Product user manual

Inverter Power

Catalog

Product introduction

This series is specially designed for the area which is lack of electricity, it is an intergration of in inverter,controller, VRLA battery. It is digital design, pure sine-wave output, low-freq uency design, independent modularization which enhances the reliability andexpandability of the product. It is mainly applied to the solar energy PV generating system, wind power system, wind, sun, oil,storage hybrid generating system and provide AC power supply for remote area, satellite groud re ception, observatory, frontier defence station,communication station, electroless island and so on.

Features:

- Advanced performance by CPU control.
- Adopt low frequency transformer, pure sine wave output, adapt to different load.
- IGBT module with high reliability.
- High effciency energy-saving and environmental protection.
- Intelligent battery management, protection against over-charged and over-discharged to prolong the service life of the battery.
- Concise LED/LCD display to check the working status.
- Full-oriented protection with high reliability.
- Invert/charge/battery intergration,simple configuration,cost-effective, suitable for users.
- Can be used at wide range of temperatures and high altitude

Safety attention:

To ensure the safety use, pls. adhere to the following:

- Suitable packing method is required when making the transportation of the goods.(To keep the equipment steady or non-vibrative.)
- It might be water when the machine was moved from low temperature environment to high temperature environment. Dry the machine before use to ensure safety.
- Read through the user manual particularly before use.Don't exceed rated load.
- Cut off the power immediately in case the failure occurred and contact with the dealer.
- Pls. use dry fire extinguisher and liquid fire extinguisher in case fire caused from the surrounding environment of the machine.
- In order not to pour it into the machine, pls. don't place the container with liquid on the top of the equipment,
- The risk of causing short circuit or electric shock or catching fire.
- The equipment should be connected to the ground well to ensure the safety.

Danger

All the load should be disconnected before connecting the equipment. It is not allowed to put out the fire with water.

drain current

Connect well the ground line before the connection of the cables.

Radio disturbance

This series is A class radio disturbance product, do not let the equipment which is sensitive to the equipment(such as emitter, receiver, radar, metal locator to get close to the equipment.

Battery

Please go to the specialist for maintenance of the batteries

- Keep the batteries in a dry environment. Electrolyte leakage may happen when it is broken, which is harm to the eyes and skin. In case of the electrolyte in the eyes or on the skin, rinse with water and go to the doctor.
- When the batteries are in series, the voltage of the battery bank may be dangerous for human. Don't touch the battery bank.
- When the battery is short circuit or discharged with large current, it will probably be broken or even catch on fires.
- If the battery is SLA one, recharge it after 6 months storage (on 20℃). Or battery failure may occur. Charge the battery every four months is advisable.
- New battery can not be 100% charged after the first charge. It will takes several charge and discharge circles
- Dispose the battery scrap properly and deliver it to the battery recycle organization.

Transportation and storage

Transportation

Check the packing of the goods. If it is broken or there is some part of the system missing, please notify the dealer within 7 days.

Unpack

Be careful, when unpacking. Check the packing if it is good.

Storage

Please put the goods in a clean, dry environment. And the temperature should be between(0℃-35℃)。

Move

Keep the packing on the up side and move it careful. Any falloff or strike may break the machines.

Installation

Warning

Installation of this system should be carried out by qualified technicist

Conditions

- This system should be installed on shelf or ground horizontally.。
- Don't stack with other things upon the inverter
- Ideal Running temperature: 15℃-25℃. From 20℃ on, the life expectancy of the battery will drop 50% if the temperature increases every 10℃
- These equipments apply to wind turbine and solar panels with equivalent wattage. Don't connect other power source to the input ends---wind (W1/W2/W3) OR solar (s+/s-).
- Leave a space of 2.5cm around the inverter for ventilation。

Max. Current and recommended cable diameter

See the following figure(IEC-287)

1）PVC-insulated copper wire (@70℃)
2）Temperature: below 40℃
3）If the two conditions above can not be met, wider cable is needed.

Rated power（W）	150 (12V)	300 (24V)	500	750	1000	1500	2000	3000
Input cable diameter of wind turbine(㎟)	2	3	3	4	4	4	6	6
Input cable diameter of PV panels（㎟）	1.5	1.5	2	3	3	3	3	4
Output cable diameter (㎟)	2	3	3	4	6	4	6	8
Ground line diameter (㎟)	0.5	0.5	0.75	0.75	1	1.5	2	2.5
Battery wire diameter (mm^2)	0.5	0.5	0.75	0.75	1	1.5	2	2.5

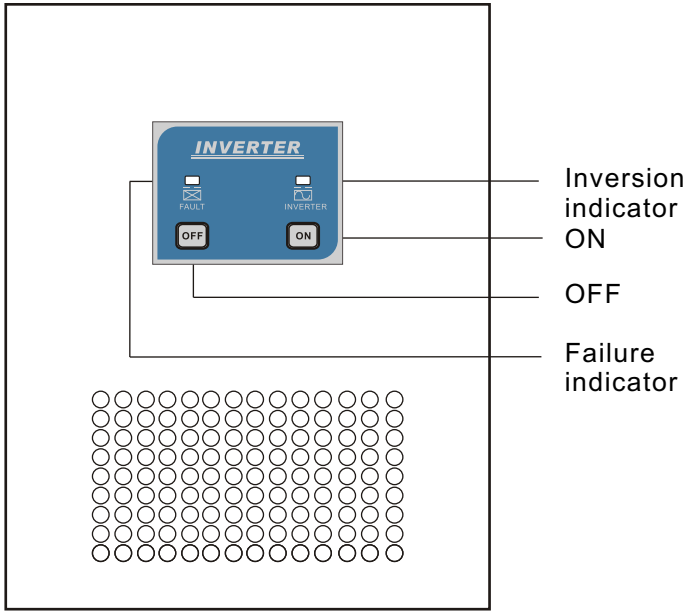
Exterior protector

Apply appropriate breaker or fuse to the exterior equipments

Notice

If there is external battery case, keep it next to the equipments and use proper breaker or fuse.

Front panel display 1



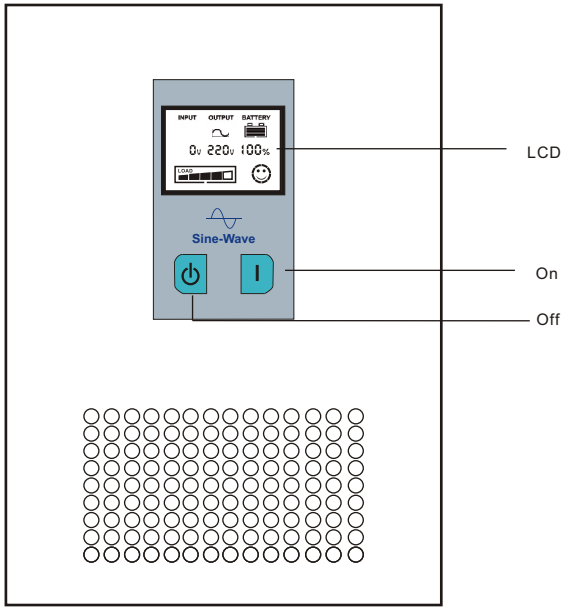
Inverter (150W/300W/500W/750W/1000W Model panel)

Indicator instruction

"INVERTER" Indicator light is green, green signifies inverter normal running.

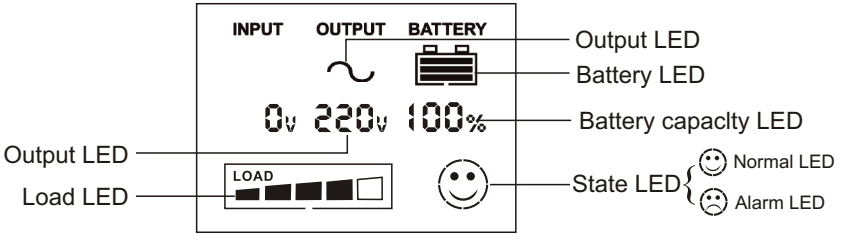
"FAULT" Indicator light is red, red signifies over load power or short circuit/ running down of battery.

Front panel display 2

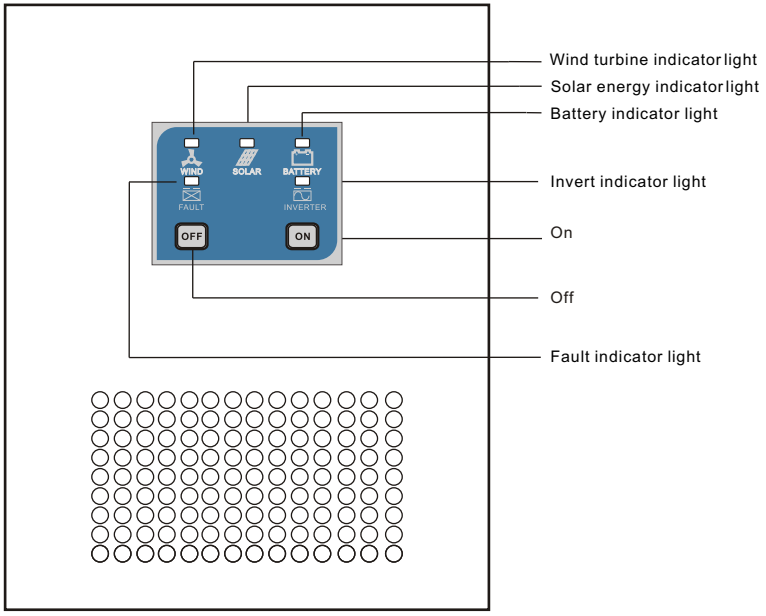


Inverter （1500W/2000W/3000W Model panel）

Indicator instruction



Front panel display 3



Conversion& Charge by wind and solar power incorporated System（150W/300W/500W/750W/1000W model panel）

display help

"BATTERY" Indicator light is bi-colour light(green/yellow). Green signifies battery normal voltage, yellow signifies battery under voltage, green/yellow twinkle signifies battery over charge protection

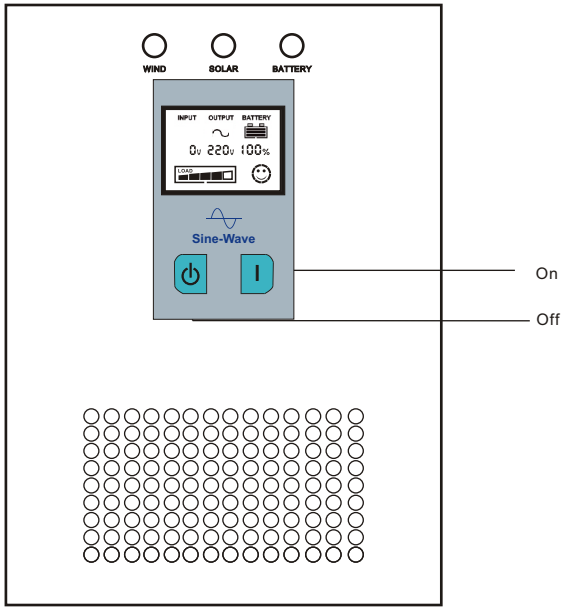
"SOLAR" Indicator light is green light. Green signifies solar energy normal running.

"WIND" Indicator is bi-colour light(green/yellow). Green signifies wind turbine normal running. Yellow signifies wind turbine is unloaded.

"INVERTER" Indicator light is green, green signifies inverter normal running.

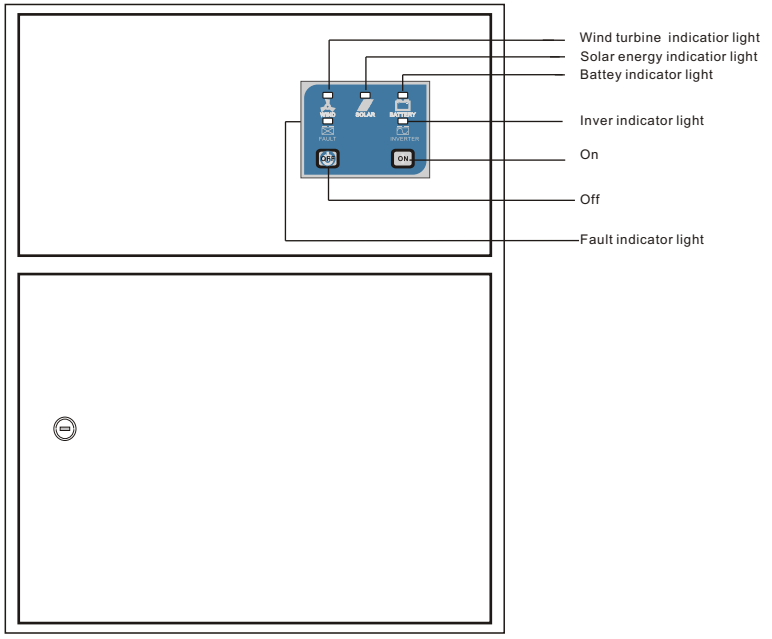
"FAULT" Indicator light is red, red signifies over load power or short circuit/ running down of battery.

Front panel display 4



Conversion& Charge by wind and solar power incorporated System（1500W/2000W/3000W model panel）

Front panel display 5



Conversion& Charge by wind and solar power incorporated system (internal batteries) (1500W/2000W/3000W Model panel)

display help

"BATTERY" Indicator light is bi-colour light(green/yellow). Green signifies battery normal voltage, yellow signifies battery under voltage, green/yellow twinkle signifies battery over charge protection

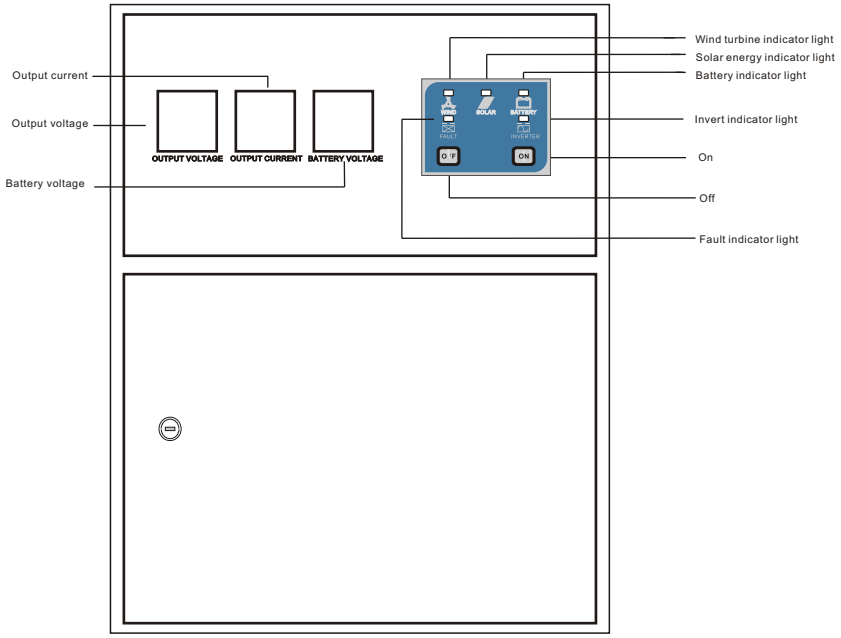
"SOLAR" Indicator light is green light. Green signifies solar energy normal running.

"WIND" Indicator is bi-colour light(green/yellow). Green signifies wind turbine normal running. Yellow signifies wind turbine is unloaded.

"INVERTER" Indicator light is green, green signifies inverter normal running.

"FAULT" Indicator light is red, red signifies over load power or short circuit/ running down of battery.

Front panel display 6



Conversion& Charge by wind and solar power incorporated system (internal batteries) (1500W/2000W/3000W Model panel)

display help

"BATTERY" Indicator light is bi-colour light(green/yellow). Green signifies battery normal voltage, yellow signifies battery under voltage, green/yellow twinkle signifies battery over charge protection

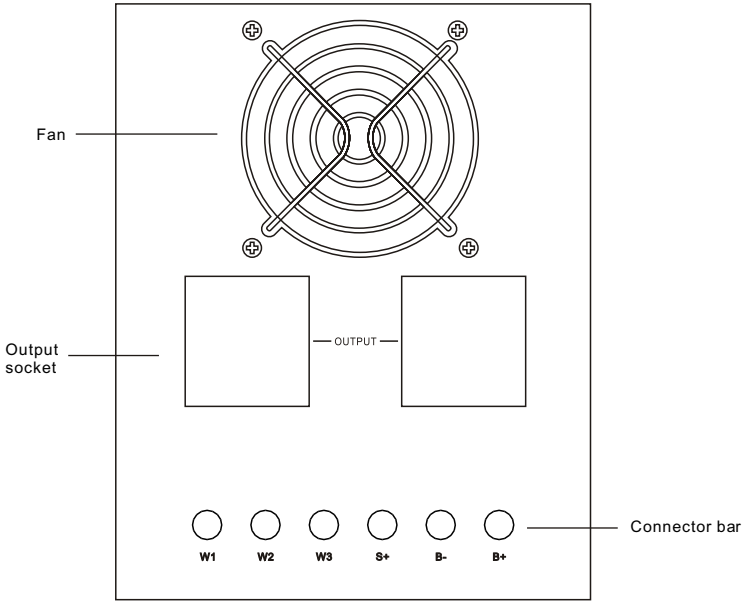
"SOLAR" Indicator light is green light. Green signifies solar energy normal running.

"WIND" Indicator is bi-colour light(green/yellow). Green signifies wind turbine normal running. Yellow signifies wind turbine is unloaded.

"INVERTER" Indicator light is green, green signifies inverter normal running.

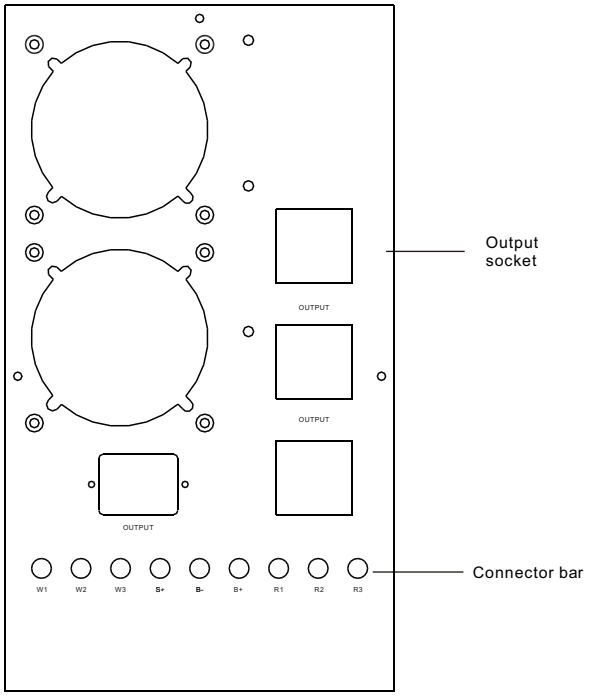
"FAULT" Indicator light is red, red signifies over load power or short circuit/ running down of battery.

Backboard and help1



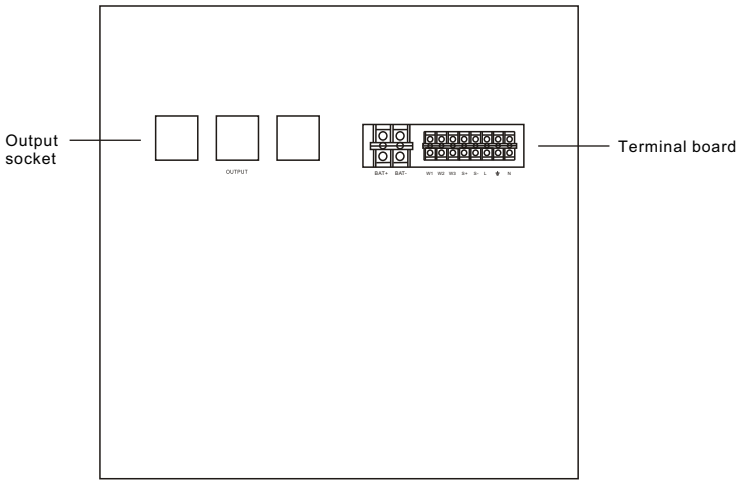
150W/300W/500W/750W/1000W Model backboard

Backboard and help 2



1500W/2000W/3000W Model backboard

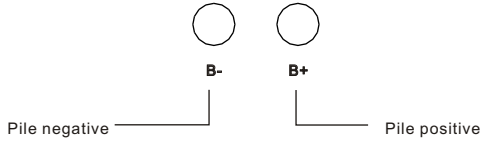
Backboard and help 3



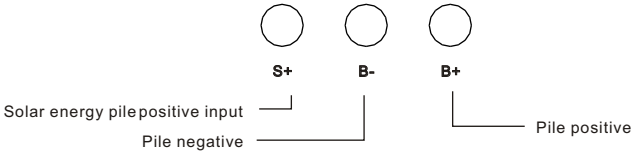
（1500W/2000W/3000W Model backboard）
(internal batteries)

Connector bar 1

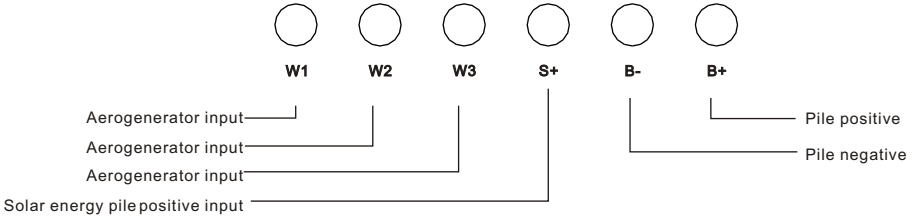
(150W/300W/500W/750W/1000WModel backboard)



Inverter backboard teminal board



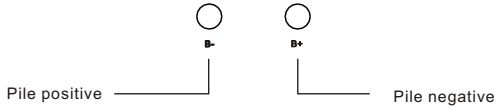
Conversion& Charge by solar power incorporated system backboard teminal board



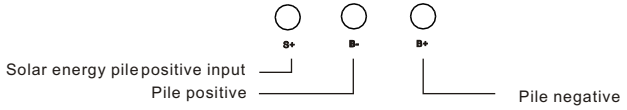
Conversion& Charge by wind and solar power incorporated system backboard teminal board

Connector bar 2

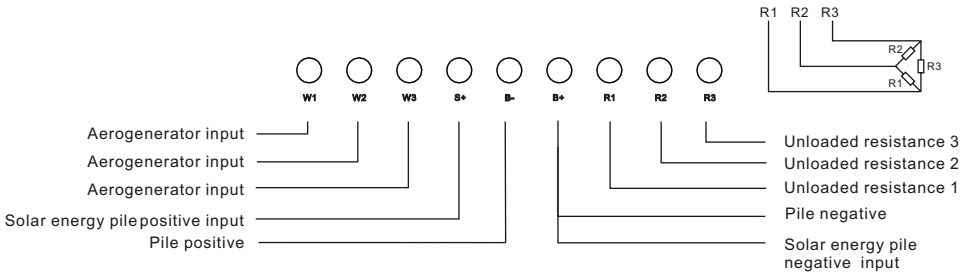
(1500W/2000W/3000W Model backboard)



Inverter backboard teminal board



Conversion& Charge by solar power incorporated system backboard teminal board



Conversion& Charge by wind and solar power incorporated system backboard teminal board

Instruction of battery connection

- Connect the batteries with the same capacity in series, according to the system voltage. And you can connect the battery bank in parallel as well.
- There should be a DC switch between the inverter and battery bank. The rated current of the switch should be larger than the ones in the following chart:

Rated power (W)	150W (12V)	300W (24V)	500W	750W	1000W	1500W	2000W	3000W
Voltage of battery bank (VDC)	12	24	24	24	24	48	48	48
MAX. current of the battery back (A)	16	16	26	40	55	40	55	80

- The air switch of the battery bank is off. Then connect the batteries in series. Check the voltage of the battery bank with multimeter.。
- Positive terminal: red wire; Negative terminal: black wire. Then connect the red wire to “ B+” and black wire to “B−” on the back panel of the inverter.
- Turn on the switch.

Notice:

When the battery connection is normal and after the air switch is on 1-2 seconds later, you will hear the “ON” sound of the relay from the inverter.

1500W/2000W/3000W Instruction for wind turbine uninstall

According to the power of the wind turbine and the requirement of user, choose the right resistance of uninstall:

Rated input power of wind power	1000W	1500W	2000W
Resistance of uninstal	7Ω/500W	4.5Ω/600W	3.5Ω/1000W

Initial run control

Before start up the inverter, please check:
- Ventilation
- Connection of the ground line
- All the switches are in the position of OFF .

Notice
Do the same as the instruction ,or something may occur during the power supply.

Startup step

- Press the “on” switch
- 5 seconds till the output voltage is stable
- Turn on the loads one by one.

Dangers

If the inverter is overloaded, there will be warning sound con tinuously. Please turn off some loads. Start the inverter again. The air switch of the external battery case should be “on”.

Notice
If the inverter is not loaded, it will turn off automatically 4-5 minutes later.

Turn off the inverter

Notice
Doing this will cutoff the power supply of all the loads

- Turn off the loads and
- Press on the OFF switch

Notice
After pressing the "off" button on the front panel, you stop the conversion only. The charge controller still works on.

Maintenance

Battery disposal

The batteries should be replaced by the customer service representative. The scrap of the lead acid battery is classified as toxic waste. The disposal of it should abide by laws and rules of recycle department.

Normally, the life expectancy of the battery is 3 years, when it is 25℃. But still we should take the running time and frequency of the inverter into consideration.

Cleansing of the machines

- Turn off the inverter accordingly. Clean the casing with dry or tiny wet cloth.
- After the cleansing, check the all the connections. When it is totally dry, you can turn on the inverter again.

Notices

□No detergent. Water only.

Prevent liquid from running into the machine.

□Make sure the airway is clear

Solution for simple error

Failure	Reasons	Solution
BATTERY indicator is off	The connection of batteries is wrong	Double check the connection of the batteries
	Errors on the charge controller.	Tell the customer service representative.
Battery indicator (yellow) is on	Low voltage of the battery bank.	Unplug all the loads to protect the batteries. When the voltage is normal, the indictor will be off
FAULT indicator is on and continuous beeping	Short circuit on the output end.	Turn off the inverter and unplug all the loads. Then check the loads to see if there are malfunctions in the loads.
	Overload	Check the loads and unplug the unimportant loads.
Startup error	The connection between the battery bank and inverter is not right.	Check the connection.
	Internal fuse is broken; Internal malfunction	Tell the customer service representative.
The on load discharge time is less.	Battery undercharge	Make sure to charge the batteries over 8 hours.
	Over load	Unplug the unimportant loads.
	Battery is aging	Replace the batteries

Provide the following information to the customer service representative:

Model Serial number The date you bought the products.

Details of the malfunctions.

Technical specification 1

Conversion& Charge by wind and solar power incorporated system (internal batteries)

Rated power (W)		150	300	500	750	1000	1500	2000	3000
Rated dc voltage(VDC)		12		24			48		
Battery	Battery capacity	(12V,65AH) ×1	(12V,100AH) ×1	(12V,100AH) ×2	(12V,100AH) ×2	(12V,65AH) ×4	(12V,100AH) ×4	(12V,65AH) ×8	(12V,100AH) ×8
	Back up time (H)	3-4							
Battery over discharge alarm voltage（VDC）		11		22			44		
Solar energy input	DC voltage range (VDC)	11-17		22-34			44-68		
	Max. Power (Wp)	200		400	500	600	900	1200	1800
Wind turbine input	Input rated voltage (V)	12		24			48		
	Max. Power (Wp)	400		600	800	1000	1000	1500	2000
AC output	Output voltage range	220V±10%							
	Output frequency range	50Hz/60Hz±0．05Hz							
	distortion rate of a wave(linearity load)	<3%							
	Overload capacity	130%,1 minute shutdown							
	Peak factor	3:1							
	Invert efficiency (80% impedance load)	84%							
Protection function		Soft start protection forbattery input reverse connection,battery voltage-lack/over-voltage, output overload/short circuit, overheatetc.							
Other	Insulating strength	1500VAC,1 minute shutdown							
	environmental temperature	－10℃～＋55℃							
	environmental humidity	0-90%， uncondensed							
Appearance (D×W×H)(mm)		480×235×510		480×235×770		480×460×950		880×460×950	
NW/GW (Kg) (not including the battery)		12/15	15/18	18/22	19/23	21/26	32/38	40/46	55/61
Remark		Specification only for reference.Subject to change withoutprior notice							

Technical specification 2

Conversion& Charge by wind and solar power incorporated system (external batteries)

Rated Power(W)		150	300	500	750	1000	1500	2000	3000
Rated DC voltage(VDC)		12		24			48		
Battery over discharge alarm voltage（VDC）		11		22			44		
Solar energy input	DC voltage range (VDC)	11-17		22-34			44-68		
	Max. Power(Wp)	200		400	500	600	900	1200	1800
Wind turbine input	Input rated voltage(V)	12		24			48		
	Max. Power(Wp)	400		600	800	1000	1000	1500	2000
AC output	Output voltage range	220V±10%							
	Output frequency range	50Hz/60Hz±0．05Hz							
	distortion rate of a wave(linearity load)	<3%							
	Overload capacity	130%,1 minute shutdown							
	Peak factor	3:1							
	Invert efficiency (80% impedance load)	84%							
Protection function		Soft start protection forbattery input reverse connection,battery voltage-lack/over-voltage, output overload/short circuit, overheatetc.							
Other	Insulating strength	1500VAC,1 minute shutdown							
	environmental temperature	－10℃～＋55℃							
	environmental humidity	0-90%， uncondensed							
Appearance (D×W×H)(mm)		400×145×210					450×190×330		
NW/GW (Kg)		10/11	11/12	12/13	12.5/15	13.7/16.2	23/25.5	27/29.5	39/41.5
Remark		Specification only for reference.Subject to change withoutprior notice.							

Technical specification 3

Inverter

Rated power (W)		150	300	500	750	1000	1500	2000	3000
DC input	Input Rated voltage (VDC)	12		24			48		
	Input Rated current (A)	16	32	30	45	60	40	60	90
	DC voltage range (VDC)	11-15		22-30			44-60		
	Battery over discharge alarm voltage(VDC)	11		22			44		
AC output	Output voltage range	220V±10%							
	Output frequency range	50Hz/60Hz±0．05Hz							
	distortion rate of a wave(linearity load)	<3%							
	Overload capacity	130%,1 minute shutdown							
	Peak factor	3:1							
	Invert efficiency (80% impedance load)	82%							
Protection function		Soft start protection forbattery input reverse connection,battery voltage-lack/over-voltage, output overload/short circuit, overheatetc.							
Othe	Insulating strength	1500VAC,1 minute shutdown							
	environmental temperature	−20℃ ~ +55℃							
	environmental humidity	0-90%， uncondensed							
Appearance (D×W×H)(mm)		400×145×210					450×190×330		
NW/GW (Kg)		11/12	11/12	12/13	12.5/15	13.7/14.7	23/25	27/29	39/41
Remark		Specification only for reference.Subject to change withoutprior notice.							

Technical specification Product operation manual