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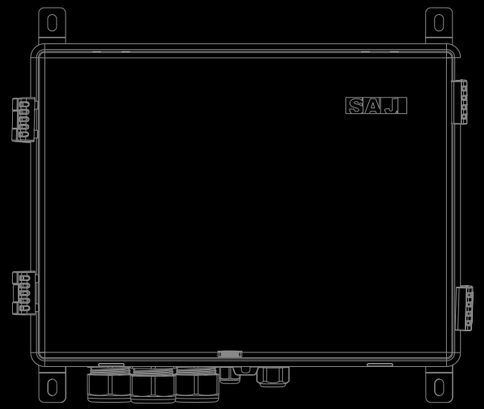


eManager-C1 Pro

SMART COMMUNICATION BOX

USER MANUAL

Preface

Thank you for choosing SAJ products. We are pleased to provide you first-class products and exceptional service.

This manual provides information about installation, operation, maintenance, troubleshooting and safety. Please follow the instructions of this manual so that we can ensure delivery of our professional guidance and whole-hearted service.

Customer-orientation is our forever commitment. We hope this document proves to be of great assistance in your journey for a cleaner and greener world.

We make constant improvements on the products and their documentation. This manual is subject to change without notice; these changes will be incorporated in new editions of the publication. To access the latest documentation, visit the SAJ website at https://www.saj-electric.com/.

Guangzhou Sanjing Electric Co., Ltd.

TABLE OF **CONTENTS**

1.

SAFETY PRECAUTIONS

1.1. Application scope

This user manual provides instructions and detailed procedures for installing, operating, and maintaining the SAJ product:

eManager-C1 Pro

1.2. Safety

CAUTION:
ONLY qualified and trained electricians who have read and fully understood all safety regulations contained in this manual can install, maintain, and repair the equipment. Access to the equipment is by the use of a tool, lock and key, or other means of security.

1.3. Safety levels

DANGER
Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING
Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION
Indicates a hazardous condition which, if not avoided, could result in minor or moderate injury.

NOTICE
Indicates a situation which, if not avoided, can result in property damage.

1.4. Symbol explanation

Symbol	Description
	**Danger:** Electrical shock hazard This device is directly connected to public grid and thus all work to the battery shall only be carried out by qualified personnel.
	**WARNING:** No open flames Do not place or install near flammable or explosive materials.
	**Attention:** Install the product out of reach of children.
	**Attention:** This device shall NOT be disposed of in residential waste.
	**CE Mark** Equipment with the CE mark fulfills the requirements of the Low Voltage Directive and Electro Magnetic Compatibility.
	**Recyclable**
	**Avoid liquid or moisture**

1.5. Safety instructions

Keep the manual for future reference.

To prevent personal injury and property damage and to ensure long-term operation of the product, be sure to read all the safety instructions in this section carefully prior to any works and follow the appropriate rules and regulations of the country or region where you install the device.

1.6. Safe handling

The product has been designed and tested strictly according to international safety regulations. As an electrical and electronic equipment, it must be installed, commissioned, operated, and maintained in strict accordance with related safety instructions. Incorrect operation or misuse of this device may cause personal injury or device damage. This will void the limit warranty and SAJ will not be responsible for the loss caused by those behaviors.

- The eManager-C1 Pro must be installed and maintained by authorized technicians based on local laws and regulations.
- Before installing or maintaining the eManager-C1 Pro, make sure that it is disconnected from the grid.
- When the eManager-C1 Pro is working, do not touch the internal component or cable to avoid electric shock.
- Before replacing an internal component within the eManager-C1 Pro, make sure that the eManager-C1 Pro is disconnected from the grid and the new component meets the usage requirement.
- When the eManager-C1 Pro is working, do not plug in or out the cables.
- During installation, make sure that the lightening protection module within the eManager-C1 Pro is grounded properly.
- Make sure the AC input voltage and current are compatible with the rated voltage and current of the eManager-C1 Pro; otherwise, components might be damaged or the device cannot work properly.

2.

PRODUCT INFORMATION

2.1. Application topology diagram

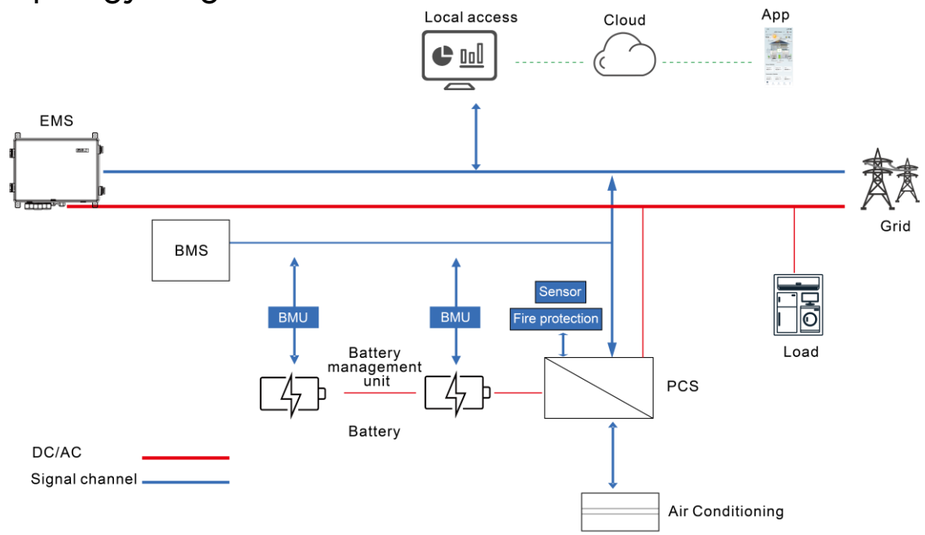


Figure 2.1. Application typology diagram

2.2. Product Overview

SAJ eManager-C1 Pro smart communication box (hereinafter called the eManager) is applied to the photovoltaic (PV) energy storage system (ESS). It is a comprehensive solution that supports the following inverter models:

- CHS2 series
- CHS-P series
- CM1 series

Note: Currently, CM1 has not been applied to the off-grid scenario.

The eManager-C1 Pro has the following features:

- All-in-one compact design
- Smart and flexible support
  - Support for RS485, Ethernet, 4G, and Bluetooth communication
  - Support for data collection/transmission/storage for energy meters, conditioners, fire protection devices, sensors, and other equipment
  - Support for communication and monitoring on a maximum of 10 inverters
- Convenient operation and maintenance
  - Batch parameter settings and firmware updates for inverters
  - 24-hour local and remote monitoring
  - Remote operation: PV-plant maintenance on Web
- Easy operation
  - All-in-one compact design for easy installation
  - IP65 protection box enclosure for easy maintenance

2.3. Dimension

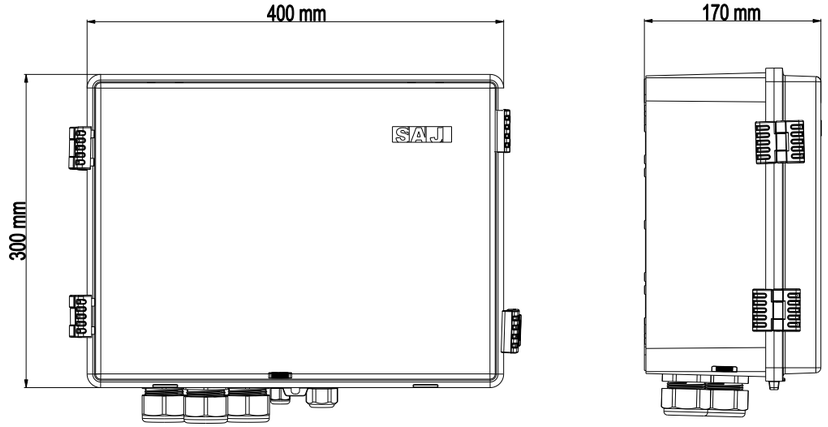


Figure 2.2. Dimension

2.4. Port introduction

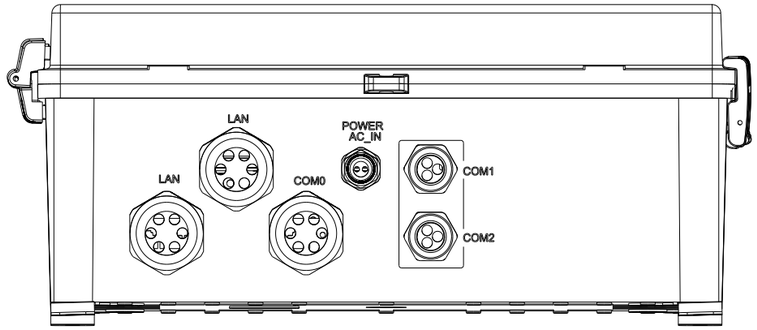


Figure 2.3. Ports

Silkscreen	Description
LAN	Ethernet port (waterproof)
POWER AC_IN	AC power cable port (waterproof)
COM 0	Reserved Ethernet/antenna port (waterproof)
COM 1	DC power cable port
COM 2	Reserved

Table 2.1. Ports

2.5. Datasheet

General parameters	
Application	Commercial project monitoring
Communication	Bluetooth, 4G, Ethernet, or RS485
Data collection interval	1–30 minutes (optional); 5 minutes (standard)
Firmware update	Ethernet, USB, or remote update
Data access	App, Web, or local Web
Electrical parameters	
Input AC voltage	176–300 V AC
Input DC voltage	9–36 V
Input frequency	50/60 Hz

Max. power	50 W
Operating temperature range	-25℃ to +60℃ (-13℉ to +140℉)
Ambient humidity	5%–95% (non-condensing)
Dimension (H x W x D) (mm)	300 x 400 x 170
Weight (kg)	7.5
Protective class	I
Ingress protection	IP65
Mounting	Wall-mounted

Table 2.2. Datasheet

2.6. Internal structure

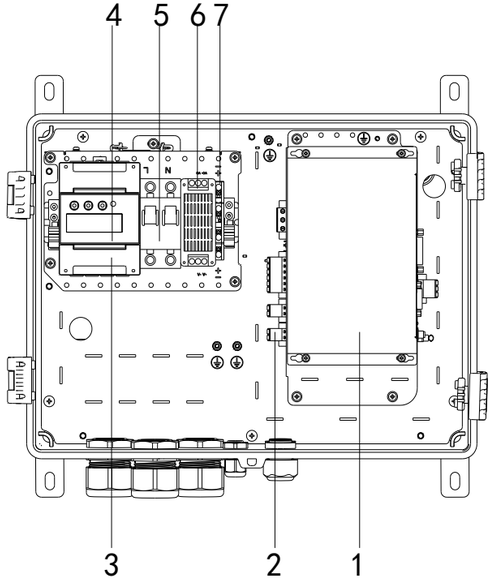


Figure 2.4. Internal structure

Callout	Description
1	EMS control module (eManager-C1-1)
2	EMS power module (eManager-C1-2)
3	Smart meter
4	Switch
5	Circuit breaker
6	12 V DC-DC power module
7	20 V DC-DC power module

Table 2.3. eManager-C1-1

2.7. EMS control module (eManager-C1-1)

2.7.1. Front view

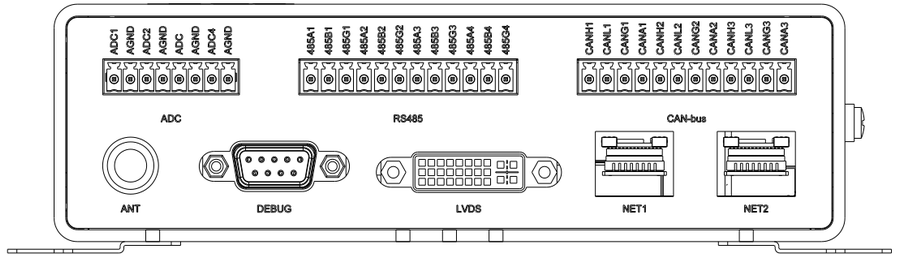


Figure 2.5. eManager-C1-1 front view

Silkscreen	Description	Remarks
ANT	Antenna	SMA port

COM	Debugging serial port	DB9 port
LVDS	Low Voltage Differential Signaling (LVDS) display port	DVI port
NET1	Fast Ethernet (FE) port	RJ45 port
NET2	FE port	RJ45 port
ADC	Isolated ADC port	3.5-08P terminal
RS485	Isolated RJ45 port	3.81-12P terminal
CAN-bus	Isolated CAN-bus port	3.81-12P terminal

Table 2.4. Front-port description

ANT

When a 4G module is inserted into the mini-PCIe slot, a 4G antenna needs to be connected to this port.

LVDS (reserved for future use)

The LVDS display port is a DVI port.

NET1 and NET2

The two FE ports use RJ45 physical ports and 10 Mbps/100 Mbps self-adaption. Each port has two LED indicators on the left and right sides, as listed in the following table.

LED	Location	Color	Function	Description
1	Left	Yellow	Link	Solid on: The network is connected.
2	Right	Green	Active	Blinking: The network connection is active.

Table 2.5. NET1 and NET2 ports

RS485

Four isolated RS485 ports are provided by a 3.81-12P terminal.

Silkscreen	Description	Silkscreen	Description	Silkscreen	Description
485A1	First RS485 A signal	485B1	First RS485 B signal	485G1	First RS485 signal ground
485A2	Second RS485 A signal	485B2	Second RS485 B signal	485G2	Second RS485 signal ground
485A3	Third RS485 A signal	485B3	Third RS485 B signal	485G3	Third RS485 signal ground
485A4	Fourth RS485 A signal	485B4	Fourth RS485 B signal	485G4	Fourth RS485 signal ground

Table 2.6. RS485 ports

RS485 interface	Connected devices	Baud rate setting
RS485_1	Export limit meter with address 1	When the factory default baud rate of the electric meter fails to meet your on-site requirements and you need to manually change the baud rate level setting of the electric meter, refer to the electric meter instruction manual to make changes. In addition, you need to adjust its baud rate level setting accordingly in the RS485 setting interface in App Bluetooth mode.
RS485_2	Metering meters, such as the energy storage meter with address 2 and the photovoltaic metering meter with address 10	
RS485_3	Reserved	/
RS485_4	Reserved	/

Table 2.7. RS485 ports

CAN-bus

Three isolated CAN ports are provided by a 3.81-12P terminal.

ADC

Four isolated ADC ports are provided by a 3.5-08P terminal. Four ADC share the AGND.

2.7.2. Rear view

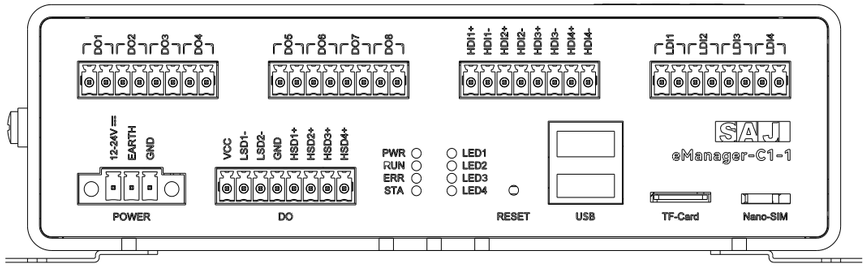


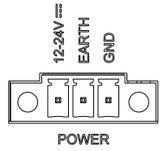
Figure 2.6. eManager-C1-1 rear view

Silkscreen	Description
POWER	Power connection. Provided by a 3.81-03P terminal.
DO	Dry output (DO) ports provided by three 3.5-08P terminals. ● Voltage collector-to-collector (VCC), GND, high side driver (HSD), and low side driver (LSD) ports ● DO1–DO8 isolated ports - DO1–DO4: Mechanical relay (passive) - DO5–DO8: Solid-state relay (passive)
PWR	Power status indicator
RUN	System running status indicator
ERR	System error indicator
STA	Wireless module status indicator
LED1, LED2, LED3, LED4	Reversed for future use.
RESET	Reset button. Press it to reset the system.
USB	Two USB 2.0 ports
TF-Card	TF card slot
Nano-SIM	Nano-SIM card slot. **Note:** You can buy a nano-SIM card.
DI1–DI8u	Isolated dry input (DI) ports provided by two 3.5-08P terminals ● HDI: High-level voltage input (VIH) (passive) ● LDI: Low-level Voltage input (VIL) (active)

Table 2.8. Rear-port description

POWER

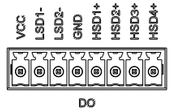
24 V DC and 500 mA. This port has three pins with 3.81 mm spacing in between. It provides two screw holes.



Silkscreen	Description
12-24V ⎓	System power input
EARTH	Protecting earthing
GND	System power ground

HSD and LSD

The eManager-C1-1 provides four high side driver (HSD) ports and two low side driver (LSD) ports.



Silkscreen	Description	Silkscreen	Description
VCC	Voltage collector-to-collector **Note:** It is the same as the system power supply voltage.	LSD1-	Low side driver
LSD2-	Low side driver	GND	Ground
HSD1+	High side driver	HSD2+	High side driver
HSD3+	High side driver	HSD4+	High side driver

Table 2.9. HSD and LSD ports

LED

The eManager-C1-1 provides eight LED indicators.

Silkscreen	Description	Silkscreen	Description
PWR	Power status indicator. ● Red: The system is powered on. ● Off: The system is powered off.	RUN	System running status indicator. ● Blinking in green: The system is running normally. ● Off: The system does not work.

Silkscreen	Description	Silkscreen	Description
ERR	System error indicator. ● Red: An error occurs. ● Off: The system is running normally.	STA	Wireless module status indicator. ● Green: The module is running normally. ● Off: The module is running abnormally.
LED1	Programmable. Green.	LED2	Programmable. Green.
LED3	Programmable. Green.	LED4	Programmable. Green.

Table 2.10. LED indicators

RESET

Silkscreen	Description
RESET	You can insert a proper tool, such as a paper clip, to the hole to reset the system.

Table 2.11. RESET port

USB

The USB hub chip provides two USB 2.0 ports for connecting to a USB flash drive, a mouse, or a keyboard.

Silkscreen	Description
USB	The two USB 2.0 ports are provided by a USB hub chip developed based on the host controller USB1.

Table 2.12. USB ports

TF-Card

The eManager-C1-1 provides a standard TF card slot. A TF card is used for system debugging, firmware read and write, startup and update.

Nano-SIM

Nano-SIM

The eManager-C1-1 provides an internal mini-PCIe interface and an external Nano-SIM card slot for inserting a standard SIM card with 4G function.

If the SIM card needs to be replaced, replace the SIM card first and then restart the device to ensure that the 4G function can be used normally.

DO1-DO8 (Reserved for user use)

The eight relay isolated passive DO ports control the power on and off for the external devices.

DI1-DI8 (Reserved for user use)

Eight optically-coupled isolation DI ports, including four VIH (active) ports and four VIL (active) ports.

2.8. EMS power module (eManager-C1-2)

2.8.1. Front view

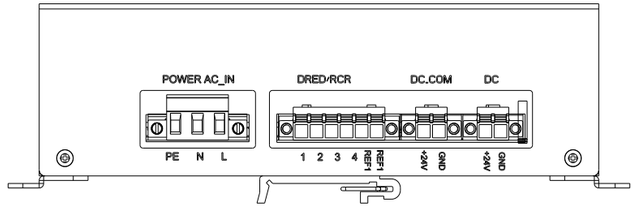


Figure 2.7. eManager-C1-2 front view

Silkscreen	Description
POWER AC_IN (PE, N, L)	Power supply port
DRED/RCR (1, 2,3, 4, REF1, REF1)	DRED/RCR function terminal
DC.COM (+24V, GND)	DC output terminals. The two will be connected to the POWER port of the EMS control module and the POWER port of the switch.
DC (+24V, GND)	DC input terminals. For connection to the external power supply.

Table 2.13. Front-port description

DRED/RCR

This port is compatible with the ripple control receiver (RCR) and demand response enabling device (DRED) functions. (DRED is used in Australia; RCR is widely used in Germany.)

Note: If you do not need this function, no connection is required for this port.

Silkscreen	1	2	3	4	REF1	REF2
DRED	DRM1/5	DRM2/6	DRM3/7	DRM4/8	Com/DRM0	RefGen
RCR	D_IN1	D_IN2	D_IN3	D_IN4	+5V	+5V

Table 2.14. Rear-port description

2.8.2. Rear view

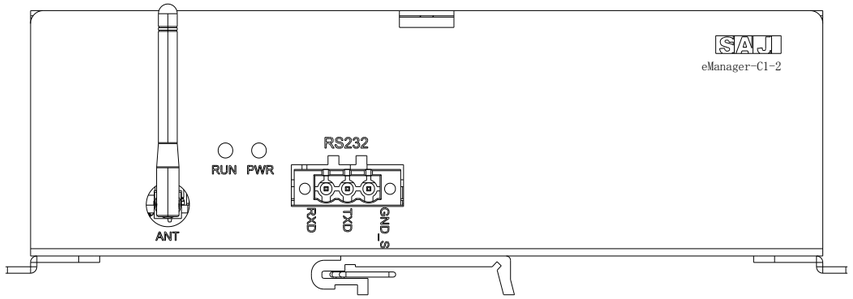


Figure 2.8. eManager-C1-2 rear view

Silkscreen	Description
RS232	RS232 terminal
ANT	Antenna terminal
PWR	Power status indicator
RUN	System running status indicator

Table 2.15. Ports on the rear view of eManager-C1-2

2.9. Smart meter

For detailed information, refer to the meter product document.

2.10. Switch

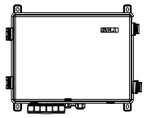
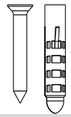
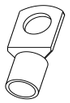
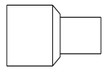
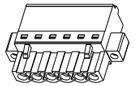
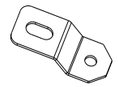
For detailed information, refer to the switch product document.

3.

INSTALLATION

3.1. Unpacking and inspection

If there are missing or damaged components, contact after sales.

			
eManager-C1 Pro *1	Expansion bolt *4	Grounding OT terminal *1	Lock with a key *1
			
Cable terminal *4	Six-pin connector *1	ST4.8 screw *4	Mounting lug *4
			
Wi-Fi module *1	Printed document *2		

The printed documents include a user guide and a quick installation guide.

Table 3.1. Package content

3.2. Installation environment requirements

- Install the eManager-C1 Pro in a place without vibration or shock and avoid exposure to direct sunlight, rain, and snow erosion.
- Keep the eManager-C1 Pro away from explosive chemicals, any gas which might corrode the metal, or any conducting dust which might destroy the insulation.
- For easy installation and maintenance, it is recommended to install the eManager-C1 Pro at eye level.
- Secure the eManager-C1 Pro on a firm surface to bear its weight.

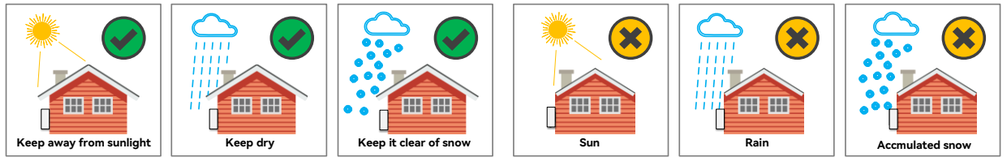


Figure 3.1. Installation environment

3.3. Installation Location requirements

- Reserve enough clearance around the box to ensure good air circulation at the installation area.

Top ------- 200 mm
Bottom ------- 500 mm
Front ------- 500 mm
Both sides ------- 200 mm

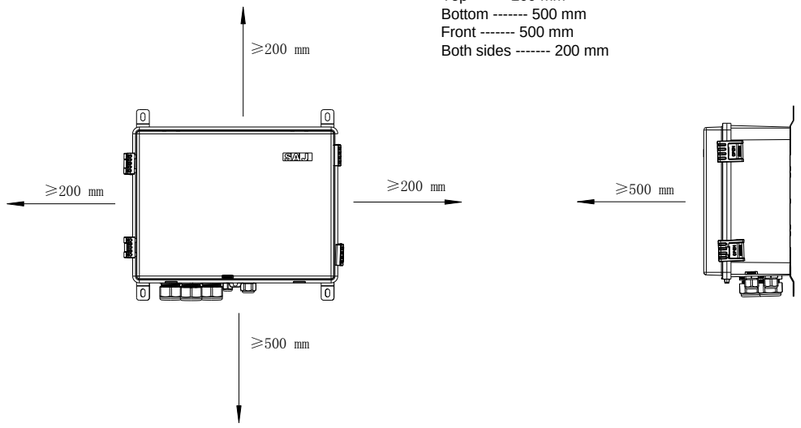


Figure 3.2. Space

- Install the eManager vertically or backwards with the maximum angle of 15 degrees. Do not tilt it leftwards or rightwards.

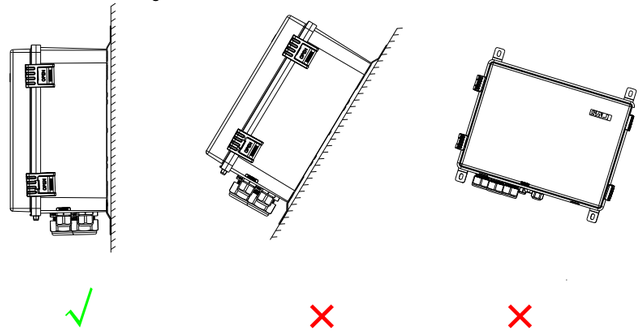


Figure 3.3. Installation position

3.4. Installation procedure

1. Use the ST4.8 screws to secure the four mounting lugs on the four corners of the eManager box.

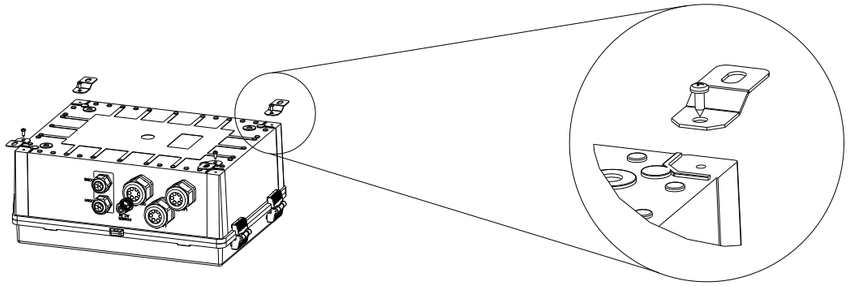


Figure 3.4. Installing the eManager

2. Lift the box onto the wall to mark positions for drilling holes and put it down.
3. Drill four holes with 10-mm diameter and 45-mm depth in the wall.
4. Lift the box upwards and align the mounting lugs to the drilled holes. Use four expansion bolts and screws to secure the box to the wall.

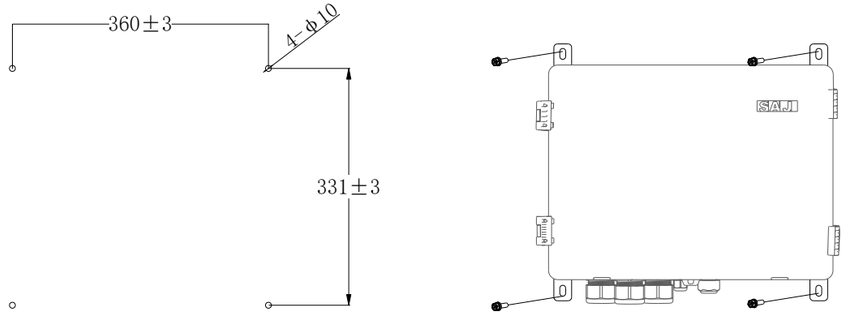


Figure 3.5. Installing the eManager box

4.

ELECTRICAL CONNECTION

4.1. Unlock the box

Hold the two tabs and pivot them upwards. Then, lift the box cover up.

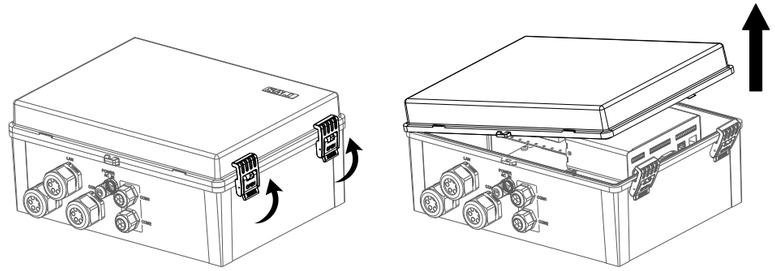


Figure 4.1. Unlocking the box

4.2. Assemble the communication connection

4.2.1. Connect the smart meter

About this task

To locate the smart meter, refer to section 2.6 “Internal structure”.

Procedure

1. Prepare the communication cables.
2. Loosen the nut from the COM0 cable gland at the bottom of the eManager box.
3. Connect the cables to terminals 19 and 21 on the smart meter.
4. Tighten the nut back to the COM0 cable gland.

4.2.2. Connect the EMS control module

About this task

To locate the EMS control module (eManager-C1-1) and its RS485 ports, refer to section 2.6 “Internal structure” and Section 2.7.1 “Front view”.

Procedure

1. Prepare the communication cables.
2. Loosen the nut from the COM1 or COM2 cable gland at the bottom of the eManager box.
3. Insert the cables through the nut and then the cable gland.
4. Insert the cables to the RS485 ports on the eManager-C1-1 module, as listed below.

485A2	485B2
485A3	485B3
485A4	485B4

Note: 485A1 and 485B1 are pre-connected to terminals 24 and 25 on the smart meter.

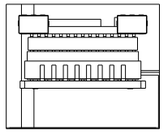
5. Tighten the nut back to the COM1 or COM2 cable gland.

4.2.3. Connect the router

Per your needs, you can choose one of the following connection manners.

Ethernet (wired manner)

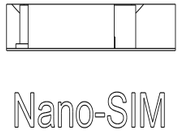
Use a standard network cable to connect the router to the NET2 network port of the EMS control module (eManager-C1-1).



4G (wireless manner)

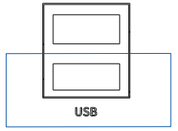
The eManager-C1-1 provides an internal mini-PCIe port and an external Nano-SIM card slot for inserting a standard SIM card with 4G function. You need to purchase a nano-SIM card in your local area.

If the SIM card has been replaced, you need to restart the EMS so that the 4G function can work properly.



Wi-Fi (wireless manner)

To use the Wi-Fi function, insert the Wi-Fi module to the USB port on the EMS control module (eManager-C1-1).



4.3. Connect the Ethernet ports on the switch

About this task

The switch provides 16 Ethernet ports with one pre-connected to the NET1 port on the EMS control module and the other 15 reserved for connecting multiple inverters.

To locate the switch, refer to Section 2.6 “Internal structure”.

Procedure

1. Prepare the Ethernet cables.
2. Insert the cables through the LAN1 or LAN2 cable gland.
   a. Loosen the nut from the cable gland at the bottom of the eManager box.
   b. Remove the seals from the cable gland. Use a knife to cut through a hole in the seals.

c. Insert the cable through the nut, seals hole, and then the cable gland.

3. Insert the cables to the Ethernet ports on the switch.

4. Tighten the nut back to the LAN1 or LAN2 cable gland.

4.4. Connect other required ports (optional)

Based on your actual needs, you can use the reserved ports, such as the NET2, DO, and DI ports on the EMS control module (eManager-C1-1) and the DRED/RCR port on the EMS power module (eManager-C1-2).

Use the six-pin connector provided in the accessary bag.

4.4.1. DRED connection (Australia)

The DRED signal controlling ports are provided to meet the Australia DERD certification requirements and other regions.

1	DRM1/5
2	DRM2/6
3	DRM3/7
4	DRM4/8
5	COM/DRM0
6	REF GEN

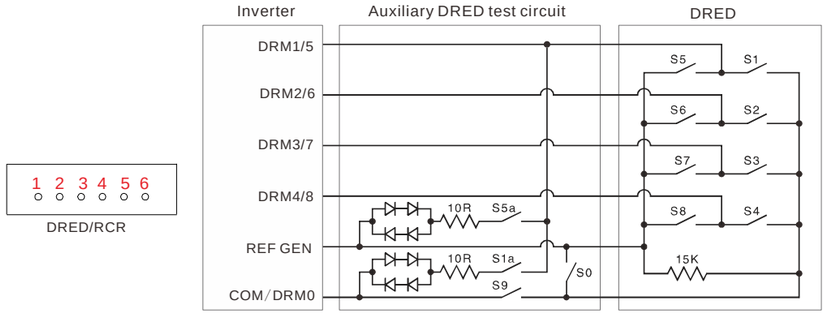


Figure 4.2. DRED connection

4.4.2. RCR connection (Germany)

The RCR signal controlling ports are provided to meet the power dispatching requirements in Germany and other countries and regions.

1	DI_1
2	DI_2
3	DI_3
4	DI_4
5	REF_1
6	REF_2

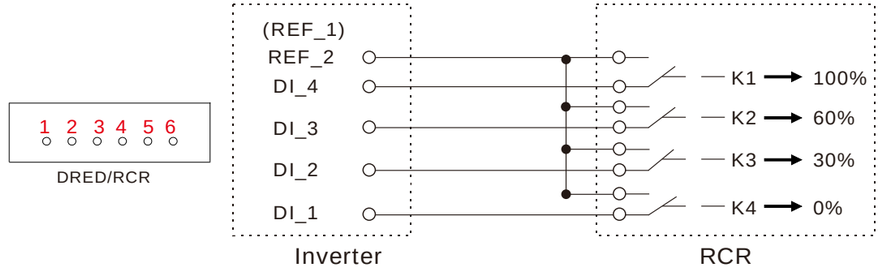


Figure 4.3. RCR connection

4.5. Connect the power supply

4.5.1. Connect the 220V/230 V AC power supply

About this task

The 220/230 V AC power supply provides power to the eManager. It is connected to the circuit breaker within the eManager. To locate the circuit breaker, refer to section 2.6 “Internal structure”.

Prerequisite

The circuit breaker is in OFF position.

Procedure

1. Prepare the AC power cables by using the provided cable terminals.

a. Strip the insulation around 10 mm.

b. Assemble the cable terminals by using the crimping pliers.

2. Locate the POWER AC_IN cable gland at the bottom of the eManager box and loosen its nut.

3. Insert the power cables through the nut and the cable gland. Connect the cables to the ports on the circuit breaker.

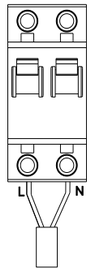


Figure 4.4. Circuit breaker

4. Tighten the nut back to the POWER AC_IN cable gland.

4.5.2. Connect the 12 V or 24 V DC power module

About this task

In general scenarios, the 220/230 V AC power supply provides the power to the eManager. However, in off-grid scenarios, it is necessary to use a DC-DC power supply module to ensure stable system communication and control.

- If you are using the CHS2 series inverter, use the 12 V DC power module.
- If you are using the CHS2-P series inverter, use the 24 V DC power module.

Note: Currently, CM1 has not been applied to the off-grid scenario.

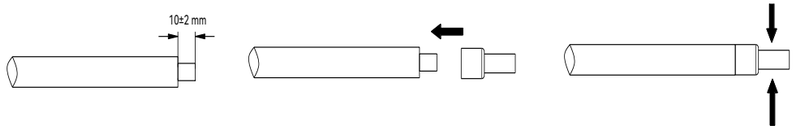
To locate the 12 V or 24 V DC–DC power module, refer to section 2.6 “Internal structure”.

The recommended DC wiring diameter ranges from 1.0 to 2.5 mm^2 (16/15/14 AWG).

Procedure

1. Prepare the DC power cables by using the provided cable terminals.

Strip the insulation around 10 mm. Assemble the cable terminals by using the crimping pliers.



2. Locate the COM1 cable gland at the bottom of the eManager box and loosen the nut.

3. Insert the power cables through the nut and the cable gland.

4. Depending on the inverter to be connected, choose a corresponding power module and connect the cables.

- 12 V DC power module:

Cable	From the 12 V DC power module	To the CHS2 (Choose one of the following pairs)	
Positive	Vin port	RSD.1 + port	RSD.2 + port
Negative	GND port	RSD.1 – port	RSD.2 - port

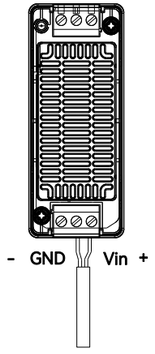


Figure 4.5. GND and Vin ports on the 12 V DC power module

- 24 V DC power module:

Cable	From the 24 V DC power module	To the CHS2-P (Choose one of the following pairs)	
Positive	+ port	EMS.1 + port	EMS.2 + port
Negative	- port	EMS.1 – port	EMS.2 - port

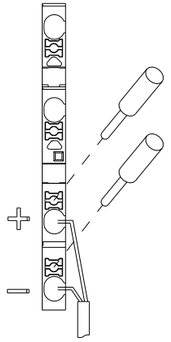


Figure 4.6.+ and – ports on the 24 V DC power module

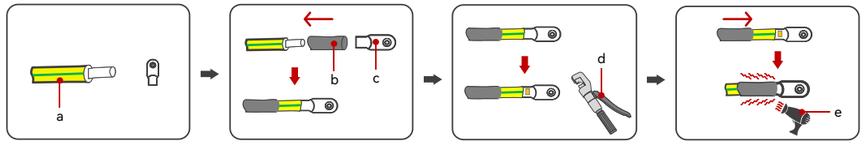
5. Tighten the nut back to the COM1 cable gland.

4.6. Grounding

Procedure

1. Insert the grounding cable through the POWER AC_IN cable gland at the bottom of the eManager box.

2. Prepare an OT terminal.



c. Preparing an OT terminal

Callout	Description	Callout	Description	Callout	Description
a	Cable	b	Heat shrink tubing	c	OT terminal
d	Hydraulic pilers	e	Heat gun	/	/

Table 4.1. Parts for cable assembling

3. Locate the grounding bolt. Install the OT terminal to the bolt and tighten it by using the hexagon flange nut.

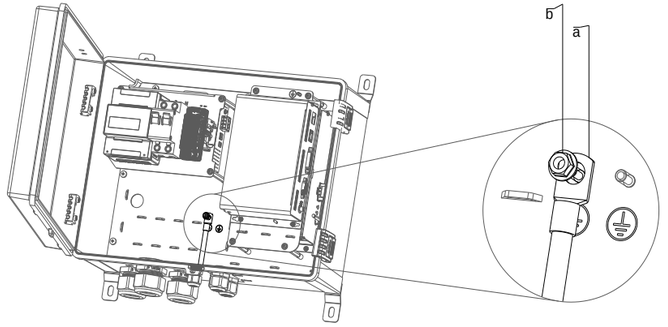


Figure 4.7. Installing the OT terminal

Callout	Description
a	OT grounding terminal
b	Hexagon flange nut

4.7. Connect the smart meter

About this task

To locate the smart meter, refer to section 2.6 “Internal structure”.

Procedure

1. Connect the grid cables to the UA, UAB, UC, and UN terminals on the smart meter.

2. Connect the cables of three current transformers (CT) to terminals 31, 33, 34, 36, 37 and 39 on the smart meter.

From (CT)	To (meter)
IA*	31
IA	33

From (CT)	To (meter)
IB*	34
IB	36

From (CT)	To (meter)
IC*	37
IC	39

Table 4.2. Meter connection

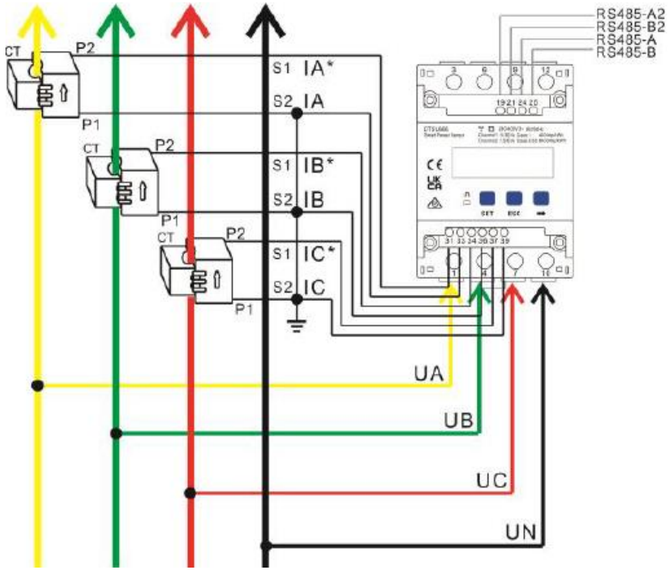


Figure 4.8. Meter connection

4.8. Turn on the circuit breaker

Turn on the circuit breaker by toggling down the switch.

4.9. Lock the Box

Close the box cover. Press the tabs to lock the cover.

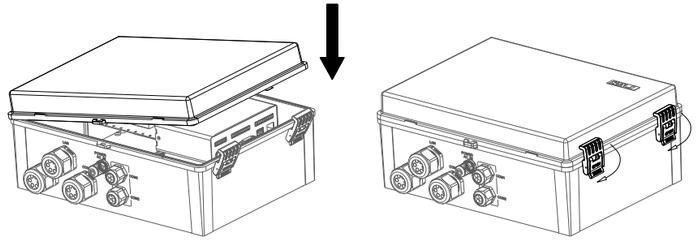


Figure 4.9. Locking the box

5.

COMMISSIONING BY APP

The Elekeeper App can be used for both nearby and remote monitoring. It supports Bluetooth/4G or Bluetooth/Wi-Fi to communicate with the device.

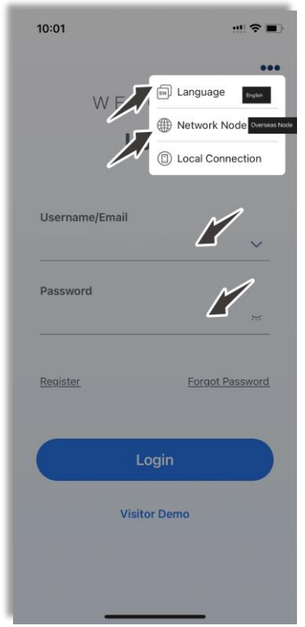
5.1. Download the Elekeeper App

On your mobile phone, search for “Elekeeper” in the App store and download the App.

5.2. Log in to the App

Procedure

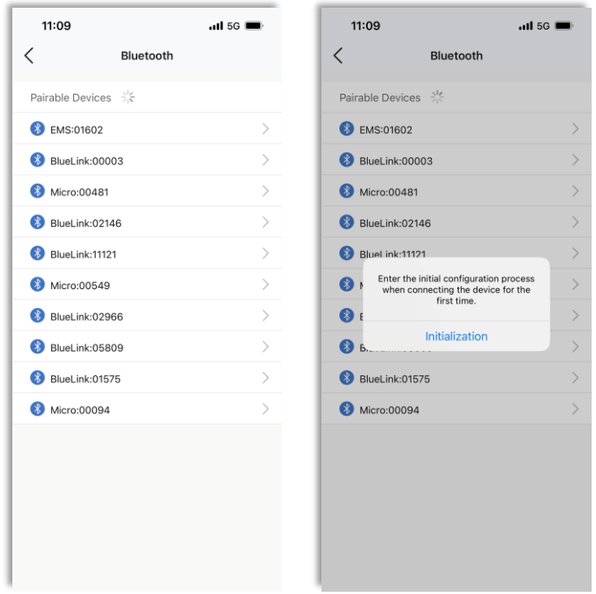
1. Open the App and tap the three-dot icon ••• on the top right corner.
2. Set the **Language** to **English** and **Network Node** to **Overseas Node**.



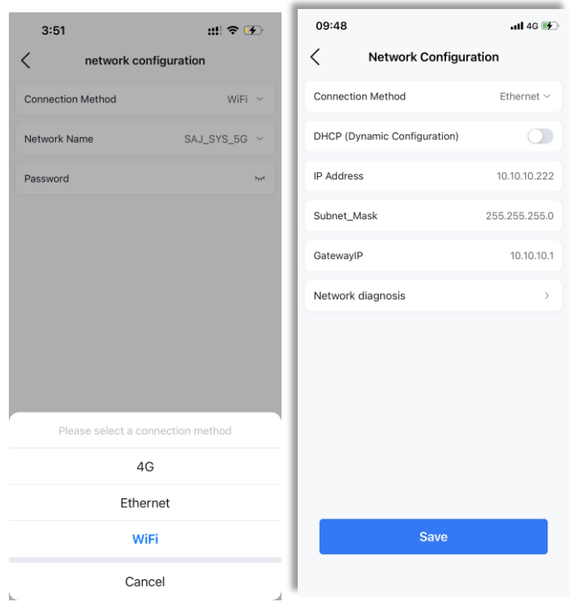
3. If you do not have an account, register first.
   a. Tap **Register**. Choose whether you are an owner, installer, or distributor.
   b. Follow the instructions on the screen to complete the registration.
4. Use the account and password to log in to the App.
5. Go to the **Service** interface and select **Remote Configuration**.
6. Verify that Bluetooth is enabled on your mobile phone. Tap **Bluetooth** and then **Next**.

5.3. Complete the initialization settings

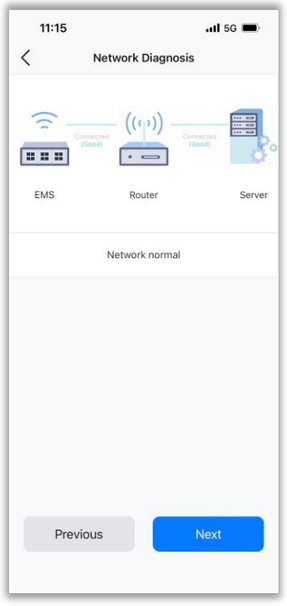
1. Choose your EMS from the device list. Then, tap **Initialization**.



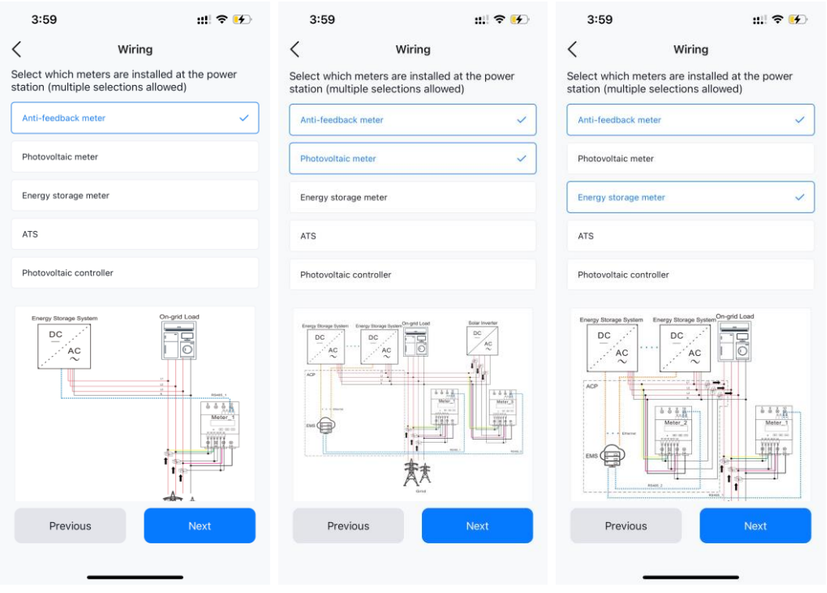
2. Set the network connection. Then, tap **Next**.
   - **4G**: To use the 4G option, you need to buy a 4G SIM card.
   - **WiFi**: This option is available only on the Wi-Fi version of EMS.
   - **Ethernet**: Use a standard network cable to connect the EMS and the router.

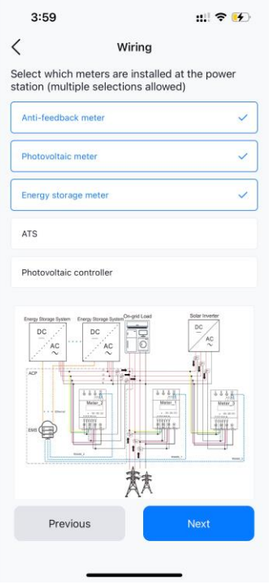


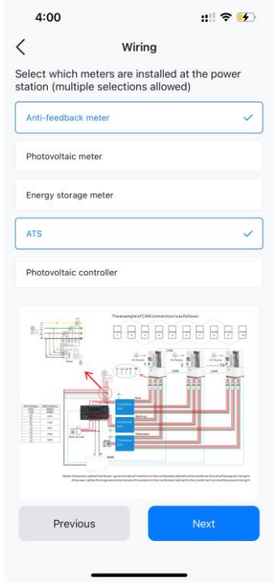
3. After the message “Network normal” is displayed, tap **Next**.

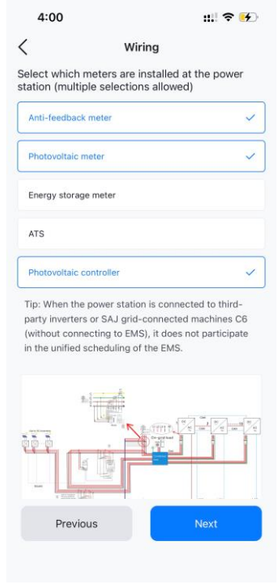


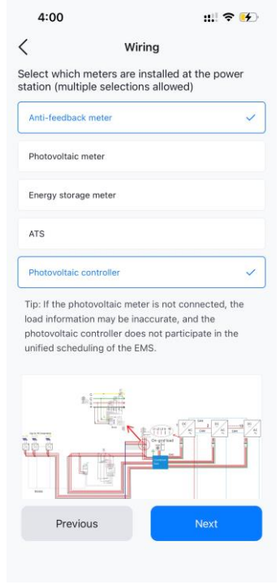
4. Set the wiring manner to one of the following seven manners. Then, tap **Next**.





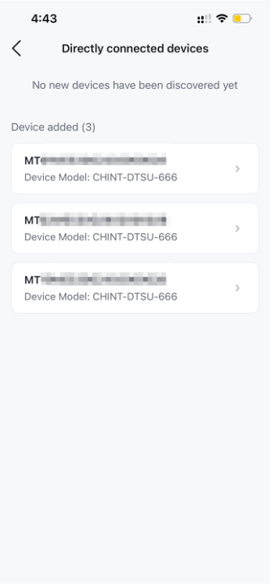


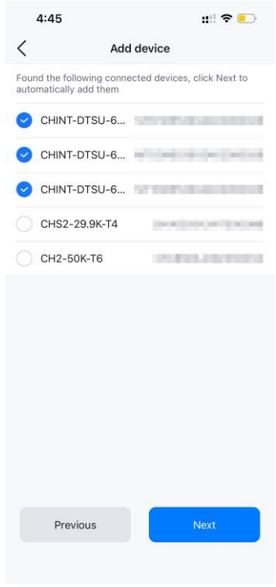




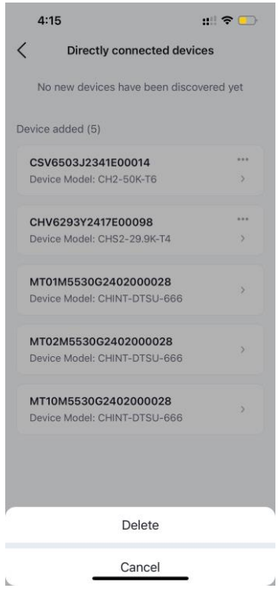
5. Add devices.

   As shown in the left screenshot, tap and drag the page down to find the devices that have been wired to the EMS. Select the required devices. Then, tap **Next**.



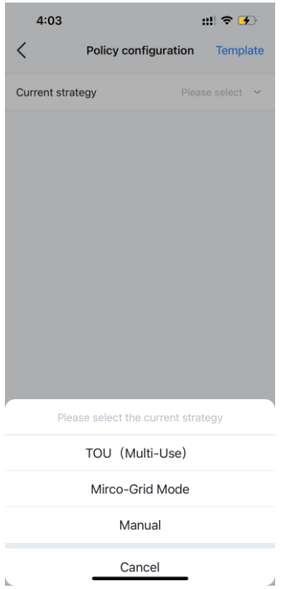


If you need to remove an added device, tap the three-dot icon ••• on the top right corner.

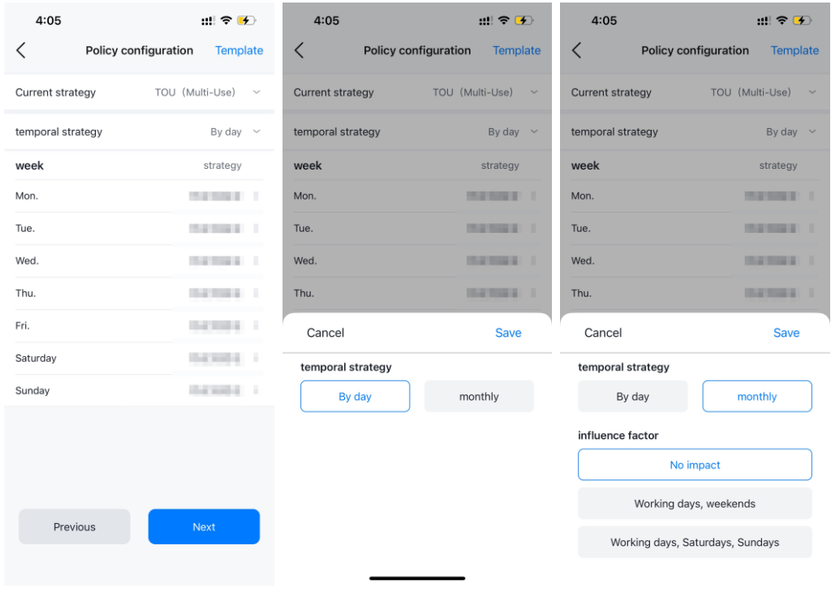


6. Set the policy. Then, tap **Next**.

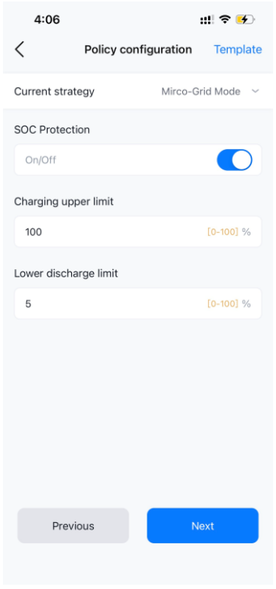
   Select one of the following strategies.



- **TOU (Multi-Use)**



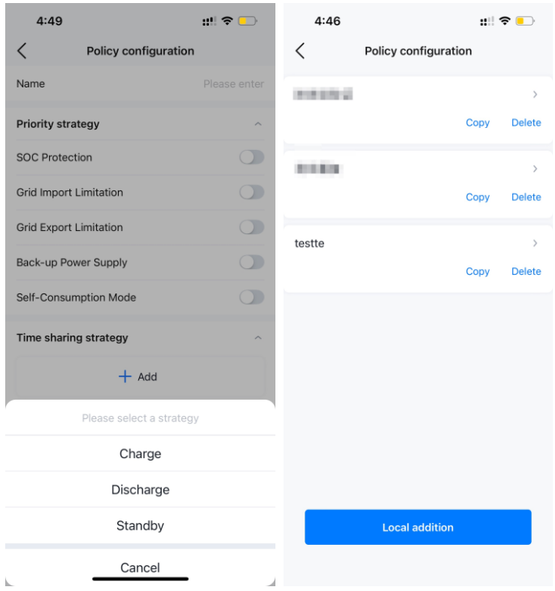
- **Micro-Grid Mode**



To create a new strategy, tap **Template** on the top right corner.

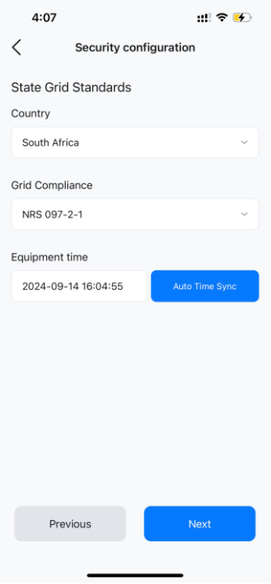
You can create a new strategy by manually setting all parameters. Alternatively, you can copy an existing strategy, modify the required parameters, and save it as a new strategy.

Examples:

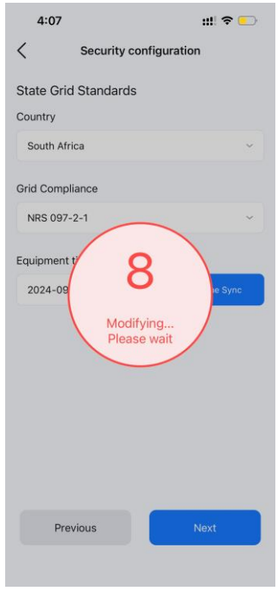


7. Select your country and grid compliance. Then, tap **Next**.

   Example:

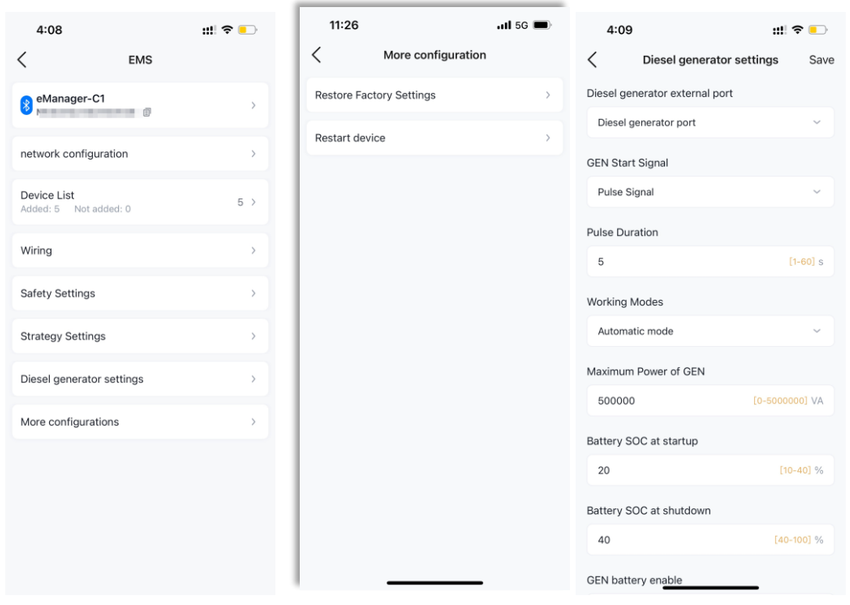


8. Wait until the initialization settings take effect.



9. View the eManager information that you have just set to make sure that all settings are proper.

- To restart the device, choose **More configurations** > **Restart device**.
- To restore the device to factory settings, choose **More configurations** > **Restore Factory Settings**.
- To configure the diesel generator, tap **Disel generator settings**.



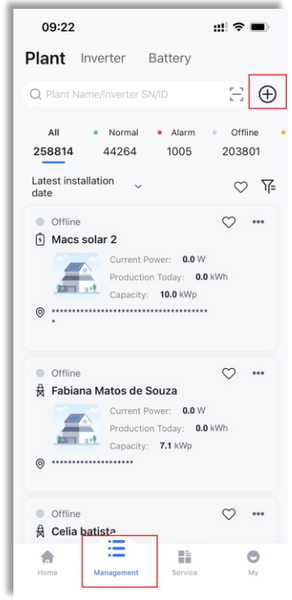
5.4. Configure devices connected to the eManager

Refer to the commissioning content in the user manuals of the devices.

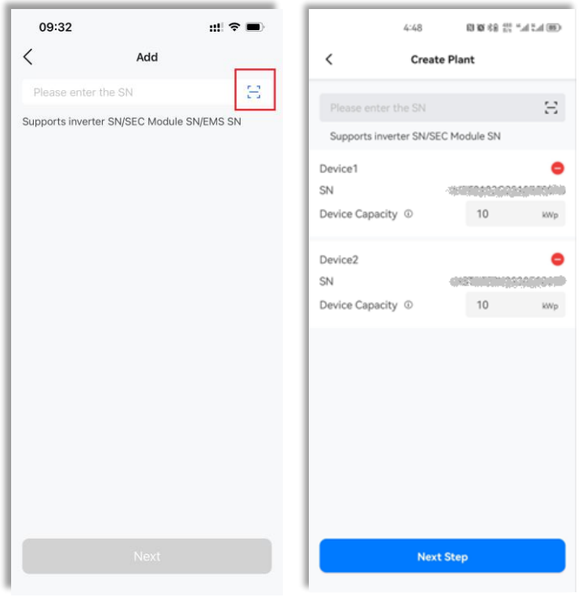
5.5. Create a plant

You can create a plant either on the App or at the Web platform. For details on how to create a plant at the Web platform, refer to Chapter **错误!未找到引用源。 "CONFIGURATIONS BY WEB"**.

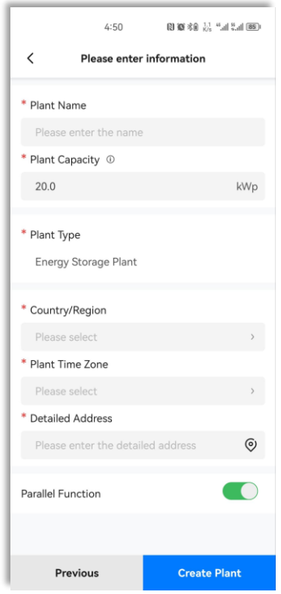
1. On the **Management** tab, tap the ⊕ icon on the top right corner. Select **Create Plant for Me**.

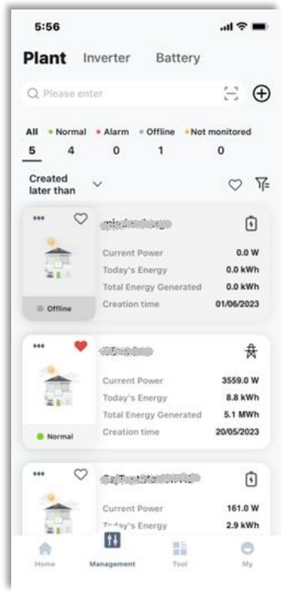


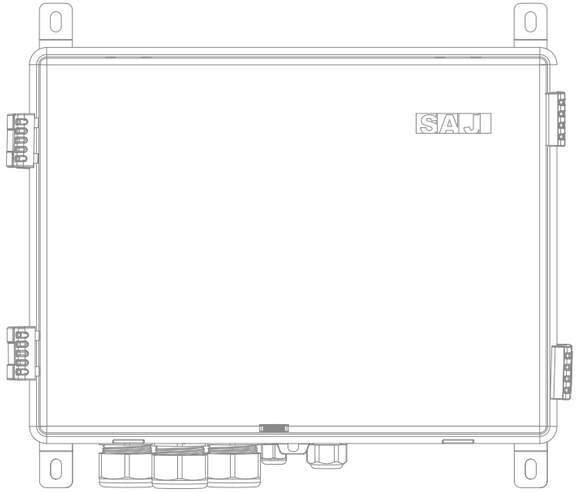
2. Scan the series number (SN) code on the eManager power label or input the SN manually. Tap ⊕ to add the device. Then, tap **Next Step**.



3. Configure the plant settings. Then, tap **Create Plant**.







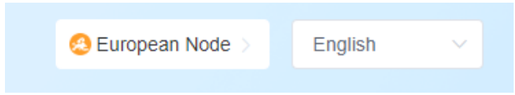
6. CONFIGURATIONS BY WEB

The Elekeeper Web platform is a smart energy management system which helps to monitor the power production and consumption statistics of your ESS.

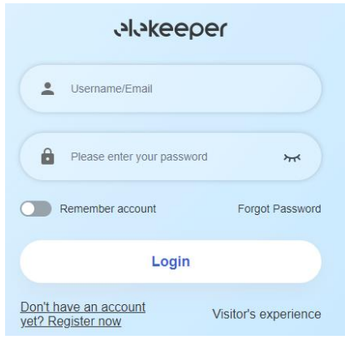
Most of the ESS configurations can be either completed on the Elekeeper App or the Elekeeper Web platform; however, some data can only be viewed on the Web platform, such as the information about the smart meter, air conditioning, fire protection, and power curve.

6.1. Log in to the Web platform

1. Go to https://eop.saj-electric.com/.
2. On the top right corner of the home page, select the node and language as required. For example:



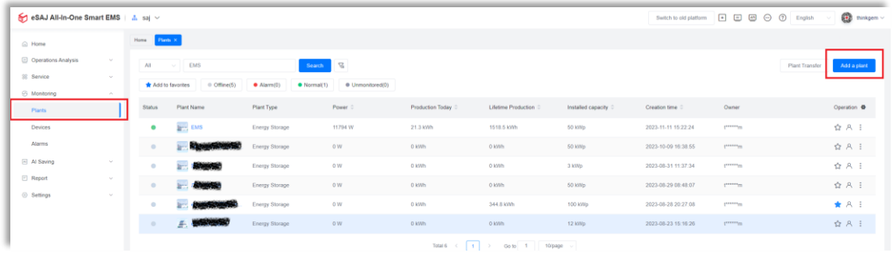
3. For the first-time login, register first.
   a. Tap **Don't have an account yet? Register now**.
   b. Follow the instructions to complete registration.



4. Use the account and password to log in to the platform.

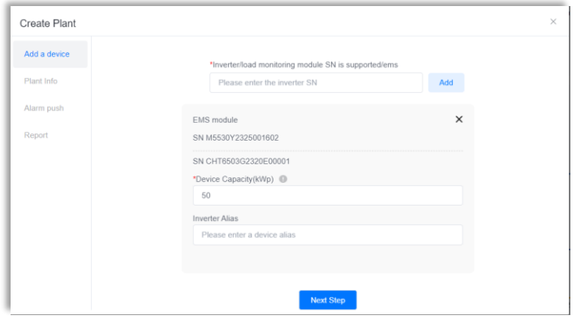
6.2. Create a plant

1. On the **Home** page, choose **Monitoring** > **Plants** on the left navigation pane. Then, tap **Add plant** on the upper right corner.

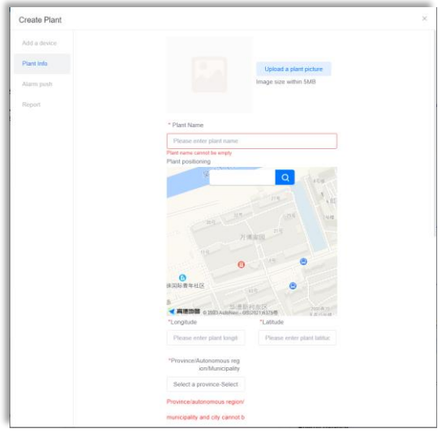


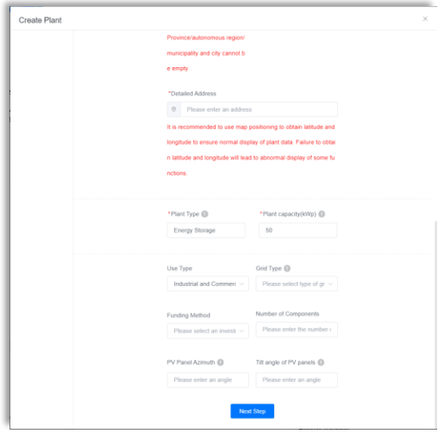
2. In the displayed Create Plant window, follow the instructions on the screen.
   a. On the **Add a device** pane, enter the device SN and tap **Add**.

For the inverter, input the device capacity.

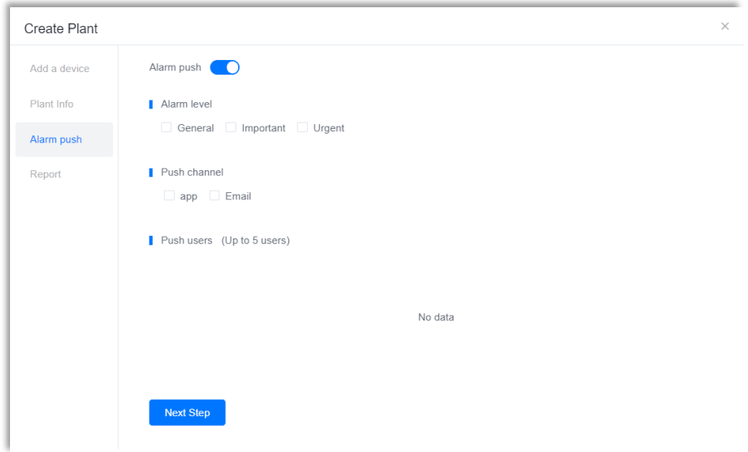


   b. On the **Plant Info** pane, enter the plant name and longitude and set **Province/Autonomous region/Municipality** according to your needs. Then, configure the plant details, such as the address, type, and capacity.

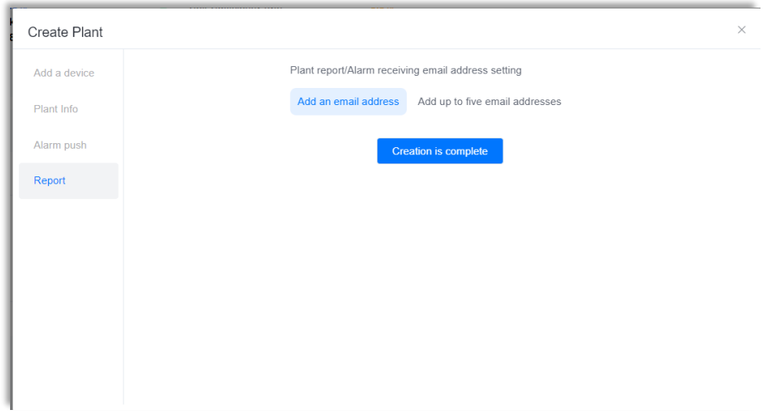




c. On the **Alarm push** pane, enable the **Alarm push** function. Configure the **Alarm level**, **Push channel**, and **Push users (Up to 5 users)**. Then, tap **Next Step**.

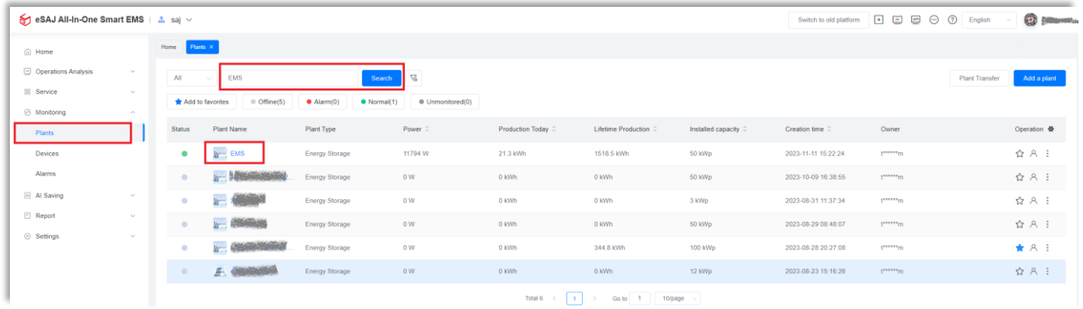


d. On the Report pane, set the email address for receiving the plant reports and alarms. Then, tap **Creation is complete** to finish the plant creation process.

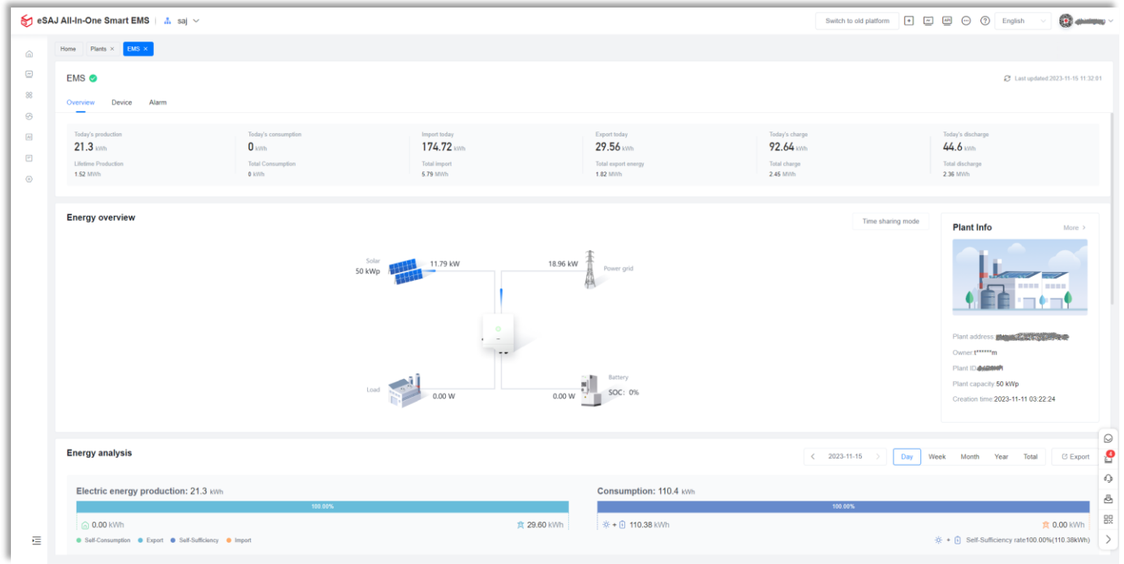


6.3. View the plant statistics

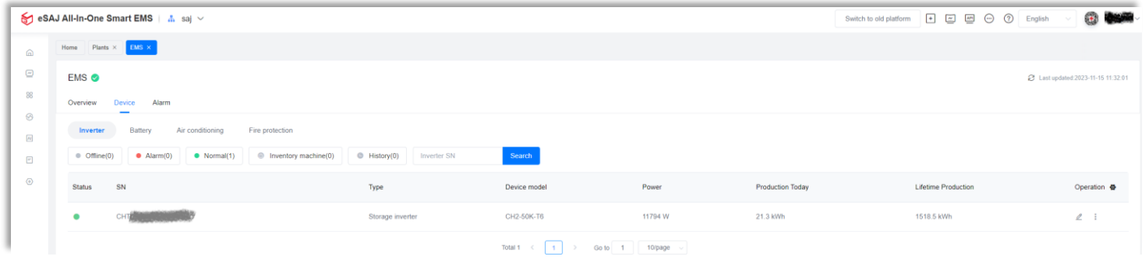
1. On the **Home** page, choose **Monitoring** > **Plants** on the left navigation pane. Search for your plant name and tap **Search**. Then, tap the required plant.



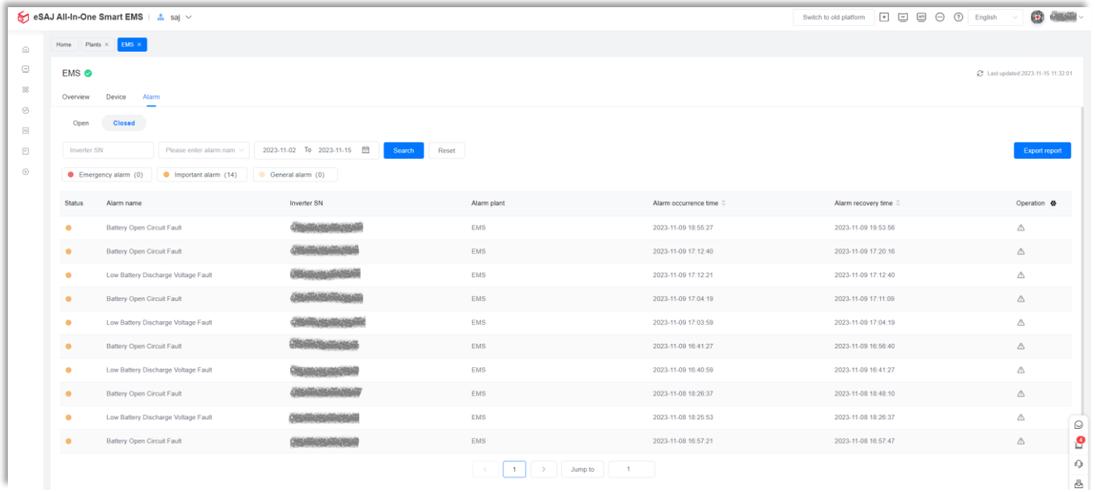
2. View the plant statistics.
   - On the **Overview** page, you can view today's production, consumption, importation, exportation, charging, and discharging data. Meanwhile, you can scroll down to check more in following areas:
     - **Energy overview**: It provides a dynamic connection diagram between PV arrays, grid, inverter, loads, and batteries.
     - **Plant Info**: It lists plant address, owner name, capacity, and creation time.
     - **Energy analysis**: You can view the electric energy production and consumption by day, week, month, year, or in total. In addition, you can tap **Export** on the right corner of this area to view the data in Excel format.
     - **Energy comparison**: You can select different types of energy from the drop-down list to view the energy by month, quarter, or year.
     - **Plant weather**: It shows the current whether in your local area.
     - **Social contribution**: It provides the CO2 emission reduction and standard coal saving statistics and converts the saving to contributions of planted trees.



- On the **Device** page, you can view statistics of the **EMS**, **Inverter**, **Battery**, **Air conditioning**, and **Fire Protection**.



- On the **Alarm** page, you can view the alarm details by severity or status.
  - By severity: **Emergency alarm** > **Important Alarm** > **General alarm**
  - By status:
    - **Open**: Active alarm
    - **Closed**: History alarms



7.

OPERATIONS BY LAN (NEAR END)

On this local Web, the real-time device data will be updated every two seconds.

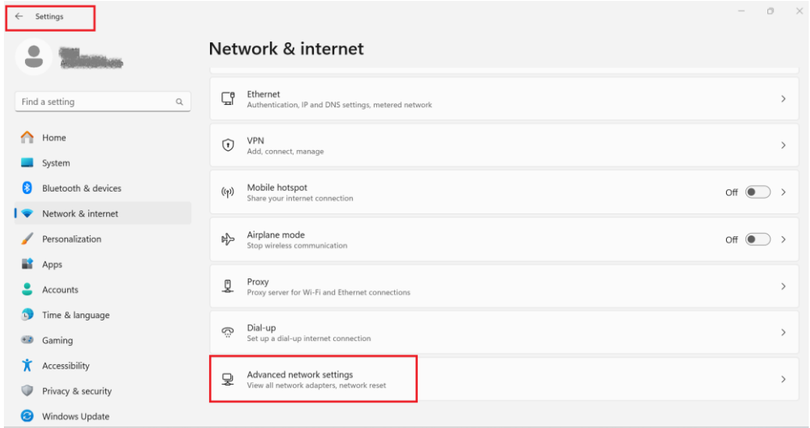
7.1. Connect the EMS to the computer

Procedure

1. Prepare an RJ45 cable.
2. Open the EMS box.
3. Connect one end of the cable to either one of the following ports in the EMS:
   - Ethernet port on the switch. To locate the switch, refer to section 2.6 “Internal structure”.
   - NET2 port on the eManager-C1-1 module. To locate the NET2 port, see section 2.7.1 “Front view”.
4. Connect the other end of the cable to your computer.

7.2. Log in to the local Web platform

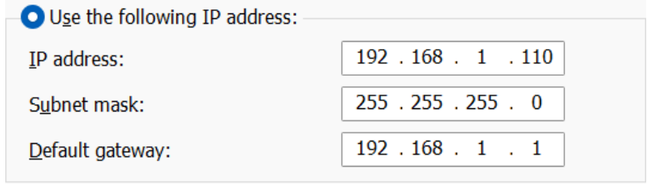
1. Open your computer, set the IP address, subnet mask, and default gateway.
   a. In **Settings**, select **Network & internet** on the left navigation pane and then select **Advanced network settings** on the right pane.



b. Select the Ethernet network. Locate **More adapter options** and tap **Edit**.

c. In the displayed dialog box, select the Internet protocol version and tap **properties**.

d. In the displayed dialog box, select **Use the following IP address** and set as follows:

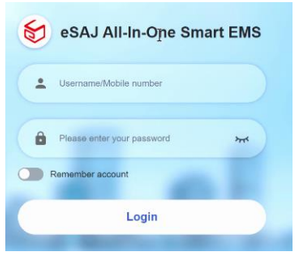


2. Open the browser and enter the following IP address in the address bar.

   Depending on the EMS port used for connection, the IP address varies:

   - Ethernet port on the switch: 192.168.1.136
   - NET2 on the EMS control module (eManager-C1-1): 192.168.2.136

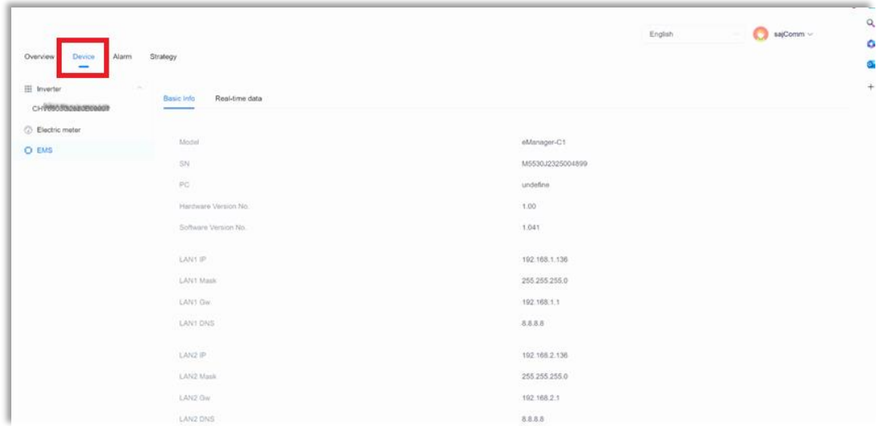
3. Use the account **sajComm** and password **080808** to log in.



To change the password, tap the account name **sajComm** on the upper right corner and select **Personal center**. Then, follow the instructions on the screen to set a new password.

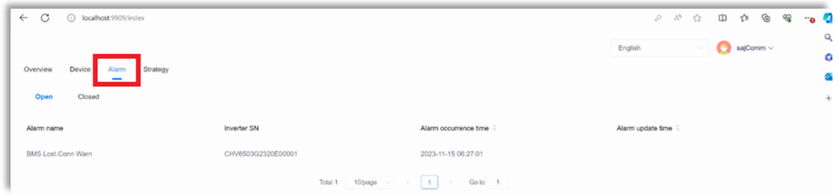
7.3. View the device information

1. To view the device information, tap the **Device** tab and select the required device from the list on the left-side.



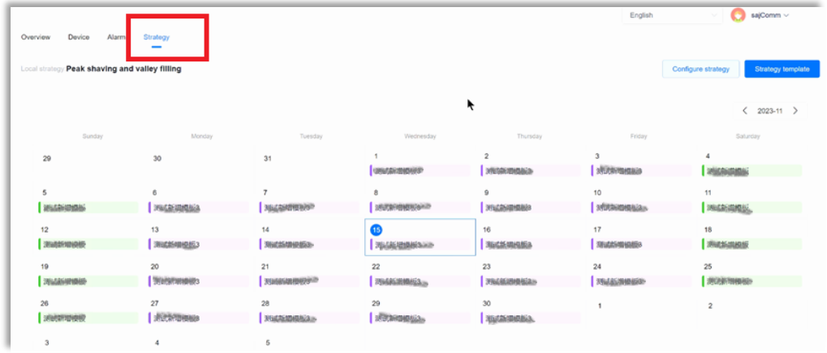
2. To check the reported alarms, tap the **Device** tab to view them in different status.

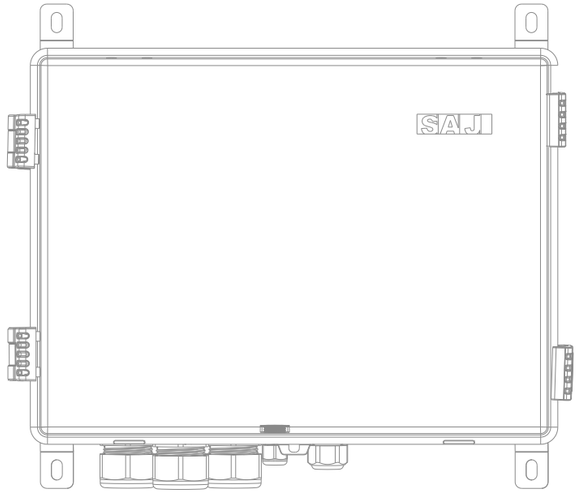
- **Open**: Active alarm
- **Closed**: History alarms



3. To view and configure the strategy, tap the **Strategy** tab.

- **Local strategy**: View the current strategy.
- **Configure strategy**: Modify the strategy.
- **Strategy template**: Create a new strategy.





8.

APPENDIX

8.1. Recycling and disposal

This device should not be disposed as a residential waste.

The device that has reached the end of its operation life is not required to be returned to your dealer; instead, it must be disposed by an approved collection and recycling facility in your area.

8.2. Transportation

Be careful with the product transportation and storage.

8.3. Warranty

Check the product warranty conditions and terms on the SAJ website: https://www.saj-electric.com/

8.4. Contacting support

Guangzhou Sanjing Electric Co., Ltd.

Address: SAJ Innovation Park, No.9, Lizhishan Road, Guangzhou Science City, Guangdong, P.R.China.

Postcode: 510663

Website: https://www.saj-electric.com/

Technical Support & Service

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Fax: +86 206660 8589

E-mail: service@saj-electric.com

International Sales

Tel: 86-20-66608618/66608619/66608588/66600086

Fax: 020-66608589

E-mail: info@saj-electric.com

China Sales

Tel: 020-66600058/66608588

Fax: 020-66608589

8.5. Trademark

SAJ is the trademark of Sanjing.