

Statement: there are some differences between the image and the real object, please subject to real objects; Products are being updated constantly, if you need to learn more, please contact us.

 Do not open inverter without permission!

# POWER INVERTER

CE RoHS

Promote green energy



USER  
MANUAL

- ☐ Modified Sine Wave
- ☐ Pure Sine Wave



Fig 1: Different types of plugs and sockets used in different countries

**Any questions, contact us...**

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## ◆ Specifications

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| ITEMS           | 4000                                 | 5000      | 6000      |
|-----------------|--------------------------------------|-----------|-----------|
| Rated Power     | 4000W                                | 5000W     | 6000W     |
| Surge Power     | 8000W                                | 10000W    | 12000W    |
| Output Voltage  | AC110V $\pm$ 10%                     |           |           |
|                 | AC220V/230V $\pm$ 10%                |           |           |
| Input Voltage   | 12/24/48V                            | 12/24/48V | 12/24/48V |
| Output Waveform | Pure sine wave or Modified sine wave |           |           |

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## ◆ Preface

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### Preface

Thank you for purchasing our Power Inverter. It is a compact and highly portable power inverter which has an excellent track record in the field of high frequency inverter. From the 12V/24V/48V DC outlet in your vehicle or boat, or directly from a dedicated 12V/24V/48V DC battery, this inverter can efficiently and reliably power a wide variety of household AC products, such as TV, Computers, Air-conditioner etc. Please read this guide before installing or using the inverter and save it for future reference.

Due to our continuous work to upgrade and improve our products, we may change or revise the contents of this manual instructions or any part of it without giving any further notice.

## ◆ Specifications

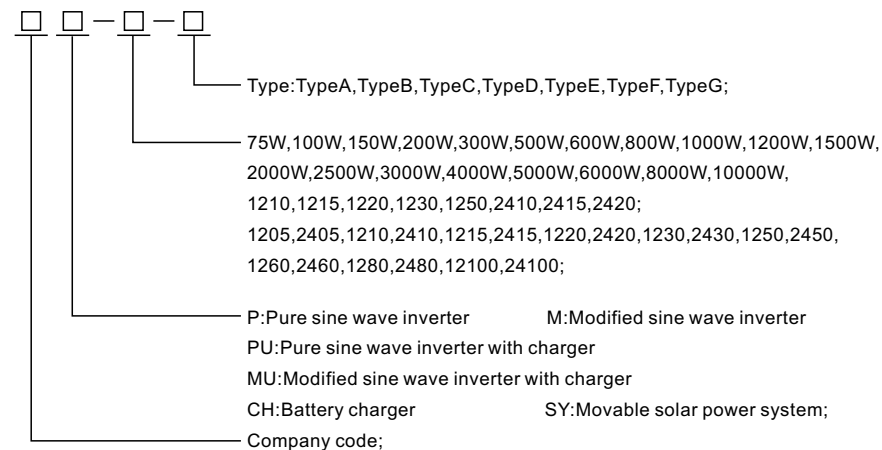
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| ITEMS           | 150                                  | 300       | 500       | 600       | 800       |
|-----------------|--------------------------------------|-----------|-----------|-----------|-----------|
| Rated Power     | 150W                                 | 300W      | 500W      | 600W      | 800W      |
| Surge Power     | 300W                                 | 600W      | 1000W     | 1200W     | 1600W     |
| Output Voltage  | AC110V $\pm$ 10%                     |           |           |           |           |
|                 | AC220V/230V $\pm$ 10%                |           |           |           |           |
| Input Voltage   | 12/24/48V                            | 12/24/48V | 12/24/48V | 12/24/48V | 12/24/48V |
| Output Waveform | Pure sine wave or Modified sine wave |           |           |           |           |

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## ◆ Models and Denotations

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## ◆ Contents

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# Contents

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## ◆ Specifications

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| ITEMS           | 1000                                 | 1500      | 2000      | 2500      | 3000      |
|-----------------|--------------------------------------|-----------|-----------|-----------|-----------|
| Rated Power     | 1000W                                | 1500W     | 2000W     | 2500W     | 3000W     |
| Surge Power     | 2000W                                | 3000W     | 4000W     | 5000W     | 6000W     |
| Output Voltage  | AC110V $\pm$ 10%                     |           |           |           |           |
|                 | AC220V/230V $\pm$ 10%                |           |           |           |           |
| Input Voltage   | 12/24/48V                            | 12/24/48V | 12/24/48V | 12/24/48V | 12/24/48V |
| Output Waveform | Pure sine wave or Modified sine wave |           |           |           |           |

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## ◆ Safety First

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### **WARNING! Shock hazard. Keep away from children.**

1-1. The inverter generates the same potentially lethal AC power as a normal household wall outlet. Treat it as if you are using any other AC outlet.

1-2. Do not insert foreign objects into the inverter's AC outlet, fan or vent openings.

1-3. Do not expose the inverter to water, rain, snow or spray.

1-4. Do not under any circumstance, connect the inverter to AC power.

### **WARNING! Heated surface.**

1-5. The inverter housing may become uncomfortably warm, reaching 140F(60°C) under extended high power operation. Ensure at least 2 inches (5cm) of air space is maintained on all sides of the inverter. During operation, keep away from materials that may be affected by high temperature.

### **WARNING! Explosion hazard.**

1-6. Do not use the inverter in the presence of flammable fumes or gases, such as in the bilge of a gasoline powered boat, or near a propane tanks. Do not use the inverter in

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## ◆ Trouble Shooting

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The inverter gives out alarm sound.

| CAUSES                            | SOLUTION  |
|-----------------------------------|---|
| Low voltage alarm                 | Shorten the wire or use wider cable. Charge the battery.  |
| Over temperature protection       | Make the inverter get cooler. Improve ventilation around the inverter. Place the inverter at a cool place. Feed the load according to requirements. |
| AC appliances draw too much power | Use bigger power inverter   |
| Poor connection                   | Check the connection and tighten it.  |

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### ◆ Trouble Shooting

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The measured output current of the inverter is too low

| CAUSES  | SOLUTION   |
|---|--|
| The range of reading of common ammeter is too small | Measure “modified sine wave” with a “real effective value multimeter” to get the accurate data |
| Too low current of the inverter                     | Charge the battery or change battery   |

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### ◆ Specifications

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an enclosure containing automotive-type, lead-acid batteries. These batteries, unlike sealed batteries, emit explosive hydrogen which can be ignited by sparks from electrical connection.

#### ⚠ CAUTION!

1-7. Do not connect live AC power to the inverter's AC outlets. The inverter will be damaged even if it is switched OFF.

1-8. Do not expose the inverter to temperatures exceeding 104°F (40°C).

#### ⚠ CAUTION! Do not use the inverter with the following equipment;

1-9. Small battery operated products such as rechargeable flashlights, some rechargeable shavers, and nightlights that are plugged directly into an AC receptacle to recharge.

1-10. Certain battery chargers for battery packs used in hand powered tools. These chargers will have warning labels stating that dangerous voltages are present at the charger's battery terminals.

1-11. Note DC voltage of battery should be similar to input DC voltage of power inverter (for example DC 12V of battery should be connected with input voltage 12V of the inverter).

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### ◆ Trouble Shooting

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The electric appliances does not work, and the red FAULT indicator of the inverter lights.

| CAUSES   | SOLUTION  |
|--|---|
| Overload shut off due to rated power of appliances exceeding the inverter's rated power                                    | Use appliances having power below the inverter's rated power  |
| Overload shut off due to overhigh peak power despite of power of electric appliances lower than the inverter's rated power | Since the peak power of the electric appliances exceeds the peak power of the inverter, use an appliance with a peak power constant with the inverter |

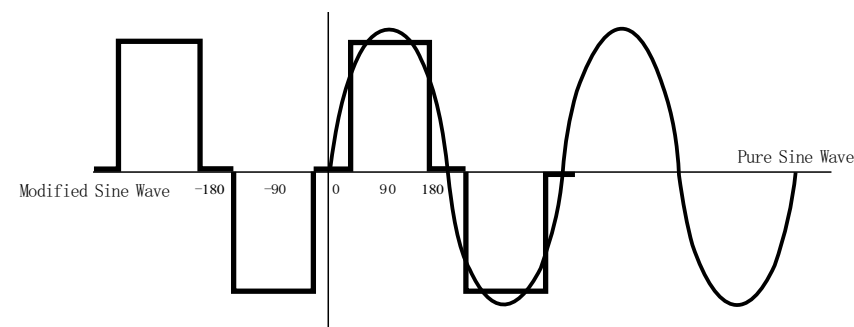
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### ◆ Pure sine wave and modified sine wave inverters

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The inverter come in two types; pure sine wave power type and modified sine wave type. In the pure sine wave power inverter, the 240V AC output harmonically follows a smooth sine wave and is almost identical to normal mains electricity. As a result, the pure sine wave output would be better for most appliances than the modified sine wave output.

A Graphic Comparison of Modified Sine Wave and Pure Sine Wave is shown below:



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## ◆ Product Features and Applications

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### Product Features

- Pure sine wave or modified sine wave
- Soft start
- PWM(Pulse Width Modulation)
- Microprocessor based design
- With power ON/OFF switch and LED indicator
- Overload protection / Over voltage protection / Short Circuit protection / Over temperature protection / Reverse polarity protection (by fuses)

### Product Applications

Power tools series: Electric Saw、Drilling Machine、Grinder、Sand blast Machine、Punching Machine、Weeding Machine、Air Compressor etc.

Office series: Computer、Printer、LCD Monitor、Scanning Machine etc.

Household Appliance series: Dust Collector、Fan、Lamp or LED、Sewing Machine etc.

Kitchen Appliance series: Microwave Oven、Fridge、Freezer、Coffemaker、

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## ◆ Trouble Shooting

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| CAUSES   | SOLUTION   |
|--|--|
| The battery is over discharged (inverter gives an alarm) | Replace the battery or use battery charger to charge your battery  |
| Over temperature shut off due to bad ventilation         | Switch off the inverter and let it get cooled for 15 minutes. Clear objects around the fan and the inverter. Place the inverter at a cool place.Reduce load according to requirements. Restart |
| Too large input current                                  | Check the working state of the charging system. Make sure the output voltage of the battery is within the proper voltage   |

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## ◆ Guidelines

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### Installation Conditions

For safe and optimum performance,install the inverter in a location that is:

- 3-1-1. Dry - Do not expose to water drips or spray.
- 3-1-2. Cool - Operate only in ambient temperatures between 32F (0°C) and 104F (40°C). Keep away from heating vents or other heat producing equipment.
- 3-1-3. Safe - Do not install inverter in a compartment with batteries or flammable liquids, such as gasoline or explosive vapors.
- 3-1-4. Well ventilated - Allow at least 2 inches(5cm)clearance above and on all sides of the unit for proper cooling.
- 3-1-5. Clean and free of dust and dirt- This is especially important if the inverter is used in a dusty working environment.Select a Suitable Location.

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## ◆ Trouble Shooting

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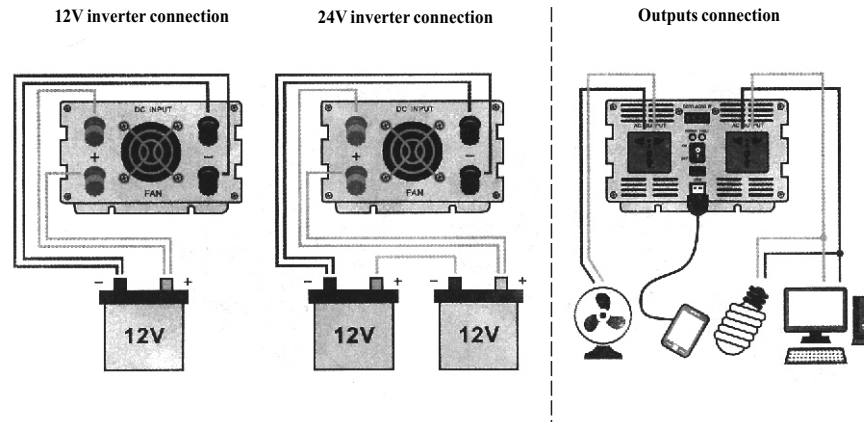
AC appliances do not work, and the green power indicator does not light.

| CAUSES   | SOLUTION  |
|--|---|
| Bad battery                                      | Check the battery, replace it if necessary  |
| Revers connection of negative and positive poles | correct the connection to battery, the inverter may be damaged. Replace the fuse inside inverter (outside warranty cover) |
| Untight connection of cables                     | Check the cables and the connection, screw tight the wiring terminal  |

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## ◆ Inverter to Battery Connections Details

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Tips: 48V and 24V inverters are connected in similar ways, but the batteries in series.

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## ◆ Guidelines

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### Working Principle

The inverter works in two stages. During the first stage, the DC to DC converter increases the DC input voltage from the power source (eg. A 12V battery) to 300V DC. In the second stage, the high voltage DC is converted to the watts you need (AC) using advanced power MOSFET transistors or IGBT technology in a full bridge configuration. The result is excellent overload capability and the capacity to operate difficult reactive loads.

### Connection Method

3-3-1. Attach the ring type connector marked with red to the positive (+) DC terminal on the inverter and attach the ring connector marked with black to the negative (-) DC terminal.

**CAUTION!**

A reverse polarity connection (positive to negative) may damage the inverter (Fuse). Damage caused by a reverse polarity connection would probably invalidate your warranty.

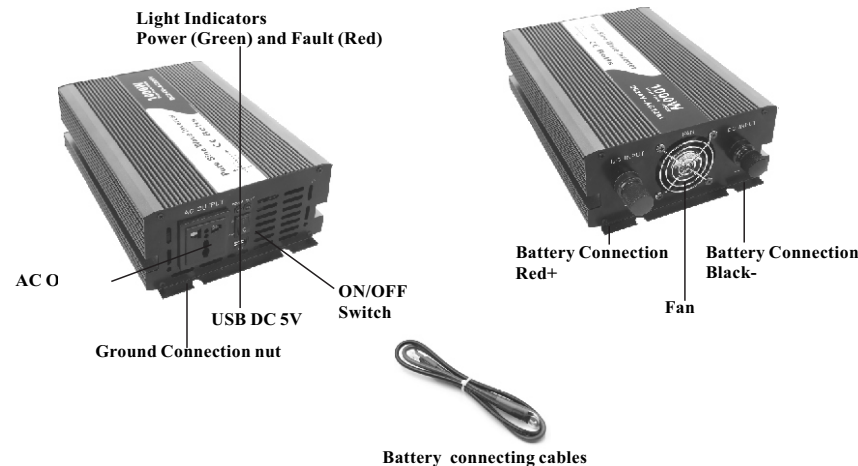
**WARNING: Sparking may occur when connecting the unit to the battery, make sure no flammable fumes are present before making any connections.**

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## ◆ The Sketch of Inverter

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### ◆ Modified sine wave 800W-2000W, Pure sine wave 800W-2000W



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## ◆ Guidelines

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### Inverter's Working Status

3-5-1. When a 12V/24V/48V DC outlet or battery is properly connected to the inverter, turn on the ON/OFF, the green Power indicator will light, and it will deliver AC power to the outlets.

3-5-2. Plug the AC appliances you wish to operate into the AC outlet(s) and switch your appliances on, one at a time.

**NOTICE: When connecting to the appliances, remember to turn on the inverter before turning on the appliance.**

3-5-3. If the audible alarm is ignored, the inverter may be automatically shut down when the battery voltage drops to 9.8-10.2V / 19.6-20.4V / 39.2-40.8V. In order to prevent damage to the battery from excessive discharge.

3-5-4. If the AC appliances' rated power is higher than the inverter's rating (or the appliance draws excessive surge power), the inverter will shut down. The red FAULT indicator will light.

3-5.5. If the inverter exceeds a safe operating temperature, due to insufficient ventilation or a high surrounding temperature, it will automatically shut down. The red FAULT indicator will light and the audio warning alarm will sound.

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### ◆ Guidelines

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3-3-2. Tighten the nut on each DC terminal by hand until it is snug. If the power more than 1800W, please use tools to tight up the screw.

3-3-3. When the inverter is not in use ,unplug it from the 12V/ 24V /48V DC outlet to avoid the battery's discharge.

**CAUTION: Before using the inverter,please provide a ground connection wire. On the rear panel of the inverter is a terminal fitted with a nut for connecting to the inverter and to the earth terminal of the AC output socket. Please choose heavy duty, insulated green/yellow wire. Drive into the ground to a depth of 1-2m or more. In a vehicle, connect the inverter to the chassis of the vehicle. In a boat, connect to the boat's grounding system.**

#### Battery's Charge

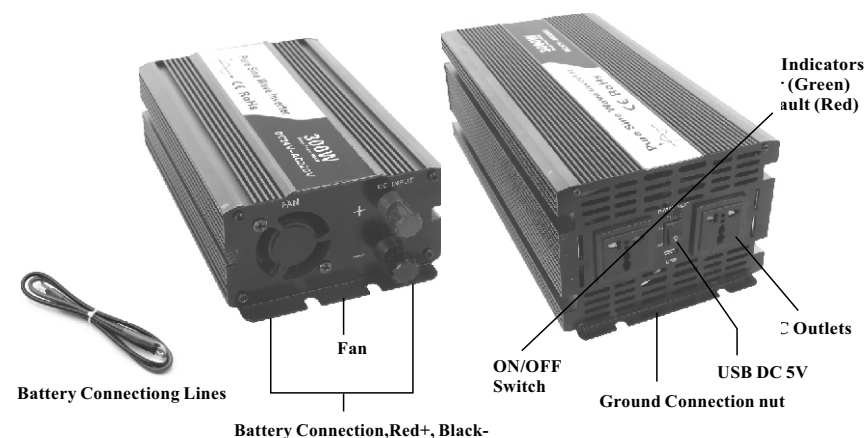
We advise that please use deep cycle battery. If you hear the low voltage alarm, please stop the inverter immediately. When the battery is fully charged, the inverter can be used again. If you use the inverter in a car, then it would be necessary to run the engine of your car after each time you use the inverter. You can run the engine for 10 minutes or so to recharge the battery.

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### ◆ The Sketch of Inverter

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#### ◆ Modified sine wave3000W-6000W,Pure sine wave3000W-6000W



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### ◆ Guidelines

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3-5-6. If a defective battery charge system has caused the battery voltage to rise to a dangerously high level, the inverter will automatically shut down.

3-5-7. The cooling fan is designed to operate only when the temperature goes up or when the loads are applied.

**⚠ CAUTION: Although the inverter incorporates the protection function against over-voltage, there would be still the possibility of getting the unit damaged if the input voltage exceeds 16V/32V/64V.**

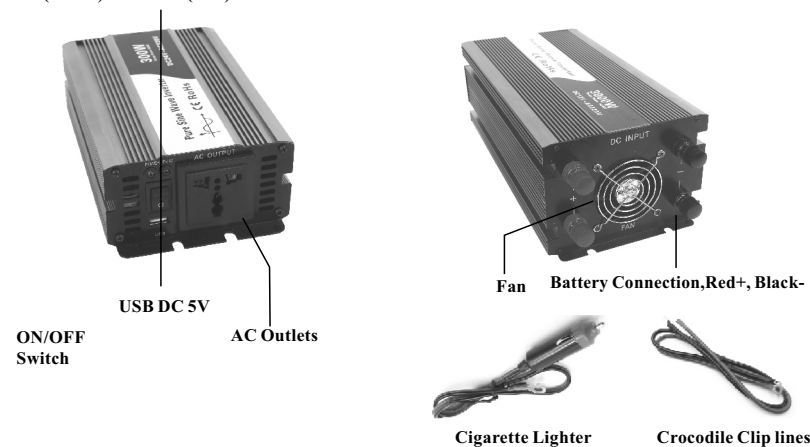
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### ◆ The Sketch of Inverter

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#### ◆ Modified sine wave150W-600W,Pure sine wave150W-600W

Power (Green) and Fault (Red) Indicate



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