GATEWAY-ECC

User Manual

Version 4.0

www.solaxpower.com

eManual in the QR code or at
http://kb.solaxpower.com/

STATEMENT

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About This Manual

Scope of Validity

This manual is an integral part of Gateway ECC. It describes the installation, electrical connection, commissioning, maintenance and troubleshooting of the product. Please read it carefully before operating.

Note:

"ECC" refers to the communication gateway energy control center-WiFi.

Target Group

The installation, maintenance and grid-related setting can only be performed by qualified personnel who

- Are licensed and/or satisfy state and local jurisdiction regulations.
- Have good knowledge of this manual and other related documents.

Explanation of Symbols

The symbols that may be found in this manual are defined as follows.

Symbol	Description
DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION!	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE!	Provides tips for the optimal operation of the product.

Change History

Version 03 (2024-10-30)

"Contact Information" (Revised the email address of Australian branch).

Version 02 (2024-07-03)

"3 Interface Description" (Added the specific interface description).

Version 01 (2024-03-28)

"3 Interface Description" (Added the specific interface description).

Version 00 (2023-09-19)

Initial release

Table of Contents

1 Preface 1

1.1 Read this First 1

1.2 Safety 1

2 ECC System 4

2.1 ECC System Description 4

2.2 Highlights 5

2.3 Appearance 6

2.3.1 Overview 6

2.3.2 Dimensions 7

2.3.3 Symbols on the Label and ECC 8

3 Interface Description 9

3.1 Interface Layout 9

3.2 Terminal Use 10

3.2.1 Wi-Fi antenna 10

3.2.2 Power 11

3.2.3 DI 11

3.2.4 AI 12

3.2.5 Ethernet 12

3.2.6 DO port 13

3.2.7 RST 14

3.2.8 USB port 14

3.2.9 RS485 port-4 14

3.2.10 RS485 port-3 15

3.2.11 RS485 port-2 16

3.2.12 RS485 port-1 18

3.2.13 4G antenna 20

3.2.14 SIM card slot 21

3.2.15 TF card slot 21

3.2.16 AP button 21

4 Installation Preparation 22

4.1 Unpacking 22

4.2 Packing List 22

4.3 Selection of Installation Location 23

4.3.1 Environment Requirement 23

4.3.2 Preinstallation check 24
4.4 Tools Requirement 25
4.4.1 Recommended Equipment 25
4.4.2 Additionally Required Items 25
4.5 System Installation Steps 26
5 Installation 27
5.1 Indoor Installation 27
5.1.1 Installation method 1 (on the wall): 27
5.1.2 Installation method 2 (on the platform) 28
5.2 Outdoor Installation 30
5.3 APP Operation 30
5.3.1 Download APP 30
5.3.2 Create an account 30
5.3.3 Create a site 31
5.3.4 Add device 32
5.3.5 Bind microinverter 35
5.3.6 Microinverter data 36
5.3.7 On-site inspection 38
6 Troubleshooting and Maintenance 40
6.1 LED Indicator 40
6.2 Maintenance 42
6.2.1 Maintenance routines 42
6.2.2 Upgrading Firmware 42
6.2.3 Device Replacement 43
7 Decommissioning 44
7.1 Disassembling the Gateway 44
7.2 Packing the Gateway 44
7.3 Transportation and Storage 44
7.4 Disposal of the Gateway 45
8 Technical Data 46
9 Appendix 48
9.1 INSTALLATION MAP 48

1 Preface

1.1 Read this First

Gateway ECC is well designed and tested to meet all applicable states and international safety standards. However, like all electrical and electronic equipment, safety precautions must be observed and followed during the installation of the ECC to reduce the risk of personal injury and to ensure a safe installation.

Before installing the device, the installer must carefully read, fully understand and strictly follow the detailed instruction of the user manual and other related regulations. And the safety instructions in this document are only supplements to local laws and regulations.

SolaX shall not be liable for any consequences caused by the violation of the storage, transportation, installation, and operation regulations specified in this document, including, but not limited to:

- ECC damage due to force majeure, such as earthquake, flooding, thunderstorm, lighting, fire hazard, volcanic eruption, etc.
- ECC damage due to man-made cause.
- ECC used or operated against any items in local policy.
- Failure to follow the operation instructions and safety precautions on the product and in this document.
- Installation and use under improper environment or electrical condition.
- Unauthorized modifications to the product or software.
- ECC damage caused during transportation by the customer.
- Storage conditions that do not meet the requirements specified in this document.
- Installation and commissioning operated by unauthorized personnel who are not licensed and /or satisfy state and local jurisdiction regulations.

1.2 Safety

Save these important safety instructions. Failure to do so may result in damage to the ECC and injury.

RF EXPOSURE WARNING!

- Install and operate the device in accordance with provided instructions.
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the equipment & your body.
- End-users and installers must be provided with antenna installation instructions and equipment operating conditions for satisfying RF exposure compliance.

CAUTION!

- Before installation, ensure all power of the device has been cut off.
- Do not dismantle or scrap by force.
- Strictly follow the installation guide to connect cables and the enclosure must be well locked before the device is electrified.
- Unauthorized opening and cable connection will void the warranty and cause lethal danger or serious injury due to electric shock.
- Refer to the corresponding installation guide for related safety requirements when it is connected to other devices.
- Anti-static measures should be taken to decrease the damage of static electricity to electronic components.
- Keep away from flammable, explosive materials.
- All the product labels and nameplate on the device shall be maintained clearly visible.

Hereby, SolaX Power Network Technology (Zhejiang) Co. ,Ltd. declare that Energy Control Center with model ECC supports WIFI and 4G functions. It is in conformity with the relevant union harmonization legislation: Radio Equipment Directive: 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address: www.solaxpower.com

2.4G WIFI: 2412MHz -2472MHz; Power: 19.5dBm

LTE Cat M1 Band 1: Tx: 1920~1980MHz/ Rx: 2110~2170MHz; Power: 21dBm

LTE Cat M1 Band 3: Tx: 1710~1785MHz/ Rx: 1805~1880MHz; Power: 21dBm

LTE Cat M1 Band 8: Tx: 880~915MHz/ Rx: 925~960MHz; Power: 21dBm

LTE Cat M1 Band 20: Tx: 832~862MHz/ Rx: 791~821MHz; Power: 21dBm

LTE Cat M1 Band 28: Tx: 703~736MHz/ Rx: 758~791MHz ; Power: 21dBm

FCC RULES

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.
Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note:This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

2 ECC System

2.1 ECC System Description

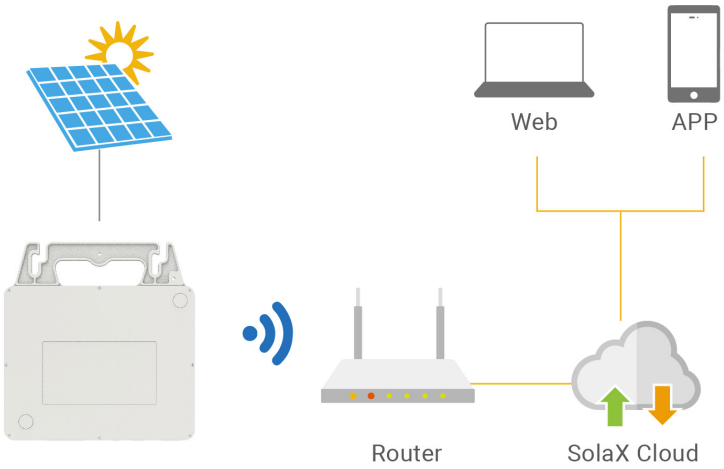


Figure 2-1 System overview diagram

ECC (energy control center)

ECC is a crucial component in this ECC system, functioning as a communication gateway. It gathers the operation data of the system and uploads the data to SolaXCloud, establishing a fundation for data monitoring and remote operation.

Microinverter

Currently, we developed A1-Micro 1 in 1, X1-Micro 2 in 1 and X1-Micro 4 in 1 series. 2 in 1 and 4 in 1 are applicable to WiFi version, and 1 in 1 is applicable to PLC version. For 2 in 1 and 4 in 1, ECC only needs to be connected to meter. For 1 in 1, ECC connects to ECC-PLC and matches to the whole system for use.

PV module

PV Module is an assembly of photovoltaic cells, also known as solar cells. To achieve a required voltage and current, a group of PV modules are wired into large array that called PV array. A PV module is the essential component of any PV system that converts sunlight directly into direct current electricity.

Grid

220V / 230V/ 240V grid are supported.

SolaXCloud

SolaXCloud is an intelligent, multifunctional monitoring platform that can be accessed either remotely or through a hard wired connection. With the SolaX Cloud, the operators and installers can always view key and up-to-date data and set it remotely. You can log in to your user account at any time through a personal computer, IOS or Android device to view real-time monitoring data or historical data, and perform remote settings as needed.

2.2 Highlights

- Load consumption monitoring
- Flexible networking with Wi-Fi, 4G and Ethernet
- 5V USB port available
- Internal relay available to control external devices
- Support seamless communication with peripherals through RS485 and Ethernet
- Support remote operation and maintenance

2.3 Appearance

2.3.1 Overview

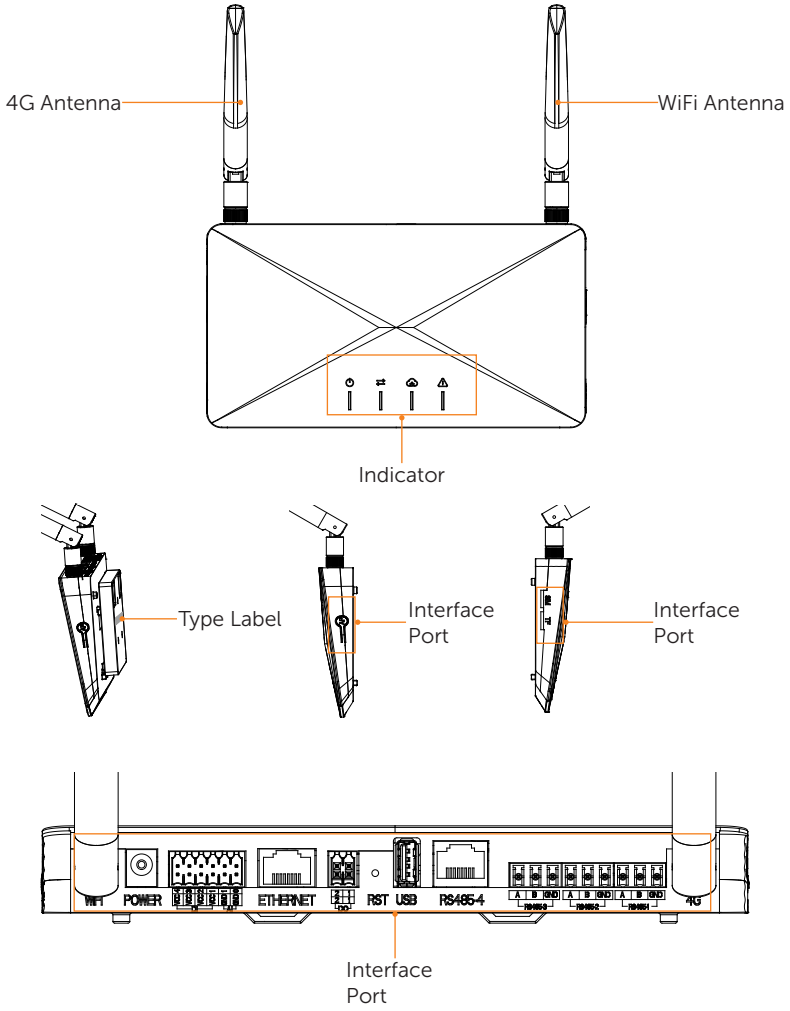


Figure 2-2 Apprearance

Table 2-1 Desciption of appearance

Item	Description
4G Atenna	To receive and transmit 4G signal.
WiFi Atenna	To receive and transmit WiFi signal.
Indicator	Show the status of the device.
Type label	Type label clearly identifies the device type, serial number, specific DC/AC parameters, certification, etc.
Interface port	Interface port is used for communication connection (like WiFi), power connection, grid connection and other functions.

2.3.2 Dimensions

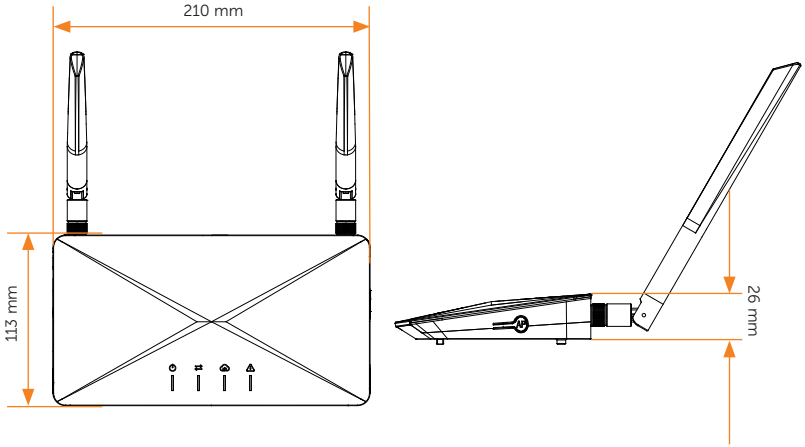


Figure 2-3 Dimensions

2.3.3 Symbols on the Label and ECC

Table 2-2 Description of symbols

Symbol	Description
	CE mark. The ECC complies with the requirementsof the applicable CE guidelines.
	FCC mark of conformity.
	CSA mark for UL1973
	Read the enclosed documentations
	Do not dispose of the ECC together with household waste.

3 Interface Description

3.1 Interface Layout

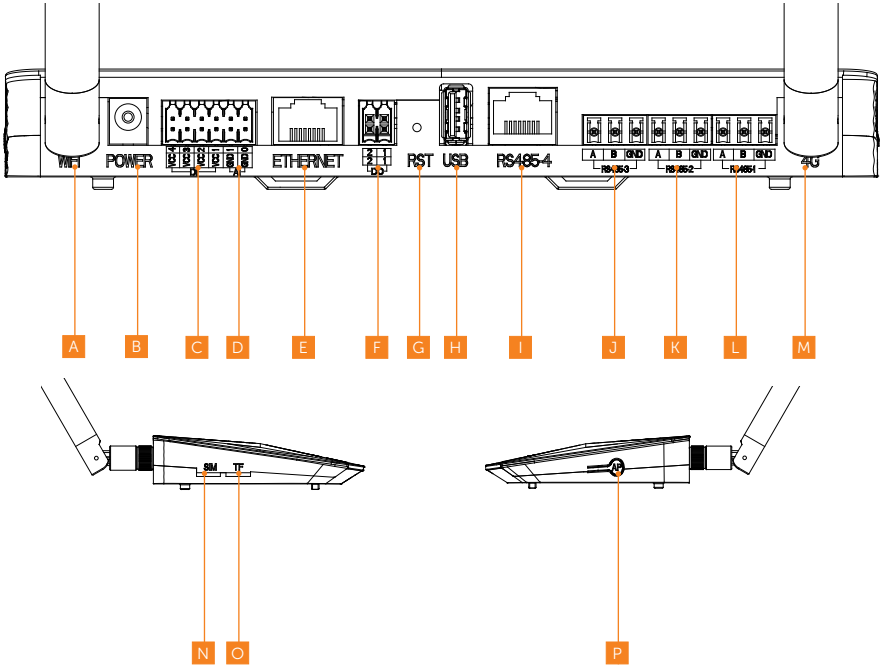


Table 3-3 Interface description

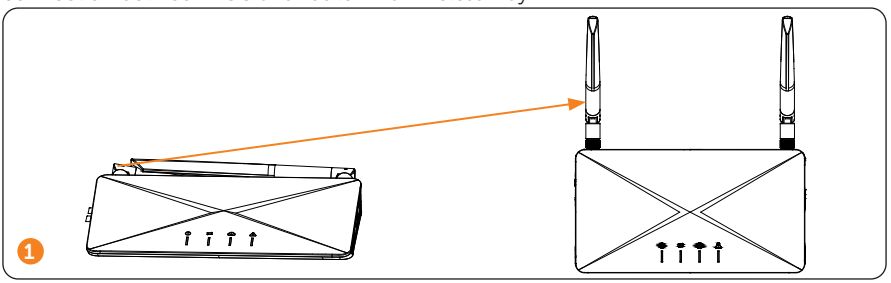
Number	Item	Description
A	Wi-Fi antenna	1 string for connecting to the router
B	Power	Output voltage: 11.4 ~ 12.6 V Power supply adapter with round tip
C	DI	4 strings for DRM including DRM0/5/6/7/8 which responds according to grid-connection needs
D	AI	2 strings
E	Ethernet	10/100M network port for connecting to the routher
F	DO port	2 active DO strings for dry contact and adapter box
G	RST	Long press to restart ECC

Number	Item	Description
H	USB port	1-string standard USB for local upgrade
I	RS485 port-4	For use with adapter box
J	RS485 port-3	For communication with energy storage system
K	RS485 port-2	For Modbus to be connected with third-party hosts
L	RS485 port-1	For communicating with ECC-PLC and wired meter
M	4G antenna	1 string for connecting to the router
N	SIM card slot	For 4G (Cat M1) SIM card installation
O	TF card slot	Supported maximum capacity: 64 GB for TF card installation to realize data storage
P	AP button	For activating hotspot of ECC and long press 10 second to clear the networking information

3.2 Terminal Use

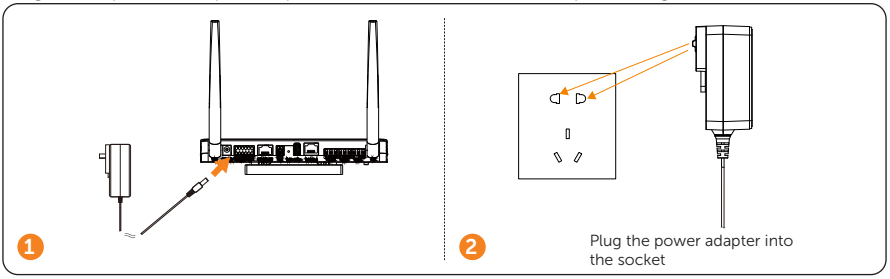
3.2.1 Wi-Fi antenna

There are 3 methods of connecting ECC to router. WiFi antenna is the first method of connection between ECC and router in a wireless way.



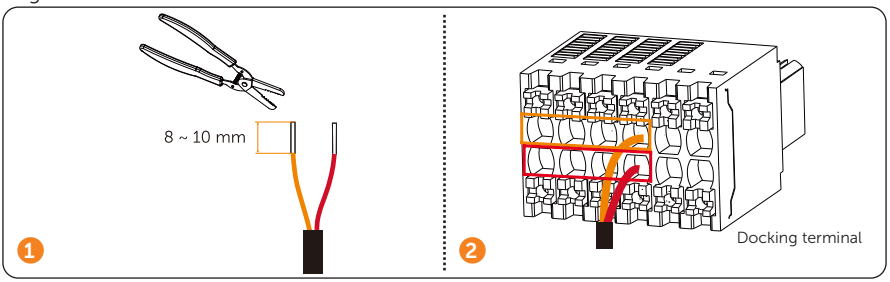
3.2.2 Power

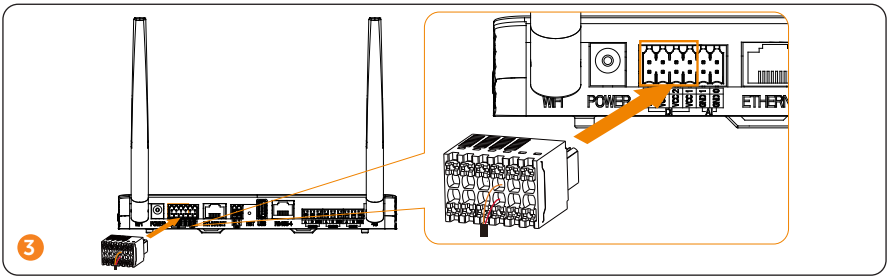
Plug in the power adapter to power on or off ECC. The output voltage is 11.4 ~ 12.6 V.



3.2.3 DI

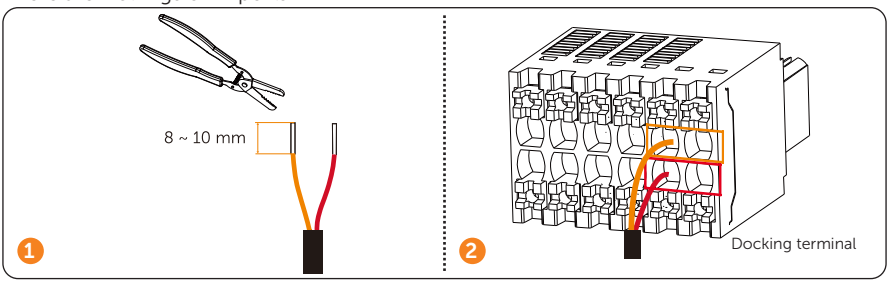
There are 4 strings of DI ports for DRM including DRM0/5/6/7/8 which responds according to grid-connection needs

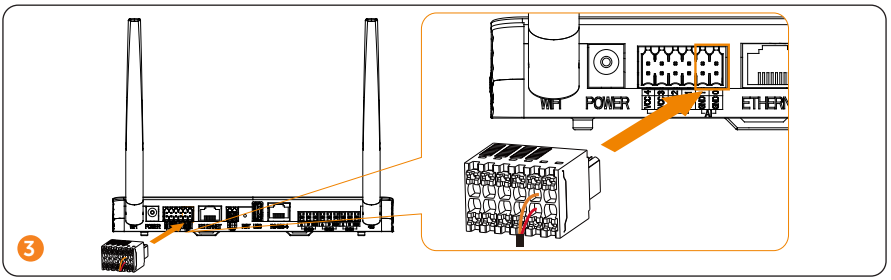




3.2.4 AI

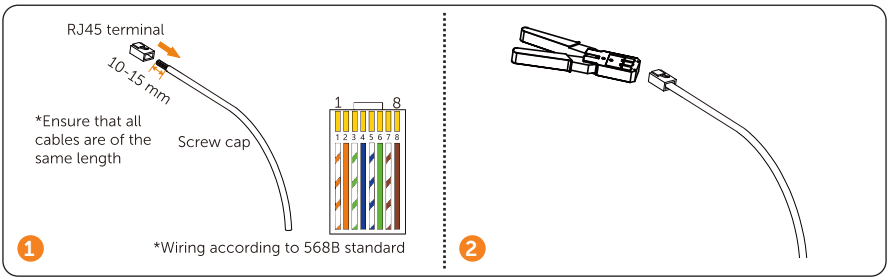
There are 2 strings of AI ports.

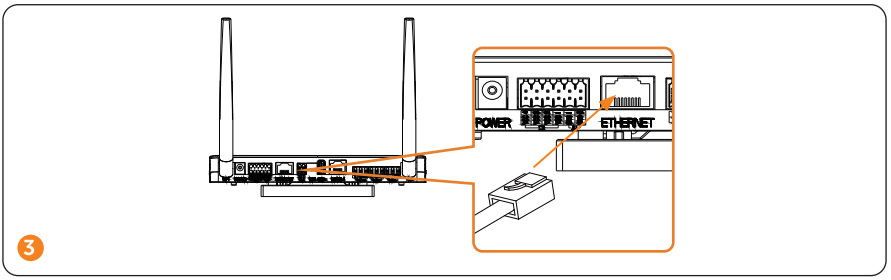




3.2.5 Ethernet

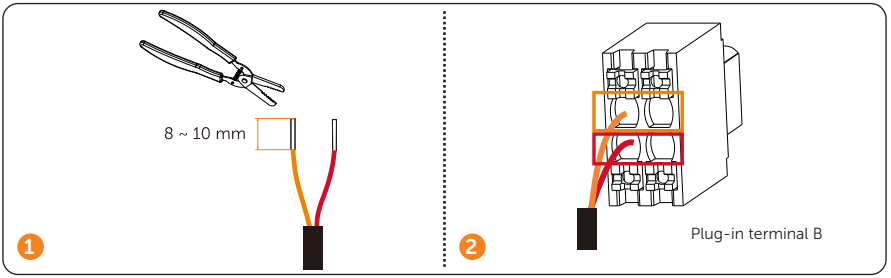
There are 3 methods of connecting ECC to router.Ethernet is the second method of connection between ECC and router in wired way. For stable communication between ECC and router, ethernet cable connection is recommended.

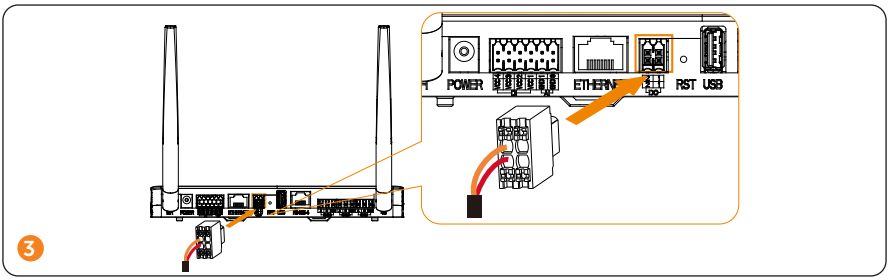




3.2.6 DO port

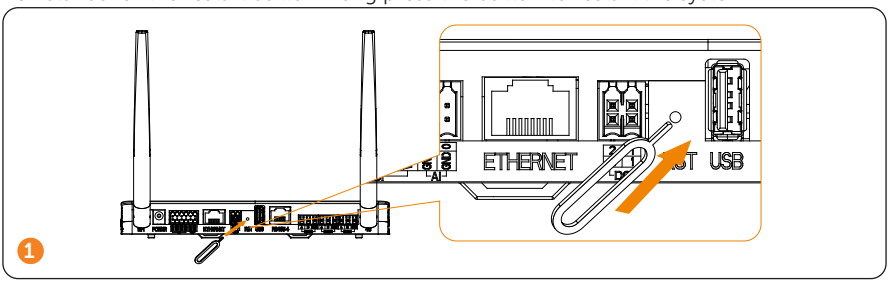
There are 2 strings of active DO ports (12 V) used for dry contact and adapter box





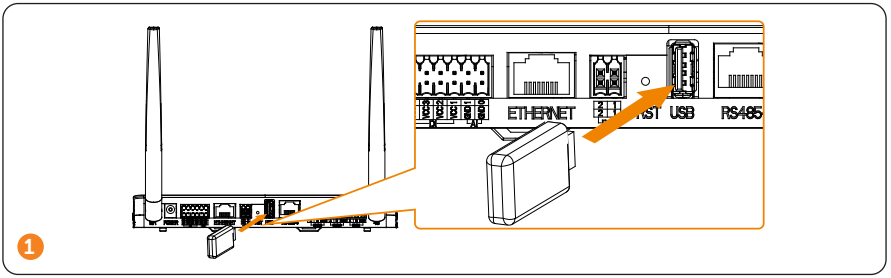
3.2.7 RST

RST stands for the restart button. Long press the button to restart the system.



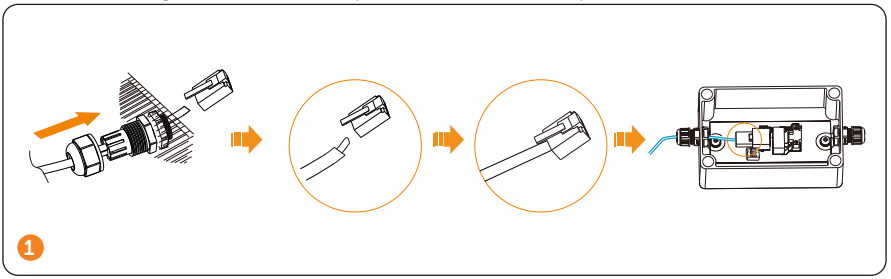
3.2.8 USB port

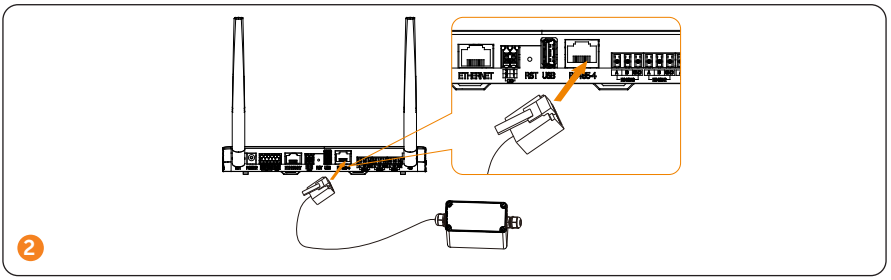
USB port is designed for local upgrade. There is only 1 string of standard USB.



3.2.9 RS485 port-4

There are 4 strings of RS485. RS485 port-4 is used with adapter box for communication.



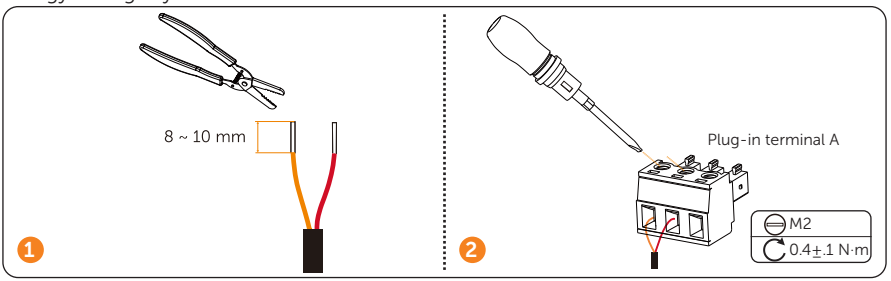


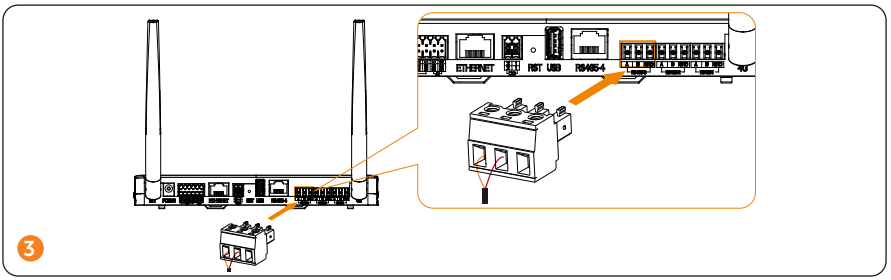
NOTICE

- For adapter box installation, please refer to the **Quick Installation Guide or User Manual of Adapter Box.**

3.2.10 RS485 port-3

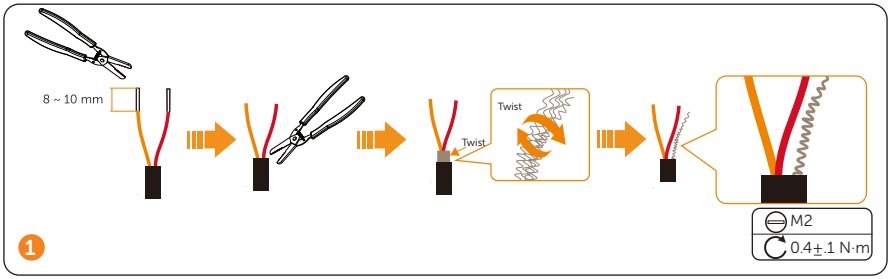
There are 4 strings of RS485. RS485 port-3 is used for AC-coupling communication with energy storage system.

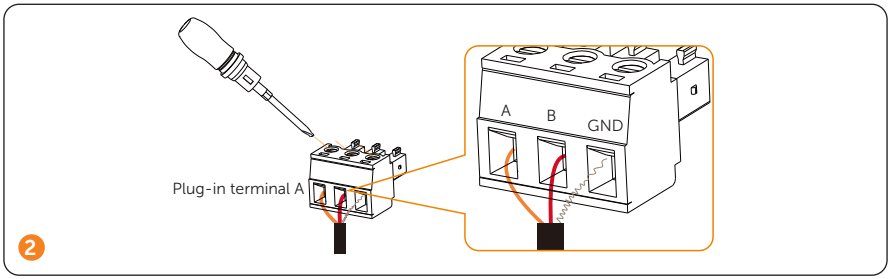




NOTICE

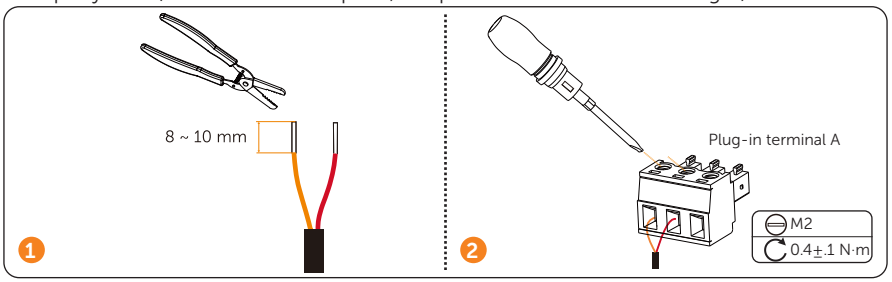
- To increase the communication performance, we recommend using shielded twisted pairs (STP). If you choose to use STP, please strip the wire and twist it, and then connect to the GND port of the plug-in terminal A (as shown below).

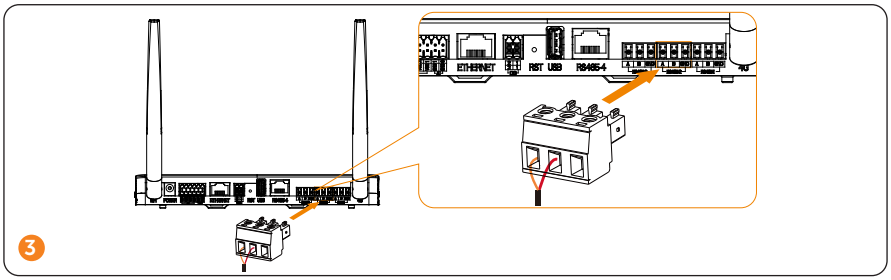




3.2.11 RS485 port-2

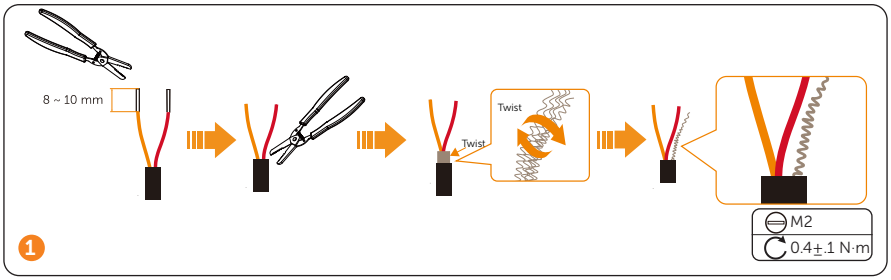
There are 4 strings of RS485.RS485 port-2 is used for modbus communication with the third party host (to measure wind speed, temperature and radiation strength).

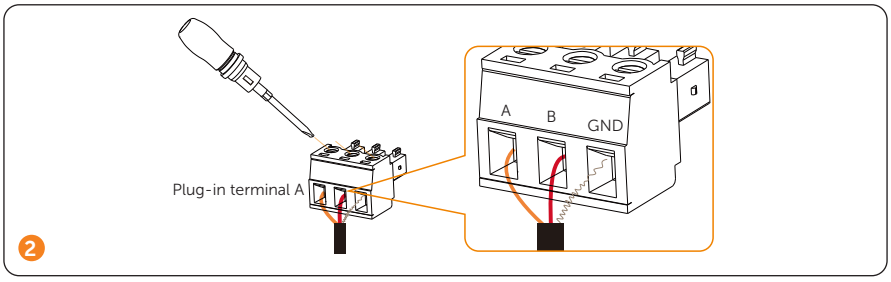




NOTICE

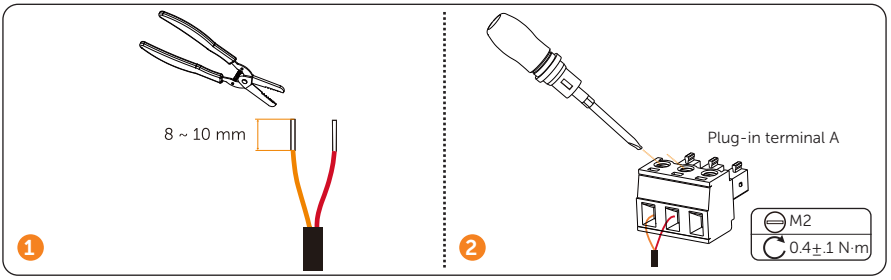
- To increase the communication performance, we recommend using shielded twisted pairs (STP). If you choose to use STP, please strip the wire and twist it, and then connect to the GND port of the plug-in terminal A (as shown below).

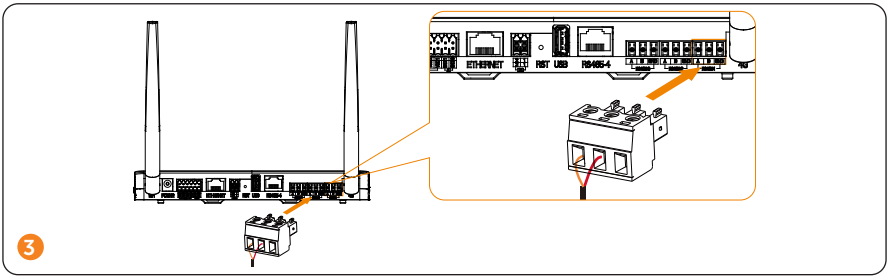




3.2.12 RS485 port-1

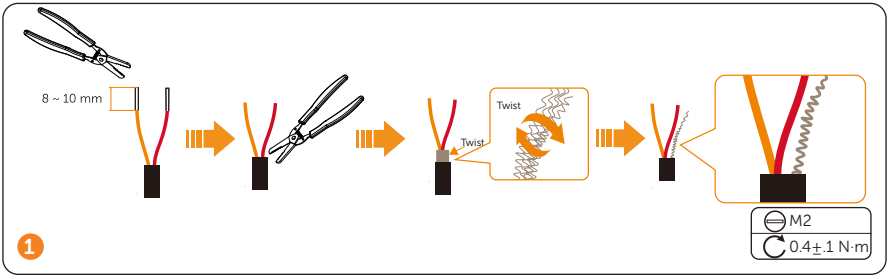
There are 4 strings of RS485. RS485 port-1 is used with wired meters and to communicate with ECC-PLC and wired meter.

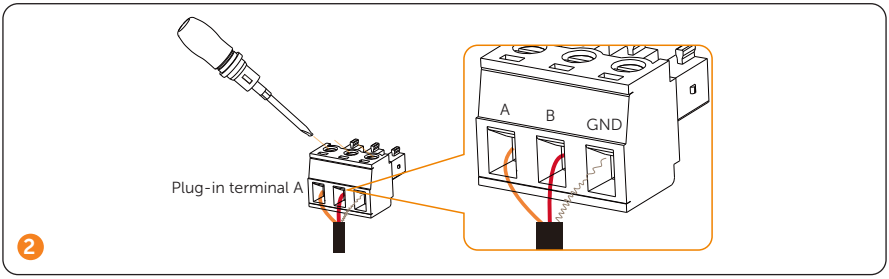




NOTICE

- To increase the communication performance, we recommend using shielded twisted pairs (STP). If you choose to use STP, please strip the wire and twist it, and then connect to the GND port of the plug-in terminal A (as shown below).

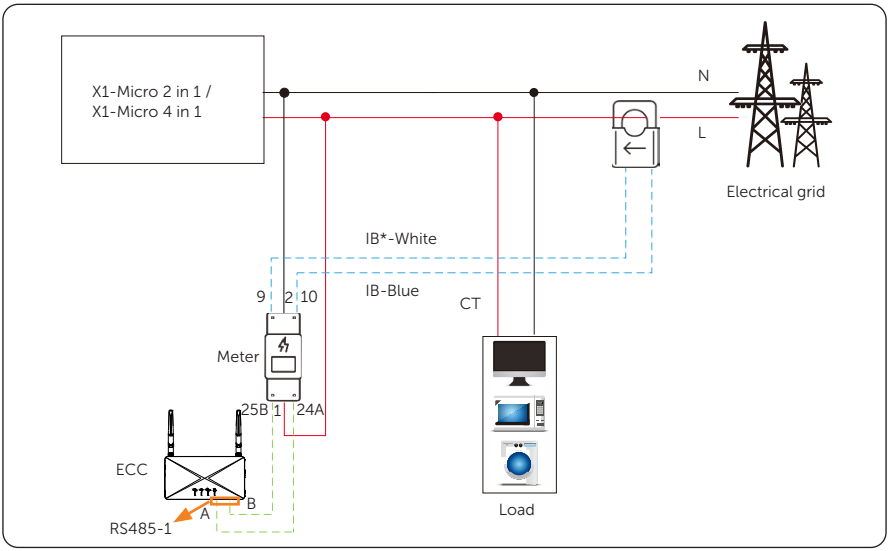




NOTICE

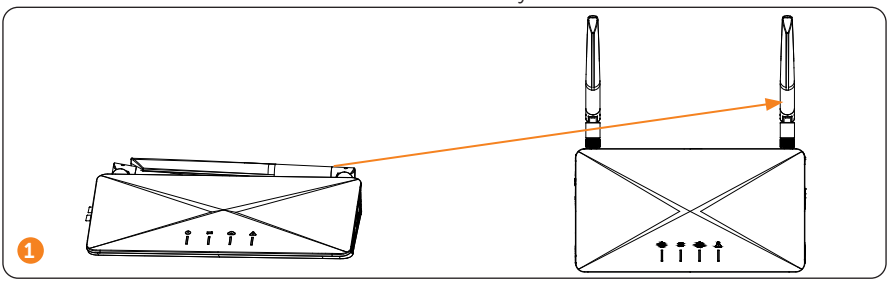
- To connect to meter, we recommend the wire diameter ranging from 0.5-1.5 mm² and the wire length depends on the actual installation conditions.
- For meter installation, please refer to the **Quick Installation Guide or User Manual of Meter.**

- ECC - meter - X1-Micro 2 in 1/4 in 1



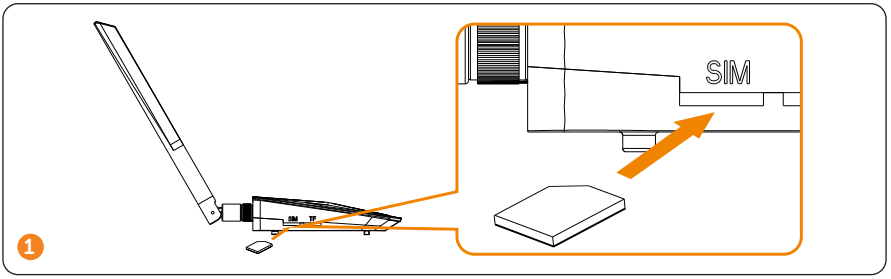
3.2.13 4G antenna

There are 3 methods of connecting ECC to router. 4G antenna is the third method of connection between ECC and router in a wireless way.



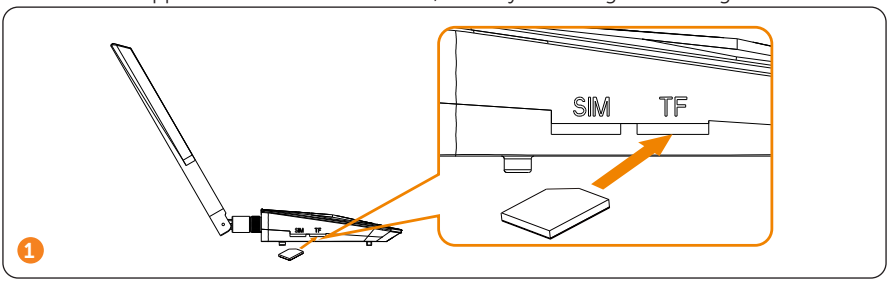
3.2.14 SIM card slot

SIM card slot is applied to install SIM card.



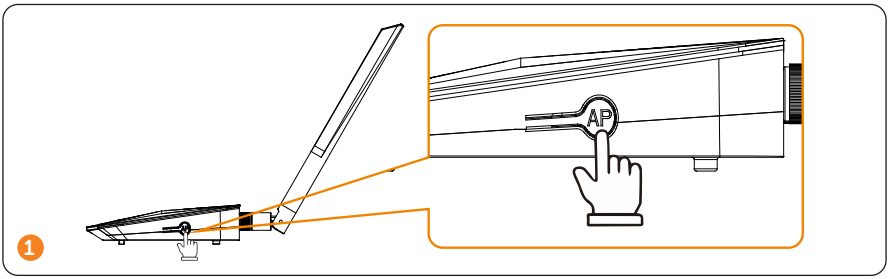
3.2.15 TF card slot

TF card slot is applied for TF card installation, thereby achieving data storage.



3.2.16 AP button

AP is a networking button. Click the button and the hotspot will be activated for 1 hour. and the hotspot will be turned off by default after 1 hour. Click the button again to turn on it; Long pree 10s to clear the networking information.



4 Installation Preparation

4.1 Unpacking

- The ECC undergoes 100% testing and inspection before shipping from the manufacturing facility. However, transport damage may still occur. Before unpacking the ECC , please verify that the model and outer packing materials for damage, such as holes and cracks.
- Unpacking the ECC according to the following figure.

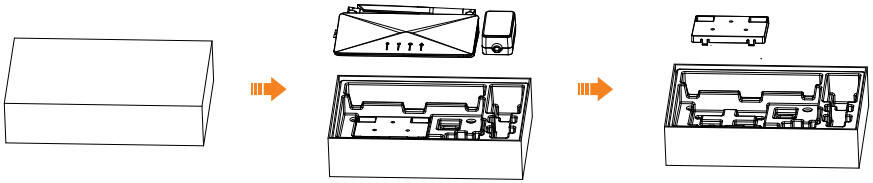
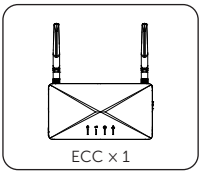


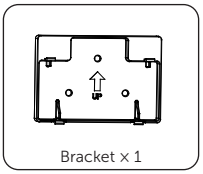
Figure 4-1 Unpacking the ECC

- Be careful when dealing with all package materials which may be reused for storage and relocation of the ECC in the future.
- Upon opening the package, check whether the appearance of the ECC is damaged or lack of accessories. If any damage is found or any parts are missing, contact your dealer immediately.

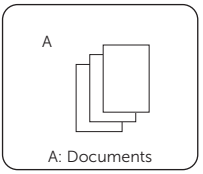
4.2 Packing List



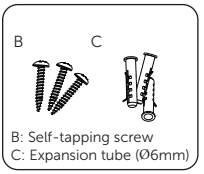
ECC × 1



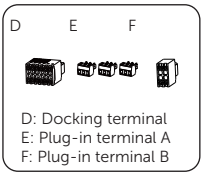
Bracket × 1



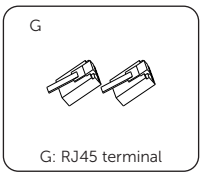
A: Documents



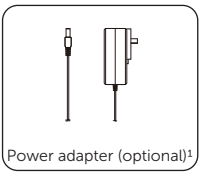
B: Self-tapping screw
C: Expansion tube (Ø6mm)



D: Docking terminal
E: Plug-in terminal A
F: Plug-in terminal B



G: RJ45 terminal



Power adapter (optional)[1]

Table 4-4 Packing list

Item No.	Items	Quantity
/	ECC	1 pc
/	Bracket	1 pc
A	Documents	/
B	Self-tapping screw	3 pcs
C	Expansion tube	3 pcs
D	Docking terminal	1 pc
E	Plug-in terminal A	3 pcs
F	Plug-in terminal B	1 pc
G	RJ45 terminal	2 pcs
/	Power adapter (optional)	1 pc

* Note: 1. Select the power adapter according to the socket in the installation site; The length of power adapter wire is 1.2 m. If the wire length doesn't meet the installation requirement, please use an appropriate power strip or choose an installation site near the socket.
2. Refer to the actual delivery for the optional accessories.

4.3 Selection of Installation Location

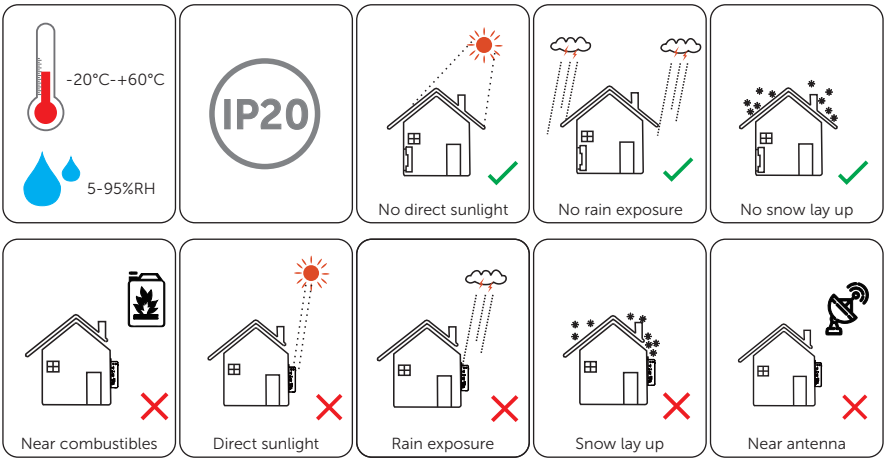
The installation location selected for the ECC is quite critical in the aspect of the guarantee of machine safety, service life and performance.

- It has the IP20 ingress protection, which allows it to be installed outdoor;
- The installation position shall be convenient for wiring connection, operation and maintenance.

4.3.1 Environment Requirement

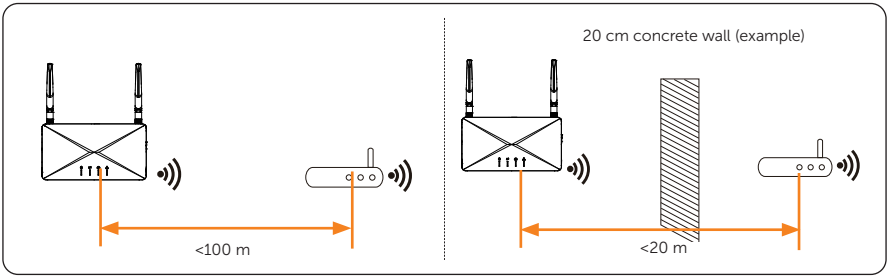
- The ambient temperature: -20°C to +60°C;
- The humidity shall be between 5%-95%;
- Do not install the ECC in the areas where the altitude exceeds 2000 m;
- Install the ECC in a well-ventilated environment for heat dissipation;
- Do not install the ECC in areas with flammable, explosive and corrosive materials;
- Do not install the ECC in areas near combustibles and antenna;
- Install all ECCs and DC connectors under the PV modules.

- Avoid direct exposure to UV, rain and other harmful weather events.
- Avoid electromagnetic inlterference in case of the malfunction of electronic equipment.



4.3.2 Preinstallation check

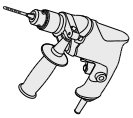
For Wi-Fi mode, the longest connection distance between the router and the device should be no more than 100 m; if there is a wall between the router and the device, the longest connection distance is 20 m.



4.4 Tools Requirement

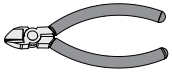
4.4.1 Recommended Equipment

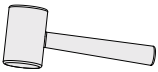
Installation tools include but are not limited to the following recommended ones. If necessary, use other auxiliary tools on site.

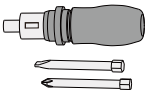

Hammer drill

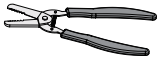
Marker

Crimping tool for RJ45


Diagonal pliers


Rubber mallet

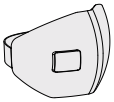

Torque screwdriver
(Phillips head: ST4.2)
(Flat head: M2)


Wire stripper

Safety gloves

Safety boots

Safety goggles


Anti-dust mask

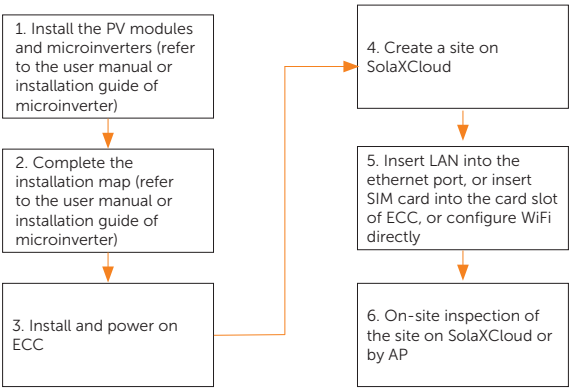
4.4.2 Additionally Required Items

Table 4-5 Additionally required wires

No.	Required Material	Type	Conductor Cross-section
1	Communication cable	Network cable CAT5	4 mm^2
2	RJ45 terminal	Standard	/

4.5 System Installation Steps

Step 1 to 6 have to be done on site. Step 7 to 9 can be finished either on site or at home. Step 6 must be finished correctly to create site on SolaXCloud.



NOTICE

- If you need to use ECC with A1-Micro 1 in 1, please refer to the **Quick Installation Guide or User Manual of ECC-PLC**.

5 Installation

5.1 Indoor Installation

5.1.1 Installation method 1 (on the wall):

Step 1: Check the box for the items as follows:

i) ECC

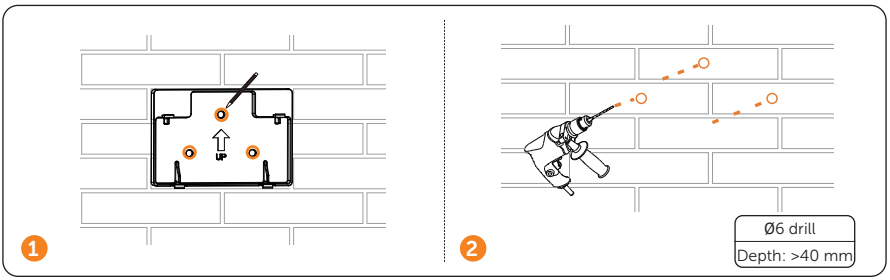
ii) Bracket

iii) Expansion tube

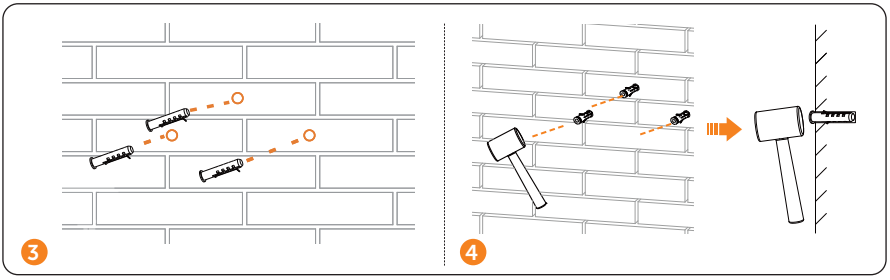
iv) Expansion bolt

Step 2: User the bracket as a template to mark the position of the 3 holes on the wall using a marker, and adjust it even using the spirit level.

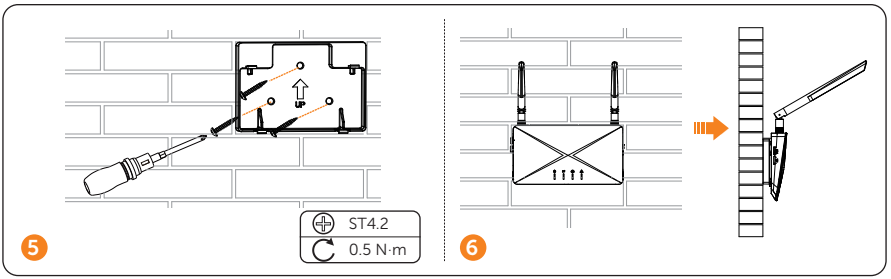
Step 3: Drill holes with a drill (drill bit: ø6 mm), make sure the holes are deep enough (at least 40 mm) for installation.



Step 4: Insert the expansion tubes in the holes.



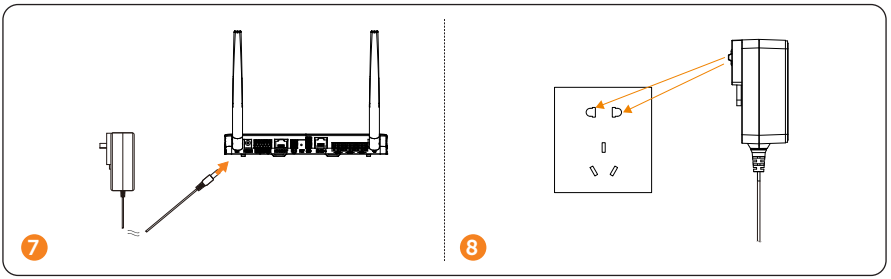
Step 5: Place the wall bracket and use self-tapping screws to tighten the bracket. Attach ECC to the bracket. Make sure the back side of ECC is fixed well with buckles on the bracket.



NOTICE

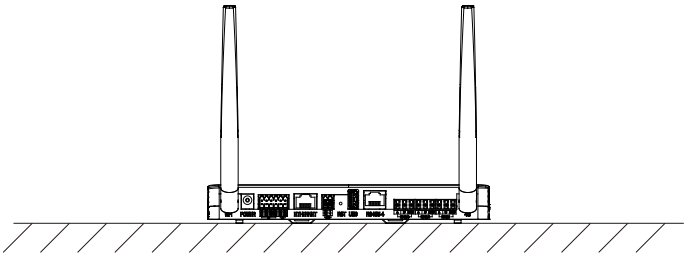
- Prior to step 6, please complete wiring process.

Step 6: Plug in the power adapter to power on ECC, and then plug in the power adapter to the socket.

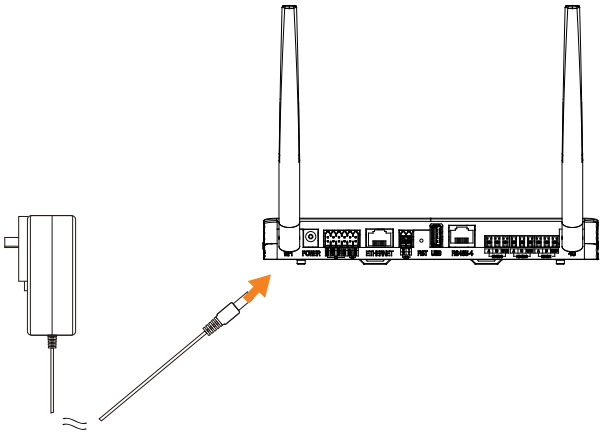


5.1.2 Installation method 2 (on the platform)

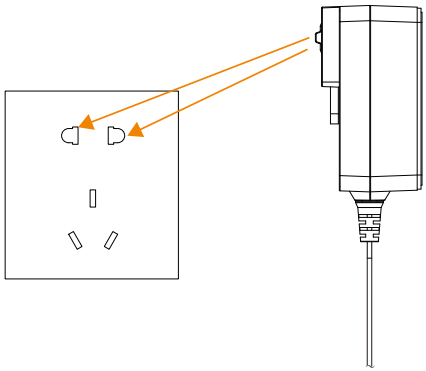
Step 1: Place ECC on a horizontal platform.



Step 2: Plug in the power adapter to power on ECC.、

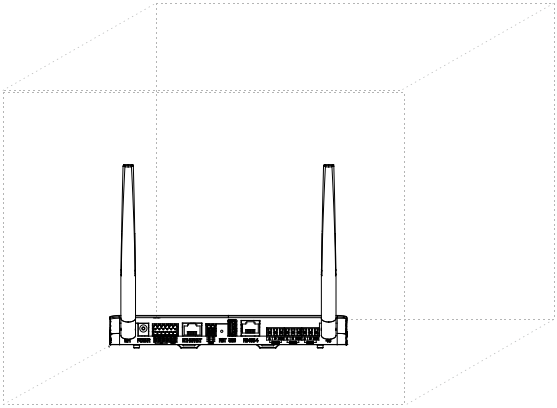


Step 3: Plug in the power adapter to the socket.



5.2 Outdoor Installation

The outdoor installation steps are the same as indoor installation. In addition, a water-proof box is needed to protect ECC.



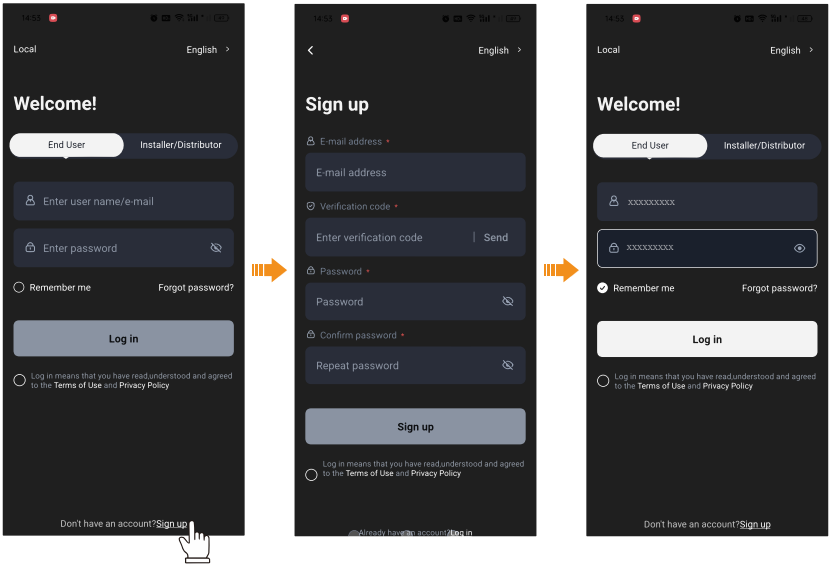
5.3 APP Operation

5.3.1 Download APP

Step 1: Scan the QR code to download the monitoring APP.

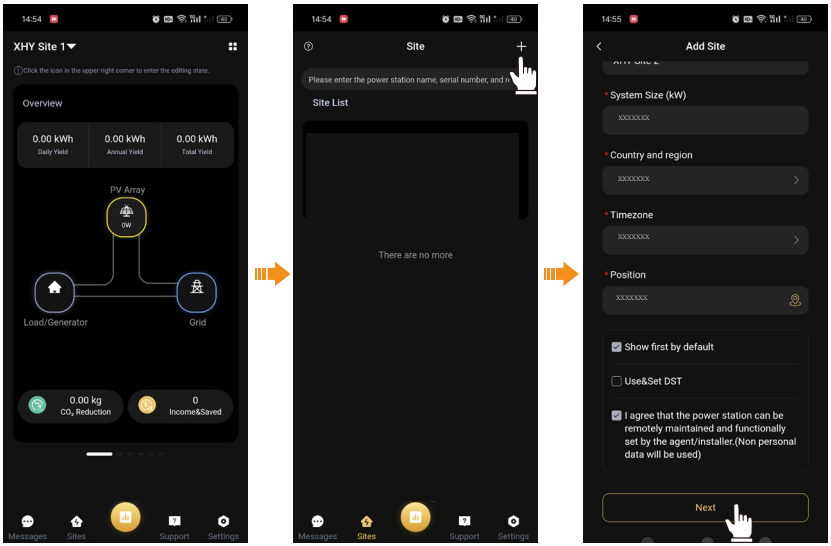
5.3.2 Create an account

Step 1: Click [Sign Up] to create an account, fill in your information and then log in your account.



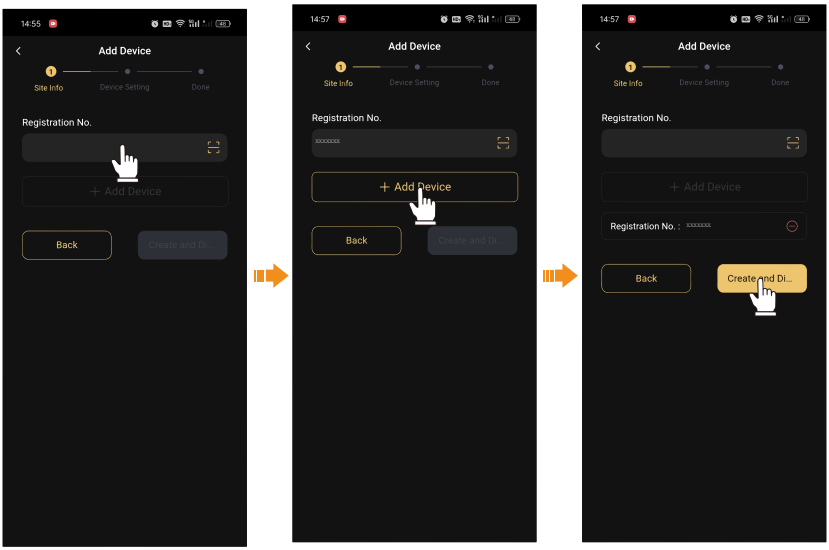
5.3.3 Create a site

Step 1: Clike [+] in the main interface and then fill in the corresponding information to create your site.



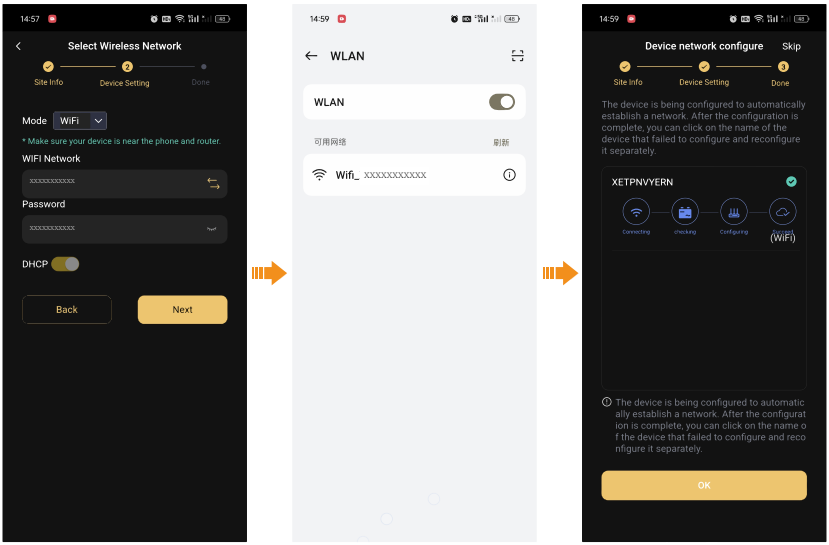
5.3.4 Add device

Step 1: Following the last step, you will enter the [Add Device] interface. Input the SN code on the device, and then click [Add Device].

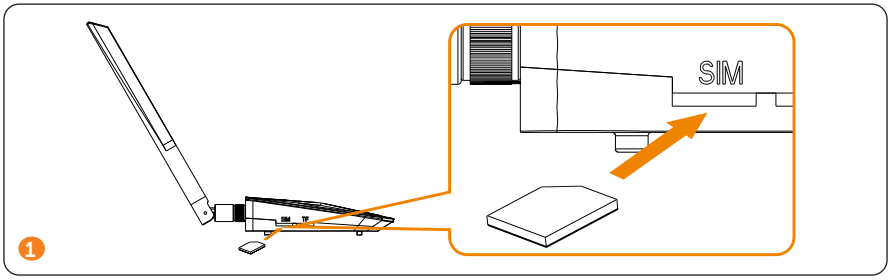


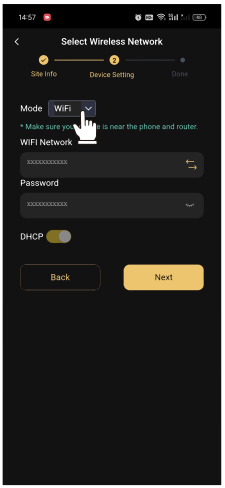
Step 2: In this step, you will start to configurate WiFi. We provide 3 methods: WiFi mode, 4G mode and LAN mode.

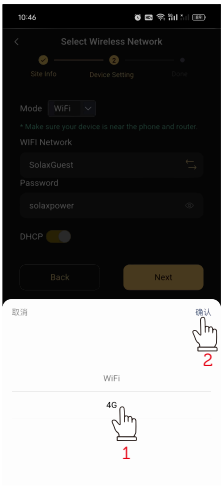
Method 1: Choose WiFi mode (the default one) and input your home WiFi account and password. Next, the interface will redirect to the WiFi interface. Please choose the WiFi of your device (WiFi_XXXXXX, XXXXXX refers to the SN on your device). After connects successfully, the APP will start to configurate.

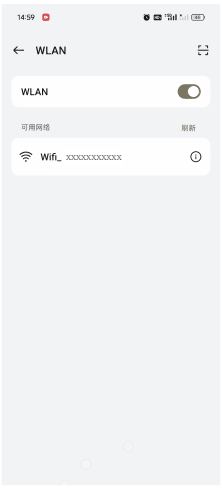


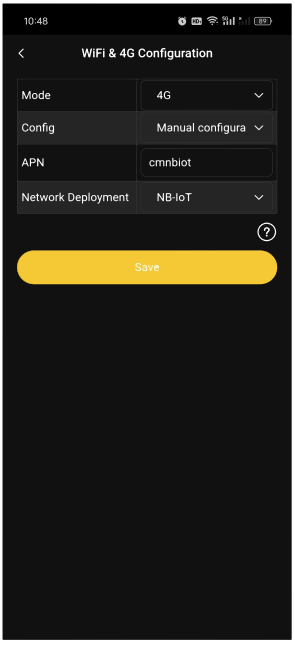
Method 2:Insert SIM card first and then select [4G] mode. Connect the WiFi of your device, and input [cmnbiot] on the APN bar and select NB-IoT on the Network Deployment bar.

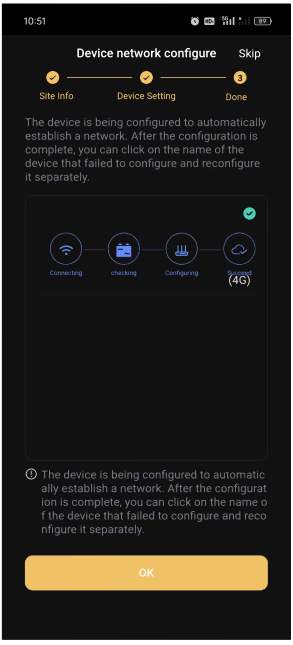








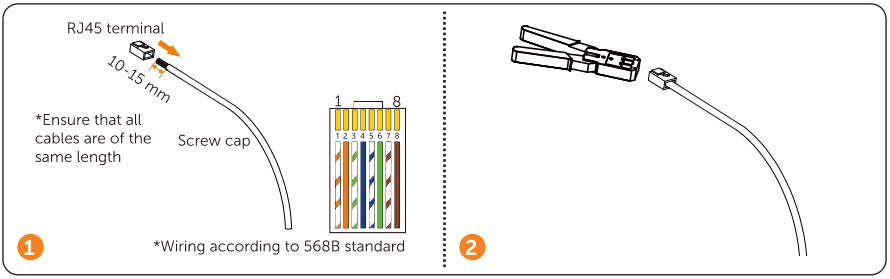


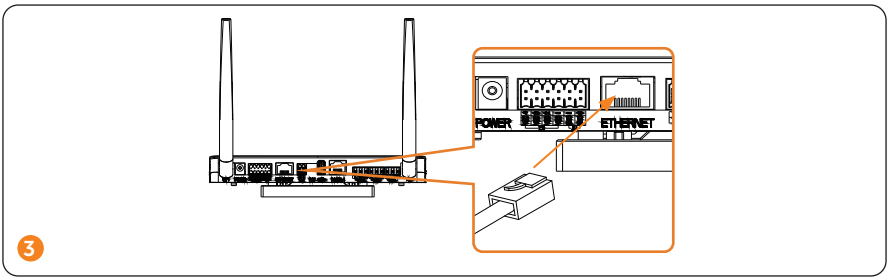


NOTICE

- If you use a white SIM card, please fill [cmnbiot] in the APN column; If you use a black SIM card, please input [cmiot] in the APN column.

Method 3:Insert LAN into the ethernet port to connect ECC to the routher in a wired way.



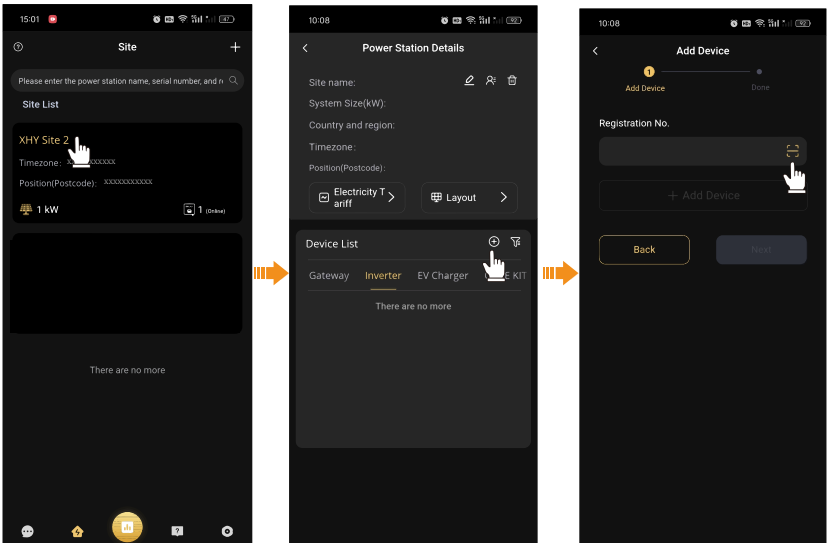


5.3.5 Bind microinverter

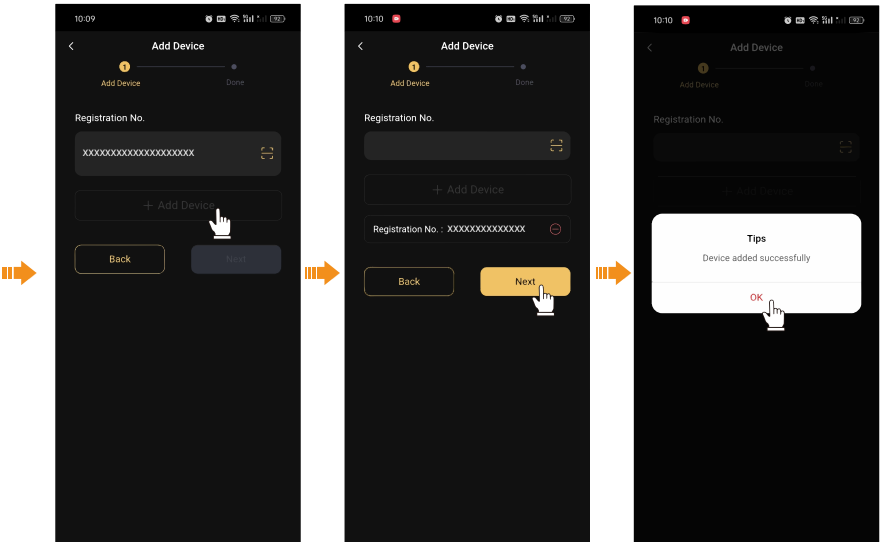
If you need to bind microinverter, please follow steps as below.

Step 1: Click a site that you need to bind microinverter, click [⊕] icon, and input or scan the QR code on the microinverter.

NOTICE
• If scanning the QR code step fails,.then try to scan the one dimensional code. Scanning one dimensional code may lead.to inaccurate scan results).



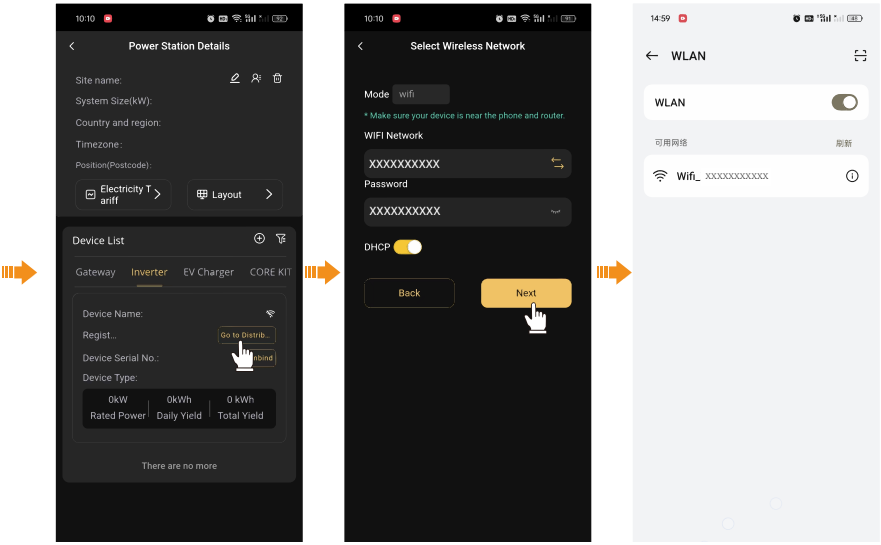
Step 2: After APP recognize the code, click [Add Device] and then [Next] until the interface pop up [Device added successfully].



5.3.6 Microinverter data

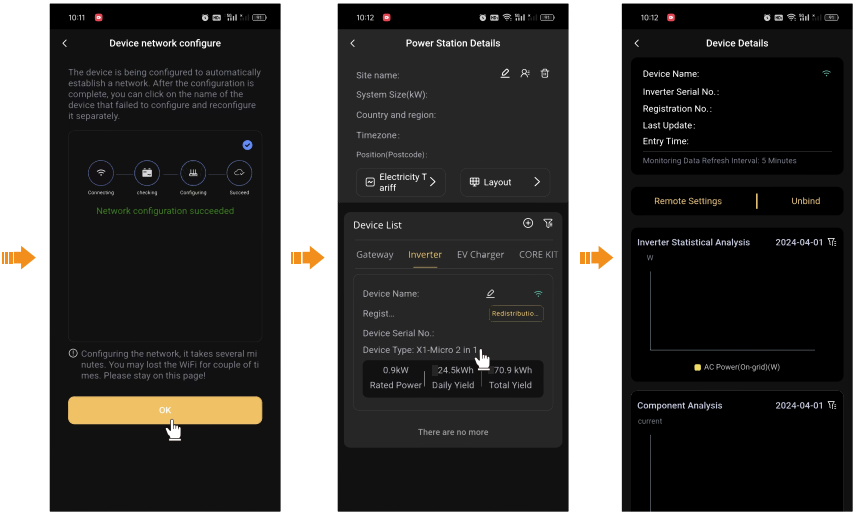
Step 1: Click [Go to Distrib...] to configurate WiFi. Fill in your Home WiFi network and

password, Select [Next], and connect [WiFi_XXXXXXX] (XXXXXX refers to the SN of your device).



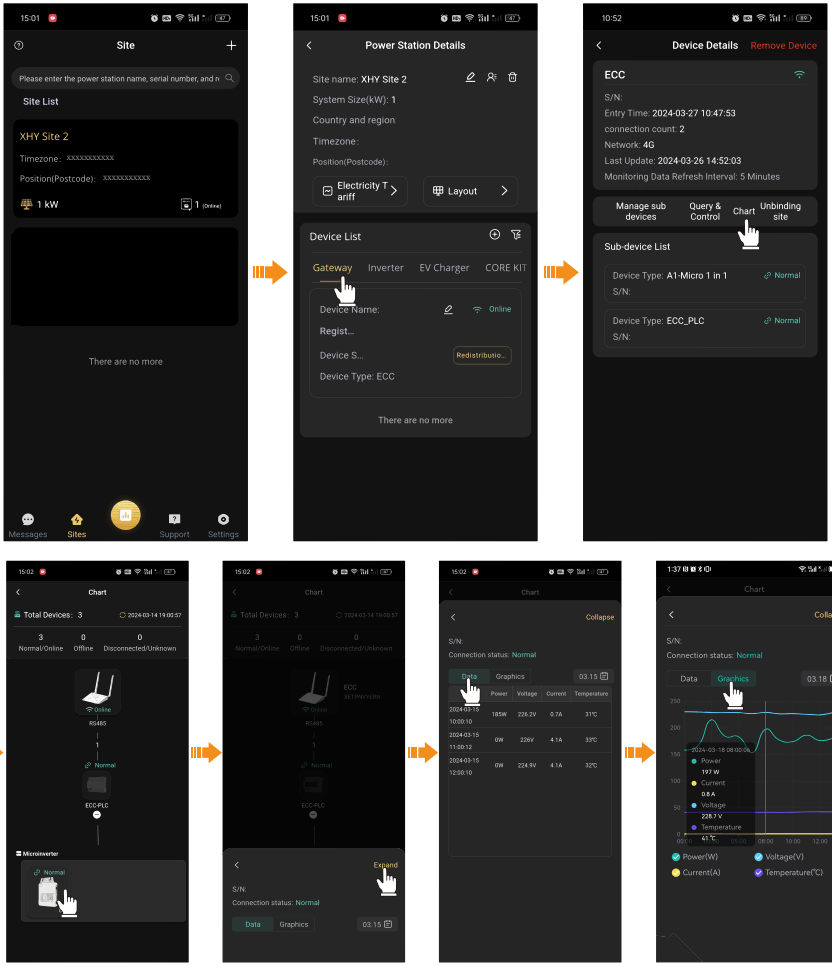
Step 2: After successfully connecting to WiFi_XXXXXX, system will start to configurate WiFi automatically.

Step 3: Click the specific inverter you bind in the last step to see more details of the device.



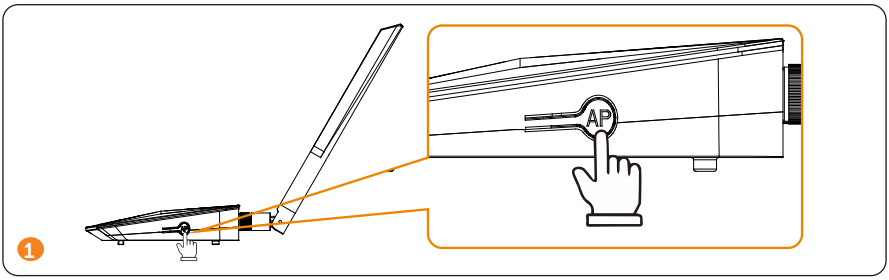
5.3.7 On-site inspection

Step 1: To inspect your site, please click the site, and choose Gateway. Click [Chart], device, [Expand], [Data] or [Graphics] to see the data of your device.



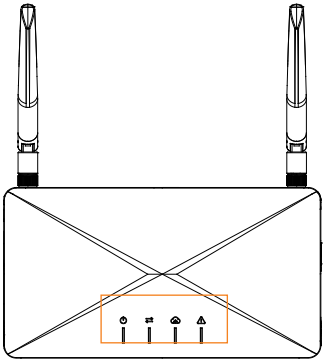
NOTICE

- You can also finish this step by clicking AP button of the ECC.


AP
1

6 Troubleshooting and Maintenance

6.1 LED Indicator



LED indicator status

Symbol	LED indicator	Definition
	Power	Display the status of electricity power
	Local communication	Display the local communication status
	SolaXCloud communication	Display the communication with SolaXCloud
	Warning	Warning important faults

- **Troubleshooting for ECC + X1-Micro 2 in 1 / 4 in 1 + meter scence**

Indicator	Status	Description
RUN	Steady on	Connected to the power
	Steady off	ECC not power on
SERVE1	Steady off	Meter scence (Device in one site: microinverter with bulit-in WiFi + ECC; no communication between microinverter with bulit-in WiFi and ECC)

Indicator	Status	Description
SERVE2	Green light steady on	ECC is connecting to the SolaXCloud; communication is normal
	Green light flashes quickly (1 s)	The AP hotspot of ECC is activated (with the highest priority); after configuration, green light will be steady on
	Red light steady on	Not connected to the routher
	Red light flashes quickly (1 s)	Connected to the routher; not connected to the server
ALARM	Steady off	Normal; no errors
	Red light flashes quickly (1 s)	Not connected to the meter (no data were transferred)
	Red light steady on	ECC report error

- **Troubleshooting for ECC + ECC-PLC + A1-Micro 1 in 1 scence**

Indicator	Status	Description
RUN	Steady on	Connected to the power
	Steady off	ECC not power on
SERVE1	Green light steady on	ECC communicates normally with all microinverters (the data of PLC microinverter will be transmitted to ECC)
	Green/red light flashes quickly (1 s) and alternately	ECC connected to partial microinverters
	Red light steady on	Not connected to any microinverters
	Green light flashes quickly (1 s)	ECC is connecting to all microinverters
SERVE2	Green light steady on	ECC is connecting to the SolaXCloud; communication is normal
	Green light flashes quickly (1 s)	The AP hotspot of ECC is activated (with the highest priority)
	Red light steady on	Not connected to the routher
	Red light flashes quickly (1 s)	Connected to the routher; not connected to the server

Indicator	Status	Description
ALARM	Steady off	Normal; no errors
	Red light flashes quickly (1 s)	Not connected to the meter (no data were transferred)
	Red light steady on	ECC report error

6.2 Maintenance

Regular maintenance is required for the ECC. The table of "Proposal of Maintenance" below lists the operational maintenance for expressing the optimum device performance. More frequent maintenance service is needed in the worse work environment. Please make records of the maintenance.

WARNING!

- Only qualified person can perform the maintenance for the ECC .
- Only use the spare parts and accessories approved by SolaX for maintenance.

6.2.1 Maintenance routines

Item	Check Notes	Maintenance Inverval
Safety check	• Check the items mentioned in section 1 "Safety" • The safety check shall be performed by manufacturer's qualified person who has adequate training, knowledge, and practical experience.	Every 12 months

6.2.2 Upgrading Firmware

Upgrade precautions

- Please make sure that the power supply is normal.

- If the firmware upgrade fails or stops, please unplug the U disk power off the ECC and restart it. Then repeat the upgrade steps.

Upgrade preparation

- Please check the ECC version and prepare a U disk (USB 2.0/3.0) and personal computer before upgrading. Please make sure that the format is FAT FAT 32.
- Please contact our service support to obtain the firmware, and store the firmware in the U disk according to the following path.
  - » ECC_Gateway/xxxxxxxxxxxx_xxx_xxxxxxx_Vxxx.xx_xxxxxxxx.usb (for example: ECC_Gateway/323101049400_ECC_Gateway_V001.01_20240102.usb)

NOTICE!
• VX.XX refers to the file version, XX.XX refers to date.

Upgrade steps

a. Plug the U-disk into the USB port of ECC.

b. Wait for ECC to detect the upgrading files and upgrade automatically.

6.2.3 Device Replacement

a. To disassembling the ECC

- » Pull the power adapter.
- » Unbind the original ECC on the APP and bind a new one in the previous site.

7 Decommissioning

7.1 Disassembling the Gateway

Refer to a. To disassembling the ECC for disassembling the ECC.

7.2 Packing the Gateway

- Load the ECC into the original packing material if possible.
- If the original packing material is not available, you can also use the packing material which meets the following requirements:
  - » Suitable for the weight of product.
  - » Easy to carry.
  - » Be capable of being closed completely.

7.3 Transportation and Storage

If the ECC is not put into use immediately, the transportation and storage requirements needs to be met:

Transportation

- Observe the caution signs on the packaging of ECC before transportation.
- Pay attenting to the weight of ECC. Handle with care.
- Wear protective gloves when carrying the equipment by hand to prevent injuries.
- When lifting up the ECC, hold the bottom position of the ECC. Keep ECC horizontal in case of falling down due to tilt.

Storage

- The ECC must be stored indoors.
- Do not remove the original packaging material and check the outer packaging material regularly.
- The storage temperature should be between -40°C and +60°C. The humidity should be between 5% and 95%.
- Stack the ECC in accordance with the caution signs on the ECC carton to prevent their falling down and device damage. Do not place it upside down.

- If the ECC has been stored for more than 10 years, it must be checked and tested by professionals prior to use.

7.4 Disposal of the Gateway

Please dispose of the ECCs or accessories in accordance with the disposal regulations for electronic waste applied at the installation site.

8 Technical Data

Power adapter	100~240 V 50/60 HZ 0.8 A AC input 12 V 2 A DC output
Ethernet	10/100 M
Wi-Fi frequency range	2.4 GHz
Wi-Fi EIRP power	19.5 dBm
Degree of protection	IP20
Operating temperature range [°C]	-20°C ~ 60°C
Humidity	5%~95%
Dimensions [mm]	210 * 113 * 26
Safety	EN 62368-1:2014+A11:2017
EMC	EN 55032: 2015+A11: 2020 EN IEC 61000-3-2: 2019+A1: 2021 EN 61000-3-3: 2013+A2: 2021 EN 55035: 2017+A11: 2020 ETSI EN 301 489-1 V2.2.3: 2019 ETSI EN 301 489-17 V3.2.4: 2020 ETSI EN 301 489-52 V1.2.1: 2021
Radio	ETSI EN 300 328 V2.2.2: 2019 ETSI EN 301 908-1 V15.2.1: 2023 ETSI EN 301 908-13 V13.2.1: 2022
Health	EN IEC 62311: 2020 EN 50665:2017
RF output power	Cat M1: LTE HD-FDD: LTE Cat M1 B1: 21dBm(Conducted) /LTE Cat M1 B2: 21dBm(Conducted) /LTE Cat M1 B3: 21dBm(Conducted) /LTE Cat M1 B4: 21dBm(Conducted) /LTE Cat M1 B5: 21dBm(Conducted) /LTE Cat M1 B8: 21dBm(Conducted) /LTE Cat M1 B12: 21dBm(Conducted) /LTE Cat M1 B13: 21dBm(Conducted) / LTE Cat M1 B18: 21dBm(Conducted) /LTE Cat M1 B19: 21dBm(Conducted) /LTE Cat M1 B20: 21dBm(Conducted) /LTE Cat M1 B25: 21dBm(Conducted) /LTE Cat M1 B26: 21dBm(Conducted) /LTE Cat M1 B271: 21dBm(Conducted) /LTE Cat M1 B28: 21dBm(Conducted) /LTE Cat M1 B66: 21dBm(Conducted) /LTE Cat M1 B85: 21dBm(Conducted) Cat NB2: LTE HD-FDD. LTE Cat NB2 B1: 21dBm(Conducted) /LTE Cat NB2 B2: 21dBm(Conducted) /LTE Cat NB2 B3: 21dBm(Conducted) /LTE Cat NB2 B4: 21dBm(Conducted) /LTE Cat NB2 B5: 21dBm(Conducted) /LTE Cat NB2 B8: 21dBm(Conducted) /LTE Cat NB2 B12: 21dBm(Conducted) /LTE Cat NB2 B13: 21dBm(Conducted) / LTE Cat NB2 B18: 21dBm(Conducted) /LTE Cat NB2 B19: 21dBm(Conducted) /LTE Cat NB2 B20: 21dBm(Conducted) /LTE Cat NB2 B25: 21dBm(Conducted) /LTE Cat NB2 B28: 21dBm(Conducted) /LTE Cat NB2 B66: 21dBm(Conducted) /LTE Cat NB2 B71: 21dBm(Conducted) /LTE Cat NB2 B85: 21dBm(Conducted)

Frequency range	LTE HD-FDD B1: Tx: 1920-1980MHz/ Rx: 2110-2170MHz LTE HD-FDD B2: Tx: 1850-1910MHz/ Rx: 1930-1990MHz LTE HD-FDD B3: Tx: 1710-1785MHz/ Rx: 1805-1880MHz LTE HD-FDD B4: Tx: 1710-1755MHz/ Rx: 2110-2155MHz LTE HD-FDD B5: Tx: 824-849MHz/ Rx: 869-894MHz LTE HD-FDD B8: Tx: 880-915MHz/ Rx: 925-960MHz LTE HD-FDD B12: Tx: 699-716MHz/ Rx: 729-746MHz LTE HD-FDD B13: Tx: 777-787MHz/ Rx: 746-756MHz LTE HD-FDD B18: Tx: 815-830MHz/ Rx: 860-875MHz LTE HD-FDD B19: Tx: 830-845MHz/ Rx: 875-890MHz LTE HD-FDD B20: Tx: 832-862MHz/ Rx: 791-821MHz LTE HD-FDD B25: Tx: 1850-1915MHz/ Rx: 1930-1995MHz LTE HD-FDD B26: Tx: 814-849MHz/ Rx: 859-894MHz LTE HD-FDD B27: Tx: 807-824MHz/ Rx: 852-869MHz LTE HD-FDD B28: Tx: 703-748MHz/ Rx: 758-803MHz LTE HD-FDD B31: Tx: 452.5-457.5MHz/ Rx: 462.5-467.5MHz LTE HD-FDD B66: Tx: 1710-1780MHz/ Rx: 2110-2180MHz LTE HD-FDD B71: Tx: 663-698MHz/ Rx: 617-652MHz LTE HD-FDD B72: Tx: 451-456MHz/ Rx: 461-466MHz LTE HD-FDD B73: Tx: 450-455MHz/ Rx: 460-465MHz LTE HD-FDD B85: Tx: 698-716MHz/ Rx: 728-746MHz
Modulation	BPSK, QPSK, 16QAM
Antenna type	700MHz~960MHZ/2.39dBi /External Antenna 1710MHZ~2170MHZ/2.39dBi /External Antenna 2300MHz~2700MHZ/2.39dBi /External Antenna

9 Appendix

9.1 INSTALLATION MAP

Microinverter Installation Map

Make sure N for North

Panel type:
Azimuth:
Tilt:
Sheet_of_

Customer information:

Gateway series number:

ROW \ COLUMN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A																
B																
C																
D																

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