

# User Manual

## Energy Management Controller

EMS300CP(Europe)



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# About This Manual

This manual introduces the system in overview, diagram, operation step and examples for you to understand and use this system flexibly and effectively.

The system is referred to as "EMS300CP" hereinafter unless otherwise specified.

## Target Group

This manual is intended for:

- Operators
- Managers
- Engineers

## How to Use This Manual

This manual is briefly described by using the standard interface as an example. For specific activated functions, refer to the content of the technical agreement or the contract.

Contents may be periodically updated or revised due to the product development. The manual content of subsequent versions of the product may be subject to change. The latest manual can be found at [support.sungrowpower.com](http://support.sungrowpower.com).

## Symbols

Important instructions contained in this manual should be followed during installation, operation and maintenance of the product. They will be highlighted by the following symbols.

The symbols listed below may be used in this manual. Please read carefully to make better use of this manual.

### DANGER

Indicates that there is a serious potential danger, which can lead to death or serious injury if not avoided.

### WARNING

Indicates that there is a moderate potential danger, which may lead to death or serious injury if not avoided.

### CAUTION

Indicates that there is a mild potential danger, which may lead to moderate or mild personal injury if not avoided.

## NOTICE

Indicates that there is a potential risk, which may cause the equipment to fail to operate normally or cause property damage if not avoided.



Indicates additional information, emphasized contents or tips that may be helpful, e.g. to help you solve problems or save time.

### Note

In order to provide customers with the best usage experience, the products and product manuals are always in the process of improvement and upgrade. If the manual received is slightly inconsistent with the product, it may be a result of product version upgrade, and the actual product shall prevail.

The diagrams in this manual are for reference only. The actual product received may differ.

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# How to Use This Manual

Read this manual carefully before performing operation on the device. Keep the manual in a convenient place for future reference.

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The content of the manual will be periodically updated or revised as per the product development. It is probably that there are changes in manuals for the subsequent module edition. If there any mismatch between the product and its manual, the actual product shall govern.

# 1 System Description

## 1.1 Introduction

EMS300CP is a Web-based local energy management system (EMS) controller. With a dedicated monitoring software system, it helps to address problems arising from the waste of surplus solar and wind power, unstable loads, and fluctuations in energy prices during peak and off-peak hours. Through optimized energy storage control, distributed power output, and load on/off control, the system enables efficient and cost-effective energy control across diverse application scenarios and operation modes, thus balancing energy supply and demand efficiently.

## 1.2 Requirements

Item	Requirements
Browser	Chrome 65 or above; 100% zoom
Display	Resolution 1920 x 1080; 100% scale


## 1.3 Port Introduction

The layout and identifiers of EMS300(Energy Management System) terminals are shown below.



Identifier	Name	Recommended cable	Description
ETH1~ETH2	Ethernet port	-	Can be connected to the background through devices like switch and router.
ETH3~ETH4	Fast dispatch port	-	Reserved function for fast active and reactive power dispatching using the Goose protocol.

Identifier	Name	Recommended cable	Description
ETH5	Ethernet port	-	Reserved for master/standby functions.
DI	Digital Input	0.75mm <sup>2</sup> outdoor or antiultraviolet wire	An interface for receiving binary signals (0 or 1), used to acquire the status of external dry contact switches.
USB	USB port	-	Reserved
Micro SD	SD port	-	Used for software programming (this port is only available to SUNGROW technicians)
Debug	Debug port	-	Used for debugging of EMS300CP
RST	Reset	-	Press and hold (> 30s) to restart EMS300 and restore factory settings Short press (< 3s), function reserved
DO1~DO4	Digital Output	0.75mm <sup>2</sup> outdoor antiultraviolet wire	Passive dry contact (used only for signal output, without providing power). The dry contact switch is controlled by an internal relay, with external specifications of 250VAC/3A and 30VDC/3A.
PT1、PT2 AI1~AI4	Analog input	0.75mm <sup>2</sup> outdoor antiultraviolet wire	<ul style="list-style-type: none"> <li>PT100/PT1000 detect range: -30°C~120°C</li> <li>Two-wire or three-wire connection method</li> <li>AI1: 0~10Vdc</li> <li>AI2-AI4: 4~20mA</li> </ul>
A1B1~A7B7	RS485 communication interface	2 x (0.75~1.5)mm <sup>2</sup> outdoor anti-ultraviolet	Support of 7 inputs of RS485 Can be connected to both slave device and background

Identifier	Name	Recommended cable	Description
		twisted pair with a shielding layer	
IRIG-B	Inter-Range Instrumentation Group-Time Code Format B	-	Reserved
CAN	CAN communication port	-	Reserved
DC IN 24V,1.25A	DC24V power supply port	1~1.5mm <sup>2</sup> Outdoor UV-resistant cable	For currents ≤ 1.25A, the switching power supply used for this port requires reinforced insulation.
AC IN 100–277V,0.48A	AC power supply port	1~1.5mm <sup>2</sup> outdoor antiultraviolet wire	Connecting 100~277Vac (50/60Hz), current≤0.48A
	Grounding hole	1~1.5mm <sup>2</sup> outdoor antiultraviolet wire	Connecting protective grounding cable

### AC power supply port

High voltages may be present on the AC power supply port "AC IN 100–277V,0.48A". Therefore, before cable connection, ensure that the ports are free of voltage and the grounding cable is reliably connected.

### Digital input/output ports

Digital input/output ports

### RS485 communication ports

For the RS485 communication ports (A1B1~A7B7), the communication distance should be no more than 1,000m.

## 2 Login Steps

**Step 1** Connect the PC to the EMS300CP by using an Ethernet cable.

**Step 2** Configure the IP address of the PC to be on the same network segment as the EMS300CP Ethernet ports (ETH1, ETH2, and ETH5). The IP addresses of these Ethernet ports are listed in the table below. For example, the default IP address of ETH1 is 14.14.14.14. Thereby, the IP address of the PC can be set to 14.14.14.X where X cannot be 14, and the subnet mask can be set to 255.255.255.0.


**Table 2-1** Controller IP Address

Port	Default IP Address	Virtual IP Address
ETH1	14.14.14.14	15.15.15.15
ETH2	12.12.12.12	16.16.16.16
ETH5	13.13.13.13	17.17.17.17



The above IP addresses are for reference only. The actual ones may be different.

**Step 3** Enter the IP address of an Ethernet port in the address bar on the PC to go to the Web interface of the EMS300CP.

**Step 4** Click  in the upper right corner of the page, and select the desired language.

**Step 5** Click **Login**, enter the username and password, then click **Confirm** to log in as an O&M user.



User types include **Ordinary user** and **O&M user**.

The **Ordinary user** can view basic information, real-time faults, and device monitoring information of the system.

The **O&M user** not only has the permissions of the **ordinary user**, but also can set and modify the control strategies and parameters of the system.

This manual provides instructions for the Web system by taking the O&M user as an example.

The default username for the O&M user is “maintain” and the password is “pw1111”.

Please change the password promptly upon first login. To change the password, click **maintain > Change password** and set a new password. The password must be 12 to 32 characters in length and contain at least three of the following four character types: uppercase letters, lowercase letters, numbers, and special characters.

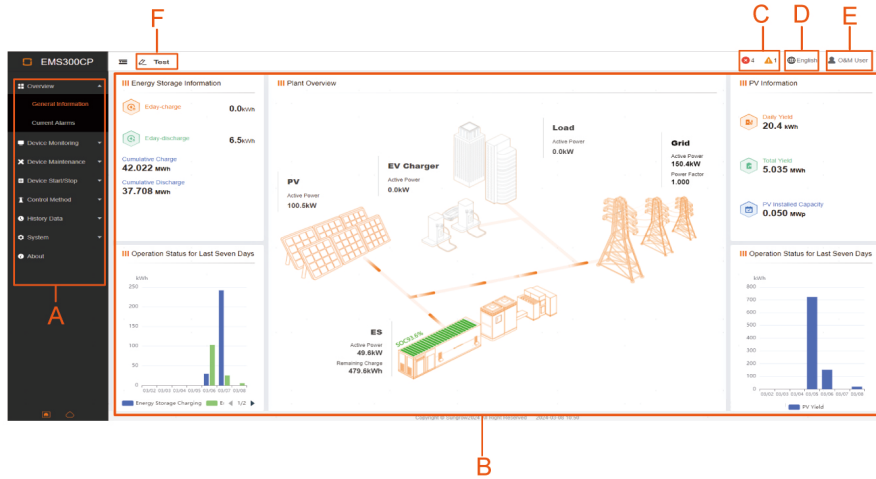
If you forgot your login password, contact Sungrow and provide the S/N and system time of the current device to obtain a dynamic password.




--End

# 3 Web Main Interface

The following figure shows the Web main interface.



Item	Name	Description
A	Navigation menu	Displays the main functions.
B	Function display area	Displays the function currently queried or parameters currently set.
C	Fault/Alarm	Displays the level and quantity of current system faults and alarms. Click the corresponding value to enter the corresponding interface.
D	Language	Used to switch the language as needed.
E	Username	Displays the current login username.
F	Plant name	Click  to edit the name of the plant.



: indicates the connection status of the Ethernet port.



: indicates the cloud access status.



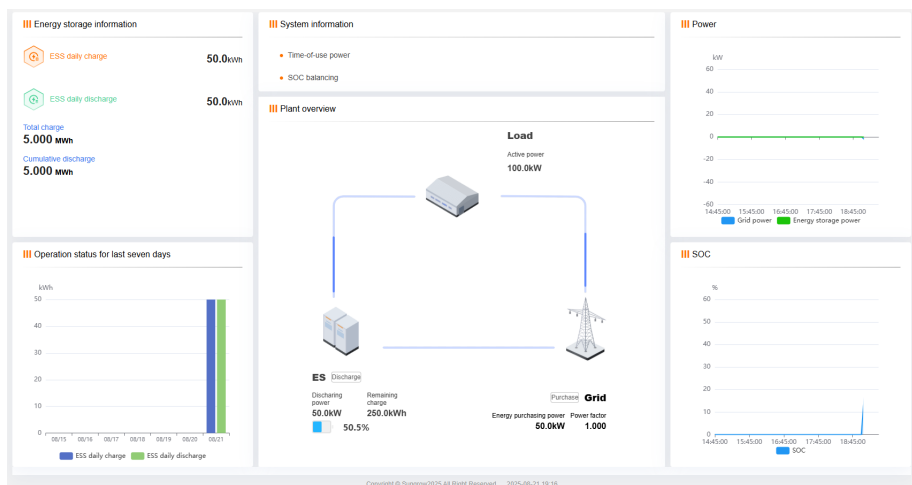
The figure is for reference only. The actual interface may be different and shall prevail.

# 4 Overview

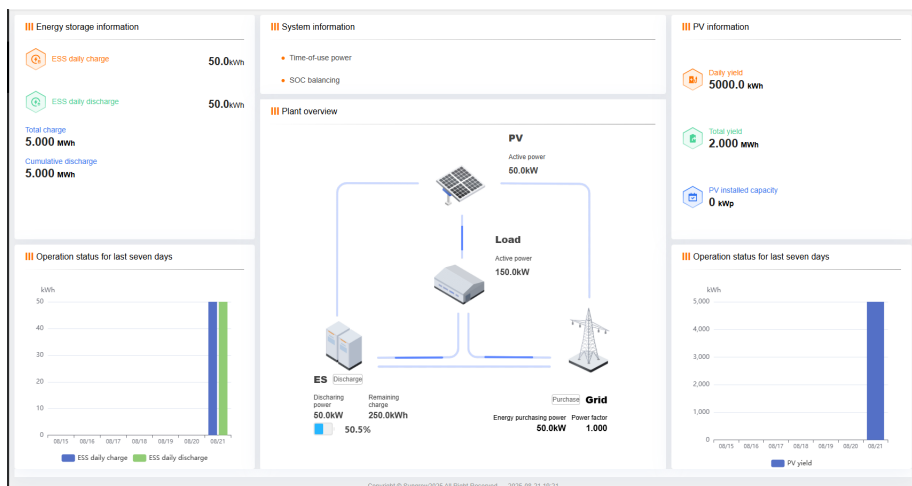
## 4.1 General Information

Choose **Overview > General Information** to view the real-time operating information of the plant. There are four main scenarios, namely, ESS-only, PV-ESS, PV-ESS-Charging, and PV-ESS-DG.

- ESS-only:



- PV-ESS:



- PV-ESS-Charging:



• PV-ESS-DG:



Figure 4-1



The figure is for reference only. The actual user interface may differ.

**Charge/Discharge**

Daily charged/discharge energy of the energy storage system, and cumulative charged/discharged energy.

**Plant Overview**

- Load: View real-time active power of the load.
- ES: View the active power and remaining charge.
- Grid: View the active power of the plant.
- PV: View the PV side active power.
- Charger: View the active power.

### Operation Status for Last 7 Days

- View the operation data of charging and discharging of energy storage in the last 7 days.
- View the operation data of PV power generation in the last 7 days.

### Yield Information

View the daily yield, total yield, and PV installed capacity of the plant.

### Power

View grid power and energy storage power.

### SOC

View the remaining battery power at each time point.

### Energy Storage Information

Daily charged/discharge and cumulative charge/discharge of the ESS.

### PV Information

Daily yield, total yield, and PV installed capacity.

## 4.2 Current Alarms

Click **Overview > Current Alarms**. The fault information of devices can be viewed on this interface, as shown below.

No.	Device Name	Fault Name	Type	Time	Fault ID
1	SC50HV_15	Low System Insulation Resistance	Fault	2022-11-30 15:57:10	32441
2	LC200(192-168-16-141-002-1)	PCS unit fault	Alarm	2022-11-30 15:57:10	32341
3	LC200(192-168-16-111-002-1)	BSC unit alarm	Alarm	2022-11-30 09:35:17	32345



The figure is for reference only. The actual interface may be different and shall prevail.

Click **Fault ID** to view the corresponding solution.

# 5 Device Monitoring and Maintenance

## 5.1 Device Monitoring

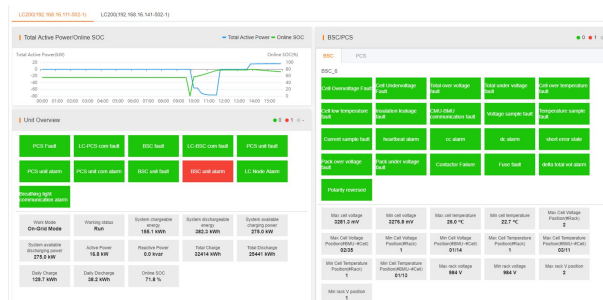
This interface mainly displays detailed working conditions of PV, energy storage and other devices in the plant.

### 5.1.1 Energy Storage Unit View

This page provides real-time operating information for each energy storage unit.

#### Procedure

1. Choose **Device Monitoring > Energy Storage Unit View** to view the real-time operating information of a device.



2. Click the tab of a local controller in the upper part of the interface to view the real-time data of the ESS.

#### More Operations

- **One-click recharge:** Click to issue a recharge command to a target energy storage unit.



- This function also takes effect when **Active recharge** of a target energy storage unit is disabled.
- The firmware version of EMS300CP must be P024 or later.

- **Fault reset:** Click to issue a fault recovery command to a target energy storage unit.



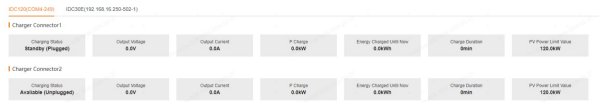
The local controller and its sub-devices, BSCs and CMUs, require on-site troubleshooting and resolution of the fault cause before the fault recovery takes effect.

### 5.1.2 Charger Unit View


Users can view the real-time information of each charger here.

### Procedure

1. Choose **Device Monitoring > Charger Unit View** to check the real-time information of the chargers.



2. Click a tab of a charger on the screen to view its real-time information.

Users can click  and set the below parameters for each charging connector.

Parameter	Description
<b>Device Start</b>	Turn on to enable the charging connector for use.
<b>Output Power Settings</b>	Set according to the actual situation.

### 5.1.3 PV Unit View

On this interface users can view the real-time information of the PV unit.

#### Procedure

1. Click **Device Monitoring > PV Unit View**.



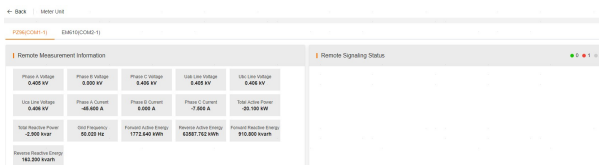
2. Click the tab of a local controller in the upper part of the interface to view the real-time information of the PV unit.

### 5.1.4 Other Device View

Users can view the remote measurement information and remote signaling status of a meter on this page.

#### Procedure

1. Click **Device Monitoring > PV Unit View**
2. Click a meter unit to view the remote measurement information and remote signaling status.



## 5.2 Device List

Click **Device Maintenance > Device List** to enter the corresponding interface.


On this interface users can manage the connected devices.

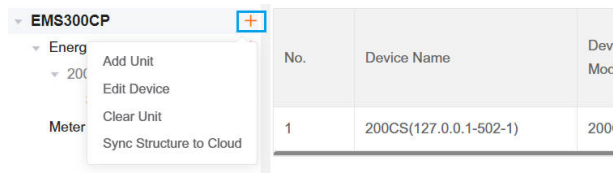
### 5.2.1 Add Device

#### 5.2.1.1 Add Unit

This function is used to create a unit list, into which devices can be added for management. Units are classified into **Energy storage unit**, **PV unit**, **Meter unit**, **Other unit**, **Energy management unit**, **Charger unit**, **Upper computer unit**, **ATS unit**, and **Diesel generator unit**.

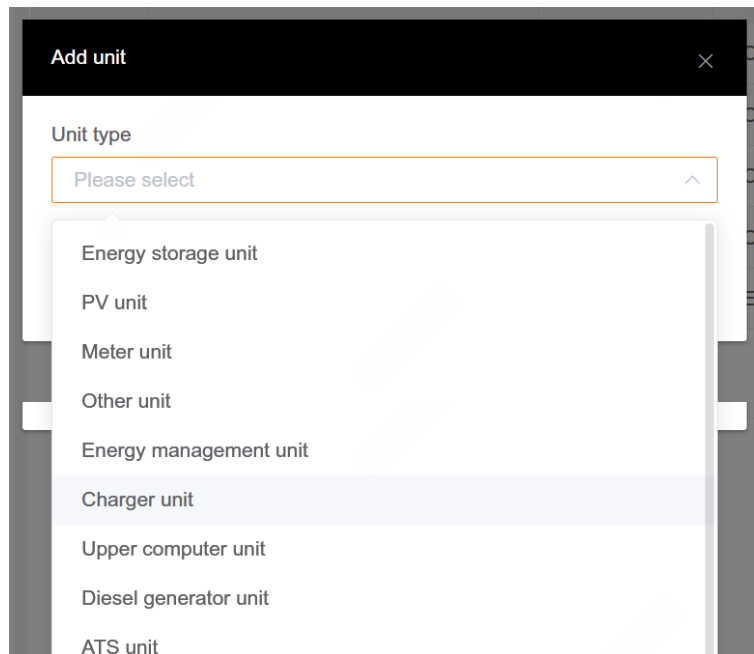
**Step 1** Choose **Device maintenance > Device list**.

**Step 2** Click  on the right side of the plant-level master node EMS300CP.



No.	Device Name	Dev Mod
1	200CS(127.0.0.1-502-1)	200i

**Step 3** Select **Add unit**. In the pop-up window, select the target unit type from the **Unit type** drop-down list.




Select **Edit device** in the dialog box to modify the name of the plant-level master node.

**Step 4** Click **Confirm**.

--End


Click  on the right side of a unit, select **Edit device** to edit the unit name, and select **Delete unit** to delete the unit.

### 5.2.1.2 Add Data Logger

This function is used to connect data loggers manufactured by Sungrow to the plant.

#### Prerequisite

A PV unit has been added in the plant system by referring to [5.2.1.1 Add Unit](#).

**Step 1** Click  on the right side of the PV unit and select **Add device**.

**Step 2** Select **Data logger** from the **Device type** drop-down list.

**Step 3** Select a port. The default port is NET. Configure the following parameters according to actual conditions:

Parameter	Description
<b>Protocol type</b>	The default protocol type is IEC104. It can be switched to MODBUS-TCP.
<b>SSL encryption</b>	This parameter defaults to <b>Disable</b> and can be set to <b>Enable</b> . When it is enabled, <b>Certificate file</b> must be selected. For <b>Certificate file</b> management, please refer to <a href="#">11.3.11 Certificate Management</a> .

Parameter	Description						
	<ul style="list-style-type: none"> <li>This parameter is available when <b>Network security mode configuration</b> is enabled and the Protocol type is set to MODBUS-TCP.</li> <li>Ensure that the device to be connected is switched to safe mode, and that the actual port settings are consistent with the peer ports in the Networking mode.</li> </ul>						
<b>Networking mode</b>	<table border="1"> <tr> <td data-bbox="436 864 581 1011">Standalone network</td> <td data-bbox="581 864 788 1011">Peer IP address Peer port</td> <td data-bbox="788 864 1192 1011"></td> </tr> <tr> <td data-bbox="436 1011 581 1452">Dual network</td> <td data-bbox="581 1011 788 1452">Network A peer IP address Network A peer port Network B peer IP address Network B peer port</td> <td data-bbox="788 1011 1192 1452">The peer IP address refers to the IP address of the data logger that is connected, and the peer port refers to the port of the data logger. Set this parameter according to actual conditions.</td> </tr> </table>	Standalone network	Peer IP address Peer port		Dual network	Network A peer IP address Network A peer port Network B peer IP address Network B peer port	The peer IP address refers to the IP address of the data logger that is connected, and the peer port refers to the port of the data logger. Set this parameter according to actual conditions.
Standalone network	Peer IP address Peer port						
Dual network	Network A peer IP address Network A peer port Network B peer IP address Network B peer port	The peer IP address refers to the IP address of the data logger that is connected, and the peer port refers to the port of the data logger. Set this parameter according to actual conditions.					
<b>Device model</b>	Select the actual model of the data logger to be connected.						

**Step 4** Click **Save** to save the settings.

--End

### 5.2.1.3 Add Meter

The system allows you to add multiple meters of different models, including system-defined models and custom models.


#### 5.2.1.3.1 Add Meter of System-Defined Model

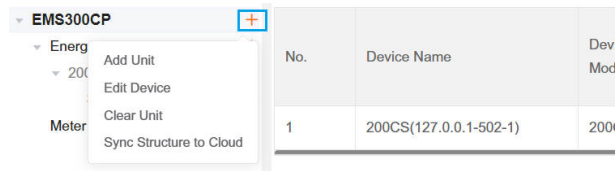
Use this function to connect meters to the plant.

##### Prerequisite

You have understood the type, access type, and port information of the meter to be connected.


**Step 1** Choose **Device maintenance > Device list**.

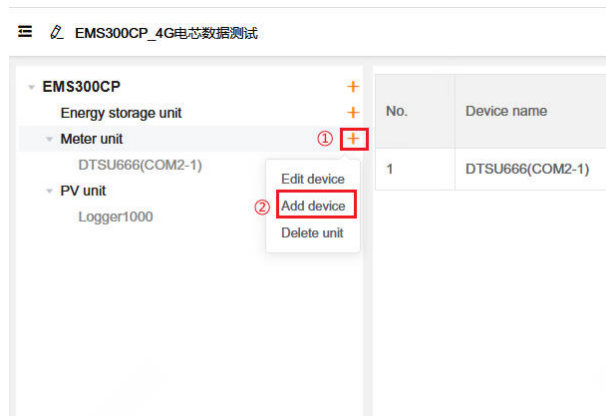
**Step 2** Click  on the right side of the plant-level master node EMS300CP.



**Step 3** Select **Add unit**. In the pop-up window, select Meter unit from the **Unit type** drop-down list.

**Step 4** Click **Confirm**.

**Step 5** Click  on the right side of the meter unit and select **Add device**.



**Step 6** In the **Add device** window, select **Meter** from the **Device type** drop-down list.

**Step 7** In **Access type**, select the type of meter according to the actual location of the connection point. Options include **ESS electricity meter**, **PV electricity meter**, **Load electricity meter**, **Overload monitoring meter**, and **Gateway meter**.

**Add Device**
✕

Device Type

Meter
▼

Access Type

Please Select


Please select the type of energy meter according to the actual connection location

AG


Position	Type	Description	Quantity Limit
A	ESS electricity meter	Obtain the energy metering value from the system side.	≤ 25
B	PV electricity meter	Obtain the energy metering value from the inverter side.	≤ 20
C	Load electricity meter	Obtain the energy metering value from the load side.	≤ 40
D	Overload monitoring meter	Obtain the energy metering value at the grid connection point and block overload in real time to protect devices in the grid.	≤ 10
E	Gateway meter	Obtain the energy metering value at the grid connection point.	≤ 4

**Step 8** Select the port for the meter from the **Port** drop-down list.

- If the port selected is COM, configure the following parameters:


Parameters	Description
<b>Device model</b>	Select the model of the meter.
<b>Start address</b>	Default value: 1. The value must be an integer in the range of 1–255.
<b>Quantity of device</b>	Enter the actual number of devices. Default value: 1. The value must be an integer in the range of 1–80.  The maximum configurable number of devices varies based on the <b>Access type</b> you choose.

- If the port selected is NET, configure the following parameters:



Parameters	Description
<b>Protocol type</b>	MODBUS-TCP by default.
<b>SSL encryption</b>	<b>Disable</b> by default. You don't need to configure this parameter.
<b>Networking mode</b>	Choose <b>Standalone network</b> . Configure the following parameters as needed: <ul style="list-style-type: none"> <li>Peer IP address: The IP address of the meter that is connected.</li> <li>Peer port: The port of the meter that is connected.</li> </ul>
<b>Device model</b>	Select the model of the meter.
<b>Start address</b>	Default value: 1. The value must be an integer in the range of 1–255.
<b>Quantity of device</b>	Enter the actual number of devices. Default value: 1. The value must be an integer in the range of 1–80.  The maximum configurable number of devices varies based on the <b>Access type</b> you choose.

Sample settings for EM610:

**Step 9** Click **Save**. If the information of the meter appears in the device list on the right, the meter has been successfully added.

**Step 10** (Optional) Click  in the **Action** column to edit the meter information. The parameter descriptions are as follows. Click **Save** to save the settings.

Parameters	Description
<b>Port</b>	Indicate the port type of the meter. Non-editable.
<b>Device name</b>	Specify the name for the meter.
<b>Instruction interval (4–5000) ms</b>	Set the interval for collecting commands. 18 ms by default.
<b>Timeout value (100–5000) ms</b>	Set the communication timeout period. 1000 ms by default.
<b>Retry attempts (1–10)</b>	Set the number of retries allowed after a communication timeout. 5 by default.
<b>PT transformation ratio</b>	Set the PT ratio. 1.000 by default.
<b>CT transformation ratio</b>	Set the CT ratio. 1.000 by default.
<b>Meter reverse polarity enable</b>	If this function is enabled, the reading value will be reversed when the meter is connected in reverse.
<b>Access type</b>	Set the access type of the meter. Options include: <ul style="list-style-type: none"> <li>• Load electricity meter</li> <li>• Gateway meter</li> <li>• Overload monitoring meter</li> <li>• ESS electricity meter</li> </ul>


Parameters	Description
<p><b>Connected to ESS or not</b></p>	<ul style="list-style-type: none"> <li>PV electricity meter</li> <li>Yes: Connected to ESS</li> <li>No: Not connected to ESS.</li> </ul> <div data-bbox="663 388 1226 501" style="border: 1px solid gray; padding: 5px;"> <p> This parameter is available only when the <b>Access type</b> is set to <b>Overload monitoring meter</b>.</p> </div>
<p><b>Meter purpose</b></p>	<p>Set the meter's purpose. Options include:</p> <ul style="list-style-type: none"> <li>Same as access type: The default option, indicating that the meter's purpose is consistent with its access type. This option is a single choice and cannot be selected simultaneously with other purposes.</li> <li>Monitoring only: Indicates that the meter data is used only for viewing. This option is a single choice and cannot be selected simultaneously with other purposes.</li> <li>Gateway meter: Indicates that the meter is used as a gateway meter. It can be simultaneously selected with <b>Overload monitoring meter</b>.</li> <li>Overload monitoring meter: Indicates that this meter is used as an overload monitoring meter. It can be simultaneously selected with <b>Gateway meter</b>.</li> </ul> <div data-bbox="663 1089 1226 1258" style="border: 1px solid gray; padding: 5px;"> <p> The meter's purpose can only be switched when the EMS300CP is shut down.</p> <ul style="list-style-type: none"> <li>The firmware version of EMS300CP must be P024 or later.</li> </ul> </div>

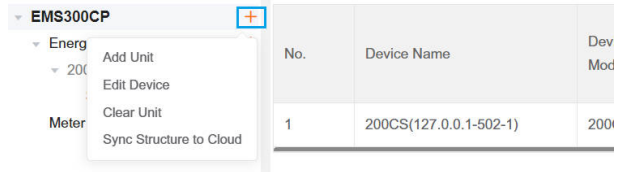
--End

### 5.2.1.3.2 Add Meter of Custom Model

You can use a custom template to add a meter of a model that is not preconfigured in the system.

**Step 1** Choose **Device maintenance > Device list**.

**Step 2** Click  on the right side of the plant-level master node EMS300CP.



**Step 3** Select **Add unit**. In the pop-up window, select **Meter** unit from the **Unit type** drop-down list.

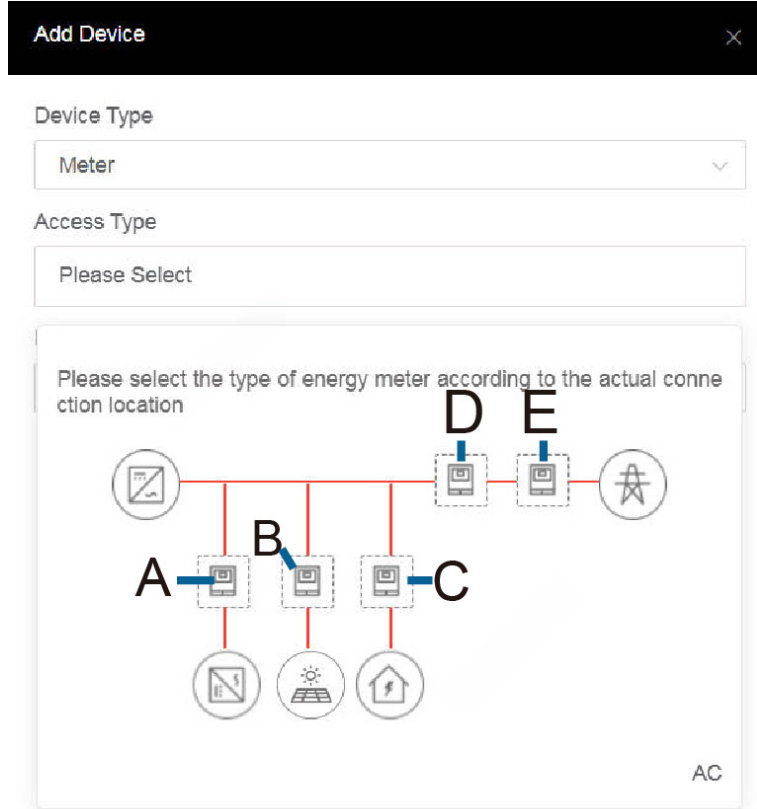
**Step 4** Click **Confirm**.

**Step 5** Click **+** on the right side of the meter unit and select **Add device**.

**Step 6** In the **Add device** window, select **Meter** from the **Device type** drop-down list.




**Step 7** In **Access type**, select the type of meter according to the wiring position.



Position	Type	Description	Quantity Limit
A	ESS electricity meter	Obtain the energy metering value from the system side.	≤ 25
B	PV electricity meter	Obtain the energy metering value from the inverter side.	≤ 20
C	Load electricity meter	Obtain the energy metering value from the load side.	≤ 40
D	Overload monitoring meter	Obtain the energy metering value at the grid connection point and block overload in real time to protect devices in the grid.	≤ 10
E	Gateway meter	Obtain the energy metering value at the grid connection point.	≤ 4

**Step 8** Select the port of the meter connected from the **Port** drop-down list.

Options include: COM and NET. If the port selected is NET, configure the following parameters:

Parameters	Description
<b>Protocol type</b>	MODBUS-TCP by default.
<b>SSL encryption</b>	<b>Disable</b> by default. You don't need to configure this parameter.
<b>Networking mode</b>	Choose <b>Standalone network</b> . Configure the following parameters as needed: <ul style="list-style-type: none"> <li>Peer IP address: The IP address of the meter that is connected.</li> <li>Peer port: The port of the meter that is connected.</li> </ul>
<b>Start address</b>	Default value: 1. The value must be an integer in the range of 1–255.
<b>Quantity of device</b>	Enter the actual number of devices. Default value: 1. The value must be an integer in the range of 1–80. <div style="border: 1px solid gray; padding: 5px; margin-top: 10px;">  The maximum configurable number of devices varies based on the <b>Access type</b> you choose. </div>

**Step 9** Select **Others** from the **Device model** drop-down list.



**Step 10** After selecting **Custom** from the **Configuration method** drop-down list, click **Next**. The **Configure measuring point** window pops up.

**Configure measuring point** ✕

Byte order: Big-endian for byte data, little | Beginning address:  | Quantity of device:

Device address:

<input type="checkbox"/>	No.	Measuring point name	Register address	Function code	Data type	Read type	Coefficient	Read back value	Unit
<input type="checkbox"/>	1	PF	<input type="text" value="19055"/>	<input type="text" value="0x3"/>	<input type="text" value="FLOAT"/>	<input type="text" value="Single"/>	<input type="text" value="0.001"/>		
<input type="checkbox"/>	2	Phase A voltage	<input type="text" value="19001"/>	<input type="text" value="0x3"/>	<input type="text" value="FLOAT"/>	<input type="text" value="Single"/>	<input type="text" value="0.001"/>		kV
<input type="checkbox"/>	3	Phase B voltage	<input type="text" value="19003"/>	<input type="text" value="0x3"/>	<input type="text" value="FLOAT"/>	<input type="text" value="Single"/>	<input type="text" value="0.001"/>		kV
<input type="checkbox"/>	4	Phase C voltage	<input type="text" value="19005"/>	<input type="text" value="0x3"/>	<input type="text" value="FLOAT"/>	<input type="text" value="Single"/>	<input type="text" value="0.001"/>		kV
<input type="checkbox"/>	5	Uab line voltage	<input type="text" value="19007"/>	<input type="text" value="0x3"/>	<input type="text" value="FLOAT"/>	<input type="text" value="Single"/>	<input type="text" value="0.001"/>		kV
<input type="checkbox"/>	6	Ubc line voltage	<input type="text" value="19009"/>	<input type="text" value="0x3"/>	<input type="text" value="FLOAT"/>	<input type="text" value="Single"/>	<input type="text" value="0.001"/>		kV
<input type="checkbox"/>	7	Uca line voltage	<input type="text" value="19011"/>	<input type="text" value="0x3"/>	<input type="text" value="FLOAT"/>	<input type="text" value="Single"/>	<input type="text" value="0.001"/>		kV
<input type="checkbox"/>	8	Phase A current	<input type="text" value="19013"/>	<input type="text" value="0x3"/>	<input type="text" value="FLOAT"/>	<input type="text" value="Single"/>	<input type="text" value="1"/>		A
<input type="checkbox"/>	9	Phase B current	<input type="text" value="19015"/>	<input type="text" value="0x3"/>	<input type="text" value="FLOAT"/>	<input type="text" value="Single"/>	<input type="text" value="1"/>		A
<input type="checkbox"/>	10	Phase C current	<input type="text" value="19017"/>	<input type="text" value="0x3"/>	<input type="text" value="FLOAT"/>	<input type="text" value="Single"/>	<input type="text" value="1"/>		A
<input type="checkbox"/>	11	Grid frequency	<input type="text" value="19051"/>	<input type="text" value="0x3"/>	<input type="text" value="FLOAT"/>	<input type="text" value="Single"/>	<input type="text" value="1"/>		Hz
<input type="checkbox"/>	12	Total active power	<input type="text" value="19027"/>	<input type="text" value="0x3"/>	<input type="text" value="FLOAT"/>	<input type="text" value="Single"/>	<input type="text" value="0.001"/>		kW
<input type="checkbox"/>	13	Total reactive power	<input type="text" value="19043"/>	<input type="text" value="0x3"/>	<input type="text" value="FLOAT"/>	<input type="text" value="Single"/>	<input type="text" value="0.001"/>		kvar
<input type="checkbox"/>	14	Frequency change ratio	<input type="text" value="19029"/>	<input type="text" value="0x3"/>	<input type="text" value="FLOAT"/>	<input type="text" value="Single"/>	<input type="text" value="0.001"/>		Hz/s

- a. Set the measuring point information associated with the meter. Click **Read-back** in the upper right corner to retrieve the current collected values of the measuring points.
- b. Click **Save template** in the upper right corner to save the current measuring point configuration as a template, then click  to export the template to the local device. You can click  to import a local template into the system.

**Step 11** Click **Save**. If the information of the meter appears in the device list on the right, the meter has been successfully added.

**Step 12** For editing meter parameters, please see [Edit meter parameters](#).

--End


### 5.2.1.4 Add String Inverters

#### Prerequisites

A Sungrow data logger has been added in the plant system by referring to [5.2.1.2 Add Data Logger](#).



String inverters can be added only when there is a data logger, and cannot be added directly under a PV unit.

**Step 1** Click  on the right side of the data logger unit and select **Add device**.

**Step 2** In the **Add device** window, select **String inverter** from the **Device type** drop-down list.



**Step 3** Select the port for string inverter connection from the **Port** drop-down list. Sungrow string inverters can be connected only through the COM port.

- If the port selected is COM, configure the following parameters:

Parameter	Description
<b>Device model</b>	Select the model of the string inverter to be connected.
<b>Beginning address</b>	Default value: 1. The value must be an integer in the range of 1–255.
<b>Quantity of device</b>	Enter the actual number of devices. Default value: 1. The value must be an integer in the range of 1–80.

- If the port selected is NET, configure the following parameters:

Parameter	Description
<b>Protocol type</b>	MODBUS-TCP by default.
<b>SSL encryption</b>	This parameter defaults to <b>Disable</b> and can be set to <b>Enable</b> . When it is set to <b>Enable</b> , <b>Certificate file</b> must be selected. For <b>Certificate file</b> management, please refer to <a href="#">11.3.11 Certificate Management</a> .

Parameter	Description															
	<div style="border: 1px solid gray; padding: 10px;"> <ul style="list-style-type: none"> <li>- This parameter is available when <b>Network security mode configuration</b> is enabled.</li> <li>- Ensure that the device to be connected is switched to safe mode, and that the actual port settings are consistent with those of the peer port in Networking mode.</li> </ul> </div>															
<p><b>Networking mode</b></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; text-align: center;">Standalone network</td> <td style="width: 20%; text-align: center;">Peer IP address</td> <td rowspan="4" style="width: 60%; vertical-align: top;"> <p>The peer IP address refers to the IP address of the string inverter to be connected, and the peer port refers to the port of the string inverter.</p> <p>Configure this parameter according to actual conditions.</p> </td> </tr> <tr> <td></td> <td style="text-align: center;">Peer port</td> </tr> <tr> <td></td> <td style="text-align: center;">Network A peer IP address</td> </tr> <tr> <td style="text-align: center;">Dual network</td> <td style="text-align: center;">Network A peer port</td> </tr> <tr> <td></td> <td style="text-align: center;">Network B peer IP address</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">Network B peer port</td> <td></td> </tr> </table>	Standalone network	Peer IP address	<p>The peer IP address refers to the IP address of the string inverter to be connected, and the peer port refers to the port of the string inverter.</p> <p>Configure this parameter according to actual conditions.</p>		Peer port		Network A peer IP address	Dual network	Network A peer port		Network B peer IP address			Network B peer port	
Standalone network	Peer IP address	<p>The peer IP address refers to the IP address of the string inverter to be connected, and the peer port refers to the port of the string inverter.</p> <p>Configure this parameter according to actual conditions.</p>														
	Peer port															
	Network A peer IP address															
Dual network	Network A peer port															
	Network B peer IP address															
	Network B peer port															
<p><b>Device model</b></p>	<p>Select the model of the string inverter to be connected.</p>															
<p><b>Beginning address</b></p>	<p>Default value: 1. The value must be an integer in the range of 1–255.</p>															
<p><b>Quantity of device</b></p>	<p>Enter the actual number of devices. Default value: 1. The</p>															

Parameter	Description
	value must be an integer in the range of 1–80.


**Step 4** Click **Save** to save the settings.

--End

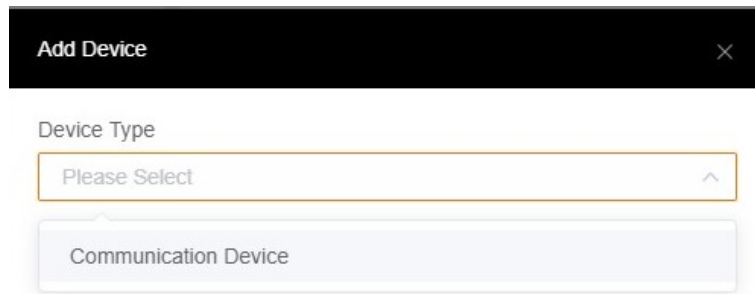
### 5.2.1.5 Add Communication Device

#### Prerequisites


An other unit has been added in the plant system by referring to [5.2.1.1 Add Unit](#).

**Step 1** Click  on the right side of the "other unit" and select **Add device**.

**Step 2** In the **Add device** window, select **Communication device** from the **Device type** drop-down list.



**Step 3** Select the port for device connection from the **Port** drop-down list.

- If the port selected is COM, click  on the right of **Configuration file** to upload the configuration file. The O&M personnel will sort the configuration file according to the actual conditions of the plant and fill in the **Device address**.
- If the port selected is NET, configure the following parameters:

Parameter	Description
<b>Protocol type</b>	MODBUS-TCP by default.
<b>SSL encryption</b>	This parameter defaults to <b>Disable</b> and can be set to <b>Enable</b> . When it is set to <b>Enable</b> , <b>Certificate file</b> must be selected. For <b>Certificate file</b> management, please refer to <a href="#">11.3.11 Certificate Management</a> .

Parameter	Description						
	<div style="border: 1px solid gray; padding: 10px;"> <ul style="list-style-type: none"> <li>- This parameter is available when <b>Network security mode configuration</b> is enabled.</li> <li>- Ensure that the device to be connected is switched to safe mode, and that the actual port settings are consistent with those of the peer port in Networking mode.</li> </ul> </div>						
<p><b>Networking mode</b></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; text-align: center; vertical-align: top;">                     Standalone network                 </td> <td style="width: 20%; text-align: center; vertical-align: top;">                     Peer IP address  <hr/>                     Peer port                 </td> <td style="width: 50%;"></td> </tr> <tr> <td style="text-align: center; vertical-align: top;">                     Dual network                 </td> <td style="text-align: center; vertical-align: top;">                     Network A peer IP address  <hr/>                     Network A peer port  <hr/>                     Network B peer IP address  <hr/>                     Network B peer port                 </td> <td style="vertical-align: top;">                     The peer IP address refers to the IP address of the communication device to be connected, and the peer port refers to the port of the communication device. Configure this parameter according to actual conditions.                 </td> </tr> </table>	Standalone network	Peer IP address <hr/> Peer port		Dual network	Network A peer IP address <hr/> Network A peer port <hr/> Network B peer IP address <hr/> Network B peer port	The peer IP address refers to the IP address of the communication device to be connected, and the peer port refers to the port of the communication device. Configure this parameter according to actual conditions.
Standalone network	Peer IP address <hr/> Peer port						
Dual network	Network A peer IP address <hr/> Network A peer port <hr/> Network B peer IP address <hr/> Network B peer port	The peer IP address refers to the IP address of the communication device to be connected, and the peer port refers to the port of the communication device. Configure this parameter according to actual conditions.					
<p><b>Configuration File</b></p>	<p>It is the LC package, which contains the point table for the LC. The configuration file is sorted by O&amp;M personnel according to the actual conditions of the plant.</p>						

Parameter	Description
Device address	Enter a value in the range of 1–255 according to actual conditions.

**Step 4** Click **Save** to save the settings.

--End

### 5.2.1.6 Add Energy Storage Device

#### Prerequisite


An energy storage unit has been added in the plant system by referring to [5.2.1.1 Add Unit](#).

You can add energy storage devices in two ways: manual adding and one-click access.

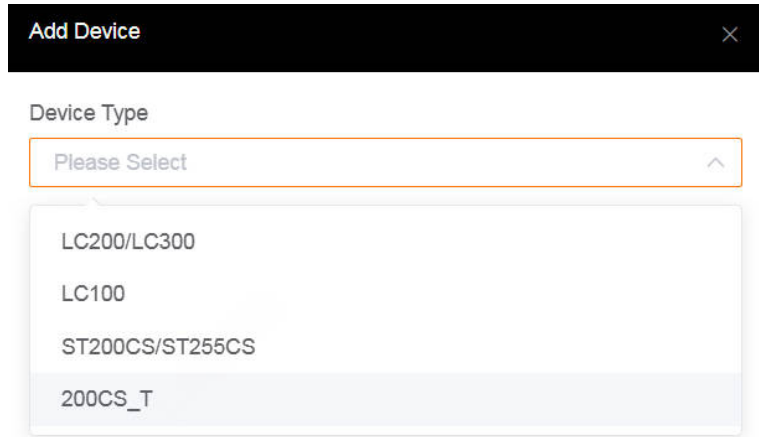
The one-click access function is only applicable to ST255CS and ST200CS. Before performing one-click access, complete the following operations. In the example below, the ETH2 port of the EMS is connected to the ETH1 port of the LC.

- The ETH1 port of the LC is **enabled** by default in the system. No manual enabling is required. To check the enabling status of the ETH1 port of the LC, log in to the LC Web, choose **Settings > Communication parameters**, and check whether ETH1 in the Auto access configuration section is set to **Enable**.
- On the EMS Web interface, choose **System > Ethernet** and enable the **DHCP Service** for ETH2.
- On the EMS Web, choose **System > Ethernet**, click the **Energy storage device IP** tab, and set the **Beginning address** and **Ending address**. The system will assign IP addresses to the energy storage devices within this subnet. For detailed instructions, see [11.8.2.2 Configure Energy Storage Device IP Settings](#).

#### 1. Manual Adding

**Step 1** Click  on the right side of the energy storage unit.

**Step 2** In the **Add device** window, select the type of the device to be connected from the **Device type** drop-down list.



**Step 3** Select the port for device connection from the **Port** drop-down list.

If the NET port is selected, configure the following parameters:

Parameter	Description
<b>Protocol type</b>	MODBUS-TCP by default.

This parameter defaults to **Disable** and can be set to **Enable**. When it is set to **Enable**, **Certificate file** must be selected.

For **Certificate file** management, please refer to [11.3.11 Certificate Management](#).

**SSL encryption**

- This parameter is available when **Network security mode configuration** is enabled.
- Ensure that the device to be connected is switched to safe mode, and that the actual port settings are consistent with those of the peer port in Networking mode.




<b>Networking mode</b>	Standalone network	Peer IP address	The peer IP address refers to the IP address of the LC to
------------------------	--------------------	-----------------	---

Parameter	Description	
Dual network	Peer port	
	Network A peer IP address	
	Network A peer port	be connected, and the peer port refers to the port of the LC. Configure this parameter according to actual conditions.
	Network B peer IP address	
	Network B peer port	
Device model	Select the model of the device to be connected.	
Device address	The value must be an integer in the range of 1–255.	
Sub-device quantity	Enter the actual number of sub-devices. Default value: 0.	

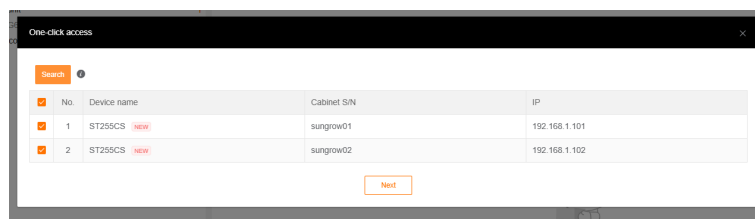
**Step 4** Click **Save** to save the settings.

## 2. One-click Access

**Step 5** Click  on the right side of the energy storage unit.

**Step 6** Select **One-click access**.

**Step 7** Click **Search**. The found devices will be displayed on the page.



**Step 8** Select the devices to be added and click **Next**.

**Step 9** Click **Complete**. The "Operation successful" message will appear on the page, indicating that the devices have been successfully added.

--End


### View Device Information

For detailed instructions, see [5.1.1 Energy Storage Unit View](#).

### 5.2.1.7 Add Charger

#### Prerequisite

A charger unit has been added in the plant system by referring to [5.2.1.1 Add Unit](#).

**Step 1** Click  on the right side of the charger unit and select **Add device**.

**Step 2** In the **Add device** window, select **EV charger** from the **Device type** drop-down list.

**Step 3** Select the port for charger connection from the **Port** drop-down list.

- Select the COM port if the IDC120, IDC180, or CDC240 charger is used. Then, configure the following parameters:

Parameter	Description
Device model	Select the model of the charger actually used in the plant.
Beginning address	Default value: 1. The value must be an integer in the range of 1–255.
Quantity of device	Enter the actual number of devices. Default value: 1. The value must be an integer in the range of 1–80.

- Select the NET port if the IDC30E or IDC480E charger is used. Then, configure the following parameters:

Parameter	Description
Protocol type	MODBUS-TCP by default.
SSL encryption	This parameter defaults to <b>Disable</b> and can be set to <b>Enable</b> . When it is set to <b>Enable</b> , Certificate file must be selected. For <b>Certificate file</b> management, please refer to <a href="#">11.3.11 Certificate Management</a> .

Parameter	Description			
Networking mode	Standalone network	Peer IP address Peer port	The peer IP address refers to the IP address of the charger to be connected, and the peer port refers to the port of the charger. Configure this parameter according to actual conditions.	
	Dual network	Network A peer IP address Network A peer port Network B peer IP address Network B peer port		
	Device model	Select the model of the charger to be connected.		
	Beginning address	Default value: 1. The value must be an integer in the range of 1–255.		
	Quantity of device	Enter the actual number of devices. Default value: 1. The		



- This parameter is available when **Network security mode configuration** is enabled.
- Ensure that the device to be connected is switched to safe mode, and that the actual port settings are consistent with those of the peer port in Networking mode.

Parameter	Description
	value must be an integer in the range of 1–80.

**Step 4** Click **Save** to save the settings.

--End

### 5.2.1.8 Add LOGGER\_UPPER Device

In Japan's power systems, the LOGGER\_UPPER device is typically used to receive power limit percentage commands issued by the northbound power company (i.e., grid operator). This device can dynamically adjust the output power of the ESSs or related power equipment based on the requirements of the power company.

#### Prerequisite


An upper computer unit has been added in the plant system referring to the [5.2.1.1 Add Unit](#).

**Step 1** Click  on the right side of the upper computer unit and select **Add device**.

**Step 2** In the **Add device** window, select **LOGGER\_UPPER** from the **Device type** drop-down list.

**Step 3** Select a port. The default fault is NET. Configure the following parameters according to actual conditions:

Parameter	Description
<b>Protocol type</b>	MODBUS-TCP by default.
<b>SSL encryption</b>	This parameter defaults to <b>Disable</b> and can be set to <b>Enable</b> . When it is set to <b>Enable</b> , Certificate file must be selected. For <b>Certificate file</b> management, please refer to <a href="#">11.3.11 Certificate Management</a> .

Parameter	Description												
<p data-bbox="260 1054 393 1119"><b>Networking mode</b></p> <table border="1" data-bbox="435 799 791 1387"> <tr> <td data-bbox="435 799 581 936">Standalone network</td> <td data-bbox="581 799 791 878">Peer IP address</td> </tr> <tr> <td data-bbox="435 878 581 936"></td> <td data-bbox="581 878 791 936">Peer port</td> </tr> <tr> <td data-bbox="435 936 581 1074"></td> <td data-bbox="581 936 791 1074">Network A peer IP address</td> </tr> <tr> <td data-bbox="435 1074 581 1191">Dual network</td> <td data-bbox="581 1074 791 1172">Network A peer port</td> </tr> <tr> <td data-bbox="435 1191 581 1309"></td> <td data-bbox="581 1191 791 1309">Network B peer IP address</td> </tr> <tr> <td data-bbox="435 1309 581 1387"></td> <td data-bbox="581 1309 791 1387">Network B peer port</td> </tr> </table>	Standalone network	Peer IP address		Peer port		Network A peer IP address	Dual network	Network A peer port		Network B peer IP address		Network B peer port	<div data-bbox="813 486 855 525" style="float: left; margin-right: 10px;">  </div> <ul data-bbox="883 276 1163 727" style="list-style-type: none"> <li>• This parameter is available when <b>Network security mode configuration</b> is enabled.</li> <li>• Ensure that the device to be connected is switched to safe mode, and that the actual port settings are consistent with those of the peer port in Networking mode.</li> </ul> <p data-bbox="809 948 1187 1223">The peer IP address refers to the IP address of the <code>LOGGER_UPPER</code> device to be connected, and the peer port refers to the port of the <code>LOGGER_UPPER</code> device. Configure this parameter according to actual conditions.</p>
Standalone network	Peer IP address												
	Peer port												
	Network A peer IP address												
Dual network	Network A peer port												
	Network B peer IP address												
	Network B peer port												
<b>Device model</b>	Select the model of the device. Default value: <code>LoggerUpper</code> .												
<b>Beginning address</b>	Default value: 1. The value must be an integer in the range of 1–255.												
<b>Quantity of device</b>	Enter the actual number of devices. Default value: 1. The												

Parameter	Description
	value must be an integer in the range of 1–80.


**Step 4** Click **Save** to save the settings.

--End

### 5.2.1.9 Add ATS

#### Prerequisite

An ATS unit has been added in the plant system by referring to [5.2.1.1 Add Unit](#).

**Step 1** Click  on the right side of the ATS unit and select **Add device**.

**Step 2** In the **Add device** window, select **ATS** from the **Device type** drop-down list.

**Step 3** Select the port for device connection from the **Port** drop-down list.

- If the port selected is COM, configure the following parameters:

Parameter	Description
<b>Device model</b>	Select the model of the device to be connected.
<b>Beginning address</b>	Default value: 1. The value must be an integer in the range of 1–255.
<b>Quantity of device</b>	Enter the actual number of devices. Default value: 1. The value must be an integer in the range of 1–80.

- If the port selected is NET, configure the following parameters:

Parameter	Description
<b>Protocol type</b>	MODBUS-TCP by default.
<b>SSL encryption</b>	This parameter defaults to <b>Disable</b> and can be set to <b>Enable</b> . When it is set to <b>Enable</b> , Certificate file must be selected. For <b>Certificate file</b> management, please refer to <a href="#">11.3.11 Certificate Management</a> .

Parameter		Description	
<b>Networking mode</b>	Standalone network	Peer IP address Peer port	
	Dual network	Network A peer IP address	The peer IP address refers to the IP address of the device to be connected, and the peer port refers to the port of the device. Configure this parameter according to actual conditions.
		Network A peer port	
		Network B peer IP address	
		Network B peer port	
<b>Device model</b>	Select the model of the device to be connected.		
<b>Beginning address</b>	Default value: 1. The value must be an integer in the range of 1–255.		
<b>Quantity of device</b>	Enter the actual number of devices. Default value: 1. The		



- This parameter is available when **Network security mode configuration** is enabled.

- Ensure that the device to be connected is switched to safe mode, and that the actual port settings are consistent with those of the peer port in Networking mode.

Parameter	Description
	value must be an integer in the range of 1–80.


**Step 4** Click **Save** to save the settings.

--End

### 5.2.1.10 Add Diesel Generator

#### Prerequisite

A diesel generator unit has been added in the plant system by referring to [5.2.1.1 Add Unit](#).

**Step 1** Click  on the right side of the diesel generator unit and select **Add device**.

**Step 2** In the **Add device** window, select **Diesel generator** from the **Device type** drop-down list.

**Step 3** Select the port for device connection from the **Port** drop-down list.

- If the port selected is COM, configure the following parameters:

Parameter	Description
<b>Device model</b>	Select the model of the device to be connected.
<b>Beginning address</b>	Default value: 1. The value must be an integer in the range of 1–255.
<b>Quantity of device</b>	Enter the actual number of devices. Default value: 1. The value must be an integer in the range of 1–80.

- If the port selected is NET, configure the following parameters:

Parameter	Description
<b>Protocol type</b>	MODBUS-TCP by default.
<b>SSL encryption</b>	This parameter defaults to <b>Disable</b> and can be set to <b>Enable</b> . When it is set to <b>Enable</b> , Certificate file must be selected. For <b>Certificate file</b> management, please refer to <a href="#">11.3.11 Certificate Management</a> .

Parameter	Description													
	<div style="border: 1px solid gray; padding: 10px;"> <ul style="list-style-type: none"> <li>- This parameter is available when <b>Network security mode configuration</b> is enabled.</li> <li>- Ensure that the device to be connected is switched to safe mode, and that the actual port settings are consistent with those of the peer port in Networking mode.</li> </ul> </div>													
<p style="text-align: center;"><b>Networking mode</b></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; text-align: center;">Standalone network</td> <td style="width: 30%; border-bottom: 1px solid black;">Peer IP address</td> <td rowspan="6" style="width: 40%; vertical-align: top; padding-left: 10px;"> <p>The peer IP address refers to the IP address of the device to be connected, and the peer port refers to the port of the device. Configure this parameter according to actual conditions.</p> </td> </tr> <tr> <td></td> <td style="border-bottom: 1px solid black;">Peer port</td> </tr> <tr> <td></td> <td style="border-bottom: 1px solid black;">Network A peer IP address</td> </tr> <tr> <td style="text-align: center;">Dual network</td> <td style="border-bottom: 1px solid black;">Network A peer port</td> </tr> <tr> <td></td> <td style="border-bottom: 1px solid black;">Network B peer IP address</td> </tr> <tr> <td></td> <td>Network B peer port</td> </tr> </table>	Standalone network	Peer IP address	<p>The peer IP address refers to the IP address of the device to be connected, and the peer port refers to the port of the device. Configure this parameter according to actual conditions.</p>		Peer port		Network A peer IP address	Dual network	Network A peer port		Network B peer IP address		Network B peer port
Standalone network	Peer IP address	<p>The peer IP address refers to the IP address of the device to be connected, and the peer port refers to the port of the device. Configure this parameter according to actual conditions.</p>												
	Peer port													
	Network A peer IP address													
Dual network	Network A peer port													
	Network B peer IP address													
	Network B peer port													
<b>Device model</b>	Select the model of the device to be connected.													
<b>Beginning address</b>	Default value: 1. The value must be an integer in the range of 1–255.													
<b>Quantity of device</b>	Enter the actual number of devices. Default value: 1. The													

Parameter	Description
	value must be an integer in the range of 1–80.

**Step 4** Click **Save** to save the settings.

--End

### 5.2.2 Edit Device

Modify the name and attributes of the device that has been added.

**Step 1** Click **Device Maintenance > Device List** to enter the corresponding interface.

**Step 2** Expand the device list and click **⋮** on the right of a device.

**Step 3** Click **Edit Device Attributes**. Modify the device attributes in the **Edit Device** dialog box.

**Step 4** Click **Save** to save the modification.

--End

### 5.2.3 Delete Device

After the device is dismantled from the site, delete the device on **Device List** interface to keep the consistency.

**Step 1** Click **Device Maintenance > Device List** to enter the corresponding interface.

**Step 2** Expand the device list and click **⋮** on the right of a device.

**Step 3** Click **Delete Device**.

**Step 4** Click **Confirm** in the pop-up window.

--End

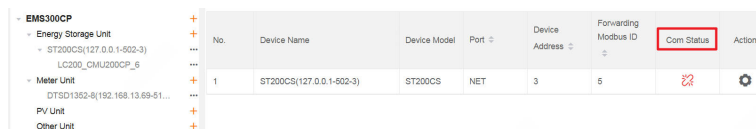
### 5.2.4 Check Device Communication Status

This section mainly describes how to check whether the communication status of each device is normal.

**Step 1** Click **Device Maintenance > Device List** to enter the corresponding interface.


**Step 2** Click the unit to be checked. The device list under that unit will be displayed on the right. For example, click **Meter Unit**.

**Step 3** Check the communication status of each device.



No.	Device Name	Device Model	Port	Device Address	Forwarding Modbus ID	Com Status	Action
1	ST200CS(127.0.0.1-502-3)	ST200CS	NET	3	5		

- Online: Indicate that the device's communication is normal and is displayed as .

- Offline: Indicate that the device's communication is abnormal and is displayed as  .

**--End**

# 6 Parameter Maintenance

## 6.1 Configure Time-of-Use Periods for Meter

For the DTSD1352-CT/F2C meter, you can configure critical peak, peak, shoulder, valley, and deep valley periods to help users optimize electricity consumption behaviors so as to lower costs while maintaining grid load balance.

### Prerequisite

- This function is only applicable to the DTSD1352-CT/F2C meter.
- Before configuring critical peak, peak, shoulder, valley, and deep valley periods, make sure that the meter is properly connected and in normal communication status. For details about device communication status check, see [5.2.4 Check Device Communication Status](#).
- The **Meter Type** of the meter is set to **8-Rate**. For details about how to edit the parameters of the meter, see [5.2.1.3 Add Meter](#).

### 6.1.1 Configure Time-of-Use Period Templates for Meter

**Step 1** Click **Parameter Maintenance > Meter Parameters** to enter the corresponding interface.

Critical Peak/Peak/Shoulder/Valley Parameter Settings

Meter	Action
DTSD1352-8(192.168.13.69-510-1)	

Time Synchronization Interval

Name	Current Value	Action
Meter Time Synchronization Interval (h)	<input type="text" value="4.0"/>	
Immediate Meter Time Synchronization		

**Step 2** Click  in the **Action** column.

**Step 3** Configure a time-of-use period template. For initial setup after system installation, a pop-up window as shown below will automatically appear on the page, prompting you to configure a time-of-use period template.



- a. Enter a custom **Template Name**.
- b. Click the Critical Peak, Peak, Shoulder, Valley, and Deep Valley sections respectively to select time blocks. Drag the handles on the two sides of the selected block to adjust its duration.



To delete a selected time period, click the Close icon in the upper right corner of the selected block.

- c. Repeat step b until the entire 24-hour period is defined without overlaps.
- d. Click **Save** to save the settings.



- e. The created template will appear in the Template List on the right panel of the **Time-of-Use Period Settings** page.



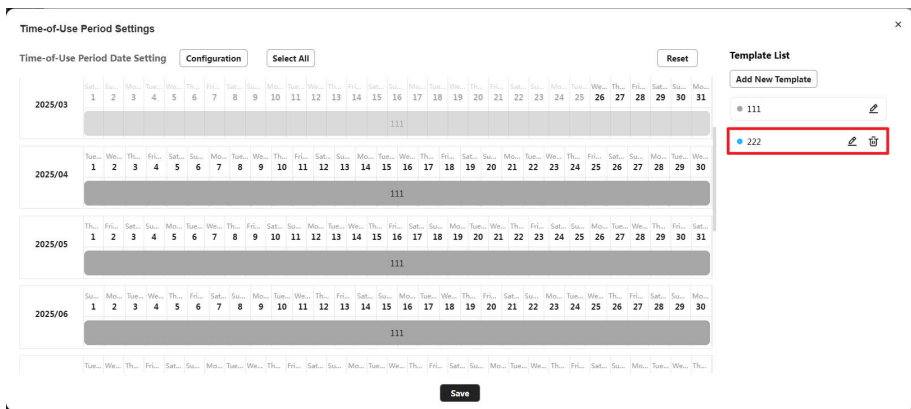
**Step 4** (Optional) Add a new time-of-use period template. If the existing time-of-use period templates do not meet requirements, a new template can be added.

- a. Click **Add New Template** on the **Time-of-Use Period Settings** page.




**Figure 6-1** Add a New Template


- b. Configure the template following the steps outlined in 3.
- c. The created template will appear in the Template List on the right panel of the **Time-of-Use Period Settings** page.





Up to 8 templates are supported.

**Step 5** (Optional) Edit an existing time-of-use period template. Click the Edit icon  of the desired template to edit it.

**Step 6** (Optional) Delete a time-of-use period template. Click the Delete icon  of the desired template to delete it.

--End


## 6.1.2 Configure Time-of-Use Period Strategies for Meter

### Prerequisite

- A time-of-use period template has been configured for the meter by referring to [6.1.1 Configure Time-of-Use Period Templates for Meter](#).

**Step 1** Click **Parameter Maintenance > Meter Parameters** to enter the corresponding interface.

Critical Peak/Peak/Shoulder/Valley Parameter Settings

Meter	Action
DTSD1352-8(192.168.13.69-51D-1)	

Time Synchronization Interval

Name	Current Value	Action
Meter Time Synchronization Interval (h)	<input type="text" value="4.0"/>	
Immediate Meter Time Synchronization		

**Step 2** Click  in the **Action** column.



The system applies a default time-of-use period template initially. Modify or replace it as needed.

**Step 3** You can configure time-of-use period strategies for the current year. Choose an appropriate time-of-use period template to configure the time-of-use period strategy.

- If the same strategy applies to all days of the current year, select all dates using the **Select All** option, then click **Configuration**. In the pop-up window, select the desired time-of-use period template and click **Save**. The configured strategy will apply to all selected days.

### Time-of-Use Power Template Settings ×

\* Time-of-Use Power Template

默认 ▼

- If different strategies apply to different days, hover over a specific date, select a single day or a date range, then click **Configuration**. In the pop-up window, select the desired time-of-use period template and click **Save**. The configured strategy will apply only to the selected days.

### Time-of-Use Power Template Settings ×

\* Time-of-Use Power Template

默认 ▼

**Step 4** Click **Save** to save the configured time-of-use period strategy.

Time-of-Use Period Settings

Time-of-Use Period Date Setting Configuration Select All Reset

Year	Month	Day	Day of Week	Time-of-Use Period
2025	03	1	Sat	111
2025	03	2	Sun	
2025	03	3	Mon	
2025	03	4	Tue	
2025	03	5	Wed	
2025	03	6	Thu	
2025	03	7	Fri	
2025	04	1	Sat	111
2025	04	2	Sun	
2025	04	3	Mon	
2025	04	4	Tue	
2025	04	5	Wed	
2025	04	6	Thu	
2025	04	7	Fri	
2025	04	8	Sat	222
2025	04	9	Sun	
2025	04	10	Mon	
2025	04	11	Tue	
2025	04	12	Wed	
2025	04	13	Thu	
2025	04	14	Fri	
2025	05	1	Sat	111
2025	05	2	Sun	
2025	05	3	Mon	
2025	05	4	Tue	
2025	05	5	Wed	
2025	05	6	Thu	
2025	05	7	Fri	
2025	06	1	Sat	111
2025	06	2	Sun	
2025	06	3	Mon	
2025	06	4	Tue	
2025	06	5	Wed	
2025	06	6	Thu	
2025	06	7	Fri	

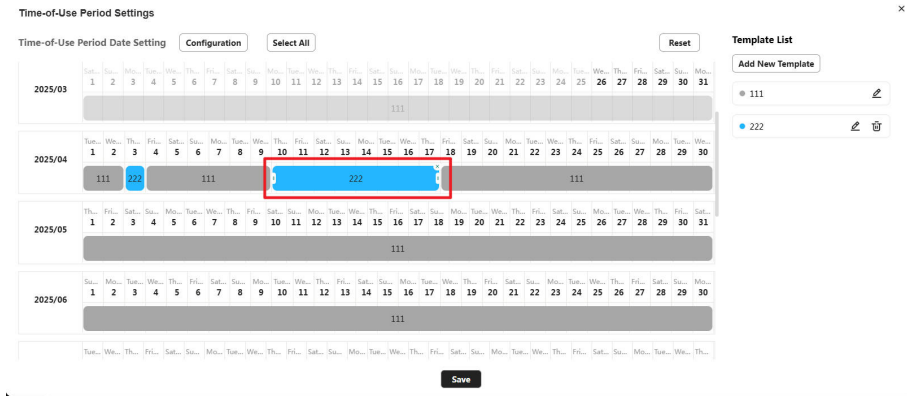
Template List ×

Add New Template

- 111 ✎
- 222 ✎ ✕

**Step 5** (Optional) Delete a time-of-use period strategy.

- Hover over the configured time block you want to delete, and click the Close icon in the upper right corner of the time block.



b. Click **Save** to save the settings.

--End

## 6.2 Meter Time Synchronization

The system supports **automatic** and **manual** time synchronization for meters.

### 1. Automatic Synchronization

**Step 1** Click **Parameter Maintenance > Meter Parameters** to enter the corresponding interface.

Time Synchronization Interval

Name	Current Value	Action
Meter Time Synchronization Interval (h)	<input type="text" value="4.0"/>	
Immediate Meter Time Synchronization		

**Step 2** Set the Meter Time Synchronization Interval. Enter an interval. Range: 0.0-10.0. Default value: 4.0.

**Step 3** Click in the Action column. The system will automatically perform periodic time synchronization for the meter based on the set interval.

### 2. Manual Synchronization

**Step 4** Click **Parameter Maintenance > Meter Parameters** to enter the corresponding interface.

Time Synchronization Interval

Name	Current Value	Action
Meter Time Synchronization Interval (h)	<input type="text" value="4.0"/>	
Immediate Meter Time Synchronization		

**Step 5** Click in the Action column. The system will perform time synchronization for the meter.

--End

## 6.3 Configure Charger Parameters

**Step 1** Choose **Parameter Maintenance > Charger parameters**.

**Step 2** Set the **Total charger output power (offline) (W)** and **Communication timeout (s)** according to actual conditions.

**Step 3** Click **Save** to save the settings.

--End

## 6.4 Configure ATS Parameters

**Step 1** Choose **Parameter Maintenance > ATS parameters**.

Parameter name	Current value	Unit/State	Action
ATS master-slave mode	No		Settings

IP:

Subnet mask:

Gateway:

MAC address:

Save

**Step 2** Click the tab of the ATS that you want to configure, set **ATS master-slave mode**, **Fault reset**, or **Sync check failed fault reset** as needed, and click **Settings** to apply the settings.

- When **ATS master-slave mode** is set to **Yes**, you can configure the **ATS master/slave settings**.
- When **ATS master-slave mode** is set to **No**, the ATS master-slave mode is disabled.

**Step 3** Set the **IP**, **Subnet mask**, **Gateway**, and **MAC address** of the ATS according to actual conditions.



After configuring the ATS communication parameters, the ATS needs to be reconnected to the system.

**Step 4** Click **Save** to save the settings.

--End

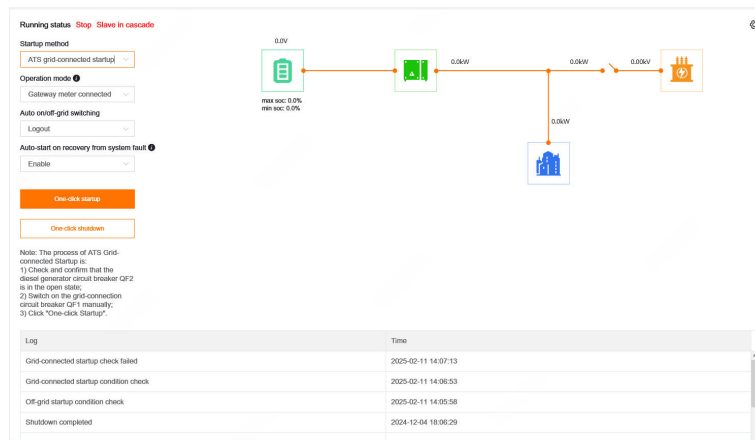
# 7 Device Start/Stop

## 7.1 Grid-connected/Off-grid Startup

Users can configure the startup settings for the devices and start or stop the devices in the plant in one click.

### Configure Startup Parameters

**Step 1** Choose **Device start/stop > Grid-connected/off-grid startup**.



**Figure 7-1** Grid-connected/Off-grid Startup


**Step 2** Select a startup method for devices in the plant from the **Startup method** drop-down list.

- When no ATIS is connected, the **Startup method** can be set to **Off-grid startup** or **Grid-connected startup**.

- **Off-grid startup**

When the device is in the off-grid status, select **Off-grid startup** to start all the devices in the plant. After a successful startup, the **Running status** will show "Off-grid".

Configure the black start parameters before proceeding with the startup. To do this,

click  in the upper-right corner to open the black start configuration window. The descriptions of the parameters are shown below.

Parameter	Description
<b>Black start SOC threshold</b>	The default value is 46.
<b>Minimum number of running units</b>	Number of units with the minimum SOC.

Parameter	Description
<b>Load rated power</b>	Set this parameter according to actual conditions.
<b>Startup mode</b>	Select an option according to actual conditions. <ul style="list-style-type: none"> <li>VSG mode: Users can select VSG mode if there is one or more LCs.</li> <li>Off-grid mode: Users can select Off-grid mode if there is one LC only.</li> </ul>
<b>System waiting time</b>	Range: 0–100. Default value: 20.
<b>System timeout</b>	Range: 0–200. Default value: 60.

- Grid-connected startup

When the device is in the grid-connected status, select **Grid-connected startup** to start all the devices in the plant. After a successful startup, the **Running status** will show “Grid-connected”.



At least one LC is needed to start the system. The system starts the LC first, and then the PV system.

- When ATSS are connected, the following options are available for **Startup method**:
  - ATS grid-connected startup: Ensure that the diesel generator circuit breaker QF2 is in the open state. Switch on the grid connection circuit breaker QF1 manually. Then, apply this startup method.
  - ATS off-grid startup (VSG mode): Ensure that the grid connection circuit breaker QF1 and diesel generator circuit breaker QF2 are in the open state. Then, apply this startup method.  
Configure the black start parameters before proceeding with the startup. For details, refer to [parameter configuration](#).
  - ATS off-grid startup (diesel generator): Ensure that the grid connection circuit breaker QF1 is in the open state. Switch on the diesel generator circuit breaker QF2 manually. Then, apply this startup method.
  - ATS grid-connected startup (bypass switch on): Ensure that the diesel generator circuit breaker QF2 is in the open state. Switch on the grid connection circuit breaker QF1 manually. Then, apply this startup method.
  - ATS startup (bypass switch on, diesel generator): Click **Diesel generator startup**. Switch on the diesel generator circuit breaker QF2 manually. Then, apply this startup method.

### Step 3 Select the **Operation mode**.

Three operation modes are available, Gateway meter connected and Gateway meter not connected. When the system is in Stop state, you can select Gateway meter connected or Gateway meter not connected for startup.

- Step 4** When the system is in Running state, you can enable or disable **Auto on/off-grid switching**.
- Step 5** Enable or disable **Auto-start on recovery from system fault**. This function is enabled by default. When this function is enabled, if a fault occurred in the ESS, the plant will restart automatically after recovering from the ESS fault.
- Step 6** Click **One-click startup** to perform startup, and click **Yes** in the pop-up dialog box.

--End

#### **One-click Shutdown**

Users can click **One-click shutdown** to stop the devices in the plant. At this time, the running status will be "Stop".

#### **View Operation Log**

The detailed will be shown on the screen when the off-grid/grid-connected start/stop task is executed.

# 8 Energy Management

Set the **Country/Region** to **Europe** by referring to [11.3.8 Setup Wizard](#).

## 8.1 Grid-connected Active Power

### 8.1.1 Self-Consumption

This mode makes the PV installation and the battery cover the most of the loads' demand, reducing energy import from the grid. Users can set different battery charging/discharging time windows based on electricity prices at different times to reduce the electricity cost.

**Step 1** Choose **Energy Management > Grid-connected Active Power**.

**Step 2** Select the **Self-consumption** mode.

**Step 3** Enable or disable **Peak shaving mode**. It is disabled by default.

If **Peak shaving mode** is enabled, you must set the **Reserved SOC for peak shaving (%)** within the range of 0–100.



- The **Reserved SOC for peak shaving** must be at least 2% higher than the **Power backup lower SOC threshold**, and must not exceed the **SOC upper limit**. Otherwise, the setting will not take effect.
- The firmware version of EMS300CP must be P024 or later, and the Country/region must be set to Europe.

**Step 4** Set a power upper limit for the system to purchase energy from the grid in **Threshold on power purchase (demand control) (kW)**. Default value: 0. When the energy purchase power exceeds this threshold, the excess power will be drawn from the battery, helping reduce the user's electricity cost.



This threshold does not apply during forced charging time periods. In this case, the limit is determined by the **Power limit for energy purchase** set in Grid-connected power control. If **Purchase energy with limited power** is not enabled, there will be no restriction on battery charging.

**Step 5** Set a power upper limit for the system to feed energy into the grid in **Threshold on power feed-in (demand control) (kW)**. Default value: 0. After you configure this threshold, the system prioritizes load demand, and the surplus PV power is fed into the grid. Only when the feed-in power exceeds this threshold, the excess power will be absorbed by charging the battery.

**Step 6** Enable **Custom time period** to add a battery usage plan. Users can create custom charging/discharging time windows, allowing the system to make the most of the PV output

in on-peak hours and charge the battery properly in off-peak hours. In this way, electricity cost is reduced.

a. Select months in the **Select month** section.

You can set different time windows based on seasonal energy demand patterns.

b. In the **Time period** section, select the days on which the battery charging/discharging plan applies.

You can apply the charging/discharging plan to every day, or set different charging/discharging plans respectively for working days & non-working days. The plan applies to every day by default.

- **Every day:** The default option, indicating the set charging/discharging plan applies on all days.

- **Working days & non-working days:** Switch between Weekday Weekend to set different charging/discharging plans respectively for working days and non-working days.

c. Set the battery discharging and forced charging windows within a day.

1. Tap a time period in the **Allow discharging** time bar. Then, drag the left or right edge of the window to adjust the length of time. A new discharging window will be created (with the minimum granularity of 15 minutes). The battery is allowed to discharge to supply the loads in the specified time period.
2. Tap a time period in the **Force charging** time bar. Then, drag the left or right boundary of the window to adjust the length of time. A new charging window will be created (1 hour by default). Click the added time window, and in the pop-up dialog box, enter the target charging SOC in **Target SOC**.

In the specified time period, the battery is charged at its maximum allowable power until reaching the preset target SOC.

- Battery discharging and forced charging windows can overlap. If a time window allows both battery discharging and forced charging, forced charging will be executed first.
- Outside of the configured time periods, the battery is not allowed to discharge or be charged by drawing power from the grid. In this case, the battery can only be charged by PV power.

**Step 7** Click **Save** to save the settings.

--End

### 8.1.2 Time Plan

The time plan mode is mainly used for electricity trading scenarios. Users can set the time windows and power for battery charging/discharging, according to the on- and off-peak electricity prices, to maximize the economic benefits.

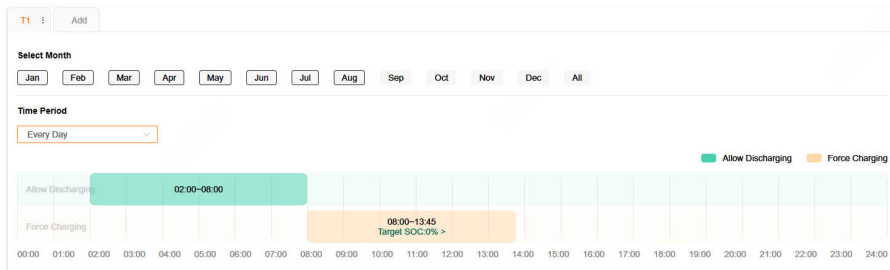


This mode only controls the commercial and industrial ESS, or residential ESS, but does not control the PV system.

**Step 1** Choose **Energy Management > Grid-connected Active Power**.

**Step 2** Select the **Time plan** mode.

**Step 3** Configure the time windows for battery charging and discharging.



- Select months in the **Select month** section.
- In the **Time period** section, select the days on which the battery charging/discharging plan applies.

You can apply the charging/discharging plan to every day, or set different charging/discharging plans respectively for weekdays and weekends. The plan applies to every day by default.

- Every day:** The default option, indicating the set charging/discharging plan applies on all days.
- Weekdays & weekends:** Switch between **Weekday** and **Weekend** to set different charging/discharging plans respectively for weekdays and weekends.

- Set the battery discharging and charging windows within a day.
  - Tap a time period in the **Discharge** time bar. Then, drag the left or right edge of the window to adjust the length of time. A new discharging window will be created. The time window is 1 hour by default.
  - Click the time window. In the **Power** field, enter the discharging power for the battery. The battery will discharge at the specified discharging power within the set time period.
  - Tap a time period in the **Charge** time bar. Then, drag the left or right edge of the window to adjust the length of time. A new charging window will be created.

4. Click the time window. In the **Power** field, enter the charging power for the battery. The battery will be charged at the specified charging power within the set time period.



- The discharging and charging windows cannot overlap.
- Outside of the configured time periods, the battery is not allowed to discharge or be charged by drawing power from the grid.

- d. To add more month spans, click **Add** to the right of the default month span name and repeat the above steps to configure the charging and discharging periods.

**Step 4** Click **Save** to save the settings.

--End

### 8.1.3 Forced Mode

The forced mode is mainly used in battery O&M to ensure it operates in compliance with the preset charging/discharging mode and power. Restore the system to the previous working mode after maintenance work is completed.



This mode only controls the commercial and industrial ESS, or residential ESS, but does not control the PV system.

**Step 1** Choose **Energy Management > Grid-connected Active Power**.

**Step 2** Select the **Forced mode**.

**Step 3** In the **Charging/discharging command** drop-down list, select the desired action based on the actual situations.

- **Stop**  
Stop battery charging or discharging manually. The battery enters standby mode.
- **Charge**  
Enter a power value in **Charging/discharging power (kW)**. The battery will be charged at the set charging power until it is fully charged.
- **Discharge**  
Enter a power value in **Charging/discharging power (kW)**. The battery will discharge at the set discharging power until it is fully discharged.

**Step 4** Click **Save** to save the settings.

--End

### 8.1.4 VPP

In the VPP mode, the system operates according to the feed-in power and battery charging/discharging commands from the VPP provider. The system supports command transmission and control via IEC104, MODBUS, and API.

- IEC104 or Modbus: Commands are received through the EMS300CP controller to control the ESS. For details, please contact the professional technical personnel of Sungrow to obtain the point table.

- API: API commands are received through the iSolarCloud platform and issued to the EMS300CP controller for execution, so as to control the ESS. You can refer to the [API usage guide](#) for relevant regulations.

Energy management and scheduling will be conducted based on the external demands, to satisfy the needs and operation requirements of the grid and achieve efficient utilization and scheduling of external resources.

**Step 1** Choose **Energy Management > Grid-connected Active Power**.

**Step 2** Select the **VPP** mode.

**Step 3** Click **Save** to save the settings.

--End

### 8.1.5 Remote Fixed Value

This function is used to make the plant output active power according to the target value remotely set by the third-party scheduling system.

**Step 1** Choose **Energy management > Grid-connected active power**.

**Step 2** Select the **Remote fixed value** mode.

Mode selection

Self-Consumption
  Time plan
  Compulsory mode
  VPP
  Remote fixed value

Remotely set value(MW)

0.000

Control dead zone (kW)

3.000

Scheduled object

Energy storage system

Control priority ⓘ


Local first

Save

**Figure 8-1** Remote Fixed Value

**Step 3** Configure the following parameters as needed:

Parameter	Description
<b>Remotely set value (MW)</b>	Shows the remotely set active power when the scheduling mode is set to Third party scheduling.

Parameter	Description
<b>Control dead zone (kW)</b>	<p>Set this parameter based on the actual power of the plant. It is recommended to set this parameter to 1% of the rated power.</p> <p>It defines the range within which the target active power value can fluctuate. For example, if the target active power of the grid-connected point is 10 kW, and the control dead zone is set to 5 kW, then the target active power of the grid-connected point can range from 5 kW to 15 kW.</p>
<b>Control priority</b>	<ul style="list-style-type: none"> <li>Local first: When the power command from third-party scheduling conflicts with the local control strategy, the local control command will be prioritized.</li> <li>Schedule first: When the power command from third-party scheduling conflicts with the local control strategy, the third-party scheduling command will be prioritized.</li> </ul>
<b>Scheduled object</b>	<p>This parameter can only be configured when the <b>Control priority</b> is set to Schedule first.</p> <ul style="list-style-type: none"> <li>Grid-connection point: The target power value set in active power control will be used to perform closed-loop control for the power of the grid-connection point.</li> <li>Energy storage system: The target power value set in active power control will be used to perform closed-loop control for the power of the ESS.</li> </ul> <div style="border: 1px solid gray; padding: 5px; margin-top: 10px;">  This item is valid when active power control is enabled alone. If other control strategies such as overload protection are enabled, the target power value will be used to perform closed-loop control on the power of the grid-connection point. </div>

**Step 4** Click **Save** to save the settings.

--End

## 8.2 Grid-connected Reactive Power

### 8.2.1 Optimized Power Factor Control

Optimized power factor control is used to adjust the power factor to reduce the power factor adjustment charges.



This strategy is only used to control the reactive power currently.

**Step 1** Choose **Energy Management > Grid-connected Reactive Power**.

**Step 2** Click  to set **Function enable/disable** .

- **Enable:** Enable the reactive power control function. Proceed to subsequent configurations.
- **Disable:** Disable the reactive power control function.

**Step 3** Select the **Optimized Power Factor Control** mode.

Function Enable/Disable

Mode Selection  
 Optimized Power Factor Control  Remote Fixed Value

Execute Strategy Only When ESS is Discharging

Grid-connected Point PF Target Value

**Figure 8-2** Optimized Power Factor Control

**Step 4** Set **Execute strategy only when ESS is discharging** based on the actual conditions.  
 Default value: **No**.

- **Yes:** When the grid power factor decreases, the optimized power factor control strategy will only be executed during discharging of the ESS.
- **No:** When the grid power factor decreases, the optimized power factor control strategy will be executed during charging, discharging, and zero power output of the ESS.

**Step 5** Set **Grid-connected point PF target value**. Set the value based on the actual conditions.  
 If the power factor of the grid-connection point is less than the set target value, the target reactive power value of the grid-connection point can be calculated on the basis of the set target value and the active power value of the grid-connection point, and then the reactive power can be regulated by the ESS and PV system.

**Step 6** Click **Save** to save the settings.

--End

### 8.2.2 Remote Fixed Value

This function is used to make the plant output reactive power according to the target value remotely set in Third party scheduling mode.

**Step 1** Choose **Energy Management > Grid-connected Reactive Power**.

**Step 2** Click  to set **Function enable/disable**.

- **Enable:** Enable the reactive power control function. Proceed to subsequent configurations.
- **Disable:** Disable the reactive power control function.

**Step 3** Select the **Remote fixed value** mode.

Function Enable/Disable

Mode Selection  
 Optimized Power Factor Control  Remote Fixed Value

Remotely Set Value(Mvar)

Control Dead Zone(kvar)

**Figure 8-3** Remote Fixed Value

**Step 4** Configure the following parameters.

Parameter	Description
<b>Remotely set value (Mvar)</b>	Shows the remotely set reactive power when the scheduling mode is set to Third party scheduling.
<b>Control dead zone (kvar)</b>	Set the value according to actual conditions. It defines the range within which the target reactive power value can fluctuate. For example, if the target reactive power of the grid-connected point is 10 kvar, and the control dead zone is set to 5 kvar, then the target reactive power of the grid-connected point can range from 5 kvar to 15 kvar.

**Step 5** Click **Save** to save the configuration.

--End

## 8.3 Backup Operation

In the event of off-grid startup, if the PV system supplies power to both the ESS and the loads, you can set different PV active power values for different power supply scenarios.



This function is applicable to off-grid scenarios.

**Step 1** Choose **Energy management > Backup operation**.



Charging protection SOC(%) <input type="text" value="90.0"/>	Charging protection SOC deadba... <input type="text" value="2.0"/>
SOC threshold for stopping DG & ... <input type="text" value="80.0"/>	SOC threshold for starting DG(%) <input type="text" value="15.0"/>
ESS shutdown pre-alarm recover... <input type="text" value="20.0"/>	ESS shutdown pre-alarm SOC thr... <input type="text" value="15.0"/>
SOC threshold for stopping ESS(%) <input type="text" value="10.0"/>	Illuminance for starting PV(W/m²) <input type="text" value="50.0"/>
Energy storage fast charging setting <input type="text" value="0.80"/>	Load factor k2 <input type="text" value="0.98"/>
Regular load power(kW) <input type="text" value="10.0"/>	SOC threshold to stop supplying ... <input type="text" value="50"/>
ESS VSG frequency adjustment a... <input type="text" value="0.00"/>	Diesel generator startup timeout t... <input type="text" value="5.0"/>
<input type="button" value="Save"/>	





The figure is for reference only. The actual user interface may differ.

**Step 2** Configure the following parameters:

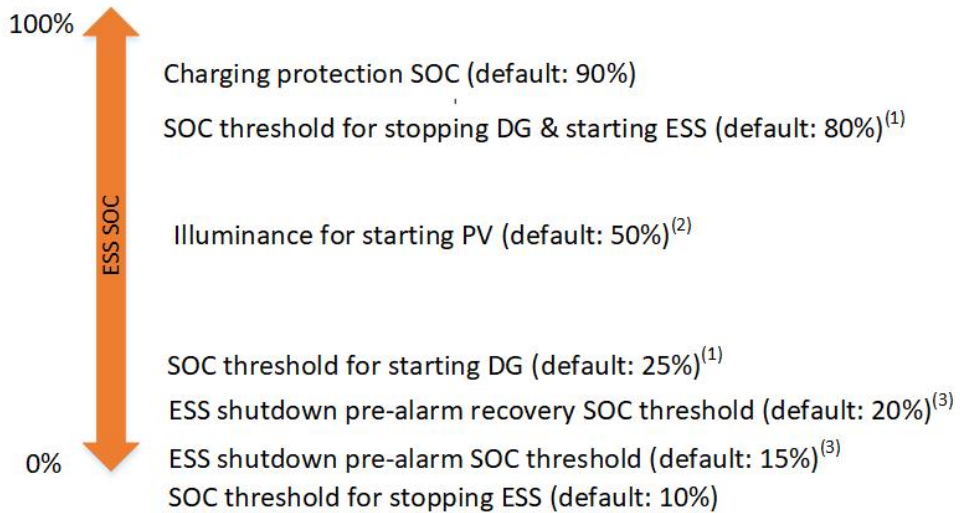
Parameter	Description
<b>Charging protection SOC (%)</b>	Charging stops when the ESS SOC reaches this threshold. Default value: 90. Range: 0–100. One decimal place is supported.
<b>Charging protection SOC deadband setpoint</b>	It limits the range within which the target charging protection SOC value can fluctuate. Default value: 2. Range: 0–100. One decimal place is supported.
<b>SOC threshold for stopping DG &amp; starting ESS (%)<sup>(1)</sup></b>	When the ESS SOC reaches this threshold, the diesel generator will shut down. Default value: 80. Range: 0–100. One decimal place is supported.
<b>SOC threshold for starting DG (%)<sup>(1)</sup></b>	When the ESS SOC reaches this threshold, the diesel generator will start. Default value: 25. Range: 0–100. One decimal place is supported.
<b>ESS shutdown pre-alarm recovery SOC threshold (%)<sup>(3)</sup></b>	When the ESS SOC is greater than or equal to this threshold, set the measuring point "ESS shutdown pre-alarm" of the ATS to 0. Default value: 20. Range: 0–100. One decimal place is supported.

Parameter	Description
	<p data-bbox="634 276 676 325"></p> <p data-bbox="701 270 1149 325">The firmware version of EMS300CP must be P024 or later.</p>
<p data-bbox="260 501 547 566"><b>ESS shutdown pre-alarm SOC threshold (%)<sup>(3)</sup></b></p>	<p data-bbox="630 393 1167 491">When the ESS SOC is less than or equal to this threshold, set the measuring point "ESS shutdown pre-alarm" of the ATS to 1.</p> <p data-bbox="630 501 1125 566">Default value: 15. Range: 0–100. One decimal place is supported.</p> <p data-bbox="634 589 676 638"></p> <p data-bbox="701 589 1149 644">The firmware version of EMS300CP must be P024 or later.</p>
<p data-bbox="260 746 578 811"><b>SOC threshold for stopping ESS (%)</b></p>	<p data-bbox="630 711 1139 776">When the ESS SOC is less than or equal to this threshold, discharging is prohibited.</p> <p data-bbox="630 785 1125 850">Default value: 10. Range: 0–100. One decimal place is supported.</p>
<p data-bbox="260 913 550 978"><b>Irradiance for starting PV (W/m<sup>2</sup>)</b></p>	<p data-bbox="630 878 1173 942">When the PV irradiance reaches this value, the PV equipment starts.</p> <p data-bbox="630 952 1125 1017">Default value: 50. Range: 0–100. One decimal place is supported.</p>
<p data-bbox="260 1128 498 1193"><b>ESS charging power coefficient</b></p>	<p data-bbox="630 1044 1177 1221">When the system supplies power to both the ESS equipment and the loads, PV active power = ESS charging power coefficient × Current minimum charging power allowed by ESS equipment + Load power.</p> <p data-bbox="630 1230 1181 1295">Default value: 0.8. Range: 0–1. Two decimal places are supported.</p>
<p data-bbox="260 1383 431 1413"><b>Load factor K2</b></p>	<p data-bbox="630 1319 1187 1417">When the ESS equipment is fully charged and power is supplied only to the loads, PV active power = K2 × Load power.</p> <p data-bbox="630 1426 1117 1491">Default value: 0.98. Range: 0–1. Two decimal places are supported.</p>
<p data-bbox="260 1618 568 1648"><b>Regular load power (kW)<sup>(2)</sup></b></p>	<p data-bbox="630 1524 1187 1701">Set this parameter to the total power demand value of all electrical equipment and loads in the system except chargers. The default value is 10 kW. The maximum value cannot exceed the maximum discharge capacity of the ESS.</p> <p data-bbox="630 1711 1145 1775">Default value: 10. The set value must be greater than 0. One decimal place is supported.</p>

Parameter	Description
	<p> If the value is set too small, the power supplied to chargers will be too high, resulting in insufficient power supply. If the value is set too large, the power supplied to chargers will be too low, affecting charging time.</p>
<p><b>SOC threshold to stop supplying power to charger (%)</b><sup>(2)</sup></p>	<p>It is recommended to set this value to Number of available ESSs (N) × Remaining power of a single ESS that can supply a regular load power setpoint × Demand duration.</p> <p>When the SOC of the ESS (Number of available energy storage units × Remaining power of a single energy storage unit) falls below the value of this parameter, the system will stop supplying power to the chargers.</p> <p>Default value: 50. Range: 0–100. Only integers are supported.</p>
<p><b>ESS VSG frequency adjustment value (Hz)</b><sup>(3)</sup></p>	<p>Default value: 0. Range: -0.3 to 0.3. Two decimal places are supported.</p>
<p><b>Diesel generator startup timeout</b><sup>(1)(3)</sup></p>	<p>Default value: 5. Range: 0–15. One decimal place is supported.</p>

-  (1) This parameter is displayed only when diesel generators are connected to the plant.  
 (2) This parameter is displayed only when chargers are connected to the plant.  
 (3) This parameter is displayed only when diesel generators are connected to the plant.

The illustration of SOC parameter settings and actual ESS SOC values under the Backup operation control strategy is as follows:



**Step 3** (Optional) Configure **VSG parameter management**. After you configure the following parameters, the system can independently maintain stable voltage and frequency in off-grid mode, ensuring reliable power supply to the load.



- **VSG parameter management** is displayed only when ST200CS or ST255CS devices are connected to the plant.
- If you do not want to use this function in the plant, select **Disable**.

- **Enable:** Enable the function. Configure the following parameters. Then, the system will send the configured parameters to the LC.

Parameter	Description
<b>Output voltage setpoint (V)</b>	Default value: 340. Range: 340–440.
<b>Output frequency setpoint (Hz)</b>	Default value: 48. Range: 48–52.
<b>Active power-frequency droop coefficient</b>	Default value: 1. Range: 1.0–4.0.
<b>Reactive power-voltage droop coefficient</b>	Default value: 1. Range: 1.0–2.0.
<b>Sent active power setpoint (kW)</b>	Default value: 0. The maximum value cannot exceed the rated power of the LC.

---

Parameter	Description
<b>Sent reactive power setpoint (kvar)</b>	Default value: 0. The maximum value cannot exceed the rated power of the LC.

---

- **Disable:** Disable the function.

**Step 4** Click **Save** to save the settings.

--End

# 9 Power Control

Set the **Country/Region** to **Europe** by referring to [11.3.8 Setup Wizard](#).

## 9.1 Grid-Connected Power Control

To ensure electrical safety and regulatory compliance, users need to set a proper feed-in power limit based on the requirements of the local grid operator, preventing the feed-in power of the system from exceeding the allowable range. In addition, users can set a power limit for energy purchase based on their capacity demands to prevent energy purchased from the grid exceeding the allowable range.

**Step 1** Choose **Power Control > Grid-connection Power Regulation**.

The screenshot shows a configuration form with the following fields:

- Energy purchase control method**: A dropdown menu with the selected option "Purchase energy with limited power".
- Power limit for energy purchase(kW)**: A text input field containing the value "50.0".
- Feed-in control method**: A dropdown menu with the selected option "Feed-in power limit".
- Feed-in control mode**: A dropdown menu with the selected option "Total active power control".
- Feed-in power limit value**: A text input field containing the value "0.0", with a unit dropdown menu set to "kW".
- Third-party power generation systems**: A dropdown menu with the selected option "Close".
- Save**: An orange button at the bottom of the form.

**Step 2** In the **Energy purchase control method** drop-down list, select **No limit** or **Purchase energy with limited power**.

**Step 3** If **Purchase energy with limited power** is selected, enter a proper power limit in Power limit for energy purchase based on the rated current of the main power source equipment that is connected in the system or other maximum power demand requirements.

**Step 4** In the **Feed-in control method** drop-down list, select **No limit** or **Feed-in power limitation**.

**Step 5** If **Feed-in power limitation** is selected, you need to select a unit for the target feed-in power. Options include **kW** and **%**.

**Step 6** When the unit **kW** is selected, set a proper feed-in power value based on local regulatory requirements.

**Step 7** When the unit **%** is selected, select a basis for limiting the grid-connected power from the **Feed-in power limit ratio calculation basis** drop-down list.

Feed-in power limit = Feed-in power limit ratio × (Feed-in power limit ratio calculation basis + Rated power of third-party power generation system)

- **Nominal power**: The dispatched value is calculated based on the rated power of the energy storage unit that is connected.
- **Installed PV power**: The dispatched value is calculated based on the installed PV power of the inverter that is connected. Enter the **Total installed power of modules** based on the actual plant conditions.

**Step 8** Set the **Feed-in control mode**.

- Total active power control: Default option. The system determines whether to trigger the control strategy based on the total active power value.
- Per-phase active power control: The system determines whether to trigger the control strategy based on the active power value of each phase.



The firmware version of EMS300CP must be P024 or later.

**Step 9** In the **Third-party power generation systems** drop-down list, select **Open** or **Close**.



When third-party power generation equipment is present in the plant but not connected to the EMS300CP, this parameter must be set.

**Step 10** If **Open** is selected in **Third-party power generation systems**, users can specify the rated power in **Rated power of third-party power generation system (kW)**. Range: 0–99999999. Unit: kW. The default value is 0.

**Step 11** Click **Save** to save the settings.

--End

## 9.2 DI Power Regulation

**Step 1** Choose **Power Control > DI Power Regulation**.

**Step 2** Configure the **Emergency stop function**. This function allows users to stop the inverter immediately in case of an emergency. Options include:

- **Close**

Emergency Stop Function



Disable the emergency stop function.

- **Stop inverter**

Emergency Stop Function

Emergency Stop Status

When emergency stop is triggered, the inverter stops feeding power to the grid and stops receiving power from the grid. The inverter enters the emergency stop state. You must configure the **Emergency stop status**. Select whether DI10 triggers emergency stop via opening or closing, based on actual requirements.

- **Stop inverter and trip battery**

Emergency Stop Function

Stop Inverter and Trip Battery ▾

Emergency Stop Status

Closed ▾

Save

When triggered, the inverter stops exporting power to the grid, and the battery ceases all interactions with the inverter or grid, neither charging nor discharging. The inverter enters the emergency stop state, and the battery enters the trip state.

You must configure the **Emergency stop status**. Select whether DI10 triggers emergency stop via opening or closing, based on actual requirements.

**Step 3** Click **Save** to save the settings.

--End

## 9.3 Overload Protection

Overload protection is used to regulate the charging power of the ESS, so as to ensure the power of the transformer at the grid connection point does not exceed the rated capacity, thus preventing overload.

**Step 1** Choose **Power Control > Overload Protection**.

Function enable/disable

Enable ▼

Transformer capacity(kVA)

0

Active power conversion coefficient

1.00

Dynamic capacity expansion

Off ▼

Overload protection for parallel transformers




Off ▼

Save

**Step 2** Click ▼ to set **Function enable/disable**.

- **Enable:** Enable the overload protection function. Configure the following parameters.

Parameter	Description
<b>Transformer capacity (kVA)</b>	<p>The capacity of the transformer at the grid connection point. Set this parameter based on the actual situation.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p><span style="color: green; font-weight: bold; font-size: 1.2em;">i</span> This parameter applies to scenarios where only one overload monitoring meter is connected to protect a single transformer. In this case, <b>Overload protection for parallel transformers</b> must be disabled.</p> </div>
<b>Active power conversion coefficient</b>	<p>Default: 1. Range: 0–1. Protection trigger threshold = <b>Transformer capacity</b> × <b>Active power conversion coefficient</b> (Protection is activated when the power on the transformer side is greater than the threshold.)</p>

Parameter	Description
	<p> This parameter applies to scenarios where only one overload monitoring meter is connected to protect a single transformer. In this case, <b>Overload protection for parallel transformers</b> must be disabled.</p>
<p><b>Dynamic capacity expansion</b></p>	<ul style="list-style-type: none"> <li>- Enable: In the event of overload, the system first reduces the charging power of the ESS. If the charging power is reduced to 0 and overload still exists, the ESS discharges.</li> <li>- Disable: In the event of overload, the system only reduces the charging power of the ESS (discharging is prohibited).</li> </ul>
<p><b>Overload protection for parallel transformers</b></p>	<p>When multiple overload monitoring meters are connected and protection for multiple parallel transformers is required, enable <b>Overload protection for parallel transformers</b> and configure the following parameters:</p> <ul style="list-style-type: none"> <li>- Transformer capacity (kVA): Set the transformer capacity value of the transformer connected to the current overload monitoring meter.</li> <li>- Impedance voltage (%): Set the percentage of the impedance voltage for the current transformer.</li> <li>- Active power conversion coefficient: The default value is 1 and the value ranges from 0–1.</li> </ul> <p> A value of 0 indicates that the transformer does not participate in overload protection.</p> <p> The firmware version of EMS300CP must be P024 or later.</p>

- **Disable:** Disable the overload protection function.

**Step 3** Click **Save** to save the settings.

--End

## 9.4 Power Backup


Power backup is used to set protection thresholds for the SOC of the ESS, so that the ESS operates within the set SOC range when connected to the grid, and some energy is reserved to supply the loads in the event of a grid outage.

**Step 1** Choose **Power Control > Power Backup** .

**Step 2** Click  to set **Function enable/disable**.

- **Enable:** Enable the power backup function. Configure the following parameters.

Function Enable/Disable


Enable 

Power Backup Lower SOC Threshold(%)


50.0

Recharging Lower SOC Threshold(%)

30.0

Recharging Power(kW) 


30.0


K Value When Prioritizing ESS Charge 

0.00

Save

Parameter	Description
<b>Power backup lower SOC threshold (%)</b>	50% by default. Set this parameter according to actual conditions. When the SOC of the ESS falls below this threshold, the ESS is not allowed to discharge.
<b>Recharging lower SOC threshold (%)</b>	When the SOC of the ESS drops to this threshold, the recharging mechanism is triggered to restore the SOC to a safe or usable level.
<b>Recharging power (kW)</b>	Set this parameter according to actual conditions. The energy storage system will be charged at this specified power.
<b>K value when prioritizing ESS charge</b>	Range: [0, 1]. For example, if this parameter is set to 0.1, an amount of power equivalent to 10% of the rated active power of the energy storage device will

Parameter	Description
	<p>be allocated from the available power for charging the energy storage device.</p> <p> This parameter takes effect only when a charger is connected to the plant.</p>

 SOC in the table refers to the percentage of the current battery power to the total capacity of the battery, namely, the actual available battery power.

- **Disable:** Disable the standby power function.

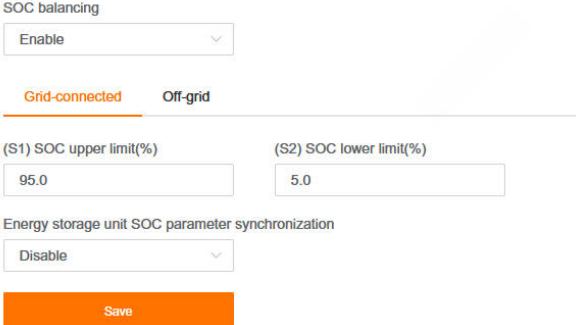
**Step 3** Click **Save** to save the settings.

--End

## 9.5 SOC Protection

To ensure the safe and efficient operation of the ESS, you can configure the SOC protection thresholds to keep the system strictly within the specified SOC range during grid-connected operation. By optimizing the control of each PCS, the battery SOC across the entire plant is maintained at a healthy level, preventing overcharging and overdischarging, thereby reducing battery degradation and extending battery life.

**Step 1** Choose **Power Control > SOC Protection**.



**Step 2** Click  in **SOC balancing**.

- **Enable:** Enable the SOC balancing function to ensure that all Packs maintain similar SOC levels, preventing individual batteries from being damaged due to overcharging or overdischarging. This helps extend the service life of the entire Pack.
- **Disable:** Disable the SOC balancing function.

**Step 3** Configure the SOC balancing strategy on the **Grid-connected** or **Off-grid** tab.

**Step 4** Configure the following parameters as needed:

Parameters	Description
<b>SOC upper limit (%)</b>	When the SOC of the ESS is greater than or equal to the SOC upper limit, the EMS300CP issues a zero power command to the local controller (hereinafter referred to as LC). Default value: 97%.
<b>SOC lower limit (%)</b>	When the SOC of the ESS is less than or equal to the lower limit, the EMS300CP issues a zero power command to the LC. 5% by default.

**Step 5** Click  in **Energy storage unit SOC parameter sync**.

- **Enable:** The EMS300CP will transmit the configured SOC thresholds to the LC, which then performs further SOC protection. Configure the following parameters:

SOC balancing

**Grid-connected**   Off-grid

(S1) SOC upper limit(%)      (S2) SOC lower limit(%)  
     

Energy storage unit SOC parameter sync

(S3) SOC upper limit level 2 protection(%)      (S4) SOC upper limit level 2 recovery(%)  
     

(S5) SOC upper limit level 1 protection(%)      (S6) SOC upper limit level 1 recovery(%)  
     

(S7) SOC lower limit level 1 recovery(%)      (S8) SOC lower limit level 1 protection(%)  
     

(S9) SOC lower limit level 2 recovery(%)      (S10) SOC lower limit level 2 protection(%)  
     

(S11) Active recharge start SOC(%) ⓘ

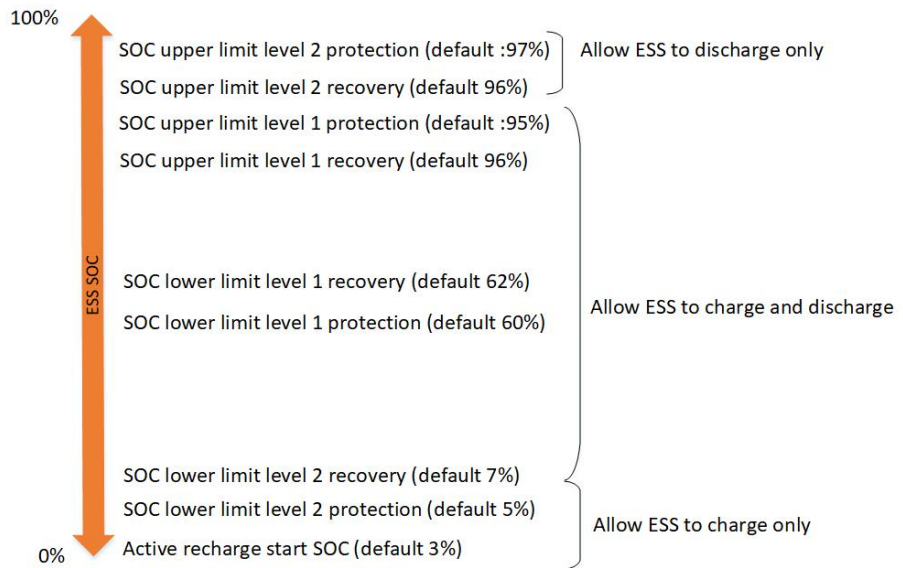
**Save**

Parameters	Description
<b>SOC upper limit level 2 protection (%)</b>	Default value: 97%. When the SOC of the ESS is greater than or equal to this threshold, the ESS is prohibited from charging.
<b>SOC upper limit level 2 recovery (%)</b>	Default value: 96%. If the SOC of the ESS is less than or equal to this threshold, the ESS resumes charging.

Parameters	Description
<b>SOC upper limit level 1 protection (%)</b>	<p>Default value: 95%. Set this parameter according to actual conditions.</p> <p>When the SOC of the ESS reaches this threshold, the EMS300CP sends an alarm to notify the user that the SOC has reached the SOC upper limit level 1 protection threshold.</p>
<b>SOC upper limit level 1 recovery (%)</b>	<p>Default value: 92%. Set this parameter according to actual conditions.</p>
<b>SOC lower limit level 1 recovery (%)</b>	<p>Default value: 62%. Set this parameter according to actual conditions.</p> <p>If the SOC of the ESS is greater than or equal to this threshold, the ESS resumes discharging.</p>
<b>SOC lower limit level 1 protection (%)</b>	<p>Default value: 60%. Set this parameter according to actual conditions.</p> <p>When the SOC of the ESS reaches this threshold, the EMS300CP sends an alarm to notify the user that the SOC has reached the SOC upper limit level 1 protection threshold.</p>
<b>SOC lower limit level 2 recovery (%)</b>	<p>Default value: 7%. Set this parameter according to actual conditions.</p> <p>If the SOC of the ESS is greater than or equal to this threshold, the EMS300CP goes back to the lower level 1 protection status, and discharging is prohibited.</p>
<b>SOC lower limit level 2 protection (%)</b>	<p>Default value: 5%. Set this parameter according to actual conditions.</p> <p>When the SOC of the ESS is less than or equal to this threshold, the ESS is prohibited from discharging. In this case, the ESS needs to be recharged.</p>
<b>Active recharge start SOC (%)</b>	<p>Default value: 3%. Set this parameter according to actual conditions.</p> <p>When the SOC of the ESS is less than or equal to the active recharge start SOC value, active recharge will be triggered.</p>

Parameters	Description
	<div style="border: 1px solid #ccc; padding: 10px;"> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="background-color: #4CAF50; color: white; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin-right: 10px;">i</div> <div> <ul style="list-style-type: none"> <li>- If the active recharge start SOC value is 0 or is greater than or equal to the SOC lower limit level 2 protection threshold, there is a risk of failure in the active recharge function of the energy storage unit.</li> <li>- This parameter is configurable only in grid-connected mode.</li> <li>- The firmware version of EMS300CP must be P024 or later.</li> </ul> </div> </div> </div>

The relationship between the configured SOC parameters of the energy storage unit and the actual SOC of the ESS under the SOC protection strategy is shown in the figure below:



- **Disable:** The EMS300CP will not transmit SOC thresholds to the LC.

**Step 6** Click **Save** to save the settings.

--End

## 9.6 Anomaly Handling

**Step 1** Choose **Power control > Anomaly handling**.

	Communication interruption control	Communication interruption time(ms)	Communication interruption counting period(s)	Communication interruption counts	Anomaly handling method	Control parameters
Third-party scheduling	Disable	600	60	2	Zero power output	60
LC	Disable	600	60	2	Zero power output	60
Logger/upper	Disable	600	60	2	Zero power output	60

Save

**Step 2** Configure the following anomaly check settings as needed. If an anomaly occurs, the system will operate according to the configured **anomaly handling method**.

Parameter	Description
Communication interruption control	<ul style="list-style-type: none"> <li>Enable: Enable anomaly check for the device.</li> <li>Disable: Disable anomaly check for the device.</li> </ul>
Communication interruption counting period (s)	Anomaly handling can be triggered in the following two ways: <ul style="list-style-type: none"> <li>When a single communication interruption lasts for a period longer than the set <b>Communication interruption counting period (s)</b>, the system triggers anomaly handling.</li> <li>When the duration of a communication interruption exceeds the set <b>Communication interruption time (ms)</b>, the system records a communication interruption event. If the number of communication interruptions occurring within the set <b>Communication interruption counting period (s)</b> reaches the set <b>Communication interruption counts</b>, the system triggers anomaly handling.</li> </ul>
Communication interruption time (ms)	
Communication interruption counts	
Anomaly handling method	The available options for <b>Anomaly handling method</b> vary by device type. <ul style="list-style-type: none"> <li>For third-party scheduling device: Keep current value, Zero power output, and Full-plant shutdown are supported.</li> <li>For ESS LC: Zero power output is supported.</li> <li>For Logger Upper: Keep current value, Zero power output, and Full-plant shutdown are supported.</li> </ul>
Control parameter	Default value: 60. Range: [0, 600]. Unit: s. The <b>Control parameter</b> settings vary by the <b>Anomaly handling method</b> :

Parameter	Description
	<ul style="list-style-type: none"> <li>• Keep current value: There is no need to set the <b>Control parameter</b>. When an anomaly occurs, the system keeps the current value.</li> <li>• Zero power output:               <ul style="list-style-type: none"> <li>- If the <b>Control parameter</b> is set to 0, the system immediately sends a zero power output command.</li> <li>- If the <b>Control parameter</b> is set to a non-zero value, the system calculates the ramp-down rate based on the current power and sends a command to reduce power to zero within the time specified by the Control parameter.</li> </ul> </li> <li>• Full-plant shutdown: There is no need to set the <b>Control parameter</b>. When an anomaly occurs, the system executes the full-plant shutdown command.</li> </ul>



The Communication interruption counting period (s), Communication interruption time (ms), and Communication interruption counts for third-party scheduling devices can be modified remotely.

**Step 3** Click **Save** to save the settings.

--End

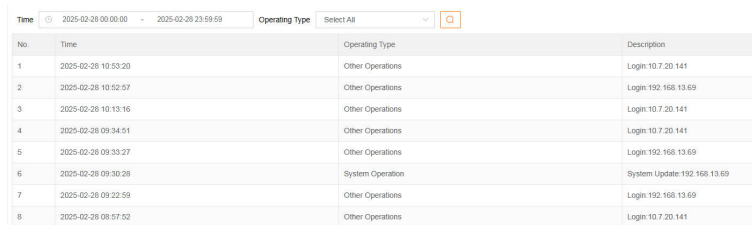
# 10 History Data

Users can view information such as operation log, history curve, fault records, and dispatch records in this function module.


## 10.1 Operation Log


It is used to record the Web operations. Users can view specific log content by setting the time range and operation type.

**Step 1** Click **History Data > Operation Log**.



No.	Time	Operating Type	Description
1	2025-02-28 10:53:20	Other Operations	Login:10.7.20.141
2	2025-02-28 10:52:57	Other Operations	Login:192.168.13.69
3	2025-02-28 10:13:16	Other Operations	Login:10.7.20.141
4	2025-02-28 09:34:51	Other Operations	Login:10.7.20.141
5	2025-02-28 09:33:27	Other Operations	Login:192.168.13.69
6	2025-02-28 09:30:28	System Operation	System Update:192.168.13.69
7	2025-02-28 09:22:59	Other Operations	Login:192.168.13.69
8	2025-02-28 08:57:52	Other Operations	Login:10.7.20.141

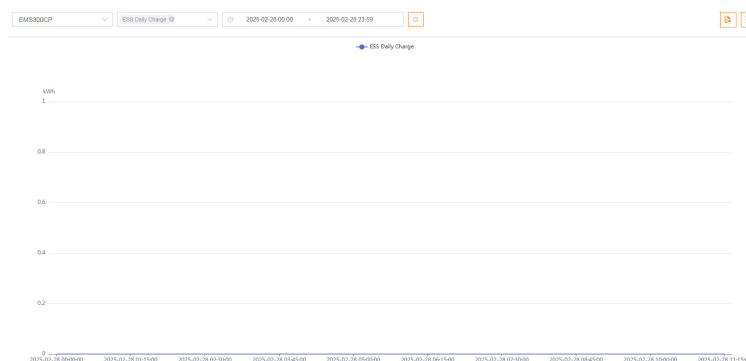
**Step 2** Set the start and end time in **Time**, and click  in **Operation Type** to select the operation type.

**Step 3** Click  on the right to view the operation log for the selected time period.  
--End


## 10.2 History Curve

On this interface users can view the data records of parameters of every device in the plant by selecting the device and the parameter.



**Step 1** Click **History Data > History Curve** to enter the corresponding interface.



**Step 2** Click , select the device and parameter to be viewed, and set the start and end time.

**Step 3** Click  to view the history curve within the specified time period.

Users can select to view data records in a table or a chart. Click the icons in the following table to switch between display methods.

Icon	Description
	Switch to table form.
	Switch to curve form.

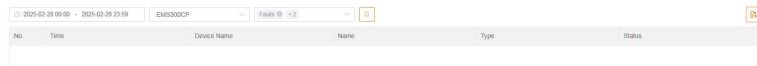
**Step 4** Click  to export the queried information to local for viewing.

--End


## 10.3 Fault Record

Search relevant faults by different conditions.

**Step 1** Click **History Data > Fault Records**.



**Step 2** Set the start and end time, and click  to select the device name and fault type.

**Step 3** Click  to view the fault records in the set time period. The fault records mainly include the following information.

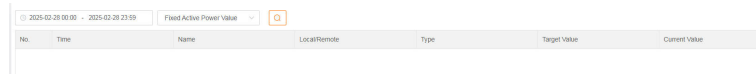
Parameter	Description
<b>Time</b>	Time of fault.
<b>Device Name</b>	The faulty device.
<b>Name</b>	Detailed description of the fault.
<b>Type</b>	There are three types of fault: "Fault", "Warning" and "Event."
<b>Status</b>	-

**Step 4** Click  to export the queried information to local for viewing.


--End

## 10.4 Dispatch Record

**Step 1** Click **History Data > Dispatch Record**.



**Step 2** Set the start and end time, and click  to select the parameter to be viewed.

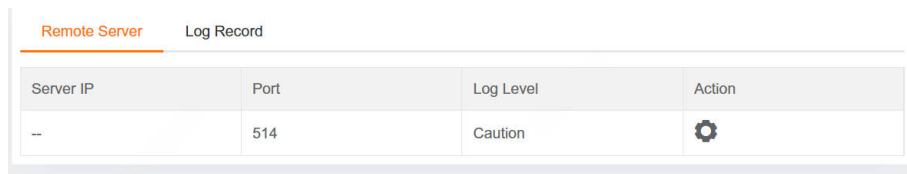
**Step 3** Click  to view the dispatch records within the specified time period.

--End


## 10.5 Syslog

The Syslog feature records the system logs and operation logs of EMS300CP and supports uploading logs of specified levels to a remote server.

Choose **History Data > Syslog**.



**Set the Remote Server for Log Upload**

1. Click the **Remote Server** tab.
2. Click  in the **Action** column to open the **Settings** window.

Settings
✕

Server IP

Port

Log Level

3. Configure the following parameters:
  - Server IP: The IP address of the remote server.
  - Port: The port number of the remote server.

- Log Level: The level of logs to be uploaded.

4. Click **Save** to save the settings.

### View Log Record


1. Click the **Log Record** tab.

Remote Server		Log Record				
No.	Time	Host Name	Source	Log Level	Process Name [Process ID]	Log Content
1	2025-01-23 10:51:59	SunGrow	auth	Caution	esp	(10.7.5.67 + maintain)Login
2	2025-01-23 10:51:08	SunGrow	user	Notice	sg_klogd	[696830.876006] rtc-ds1307 2-0032: read type:13 RX8025_REG_CTRL1:0x20 RX8025_REG_CTRL2:0x20
3	2025-01-23 10:51:08	SunGrow	user	Notice	sg_klogd	[696830.864985] rtc-ds1307 2-0032: read secs=8, mins=51, hours=10, mday=23, mon=0, year=125, wday=4
4	2025-01-23 10:51:08	SunGrow	user	Notice	sg_klogd	[696830.858320] rtc-ds1307 2-0032: read (0): 08 51 10 05 23 01 25
5	2025-01-23 10:51:08	SunGrow	user	Notice	sg_klogd	[696830.849335] rtc-ds1307 2-0032: write: 08 51 10 05 23 01 25

< 1 2 > Go to 1

2. Select the start and end time of logs to be viewed in the **Time** selection box.

3. Set the level of logs to be viewed.

4. Click  to view all logs of the specified time period and log level.

5. (Optional) Click  to export logs to your local system.

# 11 System


## 11.1 Plant Parameters

**Step 1** Choose **System > Plant Parameters**.

**Figure 11-1** Plant Parameters

**Step 2** Configure the following parameters:

Parameters	Description
<b>Debug mode</b>	<ul style="list-style-type: none"> <li><b>Enable:</b> Enable the debug mode. If the debug mode is enabled, the power control command will not be sent to the PCS or PV inverter.</li> <li><b>Disable:</b> Disable the debug mode.</li> </ul>
<b>Reactive power control deadband (kvar)</b>	<p>Set this parameter based on the actual power of the plant. It is recommended to set this parameter to 1% of the rated power.</p> <p>It defines the range within which the target reactive power value can fluctuate. For example, if the target reactive power of the grid connection point is 10 kvar, and the control deadband is set to 5 kvar, then the target reactive power of the grid connection point can range from 5 kvar to 15 kvar.</p>
<b>Cascade</b>	<ul style="list-style-type: none"> <li><b>Enable:</b> Enable the function. In this case, select an option in <b>Master/slave controller setting</b>.</li> <li><b>Disable:</b> Disable the function.</li> </ul>

Parameters	Description
<b>Master/slave controller setting</b>	<p>Set this parameter if <b>Cascade</b> is set to <b>Enable</b>.</p> <ul style="list-style-type: none"> <li>Master in cascade: This controller is a master controller.</li> <li>Slave in cascade: This controller is a slave controller.</li> </ul>
<b>ESS rated capacity (kWh)</b>	Default value: 220. Set this parameter according to actual conditions.
<b>ESS connection point</b>	<b>After CT</b> by default.
<b>Energy storage data source</b>	<ul style="list-style-type: none"> <li>Meter data: Select this option when the meter type is <b>ESS electricity meter</b>. In this case, the EMS collects ESS charge/discharge data from the ESS electricity meter.</li> <li>Local controller data: The EMS collects ESS charge/discharge data from the LC.</li> </ul>
<b>Method to exit from strategy</b>	<ul style="list-style-type: none"> <li><b>Retain current value</b>: After the strategy is exited, the ESS continues to operate at the original power.</li> <li><b>Apply zero power</b>: After the strategy is exited, a zero power output command is issued.</li> </ul>
<b>Active recharge</b>	<ul style="list-style-type: none"> <li><b>Enable</b>: Enabled by default. The ESS supports enabling this function manually, but it takes effect only once at a time.</li> <li><b>Disable</b>: The ESS supports disabling this function manually, but it takes effect only once at a time.</li> </ul> <div style="border: 1px solid gray; padding: 5px; margin-top: 10px;">  The firmware version of EMS300CP must be P024 or later.         </div>
<b>PV installed capacity (MWp)<sup>(1)</sup></b>	The actual PV installed capacity of the plant.
<b>PV connection point<sup>(1)</sup></b>	<p><b>After CT</b> by default.</p> <p>A third-party PV device must be connected after CT.</p>
<b>Shifting percentage (%)<sup>(1)</sup></b>	ESS-PV shifting step = PV rated power × shifting percentage
<b>Select power distribution strategy<sup>(2)</sup></b>	<p><b>Disable</b> by default. Options include:</p> <ul style="list-style-type: none"> <li>Evenly distributed: Allocate charging power evenly according to the quantity of EVs and grid power limits.</li> <li>First come first served: Based on charger sequence and grid power limits, allocate power according to EV</li> </ul>

Parameters	Description
	needs, prioritizing earlier-sequence EVs for quicker charging.
	<ul style="list-style-type: none"> <li>• Disable: No power distribution strategy is enabled.</li> </ul>

(1) This parameter is displayed only when PV devices are connected to the plant.

(2) This parameter is displayed only when chargers are connected to the plant.

**Step 3** Click **Save** to save the settings.

--End

## 11.2 Run Information

Click **System > Run Information** to enter the corresponding interface.

General Information	I/O Information	Forwarding Information
Parameter Name		Current Value (Unit)
System Time		2025-02-26 11:47
ETH1 IP Address		192.168.13.140
ETH2 IP Address		192.168.52.236
ETH5 IP Address		12.12.12.12
Offline Device		1Piece
Offline Device		0Piece
Total Number of Connected Devices		1Piece
CPU Utilization		19.2%
Memory Utilization		47.3%
Total number of LC		1Piece
Total LC Available		1Piece
Total Rated Power of Energy Storage		0.275MW
SOC Upper Limit		95%
SOC Lower Limit		5%
Maximum SOC		50.5%
Actual SOC		50.5%
Minimum SOC		50.5%
Maximum Charging Power Allowed		275.0kW
Maximum Discharging Power Allowed		275.0kW
Charging Complete		Incomplete
Discharge Completed		Incomplete
Charge Locked		No

On this interface users can view **General Information**, **I/O Information**, and **Forwarding Information**.

## 11.3 System Maintenance

### 11.3.1 System Update

Only online update is supported.

#### Prerequisite


You need to install and open the iConfig tool. Please contact Sungrow Customer Service for the iConfig installation package.

#### Procedure

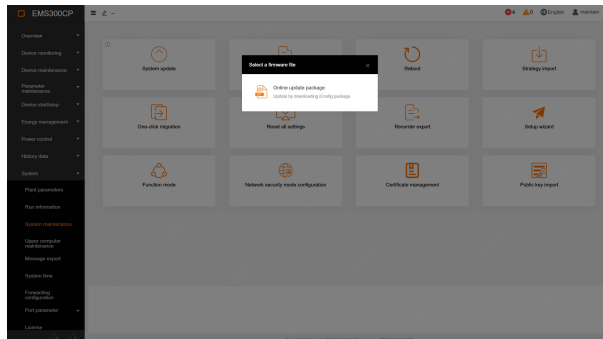
**Step 1** Choose **System > System maintenance**.

**Step 2** Click **System update** and select **Online update package** in the **Select update package** page.

**Step 3** Select an update package after iConfig is detected.

 If no update package is found, go to iConfig and download one.

**Step 4** Click **Confirm**.



**Figure 11-2**

--End

After the update is completed, you can refer to [12 Firmware Version](#) to check whether the update was successful.

### 11.3.2 Log Export

**Step 1** Choose **System > System Maintenance**.

**Step 2** Click **Log Export\_Debugging, operations and other logs**.

**Step 3** Select a log type in **Log file type selection** dialog box.

**Step 4** Click **Confirm** to export the log.

--End

### 11.3.3 Reboot

**Step 1** Choose **System > System maintenance**.

**Step 2** Click **Reboot**.

**Step 3** Click **Confirm** in the warning dialog box to restart the system.

--End

### 11.3.4 Strategy Import


#### Prerequisite

The **strategy import** function is used to import control strategy programs and configuration files.

**Step 1** Choose **System > System maintenance**.

**Step 2** Click **Strategy import**, select a strategy file, and click **Open** to import the file.

--End

 The strategy file must be in ".zip" format.

### 11.3.5 One-click Migration


#### Prerequisite

The **one-click migration** function is used to import the configurations of other devices or export the configurations of the current device.


**Step 1** Choose **System > System maintenance**.

**Step 2** Click **One-click migration**.


- a. Click **Import**, select the file to be imported, enter the **Decompression password**, and click **Confirm** to complete the import.

 The decompression password is the same as the compression password set during configuration export.

- b. Click **Export**, enter the **Compression password**, and click **Confirm** to complete the export.

 Please keep the password for the compressed package safe, as it will be required when importing the configuration in the compressed package to a new device later.

--End

 The imported file must be in ".zip" format.


### 11.3.6 Reset All Settings

**Step 1** Choose **System > System maintenance**.

**Step 2** Click **Reset all settings**.

**Step 3** Click **Confirm** in the warning dialog box.

--End

 This function will delete the IEC104/GOOSE forwarding protocol point tables, imported third-party point tables, historical data, parameter storage data, license, fault recording data, historical fault data, previous port packet export data, imported IEC104 collection point tables, third-party FTP record data, as well as device and device-stored configuration files. It will also reset default values for point table configurations and remove non-synchronizable data.

### 11.3.7 Recording Export

**Step 1** Choose **System > System maintenance**.

**Step 2** In the **Log file type selection** dialog box, select log types and specify a time period.

**Step 3** Click **Confirm**.

--End

### 11.3.8 Setup Wizard

After the system is installed and deployed, users can configure server information, plant parameters, and the iSolarCloud address based on the country/region where the plant is located.

**Step 1** Choose **System > System maintenance**.

**Step 2** Click **Setup wizard**.

**Step 3** Select the country/region where the plant is located. Options include: **China, Europe, Australia, Japan, and Others**. Then, the system will display region-specific features on the interface accordingly.

If **Japan** is selected in **Country/Region**, you need to select a scenario. Options include: **HV/UHV ESS-only scenario** and **C&I ESS scenario**.

- In HV/UHV ESS-only scenarios, only energy storage devices and grid devices are displayed in the plant overview diagram.
- In C&I ESS scenarios, devices such as loads, energy storage devices, and diesel generators are displayed in the plant overview diagram.

**Step 4** Completed the plant settings.

- **Rated capacity of energy storage (MWh)**: Enter the actual rated energy storage capacity of the plant.
- **PV installed capacity (Mwp)**: Enter the actual PV installed capacity of the plant.

**Step 5** To upload data to iSolarCloud, turn on the **iSolarCloud switch**. Then select the appropriate iSolarCloud server. Options include: **Chinese server**, **Australian server**, **European server**, and **International server**.

**Step 6** Click **Save** to save the settings.

--End

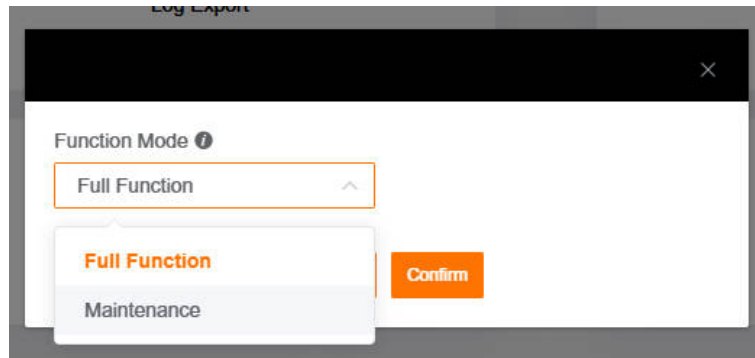
### 11.3.9 Function Mode

Users can switch the function mode based on actual needs. The system interface will display only the corresponding function menus to ensure a clean and efficient user experience.

**Step 1** Choose **System > System maintenance**.

**Step 2** Click **Function mode**.

**Step 3** Select a mode based on your actual needs.



- **Full function:** In this mode, the system supports device monitoring, control strategy management, and maintenance functions.
- **Maintenance:** In this mode, the system only supports maintenance operations such as device monitoring and updates.

**Step 4** Click **Confirm** to save your settings.

--End

### 11.3.10 Network Security Mode Configuration

After enabling network security mode, certain ports on the Web will be forcibly closed, and a risk warning will show up when accessing the page.

**Step 1** Choose **System > System Maintenance**.

**Step 2** Click **Network Security Mode Configuration**.

**Step 3** Determine whether to enable the network security mode in the pop-up window.



Turning off network security mode will weaken the network security protection for the device.

**Step 4** Click **Confirm**. The change will be applied after restart.



After the **Network security mode configuration** is enabled, the default password for maintain is changed to Pw1111111111.

--End

### 11.3.11 Certificate Management

The EMS300CP supports viewing and importing HTTPS certificates, IEC104 certificates, Modbus TCP certificates, and Modbus TCP collection certificates.

**Step 1** Choose **System > System maintenance**.

**Step 2** Click **Certificate management**.

**Step 3** Click the **HTTPS certificate, IEC104 certificate, Modbus TCP certificate** or **Modbus TCP certificate for collection** tab.

**Step 4** To import a certificate, click **Import certificate**, select the corresponding protocol, and upload the certificate file and the private key file.

**Step 5** Click **Confirm**.

--End

### 11.3.12 Public Key Import

To ensure safe system updates, digital signatures are used to verify the authenticity and integrity of update packages. When performing a controller update in Network Security Mode, please import the public key file for the update package to complete the verification process.

**Step 1** Choose **System > System Maintenance**.

**Step 2** Click **Public Key Import**.

**Step 3** Select the public key file in the pop-up window.

**Step 4** Click **Open** to import the file to the system.

--End

### 11.3.13 ATS250 Update

**Step 1** Choose **System > System maintenance**.

**Step 2** Click **ATS250 update**. The **Select a firmware file** window opens.

**Step 3** Select the **Device type**. Options include All, Master, and Slave.

**Step 4** Click **Select a firmware file** and select a local file.

**Step 5** Click **Confirm**.

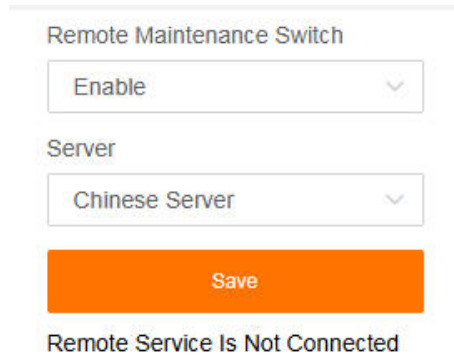


The update will cause ATs to shut down.

--End

## 11.4 Remote Maintenance

1. Click **System > Remote Maintenance** to enter the corresponding interface.



Remote Maintenance Switch


Enable

Server

Chinese Server

Save

Remote Service Is Not Connected

2. Click  in **Remote Maintenance Switch**.
  - Remote maintenance is supported if this switch is set to **Enable**, and it is required to set the address.
    - Select **Chinese Server** for projects in Mainland China.
    - Select **European Server** for projects in Europe.
    - Select **Australian Server** for projects in Australia.
    - Select **International Server** for projects in other regions.
  - Remote maintenance is not supported if this switch is set to **Disable**.
3. Click **Save** to save the configuration.

## 11.5 Message Export

- Step 1** Click **System > Message Export** to enter the corresponding interface.

Type

Serial Port

Port

COM1

Duration (Min)

1

Start

Stop

Export

**Step 2** Set **Type**, **Port**, and **Duration**, and click **Start** to start recording messages. The recording is automatically stopped when the set duration ends, or it can be manually interrupted by clicking **Stop**.

**Step 3** Click **Export** to export the message.

--End

## 11.6 System Time

On this interface, users can check whether the current system time is correct and carry out time calibration.

### NOTICE

The system time must be set if the controller is used for the first time.

#### Procedure

1. Choose **System > System Time**.

Current Time **2025-02-28 11:49**

Clock Source

User Define

Use PC Time

Time Zone

(UTC+08:00) Beijing, Urumc

Date

2025-02-28

Time

11:49:27

Save

2. Select a clock source from the **Clock Source** drop-down list. Options include **User Define**, **NTP**, and **iSolarCloud**.

Clock Source	Description
<b>User Define</b>	<p>The current system time and time zone can be set in the following two ways:</p> <ul style="list-style-type: none"> <li>Select <b>Use PC Time</b> to synchronize the controller time with the PC time.</li> <li>Select a time zone from the <b>Time Zone</b> drop-down list. Specify the <b>Date</b> and <b>Time</b> to manually set the controller time.</li> </ul> <p>It is recommended to select <b>User Define</b> during commissioning.</p>
<b>NTP</b> (Network Time Protocol)	<p>Used to synchronize computer system time.</p> <ul style="list-style-type: none"> <li>Select a time zone from the <b>Time Zone</b> drop-down list.</li> <li>Set the server site in <b>Server</b>. Use the default value.</li> <li>Set the NTP synchronization interval in <b>Time Interval</b>. Unit: minutes.</li> </ul>

Clock Source	Description
iSolarCloud	Synchronize the controller time with the iSolarCloud time.

- Click **Save** to save the settings.

## 11.7 Forwarding Configuration

### 11.7.1 IEC104 Forwarding Service Configuration

The IEC104 is a communication protocol used for remote monitoring and control systems. It can transmit various types of information, including remote signaling, telemetry, remote control, remote regulating, and remote pulse.

Select a local port, enable IEC104 forwarding service for this port, and configure the point table.

**Step 1** Choose **System > Forwarding configuration**.

**Step 2** Click the **IEC104** tab.

Local port	Switch	SSL encryption
2404	<input type="checkbox"/>	<input type="checkbox"/>
2405	<input type="checkbox"/>	<input type="checkbox"/>
2406	<input type="checkbox"/>	<input type="checkbox"/>
2407	<input type="checkbox"/>	<input type="checkbox"/>
2408	<input type="checkbox"/>	<input type="checkbox"/>
2409	<input type="checkbox"/>	<input type="checkbox"/>
2410	<input type="checkbox"/>	<input type="checkbox"/>
2411	<input type="checkbox"/>	<input type="checkbox"/>
2412	<input type="checkbox"/>	<input type="checkbox"/>
2413	<input type="checkbox"/>	<input type="checkbox"/>
2414	<input type="checkbox"/>	<input type="checkbox"/>
2415	<input type="checkbox"/>	<input type="checkbox"/>
2416	<input type="checkbox"/>	<input type="checkbox"/>
2417	<input type="checkbox"/>	<input type="checkbox"/>
2418	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

**Step 3** Select an appropriate port from the local port list and click  to enable IEC104 forwarding service for this port.

**Step 4** Click the SSL encryption icon  to enable SSL encryption for the local port.

The IEC104 forwarding service operates on ports 2404–2418. The port 2418 is enabled by default with SSL encryption applied, while other ports are disabled by default and do not use SSL encryption. The users can manually enable or disable the Switch icon and SSL encryption icon of the local port.



**SSL encryption** will be available when **Network security mode** is enabled. It is recommended to enable SSL encryption to improve data transmission security.

**Step 5** (Optional) Configure the point table.

If you choose to use the default point table, skip step 4 and go to step 5 directly.

- Click **Address configuration** in the upper right corner of the page. In the pop-up window, enter the beginning addresses of remote signaling, telemetry, remote control, remote regulating, and remote pulse.


The screenshot shows a window titled "Address Configuration" with a close button (X) in the top right corner. At the top left of the window is a "Reset" button with a circular arrow icon. Below it are five input fields, each with a label and a value:


- Beginning Address of Remote Signaling: 1
- Beginning Address of Telemetry: 16385
- Beginning Address of Remote Control: 24577
- Beginning Address of Remote Regulating: 25089
- Beginning Address of Remote Pulse: 25601

The figure above shows the default addresses configured in the system. You can modify the addresses as needed.

You can click **Reset** to restore the default address settings.

- Select an enabled local port to configure a custom point table for this port.

In the third column of the selected port, click  to open the **Advanced settings** window. Configure the following parameters.


- Remote signaling measuring point type: Set the type of measuring point sent from the upper-level device.
- Remote signaling time mark: Set the remote signaling time tag sent from the upper-level device.
- Upload with a change: When this parameter is set to enable, if the EMS device detects changes in monitoring data, the changes will be uploaded.
- Configuration file: Click  to import the point table configuration file.

Click **Save** to complete the point table configuration.

**Step 6** Generate the point table. Click **Generate point table** in the upper right corner. Point tables will be generated for all enabled ports based on the configuration in step 3. If step 4 is skipped, the default point table will be applied.

--End

**Export Point Table**

- Click **Export point table** in the upper right corner to export the point tables of all ports.
- Select a port and click  to export its point table to your local system.

### White List Setting

Click **White list setting** in the upper right corner of the page to open the setting window.


- If the **Enable white list** checkbox is not selected, the default peer IP address is "0.0.0.0". Any backend device with a valid IP address is allowed to access the controller.
- If the **Enable white list** checkbox is selected, enter the peer IP address. Then, only devices with the specified IP address can access the controller.

## 11.7.2 Modbus

This function is used to configure Modbus forwarding service of the controller.

### Server

In Server mode, the controller functions as the server and transmits data and instructions with the upper computer server through Modbus TCP protocol.

1. Choose **System > Transfer configuration > MODBUS**.
2. Click the **Server** tab.
3. Turn on/off the local port by clicking the icon in the Switch column according to the actual conditions.
4. Click the SSL encryption icon  to enable SSL encryption for the local port. Ports 502 to 516 are used for the Modbus forwarding service. The port 516 is enabled by default with SSL encryption applied, while other ports are disabled by default and do not use SSL encryption. The users can manually enable or disable the Switch icon and SSL encryption icon of the local port.




**SSL encryption** will be available when **Network security mode** is enabled. It is recommended to enable SSL encryption to improve data transmission security.

5. For whitelist setting, please refer to [White List Setting](#).

### RTU

In RTU mode, the controller transmits data and instructions with the upper computer server through Modbus RTU protocol.

1. Click **System > Transfer configuration > MODBUS** to enter the corresponding interface.
2. Click the **RTU** tab.
3. Select the serial port name and enter the delay time.
4. Click  to save the settings.

## 11.7.3 Cloud Transmission Configuration

It is used to upload data to the cloud server.

**Step 1** Click **System > Forwarding Configuration > Cloud Transmission Configuration** to enter the corresponding interface.

**Step 2** Click **Upload Parameters** to select whether to upload the parameters to the cloud or not.  
--End


## 11.8 Port Parameter

Set ports of the controller on the interface. There are 7 RS485 ports (COM1~COM7).

### 11.8.1 RS485

On this interface user can view or modify parameters of each port of the controller.

**Step 1** Click **System > Port Parameter > RS485** to enter the corresponding interface.

**Step 2** Click  in the **Action** column to modify the port function, baud rate, parity bit, and stop bit. The parameters are explained as follows.

Parameter	Description
Serial port	COM1 ~ COM7, cannot be changed.
Port function	<ul style="list-style-type: none"> <li>Acquisition</li> <li>Forwarding background</li> </ul>
Baud rate	The default value is 9600. Please fill in according to the actual situation.
Parity bit	Presence and absence, odd and even.
Stop bit	Please select according to the actual situation.



When the controller is connected to a device via a serial port, the **Baud Rate**, **Parity Bit**, and **Stop Bit** of the port must be the same as those of the connected device so that the controller can communicate normally with the device.

--End

### 11.8.2 Ethernet

#### 11.8.2.1 Configure Controller IP Settings


This section describes how to configure IP addresses for the network ports of the controller and enable the DHCP service.



The DHCP function is only applicable to ST255CS.

**Step 1** Click **System > Port Parameter > Ethernet** to navigate to the corresponding page.

Network Port	Automatically Obtain IP Settings (DHCP)	DHCP Service	IP Address	Subnet Mask	Default Gateway	Primary DNS-Server	Secondary DNS-Server
ETH1	<input type="radio"/> Open <input checked="" type="radio"/> Close	<input type="radio"/> Open <input checked="" type="radio"/> Close	192.168.13.140	255.255.255.0	192.168.13.1	1.2.4.8	8.8.8.8
ETH2	<input type="radio"/> Open <input checked="" type="radio"/> Close	<input checked="" type="radio"/> Open <input type="radio"/> Close	192.168.52.238	255.255.254.0	192.168.53.254	192.168.0.222	192.168.0.223
ETH5	<input type="radio"/> Open <input checked="" type="radio"/> Close	<input type="radio"/> Open <input checked="" type="radio"/> Close	12.12.12.12	255.0.0.0	12.12.12.1	1.2.4.8	8.8.8.8

**Step 2** Set the IP address for each network port. After completing the settings, click  on the right side to save the settings.

- If you enable **Automatically Obtain IP Settings (DHCP)** for a port, the local area network (LAN) will assign an IP address to the port.
- If **Automatically Obtain IP Settings (DHCP)** is disabled, enter the parameters such as IP address, subnet mask, and gateway address.


The default IP address and virtual IP address for each port are as follows:

**Table 11-1** Controller IP Address

Port	Default IP Address	Virtual IP Address
ETH1	14.14.14.14	15.15.15.15
ETH2	12.12.12.12	16.16.16.16
ETH5	13.13.13.13	17.17.17.17

 The above IP addresses are for reference only. The actual ones may be different.

**Step 3** (Optional) Configure the DHCP service.

- To perform one-click access, the DHCP service must be enabled. Based on the connection status of the LC, select the corresponding network port and enable its DHCP service. For example, if the LC is connected to the ETH2 port of the controller, the DHCP service needs to be enabled for only ETH2.
- Click  on the right side to save the settings.
- To perform one-click access for energy storage devices, configure energy storage device IP settings by referring to [11.8.2.2 Configure Energy Storage Device IP Settings](#).

--End

### 11.8.2.2 Configure Energy Storage Device IP Settings

On the Energy Storage Device IP page, you can set the beginning and ending IP addresses for energy storage device. The system will automatically assign IP addresses within the range to energy storage devices.




This page is displayed only when the DHCP service is enabled for the ETH ports of the controller.

**Step 1** Click **System > Port Parameters > Ethernet** to enter the corresponding interface.

**Step 2** Click the **Energy Storage Device IP** tab.

**Step 3** Set the **Beginning Address** and **Ending Address**. By default, the DHCP service is enabled for the ETH2 port, and the beginning and ending IP addresses are preconfigured for energy storage devices. You can modify the settings as needed. For example, if the LC's ETH1 port (with an IP address of 192.168.1.100) is connected to the controller, the beginning IP address for energy storage devices can be set to 192.168.1.100. Considering that up to 25 devices can be connected, the ending IP address can be set to 192.168.1.150.

**Step 4** Click  to save the settings.




--End

### 11.8.3 DI


**Step 1** Choose **System > Port parameter > DI** to enter the **DI** page.

No.	Port	Enabling status	Node type	Current value	Manual parameter resetting	Set value	Port configuration	Remarks
1	DI1	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI01	DI01
2	DI2	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI02	DI02
3	DI3	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI03	DI03
4	DI4	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI04	DI04
5	DI5	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI05	DI05
6	DI6	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI06	DI06
7	DI7	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI07	DI07
8	DI8	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI08	DI08
9	DI9	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI09	DI09
10	DI10	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI10	DI10
11	DI11	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI11	DI11
12	DI12	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI12	DI12
13	DI13	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI13	DI13
14	DI14	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI14	DI14
15	DI15	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI15	DI15
16	DI16	<input type="checkbox"/>	+ NO NC	0	<input type="checkbox"/>	0	DI16	DI16

**Step 2** Configure the following parameters:

Parameter	Description
Enabling status	<p>Click  to switch the status.</p> <ul style="list-style-type: none"> <li>: The port is enabled and allows parameter configuration.</li> <li>: The port is disabled.</li> </ul>

Parameter	Description
Node type	Set this parameter according to actual conditions. Options include <b>NO</b> and <b>NC</b> .
Current value	Display the current output value of the DI.
Manual parameter setting	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/>: Enable manual parameter setting. The value received by the connected device is determined by the <b>Set value</b>.</li> <li><input type="checkbox"/>: Disable manual parameter setting. The <b>Set value</b> and <b>Point configuration</b> cannot be modified.</li> </ul>
Set value	Set this parameter according to actual conditions. Options include 0 and 1. The default value is 0.
Point configuration	<p>Through <b>point configuration</b>, you can adjust or modify the remarks of preset strategies.</p> <ul style="list-style-type: none"> <li>1001: Preset with the remarks "Grid-connected circuit breaker closed feedback", configured on port DI2 by default.</li> <li>1002: Preset with the remarks "Grid-connected circuit breaker open feedback", configured on port DI3 by default.</li> <li>1003: Preset with the remarks "DI power control", configured on port DI1 by default.</li> <li>1004: Preset with the remarks "Overload monitoring meter switching," configured on port DI4 by default.</li> </ul>
Remarks	Enter remarks of no more than 20 characters.

**Step 3** Click  on the right to save the settings.

**Step 4** (Optional) Click **Enable all ports** in the upper right corner of the page to enable all DI ports.

**Step 5** (Optional) Click **Disable all ports** in the upper right corner of the page to disable all DI ports.

**Step 6** (Optional) Click **Enable manual setting for all** in the upper right corner of the page to enable manual parameter setting for all enabled DI ports.

**Step 7** (Optional) Click **Disable manual setting for all** in the upper right corner of the page to disable manual parameter setting for all enabled DI ports.

**Step 8** (Optional) Click **Save all** in the upper right corner of the page to save all DI settings.

--End


## 11.8.4 DO

**Step 1** Choose **System > Port parameter > DO** to enter the **DO** page.

DO	Initial status	Control mode	Function	Action mode	Pulse duration (1-60s)	Action
DO01	<input checked="" type="radio"/> NO <input type="radio"/> NC	Automatic control	ESS disconnection for overload protection	Pulse	1	
DO02	<input checked="" type="radio"/> NO <input type="radio"/> NC	Automatic control	Diesel generator start/stop	Level	1	
DO03	<input checked="" type="radio"/> NO <input type="radio"/> NC	None	Diesel generator start/stop	Level	1	
DO04	<input checked="" type="radio"/> NO <input type="radio"/> NC	None	Diesel generator start/stop	Level	1	

**Step 2** Configure the following parameters:

Parameter	Description
Initial status	Set this parameter according to actual conditions. Options include <b>NO</b> and <b>NC</b> .
Control mode	<ul style="list-style-type: none"> <li>None: No control is applied to this DO port.</li> <li>Automatic control: Control the DO port via automatic control.</li> <li>Manual control: After selecting Manual control from the drop-down list, you can click <b>Manual control</b> in the upper right corner of the page to control the DO port as needed.</li> </ul>
Function	Support automatic control for Diesel generator start/stop, Grid-connected circuit breaker, ESS disconnection for overload protection, Charger disconnection for overload protection, and Diesel generator start upon ESS fault.
Action mode	Select the Pulse or Level action mode.
Pulse duration (1–60) s	When the Action mode is set to Pulse, set the pulse duration as needed. The value range is 1–60.

**Step 3** Click  on the right to save the settings.

--End

## 11.9 License

On this interface users can view license information and import license files.

**Step 1** Click **System > license** to view the basic information and license status of the product.

**Step 2** Click **Select File** to import the license file. Please contact SUNGROW customer service and provide the contract number to apply for the license file.



Click **Clear** to clear the license file.

--End

## 12 Firmware Version

Here you can check the firmware version of the controller.

**Step 1** Click **System > About** to navigate to the corresponding page.

**Step 2** Click the field corresponds to **Version** five times to check the firmware version.

Firmware Information

Name	Version
Device S/N	92041022A
Version	EMS300CP_V01_V01_A

The firmware version of the EMS300CP is identified by **Product Release Software Version**, formatted as "EMS300CP-SV100.001.00.P[XXX]". For easier recognition, the firmware version is often shortened and referred to as "P[XXX]."

Name	Value
Product Release Software Version	EMS300CP-SV100.001.00.P017
Product Build Software Version	EMS300CP-SV100.001.00.B005
Strategy Base Version	EMS_BASE_Ver1.00
Platform Release Software Version	SUNSHINE-SV100.001.00.P017
Platform Build Software Version	SUNSHINE-SV100.001.00.B006.08
DRA7DSP1 Software Version	DSP_APP_VER_0.1
System Software Version	A15SYS-SV100.003.00.PA04

--End

# 13 User Management

An Administrator can create O&M User accounts, reset account passwords, set parameters related to account and login security, and enable R&D debugging mode.

**Step 1** The firmware version of EMS300CP should be P020 or later. See [12 Firmware Version](#) for how to check the firmware version.

**Step 2** An Administrator account is required to proceed with the operations below.

--End

## 13.1 User Roles and Permissions

The following user roles are available in this system:

- Ordinary User
- O&M User
- Developer
- Administrator



Developer accounts are available for SUNGROW technical support team only.

Permission	Role		
	Ordinary User	O&M User	Administrator
View real-time plant data	✓	✓	✗
Configure controller port settings	✗	✓	✗
Configure forwarding service for the controller	✗	✓	✗
Manage devices	✗	✓	✗
Set device parameters	✗	✓	✗
Export data	✗	✓	✗
Set control strategies	✗	✓	✗
Perform controller system maintenance	✗	✓	✗
View all O&M Users	✗	✗	✓

Permission	Role		
	Ordinary User	O&M User	Administrator
Create or delete an O&M User account	×	×	✓
Reset account password	×	×	✓
Set parameters related to account and login security	×	×	✓
Enable O&M mode	×	×	✓

## 13.2 Default Accounts and Passwords

Username	Role	Default password
maintain	O&M user	<ul style="list-style-type: none"> <li>Network security mode disabled: pw1111</li> <li>Network security mode enabled: Pw1111111111</li> </ul>
administrator	Administrator	pw1111
develop	Developer	Obtain the S/N through customer authorization and generate a dynamic password.

## 13.3 Creating O&M User Account

An Administrator can create more O&M user accounts to meet the O&M (operation and maintenance) needs of the team.

The system provides one O&M User account "maintain" by default.

In addition to the "maintain" account, the Administrator can create up to 4 more O&M user accounts.

### Username requirements

- The name can contain uppercase letters, lowercase letters, numbers, and underscores;
- The name must start with a letter;
- The name should be 4–16 characters long.

### Password requirements

- Passwords should contain at least three of the following four character types: uppercase letters, lowercase letters, numbers, and special characters;
- Password should be 12–32 characters long.



- If Network Security Mode is not enabled, the passwords of all users are permanently valid.
- Under Network Security Mode, the Administrator can set passwords to expire after a number of days between 1 and 90 for different types of users.

### Prerequisite

- Log in to the Web as an Administrator. See [13.2 Default Accounts and Passwords](#) for details.

**Step 1** Choose **User Management** on the navigation bar.

**Step 2** Click **Add** to open the “**Add User**” window.

**Step 3** Set the username and password.

**Step 4** Select **O&M User** in **Permission**.

**Step 5** Click **Confirm**.


--End

## 13.4 Deleting O&M User

### Prerequisite

- Log in to the Web as an Administrator. See [13.2 Default Accounts and Passwords](#) for details.

**Step 1** Choose **User Management** on the navigation bar.

**Step 2** Click  in the “Action” column.

**Step 3** Click **Confirm** in the confirmation dialog to delete this user.

**Step 4** You can click **Clear Users** to delete all user accounts.

--End


## 13.5 Account Password Reset

### 13.5.1 O&M Account Password Reset

#### Prerequisite

- Log in to the Web as an Administrator. See [13.2 Default Accounts and Passwords](#) for details.

**Step 1** Choose **User Management** on the navigation bar.

**Step 2** Click  in the “Action” column to open the **Modify User** window.

**Step 3** Reset the username or password.

**Step 4** Click **Confirm**.

--End

### 13.5.2 Administrator Account Password Reset

**Step 1** Log in to the EMS300CP Web system.

**Step 2** Enter the Administrator account name: administrator.

**Step 3** Click **Forgot Password** to open the **Modify Password** window.

**Step 4** Enter the secret key.

Get the secret key via email or phone.



If your account has not been linked to an email address or a phone number, contact SUNGROW customer service for secret key.

**Step 5** Enter the new password and double-confirm.

**Step 6** Click **Confirm**.

--End

## 13.6 Account and Login Security Settings

To enhance account security, you can set limits for login attempts and session timeouts.

### Prerequisite

- Log in to the Web as an Administrator. See [13.2 Default Accounts and Passwords](#).

**Step 1** Choose **Session management** in the navigation bar.

**Step 2** Change the account and session security settings.

You can set the following parameters:

- **Number of illegal visits:** Set the maximum number of allowed failed login attempts. If the count of failed login attempts due to incorrect passwords exceeds this number, the account will be locked out (range: 3–6; 6 by default).
- **Session timeout:** Defines the period of inactivity after which the login session will time out. Once timed out, the user will be required to log in again (range: 10–30; 10 by default).
- **User lock time:** Specifies the duration for which the user account remains locked after exceeding the failed login attempts limit. The user must wait until this period expires for the account to be unlocked (range: 10–30; 10 by default).
- **System notification:** Displays a notification message on the account login page.

**Step 3** Click **Save**.

--End

## 13.7 O&M Mode

The Administrator must enable **R&D Debugging** to allow Developer users to log in to the Web for debugging.



- In Network Security Mode, **R&D Debugging** is turned off by default.
- If Network Security Mode is not enabled, **R&D Debugging** is turned on by default.

### Prerequisite

- Log in to the Web as an Administrator. See [13.2 Default Accounts and Passwords](#) for details.

**Step 1** Choose **R&D Management** on the navigation bar.

**Step 2** Turn on the switch.

The switch will automatically turn off after being on for 24 hours.

--End

# 14 Appendix

## 14.1 Quality Assurance

When product faults occur during the warranty period, SUNGROW will provide free service or replace the product with a new one.

### Evidence

During the warranty period, the customer shall provide the product purchase invoice and date. In addition, the trademark on the product shall be undamaged and legible. Otherwise, SUNGROW has the right to refuse to honor the quality guarantee.

### Conditions

- After replacement, unqualified products shall be processed by SUNGROW.
- The customer shall give SUNGROW a reasonable period to repair the faulty device.

### Exclusion of Liability

In the following circumstances, SUNGROW has the right to refuse to honor the quality guarantee:

- The free warranty period for the whole machine/components has expired.
- The device is damaged during transport.
- The device is incorrectly installed, refitted, or used.
- The device operates in harsh conditions beyond those described in this manual.
- The fault or damage is caused by installation, repairs, modification, or disassembly performed by a service provider or personnel not from SUNGROW.
- The fault or damage is caused by the use of non-standard or non-SUNGROW components or software.
- The installation and use range are beyond stipulations of relevant international standards.
- The damage is caused by unexpected natural factors.

For faulty products in any of above cases, if the customer requests maintenance, paid maintenance service may be provided based on the judgment of SUNGROW.



Product data such as product dimensions are subject to change without prior notice. The latest documentation from SUNGROW should take precedence in case of any deviation.

## 14.2 Contact Information

In case of questions about this product, please contact us. We need the following information to provide you the best assistance:

- Model of the device
- Serial number of the device
- Fault code/name
- Brief description of the problem

For detailed contact information, please visit: <https://en.SUNGROWpower.com/contactUS>

**SUNGROW**

Sungrow Power Supply Co., Ltd.

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