



**samlex**power

# **SAM Series Power Inverter**

## **OWNER'S MANUAL**

For model: (12 V DC INPUT, 115V AC OUTPUT)

- **SAM-100-12**

**THIS MANUAL CONTAINS IMPORTANT INFORMATION REGARDING SAFETY, OPERATION, MAINTENANCE AND STORAGE OF THIS PRODUCT. BEFORE USE, READ AND UNDERSTAND ALL CAUTIONS, WARNINGS, INSTRUCTIONS AND PRODUCT LABELS, PLUS YOUR VEHICLE'S BATTERY MANUFACTURER GUIDELINES. FAILURE TO DO SO COULD RESULT IN INJURY AND/OR PROPERTY DAMAGE.**

*Read All Instructions Before Using This Product!*

## WARNINGS

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

1. Do not connect to AC distribution wiring.
2. Remove appliance plug from outlet strip before working on the appliance.
3. Do not make any electrical connections or disconnections in areas designated as IGNITION PROTECTED.
4. This is not a toy - keep away from children.
5. DO NOT install object into air vents.

## CAUTIONS

1. 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 unit.
2. This unit will not operate high wattage appliances over the output power limit or surge power limit.
3. Grounding the neutral will cause the unit to shut down. Do not operate this unit if it is wet.
4. This product is not tested for use with medical devices.
5. Loose connectors may cause overheated junction and melted insulation.
6. Unplug the unit when it is idle.

### The unit 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 unit.

**COOL** – Ambient air temperature should be between  $-1^{\circ}\text{C} \sim 40^{\circ}\text{C}$ . Do not place the unit on or near a heating vent or any piece of equipment which is generating heat above room temperature. Keep the unit away from direct sunlight.

**VENTILATED** – Keep the area surrounding the unit clear to ensure free air circulation around the unit. Do not place items on or over the unit during operation. If the unit over-heat, unplug it and let it cool down 30 minutes.

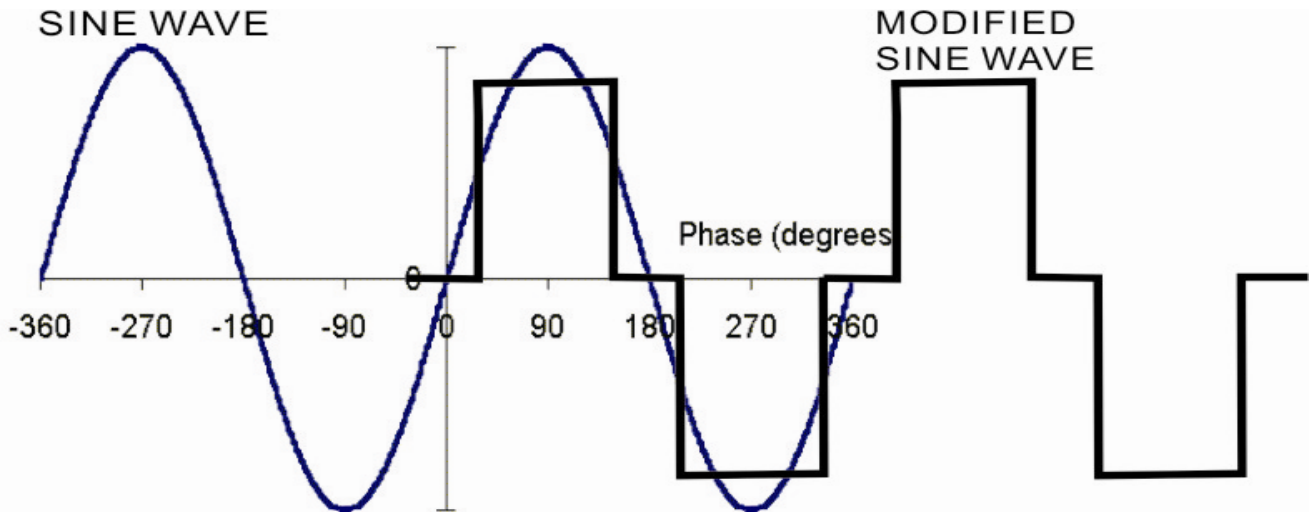
**SAFE** – Do not use the unit near flammable materials or in any locations that may accumulate flammable fumes of gases.

## 1. INTRODUCTION

This unit is an electronic device that converts 12V direct current from a battery to 115V alternating current. This unit employed the latest power electronics technology that results in smaller size but higher output power.

The AC output waveform of the this POWER INVERTER 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. (See Figure 1).

The modified sine wave 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 unit. For accurate measurement of the output voltage of this unit, use a true RMS reading voltmeter such as a Fluke 87III, Fluke 8060A, Fluke 77/99 series or Beckman 4410.



**FIGURE 1:** Modified Sine Wave and Sine Wave Comparison

## 2. OPERATION STEPS

1. Make sure environment is cool and dry.
2. Plug the unit into the vehicle's accessory outlets.
3. Rotate the plug slightly to ensure good and firmly connection.
4. Green LED light on indicates a proper operation.
5. Plug in the AC appliance.

The vehicle's accessory outlets must provide between 11 and 15 volts DC and must be able to supply the necessary current to operate the load. 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 80 watts AC, the power source must be able to deliver:  $80 \div 10 = 8$  amperes

Testing is the only definitive way to determine whether a specific load can be started and how long it can run. The unit will shut down if it is overloaded.

**CAUTION:** Check the maximum supply current of your vehicle's 12V outlet by referring to your vehicle's owner manual.

**CAUTION:** The unit 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.

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

### 3. PROTECTIVE FEATURES

**OVER TEMPERATURE PROTECTION** – If the temperature inside the unit is too high, the unit will automatically shut down. Allow the unit to cool for at least 30 minutes before restarting after a heat-related shutdown. Unplug unit while cooling.

**LOW BATTERY VOLTAGE PROTECTION** - The unit automatically shuts down when input voltage drops to around 10.0 volts. When the condition is corrected, the unit may be restarted.

**OVER VOLTAGE PROTECTION** – The unit will automatically shut down when the input voltage exceeds 15.5 volts DC.

**OVERLOAD PROTECTION** – The unit will automatically shut down when the continuous draw exceeds rated watts.

**SHORT CIRCUIT PROTECTION** – The unit will shut down.

**EARTH FAULT PROTECTION** – This unit comply with the standard current leakage allowance. When large current leakage to earth terminal occurs, the protection circuit activated and shut down the unit. Unplug the unit and unplug the fault AC appliance is the only way to restart it.

### 4. FUSE REPLACEMENT

If the unit is overloaded, and the green LED is not lit, the internal fuse may be blown.

1. Unscrew the flange of the unit (counterclockwise)
2. Remove the end contact, flange and fuse.
3. Inspect the fuse to see if it is good or blown.
4. Replace with a new fuse of same type, same dimension and same ampere rating.
5. Carefully reassemble the fuse, end contact and flange.

**CAUTION:** NO USER-SERVICEABLE COMPONENTS INSIDE. DO NOT ATTEMPT TO OPEN THE PRODUCT.



## 5. SPECIFICATIONS

Output Connection.....	One AC Receptacle
USB Output.....	5V (500mA)
Output Power.....	100W Output
Input Voltage .....	13.8 volt DC
Output Voltage.....	~ 115 volt AC RMS 60 Hz
Output Waveform.....	Modified Sine Wave
Max. Efficiency.....	~ 91%

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