





# eManager-C1 Pro

SMART COMMUNICATION BOX USER MANUAL





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# SAFETY PRECAUTIONS



#### 1.1. Application Scope

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

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

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

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

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

DANGER



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

#### 

#### NOTICE

#### 1.4. Symbol Explanation

Symbol	Description
	<b>Dangerous electrical voltage</b> This device is directly connected to public grid, thus all work to the device shall only be carried out by qualified personnel.
	No open flames Do not place or install near flammable or explosive materials.
	Attention Install the product out of reach of children.
	This device shall NOT be disposed of in residential waste.
CE	<b>CE Mark</b> Equipment with the CE mark fulfills the basic requirements of the Guideline Governing Low- Voltage and Electro-magnetic Compatibility.
	Recyclable
Ţ	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 observe 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.
- shock.
- .
- When the eManager-C1 Pro is working, do not plug in or out the cables. .
- grounded properly.
- •

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

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.

During installation, make sure that the lightening protection module within the eManager-C1 Pro is

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.

## PRODUCT INFORMATION



#### 2.1. Application Topology Diagram



Figure 3. 1 Application typology diagram

#### 2.2. Main Features

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 integrates the following components:

- Energy management system (EMS) controller
  - EMS control module (eManager-C1-1)
  - EMS power module (eManager-C1-2)
- Ethernet switch
- Smart meter
- Air circuit breaker
- DC-DC power module

controller er-C1-1) r-C1-2)

6

The eManager-C1 Pro provides the following functions:

- 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 3. 3 Ports

SilkscreenDescriptionLANEthernet porPOWER AC\_INAC power ofCOM 0Reserved ECOM 1DC power ofCOM 2Reserved

LAN

60

Table 3. 1 Ports

2.5. Datasheet

2.4. Port Introduction

# General parameters Application Communication Data collection interval (Min) Firmware update Data access Electrical parameters Input AC voltage Input DC voltage



Figure 3.2

Dimension



ption
et port (waterproof)
ver cable port (waterproof)
ed Ethernet/antenna port (waterproof)
ver cable port
ed

Commercial project monitoring
Bluetooth, 4G, Ethernet, or RS485
1 – 30 (optional); 5 (standard)
Ethernet, USB, or remote update
App, Web, or local Web
176 – 300 V AC
9 – 36 V

Input frequency	50/60 Hz
Max. power	50 W
Operating temperature range	-25°C to +60°C (-13°F to +140°F)
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

#### 2.6. Internal Structure

 $\bigcap$ () 00000 000 00 + 00000  $\bigcap$ Callout Description EMS control module (eManager-C1-1) 1 EMS power module (eManager-C1-2) 2 Smart meter 3 Switch 4 Circuit breaker 5 DC-DC power module

Figure 5. 1 Internal structure

le 5. 1

Table 5. 1 eManager-C1-1

#### Table 3. 2 Datasheet



#### 2.7. EMS Control Module (eManager-C1-1)

2.7.1. Front view



Figure 5. 2 eManager-C1-1 front view

Silkscreen	Description	Remarks
ANT	Antenna	SMA port
СОМ	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 5. 2 Front-port description

#### ANT

When a 4G module is inserted into the mini-PCle 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 when the network is connected.
2	Right	Green	Active	Blinks when the network connection is active.

#### 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	Fourt RS485 B signal	485G4	Fourt RS485 signal ground

#### 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.

#### 11

#### 2.7.2. Rear view



Figure 5. 3 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.
	• VCC, GND, high side driver (HSD), and low side driver (LSD) ports
	<ul> <li>DO1 – DO8 isolated ports</li> </ul>
	<ul> <li>DO1 – DO4: Mechanical relay (passive)</li> </ul>
	- 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. You can buy a nano-SIM card for use.
DI1 – DI8u	Isolated dry input (DI) ports provided by two 3.5-08P terminals
	<ul> <li>HDI: High-level voltage input (VIH) (passive)</li> </ul>
	LDI: Low-level Voltage input (VIL) (active)

### POWER



#### HSD and LSD

LSD1- LSD1- LSD2- LSD2-	r-C1-1 provides four high side driver (H	SD) ports and t	wo low side driver (LSD) poi
Silkscreen	Description	Silkscreen	Description
1/00	Valtage collector to collector Come		
VCC	as the system power supply voltage.	LSD1-	Low side driver
LSD2-	as the system power supply voltage.	LSD1- GND	Low side driver Ground
LSD2- HSD1+	as the system power supply voltage. Low side driver High side driver	LSD1- GND HSD2+	Low side driver Ground High side driver

#### LED

The eManager-C1-1 provides eight LED indicators.

Silkscreen	Description	Silkscreen	Description
PWR	Power status indicator.	RUN	System running status indicator.
	<ul><li>Red: The system is powered on.</li><li>Off: The system is powered off.</li></ul>		<ul> <li>Blinking in green: The system is running normally.</li> <li>Off: The system does not work.</li> </ul>
ERR	System error indicator.	STA	Wireless module status indicator.

Table 5. 3 Rear-port description

Silkscreen	Description
2-24V===	System power input
ARTH	Protecting earthing
GND	System power ground

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

orts.

Silkscreen	Description	Silkscreen	Description
	Red: An error occurs.		• Green: The module is running
	• Off: The system is running		normally.
	normally.		• Off: The module is running
			abnormally.
LED1	Programmable. Green.	LED2	Programmable. Green.
LED3	Programmable. Green.	LED4	Programmable. Green.

#### RESET

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

#### 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.

#### 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.

#### DO1 - DO8 (Reserved for user use)

Table 5. 4 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

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

Figure 5. 4 eManager-C1-2 front view

2.8.1. Front view



Silkscreen	Description
POWER AC_IN	Power supply po
DRED/RCR	DRED/RCR function
DC/OUT (+24 GND)	DC output term control module a

۲

- 6



Table 5. 5 Rear-port description The eight relay isolated passive DO ports can be used to 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)

ninals. The two will be connected to the POWER port of the EMS and the POWER port of the switch.

connection is required	for this port.
------------------------	----------------

#### 2.8.2. Rear view

Figure 5. 5 eManager-C1-2 rear view



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

Silkscreen	Description
Ctrl	For enabling or disab
GND	For connecting the n
Vin	For connecting the p

#### 2.10. Smart Meter

For detailed information, refer to the meter product document.

#### 2.11. Switch

For detailed information, refer to the switch product document.

#### 2.9. DC-DC Module



bling the module.

negative DC power cable.

positive DC power cable.



### INSTALLATION

### 3.1. Unpacking and Inspection



Table 4. 1 Package content

### 3.2. Installation Environment Requirements

- Install the eManager-C1 Pro in a pla 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 4. 1 Installation environment

		\$
sion bolt*4	Grounding OT terminal*1	Lock with a key*1
		0
connector*1	Hexagon flange nut*1	Mounting lug*4
$\square$		
ument*1		

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

• Install the eManager-C1 Pro in a place without vibration or shock and avoid exposure to direct sunlight,

#### 3.3. Installation Location Requirements

• Reserve enough clearance around the box to ensure a good air circulation at the installation area. Top ------ 200 mm



#### 3.4. Installation Procedure

Figure 4. 4

Figure 4.5

Installing the eManager

Installing the eManager



- 2.
- 3.
- 4. and four screws to secure the eManager to the wall.

330±3



Figure 4. 2 Space

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



Figure 4. 3 Installation position 1. Use the ST4.8 screws to secure the four mounting plugs on the four corners of the eManager.

Lift the eManager onto the wall to mark positions for drilling holes and put it down.

Drill four holes with 8-mm diameter and 45-mm depth in the wall.

Lift the eManager upwards and align the mounting plugs to the drilled holes. Use four expansion bolts



# ELECTRICAL **CONNECTION**

#### 4.1. Unlocking the Box

Hold the two tabs and lift it upwards. Then, lift the cover up.



Figure 6. 1 Unlocking the box

#### 4.2. Assembling the Communication Connection

4.2.1. To 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 cable gland "COM0" at the bottom of the eManager.
- 3. Connect the cables to terminals 19 and 21 on the smart meter.
- 4. Tighten the nut back to the cable gland "COM0".
- ---End

#### 4.2.2. To the EMS Control Module

#### About this task

To locate the eManager-C1-1 module 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 cable gland "COM1" or "COM2" at the bottom of the eManager.

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 cable gland "COM1" or "COM2".

---End

#### 4.3. Connecting the Ethernet Ports on the Switch

#### About this task

To locate the switch, refer to Section 2.6 "Internal Structure".

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.

#### Procedure

1. Prepare the Ethernet cables.

2. Loosen the nut from the cable gland "LAN1" or "LAN2" at the bottom of the eManager. Insert the cable through the nut.

- 4. Insert the cable through the seals hole and then the cable gland.
- 5. Insert the cables to the Ethernet ports on the switch.
- 6. Tighten the nut back to the cable gland "LAN1" or "LAN2".

---End

### 4.4. Connecting 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 eManager-C1-1 module and the DRED/RCR port on the eManager-C1-2 module.

in the accessary bag.

#### 4.4.1. DRED Connection (Australia)

### other regions.



Figure 6. 2 DRED connection

4.4.2. RCR Connection (Germany)

3. Remove the seals from the cable gland. Use a knife to cut through a hole in the seals.

The following lists the detailed information about the DRED/RCR connection. A six-pin connector is provided

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

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

(6 REF 1) 5 REF 2 O-→ 100% 4 DI 4 0-0 0 0 0 0 0 3 DI 3 0-1 2 3 4 5 6 0 0 0 0 0 0 0 → 30% 2 DI 2  $\cap$ DRED/RCR 1 DI 1  $\cap$ RCR Inverter

Figure 6. 3 RCR connection

#### 4.5. Connecting the Power Supply

#### 4.5.1. Connecting the 230 V AC Power Supply

#### About this task

To locate the circuit breaker, refer to Section 2.6 "Internal Structure".

230 V AC power supply is connected to the circuit breaker within the eManager.

#### Prerequisite

The circuit breaker is in OFF position.

#### Procedure

1. Prepare the AC 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 cable gland POWER AC\_IN at the bottom of the eManager and loosen its nut.

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



#### 4. Tighten the nut back to the cable gland POWER AC\_IN.

---End

breaker.

#### 4.5.2. Connecting the 12 V DC Power Supply

#### About this task

To locate the DC-DC power module, refer to Section 2.6 "Internal Structure".

12 V DC power supply is connected to the DC-DC power module within the eManager.

#### 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 cable gland COM1 at the bottom of the eManager and loosen its nut.





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

4. Insert the negative cable to the GND port and the positive cable to the Vin port on the 12 V DC module.



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

---End

#### 4.6. Grounding

#### Procedure

1. Insert the grounding cable through the cable gland POWER AC\_IN at the bottom of the eManager.

2. Prepare an OT terminal.

Figure 6. 4 Preparing an OT terminal

|--|--|--|--|

Callout	Description	Callout	Description	Callout	Description
а	Cable	b	Heat shrink tubing	с	OT terminal
d	Hydraulic pilers	е	Heat gun		

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



Figure 6. 5 Installing the OT terminal

Callout	Description
а	OT grounding term
b	Hexagon flange nu
End	

### 4.7. Connecting the Smart Meter

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 to meter.

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

ninal	
ıt	

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

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

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





Figure 6. 6 Locking the box

#### 4.8. Turning on the Circuit Breaker

Turn on the circuit breaker by toggling down the switch.

#### 4.9. Locking the Box

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

# COMMISSIONING **BY APP**

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

5.1. Downloading the Elekeeper App

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

5.2. Logging In to the App

#### Procedure



1. Open the App and click 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. Click <b>Register</b> . 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. Click <b>Bluetooth</b> and then <b>Next</b> .

#### 5.3. Completing the Initialization Settings

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

11:09	ull 5G 🔳	11:09 <b>1</b> 50	G 💻
Bluetooth		< Bluetooth	
Pairable Devices		Pairable Devices	
8 EMS:01602	>	8 EMS:01602	
8 BlueLink:00003	>	BlueLink:00003	
8 Micro:00481	>	Micro:00481	
8 BlueLink:02146	>	8 BlueLink:02146	
8 BlueLink:11121	>	Bluel ink:11121	
8 Micro:00549	>	Enter the initial configuration process when connecting the device for the	
8 BlueLink:02966	>	8 E	
8 BlueLink:05809	>	Initialization	
8 BlueLink:01575	>	8 BlueLink:01575	
Micro:00094	>	8 Micro:00094	

2. Set the network connection. Then, click **Save**.

Example:

Network Configuration       Connection Method     Ethernet ~       DHCP (Dynamic Configuration)     Image: Configuration (Configuration)       IP Address     10.10.10.22       Subnet_Mask     255.255.255       GatewayIP     10.10.10       Network diagnosis     0	Network Configuration       Connection Method       Ethernet ~       DHCP (Dynamic Configuration)       IP Address       Subnet_Mask       255.255.255.050       GatewayIP       10.10.10.2       Network diagnosis	Network Configuration           Connection Method         Ethernet <           DHCP (Dynamic Configuration)         Image: Configuration         Image: Configuration           IP Address         10.10.10.222         Connect_Mask         255.255.255.05           Subnet_Mask         255.255.255.05         Connect_Mask         255.255.255.05           GatewayIP         10.10.10.10         Connect_Mask         Connect_Mask	09:49	uti 4G 🗲
Connection Method     Ethernet       DHCP (Dynamic Configuration)     Image: Configuration (Configuration)       IP Address     10.10.10.22       Subnet_Mask     255.255.255.255       GatewayIP     10.10.10       Network diagonasis     Image: Configuration (Configuration)	Connection Method     Ethernet       DHCP (Dynamic Configuration)     Image: Configuration (Configuration)       IP Address     10.10.10.222       Subnet_Mask     255.255.255       GatewayIP     10.10.10.       Network diagnosis     >	Connection Method     Ethernet <       DHCP (Dynamic Configuration)     Image: Configuration       IP Address     10.10.10.222       Subnet_Mask     255.255.255.00       GatewayIP     10.10.10.32       Network diagnosis     >	Ketwork Configur	ation
DHCP (Dynamic Configuration)	DHCP (Dynamic Configuration) IP Address I0.10.10.222 Subnet_Mask 255.255.255.0 GatewayIP 10.10.10. Network diagnosis	DHCP (Dynamic Configuration)	Connection Method	Ethernet ~
IP Address 10.10.10.22 Subnet_Mask 255.255.255. GatewayIP 10.10.10. Network diagonasis	IP Address 10.10.10.223 Subnet_Mask 255.255.255.0 GatewayIP 10.10.10. Network diagnosis >	IP Address 10.10.10.222 Subnet_Mask 255.255.0 GatewayIP 10.10.10.1 Network diagnosis >	DHCP (Dynamic Configuration)	
Subnet_Mask 255.255.255. GatewayIP 10.10.10.	Subnet_Mask 255.255.255.05.0 GatewayIP 10.10.10. Network diagnosis	Subnet_Mask 255.255.255.0 GatewayIP 10.10.10.1 Network diagnosis	IP Address	10.10.10.222
GatewayiP 10.10.10.	GatewayIP 10.10.10. Network diagnosis	GatewayIP 10.10.10.10	Subnet_Mask	255.255.255.0
Network diagnosis	Network diagnosis >	Network diagnosis	GatewayIP	10.10.10.1
, and an			Network diagnosis	>
			Please select a connection	on method
Please select a connection method	Please select a connection method	Please select a connection method	40	
Please select a connection method 4G	Please select a connection method	Please select a connection method	40	
Please select a connection method 4G Ethernet	Please select a connection method 4G Ethernet	Please select a connection method 4G Ethernet	Ethernet	



3. After the message "Network normal" is displayed, click **Next**.

\_\_\_\_\_

4. Add the required deices to connect to the eManager. Then, click **Next**.

Add device

11:16

DTSU666

🕑 НС-205-К6Т

Previous

<

Example:

11:15		1 5G 🔳
< Net	work Diagnosis	
Connected (Dood)	((())) Connecte (Good)	
EMS	Router	Server
N	etwork normal	
Previous	Ne	xt





5. Set the meter connection type. Then, click **Next**.

#### Example:

11:15 uil 5G 🗩	11:151l 5G 📼
Meter connection type	< Meter connection type
Wiring	Wiring
A three-phase four-wire meter $\qquad \sim$	A three-phase four-wire meter $\qquad \qquad \lor$
Please set the grid meter address to "1"	Please set the grid meter address to "1"
System Schematic	System Schematic
Grid	No meter
	A three-phase four-wire meter
Previous	Two three-phase four-wire meters

6. Set the strategy. Then, click **Next**.

#### To set a new strategy, click **template** on the top right corner. Example:

11:21			<b>11</b> 5G
<	Strategy	Configuration	tem
Current Stra	ategy	Peak cut valle	ing an ey fillin
Time strate	gу	B	y mont
Month		S	Strateg
Jan.			Tes
Feb.			Tes
Mar.			Tes
Apr.			Tes
Мау			Tes
Jun.			Tes
Jul.			Tes
Aug.			Tes
Sep.			Tes
Oct.			Tes
Prev	/ious	Ne	

	11:19	ull 5G 🔳
	Strategy Con	figuration
	Name	Please enter
	Priority strategy	^
	Battery protection	
	Charging upper limit	Please enter %
		[60-95]
	Lower disCharging limit	Please enter %
		[10-50]
	Demand control	
	Demand limit value	Please enter kW
		[10-100]
	ExportLimitation	
	Limited power	Please enter W
		[0-5000]
	Back-up Power Supply	
	Sav	e
- 10		

7. Select your country and set the device time. Then, click **Next**.

Example:

11:24			<b>.11</b> 5G	-
< :	Safety cor	nfigura	tion	
National Grid	d Standar	d		
Country				
Australia				~
Grid Complian	ce			
AS 4777				~
Device time				
2023-11-13 1	1:24:24		Auto Time Sy	ync
Previo	us		Next	

11:25	.1	<b>i</b> 5G	•	•
<	EMS			
8 eManager-C1	<b>∦</b> 0			,
Network Configuratio	n			,
Directly connected de Added: 2 Not added:	evice 0		2	,
Wiring				,
Safety configuration				,
Strategy configuration Demand	n/ExportLimitation	V		,
More configuration				,

- 8. View the eManager information that you have just set to make sure that all settings are proper.
  - To restart the device, choose More configuration > Restart device.
  - To restore the device to factory settings, choose More configuration > Restore Factory Settings.



#### 5.4. Configuring Other Devices Connected to the eManager

To configure other devices that are connected to the eManager, refer to the commissioning content in their own user manuals.

#### 5.5. Creating a plant

You can also create a plan through the SAJ Web portal. For details, refer to Chapter 6 "**CONFIGURATIONS BY WEB**".

1. On the Management tab, click the 🕀 icon on the top right corner. Select Create Plant for Me.



Scan the SN barcode on the pov click **Next Step**.

#### Example:



2. Scan the SN barcode on the power label or input the SN manually. Click  $\oplus$  to add the device. Then,

•	4:48	(B) <b>10</b> 48 11 44 45 (B)
_	< Crea	te Plant
н	Please enter the SN	Ξ
	Supports inverter SN/S	EC Module SN
	Device1	•
	SN	
	Device Capacity ①	10 kWp
	Device2	•
	SN	-overstandingsoogenate
	Device Capacity ①	10 kwp
	Nex	ct Step

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





## **CONFIGURATIONS BY WEB**

# 

the power production and consumption statistics.

Most of the configuration functions can be completed in the Elekeeper App; however, some data, such as the smart meter, air conditioning, fire protection, and power curve, can only be viewed on the Web platform.

### 6.1. Logging In to the Web Platform

- 1. Go to https://esaj-home.saj-electric.com
- 2. For the first-time login, register first.
  - Click Don't have an account yet? Register now. a.
  - b. Follow the instructions to complete registration.



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

The eSAJ All-In-One Smart EMS Web platform is a smart family energy management system which can monitor

#### 6.2. Creating a Plant

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

😽 eSAJ All-In-One Smart EM	S i 🔥	saj ~							Switch to old platform		Tenglish v	🙆 nakyer
Home	н	Iome Plants									_	
Operations Analysis     V     Service     Monitorion		All	EMS favorites     Offine(5)	Alarm(0)     Nor	arth 😨 mal(1) 🛛 Unmonitored(0)						Plant Transfer	Add a plant
Plants	П.	Status	Plant Name	Plant Type	Power 0	Production Today 0	Lifetime Production 0	Installed capacity 0	Creation time	Owner	c	operation O
Devices	-	•	EMS	Energy Storage	11794 W	21.3 kWh	1518.5 kWh	50 killip	2023-11-11 15:22:24	(******)m	1	¢A E
Alarms		•	- Republication	Energy Storage	O W	0 kWh	0 kitth	50 kWp	2023-10-09 18:38.55	()m	1	¢A :
Al Saving ~		•		Energy Storage	0 W	0 kWh	0 kmh	3 kWp	2023-08-31 11:37:34	tanan <sup>100</sup>	1	άAI
] Report ~		•		Energy Storage	O W	0 kWh	0 kitilh	50 killip	2023-08-29 08:48:07	······	1	¢A E
Settings		•		Energy Storage	O W	0 kWh	344.8 kWh	100 kWp	2023-08-28 20:27:08	[******]00		<b>x</b> A E
			£. 850850	Energy Storage	O W	0 kMh	0 kilithi	12 killip	2023-08-23 15:16:26	farme <sup>10</sup>	1	άr Α Ι
						Total 6 < 1	> Go to 1 10	page v				

- 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 click Add.

Create Plant			
Add a device			
Plant Info	M5530	Add	
Alarm push			
Report			

#### For the inverter, input the device capacity.

add a device     *Inverter/load monitoring module SN is supportediems       Plant Info     Please enter the inverter SN       Marm push     EMS module       Report     SN M6530Y235601602       SN CHT6503G232600001     *Device Capacity(W/p)       50     Inverter Alias			
Please enter the inverter SN Add  Nam push EMS module SN M550V235501602 SN CHT6503G2320E00001 Device Capacity(W/p) 50 Inverter Alias Please enter a device alias.	Add a device	*Inverter/load monitoring module SN is supported/ems	
Aarm push EMS module   Export  SN M5530Y2325001602  SN CHT6503G2326E00001  Device Capacity(kWp)  50  Inverter Alias  Please enter a device alias.	Plant Info	Please enter the inverter SN Add	
teport SN M5530Y2325001602 SN CH1560362230E00001 *Device Capacity(Wity) @ 50 Inverter Alias	llarm push	EMS module X	
SN CHT6503G230E00001 "Device Capacity(Wity)  S0 Inverter Alias Please reter a device alias	Report	SN M5530Y2325001602	
*Device Capacity(Wp) 50 Inverter Alias Please enter a device alias		SN CHT8503G2320E00001	
50 Inverter Alias Please enter a device alias		*Device Capacity(kWp)	
Inverter Alias Please enter a device alias		50	
Please enter a device alias		Inverter Alias	
		Please enter a device alias	

type, and 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,

	×
Upload a plant picture	
and the second second	
219	
HAR NEAD	
"Latitude	
Please enter plant latituc	
	×
	×
	x
	×
	×
	×
s positioning to obtain latitude and and scient state. Salave to obtai	×
s postioning to obtain latitude and lay of plant data. Pailure to obtain	×
s positioning to obtain latitude and any of plant class. Failure to obtain to adversarial display of some fur	×
s positioning to obtain tatitude and any of plant data. Failure to obtain to advormal display of some fu	×
s positioning to activan trafficade and any of plant data. Failure to obtain to advormal display of some for "Plant capacity(Mtry) ①	×
speakinning to actean tablande and ay og sjonet data. Faktur to citata to advormat digstay of some for "Phane cospecty(MNg) @ 50	x
s be a set of part data halfvede and be per grigent data. Fullow to obtain to adverse display of some for "Plant capacity(KHP) @ 50	×
s postioning to statan kellude and urg of glant data. Fallude in of to a decomul display of some fu "Part capacity(KH2) @ 50 Ond Type @	×
s postions to actain latitude and lay of plant data. Failure to ocdar "Plant capacity(Mp) @ 50 Ord Type @ Plants solid: type of gr ~	×
1 Sostions to action latitude and lay of plant data. Failure to action 1*Prect capacity(WD) @ 50 Over Type @ Planes under type @ Planes and or go '	×
	×
spostomy to actain talkade and any of plant calk. If allow to obtain to advormal display of some for "Plant capacity(HVD) ● 50 Over Type ● Plante while type of gr ~ Plante ender type of gr ~ Plante ender the number +	×
solution by table ballede and solution by table ballede and solution balled and "Plant capacity(NW) 0 10 Over Type 0 Plants which type of y ∞ Number of Components Plans and the sumber: This argie of Ply panh. 0	×
s postoring to stan kriticke and to global data. Failude and to global data. Failude and to global data. Failude to data to global stand to global to the Please solid type () Please solid type () Please solid the random : Tat angle of Y2 pavels () Please solid the random :	×
s postions to stars failude and iny of plant data. Failure to star "Plant capacity(Way) @ 50 One Type @ Planes solent type of gr v~ Number of Components Planes and the number 1 Tit angle of My panels @ Planes may be	×
Soutions to stan failude and soutions to stan failude and soutions of part data. Failure to obda  Phate capachy(NVD)   The capachy(NVD)   The capachy(NVD)   The capachy of any	×
esteoring to actain tablede and any of part (star. Fallow to obtain to abnormal display of some for to abnormal display of some for to abnormal display of towns for to abnormal display of operative former and the manufacture Please enter the manufacture Tablese of the Please of the manufacture Please enter an angle Tablese	×

- Create Plant Alarm push Add a device Plant Info Alarm level General Important Urgent Alarm push Push channel app Email Push users (Up to 5 users) No data Next Step
- 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, click Next Step.

d. On the Report pane, set the email address for receiving the plant reports and alarms. Then, click 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.

	_	_									
둥 eSAJ All-In-One Smart	EMS	🔥 saj 🖻	<i>,</i>						Switch to old platform	• • • • •	nglish 🗸 🚳 🕅 🕅 🗤
☐ Home		Home	Plants ×								
<ul> <li>Operations Analysis</li> </ul>	~	All	V EMS	Search	2					Plant	Transfer Add a plant
38 Service	~										
Manitoring	^	* A	dd to favorites	<ul> <li>Alarm(0)</li> <li>Normal(1</li> </ul>	) • Unmonitored(0)						
Plants		Statur	Plant Name	Plant Type	Power 0	Production Today 🗧	Lifetime Production 0	Installed capacity 🗘	Creation time 0	Owner	Operation 🖶
Devices		•	EMS	Energy Storage	11794 W	21.3 kWh	1518.5 kWh	50 kWp	2023-11-11 15:22:24	t******m	☆ ∧ :
Alarms		•	🔚 1 dissilikatika	Energy Storage	D W	0 kWh	0 kWh	50 kWp	2023-10-09 16:38:55	t	☆ ∧ :
<ul> <li>Al Saving</li> </ul>	~	•		Energy Storage	D W	0 kWh	0 kWh	3 kWp	2023-08-31 11:37:34	t******m	☆ 유 :
Report	ř	•	200 (190 (190 (190 (190 (190 (190 (190 (1	Energy Storage	0 W	0 kWh	0 kWh	50 kWp	2023-08-29 08:48:07	t******m	☆ & :
<ul> <li>Settings</li> </ul>	Ŭ	•		Energy Storage	0 W	0 kWh	344.8 kWh	100 KWp	2023-08-28 20:27:08	t*****m	\star A 🗄
		0	E. CONTRACTOR	Energy Storage	0 W	0 kWh	0 kWh	12 kWp	2023-08-23 15:16:26	faraaa MJ	☆ ∧ :
						Total 6 < 1	Go to 1 10(pag				

- 2. View the plant statistics.
  - - loads, and batteries.

    - Energy analysis: You can view the electric energy production and consumption by day, week, month, year, or in total. In addition, you can click 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.

Search for your plant name and click Search. Then, click the required plant.

• 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,

Plant Info: It lists plant address, owner name, capacity, and creation time.



eSA	J All-In-One	Smart EMS   👗 saj 🗸			S	witch to old platform	- 🙆 iiiii	1
	Home Plan	s × EMS ×						
-	EMS 🥏					Ø Laste	pdated:2023-11-15 11:32:01	
8	Overview	Device Alarm						
9	Open	Closed						
-	Inverter S	N Please enter alarm nam V 202	3-11-02 To 2023-11-15 🛗 Search Reset				Export report	
9	Emerg	gency alarm (0) Important alarm (14)	General alarm (0)					
	Status	Alarm name	Inverter SN	Alarm plant	Alarm occurrence time	Alarm recovery time	Operation 🖶	
	•	Battery Open Circuit Fault	400masamasa	EMS	2023-11-09 18:55:27	2023-11-09 19:53:56		
	•	Battery Open Circuit Fault	2000000000000	EMS	2023-11-09 17:12:40	2023-11-09 17:20:16		
	•	Low Battery Discharge Voltage Fault		EMS	2023-11-09 17:12:21	2023-11-09 17:12:40		
	•	Battery Open Circuit Fault		EMS	2023-11-09 17:04:19	2023-11-09 17:11:09		
	•	Low Battery Discharge Voltage Fault	(Institutional States)	EMS	2023-11-09 17:03:59	2023-11-09 17:04:19		
	•	Battery Open Circuit Fault	and the second sec	EMS	2023-11-09 16:41:27	2023-11-09 16:56:40		
	•	Low Battery Discharge Voltage Fault		EMS	2023-11-09 16:40:59	2023-11-09 16:41:27		
	•	Battery Open Circuit Fault	Constitution of the Constitution of T	EMS	2023-11-08 18:26:37	2023-11-08 18.48:10		
	•	Low Battery Discharge Voltage Fault		EMS	2023-11-08 18:25:53	2023-11-08 18:26:37	▲	Ø
	•	Battery Open Circuit Fault		EMS	2023-11-08 16:57:21	2023-11-08 16:57:47	♪	0
				< 1 Jump to 1				9
								8

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

😸 eS/	J All-In-One Smart EMS   👗 saj 🗸				Switch to old pla	iform + 🖛 🗂 🗇 🗄	inglish 🗸 🙆 🐜
6	Home Plants × EMS ×						
•	EMS 🥏						C Last updated 2023-11-15 11:32:01
*	Overview Device Alarm						
	Inverter Battery Air conditioning Fire protection						
	Offine(0)     Alarm(0)     Normal(1)     Inventory machine(0)	History(0)     Inverter SN	Search				
۲	Status SN	Туре	Device model	Power	Production Today	Lifetime Production	Operation 🖶
	• сна	Storage inverter	CH2-50K-T6	11794 W	21.3 kWh	1518.5 kWh	∠ :
			Total 1 C 1 Go to 1	10/page v			

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

• Closed: History alarms

• Open: Current alarm

# **OPERATIONS BY LAN** (NEAR END)

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

### 7.1. Connecting 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 of the following ports in the EMS:

4. Connect the other end of the cable to your computer.

---End

#### 7.2. Logging In to the Local Web

#### network settings on the right pane.



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".

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

vork & internet		0	×
Ethernet Authentication, (P and DNS settings, metered network		>	
VPN Add, connect, manage		>	
Mobile hotspot Share your internet connection	Off 🖲	$\supset$ >	
Airplane mode Stop wireless communication	Off 🖲	$\supset$ >	
Proxy Proxy server for Wi-Fi and Ethernet connections		>	
Dial-up Set up a dial-up internet connection		>	
Advanced network settings View all network adapters, network reset		>	

- b. Select the Ethernet network. Locate More adapter options and click Edit.
- c. In the displayed dialog box, select the Internet protocol version and click properties.
- d. In the displayed dialog box, select Use the following IP address and set as follows:

OUse the following IP address:	
IP address:	192 . 168 . 1 . 110
S <u>u</u> bnet mask:	255 . 255 . 255 . 0
Default gateway:	192 . 168 . 1 . 1

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

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

- Ethernet port on the switch: 192.168.1.136
- NET2 on the EMS control module: 192.168.2.136
- 3. Use the account **sajComm** and password **080808** to log in.



 (Recommended) To change the password, click 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. Viewing the Device Information

 To view the device information, the left-side.



1. To view the device information, click the **Device** tab and select the required device from the list on

	English	sajComm ~	Q
			2
			+
eManager-C1			
M5530J2325004899			
undefine			
1.00			
1.041			
192 168 1.136			
255.255.255.0			
192.168.1.1			
8.8.8.8			
192.168.2.136			
255.255.255.0			
192.168.2.1			
8.8.8.8			

- 2. To check the reported alarms, click the **Device** tab to view them in different status.
- **Open**: Current alarm
- **Closed**: History alarms

Г	← C ① localhost.9909/index					P	$\mathbb{A}^{h}$	습	Φ	¢1	۹	~;	••••	•
L					Foolish				0	saiCor	am v			0
L	Outries Dates dates				e pro				×					¢
L	Overview Device Alarm Strategy													3
L	Open Closed													+
l	Alarm name	Inverter SN		Alarm occurrence time	Alarm upd	ate tim	• 0							
L	BMS Lost.Conn Warn	CHV6503G2320E00001		2023-11-15 08:27:01										
		Total 1	1 10/page	1 > Go to 1										

- 3. To view and configure the strategy, click the **Strategy** tab.
  - Local strategy: View the current strategy.
  - **Configure strategy**: Modify the strategy.
  - Strategy template: Create a new strategy.

					English	SajComm ~
Overview Device Alarm	Strategy					
Local strategy Peak shaving and	valley filling					Configure strategy Strategy templat
			1	•		< 2023-11 >
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	31	1	2	3	4
			ARM/BH/BR/H/3-	20100200000	350597585848	250088
5	6	7	8	9	10	11
派的影响和	2643新编辑版3	36点前的管理形的5	15/CROMONDOWN?	3152254010888	MURRIDURALAN	海道高橋區。
12	13	14	15	16	17	18
Redenoide	3846354842453	网络武士新闻学校新闻	用品质增加的Ainte	网络新闻的新闻	TELCOSING SOLIDIS	用成的现在分
19	20	21	22	23	24	25
264466999886	Telefortamentes	35466548409829 <sup>-29</sup>	294463840/53 <sub>10</sub>	PRODUCTION	256(45/260650)	用印刷物模型
26	27	28	29	30	1	2
SINGTONING	AND DESCRIPTION OF	MIGREEDIRAGAIN	1890000000	Historicania.		

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### 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

#### 8.4. Contacting Support

Guangzhou Sanjing Electric Co., Ltd.

Postcode: 510663

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

Technical Support & Service

Tel: +86 20 6660 8588

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.



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

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