

# AC POWER SOURCE



SAMLEX AMERICA®

## 12V DC-115V AC INVERTER

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**MODELS:      SI - 140HP**  
**SI - 300HP**

Please read the information in this manual before using your inverter. The information in this manual contains Warnings and Cautions that advise you of conditions that can result in damage to your inverter and personal injury. If you have questions that are not answered in this manual please contact your dealer or a certified technician.

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## WARNING

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

Never parallel the 115V AC output of the inverter with the output from a generator or the electric mains. **This will instantly cause damage to the inverter.**

Although this inverter has a high 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 about 15V.
- Do not use an unregulated solar panel, it's voltage can reach up to 18V on a very cold day. When using regulated solar panel, it's voltage should not be set beyond 15V.
- Do not connect to 24V battery (for 12V inverters).
- Ensure that the voltage of the battery charger does not exceed 15V in any condition.

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

## **SAMLEX INVERTERS**

Samlex DC — AC inverters are manufactured using the latest technological innovations and are designed to provide you with reliable power when and where you need it.

The SI-140HP is designed primarily for use in your automobile, boat, RV or motorcycle. It produces 140 watts of continuous AC power and will provide surge power of 300 Watts.

The SI-140HP is easy to connect to the DC power source in your automobile with the cigar lighter connection plug.

The SI-300HP produces 300 watts of continuous power and surge power of 600 watts. The SI-300HP can be connected to the DC power source by using the cigar lighter plug, or by using the battery cables and clamps, which are included with the inverter.

To get the most out of your new Samlex inverter it must be installed properly and used within the limits of its capability.

Please read all of the information in this manual before using your inverter and pay attention to the Cautions and Warnings.

## WHAT IS AN INVERTER?

An inverter converts 12 volt direct current (DC) power into 115 volt alternating current (AC) power.

The inverter accomplishes this task by first, raising the DC voltage to approximately 150 volts DC and then converting the DC voltage to AC voltage. The AC voltage provided from a household outlet is called “sine wave”. The AC voltage that is produced by the inverter is referred to as “quasi-sine wave” or “modified sine wave”. This quasi-sine wave form is suitable for most AC power applications such as electronic appliances, light duty motors, lights, and other reactive loads.

## MEASURING OUTPUT VOLTAGE

The inverter produces 115 volts RMS or Root Mean Square voltage, which is the same as household or utility power. Most AC voltmeters cannot read the RMS voltage of the quasi sine wave produced by an inverter. Common AC meters will not provide accurate voltage measurement. To measure the RMS output voltage of the inverter you must use a true RMS reading voltmeter such as a Fluke 87 or Triplet 4200. If a common AC meter is used to measure voltage the reading could indicate output voltage of 40 – 90 volts.

## INSTALLING THE INVERTER

You will need a reliable 12 Volt DC power source to operate the inverter. The DC power source that you will use must provide between 11 and 14.5 volts DC and must have sufficient power (current) to operate the AC devices that are connected to the inverter. To calculate an estimate of the current (Amperes) that will be needed to operate your AC devices you can use the following calculation:

POWER DEMAND FROM YOUR DEVICE (WATTS)

DIVIDED BY 10

If the power needed to operate your device is 100 Watts.

100 Watts divided by 10 = 10 Amperes.

For this example, your 12 Volt DC power source must provide 10 Amps of power to the inverter, to operate the 100 Watt AC device.

**CAUTION:** The inverter must only be connected to a 12 volt battery that is charged and in good condition. The inverter will not operate from a 6 volt battery and will be severely damaged if connected to a 24 volt battery or other 24 volt DC power source.

## WHERE TO INSTALL THE INVERTER

Install your inverter in a well **VENTILATED, COOL** space that will allow air to flow freely around the inverter case. Inverters produce heat when they are operating and must be allowed to dissipate this heat. Do not leave your inverter exposed to direct sunlight or close to any source of heat. Your inverter will operate best in an area that has a temperature of between 10°C and 20°C.

Locate your inverter as close as possible to your DC power source. Do not add extensions to the DC cables that are supplied with your inverter. If an extension is required, use an extension cord on the output or AC side.

**CAUTION:** The case on the inverter will get hot when in operation. Keep your inverter away from flammable materials, liquids, gasses and fumes. Because the inverter gets hot when operating, do not place the inverter on materials that have low melting temperatures and be cautious when handling the inverter. Keep children away from the unit when in operation.

Keep your inverter in a **DRY** location. The inverter should not be exposed to rain or other liquids.

## **CONNECTING THE INVERTER TO THE 12V DC POWER SOURCE**

The Samlex SI-140HP inverter is designed to be connected to the DC power source with the cigar lighter plug that is attached to the inverter. To connect the inverter insert the cigar lighter plug into the cigar lighter socket of your vehicle or DC power supply. With some vehicles it is necessary to turn the ignition key to the ON or Accessory position, to get power from the cigar lighter socket. The side contact of the cigar lighter plug is negative (-) and the tip of the plug is positive (+).

The Samlex SI-300HP inverter can be connected to the DC power source with the cigar lighter plug cable set or with the battery clamps and cable set that is included with your inverter.

Connect either cable set to the inverter by attaching the Black cable end to the Black (negative -) terminal located on the inverter and attaching the Red cable end to the Red (positive +) terminal.

**CAUTION:** Reversing the polarity of the connections will blow a fuse in the inverter and may cause permanent damage to your inverter. Damage caused by connecting the inverter in reversed polarity is not covered by your warranty.

**WARNING:** When using the battery clamps for connecting the SI-300HP inverter, you may see a spark when you make the connection to the battery. Do not make this connection in the presence of flammable material, liquids, gases or a fire or explosion may result



## **CONNECTING AN AC DEVICE TO THE INVERTER**

Samlex inverters have standard AC receptacles. The SI-140HP has one receptacle and the SI-300HP has two receptacles. To connect the AC powered device to the inverter, insert the plug of the device into the receptacle.

**CAUTION:** Do not connect the inverter to RV or household AC distribution wiring or to an AC circuit that has its neutral conductor connected to the negative of the DC power source or to an earth ground.

## **WHAT CAN I OPERATE WITH THE INVERTER?**

Samlex inverters are available with a wide range of output power capabilities. The model you choose will determine the range of AC tools and appliances that you will be able to operate with the inverter. The SI-140HP provides 140 Watts of power and the SI-300HP provides 300 Watts of power. Other Samlex models can provide up to 2500 Watts of power.

To determine how much power you will need to operate your AC powered device you will need to find the manufacturers rating for the device. The rating can usually be found on a label placed on the device. If your AC device is rated at 100 Watts, then the Samlex SI-140HP will operate the device.

Some manufacturers rate their devices in measurements of Amperes or Amps.

To estimate how many Watts are required to operate your equipment, if the rating is provided in Amps., you can use the following calculation:

$$\text{Amps} \times 115 \text{ (output voltage)} = \text{Watts}$$

For example, if your device is rated at 1.5 Amps you will need an inverter that will provide 172.5 Watts of power.

$$1.5 \times 115 = 172.5 \text{ Watts}$$

To operate this device you would need to use the Samlex SI-300HP inverter because the SI-140HP only provides 140 Watts of power. Some equipment manufactures over-rate the power required to operate their products so if the rated power of the equipment is 1 Amp or 150 Watts, you might be able to operate the device with the Samlex SI-140HP. Because Samlex inverters have over-load protection, you can try operating equipment that is rated 5 –10 Watts above the inverters output capability without damaging the inverter. (See Protection Features on page 12).

Samlex inverter model SI-140HP will not operate equipment that are designed to create heat. Some items that you cannot operate with the SI-140HP are: Toasters, soldering irons, hair dryers, and ovens.

## HOW LONG CAN I OPERATE MY INVERTER FROM MY VEHICLE BATTERY?

The inverter operating time will depend on:

- 1) The size and type of battery you are using for the DC supply
- 2) The condition and charge of your DC battery
- 3) The power required (Load) to operate your AC equipment

If you are using a typical automotive battery as your DC power source and the battery is in good condition and fully charged, you can expect the following operating times if the inverter is operated at full load:

SI-140HP	5 Hours	at 140 Watts
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SI-300HP	2 Hours	at 300 Watts
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These estimates are based upon using the inverter from the battery, without starting the vehicle. If you are operating the inverter, without having the vehicle running, it is recommended that you start your vehicle every 2 – 3 hours to charge the battery. If your vehicle is running and your charging system is working properly, the operating times will be extended. **DO NOT START YOUR VEHICLE WHEN THE INVERTER IS IN USE, VOLTAGE TO THE LIGHTER PLUG MAY SHUT OFF WHEN STARTING THE ENGINE.**

## SPECIFICATIONS

<u>Model</u>	<u>SI-140HP</u>	<u>SI-300HP</u>
Input Voltage	11-15V DC	11-15V DC
Output Voltage	115V RMS	115V RMS
Frequency	60 Hz	60 Hz
Output Wave Form	Modified Sine-wave	
Output Power		
Continuous	140 Watts	300 Watts
Surge	300 Watts	600 Watts
Maximum Efficiency	89%	89%
No Load Current Draw	100 mA	200 mA
Number of AC Outlets	One	Two
Low Battery Alarm	10.6V DC	10.6V DC
Low Battery Shut Down	10.0V DC	10.0V DC
DC Connection Method	Cigar Plug	Cigar Plug or Cables
Weight	1.3 lbs.	2.9 lbs.

## PROTECTION FEATURES

Samlex inverters feature the following protection features:

- 1) **Short Circuit Protection.** If the inverter is connected in reverse polarity or a short circuit occurs, the internal fuse will usually be blown.
- 2) **Over Temperature Protection.** If the temperature inside the inverter exceeds 150°, the inverter will shut down.
- 3) **Over Load Protection.** If the inverter is over-loaded, the inverter will shut down.
- 4) **Over Voltage Protection.** If the input voltage exceeds 15V DC, the inverter will shut down.
- 5) **Low Battery Protection.** To prevent damage to your battery the inverter will sound an audible alarm when the input voltage drops to 10.6V DC. If the input voltage drops to 10.0V DC the inverter will shut down

**CAUTION:** If the Low Battery Alarm sounds, the battery must be recharged. Turn off any AC equipment and allow the battery to recharge. If the inverter is allowed to continue operation the inverter will shut down when the input voltage drops to 10.0V DC.

# TROUBLESHOOTING

## **Operating Audio Systems.**

You may experience interference when operating some audio equipment with an inverter. The “buzzing sound” that you may hear coming from your speakers is generated within the power supply of the audio equipment. If your audio system has a high quality power supply it should filter the interference caused by the modified sine-wave of the inverter. Low cost audio equipment may not have a power supply that will filter this interference.

## **Operating Television.**

Although the Samlex inverter is designed to prevent interference with television signals, some interference may still be noticed. Some remedies to this problem are:

- 1) Make sure all connections are secure and that the TV operates properly when connected to household AC power.
- 2) Install the inverter away from the TV. Use an extension cord if required.
- 3) Adjust the position of the inverter, DC cables, and AC line to various positions until the interference is reduced or eliminated.

# TROUBLESHOOTING GUIDE

## PROBLEM : NO OUTPUT POWER

### Possible Cause

Inverter is not connected to the DC power source. (Battery)

Battery voltage is too low.

Battery voltage is too high.

Vehicle ignition must be ON.

Excessive voltage drop in the wiring of the dashboard cigar lighter socket.

Inverter is not warmed up.  
Fuse of cigar lighter socket blows for loads more than 10A.

Inverter is Over-loaded.

Fuse is blown.

### Solution

Make secure connection to the DC power source.

Charge the battery, or replace battery.

Battery voltage must be between 11 and 15 volts.

Turn vehicle key to ON, or to the accessory position.

Limit the load drawn to less than 100W, or run separate thicker wiring.

Switch inverter OFF and then ON.  
Do not connect loads which draw high inrush current like a TV. Run separate thicker wiring.

Reduce the load to rated load. See Page 9.

Replace inverter fuse. Check polarity.

# TROUBLESHOOTING GUIDE

## PROBLEM: NO OUTPUT POWER

### Possible Cause

Inverter is over heated and thermal shut down has triggered.

### Solution

Turn inverter OFF and allow the inverter to cool.

Check for over-load.

SI-140HP Max. 140 Watts

SI-300HP Max. 300 Watts

## PROBLEM: LOW BATTERY ALARM

### Possible Cause

Poor DC connection.

Battery voltage is too low.

Battery is in poor condition.

### Solution

Secure DC connections.

Clean connectors.

Re-charge battery.

Replace Battery.



# TROUBLESHOOTING GUIDE

## PROBLEM: INVERTER OUTPUT VOLTAGE IS LOW

### Possible Cause

Input voltage is low

The inverter is over-loaded.

Using a voltage meter that cannot read RMS voltage.

### Solution

Input voltage must be greater than 10.6V DC.

Reduce load to within inverter ratings.  
SI-140HP Max. 140 Watts  
SI-300HP Max. 300 Watts

A true RMS reading volt meter must be used to measure the correct output voltage from the inverter.  
( See page 4 )

## WARRANTY

YOU MUST PRESENT YOUR ORIGINAL BILL OF SALE WHEN MAKING A WARRANTY CLAIM.

NO WARRANTY CLAIM CAN BE PROCESSED WITHOUT YOUR PROOF OF PURCHASE.

All Samlex inverters are warranted to the original purchaser only, to be free from defects in material and workmanship for 1 year from the date of purchase. Samlex disclaims any liability for consequential damages. In no event will Samlex America, Inc. be responsible for any damages beyond the amount paid for the product at retail price. In the event that your inverter is defective, return the inverter, with your original bill of sale and complete explanation of the problem, to the place of purchase. Samlex will, at its option, repair or replace the defective inverter.

The following situations are not covered under warranty:

- 1) The cost of shipment or returning the inverter
- 2) Normal wear and tear
- 3) Damage caused by neglect, misuse, abuse, modifications or alterations, failure to follow recommended care and use instructions, repairs made by unauthorized persons.

# THANK YOU FOR CHOOSING SAMLEX !

**MODEL:**

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**DATE OF PURCHASE:**

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**PLACE PURCHASED:**

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**DEALER TELEPHONE:**

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**NOTES:**

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**Attach your Bill of Sale here.  
You must present your Bill of Sale to  
validate your warranty.**



SAMLEX AMERICA®

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