Solar Pump Inverter

Manual

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Notice

To ensure safety operation of solar pump inverter, it must choose the right way of transportation, installation, operation and maintenance. Before operations, be aware of the safety notices as below.

 Danger: misuse may cause fire disaster, personal serious injury or even death.

 Warning: misuse may cause person with mild or moderate injury or equipment damage.

 Tips: prompt some useful information.

◆Check before use

 **Warning**
If the inverter is damaged or missing parts will not be allowed to install, otherwise may have accidents.

◆Installation

 **Warning**
1. In order to ensure good convection cooling effect, the inverter must be mounted vertically, and leave at least 10cm space on the top and on the bottom. 2. The inverter should be installed indoor with vents or scavenging arrangement. Do not install under direct sunlight. 3. During installation, please do not fall drilling residual fabrics into cooling fins or fans of inverter, to prevent the impact of cooling.

u

◆Wiring

 **Danger**
1. Wiring must be carried out by qualified electrical professionals, or it may cause electric shock or fire. 2. Before wiring, make sure the input power has been cut off, otherwise may cause electric shock or fire. 3. Ground terminal must be connected to the ground, or the enclosure of the inverter may have charged danger. 4. Please choose reasonable photovoltaic array, electrical load and inverter, otherwise may cause damage to device.

 **Warning**
1. Please use the specified torque tighten the terminal, otherwise there is a fire hazard. 2. Please do not connect capacitance and phase ahead of LC/RC noise filter with the output of inverter. When the distance between the inverter and the motor load more than 100 m, it is recommended to use the output reactor.

◆ Operation

 **Danger**
1. Can be energized after confirming the wiring connected correct, otherwise may cause inverter damage or fire. 2. Do not change the wiring in the energizing, otherwise there is a risk of electrical shock.

Warning

1. Before the first run, please adjust part of control parameters according to instruction steps of the user manual. Please do not change the control parameter of inverter casually, or it may result in equipment damage.

2. During the operation, temperature of radiator is high, please do not touch for a long time, otherwise there is a risk of scald.

3. When altitude height is over 1000m, the inverter should be used with current derating. Each additional 1500m altitude, output current is derated about 10%.

◆Other

Danger

1. Maintenance and Inspection must be carried out by quality electrical professionals.

2. In energized state, do not disassemble the inverter. Waiting at least 5 minutes after power failure, maintenance and inspection can be carry out, to avoid personal injury caused by residual voltage on electrolytic capacitor of the main circuit.

3. Absolute prohibition of self- transformation of the inverter, otherwise it will lead to personal injury or equipment damage.

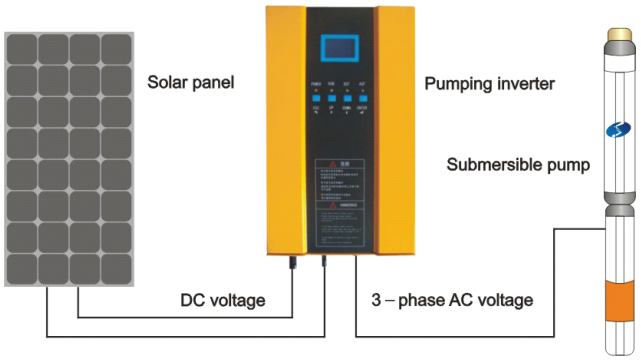
4. Processing scrapped inverter, set the inverter as an industrial waste processing. Internal electrolytic capacitor may explode during burning. Some components may produce harmful, toxic gases during burning.

I Introduction

1.1 Solar Pump System

Solar pump system consists of the photovoltaic array, solar pump inverter and AC water pump. This system is widely used in pumping water for home use (drinking & washing) , farm; irrigating for garden, field, desert plants; watering for livestock, fish pond, landscaping streams and waterfalls, swimming pool, sea island, water treatment projects, etc.

This system saves out of battery energy storage device, storage water instead of storage power, directly drives pump for pumping water. This solar pump inverter with high reliability, high power, while significantly reducing the system's construction and maintenance costs.



AC water pump is driven by three phase solar pump inverter. Pumping water from deep well, rivers or lakes to water tank/pool, or to irrigation system and fountain systems directly. According to actual demands and installation conditions, there are various water pumps to choose, such as centrifugal pump, mixed-flow pump, deep-well pump.

1.2 Features

Solar pump inverter controls and adjusts the working of solar pump system, converter DC power produced by photovoltaic array to AC power, drive water pump. According to the changing of sunlight intensity, adjust the output frequency automatically to achieve maximum power point tracking (MPPT).

- It applies to pumps of three phase induction motor.

- It adopts dynamic VI MPPT and optimized pure sine wave PWM control, with fast response and good stability.

•Fully automatic operation, it can set the range of water pump rotational speed according to the actual conditions.

• The main power circuit adopts digital power modules, with high reliability and high efficiency 98%.

• It has the complete electric protective functions. Protected against overload, over voltage, under voltage, over heat, reverse polarity, thunder, over flow and dry running.

• Aluminum alloy casing, protection degree IP41,working temperature: -10 ~ +50℃

• LCD display; easy to operate.

1.2 Inverter specification

■ Solar pump inverter specification

Model	Pump		PV Peak power (kWp)	Max. DC input (V)	Power tracking (V)[MPPT]]	Max. output current(A)	Output frequency (Hz)
	Rated power (kW)	Rated voltage (V)					
750L	0.37-0.75	200-220	1.1	430	300-350	5	0-60
1500 L	1.1-1.5	200-220	2.2	430	300-350	10	0-60
2200 L	2.2	200-220	3.3	430	300-350	15	0-60
3700 L	3-3.7	200-220	5.5	430	300-350	22.7	0-60
2200 H	1.5-2.2	380-440	3.3	750	500-600	7.3	0-60
3700H	3-3.7	380-440	5.5	750	500-600	11.1	0-60
5500H	4.5-5	380-440	8	750	500-600	17.1	0-60
7500H	7.5	380-440	10	750	500-600	22.2	0-60
11KH	9.2-11	380-440	15	750	500-600	34	0-60
15KH	13~15	380-440	21	750	500-600	46	0-60
18KH	18.5	380-440	25	750	500-600	50	0-60
22KH	22	380-440	30	750	500-600	60	0-60
30KH	26~30	380-440	42	750	500-600	90	0-60
37KH	37	380-440	50	750	500-600	100	0-60
45KH	40~45	380-440	60	750	500-600	120	0-60
55KH	55	380-440	75	750	500-600	130	0-60

Alarm: Please choose the right type of inverter according to PV array and motor load.

Alarm: High-power models using multi - channel DC input structure, the input power in the above table means the total DC input power from multi-channels.

Solar pump inverter : 7500H

Output voltage (H:380V)

Rated power of adaptation motor (W)

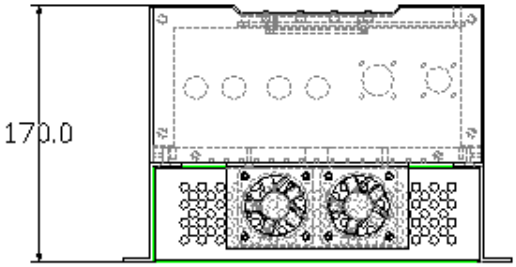
II Installation and wiring

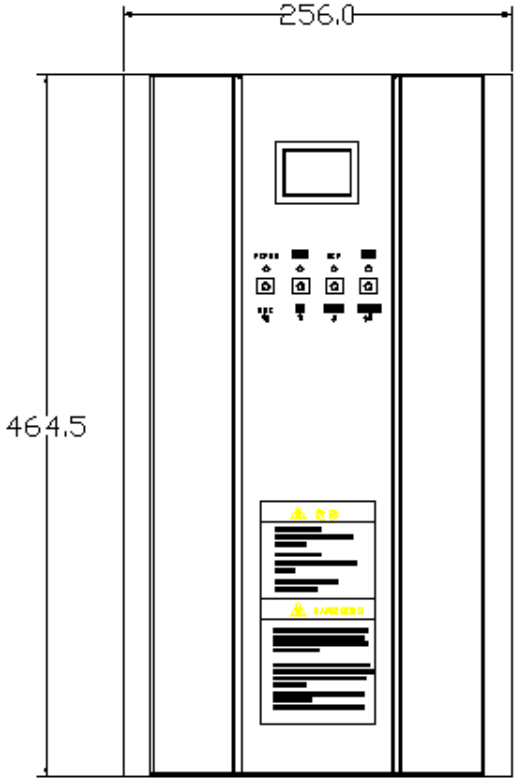
2.1 Purchasing inspection

We have a strict QC system in manufacturing and packing. If the inverter cannot work, please contact with our distributor, or you can directly contact with after-sale service department. We will solve your problem at the first time. Please confirm the items as below when you buy the product.

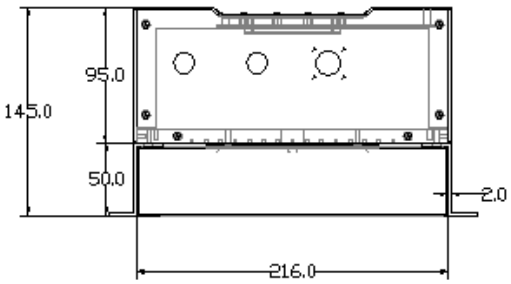
Inspection item	Inspection method
If the same as your order?	Check the brand of product
Any broken?	Check the overall appearance
Inverter and accessories are all included?	Check the product list
Screws are tightened?	If necessary, please use screwdriver to fasten.

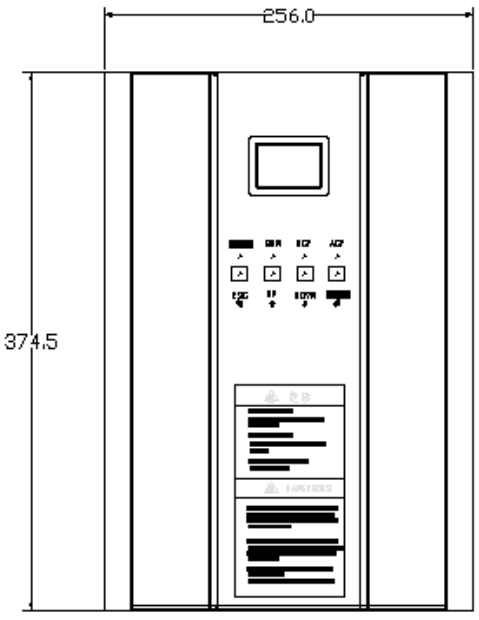
2.2 Size and weight





7500W 9.8 KG





750W 7KG

2.3 Scheme of wiring

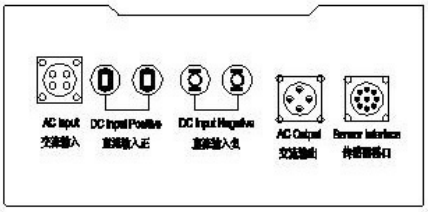
2.3.1 **With Connect to utility power function:**

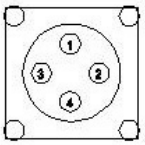
AC input, AC output and Sensor

Wiring diagram：

AC input

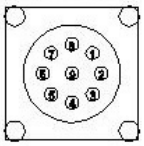
1 AC input A phase
2.AC input B phase
3 AC input C phase
4 AC input neutral wire





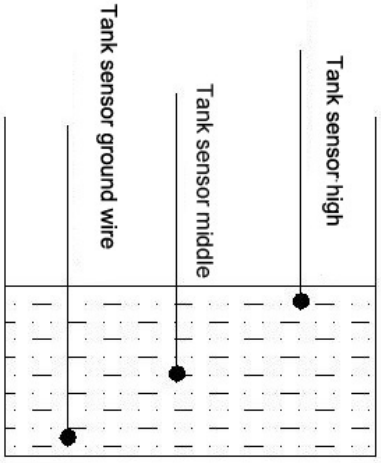
AC output

1 AC output A phase
2.AC output B phase
3.AC output C phase
4 Ground wire



Sensor interface

2 Tank sensor high
3.Tank sensor middle
4.Tank sensor ground wire
6.Well sensor middle
7.Well sensor high
8.Well sensor ground wire



Tank (well) diagram

Notice:

1. When inverter's output voltage is 3 phase/380V, AC input should connect A phase, B phase and C phase.

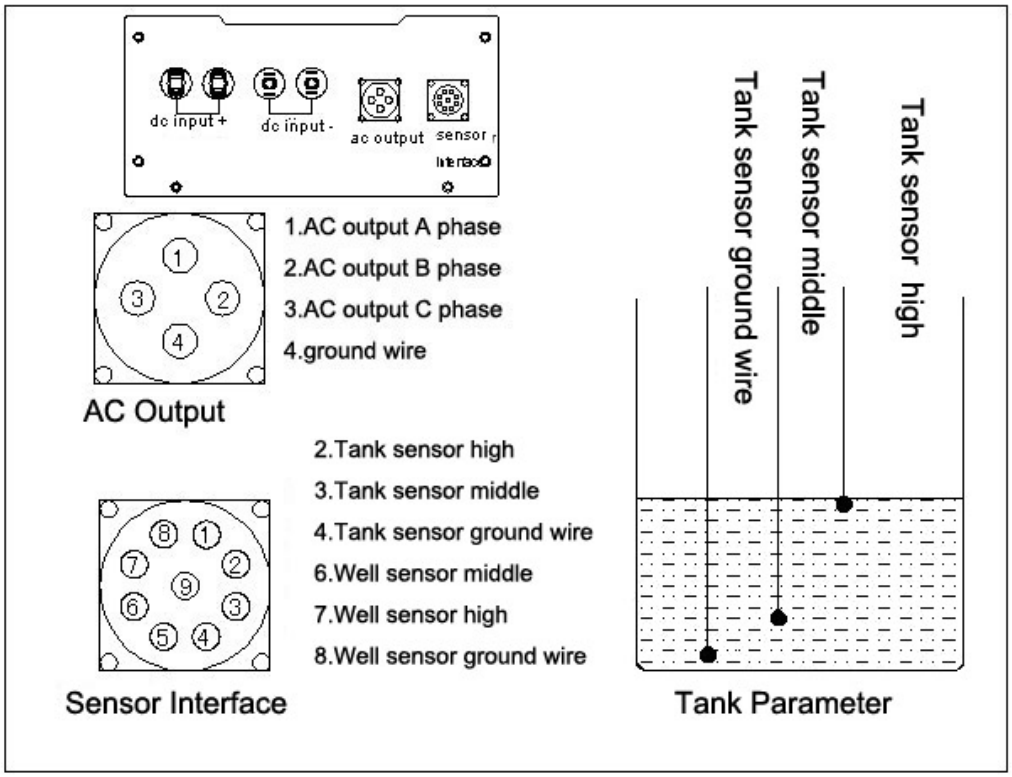
2. When inverter's output voltage is 3 phase /220V, AC input should connect A phase and neutral wire.

Customer can use knife switch to switch utility power and solar panels. The specification of knife switch/air switch should be twice of the rated output current of this model. If inverter's output power≧3700W, use knife switch; if inverter's output power is 750W, 1500W and 2200W, use air switch.

2.3.2 **Without connect to utility power function**

AC output, Sensor

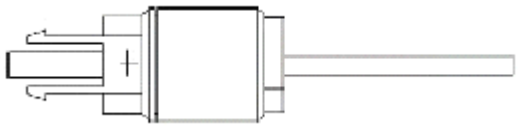
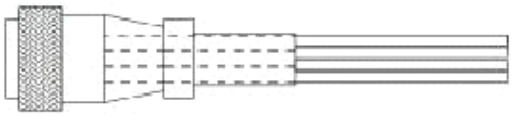
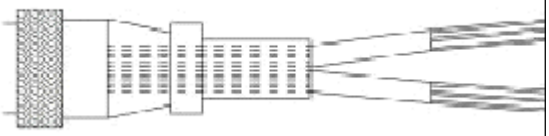
Wiring diagram：



Warning: In order to ensure system work normally and properly, please use recommended wires with different size as below.

Model No	Battery board wire	Ground wire	Motor wire	Sensor wire
750L	2.5mm^2	2.5 mm^2	2.5 mm^2	0.5-1.0 mm^2
1500 L	2.5 mm^2	2.5 mm^2	2.5 mm^2	0.5-1.0 mm^2
2200 L	2.5 mm^2	2.5 mm^2	2.5 mm^2	0.5-1.0 mm^2
3700 L	4 mm^2	4 mm^2	4 mm^2	0.5-1.0 mm^2
3700H	2.5 mm^2 Rated voltage 750V	2.5 mm^2 Rated voltage 750V	2.5 mm^2	0.5-1.0 mm^2
5500H	4 mm^2 Rated voltage 750V	4 mm^2 Rated voltage 750V	4 mm^2	0.5-1.0 mm^2
7500H	4 mm^2 Rated voltage 750V	4 mm^2 Rated voltage 750V	4 mm^2	0.5-1.0 mm^2
11KH	8 mm^2 Rated voltage 750V	8 mm^2 Rated voltage 750V	6 mm^2	0.5-1.0 mm^2

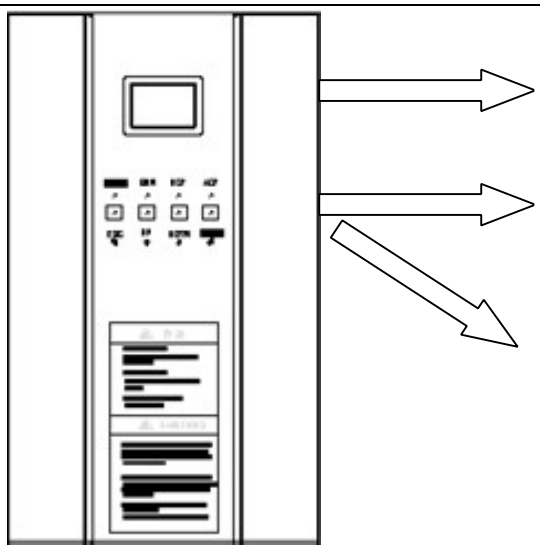
◆ Outer plug instruction:

Plug	Wire instruction		Connecting
	red wire single strand		connected positive pole of PV array
	black wire single strand		connected negative pole of PV array
	4 core wire	Red 4.0 mm^2	A phase
		Green 4.0 mm^2	B phase
		Blue 4.0 mm^2	C phase
		Yellow-green	ground wire
	8 Core wire （network cable	blue	tank sensor high
		red	tank sensor middle
		White-green, white-red	tank sensor ground wire
		green	well sensor high
		brown	well sensor middle
		White-green White-brown	well sensor ground wire

III Operation

3.1 Panel instruction

Solar pump inverter is LCD displayed, see as below diagram, including 4 LED lights, 1 LCD panel and 4 keys, Simple operation, easy understanding.



LCD

Power indicate light POWER
Automatic run mode AUTO
Manual operate run mode MANUAL
Alarm light ALARM

Return key ESC
Up key UP
Down key DOWN
Confirm key ENTER

3.2 Methods of panel operation

Setting of all parameters, work state, alarms etc. are explained as below.
Key Explanation: there are 4 keys: ‘’ESC’’, ‘’UP’’, ‘’DOWN’’, ‘’ENTER’’. Change parameter by pressing ‘’ENTER’’ key. Press ‘’ UP’’, ‘’DOWN’’ to change value, then press ‘’ ENTER’’ key to save.

Detailed Operation and Explanation For Each Menu

1. **First Interface:**

Pump Inverter
7500H
19:52:21
2012Y11M03D

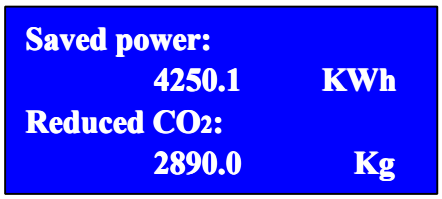
Display product name, model No., current time and date, press ‘’DOWN’’ key to enter into second interface.

2. **Second Interface**:

DC voltage:
500V
Output Frequency:
50 Hz

Display current DC input voltage, AC output frequency, press ‘’DOWN’’ key to enter into third interface.

3. Third Interface:

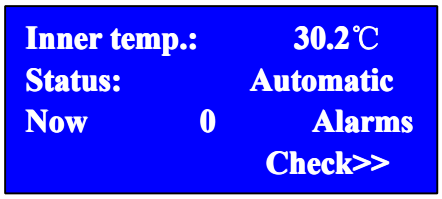


Display saved power value, reduced CO_2 value, press ‘’DOWN’’ key to enter into fourth interface.

4. Fourth Interface:

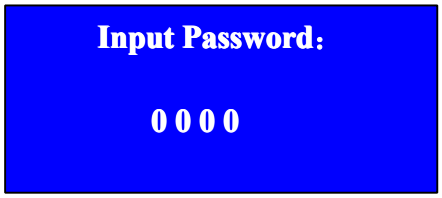
Display tank sensor state and well sensor state, you can choose “NO” or “OK”, if you choose “OK”, the tank sensor and well sensor can work, default “NO”, press ‘’DOWN’’ key to enter into fifth interface.

5. Fifth Interface:



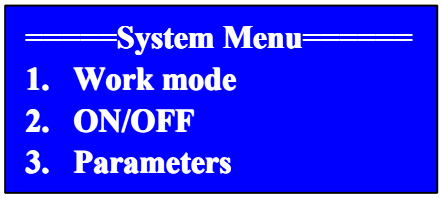
Display device inner temperature, working state, alarm, press ‘’ENTER’’ key to enter into password setting interface.

6. Enter Password:



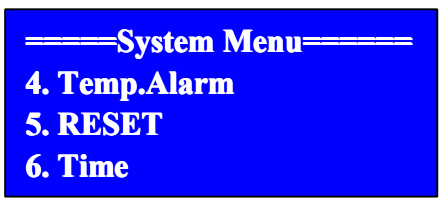
Enter password before enter into system menu, Press ‘’UP’’ ‘’DOWN’’ to enter 4 correct password to enter into, default password:0000, user can change password after enter into system menu.

7. Main Menu First Interface:



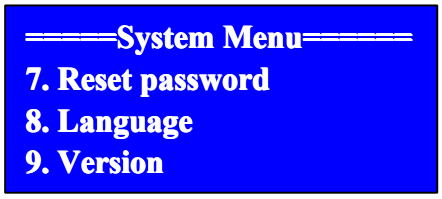
Under System Menu, press ‘’UP’’, ‘’DOWN’’ to select your wanted content, press ‘’ENTER’’ key to enter into corresponding menu.

8. Main Menu Second Interface:



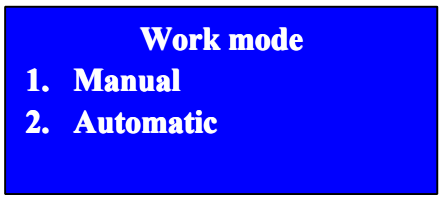
Under System Main Menu, press ‘’UP’’, ‘’DOWN’’ to select your wanted content, press ‘’ENTER’’ key to enter into corresponding menu.

9. Main Menu Third Interface:



Under System Main Menu, press ‘’UP’’, ‘’DOWN’’ to select your wanted content, press ‘’ENTER’’ key to enter into corresponding menu.

10. Work Mode Setting:

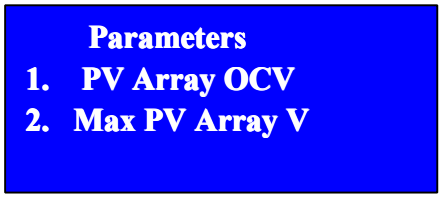


Setting system work mode, press ‘’UP’’, ‘’DOWN’’ to select mode, press ‘’ENTER’’ key to confirm modification.

11. Power On/Off Setting:

Power On/Off setting, press ‘’UP’’, ‘’DOWN’’ to select mode, press ‘’ENTER’’ to confirm modification.

12. Work Parameter Setting First Interface:

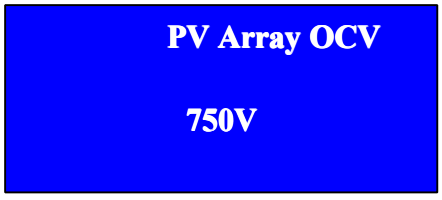


Work parameter setting menu, press ‘’UP’’, ‘’DOWN’’ to select your wanted content, press ‘’ENTER’’ key to enter into corresponding menu.

13. Work Parameter Setting Second Interface:

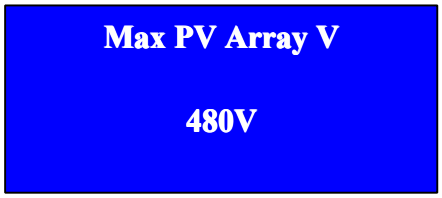
Work parameter setting menu, press ‘’UP’’, ‘’DOWN’’ to select your wanted content, press ‘’ENTER’’ key to enter into corresponding menu.

14. Photovoltaic Open Circuit Voltage Setting:



Photovoltaic Open Circuit Voltage Setting, press ‘’UP’’, ‘’DOWN’’ to increase or decrease voltage value, press ‘’ENTER’’ to confirm modification.

15. Maximum Power Voltage Setting:



Max. Power Voltage Setting, press ‘’UP’’, ‘’DOWN’’ to increase or decrease voltage value, press ‘’ENTER’’ to confirm modification.

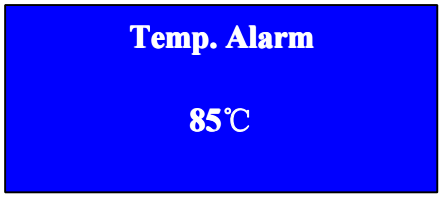
16. Highest Frequency Setting:

Highest Frequency Setting, press ‘’UP’’, ‘’DOWN’’ to increase or decrease frequency value, press ‘’ENTER’’ to confirm modification.

17. Sensor Setting:

Transducer Setting, press ‘’UP’’, ‘’DOWN’’ to select “OK” or “NO”, press ‘’ENTER’’ to confirm modification.

18. Temperature Alarm Setting:



Temperature alarm setting, press ‘’UP’’, ‘’DOWN’’ to increase or decrease temperature, press ‘’ENTER’’ to confirm modification.

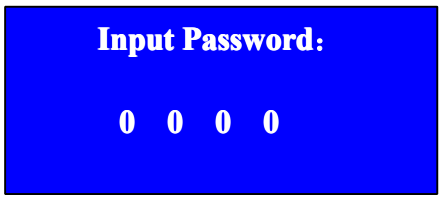
19. Reset Setting:

Reset setting, press ‘’UP’’, ‘’DOWN’’ to select, press ‘’ENTER’’ to confirm modification.

20. Time Setting:

Time setting, press ‘’UP’’, ‘’DOWN’’ to select, press ‘’ENTER’’ to confirm modification.

21. Password Revise Setting:



Password revise setting, press ‘’UP’’, ‘’DOWN’’ to select, press ‘’ENTER’’ to confirm modification.

22. Language Setting:

Language setting, press ‘’UP’’, ‘’DOWN’’ to select, press ‘’ENTER’’ to confirm modification.

23. Version Info:

Ⅳ Storage & Maintenance

◆ Storage

Temporary or long-time store inverter, pay attention to below points:

1. **Don’t store inverter at high temperature, humidity, shake, metallic dust place, ensure well ventilated place.**

2. **If long-time no use, inner filter characteristics of the inverter will decay. Every two years through the electrical power to restore the filter characteristics, and check the inverter functionality. In power turn-on, voltage should be gradually increased through a DC power supply, and power-on time is not less than five hours.**

3. Warranty

Setec warrants that this product is free from defects in material and workmanship and agrees to remedy any defect (or at its option replace the product) for a period of 2 years from the date of purchase. Parts may be replaced under this warranty with new or remanufactured parts. Beyond the warranty period, Setec also provides life-long paid service.

This 2-year warranty will not apply to the conditions as below. A maintenance fee will be charged.

1. **Improperly installed (as described in the installation manual)**;
2. **Altered or repaired in any way which may affect the performance or reliability of operation**;
3. **Stored improperly (as described in the installation manual)**;
4. **Misused, abused, used in ways the product was not designed**;
5. **Damaged because of fire, gas corrosion, earthquake, storm, flood, thunder, voltage anomaly or irresistible force.**

Note: Warranty only covers inverter device.

Guarantee Card

In order to ensure good quality, we do strict inspection before leaving factory. We warrant that this product is free from defects in material and workmanship and agree to remedy any defect for a period of 2 years from the date of purchase.

1. Parts may be replaced under this 2 years warranty with new or remanufactured parts when the damaged is checked by our technicians. Damaged parts should be returned to us.

2. This 2-year warranty will not apply to the conditions as below. A maintenance fee will be charged.

(1). Improperly installed (as described in the installation manual);
(2). Altered or repaired in any way which may affect the performance or reliability of operation;
(3). Stored improperly (as described in the installation manual);
(4). Misused, abused, used in ways the product was not designed;
(5). Damaged because of fire, gas corrosion, earthquake, storm, flood, thunder, voltage anomaly or irresistible force.

3. Please refer to the warranty statement.

User's Information

User Company:_____ **Contact person:**_____
Address:_____ **Phone:**_____
Dealer company: _____ **Post code:**_____
Model:_____ **Serial number:**_____
Purchase date:_____ **Handling person:**_____

Repair Record

Date	Record	Abstract	Technician	Signature