User Manual

Wi-Fi/GPRS Wireless Data Collector

Revision History

The revision history provides description on each document upgrade. The latest version of document includes the upgraded content of all previous versions.

Date	Version	Summary of Changes
2017/11/9	V1.00	Initial version
2018/3/15	V1.01	Update FAQ
2018/4/25	V1.02	Wi-Fi Indicators, protocol, reset button
2018/7/3	V1.03	Product description, Indicators, Specifications

This document is intended for the user to quickly understand the product and its operation. Mobile APP and Cloud Platform can carry out an update and optimization as needed, and provide help documents in the appropriate interface. The specific subjects to the actual operation.

1 Product Overview

Wi-Fi/GRPS Wireless Data Collector is divided into built-in and external type. It can be installed in equipment such as UPS, PV inverters and electric vehicle charging piles. Wi-Fi/GPRS module falls into selectable 5 V version and 12 V version based on its different power voltage. It acquires the equipment information via RS232 or RS485, connects the router / GPRS network via Wi-Fi and sends relevant information to the monitoring platform. Users need to download the " **Solar Assistant** " APP, or log in to the Photovoltaic Cloud Platform, register an account to establish a personal power station, and add the collector to the plant to see the status of the equipment anytime, anywhere.

The APP includes both local and remote modes, the local mode is only for the WI-FI collector, and the remote mode includes both. Most of the operations in the APP remote mode can also be done at www.idbkmonitor.com. The APP pays more attention to quickly adding a collector and monitoring device status and modifying data anytime, anywhere. Photovoltaic Cloud Platform pays more attention to monitoring data show, data analysis, historical inquiry.

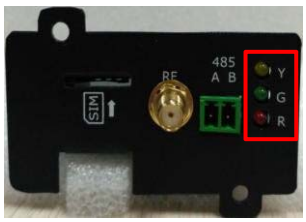
Product Features

- Easy operation, flexible configuration
- Independent watchdog, automatic restoring
- Reset button, one-key restoring

Interface Function

- RS232 or RS485 compatibility
- External RS485 debug interface
- External Reset button (RE)
- Signal indicators
- External antenna

Indicators

Indicators		**Status**	**Explanation**
Note: In the passthrough mode, yellow and red lights flash at the same time.			
	Y (yellow)	Slowly flashes	Irregularly. Being lit indicates sending, extinguishing indicates receiving
		Slowly flashes every 3 seconds	Communication is abnormal
	G (green)	Always illuminated	Power supply is normal
		Not illuminated	Power supply is abnormal
	R (red)	Quickly flashes 3 times per second	GPRS network registry / Wi-Fi module connecting to the router
		Slowly flashes once per second	Being connecting to the server
		Slowly flashes every 3 seconds	Acquisition is abnormal
		Not flashing	It is normal

● Wi-Fi/GPRS module of 12 V version

Indicators		Status	Explanation
	LED (GPRS)	Slowly flashes every 3 seconds	GPRS module is normal
		Not flashing	No boot or abnormal
	LED (Wi-Fi)	Quickly flashes 3 times per second	Being connecting to the router
		Slowly flashes once per second	Being connecting to the server
		Always illuminated	The server connection is normal

● Wi-Fi/GPRS module of 5 V version

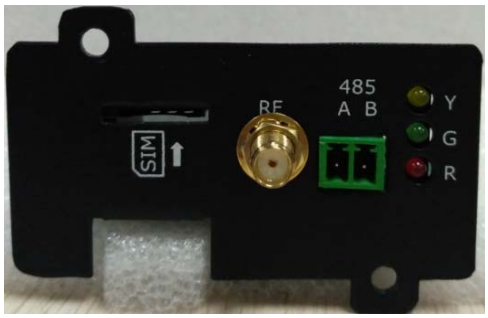
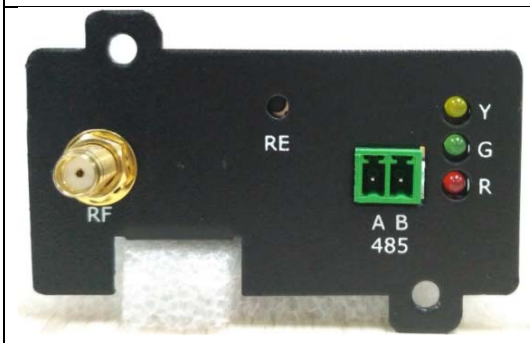
Indicators		Status	Explanation
	Acquisition COM (green light)	Slowly flashes	Irregularly. Being lit indicates sending, extinguishing indicates receiving
		Slowly flashes every 3 seconds	Acquisition is abnormal
	STATE (blue light)	Slowly flashes	GPRS module is normal
		Not flashing	No boot or abnormal
	NET (red light)	Quickly flashes 3 times per second	GPRS is registered on the network
		Slowly flashes once per second	Being connecting to the server
		Slowly flashes every 3 seconds	Network is abnormal
		Not flashing	It is normal
	Acquisition COM (green light)	Slowly flashes	Irregularly. Being lit indicates sending, extinguishing indicates receiving
		Slowly flashes every 3 seconds	Acquisition is abnormal
	STATE (blue light)	Always illuminated	Connect to the router successfully
		Not flashing	No boot or disconnect to the router
	NET (red light)	Quickly flashes 3 times per second	Wi-Fi module connecting to the router
		Slowly flashes once per second	Being connecting to the server
		Slowly flashes every 3 seconds	Network is abnormal
		Not flashing	It is normal
Note: In the passthrough mode, the blue STATE light is not illuminated, the green COM light and the red NET light flash at the same time.			

Specifications

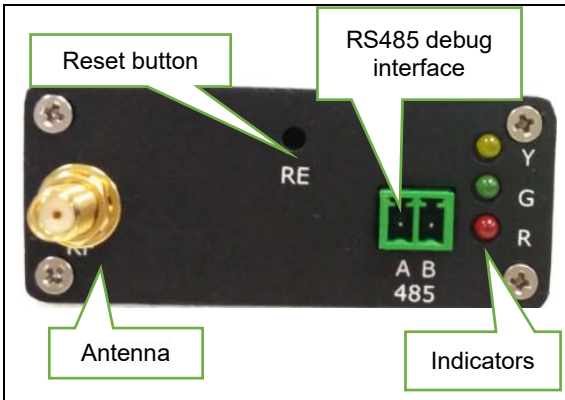
Power voltage	Rated voltage: 12 VDC / 5 VDC	
	Voltage range: 9 ~ 18 VDC / 4.5 ~.5.5 VDC	
Power	< 5 W	
Temperature range	-20℃ ~ 70℃	
Wi-Fi reset button (RE)	Available	
SIM card	Surface mount SIM card / NANO SIM	
Baud	Model	Baud
	Off-grid solar inverter 500 W – 3000 W	2400
	Hybrid solar inverter 3000 W	2400
	Off-grid solar inverter 10 kVA – 120 kVA	2400
	On-grid PV inverter 1 kW – 5 kW	9600
	On-grid PV inverter 30 kW – 50 kW	9600
	On-grid PV inverter 500 kW	9600
	On-grid PV inverter 630 kW – 1250 kW	9600

At a Glance

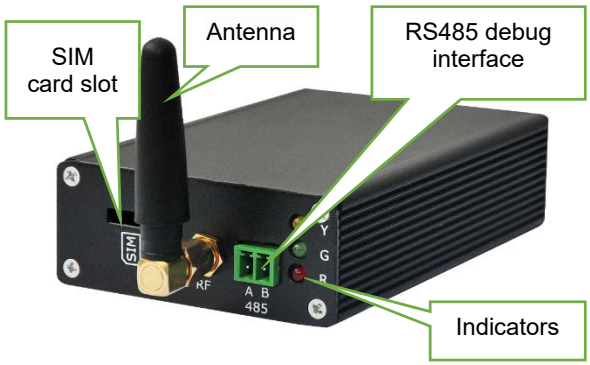
- Built-in modules

	
Built-in GPRS	Built-in GPRS
	
Built-in Wi-Fi	Built-in Wi-Fi

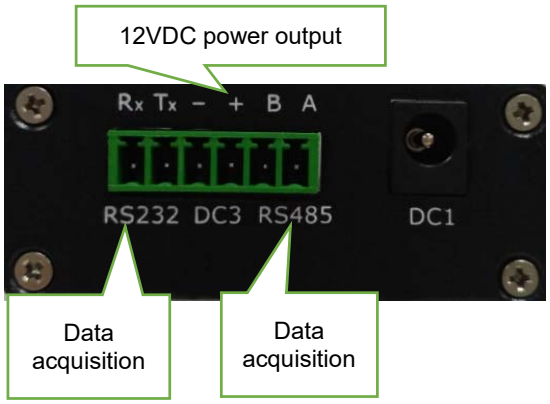
● External modules



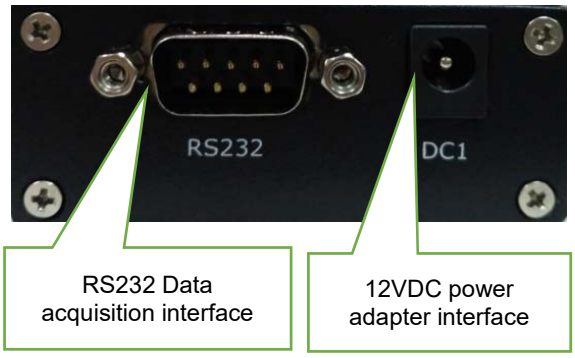
External Wi-Fi



External GPRS

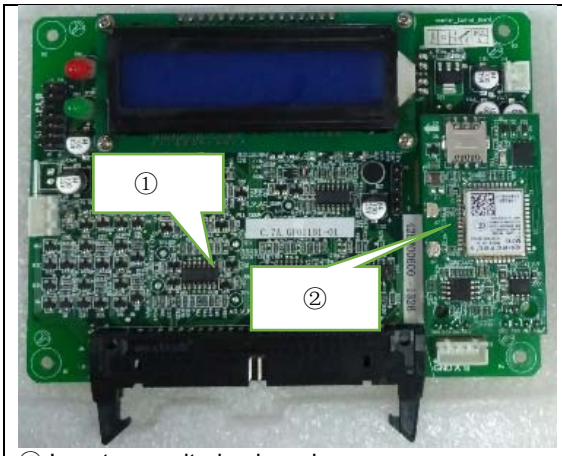


External 6 pin terminal



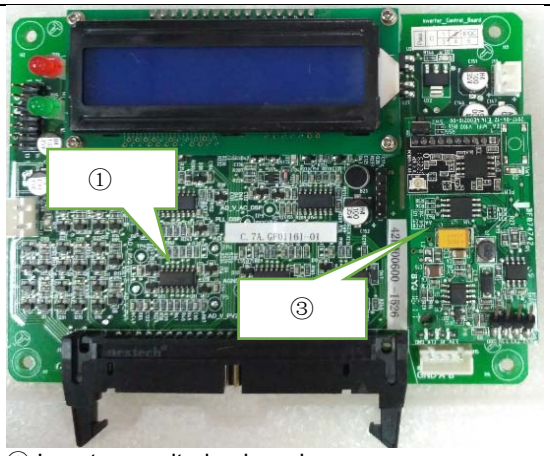
External DB9

● Grid-connected PV string inverters



① Inverter monitoring board
② GPRS communication module

GPRS



① Inverter monitoring board
③ Wi-Fi communication module

Wi-Fi

2 Solar Assistant APP

Download at http://app.idbkmonitor.com/appinfo

Serial Number Management

Each collector has an 8-bit serial number, which is one-to-one correspondence with the serial number on the body shell. It has been set before factory delivery, you can get it from the QR code (or barcode) on the body of inverter. This serial number is required for remote monitoring.

	
Wi-Fi: The serial number is under the QR code, the initial of sequence number is W.	GPRS: The serial number is under the QR code, the initial of sequence number is G.

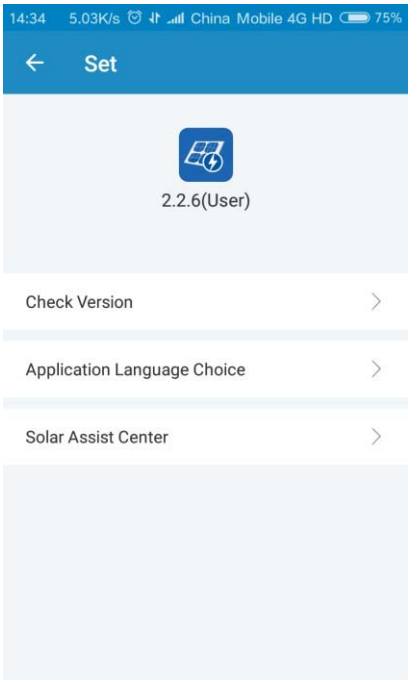
APP Context of Use

	Operation Modes	Data Query	Function	Note
GPRS data collector	Only remote mode available	Solar Assistant APP / monitoring Cloud Platform	View data	
Wi-Fi data collector	Remote acquisition mode	Solar Assistant APP / monitoring Cloud Platform	View data, configure parameters settings	Two modes can be switched.
	Local passthrough mode	Solar Assistant APP	View data, configure parameters settings, control equipment	

2.1 Remote Mode

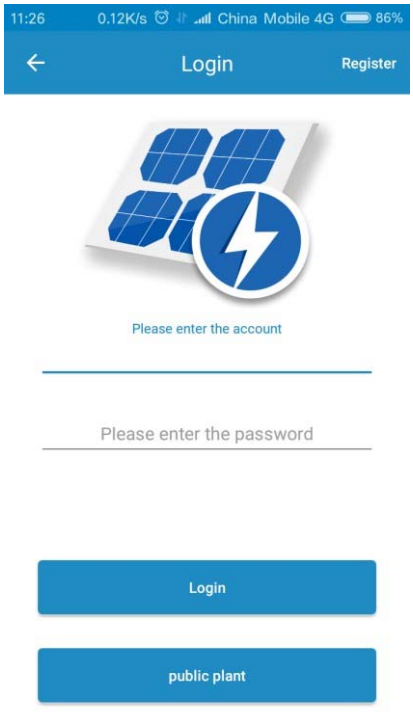
User settings

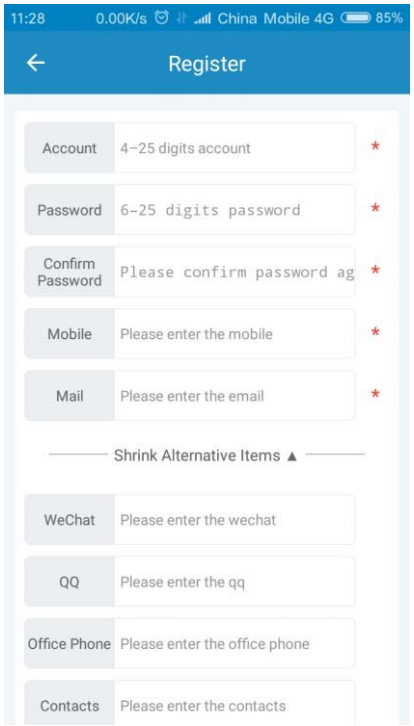
Open the “Solar Assistant APP”, click the SET button in the upper right corner, you can check for updates, set the language, view the help document, as shown below:



User login

Select Remote Mode, first register an account, and then login, as shown below:





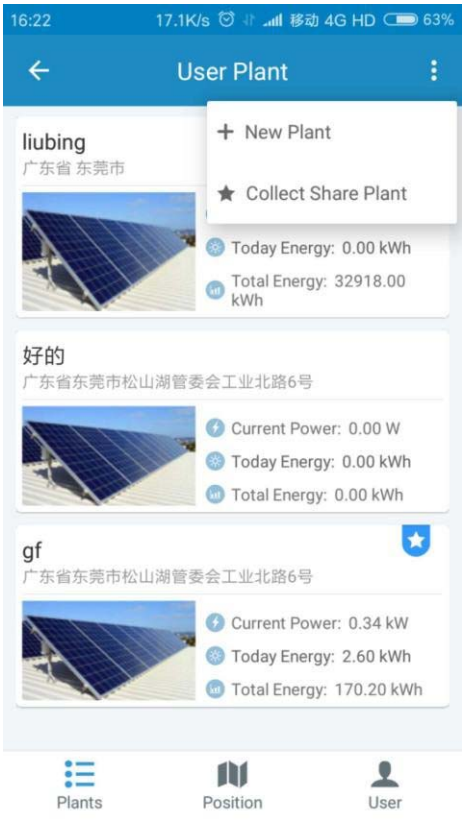
Add new plant & collector

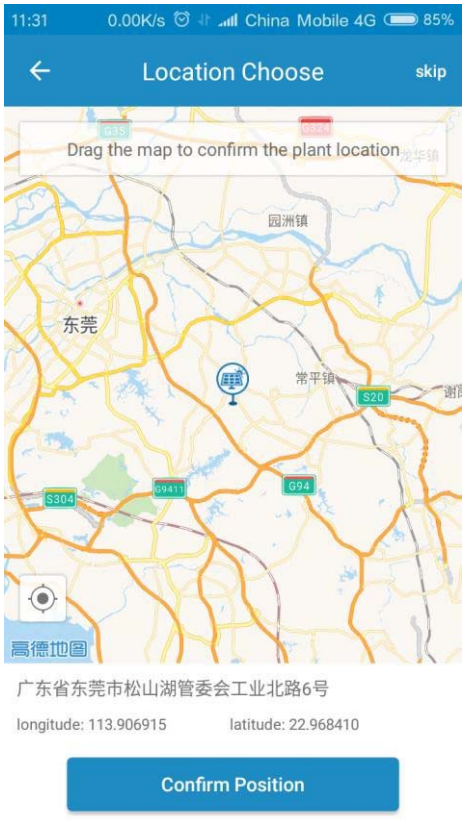
The user fills out relevant information to add the monitored power plant. The information of added power plant can be viewed in the list of power stations after adding is successful.

Note: The added power plant must be bound with at least one effective collector. The serial number can be found on the body of equipment, as shown below,

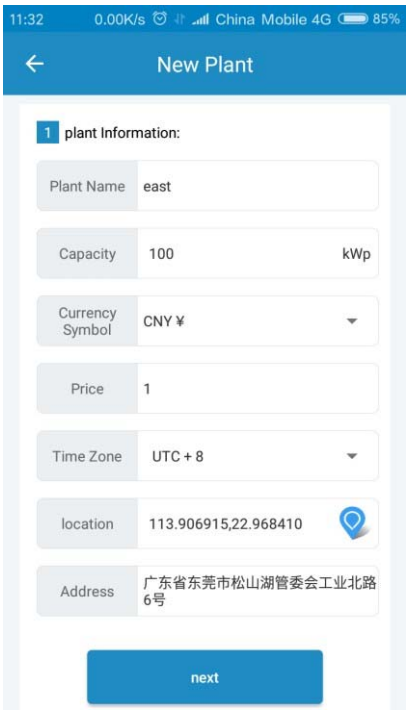
Procedure:

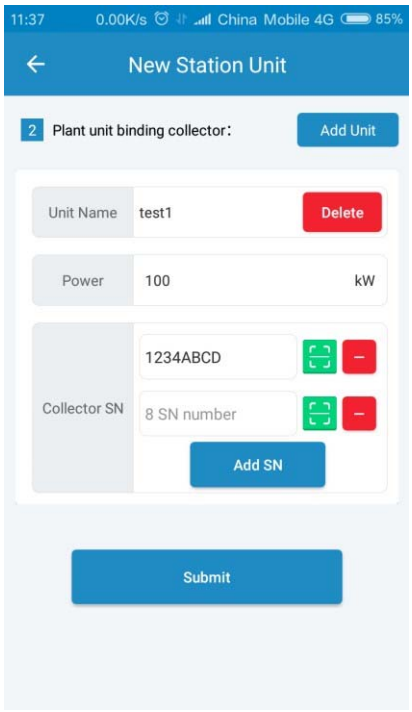
- Positioning correct location of the power plant, as shown below,





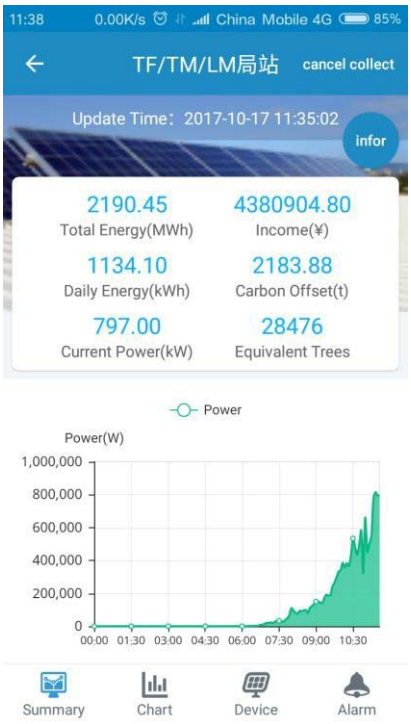
- Fill out relevant information of the power plant, as shown below,
- Add the new plant unit, and scan the QR code on the collector via icon or manually enter the 8-bit serial number to add the collector.





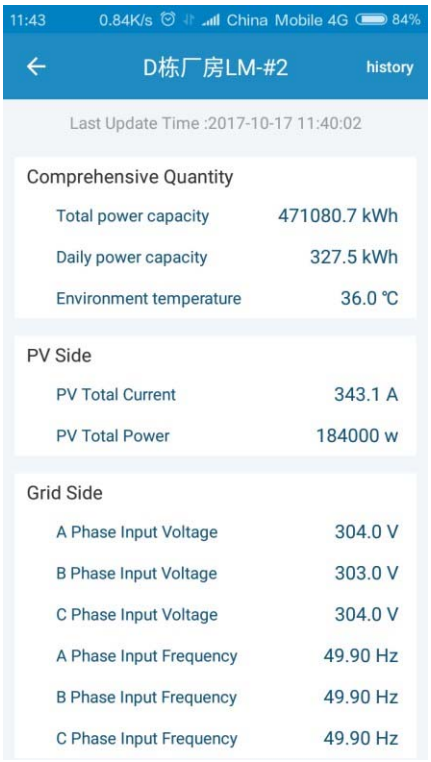
Monitor plants

Select the monitored plant in the list of power stations to monitor the operation of the plant and devices in the plant, as shown below.



Overview of the power plant

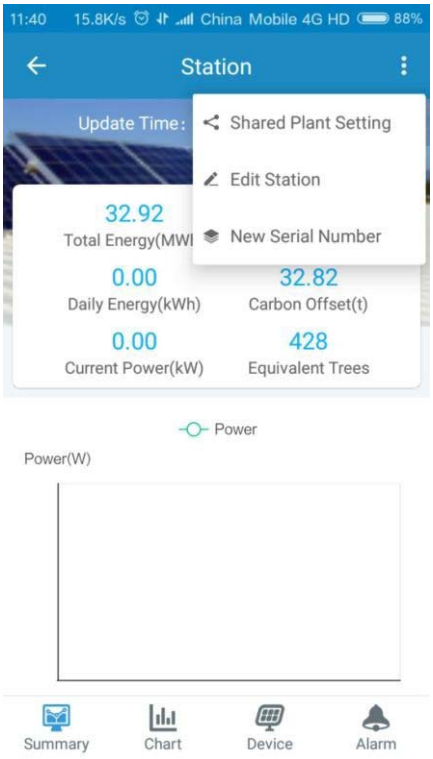
Device list



Latest status of the device

Power station settings

Enter the power station interface, click the button in the upper right corner. As shown in the picture, you can share the power station, edit the power station, Add the collector to the station.



2.2 Local Mode

Note:

- The form of the collector Wi-Fi module hotspot is AP + 8-bit serial number, and the password is 00000000 by default. Hold and press Reset button SW2 (stator RE position) for 12 seconds, the initial password of Wi-Fi will be restored, and release the hotspot for local connection
- For the Wi-Fi collector, to achieve remote monitoring, it is necessary to connect the router, which is the acquisition mode
- In a routerless environment, set the Wi-Fi collector to local passthrough mode
- Wi-Fi collector does not allow multiple mobile devices to connect at the same time

Function 1: Wi-Fi connection

Note: If the Wi-Fi collector is not connected to the router, the mobile phone should be connected to the Wi-Fi hotspot. If the collector has been connected to the router, you need the phone is also connected to the same router, and then open the phone APP for device connection. APP operation procedure:

1. Turn on the Wi-Fi on the phone, and then find Wi-Fi module hotspot (AP + 8-bit serial number) and connect it (The Wi-Fi module password is 00000000 by default), as shown in Figure 1.

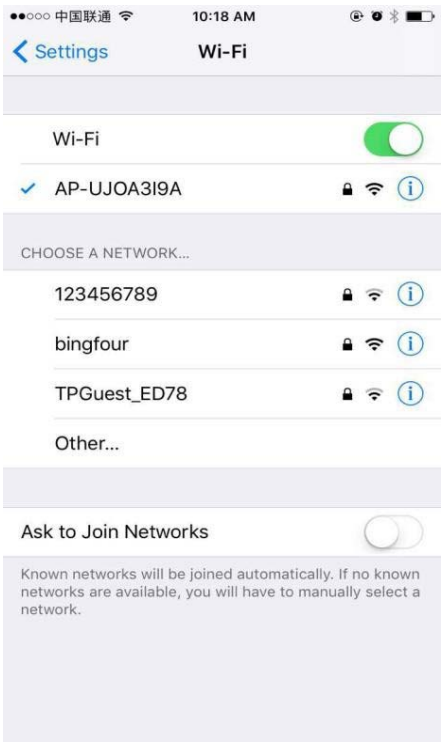
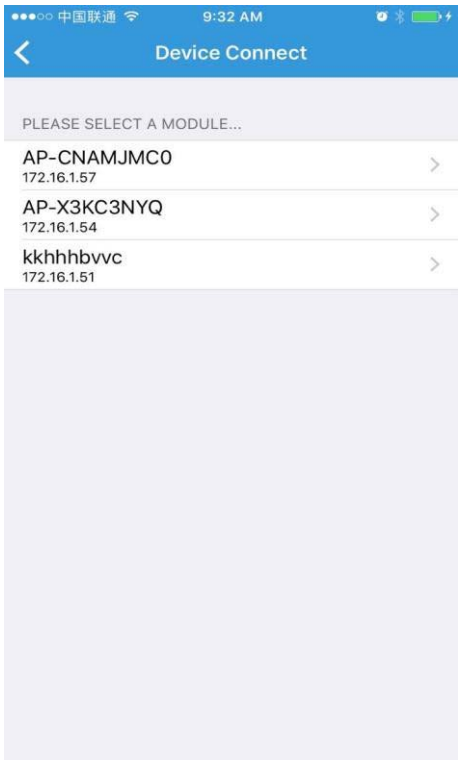


Figure 1

Figure 2

2. Open Solar Assistant APP, select Local Mode, and then select Device Connect, as shown in Figure 2. Select the required Wi-Fi hotspot in the module list, as shown in Figure 3.



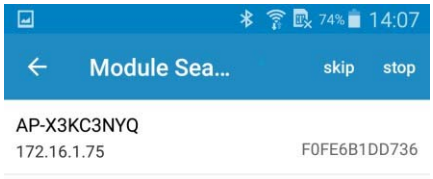


Figure 3 iOS

Figure 3 android

3. Confirm the information and click on the Connect button, as shown in Figure 4. Wait for APP connection and recognition, as shown in Figure 5.

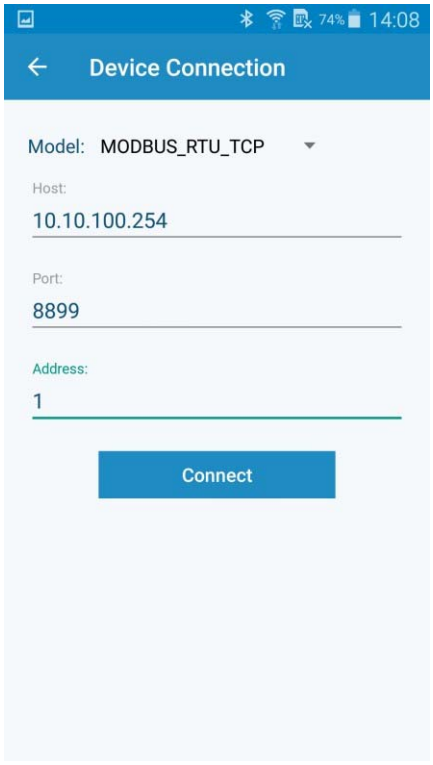


Figure 4 iOS

Figure 4 android

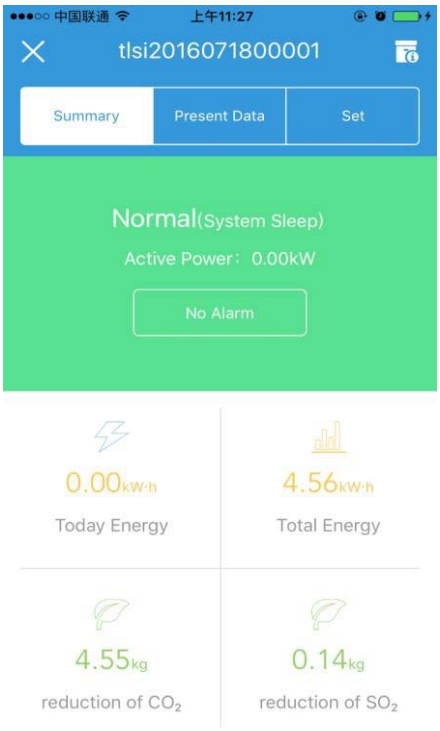


Figure 5

Function 2: Module settings

Procedure:

1. Turn on Wi-Fi on the phone, and then find Wi-Fi module hotspot (AP + 8-bit serial number) and connect it (The Wi-Fi module password is 00000000 by default), as shown in Figure 6.

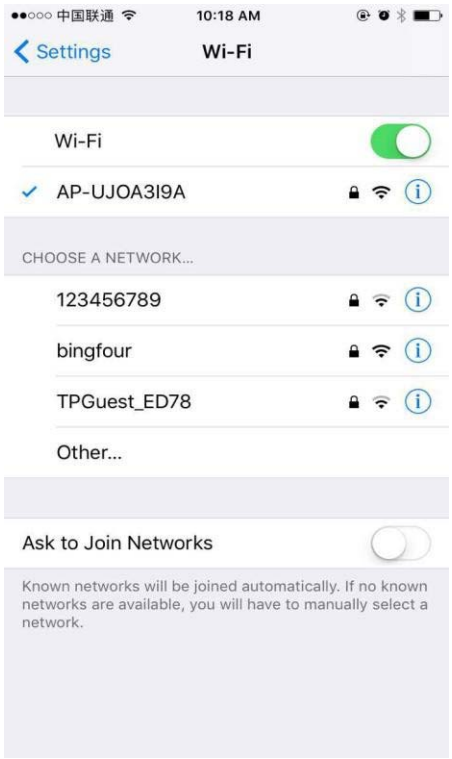


Figure 6

2. Open Solar Assistant APP, select Local Mode, and then select Module Setting, as shown in Figure 7. Select the required Wi-Fi hotspot in the module list, as shown in Figure 8.

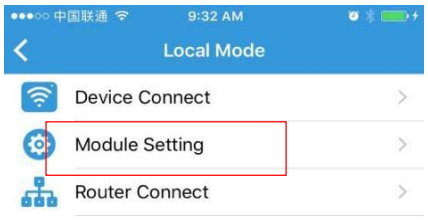


Figure 7

Figure 8

3. Click setting item and perform settings according to the prompt, as shown in Figure 10.

Figure 9

Figure 10

4. Module restart. Click on the Restart in the upper right to restart the module, as shown in Figure 11.

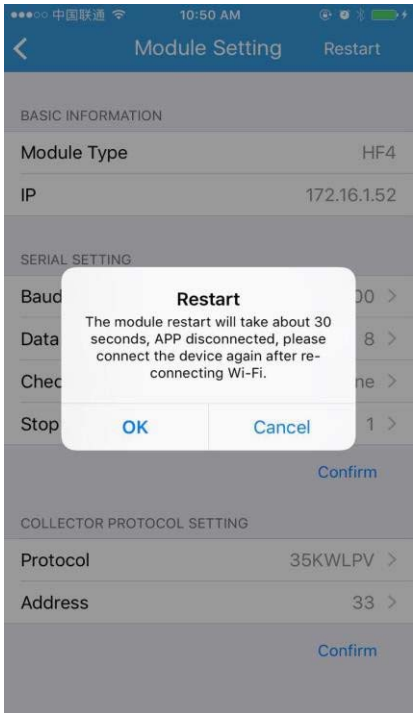


Figure 11

Additional information:

Wi-Fi module operation mode is switched to acquisition mode.

APP operation: In above procedure 3, select the protocol of acquisition protocol settings, as shown in Figure 12.

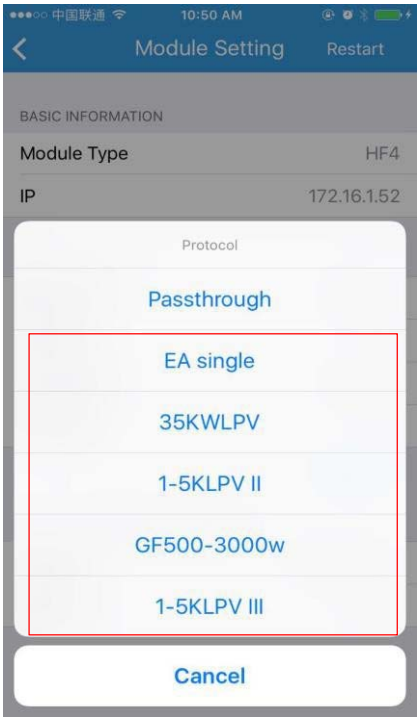


Figure 12

1. Switch to acquisition mode: Select the corresponding model option, set address (address: device communication address)
2. Click OK to modify it after the setting is completed, click module restart after the setting is completed successfully.

Wi-Fi module operation mode is switched to local passthrough mode.

APP operation: In above procedure 3, select the protocol of collector protocol settings, as shown in Figure 13.

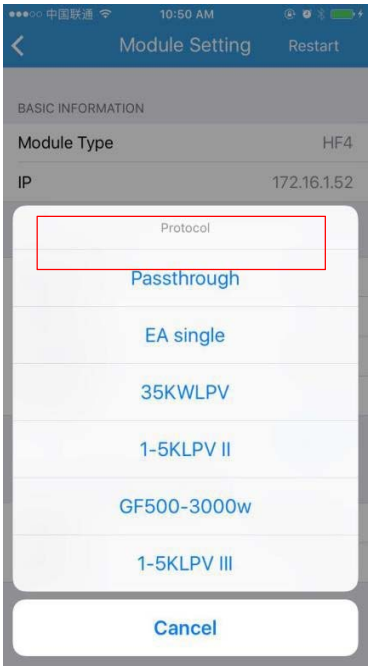


Figure 13

1. Switch to local mode: Select Passthrough option.
2. Click OK to modify it after the setting is completed, click module restart after the setting is completed successfully.

Function 3: Connect the router

Procedure:

1. Turn on Wi-Fi on the phone, and find Wi-Fi module hotspot (AP + 8-bit serial number) and connect it (The Wi-Fi module password is 00000000 by default), as shown in Figure 14.

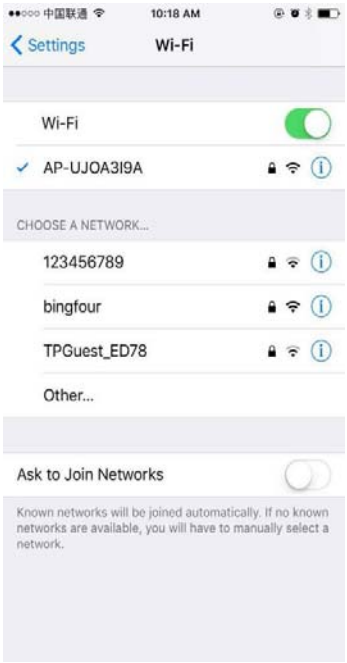


Figure 14

2. Open Solar Assistant APP, select Local Mode, and then select Router Connect, as shown in Figure 15. Enter Router Connect setting interface, as shown in Figure 16.

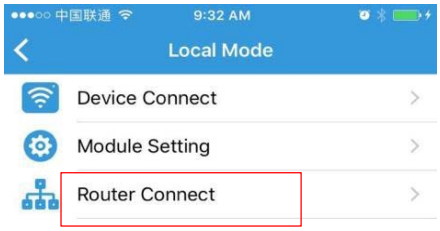


Figure 15

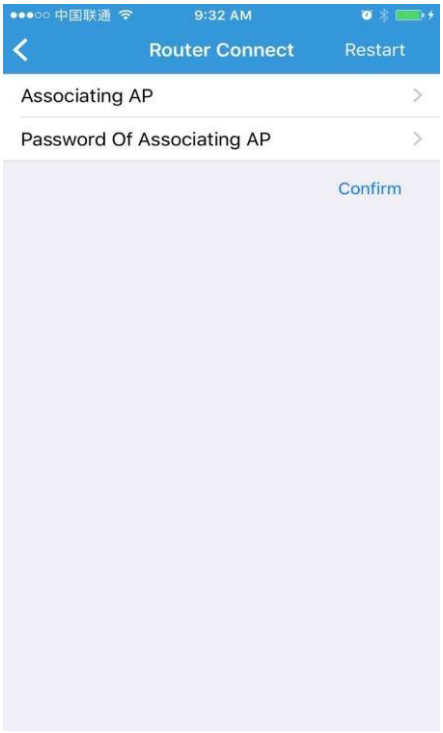


Figure 16

3. Click SSID associating AP to search for the SSID of the router requiring Wi-Fi module connection, as shown in Figure 17, and click to select it. When it fails to be searched, click the refresh icon to search again.

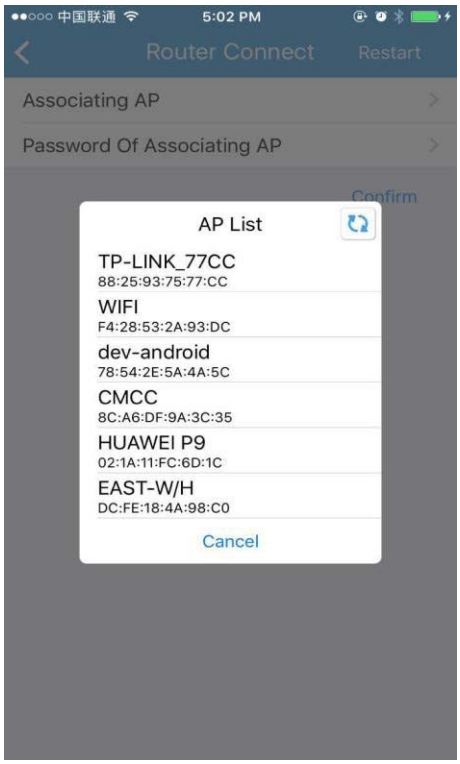


Figure 17

4. Click the Password to set the Wi-Fi password connecting to the router (you can skip to the next step if no password is set for the router), as shown in Figure 18, click OK when setting is completed.

Figure 18

5. Confirm the modifications. After the SSID and password settings are completed, click OK to confirm the parameter modification settings, as shown in Figure 19.

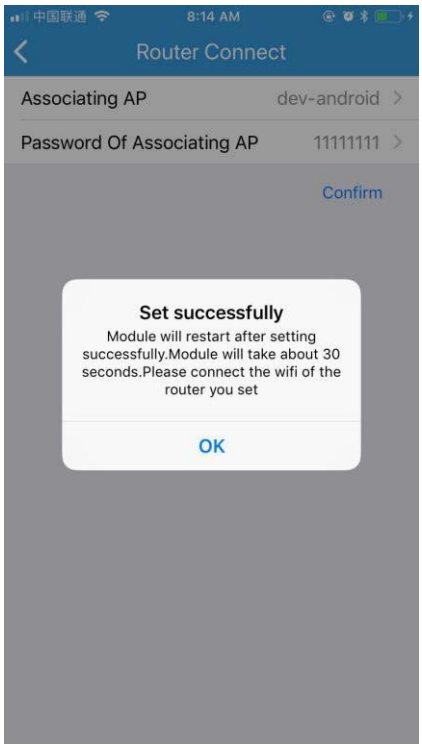


Figure 19

6. After the setting is successful, the module restarts automatically. After the module restarts, it takes about 30 seconds to prepare. When the Wi-Fi collector connected to the router, there are two ways to view the device data.

   One is to add the collector to the plant and view the data via remote mode.

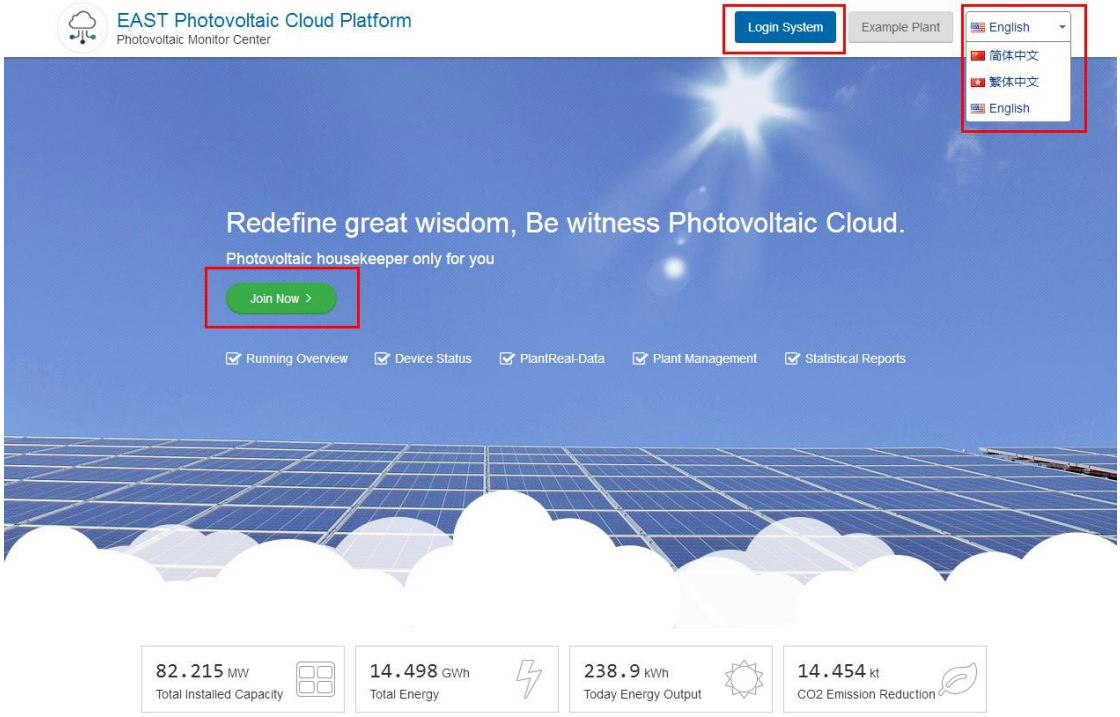
   Second, the phone is also connected to the same router, open the APP, select the local mode, you can connect Wi-Fi collector.

3 Photovoltaic Cloud Platform

The function of Photovoltaic Cloud web is more comprehensive compared with mobile APP.

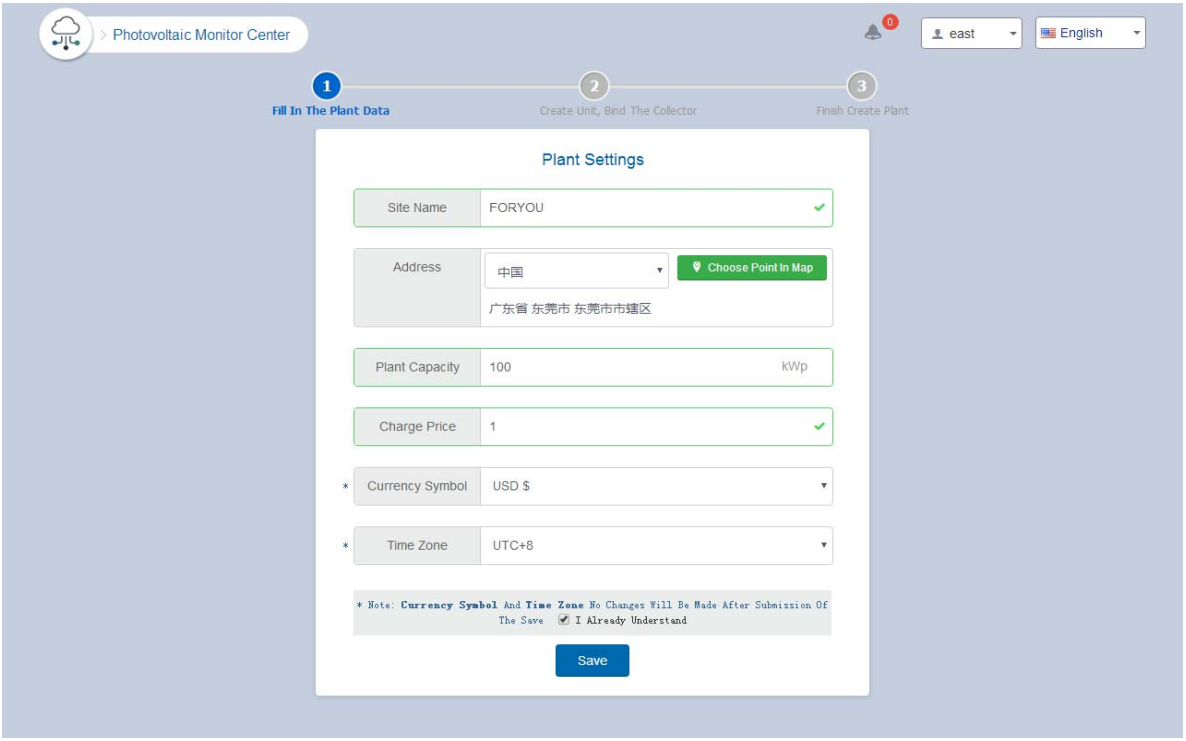
3.1 Add new plant & collector

- Login to the user monitoring interface (www.idbkmonitor.com). Unregistered users need to click on Join Now to be a registered user for free.



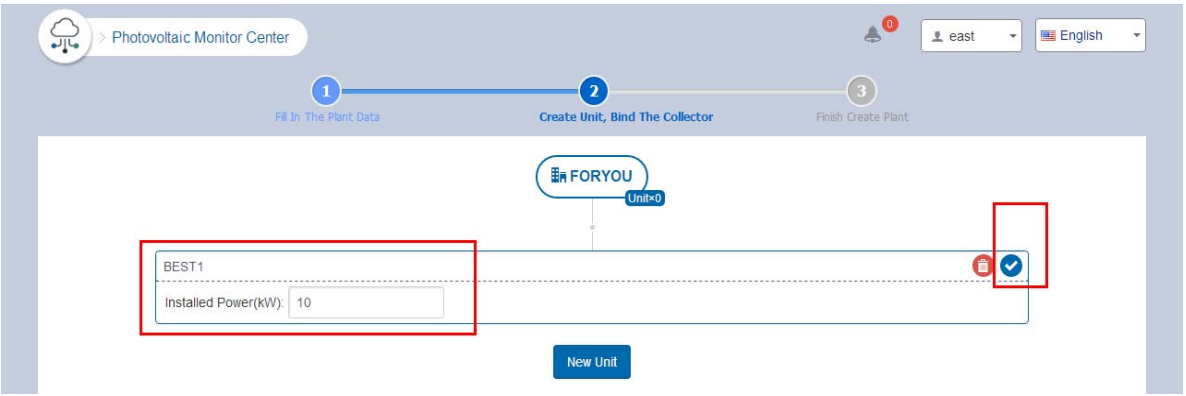
- Enter the Plant List interface. If it is the first time for the user to log in, the user can create a new plant here by clicking on New Plant.

- Fill out some basic information of the power plant in the New Plant interface.



- Click on New Unit button to create a plant unit. Fill out information and click the icon on the right.

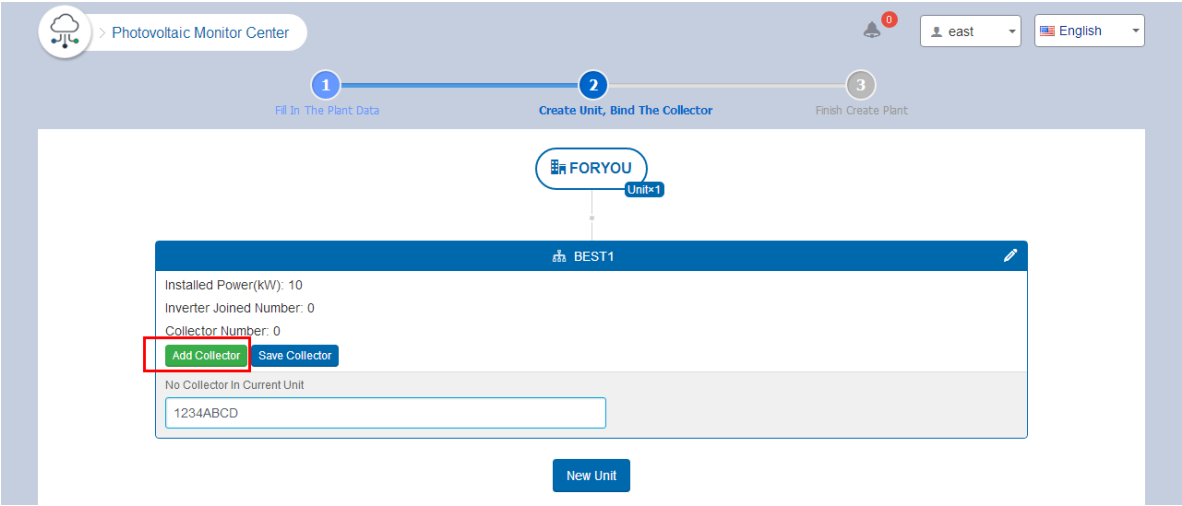
  The plant unit is a sub-module in the plant. One plant requires one plant unit at least, more plant units can be created as well.



- Click on Add Collector button, enter the serial number of the collector, and then click on Save Collector button.

  The serial number of the collector is a string of 8-bit characters, which is composed of numbers and capitals and printed on the connector.

  One plant unit relates to one data collector at least, more data collectors can be related as well.

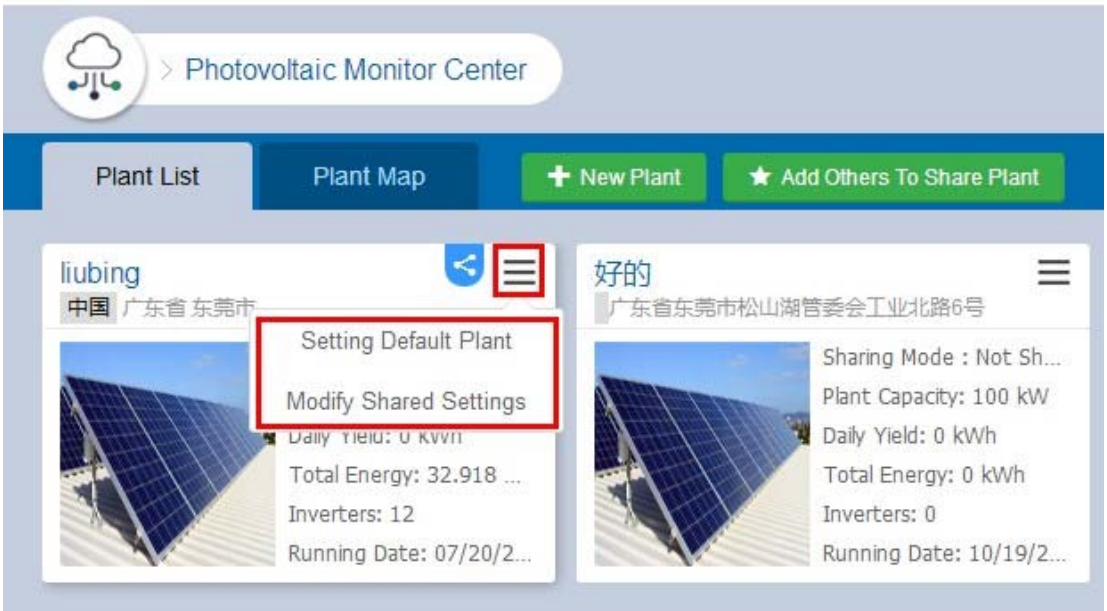


- Follow the prompts given.

3.2 Share Plants

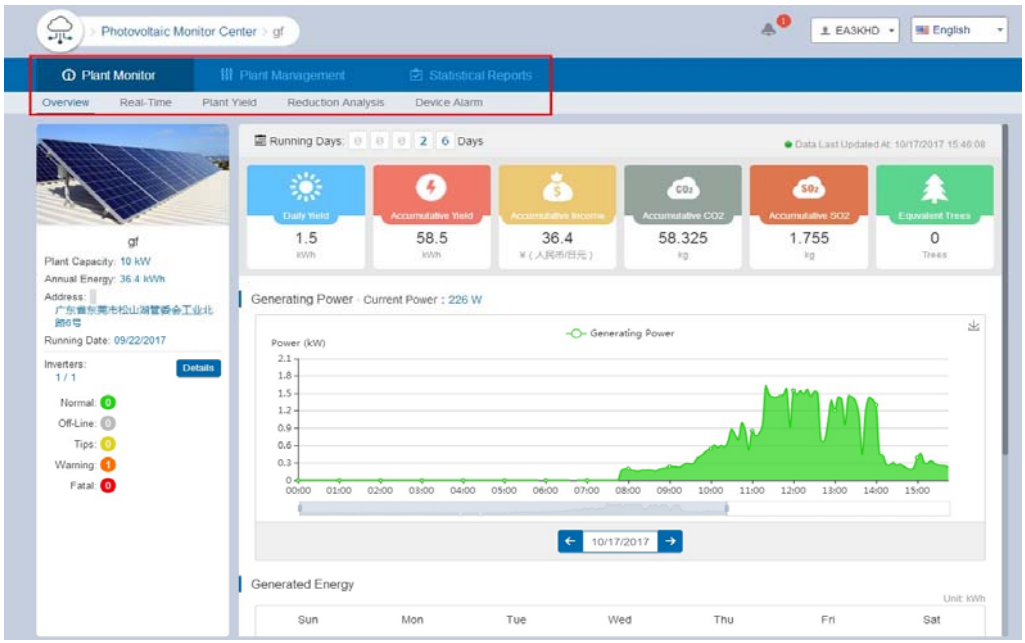
Plant-sharing is to share your account's power plant with other users, allowing others to view your plant data, but other users are not allowed to do any operations on it.

Click icon ☰ in the upper right corner of a power plant in the plant list and Setting Default plant & Modify Shared Settings are listed, then the user can set sharing or modify the plant-sharing settings.

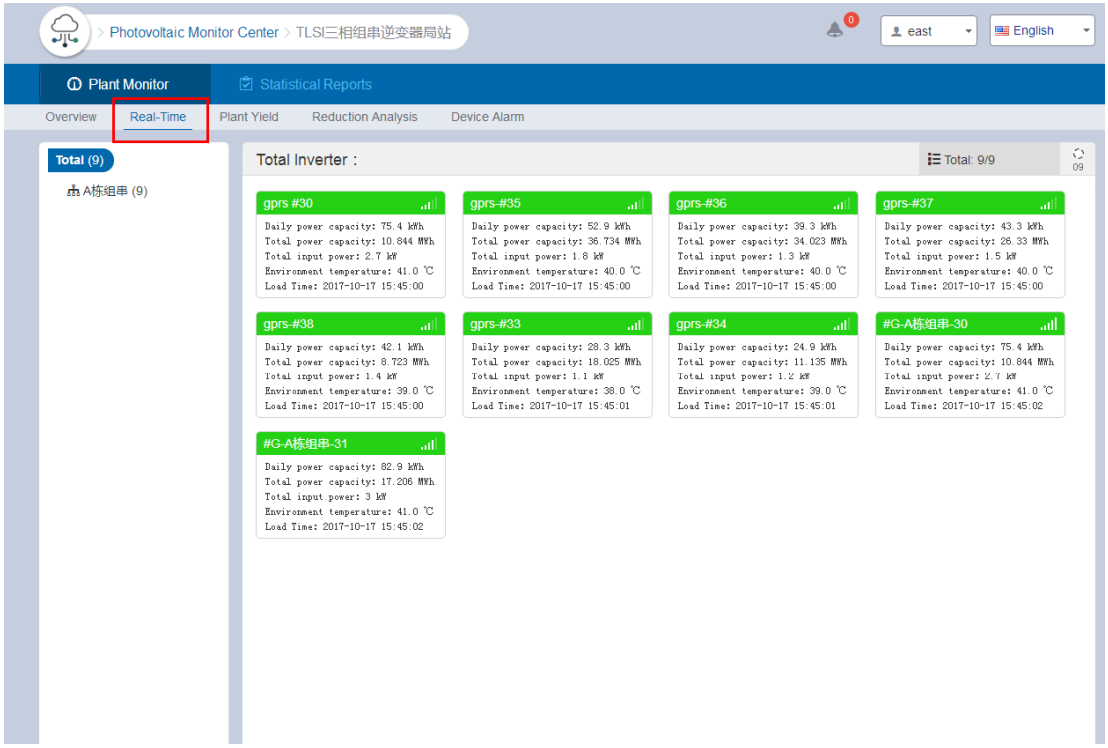


3.3 Monitor Plants

- Select a power plant to do operations: monitoring, management, Statistical statement.



- Monitor devices in real time.

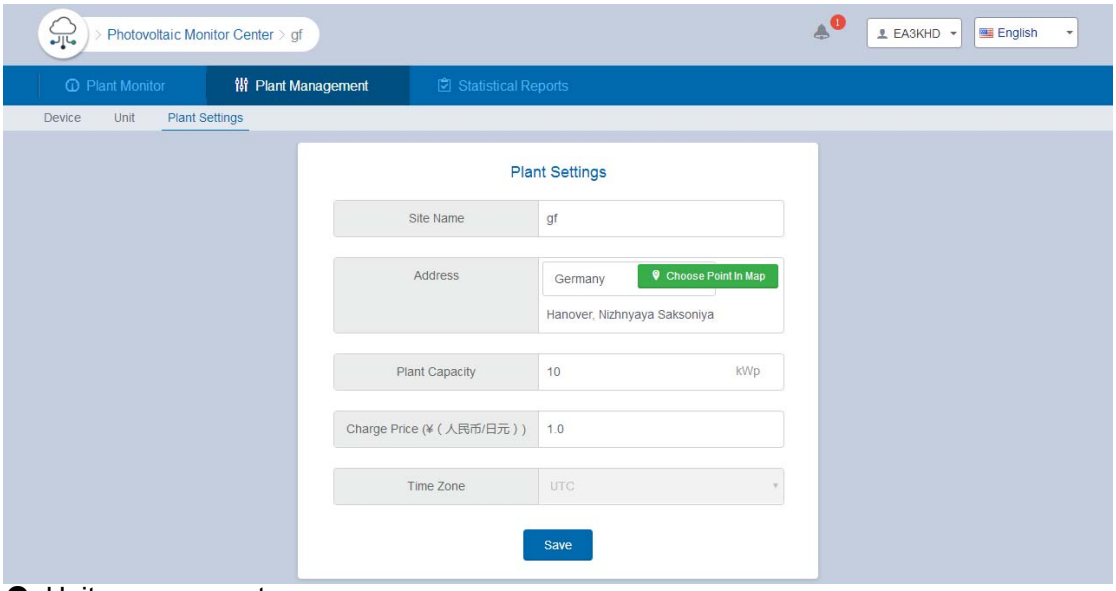


3.4 Manage Plants

Management operations of plant information, plant units and collectors can be implemented via

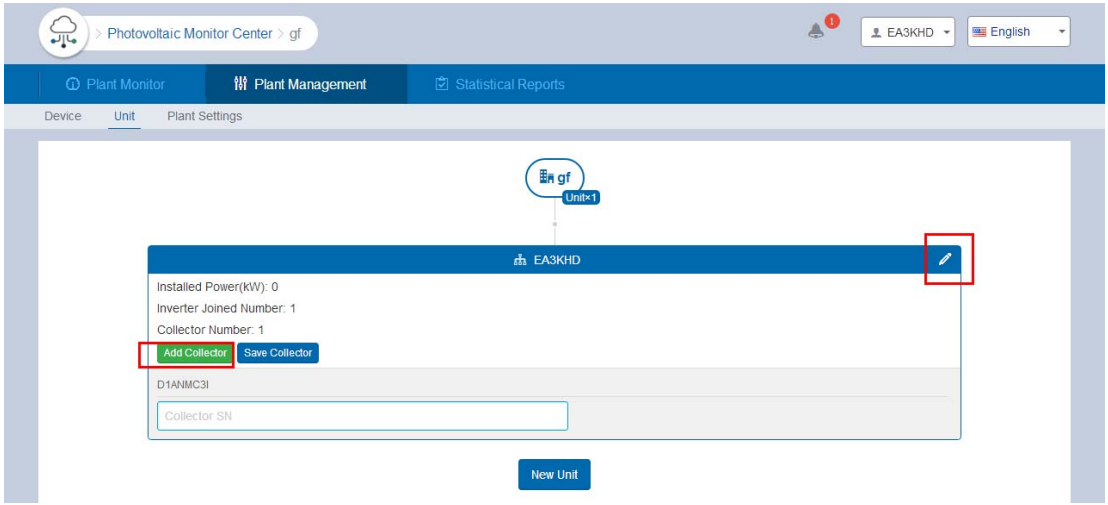
Plant Management function menu.

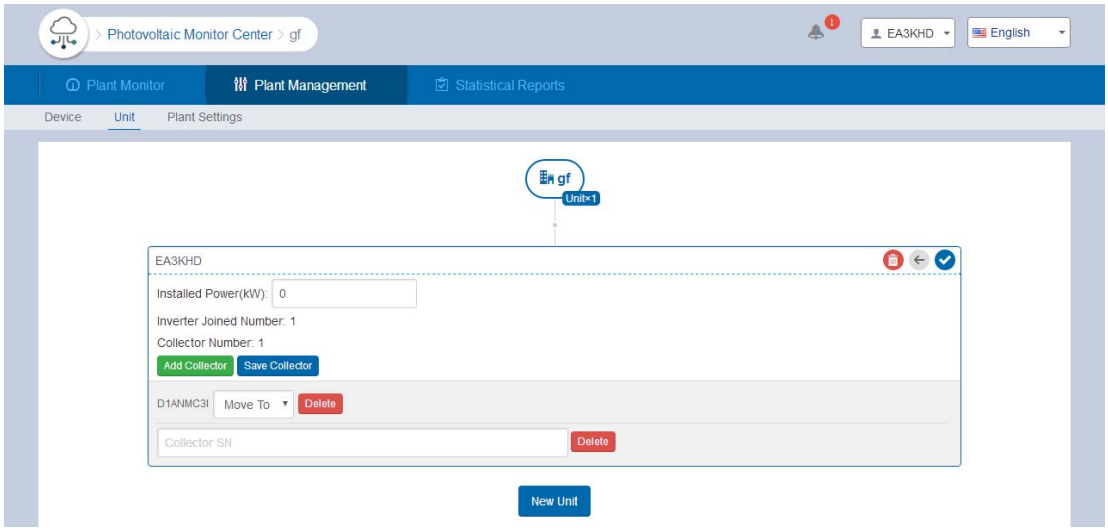
- Plant settings



- Unit management

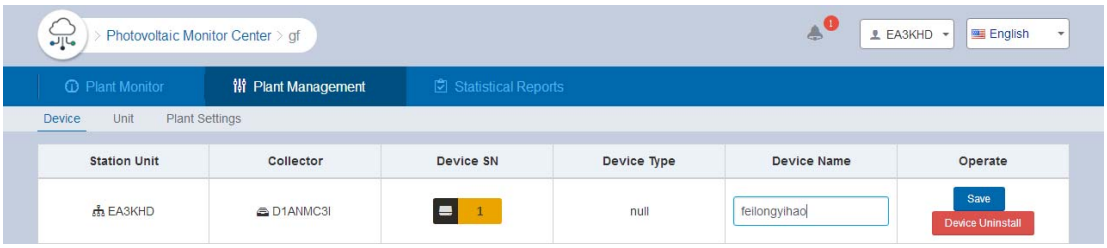
Click the icon  in the upper right corner to do operations of adding, deleting and moving units and collectors.





- Device management

  Users can modify the name of device and unload it.

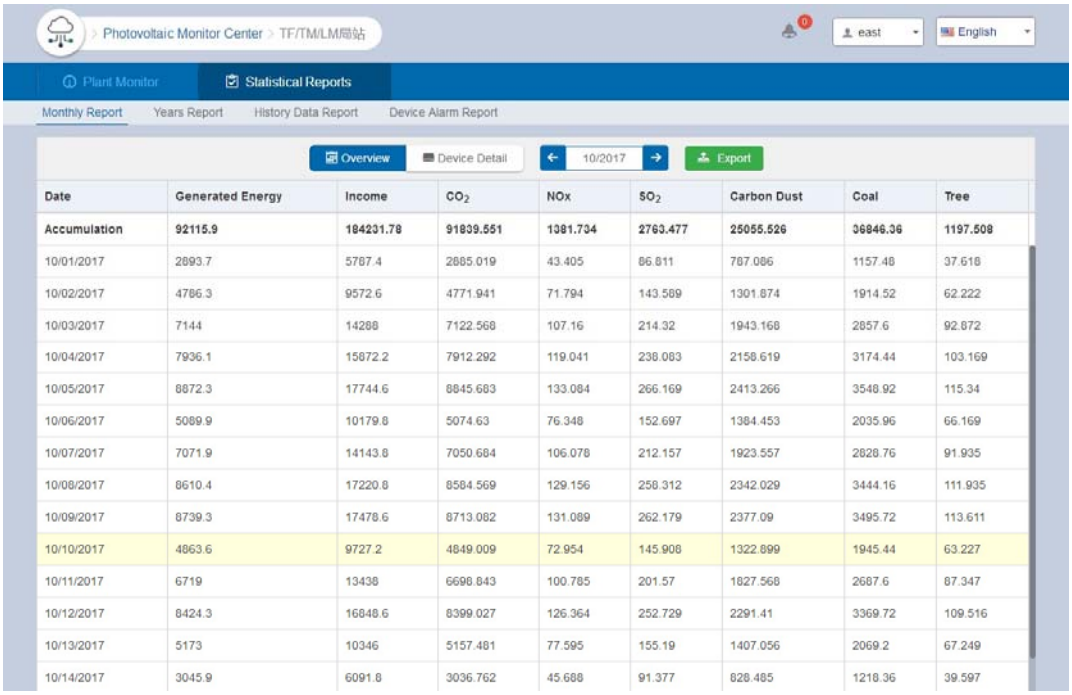


3.5 Report

It contains monthly power generation report, yearly power generation report, equipment operation data report and equipment failure report.

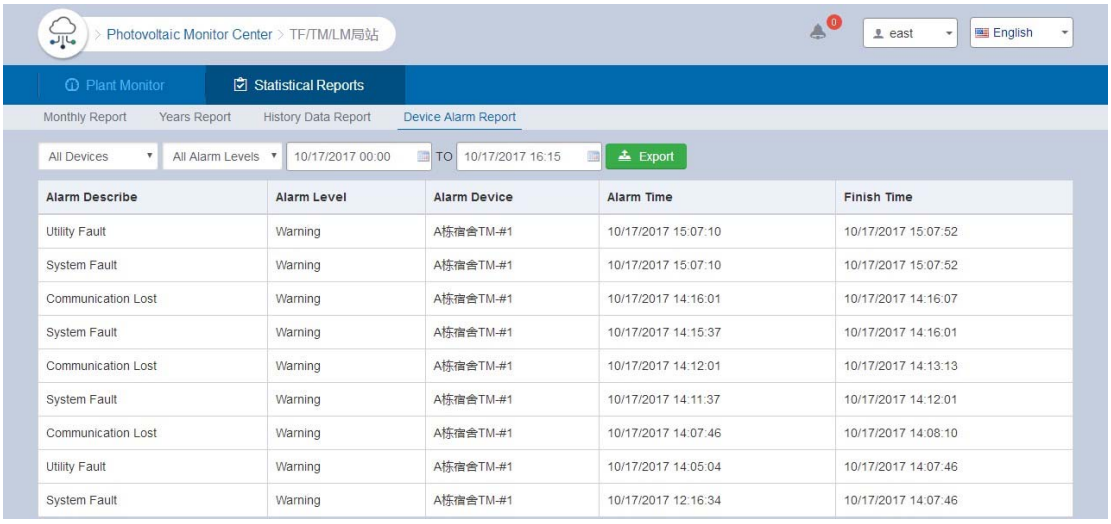
- Monthly power generation report

  The overview displays the pant information data and power generation of each equipment on a certain period, and data can be exported.



Date	Generated Energy	Income	CO_2	NOx	SO_2	Carbon Dust	Coal	Tree
Accumulation	92115.9	184231.78	91839.551	1381.734	2763.477	25055.526	36846.36	1197.508
10/01/2017	2893.7	5787.4	2885.019	43.405	86.811	787.086	1157.48	37.618
10/02/2017	4786.3	9572.6	4771.941	71.794	143.589	1301.874	1914.52	62.222
10/03/2017	7144	14288	7122.568	107.16	214.32	1943.168	2857.6	92.872
10/04/2017	7936.1	15872.2	7912.292	119.041	238.083	2158.619	3174.44	103.169
10/05/2017	8872.3	17744.6	8845.683	133.084	266.169	2413.266	3548.92	115.34
10/06/2017	5089.9	10179.8	5074.63	76.348	152.697	1384.453	2035.96	66.169
10/07/2017	7071.9	14143.8	7050.684	106.078	212.157	1923.557	2828.76	91.935
10/08/2017	8610.4	17220.8	8584.569	129.156	258.312	2342.029	3444.16	111.935
10/09/2017	8739.3	17478.6	8713.082	131.089	262.179	2377.09	3495.72	113.611
10/10/2017	4863.6	9727.2	4849.009	72.954	145.908	1322.899	1945.44	63.227
10/11/2017	6719	13438	6698.843	100.785	201.57	1827.568	2687.6	87.347
10/12/2017	8424.3	16848.6	8399.027	126.364	252.729	2291.41	3369.72	109.516
10/13/2017	5173	10346	5157.481	77.595	155.19	1407.056	2069.2	67.249
10/14/2017	3045.9	6091.8	3036.762	45.688	91.377	828.485	1218.36	39.597

- Equipment failure report



Alarm Describe	Alarm Level	Alarm Device	Alarm Time	Finish Time
Utility Fault	Warning	A栋宿舍TM-#1	10/17/2017 15:07:10	10/17/2017 15:07:52
System Fault	Warning	A栋宿舍TM-#1	10/17/2017 15:07:10	10/17/2017 15:07:52
Communication Lost	Warning	A栋宿舍TM-#1	10/17/2017 14:16:01	10/17/2017 14:16:07
System Fault	Warning	A栋宿舍TM-#1	10/17/2017 14:15:37	10/17/2017 14:16:01
Communication Lost	Warning	A栋宿舍TM-#1	10/17/2017 14:12:01	10/17/2017 14:13:13
System Fault	Warning	A栋宿舍TM-#1	10/17/2017 14:11:37	10/17/2017 14:12:01
Communication Lost	Warning	A栋宿舍TM-#1	10/17/2017 14:07:46	10/17/2017 14:08:10
Utility Fault	Warning	A栋宿舍TM-#1	10/17/2017 14:05:04	10/17/2017 14:07:46
System Fault	Warning	A栋宿舍TM-#1	10/17/2017 12:16:34	10/17/2017 14:07:46

4 FAQ

● Fail to add the serial number

A: The serial number has been added to the power station. If it needs to be moved or deleted, go to the unit management operation of the power station management.

● Forgot Wi-Fi password

A: Hold and press Reset button SW2 (RE) for 12 seconds, the initial password of Wi-Fi (00000000) will be restored, then you can reconfigure it via APP. Password can be modified only in Local passthrough mode.

● Wi-Fi has been connected to the router, how to view the local data

A: Connect the mobile phone to the router, open the Solar Assistant APP, select the local mode, and then click the Wi-Fi connection. The communication address must be the same as the inverter. The default is 1. Or hold and press Reset button SW2 (RE) for 12 seconds, delete the connected router information.

● Wi-Fi has been configured to connect to the router, but fail to find the corresponding collector on the Wi-Fi connection list

A: If the Wi-Fi signal appears on the WLAN list of the mobile phone for a long time, please check if correct acquisition protocol and baud rate are selected for the Wi-Fi; if the phone has been connected to the router, but fail to refresh the Wi-Fi signal for a long time, please check the wireless channel of the router, connect 2.4G channel, 2.4G can’t be combined with 5G.

● The reason why the Wi-Fi collector can’t be connected to the router

A: There are too many wireless devices connected to the router, the Wi-Fi collector is in passthrough mode.

● The red and yellow indicator lights of the Wi-Fi collector flash at the same time in passthrough mode.

A: This is normal.

● The user manual may differ from the actual situation

A: The user manual is for reference only. APP and Cloud Platform will be updated and optimized as needed. Specific operation shall be subject to the latest help document.