※**Thank you for selecting the IPower series Pure Sine Wave Inverter. Please read this manual carefully before using the product and pay attention to the safety information.**

IPower series Pure Sine Wave Inverter

1. Overview

IPower series is a pure sine wave inverter which can convert 12/24Vdc into 110/120Vac. It has the characteristics of concise outline, compact size, high reliability, high efficiency, easy to install and operate and so on. The inverter applicable to household emergency lighting system, vehicle mounted system and small field power supply, etc.

Features:

- Complete isolation-type inverter technology
- Adoption of advanced SPWM technology, pure sine wave output
- Low output harmonic distortion (THD≤5%)
- Optional output voltage and frequency at 110/120Vac,50/60Hz
- High conversion efficiency up to 91%
- USB output 5Vdc/1A
- Extensive Electronic protection
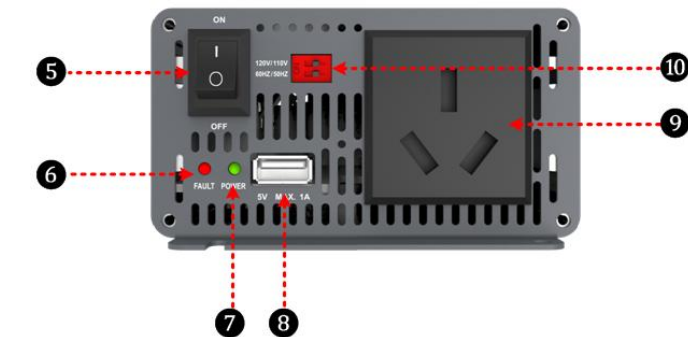
2. Product Features

Figure1 DC Input panel

Figure2　Output panel

①	DC positive input	⑥	Fault indicator(red)
②	Fuse	⑦	Working indicator(green)
③	Fan Ventilation	⑧	USB output interface（5VDC/1A）
④	DC negative input	⑨	AC Outlet
⑤	AC output switch	⑩	Mode switch

⚠ **NOTE：12V system input voltage range is 10.8～16V; 24V system input voltage range is 21.6～32V.**

1) Fan Ventilation

When the heat sink temperature is more than 40℃ or internal temperature is more than 45℃, the fan will turn on automatically.

When the heat sink temperature is lower than 35℃ and internal temperature is lower than 40℃, the fan will turn off automatically.

2) Mode Switch

The output mode can be changed by the mode switch. This mode can be switched online.

- When the switch No.1 is on the ON side, output frequency is 60Hz, otherwise is 50Hz.
- When the switch No.2 is on the ON side, the output voltage is 120Vac, otherwise is 110Vac.

⚠ **NOTE: Both the output frequency and the output voltage change availability after restart the inverter.**

⚡ **WARNING：DO NOT turn ON/OFF the mode switch when the inverter is working.**

3) LED indicator and Buzzer

| Working indicator	Fault indicator	Buzzer	Status
Green On Solid	Red OFF	No Sounding	Output is ON
Green Slowly Flashing	Red OFF	Sounding	Input low voltage
Green Fast Flashing	Red OFF	Sounding	Input over voltage
Green On Solid	Red On Solid	Sounding	Over temperature
Green OFF	Red Fast Flashing	Sounding	Load short circuit
Green On Solid	Red Slowly Flashing	Sounding	Overload
Green OFF	Red OFF	Sounding	Output voltage abnormal

4) AC Outlet (optional)

Universal：
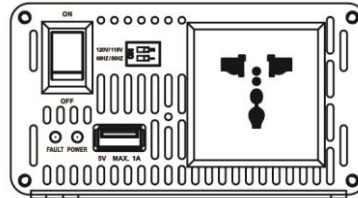
Australia/New Zealand:
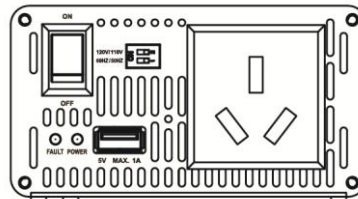
European:
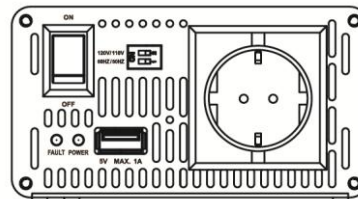
3. Installation and wiring

1）Notes of installation

- Do not expose the inverter to humid, flammable, explosive or dust environment.
- Please make sure the air ventilation clearance around the inverter is more than 10cm.
- Never install the inverter in a sealed enclosure with flooded batteries.

- The surface of the inverter produce high temperature when it is working，please stay away from materials or equipment which affected by high temperature
- This inverter can only be used singly, parallel connection or in series will damage the inverters.
- It's an off-grid inverter, if connect to the grid, the inverter may be damaged.

2）**Wiring**
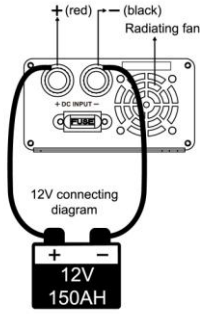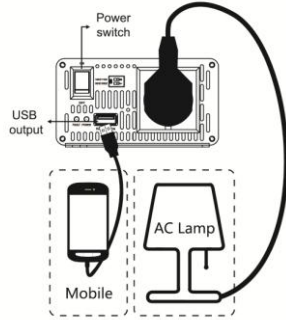

Figure 1 DC Input   Figure 2   Output

Operation Steps：

Step1: Turn off the inverter.

Step2: Connect the AC load to the AC outlet.

Step3: Connect the battery.

Step4: Turn on the inverter.

Step5: Turn on the AC load.

⚠ **NOTE:** If the output is connected different loads, it is suggested that turn on the large shock current load first, then turn on the small shock current load.

⚠ **NOTE：** Turn off the inverter, and then cut off the DC input power supply when the load stops working.

⚡ **WARNING：** When the inverter polarity reversed, the fuse or inverter will be damaged.

⚡ **WARNING：** Be careful the electric shock risk, the AC port will output a high voltage.

⚡ **WARNING：** DO NOT open the inverter cover, place where the children can't reach to prevent electric shock.

⚡ **WARNING：** Please contact the professional, when the inverter occur the faults

4.Protection

Protection and recover	Condition			Phenomenon
	Parameter	IPower-11	IPower-21	
Over voltage protection and recover	Input Voltage Ui	Ui>16V±3%	Ui>32V±2%	Output is OFF Green indicator fast flashing Buzzer sounds
		Ui≤14.5V±3%	Ui≤29V±2%	Green indicator on solid The output is on
Low voltage protection and recover	Input Voltage Ui	Ui<10.8V±3%	Ui<21.6V±2%	Output is OFF Green indicator slowly flashing Buzzer sounds
		Ui≥12.5V±3%	Ui≥25V±2%	Green indicator on solid The output is on
Over tem. protection and recover	Tem.(T)	Heat sink T≥75℃ (IP350-12:70℃) or Internal T≥65℃		Inverter turn OFF
		Heat sink T≤55℃ and Internal T≤50℃		Inverter turn ON
Overload protection① and recover	Output power S Output power Pe	S=1.2Pe		Output is OFF after 15min Red indicator slowly flashing Buzzer sounds
		S=1.3Pe		Output is OFF after 1min Red indicator slowly flashing Buzzer sounds
		S=1.5Pe		Output is OFF after 10s Red indicator slowly flashing Buzzer sounds
		S>2Pe(Rated input power)		Output is OFF after 5s Red indicator slowly flashing Buzzer sounds
	Load short circuit protection①			Output is OFF immediately Red indicator fast flashing Buzzer sounds

①**When appear output overload protection or load short circuit protection, it has three times auto-recover output function (once delay 5s, twice delay 10s and three times delay 15s).**

5. Troubleshooting

Faults	Possible reasons	Troubleshooting
Green indicator slowly flashing Buzzer sounds	DC input voltage too low	Measure the DC input voltage, if the voltage is lower than 10.8V/21.6V. Adjust the input voltage to restore normally.
Green indicator fast flashing Buzzer sounds	DC input voltage too high	Measure the DC input voltage, if the voltage is higher than 16V/32V. Adjust the input voltage to restore normally.
Red indicator slowly flashing Buzzer sounds	Overload	① Reduce the number of the AC load. ② Restart the inverter.
Red indicator fast flashing Buzzer sounds	Short circuit	①Check carefully loads connection, clear the fault. ②Restart the inverter.
Green and red indicator on solid Buzzer sounds	Over temperature	When the heat sink temperature exceeds 75℃ or the internal temperature exceeds 65℃, the inverter will automatically stop output; When the heat sink temperature below 55℃ and the internal temperature below 50℃, the inverter will resume to output.

6.Technical Specifications

Technical Parameters

Item \ Model	IP350-11	IP500-11	IP350-21	IP500-21
Input Rated Voltage	12VDC		24VDC	
Input Voltage Range	10.8～16VDC		21.6～32VDC	
Input surge voltage	<32V		<44V	
Fuse	32VDC/50A	2*32VDC/35A	32VDC/30A	2*32VDC/25A
No-load current	<0.7A	<0.9A	<0.5A	<0.5A
Output Voltage	110VAC(±5%) 120VAC(-10%～+5%)			
Output Continuous Power(-20℃～+45℃)	350VA	500VA	350VA	500VA
Power factor	0.8			
Instantaneous impact power	≥750VA	≥1000VA	≥750VA	≥1000VA
Output way	Single phase			
Output Wave	Pure sine wave			
Output Frequency	50/60Hz （±0.2%）			
Distortion THD	THD≤5%(Resistive load)			
Max. Efficiency	91% 90%(IP350-11)			
Max. USB Output	5VDC/1A			

Environmental Parameters

Working environment temperature	-20℃～+45℃
Storage temperature range	-35℃～+70℃
Humidity range	≤93%（N.C.）
Enclosure	IP20
Altitude	<2000m (Derating to operate according to IEC62040 at a height exceeding 1000 m)

Mechanical Parameters

Model	IP350-11	IP350-21	IP500-11	IP500-21
DC input terminal	6mm²			
Overall dimension	214×105.5×57.7mm		232.2×132×74.5mm	
Mounting dimension	185.5×76.7mm		205×102mm	
Mounting hole size	Φ4.2mm		Φ5.2mm	
Net weight	0.9kg		1.4kg	

7. Disclaimer

This warranty does not apply under the following conditions:

- Damage from improper use or use in an unsuitable environment.
- Battery voltage exceeding the rated value of inverter.
- User disassembly or attempted repair the inverter without permission.
- The inverter is damaged due to natural elements such as lightning.
- The inverter is damaged during transportation and shipment.

Any changes without prior notice!   Version number：V1.0