User Manual

-Installation
-Operation

Omniksol-5k-TL2-3P
Omniksol-6k-TL2
Omniksol-8k-TL2
Omniksol-9k-TL2
Omniksol-10k-TL2

Omnik New Energy Co.,Ltd.

Catalog

1. Notes on this manual

1.1 General notes

The main purpose of this User's Manual is to provide instructions and detailed procedures for installing, operating, maintaining, and troubleshooting the following three types of Omnik New Energy-Solar Inverters:

- Omniksol-5k-TL2-3P
- Omniksol-6k-TL2
- Omniksol-8k-TL2
- Omniksol-9k-TL2
- Omniksol-10k-TL2

Please keep this user manual all time available in case of emergency.

1.2 Symbols Used

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, can result in death or serious injury or moderate injury.

CAUTION

CAUTION indicates a hazardous condition which, if not avoided, can result in minor or moderate injury. or moderate injury.

NOTICE

NOTICE indicates a situation that can result in property damage, if not avoided.

1.3 Target Group

- Chapter 1, 2, 3, 4, 7, 8, 9, 10, 11 and Chapter 12 are intended for anyone who is intended to use Omnik Grid Tie Solar Inverter. Before any further action, the operators must first read all safety regulations and be aware of the potential danger to operate high-voltage devices. Operators must also have a complete understanding of this device's features and functions.

WARNING

Do not use this product unless it has been successfully installed by qualified personnel in accordance with the instructions in Chapter 5, "Installation".

- Chapter 5 and Chapter 6 are only for qualified personnel who are intended to install or uninstall the Omnik Grid Tie Solar Inverter.

NOTICE

Hereby qualified personnel means he/she has the valid license from the local authority in:

• Installing electrical equipment and PV power systems (up to 1000 V).

• Applying all applicable installation codes.

• Analyzing and reducing the hazards involved in performing electrical work.

• Selecting and using Personal Protective Equipment (PPE).

2. Preparation

2.1 Safety Instructions

DANGER

DANGER due to electrical shock and high voltage

DO NOT touch the operating component of the inverter, it might result in burning or death.

TO prevent risk of electric shock during installation and maintenance, please make sure that all AC and DC terminals are plugged out.

DO NOT stay close to the instruments while there is severe weather conditions including storm, lighting etc.

WARNING

The installation, service, recycling and disposal of the inverters must be performed by qualified personnel only in compliance with national and local standards and regulations. Please contact your dealer to get the information of authorized repair facility for any maintenance or repairmen.

Any unauthorized actions including modification of product functionality of any form will affect the validation of warranty service; Omnik may deny the obligation of warranty service accordingly.

NOTICE

Public utility only

The PV inverter designed to feed AC power directly into the public utility power grid，do not connect AC output of the device to any private AC equipment.

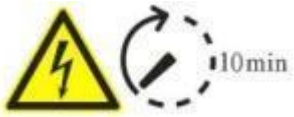
CAUTION

The PV inverter will become hot during operation; please don't touch the heat sink or peripheral surface during or shortly after operation。

Risk of damage due to improper modifications.

Never modify or manipulate the inverter or other components of the system.

2.2 Explanations of Symbols on Inverter

identification	description
	**Dangerous electrical voltage** This device is directly connected to public grid, thus all work to the inverter shall only be carried out by qualified personnel.
	**DANGER to life due to high electrical voltage!** There might be residual currents in inverter because of large capacitors. Wait **10 MINUTES** before you remove the front lid.
	**NOTICE, danger!** This device directly connected with electricity generators and public grid.
	**Danger of hot surface** The components inside the inverter will release a log of heat during operation, DO NOT touch aluminum housing during operating.
	**An error has occurred** Please go to Chapter 10 "Trouble Shooting" to remedy the error.

	**This device SHALL NOT be disposed of in residential waste** Please go to Chapter 9 “Recycling and Disposal” for proper treatments.
	**Without Transformer** This inverter does not use transformer for the isolation function.
	**Standards Association of Australian** The inverter complies with the requirement of the AS4777.
	**CE Mark** Equipment with the CE mark fulfils the basic requirements of the Guideline Governing Low-Voltage and Electromagnetic Compatibility.
	**No unauthorized perforations or modifications** Any unauthorized perforations or modifications are strictly forbidden, if any defect or damage (device/person) is occurred, Omnik shall not take any responsibility for it.

3. Product Information

3.1 Overview

- Industrial Layout

- Effective Shield For DC/AC/Communication Connections

3.2 Major Characteristics

Omnik inverter has following characteristics which make Omnik inverter “High Efficiency, High Reliability, High Cost Effective Ratio”

- Wide DC input voltage and current ranges, enables more PV panels connected.
- Wide MPP voltage range ensure high yield under various weather conditions.
- High MPP tracking accuracy, ensure the minimum power loses during converting.
- Complete set of protection methods.

Also, following protection methods are integrated in Omnik inverter:

- Internal overvoltage
- DC insulation monitoring
- Ground fault protection
- Grid monitoring
- Ground fault current monitoring
- DC current monitoring
- Integrated DC switch

3.3 Technical Data

Type	Omniksol-5k-TL2-3P	Omniksol-6k-TL2	Omniksol-8k-TL2
Input (DC)			
Max. PV Power	5150W	6150W	8200W
Max DC Voltage	1000V	1000V	1000V
Nominal DC Voltage	640V	640V	640V
Operating MPPT Voltage Range	150-800V	150-800V	150-800V
MPP voltage range at full load	260-800V	280-800V	360-800V
Start up DC Voltage	250V	250V	250V
Turn off DC Voltage	150V	150V	150V
Max. DC Current (A/B)	11A/11A	11A/11A	14A/14A
Max. Short Circuit Current for each MPPT	16A/16A	16A/16A	20A/20A
Number of MPP trackers	2	2	2
Number of DC Connection	A:2/B:2	A:2/B:2	A:2/B:2
DC Connection Type	MC4 connector	MC4 connector	MC4 connector
Output (AC)			
Max. AC Apparent Power	5000VA	6000VA	8000VA
Nominal AC Power	5000W	6000W	8000W
Nominal AC Voltage	3/N/PE; 220/380V 3/N/PE; 230/400V 3/N/PE; 240/415V	3/N/PE; 220/380V 3/N/PE; 230/400V 3/N/PE; 240/415V	3/N/PE; 220/380V 3/N/PE; 230/400V 3/N/PE; 240/415V
Nominal Grid Frequency	50Hz/60Hz	50Hz/60Hz	50Hz/60Hz
Max. AC Current	8.8A	10.7A	13.6A
Grid Voltage Range*	185-276V	185-276V	185-276V
Grid Frequency Range*	45-55Hz/55-65Hz	45-55Hz/55-65Hz	45-55Hz/55-65Hz
Power Factor	0.9 c…0.9 i	0.9 c…0.9 i	0.9 c…0.9 i
Total Harmonic Distortion (THD)	<2%	<2%	<2%
Feed in Starting Power	30W	30W	30W
Night time Power Consumption	<1W	<1W	<1W
AC Connection Type	Plug-in connector	Plug-in connector	Plug-in connector
Efficiency			
Max. Efficiency	98.2%	98.2%	98.2%
Euro Efficiency	97.2%	97.4%	97.5%
MPPT Efficiency	99.9%	99.9%	99.9%

*The AC voltage and frequency range depend on countries

Type	Omniksol-5k-TL2-3P	Omniksol-6k-TL2	Omniksol-8k-TL2
Safety and Protection			
Protection Functions	Array ground insulation resistance monitoring	Output over current protection	
	Residual current monitoring	Surge protection	
	Array polarity reverse monitoring	Output over/under voltage protection	
	Array over voltage protection	Output over/under frequency protection	
	Anti-island protection	Over temperature protection	
	Array over current protection	Output short circuit protection	
Protection Class	I (According to IEC 62103)		
Overvoltage Category	PV II / Mains III (According to IEC 62109-1)		
Reference Standard			
Safety Standard	EN 62109, AS/NZS 3100		
EMC Standard	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3		
Grid Standard	VDE-AR-N4105, VDE-0126-1-1, G83/1, EN 50438, RD1699, CEI 0-21, AS4777, C10/C11		
Physical Structure			
Dimensions (WxHxD)	352x421x172.5mm		
Weight	22kg		
Environmental Protection Rating	IP 65 (According to IEC 60529)		
Cooling Concept	Natural cool		
Mounting Information	Wall bracket		
General Data			
Operating Temperature Range	-25°C to +60°C(derating above 45℃)		
Relative Humidity	0% to 100%, no condensation		
Max. Altitude (above sea level)	2000m		
Noise Level	<40dB		
Isolation Type	Transformerless		
Display	5’’ LCD		
Data Communication Interfaces	RS485(WiFi, GPRS optional)		
Standard Warranty	5-25 years optional		

type	Omniksol-9k-TL2	Omniksol-10k-TL2
Input (DC)		
Max. PV Power	9000W	10000W
Max DC Voltage	1000V	1000V
Nominal DC Voltage	640V	640V
Operating MPPT Voltage Range	150-800V	150-800V
MPP voltage range at full load	380-800V	380-800V
Start up DC Voltage	250V	250V
Turn off DC Voltage	150V	150V
Max. DC Current (A/B)	14A/14A	14A/14A
Max. Short Circuit Current for each MPPT	20A/20A	20A/20A
Number of MPP trackers	2	2
Number of MPP trackers	A:2/B:2	A:2/B:2
DC Connection Type	MC4 connector	MC4 connector
Output (AC)		
Max. AC Apparent Power	8100VA	8200VA
Nominal AC Power	8100W	8200W
Nominal AC Voltage	3/N/PE; 220/380V 3/N/PE; 230/400V 3/N/PE; 240/415V	3/N/PE; 220/380V 3/N/PE; 230/400V 3/N/PE; 240/415V
Nominal Grid Frequency	50Hz/60Hz	50Hz/60Hz
Max. AC Current	13.8A	13.9A
Grid Voltage Range*	185-276V	185-276V
Grid Frequency Range*	45-55Hz/55-65Hz	45-55Hz/55-65Hz
Power Factor	0.9 c…0.9 i	0.9 c…0.9 i
Total Harmonic Distortion (THD)	<2%	<2%
Feed in Starting Power	30W	30W
Night time Power Consumption	<1W	<1W
AC Connection Type	Plug-in connector	Plug-in connector
Efficiency		
Max. Efficiency	98.2%	98.2%
Euro Efficiency	97.5%	97.5%
MPPT Efficiency	99.9%	99.9%

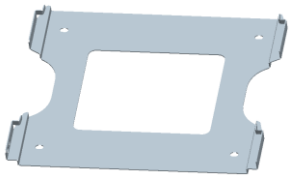
*The AC voltage and frequency range depend on countries

Type	Omniksol-9k-TL2	Omniksol-10k-TL2
Safety and Protection		
Protection Functions	Array ground insulation resistance monitoring	Output over current protection
	Residual current monitoring	Surge protection
	Array polarity reverse monitoring protection	Output over/under voltage
	Array over voltage protection protection	Output over/under frequency
	Anti-island protection	Over temperature protection
	Array over current protection	Output short circuit protection
Protection Class	I (According to IEC 62103)	
Overvoltage Category	PV II / Mains III (According to IEC 62109-1)	
Reference Standard		
Safety Standard	EN 62109, AS/NZS 3100	
EMC Standard	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3	
Grid Standard	VDE-AR-N4105, VDE-0126-1-1, G83/1, EN 50438, RD1699, CEI 0-21, AS4777, C10/C11	
Physical Structure		
Dimensions (WxHxD)	352x421x172.5mm	
Weight	22kg	
Environmental Protection Rating	IP 65 (According IEC 60529)	
Cooling Concept	Natural cool	
Mounting Information	Wall bracket	
General Data		
Operating Temperature Range	-25°C to +60°C(above 45℃)	
Relative Humidity	0% to 100%, no condensation	
Max. Altitude (above sea level)	2000m	
Noise Level	<40dB	
Isolation Type	Transformerless	
Display	5’’ LCD	
Data Communication Interfaces	RS485(WiFi, GPRS 可选)	
Standard Warranty	5 - 25 years optional	

4. Packing checklist

4.1 Assembly parts

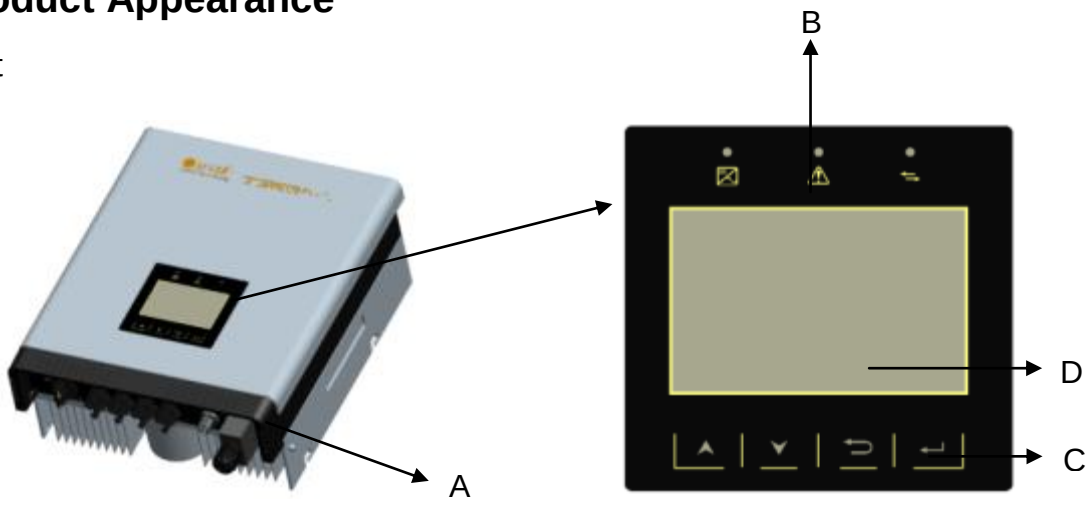
After you receive the Omnik inverter, please check if there is any damage on the carton, and then check the inside completeness for any visible external damage on the inverter or any accessories. Contact your dealer if anything is damaged or missing.

			
A	B	C	D
			
E	F	G	H

Object	Quantity	Description
A	1	Omnik inverter
B	1	Wall mounting bracket
C	1	User manual
D	4	Screw(ST6x50)
E	4	Expansion tube
F	1	AC connector
G	4	DC connector
H	1	Ground terminal

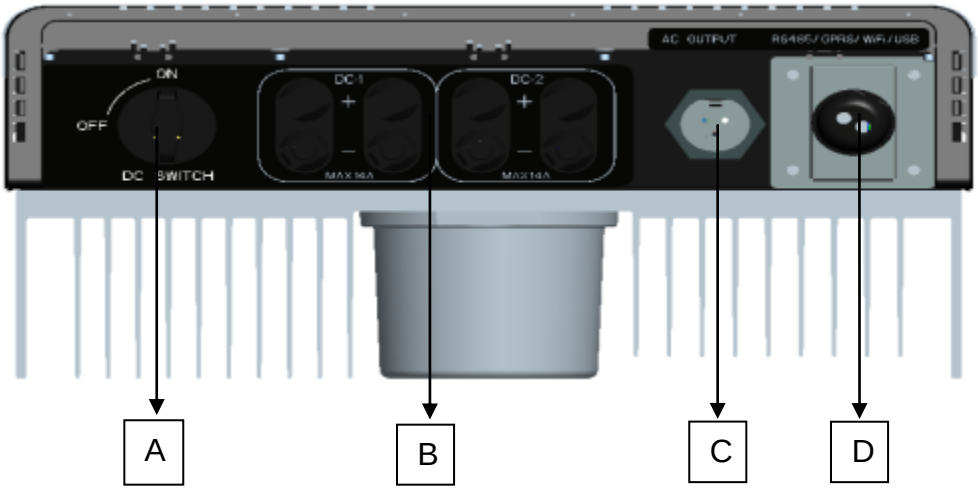
4.2 Product Appearance

- Front



Object	Description
A	Removable front cover
B	LED Light （Three）
C	Functional key（Four）
D	LCD Display

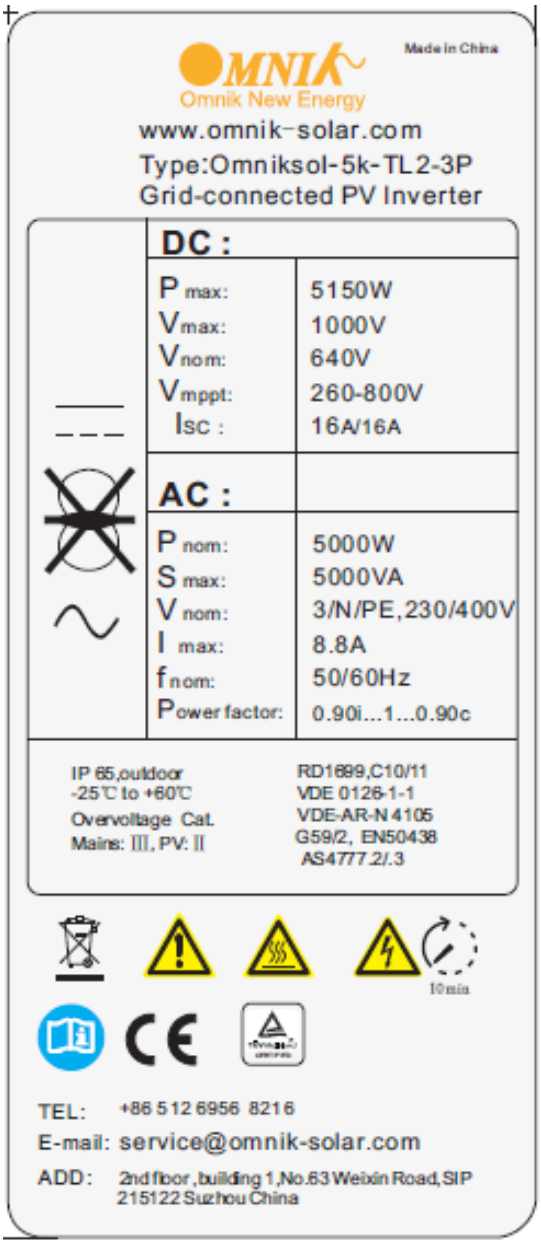
- Bottom



Object	Description
A	DC switch
B	Plug connectors for DC input.
C	AC output terminals(connect to grid)
D	Communication interface(RS485/GPRS/WiFi/USB)

4.3 Product Identification

You can identify the inverter by the side nameplate. Information such as serial number (SN.), type of the inverter, as well as inverter specifications are specified on the side name plate. The name plate is on the middle part of the right side of the inverter housing. And the following figure is the side name plate example as on **Omniksol-5k-TL2-3P**.



4.4 Further Information

If you have any further questions concerning the type of accessories or installation, please check our website www.omnik-solar.com or contact our service hotline.

5. Installation

5.1 Safety

DANGER

DANGER to life due to potential fire or electricity shock.

DO NOT install the inverter near any inflammable or explosive items.

This inverter will be directly connected with HIGH VOLTAGE power generation device, the installation must be performed by qualified personnel only in compliance with national and local standards and regulations.

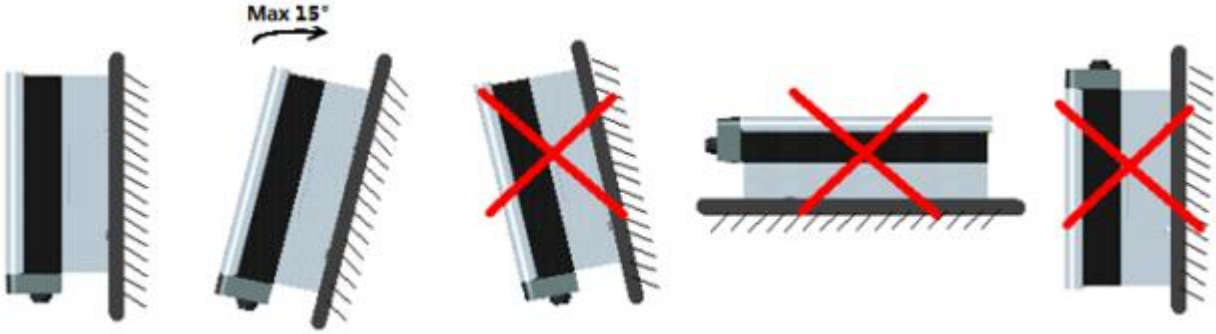
NOTICE

NOTICE due to the inappropriate or the harmonized installation environment may jeopardize the life span of the inverter.

Installation directly expose under intensive sunshine is not recommended.

The installation site MUST have good ventilation condition.

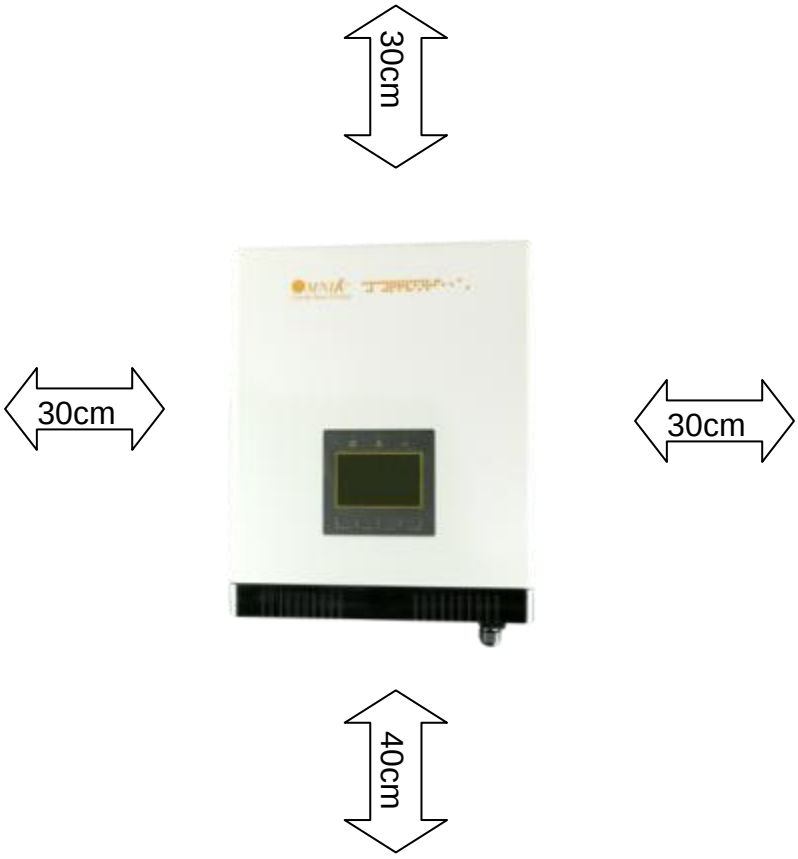
5.2 Mounting Instructions



- Omnik inverter is designed for indoors and outdoors installation, in order to extend the service life of inverter, we suggest to install the inverter in the basement or garage or other regions without sun, rain and snow.
- Since the inverter generates noise at work, so do not install it in the bedroom or often been active region
- Install the inverter in the vertical direction is recommended, with a max.15 degrees backwards.
- For the convenience of checking the LCD display and possible maintenance activities, please install the inverter at eye level.
- Please make sure the wall you selected is strong enough to handle the screws and bear the weight of the inverter
- Ensure the device is properly fixed to the wall
- It is not recommended that the inverter is exposed to the strong sunshine, because the excess heating might lead to power reduction
- The ambient temperature of installation site should be between -25 °C and +60 °C
- Make sure the ventilation of the installation spot, not sufficient ventilation may reduce the performance of the electronic components inside the inverter and shorten the life of the inverter

5.3 Safety Clearance

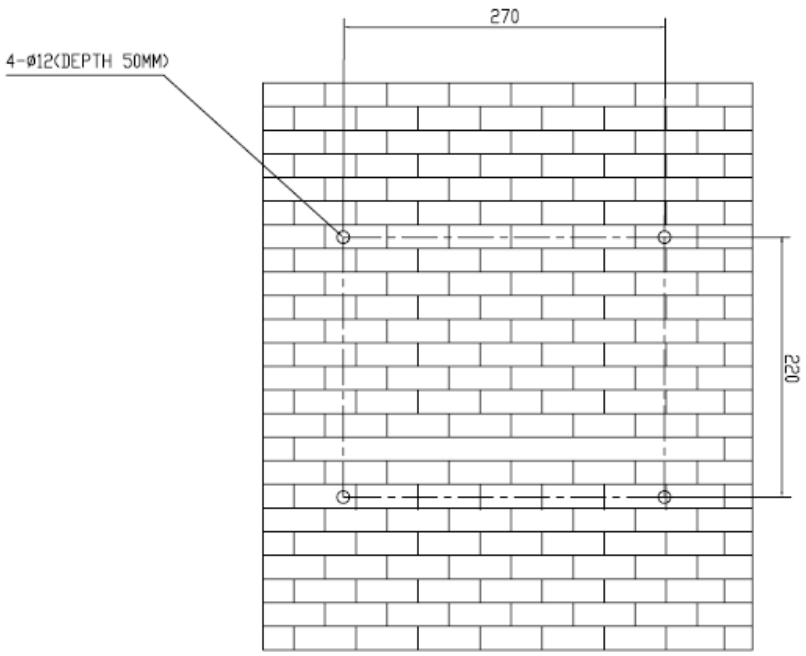
Observe the following minimum clearances to walls, other devices or objects to guarantee sufficient heat dissipation and enough space for pulling the electronic solar switch handle



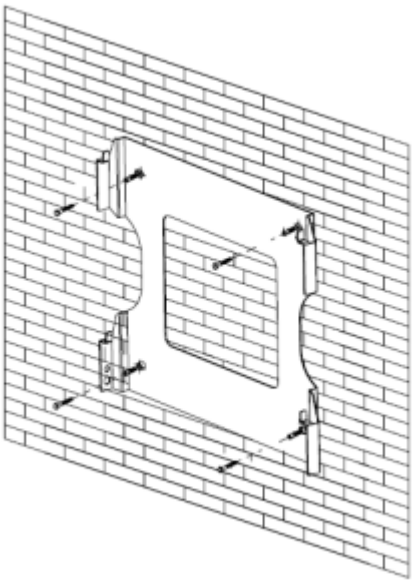
Direction	Minimum clearance
Above	30 cm
Below	40 cm
Sides	30 cm

5.4 Mounting Procedure

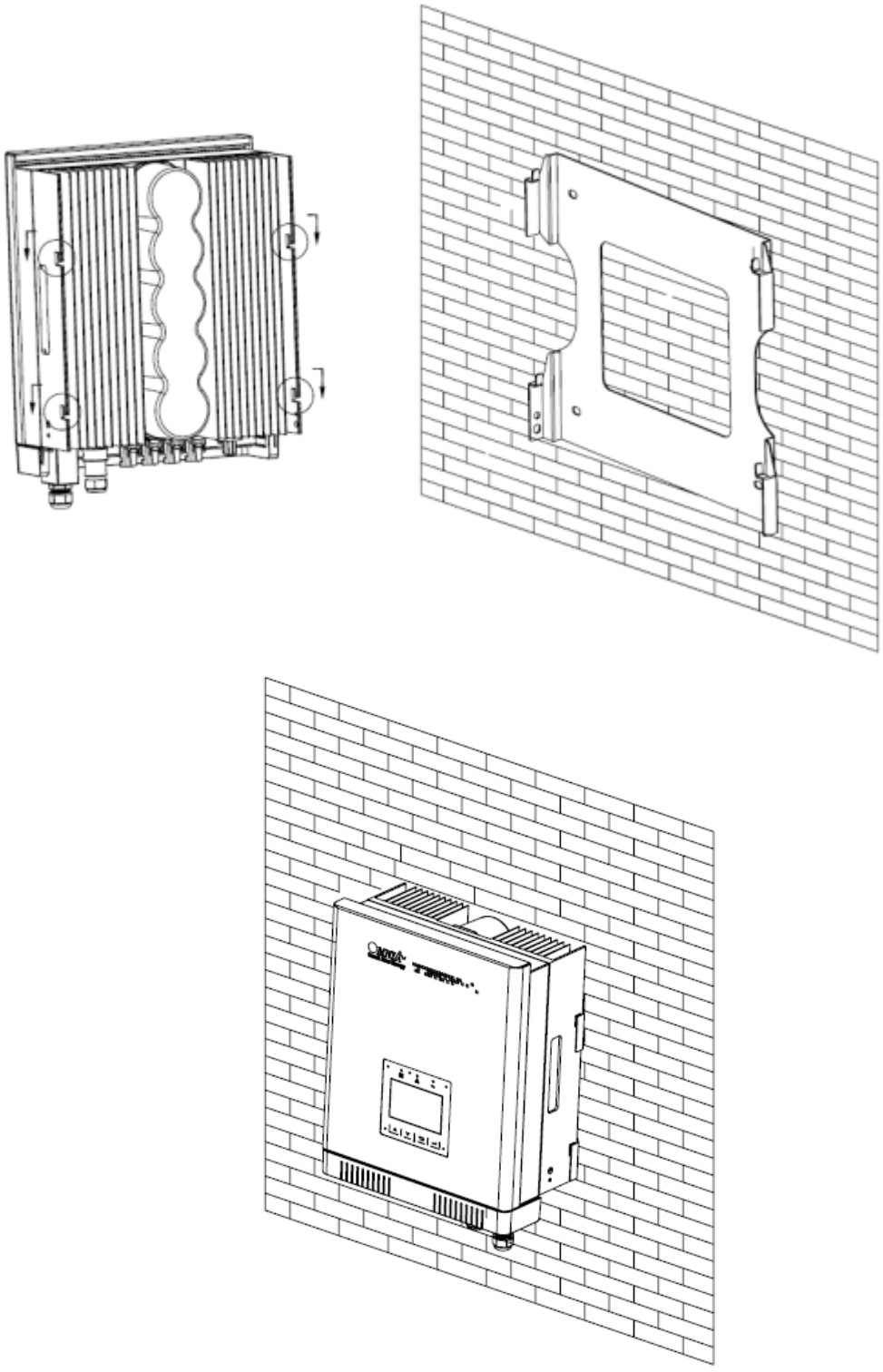
1. Mark 4 positions of the drill holes on the wall according to the paper installation position scale packed in the carton box.



2. according to the marks, drill 4 holes in the wall. Then, place four expansion tubes in the holes using a rubber hammer. Next, wring 4 screws into the expansion tubes. So far, the wall mounting bracket is fixed already.

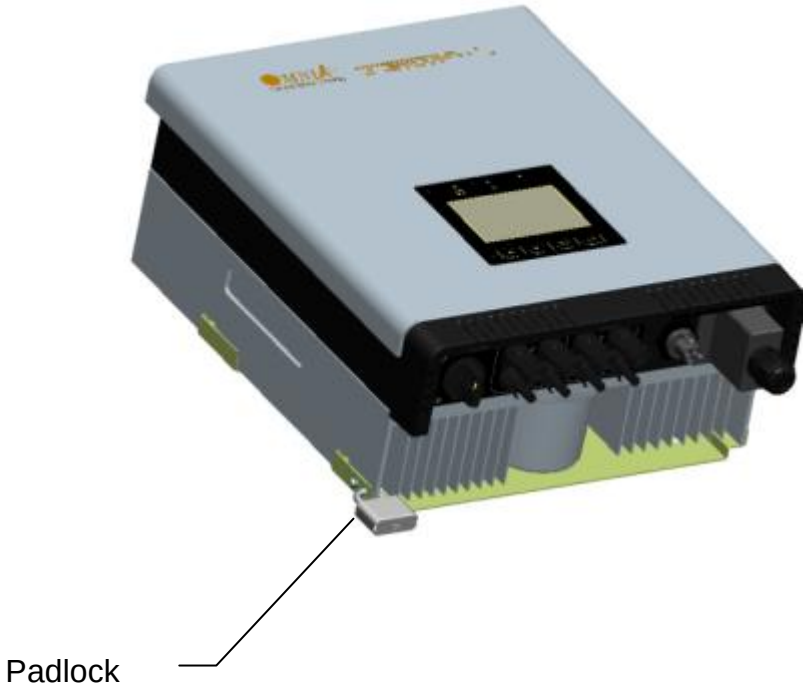


3. check the 4 holes in the backside of the inverter. Then, lift the inverter carefully, align the 4 holes in the inverter and the 4 screws in the wall, and finally attach the inverter to the screws slightly.

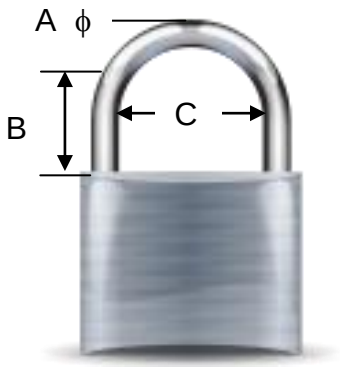


5.5 Safety lock

After the inverter is hang up on the bracket，lock up the device and the bracket together at the Lower Right Corner of the inverter (as the picture showed below)



Recommended padlock dimension：



A. Shackle Diameter	5~7 mm
B. Vertical Clearance	8~15 mm
C. Horizontal Clearance	12~20 mm
Stainless, solid hanger and secured lock cylinder	

NOTICE

For further maintenance and possible repair, please keep the key of the padlock in a safe place.

6. Electrical Connection

6.1 Safety

DANGER

DANGER to life due to potential fire or electricity shock. With the inverter powered, comply with all prevailing national regulations on accidents prevention.

This inverter will be directly connected with HIGH VOLTAGE power generation device; the installation must be performed by qualified personnel only in compliance with national and local standards and regulations.

NOTICE

Electrical connections shall be carried out in accordance with the applicable regulations, such as conductor sections, fuses, PE connection.

NOTICE

To ensure the safety of personnel and equipment needed to mount the PV array is connected and grounded with other conductor casing.

6.2 AC Side Connection

DANGER

DANGER to life due to potential fire or electricity shock.

NEVER connect or disconnect the connectors under load.

1. Integrated RCD and RCM

The Omniksol inverter is equipped with integrated RCD (Residual Current Protective Device) and RCM (Residual Current Operated Monitor). The current sensor will detect the volume of the leakage current and compare it with the pre-set value, if the leakage current exceeds the permitted range, the RCD will disconnect the inverter from the AC load.

2. Assembly Instructions

NOTICE

Use 14 -10AWG (2.56mm^2) copper wire for all AC wiring connections to Omnik inverter. Use only solid wire or stranded wire.

NOTICE

Use a residual current protective device **(residual operating current: 300mA)**.

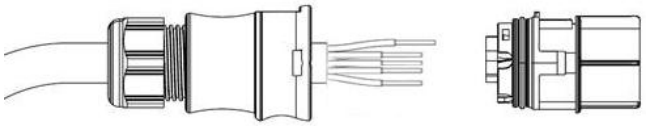
In order to reduce the line loss of AC side (no more than 1% of P_{out}), Omnik suggest that the length of AC cable from the inverter to the distribution box should not exceed the limit below.

Model	Rated current	Length of cable		
		2.5 mm^2	4 mm^2	6 mm^2
Omniksol-5k-TL2-3p	7.2A	44m	71m	-
Omniksol-6k-TL2	8.7A	-	59m	-

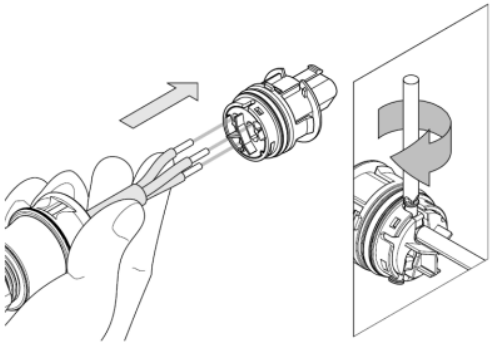
Omniksol-8k-TL2	11.6A	-	44m	66m
Omniksol-9k-TL2	11.8A	-	44m	66m
Omniksol-10k-TL2	12A	-	44m	66m

1) Remove length y of **N,L,1,2** conductor 35mm(1.38'')/**PE** conductor 40mm(1.57'') sheath of AC cable terminal, length x about 14mm(0.55'') of the inner wrapper, then dress the conductor terminals with ferrules or tin soldering.

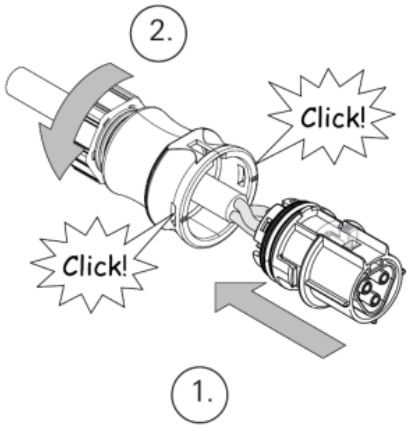
2) Check that all parts of AC connector are present. Then slide hex nut onto the cable and insert the cable end through clamp ring.



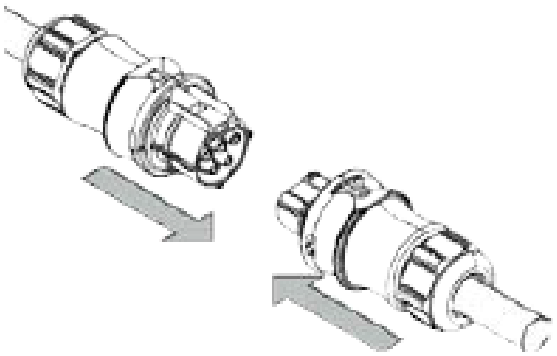
3) Insert the **stripped N, L and PE conductor terminal** to the appointed holes, use a cross screwdriver to tighten it with tightening torque 1Nm.



4) Insert the connector to clamp ring with two click sound and then tighten the hex nut with tightening torque 4Nm.



5) Finally connect the straight plug to the AC terminal on inverter. **Pay attention to the polarity of the terminals to avoid wrong connecting.**



6.3 DC Side Connection

DANGER

DANGER to life due to potential fire or electricity shock.

NEVER connect or disconnect the connectors under load.

DANGER

NEVER connect the ground lead of PV module to the inverter.

In order to reduce the line loss of DC side (no more than 1% of P_{in}), Omnik suggest that the length of DC cable for each cable section should not exceed the limit below.

Model	Length of cable	
	2.5 mm^2	4 mm^2
Omniksol-5k-TL2-3p	50m	80m
Omniksol-6k-TL2	60m	96m
Omniksol-8k-TL2	80m	128m
Omniksol-9k-TL2	90m	144m
Omniksol-10k-TL2	100m	160m

MC4 Assembly instructions

☞ If, during self assembly, parts and tools other than those stated by MC are used or if the preparation and assembly instructions described here are disregarded then neither safety nor compliance with the technical data can be guaranteed.

⚠ For protection against electric shock, PV-connectors must be isolated from the power supply while being assembled or disassembled.

⚠ The end product must provide protection from electric shock.

☞ The use of PVC cables is not recommended.

☞ Unplugging under load: PV plug connections must not be unplugged while under load. They can be placed in a no load state by switching off the DC/AC converter or breaking the DC circuit interrupter. Plugging and unplugging while under voltage is permitted.

☞ It is unadvisable to use non-tinned cables of type H07RN-F, since with oxidized copper wires the contact resistances of the crimp connection may exceed the permitted limits.

☞ Disconnected connectors should be protected from dirt and water with sealing caps.

☞ Plugged parts are watertight IP67. They cannot be used permanently under water. Do not lay the MC-PV connectors on the roof surface.

☞ See the MC catalogue 2 solar lines for technical data and assembled parts.

PV-Female cable coupler

PV-KBT4

PV-Male cable coupler

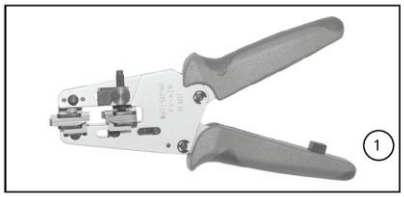
PV-KST4

Optional

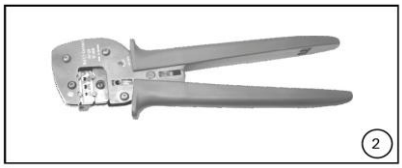
PV-SSH4

Protection class mated/unmated	IP67/IP2X	**Rated current**	17A(1,5mm^2/16AWG) 22A(2,5mm^2/14AWG) 30A(4mm^2,6mm^2/10AWG)
Ambient temperature range	-40° to 90°C (IEC) -40° to 75°C(UL) -40° ...70°C (UL:14AWG)	Rated voltage	1000V DC (IEC) 1000V DC (UL)
Upper limiting temperature	105°C （IEC）	Safety class	II

Note: The DC connector is MC4 type; you can order the specified tools at MC website: http://www.multi-contact.com.



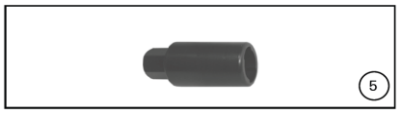
（ill. 1）
Stripping pliers PV-AZM... incl. built-in blade as well as hexagonal screwdriver A/F 2,5mm.
Cable cross section:1,5 / 2,5 / 4 / 6 mm^2
type： PV-AZM-1.5/6
Order No.： 32.6029-156



(ill. 2)
Crimping tool incl. locator and built-in crimping insert(PV-CZM)
Crimping range：
2,5 / 4 / 6 mm^2 (12 / 10 AWG)
type： PV-CZM-19100
Order No.： 32.6020-19100

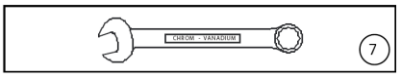
(ill. 3)
Open-end spanner PV-MS, 1 set = 2 pieces
Order No.： 32.6024

(ill. 4)
PV-WZ-AD/GWD socket wrench insert to tighten
Order No.： 32.6006



(ill. 5)
PV-SSE-AD4 socket wrench insert to secure PV-SSE-AD4
Order No.： 32.6026

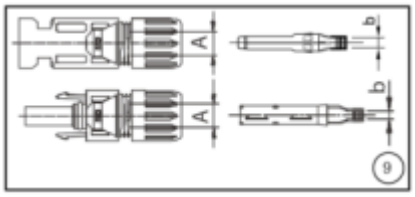
(ill. 6)
Test plug PV-PST
Order No.： 32.6028



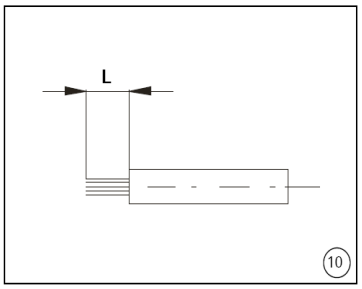
(ill. 7)
Test plug PV-A/F 15 mm

(ill. 8)
Torque screwdriver A/F 12 mm

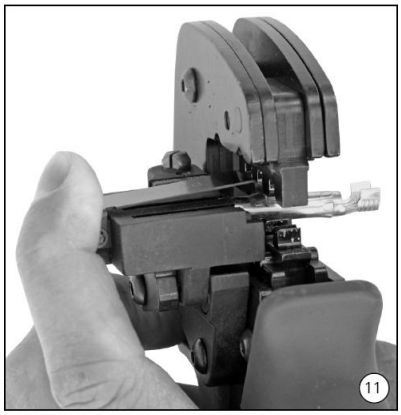
Cable preparation



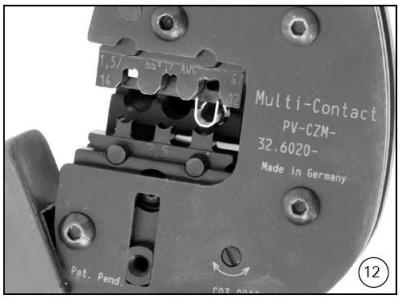
（ill. 9）
Use 14-10AWG (2.5-6mm^2) conductor as DC cable. Dimension **A** 3-6mm, **b** 2.5-6mm^2



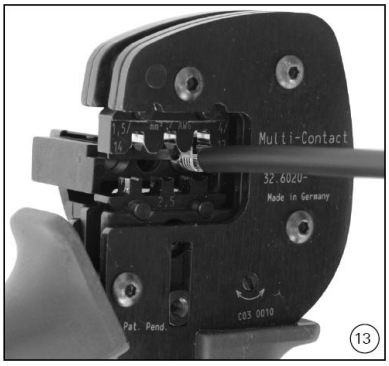
(ill. 10)
Strip cable insulation. L = 6-7, 5 mm. Take care not to cut individual strands.



(ill. 11)
Open the clamp (K) and hold. Place the contact in the appropriate cross section range.
Turn the crimp lugs upwards. Release the clamp (K). The contact is fixed.

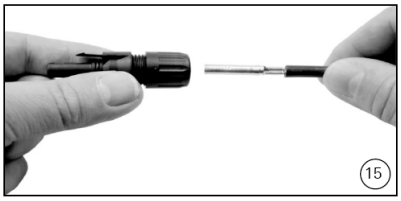


(ill. 12)
Press the pliers gently together until the crimp lugs are properly located within the crimping die.



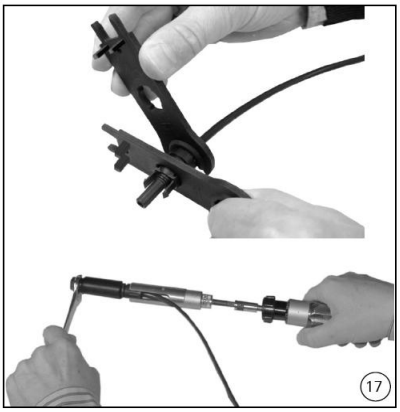
(ill. 13)
Insert the stripped cable end until the insulation comes up against the crimp insert. Completely close the crimping pliers.

(ill. 14)
Visually check the crimp.

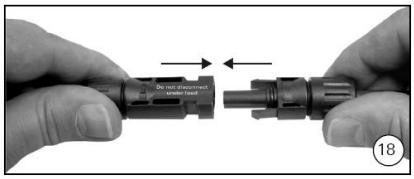


(ill. 15)
Insert the crimped-on contact into the insulator of the male or female coupler until it clicks into place. Pull gently on the lead to check that the metal part is correctly engaged.

(ill. 16)
Insert the appropriate end of the test pin into the male or female coupler as far as it will go. If the contact is correctly located, the white mark on the test pin must still be visible.



(ill. 17)
Screw up the cable gland hand-tight with the tools PV-MS or tighten the cable gland with the tools PV-WZ-AD/GWD and PV-SSE-AD4.
In both cases: The tightening torque must be appropriate for the solar cables used. Typical values are between 2,5 Nm and 3 Nm.



(ill. 18)
Plug the parts of the cable coupler together until they click in place. Check that they have engaged properly by pulling on the cable coupler.

7. Display and Operation

7.1 LCD Panel

The display panel composed of three parts: lights, display and buttons. As shown in Figure 1.

Figure 1 Display Panel

7.2 Indicator

The inverter total has three indicators: running lights(green), Fault lights (red), and Communication lights(yellow), as shown in Figure 2, See Table 1 for specific meaning

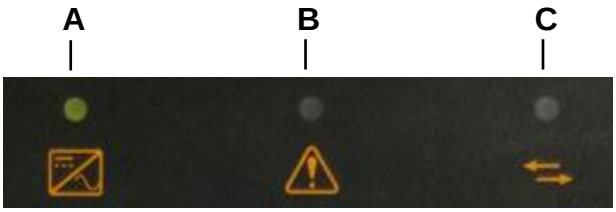


Figure 2 Indicator Panel

Table1 Indicator Description

NO.	Name	State	Description
A	Running lights	light	Inverter connects to grid normal
		dark	Inverter don't connect to grid
B	Fault lights	light	Malfunction
		dark	The machine is not the fault
C	Communication lights	flashing	Data is being transmitted
		dark	No data transmission

7.3 Button

The inverter total has four buttons, from the left, followed by UP button, DOWN button, ESC button and ENTER button, as shown in figure 3.

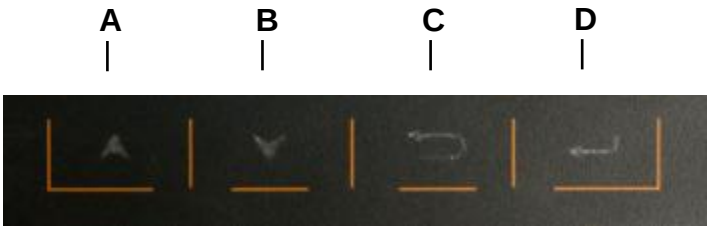


Figure 3 Keypad

7.4 Display

Display interface is shown as Figure 4. Among them, red dashed box is a fixed display area, the rest is menu display area. Menu display area is in response to key operation, while fixed display area does not support control of keypad.

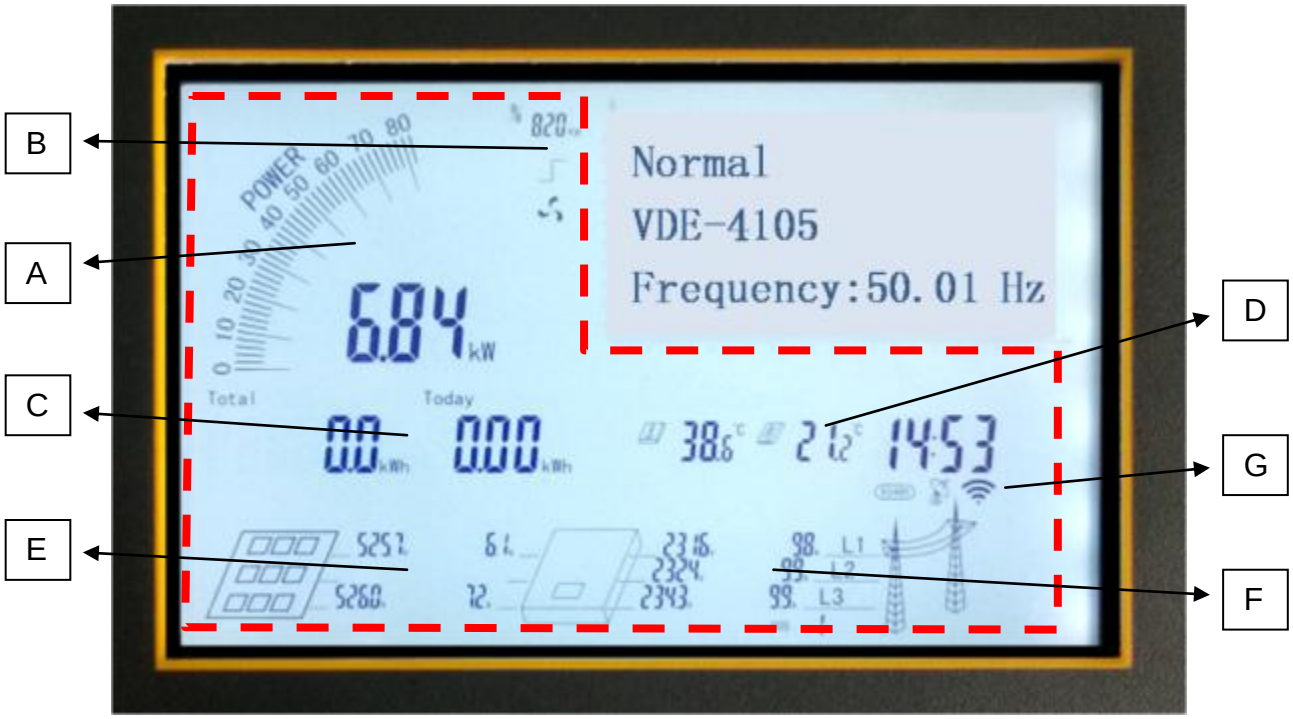


Figure 4 Display interface

7.4.1 Fixed display area

Fixed display area is divided into seven by content, contains Instant power display block, Models and auxiliary information display block, Generation display block, Temperature and time display block, PV connection information display block, AC connection information display block and Communication display block, Sequentially corresponds to A, B, C, D, E, F and G blocks in figure 4.

7.4.1.1 **Instant power display block**

Instant power display block provides two display modes, instant power values and percentage.

7.4.1.2 **Models and auxiliary information display block**

Type information: rated power

Fans logo: indicates fan operation status

7.4.1.3、Generation display block

E-total records the total generating capacity of the inverter, E-Today records the day generating capacity of inverter.

7.4.1.4、**Temperature and time display block**

Heat sink temperature is in the left side, in the right side that is the internal temperature

7.4.1.5、**PV connection information display block**

This mode provides the information of number of PV strings, PV voltage and PV current.

7.4.1.6、**AC connection information display block**

This modes provides the information of grid single / three phase, grid voltage and grid current.

7.4.1.7、**Communication display block**

This modes provides the monitoring connection, includes RS485 communication, GPRS communication and WiFi communication

7.4.2 Menu display area

Menu display area is divided to three display modes: working state mode, menu mode and curve mode, through the "UP" button and "DOWN" key to switch, the following sections will explain these three modes.

7.4.2.1 work state interface

This interface provides current work status, current national safety regulation and grid frequency information of current inverter, as shown in figure 5.

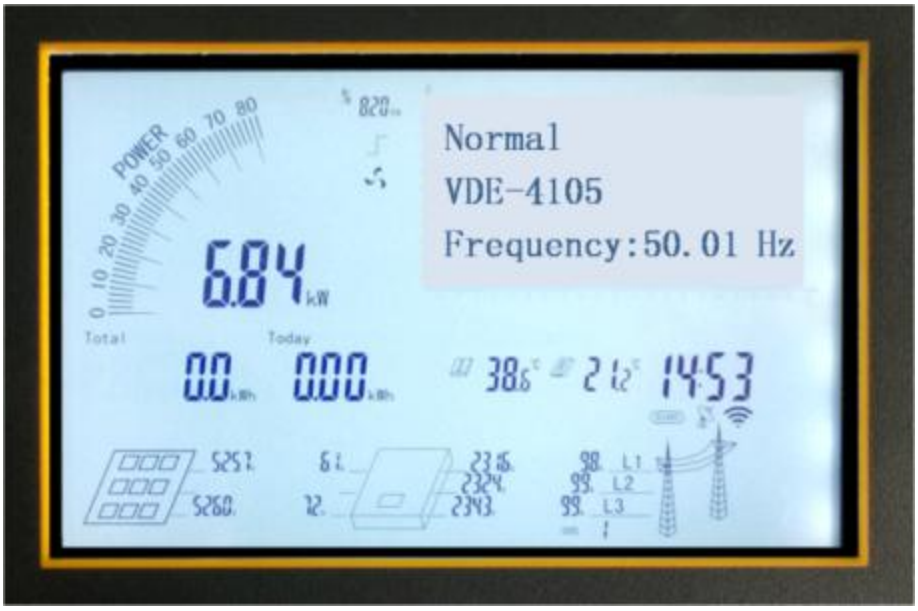


Figure 5 work state interface

State	Description
wait	Initialization, waiting for the grid
run	Inverter has been connected to grid, and is running normally
fault	Inverter malfunctions
upgrade	inverter is upgrading process

7.4.2.2 Menu interface

The menu structure is the hierarchical, consists of fault, configuration and equipment, as shown in figure 6, each main menu consists of several sub-menu items, on the left of vertical line is main menu item, the right is submenu item corresponds to main menu item. Select the main menu item by "UP" button and "DOWN" button and then enter a sub-menu item through “ENTER” button.

Figure 6 menu interface

1) Failure items

Failure item is consist of three sub-menu items, clear, current and history, as shown in Figure 10.

a) Clear fault history

System only can record at most 10 pcs of fault information, stored in the history menu. To clear the fault history, need password authentication, as shown in figure 7. The factory password is “000000”, users can change a single password by “UP” and “DOWN” button, and

then set the next digit password by “ENTER” button, until six correct password is entered, then press “ ENTER” button can enter to clear fault interface, as shown in Figure 8.

Figure 7 Password authentication interface

Figure 8 Clear fault interface

Choose “YES” button through “UP” and “ DOWN” button, then press “ENTER” button, already clear the history fault information.

b) Current fault information

Current fault information records current fault code and content, shown in Figure 10. If there is no fault, then it will show “no fault record”.

Figure 9 Current fault record interface

Figure 10 Current fault record interface

c) History fault information

This page provides the history fault record, through “UP” and “DOWN” button to scroll up the records, at most can display 10pcs of history fault information. Every page will show single fault time, fault code and fault content, shown in Figure 11.

Figure 11 History fault information interface

2) Setting item

Setting menu is consist of fourteen sub-items, contains language setting, communication, safety regulation, WiFi and so on, shown in Figure 12.

Figure 12 Setting item display interface

a) Language setting

The inverter supports three languages, Chinese, English and Deutsch. Select the language through " UP" and "DOWN" button, then the set up is finished, shown in Figure 13.

Figure 13 Setting language interface

b) Set communication

Does not support this feature.

c) Set Safety regulation and country

Set safety regulation, also needs the password authentication, to be verified by entering the safety selection interface, shown in Figure 14, the unit supports 43 types of safety regulations, VDE-4105, VDE-0126, Spain and so on, through the "UP" key and "ENTER" key to scroll, select and press "ENTER" key, then setup is complete.

Figure 14 setting safety regulation interface

d) WiFi reset

WiFi reset is to reset the WiFi AP address, as shown in Figure 15, select “YES” through “UP” and “DOWN” button, then press “ENTER”, operation is complete.

Figure 15 WiFi reset interface

e) Clear generating capacity

Clear generating capacity, means clear total generating capacity(E-Total) and clear day generating capacity(E-Today), through the "UP" and "DOWN" button to select "Yes", as shown in Figure 16, then press "ENTER" , the clear is complete.

Figure16 Clear generating capacity interface

f) set the firmware
g) set the price
h) set time

Time format is hours: minutes: seconds, shown in Figure 17, by "UP" and "DOWN" button to adjust the "hour", then press "ENTER" to adjust "minutes" Similarly, adjust "seconds", and finally press the "ENTER" key to finish the setup.

Figure17 setting time interface

i) set date

Date The date format is month - day - year, shown in Figure 18, by "UP" and "DOWN" button, can adjust "month", then press "ENTER", go to adjust "Day". Similarly, adjust the "year", and finally press the "ENTER" button to finish the setup.

Figure 18 set date interface

j) set password
k) set Over voltage and frequency limit

Over voltage and frequency have two pages, over frequency (PAGE 19) and under frequency (page 20) ,and press the button “up” and “down” to set it , over frequency setting have four limitation data , over frequency 1, over frequency 2, over frequency 3, over frequency 4. Press the button “Enter “to enter into the setting status, and press the up and down to select the limitation data, and press the “enter” to finish it.

Figure 19 set Over voltage and frequency limit interface

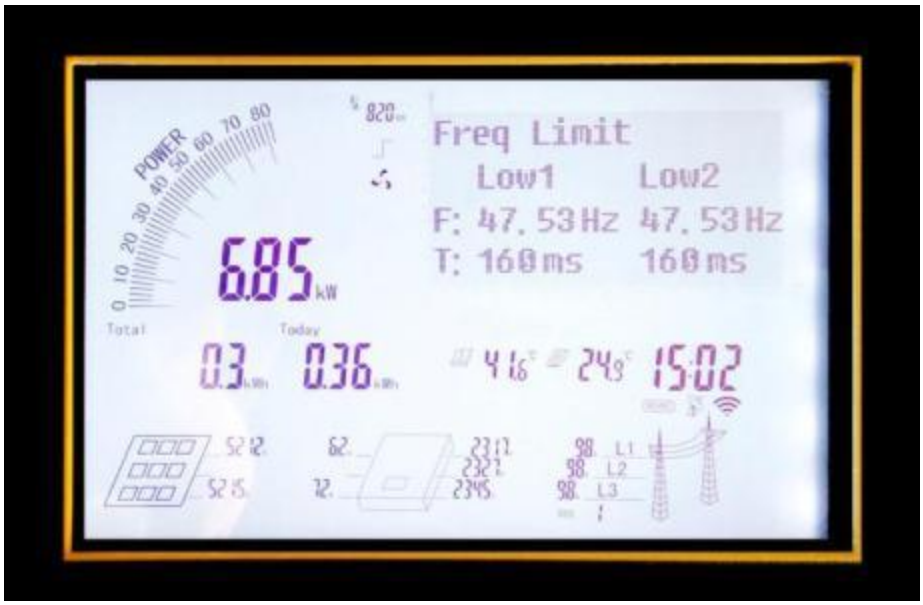


Figure 20 set under frequency limit interface

l) set over voltage limit

Over voltage setting is also divided to 2 pages, overvoltage settings (Figure 21) and under voltage setting (Figure 22). The way to set up under frequency limit is the same with set over frequency limit.

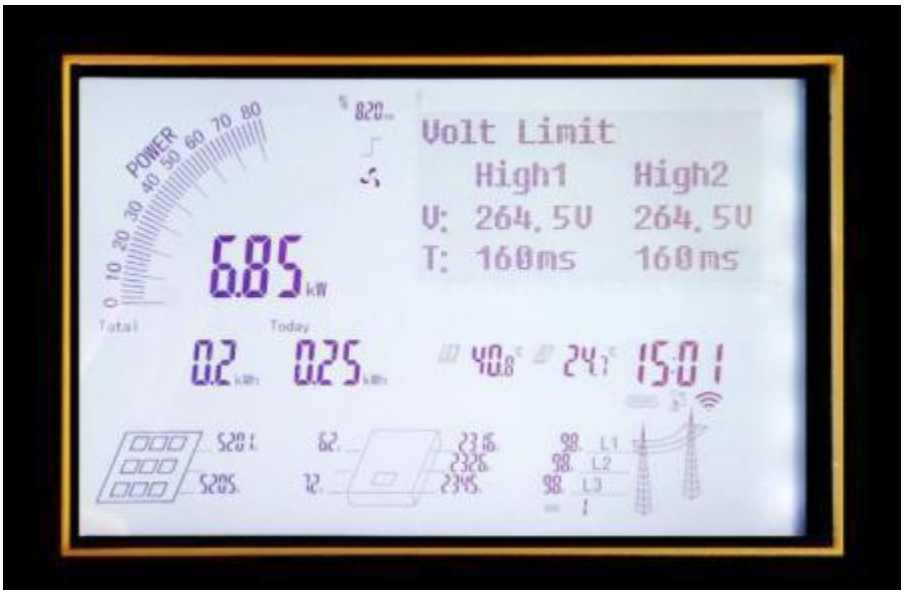


Figure 21 Set overvoltage limit interface

Figure 22 Set voltage limits interface

m) Set MPPT scan time

MPPT scan setting interface is shown as Figure 23, by "UP" and "DOWN" button to adjust the "hour", then press "ENTER", adjust the "minute" and press "ENTER" button, that setup is complete.

Figure 23 Set MPPT scan interface

n) protective item

The inverter is consist of 11pcs of protection items, ISO, GFCI, DCI and so on, user can turn on or off by themselves, as shown in Figure 24, through " UP" and "DOWN" button, can scroll up to view the state of protected item. To reset a protected item, need to press "ENTER" to go to the setup mode, as shown in Figure 25.

Figure 24 Set protection item interface

In setting state, through "UP" and "DOWN" button to turn on or off, then press "ENTER" button to confirm and enter to set up the next protection item state, until finish all the setup, through "ESC" button to exit settings page.

Figure 25 Set interface protection items

3) Equipment items

Equipment menu is consists of four sub-menus, version, WiFi, model and serial number, as shown in Figure 26.

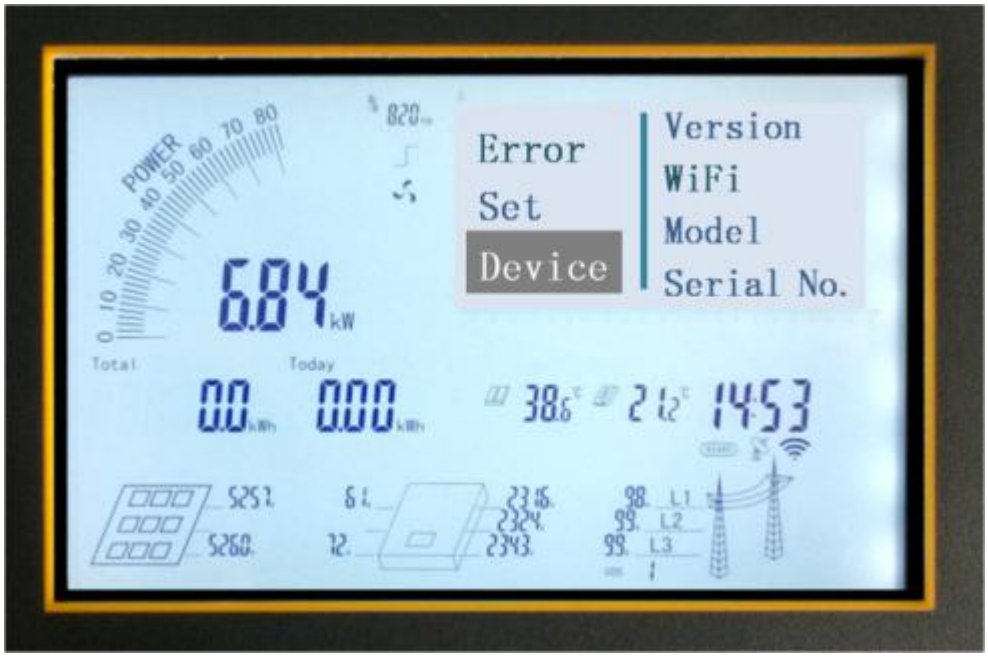


Figure 26 Equipment items Interface

a) Version NO.

The version number menu is consist of three sub-menu, the main CPU version number page, Vice-CPU version page, CPU version number displayed page, through "UP" and "DOWN" to scroll to view, shown as figure 27, figure 28 and figure 29.

Figure 27 main CPU version interface

Figure 28 Vice CPU interface version

Figure 29 display CPU version interface

b) WiFi SN and add

Figure 30 WiFi SN interface

图 31 WiFi AP add interface

c) Type of inverter

Model information is shown in Figure 32.

Figure 32 Models display interface

d) Inverter SN

Inverter serial number information is shown as Figure 33.

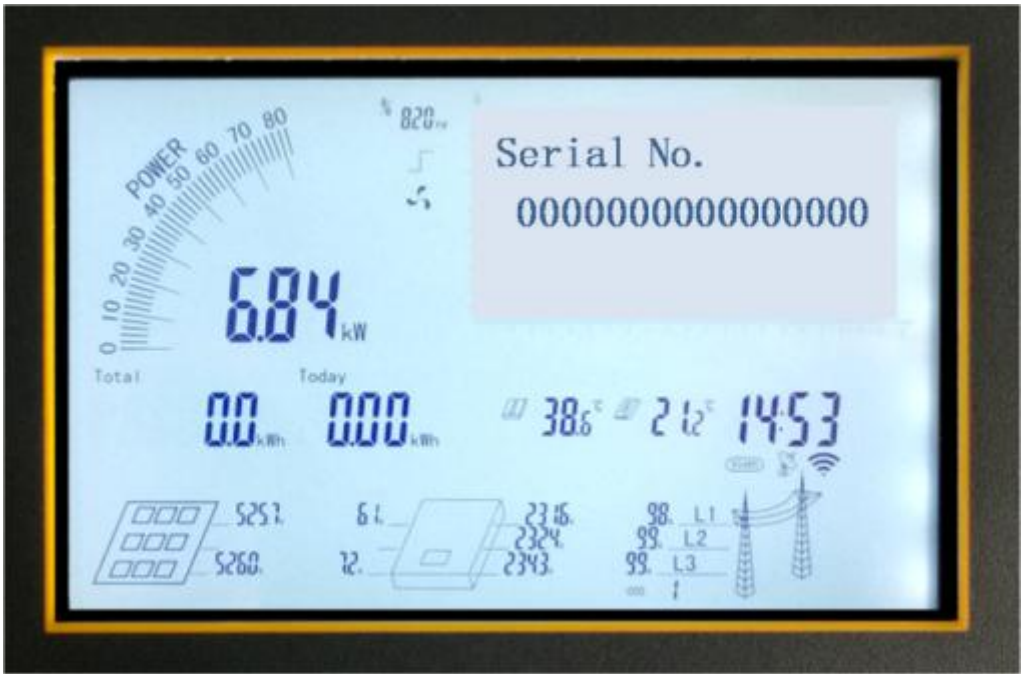


Figure 33 Inverter SN interface

7.4.3.3 Curves interface

Curve interface draws day power curve, X-axis represents time in 1 hour, from the left, the first is 1:00 to 2:00, and the far right represents the night 22:00. Y-axis represents the power value, the full scale means rated power, as shown in Figure 34.

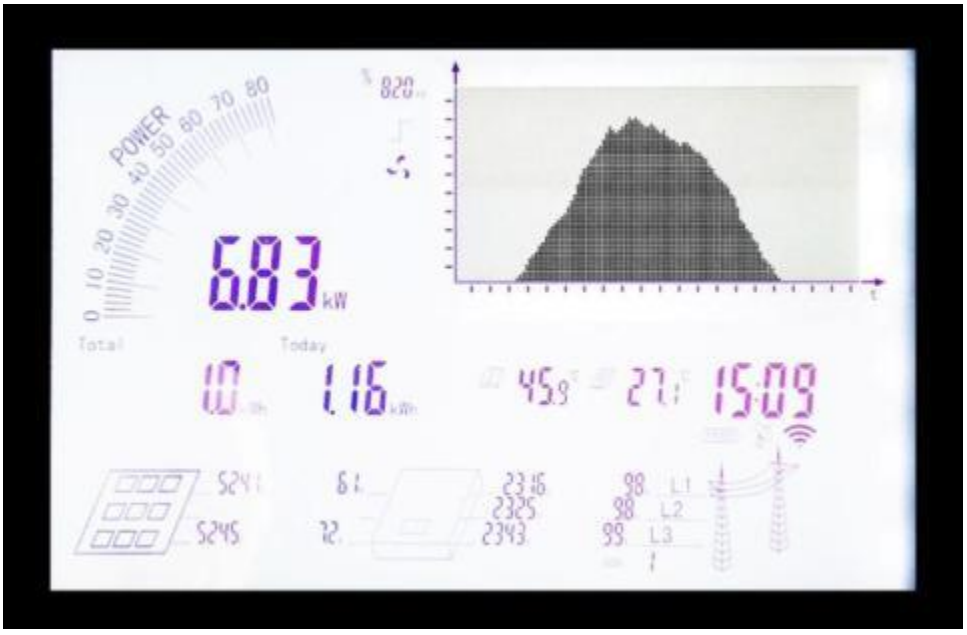


Figure 34 Curves interface

7.5 Ground

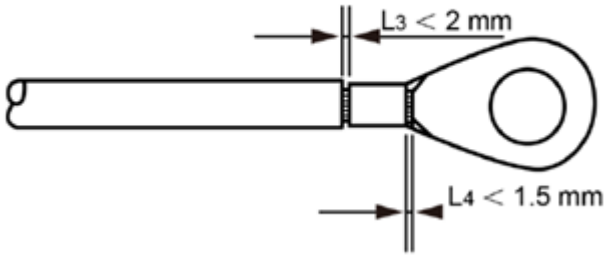
Protective ground port position

On the right side of the inverter has a protective earth hole, users can link to ground.

Grounding screw has been attached to the machine, when user is connecting to the ground, first remove the screws, then put terminal with grounding cable to fix to the machine (support Grounding Cable use 5mm2)

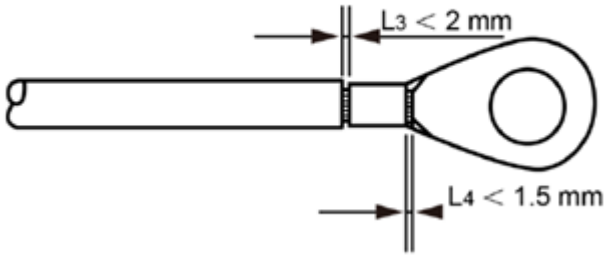
Crimping steps：

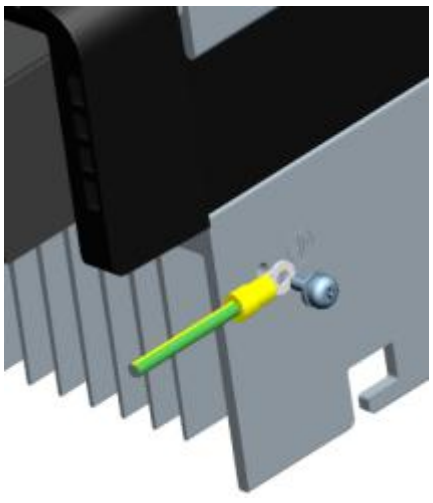
1. Using wire strippers, stripped suitable length of grounding cable insulation (as shown in figure 4-3)



Note： L2 is longer than LI, about the length of 2-3mm.

2. Will strip the insulation wire core through the conductor of OT terminal pressure welding zone, and line pressing clamp pressure (as shown in figure 4-4)





7.6 State Information

State	Display	State information
Wait	Waiting	Initialization & waiting
	Reconnect s	Reconnect
	Checking s	Checking
Normal	Normal	Normal state
Fault	Ground I Fault	GFCI failure oversized leakage current
	Fac Failure	Grid frequency failure
	Vac Failure	Grid voltage failure
	Utility Loss	No Utility & Island
	PV Over Voltage	Input voltage too high
	Over Temperature	Temperature abnormal
	Isolation Fault	Isolation failure
	Relay-Check Fail	Output relay failure
	DC INJ High	Output DC injection too high
	EEPROM R/W Fail	EEPROM problem
	SCI Failure	Serial communication interface failure
	AC HCT Failure	Output AC sensor abnormal
	GFCI Failure	GFCI testing device abnormal
Flash	F/W Updating	Update

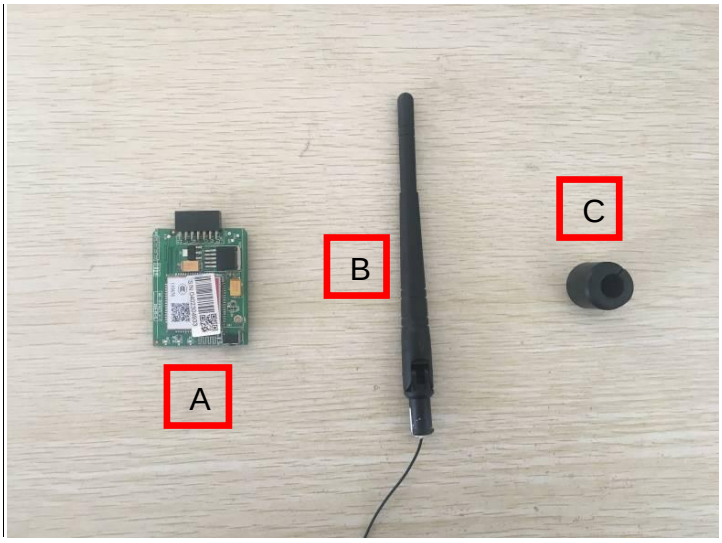
About the further information for each fault, please reference to Chapter “10.Troubleshooting”.

8. Communication Setting

8.1 GPRS Card

GPRS card is an optional device. If your inverter had installed the GPRS card, please go to **8.3. Register on monitoring website**.

After unpacking the box, please check the parts according to the below list. Contact the manufacturer immediately when you find any damage, missing or wrong model.



No.	Name	Quantity
A	PV data collector	1
B	GPRS antenna	1
C	connector	1

Fig. GPRS card

Omnik provide 2 kinds of GPRS cards. One is a standard GPRS card and the other one has a card slot.

No.	Name
A	14 pin connector
B	I-PEX interface

Fig. Standard GPRS card

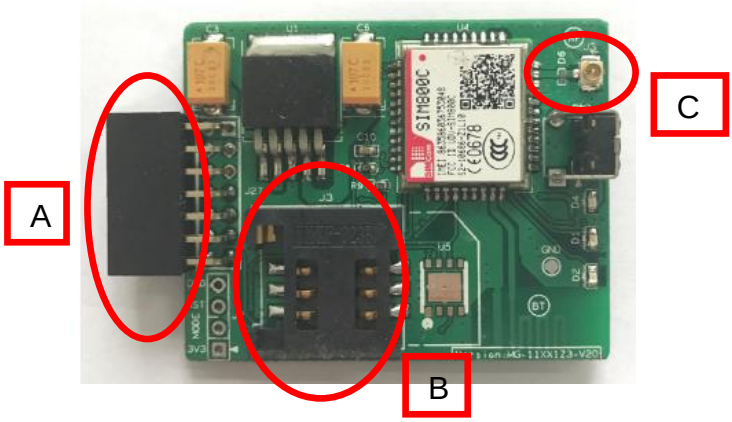


Fig. GPRS card with card slot

No.	Name
A	14 pin connector
B	SIM card slot
C	I-PEX Interface

The serial number is shown as below.

Fig. Serial Number

8.2 Installation of communication card

Warning: Before installing the GPRS card to inverter, you must turn off both the AC side and DC side of inverter to make sure personal safety.

Fig. Dismantle the communication box

Unscrew the four screws on the interface panel with the screwdriver as shown in Picture above and keep the screws aside.

Fig. Communication box and connector

The standard connector has two holes. Use the single-hole connector to take place of the double-hole connector.

Fig. Single-hole connector

Insert the GPRS antenna through the gland and screw the hex nut with a torque of 2.0 N.m.

Connect the data line into the I-PEX interface.

While using the second kind of GPRS card, just insert the SIM card into the card slot. Then insert the GPRS card into the inverter.

Fig. Slot of the inverter

Fig. Insert the GPRS card

Install the communication box back to the inverter. While the installation is completed, Antenna can be turned in 360 degrees.

Fig. Complete the installation

8.3 Register on monitoring website

The PV monitoring system of Omnik is supported by: IE8, Firefox, Chrome, and Safari. Login the website **http://www.omnikportal.com**, click register to enter the user registration page, follows the requirements for registration; please fill in the information for register. After successful registration, enter the mailbox and activity the account, then to complete the registration.

Fig. Click and enter the register interface

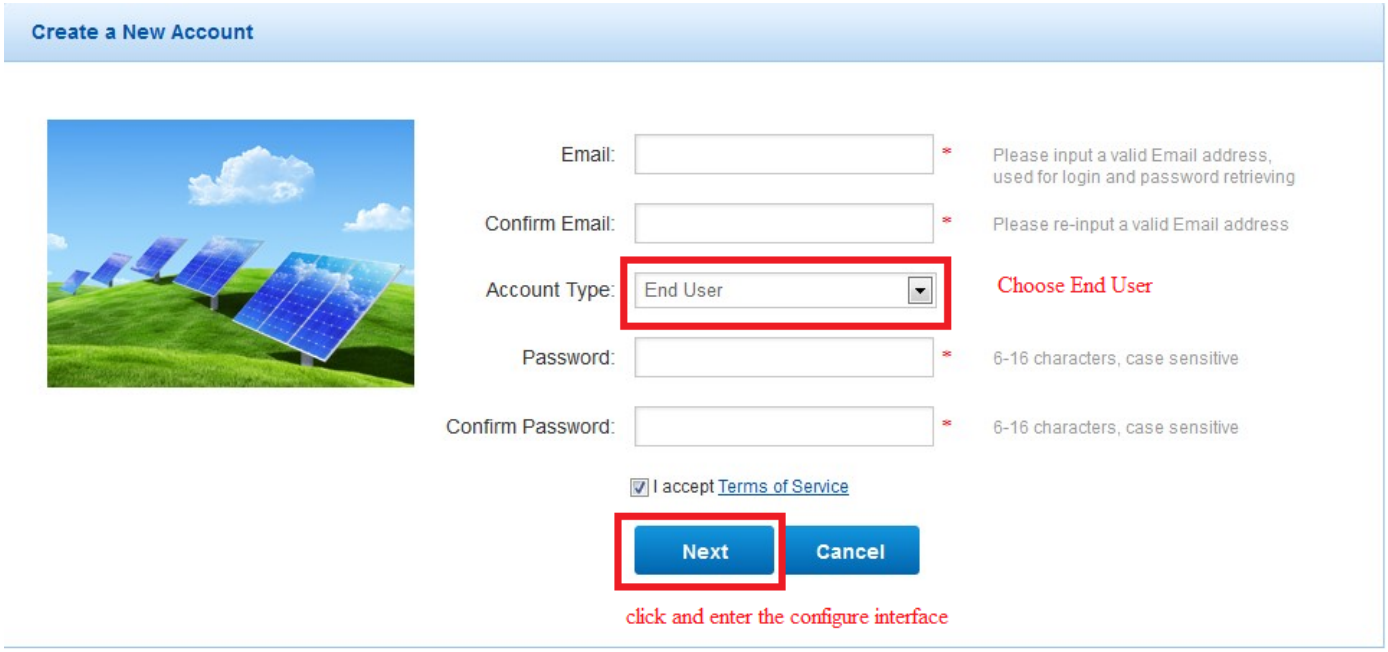


Fig. Choose the account type

Remarks: please read the < Omnik service agreement > carefully, the enclosure is the cost list for all the countries; please choose your operators ***End User*** *means the final user*

""* *you must fill it*

Fig. Fill in the power station information

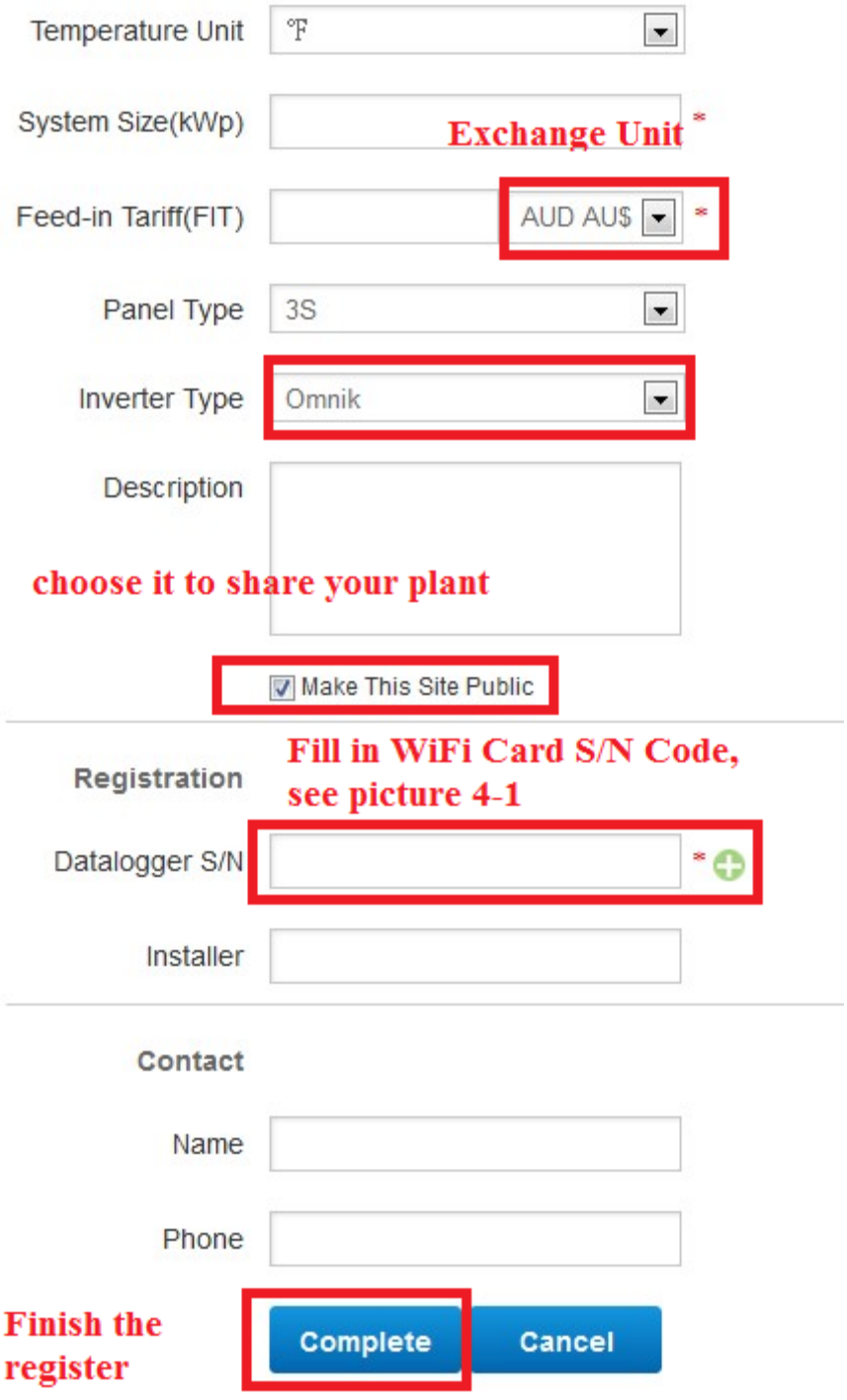


Fig. Fill in the power station information

After the register, you may enter next chapter **8.4 Login Monitoring System**.

8.4 Login monitoring System

After the successful register and account activation, open the login interface as below. Input the correct email and code. Enter the PV monitoring system. Then you can monitor and manage the power station.

Fig. Input the email and code

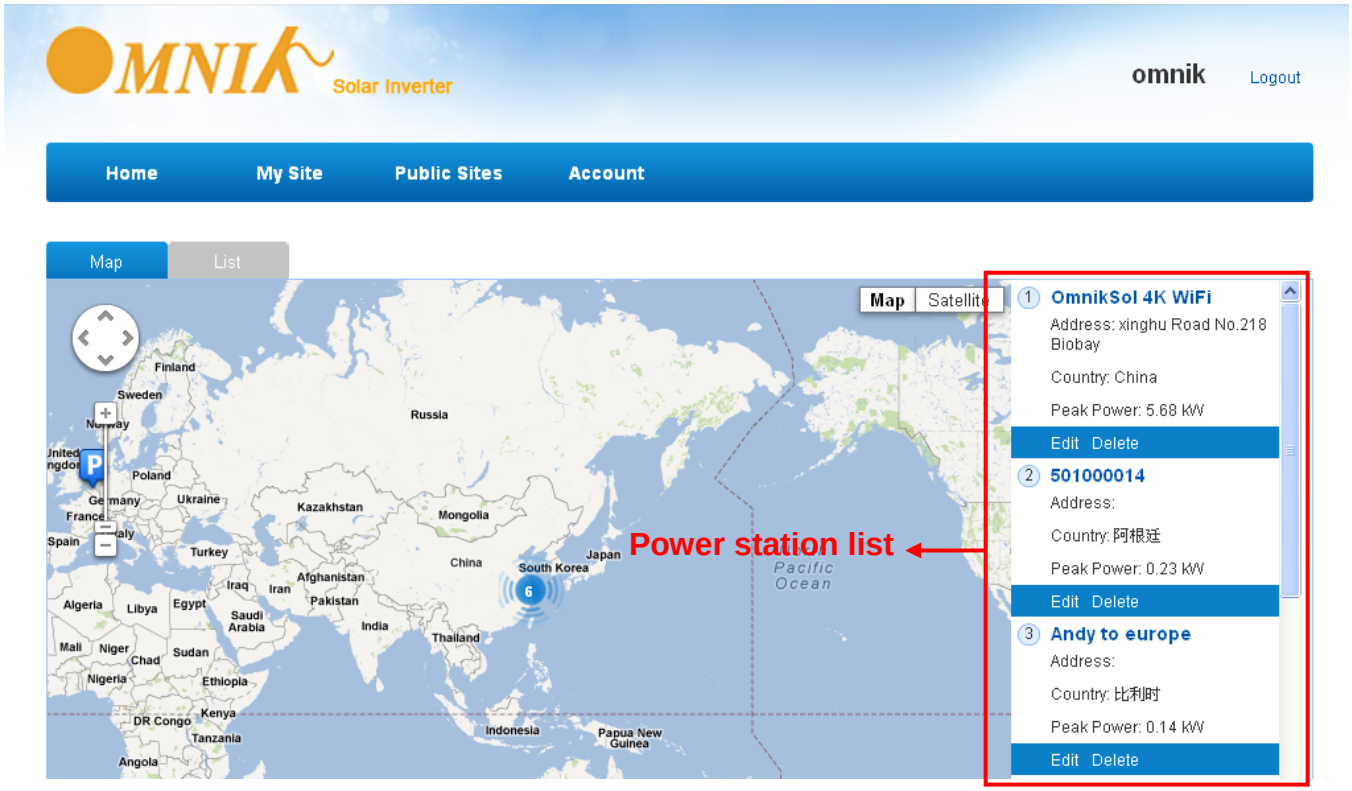


Fig. User interface

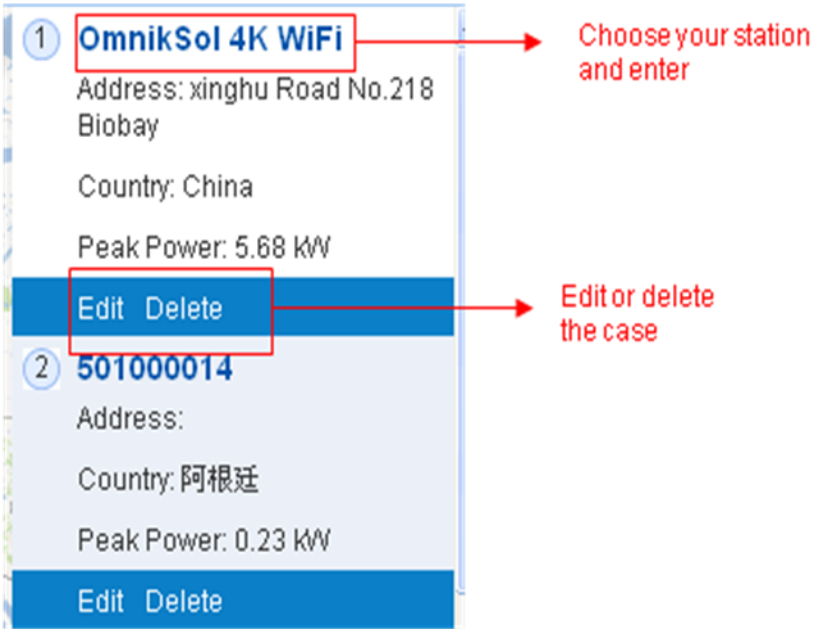


Fig. List of power station

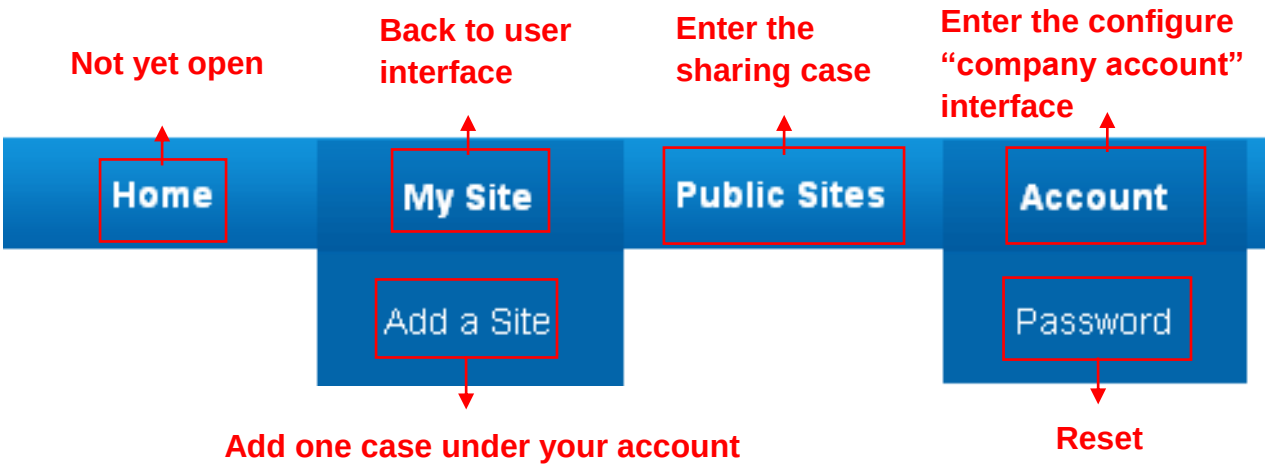


Fig. Navigation Bar

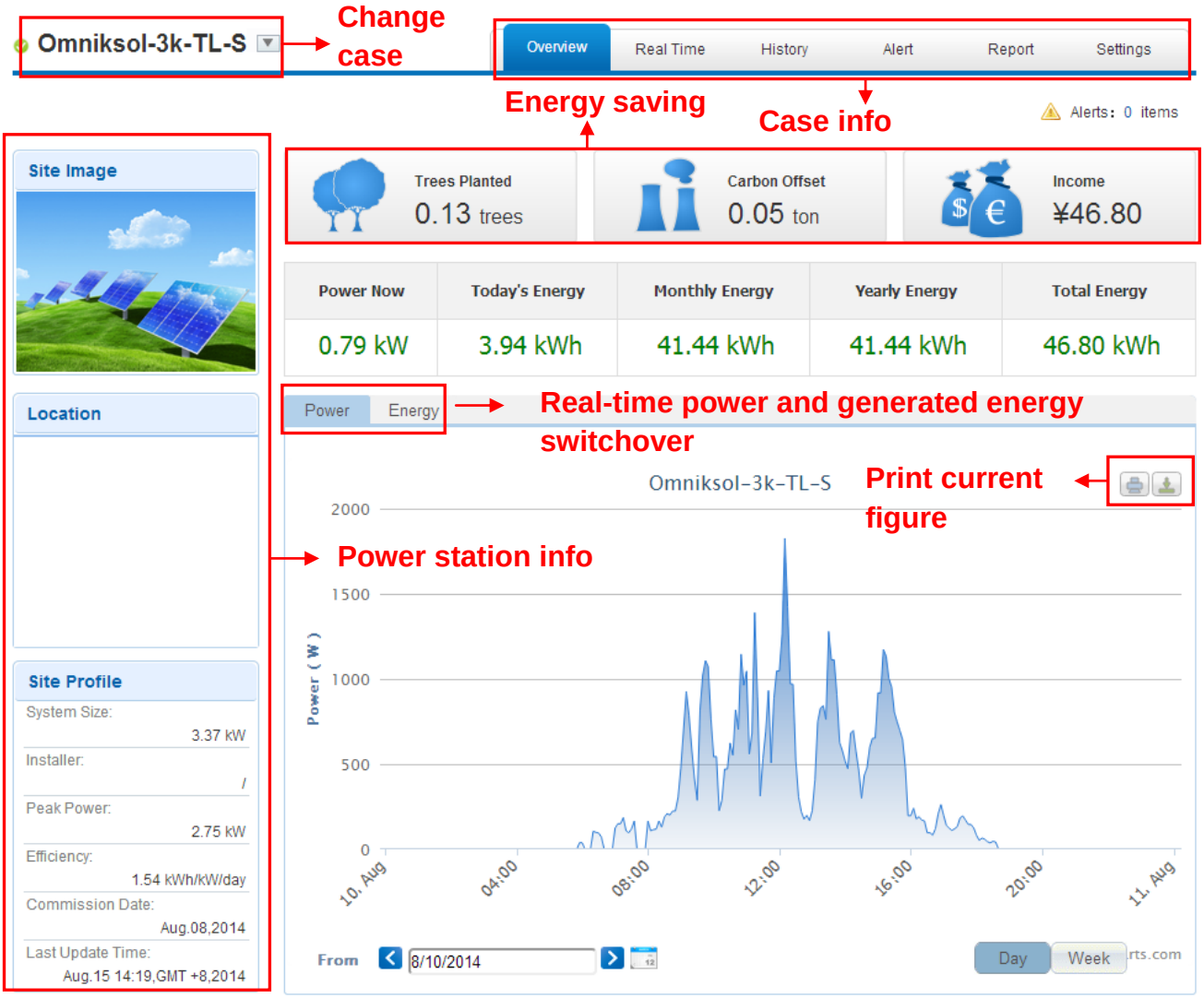
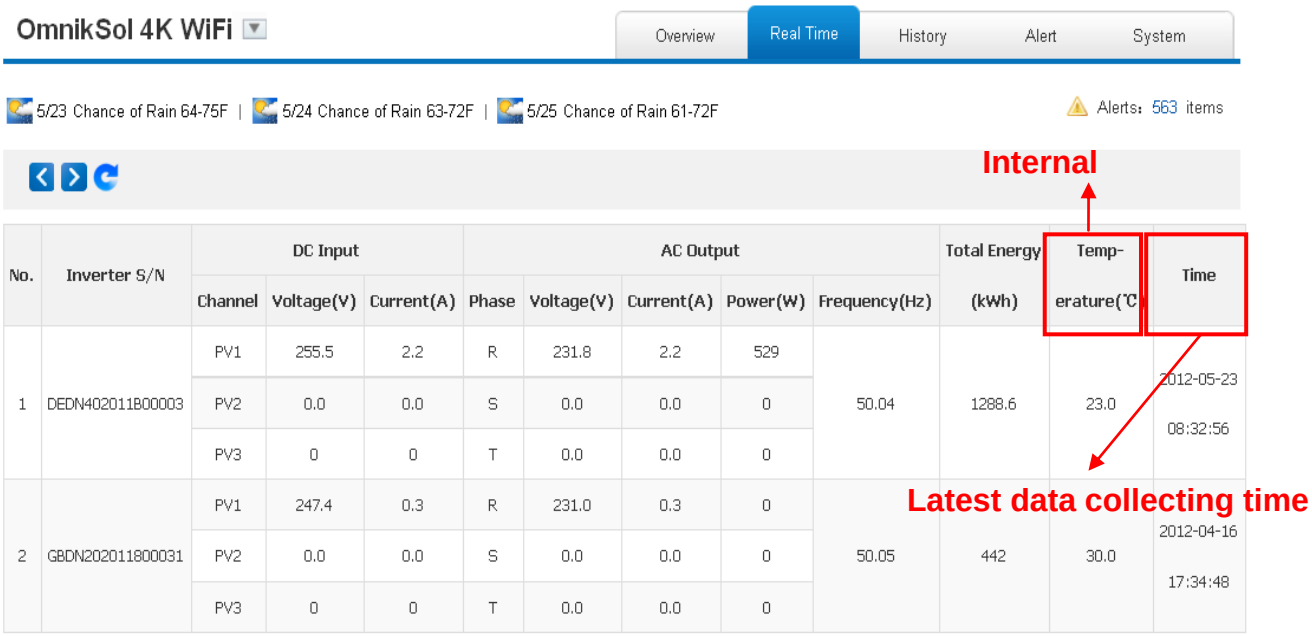


Fig. Main interface of Power Station



No.	Inverter S/N	DC Input			AC Output					Total Energy (kWh)	Temperature(℃)	Time
		Channel	Voltage(V)	Current(A)	Phase	Voltage(V)	Current(A)	Power(W)	Frequency(Hz)			
1	DEDN402011B00003	PV1	255.5	2.2	R	231.8	2.2	529	50.04	1288.6	23.0	2012-05-23 08:32:56
		PV2	0.0	0.0	S	0.0	0.0	0				
		PV3	0	0	T	0.0	0.0	0				
2	GBDN202011800031	PV1	247.4	0.3	R	231.0	0.3	0	50.05	442	30.0	2012-04-16 17:34:48
		PV2	0.0	0.0	S	0.0	0.0	0				
		PV3	0	0	T	0.0	0.0	0				

Fig . Real Time Interface

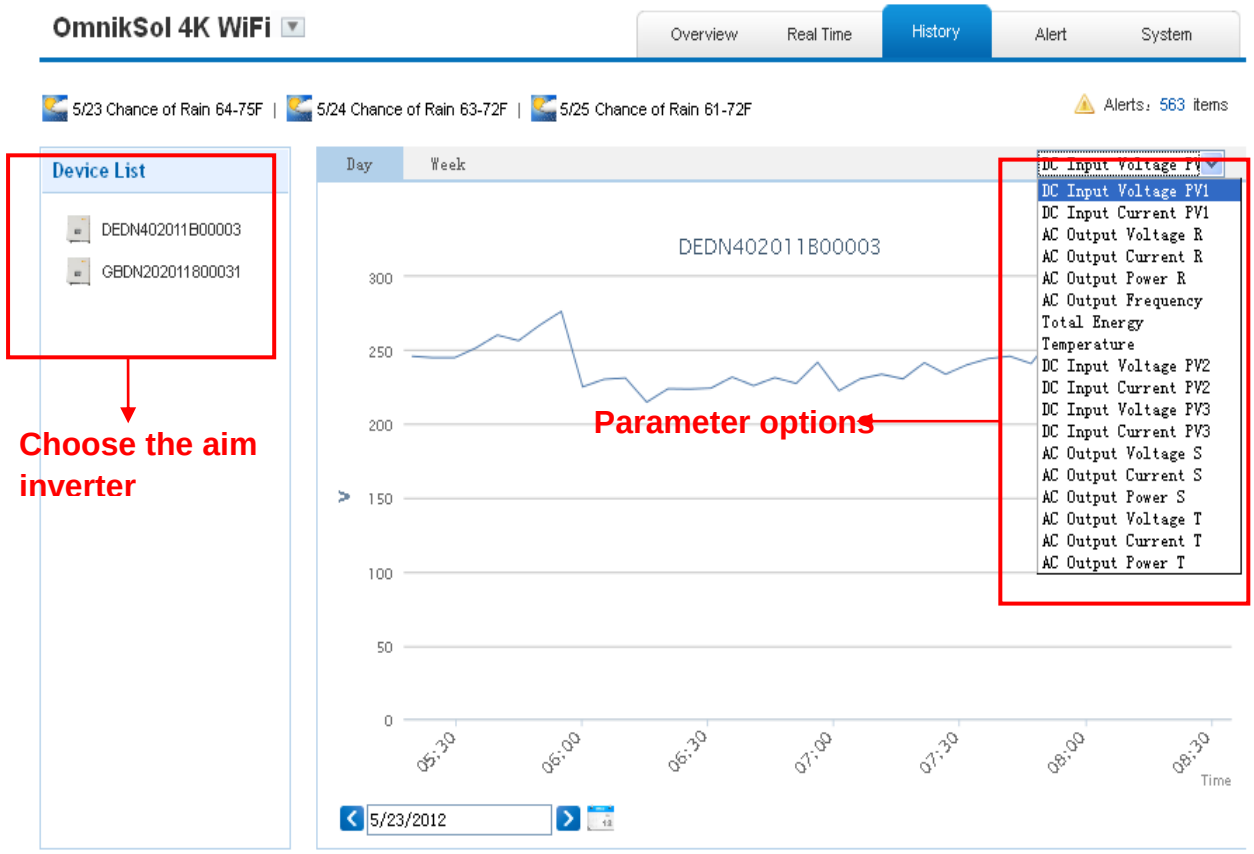
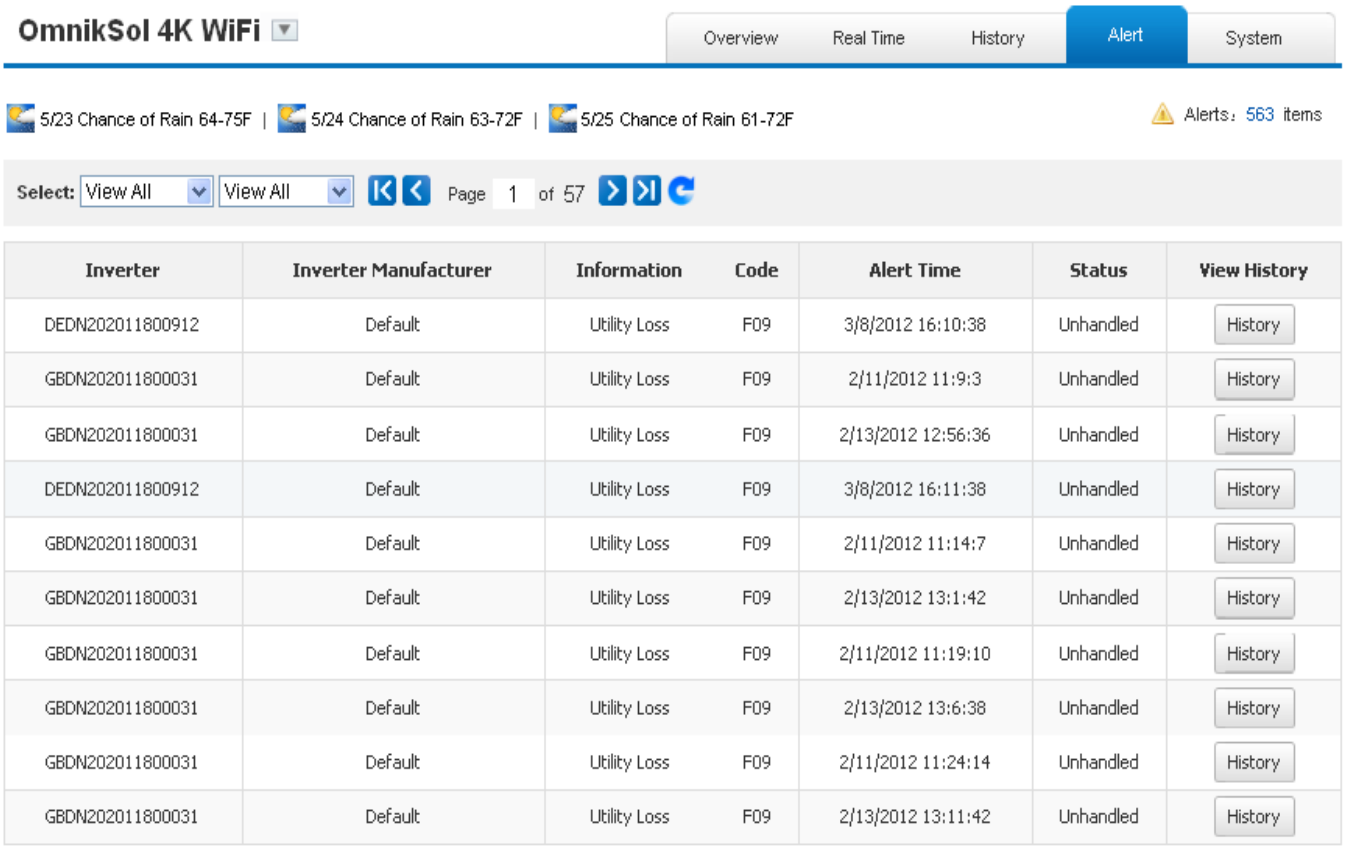


Fig. History Interface



Inverter	Inverter Manufacturer	Information	Code	Alert Time	Status	View History
DEDN202011800912	Default	Utility Loss	F09	3/8/2012 16:10:38	Unhandled	History
GBDN202011800031	Default	Utility Loss	F09	2/11/2012 11:9:3	Unhandled	History
GBDN202011800031	Default	Utility Loss	F09	2/13/2012 12:56:36	Unhandled	History
DEDN202011800912	Default	Utility Loss	F09	3/8/2012 16:11:38	Unhandled	History
GBDN202011800031	Default	Utility Loss	F09	2/11/2012 11:14:7	Unhandled	History
GBDN202011800031	Default	Utility Loss	F09	2/13/2012 13:1:42	Unhandled	History
GBDN202011800031	Default	Utility Loss	F09	2/11/2012 11:19:10	Unhandled	History
GBDN202011800031	Default	Utility Loss	F09	2/13/2012 13:6:38	Unhandled	History
GBDN202011800031	Default	Utility Loss	F09	2/11/2012 11:24:14	Unhandled	History
GBDN202011800031	Default	Utility Loss	F09	2/13/2012 13:11:42	Unhandled	History

Fig. Alert Interface

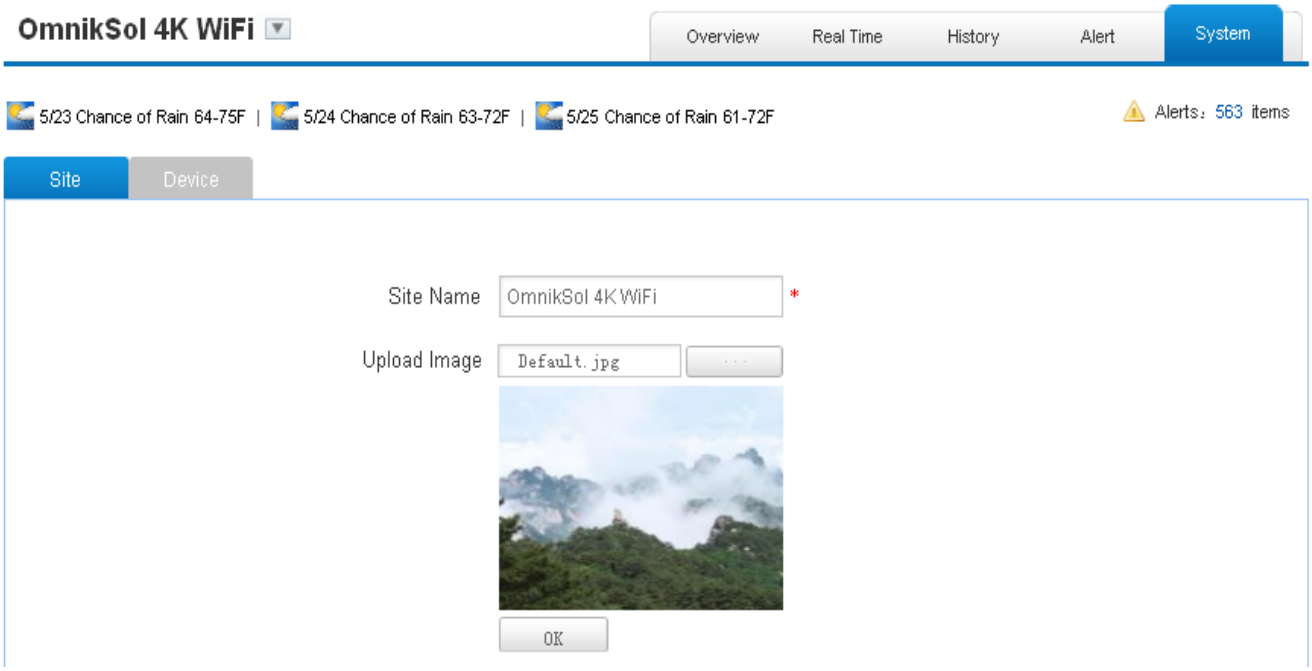


Fig. System Setting Interface

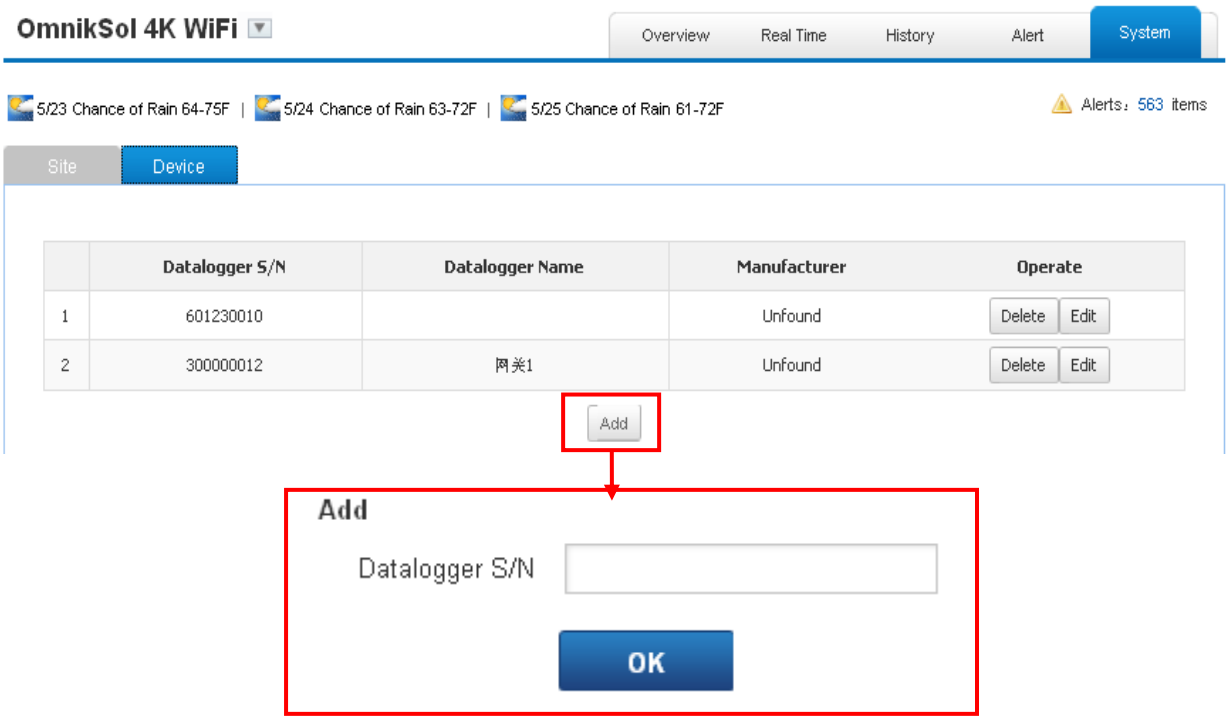
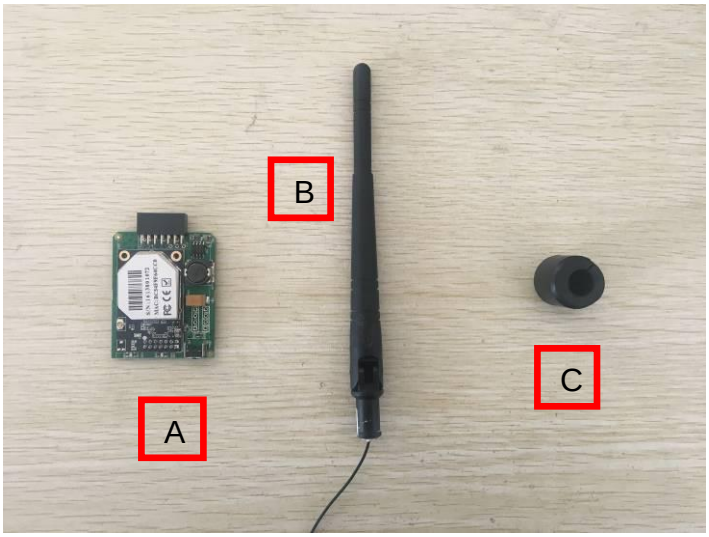


Fig. Add serial number

8.5 WiFi card

WiFi card is an optional device. If your inverter had installed the WiFi card, please go to **8.6. Network Settings.** If your inverter had not installed the WiFi card, please go to **8.2. Installation of communication card** first, then go to **8.6. Network Settings.**

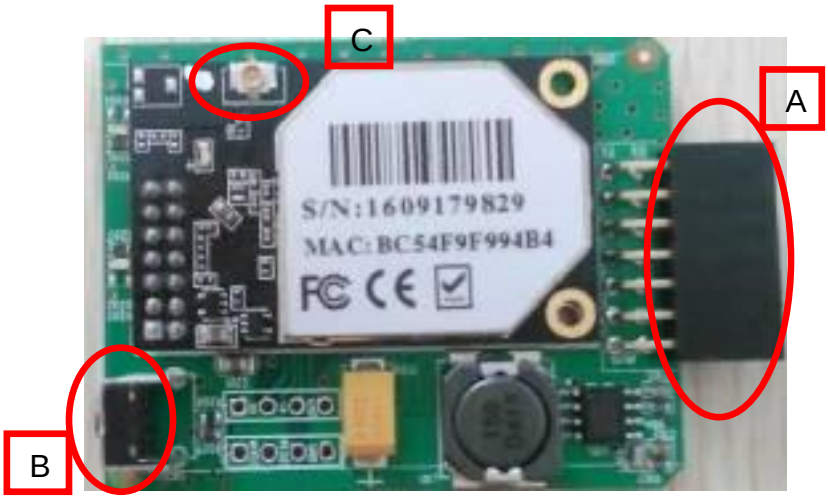
After unpacking the box, please check the parts according to the below list. Contact the manufacturer immediately when you find any damage, missing or wrong model.



No.	Name	Quantity
A	PV data collector	1
B	WiFi antenna	1
C	connector	1

Fig. WiFi card

WiFi card is shown as below:



No.	Name
A	14 pin connector
B	Reset Button
C	I-PEX Interface

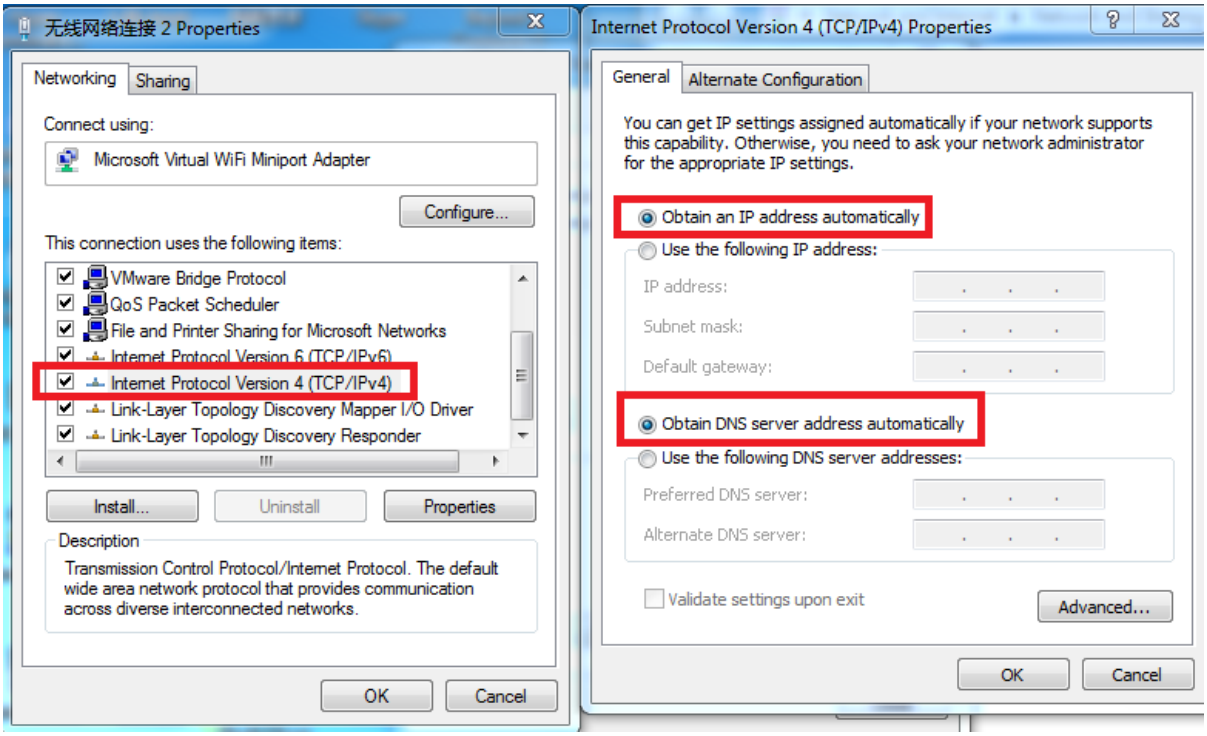
Fig. WiFi card

Fig. Serial Number

8.6 Netwoek Settings

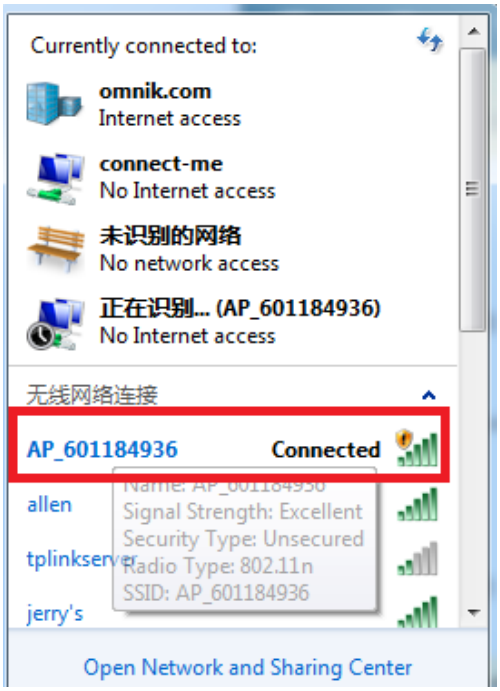
1) Prepare a computer or device, e.g. tablet PC and smart phone that enables WiFi
2) Obtain an IP address automatically

- Open Wireless Network Connection Properties, double click **Internet Protocol Version 4(TCP/IPv4)**
- Select Obtain an IP address automatically, and **click OK**



3) Open wireless network connection and click **View Wireless Networks**

Select wireless network of the data logging module, no passwords required as default. The network name consists of **AP** and the **serial number** of the product. Then click **Connect.**



Connection successful

*Notice: If **AP_ (serial number of product)** is not available in the wireless network list, there may be problems in the connection or setting of data logging module. Please check if the WiFi had installed ok, and inverter has been powered on.*

Before troubleshooting, please inquire with your inverter installer whether you are allowed to remove the cover of the inverter to trouble shoot the module. If not allowed, please contact customer service.

4) Set parameters of WiFi module

(a) Open a web browser, and enter 10.10.100.254(the Default IP address of WiFi card, you may set domain name access, please see the picture 6-14), then fill in username: **admin** and password: **admin**, both of which are admin as default.

Recommended browsers: Internet Explorer 8+, Google Chrome 15+, Firefox 10+

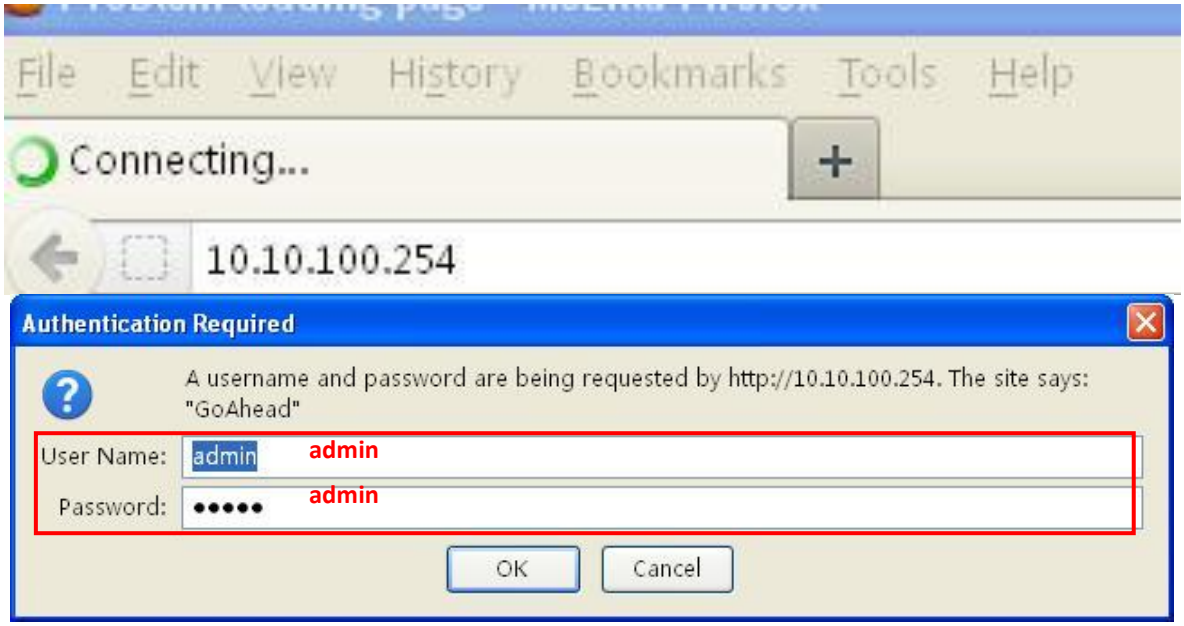
Note:

① *If the IP address shows **0.0.0.0** (factory value) on your LCD (Picture5-4-1), it is not a correct address. There are 2 cases show 0.0.0.0:*

- *Not connect router rightly, you need reset to connect you router to make it right*
- *Card loose in the inverter, please check your inverter, see chapter 4:.WiFi Card Installation*

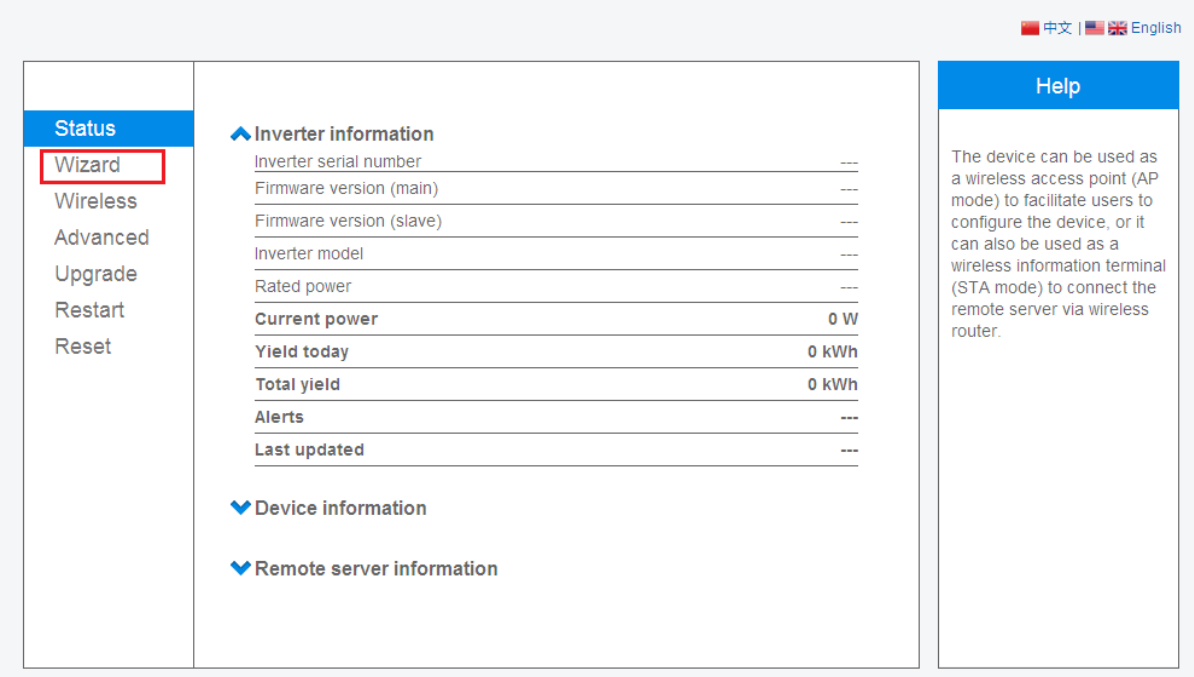
② *The default username & password :admin, admin, we suggest modify the username & password:*

Step: choose Account, input your username &password.

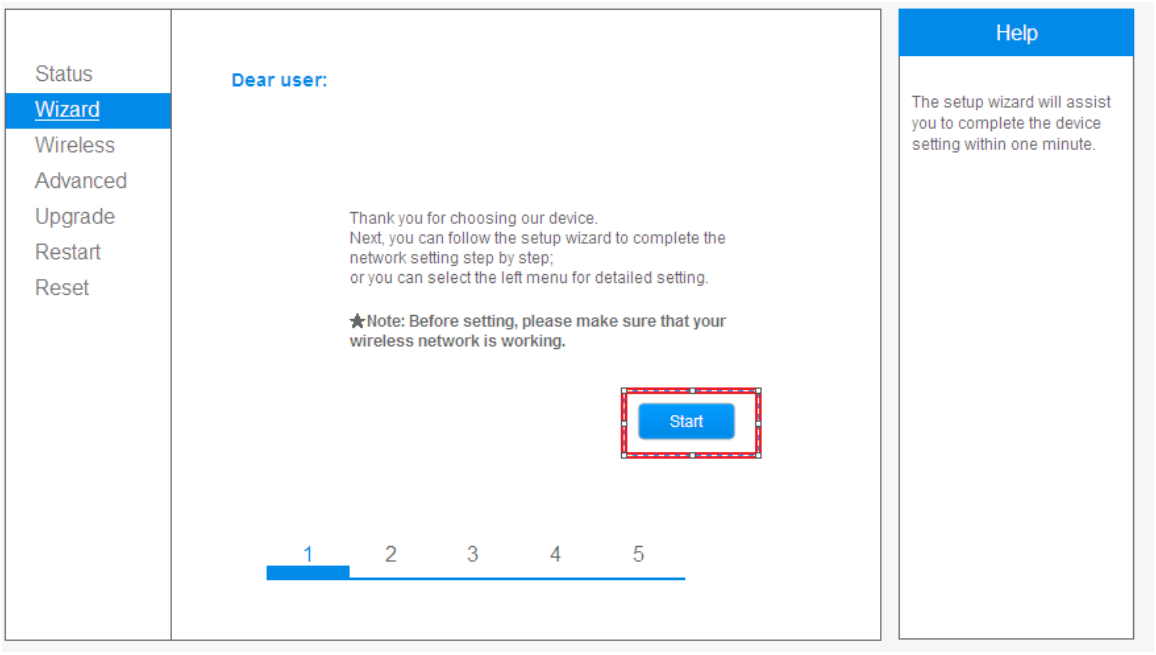


(b) In the configuration interface of WiFi module, you can view general information of the module.

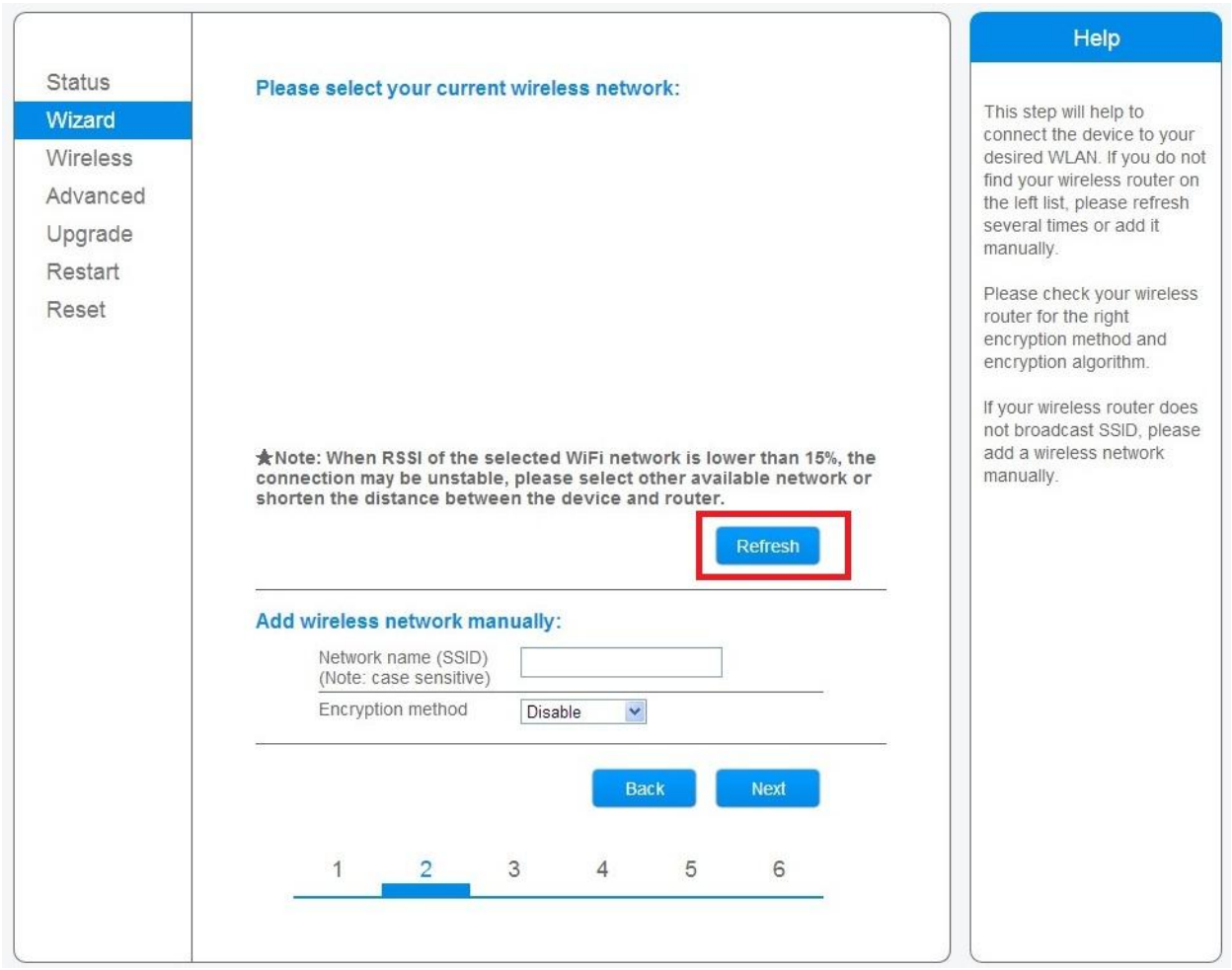
Follow the setup wizard to start quick setting.



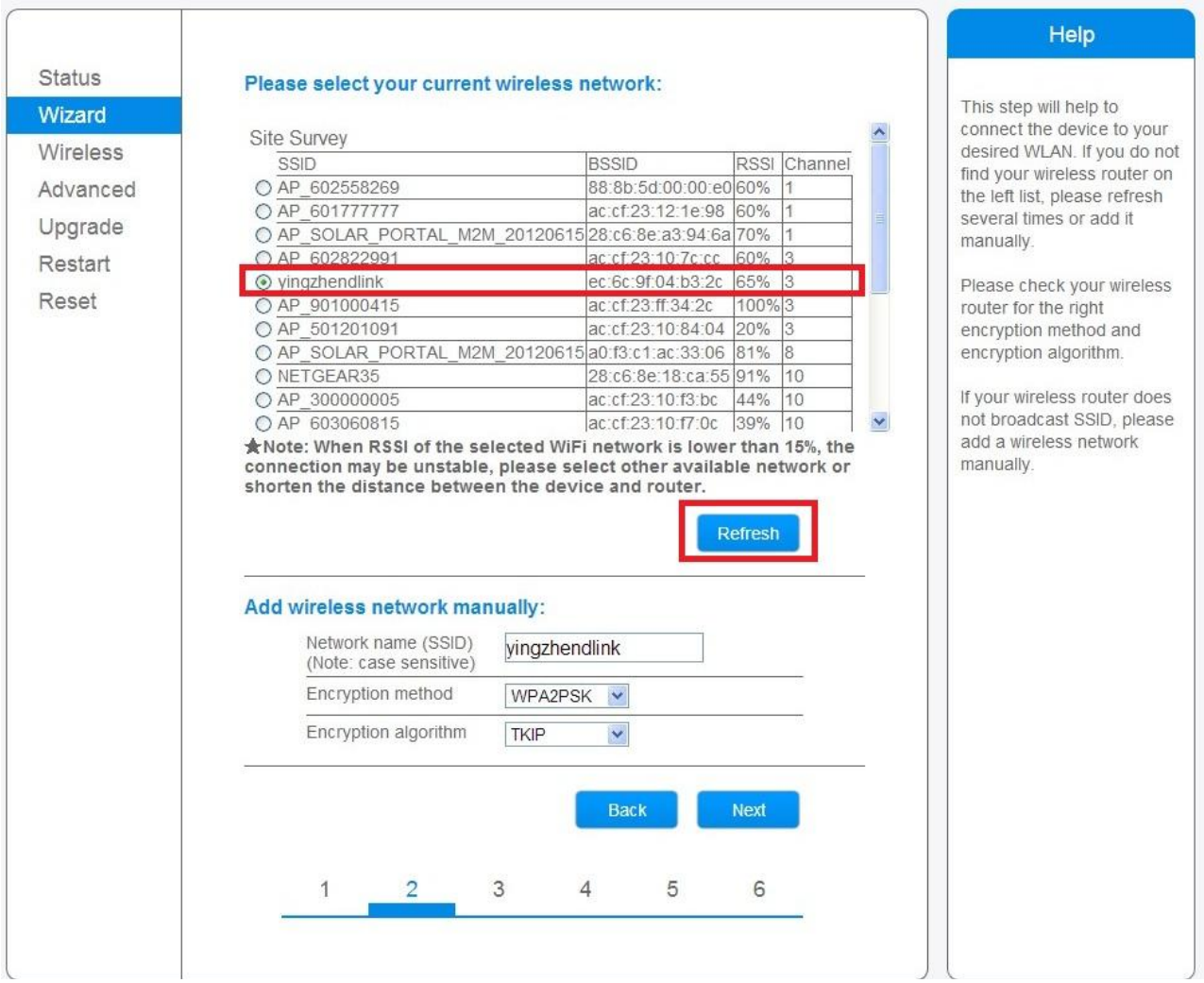
Click **Wizard** to start



Click **Start** to continue



Click **Refresh** to search available wireless networks



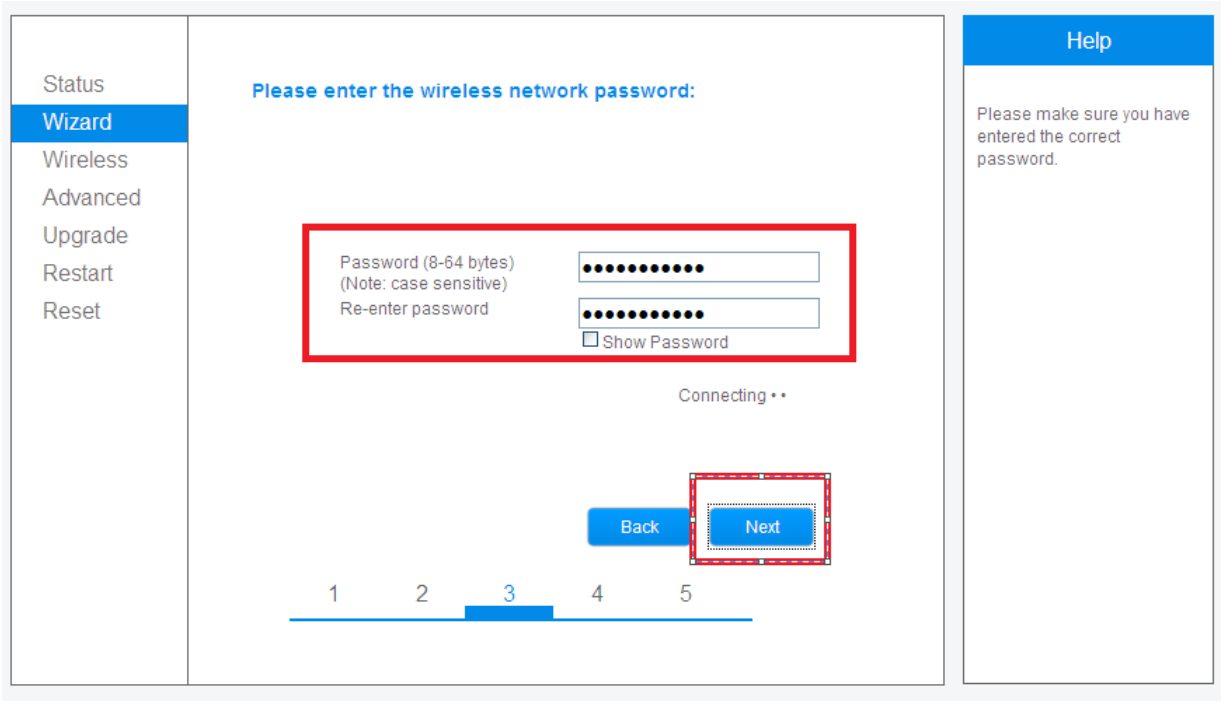
Select the wireless network you need to connect, then click **Next**

Notice:

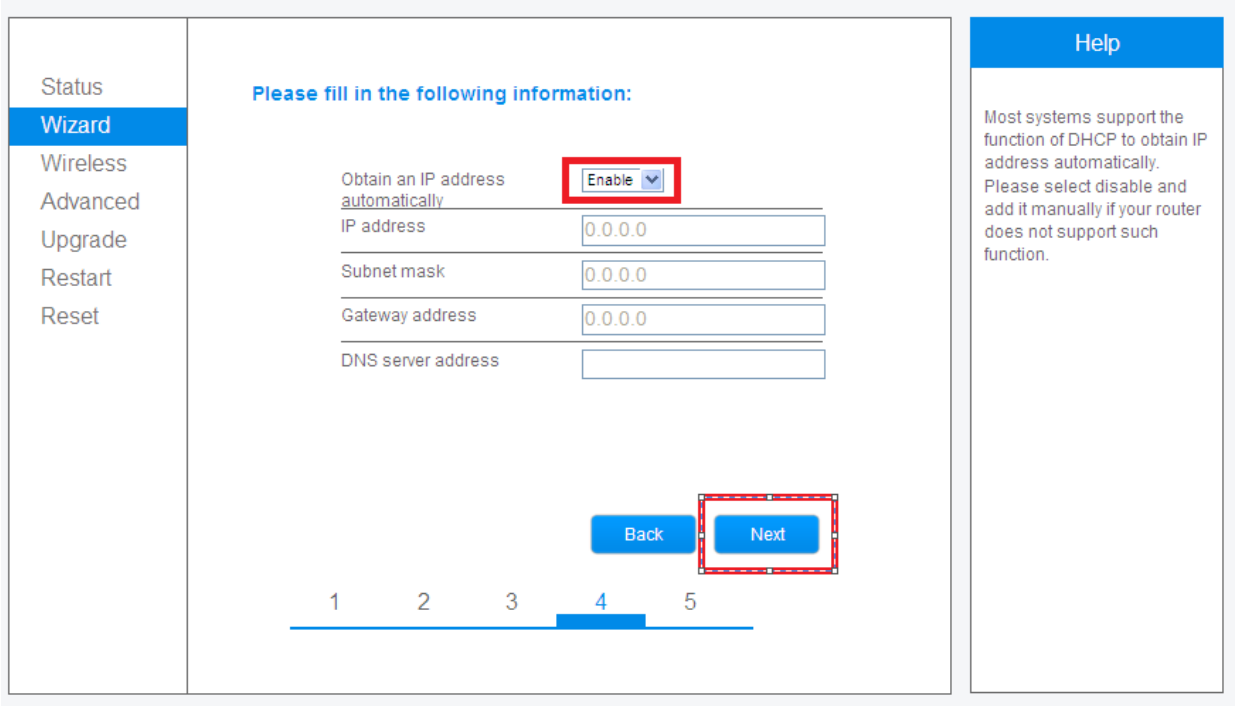
① If the signal strength (RSSI) of the selected network is <10%, which means unstable connection, please adjust the antenna of the router, or use a repeater to enhance the signal.

② We recommend router setting:

- *Security setting: WPA2-personal*
- *Encryption type: AES*



Enter the password for the selected network, then click **Next**

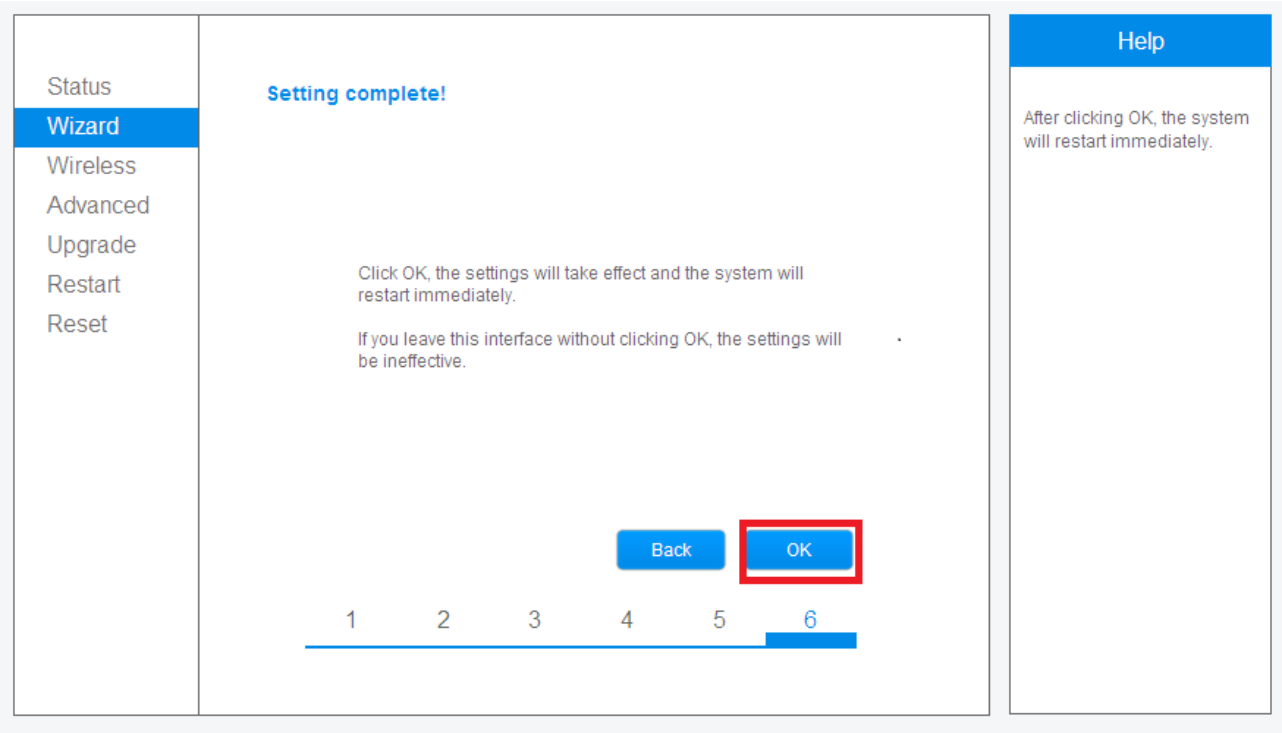


Select **Enable** to obtain an IP address automatically, then click **Next**

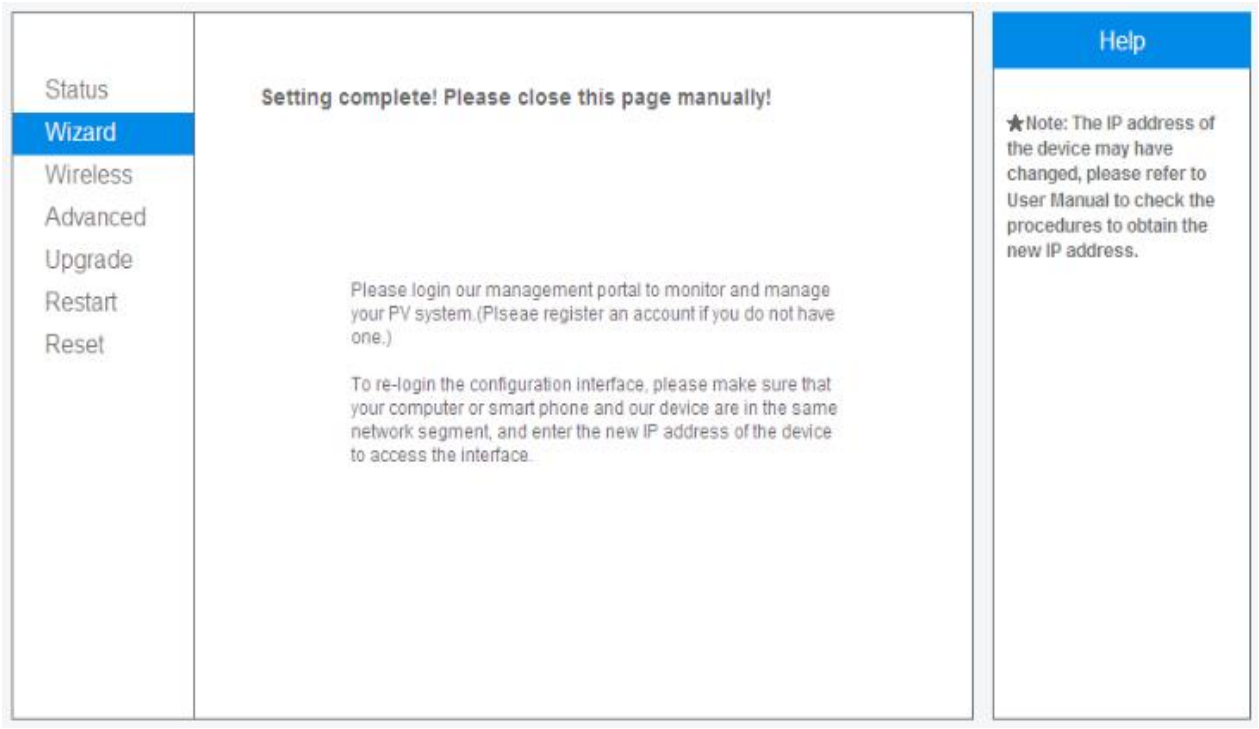
Notice:

① Turn off the firewall of the router

② Make sure the DHCP function of the router is enable



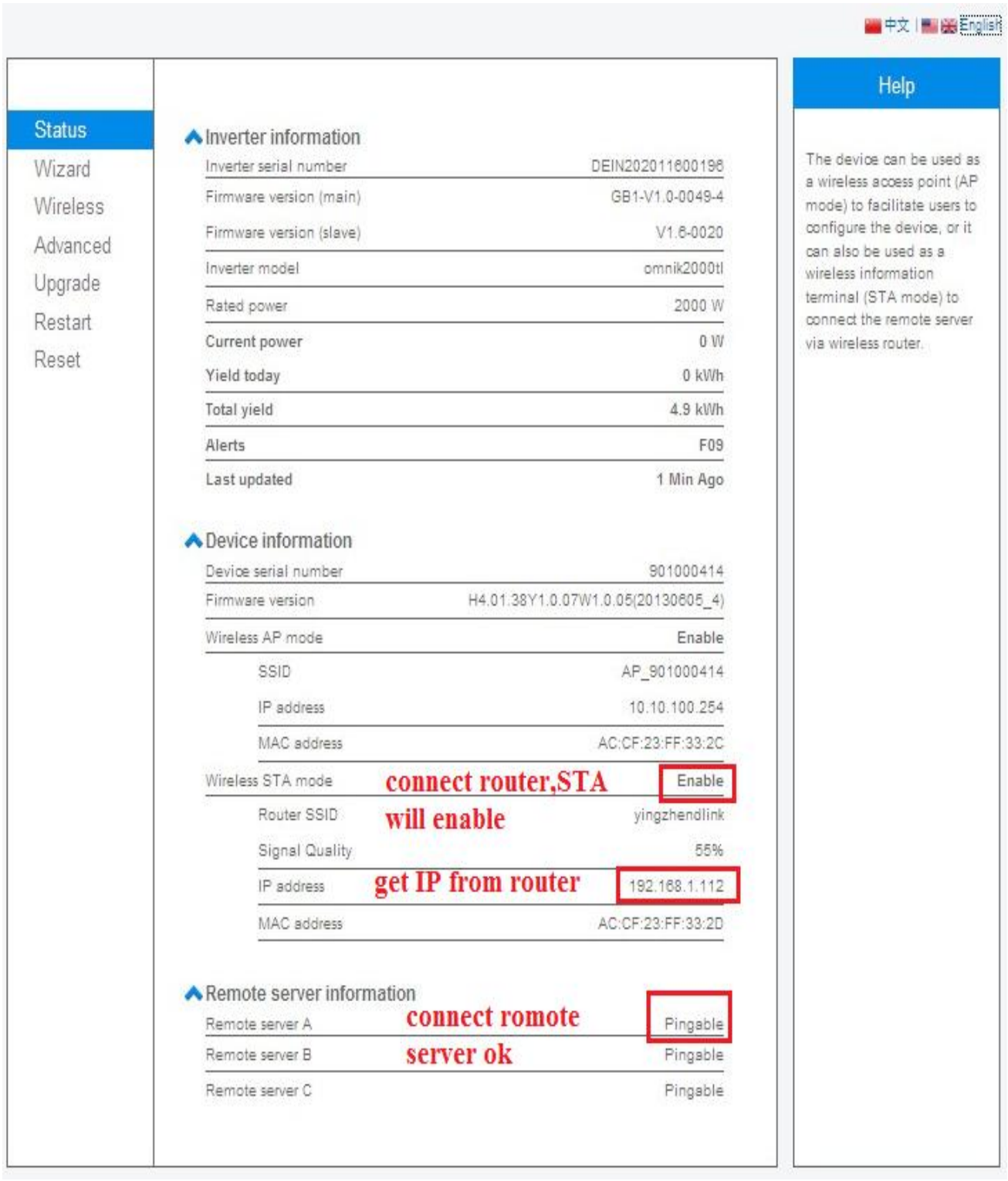
If setting is complete, the above page will display. Click **OK** to restart.



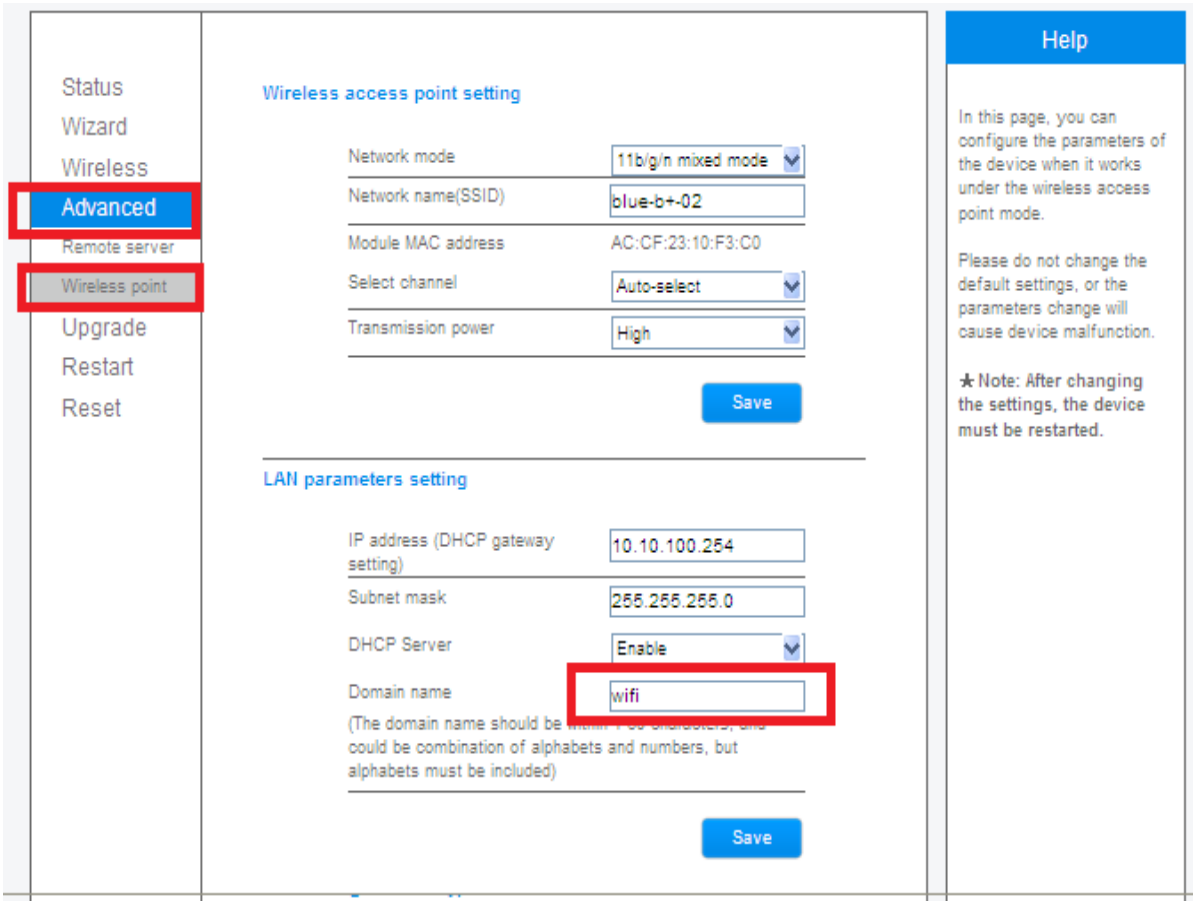
If setting is complete, the above page will display.

After your WiFi card set ok and get IP address from your router for example: 192.168.16.8, (You may see the IP address from inverter)

Input: http://192.168.16.8/ will display the following page:



You may also add your domain name of WiFi card to easy access according below picture , after you set ok, input http://wifi, you may also access the related page.



Now we finish the network setting, please go to **8.3. Register on monitoring website.**

8.7 RS485 card

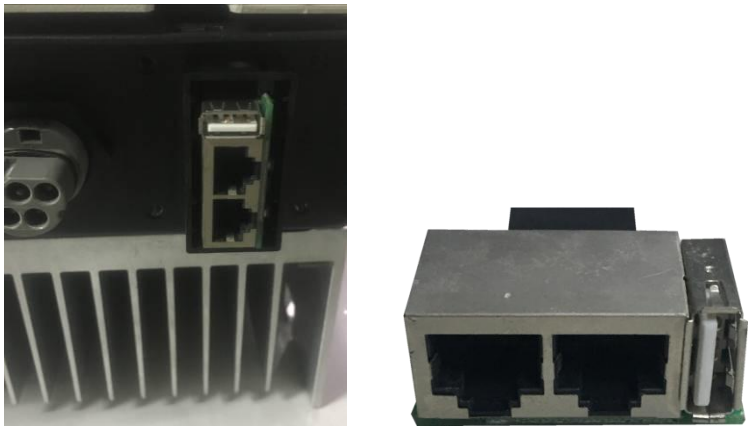


Fig. RS485 card

RS485 card is an optional device. RS485 card has two RJ45 ports and one USB port. The USB port is used to update the inverter. The RJ45 port is used to communicate with WiFi kit or GPRS kit.

Fig. WiFi/GPRS Kit

You can get more information in the user manual of WiFi/GPRS kit.

9. Recycling and Disposal

To comply with European Directive 2012/19/EU on waste Electrical and Electronic Equipment and its implementation as national law, electrical equipment that has reached the end of its life must be collected separately and returned to an approved recycling facility. Any device that you no longer required must be returned to your dealer or you must find an approved collection and recycling facility in your area.

Ignoring this EU Directive may have severe affects on the environment and your health.

WARNING

This device SHALL NOT be disposed of in residential waste.

10. Troubleshooting

	LCD display	Possible actions
Resumable Fault	Isolation Fault	1. Check the impedance between PV (+) & PV (-) and the inverter is earthed. The impedance must be greater than 2MΩ. 2. Check whether the AC-side has contacts with earth.
	Ground I Fault	1. The ground current is too high. 2. After cut off the AC side connection, unplug the inputs from the PV generator and check the peripheral AC system. 3. After the cause is cleared, re-plug the PV panel and AC connection, and check PV-Inverter status.
	Grid Fault Fac Over Range Vac Over Range	1. Wait for a moment, if the grid returns to normal, PV-Inverter automatically restarts. 2. Make sure grid voltage and frequency meet the specifications.
	Utility Loss	1. Grid is not connected. 2. Check grid connection cables. 3. Check grid usability. If grid is ok, and the problem persists, maybe the fuse in the inverter is open, please call service.
	Over Temperature	1. The internal temperature is higher than specified normal value. 2. Find a way to reduce the ambient temperature. Or move the inverter to a cooler environment.
	PV over Voltage	3. 1. Pv open circuit voltage and see if it is greater than or close to 1000 VDC. 4. 2. If the pv voltage is lower than 1000 VDC, there is still a problem, please contact our local customer service
Permanent Fault	Consistent Fault	Disconnect PV (+) or PV (-) from the input, restart the inverter.
	Relay-Check Fail	1. Disconnect ALL PV (+) or PV (-). 2. Wait for a few seconds. 3. After the LCD switches off, reconnect and check again. If the problems remain please call local service.
	DC INJ High	
	EEPROM R/W Fail	
	SCI Failure	
	AC HCT Fault	
	GFCI Failure	

11. Abbreviation

LCD	Liquid Crystal Display
LED	Light Emitting Diode
MPPT	Maximum Power Point Tracking
PV	Photovoltaic
Vdc	Voltage at the DC side
Vac	Voltage at the AC side
Vmpp	Voltage at the Maximum Power Point
Impp	Amperage at Maximum Power Point
AC	Alternating Current (Form of electricity supplied by Utility Company)
DC	Direct Current (Form of electricity generated by PV modules)
VDE 0126-1-1	German standard for establishing suitability for Grid Connection of the Inverter
DC Switch	Switch in the DC Circuit. Disconnects DC source from Inverter. May be integrated or external to Inverter

12. Contact

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Mob: 0031 628868628
Email: Service@omnik-solar.com
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Email: info@omnikservice.nl
Website: www.omnikservice.nl

GUARANTEE CARD

Agency retention

User information

Product Model	
Product ID	
Purchase Date	
Customer Name	

Historical Warranty

Warranty date	Troubleshooting	Finished date	Customer Signature

Client retention

User Information

Product Model	

Product ID	
Purchase Date	
Customer Name	

Historical Warranty

Warranty date	Troubleshooting	Finished date	Customer Signature

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Warranty Terms

1. Please fill in this card carefully and read the following warranty terms carefully to ensure that the product is effectively guaranteed.
   ① User keeps the card carefully when purchasing the product and asks the seller to seal it.
   ② Provide the warranty card when repairing the machine in the warranty period.
   ③ The information in this warranty card is true; otherwise it will not be valid.
   ④ Warranty period is 5 years (standard) □10 years (selectable, effective after sealing) During the warranty period, if the product fails, the quality of the original device or the production problem, the company provides free maintenance and parts replacement.
2. The following reasons cannot be used normally in the warranty period.
   ① Cause damage for not following the instructions.
   ② All man-made or accidental product damage
   ③ Without the company's approved repair, modification or product seal sticker damage.
   ④ Aging bruising and scratches on the surface of the product.
3. After the warranty expires, the user can still get the maintenance services provided by the company, but the corresponding expenses shall be paid.