
# ShineMaster4G-X Data Collector
# User Manual

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## Change history

**Version 00**

First release

# Table of Contents

# 1 Product Brief

## 1.1 Intended use

ShineMaster4G-X is an energy management device for PV subarrays and energy storage applications, supporting device data acquisition, protocol conversion, energy management and edge computing, as well as multiple networking and electrical and environmental protection.

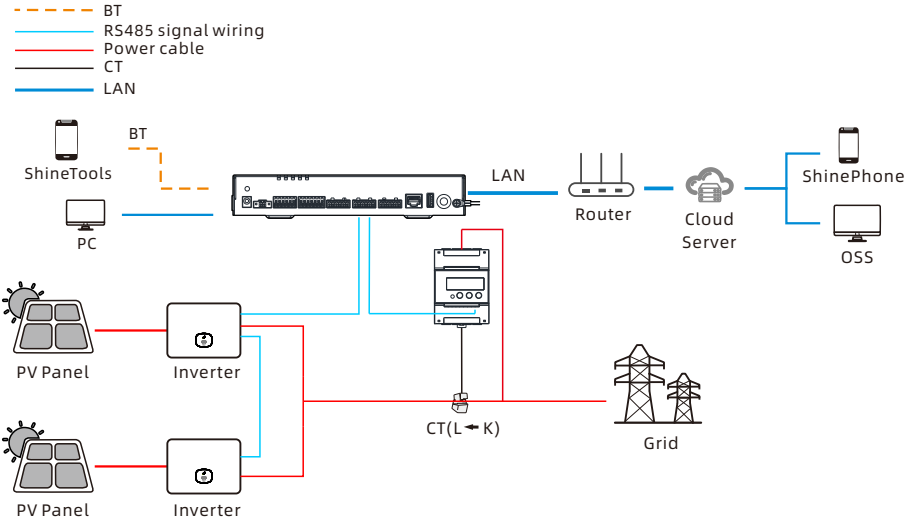



Figure 1.1 Ethernet connection to server

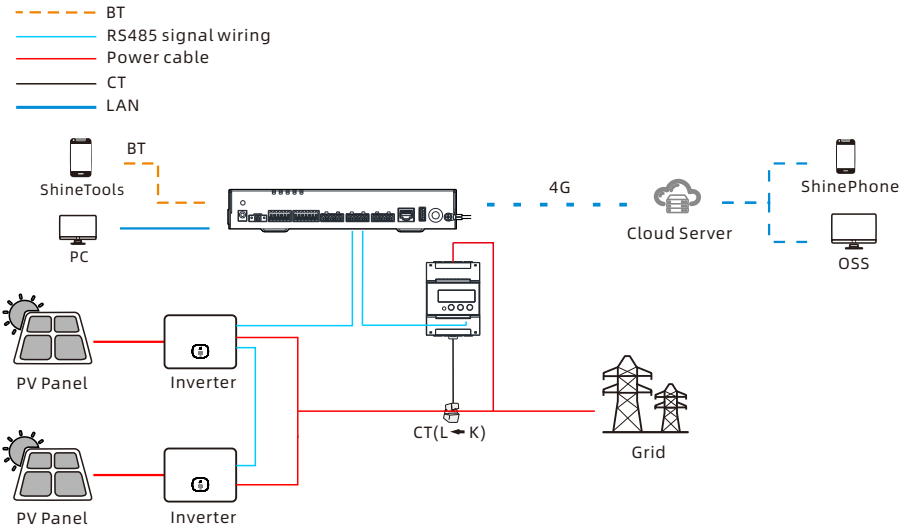



Figure 1.2 4G connection to server

## 1.2 ShineMaster4G-X Appearance

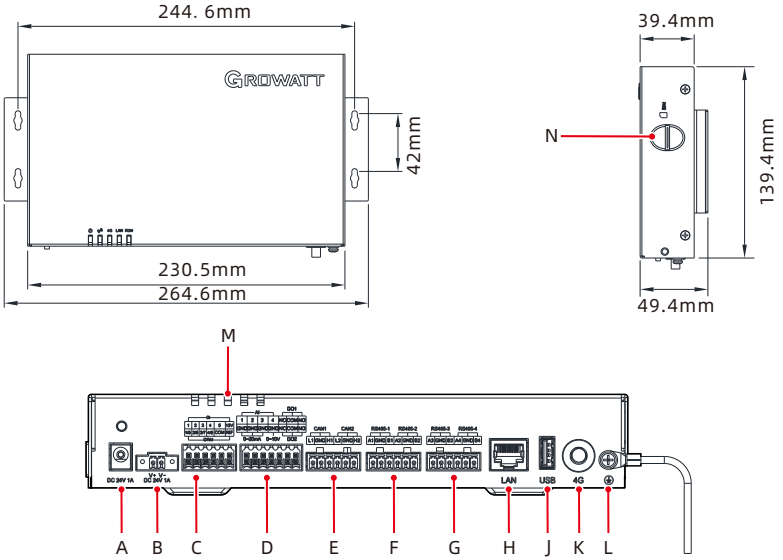



Figure 1.3 Dimensions and Interfaces

| NO. | connector | descriptive |
|---|---|---|
| A | 24V input round hole terminal | Connecting the 24V adapter |
| B | 24V Input Phoenix Terminal | Connected to external 24V power terminals, it can be used as a backup input power supply, off-grid power supply. |
| C | DI & DRM signal terminals | Connecting DI and DRM signals |
| D | AI & DO signal terminals | Connecting AI and DO signals |
| E | CAN communication terminal | Connecting CAN communication lines |
| F, G | RS485 communication terminal | Connecting the RS485 communication cable |
| H | RJ45 Communication Terminal | Connect Ethernet communication cable, 10/100M |
| J | USB port | Connect a USB flash drive for local upgrades |
| K | 4G Antenna Interface | Connects to 4G antenna (not available on non-4G versions) |
| L | grounding screw | grounding |
| M | LED light | Indicates collector operating status |
| N | SIM card slot | Installation of 4G SIM card (non-4G version does not have this port) |

## 1.3 ShineMaster 4G-X version

The 4G version model name: ShineMaster4G-X, with an extra 4G SIM slot and 4G antenna connector on the exterior.

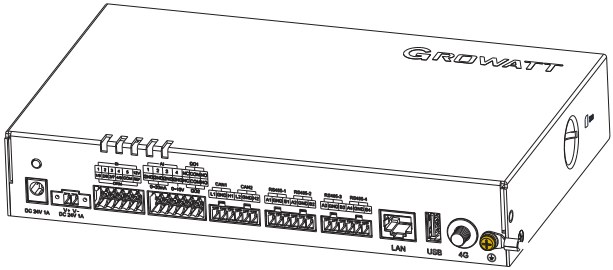



Figure 1.4 4G version of ShineMaster4G-X

## 1.4 ShineMaster4G-X Indicator Description

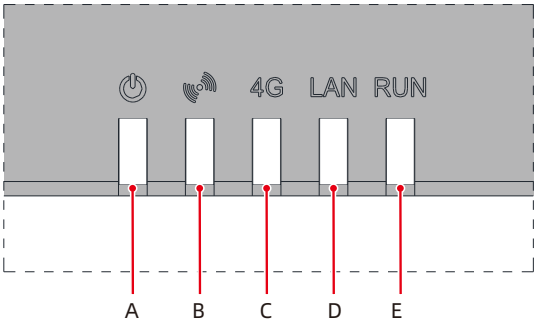



Figure 1-5 LED Status Indicators

| NO. | Designation | Description |
|---|---|---|
| A | Power status indicator | Normally off: The power supply works abnormally;<br>Normal light: Power supply works normally. |
| B | Bluetooth status indicator (not supported yet) | Always off: Bluetooth is not enabled;<br>1S blinks 1 time, goes out 1 time: Bluetooth is enabled, but not connected to the cell phone APP;<br>Normal light: Bluetooth works normally and connects with cell phone APP normally. |

| NO. | Designation | Description |
| --- | --- | --- |
| C | 4G Status Indicator | Always off: 4G function is not supported;<br>1S blinks 2 times, goes out 1 time: SIM card not inserted<br>1S blinks 1 time, goes out 1 time: 4G network abnormality or SIM no traffic;<br>Standing light: 4G network is normal. |
| D | LAN status indicator | Always off: The network is not connected;<br>1S blinks 1 time, extinguishes 1 time: valid IP is obtained, no network data interaction. That is, the connection with the server is abnormal.<br>Always on: LAN network is normal. |
| E | Operation status indicator | Normally off: The system is working normally, no alarms or malfunctions;<br>Blinking blue light: system alarms; for example: abnormal connection to the server, abnormal communication of monitoring equipment, etc.<br>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. |

# 2 Unpacking

The Data Collector body and accessories are listed below:

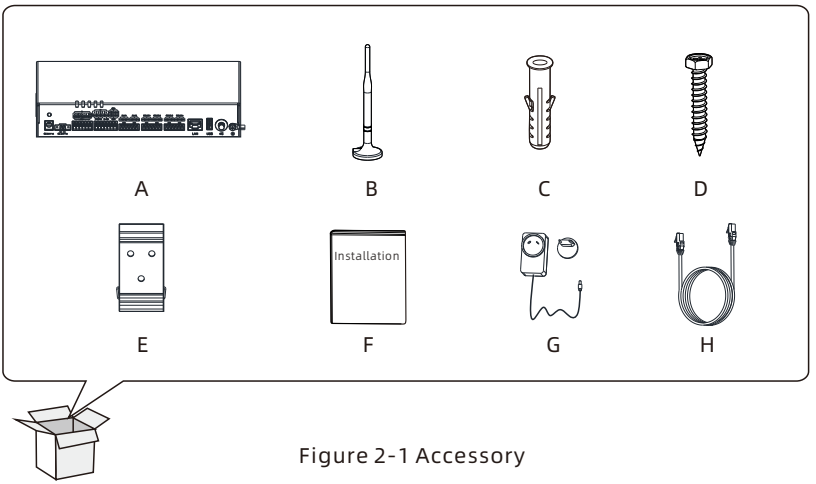



Figure 2-1 Accessory

| NO. | Designation | Description |
|---|---|---|
| A | data collector | ShineMaster4G-X product body, 1pcs. |
| B | 4G Antenna | (Optional) Suction cup antenna for data collector for 4G communication, 1pcs. |
| C | Plastic Expansion Tube | For wall mounting ShineMaster4G-X, 4pcs. |
| D | M6 self-tapping screws | For wall mounting ShineMaster4G-X, 4pcs. |
| E | Guideway bayonet | For collector rail mounting, 2pcs. |
| F | user manual | ShineMaster4G-X paper instruction manual, 1pcs. |
| G | power adapter | For collector power supply with Euro pins, 1pcs. |
| H | network cable | For connecting to the collector's network port for communication, 1pcs. |

# Ddevice Installation 3

## 3.1 Guide rail mounting

ShineMaster-X supports DIN35 standard rail mounting. Before installation, please go to the lower wall mounting lugs, and then install the rail mounting bayonet on the back, align the bayonet with the location of the rail to be mounted, and press down until the lower end of the bayonet clicks onto the rail.

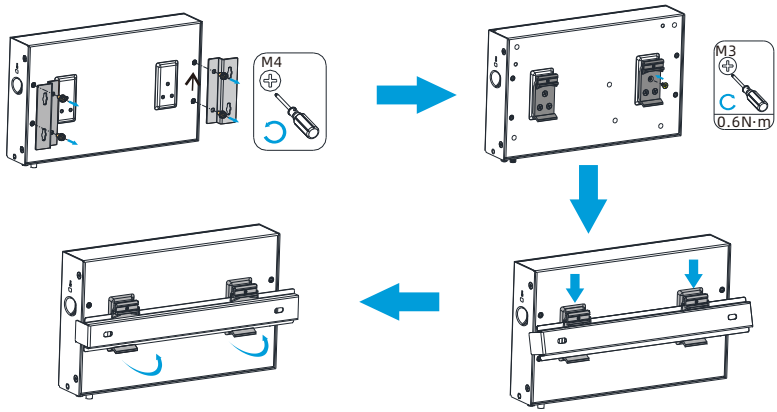



Figure 3-1 Rail mounting

## 3.2 Wall mounting

ShineMaster4G-X supports wall mounting, before installation, please make sure the wall mounting lugs are pre-installed, then move ShineMaster4G-X to the wall where it needs to be mounted, with the back of the lugs tightly pressed against the wall, use a level to keep the device level, and at the same time, use a marker pen to go through the holes of the lugs to make a hole marking on the wall, and use an electric drill with a 6mm bit to drill the holes in the marked positions. Use 6mm drill bit to drill holes in the marked holes 42-50mm deep, insert the expansion plugs into the holes, screw the screws to 10-12mm, push the ShineMaster4G-X lugs through the screws and push them until they are tightly attached to the wall, and finally tighten all the screws to complete the installation.

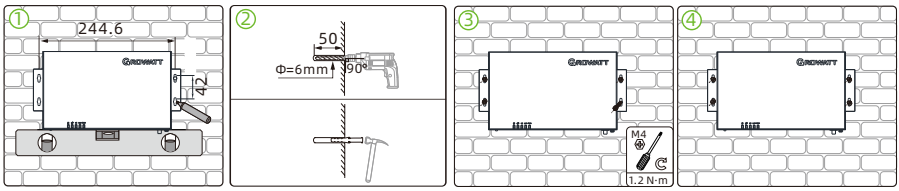



Figure 3-2 Wall Mounting

# 4 Cable Connections

| | |
|---|---|
| **WARNING** | ➢ Please read this manual carefully for product information and safety precautions before installation.<br>➢ 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.<br>➢ 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 ground wire

After ShineMaster4G-X 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, the resistance value should be ≤10Ω, so as to make a reliable connection between the metal casing and the earth, and it is recommended to use the cable with a cross-sectional area of 4mm$^2$ -6mm$^2$ .

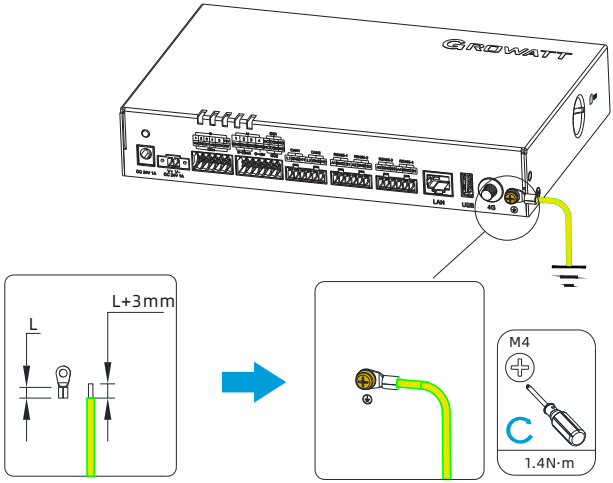



Figure 4-1 Grounding

## 4.2 RS485 Signal Wiring

ShineMaster4G-X data collector provides 4 RS485 communication interfaces. For long distance RS485 communication, it is recommended to choose twisted pair cable with shielding, and the shielding layer is 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$^2$ .

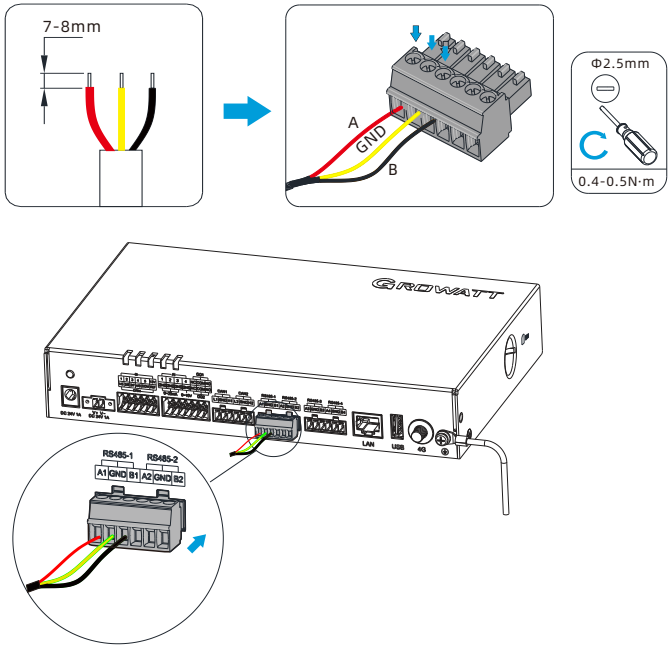
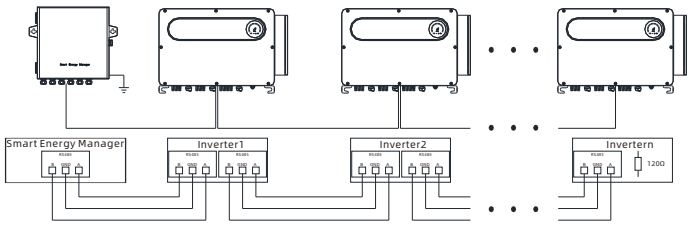



Figure 4-2 RS485 Wiring

**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.



## 4.3 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$^2$ .

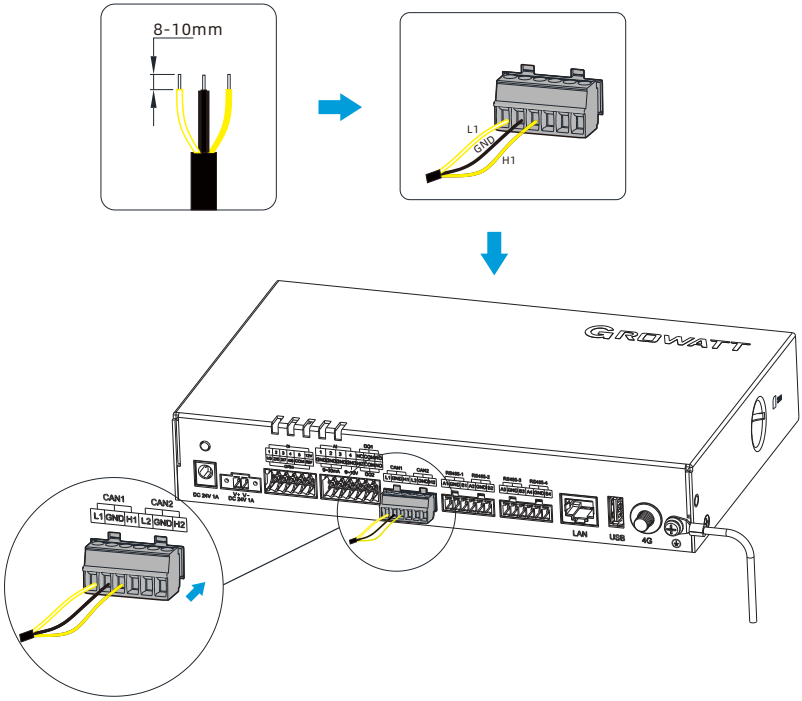



Figure 4-3 CAN wiring

## 4.4 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 0.5mm$^2$ -1.5mm$^2$ . The DRM controller is wired to the ShineMaster4G-X as shown in the following figure.

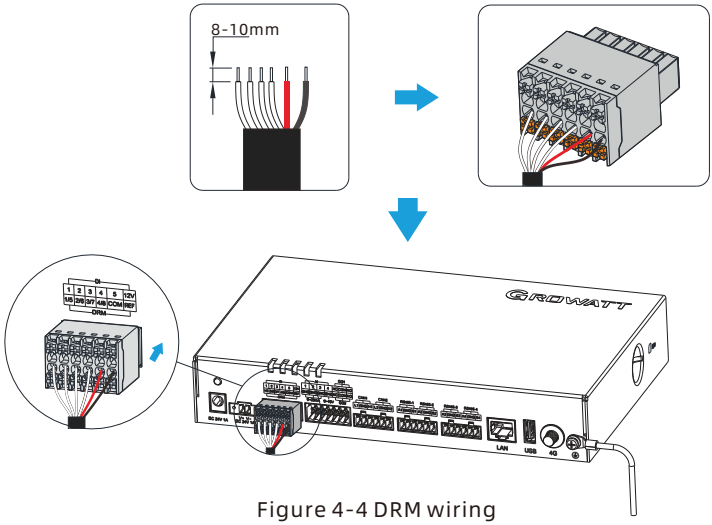



Figure 4-4 DRM wiring

## 4.5 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 0mm -1mm . It is recommended to use cables with a cross-sectional area of 0.5mm$^2$ -1.5mm$^2$ .

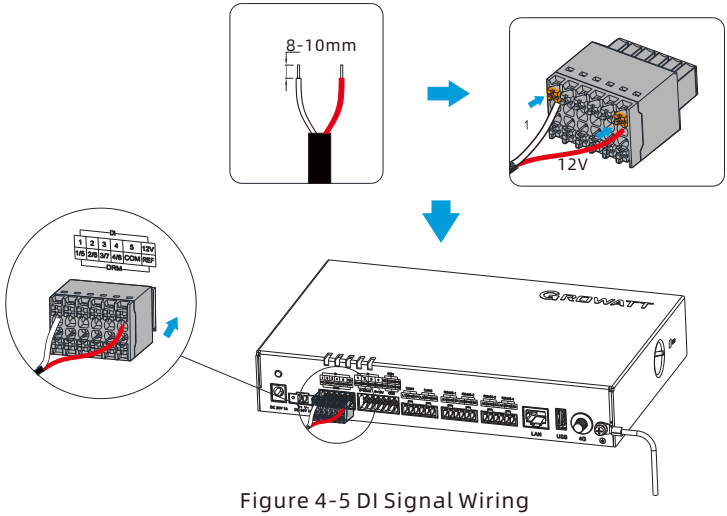



Figure 4-5 DI Signal Wiring

## 4.6 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. ShineMaster4G-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 0.5mm$^2$ -1.5mm$^2$ .

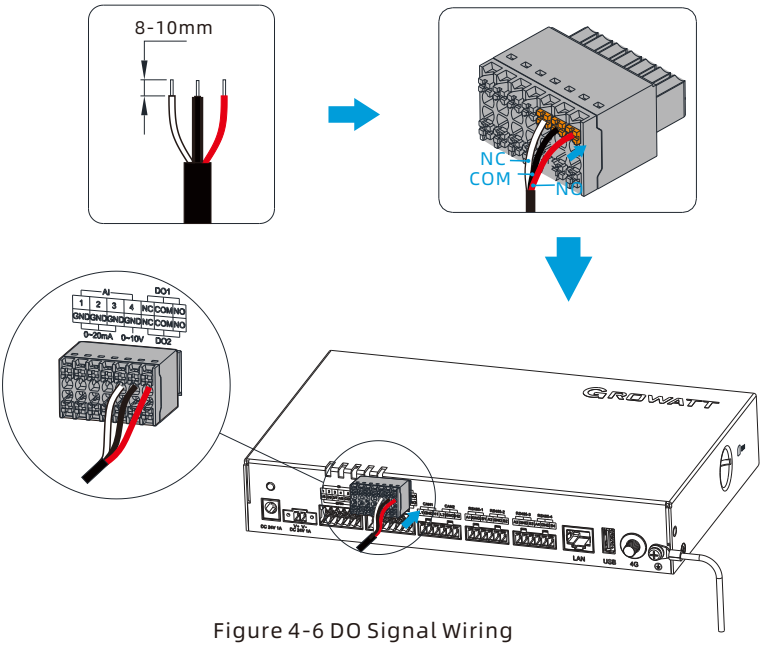



Figure 4-6 DO Signal Wiring

## 4.7 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 0.5mm$^2$ -1.5mm$^2$ .

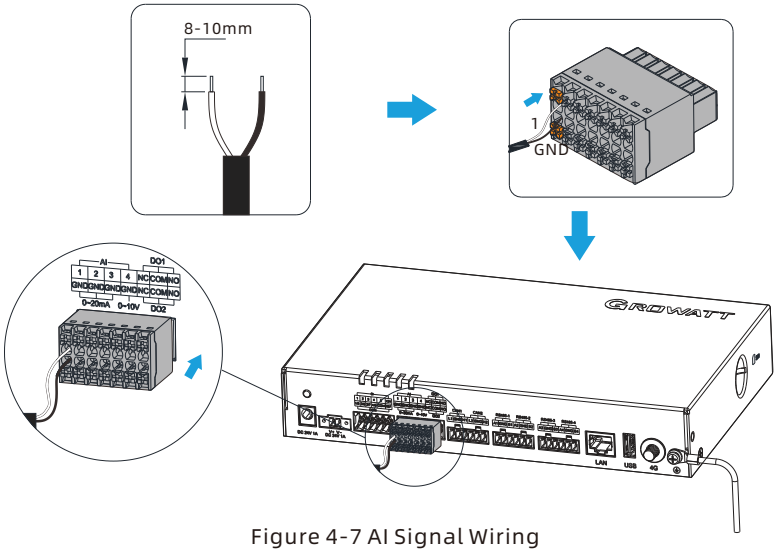



Figure 4-7 AI Signal Wiring

## 4.8 4G antenna wiring and SIM card insertion

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

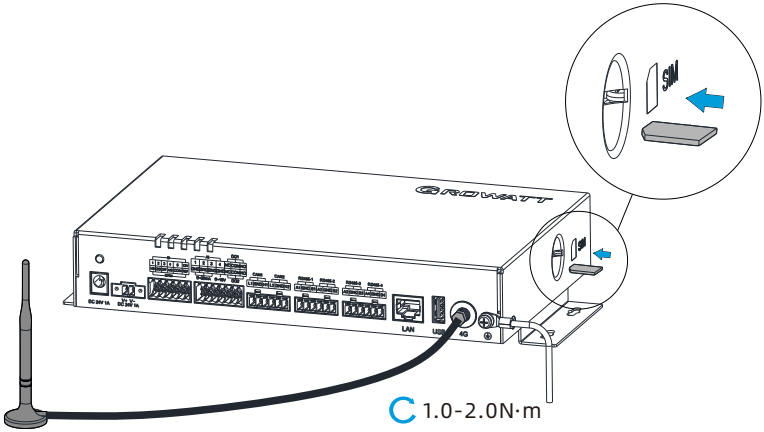



Figure 4-8 Antenna Wiring and SIM Card Installation

# 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, plug the mating adapter into a suitable socket and power up the socket, at which point the ShineMaster4G-X data collector's LED status indicators will all light up and flash until the system is running successfully and indicates the current status.

| | |
|---|---|
| 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:

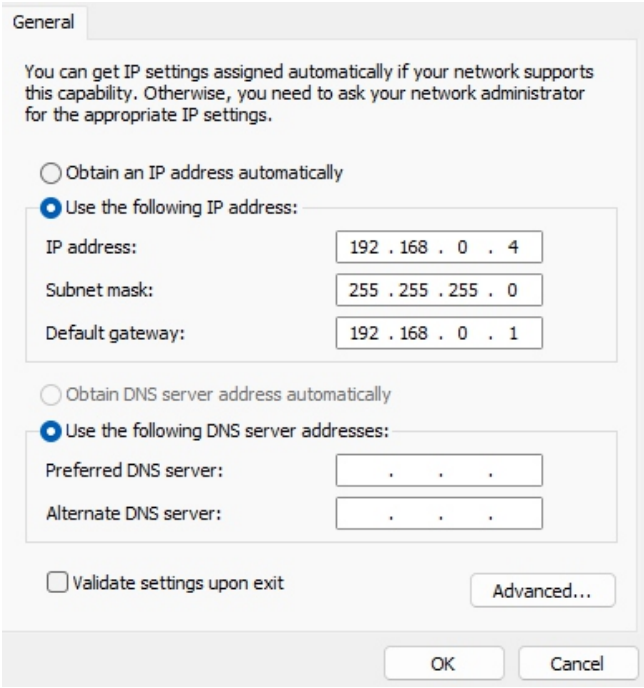



Figure 6-1 Example of PC local IP settings

## 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:

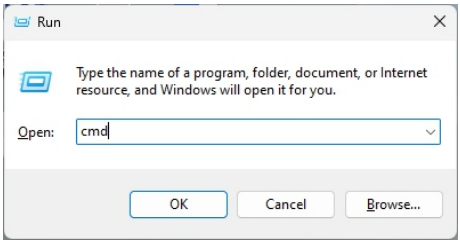



Figure 6-2 CMD tool

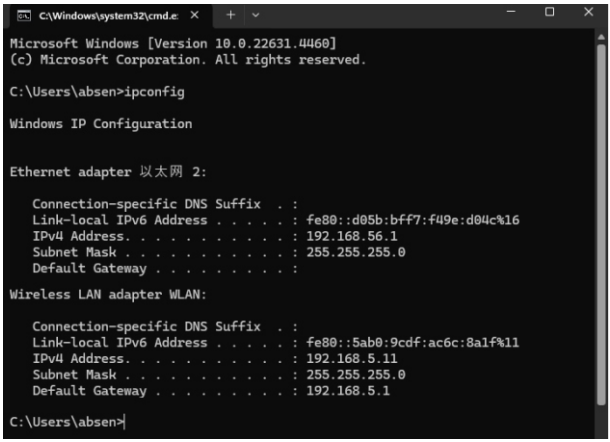



Figure 6-3 Show iP

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:

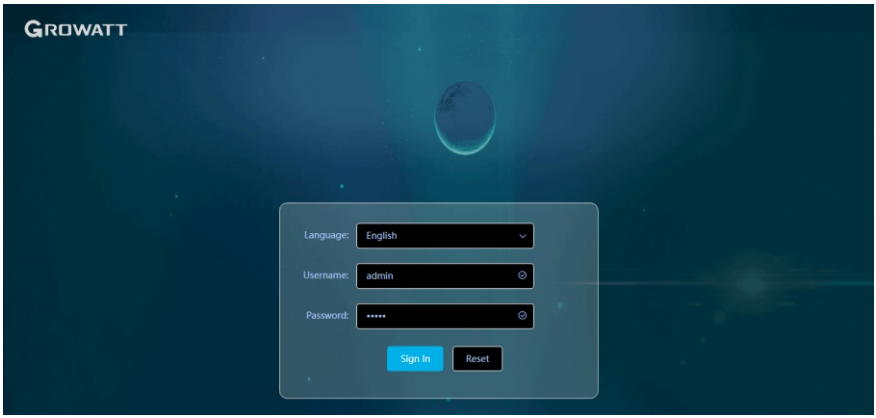



Figure 6-4 Built-in web login in

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

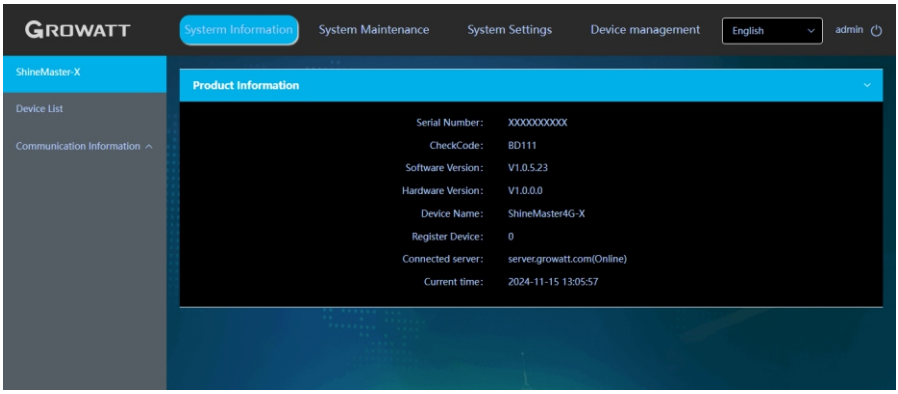



Figure 6-5 Built-in web system page

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:

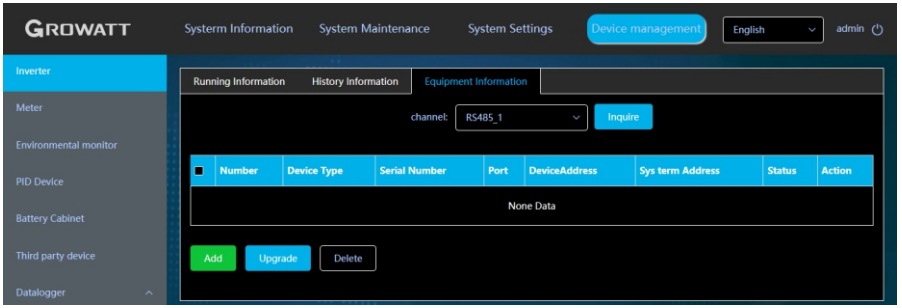



Figure 6-6 Adding inverters

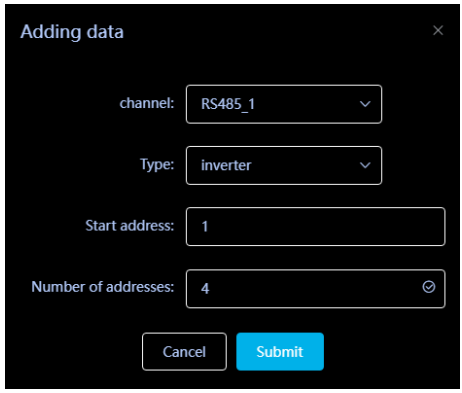



Figure 6-7 Select and Submit

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】.

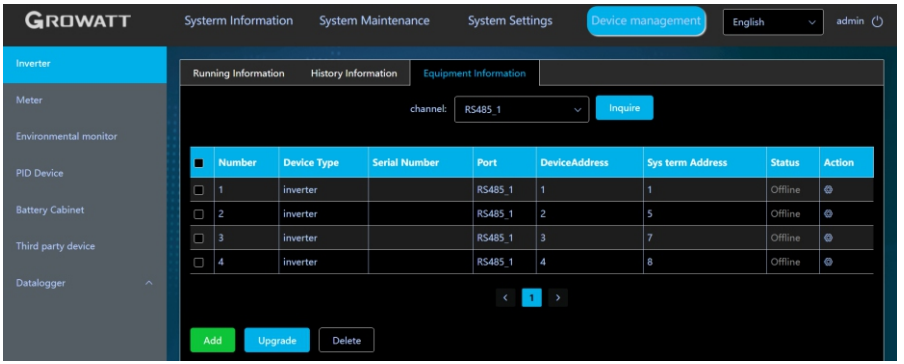



Figure 6-8 Successful addition

| 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>:

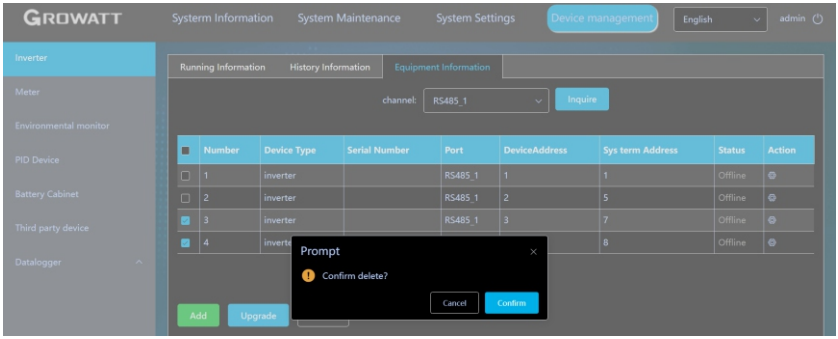



Figure 6-9 Delete Inverter operation

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

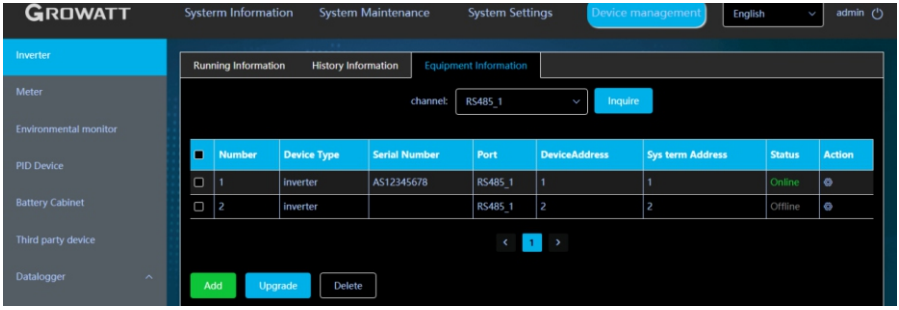



Figure 6-10 Successful deletion

## 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;

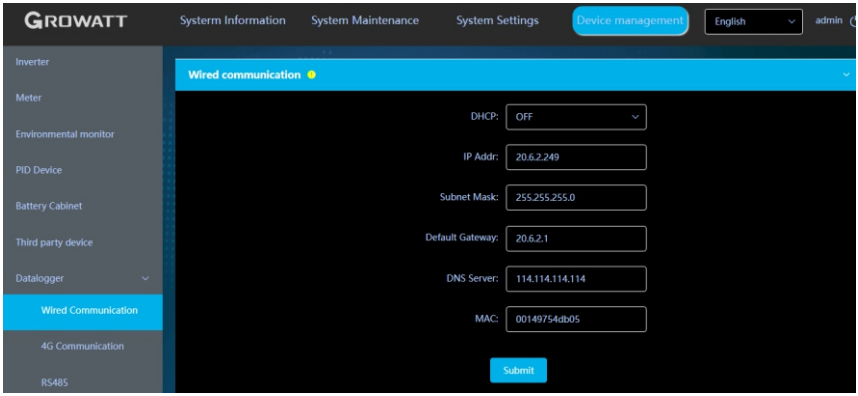



Figure 6-11 Setting a static IP address

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";

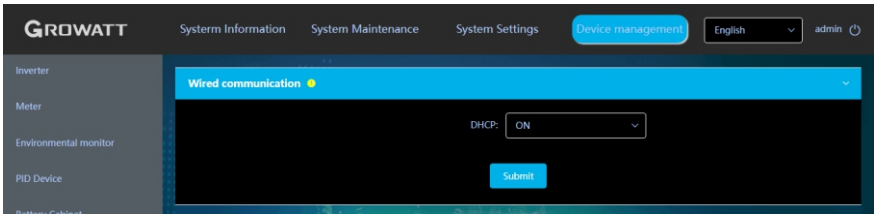



Figure 6-12 Setting up DHCP on

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.

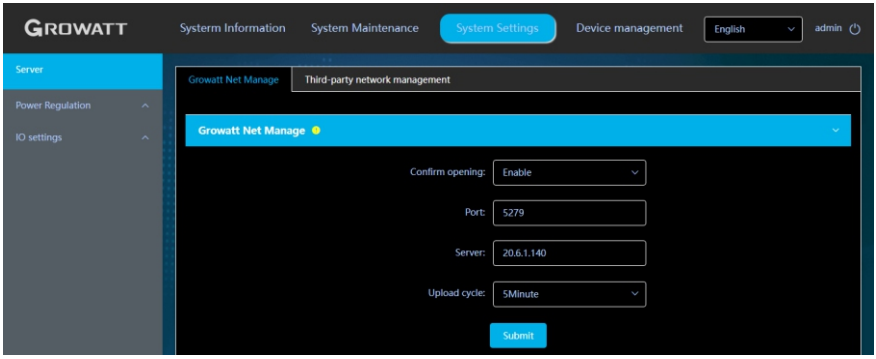



Figure 6-13 Server Setup

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;

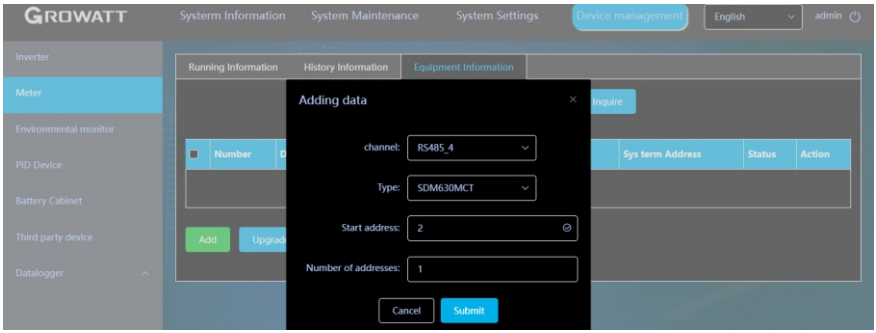



Figure 6-14 Select and Submit

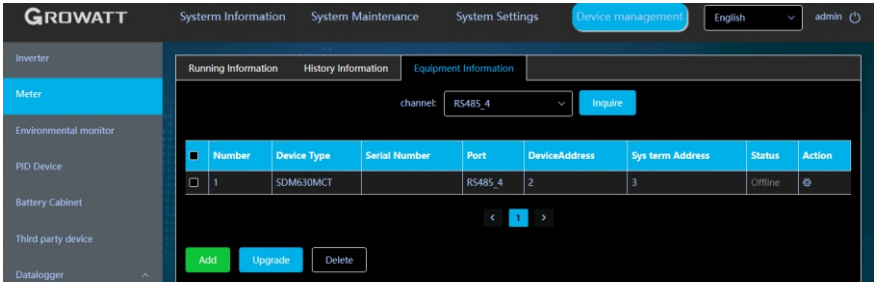



Figure 6-15 Adding a meter

### 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.

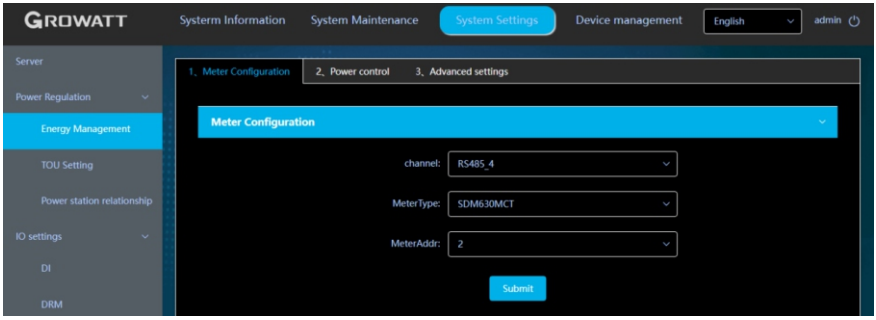



Figure 6-16 Meter Configuration

### 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.

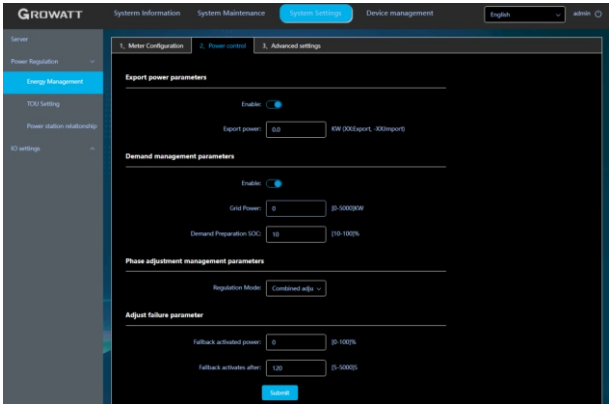



Figure 6-17 Power Control Configuration

- **<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.

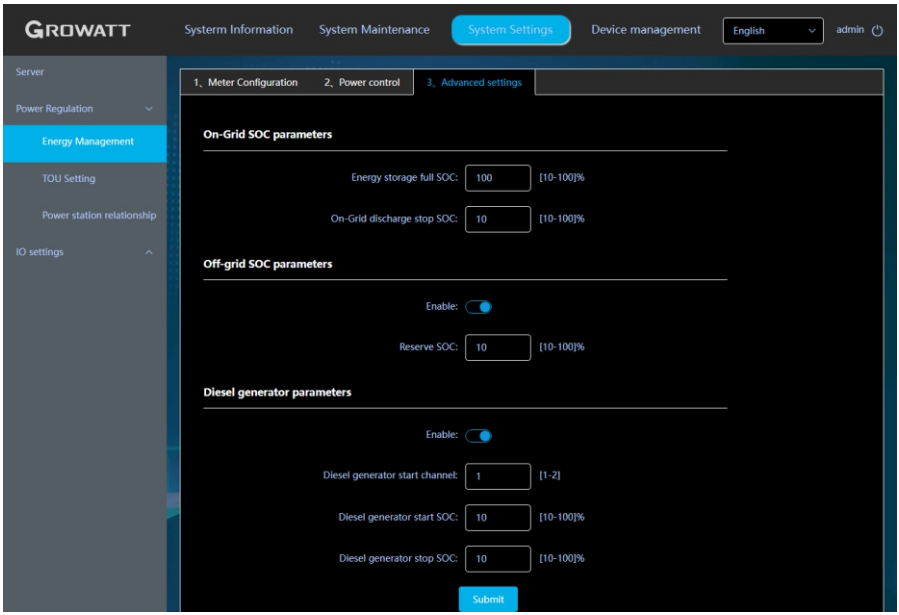



Figure 6-18 Advanced Settings

### 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".

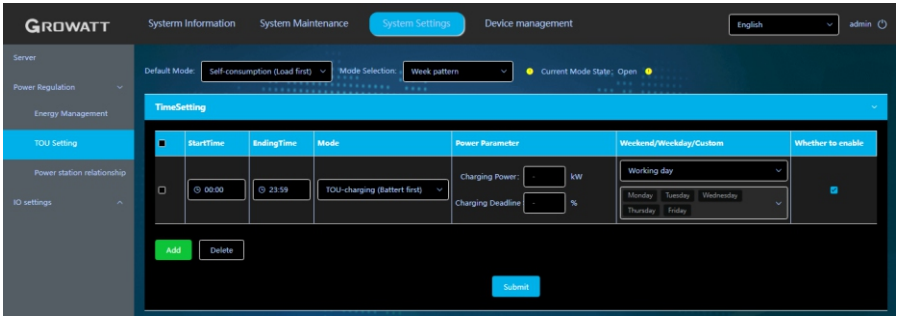



Figure 6-19 TOU default operating

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.

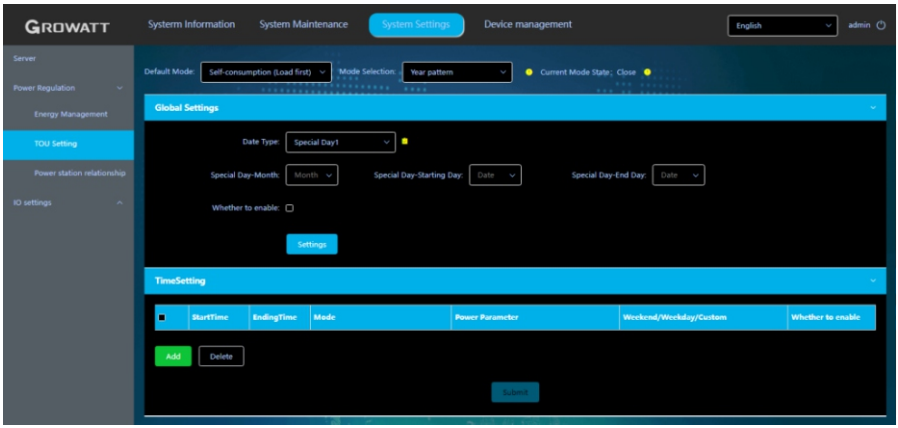



Figure 6-20 TOU specific operating

| | |
|---|---|
| **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.<br>➢ 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.

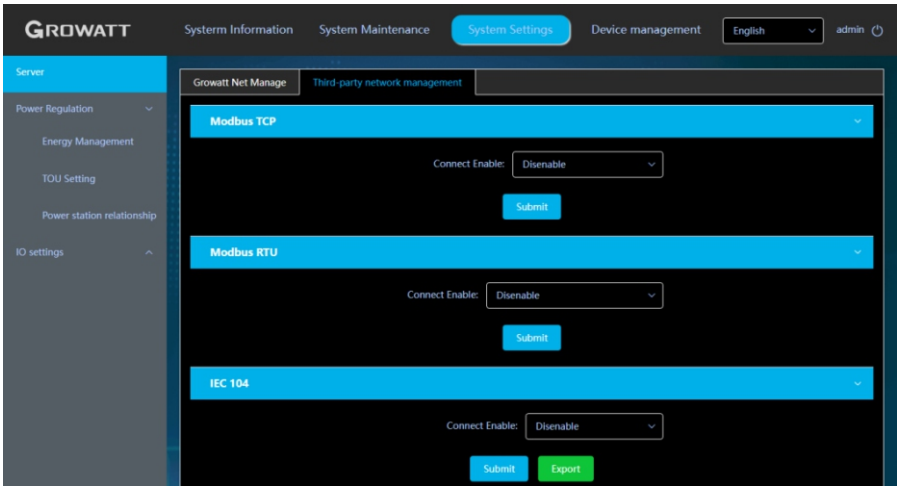



Figure 6-21 Third-party client access

### 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.

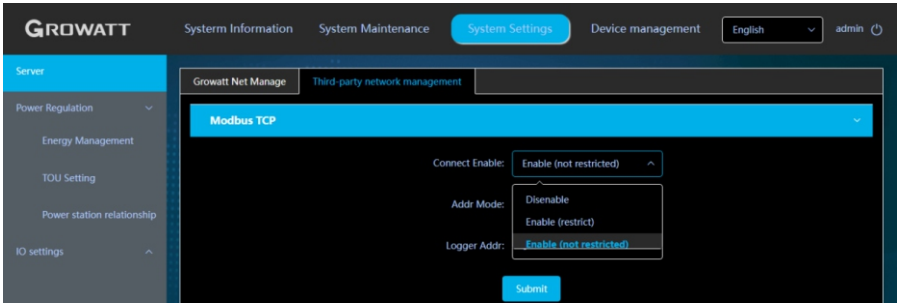



Figure 6-22 Modbus-TCP connection

### 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.

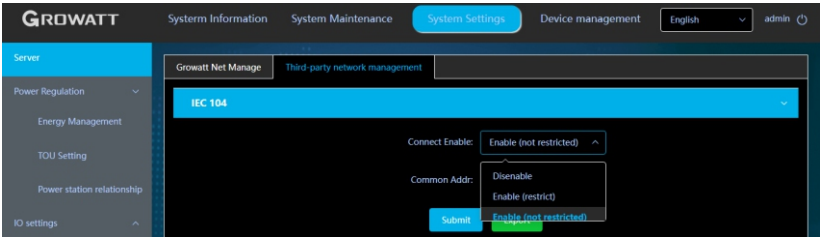



Figure 6-23 IEC104 connection

## 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.

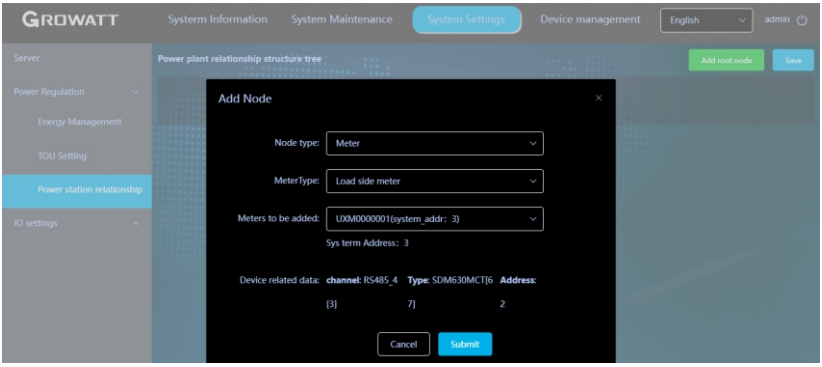



Figure 6-24 Setting power station relationship

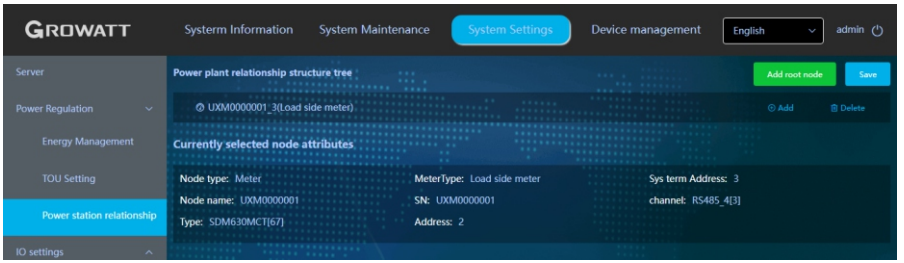



Figure 6-25 Show power station relationship

Example of station relationship configuration.

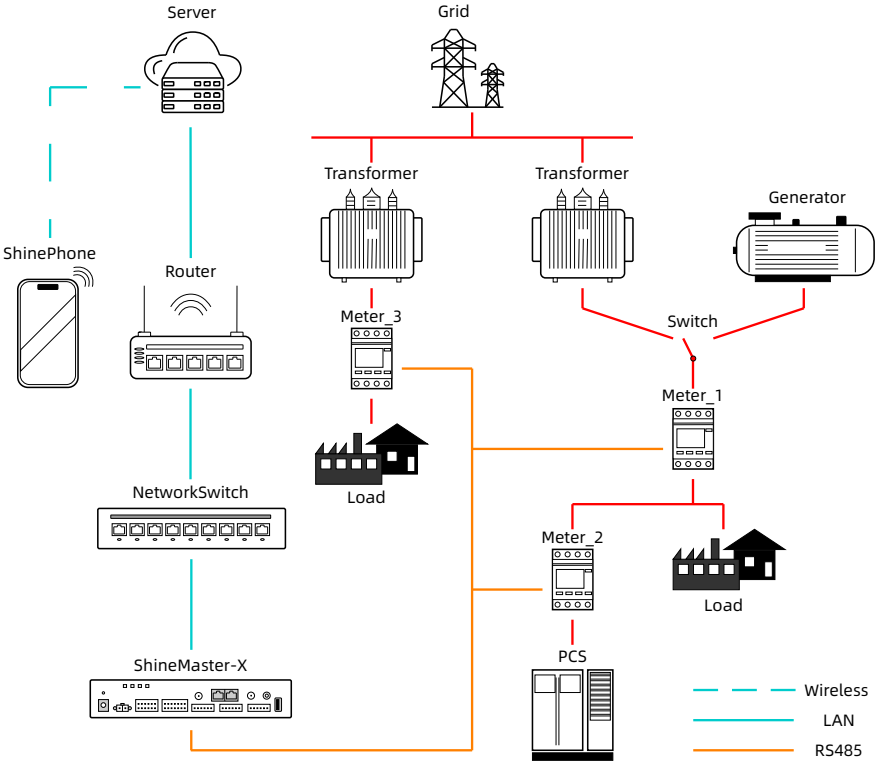



Figure 6-26 Power station topology

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.

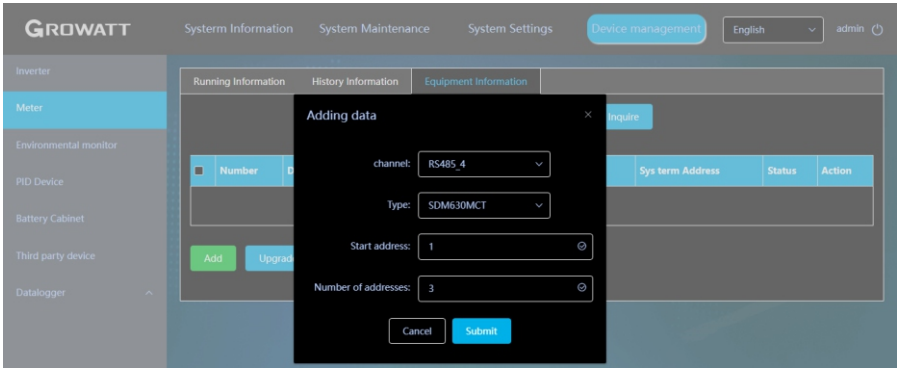



Figure 6-27 Adding power station meters

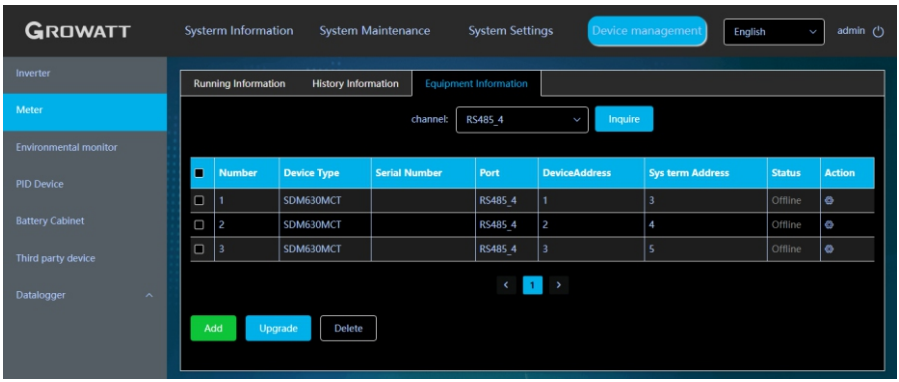



Figure 6-28 Show station meters

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

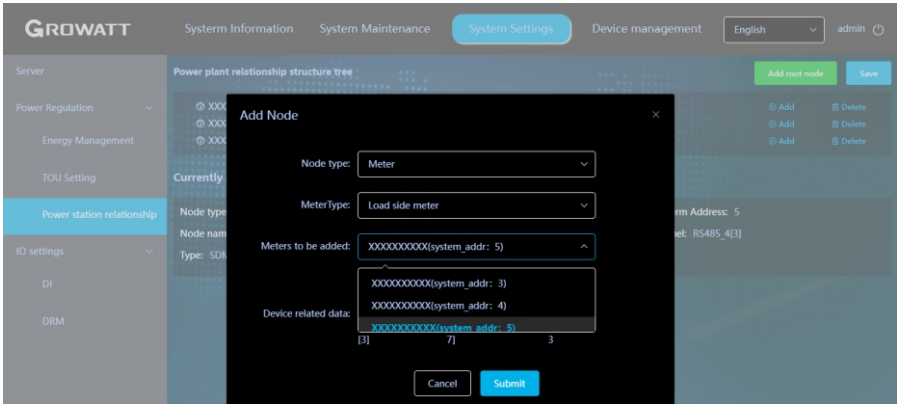



Figure 6-29 Power station nodes

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;<br>➢ 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**

| General parameters | Parameter Description | Note |
|---|---|---|
| model number | ShineMaster4G-X | |
| Dimension(W*H*T) | 232.0x139.5x40.0(mm) | |
| Weight (bare metal net weight) | 1.2kg | |
| Operating Temperature Range | -30~60℃ | |
| relative humidity | 5%~95% RH | |
| highest altitude | 3000 meters | |
| Rated power supply | 24V/1A | |
| Standby loss | ≤24W | |
| Heat dissipation method | passive cooling | |
| protection class | IP20 | |

**Interface parameters**

| General parameters | Parameter Description | Note |
|---|---|---|
| RS485 | Plug-in terminals RS485 x4 (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) | |

**Performance Parameters**

| Performance Parameters | Parameter Description | Note |
|---|---|---|
| Maximum number of access devices | 48 units | 4*12 units, 4 RS485 ports, equal distribution of equipment |
| Power regulation accuracy | ≤1% | System Power Rating |
| Countercurrent energy | ≤2 seconds | System Power Rating |
| balance regulation time | | Remaining 3 RS_485 ports 3*3 units as required for regulation time. **Number of accesses = 3*regulation time_sec/0.7** |

## 7.2 BLE Module

| Parameters | Specifications | Note |
|---|---|---|
| Frequency Band | 2402-2480MHz | |
| Output Power | 0dBm ±2dBm | |

## 7.3 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 |

## 7.4 Output Power of the 4G Module

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

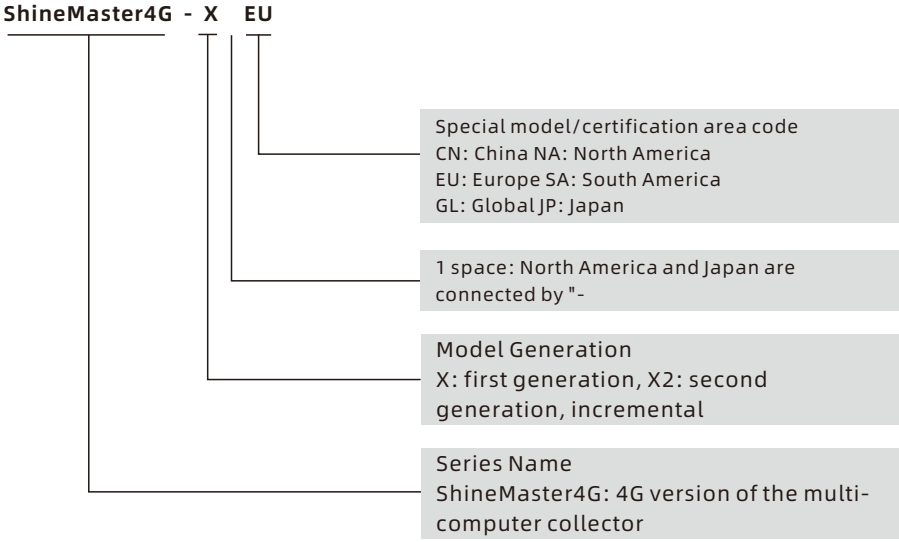
**Note:**
Equipment meeting Class A requirements may not offer adequate protection to broadcast services within a residential environment .

## 7.5 Declarations

**CE compliance statement**
"Shenzhen Growatt New Energy Co., Ltd." declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. provisions of Directive 2014/53/EU.
For the full RED DoC file, Please download it as follow web. en.growatt.com

The wireless operation frequency.
Bluetooth:2402-2480MHz,Max output power ≤ 20dBm(E.I.R.P)
4G:1920-1980MHz(TX), 2110-2170MHz(RX),Max output power ≤ 22.2dBm(E.I.R.P)
1710-1785MHz(TX), 1805-1880MHz(RX),Max output power ≤ 22.5dBm(E.I.R.P)
2500-2570MHz(TX), 2620-2690MHz(RX),Max output power ≤ 23.1dBm(E.I.R.P)
880-915MHz(TX) .P) 2500-2570MHz(TX), 2620-2690MHz(RX),Max output power ≤ 23.1dBm(E.I.R.P) 880-915MHz(TX), 925-960MHz(RX),Max output power ≤ 22.3dBm(E.I.R.P) 832-862MHz(TX), 791-821MHz(RX),Max output power ≤ 21.8dBm(E.I.R.P) 2570-2620MHz(TX), 2570-2620MHz(RX),Max output power ≤ 23.3dBm(E.I.R.P) 2300-2400MHz(TX), 925-960MHz(RX),Max output power ≤ 22.3dBm(E.I.R.P) -2400MHz(TX), 2300-2400MHz(RX),Max output power ≤ 23.0dBm(E.I.R.P)

## 7.6 Description of models



# 8 Contact us

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.

**Shenzhen Growatt New Energy Co., Ltd.**

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Hangcheng Blvd, Bao'an District, Shenzhen, China

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