User Manual

Micro Inverter SMART GW
Configuration Instruction

This guide describes how to use the micro-inverter and the SMART GW.
In order to prevent improper operation before use, please read this manual carefully.

Contents

1. System and Component Introduction

1.1 System function description

Local grid authorities in some countries limit the amount of electricity injected onto the transmission grid to avoid power surges, power problems, or power quality reduction.

To full fill the requirement of grid export power control, an export limit management solution for micro inverter systems is proposed, allowing users to install micro inverter photovoltaic systems without violating the requirements of the zero network regulations.

For this solution, a smart meter and a SMART GW is required.The SMART GW and microinverters in the system need to work on the same LAN.The smart meter is used to measure the electricity consumption or the export power. The SMART GW is the interface to adjust the generating power of the micro inverter system to ensure that the output power does not exceed the preset limit. In this case, the SMART GW will collect the meter data, and users will be able to view their power consumption on the cloud monitoring platform. After the *Export Limit* function is enabled, the micro inverter will reduce power based on the meter feedback.

An schematic of export limit control system is shown in Figure 1, there is a micro inverter, a CHINT smart meter DDSU666, and the smart gateway model (SMART GW).

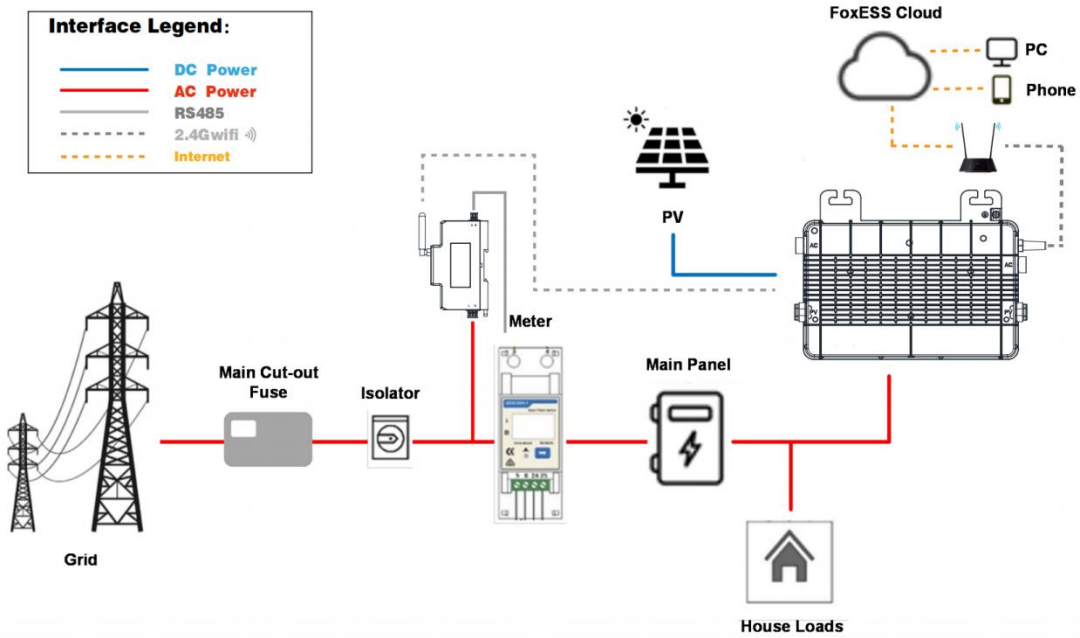
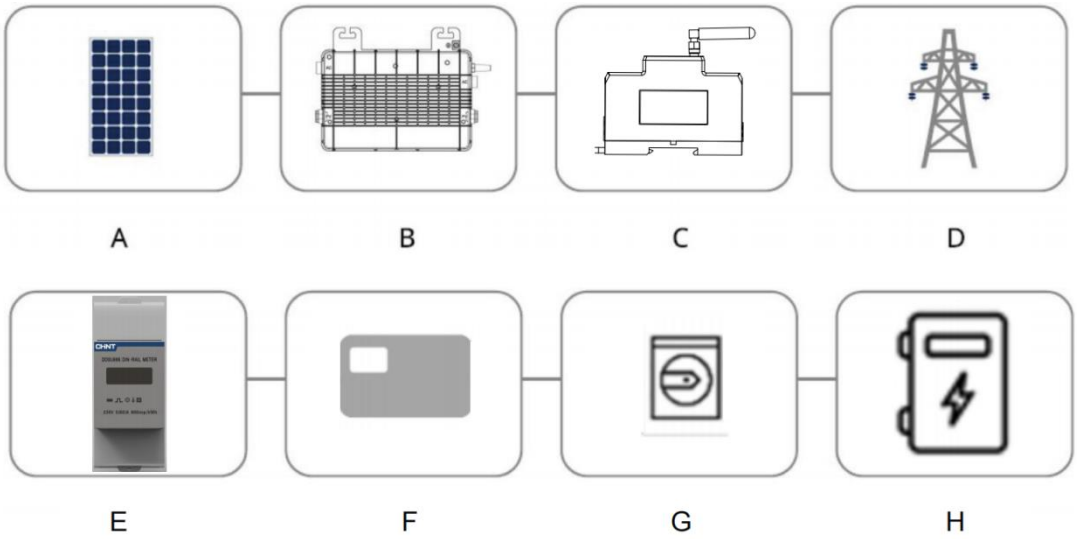


Figure 1 The system diagram with SMART GW control for micro inverter.

※Note：The SMART GW and microinverters in the system need to work on the same LAN.

1.2 System definition



Item	Description
A	PV Module
B	Photovoltaic Inverter(1)
C	Smart GW (1)
D	Power Grid
E	Power Meter
F	Main Cut-out Fuse
G	Isolator
H	Main Panel

※Note(1): In this system, the photovoltaic inverter and SMART GW are developed and produced independently by our company. Others are not within the range provided by our company.

1.3 SMART GW introduction

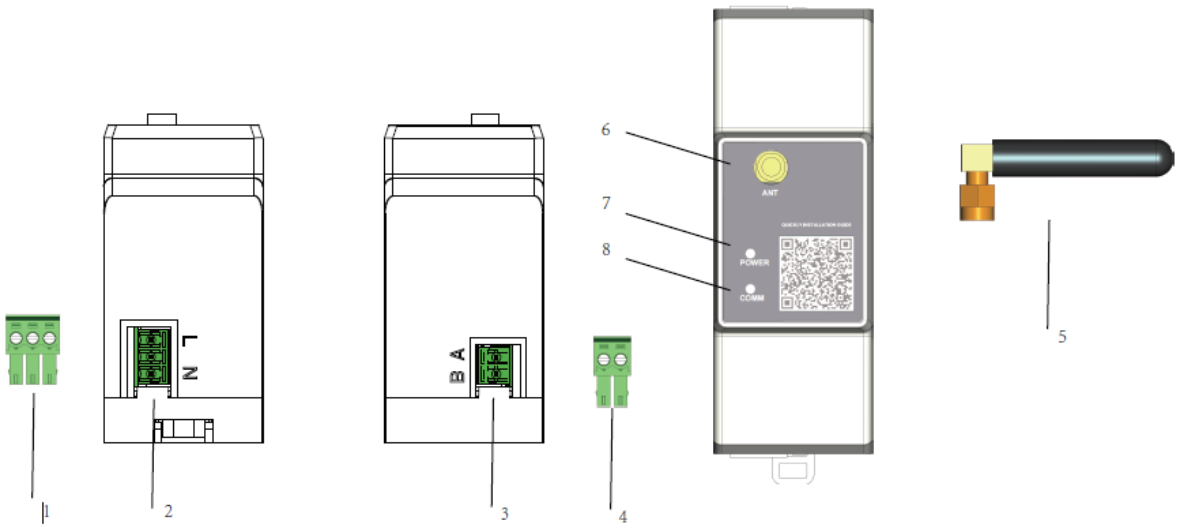
1.3.1 Electric specification

SMART GW is designed to obtain real-time data from electricity meters and upload it to the cloud monitoring platform. SMART GW requires AC power supply and a RS485 channel to communicate with smart meters. Main technical parameters of SMART GW are shown in Table 1.

Item Name	Specification
Operation Voltage Range	160 ~ 277Vac
Power Consumption	≤2W

Table 1 SMART GW technical specification

1.3.2 Connector



Item	Description
1	3Pin Connector
2	Grid Power Line Connector
3	RS485 Connector
4	2Pin Connector
5	Antenna
6	Antenna Port
7	Power Status Light
8	Communication Status Light

1.3.3 Status Light

Item	Condition	Status
Power Status Light	Disconnected	Off
	Powered	Green Light On
Communication Status Light	No Connection to Server	Blue Light Fast Flashing（100ms）
	Connected to Router & Accessed to IP	Blue Light Flashing（400ms）
	Connected to Server	Blue Light Slow Flashing（1s）

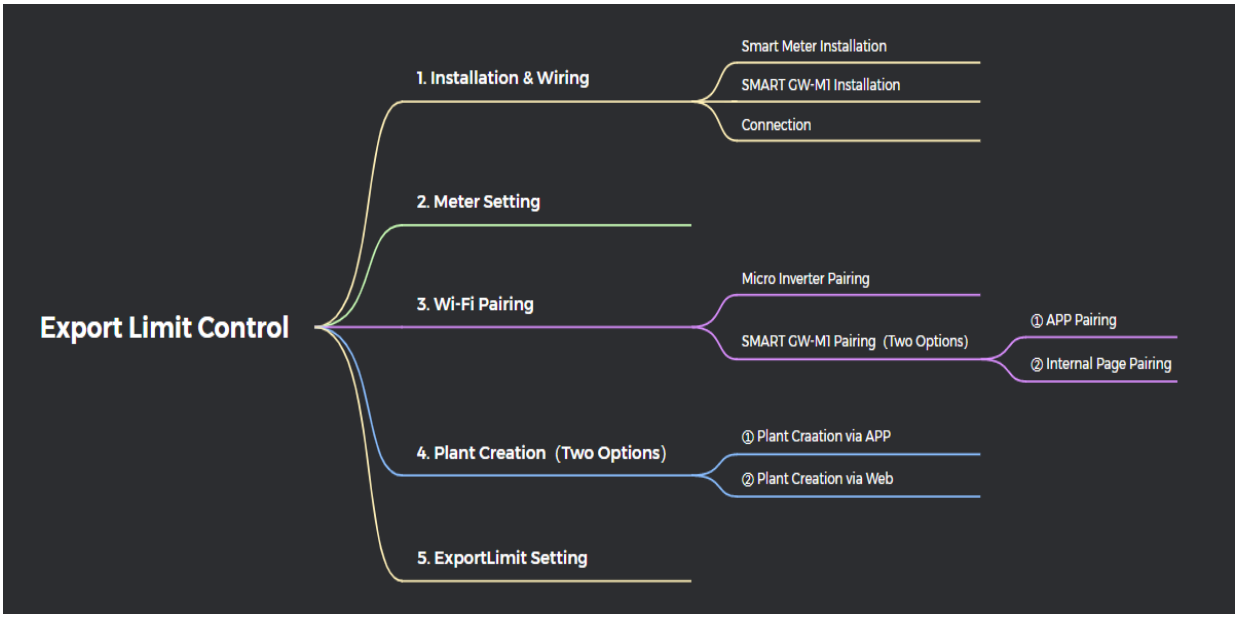
1.4 Smart meter Introduction

1.4.1 DDSU666 Three phase smart meter

For DDSU666 Smart Power Meter has a RS485 communication channel. The meter data is communicated via RS485 to the SMART GW. The meter data then is uploaded to the cloud platform and achieve the power limit function of the micro inverter. On DDSU666 Smart Power Meter, the address of RS485 which is connected to SMART GW, does not need to be specified. Please refer to the DDSU666 Smart Power Meter user manual for detailed wiring instructions.

1.5 System configuration process

As shown in the following figure, the system requires the following five steps to activate the export limit function of the micro inverter: Installation and Wiring, Meter Setting, Micro inverter and SMART GW WiFi connection, Power Plant Creation, and Setting of ExportLimit Parameters.



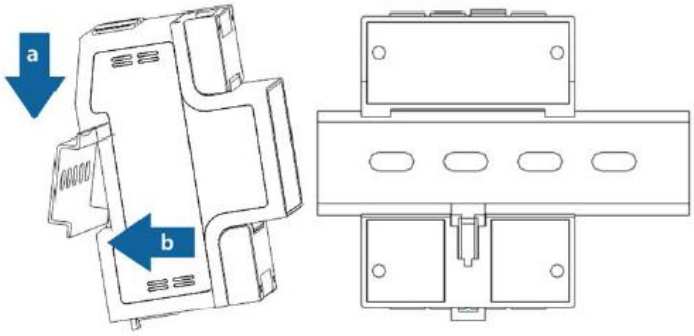
2. Installation and Wiring

The electric installation requires an experienced electrician or professional. Before the installation, please read this manual carefully.

2.1 Smart power meter installation

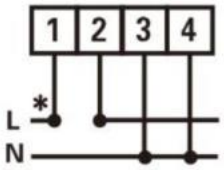
Make sure the power is off before installation!

Here below, the figure shows the installation of the device.



DDSU666 single phase meter wiring

Please size the system according to the current used in the household, select an appropriate cable size for the AC connection. Then connect the AC cables to the meter according to the diagram. Line phase from the grid is connected to Pin 1 of the meter and line phase of load side is connected to Pin 2. The N line of the power grid is connected to the Pin 3, the Pin 4.

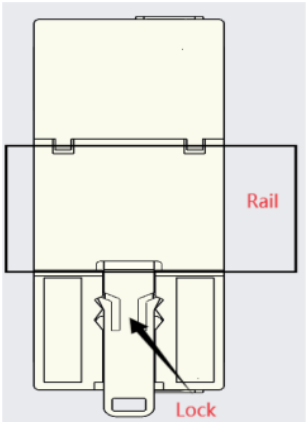


DDSU666 power cable wiring

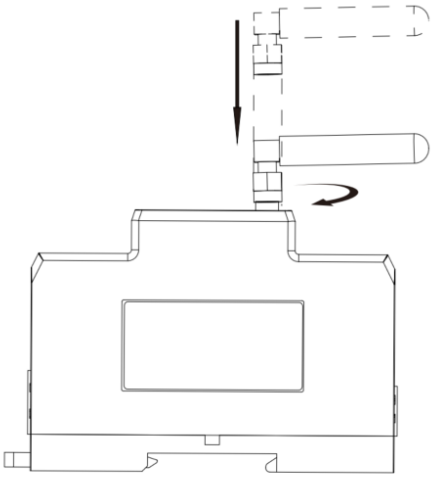
2.2 SMART GW installation

Disconnect the AC circuit breaker before installation.

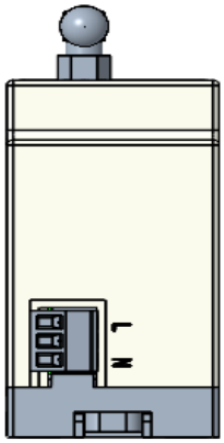
The figure on the right shows the method of installing the SMART GW. The SMART GW uses a guide rail for connection. The buckle can be pulled up and pulled down to lock the guide rail and to loosen the guide rail respectively.



When installing the antenna, it is important to spin clock-wise and lock the connection securely.



The SMART GW power supply wiring is shown in the following figure below, L is phase line N is zero line (can be connected in reverse), generally municipal power supply 220VAC.

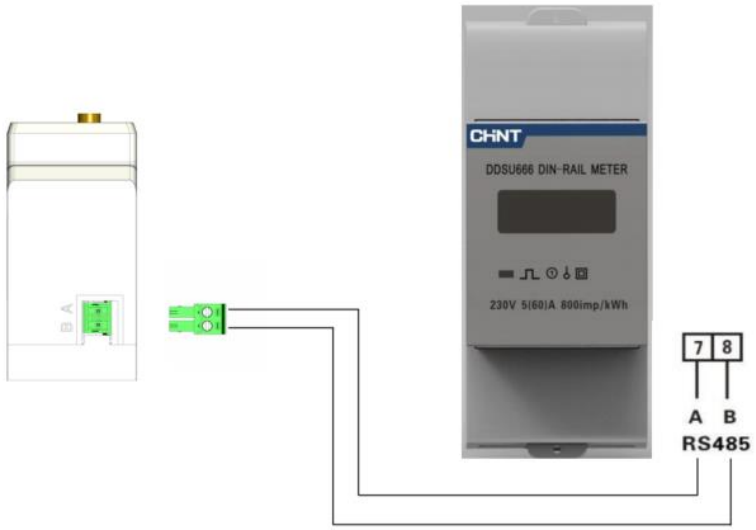


The SMART GW needs AC power supply. The AC power cable used should have the following characteristics:

The SMART GW requires AC power for operation. Please select cables with insulation voltage is higher than 600V, temperature tolerance higher than 85℃, and cross-sectional area of the cable is larger than 0.3mm2

The SMART GW should be installed where the Wi-Fi signal is stable, otherwise it may cause the SMART GW not being able to connect to the network or having unstable data transmission.

The figure below shows the 485 communication wiring port of the SMART GW, 485A and 485B respectively, which shall be connected to 485A and 485B of the smart meter. The electricity meter 485 interface is described in detail in the meter manual.



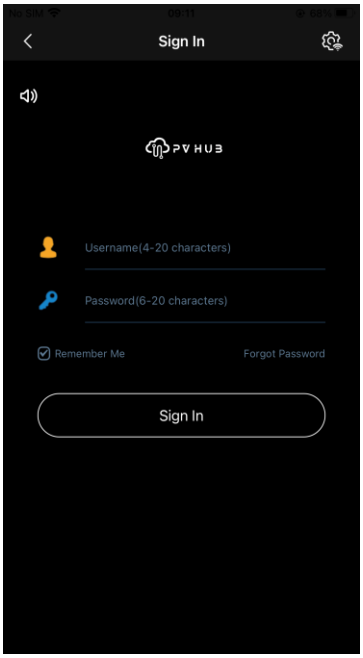
3. Wi-Fi Pairing

Note that the SMART GW and micro-inverse devices will only work under Wi-Fi 2.4G. Ensure the router is 2.4GHz before configuring the SMART GW.

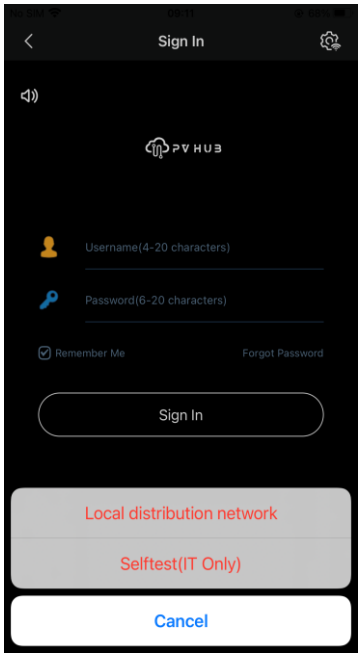
Scan the QR code on the right and install the APP. Turn on the Bluetooth of the mobile phone.

3.1 Micro Inverter WiFi Pairing

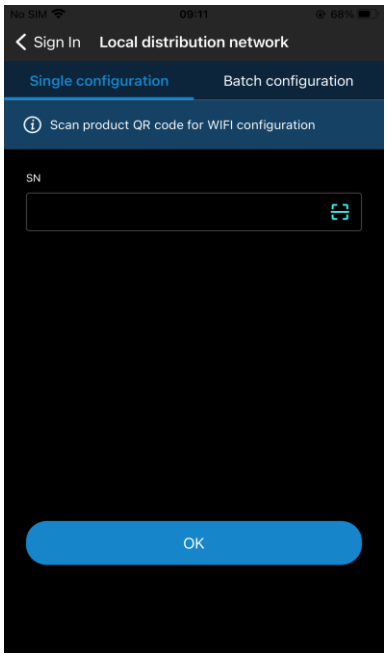
Step1: Open the APP and click on Sign In.



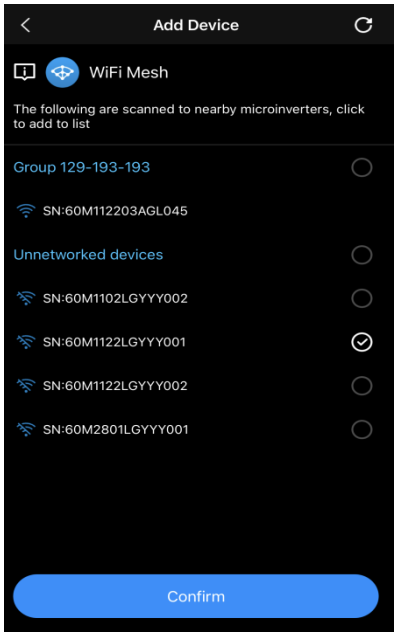
Step 2: Click the icon in the upper right corner , select the Local distribution network in the pop-up window, and enter the configuration page.



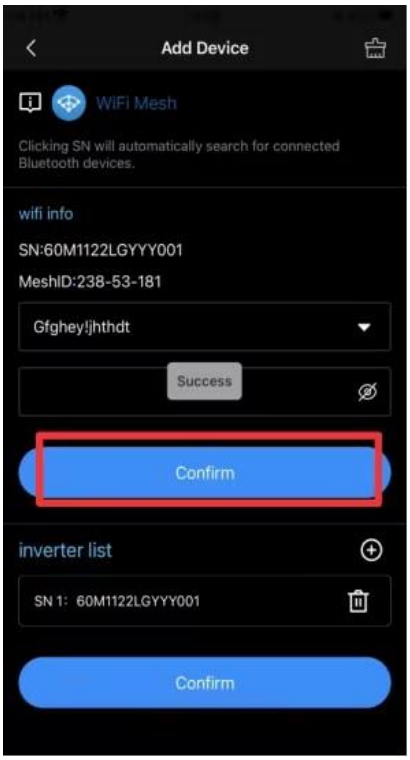
Step 3: Enter the device SN or scan the device QR code and click OK.



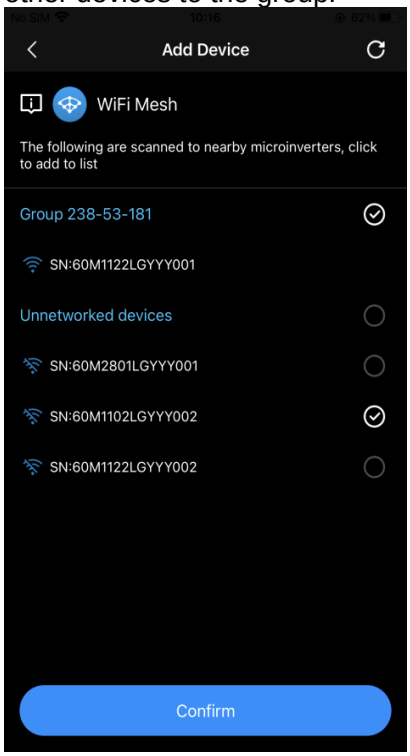
Step4: First select an Unnetworked device for the setup, and click confirm to enter the WiFi configuration page.



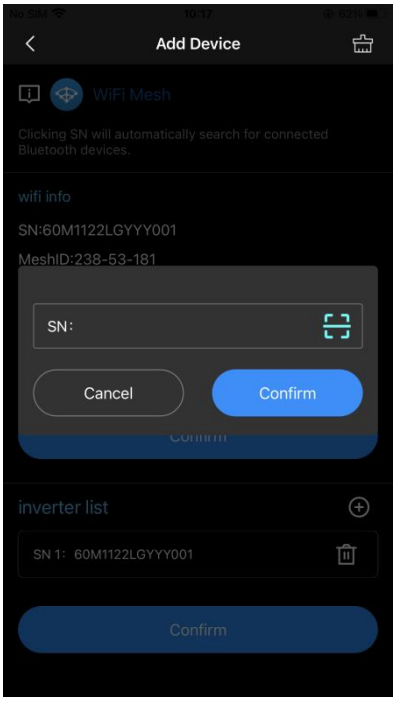
Step5: Select the correct Wi-Fi hotspots in the drop-down list, enter the Wi-Fi password, and click on confirm.

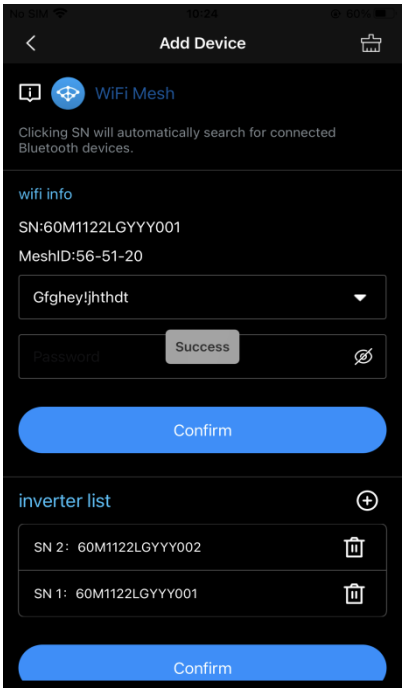


Step6: After successful configuration, return to the step4 interface to scan for the device group. Then select the group and select other **unnetworked** devices that are to be connected. Click confirm to add their other devices to the group.

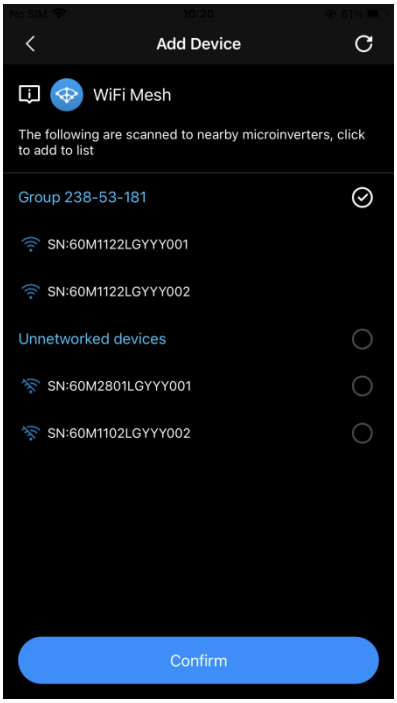


Step7: Check whether the device list has all device SN that needs to be added to the group. If there are other devices to add, you can enter the device SN or scan the QR code to add additional devices. If all devices have been added to the inverter list, then click the confirm button below. Then the selected devices will be paired to the group automatically.





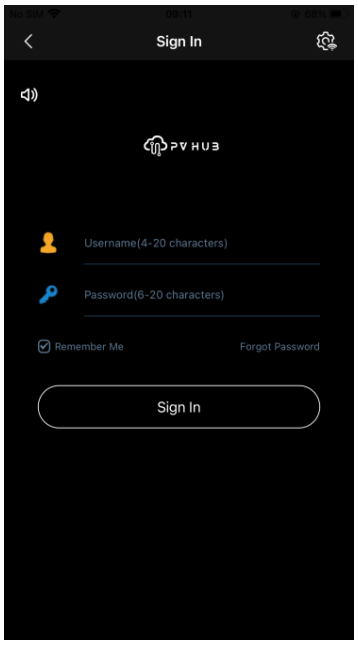
Step8: After successful configuration, return to the step4 interface and click the refresh button in the upper right corner to wait for the device to added the group.



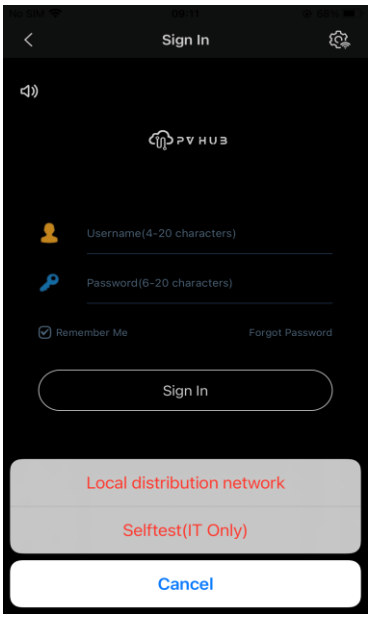
3.2 SMART GW Wi-Fi Pairing (Via APP or WEB portal)

3.2.1 Option 1: APP pairing

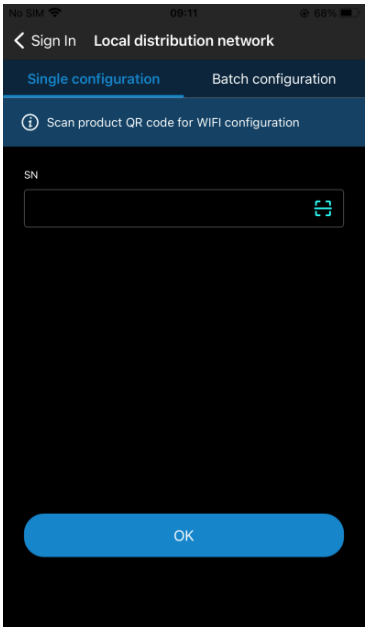
Step1: Open the APP and click on Sign In.



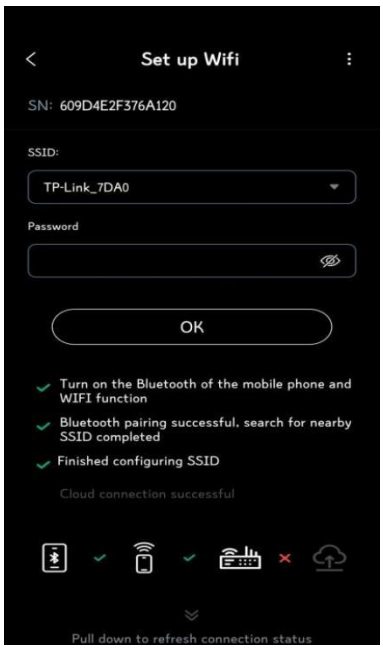
Step 2: Click the icon in the upper right corner, select the Local distribution network in the pop-up window, and enter the configuration page.



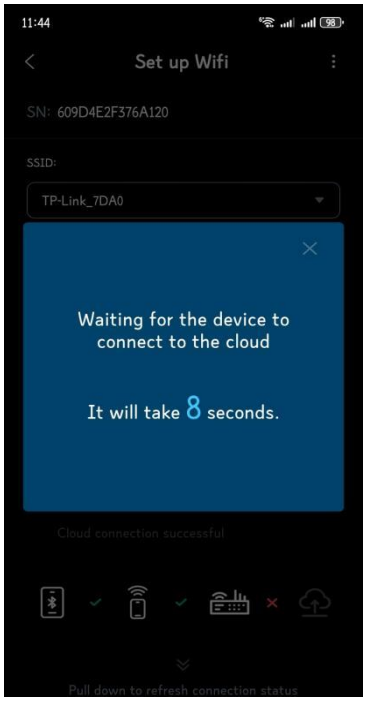
Step 3: Enter the device SN or scan the QR code of the SMART GW and click OK to enter the distribution network interface.



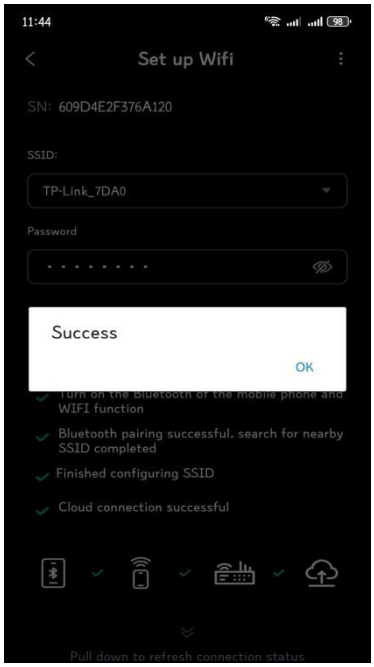
Step4: Select the surrounding WiFi hotspots from the WiFi drop-down list, enter the password and click OK. Wait for the configuration.



Step4: Pairing



Step 5: Wait until the page prompts "Success", and the WiFi paring for SMART GW is then successful. After successful pairing, the blue light becomes slowly flashing, indicating that the SMART GW has been successfully connected to the Wi-Fi.

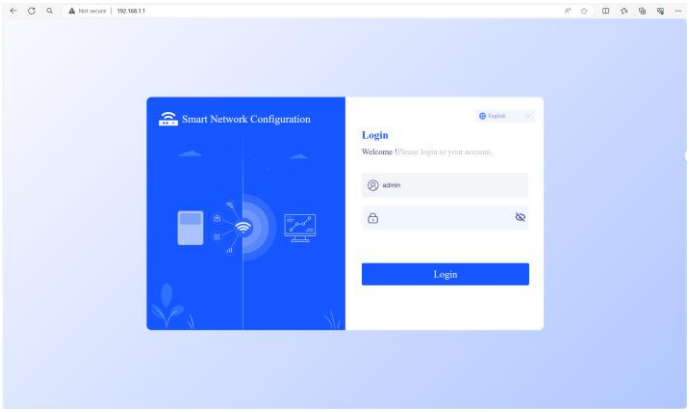


If the network fails, you need to repeat the configuration or change to another Wi-Fi connection.

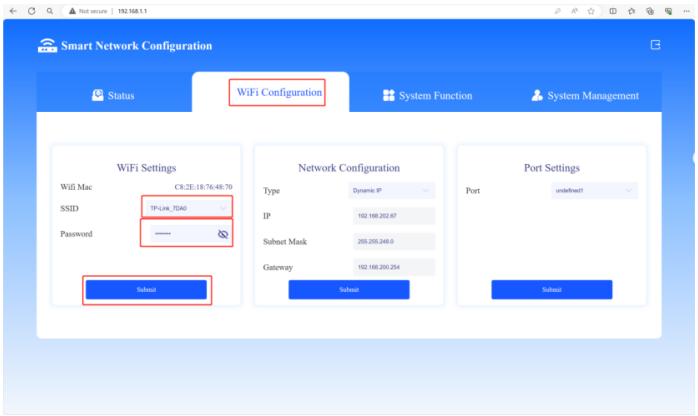
3.2.2 Option 2: Pairing via WEB Internal Page

Step 1: Open the mobile phone or computer WiFi, scan the AP hotspot around, connect to W-XXXXXXX (XXXXXXX is SMART GW SN after 7 bits), and enter password "**mtmt2020**".

Step 2: Once connected to the SMART GW hostpot, Open the browser to search "192.168.1.1" website to enter the built-in WEB login page. The default login password is "**12345678**".



Step3: Click on WiFi Configuration page, and select the correct hotspot in the SSID list, enter the Wi-Fi password and click Submit.



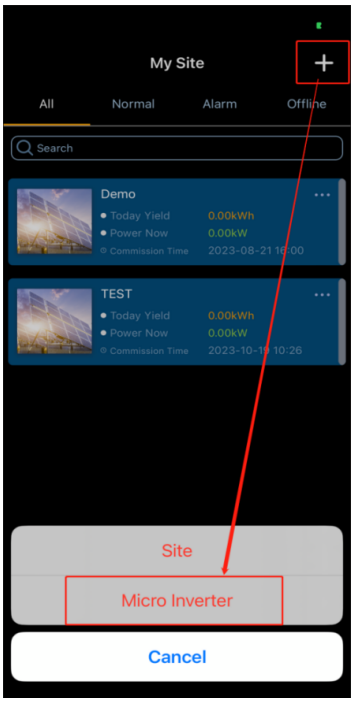
Step4: After successful pairing, the blue light on the SMART GW is flashing slowly. If the connection fails, check whether the password and hotspot are correct or replace the wireless network.

4. Power station creation and binding equipment (APP / platform WEB method two option)

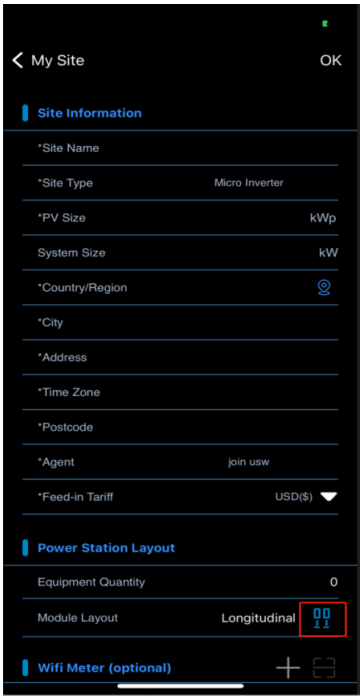
4.1 Plant creation via APP

Step 1. After opening the APP login account, enter the power station list page.

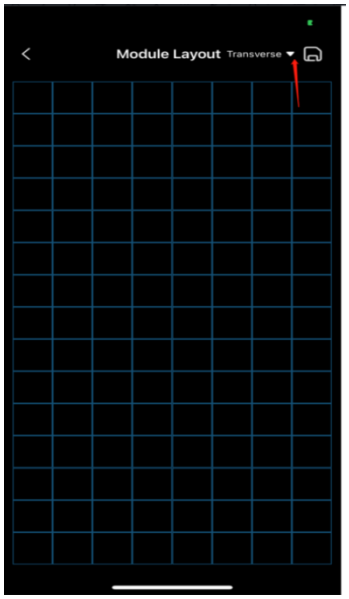
Step 2. Click the "+" icon in the upper right corner of the power station list page, select "Micro-inverse", and enter the micro-inverse station construction page.

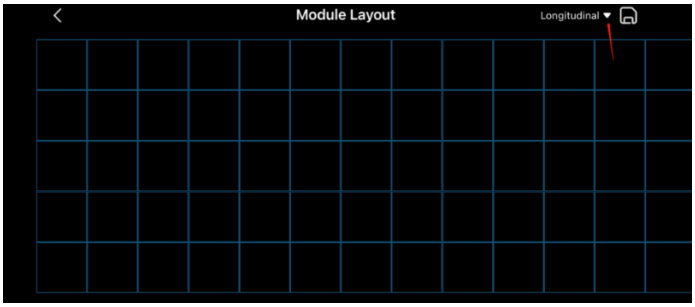


Step 3. Enter the Site Information as required, WiFi Meter to fill in the SMART GW SN, click icon below, and enter the component layout page.



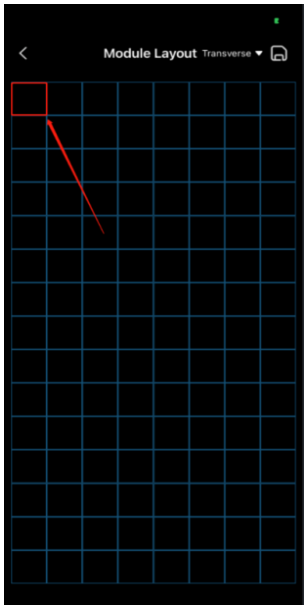
Step 4. Click the drop down icon to select the horizontal layout or vertical layout.

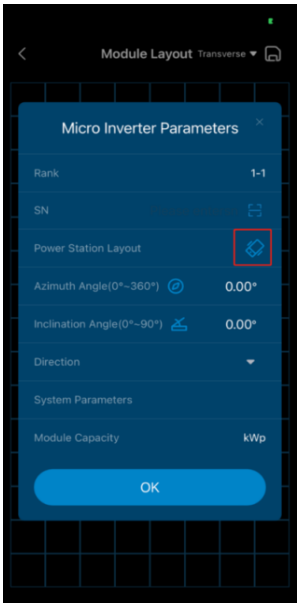


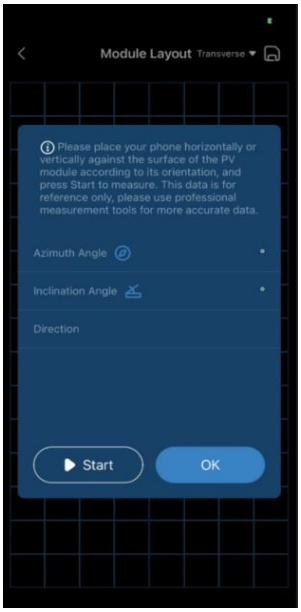


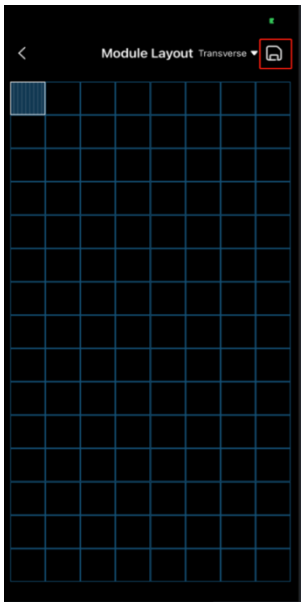
Step 5. Click to select the appropriate position in the grid, pop up the micro-inverse parameters, and input relevant information, click confirm to see the added micro-inverse component in the component layout, click the save button, the page back to the create power station page, click confirm, to complete the creation of the micro-inverse power station.

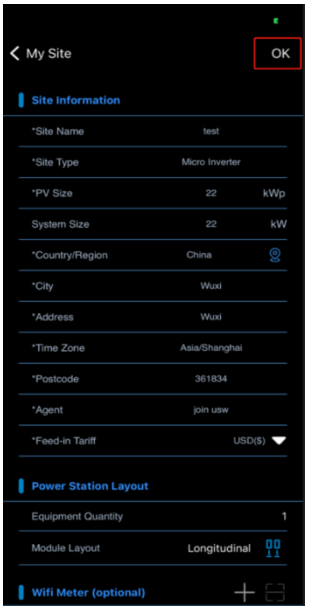
Tip: Click icon below to measure the azimuth, tilt Angle and direction through the mobile phone, or manually enter the azimuth, tilt Angle and select the direction. Note: Component layout





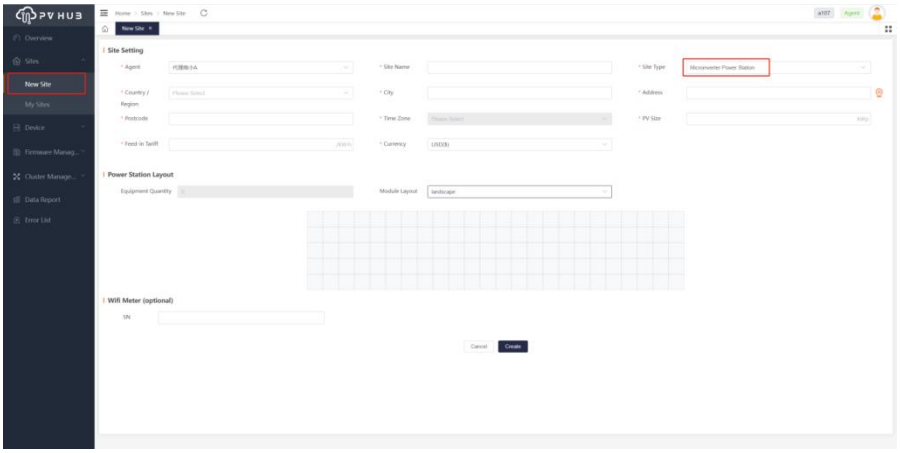




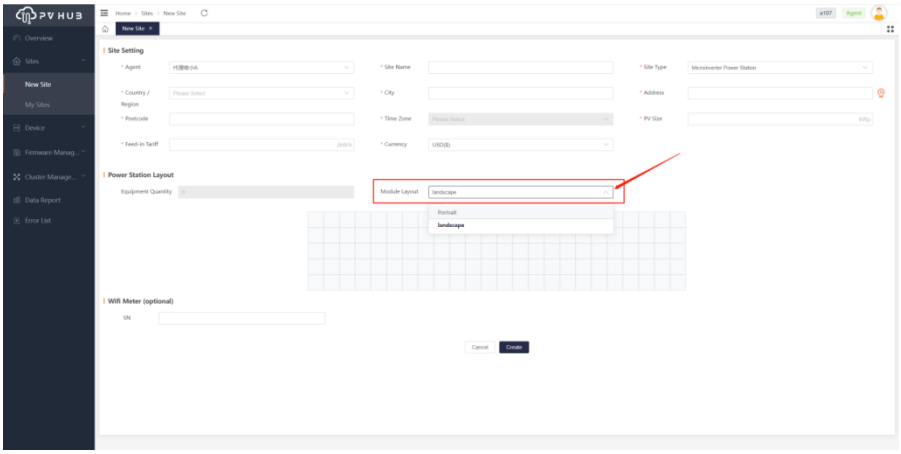


4.2 Plant creation via web

Step1: Log in to the "https://www.pv-hub.com/". Then enter the create power station page, power station type select" micro inverter power station ", WiFi Meter input SMART GW SN.

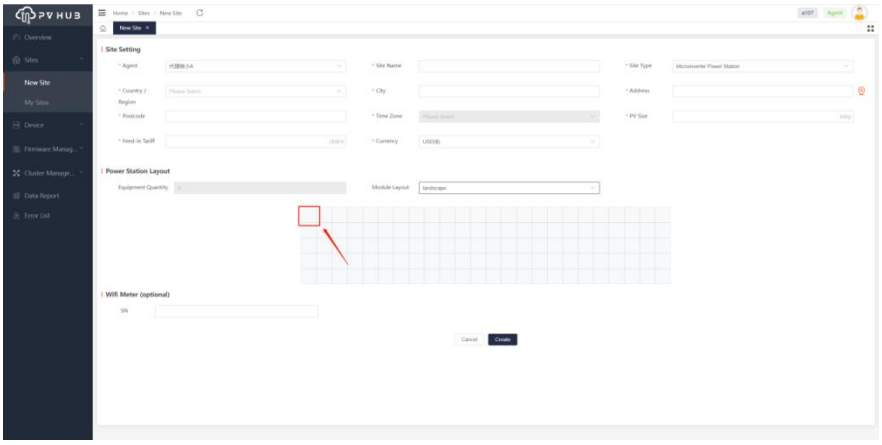


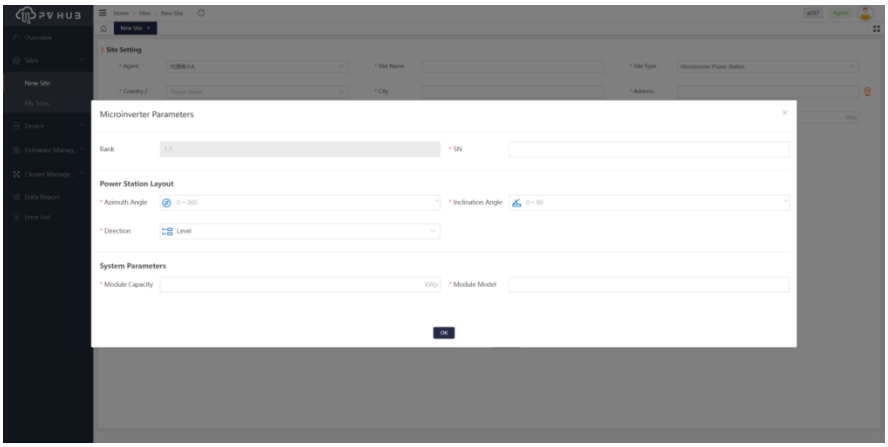
Step2: After the component layout is selected from horizontal or vertical



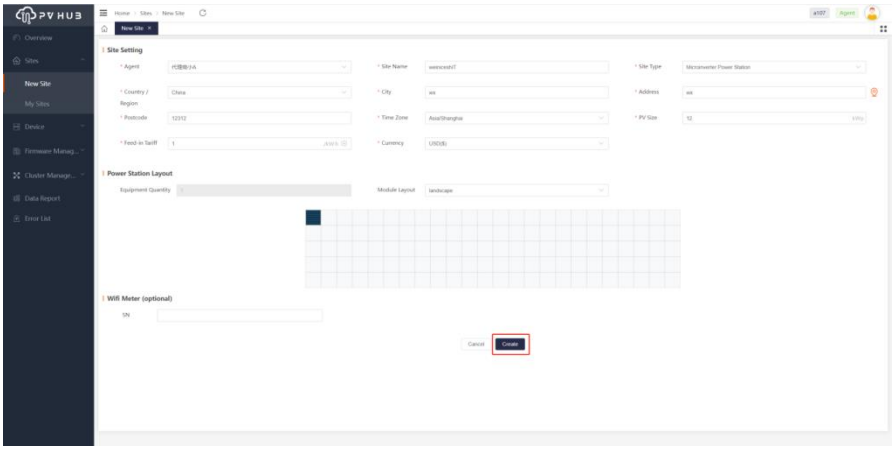
Step3: Select the appropriate position in the grid and click, input the correct information in the micro inverter parameter box, and click OK.

Note: The azimuth and inclination angles can retain up to two decimal places.





Step4: After all the information is completed, click the create button to complete the creation of the micro inverter power station

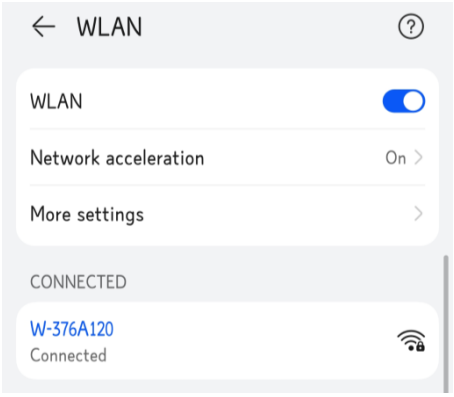


5. Power Limit Setting

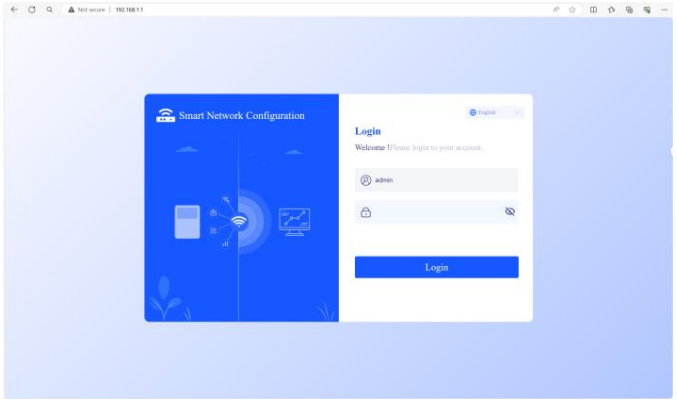
The power limit function requires the SMART GW and the micro inverter device to be connected the same Wi-Fi network to ensure that both parties can communicate stably with each other rough the router.. At the same time, RS485 communication between SMART GW and smart meter should be securely connected. SMART GW currently recommends 10 devices in the system.

Built-in internal web page setting

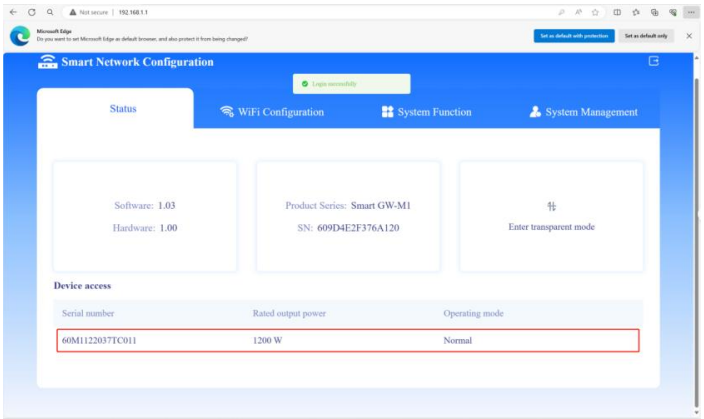
Step 1: Open the mobile phone or computer WiFi, scan the AP hotspot around, connect to W-XXXXXXX (XXXXXXX is SMART GW SN after 7 bits), password "**mtmt2020**".



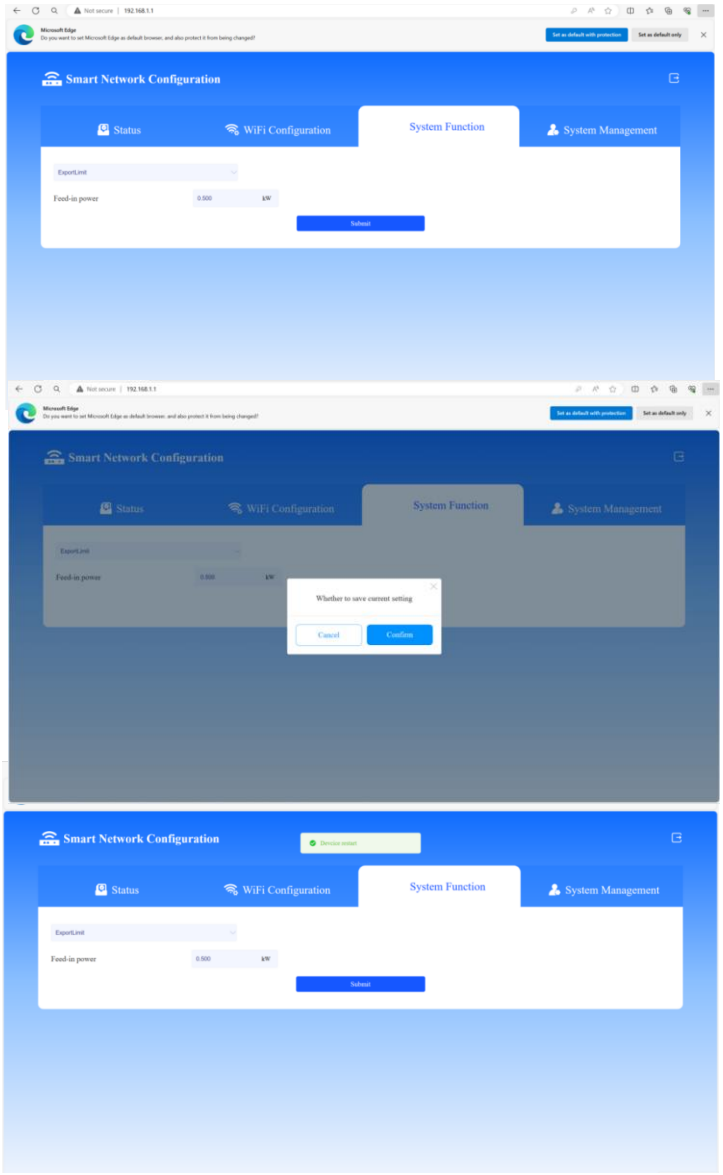
Step 2: Open the browser to search "192.168.1.1" website to enter the built-in WEB login page, login password default "**12345678**".



Step 3: View the current accessing condition of the micro inverter.



Step 4: Click to enter System Function, select ExportLimit in the drop-down list, enter the feed network power value and click submit to confirm the pop-up and click confirm



Step 5: Wait for the device to restart and log in again to check the access to SMART GW.