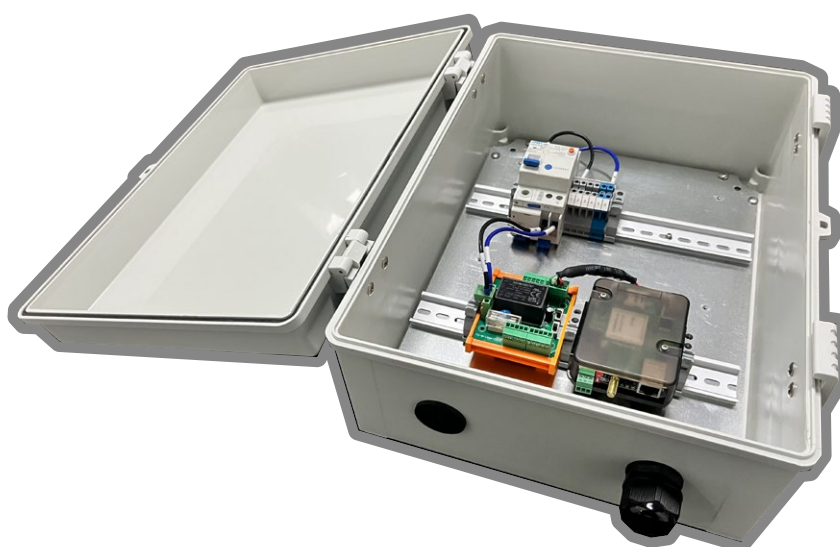


System Edge **BOX**



Quick Guide for SE-FC2-E Box

05/05/2023

Revision 3

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Safety Precautions



NOTICE

Before performing operations, read through this manual and follow all the precautions to prevent accidents. The safety precautions provided in this document do not cover all the safety precautions. **CPS** shall not be liable for any consequence caused by the violation of the safety operation regulations and design, production, and usage standards.

Declare

CPS shall not be liable for any consequence caused by any of the following events.

- Transportation
- The storage conditions do not meet the requirements specified in this document.
- Violate the operation instructions and safety precautions in this document for installation, cable connecting, and maintenance.
- Operation in extreme environments which are not covered in this document.
- Unauthorized modifications to the product or software code.
- Installation or use in environments which are not specified in related international standards.
- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Personal Requirements

- Only qualified electrical technicians are allowed to install and operate the **SE-FC2 Box**.
- Operation personnel should receive professional training.
- Operation personnel should read through this document and follow all the precautions.
- Operation personnel should be familiar with the safety specifications about the electrical system.
- Operation personnel should understand the composition and working principles of the grid-tied PV power system and local regulations.
-

Installation

- Ensure that the **SE-FC2 Box** is not connected to a power supply and is not powered on before starting installation.
- Ensure that the **SE-FC2 Box** is installed in a well ventilated environment.
- Do not perform any operation on other components inside the chassis except connecting AC power cables and communications cables.
- Ensure that all electrical connections comply with local electrical standards.



DANGER

High voltages may cause electric shocks and serious injuries during **SE-FC2 Box** operating.

Do not touch components such as AC cables, circuit breakers and connectors during **SE-FC2 Box** is energized.

- Maintain the **SE-FC2 Box** with sufficient knowledge of this document and proper tools and testing equipment.
- Before performing maintenance tasks, power off the **SE-FC2 Box** and perform lock-out/tagout (LOTO) of the source circuit.
- For personal safety, wear personal protective equipment (PPE), including insulated gloves and protective shoes.

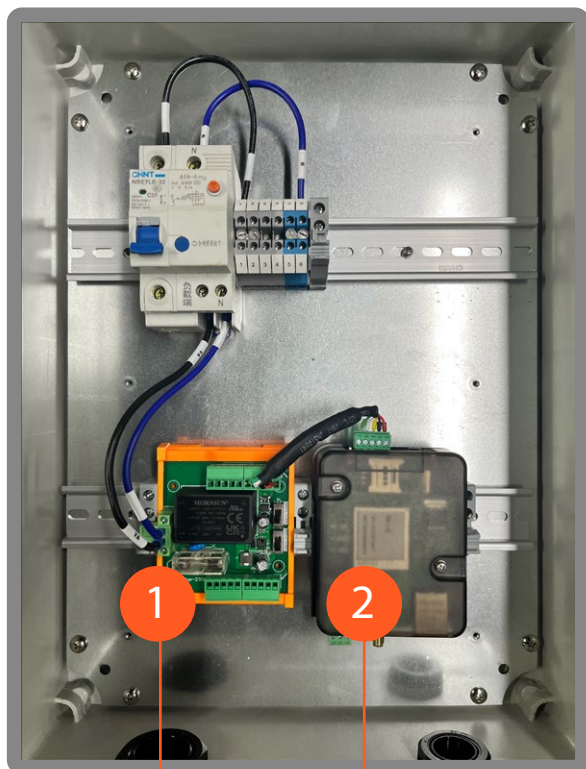
Warranty Policy

- The warranty policy of this product is specified in the contract; otherwise, the standard warranty is 2 years.
- For warranty terms, please refer to the **CPS** accessories warranty policy in place at time of purchase.

Product Specifications

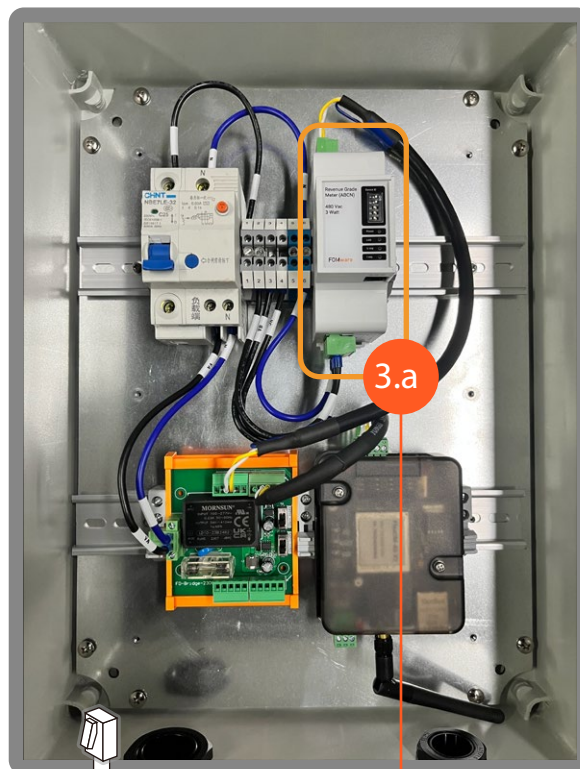
RS485 HUB (FD2-Bridge2)	
No. of Ports	4 (5-Pole Terminal Block , RS485 + DC output)
DC Output	12 / 24 V selectable
AC/DC Power Supply (FD2-Bridge2)	
AC Input	100 ~ 270 V, (220VAC, L-N / 380VAC, L-N)
DC Output	12 / 24 V, 10W
Environmental Limits	
Operating Temperature	-40 ℃ to 60 ℃ (-40 to 140°F), Natural convection
Ambient Relative Humidity	5 to 85% (non-condensing)
Physical Characteristics	
Installation Options	Wall Mounting
IP Rating	IP 65
Dimensions	400 mm / 300 mm / 170 mm
Weight	2kg

SE-FC2
without EPM kit (PV O&M)



FC2-EWX2/EHX2 Gateway

SE-FC2-E
with EPM kit (+ Zero-export / Load monitoring)



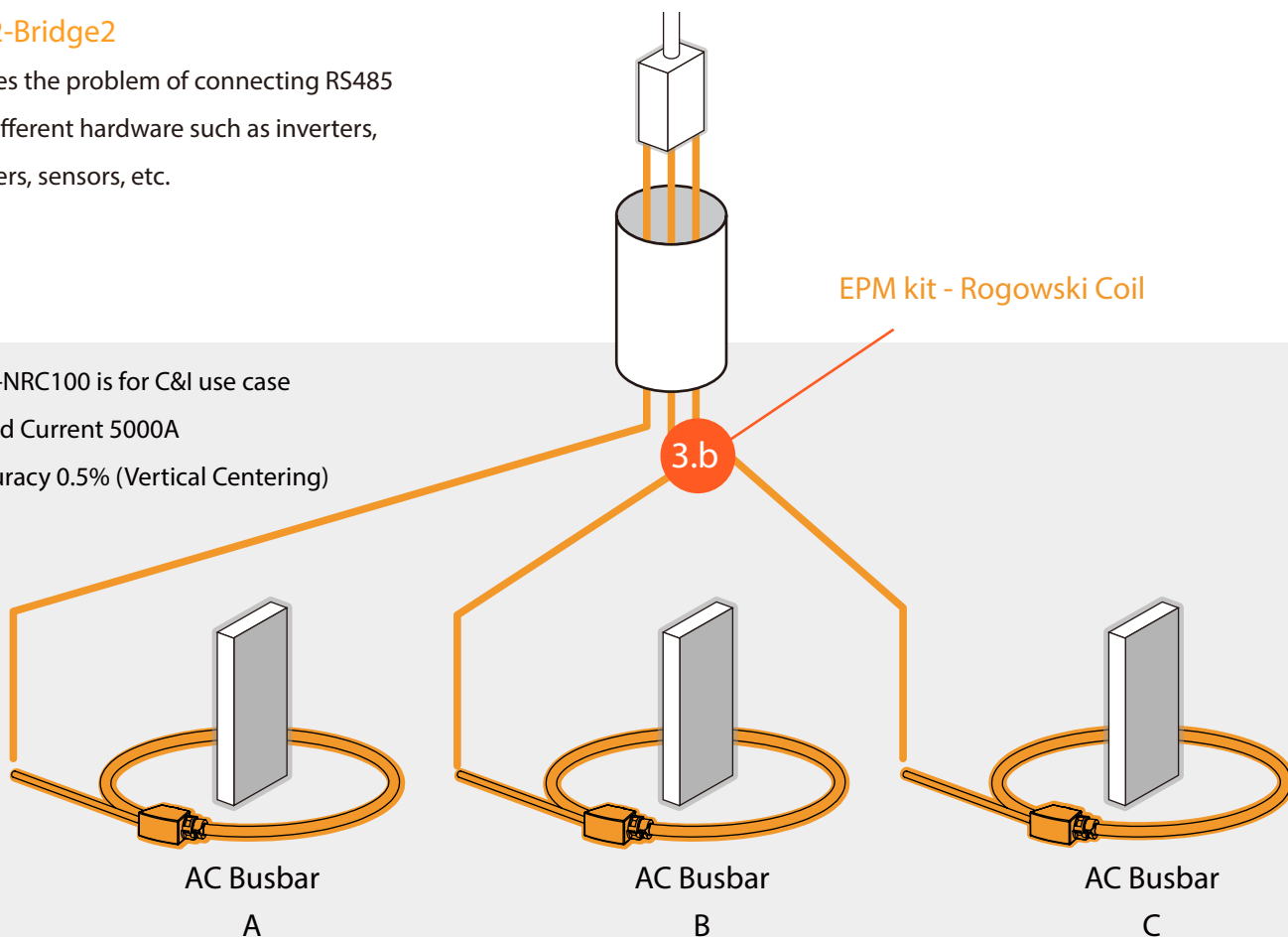
Prefabricated cables
and RJ12 connectors

EPM kit - Meter

FD2-Bridge2

solves the problem of connecting RS485
to different hardware such as inverters,
meters, sensors, etc.

FD2-NRC100 is for C&I use case
Rated Current 5000A
Accuracy 0.5% (Vertical Centering)



EPM kit - Rogowski Coil

AC Busbar
A

AC Busbar
B

AC Busbar
C

Specification (FD2-M1 Meter)	
Wiring Type	3P4W / 3CT, 3P3W / 3CT, 1P3W, 1P2W
Sensor Type	Rogowski Coil
Voltage Range	0~480 VAC
Max. Voltage	528 VAC
Accuracy	
Current	0.1% +Current Sensor Accuracy
Voltage	±0.2% (60V~600V AC)
Frequency	±0.01% (45~65Hz)
Power Factor	±0.005
Active and Apparent Power	IEC62053-22 Grade:0.5S
Reactive Power	IEC62053-21 Grade:1S
Active Energy	IEC62053-22 Grade:0.5S
Reactive Eergy	IEC62053-21 Grade:1S

Specification (FD2-NRC100)	
Rated Current	5000A
Sensitivity @50Hz	Calibrated 50mV/kA, 85mV/kA
	Uncalibrated 56mV/kA, 90mV/kA
Temperature Drift	Calibrated < 100ppm/℃
	Uncalibrated < 50ppm/℃
Accuracy	0.5% (Vertical Centering)
Internal Resistance	50 ~ 250 Ω
Coil Cross-sectional Thickness	8mm
Signal Length	5m

Gateway	FC2-EHX2	FC2-EWX2
Daisy Chain Interface		
No. of Ports	1 (5-pole Terminal Block)	✓
Protocol	Modbus RTU	✓
Modbus RTU Mode	Master	✓
CAN Interface		
No. of Ports	1 (3-pole Terminal Block)	✓
Signals	CAN_L, CAN_H, CAN Signal GND	✓
Terminator	120 ohms (configurable)	✓
Isolation	3 kV (built-in)	✓
Ethernet Interface		
10/100BaseTX Ports	1 (RJ45 connector)	✓
Cloud Applications	MQTT	✓
WLAN Interface		
WLAN Standard	802.11 b/g/n	✓
Frequency Band	2.4 GHz	✓
Wireless Security	WEP, WPA/WPA2	✓
Antenna	Built-in	✓
Bluetooth Interface		
Standard	BLE 4.2	✓
Antenna	Built-in	✓

	FC2-EHX2	FC2-EWX2
Cellular Interface		
Cellular Standards	LTE-FDD/LTE-TDD	
No. of SIM Slot	1	
Cellular Antenna	Built-in	
Power Parameters		
Input Voltage	8 to 24 Vdc	✓
Power Consumption	2.5 W, Max. 5 W	✓
Environment Limits		
Operating Temperature	-30 °C to 85 °C, Natural convection	✓
Storage Temperature	-40 to 85°C	✓
Ambient Relative Humidity	5 to 85% (non-condensing)	✓
Physical Characteristics		
Housing	Plastic	✓
IP Rating	IP 20	✓
Dimensions	101 mm / 69 mm / 21 mm	✓
Weight	150g	✓

	Input Power	Scenario	
SE-FC2 ☐	120 / 220/ 380 VAC, (L - N)	Three Phase INV Daisy Chain (Hybrid System / High Performance)	SE-FC2-E ☐
SE-FA1 ☐	480 / 600 / 800 VAC	Three Phase INV Daisy Chain (3rd Party SCADA / Hybrid System / High Performance)	SE-FA1-E ☐
without EPM		with EPM (+ Zero-export / Load monitoring)	

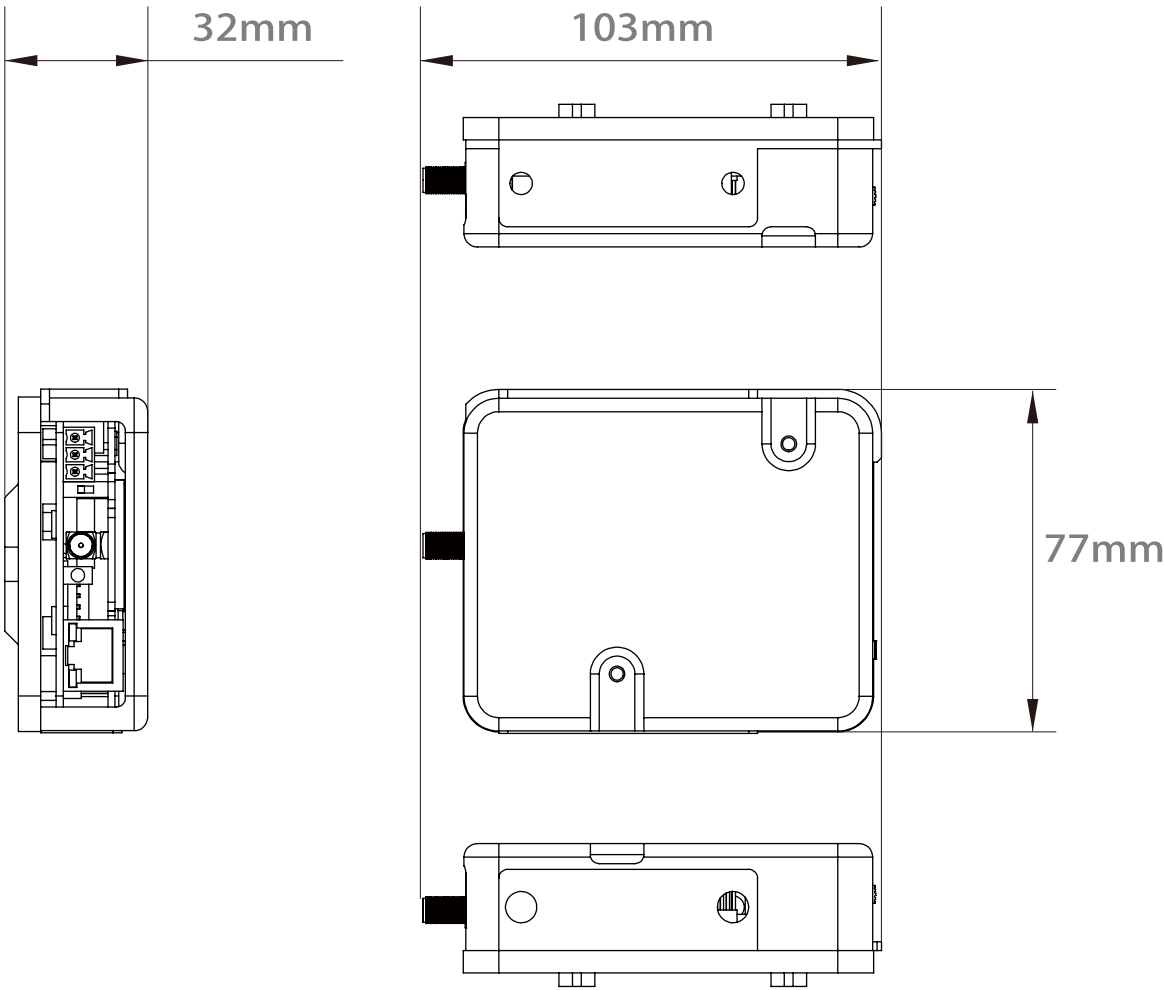
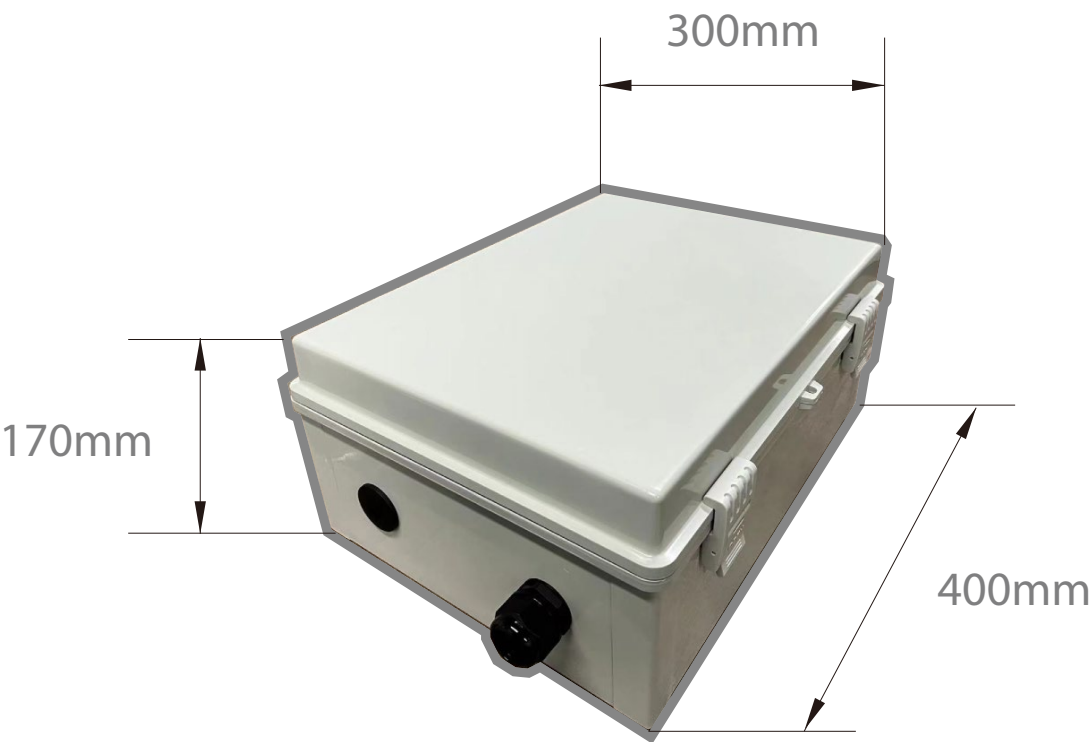
Notice:

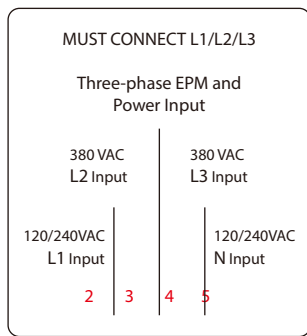
EPM is completely dependent on the reliability and timeliness of communication between the gateway and the devices in the daisy chain, and EPM performance is based on the premise of reliable communication.



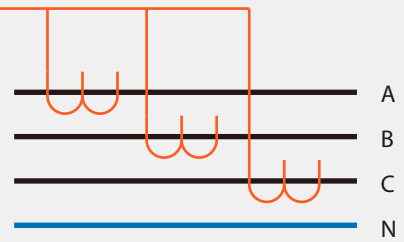
Minimum time interval for the entire daisy chain to perform a single derating	Maximum time for the inverter to execute a write command	
	< 200 ms	> 200 ms
2 Seconds	5	2
10 Seconds	25	10
	Maximum number of inverters that can be connected	

Dimensions



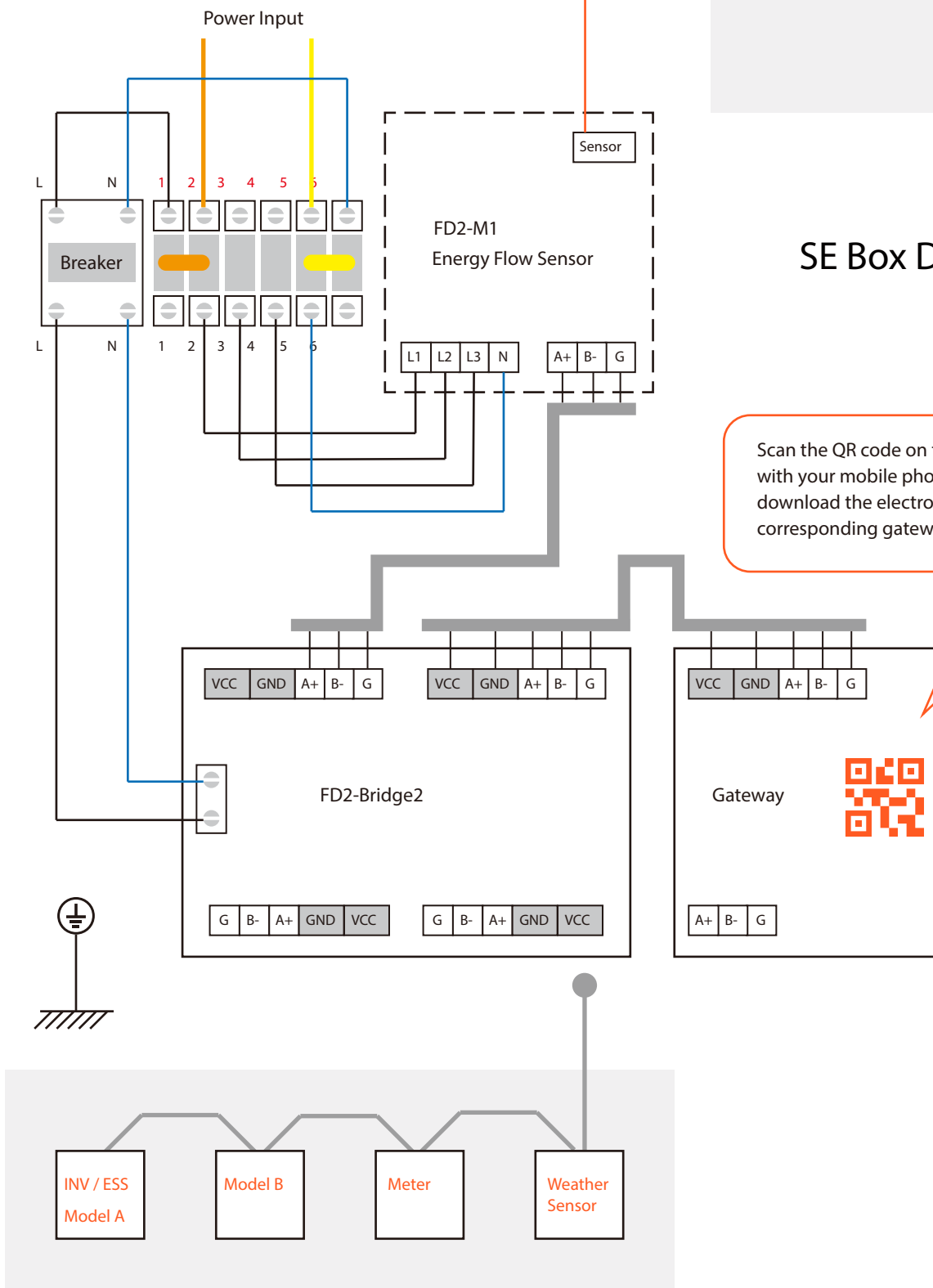


For three-phase scenarios, choose the FD2-NRC100 sensor



SE Box Diagram

Scan the QR code on the shell of the gateway with your mobile phone to download the electronic manual of the corresponding gateway !



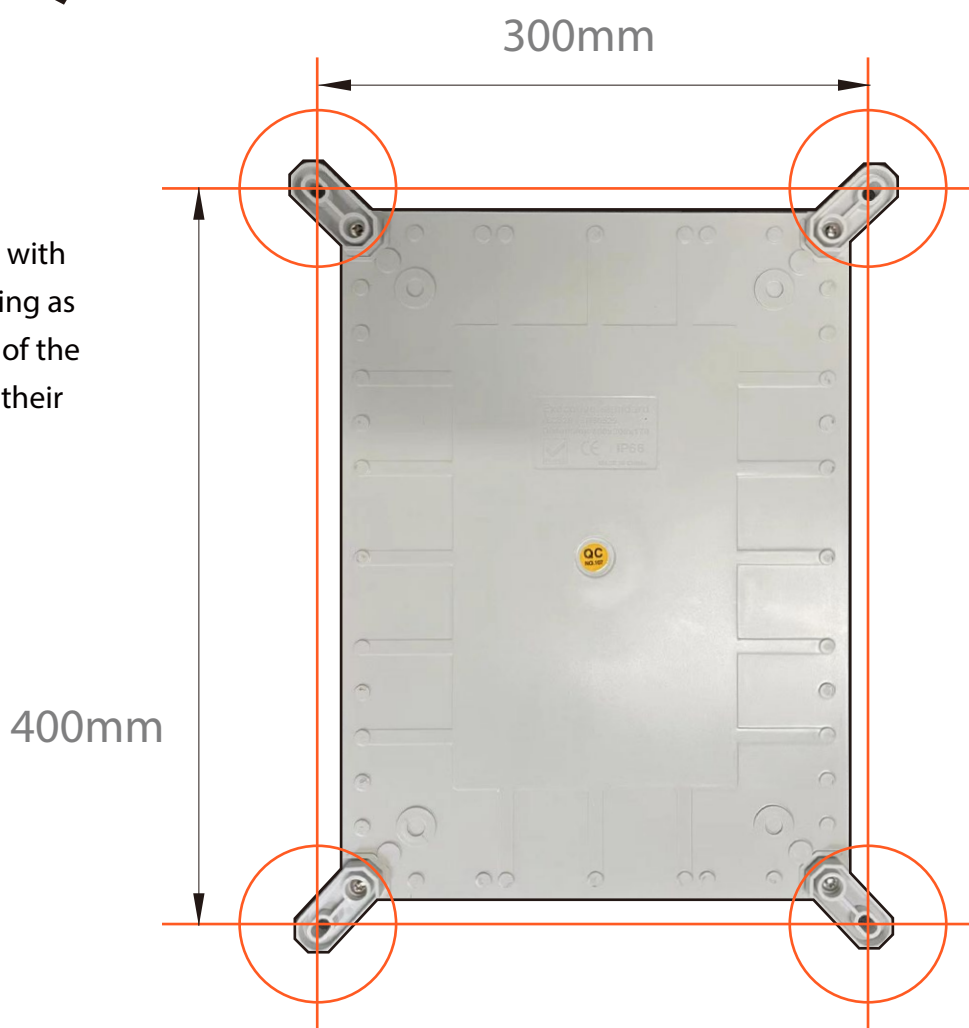
Hardware Installation

Wall Mounting



SE box accessories bag with wall mounting accessories and screws,
using a screwdriver to screw the accessories one by one to the four corners of the box

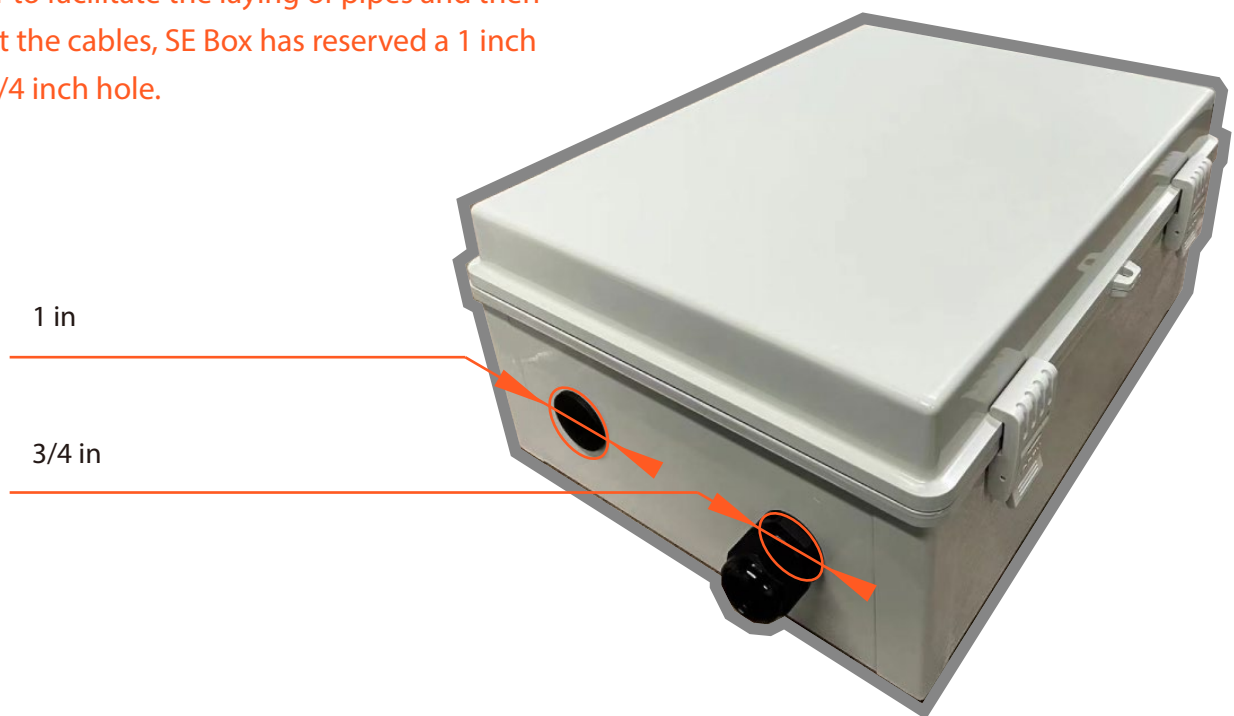
Pre-open four holes in the wall with an impact drill, four holes spacing as shown in the figure, the depth of the reference installer to purchase their own expansion screws.



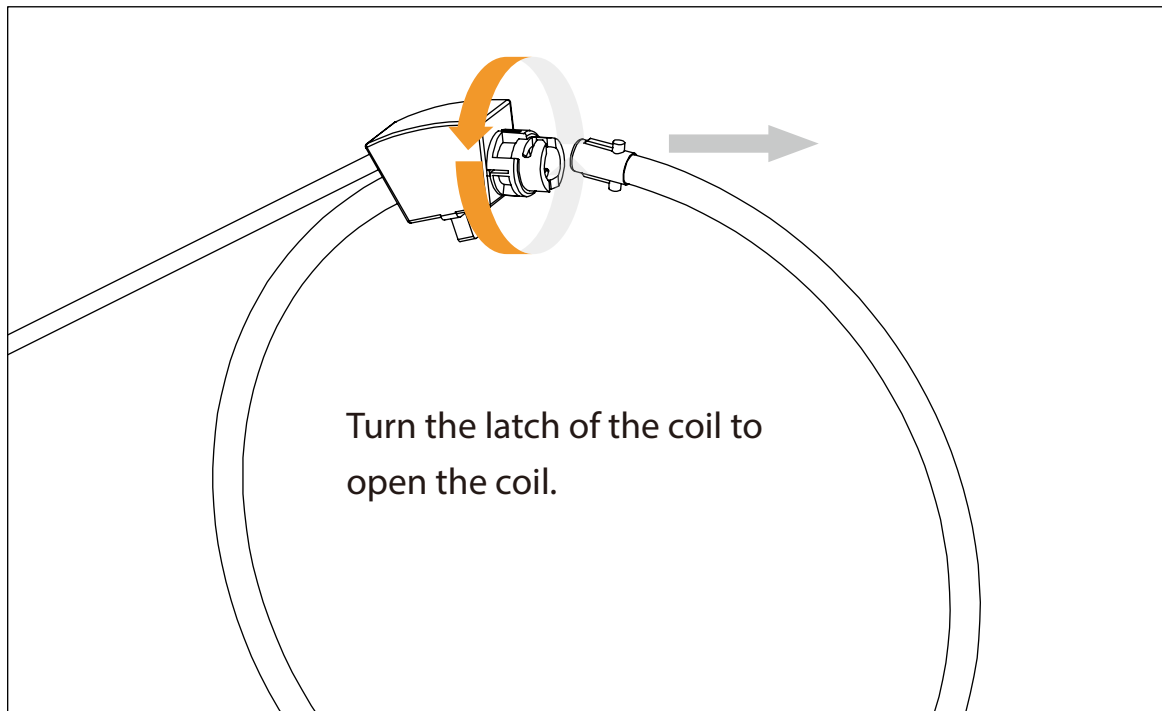
Fix the SE box to the wall by expansion screws, and check if it is firmly installed.



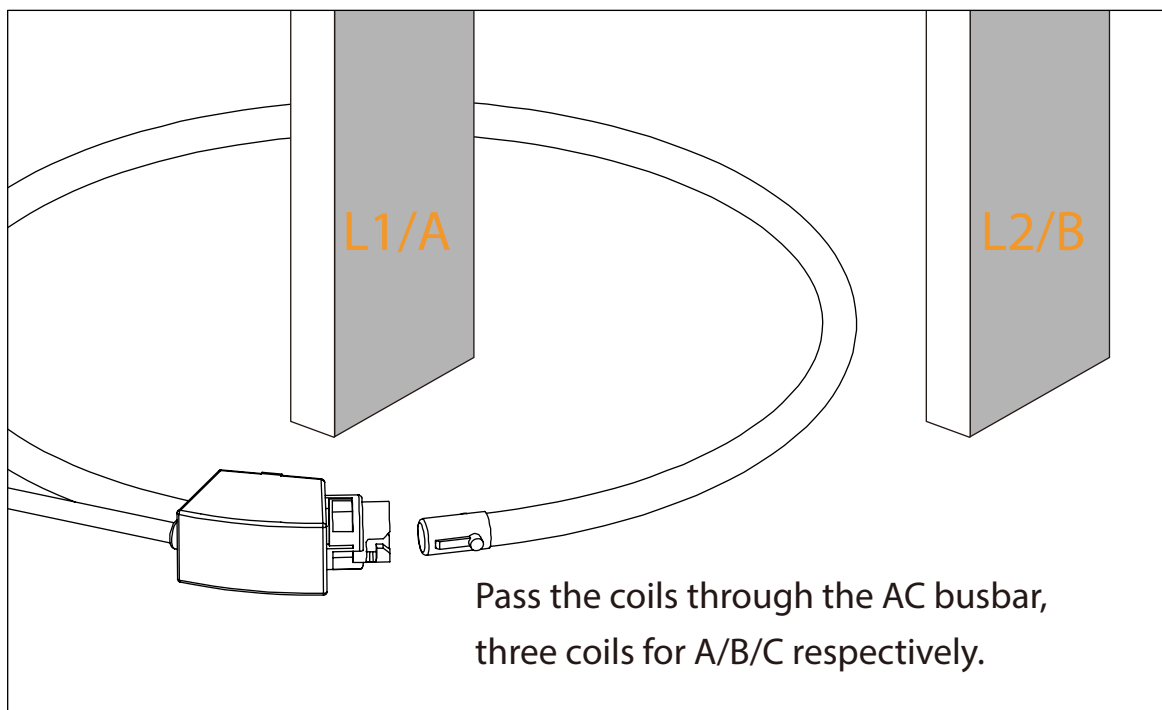
In order to facilitate the laying of pipes and then connect the cables, SE Box has reserved a 1 inch and a 3/4 inch hole.

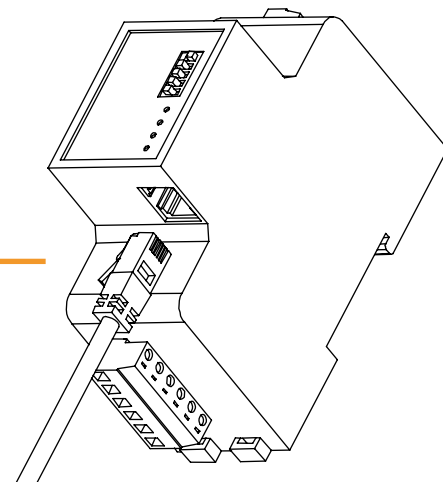
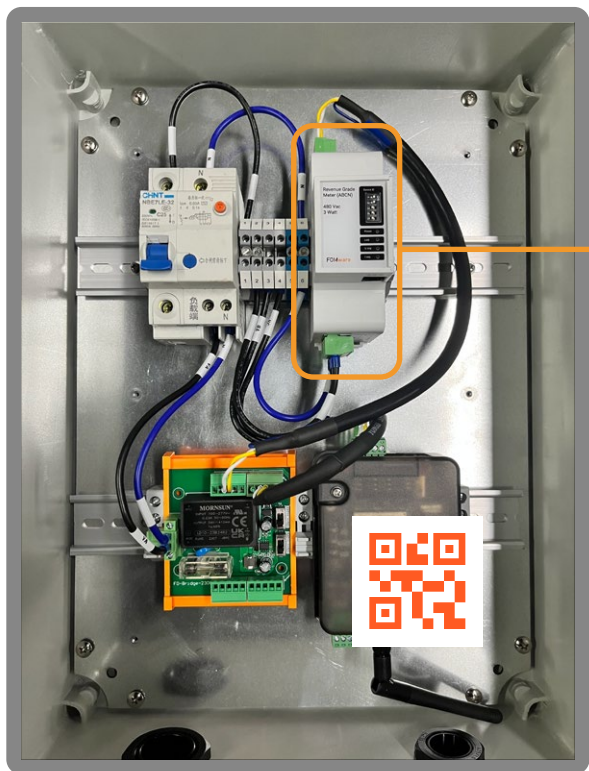


Connecting EPM



Do not pull or fold the coil with force.

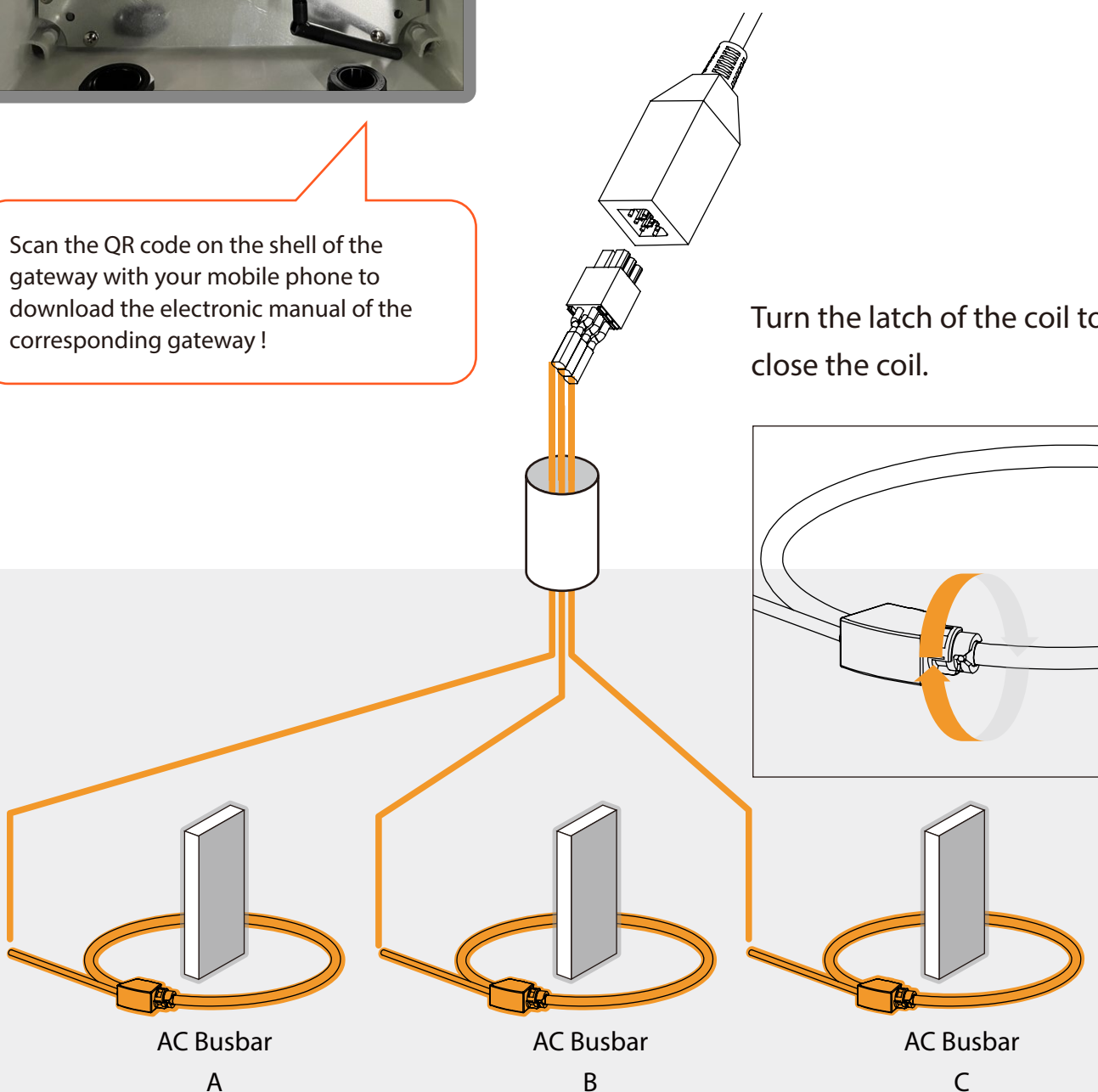




The RJ12 connector is pre-connected to the signal lines of the three coils. the RJ12 plugs into the corresponding port of the meter.

Scan the QR code on the shell of the gateway with your mobile phone to download the electronic manual of the corresponding gateway !

Turn the latch of the coil to close the coil.



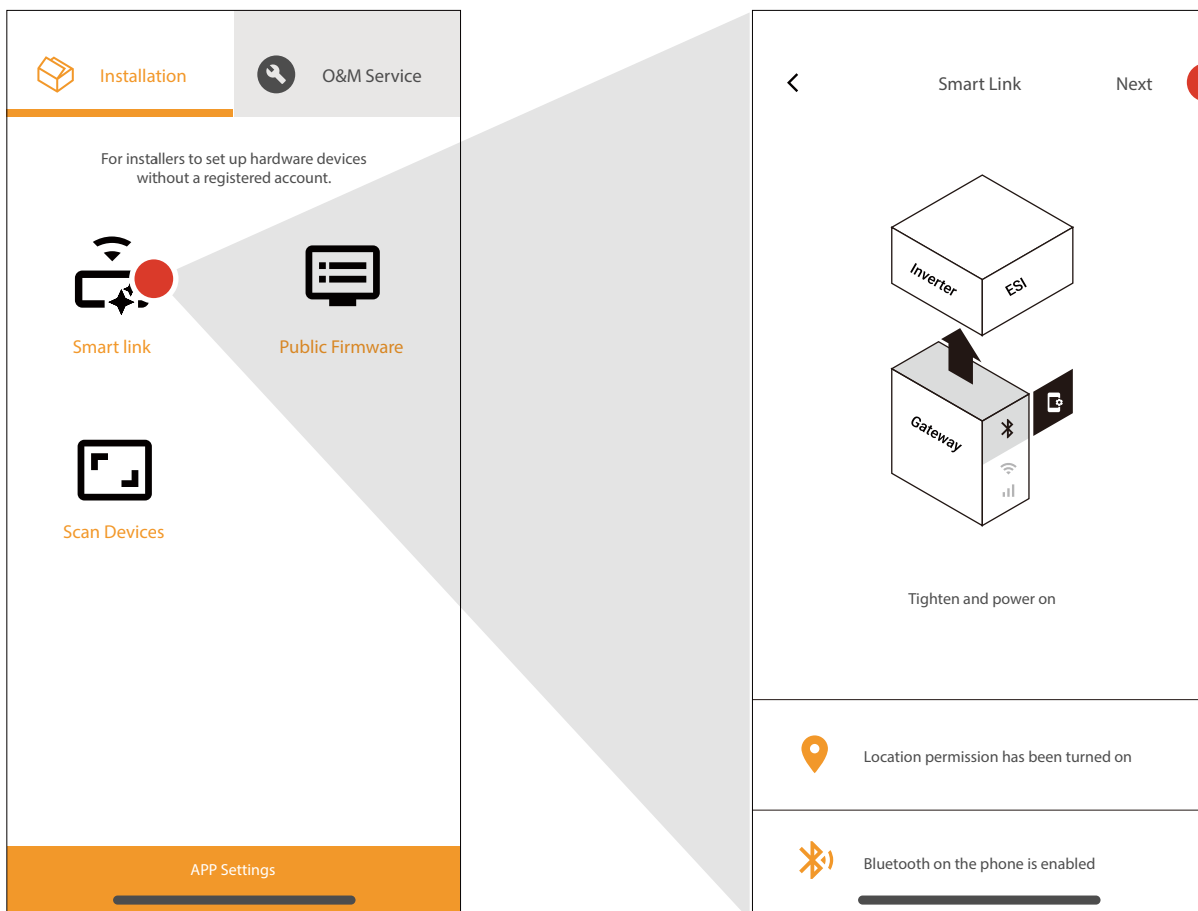
System Commissioning

Scan the QR-code to complete APP download and installation by using the mobile phones that can access the Internet. Or search for “**Chint Connect**” in Apple Store and Google Play.



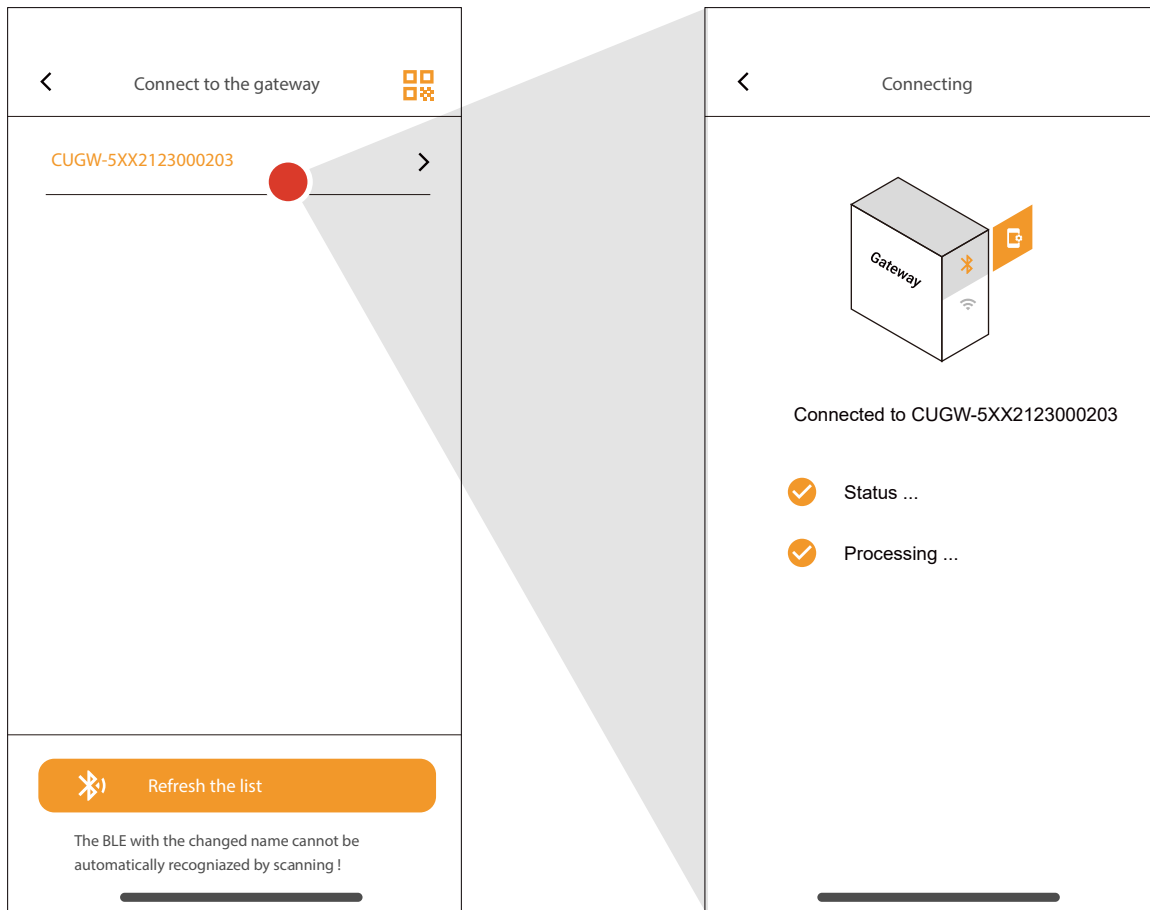
The Android/iPhone user interface may look slightly different but the setup procedure will be the same as shown.

Check the Internet Connection



Make sure your phone can connect to the Internet when you run the app for the first time. The APP needs to sync some important data from the cloud.

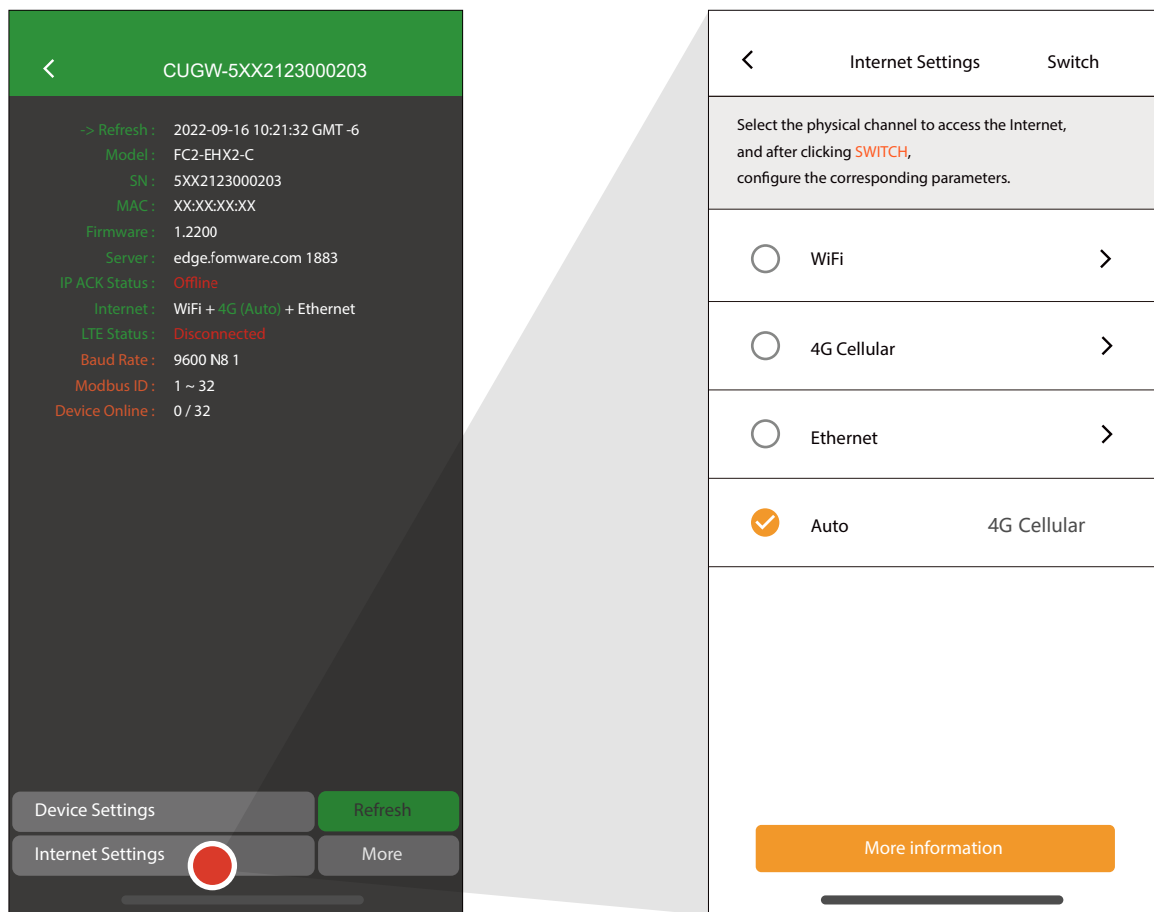
Click "smart link" and the app will prompt you to obtain some phone permissions. There is no abnormal prompt, click "next" to enter.



The gateway SN is included in the BLE signal name, and the app will list the scanned signals. Select the SN consistent with the target gateway label and click to enter.

During the process of connecting and entering the gateway configuration interface, the APP will prompt detailed information in case of any abnormality. Easy for users to diagnose problems.





Ensuring that the gateway can connect to the Internet is the most important step.

Different gateway models have different optional networking channels

if the “Status” is “Online”, the gateway is connected to the target server.

When the gateway status becomes “Online”, the gateway will automatically create related objects on the portal, and the administrator can remotely set the required parameters.

Unless the factory default does not include 4G, the gateway connects to the Internet via 4G by default.

In this case, it is assumed that the SIM card is inserted into the gateway.

WiFi		Save
Notice: 5 GHz WiFi Router is not supported. Does not support redirect authentication, common in hotel WiFi routers.		
WiFi SSID		>
Password		>
DHCP		>
Auto DNS		>

Click on "Internet Settings", select "WiFi" after "Switch".

Enter the correct WLAN information.



Caution :

After clicking "WiFi SSID" to configure, the APP will automatically fill in the WiFi SSID currently used by the phone.

If the user cannot judge the network status of the WLAN router, the user can configure the WiFi hotspot of the mobile phone to the gateway for reference.

WiFi Password



Cancel

OK

WiFi SSID

WiFi currently connected to the phone:

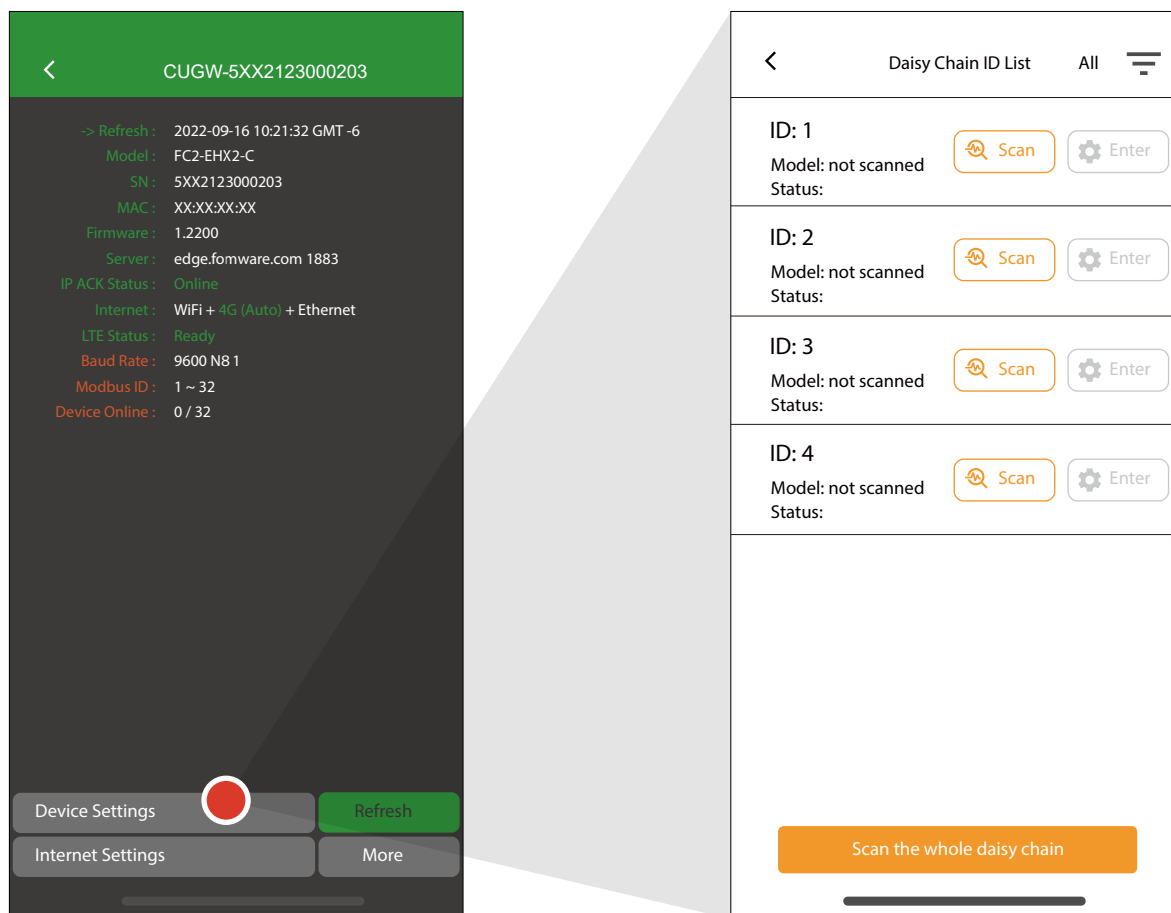
Free WI-FI for ABC

Click on the WIFI name above,
Input box will be filled in automatically

Cancel

OK

Modbus Device Settings



The gateway is configured with a default modbus ID range.

Click "Device Settings" and the gateway will scan the daisy chain. After scanning, a device list will appear with the default ID.

The user can either rescan the target IDs individually in the list, or scan the daisy chain in full.

Click "more" and then "Modbus ID Range" to set different Modbus ID address segments on a RS485 daisy chain for discovering various hardware devices

<

Modbus ID Range

Save

Support the discontinuous ID in the range of 1 - 246.
Modbus ID 165, 222, 251, 252, 253, 254
should not be used.

1 - 10 :
SCA100KTL-DO

New Device ID

New ID Range

ID Range

2

Product

3

Protocol

ID Start From:

End In:

246

9

1

10

2

11

Cancel

Next

New ID Range

ID Range

Product

3

Protocol

HYUNDAI INV

1P-INV-XX

3P-INV-CPS

Wattnode Meter

Previous

Next

New ID Range

ID Range

Product

Protocol

SCH125KTL-DO/US-480

SCH100KTL-DO/US-480

SCA 50KTL-DO/US-480

SCA 25KTL-DO/US-480

Previous

OK



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