



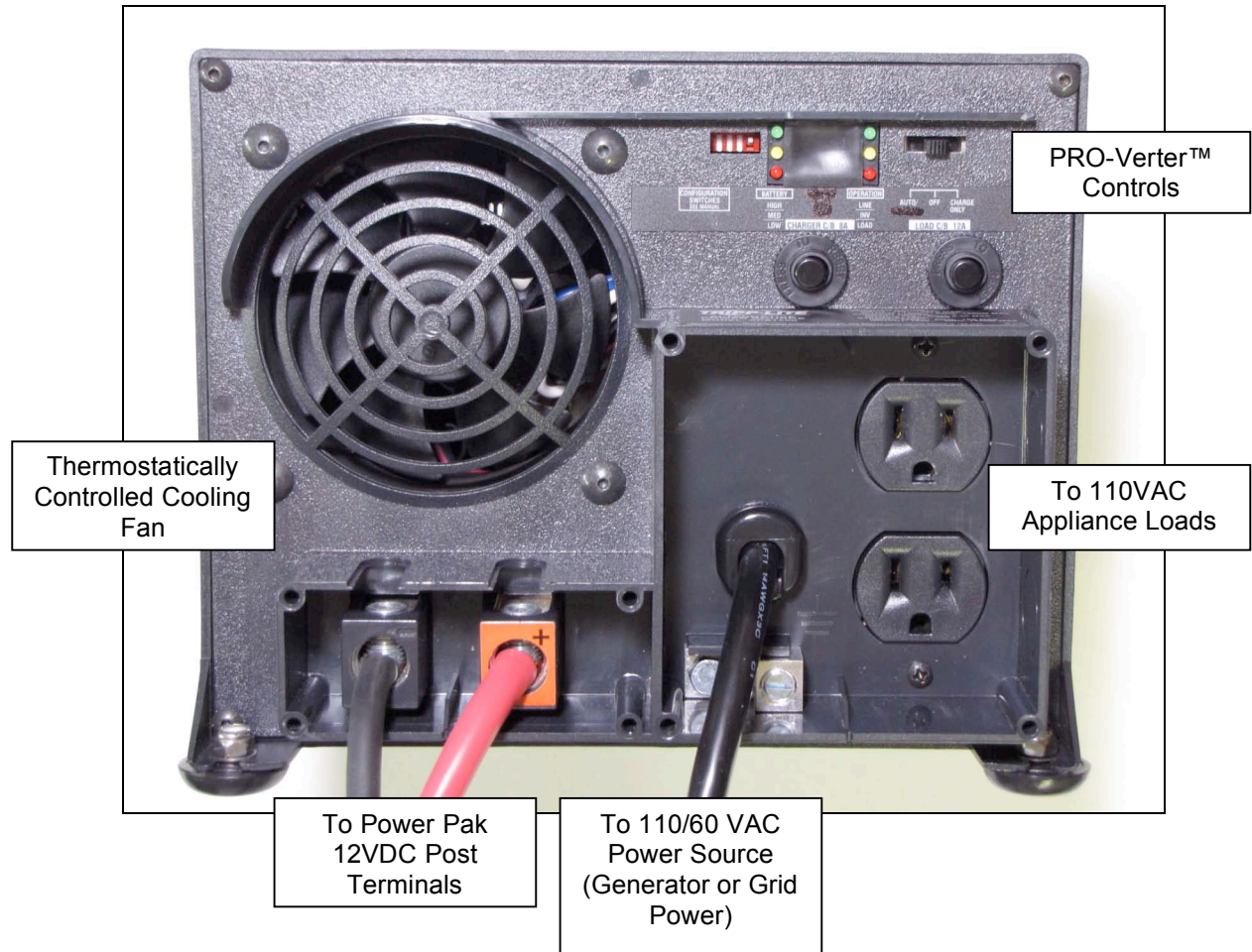
**SOLAR STIK™**

**P.R.O. VERTER™  
1250MS**



**PORTABLE REMOTE OPERATION  
INVERTER/ CHARGER**

**(PRO-VERTER™) 1250MS PAK  
GUIDE AND INSTRUCTIONS**



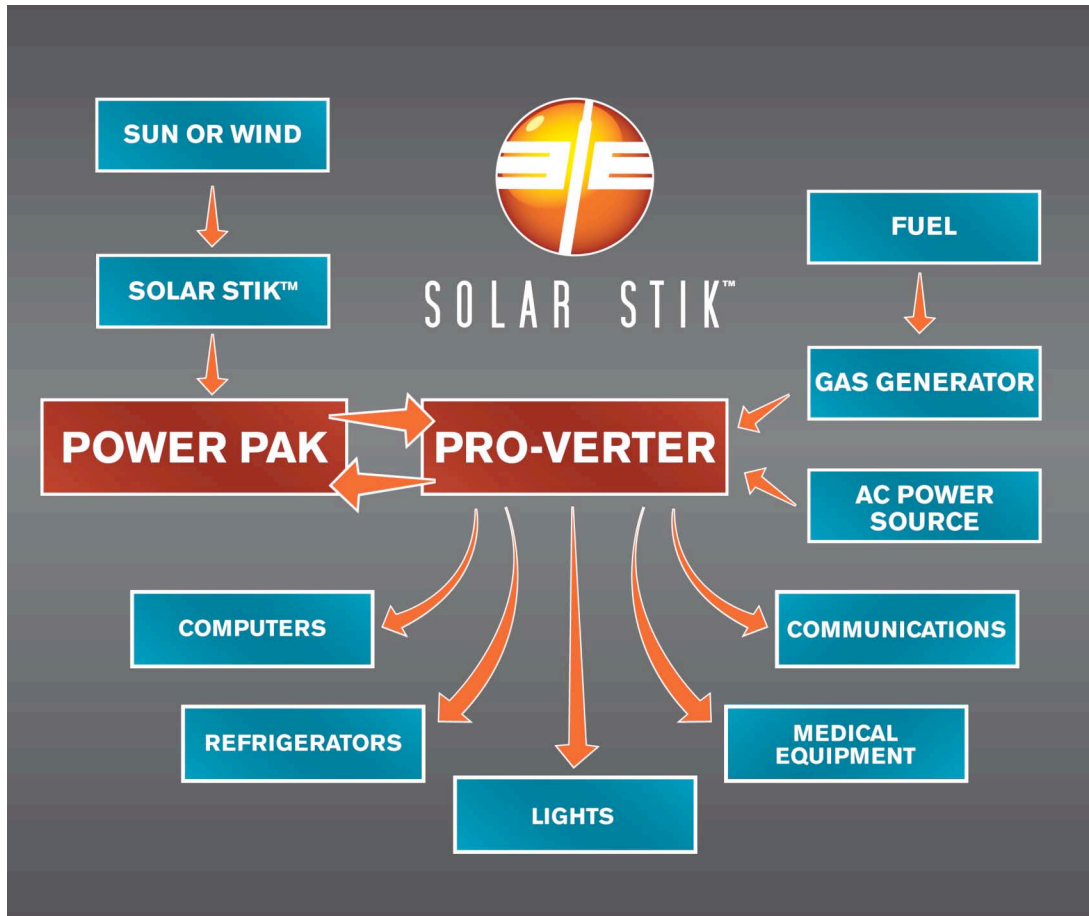
## INTRODUCTION

The PRO-Verter™ is an ideal solution for applications where the power grid is prone to frequent outages, a fuel-driven generator is available, and/or the Solar Stik™ cannot independently meet the daily power generation requirement. The PRO-Verter™ can also be used to reduce the "run-time" of a fuel-driven generator (either due to the lack of fuel or to lessen the operational cost burden).

The PRO-Verter™ serves as the connection point for all appliance loads in a Solar Stik™ System, and manages all available sources of power (solar/wind, grid, or fuel-driven generator) as a Micro-grid configuration.

## The Power Ratings

Any PRO-Verter™ is rated at "Maximum Watts", or the maximum value of the power it can process at one time. The "maximum" value is a sum total of the power processed when both INVERTER and CHARGING functions are simultaneously operating at their full capability. The PRO-Verter™ 1250MS can process 1875 Watts at its peak, and 1440 Watts at its maximum continuous rate.



### The Inverter & The Charger – Principles of Operation

The PRO-Verter™ features an inverter that functions in two modes:

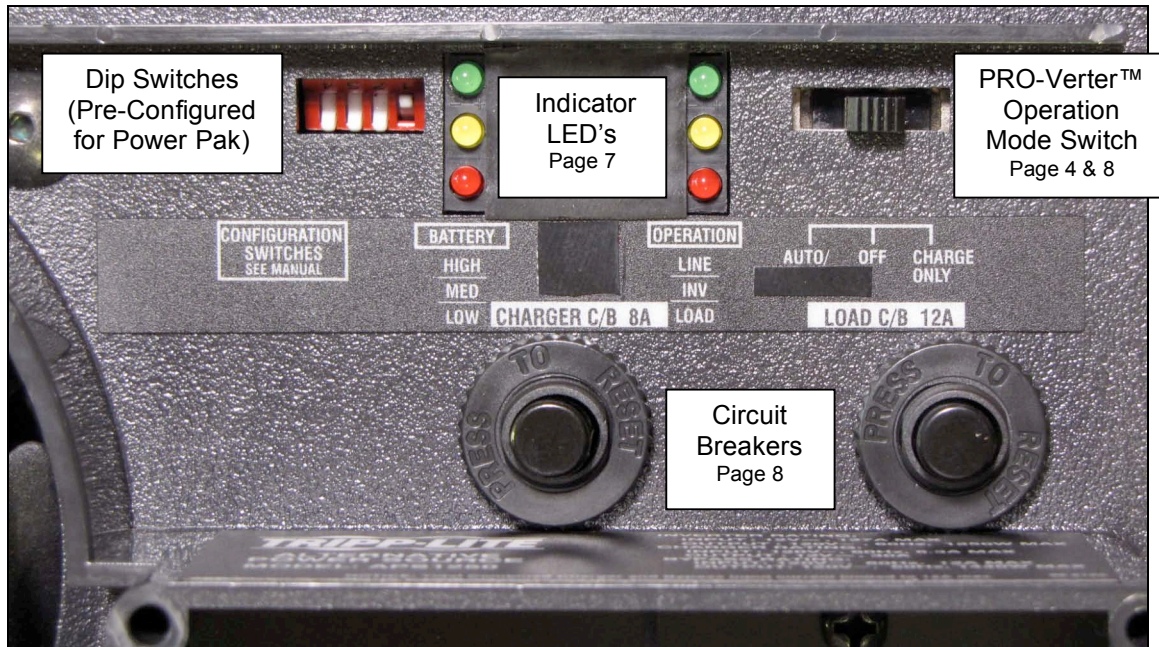
1. “Inverter” Mode - takes power exclusively from the battery and inverts it to AC power for the connected load.
2. “Bypass” Mode - When AC power is available (from the power grid or fuel-driven power generator), it will pass the available AC power through to an appliance.

If providing power to AC appliances in “Bypass” mode, it will instantly switch itself into Inverter mode upon the loss of utility or generator supplied AC Power, drawing power from a connected Power Pak or battery. This function ensures a continuous, uninterrupted flow of power to the appliance loads, similar to the function of an Uninterrupted Power Supply (U.P.S.).

The PRO-Verter™ also features a high-output battery charger that **functions only when the inverter is in Bypass mode**. When in Bypass, the Charger converts some of the incoming AC power into DC power and then stores it in Solar Stik™ Power Paks (**charging the Pak’s batteries**).

The rate at which the PRO-Verter™ can recharge a battery is based on the amount of power the PRO-Verter™ can process at one time (1440 Watts). The PRO-Verter™ automatically adjusts the charge rate to ensure that the AC load remains in operation, and the maximum charging rate of 30 Amps can only occur if there is enough power available after the load requirement is met.

**CONTROLS**



**“AUTO”** – (Inverter/Charger mode) When AC power is available from the grid or from a generator, it passes that power through to the connected appliances, while it simultaneously behaves as a 30 Amp battery charger, storing DC power into Power Paks when possible or necessary.

When the AC power source fails, it automatically switches itself from a battery-charger to a 1250-Watt inverter, instantly drawing power stored in the Power Paks and providing it to the connected appliances. Transfer time is only 16 Milliseconds, ensuring uninterrupted appliance operation.

**“CHARGE ONLY”** – Will only behave as a 30 Amp three-stage battery charger, storing power from AC sources into the Power Pak.

**“OFF”** - Switch to this mode to shut down the PRO-Verter™ completely, preventing the inverter from drawing power from the batteries, and preventing utility AC from passing through to connected equipment or charging the batteries. Use this switch to automatically reset the unit if it shuts down due to overload or overheating. First remove the excessive load or allow the unit to sufficiently cool (applicable to your situation). Switch to “OFF”, then back to “AUTO/REMOTE” or “CHARGE ONLY” as desired. If unit fails to reset, remove more load or allow unit to cool further and retry.

**“Operation” Indicator LEDs** - intuitive “traffic light” style signals show whether the PRO-Verter™ is operating from AC line power or DC battery power. It also warns you if the connected equipment load is too high.

**“Battery” Indicator LEDs** - intuitive “traffic light” style signals show approximate charge level of your battery.

**Thermostatically-Controlled Cooling Fan** - quiet, efficient fan regulates internal temperature and prolongs equipment service life. Fan runs intermittently depending on temperature and load.

## INVERTER TYPE

The PRO-Verter™ 1250MS provides Non-Sinusoidal (MODIFIED SINE WAVE) AC output, and may not be suitable for all intended applications. Consult the intended-appliances operation manual to ensure that Modified Sine-Wave Form is acceptable.

## AC POWER AVAILABLE IN “INVERTER” & “BYPASS” MODE

A maximum of 1250 Watts continuous AC output in **inverter** mode and 1440 Watts continuous AC output in **bypass** mode is available. Twin standard (North American) 120/60VAC output receptacles pass “line power” or “inverted power” through to connected equipment. **NOTE:** The Power Pak will only handle a maximum load of 1250 Watts. If loads greater than this threshold are connected, the Power Pak’s 100 Amp Master Circuit Breaker may be tripped.

## CHARGER TYPE

The PRO-Verter™ provides three-stage, 30 Amp 12 Volt DC battery charging.

## INVERTER/CHARGER SWITCHING

When switching between **inverter** & **charger** modes, the automatic line-to-battery transfer takes 16.6 milliseconds. Loads that are connected to the PRO-Verter™ will not shut down during transfer.

## OPERATING VOLTAGE

The PRO-Verter™ accepts 10VDC to 15VDC supply Voltage range.

## WARNINGS



### Precautions using PRO-Verter™ with rechargeable appliances:

EXERCISE CAUTION WHEN USING AN PRO-VERTER™ WITH NON-SINUSOIDAL OUTPUT. THIS MEANS THAT THE AC WAVEFORM PRODUCED BY THE INVERTER IS A MODIFIED WAVE, NOT A PURE SINE WAVE. MOST RECHARGEABLE BATTERY-OPERATED EQUIPMENT USES A SEPARATE CHARGER OR TRANSFORMER THAT IS PLUGGED INTO AN AC RECEPTACLE AND PRODUCES A LOW VOLTAGE CHARGING OUTPUT. WHEN RECHARGING BATTERY-OPERATED DEVICES SUCH AS RADIOS OR FLASHLIGHTS, IT IS RECOMMENDED THAT THE POWER PAK’S DC TERMINALS BE USED. SOME CHARGERS FOR RECHARGEABLE BATTERIES CAN BE DAMAGED IF CONNECTED TO THE PRO-VERTER™. TAKE PRECAUTIONS WHEN USING PRO-VERTERS AND MAKE SURE THAT THE RECHARGING APPLIANCE IS COMPATIBLE WITH THE INVERTER’S OUTPUT.



### Operation Location

- Do not operate the PRO-Verter™ in the Pelican™ Case. Use the PRO-Verter™ in a location that minimizes exposure to high heat, direct sunlight, dust, and rain.
- Leave a minimum of 2" clearance at front and back of the Inverter/Charger for proper ventilation. The heavier the load of connected equipment, the more heat will be generated by the unit.
- Do not use the PRO-Verter™ near magnetic storage media, as this may result in data corruption.
- Do not use near flammable materials, fuel or chemicals.

### ⊗ Power Pak Connection

- The PRO-Verter™ **will not** operate (with or without utility power) until it is connected to a Power Pak® DC Terminals or Inter-connector Port.
- If using with batteries other than the Power Pak, all battery systems must be comprised of batteries of identical Voltage, age, Amp-hour capacity and type.
- TURN OFF POWER PAK TERMINALS AND MASTER BREAKER DURING CONNECTION.
- **ALWAYS OBSERVE PROPER POLARITY! FAILURE TO DO SO MAY CAUSE DAMAGE!**
- Do not allow objects to contact the two DC input terminals. Do not short or bridge these terminals together. Serious personal injury or property damage could result.

### ⊗ Equipment Connection Warnings

- Do not use a Tripp Lite APS Inverter/Charger (PRO-Verter™) in life support or healthcare applications where a malfunction or failure of a Tripp Lite APS Inverter/Charger could cause failure of or significantly alter the performance of, a life support device or medical equipment.
- Connect your PRO-Verter™ only to a properly grounded AC power outlet or hardwired source. Do not plug the unit into itself; this will damage the device and void your warranty.
- You may experience uneven performance results if you connect a surge suppressor, line conditioner or UPS system to the output of the PRO-Verter™.

### ⊗ Operation Warnings

- The PRO-Verter™ will not operate until it is connected to a Power Pak.
- The PRO-Verter™ does not require routine maintenance. **Do not open the device for any reason.** There are no user serviceable parts inside.
- Potentially lethal Voltages exist within the PRO-Verter™ as long as the battery supply and/or AC input are connected. During any service work, the battery supply and AC input connection should be disconnected.
- Do not connect or disconnect Power Pak while the PRO-Verter™ is operating. Operating Mode Switch should be in the OFF position. Dangerous arcing may occur.

### ⊗ Correct polarity:

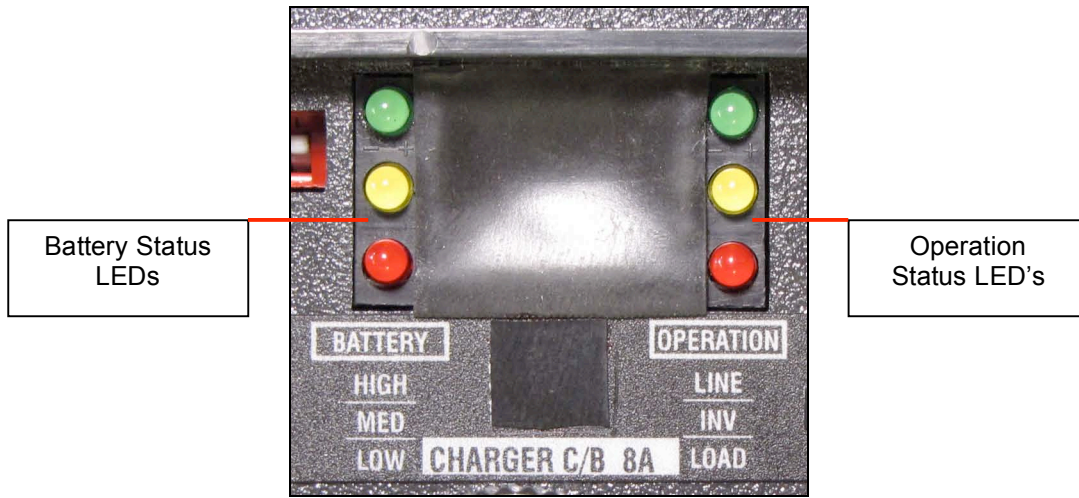
WHEN CONNECTING ANY PRO-VERTER™, BE SURE THAT YOU ARE CONNECTING USING THE CORRECT POLARITY. FAILURE TO CONNECT TO BATTERY OR POWER PAK TERMINALS USING CORRECT POLARITY CAN DAMAGE THE UNIT.

### ⊗ EXPLOSION HAZARD:

DO NOT USE THIS PRODUCT IN AN ENVIRONMENT WHERE FLAMMABLE FUMES OR GASES MAY BE PRESENT, SUCH AS NEAR PROPANE TANKS OR ENCLOSED CONTAINERS WHERE FUEL OR LEAD ACID BATTERIES MAY BE STORED. GREAT CARE MUST BE EXERCISED TO AVOID A DIRECT SHORT CIRCUIT ACROSS THE POWER PAK'S DC "TERMINAL" POSTS WITH A METAL OBJECT.

**OPERATION**

**Indicator Lights** - The PRO-Verter™ is equipped with a simple, intuitive, user-friendly set of indicator lights. These “traffic light”-styled signals allow for quick determination of the charge condition of the Power Pak, as well as the operating details and fault conditions.



**“LINE”** Green Indicator: If the operating mode switch is set to “AUTO”, this light will ILLUMINATE CONTINUOUSLY when your connected equipment is receiving continuous AC power supplied from a utility/generator source. If the operating mode switch is set to “CHARGE ONLY,” this light will FLASH to alert you that the unit’s inverter is OFF and will NOT supply AC power in the absence of a utility/generator source or in over/under Voltage situations.

**“INV”** (Inverting) Yellow Indicator: This light will ILLUMINATE CONTINUOUSLY whenever connected equipment is receiving battery-supplied, inverted AC power (in the absence of a utility/generator source or in over/under Voltage situations). This light will be off when AC power is supplying the load. This light will FLASH to alert you if the load is less than the Battery Charge Converter (Load Sense) setting.

**“LOAD”** Red Indicator: This light will ILLUMINATE CONTINUOUSLY whenever the inverter is functioning and the power demanded by connected appliances and equipment exceeds 100% of load capacity. The light will FLASH to alert you when the inverter shuts down due to a severe overload or overheating. If this happens, turn the operating mode switch “OFF”; remove the overload and let the unit cool. You may then turn the operating mode switch to either “AUTO/REMOTE” or “CHARGE ONLY” after it has adequately cooled. This light will be off when AC power is supplying the load.

**“BATTERY”** Indicator Lights: These three lights will illuminate in several sequences to show the approximate charge level of your connected battery bank and alert you to two fault conditions: Approximate Battery Charge Level\* Indicator Illuminated Battery Capacity (Charging/Discharging)

\* Charge levels listed are approximate. Actual conditions vary depending on battery condition and load. Consult the Power Pak display also.

Green	91%-Full
Green & Yellow	81%–90%
Yellow	61%–80%
Yellow & Red	41%–60%
Red	21%–40%
All three lights off	1%–20%
Flashing Red	0% (Inverter shutdown)

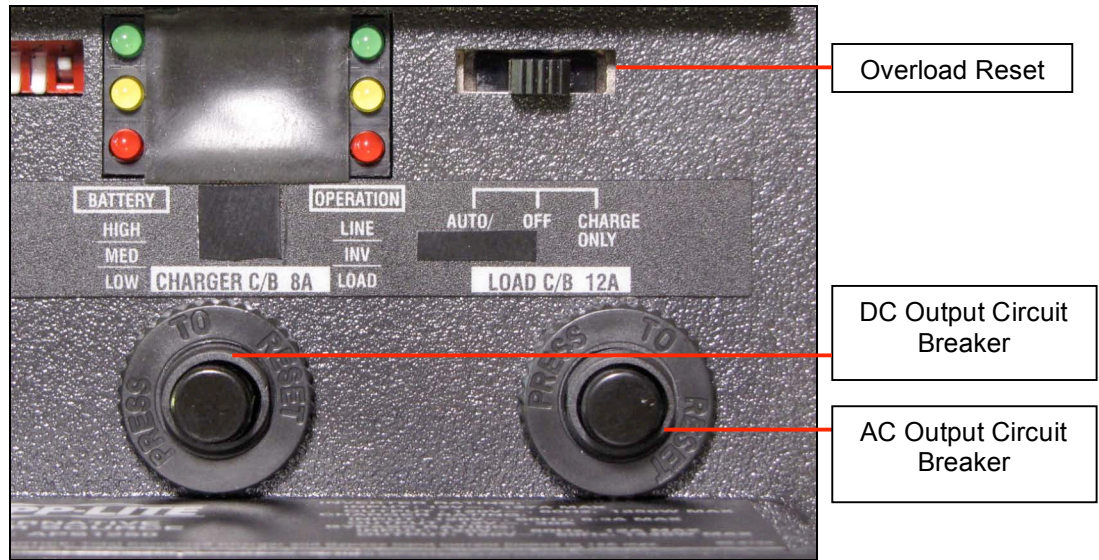
Fault Conditions:

<u>Indicator Illuminated</u>	<u>Fault Condition</u>
All three lights flash slowly*	Excessive discharge (Inverter shutdown)
All three lights flash quickly**	Overcharge (Charger shutdown)

\* Approximately 1/2 second on, 1/2 second off.

\*\* Approximately 1/4 second, 1/4 second off. May also indicate a battery charger fault exists.

**RESETTING THE PRO-VERTER™ CIRCUIT BREAKERS**



The PRO-Verter™ may cease supplying AC power or DC charging power in order to protect itself from overload or to protect your electrical system. To restore normal functioning:

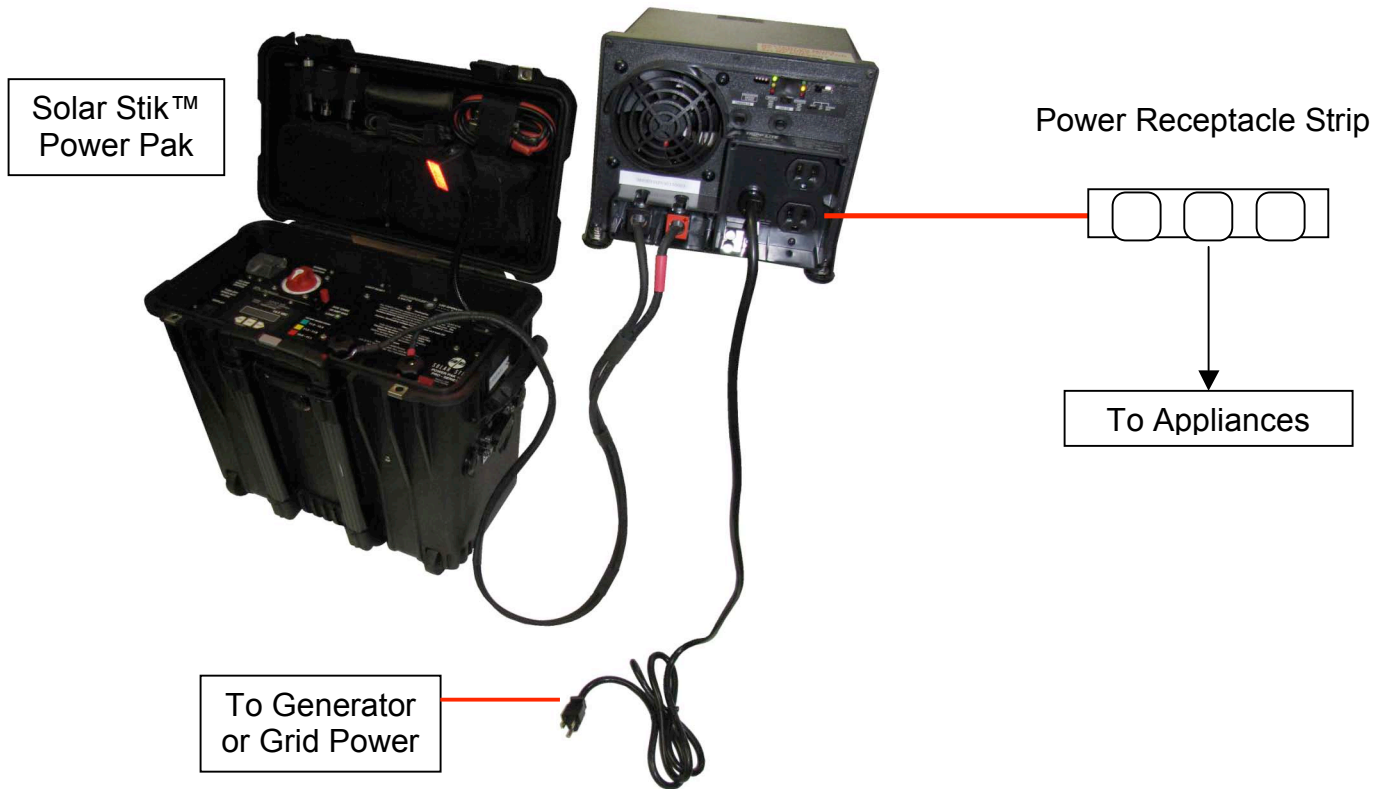
- “Overload” Reset: Switch operating mode switch to “OFF” and remove some of the connected electrical load (turn off some of the AC devices drawing power which may have caused the overload of the unit). Wait one minute, then switch operating mode switch back to either “AUTO/REMOTE” or “CHARGE ONLY.”
- “Output” Circuit Breaker Reset: Alternatively, check output circuit breaker(s) on the unit’s front panel. If tripped, remove some of the electrical load, then wait one minute to allow components to cool before resetting the circuit breaker.

**TRANSPORTING THE PRO-VERTER™**

The PRO-Verter transports in a Pelican™ 1550 Case. When not in use, it should be stored in the case to prevent damage.

The case has additional space which can be used for power cords, terminal strips, or other accessories.



**CAUTION – USING MODIFIED SINE WAVE AC POWER**

Modified Sine Wave AC Power is safe for most appliances, but may produce “noise” or “distortion” in Audio/Visual equipment, Communications equipment, and other Sensitive AC electronics. It may also cause some electrical appliances to generate more heat than normal or make a humming sound.

**Manufacturer’s Information:** The Inverter/Charger Manufacturer’s Manual is included with the PRO-Verter™. It is located under the foam inserts inside the Pelican™ Case.

**Warranty:** 1 year from date of purchase

**Service:** Please contact Solar Stik™, Inc. for all service issues related to the PRO-Verter™ Pak.

Solar Stik™, Inc. will not be held liable for any damage to the PRO-Verter™, Power Pak, or any other corresponding equipment as a result of poor or incorrect operation methods.

TECHNICAL SUPPORT LINE: 800-793-4364 (available weekdays 7AM to 7PM EST and Sat - Sun 9AM to 4PM EST)

ADDRESS: Solar Stik™ R&D Facility  
226 1/2 West King Street  
Saint Augustine, Florida 32084

**For more information, visit the website [WWW.SOLARSTIK.COM](http://WWW.SOLARSTIK.COM)**

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Please Consult the Website for additional education on 12 Volt DC and 120 Volt AC systems.

Available for download from the site are:

Solar School  
Battery School  
Inverter School  
...and more!

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