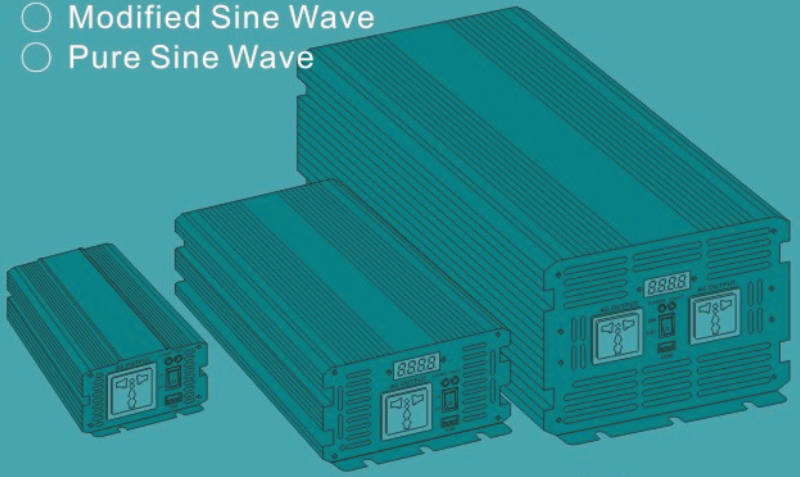
POWER INVERTER

- Modified Sine Wave
- Pure Sine Wave



CE RoHS

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

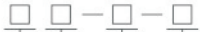
Preface

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 house hold 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.

Contents

◆ Models and Denotations



Type:TypeA,TypeB,TypeC,TypeD,TypeE,TypeF,TypeG;

75W,100W,150W,200W,300W,500W,600W,800W,1000W,1200W,1500W,
2000W,2500W,3000W,4000W,5000W,6000W

P:Pure sine wave inverter M:Modified sine wave inverter
PU:Pure sine wave inverter with charger
MU:Modified sine wave inverter with charger
CH:Battery charger SY:Movable solar power system;

Company code;

◆ Safety First

⚠ 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℃) under extended high power opeartion.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

◆ Safety First

an enclosure containing automotive-type, lead-acid batteries.These batteries, unlike sealed batteries, emit explosive hy-drogen gas 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 104F (40℃).

⚠ **CAUTION! Do not use the inverter with the following equipment:**

1-9. Small battery operated products such as rechargeable falshlights,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 DC12V of battery should be connected with input voltage 12V of the inverter).

◆ Product Features and Applications

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 Marchine、Weeding Machine、Air Compressor etc.

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

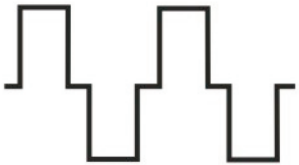
Household Appliance series: Dust Collector、Fan、Lamp or LED、Sewing Marchine etc.

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

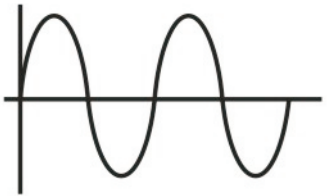
◆ Pure sine wave and modified sine wave inverters

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 belew:



Modified Sine Wave



Pure Sine Wave

◆ Guidelines

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℃) and 104F (40℃). 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.

◆ Guidelines

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 thewatts you need (AC) using advanced power MOSFET tran-sistors 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 redto 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.**

◆ Guidelines

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 depthof 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.

◆ Guidelines

Inverter's Working Status

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

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

⚠ **NOTICE: When connect to the appliances, remember to turn on the inverter before turn on the appliance.**

3-5-3. If the audible alarm be 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 inverters 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.

◆ Guidelines

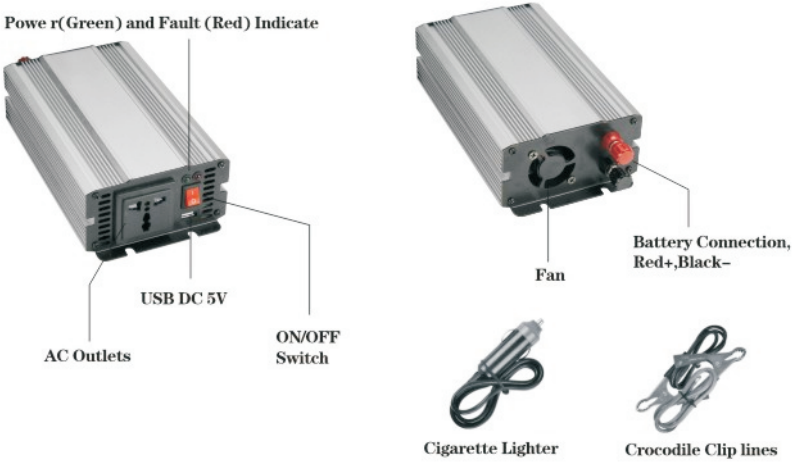
3-5-6. If a defective battery charge system has caused the battery voltage to rise to a dangerously high level, the inverter will automatically shut down.

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.**

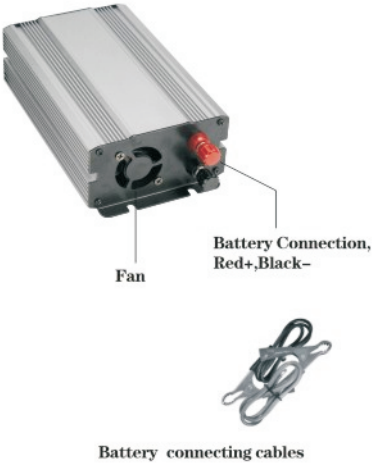
◆ The Sketch of Inverter

◆ **Modified sine wave150W–600W,Pure sine wave150W–600W**



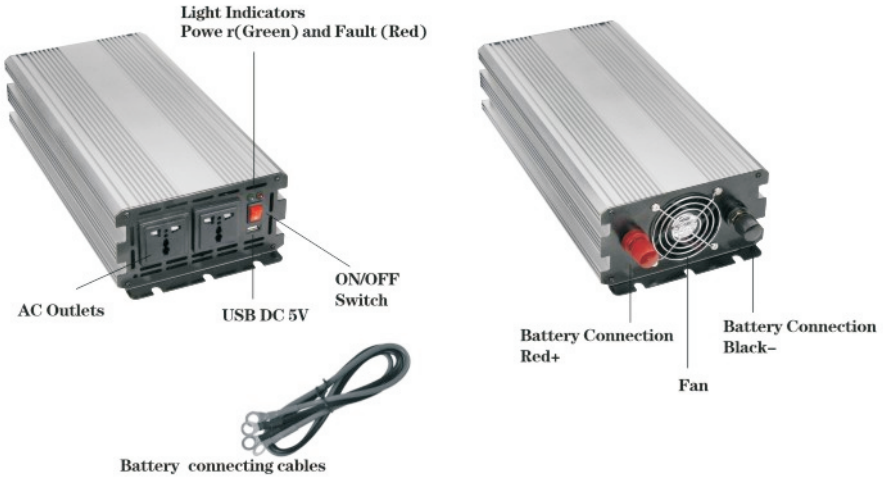
◆ The Sketch of Inverter

◆ **Modified sine wave150W–600W,Pure sine wave150W–600W**



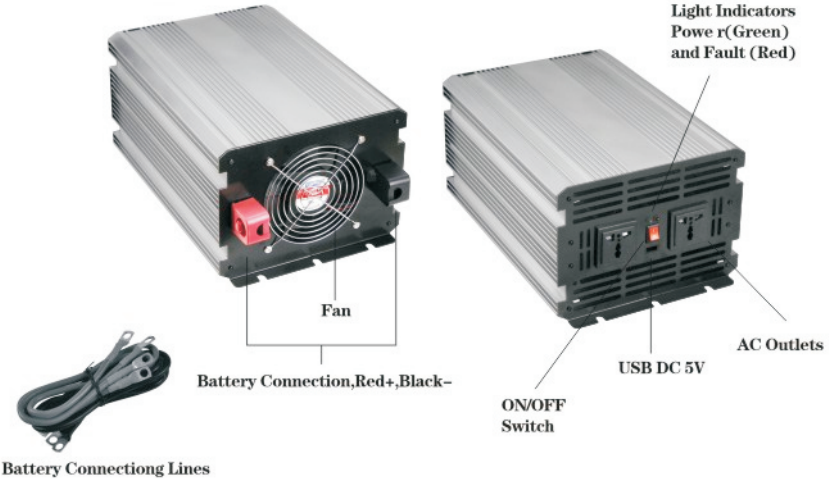
◆ The Sketch of Inverter

◆ **Modified sine wave800W–2000W,Pure sine wave800W–2000W**



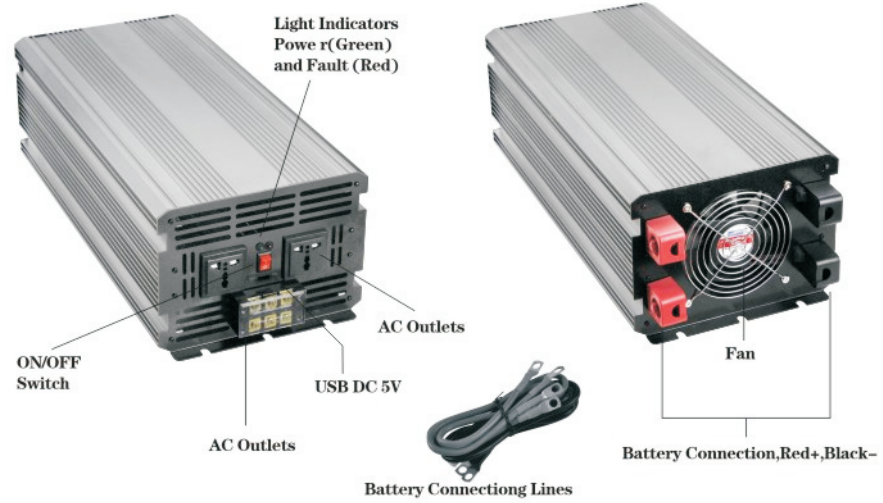
◆ The Sketch of Inverter

◆ **Modified sine wave3000W–6000W,Pure sine wave3000W–4000W**



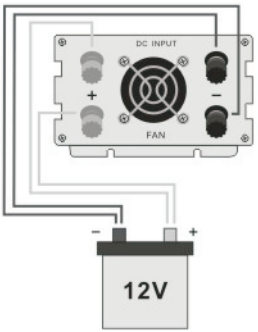
◆ The Sketch of Inverter

◆ Pure sine wave5000W–6000W

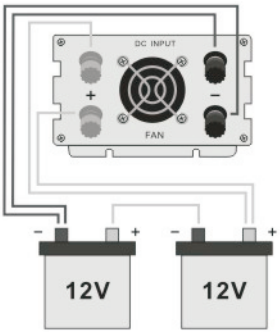


◆ Inverter to Battery Connections Details

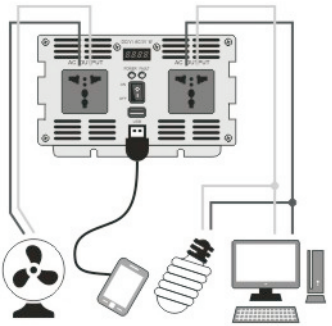
12V inverter connection



24V inverter connection



Outputs connection



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

◆ Trouble Shooting

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

◆ Trouble Shooting

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 consistant with the inverter

◆ Trouble Shooting

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 objectes 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

◆ Trouble Shooting

The measured output courrent 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

◆ Trouble Shooting

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.

◆ Specifications

ITEMS	150	300	500	600	800
Rated Power	150W	300W	500W	600W	800W
Surge Power	300W	600W	1000W	1200W	1600W
Output Voltage	AC110V±10%				
	AC220V/230V±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				

◆ Specifications

ITEMS	1000	1500	2000	2500	3000
Rated Power	1000W	1500W	2000W	2500W	3000W
Surge Power	2000W	3000W	4000W	5000W	6000W
Output Voltage	AC110V±10%				
	AC220V/230V±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				

◆ Specifications

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

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!