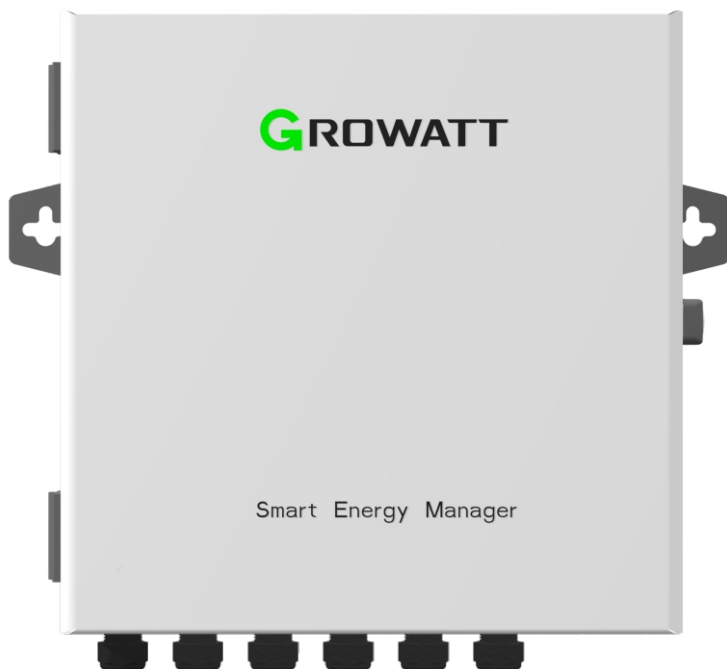




ShineSEM-XA Smart Energy Manager User Manual

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Change history

Version 01

- Update homepage image;
- Update the size diagram of the inner appearance page.
- Update operation identification diagram.
- Update operation description content.
- Update contact information.

Version 00

- First release

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1 Product Profile

1.1 Intended use

ShineSEM-XA is an energy management device for photovoltaic subarrays and energy storage applications, with a built-in ShineMaster-X data collector, supporting device data acquisition, protocol conversion, energy management and edge computing, as well as a variety of networking and electrical and environmental protection.

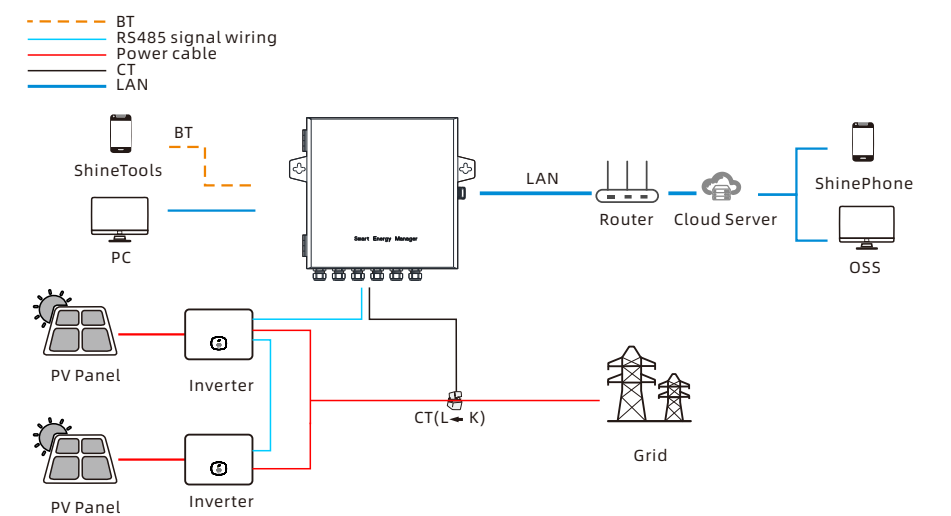


Figure 1.1 Ethernet connection to server

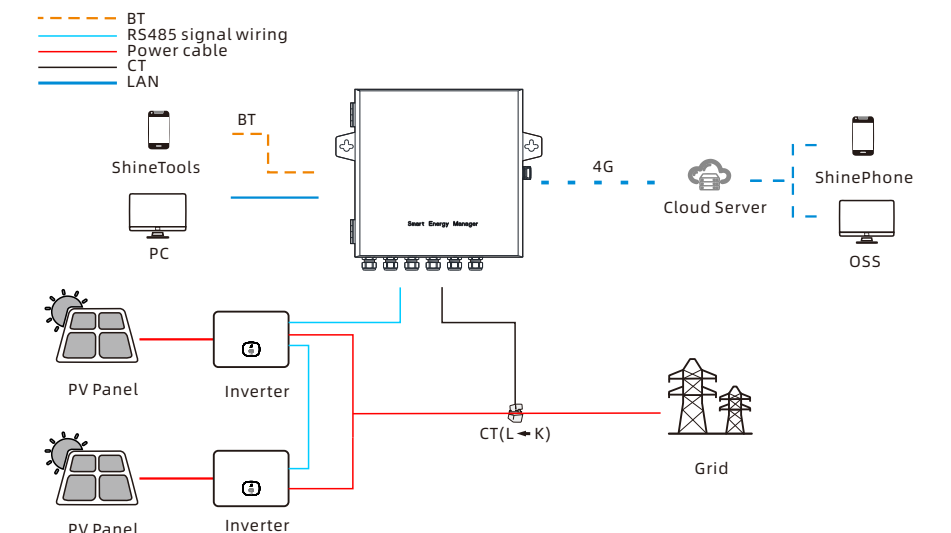


Figure 1.2 4G connection to server

1.2 Appearance

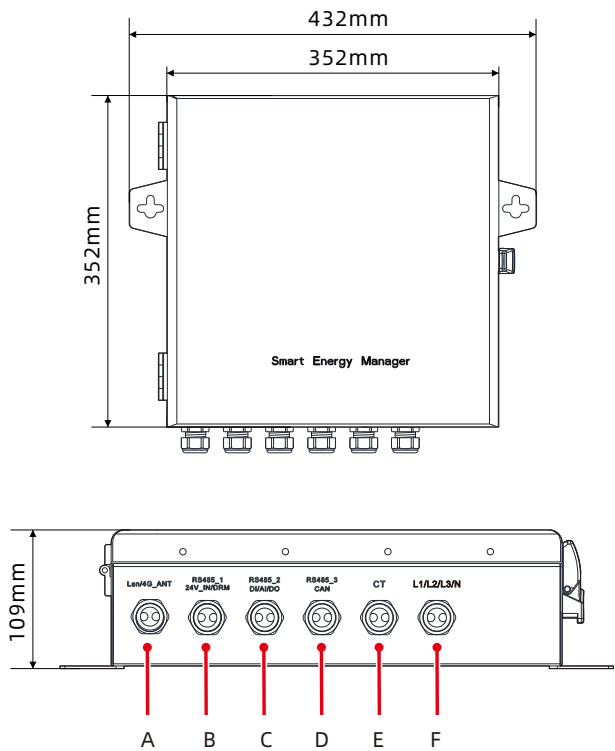


Figure 1.3 ShineSEM-XA dimensions and interface

NO.	wiring terminal	descriptive
A	Lan/4G_ANT	Connect Ethernet cable/4G antenna cable
B	RS485_1/24V_IN/DRM	Connecting the 1st RS485/ShineMaster-X Auxiliary 24V Power Supply/DRM Cable
C	RS485_2/DI/AI/DO	Connecting the 2nd RS485/DI/AI/DO cable
D	RS485_3/CAN	Connecting the 3rd RS485/CAN cable
E	CT	Connecting the CT Cable
F	L1/L2/L3/N	Connecting the AC Voltage Sampling Cable

1.3 Internal structure

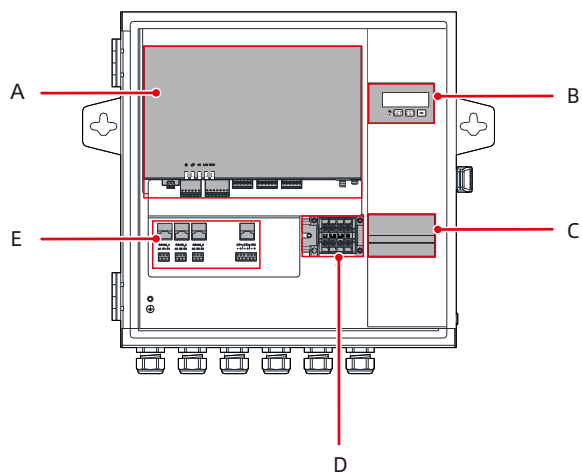


Figure 1.4 Schematic diagram of the internal structure of ShineSEM-XA

NO.	Designation	Description
A	collector	Data collector to realize data collection, protocol conversion and other functions.
B	wattmeter	Built-in power meter for AC voltage and current data acquisition.
C	air switch	Controls the on/off switching of the AC sampling input lines, as well as the power supply to the internal devices.
D	Wiring Terminal Block	AC Sampling Input Cable Terminal.
E	Wiring Terminal Block	Terminals for RS485 and CT current sampling cables.

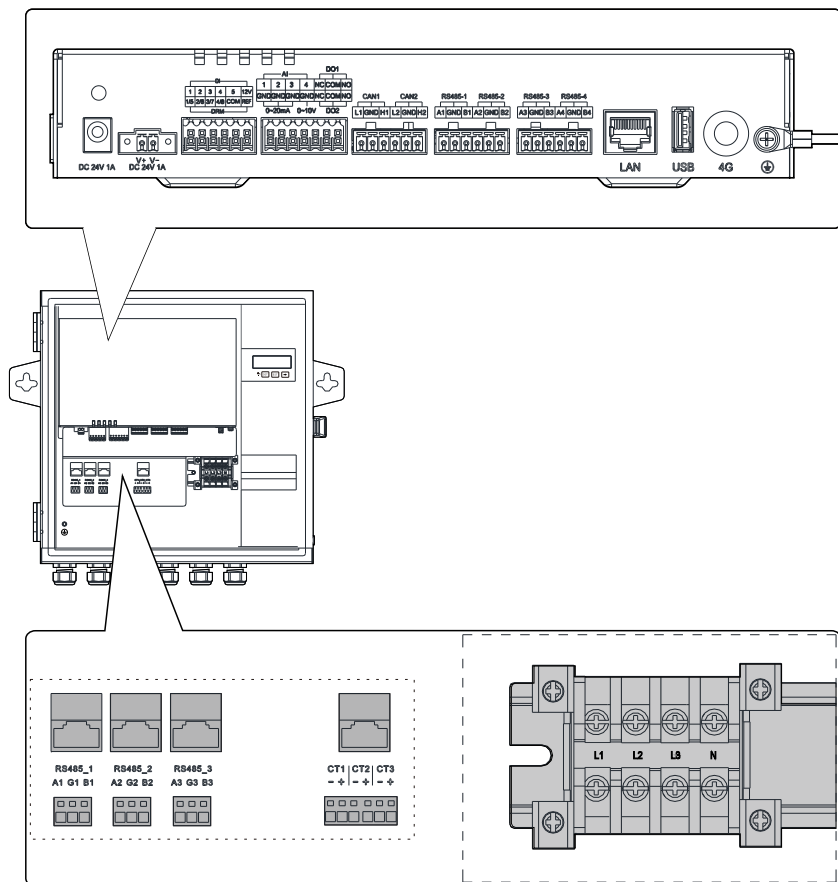


Figure 1.5 Schematic diagram of the internal structure of ShineSEM-XA

1.3.1 Data collector LED indicators

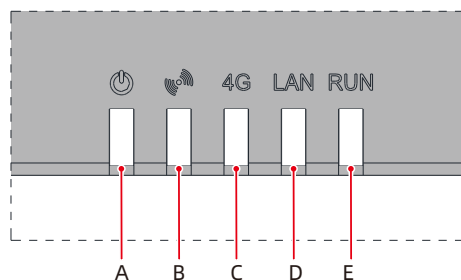


Figure 1.6 Schematic diagram of ShineSEM-XA LED status indicators

NO.	Designation	Description
A	Power status indicator	Normally off: The power supply works abnormally; Normal light: Power supply works normally.
B	Bluetooth status indicator (not supported yet)	Always off: Bluetooth is not enabled; 1S blinks 1 time, goes out 1 time: Bluetooth is enabled, but not connected to the cell phone APP; Normal light: Bluetooth works normally and connects with cell phone APP normally.
C	4G Status Indicator	Always off: 4G function is not supported; 1S blinks 2 times, goes out 1 time: SIM card not inserted 1S blinks 1 time, goes out 1 time: 4G network abnormality or SIM no traffic; Standing light: 4G network is normal.
D	LAN status indicator	Always off: The network is not connected; 1S blinks 1 time, extinguishes 1 time: valid IP is obtained, no network data interaction. That is, the connection with the server is abnormal. Always on: LAN network is normal.
E	Operation status indicator	Normally off: The system is working normally, no alarms or malfunctions; Blinking blue light: system alarms; for example: abnormal connection to the server, abnormal communication of monitoring equipment, etc. Red light is always on: the system is faulty. For example: the SD card works abnormally. the MMC memory chip works abnormally. Anti-reverse current function fails. Lightning alarm, third party alarm signal, etc.

1.3.2 Air switches

This product has a built-in air switch. Before initial installation and before servicing, make sure that the switch handle is in the downward-facing disconnected state. With the switch in the disconnected state, all other equipment inside the product is electrically isolated from the AC input to ensure the safety of the operator.

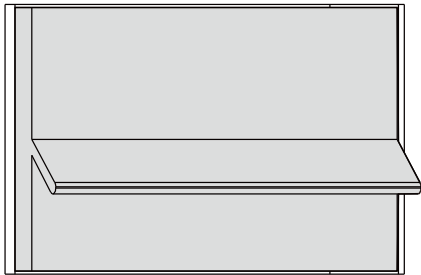


Figure 1.7 Schematic diagram of air switch

1.3.3 Energy meters

The built-in power meter of this product may differ in appearance, buttons and functions depending on the specific model, please contact after-sales service for technical support.

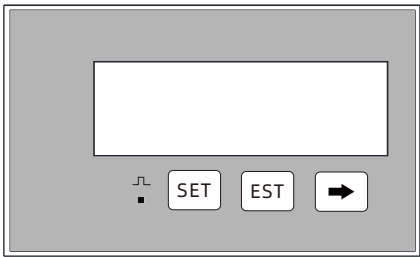


Figure 1.8 Schematic diagram of the energy meter

 NOTICE	The diagram of the appearance of the power meter shown in the picture is only for the convenience of illustration, please refer to the actual product when you receive the goods.
--	--

1.3.4 AC Sampling Input Terminal Block

The external voltage sampling cable is plugged into the AC Sampling Terminal connector for voltage sampling by the built-in meter.

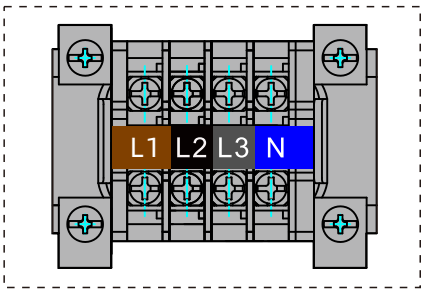


Figure 1.9 AC Sampling Input Terminal Diagram

1.3.5 RS485 terminal block

This product provides 3 RS485 interfaces to communicate with external devices. In order to meet different connection methods, two types of terminals, RJ45 and crimp terminals, are designed:

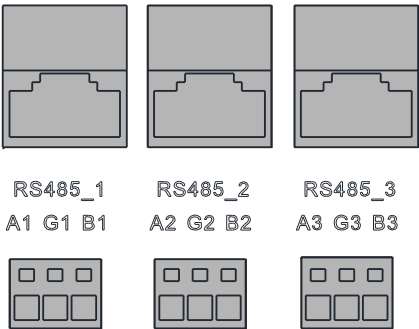


Figure 1.10 Diagram of RS485 terminal block

➤ For the same RS485 interface, RJ45 connection and crimp terminal connection cannot be used at the same time.

1.3.6 CT terminal blocks

This product provides 3 CT interfaces to connect with external CT devices, and two types of terminals, RJ45 and crimp terminals, are designed to meet different connection methods:

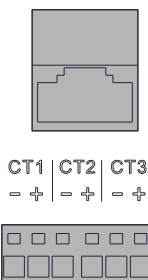


Figure 1.11 Schematic diagram of CT terminal block

 NOTICE	➤ The RJ45 connection method and the crimp terminal connection method cannot be used at the same time. ➤ The RJ45 terminal can only be connected to current-type CTs with a secondary-side current of 40mA specification. ➤ The crimp terminals can be connected to current-type CTs with secondary-side currents of 40mA and 5A specifications.
--	--

1.3.7 CT selection

Smart Energy Managers with different system capacities need to be paired with different models of open-ended current transformers for detecting the current at the access points in the system, the specifications of which are shown in the table below:

System capacity	Current ratio	Accuracy class	Number of turns through the core	Overall Dimension (mm) W*H*D	erforation size (mm)a*e
100KW	250/5A	0.5	1	90*114*40	22*32
300KW	600/5A	0.5	1	114*140*36	42*62
600KW	1200/5A	0.5	1	144*199*36	82*122
1MW	2000/5A	0.5	1	184*254*52	82*162
2MW	4000/5A	0.2	1	184*254*52	82*162

 NOTICE	➤ The above selection value is based on 400V system for example, other voltage system, please according to the actual conversion. ➤ The total inverter power or total load power in the system must not exceed the matched system capacity. ➤ Under any conditions, the current flowing through the primary side of the current transformer (CT) must not exceed its maximum detection range. ➤ Avoid operating current transformers in high humidity environments.
--	--

2 Unpacking

The Smart Energy Manager body and accessories are listed below:

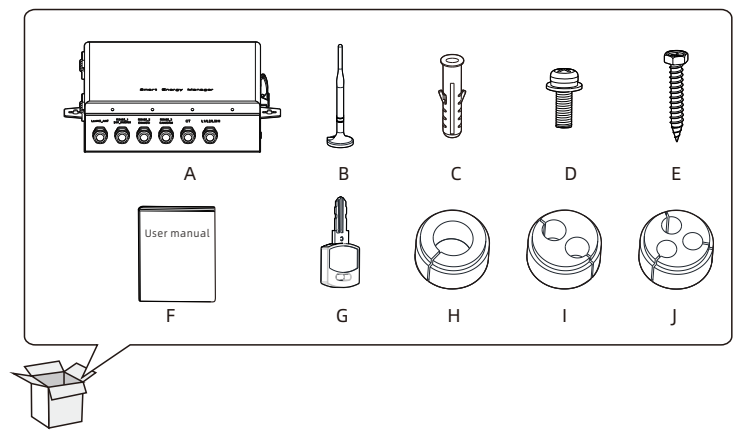


Figure 2.1 Schematic diagram of SEM-XA accessories

NO.	Designation	Description
A	Smart Energy Manager	ShineSEM-XA product body, 1pcs.
B	4G Antenna	(Optional) Suction cup antenna for data collector with 4G communication, 1pcs.
C	Plastic Expansion Tube	For wall mounting ShineSEM-XA, 2pcs.
D	M6 Ground Screw	For ShineSEM-XA box ground wire, 1pcs.
E	M6 self-tapping screws	For wall mounting SEM-XA, 2pcs.
F	user manual	ShineSEM-XA paper user manual, 1pcs.
G	Case Key	ShineSEM-XA Product Case Latch Key, 2pcs.
H	14mm/10mm Single Hole Plug	Suitable for box terminals, for different wire diameter threading sealing, open, 3pcs.
I	6mm Double Hole Plug	Suitable for box terminals, for different wire diameter threading sealing, open, 3pcs.
J	4mm three-hole rubber plug	Suitable for box terminals, for different wire diameter threading sealing, open, 3pcs.

Installation of 3

Referring to the tracing method in the figure below, drill holes in the selected wall and insert plastic expansion plugs, raise the main body of the Smart Energy Manager and align the wall holes with the expansion plug holes so that the Smart Energy Manager will be close to the wall and remain stable, insert self-tapping screws through the wall holes into the expansion tubes, and then use a screwdriver to lock the screws completely, and the installation of the Smart Energy Manager is complete.

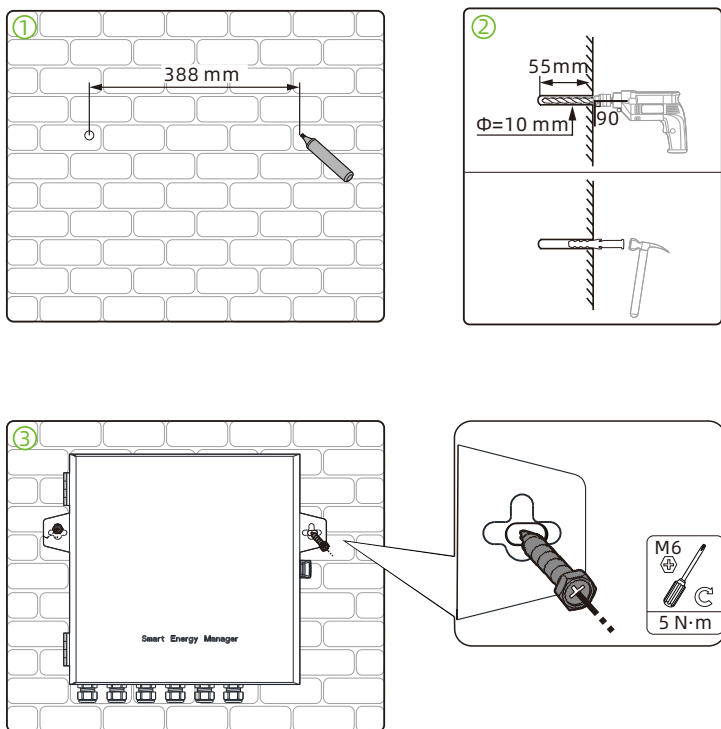


Figure 3-1 Installation Diagram

4 Cable Connections



WARNING

- Please read this manual carefully for product information and safety precautions before installation.
- Only qualified and trained technicians who have a thorough understanding of the PV system, the grid system, the operating principles of the battery system and national/local standards should operate the battery system.
- Installers must use insulated tools and wear safety equipment during operation. The Company will not assume any warranty responsibility for damage to the equipment caused by failure to comply with the storage, transportation, installation or operation requirements set forth in this document.

4.1 Connecting the protective earth wire

After the Smart Energy Manager is installed and fixed on the wall, it is necessary to connect the grounding screws on the side of the case with a special grounding cable, and use a grounding resistance tester to test the grounding resistance of the case with a resistance value of $\leq 10\Omega$, so as to make a reliable connection between the metal case and the earth. It is recommended to use a cable with a cross-sectional area of 4mm^2 - 6mm^2 .

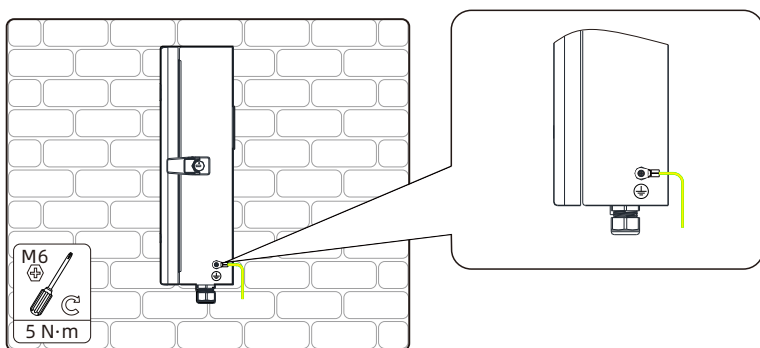


Figure 4-1 Grounding

4.2 RS485 Wiring

The RS485 connection of the Smart Energy Manager provides two wiring methods, RJ45 network port wiring and crimp terminal wiring.

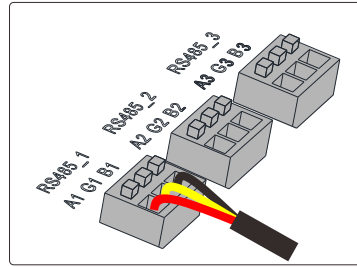
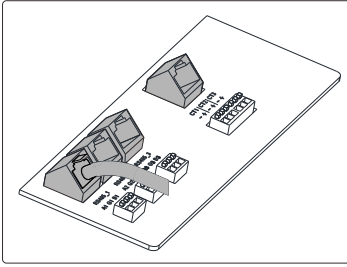


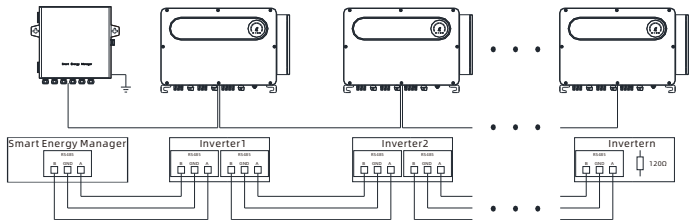
Figure 4-2 Two types of RS485 wiring methods

The RS485 connection of the Smart Energy Manager provides three RS485 wiring ports, RS485_1, RS485_2, and RS485_3.



NOTICE

- In the RS485 cable laying, power cables, power cables and communication cables must be placed in a different line ditch to avoid power lines and other cables long distance parallel lines, reduce the output voltage transient cross electromagnetic interference. rs485 cable and power cables parallel line distance should be greater than 0.5 meters.
- It is recommended to use shielded twisted-pair cable for RS485 wire, with the shield connected to the G (GND) pole of the RS485 interface.
- The collector and inverter need to be connected by hand, and the last inverter RS485 interface needs to be configured with matching resistor to ensure stable communication.



4.2.1 RS485 wiring (RJ45)

Prepare the RS485 cable with RJ45 crystal head, select the RS485 waterproof connector that needs to be accessed, put on the waterproof rubber ring according to the method shown in the figure (prepare a variety of aperture specifications, choose as needed) and then through the box, reserve the length of the cable in the box, tighten the waterproof connector nut:

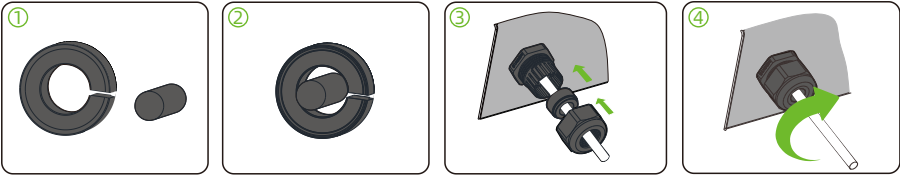


Figure 4-3 Waterproof connector string wire

Align the crystal head with the corresponding RJ45 holder and insert it in the direction of the arrow until you hear the snap in place. If you need to make the crystal head cable on site, you need to connect the cable according to the wiring sequence shown in the diagram, and it is recommended that you use Cat 5e or higher specification network cable and shielded crystal head:

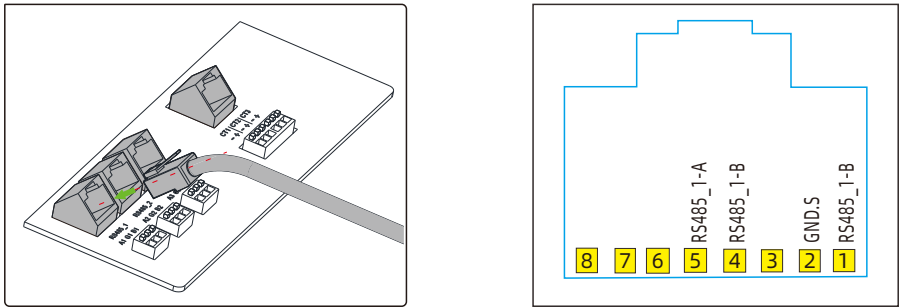


Figure 4-4 RS485 wiring - RJ45

4.2.2 RS485 wiring (crimp terminal)

It is recommended to use RS485 shielded twisted pair cable with cross sectional area of $0.5\text{mm}^2 - 2.5\text{mm}^2$. Select the waterproof connector you need to access, put on the waterproof rubber ring according to the illustration (prepared for a variety of aperture specifications, according to the need to choose) and then pass through the box, reserve a good length of cable in the box, then tighten the waterproof connector nut:

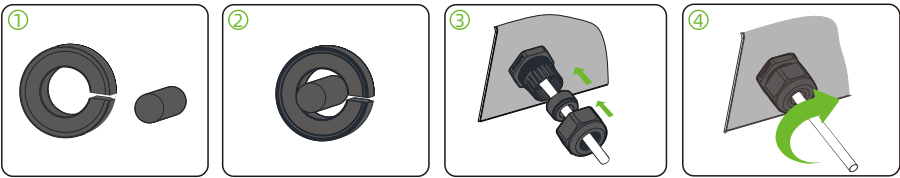


Figure 4-5 Waterproof connector string wire

Strip the insulation layer of the cable, the length of the bare metal wire is 9~10mm, align the tool with the corresponding crimp terminal's lever, press down in the direction of the arrow, then insert the metal wire into the corresponding jack until the bottom (if it is a hard wire, no need to press the lever, it can be directly inserted into the jack), if you need to take out the cable, you will need to use a tool to press down on the terminal's lever to take it out:

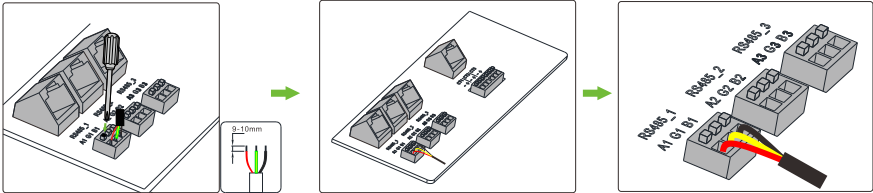


Figure 4-6 RS485 wiring - crimp terminal

4.3 CT Wiring

The CT connection of the Smart Energy Manager provides two wiring methods, RJ45 network port wiring and crimp terminal wiring.

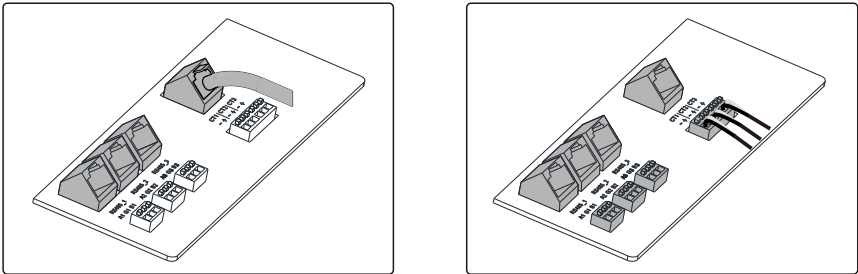


Figure 4-7 two types of CT wiring methods

4.3.1 CT wiring (RJ45 connector)

Prepare the CT cable with RJ45 crystal head, select the waterproof connector that needs to be accessed, put on the waterproof rubber ring according to the method shown in the picture (prepare a variety of aperture specifications, choose as needed) and then through the box, reserve the length of the cable in the box, tighten the waterproof connector nut:

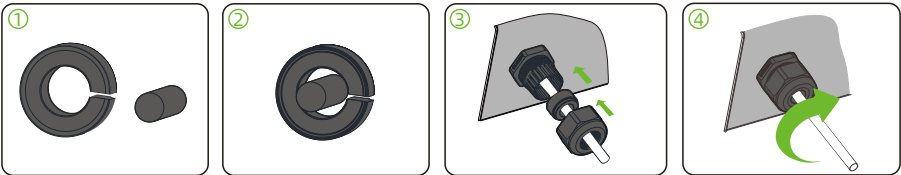


Figure 4-8 Waterproof connector string wire

Align the crystal head with the corresponding RJ45 holder and insert it in the direction of the arrow until you hear the snap in place. If you need to make the crystal head cable on site, you need to connect the cable according to the wiring sequence shown in the diagram, and we recommend you to use Cat 5e or higher specification network cable and shielded crystal head:

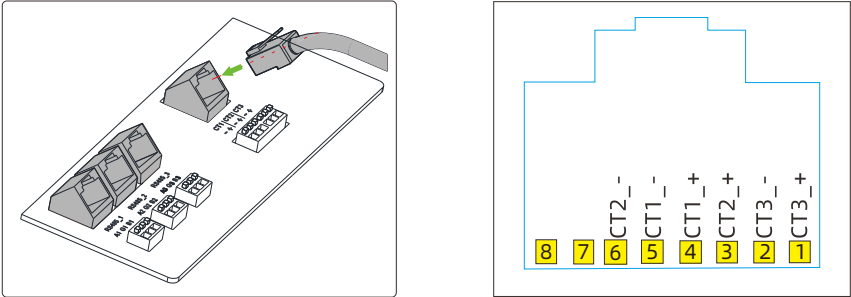


Figure 4-9 CT wiring-RJ45

 NOTICE	➤ The CT terminal block of the ShineSEM-XA consists of CT1-, CT1+, CT2-, CT2+, CT3-, and CT3+ signal poles. ➤ The definition of CT polarity for different brands may be "S1" and "S2", corresponding to "+" and "-". ➤ The RJ45 terminal can only be connected to current-type CTs with a secondary-side current of 40mA specification.
--	---

4.3.2 CT wiring (crimp terminal)

Recommended cross sectional area of 1mm² -2.5mm² CT cable, select the waterproof connector that needs to be accessed, put on the waterproof rubber ring according to the method shown in the illustration (ready for a variety of aperture specifications, according to the need to choose), and then go through the box, reserve a good length of cable in the box, then tighten the nut of waterproof connector:

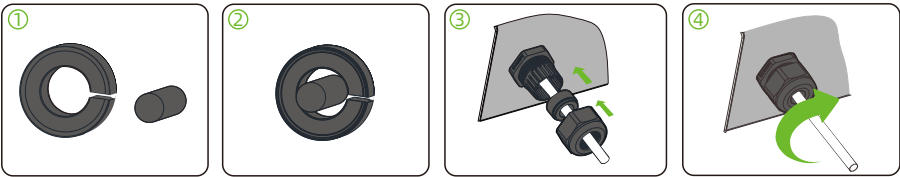


Figure 4-10 Waterproof connector string wire

Strip the insulation layer of the cable, the length of the bare metal wire is 9~10mm, align the tool with the corresponding crimp terminal's lever, press down in the direction of the arrow, then insert the metal wire into the corresponding jack until the bottom (if it is a hard wire, no need to press the lever, it can be directly inserted into the jack), if you need to take out the cable, you will need to use a tool to press down on the terminal's lever to take it out:

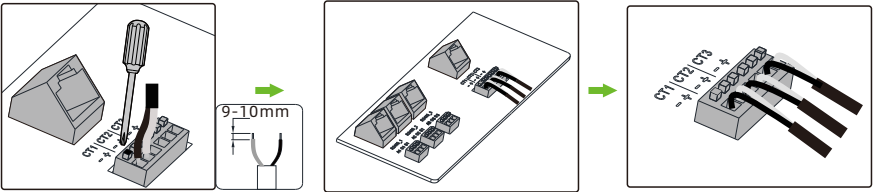


Figure 4-11 CT wiring - RJ45

4.4 AC Wiring

The voltage sampling and internal power supply of the Smart Energy Manager is achieved through three-phase electricity accessed through AC terminals. Depending on the model, there may be three-phase four-wire and three-phase three-wire wiring types, and terminal color markings may vary depending on the region:

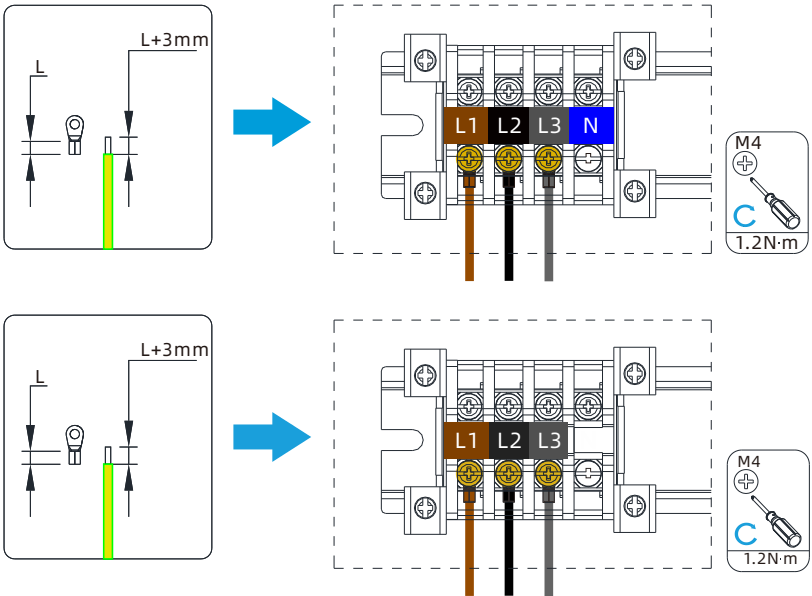


Figure 4-12 Three-phase four&three-wire AC wiring

It is recommended to use cold-rolled terminals to process the wire before accessing the terminal, terminal screws need to be used to adapt to the M4 screw screwdriver for fastening, fastening force 1.2N·m.



WARNING

- Please connect the wires in strict accordance with the labeling sequence of the phase and zero wires, otherwise it may lead to inaccurate metering or even damage to the equipment.

4.5 CAN signal wiring

The ShineMaster 4G-X data collector provides two CAN communication interfaces. For long distance CAN communication, it is recommended to use a shielded twisted pair cable with the shield connected to the GND pole. It is recommended to use a special shielded twisted pair cable with a cross-sectional area of 0.5mm^2 - 2.5mm^2 .

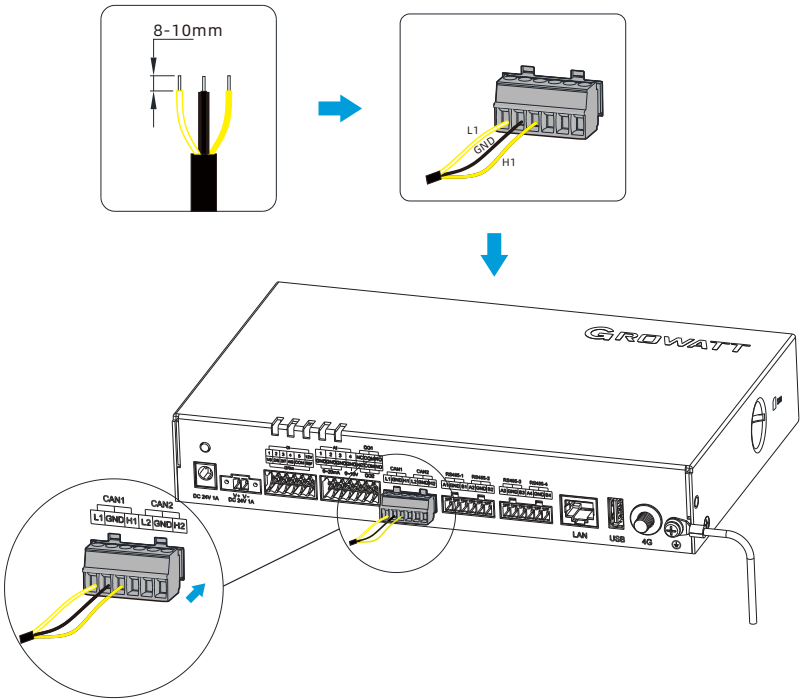


Figure 4-13 CAN wiring

4.6 DRM Signal Wiring

According to Australian standards, the inverter must comply with Demand Response Mode (DRM), the ShineMaster4G-X data collector provides a DRM interface, and it is recommended to use a cable with a cross-sectional area of $0.5\text{mm}^2 - 1.5\text{mm}^2$. The DRM controller is wired to the ShineMaster4G-X as shown in the following figure.

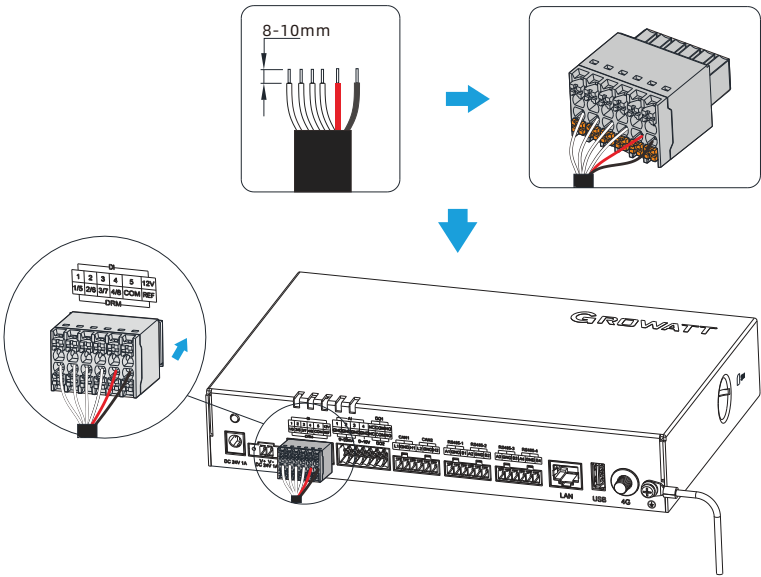
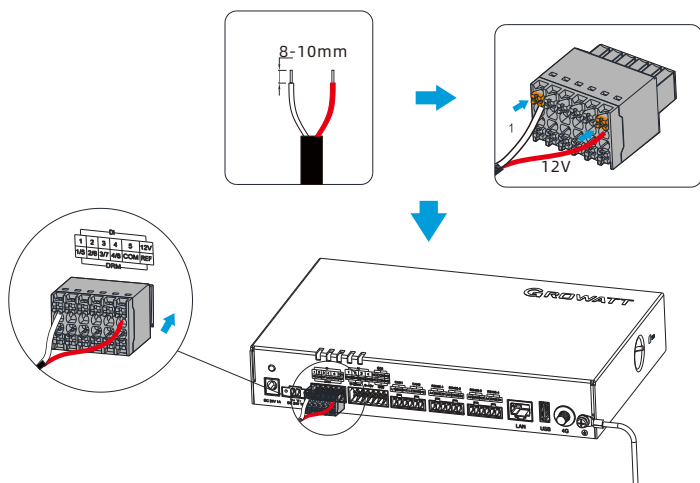


Figure 4-14 DRM wiring

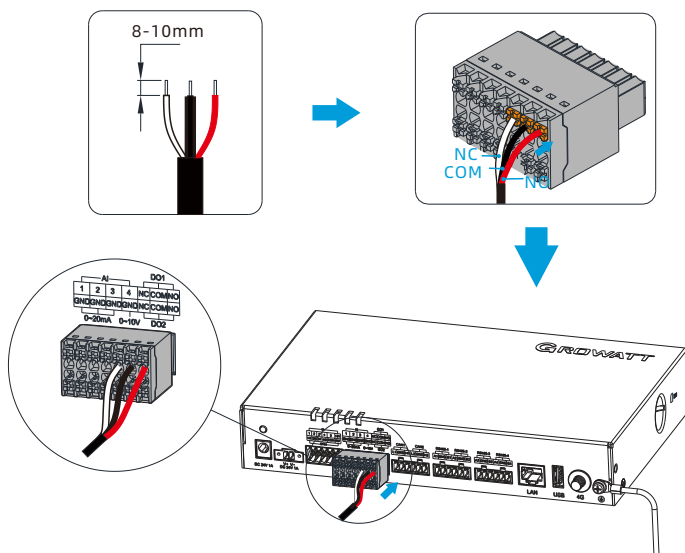
4.7 DI signal wiring

ShineMaster4G-X can access remote grid scheduling commands, alarms and other DI signals through the DI port, only supports passive dry contact signal access, the signal of the DI interface is 12V DC voltage, before connecting, please make sure that the control equipment supports it. ShineMaster4G-X provides 5 DI signal inputs, it is recommended that the transmission distance of DI signals should not be more than 10m, it is recommended to use a cable with a cross-sectional area of $0\text{mm}^2 - 1\text{mm}^2$. It is recommended to use cables with a cross-sectional area of $0.5\text{mm}^2 - 1.5\text{mm}^2$.



4.8 DO wiring

The DO signal of ShineMaster4G-X is a passive dry contact signal, and the port supports a maximum signal voltage of 12V, which can control the start/stop of diesel engine, etc. ShineMaster-X provides 2-channel DO interfaces, NC/COM is a normally-closed contact, and NO/COM is a normally-open contact. It is recommended that the signal transmission distance should not exceed 10m, and it is recommended to use cables with a cross-sectional area of 0.5mm²~1.5mm².



4.9 AI wiring

ShineMaster4G-X can access the AI signals of environmental sensors through the AI interface, signal range 0~20mA(3 ways)/0~10V(1 way), the recommended signal transmission distance is not more than 10m, and it is recommended to use the cable with the cross sectional area of 0.5mm² -1.5mm².

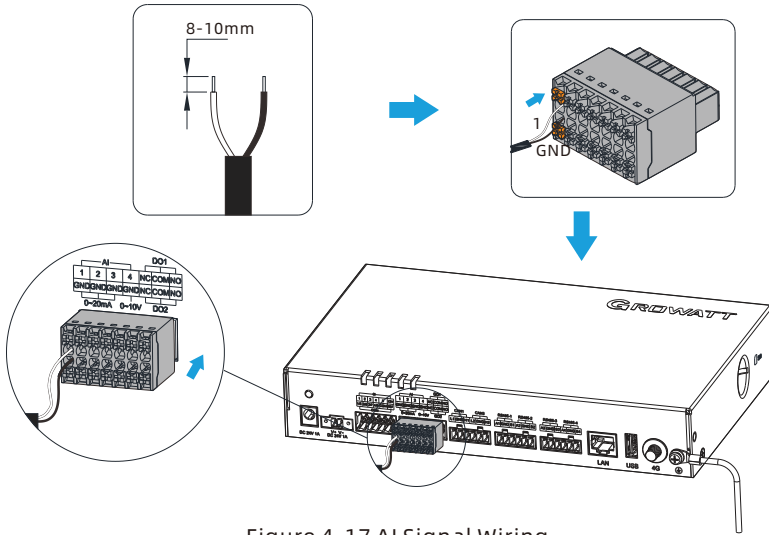


Figure 4-17 AI Signal Wiring

4.10 4G antenna wiring and SIM card insertion

ShineMaster4G-X supports 4G networking and requires a 4G antenna and SIM card.

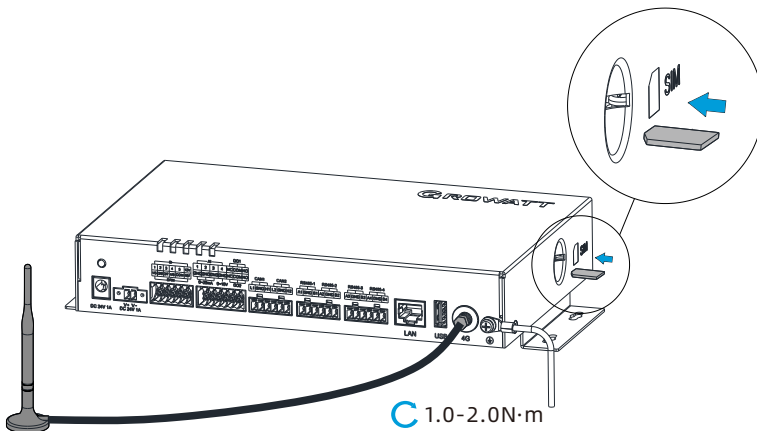


Figure 4-18 Antenna Wiring and SIM Card Installation

5 System operation

5.1 Pre-power-up checks

The following items need to be checked before the Smart Energy Manager is powered up and running:

- Is the installation secure and in place;
- Wiring is reliable and accurate;
- Whether the power supply alignment and signal alignment meet the requirements of strong and weak power alignment, and whether they are in line with the system alignment planning (strong and weak power separate alignment);

5.2 System power-up

After ensuring that the AC input voltage is within the rated range, toggle the air switch handle upward until the handle is in place and release it to keep the handle facing upward, at which time the meter display will light up, while the ShineMaster-X data collector's LED status indicators will all light up and flash until the system is running successfully and indicates the current status.

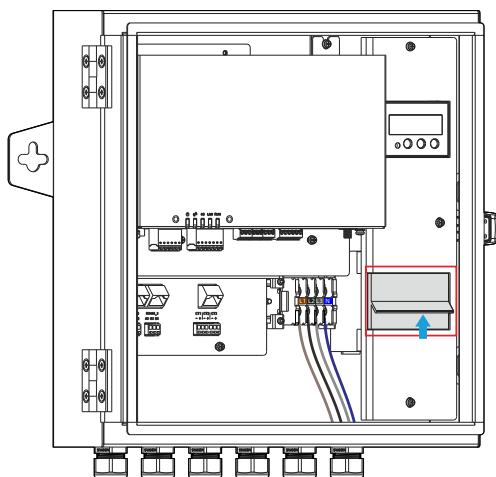


Figure 5-1 System power-up

web interface 6



NOTICE

- This manual applies to ShineMaster4G-X software version V1.0.6.0, please contact after-sales for the history version.

6.1 Introduction to the web interface

The ShineMaster4G-X data collector built into the Smart Energy Manager has a local web interface function, which allows you to access the built-in page via either a static IP or a dynamic IP to set up or modify the parameters of the device.

6.2 PC direct access to built-in web interface

Connect your PC to the ShineMaster4G-X inside the case via a network cable, and change the IP of your PC to 192.168.0.XXX (XXXrange is 2 ~ 253).The default IP of the ShineMaster4G-X is: 192.168.0.254, so you can enter 192.168.0.254 into your computer's browser to access the ShineMaster4G-X built-in page. Refer to the following figure for computer IP settings:

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

☐ Obtain an IP address automatically

☒ Use the following IP address:

IP address: 192 . 168 . 0 . 4

Subnet mask: 255 . 255 . 255 . 0

Default gateway: 192 . 168 . 0 . 1

☐ Obtain DNS server address automatically

☒ Use the following DNS server addresses:

Preferred DNS server: . . .

Alternate DNS server: . . .

☐ Validate settings upon exit

Advanced...

OK Cancel

Figure 6-1 Example of PC local IP settings

6.3 Accessing the built-in web interface through the router

The ShineMaster4G-X data collector built into the Smart Energy Manager has a static IP by default (default IP: 192.168.0.254). You need to use a PC to connect directly, access the web interface through a static IP and set ShineMaster4G-X to get IP automatically, and the PC is also set to get IP automatically. then connect the PC, ShineMaster4G-X to the same router so that they are in the same LAN.



NOTICE

➤ The router must have DHCP enabled.

6.3.1 Viewing the Router IP Field

Open the cmd utility on the PC and enter the command line ipconfig to view the IP field assigned to the PC by the router:

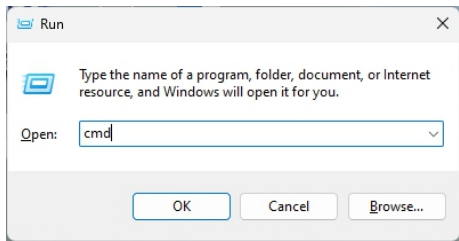


Figure 6-2 CMD tool

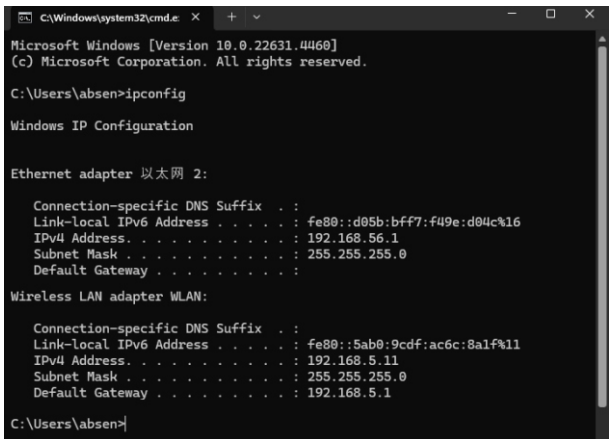


Figure 6-3 Show IP

From the above figure, you can see that the router is assigned the network segment: 192.168.10.xx

6.3.2 PC access to ShineMaster4G-X built-in web interface via router

You can access the ShineMaster4G-X built-in web interface by typing 192.168.0.254 in the search bar of your PC browser.

6.4 Built-in web interface login

After successfully accessing the built-in page of ShineMaster4G-X, users need to log in to modify or set the parameters, as shown in the figure below:

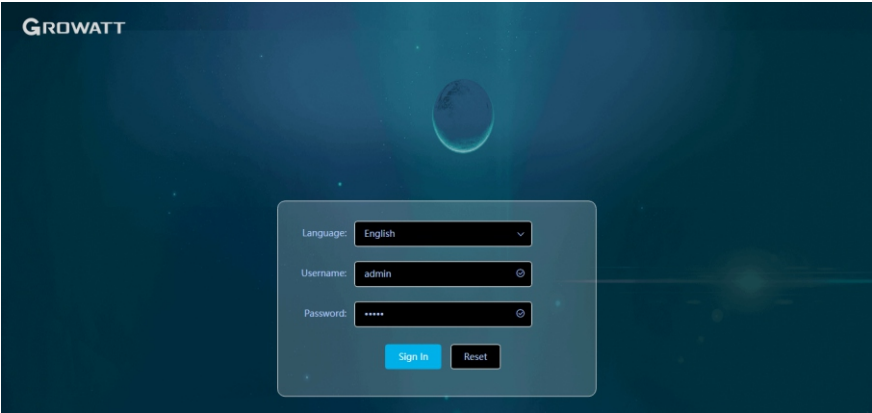


Figure 6-4 Built-in web login in

Input user name and password, default login user name: admin, password: admin, fill in and click login to enter ShineMaster-X system page:

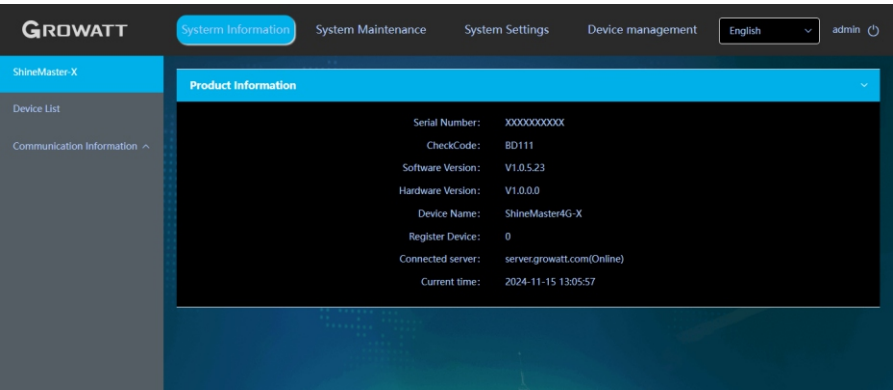


Figure 6-5 Built-in web system page

The system page contains the following four main level menus:
A. System Information, B. Product Maintenance, C. System Setup, D. Device Management.

6.5 Viewing System Information

After successfully accessing the ShineMaster-X system page, users can click [System Information] to view "Product Information", "Device List", "Communication Information", and so on. information;

Product Information	ShineMaster4G-X serial number, software version and other information
Device List	Registered device information and online information
network information	Detailed information on wired and 4G networks
RS485	RS485-1, RS485-2, RS485-3, RS485-4 Setting Information
CAN	CAN communication messages

6.6 Equipment management

After the user has successfully accessed the ShineMaster-X system page, click [Device Management] to set the collector's connected devices and interface parameters.

6.6.1 Adding equipment

The left sidebar shows the types of devices that can be added, and the device types are "Inverter", "Meter", "Environment Monitor", "PID Device". To add an inverter, for example, click [Inverter] > [Device Information] on the left sidebar, and then click the <Add> button on the display page:

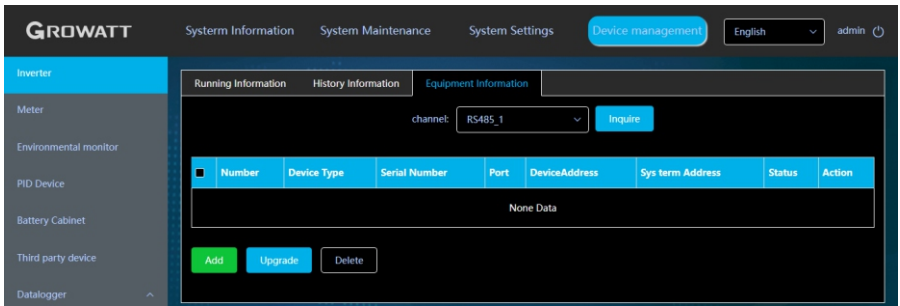
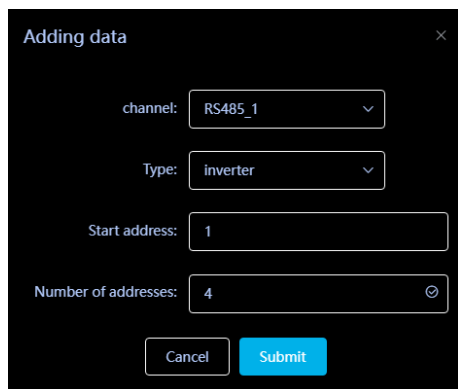


Figure 6-6 Adding inverters



Adding data

channel: RS485_1

Type: inverter

Start address: 1

Number of addresses: 4

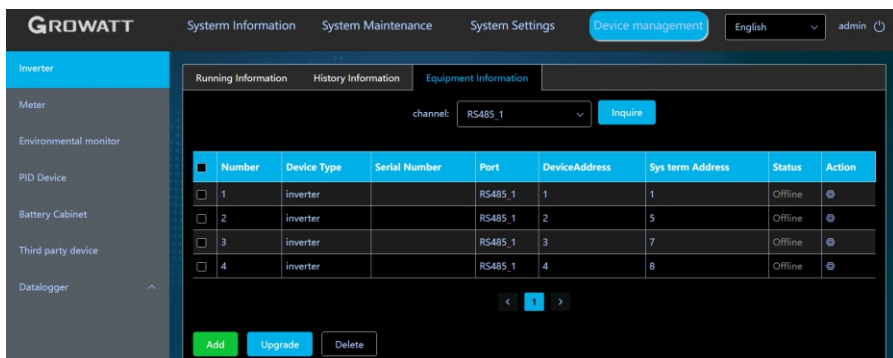
Cancel Submit

Figure 6-7 Select and Submit

Select or fill in the parameters in the pop-up window:

- The channel selection "RS485_1" indicates that the device is connected to the first channel interface of RS485;
- Selecting "Inverter" for Type indicates that the type of device to be connected is an inverter;
- Start address "1", indicates that the start address of the inverter being accessed is 1;
- The number of addresses "4" means the number of inverters to be accessed is 4. ShineMaster-X supports adding multiple devices of the same type with consecutive addresses at one time on the same RS485 interface. For example, if you need to access 4 PV inverters in the same way, the addresses are 1, 2, 3 and 4 respectively, then write "1" as the "Start Address" and "4" as the "Number of Addresses". "4", after submitting, 4 inverters will be added.

After clicking submit, if the information is correct, there will be a pop-up message "Register Device Successfully!" You can check whether the inverter is added successfully in [Device management] > [Inverter] > [Equipment Information] .



GROWATT System Information System Maintenance System Settings **Device management** English admin

Inverter

Meter

Environmental monitor

PID Device

Battery Cabinet

Third party device

Datalogger

Running Information History Information **Equipment Information**

channel: RS485_1 Inquire

Number	Device Type	Serial Number	Port	DeviceAddress	Sys term Address	Status	Action
1	inverter		RS485_1	1	1	Offline	⊕
2	inverter		RS485_1	2	5	Offline	⊕
3	inverter		RS485_1	3	7	Offline	⊕
4	inverter		RS485_1	4	8	Offline	⊕

< 1 >

Add Upgrade Delete

Figure 6-8 Successful addition



NOTICE

- Each RS485 channel supports the addition of up to 12 devices, and the address range of the inverter is 1-254.

Device types can be added	English name	Description
inverter	INVERTER	GROWATT inverters
wattmeter	SDM630MCT	Donghong three-phase meter
	SHNT-DTSU666	Astronergy three-phase meter
	ACREL meter	Anchoray Electricity Meter
	DTSD719-B10	Kolu High Voltage Meter
	CHNT-DJZU666	Astronergy DC Meter
	JANITZA-UMGRM-E	Thailand High Voltage Meters
	CCS meter	North American CCS meters
Environmental monitor	PH-SFD	Environmental monitor
PID devices	Anti-PID Box	PID devices
battery compartment	GRT-Battery cabinet	battery compartment
Third-party equipment	\	\

6.6.2 Deleting equipment

Take deleting inverter device as an example, select the first level menu [Device Management], choose [Inverter] > [Equipment Information] in the sidebar, select the RS485 channel where the device to be deleted is located in the <Channel> drop-down list, and then click the <Inquire> button, it will show the inverter devices that have been added under the corresponding RS485 channel. Check the inverter to be deleted, click <Delete> button, and click <Confirm>:

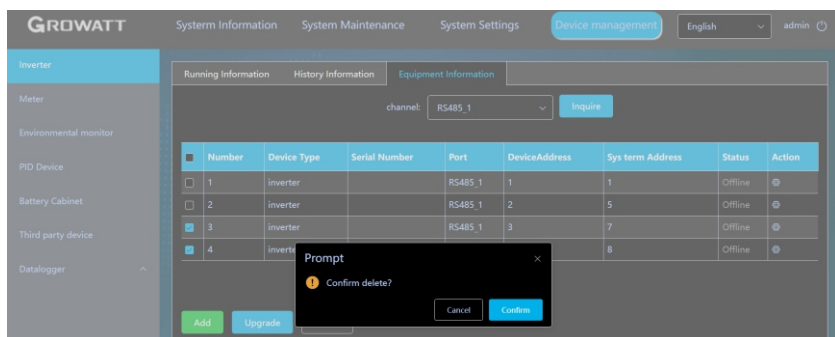


Figure 6-9 Delete Inverter operation

After successful deletion, a pop-up message "Delete device successfully! Click "Query" again to check whether the deletion is successful.

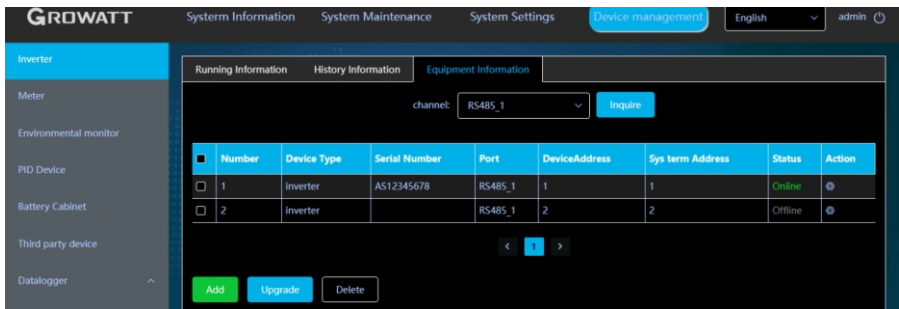


Figure 6-10 Successful deletion

6.7 Network Setup

When you need to use the remote monitoring function of ShineMaster-X, you need to set up its network. Under normal circumstances, the network parameters have been set up at the factory, and you can run it according to the default configuration.

6.7.1 Collector IP Settings

The collector is enabled with static IP by default (default IP: 192.168.0.254), if you need to change the static IP in the process of using, you need to set it as follows: Select the first level menu [Device Management], and choose [Collector] -> [Wired Communication] in the sidebar.

- Verify that the <DHCP> option is "off";
- Enter the static IP address to be set in the <IP Addr> field;
- Enter the subnet mask in the <Subnet Mask> field;
- Enter the default gateway in the <Default Gateway> field;
- Enter the DNS server address in the <DNS Server> field;

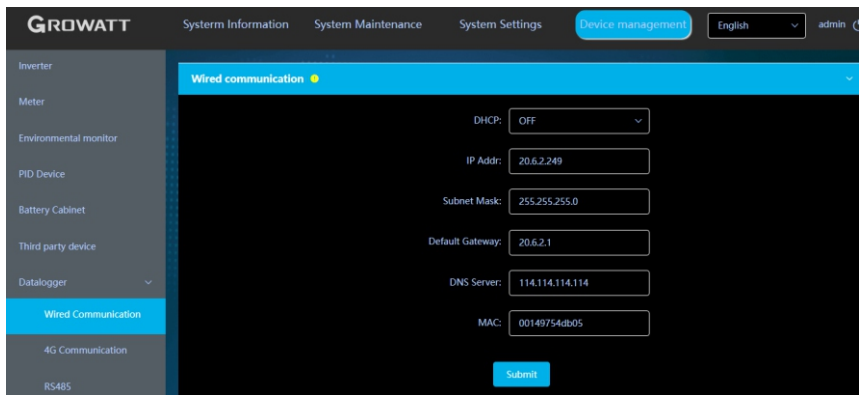


Figure 6-11 Setting a static IP address

After setting up, you need to submit and restart the collector to take effect, and you need to enter the set IP to access it again.

If you need the router to automatically assign IP to the collector, you need to set the router to enable the DHCP function, and at the same time enable the DHCP function of the collector, and the collector to enable the DHCP function operates as follows:

Select the first level menu [Device management], and select the sidebar to choose [Wired Communication].

➤ Click on the <DHCP> option and scroll down to select "On";

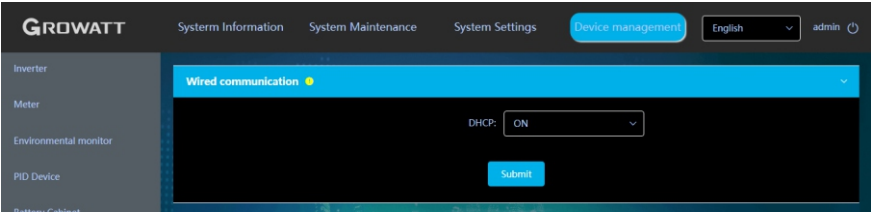


Figure 6-12 Setting up DHCP on

After setting up, you need to submit and restart the collector for it to take effect.

6.7.2 Server address settings (default is fine)

The collector default preset the server address of the corresponding region, it is recommended not to modify this item, so as not to cause abnormal function, if for special reasons need to modify the server address, select the first level of the menu [System Settings], the sidebar select [Server] > [Growatt Net Manage].

➤ <Is it on> drop down to select on;

➤ <Port> Enter the corresponding port number;

➤ <Server> Enter the server domain address;

➤ <Upload Period> drop down to select 5 minutes, this period is the data upload interval, the user can set according to demand, the default 5 minutes.

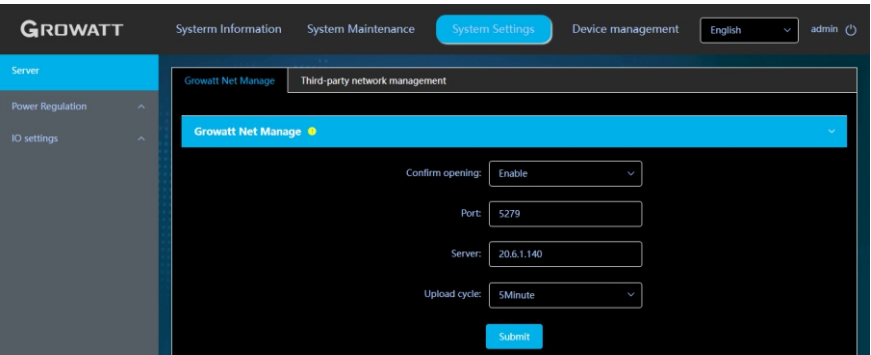


Figure 6-13 Server Setup

After setting up, you need to submit and restart the collector for it to take effect.



NOTICE

> The 1min interval can only be used for testing purposes.

6.8 Power Regulation Settings

6.8.1 Adding a meter

When power control is enabled, you need to add the meter accessed by the collector, select the first level menu [Device Management], select [Meter] -> [Device Maintenance] in the sidebar and click <Add>.

- > <Channel> Select the RS485 channel that the meter is actually connected to, such as RS485_4;
- > <Type> Select the type of meter actually connected, for example, Donghong SDM630MCT;
- > <Start address> Donghong meter address is 2 and Astronergy meter address is 4;
- > Number of addresses: 1;

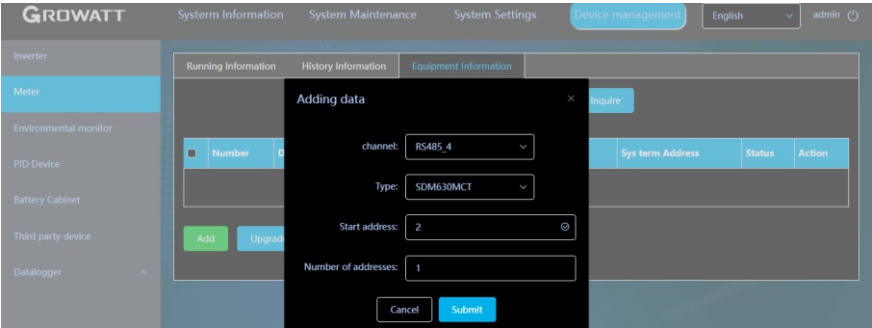


Figure 6-14 Select and Submit

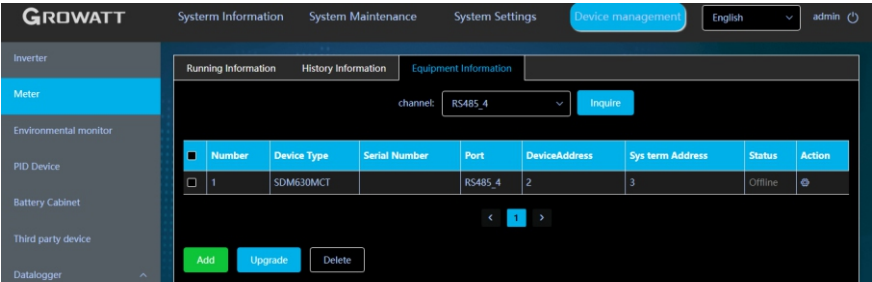


Figure 6-15 Adding a meter

6.8.2 Meter configuration

When the power control function is enabled, it is necessary to configure the meter accessed by the collector, and the operation of configuring the meter is as follows: Select the first-level menu [System Settings], and choose [Power Regulation] > [Energy Management] > [Meter Configuration] in the sidebar. Select the meter corresponding to the channel and address.

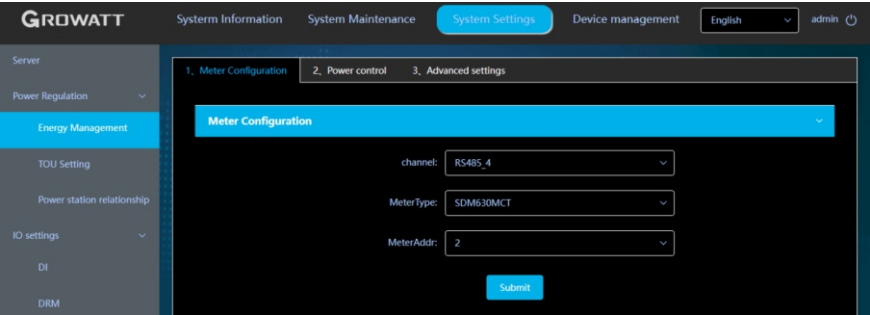


Figure 6-16 Meter Configuration

6.8.3 Power control settings



NOTICE

➤ The factory default of the anti-backflow box is to enable power control, when choose not to enable, it does not regulate the power of the inverter and energy storage machine, but only do data monitoring.

For systems that require power control, you need to turn on and set the power control parameters as follows: Select the first-level menu [System Setup], and choose [Power Regulation] > [Energy Management] > [Power Control] in the sidebar.

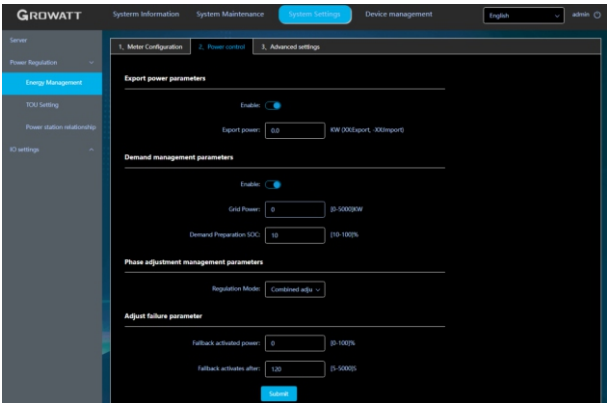


Figure 6-17 Power Control Configuration

- **<Export Power Parameter>** Enable and enter the power allowed to be fed into the grid;
- **<Demand Management Parameter>** Enable, Enter Grid Draw Power: to set the maximum power value (load + battery charging power) that the system is allowed to draw from the grid, mainly to prevent the power (load + battery charging) from being too large, which may cause damage to the transformer at the site or trigger the protection of the protection device. Input demand reserve SOC: the battery will only discharge when the average SOC of the system battery is lower than the demand reserve SOC, and the system's power draw is greater than the grid power draw managed by the demand.
- **<Phase adjustment Management Parameters>** The power regulation mode can be selected in this selection:
 - Combined-phase adjustment: Read the A, B, C phase power or combined-phase power of the meter, and adjust the power of the inverter and energy storage machine by judging the size and direction of the combined-phase power.
 - Minimum Phase Adjustment: Read the power of A, B and C phases of the three-phase meter, and adjust the power of the inverter and energy storage machine by judging the size and direction of the minimum phase power.
 - Single-phase regulation: Read the power of phase A, B and C of the three-phase meter, and adjust the power of the inverter or energy storage machine by judging the size and direction of each phase.



NOTICE

➤ When all PV inverters are used in the actual application site, "single-phase regulation" cannot be selected; PV inverters are not capable of single-phase regulation and can only be selected as "combined-phase regulation" or "minimum-phase regulation". PV inverters are not capable of single-phase regulation, only "combined phase regulation" or "minimum phase regulation" can be selected.

- **<Adjustment Failure Parameter>** Timeout time for the inverter and energy storage machine to disconnect communication with the collector. If the collector does not communicate effectively with the inverter and energy storage machine once within the set expiration time, the inverter and energy storage machine will automatically enter the expiration state.

6.9 Advanced Settings

Select the first level menu [System Settings], and choose [Power Regulation] > [Energy Management] > [Advanced Settings] in the sidebar to set the On-Grid SOC, off-grid SOC, and Chai Fa parameters.

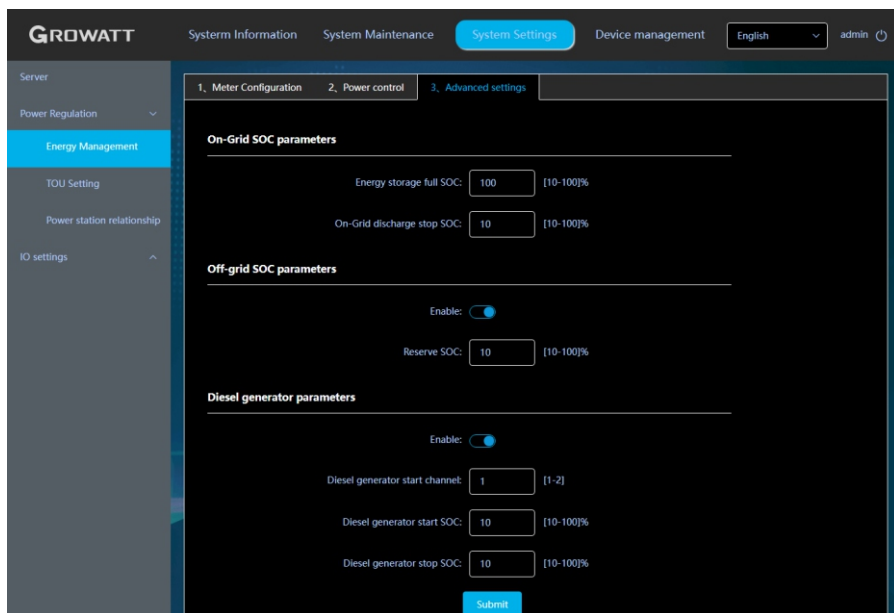


Figure 6-18 Advanced Settings

6.9.1 On-Grid SOC parameters

- **<Energy Storage Full SOC>** When the average system battery charge reaches the set storage full SOC, charging stops.
- **<On-Grid discharge stop SOC>** When the average system battery charge reaches the set grid-connected discharge cutoff SOC, discharge is stopped.

6.9.2 Off-grid SOC parameters

- **<Reserve SOC>** When the average SOC of the system battery is reduced to the backup reserve SOC, the system battery will not be discharged again.

6.9.3 Diesel generator parameters

- **<Diesel generator start Channel>** Select DO1 or DO2 for Diesel control;
- **<Diesel generator start SOC>** System average SOC of Diesel start, when system average SOC is lower than Diesel start SOC, DO is normally closed when system average SOC is higher than Diesel start SOC, DO is normally open;
- **<Diesel generator Stop SOC>** The system average SOC of off-grid diesel stop, the written value is 0~100. DO will turn from normally closed to normally open only when the system average SOC is higher than the diesel stop SOC after diesel start.

6.10 TOU mode setting

TOU mode mainly sets the working mode of the energy storage machine in different time periods, the operation is as follows: select the first level menu [System Settings], the sidebar select [Power Adjustment] > [TOU Settings]. The TOU mode can be selected as the default mode, in the time period when no specific mode is set, the system is running according to the default mode, the default mode is as follows.

- **<Load Priority>** Prioritizes power supply to the load, both PV and battery can supply power to the load. When the load draws power from the grid, the accumulator outputs the corresponding power to compensate. The excess PV power is fed into the grid, but it must be less than the set "feed power".
- **<Battery Priority>** Power supply to the load is prioritized, and both PV and battery can supply power to the load. When the load power is less than the "permissible withdrawal power", the battery is regulated to charge. Charging power range: load power + battery charging power < allowable withdrawal power. If during the charging process it is detected that the power taken from the grid is higher than the "permissible withdrawal power", the battery charging power is reduced. If there is excess PV power in the system, the PV power can be fed into the grid at a rate not greater than the set "feed-in power".
- **<Grid Priority>** Power is given to the load first, both PV and battery can supply power to the load, and the excess power is fed to the grid. The power fed to the grid is not greater than the set "feed power".

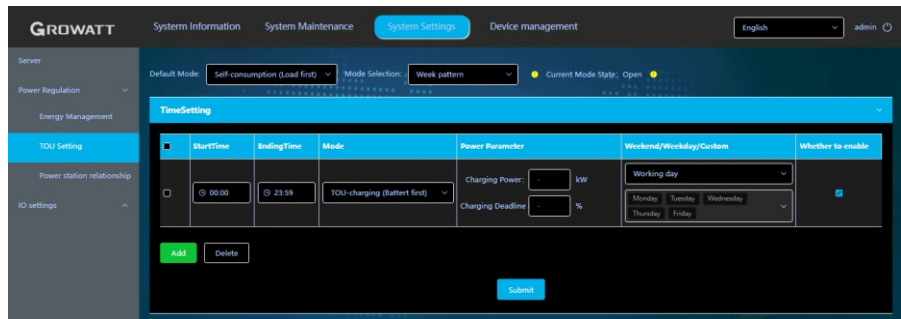


Figure 6-19 TOU default operating

The TOU mode allows you to select a specific mode, and the specific mode settings are as follows:

- **<Weekly Mode Setting>** 9 time period settings to set different time ranges of operating modes as required for on-site applications.
- **<Annual Mode Setting>** Various time modes can be set, respectively: Special Day 1, Special Day 2, Quarterly (1, 2, 3, 4), and the annual working mode, as shown below.

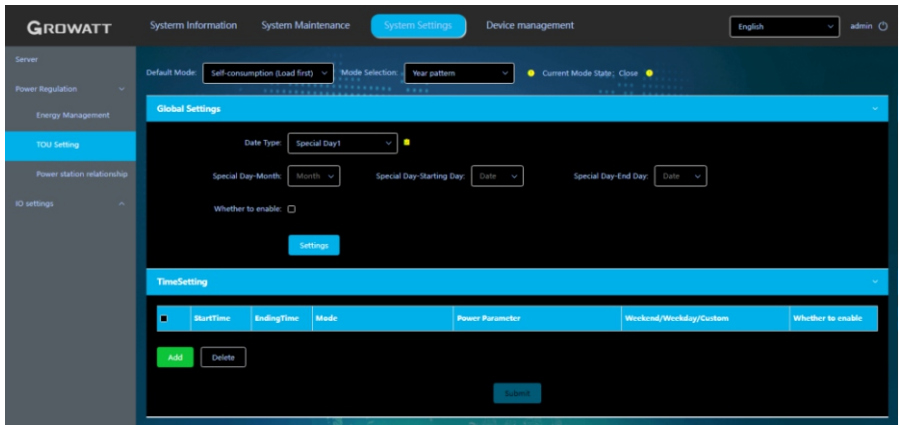


Figure 6-20 TOU specific operating



NOTICE

- On Special Day 1, Special Day 2, Quarter (1, 2, 3, 4), and throughout the year, the times between the different types are independent and can be set at the same time, running in accordance with priority. Under the same type, there can be no overlap between time intervals.
- Priority is: special day 1 > special day 2 > quarterly (1>2>3>4) > full year.

6.11 Third-party client access settings

The third party client access function is closed by default, and currently Modbus TCP, Modbus RTU and IEC104 are provided for third party clients to access ShineMaster-X server. The operation is as follows: Select the first level menu [System Settings], and choose [Server] > [Third Party Network Management] in the sidebar.

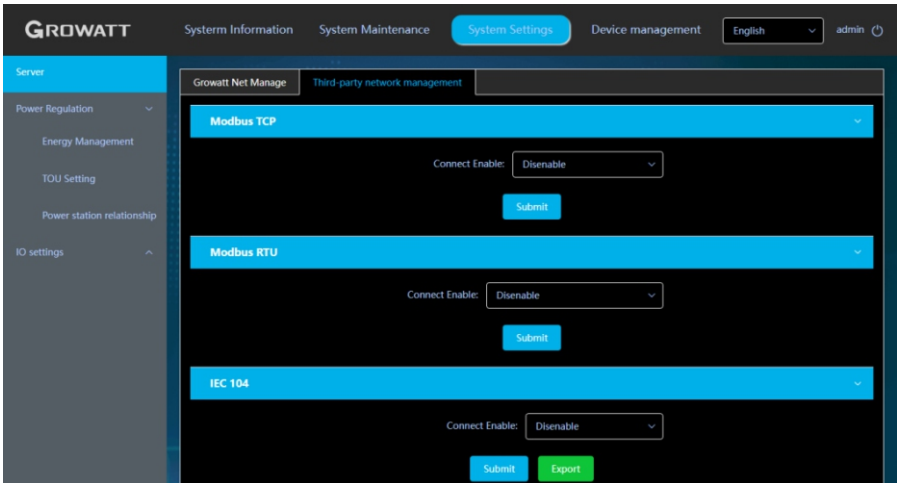


Figure 6-21 Third-party client access

6.11.1 Modbus TCP Connection Settings

- <Connection Enable> has three options: Disable, Enable (Restricted), Enable (Unrestricted)
- Disable: Default option, disables Modbus TCP connection and prohibits third-party clients from connecting to the ShineMaster-X server.
- Enable (Restricted): Only the set client IPs are allowed to connect to the ShineMaster-X server. The number of connectable clients is less than 3 and can be set.
- Enable (Unlimited): Allows any client IP to connect to the ShineMaster-X server. The number of connectable clients is less than 3.

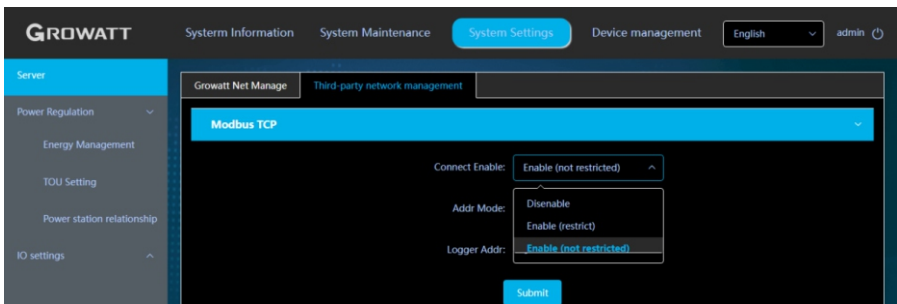


Figure 6-22 Modbus-TCP connection

6.11.2 IEC104 connection settings

- <Connection Enable> has three options: Disable, Enable (Restricted), Enable (Unrestricted)
- Disable: default option, disables the connection of IEC104 and prohibits third-party clients from connecting to the ShineMaster-X server. 104 function supports the export of point tables for inverters and other devices currently configured within ShineMaster-X.
 - Enable (Restricted): Only the set client IPs are allowed to connect to the ShineMaster-X server. The number of connectable clients is less than 3 and can be set.
 - Enable (Unlimited): Allow any client IP to connect to the ShineMaster-X server. The number of connectable clients is less than 3.

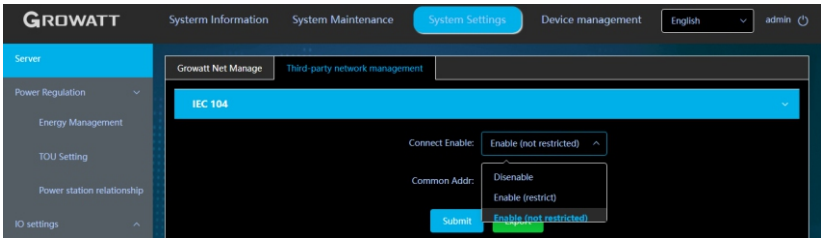


Figure 6-23 IEC104 connection

6.12 Configuration of station relationships



NOTICE

- All the meters of the power station relationship should be at the same level of node.

Select the first level menu [System Settings], and in the sidebar select [Power Regulation] > [Power Station Relationships]

Relationships are configured based on the relationship of the on-site power station meters;

Once the configuration is complete, click Submit to save and complete the setup.

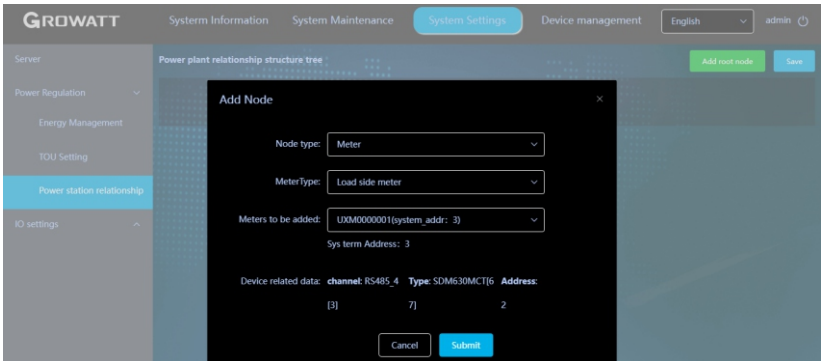


Figure 6-24 Setting power station relationship

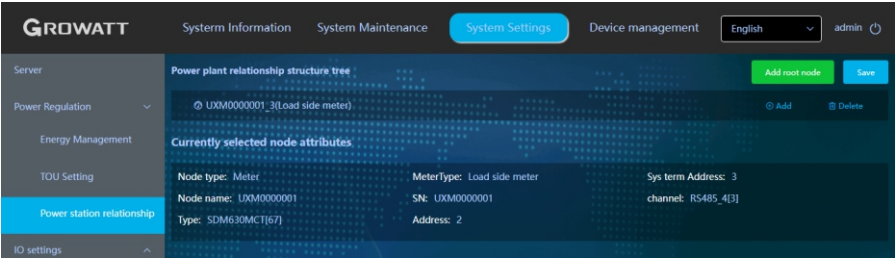


Figure 6-25 Show power station relationship

Example of station relationship configuration.

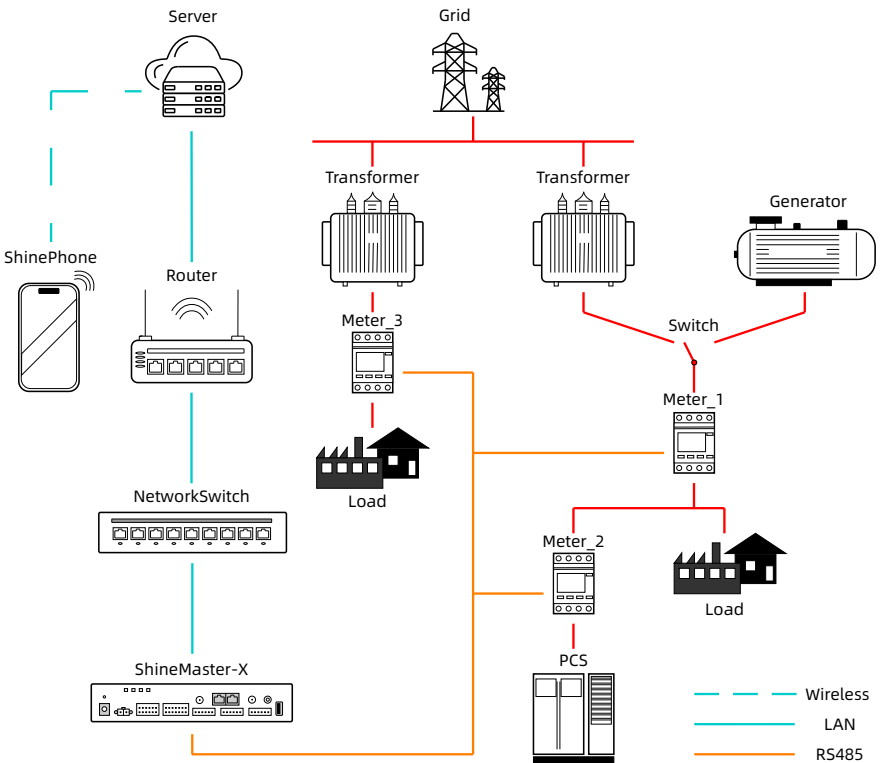


Figure 6-26 Power station topology

Configuration steps.

1. Determine meter type

From "Fig. X Power Station Topology Schematic", it can be seen that meter 1 is the load-side meter, meter 2 is the energy storage-side meter, and meter 3 is the load-side meter.

2. Adding Meter Equipment

Add the three meters to the equipment list first.

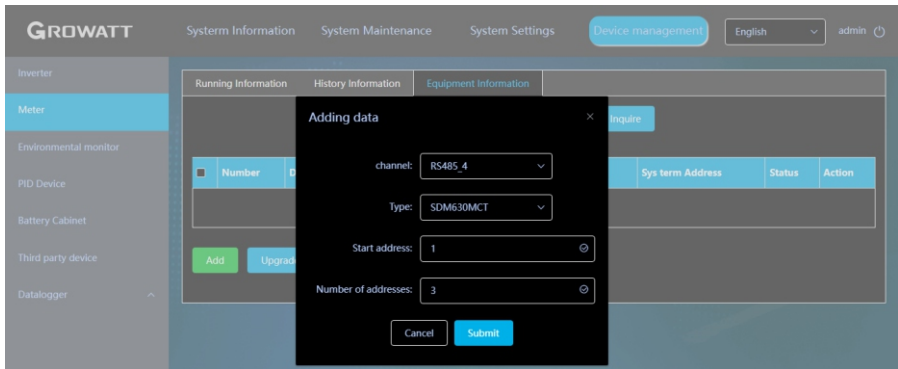


Figure 6-27 Adding power station meters

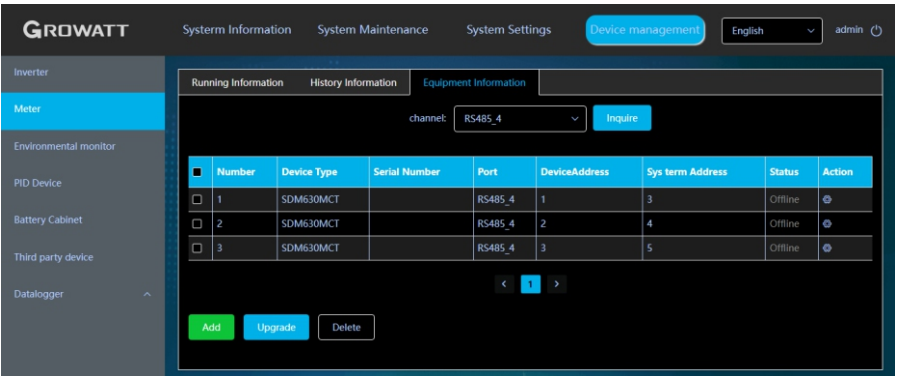


Figure 6-28 Show station meters

3. Adding a power station relationship
Select the meter device to be added and choose the meter type

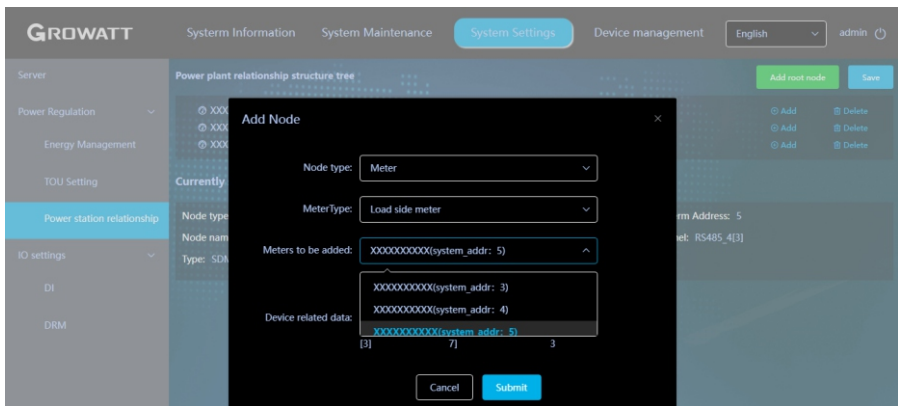


Figure 6-29 Power station nodes

Results after the configuration of the power station relationship is completed



Figure 6-30 Power station relationships

Just confirm and save.

6.13 Problems and Solutions

 NOTICE	➤ If the interface is not refreshed for a long time after clicking "Save" when adding devices, the collector will be powered off and restarted. After restarting, click "Device Status" to check whether the last operation was successful or not; ➤ When configuring the parameters of the corresponding function, you only need to configure the parameters of the corresponding function according to the above method, and other parameters that are not related to the required configuration function should remain unchanged.
--	--

7 Specifications and Model Descriptions

7.1 Specifications

General parameters	Parameter Description	Note
model number	ShineSEM-XA-R	
Dimension(W*H*T)	352x352x110(mm)	
Weight (bare metal net weight)	8.7kg	
Operating Temperature Range	-30~60℃	
Sampling/supply voltage	Rated voltage: 220V/380VAac, 230V/400VAac	three-phase, four-wire (4-wire)
relative humidity	5%~95% RH	
highest altitude	3000 meters	
Standby loss	≤24W	
Heat dissipation method	passive cooling	
protection class	IP66	

7.2 Interface parameters

General parameters	Parameter Description	Note
RS485	RS485 x3 (9600, 8, N, 1)	
CAN	CAN 2.0 x2 (not supported yet)	
DRM	1-5/2-6/3-7/4-8/COM/REF	
DI input	Isolated DI x5 (Maximum input voltage: 12V)	
DO Output	Relay DO x2 (12V/100mA)	
AI voltage input	AI x1 (0 ~10V)	
AI current input	AI x3 (0~20mA)	
Voltage Sampling Input	Three-phase voltage sampling	
Current Sampling Input	Three-phase current sampling	

7.3 BLE Module

Parameters	Specifications	Note
Frequency Band	2402-2480MHz	
Output Power	0dBm $\pm$ 2dBm	

7.4 RF Bands of the 4G Module

Frequency Band	Uplink (UL) operating	Downlink (DL) operating
GSM EGSM900	880 ~ 915 MHz	925 ~ 960MHz
GSM DSC1800	1710 ~ 1785MHz	1805 ~ 1880 Mhz
WCDMA B1	1920 ~ 1980 MHz	2110 ~ 2170 Mhz
WCDMA B5	824 ~ 849 MHz	869 ~ 894 Mhz
WCDMA B8	880 ~ 915 MHz	925 ~ 960 Mhz
FDD B1	1920 ~1980 MHz	2110 ~2170 Mhz
FDD B3	1710 ~1785MHz	1805 ~1880MHz
FDD B5	824 ~ 849MHz	869 ~ 894MHz
FDD B7	2500~2570MHz	2620~2690MHz
FDD B8	880 ~915MHz	925 ~960MHz
FDD B20	832~862MHz	791~ 821MHz
FDD B38	2570 ~2620MHz	2570 ~2620MHz
FDD B40	2300 ~2400MHz	2300 ~2400MHz
TDD B41	2496~2696MHz	2496~2690MHz

7.5 Output Power of the 4G Module

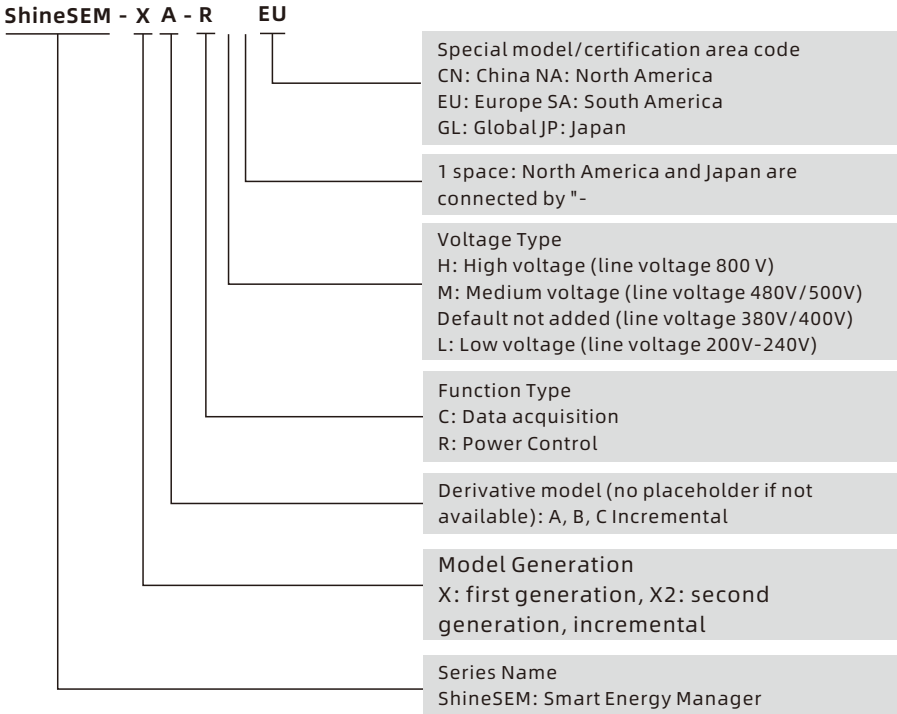
Frequency Band	Standard Value(Unit: dBm)	Remarks (Unit: dB)
GSM EGSM900	33	$\pm$ 2
GSM DSC1800	30	$\pm$ 2
WCDMA B1	24	+1/-3
WCDMA B5	24	+1/-3
WCDMA B8	24	+1/-3

Frequency Band	Standard Value(Unit: dBm)	Remarks (Unit:dB)
FDD B1	23	±2.7
FDD B3	23	±2.7
FDD B5	23	±2.7
FDD B7	23	±2.7
TDD B8	23	±2.7
FDD B20	23	±2.7
TDD B38	23	±2.7
TDD B40	23	±2.7
TDD B41	23	±2.7

Note:

Equipment meeting Class A requirements may not offer adequate protection to broadcast services within a residential environment .

7.6 Description of models



Contact us 8

Growatt New Energy provides customers with comprehensive technical support. Users can contact the nearest Growatt New Energy office or customer service point, or directly contact the company's customer service center.

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