Warning: This manual contains important safety and operating instruction. Please read it carefully before use the unit.
Specifications
1. Use of advanced microprocessor control
2. Intelligent temperature control cooling fan will stop working when case temperature is Low enough.
3. With USB power supply, can provide power for the portable device with USB port.

<table>
<thead>
<tr>
<th>Item</th>
<th>PS-1000HSC</th>
<th>PS-1200HSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous power</td>
<td>1000W</td>
<td>1200W</td>
</tr>
<tr>
<td>Peak power</td>
<td>2000W</td>
<td>2400W</td>
</tr>
<tr>
<td>Rated input voltage</td>
<td>12VDC</td>
<td>24VDC</td>
</tr>
<tr>
<td>Input over voltage shutdown</td>
<td>9.8~16VDC</td>
<td>19.6~32VDC</td>
</tr>
<tr>
<td>Input under voltage shutdown</td>
<td>16VDC</td>
<td>32VDC</td>
</tr>
<tr>
<td>Input under voltage alarm</td>
<td>9.8VDC</td>
<td>19.6VDC</td>
</tr>
<tr>
<td>Input voltage</td>
<td>10.1VDC</td>
<td>20.2VDC</td>
</tr>
<tr>
<td>Output voltage</td>
<td>□115V / □120V / □220V / □230V / □240V AC±10% (Subject to the label)</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>□50Hz / □60Hz ±1Hz</td>
<td></td>
</tr>
<tr>
<td>Waveform</td>
<td>Modified sine wave</td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td>Approximate 90%</td>
<td></td>
</tr>
<tr>
<td>Over heat protection</td>
<td>65 ± 5°C</td>
<td></td>
</tr>
<tr>
<td>Over load protection</td>
<td>1200W</td>
<td>1200W</td>
</tr>
<tr>
<td>Short Circuit protection</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>USB output</td>
<td>5V, 2.4A</td>
<td></td>
</tr>
<tr>
<td>No load current(12/24VDC)</td>
<td>0.8A</td>
<td>0.5A</td>
</tr>
<tr>
<td>Solar input voltage range</td>
<td>15VDC (15~18V)</td>
<td>30VDC (30~36V)</td>
</tr>
<tr>
<td>Solar Panel power</td>
<td>≤300W</td>
<td>≤600W</td>
</tr>
<tr>
<td>Solar panel open circuit voltage</td>
<td>22VDC</td>
<td>44VDC</td>
</tr>
<tr>
<td>Max charging current</td>
<td>20A</td>
<td>20A</td>
</tr>
<tr>
<td>Recovery charge voltage</td>
<td>≤12.5V</td>
<td>≤25V</td>
</tr>
<tr>
<td>Battery type</td>
<td>Lead Acid/Gel Battery</td>
<td>switchable</td>
</tr>
<tr>
<td>Over charge protection</td>
<td>15V(lead acid battery) / 14.4V(Gel battery)</td>
<td></td>
</tr>
<tr>
<td>Intelligent heat radiation</td>
<td>The cooling fan won’t work while turning on the inverter, till the temperature of inverter case reach 40°C.</td>
<td></td>
</tr>
<tr>
<td>Working temperature</td>
<td>0 ~ 40°C</td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-10 ~ 45°C</td>
<td></td>
</tr>
<tr>
<td>Fuse(built in)</td>
<td>30A×4</td>
<td>30A×2</td>
</tr>
<tr>
<td>Weight</td>
<td>2.2Kg</td>
<td>2.2Kg</td>
</tr>
<tr>
<td>Size (L×W×H)</td>
<td>254×179×69mm</td>
<td></td>
</tr>
</tbody>
</table>

1. BRIEF:
Our power inverter is an advanced tool of power conversion, and it can supply you with AC power converted from a DC power source. It not only can be used in cars, vessels and camping, but also can be used in emergency when out of electricity.

2. WARNING AND SAFETY
1) Read the manual before use and keep it for future reference.
2) Don't put the inverter under sunlight, near a heating source, wet or humid environment.
3) The case housing of inverter will be hot when using, please keep the inverter away from material that can't withstand high temperature, such as clothing, sleeping bags, carpets etc.
4) Our power inverter is designed to use with the negative ground electrical system! Don't use with positive ground electrical systems (The majority of modern automobiles, RVs, trucks and boats are negative ground).
5) Do not disassemble the unit , it may cause fire or electric shock.
6) Keep the inverter out of reach from children.
7) The power inverter will output AC power as utility power, please treat the output terminal as carefully as your home AC socket. Don’t put any other things into the output terminal except electrical appliance plug.
8) Disconnect the battery and inverter when it is not in use.

3. PARTS LIST
1)Rear panel:
2) Front panel:

- AC output socket
- USB port
- Solar battery positive input (+)
- Solar battery negative input (-)
- Charging indicator
- Grounding
- Wired remote port
- LED protect indicator
- Power indicator

3) Remote control box:

- Normal working indicator
- Power switch (Switch)
- Fault indicator
- Connecting wire

4. ASSEMBLE

1. The position of Mounting
   First ensure that there is enough space to install the inverter, while the installation location must meet the following requirements:
   (1) Drying: Do not use water or other liquids dripping on the inverter
   (2) Cool: a working environment temperature of the product is 0-40 °C, preferably a temperature of 10-25 °C, at a temperature as low as possible within this range
   (3) Ventilation: There should be a certain distance between inverter and other objects, to avoid blocking the products vents.
   (4) Clean: Do install the products in the dusty, wood chips or other particles. If cooling fan is turned on, the particles involved in the inside of the product, thus affecting the normal work.
   (5) While inverters and batteries connected, will produce arcs or sparks, so there should not be around flammable objects such as gasoline, alcohol, etc.

2. Assemble the inverter
   For this big power inverter, because of the heavier weight, preferably mounted on a solid platform, such as floor, table or mounting bracket fine. In order to avoid falling off, platform for supporting the product should can bear the weight of sufficient capacity, and it is good with four screws to secure the product.

3. Assemble the remote control box
   1) the remote is designed to be mounted on a dash or other surface where a hole should be cut so that it sits flush. This is not a requirement however just a recommendation.
   2) The remote cable should be plugged into inverter and the remote before mounted.
   Note: Optional remote is not needed for inverter operation. The main power switch will work the power on / off.
5. Using time of battery
1). Current and voltage:
   The using time of battery depends on battery capacity (AH) and the power of the connected load (W), the calculating method is: Time (hours) = battery capacity (AH) × battery output voltage (V) × efficiency rate ÷ electrical power of using (W) such as the 12V DC input inverter uses the 12V battery, if the battery capacity is 300AH and at this time the inverter is driving 1500W power load, the efficiency rate is 90% when the battery is full, according to the formula above, the battery use time = 300(AH)×12(V)×0.9 ÷ 1500(w) = 2.16 (Hour). This means the battery can be used for 2.16 hours.

2). Battery operating time
   Battery operating time depends on battery capacity and current, and the calculation formula of operating time is: battery capacity divided by current, that is, battery capacity divided by the value of the load power divided by battery voltage times 110%. For example, battery specification is 12V, 2000Ah, load power is 1000W, so the total discharging time is 2000Ah ÷ (1000÷12×110%) ≈ 21.8 hours

Notice:
The result of formula above is on the basic of discharging rate of 20 hours of the battery, that is, the result is from the discharging current of 2000Ah battery not exceed 100A. When the charging current exceeds this value, the discharging period will reduce. And the quantity of the electricity of the battery may also influence the result. See the specification of the battery manufacturer.

6. Connection
1). Grounding
   The power inverter has a terminal on the back panel marked “Grounding” or “grounds”. This is used to connect the chassis of the power inverter to the ground. The ground terminal has already connected to the ground wire of AC output receptacle through the internal connecting wire. The ground terminal must be connected to the ground wire, which will vary depending on where the power inverter is installed. In a vehicle, connect the ground terminal to the chassis of the vehicle. On the ship, connect the ground terminal to the ship grounding system; In a fixed position, connect the ground terminal to the earth.

   Warning:
   ● To make sure the firmness of the connection. The ground wire must be 14AWG (2.08mm²) or even larger.
   ● Do not operate the power inverter without connecting to ground. Electric shock hazard may result.

2). Connect to the battery
   Please do all the safety precautions before connection, then check whether the battery voltage is in accordance with the input voltage of the inverter. Only the voltage of battery according with the requirements can be allowed to connect with the inverter.

The connecting wire must be big enough to bear current, or else the inverter can not support big load because of voltage reduce caused by the small cross-sectional wire. Depending on the below table, please select the input DC wire or larger one.

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>Current max. load power</th>
<th>Max. current of wire</th>
<th>Specification of wire length ≤ 1m</th>
<th>Specification of wire length ≤ 1m</th>
<th>Specification of wire length ≤ 1m</th>
</tr>
</thead>
<tbody>
<tr>
<td>12V</td>
<td>1000W</td>
<td>100A</td>
<td>6AWG (13.3mm²)</td>
<td>3AWG (26.67mm²)</td>
<td>N×5AWG (N×16.77mm²)</td>
</tr>
<tr>
<td></td>
<td>1200W</td>
<td>120A</td>
<td>5AWG (16.77mm²)</td>
<td>2AWG (33.62mm²)</td>
<td>N×5AWG (N×16.77mm²)</td>
</tr>
<tr>
<td>24V</td>
<td>1000W</td>
<td>50A</td>
<td>9AWG (6.63mm²)</td>
<td>6AWG (13.3mm²)</td>
<td>N×9AWG (N×6.63mm²)</td>
</tr>
<tr>
<td></td>
<td>1200W</td>
<td>60A</td>
<td>8AWG (8.37mm²)</td>
<td>5AWG (16.77mm²)</td>
<td>N×8AWG (N×8.37mm²)</td>
</tr>
</tbody>
</table>

Notice:
The above table is only for your reference. In practice, the thick wire can be replaced by two thin parallel wires if only the total section acreage of the wire meets the requirements. In high current, the input DC wire may produce voltage drop, therefore, the operating voltage should be subject to the value on the terminals. If the voltage drop is too large, it can increase the acreage of the section or reduce the length of the lead. The recommended length of lead is less than 1m.

Connect cathode wire of the battery to the cathode terminal (black) on the back panel of inverter and then connect the anode wire of the battery to the anode terminal (red) on the inverter, and fix them.

Warnings:
1) Please wear eye patch and work clothes when working around the battery to avoid the acid and corrosive objects harm your eyes and skin.
2) Prepare enough water and soap. In case the acid materials contact eyes or skin, clean it by cold water immediately and then sent to hospital.
3) Do not put any combustible material in the location of installation for spark will result when it is connected to the battery.
4) Keep good ventilation. The battery may produce a little inflammable gas when it works, so keep away from the inverter and it is better to install them in different space.
5) Fix the connecting wire of the input DC, or it will result the over-reduction of the voltage or over-temperature of the wire.
6) Reverse connection of the polarities or the short circuit will burn the fuse or result the permanence damage of the internal elements of inverter.
7) Take away the metal accouterment, such as ring or watch, when installation to avoid the short circuit.
8) Although there is over-voltage protection, it may also cause damage of the inverter if the input voltage is too high.
3). Connection of the AC appliance
1. Put the power plug of the AC appliance load into the output AC receptacle of the inverter directly.
2. Warnings:
   - Make sure that the switches of the inverter and appliance power are in OFF position before connection.
   - Check the power cord. If it is damaged, it should be connected after replacement.
6. Usage of inverter
   ① How to use a inverter
   1) Check the output voltage and capacity of the battery to make sure it applicable to the requirement of the product use.
   2) Connect the battery and the DC cable of the inverter to ensure that the polarities do not be reversed and in good contact.
   3) Long press the switch of inverter or of remoter for over 0.5s and later on let it go, if the indicator light on the inverter or on the remoter box is on, it means that the inverter start to work normally. This method can avoid effectively turning on the unit due to the interference or any mistakes.
   4) Switch off electrical appliances and put electrical appliance plug to the AC output socket of inverter. And then switch on electrical appliance for using.
   5) The cooling fans inside the inverter do not work when the unit power on. It doesn't run until the case temperature rise up to 40℃.
   6) Switch off inverter and remoter to stop working. At that time, the indicator lights in both inverter and remoter are off. The inverter does not consume current from battery when it switched off
   ② How to use USB outlet
   The USB outlet can provide stable 5V DC voltage; the maximum current is 1000mA(2100mA), which can directly provide power for the portable device with USB port.
   Notice: Before use the USB power supply, please make sure the device can be charged by USB and the maximum working current is no more than 1000mA(2100mA).
   ③ How to use solar charging
   1) Firstly connect the battery correctly, switch to the correct battery types(Lead Acid or GEL)
   2) Connect the solar panel's positive and negative electrode to the positive and negative terminal of the solar input of inverter, pay attention to the correct polarity.
   3) Normal charging panel quantity of electric charge indicator lights light up, the user can know the size of the battery charging voltage, when the "full" indicator lights up, indicating that the battery is fully charged, the user should promptly disconnect the solar cell and product connected to stop charging, avoid overcharge.
   Notice: It will destroy inverter when solar charging input voltage too high, so please choose the working voltage 15V-18V, open voltage ≤22V, power 600W solar panel.
7. Operational principle
   The inverter converts DC to AC, conversion process is divided into two steps, the first step is to convert low voltage DC to high voltage DC, the second step is using the full bridge converter tech to convert high voltage direct current into alternating current.
   The conversion circuit adopts advanced power device and high frequency power conversion technology. Compared with the traditional inverter using the power frequency transformer, it has the characteristics of small size, light weight and high conversion efficiency etc.
   ① DC input Internal fuse DC step up circuit DC to AC conversion circuit Output socket AC output
   8. Output voltage and wave form
   The output voltage waveform of the inverter is called "quasi sine wave" or "modified sine wave", it is a step waveform similar like household alternating current, this type of waveform is applicable to most of the load, including linear or switching power supply, transformer, electric motor etc.
   Since the output voltage waveform of the inverter is different from AC, RMS with general analog or digital multimeter can not accurately measure the output of the inverter, please use the true RMS digital multimeter to measure, such as FLUKE 177/179 multimeter
   9. About soft start technology
   This inverter has advanced soft start function. The output voltage rises up from low to normal when the inverter is turned on. This can reduce high startup currents, which can make startup easier for large inductive loads.
   As for the large inductive loads, such as electric tools and capacitive loads, we suggest turning on the switch of the appliance firstly and then the inverter's. The soft start. May be enough to power the high staring.
10. Protection Features
1. Input under-voltage alarm: When the input DC voltage is lower than 9.8V (19.6V/39.2V), the buzzer will whistle intermittently to remind that the inverter will go into the under voltage protection. Pay attention to save the data if you are using computer.
2. Under voltage protection: The inverter will automatically shut down when the input DC voltage is lower than 9.5V(19V/38V). The buzzer will whistle continuously and the green light is off, red light is on. Please turn off the inverter and use it after recharging the battery.
3. Over voltage protection: The inverter will automatically shut down when the input DC voltage is higher than 16V(32V/62V). The buzzer will whistle continuously and the green light is off, red light is on. Please turn off the inverter and adjust the input voltage to the admissible range.
4. Overload protection: The inverter will automatically shut down when the load is higher than the rated power. The buzzer will whistle continuously. Turn off the inverter and resume to normal operation after taking away the excessive load.
5. Short-circuit protection: The AC output will be automatically shut down when short circuited. It will automatically reset after the problem is solved.
6. Thermal protection: The unit will get hot during operation. If the temperature is higher than 149°F, the inverter will automatically shut down. Then the buzzer will whistle continuously and the green light is off, red light is on. Please turn off the inverter, and continue using it after the temperature goes back to normal. Meanwhile find out the factors causing the fault, such as ventilation, ambient temperature, vent, load power and so on. It can avoid similar things from happening again.

11. HOW TO CHANGE FUSE
1. Firstly disconnect the inverter and external batteries, solar panels, load etc all the connections.
2. Unscrew the side plate screws and pull out the bottom plate.
3. Use pliers to clamp car fuse inside the product, and pull out.
4. Replace the same specifications of the car fuse, and then install the bottom and side panels, and screw well.

12. TROUBLESHOOTING TIPS

<table>
<thead>
<tr>
<th>Fault/Display</th>
<th>Cause</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>No output voltage, buzzer sounds continuously</td>
<td>Low input DC voltage</td>
<td>Recharge or replace the battery</td>
</tr>
<tr>
<td>High input DC voltage</td>
<td></td>
<td>1. Do not use when the battery is charging. 2. Check the rated voltage of the battery and make sure that it is in the allowable range of the input voltage.</td>
</tr>
<tr>
<td>Overload</td>
<td></td>
<td>Reduce the load power.</td>
</tr>
<tr>
<td>Over temperature</td>
<td></td>
<td>1. Cut off the load and allow to cool for 10 to 30 minutes. Restart after it reaches to normal temperature. 2. The load power is too large. Reduce the total load power to the range of rated power. 3. Avoid blocking the vent and improve the ventilation condition. 4. Reduce the ambient temperature.</td>
</tr>
</tbody>
</table>

If all of the above methods have been tried, the product still not work properly. The internal circuit of the product may be out of order. Please return the product to the supplier for maintenance.