

# **AC POWER SOURCE**



SAMLEX AMERICA®

## **PURE SINE WAVE DC-AC INVERTERS**

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**MODEL: PST-30S-12A**

# **OWNER'S MANUAL**

Please read this manual before operating your inverter.

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**PLEASE READ THIS MANUAL BEFORE OPERATING  
THIS INVERTER!**

**General Safety and Installation Information**



**Warning!** Exclamation mark ! indicates fundamental safety measures to be observed when using electrical equipment to avoid the danger of:

- **electric shocks**
- **fire**
- **injury**

**1.1 About the unit itself:**

- Do not connect the output to other power sources!
- The inverter must only be used for the purpose specified by the manufacturer!
- When working on the inverter, always disconnect it from the mains!
- A failure of the protective device means that danger is still possible from parts which remain under voltage during repair!
- Do not operate the inverter if housing or cables are damaged!
- Do not expose the inverter to direct sunlight in order to avoid additional heating!
- The inverter must be positioned and fixed in such a way that it cannot fall over or fall down!
- The inverter must be kept in a safe place out of the reach of children!
- The inverter must not be operated in a damp or wet environment!
- Air intake and outlets must not be blocked!
- Ensure good ventilation!

**1.2 Cables:**

- If cables have to be inserted through metal walls or other sharp-edged materials, use a cable duct or cable bushing!
- Do not lay cables loosely or in sharp bends in electrically conductive materials!
- Do not pull the cables!
- Do not lay 115/230 VAC mains cable and 12/24 V DC cable together in the same cable duct!
- The specified minimum cable cross-section must be complied with!
- Fix cables properly!
- Lay cables in such a way that no one can trip over them!
- Lay cables in such a way that they are not exposed to the risk of damage!

**1.3 Installation on Boats:**

- Wrong installation of electrical units on a boat may lead to corrosion of the boat. Therefore, please let a boat electrician carry out the installation of the inverter.

## WARNING



**PLEASE TAKE THE FOLLOWING PRECAUTIONS. FAILURE TO ABIDE BY THESE REQUIREMENTS WILL VOID WARRANTY.**

**2.1 Never parallel the 115V AC output of the inverter with the output from a generator or electric mains, or with the output of another inverter. This will instantly burn the inverter.**

Although this inverter has an input OVER VOLTAGE SHUT DOWN at 15V, input voltages higher than 15V will cause permanent damage. Ensure the following when the battery is being charged simultaneously (the output voltage of the charging device will be fed to the inverter):

- Ensure that the charging voltage of the alternator has not been set above 15V.
- Do not use an unregulated solar panel. It's voltage can reach up to 18V on a very cold day. When using a regulated solar panel, its voltage should not be set beyond 15V.
- Do not connect to a 24V battery.
- Ensure that the voltage of the battery charger does not exceed 15V in any condition.

**2.2 Do not reverse the polarity to the input connections. This will permanently damage the inverter.**

**2.3 Do not connect the inverter to positive grounded vehicle.**

## DESCRIPTION AND APPLICATION

**3.1** This inverter converts 12V DC from 12V battery system into 115V AC, 60Hz. The waveform of its AC output voltage is pure sine wave like the wave form of the electric utility power supply. (Cheaper commercial grade inverters have a quasi-sinewave output wave form which is not suitable for sensitive equipment.) Typical applications of this are:

- Sensitive radio equipment
- Precision equipment
- Home theater
- Laser printers, Fax machines
- Radios, TV's
- Recording equipment
- Musical instruments
- High-end stereos
- Computers
- Power Tools

**3.2** The maximum continuous power rating of this inverter is 300 watts. It can provide a surge power of 500 watts (for a few seconds) to start motor driven loads.

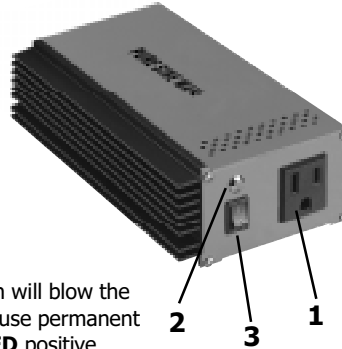
**3.3** A continuously running fan has been provided for forced cooling.

### **REMARKS:**

- Please note that motor driven loads (e.g. power tools, pumps, compressors, refrigerator etc.) require 5 to 10 times their normal running power for initial starting. Ensure that the starting power of these loads is not more than 500 watts.
- Please also note that the output power indicated for microwave ovens is generally the "cooking power". The electrical input power in this case will be almost 2 times the "cooking power". Ensure that the "electrical power" of the microwave is less than the "continuous power" output of the inverter.

## INSTALLATION & MAKING CONNECTIONS

- 1 115V AC output
- 2 LED indicator
- 3 On/Off switch
- 4 Input terminals (back of unit - not shown)  
RED - Positive (+)  
WHITE - Negative (-)
- 5 Cooling fan (back of unit - not shown)
- 6 Grounding lug (back of unit - not shown)



### **CAUTION!**

Reverse polarity of input connection will blow the fuse inside the inverter and may cause permanent damage. Please ensure that the **RED** positive terminal is connected to the positive(+) terminal of the battery and the **WHITE** negative (-) terminal is connected to the negative (-) terminal of the battery. **Damage due to reverse polarity is not covered by warranty.**

**4.1** Ensure that the power ON/OFF switch is turned off.

**4.2** Place the inverter in a cool & ventilated space. Ensure that there is at least 10cm of open space around the inverter. Do not block the openings on the inlet side of the cooling fan and the vent holes.

**4.3** The color coded input side cable provided with the inverter is used to connect the inverter to the battery. The red wire is positive (+) and the black wire is negative (-). Pin type connectors connect to the inverter and the alligator clips connect to the battery. Connect the pin on the red wire to the **RED** (+) terminal of the inverter and the pin on the black wire to the **WHITE** (-) terminal of the inverter. Now connect the black wire to the negative (-) terminal of the battery and then the red wire to the positive (+) terminal of the battery. **A spark may be observed when connecting the positive wire to the battery (+) due to charging of capacitors inside the inverter. This is normal.**

**4.4** Ground the inverter using the Grounding Lug at the rear of the unit.

## OPERATING THE INVERTER

**5.1** Switch off all loads connected to the output of the inverter.

**5.2** Push the power ON/OFF switch to "ON" position. The L.E.D will turn green and AC output voltage will be available under normal conditions. The cooling fan will be switched on automatically.

**5.3** Now switch on the load.

**5.4** When running on full load for longer duration, keep the vehicle's engine running to prevent batteries from discharging.

**5.5 CAUTION!** Do not start the vehicle's engine with the inverter in "ON" condition. The inverter may shut down during cranking due to drop in the battery voltage below the inverter's low battery shut down threshold of 10V.

## PROTECTIONS AGAINST ABNORMAL CONDITIONS

**6.1 LOW BATTERY ALARM:** In case the battery voltage drops below 10.7V, a buzzer alarm will be sounded.

**6.2 LOW BATTERY SHUTDOWN:** In case the battery voltage further drops to 10V or below, the inverter will shut down the output voltage. Buzzer will be sounded and the LED will turn Orange.

**6.3 INPUT OVERVOLTAGE SHUT-DOWN:** In case the input voltage is 15V or higher, the output voltage will be shut down. The LED will turn Orange. (**CAUTION!** This condition may cause permanent damage.)

**6.4 OUTPUT OVER-LOAD OR SHORT:** If there is overload or short in the output, the output voltage pulses will be clipped and the voltage will drop. The LED will remain Green

**6.5 REVERSE POLARITY SHUT-DOWN:** In case the positive (+) or negative(-) connections on the input side are reversed, the 40A fuse inside the unit will blow. The LED will be OFF. (**CAUTION!** This condition may cause permanent damage.)

**6.6 OVER TEMPERATURE SHUT-DOWN:** In case the unit gets overheated due to inadequate cooling, the output voltage will be shut-sown. The buzzer will be sounded and the LED will turn Orange. Switch off the unit. Determine and remove the cause of overheating . Switch on again when the unit has cooled down.

**NOTE:** Check the Troubleshooting Guide for possible remedies to prevent the above abnormal conditions.



## TROUBLESHOOTING GUIDE

### 7.1 PROBLEM: No output. LED is OFF. Buzzer is OFF.

#### REASON

- Break in battery connection
- 40A fuse inside the inverter is blown due to reverse polarity or defect in the unit.

#### POSSIBLE REMEDY

- Check connections are tight
- Replace the fuse. If blows again, the unit needs to sent for repair.

### 7.2 PROBLEM: Output voltage is low. LED is GREEN. Buzzer is OFF

- Output voltage pulses clipped due to overload or short circuit in output
- Reduce load/ Remove short

### 7.3 PROBLEM: No output. LED is ORANGE. Buzzer is ON

- Low battery shut-down due to discharged battery or excessive voltage drop in the cabling from the battery to the inverter.
- Re-charge the battery  
Ensure cable from battery to inverter is thick enough to carry 30A (AWG#10)  
Ensure connection from battery to the inverter is tight and firm.
- Over temperature shut down.
- Switch off the unit to cool down.  
Improve ventilation and ensure fan inlet and vent holes are not blocked.  
Reduce load.

### 7.4 PROBLEM: No output. LED is ORANGE. Buzzer is OFF

Shut down due to input voltage beyond 15V. (CAUTION! This may permantly damgae the inverter.)

- Inverter wrongly connected to 24V Battery instead of 12V Battery.
- Ensure battery is 12V
- Charging alternator's voltage has been set beyond 15V, or it's regulator has become defective.
- Set the voltage correctly or repair the alternator
- Batteries are being charged simultaneously from an unregulated solar panel set beyond 15V
- Ensure that the voltage of solar panel does not exceed 15V
- Batteries are connected to a battery charger with its boost voltage set beyond 15V
- Ensure that the boost voltage of the battery charger is less than 15V

### 7.5 PROBLEM: No output when load is switched on. LED is GREEN

- The starting current required by the load is higher than the surge rating of 500 watts
- Use inverter with appropriate surge rating.

### 7.6 PROBLEM: There is no output when the vehicle's engine is cranked.

- On cranking, the battery voltage drops below 10V
- Switch OFF the inverter when cranking the engine.

## SPECIFICATIONS

- 8.1 Input Voltage ..... 10 to 15 V DC
- 8.2 Input Current at No Load ..... 700 milliamps
- 8.3 Output Voltage ..... 115 V AC +/- 3%
- 8.4 Output Frequency ..... 60 Hz
- 8.5 Output Voltage Waveform ..... Pure Sine Wave
- 8.6 Total Harmonic distortion ..... Less than 3%
- 8.7 Output Power
  - Continuous ..... 300 Watts
  - Surge (for few seconds) ..... 500 Watts
- 8.8 Low Battery Alarm ..... 10.7 V
- 8.9 Low Battery Shutdown ..... 10 V
- 8.10 Operating Ambient Temp. .... 50°C +/- 5°C
- 8.11 Efficiency ..... Higher than 90%
- 8.12 Connection
  - Input ..... Tubular type screw down terminals
  - Output ..... Standard North American Outlet (NEMA 5-15R)
- 8.13 Fuse (Input side) ..... 32V,40A
- 8.14 Dimensions( L x W x H) ..... 285 x 120 x 62mm
- 8.15 Weight ..... 1.75 kg / 3.9 lbs.

**Note:** Specifications are subject to change without notice.

## **1 YEAR Limited Warranty**

This DC-AC inverter manufactured by Samlex America, Inc. ( the " Warrantor " ) is warranted to be free from defects in workmanship and materials under normal use and service. This warranty is in effect for 1 year from the date of purchase by the user ( the " Purchaser " )

For a warranty claim, the purchaser should do the following :

1. Prepare a written statement of the nature of the defect to the best of the Purchaser's knowledge, and include the date of purchase, the place of purchase, and the Purchaser's name, address and telephone number.
2. Call Samlex America, Inc. 1-800-561-5885 or 1 (604) 525-3836 and request a Returning Merchandise Authorization Number ( RMA ).
3. Return the defective part or unit along with the statement at the Purchaser's expense to the Warrantor ; Samlex America Inc., #110 - 17 Fawcett Road, Coquitlam, B.C. V3K 6V2 Canada. The RMA number must be marked clearly on the outside of the packaging.

If upon the Warrantor's examination, the defect proves to be the result of defective material or workmanship, the equipment will be repaired or replaced at the Warrantor's option without charge, and returned to the Purchaser at the Warrantor's expense.

No refund of the purchase price will be granted to the Purchaser, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so.

Warranty service shall be performed only by the Warrantor. Any attempt to remedy the defect by anyone other than the Warrantor shall render this warranty void.

There shall be no warranty for defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion.

No other express warranty is hereby given and there are no warranties which extend beyond those described herein. This warranty is expressly in lieu of any other expressed or implied warranties, including any implied warranty of merchantability, fitness for the ordinary purposes for which such goods are used, or fitness for a particular purpose, or any other obligations on the part of the Warrantor or its employees and representatives.

There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives for injury to any persons, or damage to person or persons, or damage to property, or loss of income or profit, or any other consequential or resulting damage which may be claimed to have been incurred through the use or sale of the equipment, including any possible failure of malfunction of the equipment, or part thereof.

The Warrantor assumes no liability for incidental or consequential damages of any kind.



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