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Version SI750-100903

AC POWER SOURCE

SAMLEX AMERICA®

DC-AC
MODIFIED
SINE-WAVE INVERTER

MODEL: SI-750HP

OWNER'S MANUAL

Please read this manual before operating your inverter.

IMPORTANT SAFETY INSTRUCTIONS

To ensure reliable service, your power inverter must be installed and used properly. Please read the installation and operating instructions thoroughly prior to installation and use. Pay particular attention to the WARNING and CAUTION statements in this manual. The CAUTION statements advise against certain conditions and practices that may result in damage to your inverter. The WARNING statements identify conditions or practices that may result in personal injury.

Read All Instructions Before Using This Power Inverter!

WARNINGS:

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, EXPLOSION OR INJURY

- Do not connect to AC distribution wiring
- Remove appliance plug from outlet strip or turn off inverter before working on the appliance. 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
- Do not make any electrical connections or disconnections in areas designated as IGNITION PROTECTED. This includes DC cigarette lighter type plug connections, and ring terminal connections
- This is not a toy - keep away from children

CAUTIONS:

- Do not use with positive ground electrical systems (the majority of modern automobiles, RVs, trucks and boats are negative ground). Reverse polarity connection will result in a blown fuse and may cause permanent damage to the inverter and will void warranty
- This inverter will not operate high wattage appliances or equipment that produce heat, such as hair dryers, microwave ovens and toasters
- Do not ground the neutral. This will shut down the inverter
- Do not operate this inverter if it is wet
- Do not install in engine compartment
- Do not parallel the output of this inverter with the AC output of another AC power source. The inverter will be damaged.
- This inverter is not tested for use with medical devices

IMPORTANT CABLE INFORMATION

Substantial power loss and reduced battery operating time results from inverters installed with cables that are not able to supply full power. Symptoms of low battery power can result from cables that are either excessively long or an insufficient gauge. Marine installations are also subjected to vibration and stresses that exceed those of other mobile installations. Therefore, the installer/operator should be especially aware of the requirements to maintain secure, tight, water-resistant electrical connections and to provide for strain relief for DC cables and appliance wiring. Cable insulation must be the appropriate type for the environment.

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.

10. **SPECIFICATIONS**

Output Connection	Triple North American Standard Receptacles
Output Voltage	115 VAC +5% / -10%, 60 Hz
Output Power	750 Watts
Output Waveform	Modified Sine Wave
Input Voltage Range	10.5 to 14.7 VDC
Low Voltage Alarm	10.5 VDC
Low Voltage Shutdown	10.0 VDC
Input Fuses	Automotive Type ATC 35 A x 3
Additional Protection	Overload, Overvolt, Overtemp
Weight	4 lbs (1.8 kg)
Length	11.2 in. (285 mm)
Width	6.1 in. (154 mm)
Height	2.2 in. (59 mm)

NOTE: Specifications are subject to change without notice

CONTENTS

1. INTRODUCTION

Your new Samlex SI-750HP inverter is one in a series of the most advanced DC to AC inverters available. With proper care and appropriate usage, it will give you years of dependable service in your car, truck, RV or boat.

The SI-750HP supplies 750 watts of continuous power, with a 1500 watt peak, in the form of three household-type outlets that are ready to deliver 115 volt AC power whenever and wherever you need it! The heavy-duty inverter has enough power to run most household or electronic appliances. It also comes equipped with battery clips to handle higher amperage/load applications, such as power tools, stereo amplifiers, vacuums, etc. Added safety features include automatic shutdown and a low battery alarm to prevent damage to your battery.

This Power Inverter is configured with the latest Soft Start Technology (SST). Before introduction of Soft-Start, high startup currents from large inductive loads could shut down the inverter. Soft Start improves inverter operation. Three major features incorporated in SST include: First gradual voltage ramp-up during inverter startup. This eliminates failed cold starts under load. Second, output that momentarily dips in voltage and quickly recovers to allow large motorized loads to start. This eliminates almost all shutdowns from momentary overloads. Last, the inverter automatically re-starts when an overload that causes inverter shutdown is removed. Previously, manual reset was required.

This power inverter also incorporates a new cooling technology. The new design more efficiently cools the power transistors, and combined with Soft Start, dramatically increases reliability and the life of the product.

Given proper care and appropriate use, your inverter is covered by a 1-year limited warranty. See the Warranty Information at the end of this manual

2. CONTROLS, INDICATORS AND CONNECTORS

Figure 1 details the front panel of the inverter. The front panel provides two LED indicators. A green LED shows proper operation when lit. The red LED shows inverter shutdown from overload, over voltage or over temperature. Power is supplied through two grounded standard North American outlets. Outlets accommodate either two or three pin AC plugs. An On/Off Switch turns the inverter circuitry On and Off. The switch is used to force a reset of inverter circuits if it is switched Off, then On.

TROUBLE/ INDICATION	POSSIBLE CAUSE	SUGGESTED REMEDY
Low battery alarm sounds continuously	Bad connection or wiring	Tighten all DC connections
Low battery alarm sounds	Low battery voltage	Recharge battery. Remove load from inverter while recharging battery
Motorized power tool won't start	Excessive start-up load	If appliance does not start,then appliance is drawing excessive wattage and will not work with inverter
Motorized power tool does not operate at correct speed	Purely inductive load	Make the load not purely inductive. Operate an incandes cent lamp at same time as motor
Television/Radio interference	Snow in picture, buzz in speaker	Keep inverter and antenna distant from each other. Use shielded antenna cable. Connect antenna to amplifier

9. FUSE REPLACEMENT

If external fuses blow, (or breakers trip), then there is a short or overload in the DC wiring. Find and fix the problem before replacing the fuses (or resetting the breaker). After fuse replacement, reconnect the inverter.

This power inverter is equipped with 3 pcs of 35A automotive type ATC fuses. These will not blow unless there is a serious problem inside the unit. These fuses are located near the DC input terminals. Samlex recommends contacting Technical Support for guidance. Based on experience, it is best to return the unit to Samlex for repair. Samlex Technical Support can be reached by calling 1-800-561-5885. You may also contact us by visiting our website @www.samlexamerica.com.

7. COMMON PROBLEMS

"Buzzing" sound in audio systems:

Some inexpensive stereo systems and "boom boxes" emit a buzzing sound from their speakers when operated from the SI-750HP power inverter. This occurs because the power supply in the electronic device does not adequately filter the modified sine wave produced by the inverter. The only solution to this problem is to use a higher quality sound system that incorporates a higher quality power amplifier supply.

Television Interference:

The SI-750HP is shielded to minimize interference with TV signals. However, in some instances, some interference may still be visible, particularly with weak TV signals. Try the following corrective measures:

- Position the inverter as far as possible from the television, the antenna and the antenna cables. Use an extension cable, if necessary
- Adjust the orientation of the inverter, the antenna cables and the TV power cord to minimize interference

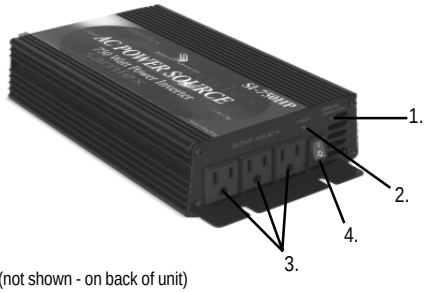
Make sure that the antenna feeding the television provides an adequate ("snow free") signal and that high quality, shielded antenna cable is used

8. TROUBLESHOOTING GUIDE:

TABLE 1 - INVERTER POWER SWITCH TURNED ON

TROUBLE/ INDICATION	POSSIBLE CAUSE	SUGGESTED REMEDY
No AC output- red LED lit	DC input below 10 Volts	Recharge or Replace battery
No AC output- red LED lit	Excessive appliance load-thermal shutdown	Reduce load-wait for inverter to cool. Turn Off, then turn On
No AC output	Inverter cold	Disconnect load from inverter. Operate inverter without load for a few minutes. reconnect load.
No AC output- Green LED not lit	Inverter input fuse open	Check fuse and wiring. Repair and replace fuse.

FIGURE 1



1. RED SHUT DOWN LED
2. GREEN OPERATING LED
3. (3) 115 VAC RECEPTACLES
4. ON/OFF SWITCH
5. HIGH SPEED COOLING FAN (not shown - on back of unit)
6. (+) DC POWER CONNECTION (not shown - on back of unit)
7. (-) DC POWER CONNECTION (not shown - on back of unit)

3. HOW YOUR SAMLEX INVERTER WORKS

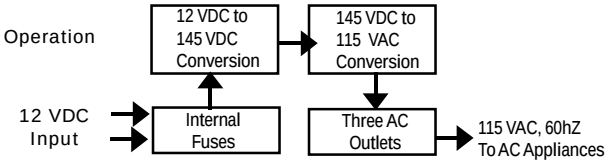
The inverter converts low voltage DC (direct current) from a battery or other power source to standard 115 volt AC (alternating current) household power.

3.1 PRINCIPLE OF OPERATION

The inverter converts power in two stages. The first stage is a DC-to-DC conversion process that raises the low voltage DC at the inverter input to 145 volts DC. The second stage is the actual inverter stage that converts the high voltage DC into 115 volts, 60 Hz AC.

The DC-to-DC converter stage uses modern high frequency power conversion techniques that have replaced the bulky transformers found in less technologically-advanced models. The inverter stage uses advanced power MOSFET transistors in a full bridge configuration. This ensures excellent overload capability and the ability to operate reactive loads like lamp ballasts and small induction motors.

FIGURE 2
Principle of Operation

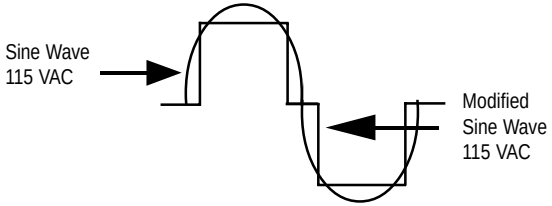


3.2 THE SAMLEX SI-750HP OUTPUT WAVEFORM

The AC output waveform of the SI-750HP is known as “modified sine wave”. It is a waveform that has characteristics similar to the sine wave shape of utility power. This type of waveform is suitable for most AC loads, including linear and switching power supplies used in electronic equipment, transformers, and motors.

The modified sine wave produced by the SI-750HP inverter has an RMS (root mean square) voltage of 115 volts, which is the same as standard household power. Most AC voltmeters (both digital and analog) are sensitive to the average value of the waveform rather than the RMS value. They are calibrated for RMS voltage under the assumption that the waveform measured will be a pure sine wave. These meters will not read the RMS voltage of a modified sine wave correctly. They will read about 20 to 30 volts low when measuring the output of the inverter. For accurate measurement of the output voltage of this unit, **use a true RMS reading voltmeter** such as a Fluke 87, Fluke 8060A, Fluke 77/99 series, Beckman 4410, or Triplett 4200.

FIGURE 4



Modified Sine Wave and Sine Wave Comparison

4. INSTALLATION

4.1 POWER SOURCE REQUIREMENTS

The power source must provide between 11 and 14.5 volts DC and must be able to supply the necessary current to operate the load. The power source may be a battery or a well-regulated DC power supply. To obtain a rough estimate of the current (in amperes) the power source must deliver, simply divide the power consumption of the load (in watts AC) by 10.

Example: If a load is rated at 750 watts AC, the power source must be able to deliver: 750 divided by 10 = 75 amperes

Your SI-750HP monitors the following potentially hazardous conditions:

Low Battery Voltage - This condition is not harmful to the inverter but could damage the power source. An audible alarm will sound when input voltage drops to 10.6. The SI-750HP automatically shuts down when input voltage drops to 10.0 volts. When the condition is corrected, the unit may be restarted.

Over Voltage Protection - The SI-750HP will automatically shut down when the input voltage exceeds 15 volts DC. **However, voltages higher thatn 15V may cause damage.**

Short Circuit Protection - Reverse polarity or a short circuit condition will usually result in an external or internal fuse being blown.

Overload Protection - The inverter will automatically shut down when the continuous draw exceeds 750 Watts. When the overload is removed the inverter will self-start.

Over Temperature Protection - **The inverter is cooled by a fan.** When the temperature sensor inside the SI-750HP reaches 150 degrees F, the unit will automatically shutdown. Allow the unit to cool for at least 15 minutes before restarting after a heat-related shutdown. Unplug unit while cooling.

Low Battery Alarm - An alarm will sound when the voltage from the battery drops to 10.6 volts. This is an indication that the battery needs to be recharged. The user should stop operation of the electronic device at this time, since the inverter will shut down automatically shortly thereafter, when the battery voltage drops to 10 volts.

If the low voltage alarm sounds when the battery is fully charged, follow the steps for solving lack of output power in the Troubleshooting Guide. The alarm will sound when the inverter is overloaded, in thermal shutdown, or if there is an excessive voltage drop between the battery and inverter.

NOTE: It is normal for the alarm to sound while the unit is being connected to, or disconnected from, the power source. This is not indicative of a problem

5. OPERATING TIPS

5.1 RATED VERSUS ACTUAL CURRENT DRAW OF EQUIPMENT

Most electrical tools, appliances and audio/video equipment have labels that indicate the power consumption in amps or watts. Be sure that the power consumption of the item you wish to operate is rated at 750 watts or less (If the power consumption is rated in amps AC, simply multiply by the AC volts (115) to determine the wattage). The inverter has overload protection, so it is safe to try to operate equipment rated at 750 watts or less. The inverter will shut down if it is overloaded. The overload must be removed before the inverter will restart. Resistive loads are the easiest for the SI-750HP to run. However, larger resistive loads, such as electric stoves or heaters, usually require more wattage than the SI-750HP can deliver on a continuous basis. Inductive loads, such as TV's and stereos, require more current to operate than do resistive loads of the same wattage rating. Induction motors, as well as some televisions, may require 2 to 6 times their wattage rating to start up. The most demanding in this category are those that start under load, such as compressors and pumps. Testing is the only definitive way to determine whether a specific load can be started and how long it can run. The unit will simply shut down if it is overloaded. To restart the unit after a shutdown due to overloading, remove the overload.

CAUTION: This inverter will not operate high wattage appliances or equipment that produce heat, such as hair dryers, microwave ovens, and toasters.

5.2 BATTERY OPERATING TIME

The SI-750HP will draw approx. 75 Amps when delivering its full rated power of 750 Watts. Multiplying his by the hours of operation will indicate the power required in Ampere Hours. The battery capacity is normally indicated in Ampere Hours. **Use a Deep Cycle battery when using this inverter.** The Ampere Hour Capacity of the battery should be approximately 2 times the Ampere Hours required by the Inverter. Considering that the full 750 Watts of power is drawn from the inverter for 2 hours, the power required by the inverter will be 75A x 2 hours = 150 Ampere Hours. Use a battery with capacity of 2 x 150 = 300 Ampere Hours.

CAUTION: The SI-750HP must be connected only to batteries with a nominal output voltage of 12 volts. The unit will not operate from a 6 volt battery and will sustain permanent damage if connected to a 24 volt battery.

4.2 CONNECTION TO POWER SOURCE

The SI-750HP comes equipped with battery clip cables for connection to the power source:

CAUTION: Do not use with positive ground electrical systems (the majority of modern automobiles, RVs, and trucks are negative ground).

To operate at full 750 watts output, either use the battery clip cable (supplied) or directly wire to the power source with user supplied wire and fuse. Use wire #4AWG for lengths of four feet or less and #2 AWG for lengths to 12 feet.

CAUTION: Reverse polarity connection will result in a blown fuse and may cause permanent damage to the inverter.

Connecting to a Power Source Using Provided Cables:

Use the provided cables to connect the SI-750HP directly to the 12 volt power source using the following guidelines:

1. Check to be sure the SI-750HP power switch is turned off and that no flammable fumes are present.
2. Connect the black cable to the black post marked "(-)" on the back of the inverter. Connect the battery clip to the negative terminal of the battery.
3. Connect the red cable to the red post marked "(+)" on the back of the inverter. Connect the battery clip to the positive terminal of the battery.
4. Check to be sure that all connections between battery clips and terminals are secure.

Direct Hardwiring to Power Source:

Use #4 AWG wire if the inverter to power source connection is 4 feet or less. For wire run of 4-12ft. use #2 AWG wire. **In either case, protect the positive (+) wire from shorts by installing a 150 to 200 Amp fuse or circuit breaker close to the DC power source (battery) terminal.**

1. Check to be sure the inverter's power switch is turned off and that no flammable fumes are present.

2. Identify the positive (+) and negative (-) DC power source (battery) terminals.

3. Install a fuse holder or breaker dose to the positive (+) terminal of the DC source (battery).

4. Connect a length of wire on one side of the fuse holder or circuit breaker. Connect the other end of the wire to the Positive (+) terminal of the inverter.

5. Connect a length of wire between the inverter's negative (-) terminal and the DC power source negative (-) terminal.

6. Connect a short length of wire to the other terminal of the fuse holder or circuit breaker. Mark it "POSITIVE" or '+'.

7. Connect the free end of the fuse or breaker wire to the positive terminal of the DC power source (battery).

8. Insert an 150 to 200 Amp fuse in the fuse holder.

9. Test the inverter by turning it on and plugging in a 100 watt lamp or equipment.

l0. If the inverter is not properly operating, then refer to the trouble-shooting sections of this manual.

CAUTION: Loose connectors may cause overheated wires and melted insulation. Check to make sure you have not reversed the polarity. Damage due to reversed polarity is not covered by our warranty.

4.3 CONNECTION TO LOAD

The SI-750HP is equipped with triple standard North American AC power receptacles. Plug the cord from the equipment you wish to operate into the AC receptacle. The green LED indicator lights to indicate that the inverter is functioning. Make sure the combined load requirement of your equipment does not exceed 750 watts.

The SI-750HP is engineered to be connected directly to standard electrical and electronic equipment in the manner described above **Do Not Connect** the Power Inverters to household or RV AC distribution wiring. **Do not connect the Power Inverter to an AC load circuit in which the neutral conductor is connected to ground (earth) or to the negative of the DC battery) source.**

WARNING: Do not connect to AC distribution wiring!

CAUTION: RECHARGEABLE APPLIANCES

Certain rechargers for small nickel cadmium batteries can be damaged by the modified sine wave form of the input voltage. For example, small battery operated appliances such as flashlights, razors and night lights which are directly plugged into the AC outlet or, certain battery chargers for battery packs used in hand power tools.

This problem does not occur with the majority of battery-operated equipment. Most of these devices use a separate charger or transformer that is plugged into an AC receptacle. The SI-750HP is easily capable of running most chargers and transformers.

4.4 PLACEMENT OF THE INVERTER

For best operating results, the inverter should be placed on a flat and/or solid surface. The inverter should only be used in locations that meet the following criteria:

DRY - Do not allow water and/or other liquids to come into contact with the SI-750HP inverter.

COOL - Ambient air temperature should be between 30°F (-1 °C) non-condensing, and 105°F (40°C). Do not place the inverter on or near a heating vent or any piece of equipment which is generating heat above room temperature. Keep the inverter away from direct sunlight, if at all possible.

VENTILATED - Keep the area surrounding the inverter clear to ensure free air circulation around the unit. Do not place items on or over the inverter during operation. A fan is helpful if the inverter is operating at maximum power outputs for extended periods of time. The unit will shut down if the internal temperature exceeds 90°C. The unit will restart after it cools.

SAFE - Do not use the inverter near flammable materials or in any locations that may accumulate flammable fumes or gases.