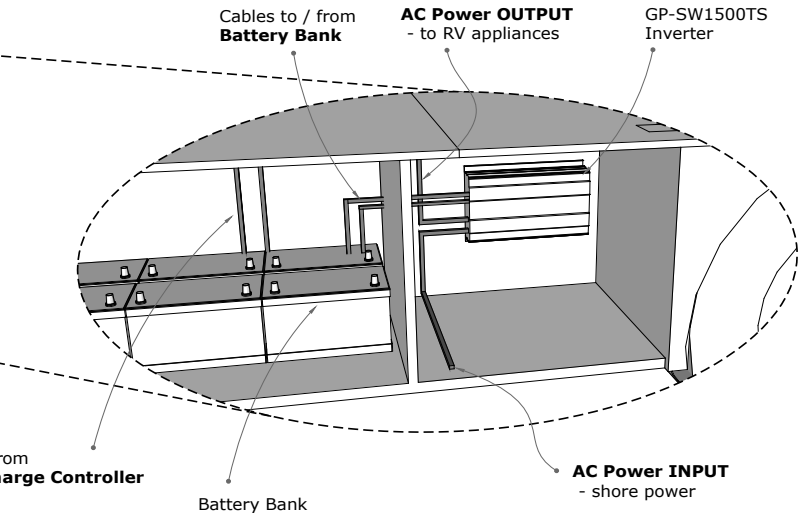
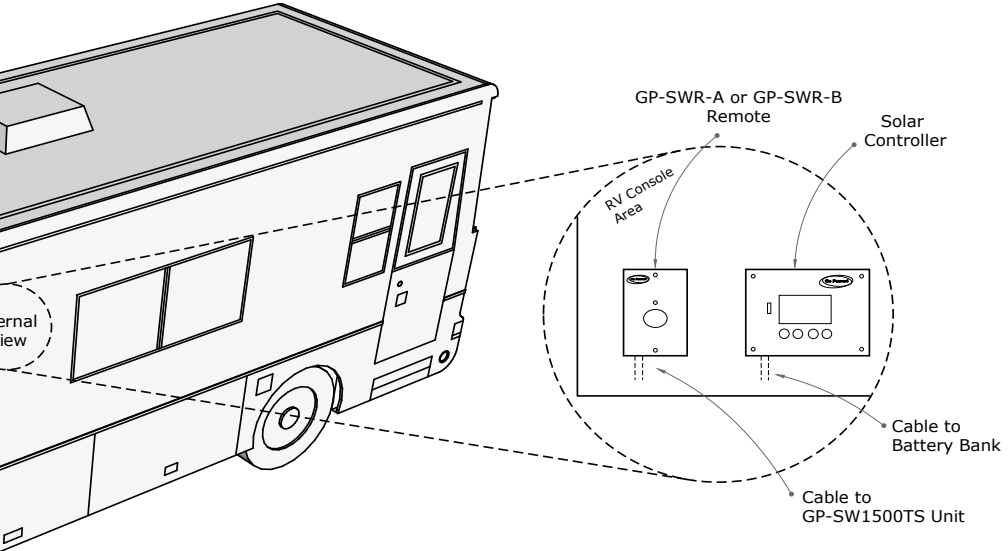


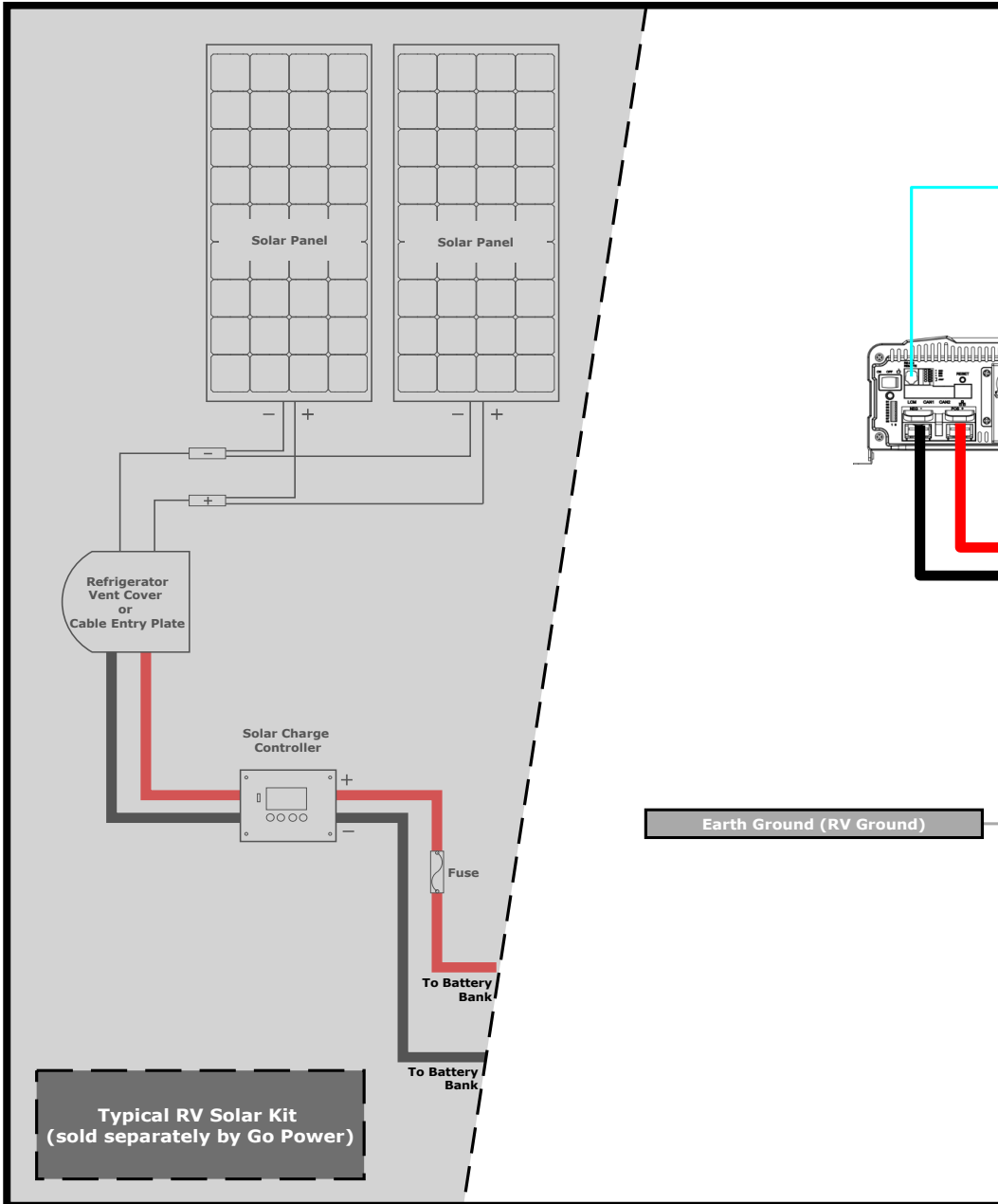
Mode/Transfer Switch	ATS
Haphazard	Inverter to utility AC: <5ms.; Utility AC to inverter: 10~35ms.
Normal	Inverter to utility AC: <5ms.; Utility AC to inverter: <10ms
Exacting	Inverter to utility AC: <5ms.; Utility AC to inverter: 10~35ms.
Online	Inverter to utility AC: <5ms.; Utility AC to inverter: <10ms

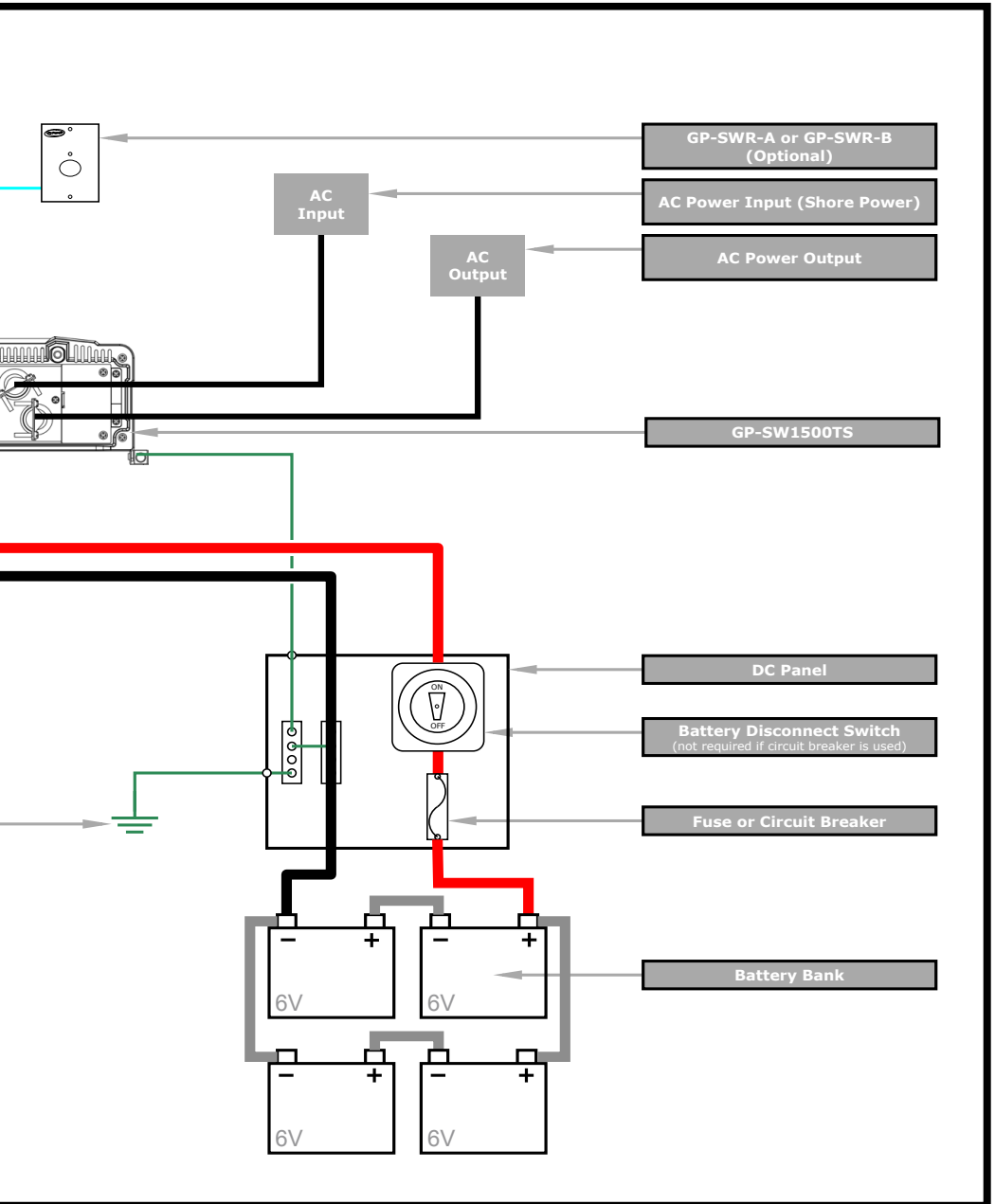
3.1 TYPICAL SYSTEM OVERVIEW

The following diagrams on pages 16-19 show how the GP-SW1500TS and GP-SWR-A (or B) Remote are typically installed in a mobile RV application. The diagrams show where the remote and Inverter are installed and how the mobile power system can be integrated with a Go Power! RV Solar Kit (sold separately by Go Power, please contact us direct.)









3.2 MOUNTING REQUIREMENTS

1. TEMPERATURE

Make sure the GP-SW1500TS is installed in a location where the normal air temperature is between -20°C and 40°C. The cooler the better within this range.

2. MOISTURE

Do not allow water or other fluids to come into contact with the GP-SW1500TS. Do not expose to rain, snow or water.

3. VENTILATION

For optimum Inverter performance the GP-SW1500TS must be installed so the front and rear air vents are not blocked or obstructed in any way. Do not install the GP-SW1500TS in an area with limited air flow. Allow as much space around the Inverter as possible, leaving at least 6" of airspace clearance around all ventilation areas.



CAUTION! Equipment Damage. Do not mount the GP-SW1500TS in a zero clearance compartment. Do not cover the ventilation openings. Overheating and mechanical failure may occur.

4. FIRE

Install the GP-SW1500TS away from the battery bank, away from any flammable or combustible material (paper, flammable liquids, gasoline, cloths) that may be ignited by heat, sparks or flames. Never place the Inverter directly above the battery bank - gases from the batteries will corrode and damage the Inverter, never allow battery acid to drip onto the unit.

5. ACCESSIBILITY / ORIENTATION

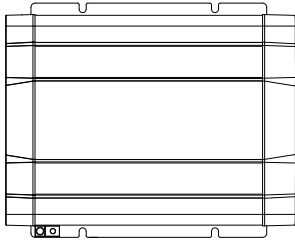
Do not block access to the GP-SW1500TS remote control access port, status LEDs and the On/Off switch. Allow enough room to access the AC and DC wiring terminals and connections as they will need to be checked and tightened periodically. The GP-SW1500TS must be installed in one of the approved mounting orientations detailed on page 21. **DO NOT MOUNT VERTICALLY.**

6. CLEAN

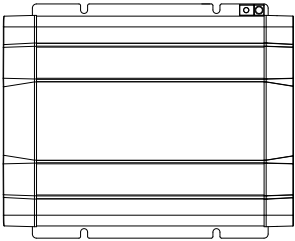
The GP-SW1500TS should be installed in a location which is clean and limits the introduction of dust, fumes, insects or rodents which could enter and block the Inverter ventilation openings.

7. PROXIMITY TO BATTERY BANK

The GP-SW1500TS should be located as close to the batteries as possible but not within the same compartment. The length and size of the DC Cables will affect performance. Long DC wires tend to lose efficiency and reduce the overall performance of the Inverter/Charger. Use the DC cables recommended on page 23.



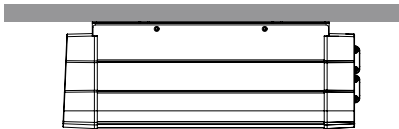
HORIZONTAL WALL MOUNT, BASE DOWN



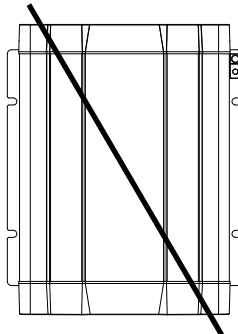
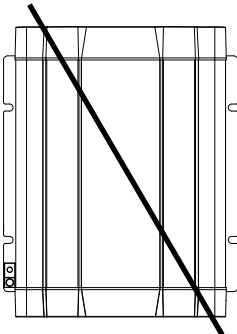
HORIZONTAL WALL MOUNT, BASE DOWN



HORIZONTAL MOUNT, BASE DOWN

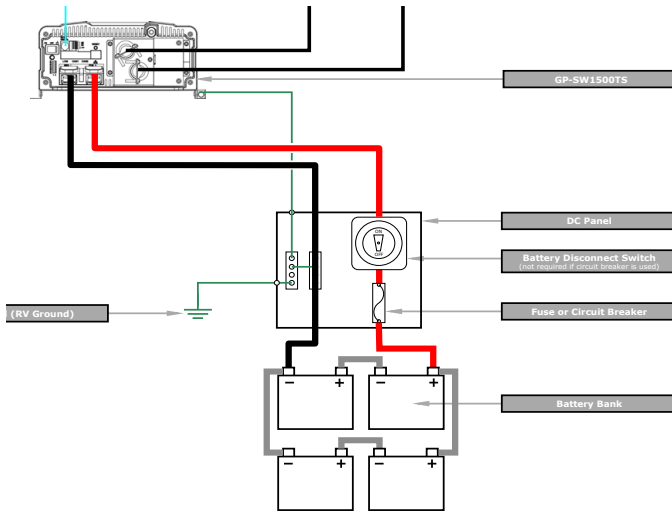


HORIZONTAL MOUNT, BASE UP



VERTICAL MOUNT, DO NOT MOUNT THE GP-SW1500TS IN THIS CONFIGURATION

3.3 DC WIRING



The following points must be observed for the DC Wiring.

- The DC positive and negative cables connected to the GP-SW1500TS 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 GP-SW1500TS 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 GP-SW1500TS, 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.



3.3.1 DC WIRING SIZING

The distance between the battery bank and the GP-SW1500TS 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 6ft (1.5m) 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 GP-SW1500TS (**Note:** these values are correct for cables in free air, not conduit)

Model	Wire AWG	Inline Fuse / Circuit Breaker
GP-SW1500TS-112	# 1	240 A

3.3.2 DC OVERCURRENT PROTECTION AND DC DISCONNECT

Batteries are capable of providing very large currents in case of a short circuit, if this occurs with no DC overcurrent protection, it will result in overheating and melting of the cables and possibly serious injury and/or fire.

DC overcurrent protection is not included with the GP-SW1500TS. It must be installed between the Inverter and battery bank for safety reasons and to comply with code regulations.

The fuse should be as close to the positive battery terminal as possible. Use Bussmann ANN series fuses (will also require Fuse Block 4164) or equivalent. Ideally the fuse/circuit breaker should be installed within 18" (45cm) of the battery). The fuse required for DC Cable lengths up to 6ft is detailed in the above table.

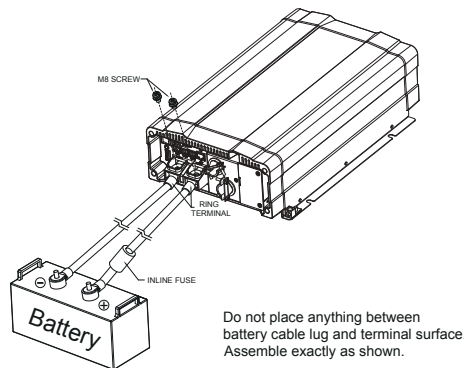
In all installations a battery disconnect switch is required, if you install a circuit breaker for overcurrent protection this will suffice as a disconnect switch. If you install a fuse for overcurrent protection then a separate disconnect switch will need to be installed.

3.3.3 PREPARING THE DC CABLES

Go Power! supplies 2 ring lugs with the GP-SW1500TS which can be used for the Inverter end of the DC Cables. Source the correct ring terminals for the batteries you are using.

- Cut the negative and positive cables to the required length.
- Strip off enough insulation so you can install the ring lugs provided.
- Use the correct crimp connector to install the ring lugs.
- Attach the connectors to both ends of both cables. Make sure no stray wire strands protrude from the connectors.

3.3.4 DC CABLE CONNECTIONS



When installing the battery cable ring lug onto the GP-SW1500TS DC terminal and the battery post - do not put anything between the ring lug and the metal surface. Incorrectly installed hardware causes a high resistance connection which could lead to poor Inverter/Charger performance and may melt the cable and terminal connections. Tighten the terminal connections securely (torque to 9 – 10 ft-lbs, 11.7 – 13 Nm) and periodically check the connections to make sure they remain tight and secure.

To help prevent seizing and corrosion around the terminals the use of an anti-seize lubricant is highly recommended. Apply the antioxidant grease or spray after all the connections are made and tightened.



3.3.5 WIRING THE INVERTER TO THE BATTERIES

WARNING: Lethal currents will be present if the positive and negative cables attached to the battery bank touch each other. During the installation and wiring process, ensure the cable ends are insulated or covered to prevent shorting the cables.

WARNING: DO NOT connect the DC Wires from the battery bank to the GP-IC-ISW until all the DC and AC wiring is complete and the AC overcurrent protection has been installed.

The GP-SW1500TS comes in a 12V version only, so the battery bank must be wired in series, parallel, or series-parallel to provide the correct voltage: 12V. The interconnecting wires between the individual batteries must be sized and rated exactly the same as those used between the battery bank and Inverter. To ensure the best performance from your Inverter system, batteries should be the same size, type, rating and age. Do not use old or untested batteries.

DC Positive and Negative Wires

- Connect the negative cable from the battery bank negative terminal to the Inverters negative terminal. Mount the DC circuit breaker or fuse assembly and leave open (no power to the GP-SW1500TS). Connect the positive cables from the circuit breaker / fuse to the battery bank and to the Inverters positive terminal.
- Ensure the DC wire connections are flush on the surface of the DC terminals and the hardware used to hold these connections are stacked correctly. Verify all DC connections are secured tightly.

3.3.6 DC GROUNDING

To protect against electrical shock hazards the GP-SW1500TS 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 GP-SW1500TS 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 GP-SW1500TS. 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.



3.4 AC WIRING

The cables linking the GP-SW1500TS to the appliances are the AC cables. The following points must be observed for the AC Wiring

- A branch rated over current protection at the time of installation shall be provided by others for the AC output circuit.
- Depending on the usage scenario, the AC output of the inverter may require a user installed breaker or fuse.
- For 20A branch circuit protection, additional breakers are needed for the GFCI receptacles.
- Review the safety information at the start of this manual before completing any AC wire installation steps.
- All AC Wiring must be approved for the application (RV, Marine, Residential). For RV applications, this may be solid wire in multi-conductor cables, but stranded wire is required if single conductors are used.
- All wiring must be rated to 75°C or higher.
- Do not connect the AC Output to an AC Power source (generator / shore power). Severe damage may occur and will not be covered under the warranty.
- Always use properly rated circuit breakers / fuses. Make sure all cables have a smooth bend radius and no kinks are present.

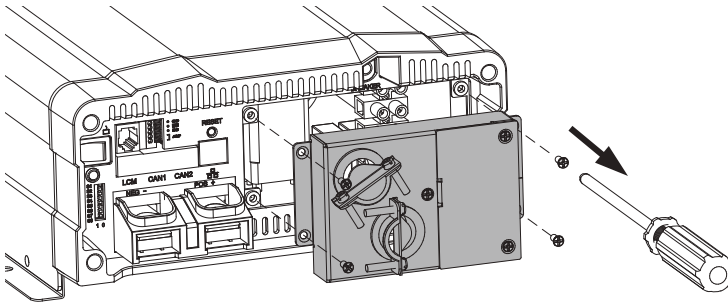
3.4.1 GP-SW1500TS AC WIRING TABLE

Terminal (F)		Wire Colour	Wire AWG	Max Wire Length
AC Output	Line (L)	Black	100-120 VAC: #12	Up to 16ft
	Neutral (N)	White		
AC Input	Line (L)	Brown		
	Neutral (N)	Blue		
Ground		Green / Yellow or Bare Copper	#14	Up to 32ft

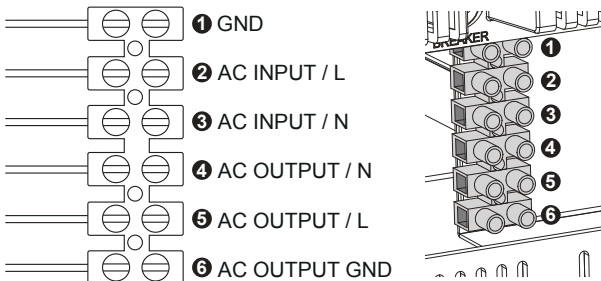
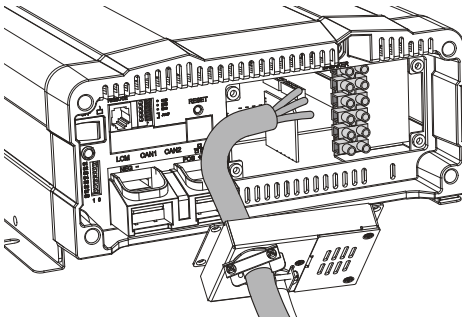
3.4.2 HARD-WIRE INSTALLATION

GP-SW1500TS provides the flexibility of hard-wire connection, and this function will make external control panel wiring easier.

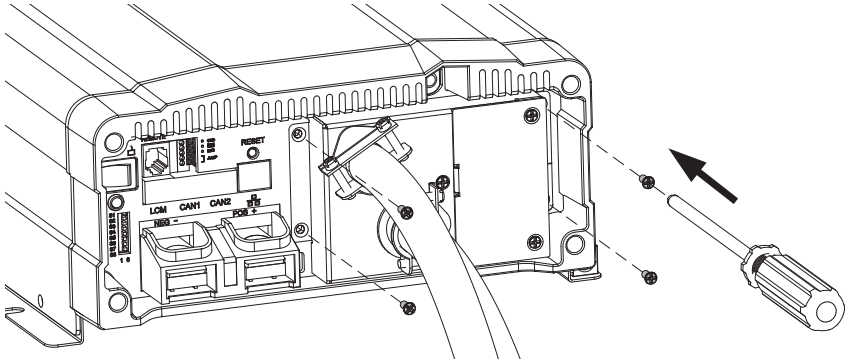
- Step 1 - Use a screwdriver to remove the cover.



- Step 2. Pass the AC cable pass through the cable gland. Wire the AC cable on the terminal.
- Use the screwdriver to re-attach the cover.



CAUTION!




It is advised that all the electrical installation should conform to the local electrical codes and should be carried out by a certified technician.

When the unit is feeding the internally inverted voltage, the current carrying conductors connected to the “L” and “N” terminals of the AC output will be isolated from the metal chassis of the inverter. Hence, during this condition, when the metal chassis of the inverter is connected to the earth ground, the “N” terminal of the AC output will not be grounded (bonded) to the earth ground. Under this condition, the “N” terminal of the AC output will not be a Neutral in the true sense. Do not touch this terminal as it will be at an elevated voltage (almost half the value the AC output voltage) with respect to the metal chassis / earth ground and may produce an electrical shock when touched!

When the unit is transferring power from the AC input source, the grounding condition of the “N” terminal of the AC output will be the same as the condition of the “N” terminal of the AC input source. If the AC input source is the power supplied from the utility, the “N” terminal would be a Neutral in the true sense. It will normally be bonded to the earth ground and will read almost 0 V with respect to the earth ground. In this case, touching this terminal will not be a shock hazard.

3.4.3 AC OUTPUT AND TERMINALS OF THE GP-SW1500TS

Model	Voltage (VAC)	Total Current (A)
*UL458 	120	20



NOTE

In case the load current over the outlet rated current, please use the hard wire terminal next to the outlets.



WARNING!

When using full power, it is recommended to use the wiring terminal.

3.4.4 GFCI (GROUND FAULT CIRCUIT INTERRUPTION)

Compliance with UL standards requires that Go Power! test and recommend specific GFCIs for use on the AC output of the GP-SW1500TS. GFCIs shall be installed in the AC output wiring system to protect all branch circuits. A GFCI is a device that de-energizes a circuit when a current exceeds a specified value that is less than that required to open the circuit breaker. GFCIs are intended to protect people from electric shocks and are usually required in wet or damp locations. The table below lists GFCIs that have been tested and will function properly when connected to the AC output of the GP-SW1500TS.

Manufacturer	Model Number
Cooper Wiring Devices	Type SGF20. Rated 125V, 20A
Leviton Mfg Co Inc	Type GFNT2. Rated 125V, 20A
Hubbell Inc Wiring Device Dev	Type GFRST20. Rated 125V, 20A
Pass & Seymour Inc	Type 2097. Rated 125V, 20A



4. OPERATION

4.1 FINAL INSPECTION

1. Verify all cables / conduit runs are secured with zip ties or other non-conductive cable clamps to prevent damage from vibration.
2. Ensure all cables that pass through walls, bulkheads or any other openings are protected against abrasion by using strain reliefs and/or grommets.
3. Check all AC, DC and ground connections are securely tightened, and if required covered with suitable anti-seizing grease.
4. Check all connections are secure in the main and sub panels - replace all covers.
5. If required by code, have the installation inspected by an electrical inspector.

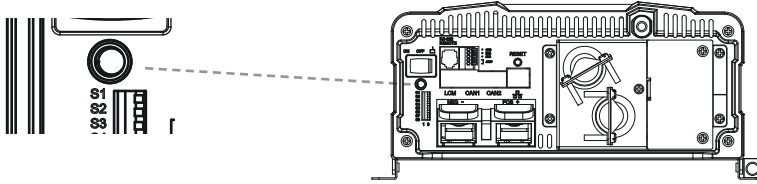
4.2 TESTING THE INSTALLATION

1. Apply battery power to the inverter by engaging the fuse or switching the breaker to the ON position.
2. Disconnect all AC loads from the inverter.
3. Press the ON/OFF button. The inverter will carry out self-diagnosis and the LED's will also appear (various colors).
4. Connect a 25W light bulb to the inverter output and verify it comes on and shines normally.
5. Press the ON/OFF button. The inverter and LED lights will turn off.

4.3 CONNECTING THE AC LOADS

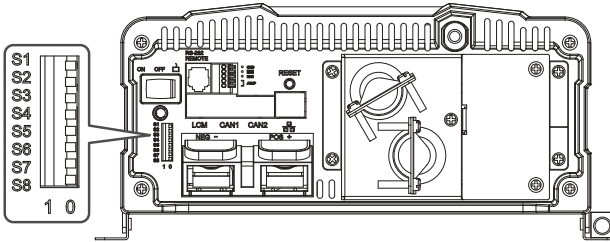
Calculate the total power consumption of the output load. Make sure that the total power consumption does not exceed the rated power. If the total power consumption is higher than the rated power of the inverter, remove the non-critical loads until the total power consumption is below the rated power.

4.4 LED INDICATOR



Green LED	LED Signal	Status
Solid	—————	Power OK
Slow Blink	— — — —	Power Saving
Intermittent Blink	Bypass
Orange LED	LED Signal	Status
Fast Blink	— — — —	OVP
Slow Blink	— — — —	UVP
Red LED	LED Signal	Status
Intermittent Blink	OTP
Fast Blink	— — — —	OVP- Shut-down
Slow Blink	— — — —	UVP- Shut-down
Solid	—————	OLP
Intermittent Blink	— .. — ..	Fan Failure
Intermittent Blink	— ... — ...	Component Failure

4.5 DIP SWITCH (S1~S8)



Switch#	Switch Assignment
1	AC output voltage setting
2	AC output voltage setting
3	AC output frequency setting
4	Energy-saving level
5	Energy-saving level
6	Energy-saving level
7	To set-up DIP Switch S4~S6 for power saving
8	To set-up function parameters adjustment via DIP switch

S1	S2	S3	S4	S5	S6	S7	S8	Scenario
0	0	X	X	X	X	X	X	AC output voltage : 100VAC/200VAC
1	0	X	X	X	X	X	X	AC output voltage : 110VAC/220VAC
0	1	X	X	X	X	X	X	AC output voltage : 115VAC/230VAC
1	1	X	X	X	X	X	X	AC output voltage : 120VAC/240VAC
X	X	0	X	X	X	X	X	AC output frequency : 50Hz
X	X	1	X	X	X	X	X	AC output frequency : 60Hz
X	X	X	X	X	X	0	X	Power saving mode setting (S4~S6)
X	X	X	X	X	X	X	0	Function parameters are the default value
X	X	X	X	X	X	X	1	Adjust function parameters via DIP switch



4.5.1 POWER SAVING MODE

Power Saving Mode is adjustable and set by the Dip Switches, S4, S5 and S6 on the front panel. Example GP-SW1500TS: Saving set 2%, the load is below 30W 10 sec. will into saving mode, more than 90W or more leave saving mode.

A. Power device enter the saving mode

The rate power x setting % = the threshold enter the power saving model.

In case the load less than threshold value 5 seconds, the power device will enter the saving mode.

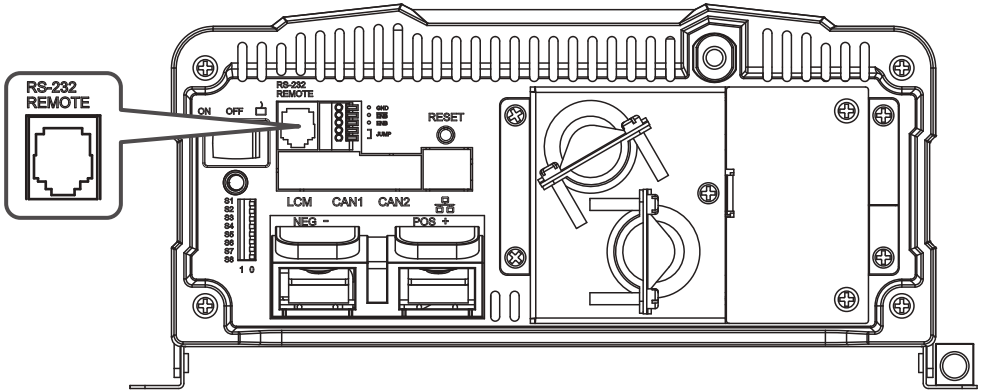
B. Power device leaving saving mode(re-start).

Restart threshold = rate power x setting % x 2~3

In case the power over the restart threshold, the power device will re-start and provide the AC power.

S1	S2	S3	S4	S5	S6	S7	S8	Scenario
X	X	X	0	0	0	0	X	Power saving DISABLE
X	X	X	1	0	0	0	X	Go in power saving mode when output load is under 2% of rating power
X	X	X	0	1	0	0	X	Go in power saving mode when output load is under 3% of rating power
X	X	X	1	1	0	0	X	Go in power saving mode when output load is under 4% of rating power
X	X	X	0	0	1	0	X	Go in power saving mode when output load is under 5% of rating power
X	X	X	1	0	1	0	X	Go in power saving mode when output load is under 6% of rating power
X	X	X	0	1	1	0	X	Go in power saving mode when output load is under 7% of rating power
X	X	X	1	1	1	0	X	Go in power saving mode when output load is under 8% of rating power

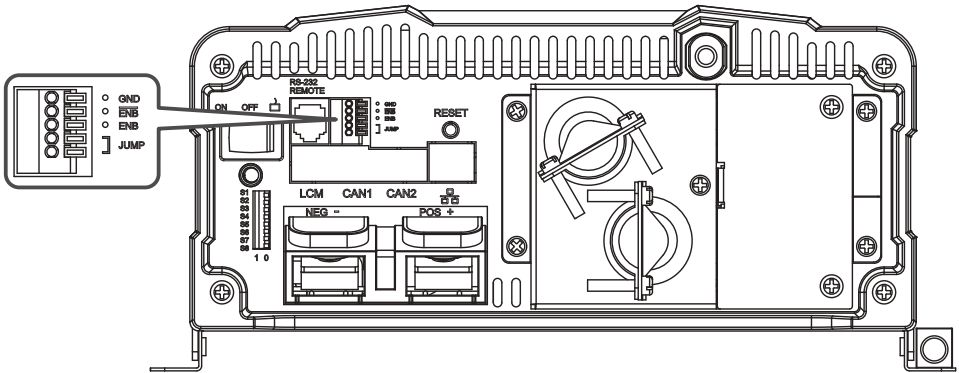
4.6 REMOTE PORT



The GP-SW1500TS Series Inverter is compatible with GP-SWR-A, and GP-SWR-B remote control via RS232 Communication. Before using the remote control, make sure the inverter main switch is set to “REMOTE” position.

Pin Number	Signal Description
1	Not used
2	GND
3	RXD
4	TXD
5	Not used
6	Not used

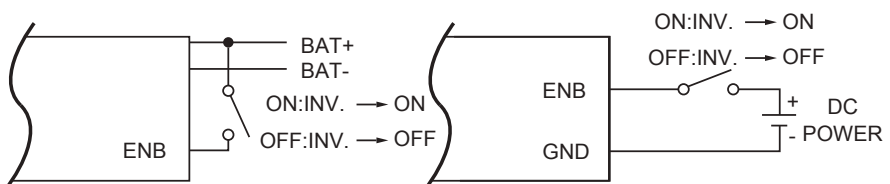
4.6.1 REMOTE CONTROL GREEN TERMINAL



PIN#	PIN Assignment
1	GND
2	-ENB
3	ENB
4	No Use
5	No Use

Remote control green terminal (1) may be connected to a Form C relay for “FAULT” indication. When “FAULT” occurs, the relay switches.

- Before installing the inverter, please ensure that the main switch is in the OFF position.
- Before using the remote control terminal, please ensure the main switch is in the REMOTE position.
- Use 20 ~ 24 #AWG wire to connect the remote control terminal.
- Remote control ON/OFF inverter setup status.



4.7 HIPOT TESTING

The GP-SW1500-TS uses two 55VAC lines to create 110VAC much like how 240VAC is created using two 120VAC lines in a house. To accomplish this the neutral line must be bonded to the ground, however, this causes problems during HIPOT testing. For this reason, the neutral to ground bonding is done using a screw that is externally accessible so it can be removed. The screw is installed when the unit is delivered to the dealer and is located on the side of the inverter next to the chassis ground lug as shown in the image below.



The inverter is HIPOT tested at the factory, but if another HIPOT test must be done the screw must be removed from the inverter for the test and re-installed after the test.

4.8 TROUBLESHOOTING

Problems and Symptoms	Possible Cause	Solutions
Power status red light is blinking fast.	Over input voltage. (OVP)	Check input voltage. Reduce input voltage.
Power status red light is Blinking slowly.	Low input voltage. (UVP)	Recharge battery. Check connections and cables.
Power status red light is blinking Intermittently.	Thermal shut-down. (OTP)	Improve ventilation. Make sure ventilation, shafts of the inverter are not obstructed. Lower ambient temperature.
Power status is solid red	Short circuit. Wiring error. Over Loading (OLP).	Check AC wiring for short circuit. Reduce load.



5. 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!'s 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 1-866-247-6527 or Fax 1.866.607.6527.

Out of Warranty

Go Power! electronic products are non-repairable, 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.





6. SPECIFICATIONS

Electrical	Specification Item	GP-SW1500TS-112
Input Characteristics	DC Voltage	12VDC
	Fuse	6 x 40A
	Voltage Range	10.0 ~ 16.0VDC
	No Load Current	< 0.9A
	Power Saving Mode	<0.9A @12VDC
Output Characteristics	Continuous Output Power	1500W (de-rating after 40°C, refer to de-rating curve)
	Surge Power	3000W
	Output Voltage	100 / 110 / 115 / 120VAC ±3%
	Efficiency Max.	88%
	Total Harmonic Distortion (THD)	< 3% @ under condition : greater than 1.15 times of the rated VDC, 115V / linear load)
AC Input	Output Waveform	Pure Sine Wave
	AC Range	100 / 110 / 115 / 120VAC ± 12.5%
	Frequency Selectable	50 / 60 Hz
	Synchronous Frequency	47 - 57 / 53 - 63 Hz
	Circuit Breaker	20A
Protection	Transfer Switch (Refer to Transfer - Time Table.)	Standard ATS : Inverter to utility AC: <5ms.; Utility AC to inverter. <10ms.
	BAT.Low Alarm ± 3%	10.5VDC
	BAT.Low Shut-down ± 3%	10.0VDC
	BAT.Low Restart ± 3%	11.5VDC
	BAT.High Alarm ± 3%	15.5VDC
	BAT.High Shut-down ± 3%	16.0VDC
	BAT.High Restart ± 3%	15.0VDC
Environment	Input Protection	Reverse Polarity (Fuse) / Under Voltage / Over Voltage Protection / AC over current (Breaker)
	Output Protection	Short Circuit / Overload / Over Temperature / Over Voltage
	Operating Temp.	-20 °C~40 °C refer to GP-SW1500TS power de-rating curve
Safety & EMC	Storage Temp.	-40 °C~70 °C
	Relative Humidity	Max. 90%, non-condensing
	Safety Standards	Certified UL 458 (6th Edition)
	EMC Standards	Certified FCC class B
	Dimension(WxHxD)	283x128x351 mm / 11.14x5.04x13.82 inch
	Weight	5.5 kg
	Cooling	Temperature & Load Controlled Cooling Fan
	LED Indicator	Input voltage level, faulty status
	Remote Control	GP-SWR-A and GP-SWR-B
	Remote Port	RJ-11 type connector

The specifications are subject to change without prior notice. All the test environments are conducted under the rated power operation conditions.

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



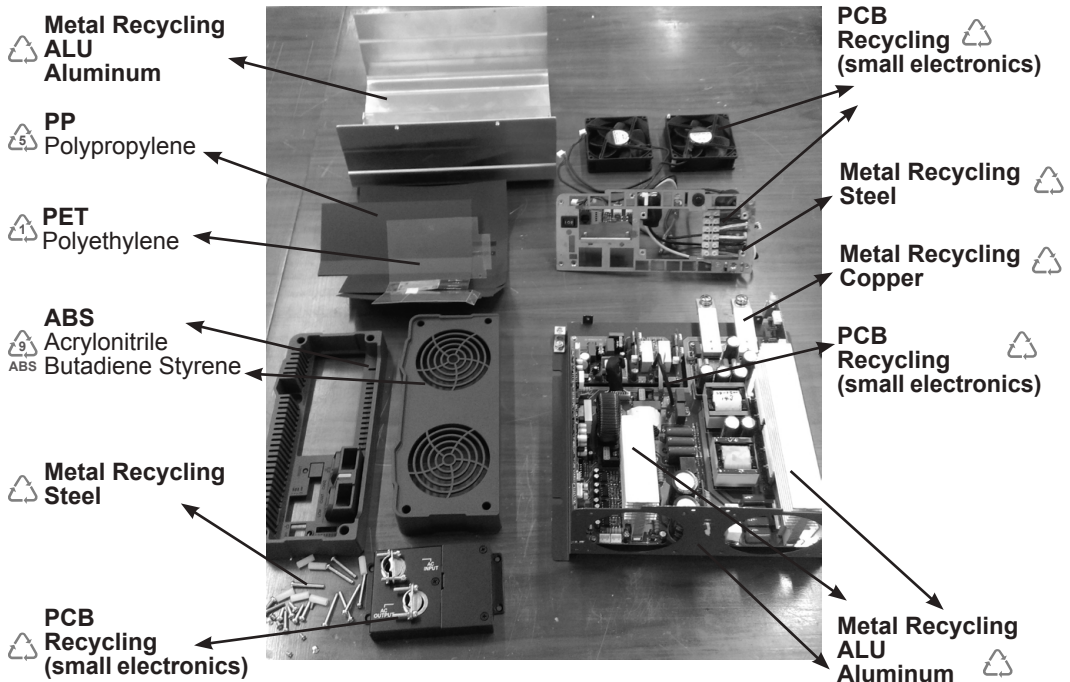
This product required the extraction and use of natural resources. It may contain substances that could be harmful to the environment or human health if improperly handled at the product's end of life. In order to avoid release of such substances into the environment and to reduce the use of natural resources, we encourage you to recycle the GP-SW1500TS 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 GP-SW1500TS 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 your 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 GP-SW1500TS can be dis-assembled manually and recycled responsibly. A Phillips screwdriver is required to disassemble the GP-SW1500TS. Note: The GP-SW1500TS should only be dis-assembled at the end of its service life, Go Power! provides no spare parts for the GP-SW1500TS.



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