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SK200,SK350 Series Pure Sine Wave Inverter User's Manual



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1. Important Safety Information



WARNING!

Before installing and using the Inverter, you need to read the following safety information carefully.

1-1. General Safety Precautions

- 1-1-1. Do not expose the Inverter to water, mist, snow, or dust. To reduce the risk of hazard, do not cover or obstruct the ventilation shaft. Do not install the Inverter in a zero-clearance compartment to avoid overheating occurred.
- 1-1-2. To avoid the risk of fire and electronic shock, make sure that the existing wiring is in good electrical condition and not undersize. Do not operate the Inverter with the damaged or substandard Wiring.
- 1-1-3. There are some components in the inverter can cause arcs and sparks. To prevent from fire or explosion, do not put the batteries, flammable materials, or anything should be ignition-protected around the inverter.

1-2. Precautions When Working with Batteries

- 1-2-1. If battery acid contacts your skin or clothing, you need to wash it out immediately with soap and water. If the acid sinks in your eyes, flush your eyes with running cold water for at least 20 minutes and get medical attention immediately.
- 1-2-2. Never smoke or make a spark and flame in the vicinity of batteries or Engines.
- 1-2-3. Do not drop the metal tools on the battery. The result of spark or short-circuit on the battery or other electrical parts may cause an explosion.
- 1-2-4. Remove the personal metal items, such as rings, bracelets, necklaces, and watches when working with a lead-acid battery, Due to a lead-acid battery may produce a short -circuit current once someone's temperature is high enough to weld these metal items and cause a severe burn.

2. Features

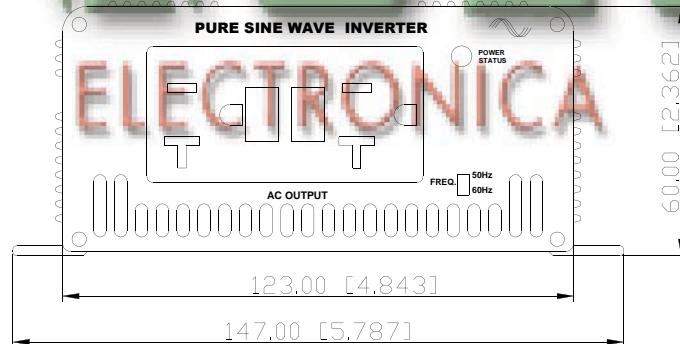
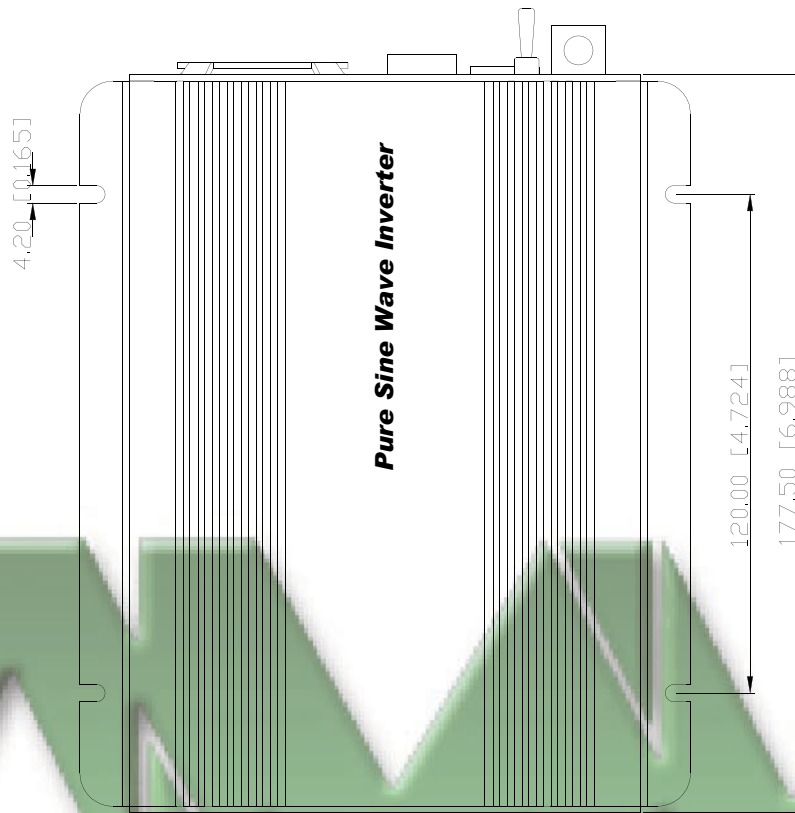
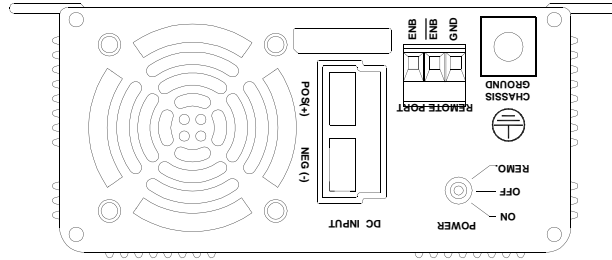
- Pure sine wave output (THD < 3%)
- Output frequency 50 / 60Hz switch selections
- Input & output completely isolated design
- High efficiency 84~94%
- Capable of driving inductive & capacitive loads at the start moment.
- A LED Indicator with twin color displays all operation status.
- Loading and temperature controlled cooling fan.
- Built in advanced microprocessor to mark friendly interface with user.
- Protection Input low voltage Overload Short circuit
 Low battery alarm Input over voltage Over temperature



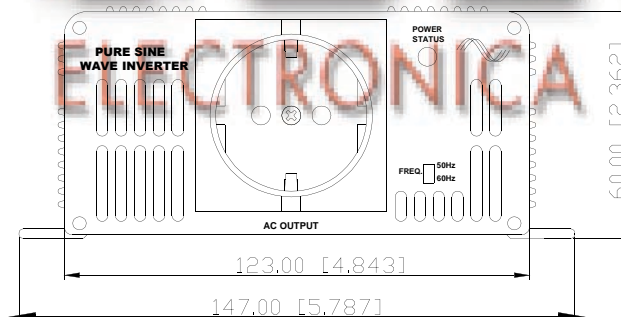
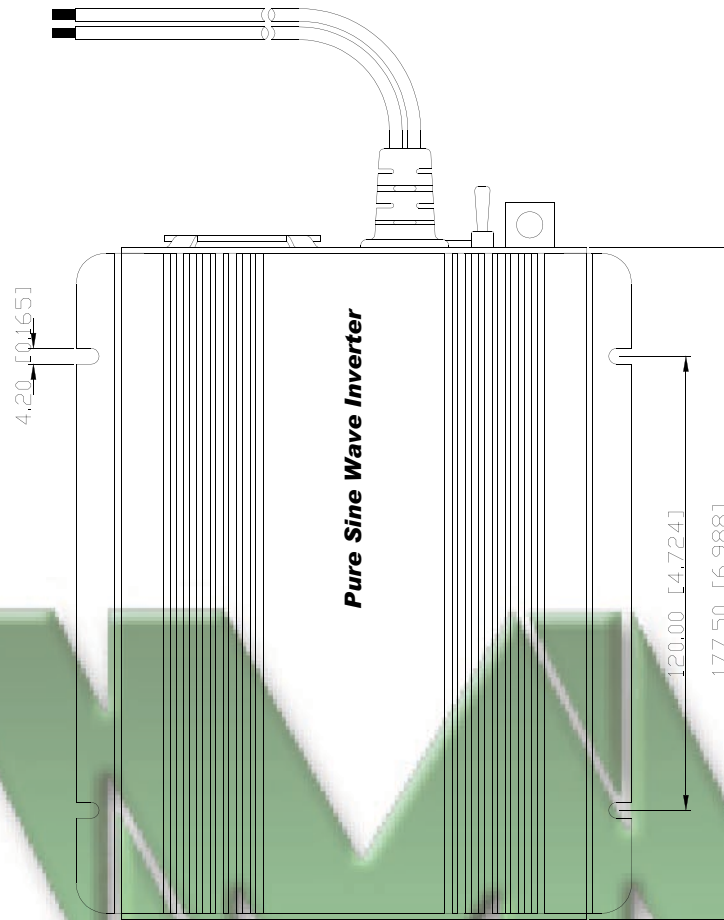
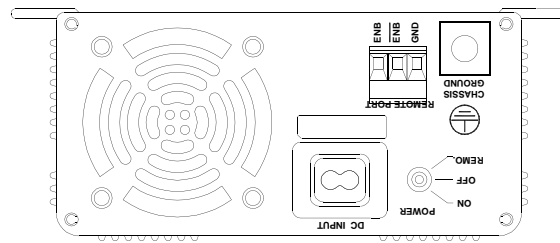
Specification	Model No.					
Item	SK200-112	SK200-124	SK200-148	SK200-212	SK200-224	SK200-248
Continuous Output Power	200W					
Maximum Output Power (3Min.)	230W					
Surge Rating	400W					
Input voltage	12Vdc	24Vdc	48Vdc	12Vdc	24Vdc	48Vdc
Output Voltage	100 / 110 / 120Vac +/- 5%			220 / 230 / 240Vac +/- 3%		
Frequency (Switch Selections)	50 / 60Hz +/- 0.05%					
Output Waveform	Pure Sine Wave (THD < 3%)					
Efficiency (full load)	87%	90%	92%	90%	93%	94%
Input Voltage Regulation	10.5-15 VDC	21.0-30 VDC	42-60 VDC	10.5-15 VDC	21.0-30 VDC	42-60 VDC
Failure Indicator	Red LED					
Protection	Overload (Alarm then shot down), Short Circuit (Shot down) Reverse Polarity (Fuse), Over / Under Input Voltage (Alarm and shot down then auto recover) Over Temperature.(Alarm and shot down then auto recover)					
Remote Control	Yes (Control by two mode hard wire)					
Safety	Meet UL458			EN60950-1		
EMC	FCC Class A			EN55022:1997 EN61000-3-2:1998 EN61000-3-3:1995 EN55024:2001		e-mark e13
Operating Temperature Range	0 - 40					
Storage Temperature Range	-30 to 70					
Cooling	FAN (Ctrl by Load and Temperature)					
Dimensions	185(L)x147(W)x60(H)mm / 7.3(L)x5.8(W)x2.36(H) Inch					
Weight	1.2kg					

Specification	Model No.					
Item	SK350-112	SK350-124	SK350-148	SK350-212	SK350-224	SK350-248
Continuous Output Power	350W					
Maximum Output Power (3Min.)	400W					
Surge Rating	700W					
Input voltage	12Vdc	24Vdc	48Vdc	12Vdc	24Vdc	48Vdc
Output Voltage	100 / 110 / 120Vac +/- 5%			220 / 230 / 240Vac +/- 3%		
Frequency (Switch Selections)	50 / 60Hz +/- 0.05%					
Output Waveform	Pure Sine Wave (THD < 3%)					
Efficiency (full load)	84%	86%	88%	86%	89%	90%
Input Voltage Regulation	10.5-15 VDC	21.0-30 VDC	42-60 VDC	10.5-15 VDC	21.0-30 VDC	42-60 VDC
Failure Indicator	Red LED					
Protection	Overload (Alarm then shot down), Short Circuit (Shot down) Reverse Polarity (Fuse), Over / Under Input Voltage (Alarm and shot down then auto recover) Over Temperature.(Alarm and shot down then auto recover)					
Remote Control	Yes (Control by two mode hard wire)					
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Operating Temperature Range	0 - 40					
Storage Temperature Range	-30 to 70					
Cooling	FAN (Ctrl by Load and Temperature)					
Dimensions	185(L)x147(W)x60(H)mm / 7.3(L)x5.8(W)x2.36(H) Inch					
Weight	1.4kg					

2-2. Mechanical Drawing For PP75 Type



2-3. Mechanical Drawing For Strip Type



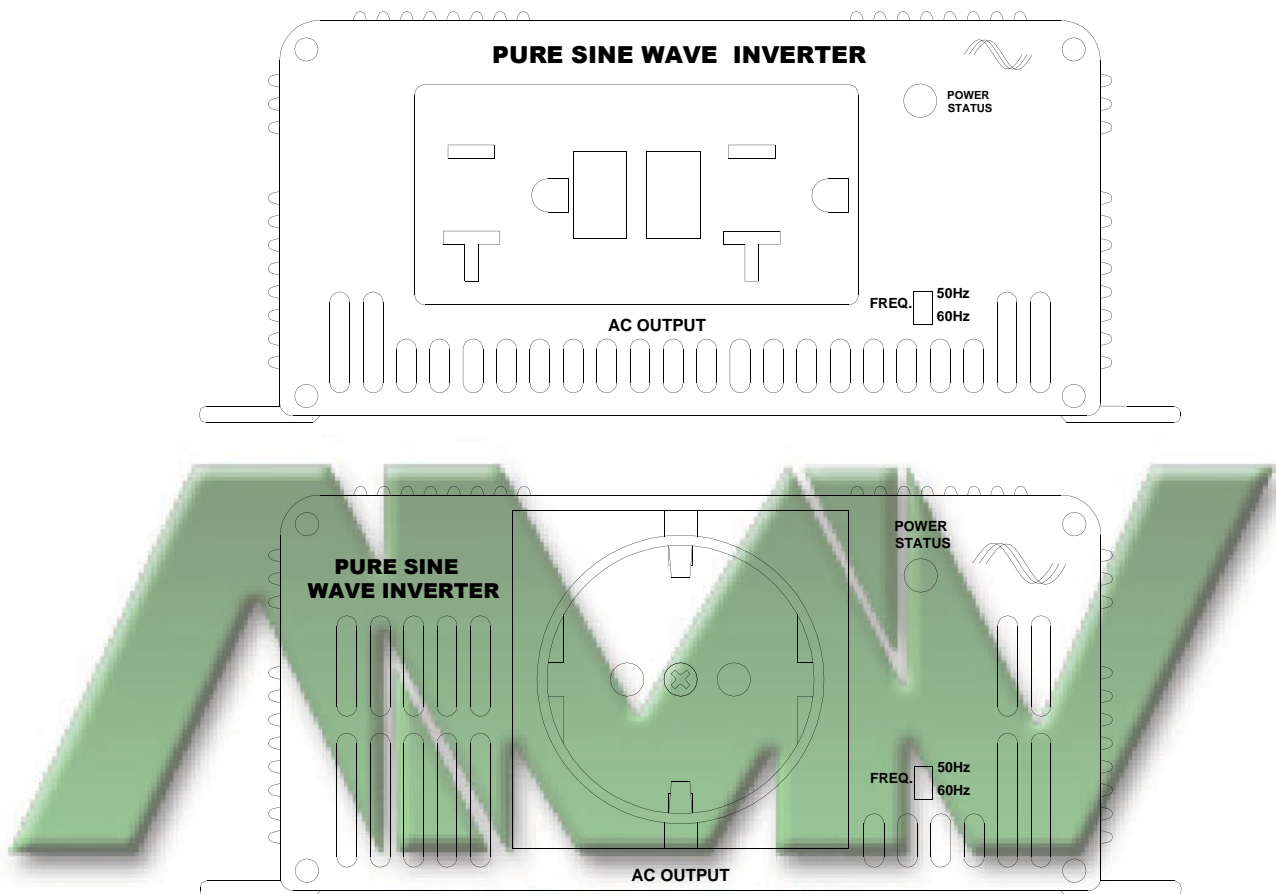
3. Instructions

This power inverter series is one of the most advanced line of the mobile AC power systems.

To get the most effective power inverter, it must be installed and used properly. Please read the instructions of this manual before you install and operate this model.

3-1. Front Panel Operation

3-1-1. Front view



3-1-2. Frequency switch 50Hz/60Hz

Move switch to up, setup output frequency to 50Hz

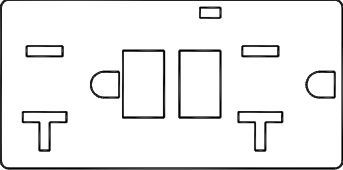
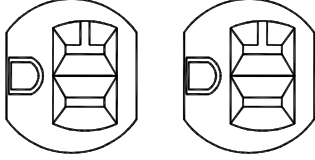
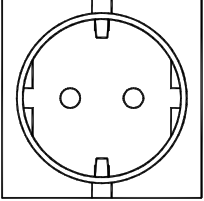
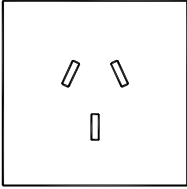
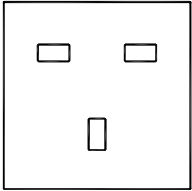
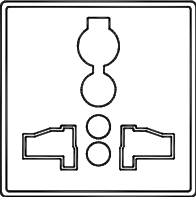
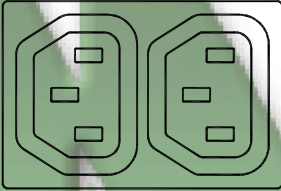
Move switch to down, setup output frequency to 60Hz

3-1-3. LED status

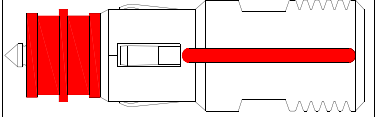
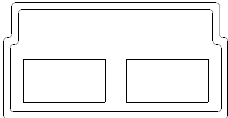
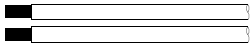
Green -- inverter is working normally .

Red – inverter is failure.

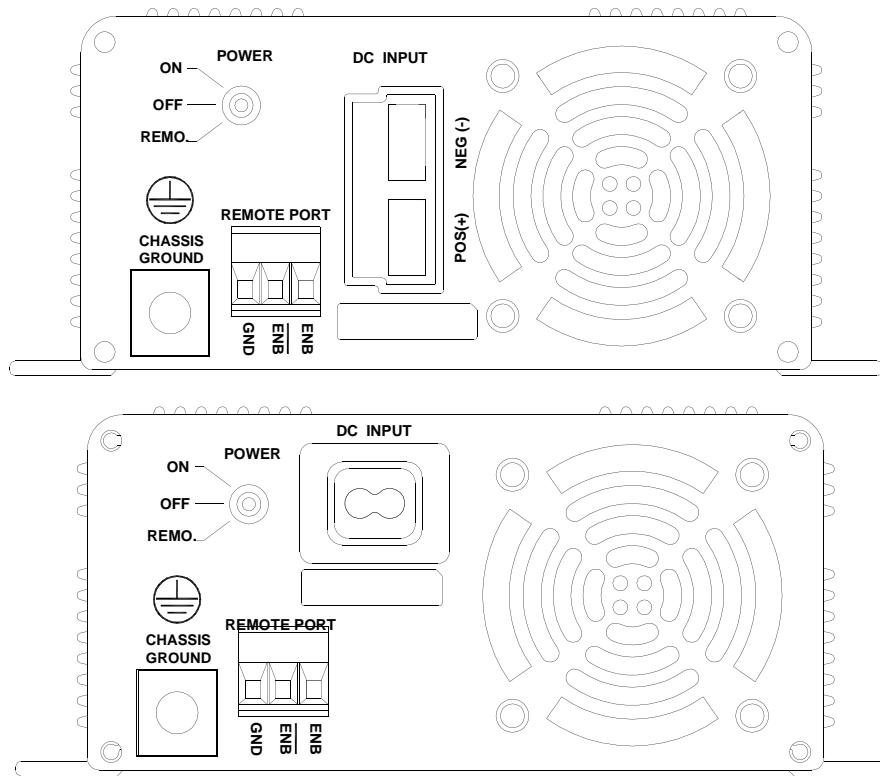
3-1-4. AC Output (available Sockets)

<p>North America (GFCI)</p> 	<p>NEMA 5-20R</p> 
<p>Continental European</p> 	<p>Australia / New Zealand</p> 
<p>United Kingdom</p> 	<p>Universal</p> 
<p>IEC-2</p> 	

3-1-5. DC Input (available type)

<p>CIGARET</p>	<p>PP75</p>	<p>STRIPPED WIRE</p>
		

3-2. Rear Panel Operation



3-2-1. ON / OFF/Remote (Main) switch .

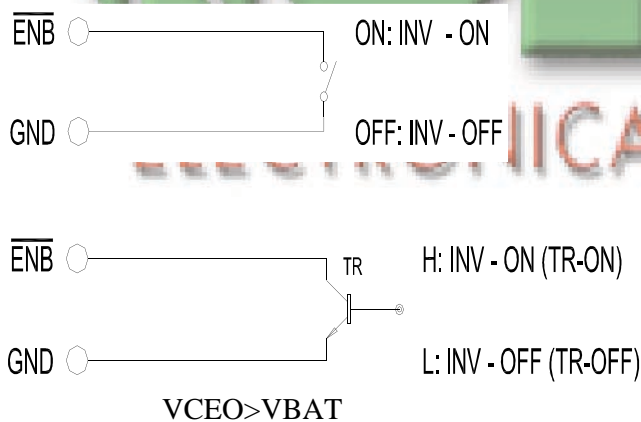
3-2-1-1. Before installing the inverter, you need to ensure the main switch must be “OFF”.

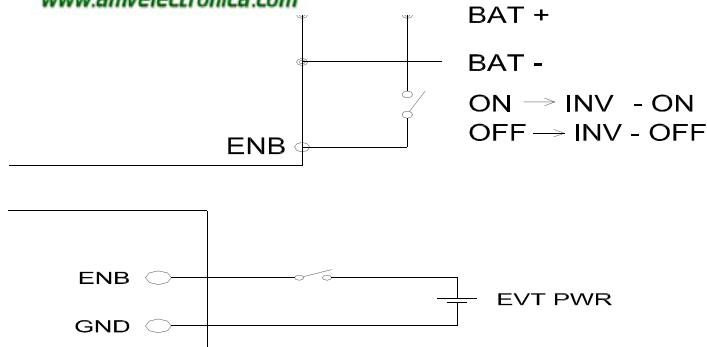
3-2-1-2. Before using the remote port, you need to ensure the main switch must be “REMOTE”.

3-2-1-2. Ensure the remote control contact is off.

3-2-1-3. Use 14 ~ 20 AWG wire to connect the Rear Panel Terminal marked “REMOTE PORT” to the remote control contact.

3-2-1-4. Remote port ON/OFF inverter setup status





NOTE: At the same time, only can use one model to control the inverter.
 The maximum level is the same as input DC voltage.

3-2-2. Ventilation Shaft

Be sure to keep it a distance (at least 1 inch) away from surrounding materials.

3-2-3. Input DC line

Connect the input DC line to 12V / 24V / 48V battery or other 12V / 24V / 48V power source, the line type #10 105 600V.

RED represents positive, and BLACK represents negative.
 Reversing polarity connection will blow the internal fuse and may damage the inverter permanently.

3-2-4. Use wire #8 AWG to connect Chassis ground with Vehicle Chassis.



WARNING!

Operating the inverter without a proper ground connection may cause an electrical safety hazard.

3-3. Installation

The power inverter should be installed in an environment that meets the following requirements:

3-3-1. Dry – Avoid water to drip on or sink in the inverter.

3-3-2. Cool – Ambient air temperature should be between 0 and 33 °C, the cooler the better.

3-3-3. Safe – Do not install the inverter in a battery compartment or other areas where flammable fumes may exist, such as fuel storage areas or engine compartments.

- 3-3-4. Ventilated – Keep the inverter a distance (at least one inch) away from surrounding things. Ensure the ventilation shafts are set on the rear and the bottom of the unit, and will not be obstructed.
- 3-3-5. Dust free – Do not install the Inverter in a dusty environment. The dust will be inhaled into the unit when the cooling fan is working.
- 3-3-6. Close to batteries – Avoid the excessive length of cables using. Do not install the Inverter in the same compartment as batteries.

WARNING!



Shock Hazard. Must be sure that the Inverter is NOT connected to any batteries, and all wiring is disconnected from any electrical sources by your further operating. Do not connect the output terminals of the Inverter to an incoming AC source.

3-4. Quick hook – up and testing

For a quick hook – up of the power inverter to check its performance before installing, please follow these guidelines below

- 3-4-1. To check its performance, unpack and inspect the power inverter ,then mark sure the switch is OFF.
- 3-4-2. Connect the cables to the power input terminals on the rear panel of the power inverter. The red line represents positive (+) and black line represents negative (-).

WARNING!



You may observe a spark when you make this connection since the current may flow into the charge capacitors of the power inverter. Do not make this connection close to the flammable fumes to avoid the explosion occurred .

WARNING!



Ensure all the DC connection is tight (torque to 9 -10) ft-lbs, 11.7 – 13 Nm. A potential hazard will be produced if the connections are in loose status or overheating.

3-4-3. Must be sure that the cable you connected is not the negative output power source (BLACK wire) of the inverter by your further operating.



CAUTION !

Reverse polarity connection will blow the fuse of the inverter and may damage the inverter permanently . It will be not regarded as warranty if the damage is caused by reverse polarity connection.

3-4-4. Connect the cable from the RED wire of the inverter to the positive terminal of the power source to make a secure connection.

3-4-5. Set the power switch to the “ON” position and the buzzer will send out beep sound at the moment, then the inverter will make self-diagnosis and the LED indicators will also appear various colors. Finally the buzzer will send out another beep sound and the input Level LED indicators will turn to “Green” color, which means the inverter start to work successfully.

3-4-6. Set the power switch to the “OFF” position, the inverter will stop working and all of the lights will be off.

3-4-7. To measure the r.m.s of true O/P voltage, please use the meters of FLUKE 45 BECKMAN 4410 or TRIPLETT 4200.

3-5. AC Safety Grounding

During the AC wiring installation, AC input and output ground wires are connected to the inverter. The AC input ground wire must be connected to the incoming ground from AC utility source.

The AC output ground wire should go to the grounding point for your loads (for example, a distribution panel ground bus).

3-5-1. Neutral Grounding (GFCI'S)

3-5-1-1. **120V models** – The neutral conductor of the AC output circuit of the Inverter is automatically connected to the safety ground during inverter operation. This conforms to National Electrical Code requirements that separately derived from AC sources (such as inverters and generators) which have their neutral conductors tied to ground in the same way as the neutral conductors from the utility tied to ground at the AC breaker panel. For models configured with a transfer relay,

while AC utility power is present and the Inverter is in bypass mode, this connection (the neutral of the Inverter's AC output to input safety ground) is not present so that the utility neutral is only connected to ground at your breaker panel, as required.



WARNING!

The risk of electronic shock. Use only pass and Seymour type 2091-W, ground fault circuit-interrupter receptacles. Other types may fail to operate properly when connected to this inverter equipment.

3-5-1-2. **230V models** There is no connection made inside the Inverter from either the line or neutral conductor to safety ground.

Ground Fault Circuit Interrupters (GFCI)

The installations in Recreational Vehicles (for North American approvals) will be required GFCI protection of all branch circuit connected to the AC output of the hardwire terminal equipped with Inverter. In addition, the electrical codes require GFCI protection of certain receptacles in residential installations. While the pure sine wave output of the Inverter is equivalent to the waveform provided by utilities, UL compliance requires testing and recommending the specific GFCI. AMV has tested the following GFCI – protected 20A receptacles and found that they functioned properly when connected to the output of the Inverter.



WARNING!

Do not operate the power inverter without connecting it to ground. Electrical shock hazard may occur.

4. Maintenance

Very little maintenance is required to keep your inverter operating properly. You should clean the exterior of the unit periodically with a damp cloth to prevent the accumulation of dust and dirt. At the same time, tighten the screws on the DC input terminals.

5. Warranty

We guarantee this product against defects in materials and workmanship for a period of 24 months from the date of purchase and will repair or replace any defective power inverters if you directly return them to us with postage paid. Please note that AMV is only responsible for ensuring our products are operational before delivering. This warranty will be considered void if the unit has been misused, altered, or accidentally damaged. AMV is not liable for anything that occurs as a result of the user's fault.





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GARANTIA

TODOS LOS EQUIPOS FABRICADOS POR **AMV ELECTRÓNICA** SALEN DE NUESTROS TALLERES AJUSTADOS, NUMERADOS Y CON DOCUMENTACIÓN TÉCNICA, **SIENDO LA GARANTIA TOTAL DE 2 AÑOS.**

LA GARANTÍA CUBRE LAS SITUACIONES DE DAÑO INTRÍNSECO, Y NO LAS PROVOCADAS POR CAUSAS EXTERNAS O LA MANIPULACIÓN POR PARTE DEL USUARIO.

LA GARANTÍA SE ENTIENDE EN NUESTROS TALLERES, SIENDO POR CUENTA DEL USUARIO LOS COSTES DEL TRANSPORTE.

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