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USER MANUAL

External Data Logger

WiFi Kit S-WE01S

Version 1.0

IGEN

www.solarmanpv.com

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1. General information

This manual is intended to assist users in the installation, connection and commissioning of the PV data logger WiFi Kit S-WE01S. We will not be liable for any damage caused by non-observance of the instructions of this manual.

This manual should be placed at a safe place to ensure that it is available when needed. If this manual is lost, an up-to-date electronic version can be obtained from SolarMAN customer service.

1.1 Symbol description

Warning

This symbol indicates potential hazard to personal or device. Users should set the device under the instruction of this manual, otherwise a personal injury or device damage might occur.

Attention/Notice

This symbol indicates the issues that users should take account into. Users should pay attention to the notice while setting the device, otherwise a device damage might occur.

2. Instructions & Notes

Please read the instructions and notes carefully, otherwise personal injury or device damage might occur if not avoided.

2.1 Instructions

- All installation work must be operated by professional workers.
- Please turn the power off during device installation and connection.
- Please do not remove the cover of the device.
- Please make sure that all operations during the device setting are in compliance with local laws and regulations.

2.2 Notes

- Damaged device must be replaced immediately. Please contact the manufacturer for repair or replacement, if the device is still within warranty period. Self maintenance or continuous working is not accepted.
- The device must be operated with certain power supply. The working voltage should be within specified range.

- The device meets the requirements of protection class IP21 and is therefore only suitable for installation in dry, clean spaces. For outdoor installation or operation under adverse conditions the device must be mounted in an additional casing that meets the requirements of the required protection class.
- Please keep the device away from children.
- Please turn off the power when the device is not working for a long time.

3. Installation

3.1 Packing list

Please check the packing list carefully before installation . If a device defect, accessory lacing, or other problem exit, please contact manufacturer immediately.

A *B* *C* *D* *E*

Pic. 1

Code.	Quantity	Description	Model
A	1	External data logger	WiFi Kit S-WE01S
B	1	Power adapter	FY0502000
C	2	Expandable rubber hoses	--
D	2	Screws	--
E	1	Quick guide	--

3.2 Location/Placement

In order to keep the device away from damage and working normally, following conditions should be met when choosing the installation place.

- The device cannot be installed outdoor or in some place which is dusty, damp or full of corrosive vapors. In addition, direct sunshine, vibration and pressure should be avoided.
- The ambient temperature of the installation location must be within the range between -10℃ and +65 ℃.

- The communication distance for RS485/422 is no more than 1000 meters. Please make sure that the distance between the inverter and the data logger is within this range.
- Please make sure that the device is located away from the crucial pipes or wires behind the wall before drilling.
- The device should be installed near a power outlet, which can provide 50-60Hz current with the voltage range from 100V to 240V.
- The device should be located 10cm away from metal in each direction as to ensure good signal.

Attention

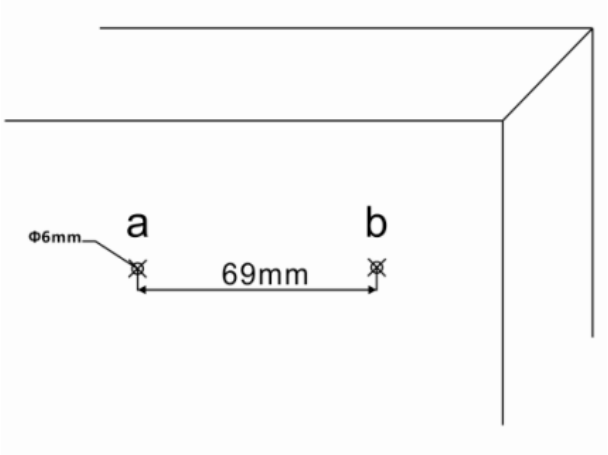
Metal products can weaken the electromagnetic waves, please keep the data logger away from metal.

3.3 Detailed Procedures

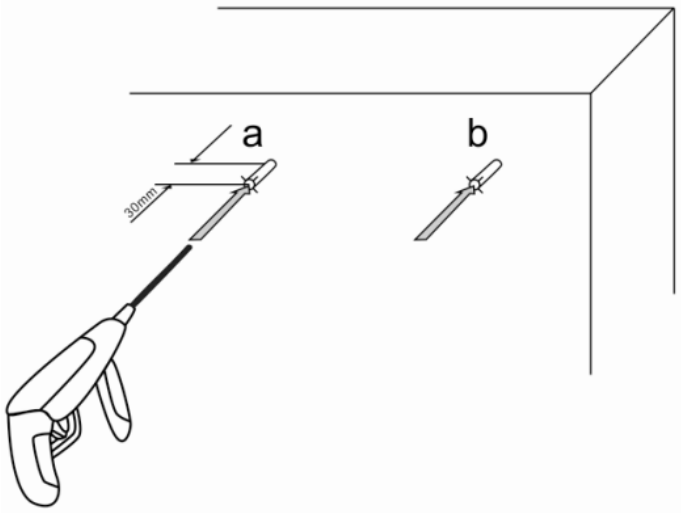
This WiFi Kit can be installed with two methods: wall-mounted or flatwise.

Method 1：Wall mounted

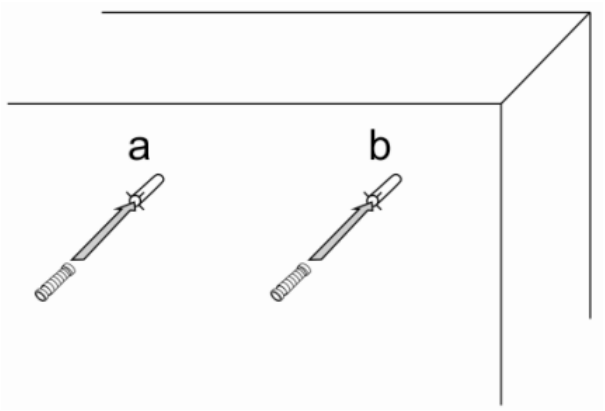
Tools	Purpose
Impact Drill	Drill holes
Rubber hammer	Hammer the screw into expendable pipes.
Screwdriver	Screw



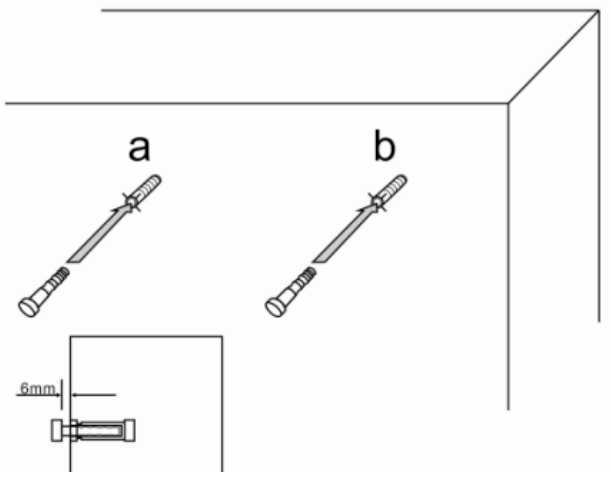
1.Mark the wall where you need to install the device. The distance between the two marking spots is 69mm.



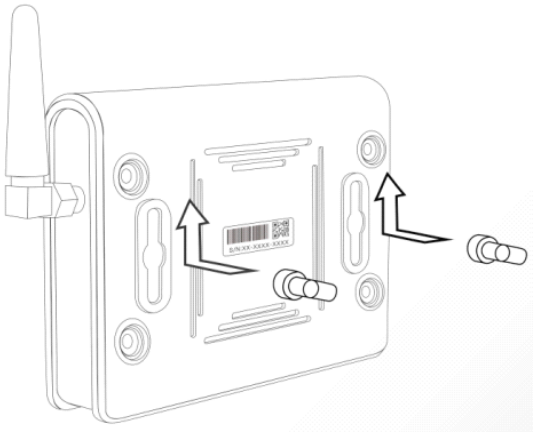
2. At each marking spot, drill a hole with 6mm in diameter and with the depth not less than 30mm.



3. Hammer the plastic expandable pipe into the hole with a rubber hammer.



4. Screw the two screws into the expandable pipe, with the head of the screw exposed outside the wall for 6mm.



5.Hang the WiFi Kit on the screws, and rotate the metal part of the antenna to the desired direction manually.

Pic. 2

Method 2: Flatwise

Lay the device on flat ground, and rotate the metal part of the antenna to the desired direction.

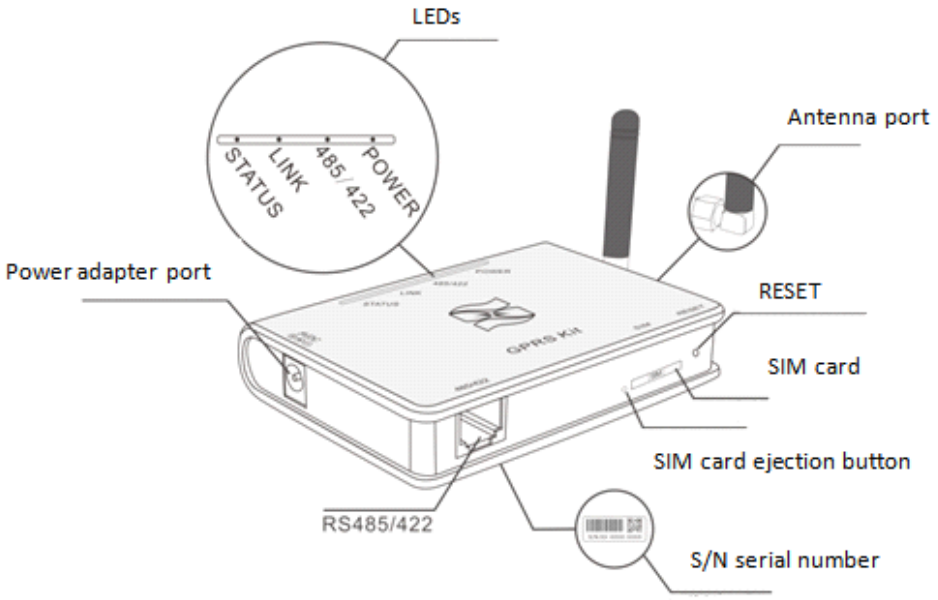
Attention:

1. Only the metal part of the antenna is designed for rotating， please do not screw the plastic part, otherwise a device damage might occur. To avoid device malfunction caused by antenna, please make sure that the antenna is installed properly under the instruction of the manual.

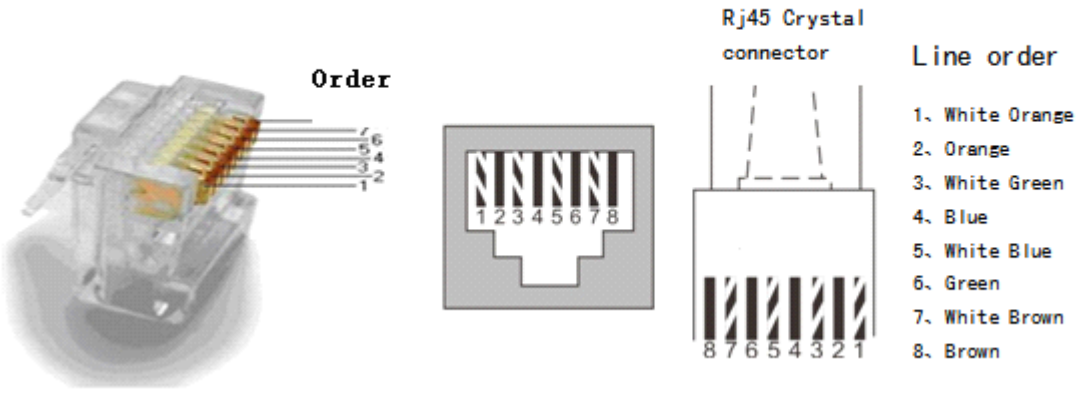
2. In order to keep the device working normally,please make sure that the data logger will not be moved once it has been installed in a suitable location.

4. Connection to Inverter and Power

4.1 Interface, Button and Cable interface



Pic. 3 Interface and button



Pic. 4 Cable interface

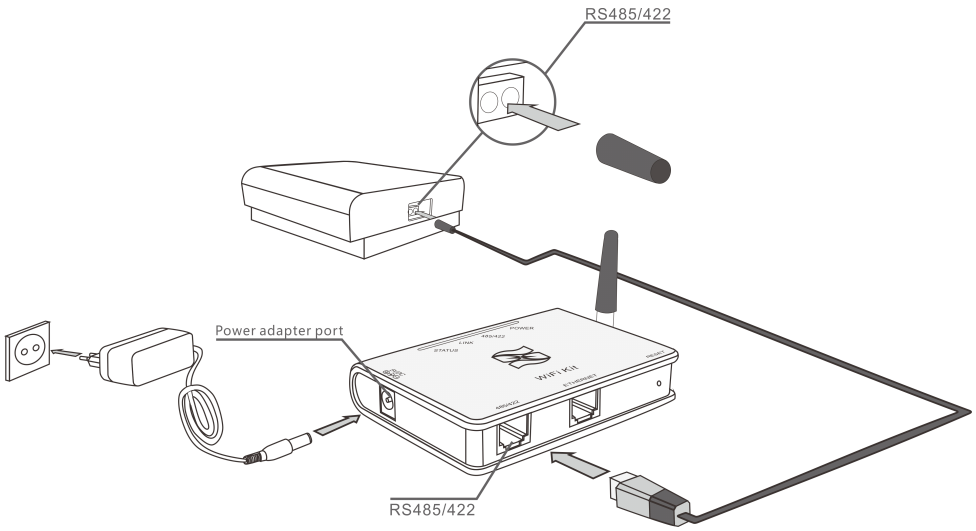
Device	Order	Color	RJ45	RS485	RS422	RS232
WiFi Kit	1	White Orange	Pin1	NC	NC	NC
	2	Orange	Pin2	NC	NC	NC
	3	White Green	Pin3	NC	RX+	RXD
	4	Blue	Pin4	A	TX+	NC
	5	White Blue	Pin5	B	TX-	NC
	6	Green	Pin6	NC	RX-	TXD
	7	White Brown	Pin7	GND	GND	GND
	8	Brown	pin8	GND	GND	GND

4.2 Connection

Please use the cable with RJ45 connector on each head and the line order is T568B.

4.2.1 Connection to single inverter

1) Please turn the power off.
2) Plug the cable into the RS485/422/232 port on the inverter.
3) Plug the other head of the cable into the RS485/422/232 port of the data logger.
4) Connect the power adapter to the data logger and plug the adapter.

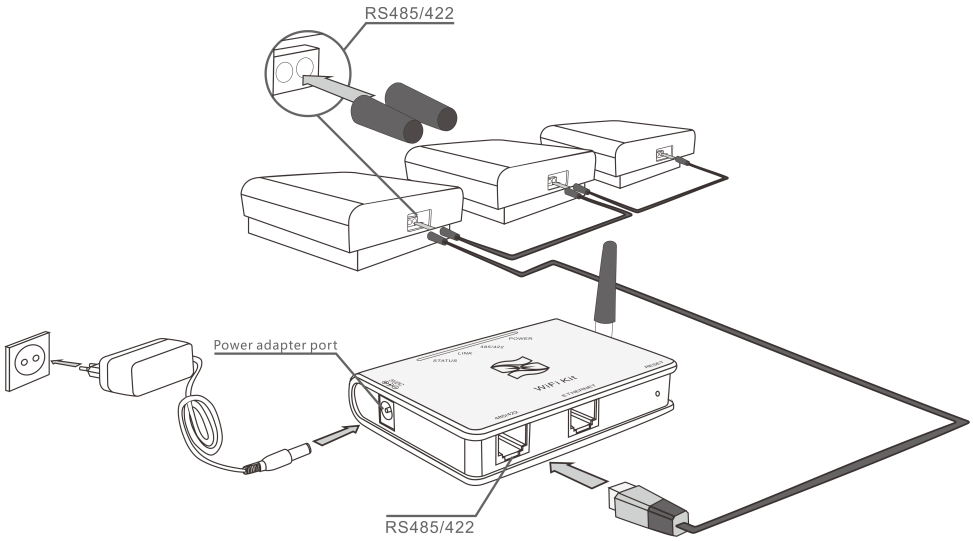


Pic. 5

4.2.2 Connection to multiple inverters

1) Please turn the power off.
2) Plug the cable into the RS485/422 port of a inverter.
3) Plug the other head of the cable into the RJ45 port of the second inverter.
4) String connect all the inverters you need to connect with the above method.

5) Connect the first or last inverter in the string to the data logger with network cable.
6) Connect the data logger to power outlet with the power adapter, then turn on the power of the inverter.



Pic. 6

Warning

Please turn the power off before setting and connection. All connections must be finished and checked before powering on, otherwise personal injury or device damage might occur.

4.3 Confirm connection

When all connections are completed and with the power on for about 1 minute, check the 4 LEDs. If POWER and STATUS are permanently on, and LINK and 485/422 are permanently on or flashing, connections are successful. If any problems, please refer to 8. Debug.

5. Connect the data logger to the server

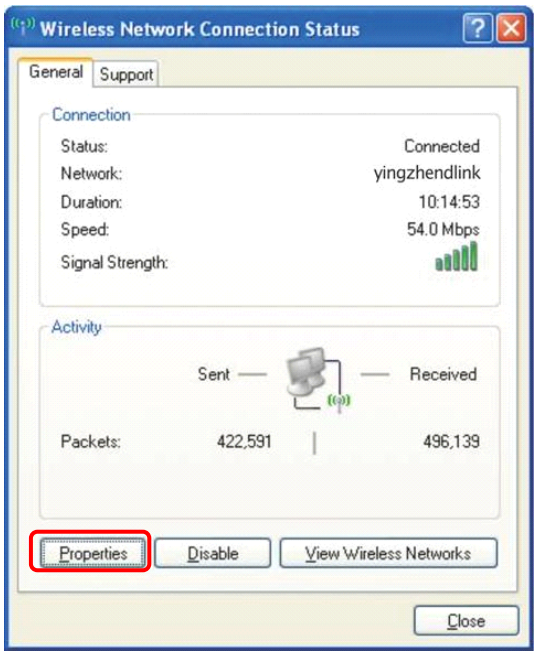
5.1 Connection via Setup Wizard

5.1.1 Preparations

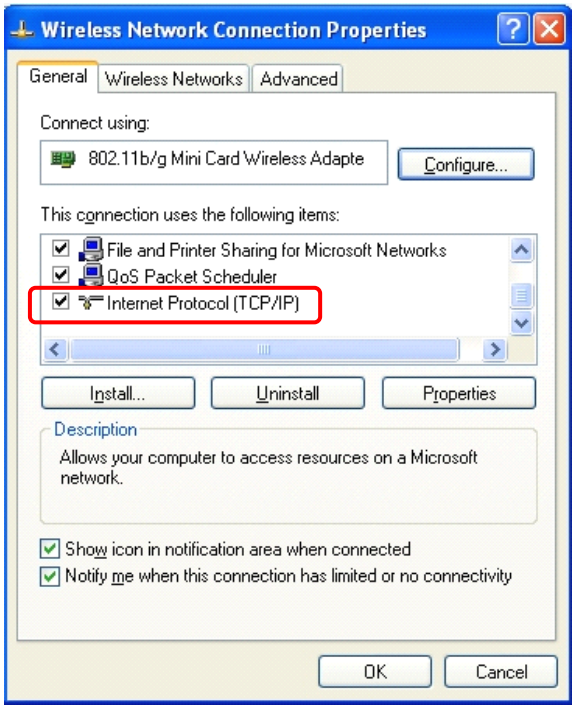
Prepare a computer or device, e.g. tablet PC and smartphone, that enables WiFi.

5.1.2 Obtain an IP or DNS server address automatically

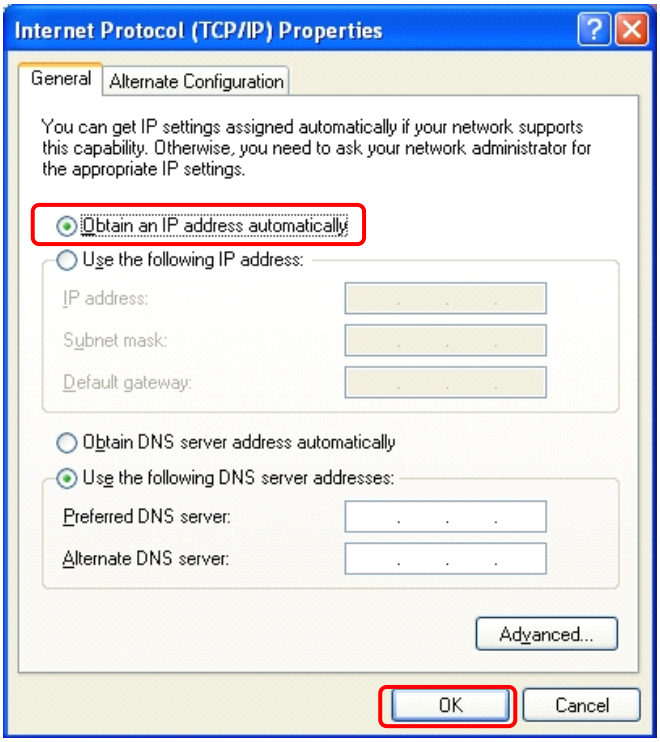
1）If WiFi function is available on your computer, you may see a icon of compute like this, on the bottom of your screen. Double click the icon, then click **properties**



2）Double click **Internet Protocol (TCP/IP)**



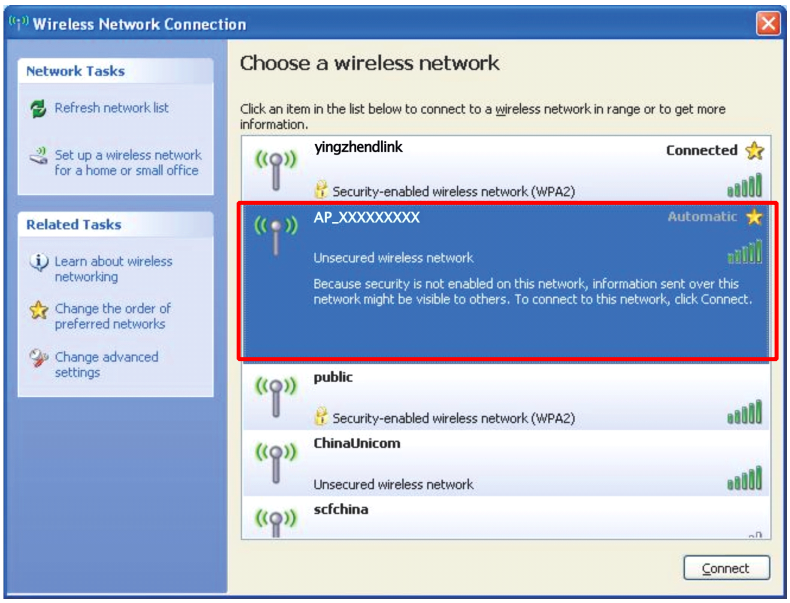
3) Select **Obtain an IP address automatically**, and click **OK**



5.1.3 Set network connection to the data logger

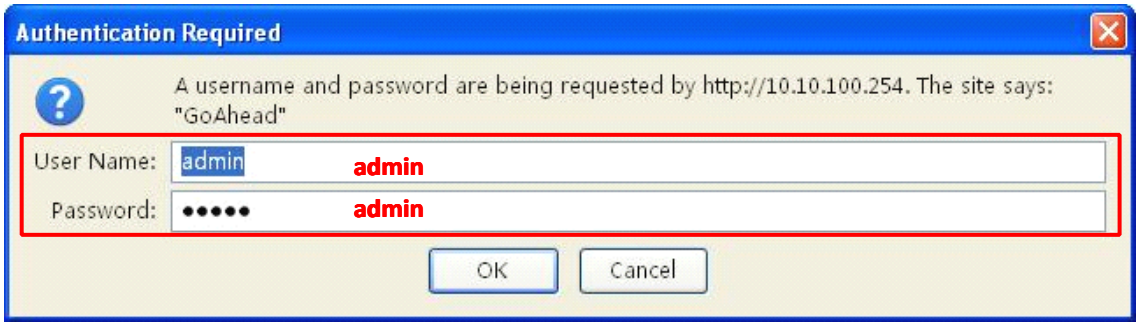
Refresh the wireless network list several times till the AP network shows on the list. Connect to the AP network.

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**.



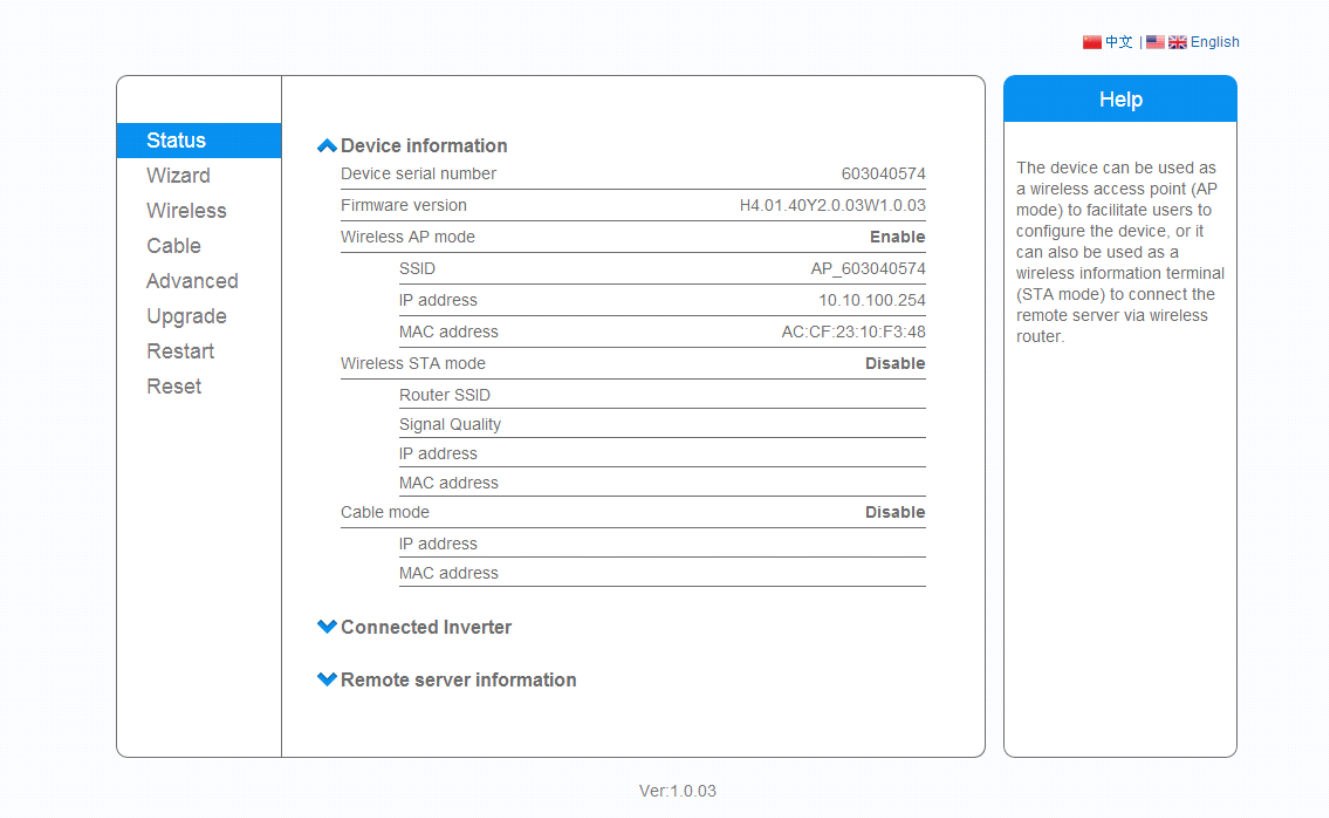
5.1.4 Network configuration of the data logger

Open a web browser, and enter **10.10.100.254**, then fill in username and password, both of which are **admin** as default.



5.1.4.1 Status Interface

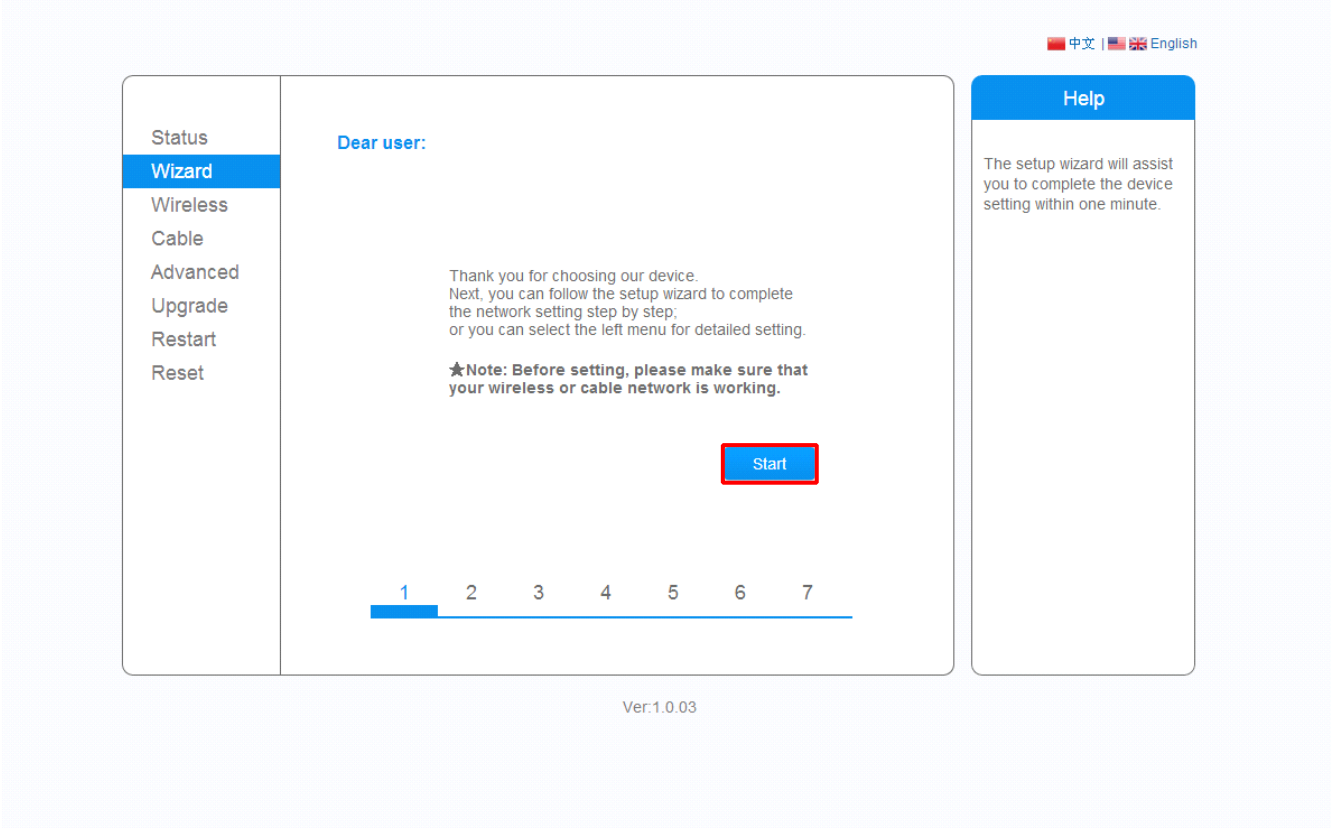
After clicking **OK**, the Status interface will display first. The device information of data logger, such as the device mode and serial number, will display on this page.



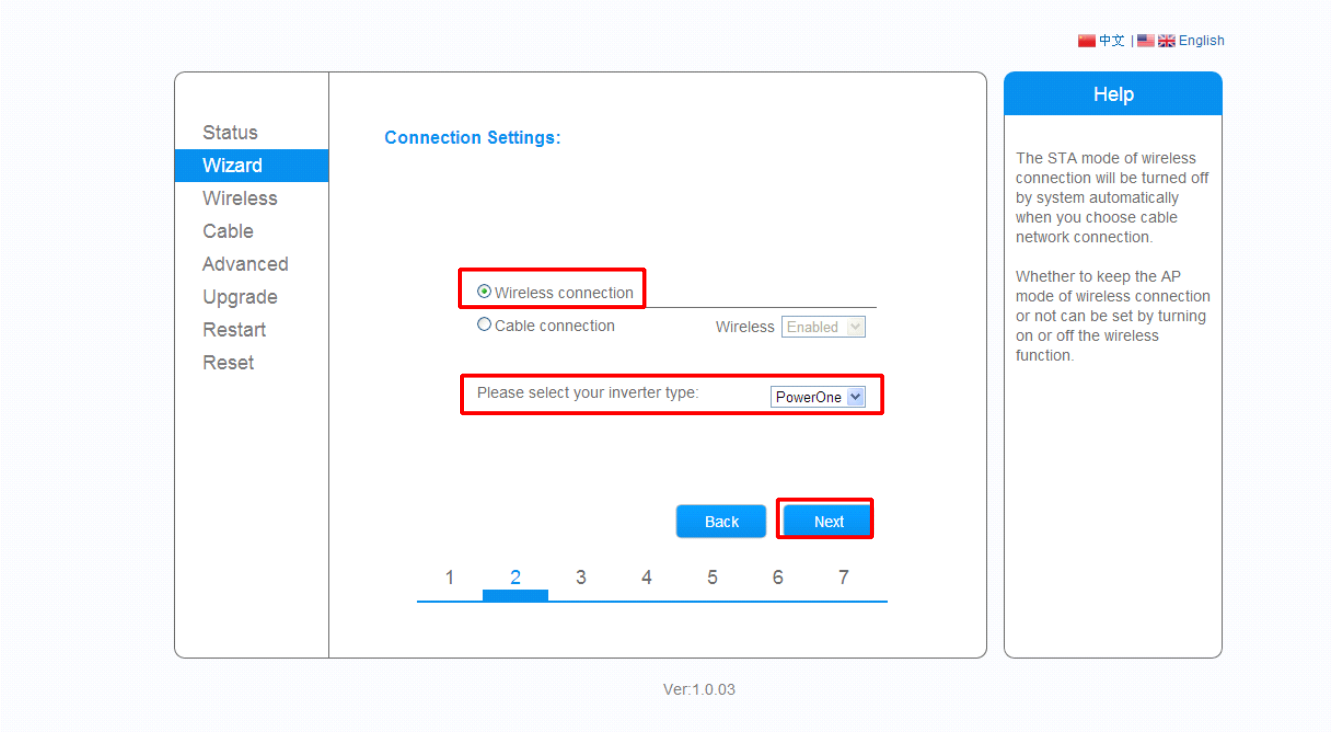
5.1.4.2 Follow the setup wizard to start quick setting

Click Wizard to logon to the setup interface, and follow the setup wizard to start quick setting.

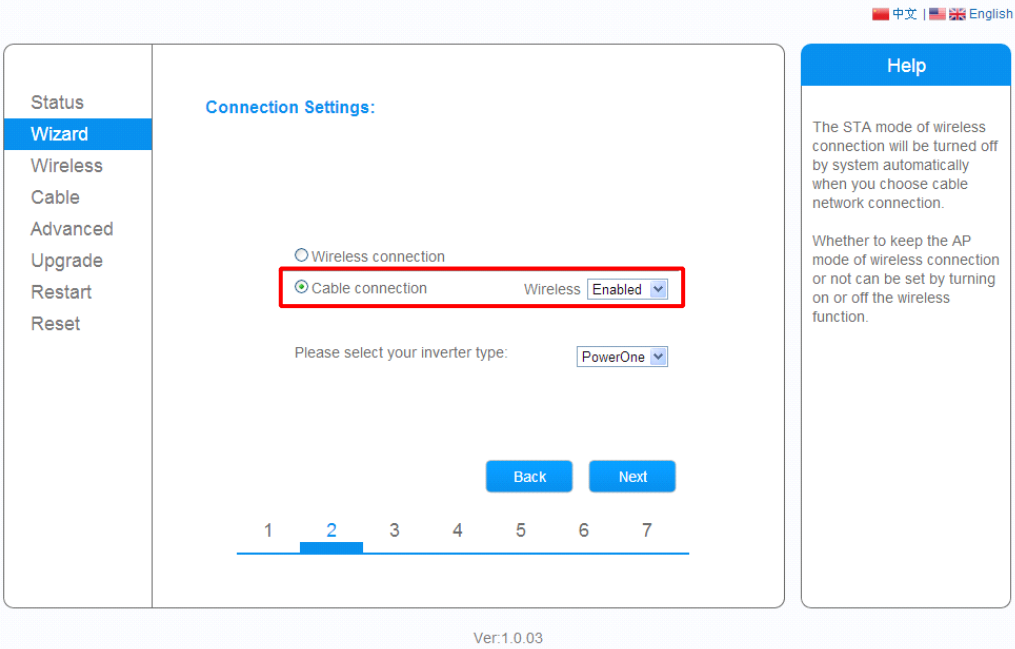
①Click **Start** to begin quick setting
This setup wizard will assist you to complete the device setting within one minute.



②)Select **Wireless connection**, and select the type of your inverter, then click **Next**



You may select cable connection in this page, then skip to Step ⑥ on page 19.

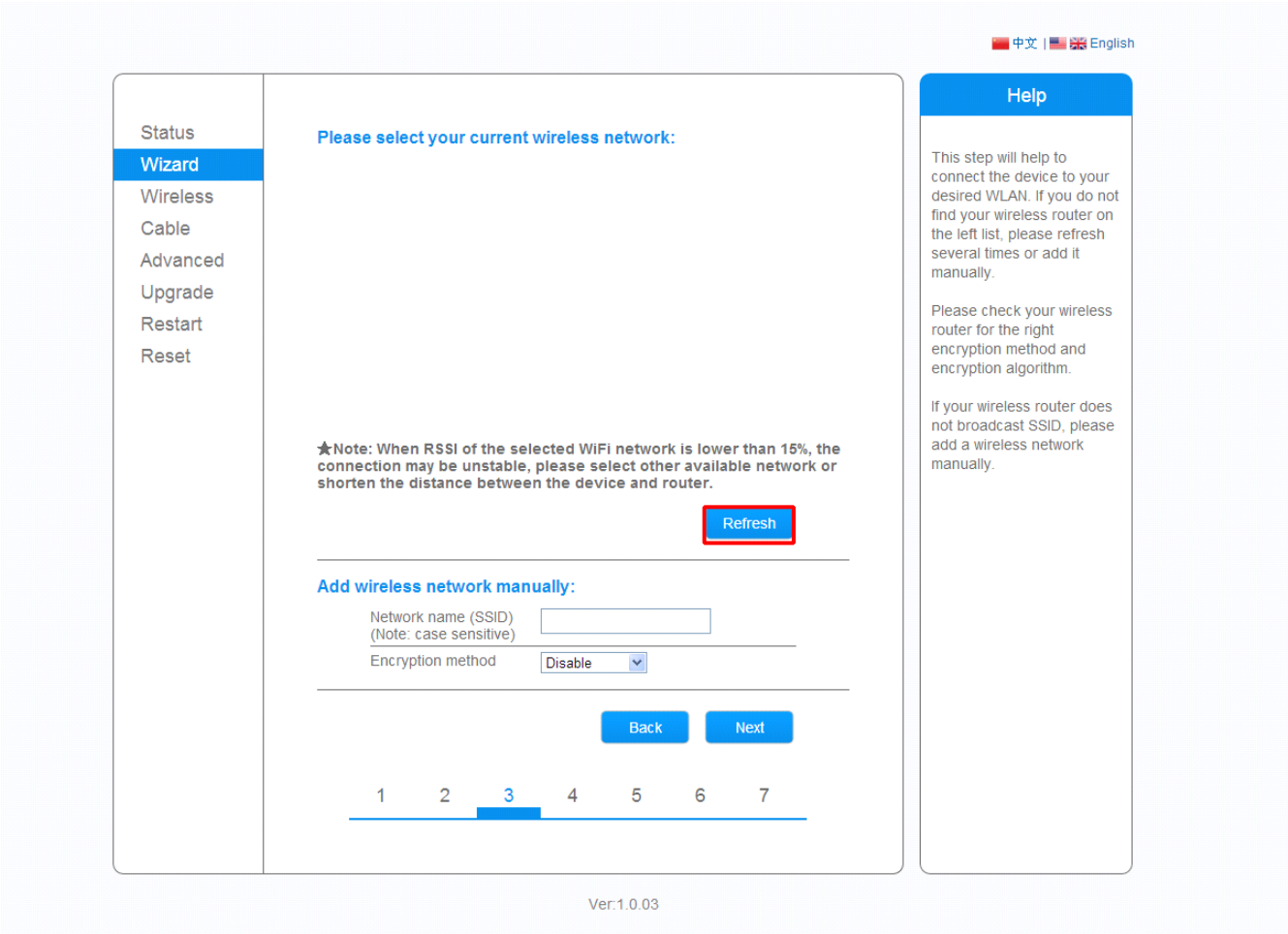


Notice

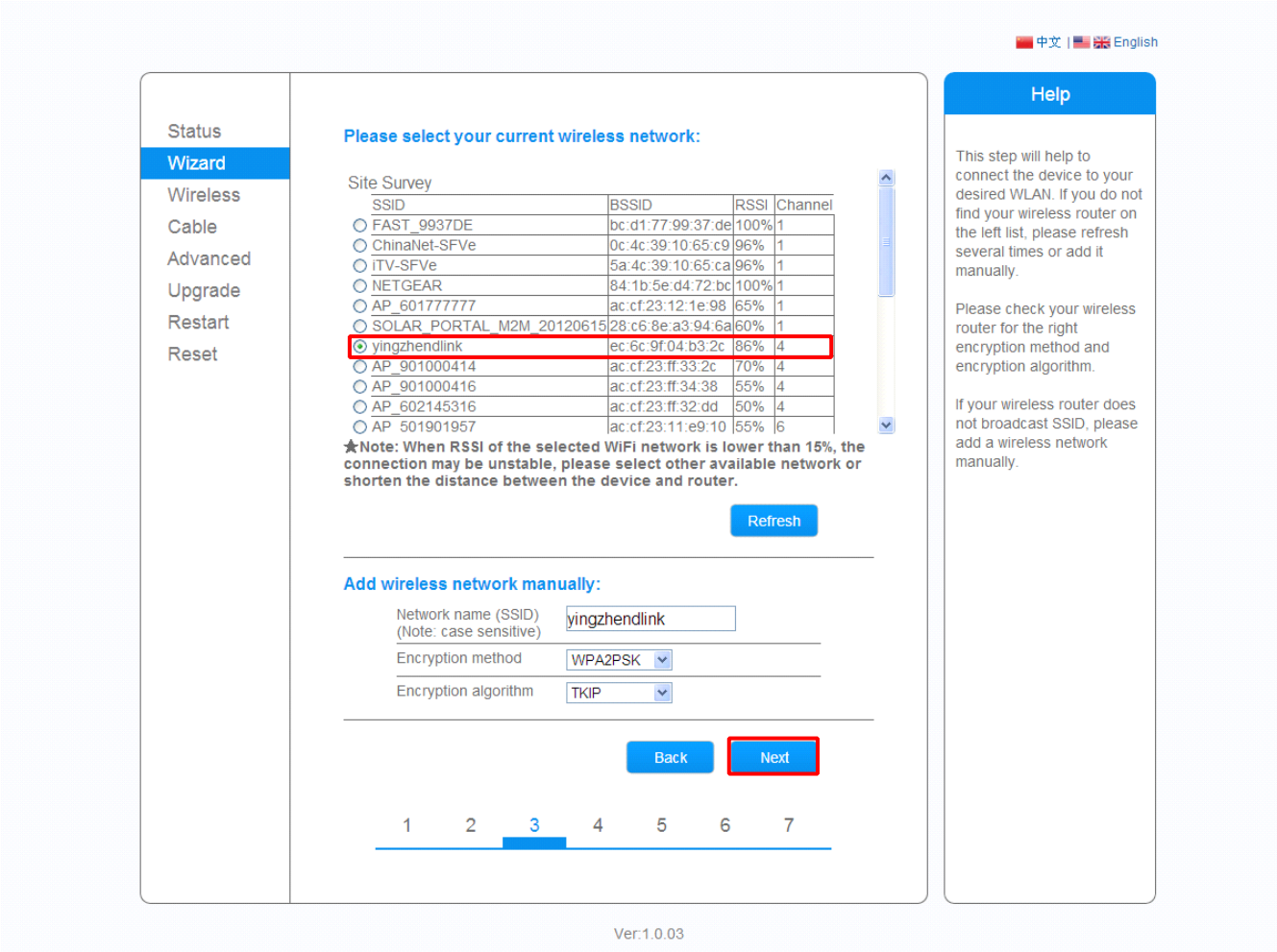
1. The STA mode of wireless connection will be turned off by system automatically when you choose cable network connection

2. Whether to keep the AP mode or wireless connection or not can be set by turning on or off the wireless function

③Click **Refresh** to search available wireless networks, or add it manually.



④Select the wireless network you need to connect, then click **Next**



Notice

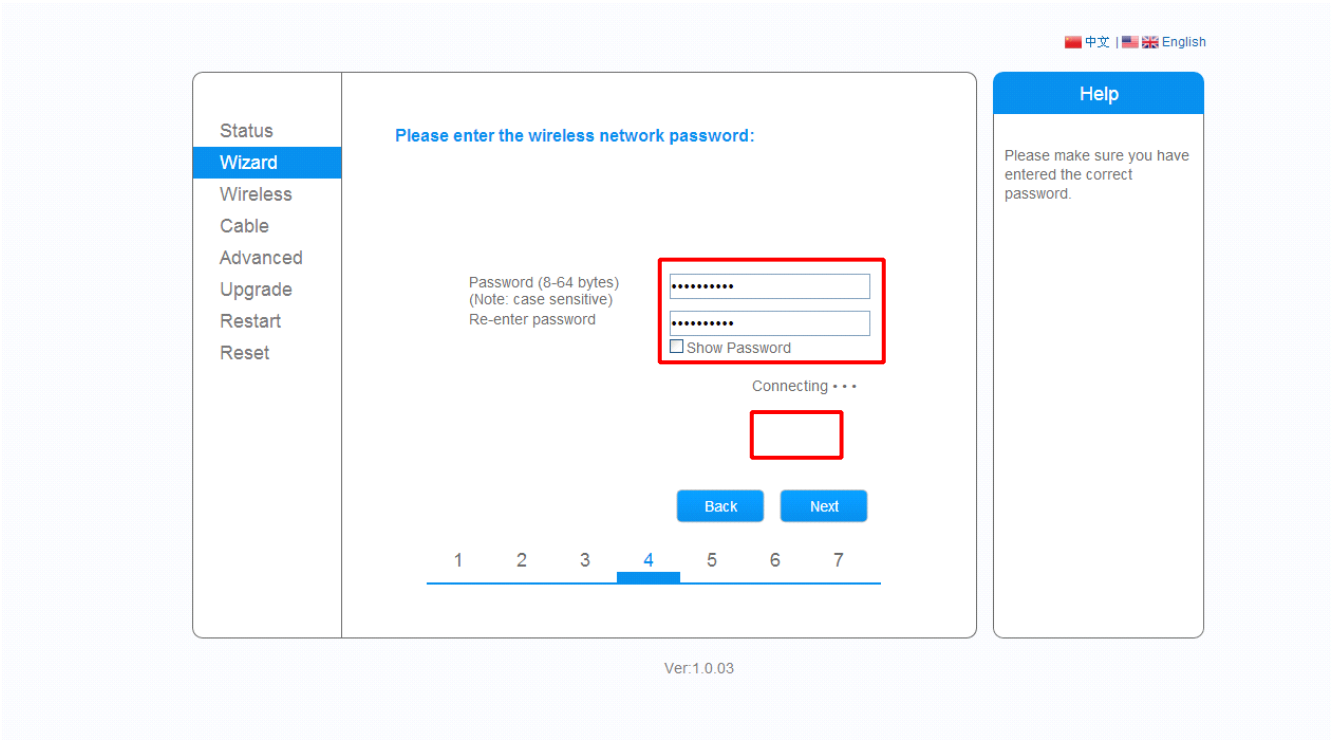
1. If the signal strength (RSSI) of the selected network is <15%, which means unstable connection, please adjust the antenna of the router, or use a repeater to enhance the signal.

2. This step will help you to connect the device to the desired WLAN. If you do not find your wireless router on the network list, please click refresh or add it manually.

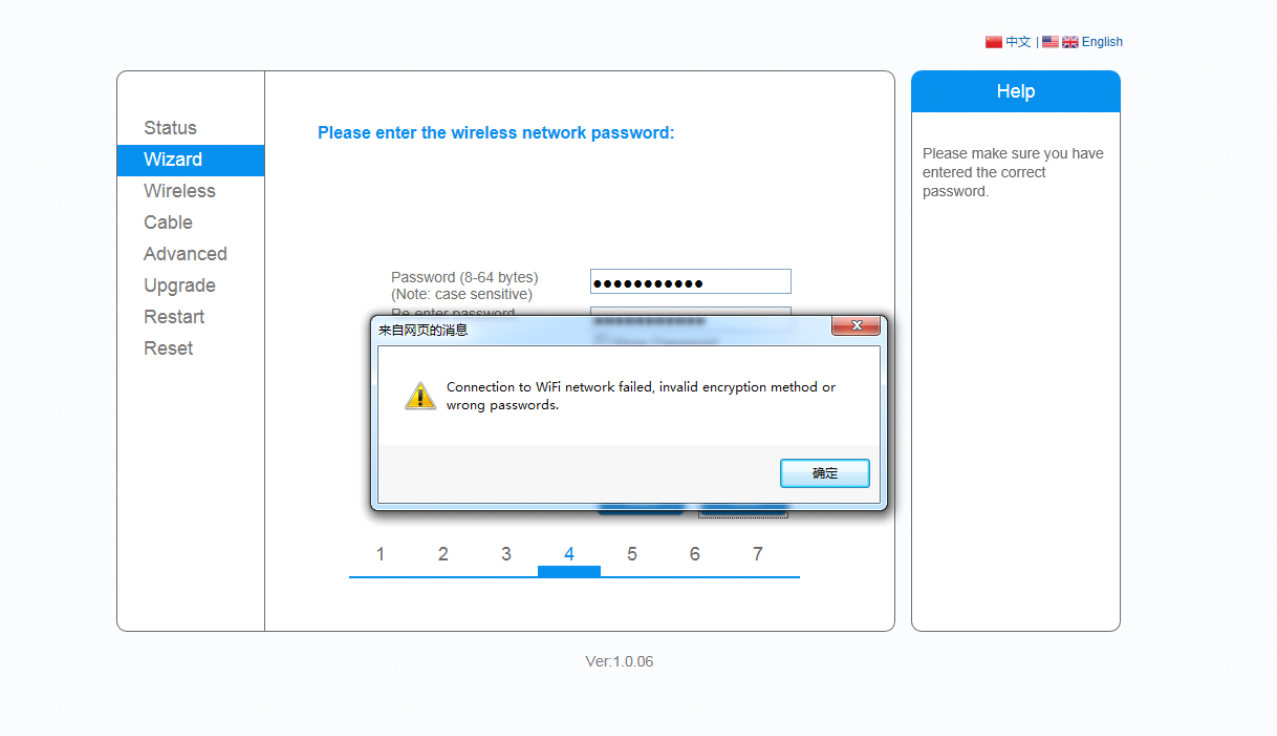
3. Please check your wireless router for the right encryption method and encryption algorithm.

4. If your wireless router does not broadcast the SSID, please set the desired wireless network in Wireless interface on page 26.

⑤Enter the password for the selected network, then click **Next**

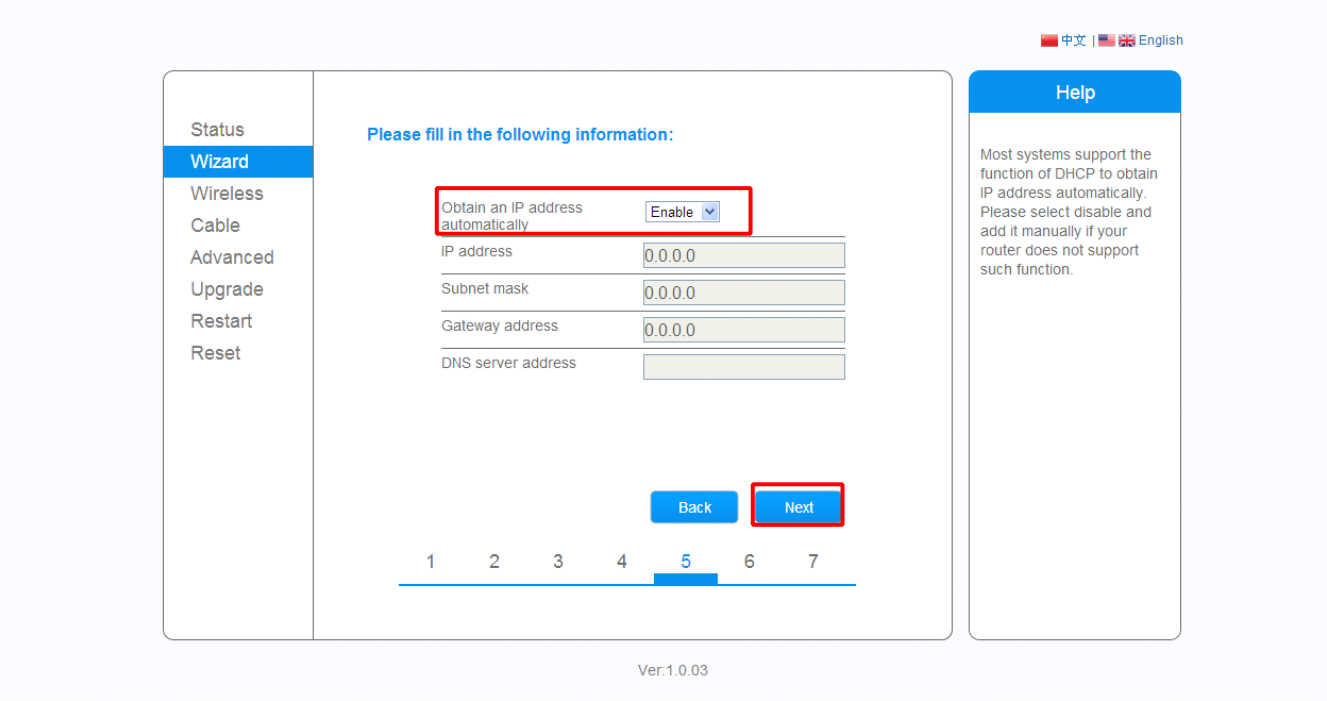


The password is being verified, please wait for a while. If you have entered an invalid password or encryption method, an error notice will pop up.



Notice：Please make sure you have entered the valid password.

⑥Select **Enable** to obtain an IP address automatically, then click **Next**

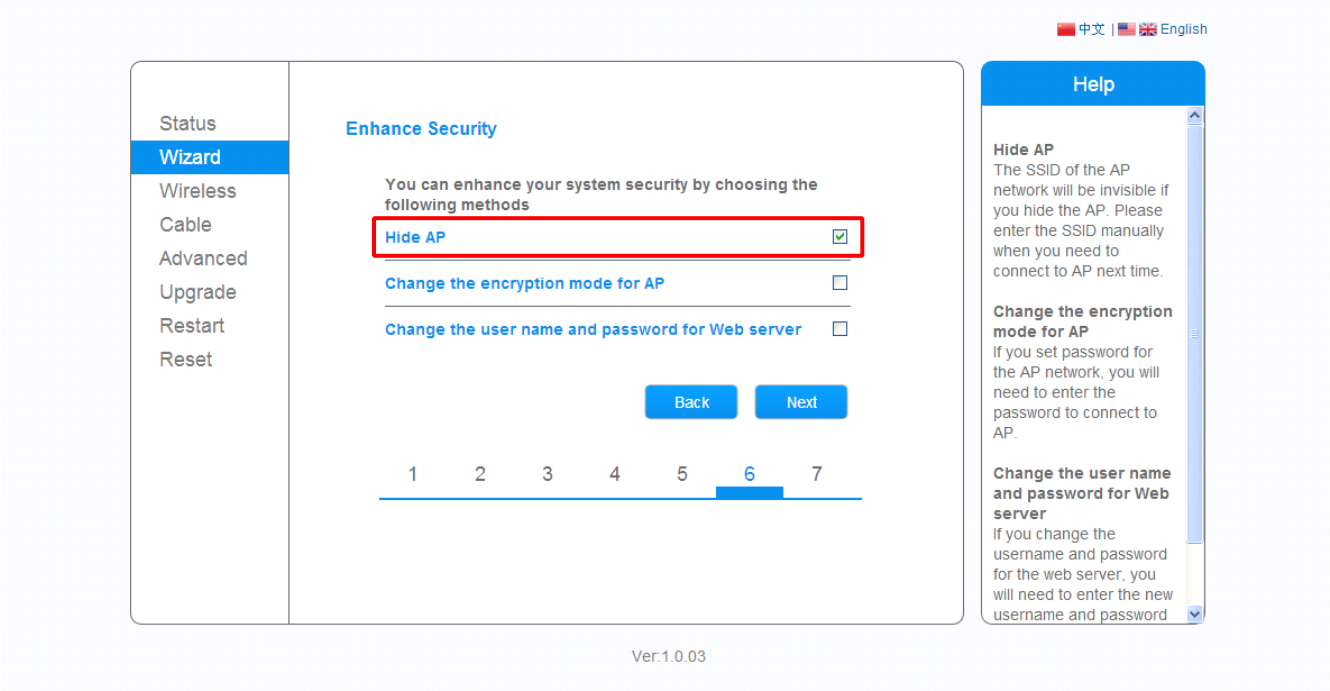


Notice

Most systems support the function of DHCP to obtain IP address automatically. Please add it manually if your router does not support such function.

⑦ Enhance security settings of the device by selecting any options as follows, then click **Next**

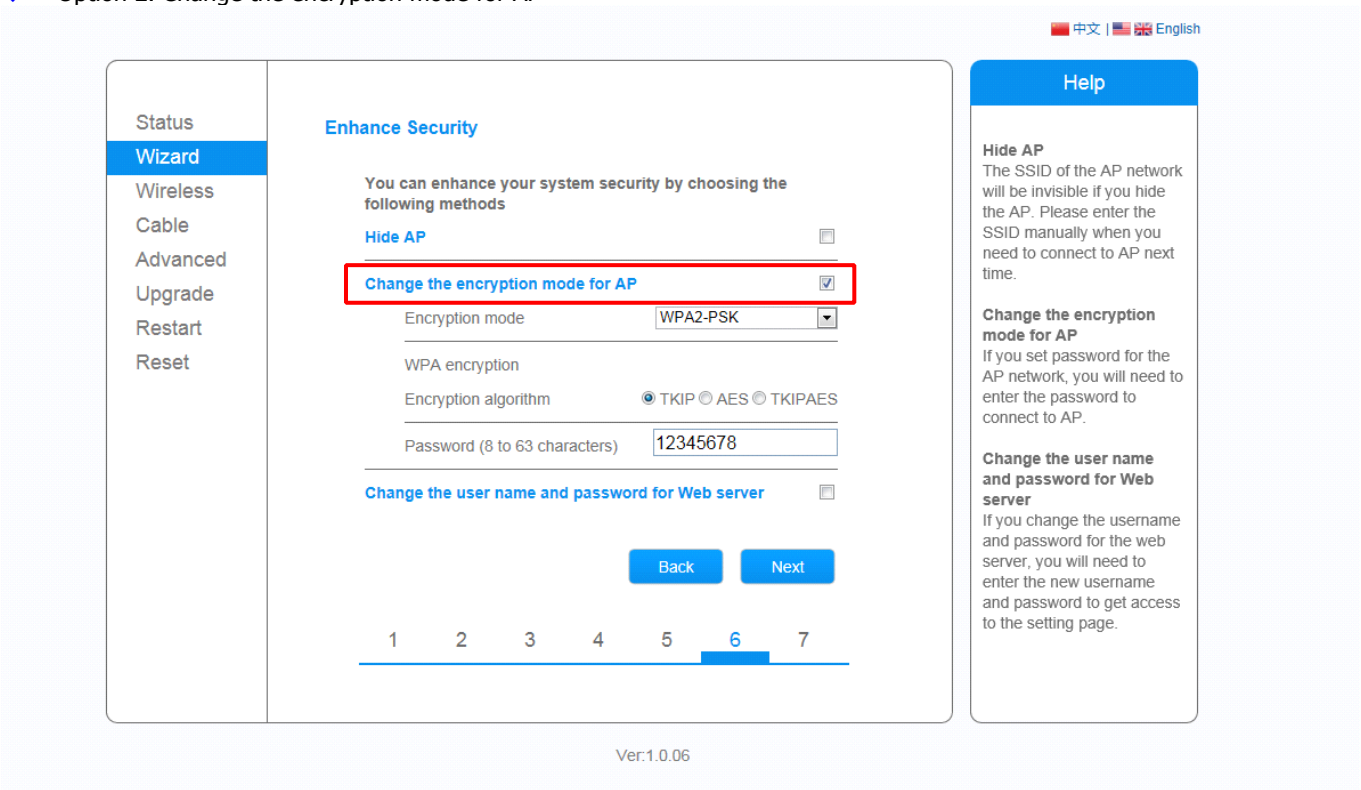
◆ Option 1. Hide AP



Notice

If you choose to **hide AP**, the SSID of the AP network of your WiFi Kit will be invisible on the wireless network list. Please enter the SSID manually when you need to connect to AP next time.

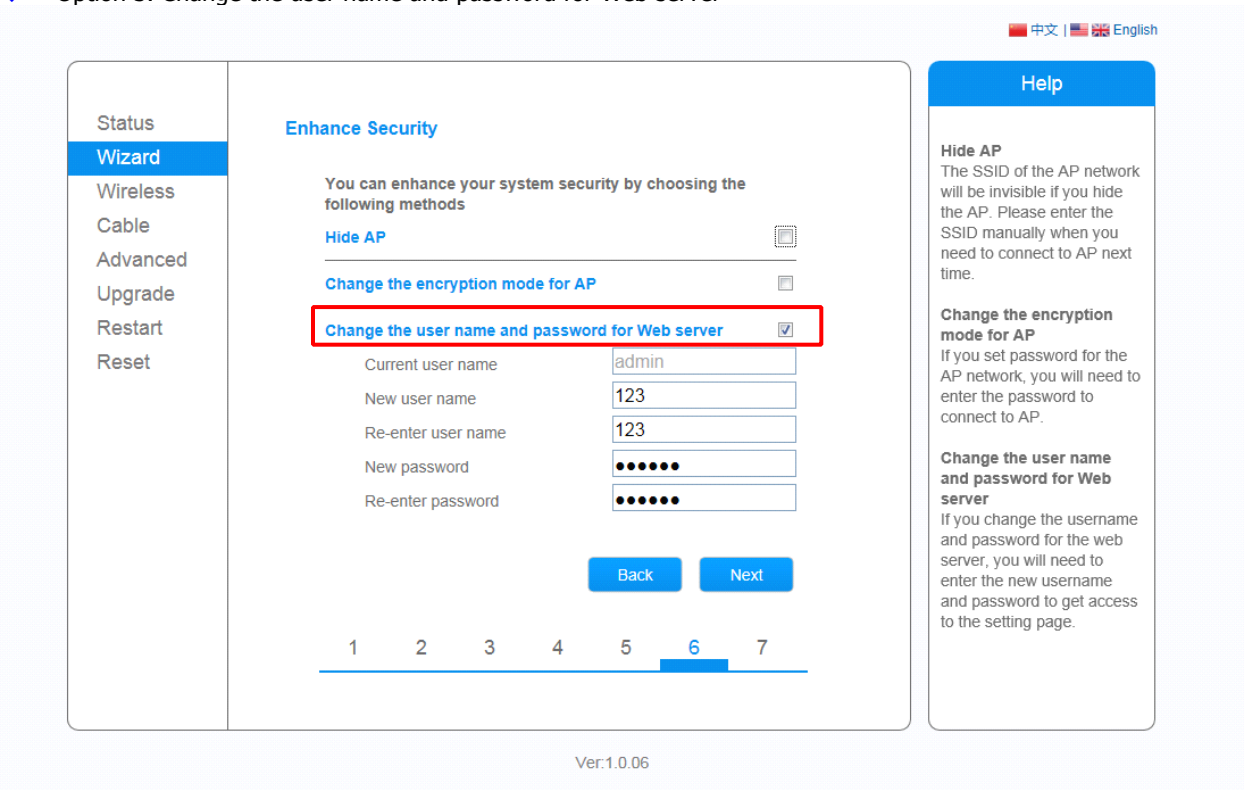
◆ Option 2. Change the encryption mode for AP



Notice

If you wish to change the **encryption mode** of the AP network, you will need to enter the corresponding encryption method and password before you connect to this WiFi Kit next time.

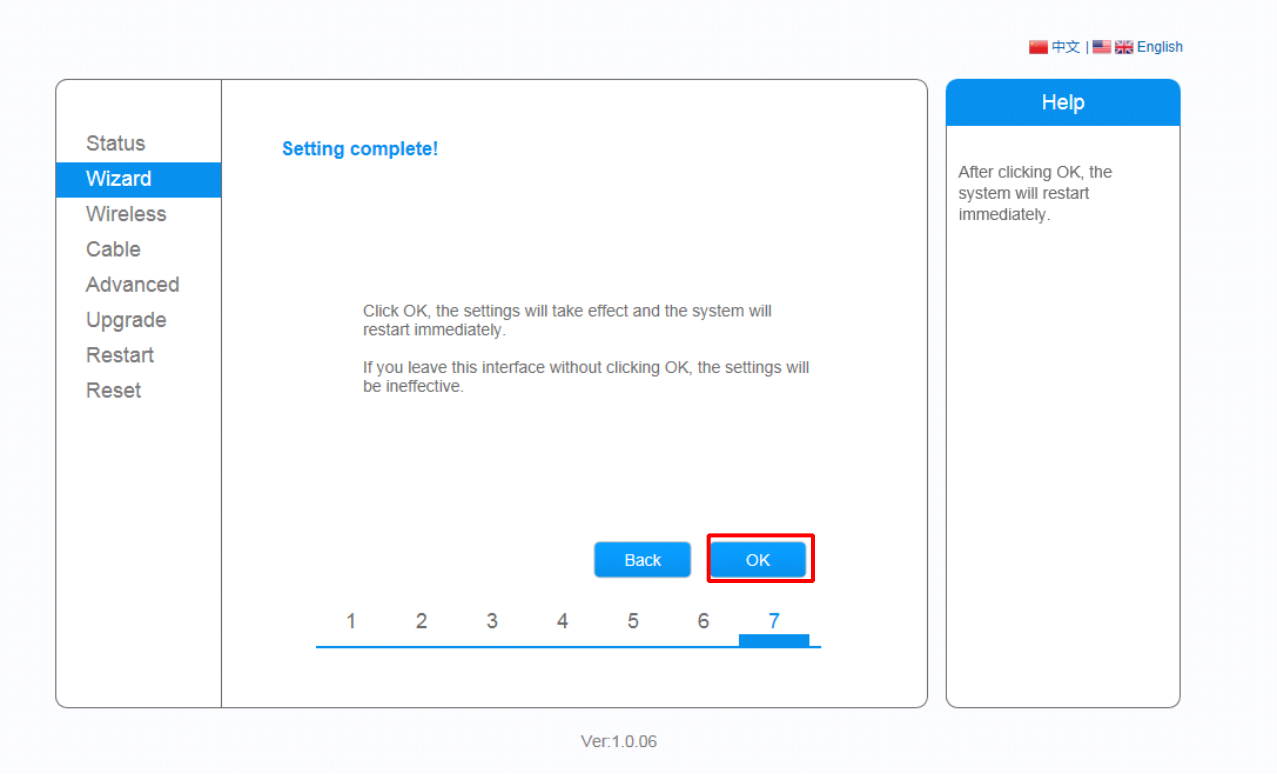
◆ Option 3. Change the user name and password for Web server



Notice

If you change the user name and password for the Web server, you will need to enter the new username and password when you need to re-log on this server.

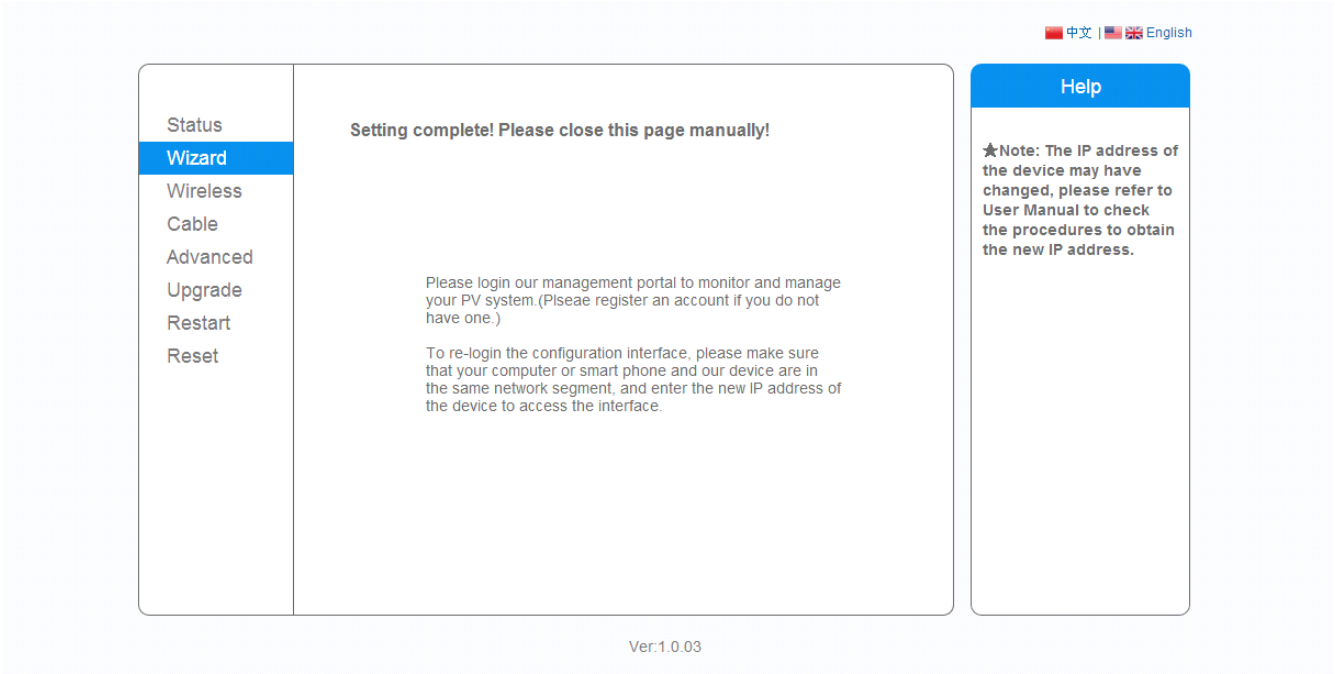
⑧If setting is successful, the following page will display. Click **OK** to restart.



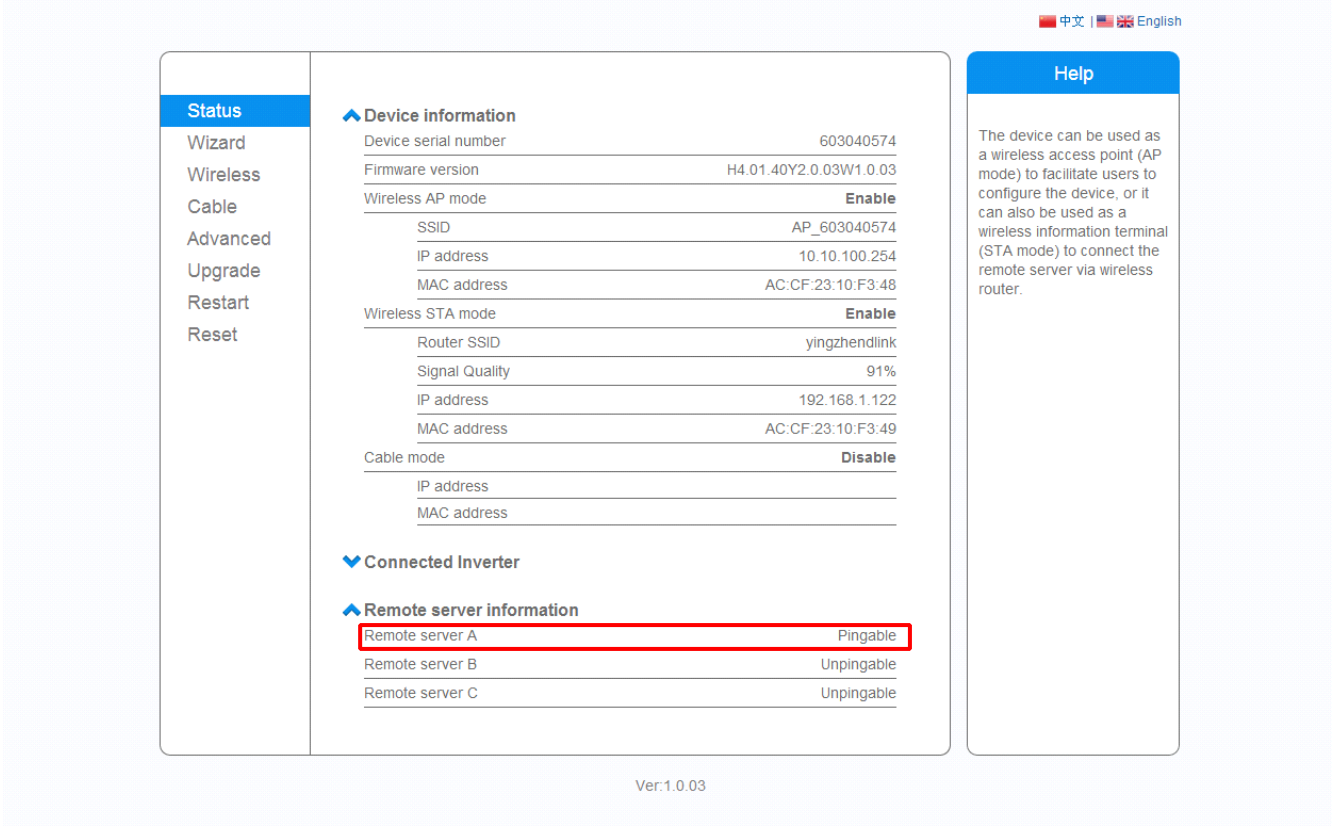
Notice

After you click OK, the system will restart automatically. Please wait for about 30s during restart.

⑨If restart is successful, the following page will display.



⑩Re-log on the setting page after network setting is completed, and check the network status on Status page.



Notice

1. After network setting is completed, the Wireless STA mode should be enabled and relative information of your router will display on the interface automatically as follows. In addition, Remote server A should be pingable as shown in the above graph.

Wireless STA mode: Enable
Router SSID:
Signal quality：*% （please refresh the page if it shows 0）
IP address：192.168.1.***（Please refresh the page if it shows 0.0.0.0）
Mac address：the Mac address of your local network
Network setting might be failed if it still shows 0 or 0.0.0.0 in the signal quality and IP address. Please try to reset the network connection to the device according to the quick guide.

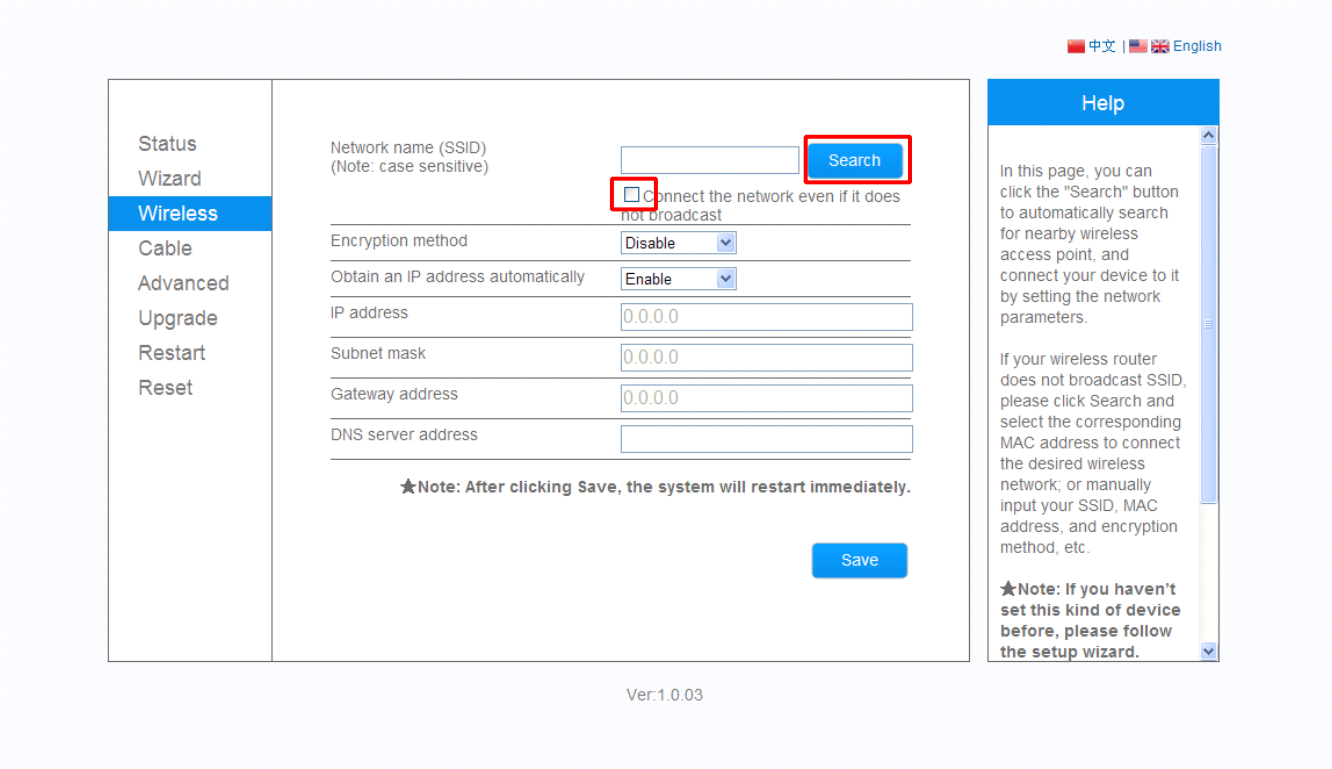
2. The IP address of the device may have changed. Please refer to chapter 5.8 to check the procedures to obtain the new IP address.

5.2 Network setting on Wireless interface

5.2.1 Please make preparations according to 5.1.1 and 5.1.2 on page 10.

5.2.2 Click **Wireless** to log on the wireless interface and start configuration of the data logger.

① click **Search** to automatically search for available wireless access point

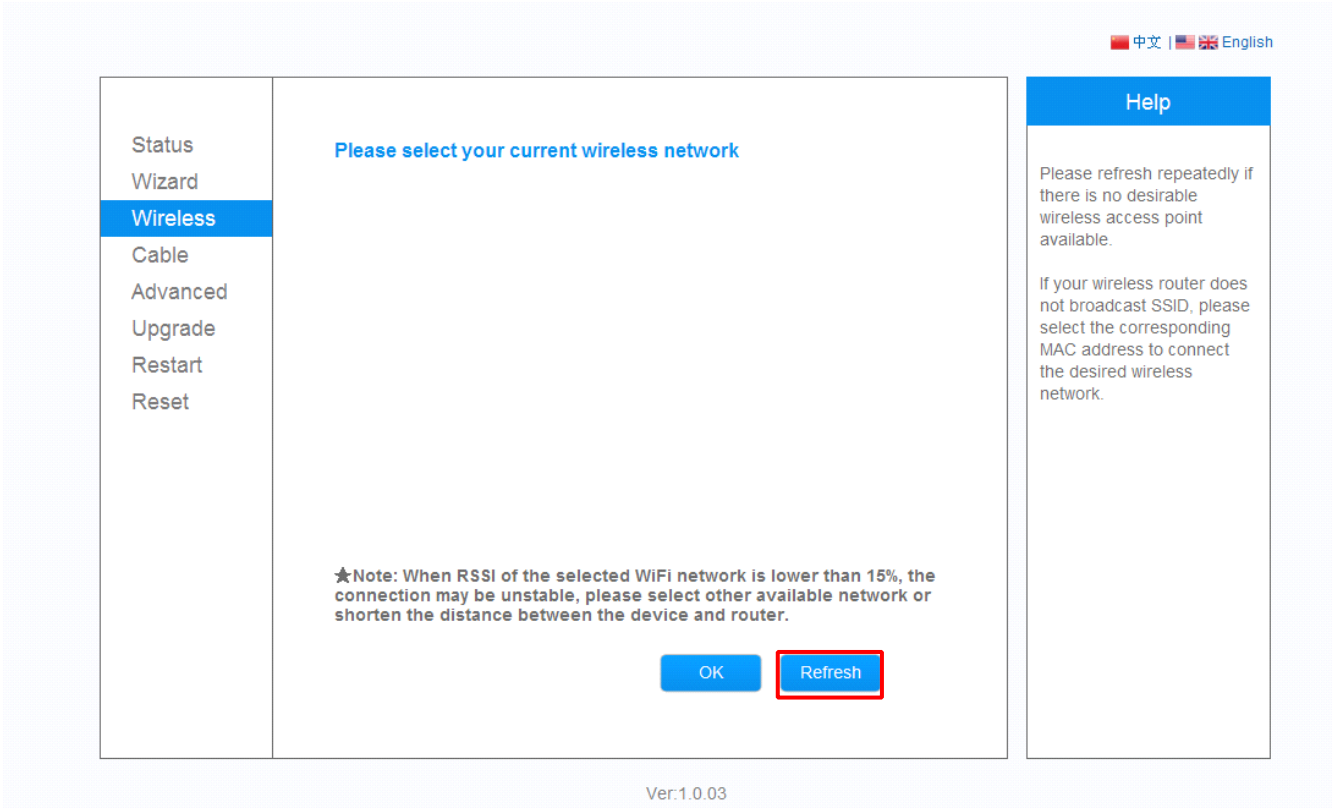


Notice

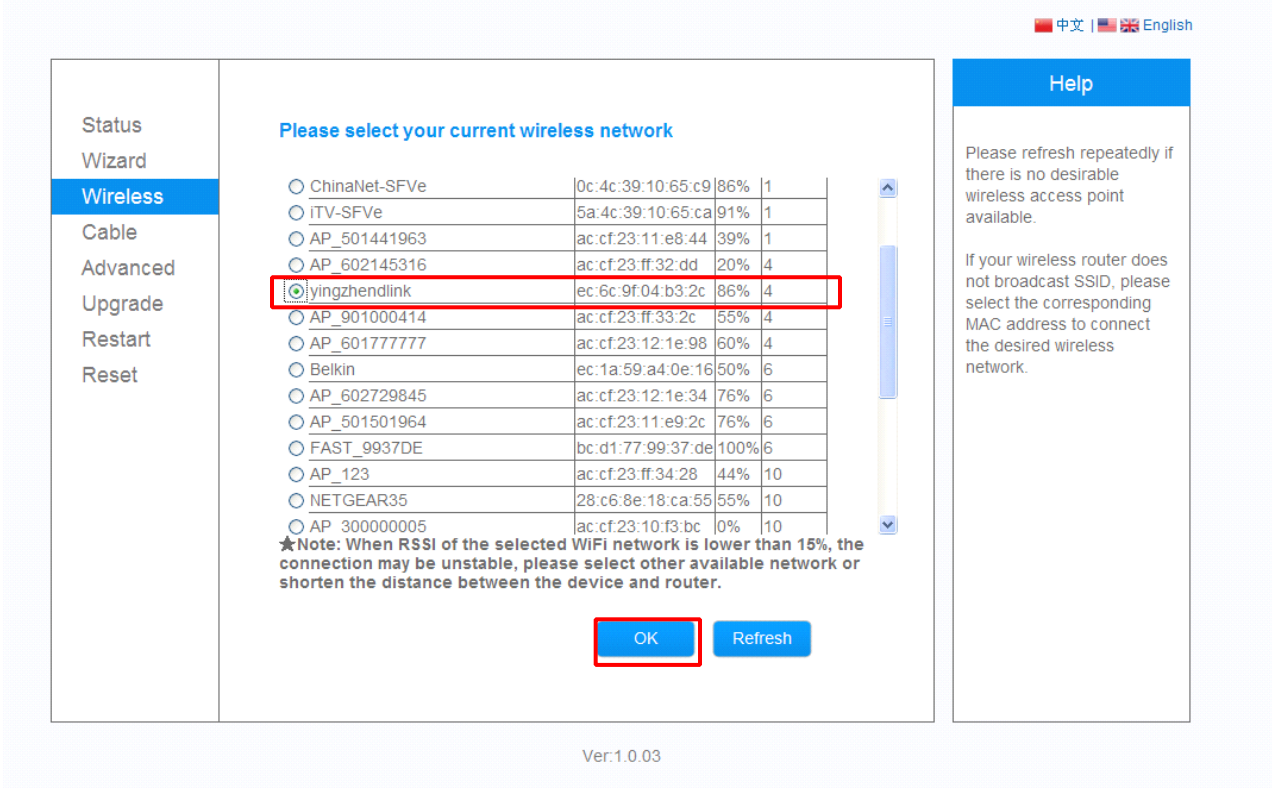
1. If your wireless router does not broadcast the SSID, please click search and select the corresponding **MAC** address to connect to the desired wireless network, or manually input your **SSID MAC** address and encryption method,etc.
2. If you have not set this kind of device before, please follow the setup wizard.

3. After clicking **Save**, the system will restart immediately. You need to re-login the configuration interface after restart.

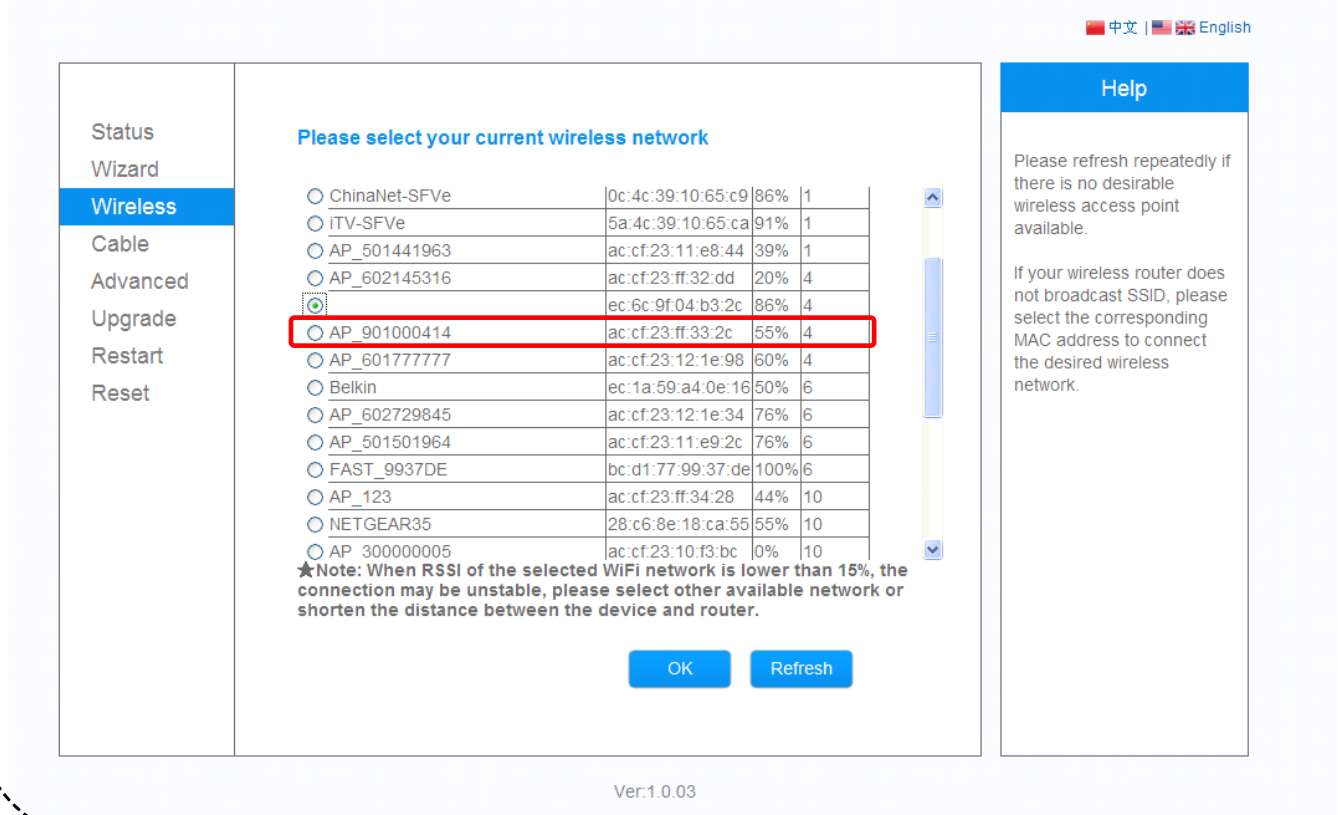
②Click **Refresh** to search available wireless networks



③Select the wireless network you need to connect, then click **OK**



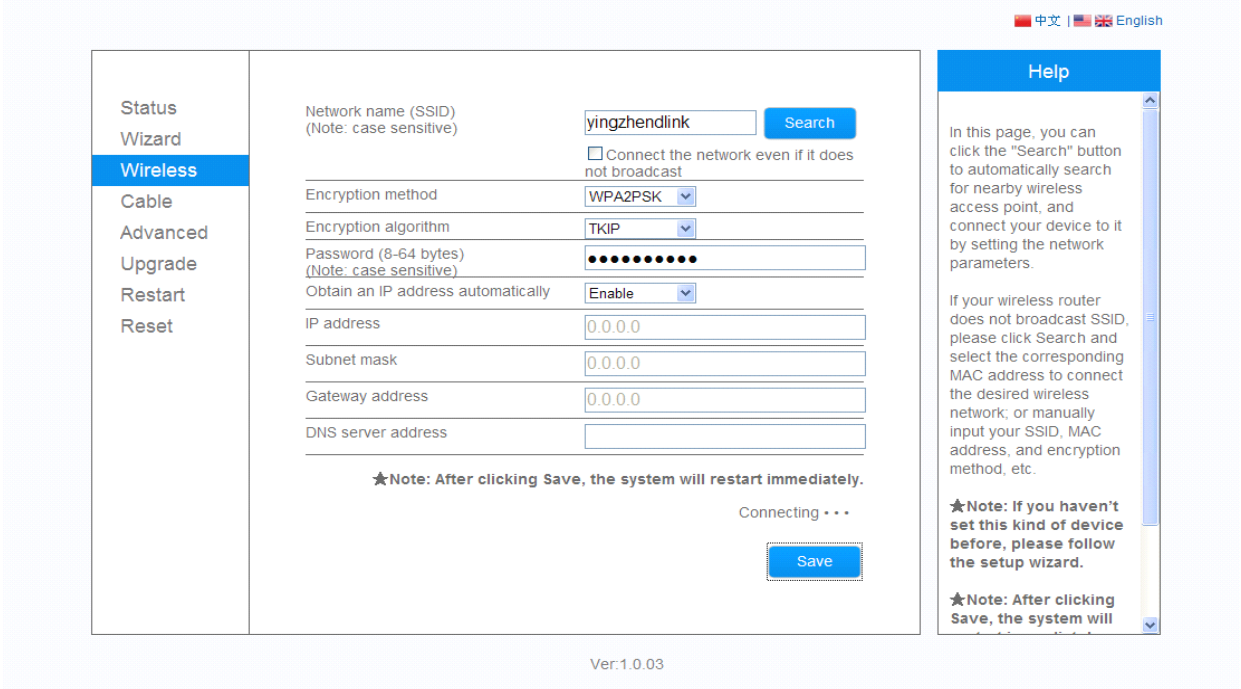
If your wireless router does not broadcast the SSID, please set the desired wireless network according to the MAC address..



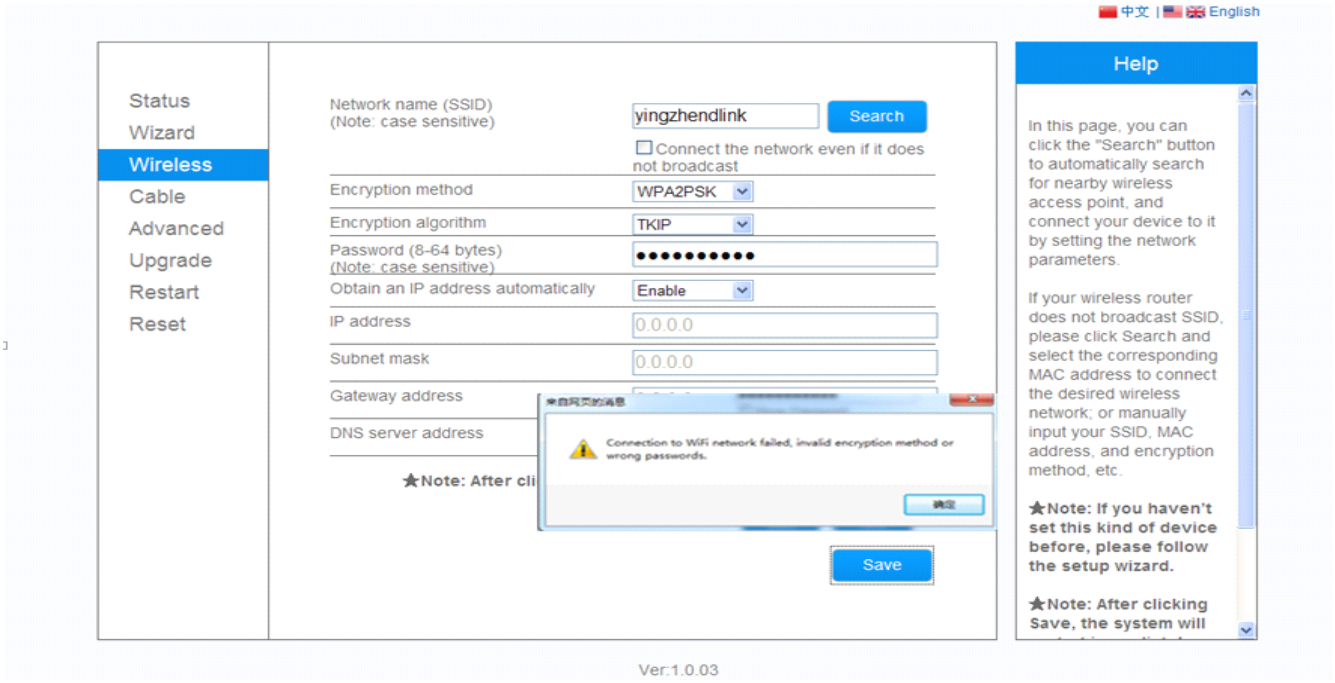
Notice

This step will help you to connect the device to the desired WLAN. If you do not find your wireless router on the network list, please refresh a few times or add it manually. To select the right encryption method and encryption algorithm, please check your wireless router.

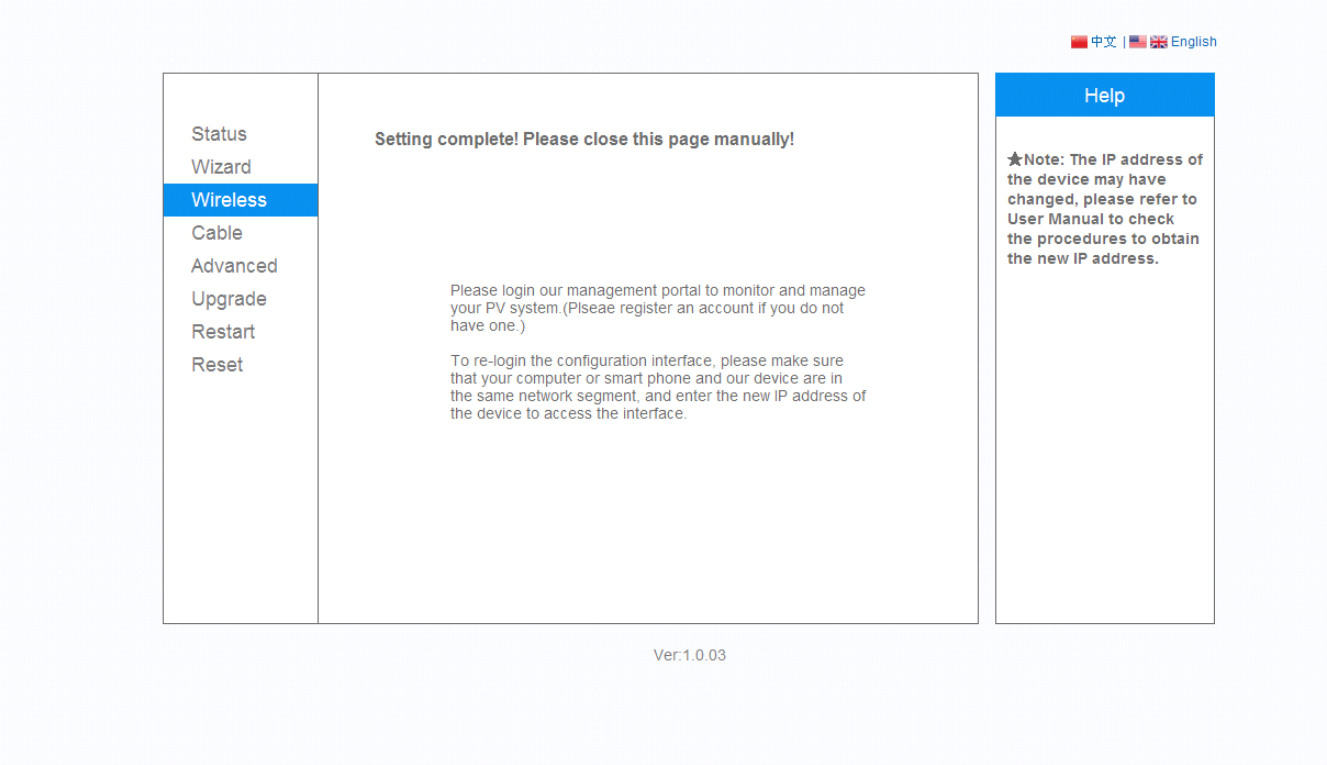
④Click **OK** after it returns to the setting page. Enter the password for selected network, then click **Save**.



Notice: The password is being verified, please wait for a while. If you have entered an invalid password or encryption method, an error notice will pop up.



⑤If setting is successful, the following page will display.

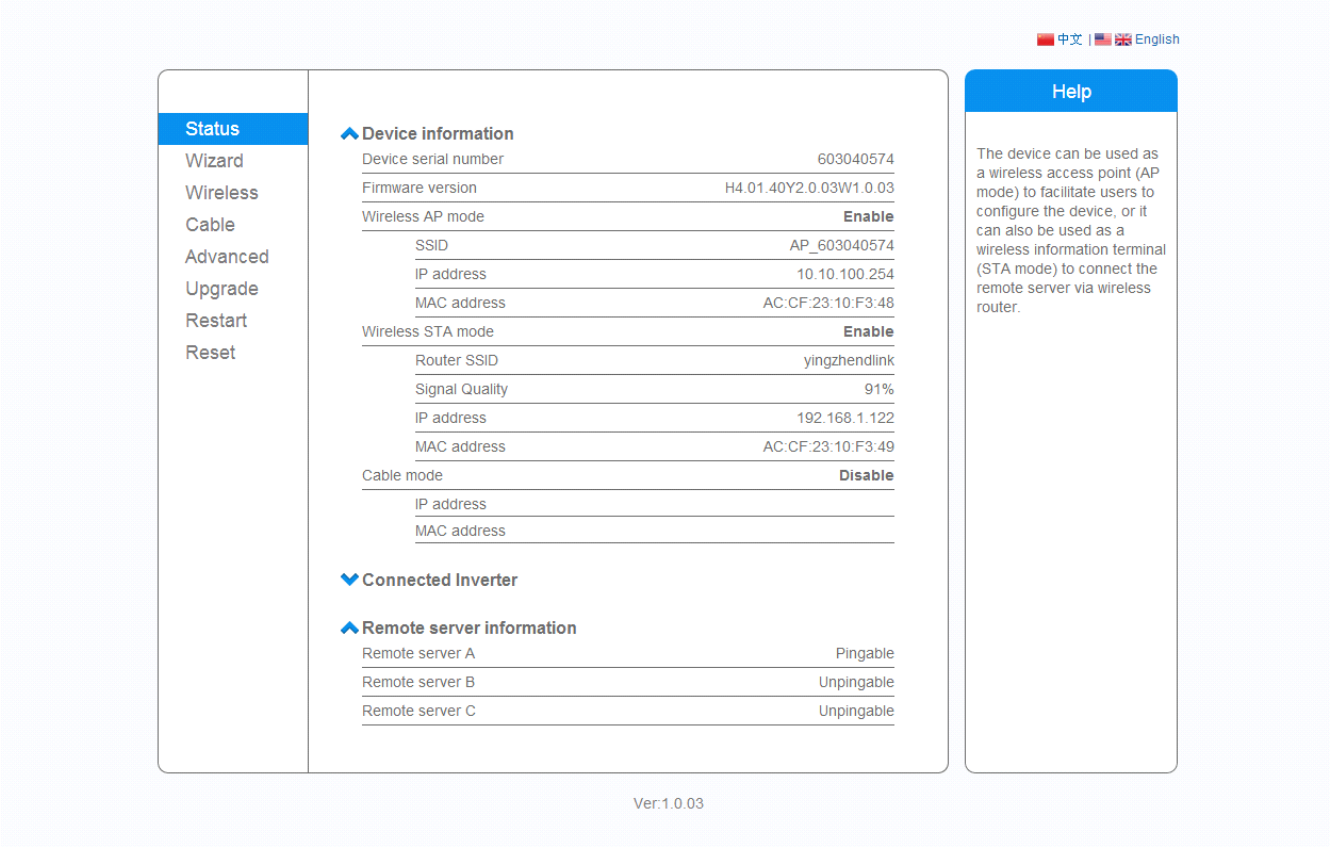


Notice

1. The IP address of the device may have changed. Please refer the chapter 5.8 to check the procedures to obtain the new IP address.

2. If you would like to enhance the security of this web server, please set this device via Setup Wizard.

⑥Re-log on the setting page after network setting is completed,and check the network status on Status page.



Notice

1. After network setting is completed, the Wireless STA mode should be enabled and relative information of your router will display automatically as follows. Remote server A should be pingable as shown in above graph.

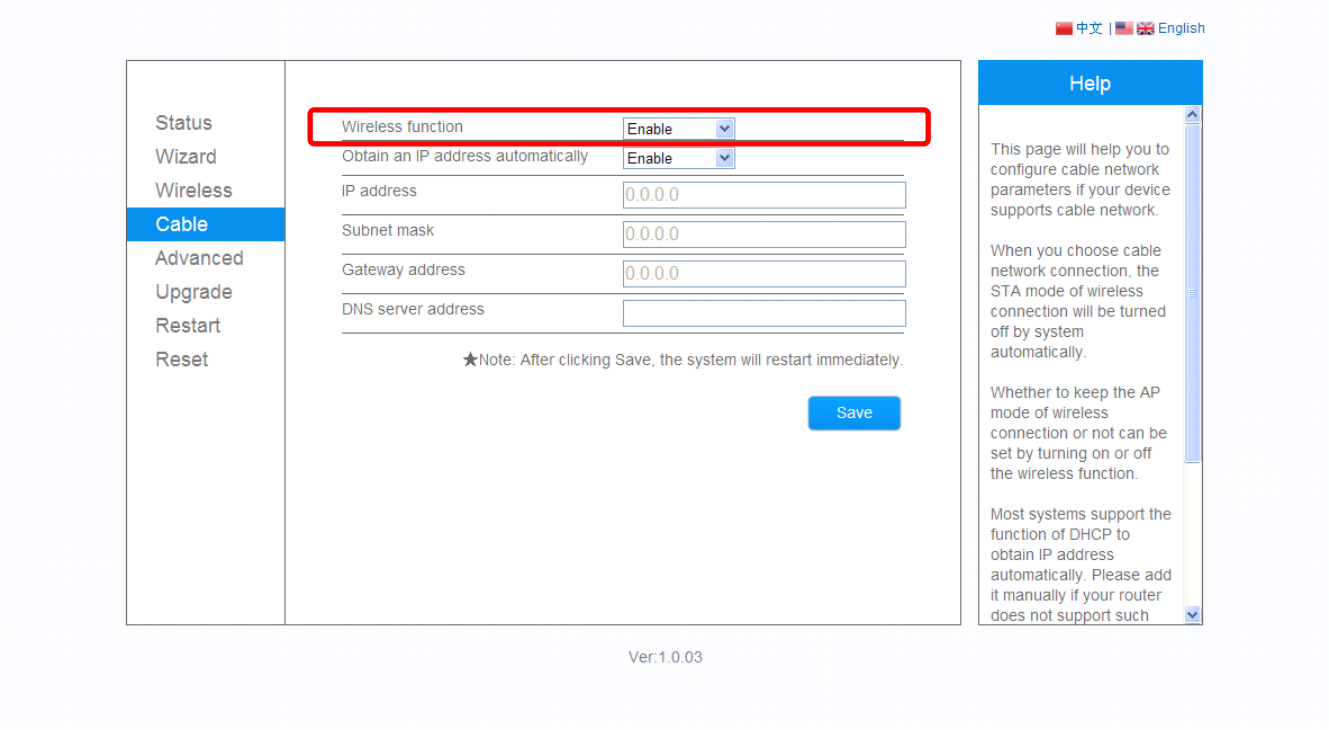
Wireless STA mode: Enable
Router SSID:
Signal quality：*% （please refresh the page if it shows 0）
IP address：192.168.1.***（Please refresh the page if it shows 0.0.0.0）
Mac address：the Mac address of your local network
Network setting might be failed if it still shows 0 or 0.0.0.0 in the signal quality and IP address. Please try to reset the network connection to the device according to the quick guide.

2.the IP address of the device may have changed. Please refer to chapter 5.8 to check the procedures to obtain the new IP address.

5.3 Device setting on Cable setting interface

If you would like to set cable network connection to this device, please connect the data logger to the router with a network cable first.

1. Select **Enable** to obtain an IP address automatically, then click **Save**



Notice

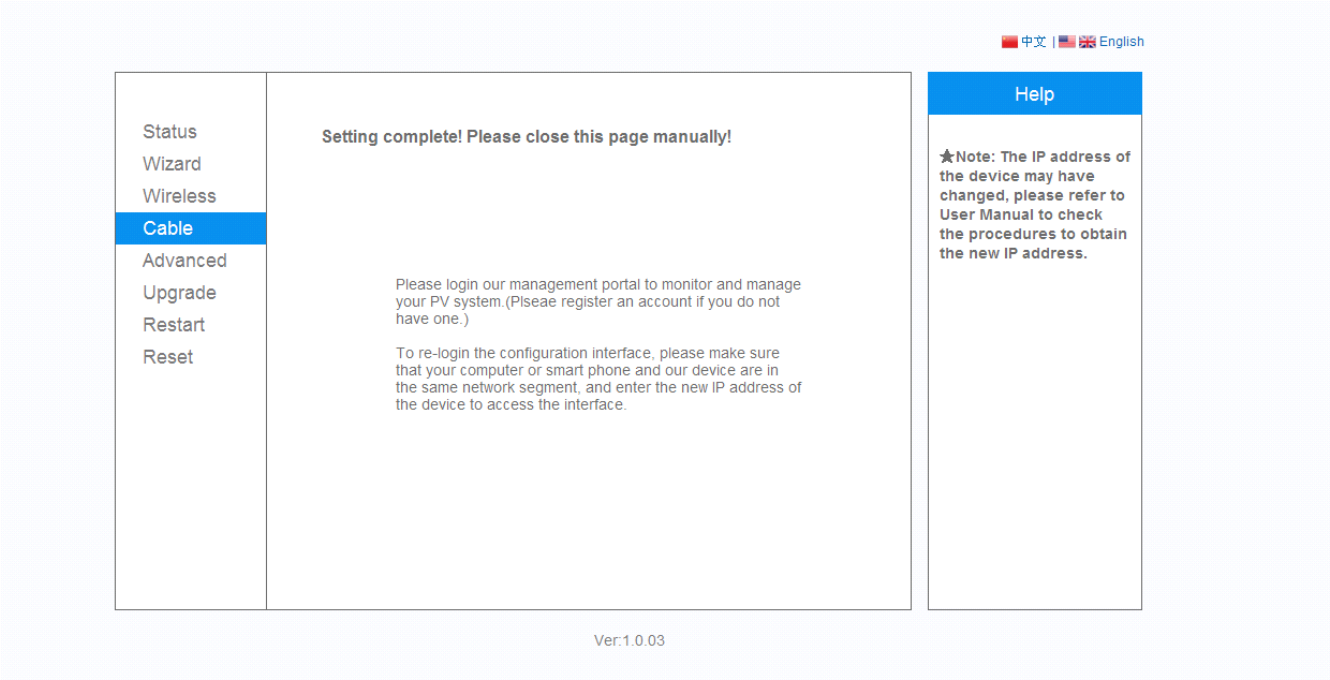
1. This page will help you to configure cable network parameters if your device support cable network.

2. When you choose cable network connection, the STA mode of wireless connection will be turned off automatically.

3. Whether to keep the AP mode of wireless connection or not can be set by turning on or off the wireless function.

4. Most systems support the function of DHCP to obtain IP address automatically . Please add it automatically if your router do not support such function.

2. If saved successfully, the following page will display.



Notice

The IP address of the device may have changed. Please refer to chapter 5.8 to check the procedures to obtain the new IP address.

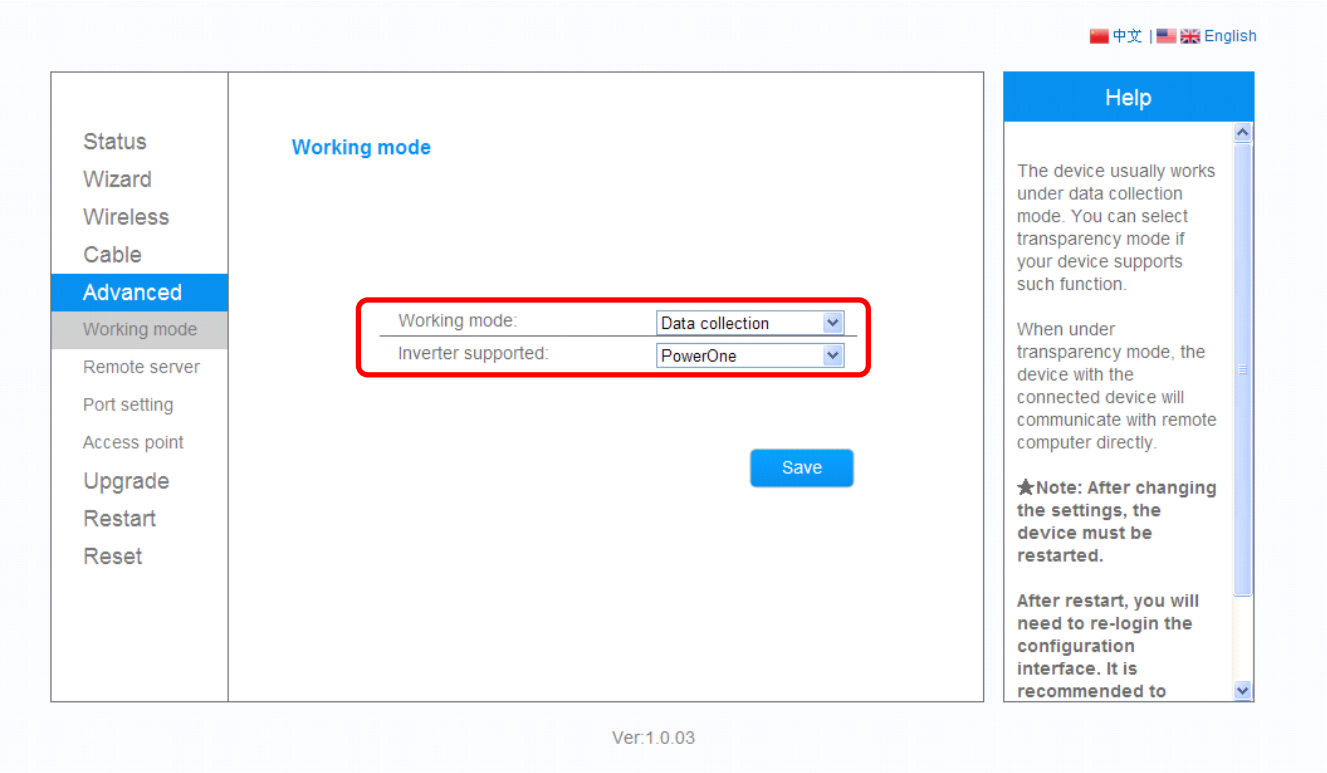
3. Please refer to Step ⑩ in part 5.1 on page 24.

5.4 Device setting on Advanced setting interface

In Advanced setting, you can configure the parameters of the device. Please do not change the default settings unless guided by professional staff, otherwise the parameters change may cause device malfunction，e.g. failure to log on the setting page, no data transmission, etc.

1. Select working mode

① Select your desired **Working mode**, then click **Save**.

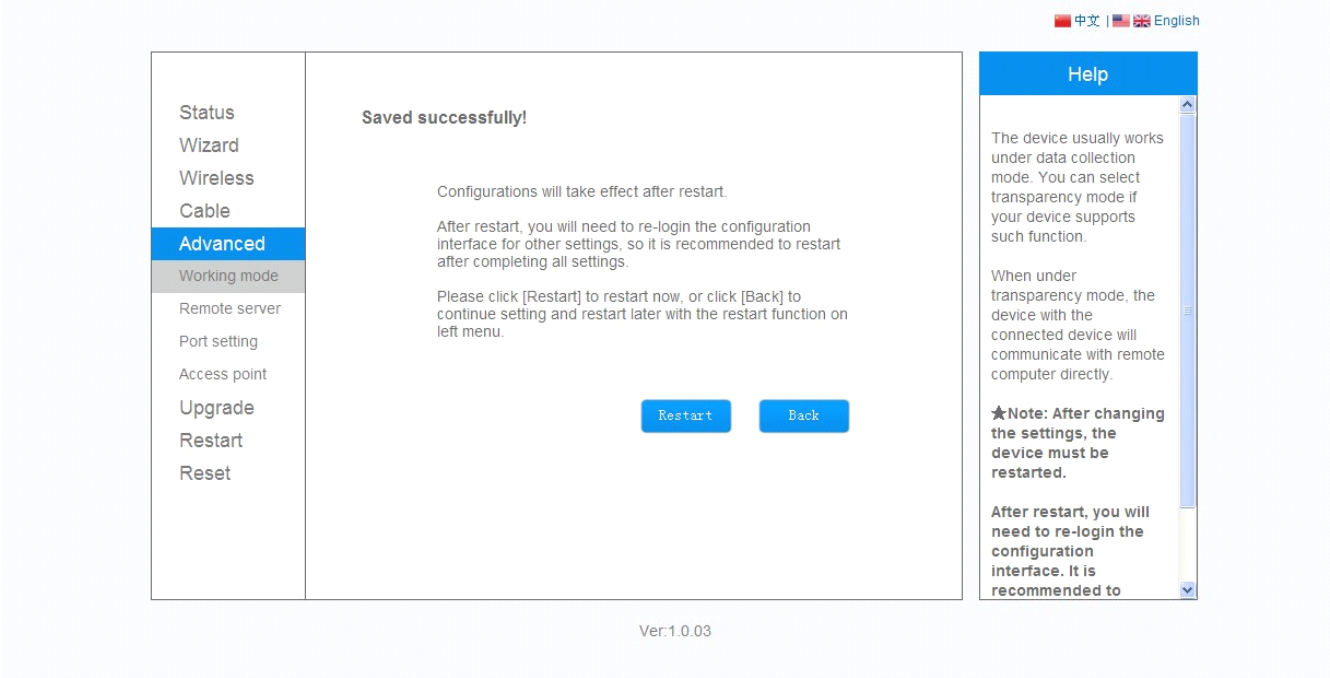


Notice

1. The device usually works under data collection mode. You can select transparency mode if your device supports this function.

2. When under transparency mode, the device with the connected device will communicate with remote computer directly.

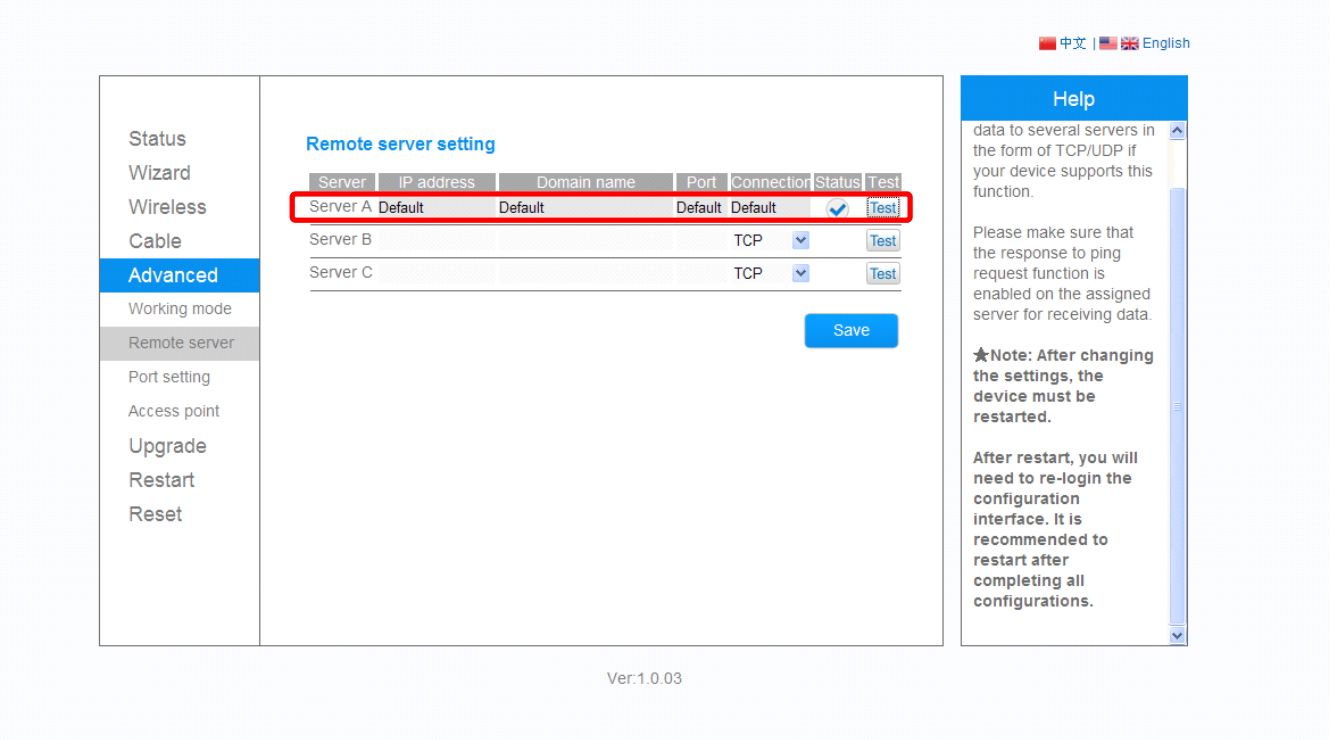
After changing the setting, the device must be restarted. After restart, you will need to re-log on the configuration interface. It is recommended to restart after all settings are completed.



2. Set remote server

After the network setting is completed, monitoring data will be transmitted to Server A as default. You can set other servers to receive data in this page.

① Enter the **IP address** or **domain name** and **port number** to add a new server，click **Test** to check the server status, then click **Save** when setting is completed.

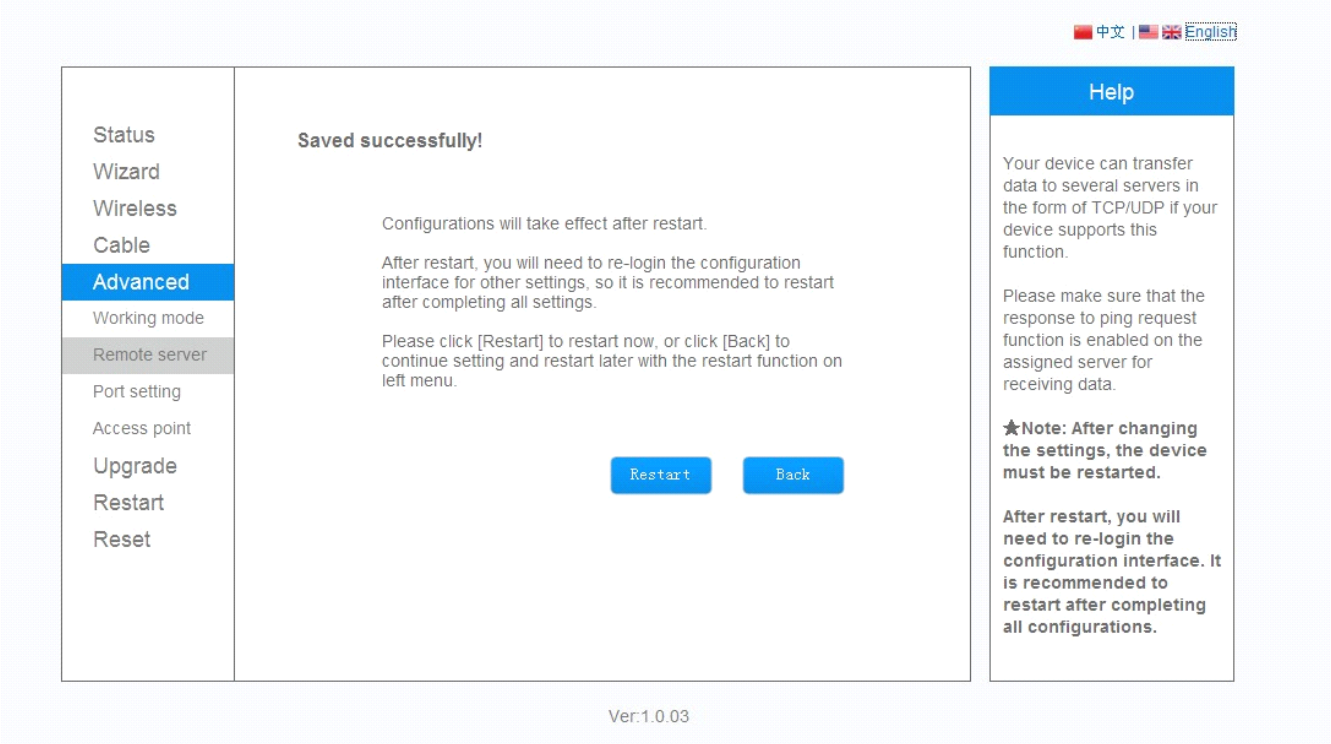


Notice

1.Your device can transfer data to several servers in the form of TCP/UDP if your device supports this function.

2. Please makes sure that the response to ping request function is enabled on the assigned server for receiving data.

After changing the settings, the device must be restarted. After restart, you will need to re-login the configuration interface. It is recommended to restart after completing all configurations.

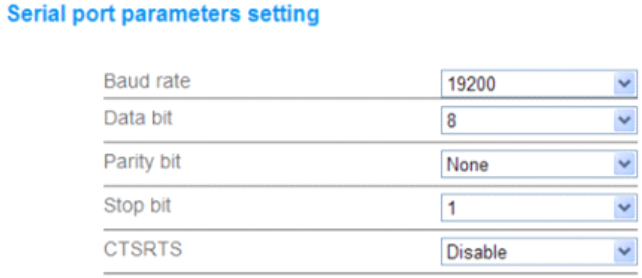


3. Port Setting

In this page, you can set the parameters for serial port and the internal web server of the data logger. After the network setting of device is completed, all parameters will be loaded to corresponding columns automatically. Please do not change the default settings, otherwise the parameters change may cause device malfunction.

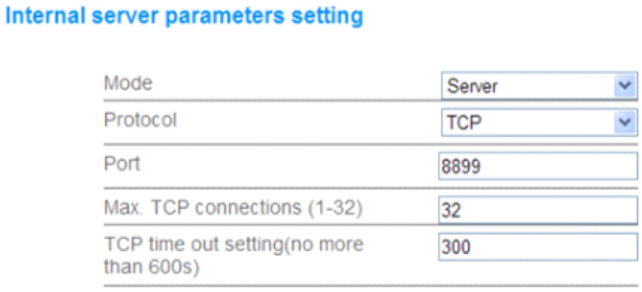
① Set serial port

In this column, you can change the serial port parameters for the data logger. Any operation on this page should be guided by professional engineer.



② Set internal server

In this column, you can change the serial port parameters for the data logger. Any operation on this page should be guided by professional engineer.

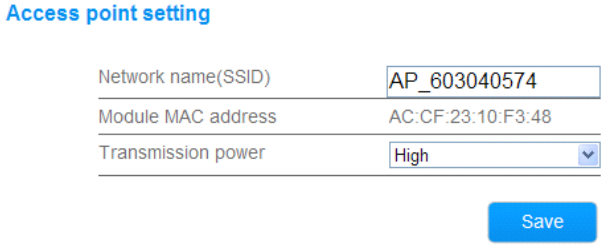


4. Set wireless access point

In this page, you can configure the parameters of the device when it works under Wireless access point mode. After the network setting of device is completed, all parameters and encryption information of your network will be loaded into corresponding columns automatically. Please do not change the default settings, otherwise the parameters change may cause device malfunction.

① Set wireless access point

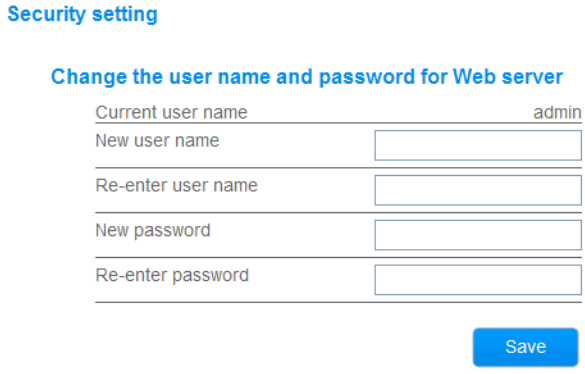
Parameters listed in the following columns are designed for setting the function of the device when it works under AP mode. Information including network mode, network name, select channel and transmission power will be recognized by the device automatically. If any parameters change is required, please follow the instructions by professional staff.



② Security setting for Wireless access point

Parameters listed in the following column are designed for setting the encryption method of the device. Setting in this column should be operated under the instructions by professional staff.

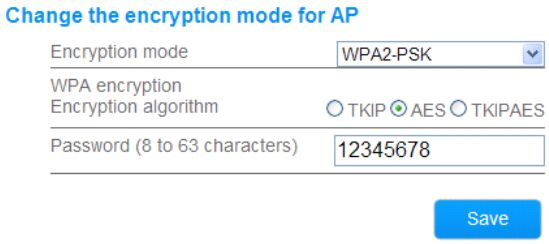
（a）



Notice

If you wish to change the user name and password of the Web server, please enter the new username and password when you need to re-log in this server.

(b)

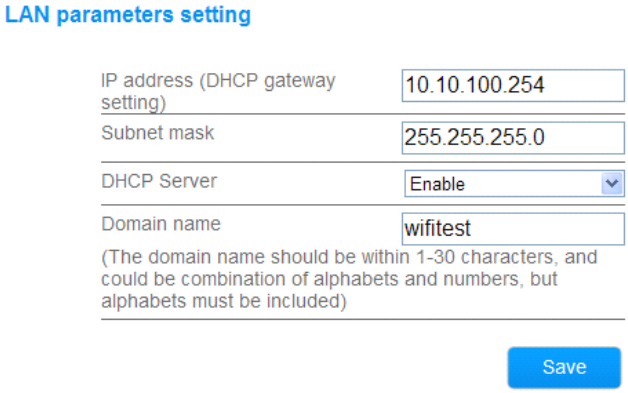


Notice

If you wish to change the **encryption mode** of the AP network, you will need to enter the corresponding encryption method and password before you connect to this device next time.

③ Set LAN parameters

Parameters listed in the following columns are designed for changing the status of local area network which is embedded in the device. Information including IP address and Subnet mask will be recognized automatically. Setting for other functions should be guided by professional staff.

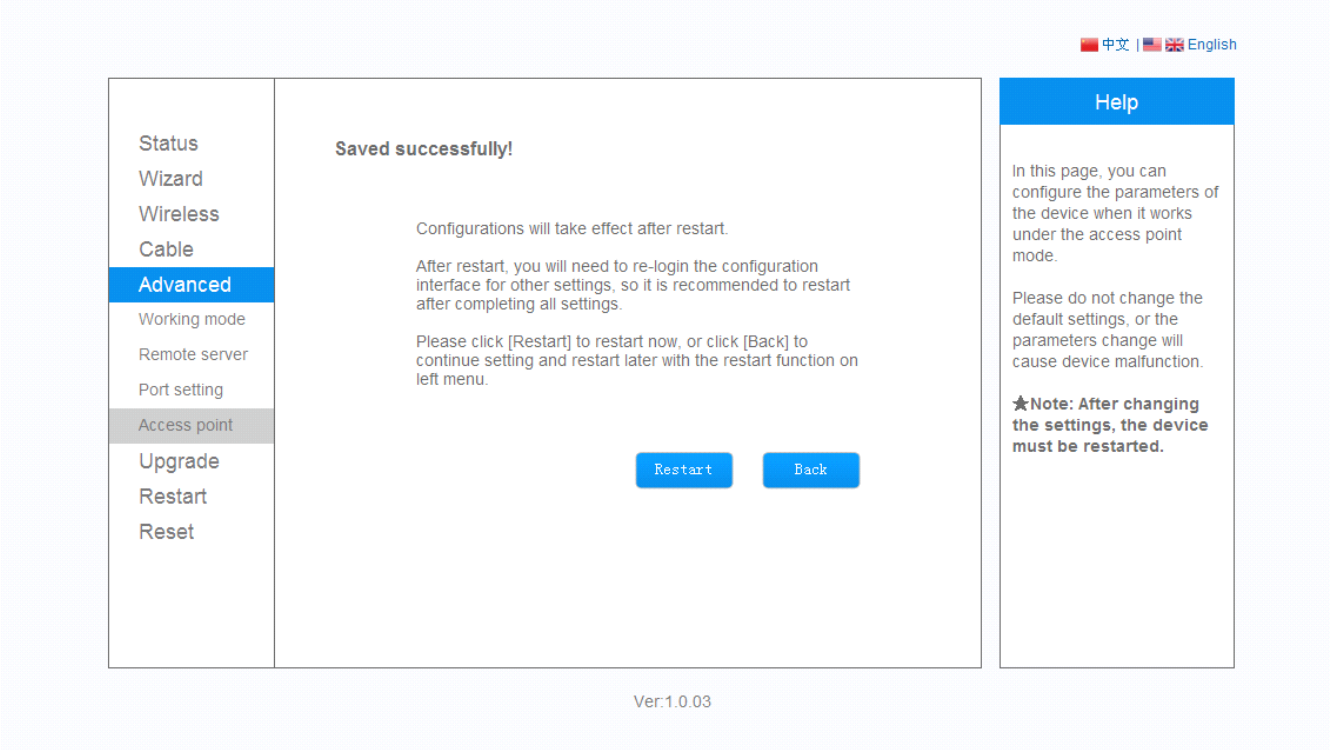


Notice

1. If a domain name changing is required, please enable the function to automatically obtain DNS server. Please refer to chapter 5.2.2 to check the detailed procedures. or enter the information of IP address(DHCP gateway setting).

2. After changing the settings, the device must be restarted. After restart, you will need to re-login the configuration interface. It is recommended to restart after completing all configurations.

5. After saved successfully, the following page will display. Click **Restart**.

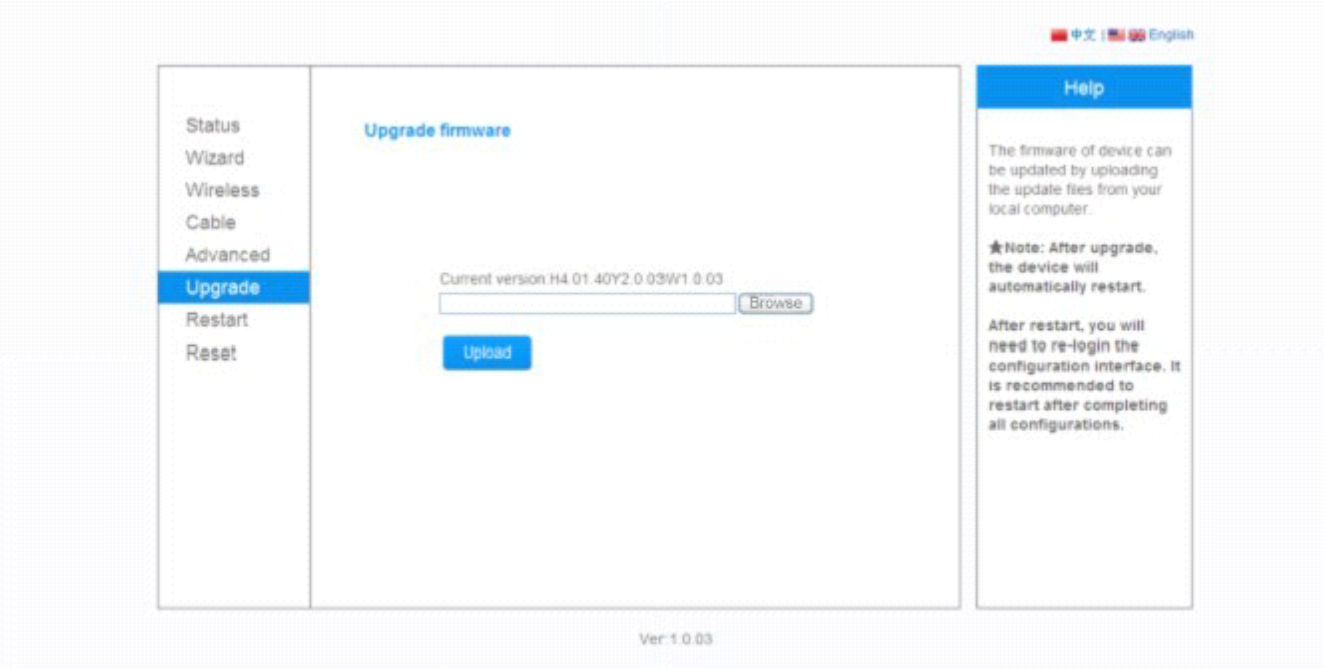


Notice

After you click **Restart,** the system will restart automatically. Please wait for about 30s during restart.

5.5 Upgrade

In this page,the firmware of device can be upgraded by uploading the update files from your local computer.



Click **Browse** to upload the firmware, then click **Upload** to start upgrade.

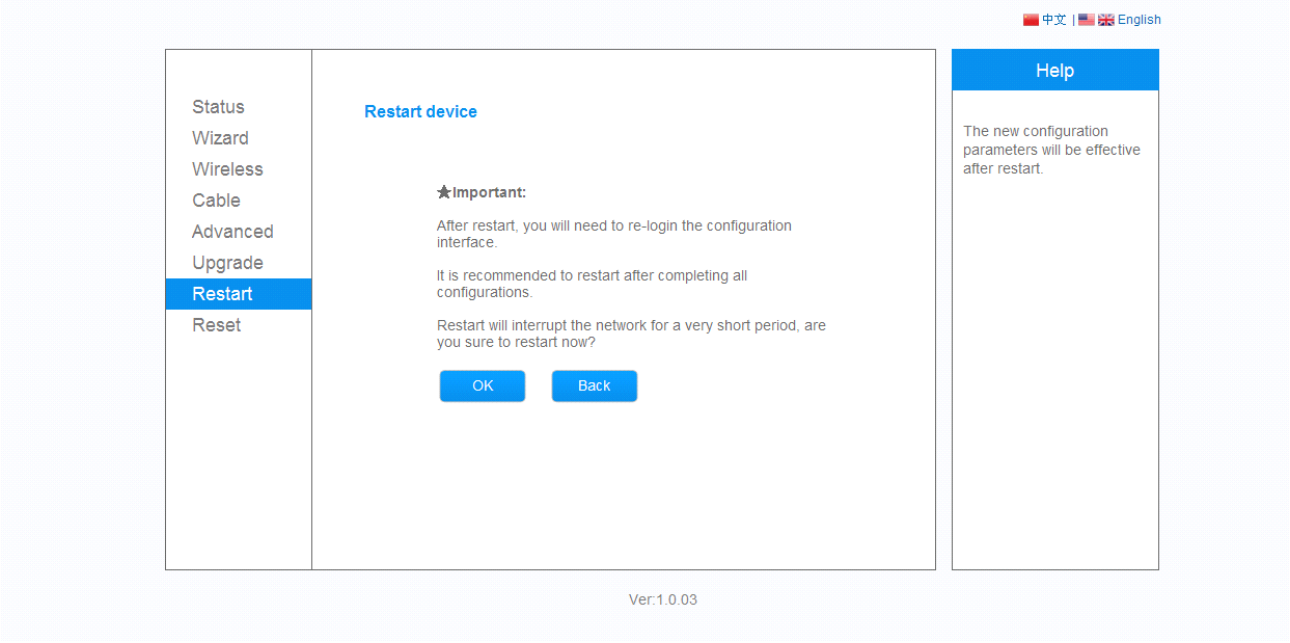
Notice

1. The firmware update should be operated during a shiny period among the day.

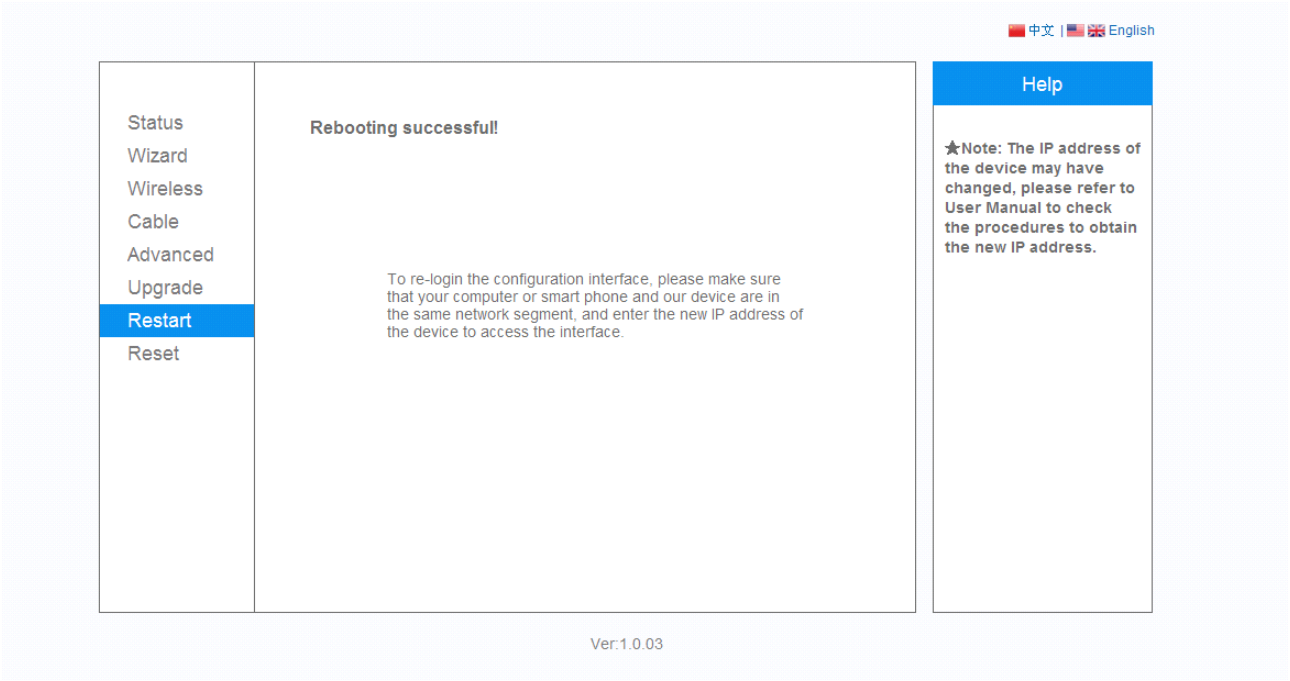
2. During upgrade, please make sure that the power and network connection between WiFi Kit and the router is stable, and the WiFi signal is constantly good.

5.6 Restart

The device can be restarted in this page. After restart, all settings you have made before shall be effective. It may takes 30s to restart the device, and please read the notice on the page carefully before restart.



Click **OK** to restart the device



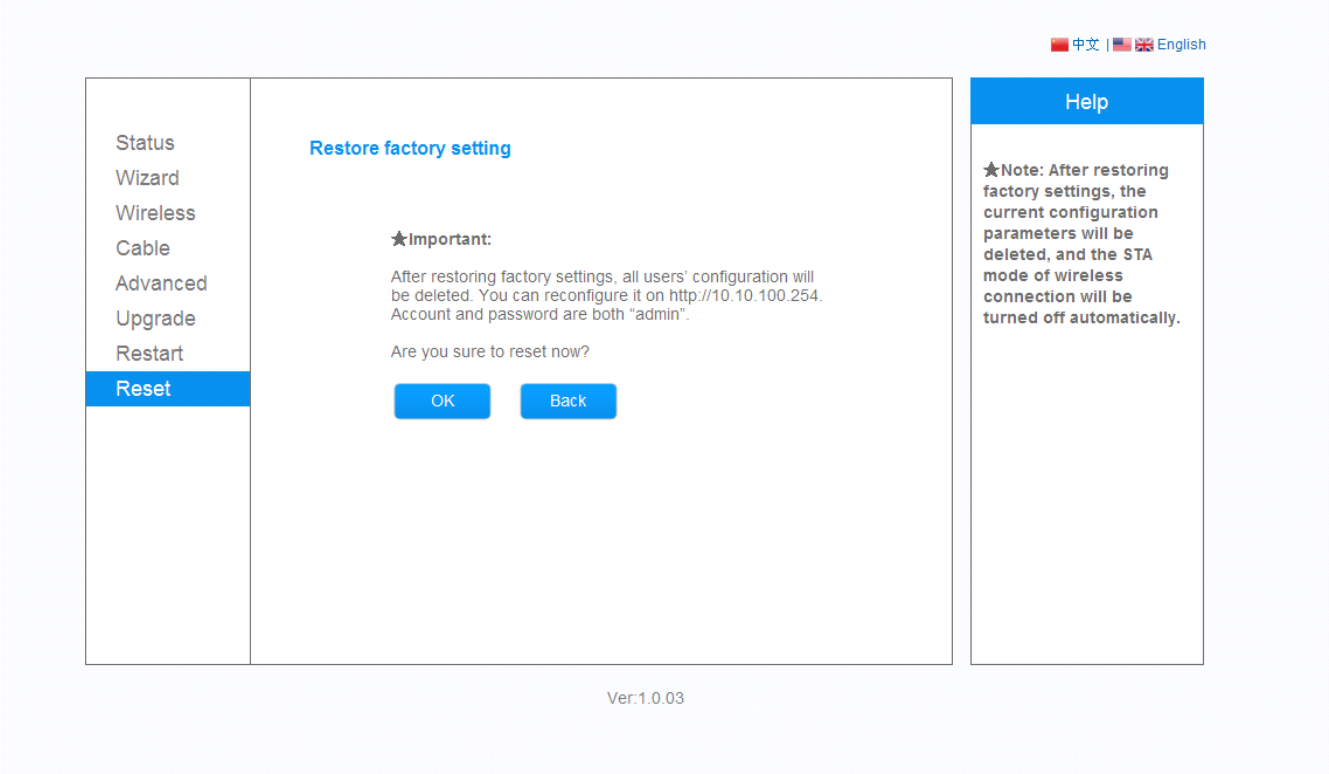
Rebooting successful. Please close this page automatically.

Notice

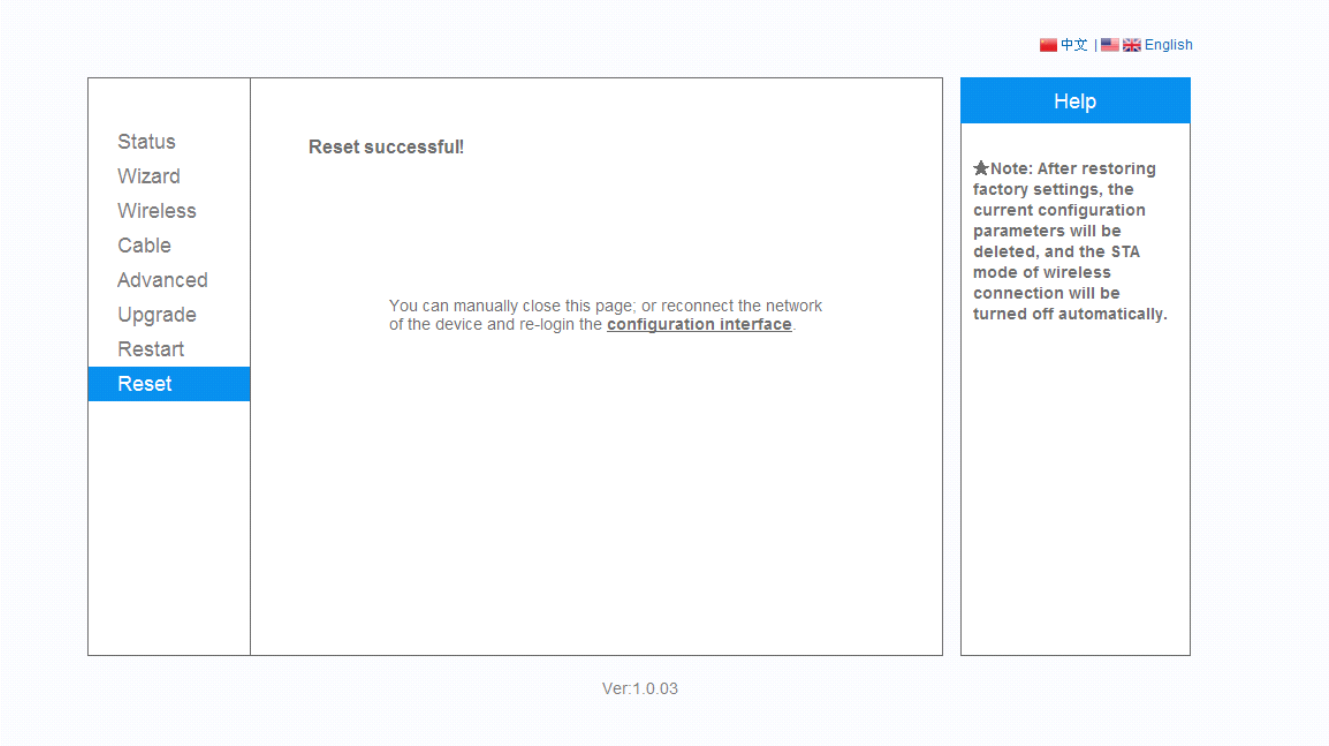
The IP address of the device may have changed. Please refer to chapter 5.2.4.9 to check the procedures to obtain the new IP address.

5.7 Reset

The device can be reset in this page. After reset, the device will be restored to factory setting, and all users' configuration will be deleted. It may takes 30s to reset the device, and please read the notice on the page carefully before reset.



Click **OK** to reset



Reset is successful, please close this page manually,then re-login the web server.

5.8 Obtain the new IP address

After the configuration to the data logger is completed, the device will work under STA mode and a new IP address will be assigned by the router. Please log on the setting interface of your router to check the new IP address of the data logger. When the data logger is working under STA mode, you will need to enter the new IP address to get access o the configuration interface.

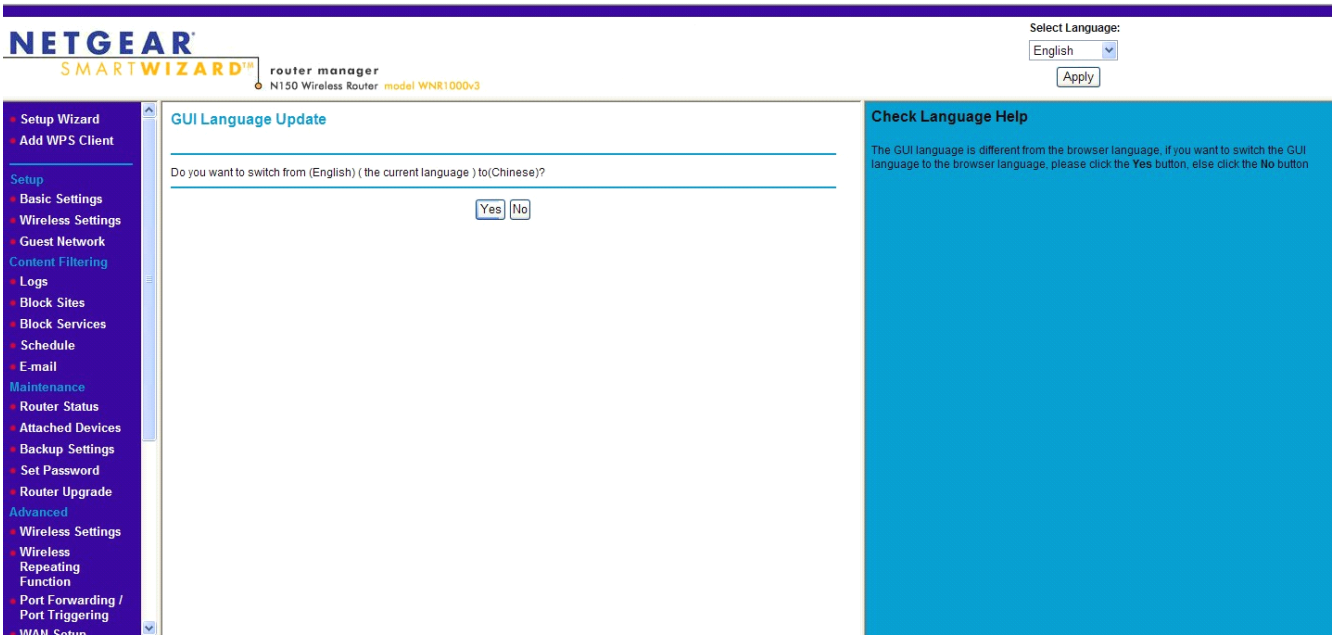
An example of Netgear is shown as follows for reference.

IP address: www.routerlogin.net

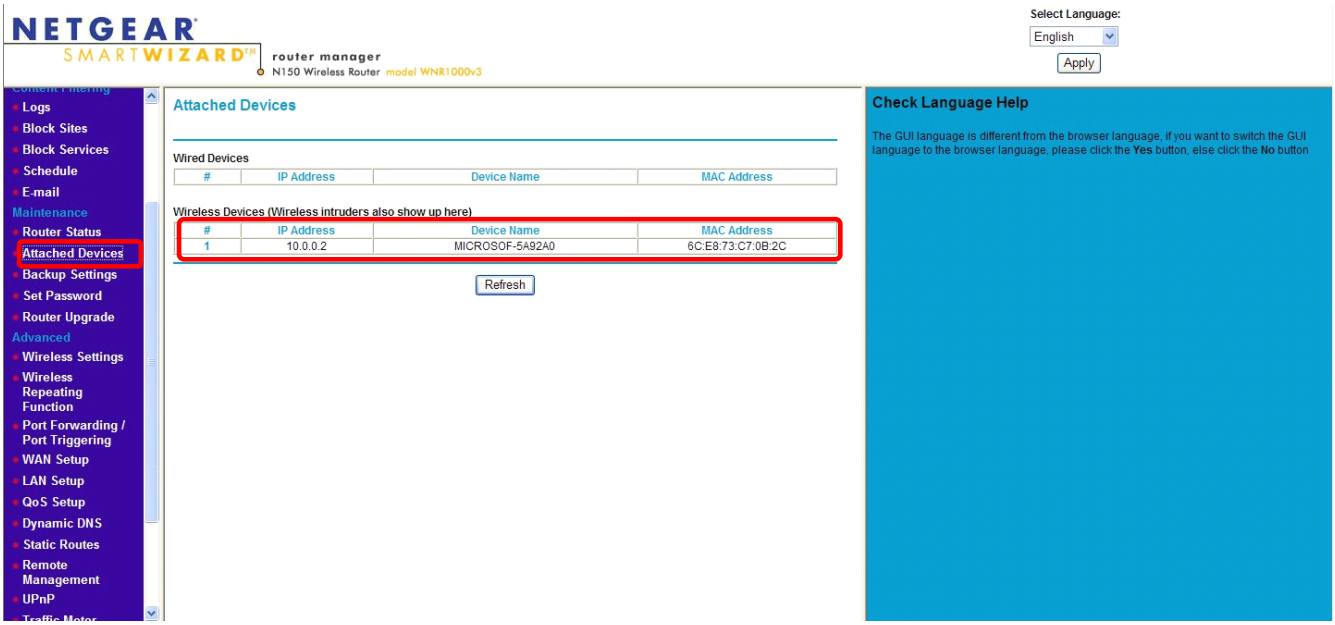
Username: admin

Password: password

1 Log on the router setting interface by entering the above information, then select your current language



2 Click the **Arrived devices** on the SMART Wizard list on the left, then you will get the IP address of the data logger.

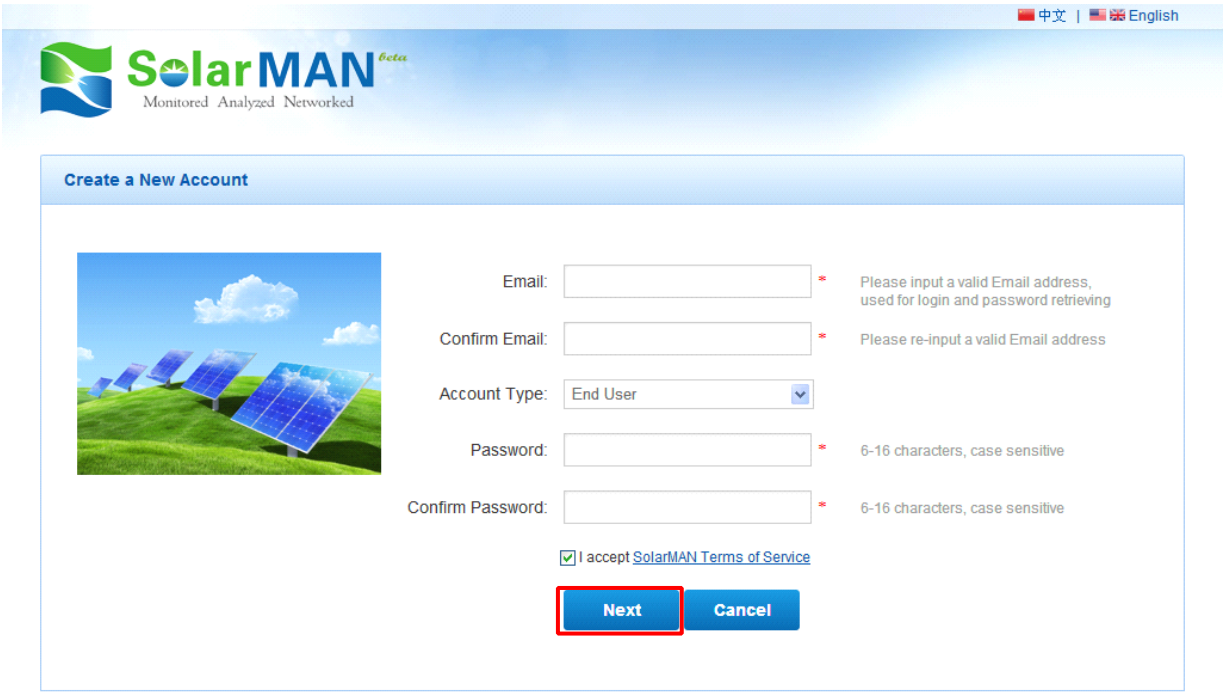


6. Register on SolarMAN Portal

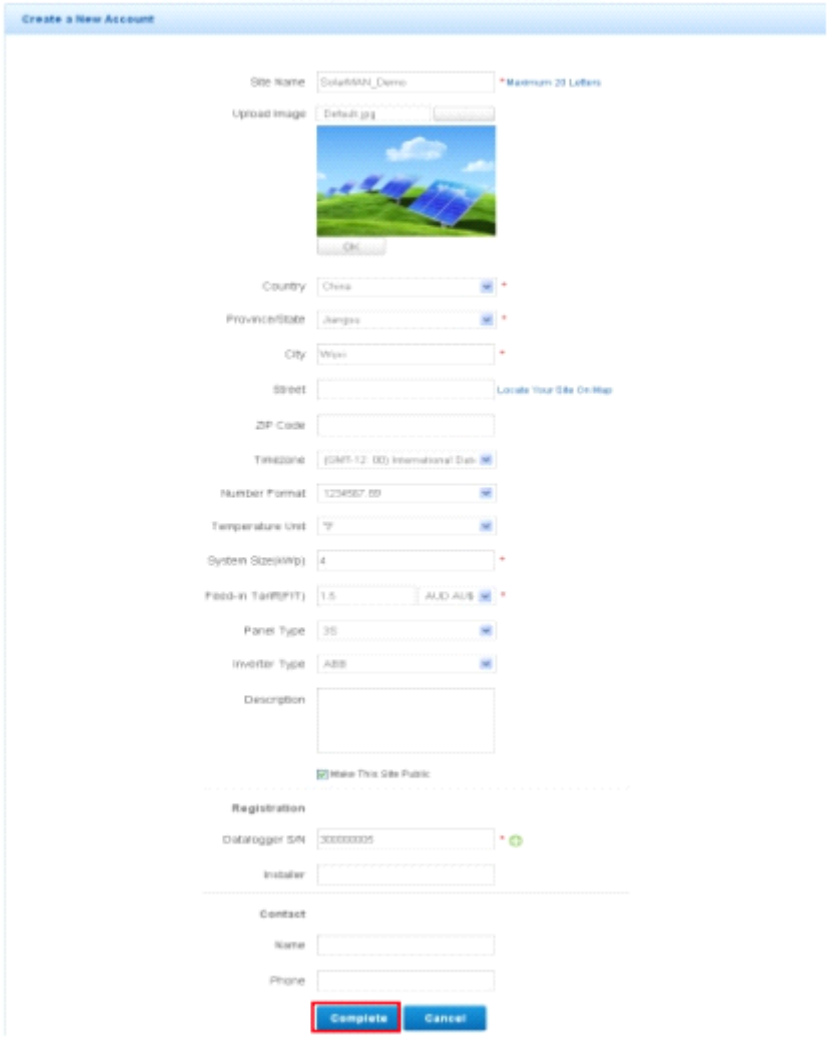
Open a web browser and visit the portal website: http://www.solarmanpv.com/portal

Supported browsers: Internet Explorer 8+, Google Chrome 10+, Firefox 9+, Safari 4+

Click **Register Now**



Fill in your email address and password, then click **Next**



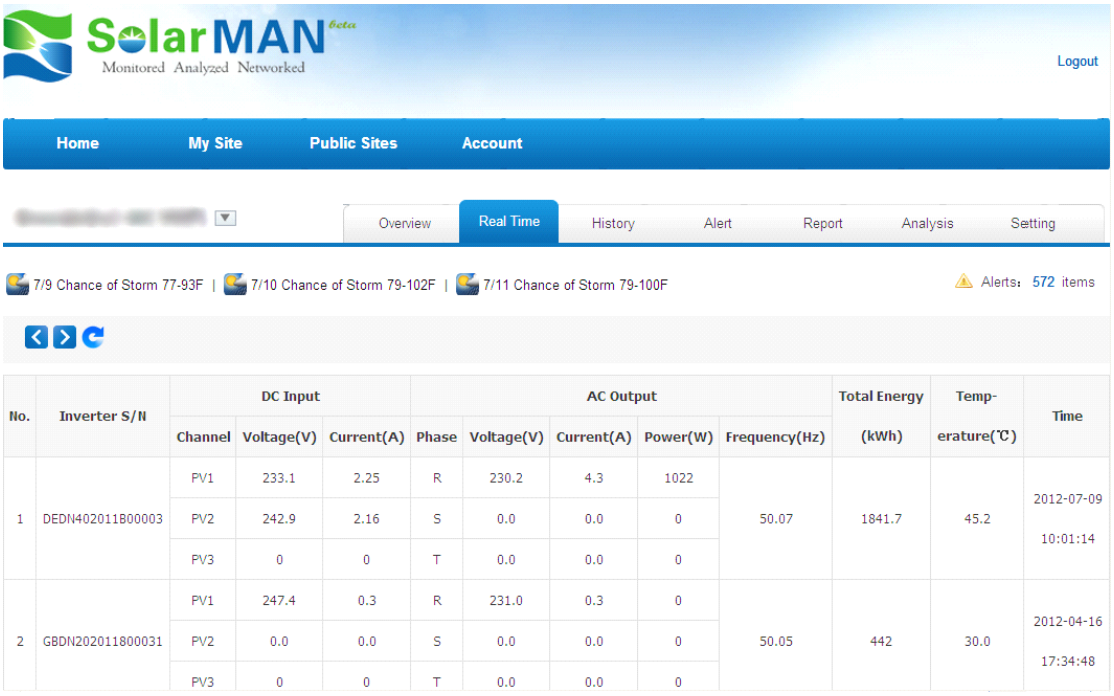
Fill in the information as required, then click **Complete**

If registration is successful, the above page will display. Click **OK** to return to the homepage of the portal.

7. Log in SolarMAN Portal to manage power station

After successful registration, open the login page of SolarMAN Portal, and input your E-mail and password to get access to the monitoring system and start monitoring and management of power plants.

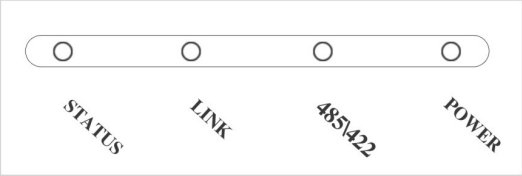
If users access the monitoring system for the first time within ten minutes after successful registration, please check the "Real Time" interface. If there are data shown in the Real Time interface, network setting of data logger and other connection are deemed successful.



No.	Inverter S/N	DC Input			AC Output					Total Energy (kWh)	Temp-erature(℃)	Time
		Channel	Voltage(V)	Current(A)	Phase	Voltage(V)	Current(A)	Power(W)	Frequency(Hz)			
1	DEDN402011B00003	PV1	233.1	2.25	R	230.2	4.3	1022	50.07	1841.7	45.2	2012-07-09 10:01:14
		PV2	242.9	2.16	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				

8. Debug

8.1 LED indication



LEDs	Status	Meaning
POWER	On	Power is normal
	Off	Power is abnormal
485\422	On	Connection between data logger and inverter is normal
	Flashing	Data is transmitting between data logger and inverter
	Off	Connection between data logger and inverter is abnormal
LINK	On	Connection between data logger and server is normal
	Flashing	Data logger is under cable mode or AP mode of wireless mode
	Off	Connection between data logger and server is abnormal
STATUS	On	Data logger works normally
	Off	Data logger works abnormally

8.2 Trouble shootings

Phenomenon	Meaning	Solutions
Power off	No power supply	Connect power supply and ensure good contacts.
RS485/422 off	Connection with inverter is abnormal	Check the connection cable, and ensure that the cable order comply with descriptions of part III in this text, or the line order described in Inverter quick guide .
		Ensure the stability of RJ-45.
		Ensure that inverter is working under normal condition.
LINK flashing	Wireless setting In AP mode	The data logger has not been connected to Internet.Please configure internet connection to the data logger by following Quick Guide.
LINK off	Connection to remote server failed	Check if router can connect to Internet
		Check if the antenna is loose or falls off. If so, please screw to tighten.
		Check if the device is covered by the signal range of the router.
		Please refer to User Manul for further information or have the data logger tested with our diagnosis tool.
Status off	Data logger works abnormally	Reset. If reset failed for several times, please contact customer service.
Weak WiFi		Check the connection of antenna
		Add WiFi repeater
		Connect via Ethernet

Note 1：Please check the status of these 4 LEDS 5 minutes later after the data logger is powered on.

Note 2：When screw or adjust the antenna, please note that only the metal part can be touched, and do not screw the plastic part, otherwise the antenna may be damaged.

Note 3：If the equipment still fails to work upon above solutions, please contact your device customer service.

8.3 Reset

Press the reset button with a needle or open paper clip and hold for a while when the 4 LEDs should be the same as before. Reset is successful when 3 LEDs, except POWER, turn off.

9. Scrap

The scrapped device must be processed as disposal of electronic waste by recycling center.

Attention

The highly toxic substances contained in electronic components of our device may pollute the environment, please do not dispose it at will.

10. Technical parameters

S-WE01S	
Communication	
Max. number of inverters	1-64
Inverter communication	RS485/422/232
Remote communication	WiFi(802.11 b/g/n)/Ethernet
Max. communication range	<1km
Communication rate	1200-19200bps(Adjustable)
WiFi frequency	2.4GHz
WiFi communication range	400m in outdoor open area without obstruction
WiFi transmitting power	802.11b/g/n:+20dBm/+18dBm/15dBm(Max)
Data collection intervals	5minutes(Default)/1-15minutes(Optional)
Memory	SD Card/EEPROM(Optional)
Preferences setting	Web Server/Serial port AT instruction
Firmware updates	Serial port/Wireless
Data access	Serial port/WiFi point-to-point/Remote server
Status display	4 LEDs
Electrical	
Input voltage	DC 5V
Static power consumption	<1.6W
Max. instantaneous power	<2.5W
Environmental	
Operating temperature	-10~+65℃
Operating humidity	10%-90% Relative humidity, no condensation
Storage temperature	-40~+85℃
Storage humidity	<40%

Protection class	IP21
Physical	
Dimension(L*W*H)	110mm*80mm*26mm
Weight	108g
Other	
Installation method	Wall mounted or flatwise
Certificates	FCC,CE

11. Contact

If any technical problems, please contact us, with the following information in hand:

- Device model
- Serial number of data logger
- Number of inverters connected

IGEN Tech Co., Ltd
Address：A1-405, Tian'an iPark, No.228 Linghu Avenue, New District, Wuxi, Jiangsu Province, P.R.China
Tel：0510-8181 6208
Fax：0510-8181 6208
Email：tech@solarmanpv.com

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