

Pure sine wave inverter

Manual of Use

Please read this manual carefully before installation.

Warning:

This series of products belong to off-grid inverters. It is forbidden to connect other AC to the inside of the inverters. It is forbidden to inject AC power from any other external source into the AC socket.

Statement:

The company reserves the right to change products, product updates are not subject to notice!

Pure sine wave inverter

CATALOGUE

User Manual

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1. Safety Precautions (Please read this manual carefully before installing)

- The machine contains high voltage with a potential hazard, if abnormal must be handled by qualified technical personnel, do not open the Inverter cover.
- Do not place Inverter in a humid environment and near water.
- Do not place Inverter in a high-temperature environment, direct sunlight or near fire.
- Replace the battery, please use the same brand and the same type of battery equipment, is strictly prohibited using different brands or different capacity batteries at the same time use.
- Do not keep the battery or battery near the fire source, or explode wounding.
- Keep the Inverter before or after the air intake or exhaust (please keep at least 15cm or more).
- Do not stack other items on the Inverter cabinet.



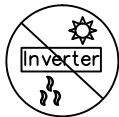
Warning: The battery will increase with the use of life and aging problems, once the battery aging, the need for professionals to do the replacement or treatment, or the battery may be due to leakage and other hazards caused by the proposed annual maintenance of the battery on a regular basis.



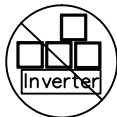
No Disassembling



No Humidity



No Fire or High Temperature



Don't pile Up Sundries



Keep Ventilation

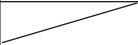

2. Product Introduction

- The off-grid inverter series for the digital CPU control, DC / AC converter, the use of battery pack to provide energy conversion to AC voltage output.
- With a sinusoidal waveform output, long-term work in the 0% -100% load state.
- Its instantaneous power of more than 1 times, for inductive, capacitive load and other different load types.
- Applications include computers, communications, yachts, SUV, home recreation equipment, motors, power tools, industrial control equipment, various types of audio and video appliances and other applications.







2.1 Features

- Sine wave output (THD <3%)
- Full digital control tips
- Highest efficiency output up to 91%
- The product complies with CE/FCC/LVD/ROSE specifications
- LED / LCD display working status
- One-year free product maintenance and warranty

2.2 Main Specifications

OUTPUT	Model type	FS300W FS500W FS600W PS1000W PS1500W PS2000W KS2500W KS3000W TS4000W TS5000W TS6000W			
	Power	0% -100% (continuous use) - (120% - 145% = 10S) - ($\leq 145\%$ = 2S)			
	Voltage Frequency	AC230V \pm 5V 50 \pm 0.5Hz		AC115V \pm 5V 60 \pm 0.5Hz	
	Waveform	Rated power input, pure sine wave (THD <3%)			
Protection		Overvoltage protection, undervoltage protection, overheat protection, overload protection, reverse connection protection (internal fuse) AC short circuit protection			
INPUT	Battery voltage range		10.5V-15V	20V-30V	40V-60V
	Efficiency		89%	90%	91%
Input Overload Current and Percentage		FS300W Current	120%=30A	120%=15A	120%=7.5A
		FS500W Current	120%=50A	120%=25A	120%=12A
		FS600W Current	120%=60A	120%=30A	120%=15A
		PS1000W Current	120%=100A	120%=50A	120%=25A
		PS1500W Current	120%=150A	120%=75A	120%=38A
		PS2000W Current	120%=200A	120%=100A	120%=50A
		KS2500W Current	120%=250A	120%=125A	120%=63A
		KS3000W Current	120%=300A	120%=150A	120%=75A
		TS4000W Current		120%=200A	120%=100A
		TS5000W Current		120%=250A	120%=125A
		TS6000W Current		120%=300A	120%=150A
No-load current		Please refer to the technical specifications			

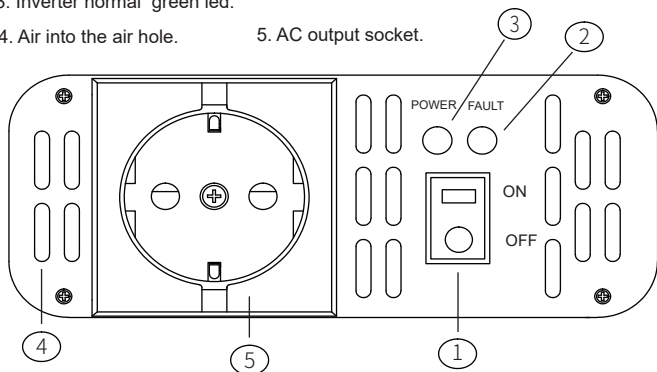
2.3 AC socket (support customization of table below)

					
A USA	B AUSTRALIA	C UNIVERSAL	D U.K	E FRANCE	F GERMANY

3.(FS series) Panel description

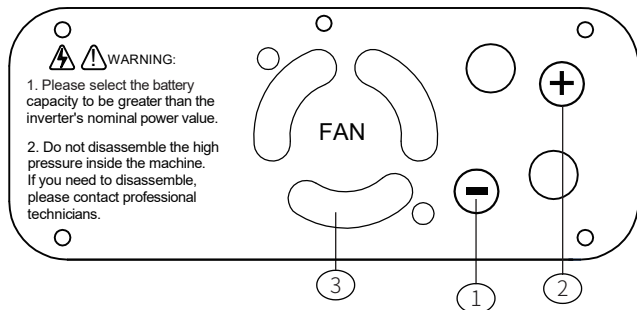
3.1 FS300W/FS500W/FS600W (AC PANEL DESCRIPTION)

1. Power ON / OFF.
2. Fault warning red led.
3. Inverter normal green led.
4. Air into the air hole.
5. AC output socket.



3.2 FS300W/FS500W/FS600W (DC Input Panel Description)

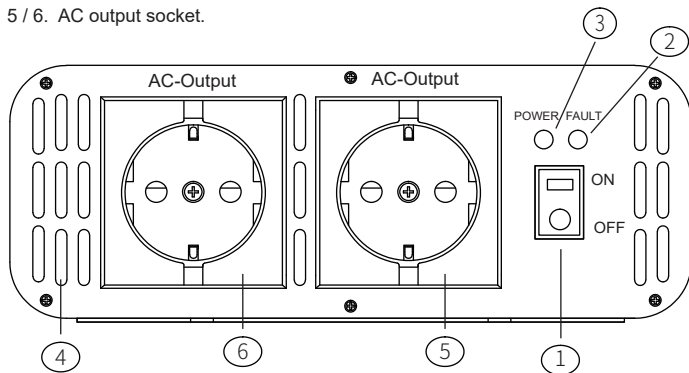
1. Battery/DC(-)
2. Battery/DC(+)
3. Cooling fan.



4. (PS series) Panel description

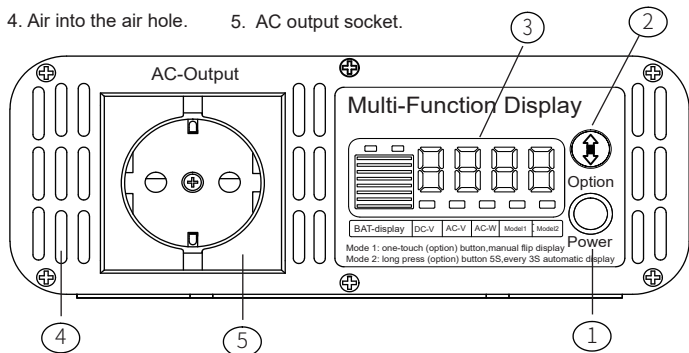
4.1 PS1000W/PS1500W/PS2000W (No LCD display for AC panel instructions)

1. Power ON / OFF.
2. Fault warning red led.
3. Inverter normal green led.
4. Air into the air hole.
- 5 / 6. AC output socket.



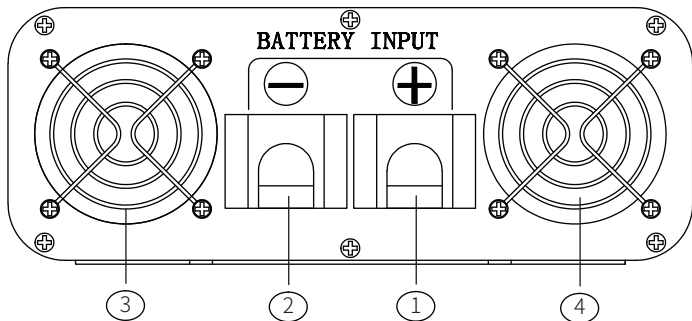
4.2 PS1000W/PS1500W/PS2000W (AC panel instruction + with LCD)

1. Power ON / OFF.
2. Flip-over display button.
3. Digital display screen.
4. Air into the air hole.
5. AC output socket.



4.3 PS1000W/PS1500W/PS2000W (DC Input Panel Description)

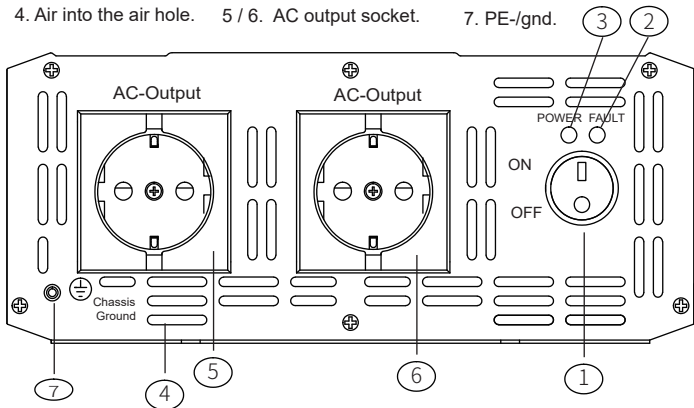
1. Battery input (+).
2. Battery input (-).
3. Cooling fan 1.
4. Cooling fan 2.



5. (KS series) Panel description

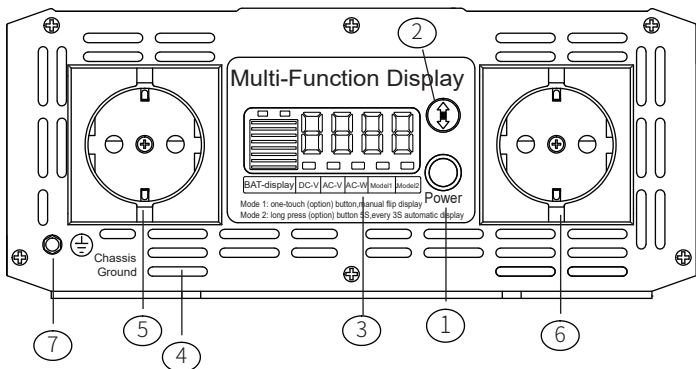
5.1 KS2500W/KS3000W (No LCD display for AC panel instructions)

1. Power ON / OFF.
2. Fault warning red led.
3. Inverter normal green led.
4. Air into the air hole.
- 5 / 6. AC output socket.
7. PE-/gnd.



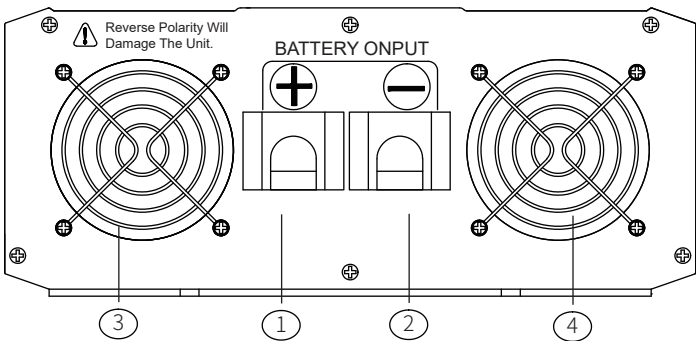
5.2 KS2500W/KS3000W (AC panel instruction + with LCD)

1. Power ON / OFF.
2. Flip-over display button.
3. Digital display screen.
4. Air into the air hole.
- 5/6. AC output socket.
7. PE-/gnd.



5.3 KS2500W/KS3000W (DC Input Panel Description)

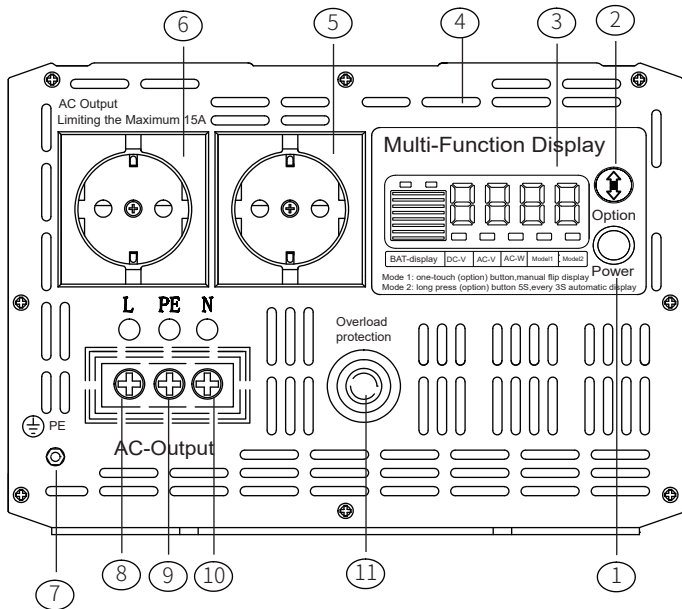
1. Battery input (+).
2. Battery input (-).
3. Cooling fan 1.
4. Cooling fan 2.



6. (TS series) Panel description

6.1 TS4000W/TS5000W/TS6000W (AC PANEL INSTRUCTION + WITH LCD)

1. Power ON / OFF.
2. Flip-over display button.
3. Digital display screen.
4. Air into the air hole.
- 5/6. AC output socket.
7. PE-/gnd.
8. AC-L
9. AC-pe/gnd
10. AC-n
11. Overload protector maximum 15a.



Warning:

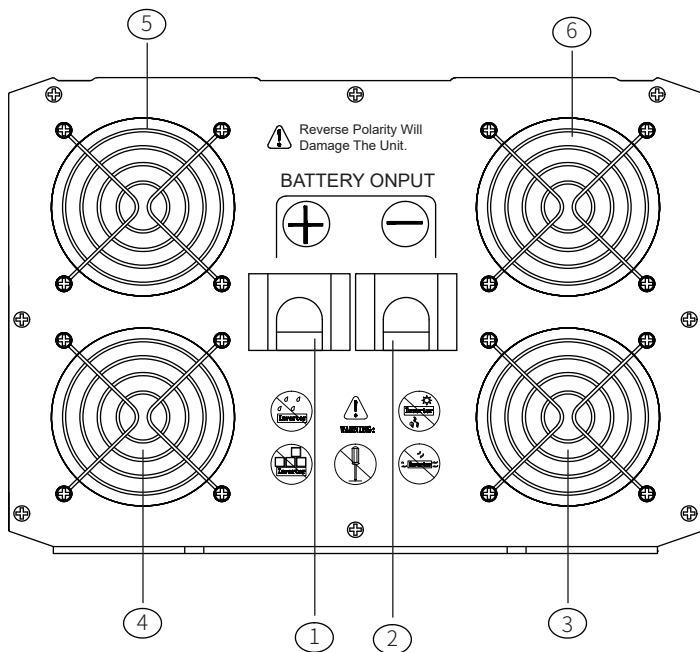
The maximum current of AC socket is 15A.

Overload protector of AC socket will be disconnected if it exceeds (15A = 3300W).

AC-L/AC-N terminal is used for high-power electrical appliances.

6.2 TS4000W/TS5000W/TS6000W (DC Input Panel Description)

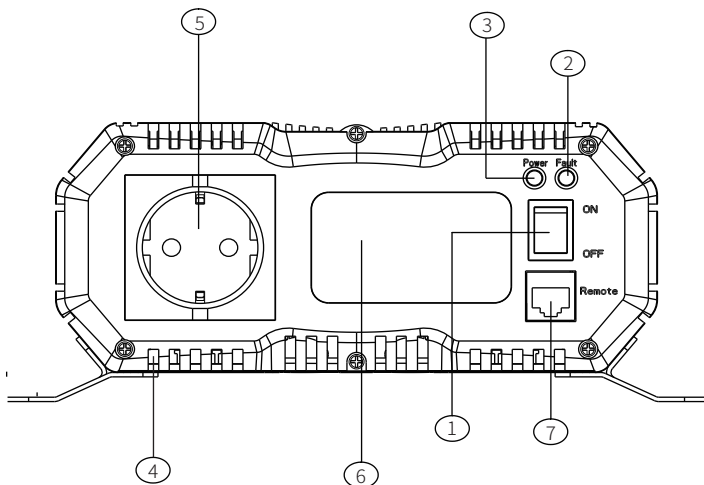
1. Battery input (+).
2. Battery input (-).
3. Cooling fan 1.
4. Cooling fan 2.
5. Cooling fan 3.
6. Cooling fan 4.



7. Description of PSC series panel

7.1 PSC1200W/PSC1500W/PSC1800W (AC outlet panel with LCD dual display)

1. Power ON/OFF
2. Fault warning red led
3. Inverter normal green led
4. Air into the air hole
5. AC output socket
6. Lcd liquid crystal display
7. Remote connector



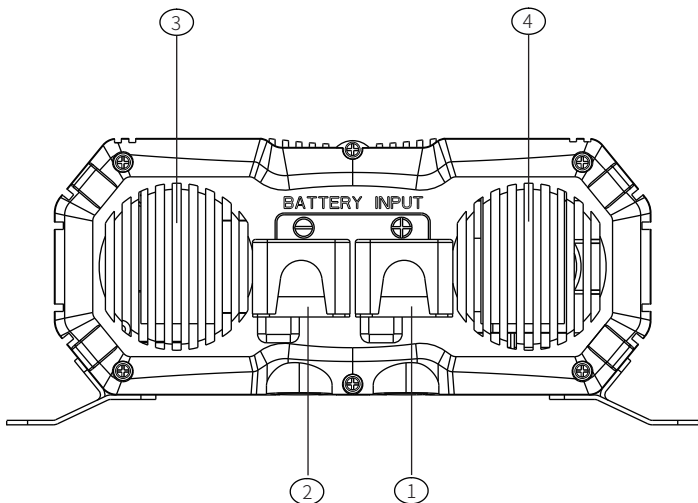
7.1 PSC1200W/PSC1500W/PSC1800W(Battery, DC input panel)

1. Battery/DC (+)

2. Battery/DC (-)

3. Cooling Fan 1

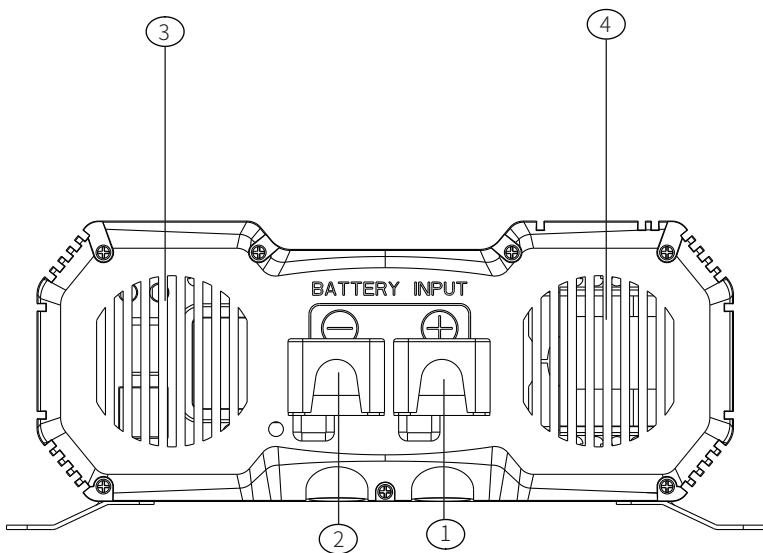
4. Cooling Fan 2



8. KSC Series panel description

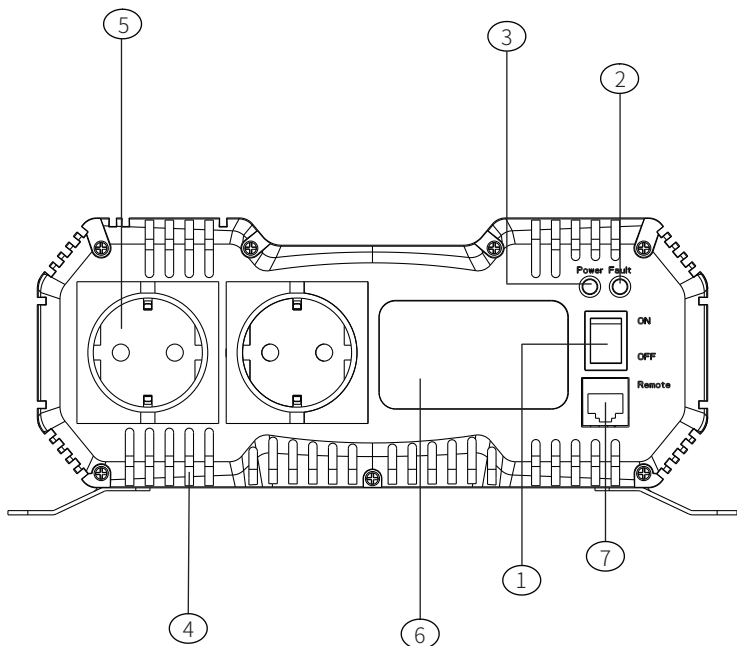
KSC1200W/KSC1500W/KSC1800W(Battery, DC input panel)

1. Battery/DC (+)
2. Battery/DC (-)
3. Cooling fan 1
4. Cooling fan 2



8.1 KSC2000W/KSC2500W/KSC3000W(Battery, DC input panelv)

1. Power ON/OFF
2. Fault warning red led
3. Inverter normal green led
4. Air into the air hole
5. AC output socket
6. Lcd liquid crystal display
7. Remote connector



9. Protection function description

9.1 No LCD display instructions

LED to describe	Green led	Red led	Buzzer alarm
State mode	Normal	Fault warning	
1)Battery polarity reverse connection protection: When the input voltage of the battery is reversed, the internal fuse of the inverter will be fused. Please open the lid and replace it, or send it back to the factory for repair.			
2)Battery low voltage protection: When the battery voltage is lower than the specification value, the inverter will automatically turn off and alarm 3 sound, failure LED lights up.			
3)Battery high voltage protection: When the battery voltage is higher than the specification value, The inverter will automatically turn off and alarm 4, and the fault LED will light up.			
4)Over temperature protection : When the internal temperature of the inverter is too high (75 degrees), it will automatically turn off and alarm 5 sounds. The fault light LED will be on for a long time. When the temperature drops to 65 degrees, it will automatically recover.			
5)AC output short circuit protection: The AC output of the inverter is short-circuited, the fault load is disconnected, and the inverter is automatically restored.			
6)Output overload / over power protection: When the load is 120%-145%, the buzzer will stop the output after 10S continuous alarm. When the power reaches 145% instantaneously, the output will be turned off within 2S. (Restart inverter switch recovery)			

Tips: If an abnormal situation occurs, the fault display light will appear on the display panel of the unit (see Table 7.3.1) for troubleshooting reference.

9.2 With LCD display instructions

LCD function display State mode	1) Battery voltage, 2) Battery percentage, 3) AC voltage, 4) AC power 5) Buzzer alarm	1) Short press (option) page display 2) After long pressing 5S (option), every 3S automatically flips the page to display
1)Battery polarity reverse connection protection: When the input voltage of the battery is reversed, the internal fuse of the inverter will be fused. Please open the lid and replace it, or send it back to the factory for repair.		
2)Battery low voltage protection: When the battery voltage is lower than the specification value, the inverter will automatically turn off, alarm 3 will sound, LCD will show no output of AC, and the battery power will flash red.		
3)Battery high voltage protection: When the battery voltage is lower than the specification value, the inverter will automatically turn off, alarm 4 will sound, LCD will display no AC output.		
4)Over temperature protection : When the internal temperature of the inverter is too high (75 degrees), it will automatically turn off and emit 5 rings, and the LCD will display no AC output.		
5)AC output short circuit protection: The AC output of the inverter is short-circuited, the fault load is disconnected, and the inverter is automatically restored.		
6)Output overload / over power protection: When the load is 120%-145%, the buzzer will stop the output after 10S continuous alarm. When the power reaches 145% instantaneously, the output will be turned off within 2S,LCD has no AC display. (Restart inverter switch recovery)		

Tips: If an abnormal situation occurs, the fault display light will appear on the display panel of the unit (see Table 7.3.2) for troubleshooting reference.

9.3. Fault message guide

9.3.1 No LCD fault information guide

Buzzer + LED indicator	Fault Information
1 beep Alert, LED green light	Normal Startup.
3 beep Alert, LED Green Light on, LED Red Light on	Undervoltage Protection:Red LED is on, shows the battery voltage is too low or depleted.
4 beep Alert, LED Green Light on, LED Red Light on	Overvoltage Protection:RED LED is on, shows the battery voltage is too high.
5 beep Alert, LED Green Light on, LED Red Light on	Overheat Protection:RED LED is on, shows the interior of the inverter is overheat.
LED red light flashes	Inverter overload protection: turn off AC output after 10 seconds(Need to reset converter switch)

9.3.2 With LCD fault information guide

Buzzer + LCD Display	Fault Information
1 beep Alert, LCD Battery Percentage Full, AC Voltage Display.	Normal Startup.
3 beep Alert, Battery percentage flickers, the number is not displayed.	Indicating battery undervoltage protection, no AC output.
4 beep Alert, LCD Battery Percentage Full, The number is not displayed.	Indicates battery overvoltage protection.
5 beep Alert, LCD Battery Percentage Full, The number is not displayed.	Indicate internal overheating protection of inverters
LCD Battery Percentage Full, The number is not displayed.	Inverter overload protection: turn off AC output after 10 seconds(Need to reset converter switch)

10. Installation and Wiring

10.1 Battery cable:

wire length should be shortened, the following is not more than 1.5 meters for the principle, and the choice of wire diameter required according to safety regulations, can carry the current flow of the wire. Wiring too thin will cause the wire to overheat and even cause the risk of ignition. Please refer to the following table 8-1 actual wiring, please find the dealer or the original factory to ensure safety

Form 8-1 Wire Using recommendation

Rated Current	Wire CSA(m ²)	AWG	Safety Wiring Range
16A-25A	2.5	12	
25A-32A	4	10	
32A-40A	6	8	
40A-60A	10	6	
63A-80A	16	4	
80A-100A	25	2	
100A-125A	35	1	
≥125A	50	0	

10.2 Battery Pack Recommendation

1. Battery packs are configured according to minimum safe start-up and full load discharge time and minimum capacity. Users can choose a larger capacity (meeting discharge time) battery pack according to this table to meet their needs.

Form 8-2-1 (12V Configuration Table) Suggestions for Battery Capacity Use

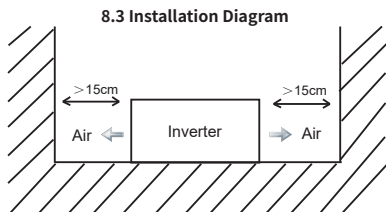
Machine model	Use time	Battery capacity	Safe start-up and use time, increase battery capacity and prolong service time
300W	1 hour	30Ah*10V =300Wh	
500W	1 hour	50Ah*10V =500Wh	
600W	1 hour	60Ah*10V = 600Wh	
1000W	1 hour	100Ah*10V =1000Wh	
1500W	1 hour	150Ah*10V =1500Wh	
2000W	1 hour	200Ah*10V =2000Wh	
2500W	1 hour	250Ah*10V =2500Wh	
3000W	1 hour	300Ah*10V =3000Wh	

Form 8-2-2 (24V Configuration Table) Suggestions for Battery Capacity Use

Machine model	Use time	Battery capacity	Safe start-up and use time, increase battery capacity and prolong service time
300W	1 hour	15Ah*20V =300Wh	
500W	1 hour	25Ah*20V =500Wh	
600W	1 hour	30Ah*20V = 600Wh	
1000W	1 hour	50Ah*20V =1000Wh	
1500W	1 hour	75Ah*20V =1500Wh	
2000W	1 hour	100Ah*20V =2000Wh	
2500W	1 hour	125Ah*20V =2500Wh	
3000W	1 hour	150Ah*20V =3000Wh	

10.3 Installation Requirements

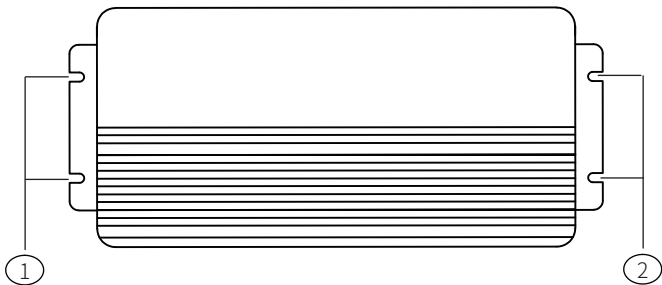
- The machine weight should be taken into consideration when fixing the machine, and avoid high temperature and high pressure environment, in order to guarantee a long service life.
- The machine uses the built-in fan to force the air-cooled heat, need to keep the front and rear ventilation openings, to avoid long-term operation in high temperature environment or overload conditions to operate, in order to avoid the machine can not provide normal function operation or affect the service life. (Recommended access to the outlet 15 cm, should not hinder the ventilation of the fault)



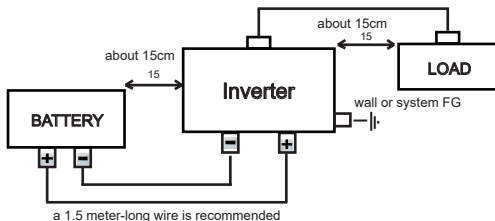
10.4 Fixing Recommendation

As shown in the figure, the body shell design to retain four fixed holes, the user can use the reserved hole to be fixed. (Recommended horizontal fixed, and pay attention to whether the ventilated ventilation is smooth)

1. Fixed mounting hole
2. Fixed mounting hole



10.5 Rerence Diagram of Setup



11. Troubleshooting

This series of inverter power supply for professional goods, due to improper use or modification, can cause damage or electric shock hazard. Therefore, the company recommends that users according to the following table after the basic inspection can not return to normal, please contact the dealer or return to the original maintenance.

Fault state	May cause the cause	Suggest the method of lifting
AC voltage no output	DC voltage abnormality	Check if the DC voltage (battery voltage) is too low or too high
	Over temperature protection	Check if the radiator vents are open or the temperature is too high. Please use or lower the ambient temperature
	Overload protection	Check whether the load exceeds the rating or requires large starting current, such as inductive or capacitive devices.
	Short circuit protection	Check whether the load exceeds the rating or short-circuited
Battery discharge Time is too short	battery is used for too long or malfunctioning	Replace battery
	battery capacity is too small	Confirm specifications recommend increasing battery capacity

12. Cautions for the Electrical Load

This series of inverter power supply can be used on most AC devices, and can be normal power supply. But some special equipment applications, Inverter may not be able to start or work properly.

- 1) Motor load equipment due to its start will produce a great starting current (about 6-10 times the rated current), pay attention to whether the instantaneous start power exceeds the Inverter maximum output power specifications.
- 2) When the load device is capacitive or rectified (for example: switching or switching power supply), it is recommended to put the device before the no-load or light load conditions, with Inverter after the start of the load will slowly increase to ensure that Inverter can be smooth machine.

13. Warranty

In the normal use of the product to provide free repair service for 1 year, do not replace the parts or modify or repair the product in any way, so as not to affect your enjoyment of the normal warranty service.