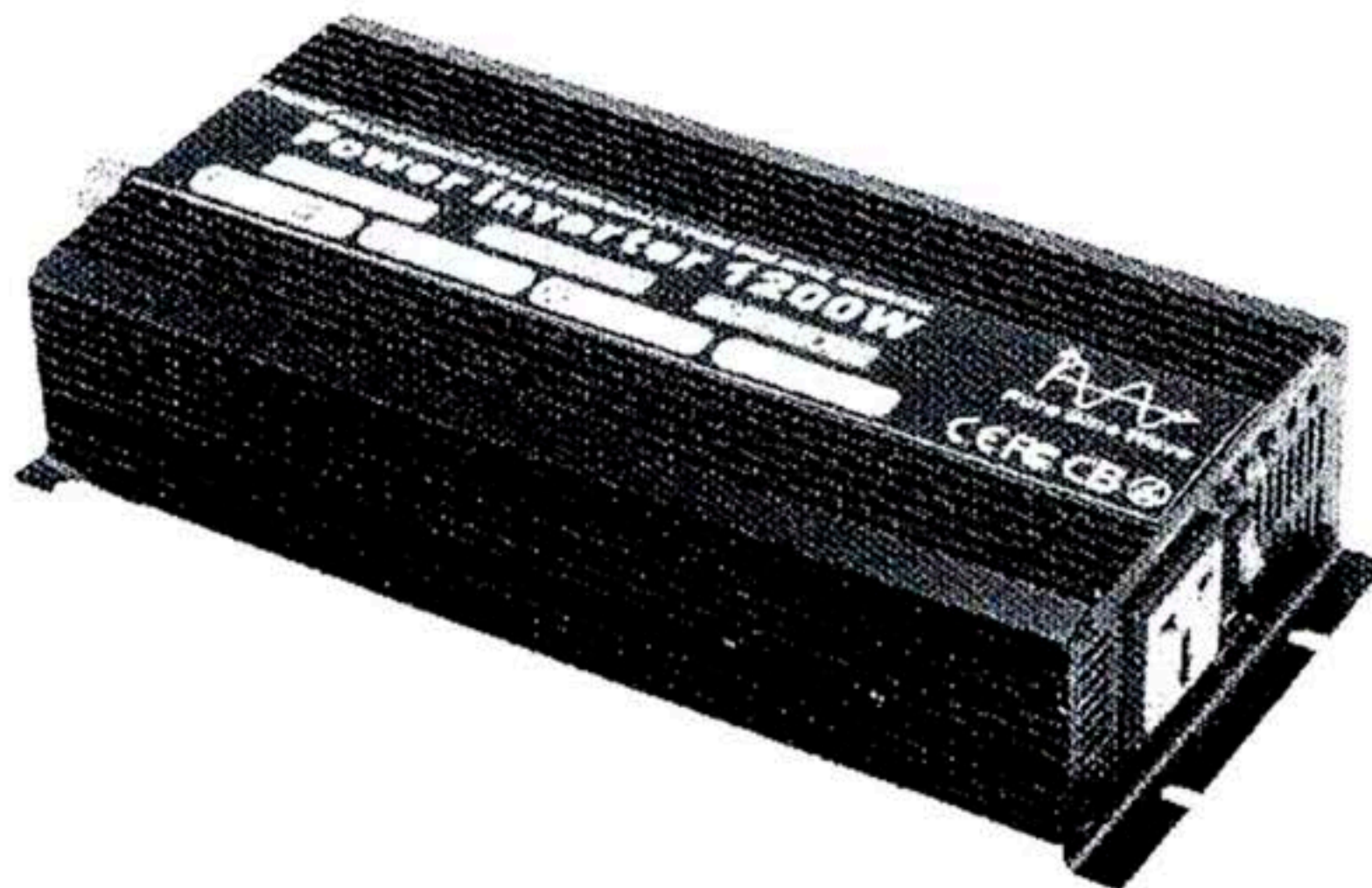


- High Efficiency •Low Interference •Precision Output V Regulation & Filtering
- Turbo Cooling Fan •Soft Operation •LED Indicators

# DC TO AC INVERTER OWNER' S MANUAL

Power Inverter and Inverter/Charger



1. Low voltage input model adopt original imported MOS tube. The current is 5.5 times of rated current.
2. Its low voltage input connection adopt high frequency low resistivity electrolytic capacitor. However ordinary capacitor will explode if the temperature become very high.
3. Every transformer has independent fuse protection. If there is a MOS tube break down, then the fuse will break fast. So that will not effect other MOS tube to break.
4. All the protection signal adopt monolithic processing. Circuit is simple and stable.
5. Input and output are isolated to ensure the operation stability.
6. Output circuit adopt convertible circuit. The SPWM signal produced by Single Chip Microcomputer drive the TLP350 optical coupler. Then the optical coupler isolated drive the output through IGBT tube. Adopt negative pressure to cut off IGBT to eliminate Miller effect, so the output is more steady.
7. The whole design adopt patch technology. The circuit is simple and steady.
8. Allow ON/OFF button controlled by remote control switch;
9. LED indicate and alarm notice the protection function start.

Congratulations and thank you for purchasing ours Power Inverter.  
Carefully read, understand and comply with all instructions before usc.

Edition:04/12      Revised:01/13

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Notice that specifications and product functionality may change without notice.

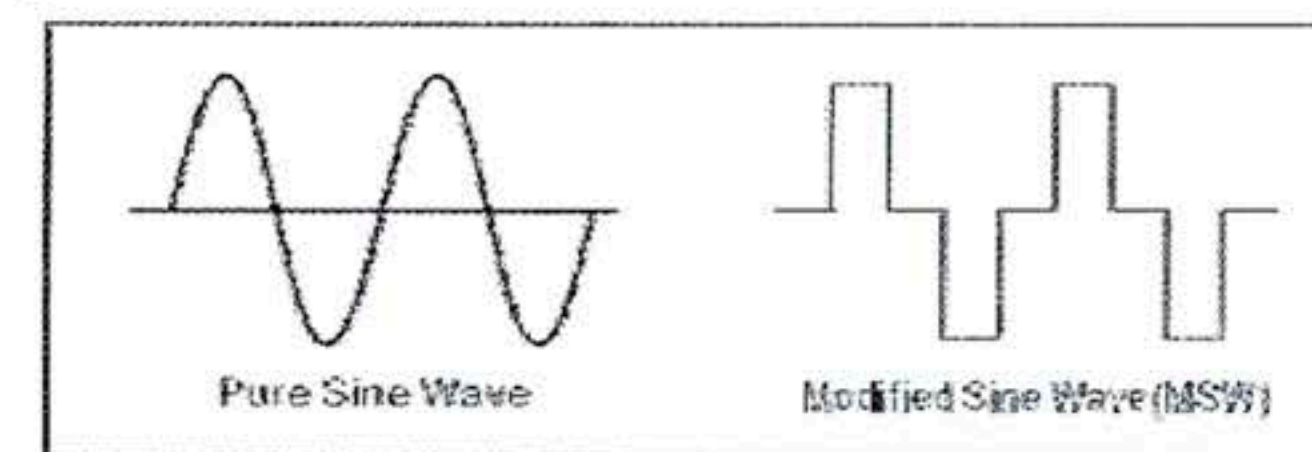
## I. INTRODUCTION

### 1.1 What is an Inverter?

Power inverter is an electronic device that converts low voltage DC (Direct Current) electricity from a battery or other power source to 100V-120V or 220V-240V AC (Alternating Current) household power. DC is the power that is produced by battery or other power source while AC is the standard power needed to run electrical equipment. A power inverter does the opposite of a rectifier and is used in places and situations where AC power is not available.

Inverter/Charger can provide your equipment with utility-supplied AC power when it is available, and during blackouts and brownouts, the unit will automatically switch over to an external battery source to power connected equipment with voltage and frequency -controlled AC power.

### 1.2 Select the right waveform



Waveform is an important consideration when choosing an inverter.

**Pure Sine Wave:** If you want to run your equipment exactly to the manufacturer's specifications, choose a pure sine wave inverter. With pure sine wave, motor loads start easier and run cooler. Some equipment only operate properly with pure sine wave inverter, such as laser printers, variable speed motors and digital clocks.

**Modified Sine Wave:** If your equipment can accept some voltage fluctuation, consider a modified sine wave inverter. These inverters provide mobile power at a more affordable price and come in a full range of size-from handheld to high performance.

### 1.3 Typical Power Inverter Uses

You could use a power inverter in your car or boat to power devices such as laptops, video games consoles, a small television or DVD player.

They also come in handy in emergencies when there is a power outage.

They are also helpful sources of energy on camping trips, beaches and parks where conventional electricity is not available.

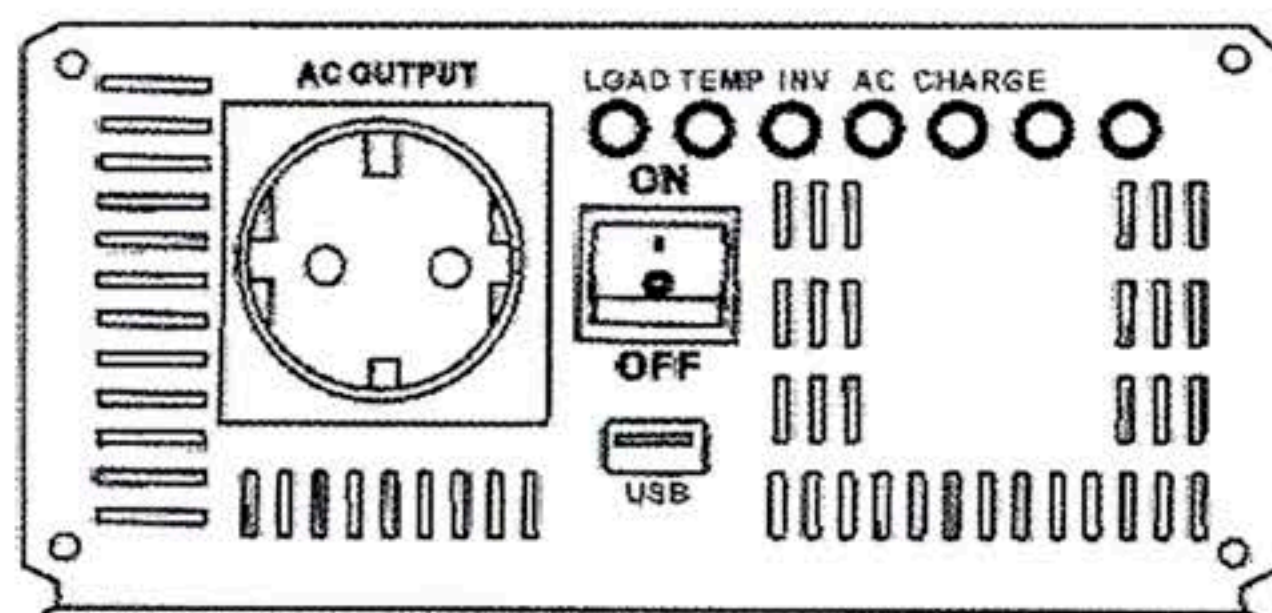
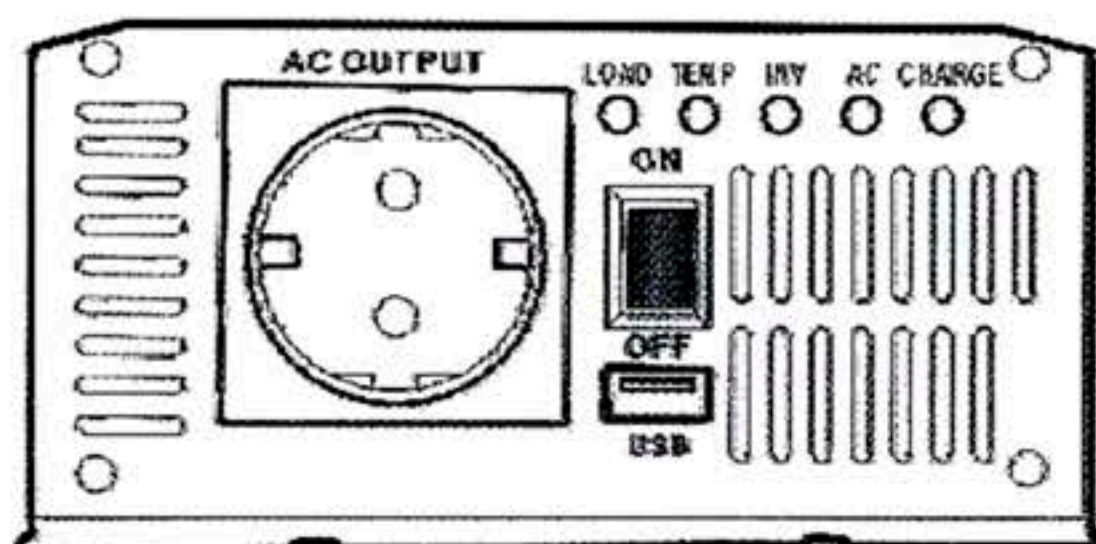
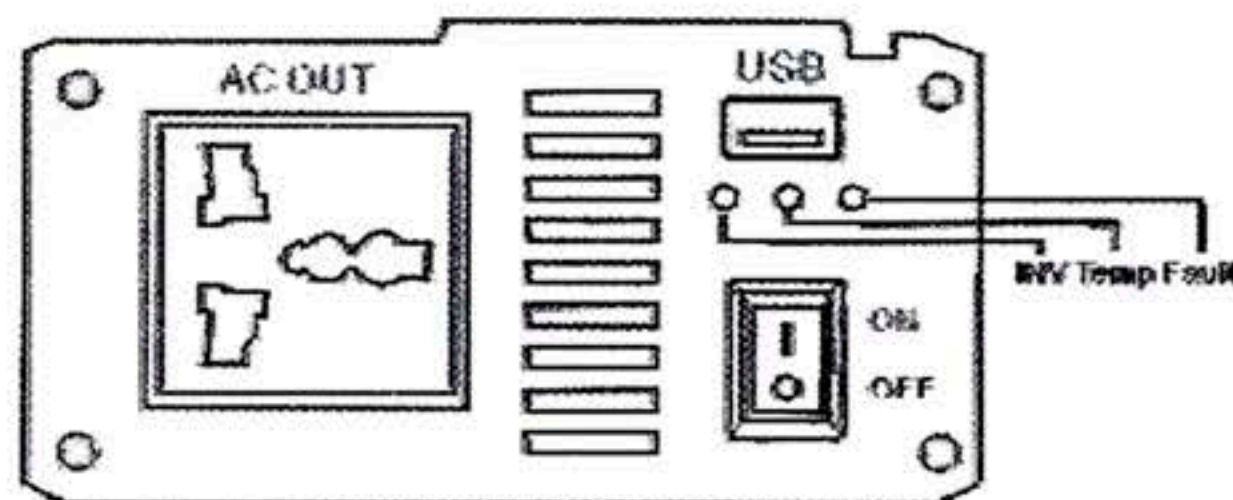
Power inverter can also be used in areas with unstable power supply. The inverter is connected to batteries and the main electrical source. When there is an electrical power supply the system is designed to charge the batteries to store power and when there is a power outage the inverter draws DC current from the battery and converts it to AC to power the home.



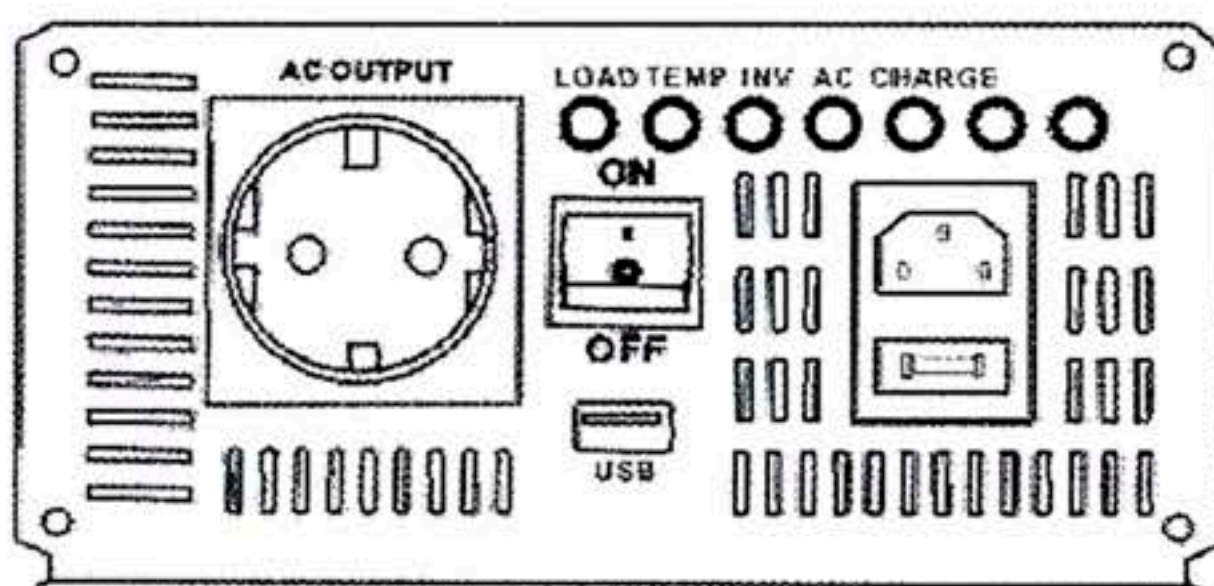
## 2. MAIN COMPONENTS

### 2.1 Front Panel

The front panel view shows the inverter's ON/OFF Switch, AC Outlet, LED Indicator Light Vent Outlet.



Inverter without Charger Model



With Charger Model

### A. ON/OFF Switch.

This switch controls ON/OFF operation of the inverter.

### B. LED Indicator Light

#### b1. Inverter without Charger Model

Three LED indicator light: Temperature, Fault, Inverter.

- Temperature: Turns yellow shows over-temperature, Reduce Load to cool down the device.
- Fault: Turns Red shows fault, reference to Troubleshooting
- Inverter: This light will illuminate continuously whenever connected equipment is receiving battery-supplied, inverted AC power.

#### b2. With Charger model

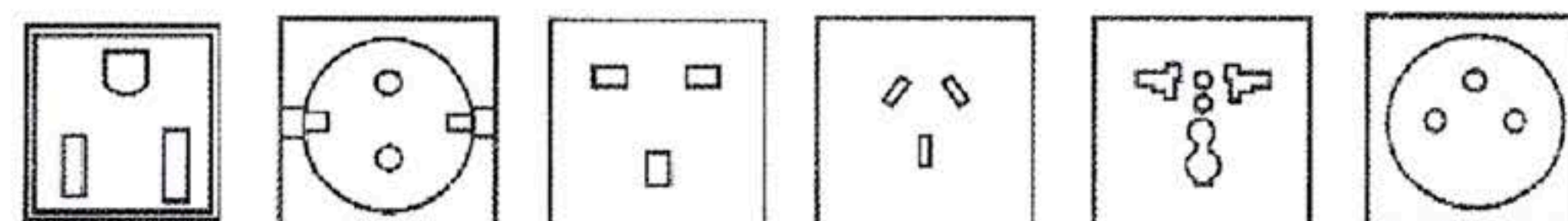
Five LED indicator Light: Charging/Full, Temperature, AC, Fault, Inverter.

- Charging/Full: When Charging, the LED is red; Once battery was fully charged, the light is green.
- Temperature: Turns yellow shows over-temperature, Reduce Load to cool down the device.
- AC: This lights, the main power input normal.
- Fault: Turns Red shows fault, reference to Troubleshooting.
- Inverter: This light will illuminate continuously whenever connected equipment is receiving battery-supplied, inverted AC power.

### C. AC Outlet

Outlet sockets available: North America, Europe(schuko), UK, Australia, etc.

AC Output Optional:



Type1 Type2 Type3 Type4 Type5 Type6

### D. Vent Outlet.

To decrease the temperature of the inverter.

### E. Charger(Optional)

AC input from an AC source like the utility grid or from a generator is allowed to pass the unit to charge the battery/batteries or to operate connected AC loads.

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### Three-stage charging:

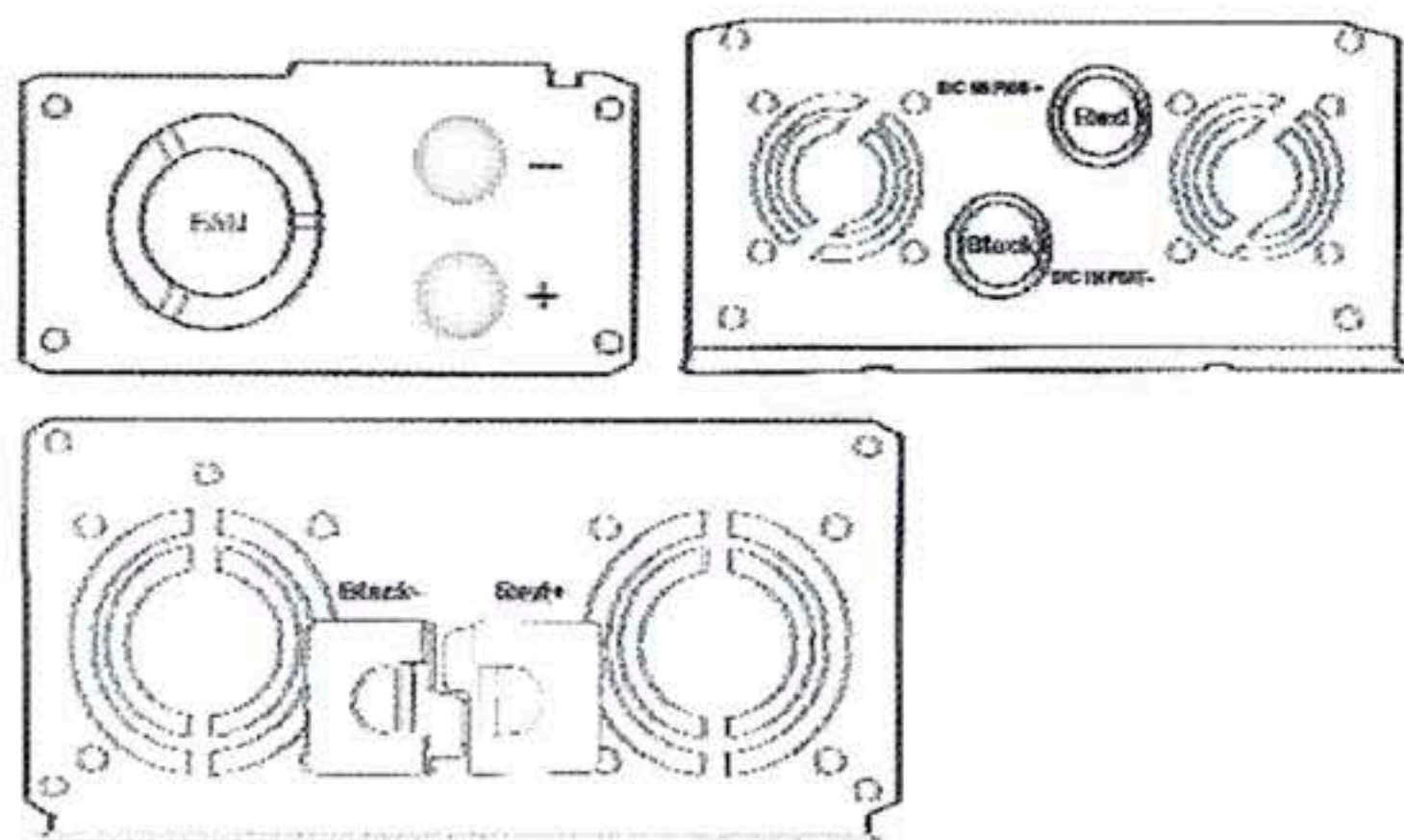
Stage	Description
Stage 1 :Bulk Charge (Constant current)	Current is supplied to the battery at a constant rate while voltage gradually rises.
Stage2:Absorption Charge (Constant Voltage)	Voltage remains constant and current reduces as the battery becomes charged. This ensures complete charging.
Stage3: Float Charge	After the battery reach full charge, charging voltage is reduced to a lower level to prevent gassing and to prolong life. This stage is often referred to as a maintenance charge. Rather than charging a battery, it keeps an already-charged battery from discharging while providing load current

### F. Automatic Transfer Switch (Utility-to-Battery)

When inverter/charger connected with batteries and utility, the unit will start its UPS function: When utility power is available, it will output directly and charge batteries simultaneously. When utility power cuts off, the unit will convert DC power to AC power. When utility power comes back, the unit will turn into utility power supply automatically within 16ms and charge batteries simultaneously.

### 2.2 Rear Panel

The rear panel view shows the inverter's Cooling fan, DC Battery Terminals, Fuse.



#### A. Cooling fans/ Ventilation Windows

The fans automatically operate when the internal temperature (exceeds 35°C) of the inverter requires cooling. Always allow free air flow - do not block the vents.

### B. DC Battery Terminals

**Connect the inverter to battery or other power sources.**

Negative (-) and Positive (+) DC terminals should be kept insulated to protect from accidental short circuits.

- Connect the black cable to the black post marked (-) on the back of the inverter. Connect the other end to the negative terminal on the battery.
- Connect the red cable to the red post marked (+) on the back of the inverter. Connect the other end to the positive terminal on the battery.

**If you connect the cables to the incorrect terminals, you will reverse the polarity and damage the inverter.**



### PROHIBITED REVERSE POLARITY.

DAMAGE CAUSED BY REVERSE POLARITY WILL NOT BE COVERED BY WARRANTY.

### C. Wireless remote control (Optional).

You can use the wireless remote to control the inverter switching



## 3. HOW TO USE INVERTER

### 3.1 Placement of inverter

The location where to install inverter must be:

- Dry:** Do not allow water to drip or splash onto it. Keep this Inverter in a safe place and out of reach of children.
- Cool:** Ambient air temperature should be between 0°C and 40°C - ideally between 15°C and 25°. Do not place the inverter on or near a heating vent or any piece of equipment which is generating heat above room temperature. Do not place the inverter in direct sunlight unnecessarily.
- Ventilated:** Allow at least one inch of clearance around the unit for air flow. Do not place items on or over the inverter during operation. Make sure that air is allowed to circulate freely around the unit. A fan is helpful in the case where the inverter is operating at maximum.
- Safe:** Do not install the inverter in the same compartment as the batteries or in any compartment where flammable liquids or fumes may be or may become present.
- Dust:** Do not install the inverter in a dusty environments. The dust can be inhaled into the unit when the cooling fan is working.
- Close to batteries:** Avoid excessive cable lengths. Do not install the inverter in the same compartment as batteries.



Battery is connected Make sure the On/Off Switch is off.

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### 3.2 Mounting position of the inverter

The inverter may be mounted horizontally on the top of a horizontal surface or under a horizontal surface. The inverter may be mounted on a vertical surface only horizontally.

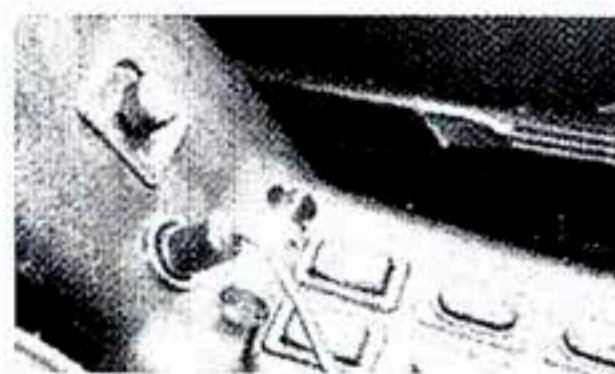
### 3.3 Getting Connected.

To get going, follow these easy steps.

1. Power supply selection - It must get power from storage battery/batteries or a car cigarette lighter port.
2. Connect inverter to power supply. Set the switches into the OFF position (including inverter and appliances).
  - a. Get power from battery/batteries: Connect the DC cables to the DC battery terminals on the rear panel of the inverter. The red terminal is positive (+) and the black terminal is negative (-).
  - b. Get power from car cigarette lighter port, insert the car cigarette lighter plug into the car cigarette lighter port.



a. Connecting to the accumulator



b. Connecting to cigarette lighter socket

3. Connect inverter to appliances. Make sure the load power within the rated power of inverter and the start power should not exceed the peak power of the inverter. When having the inverter connected with appliances and a power supply, switch on the inverter and appliances.

## 4. IMPORTANT SAFETY INSTRUCTIONS

Incorrect installation and misuse of the inverter may result in danger to the user or hazardous conditions.

1. Do not attempt to connect the any other power source, including any AC power source.
2. Make sure the opening to the ventilation fan and vent holes are not blocked.
3. Avoid pulling on the cords and cables. Always grip plugs firmly when unplugging from power source and when disconnecting cables.
4. To avoid electrical hazard, be sure to unplug the inverter from its external power source before inserting the AC plug.
5. For indoor use only. Avoid exposure to external heat sources: direct, prolonged sunlight; dust; corrosive chemicals; and moisture.
6. It is normal for inverters to become warm during use. Avoid touching the device during use. Avoid placing in direct sunlight or near heat-sensitive materials.
7. Do not drop or subject the inverter to undue shock.

8. Do not place anything on top of the inverter.
9. Always with the supplied cables and connectors as shown. Use of cables, connectors, or accessories not supplied with this product constitutes misuse and may result in injury or damage.
10. Do not attempt to service or disassemble. The unit is not user-serviceable. Attempting to disassemble or service the unit can result in electrical hazard, including death from exposure to high voltage. If you experience problems with the unit, discontinue use and Contact Technician.
11. When cleaning the inverter, please switch off power (unplug the inverter). Carefully clean with dry cloth. Do not use wet cloth or cleanser.
12. Disconnect all AC and DC side connections before working on any circuits associated with the inverter. Turning the ON/OFF switch on the inverter to off position may not entirely remove dangerous voltage.
13. Keep away from children.

## 5. PROTECTION FEATURE

Inverter is equipped with numerous protection features to ensure safe operation.

### Input Low Voltage Protection

A: When battery voltage is below  $10.5V \pm 0.5V$  (12V input inverter)/ $21V \pm 1.0V$  (24V input inverter)/  $42V \pm 2.0V$  (48V input inverter), a buzzer will alarm, which indicates DC power supply voltage is descending and batteries need to recharge.

B: When input voltage is below  $10V \pm 0.5V$  (12V input inverter)/ $20V \pm 1.0V$  (24V input inverter)/  $40V \pm 2.0V$  (48V input inverter), AC output will be automatically shut off, Buzzer sounded the alarm sound Bi Bi ~ ~ Bi Bi ~ ~.

### Input Over Voltage Protection

When input voltage reach  $15V \pm 0.5V$  (12V input inverter)/ $30V \pm 1.0V$  (24V input inverter)/ $60V \pm 2.0V$  (48V input inverter), Buzzer sounded the alarm sound Bi ~ ~ ~ and the AC output will be shut off automatically.

### Short Circuit Protection

When short circuits occur, output will be shut off and ALARM/WARNING light turns red.

### Overload Protection

When overloads occur, output will be shut off and ALARM/WARNING light turns red.

### Reverse polarity protection (Fuse, 0.15KW-4KW)

When battery terminals are reverse connected, fuse will be burned to protect appliances.

**Reverse polarity /Sparkproof protection** (Pure Sine Wave Inverter 5KW-8KW model) Our Customized High Current Relay to realize this function.

### Over Temperature Protection

When inner temperature exceeds  $42^{\circ}C$ , the inner cooling fan will automatically turn on to cool the inverter; when less than  $38^{\circ}C$ , the inner cooling fan will automatically shut off. When



inner temperature exceeds 70°C, AC output will automatically shut off, The yellow indicator is lit. It is unusable for 15 minutes.

## 6. Applications and Descriptions:

- 1) The Inverter converts 12V or 24V or 36V or 48V directly to an 110V or 220V Alternating Current at a frequency of 50Hz/60Hz.
- 2) Compared to commercial grade modified sine wave Inverter, the output of pure sine wave Inverter are more suitable for sensitive electronic equipments such as:
- 3) Medical instruments, Emergency power, Oxygen concentrators, Cash registers, Home Theater, High-end Stereos, Computers, Power Tools, Radios, DVD players, TV'S, Musical instruments, Recording equipment, Limousines, Buses, RVs, Precision equipment, Sensitive radio equipment, Laser printers, Fax machines, etc.
- 4) The USB 5V DC output is suitable for electronic equipments such as:
- 5) Digital Camera, Cell Phone, Video Game, MP3, MP4, PDA.
- 6) Appliances requiring a higher output than the rated output are not be connected.

(Note)

- 7) Some electrical appliances (such as power drills, refrigerators, power tools, pumps, compressors and cooking appliances) often need more power than it is stated on the specification plate.

## 7. TROUBLESHOOTING REFERENCE

### 7.1 For Pure Sine Wave Inverter and Inverter & Charger

Inverter Status	Alarm sounds	LED indicate	Solution
ON/OFF switch is switched on, LED does not light. Buzzer is off. There is no AC voltage	No sound	No Signal	<ol style="list-style-type: none"> <li>1) Check the continuity of the battery input circuit</li> <li>2) Check that the battery fuse is intact. Replace if blown</li> <li>3) Check that all connections in the battery input circuit are tight</li> </ol>
Battery low alarm	BiBi~ BiBi~	No Signal	<ol style="list-style-type: none"> <li>a) Check if the cable from battery to the Inverter is Firm and tight.</li> <li>b) Check the battery voltage. If it is below 10V for 12V version Inverter or below 20V for 24V version Inverter or below 30V for 36V version Inverter or below 40V for 48V version Inverter, please charge the battery or change the battery.</li> </ol>
Low/High Voltage alarm	Bi~~~~		<ol style="list-style-type: none"> <li>c) Device switches on and off. Low output voltage may be caused by overload or short circuit in output. Please reduce load.</li> <li>d) Check that the battery cables are thick enough to carry the required current over the required length. Use thicker cables, if required</li> <li>e) Input voltage over 15V for 12V version Inverter, or over 30V for 24V version or over 45V for 36V version or over 60V for 48V version. Correct the input voltage.</li> </ol>

Over Temperature protection	Bi~	Yellow	Check the fan. The cooling fan will be off initially, it is temperature control. If the fan is functional, please make sure the unit is placed at a well-ventilated environment. Reduce Load to cool down the device.
Over Loaded protection	BiBiBi~ BiBiBi~	Red	Please reduce load. Re-start the device.
Not Charge the battery (AC input present).	No sound	No Signal	<ol style="list-style-type: none"> <li>a) Connected batteries are dead, Check and replace old batteries.</li> <li>b) Battery fuse is blown, Check and replace fuse.</li> <li>c) Battery cabling is loose or degraded, Check and tighten or replace cabling</li> <li>d) Charger failure. Call Technical Support.</li> </ol>

### 7.2 For Modified Sine Wave Inverter

#### Acoustics buzzer alarms

When applying the inverter to acoustics devices, some inferior acoustics devices will buzz, this is because the output wave from the inverter is modified sine wave inverter.

#### TV Interference

You can get minimum interference through use of a filter. On some occasions, when the interference of every weak signals becomes too obvious, you can try the following:

- Place the inverter far from the TV and TV antenna.
- Try to change the direction of TV signals cable and TV antenna to reduce the interference to minimum.
- Use screen cable antenna of highly quality.

#### Problem: No output voltage

Possible Causes	Solution
Battery voltage too low	Recharge or replace the battery
Overload	Reduce the load
Inverter thermal protection	Cool the inverter and place it in the place with good ventilation; Reduce the load.
Inverter start-up fail	Repeat starting the inverter
Reverse polarity connection and fuse	Replace the fuse with a fuse of equivalent value.

#### Problem: Inverter no response

Possible Causes	Solution
Poor contact between battery and inverter	Reconnect them
Reverse polarity connection and fuse	Replace the fuse with a fuse of equivalent value.

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**Problem: Output voltage low**

Possible Causes	Solution
Input voltage too low	Make sure input voltage is within the rated range.
Overload	Reduce the load

**Problem: Low voltage alarm**

Possible Causes	Solution
Battery no power	Recharge the battery
Battery voltage too low or poor connection	Recharge the battery, check terminals connection or clean terminal with a dry cloth

**8. Specifications**

Pure sine wave 300/500/600/800				
Model: Pure sine wave -Series	300W	500W	600W	800W
Size W×D×H(mm)	(180+25)*112*58	(225-25)*157*75	(225+25)*157*75	(225-25)*157*75
Packing size W×D×H(mm)	265*150*90	335*205*125	335*205*125	335*205*125
Net weight (kg)	0.8	2.4	2.5	2.6
Gross weight (kg)	1.2	2.6	2.7	2.9
Pure sine wave 1000/1200/1500/2000				
Model: Pure sine wave -Series	1000W	1200W	1500W	2000W
Size W×D×H(mm)	(310+30)*157*75	(310+30)*157*75	(320-33)*216*88	(320+33)*216*88
Packing size W×D×H(mm)	420*205*125	420*205*125	480*150*285	480*150*285
Net weight (kg)	2.6	2.9	5.1	5.4
Gross weight (kg)	3.2	3.5	5.7	6.0
Pure sine wave 2500/3000/4000/5000				
Model: Pure sine wave -Series	2500W	3000W	4000W	5000W
Size W×D×H(mm)	(370-33)*216*88	(370+33)*216*88	350*216*150	350*216*150
Packing size W×D×H(mm)	480*150*285	480*150*285	450*300*250	450*300*250
Net weight (kg)	5.7	6.0	10	11
Gross weight (kg)	6.3	6.6	11	12
Pure sine wave 6000/8000/10000				
Model: Pure sine wave -Series	6000W	8000W	10000W	
Size W×D×H(mm)	400*216*150	400*216*150	450*216*150	
Packing size W×D×H(mm)	500*300*250	500*300*250	550*300*250	
Net weight (kg)	13	15	18	
Gross weight (kg)	14	16	19	
Modified sine wave 300/500/600/800				
Model: Modified sine wave -Series	300W	500W	600W	800W
Size W×D×H(mm)	(137-25)*112*58	(180+25)*112*58	(180+25)*112*58	(225-25)*157*75
Packing size W×D×H(mm)	265*150*90	265*150*90	265*150*90	335*205*125
Net weight (kg)	0.7	0.9	0.9	2.6
Gross weight (kg)	1.1	1.3	1.3	2.9

Modified sine wave 1000/1200/1500/2000				
Model: Modified sine wave -Series	1000W	1200W	1500W	2000W
Size W×D×H(mm)	(225+25)*157*75	(225-25)*157*75	(310+30)*157*75	(260+33)*216*88
Packing size W×D×H(mm)	335*205*125	335*205*125	420*205*125	480*150*285
Net weight (kg)	2.6	2.8	2.6	4.5
Gross weight (kg)	2.9	3.1	3.2	5.1
Modified sine wave 2500/3000/4000/5000				
Model: Modified sine wave -Series	2500W	3000W	4000W	5000W
Size W×D×H(mm)	(370-33)*216*88	(370-33)*216*88	350*216*150	350*216*150
Packing size W×D×H(mm)	480*150*285	480*150*285	450*300*250	450*300*250
Net weight (kg)	5.7	6.0	10	11
Gross weight (kg)	6.3	6.6	11	12
Share Technical parameters				
DC Input Voltage(DC)	12V/24V/48V or 12V/24V(with Remote Control Switch Unit)			
Output Input Voltage(AC)	100V~120V or 220V~240V(optional)			
Conversion Efficiency	≥90%			
Frequency	50Hz or 60Hz			
Waveform	Pure Sine Wave(YPS-Series)		Modified Sine Wave(YPM-Series)	
Regulation	Vrms ± 5%			
Total Harmonic Distortion	THD ≤ 3%(YPS-Series)			
USB Output	DC 5V±5% 500mA			
Socket Types	Universal, Australian, British, Europe types(Optional)			
Protection	Output overload protection, Output short-circuit protection, Battery reverse polarity protection, Input high-voltage protection ,Input low-voltage protections, Overheat protection;			
Intelligent Design Heat Auto Control	Fan Start : 42℃±3    Fan Stop : 38℃±3			
	High Temperature Shut Down : 63℃±3 ,    Restart Output : 55℃±3			
Indicator	Inverter: Green LED ;    Fault: Red LED ; Over Temperature: Yellow LED			
Charger Specification				
AC Input Voltage	AC 100V- 120V± 10%, AC 220V-240V ± 10%.			
DC Charging Voltage	12V	24V	48V	
DC Charging Current	10A/20A/30A	5A/10A/15A	3A/5A/8A	
Remark: 1. Dimesnsion: L*W*H    2.Charger/USB are optional 3.Special order is accepted.				

Note: \*The specifications are subject to change without prior notice for further improvement of products.

**9. Maintenance**

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



## 10. Warranty

We guarantee this product against defects in materials and workmanship for a period of one year from the date of retail purchase by end user.

This warranty will be considered void if the unit has been misused, altered, or accidentally damaged. We are not liable for anything that occurs as a result of the user's fault.

If the warranty period for your product has expired, if the unit was damaged by misuse or incorrect installation, if other conditions of the warranty have not been met, or if no dated proof of purchase is available, your unit may be serviced or replaced for a flat fee.

### Product Warranty Cards

#### 产品保修卡

Warranty Card 保修卡			
Products name 产品名称		Item number 商品编码	
Model 型号		Purchase date 购买日期	
Buyer 买方信息			
Contact name 联系人姓名		Tel 电话	
Seller 经销商			
Maintenance Record 维修记录			

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