V01

# COMMERCIAL & INDUSTRIAL ALPHACLOUD END USER MANUAL

# Table of Contents

Table of Contents ..... 1

1. Login Page ..... 3

1.1 Registration ..... 3

1.2 Forgot Password ..... 4

2. Home Page ..... 6

2.1 Summary Information ..... 6

2.2 Map ..... 8

3. Station List ..... 10

4. Station Overview ..... 10

5. Channel List ..... 11

6. Statistical Analysis ..... 13

Power Consumption Statistics ..... 13

6.2 Profit Statistics ..... 15

7. Energy Storage System Maintenance ..... 17

7.1 Adding New Channels to the Station ..... 17

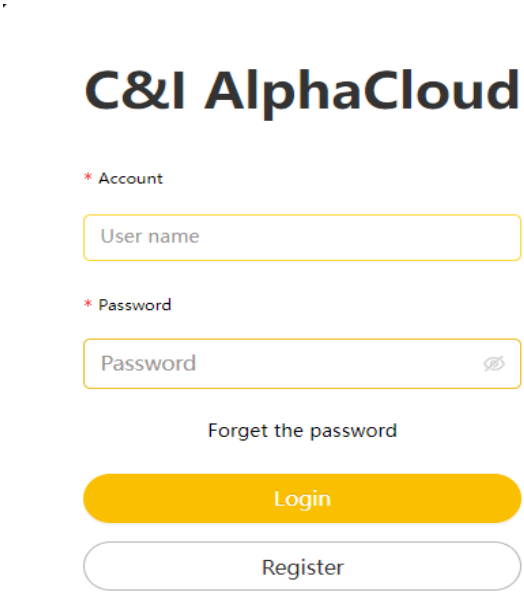
8. Station Parameters Configuration ..... 17

8.1 Electricity Price Settings ..... 17

8.2 Station Basic Information Modification ..... 18

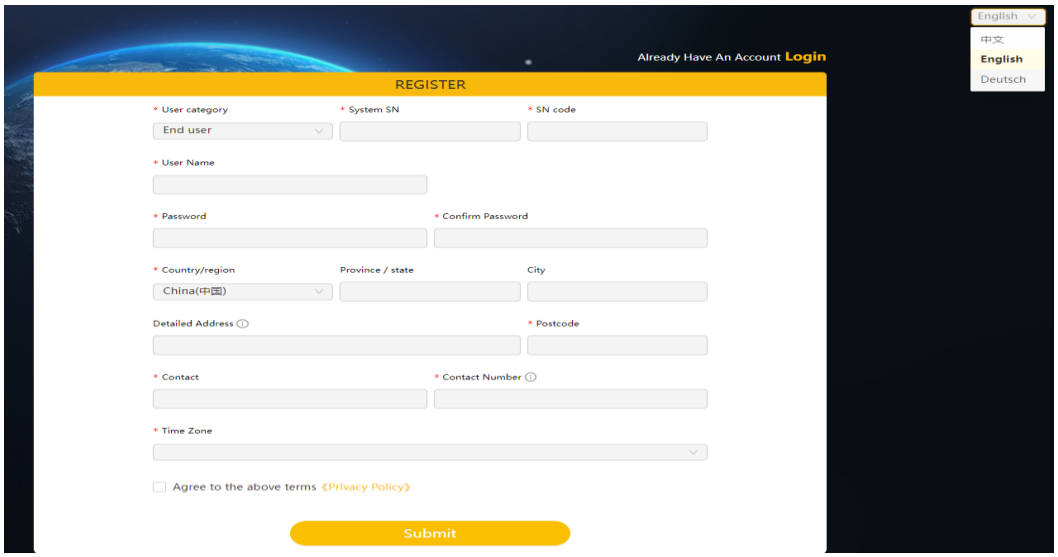
8.3 Control Strategies ..... 19
8.4 Device List ..... 24
8.5 Advanced System Parameters ..... 25
9. Log List ..... 26
9.1 Event List ..... 26
10. User Settings ..... 27
10.1 User Information Modification ..... 27
10.2 Change Password ..... 27
10.3 Account Logout ..... 27
11. 11. Data Center ..... 28
11.1 Product Information ..... 28
12. Contact Information ..... 28
13. Privacy Policy ..... 29
14. Customer Feedback ..... 29
15. Select Language, Logout, Change Theme ..... 29

# 1. Login Page




Enter your username and password, and click “Log in” to jump to the home page. In case of login failure, a reminder will appear stating “Incorrect username or password”. Users who haven't registered need to click “Register” to register a new account first. If you have forgotten your password, please click “Forgot Password” on the login page.

## 1.1 Registration




Fields marked with a “*” indicate mandatory information. The information provided during registration must be genuine and valid, and the time zone in

the mandatory fields must accurately reflect the user's actual time zone. In case of language barriers, users can select different languages in the top right corner of the page. Currently, Chinese, English, and German are available for selection.

## 1.2 Forgot Password

Enter your username (email) and click on “Get Verification Code” (as shown in Figure 1.2.1). A verification code for password recovery will be sent to your email address (as shown in Figure 1.2.2). Enter the verification code received in your email and click 'Next Step' to proceed to the password reset page (as shown in Figure 1.2.3). In the respective input fields, enter your “Password” and “Confirm Password”, then click “Submit” to complete the password reset process.

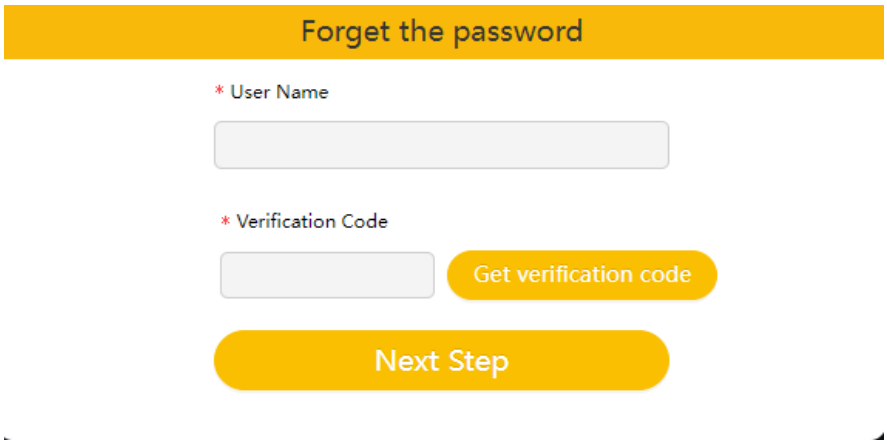



**Figure 1.2.1**

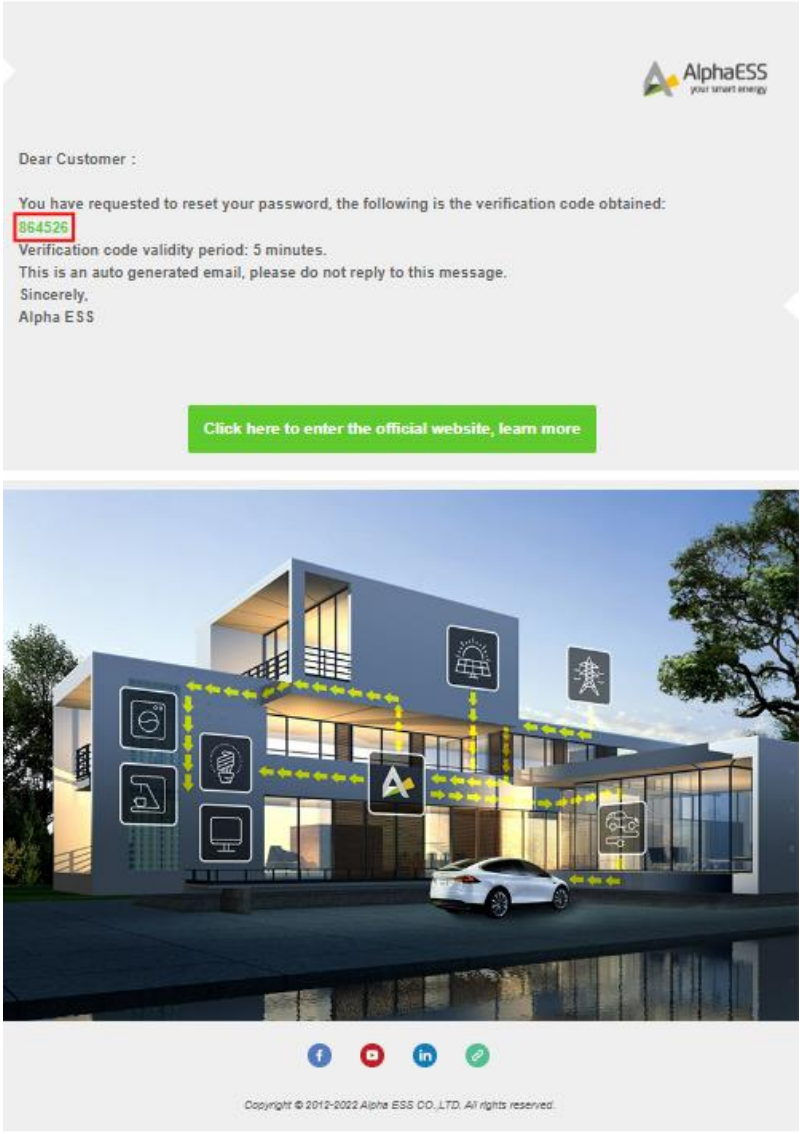



**Figure 1.2.2**

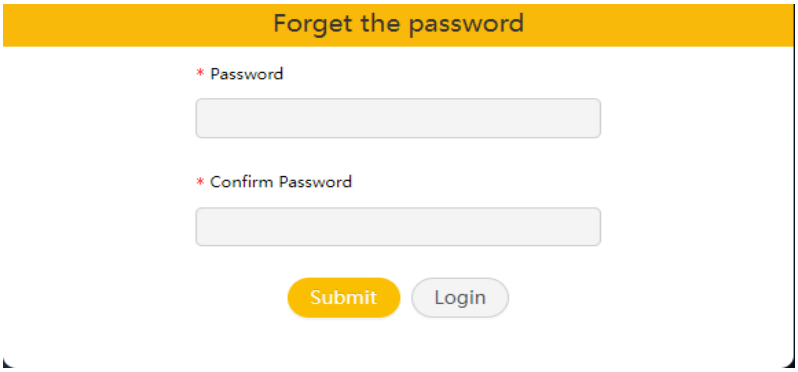



**Figure 1.2.3**

# 2. Home Page

## 2.1 Summary Information

Summary Information on the Home Page:

For Admin: Provides a summary of all stations' information.

For Installers: Provides a summary of all stations bound to their License.

For End Users: Provides a summary of stations bound to their accounts.

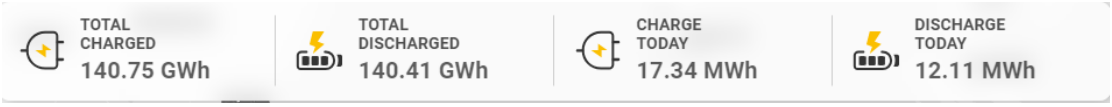
(As shown in the image)

The sum of the battery total capacity entered in the basic station information.

PCS Total Power: The sum of the installed power entered in the basic station information.

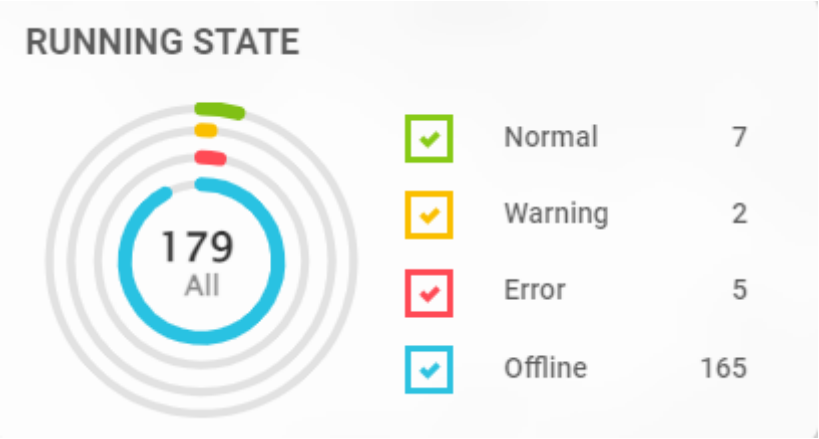
Total Photovoltaic (PV) Generation: The aggregated energy value from the "Photovoltaic Grid-Connected Point Meter" in the station or the aggregated energy value from the total PV generation uploaded by the DC/AC in the PCS.

Photovoltaic Generation: The daily aggregated energy value from the "Photovoltaic Grid-Connected Point Meter" in the station or the daily total PV generation uploaded by the DC/AC in the PCS (as shown in the above figure).

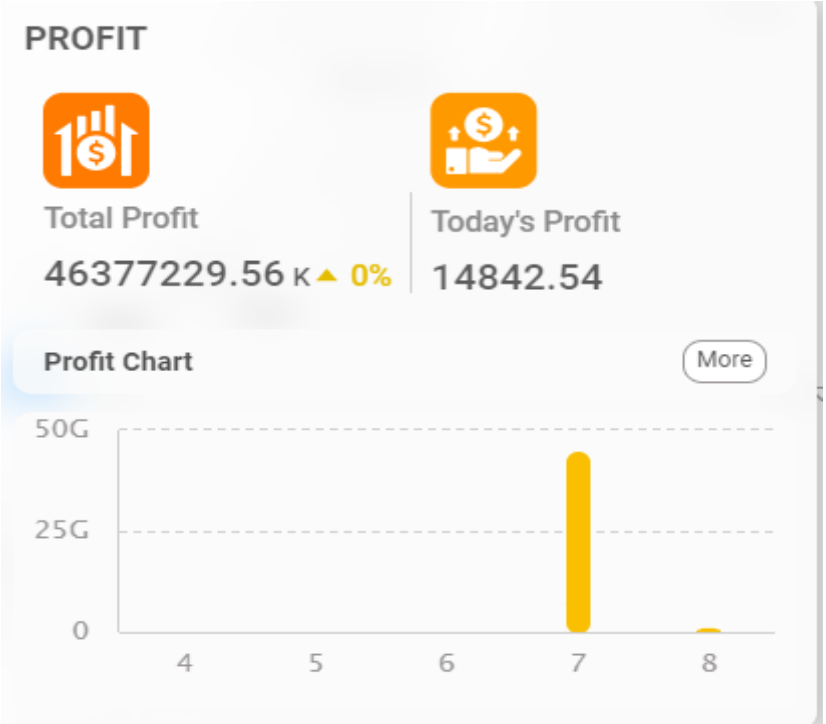



Total Charge & Total Generation: If the station has an "Energy Storage Grid-Connected Point Meter", then the energy value is taken from the statistical summary of that meter. If not, the value is taken from the energy statistics summary on the DC side of the PCS.

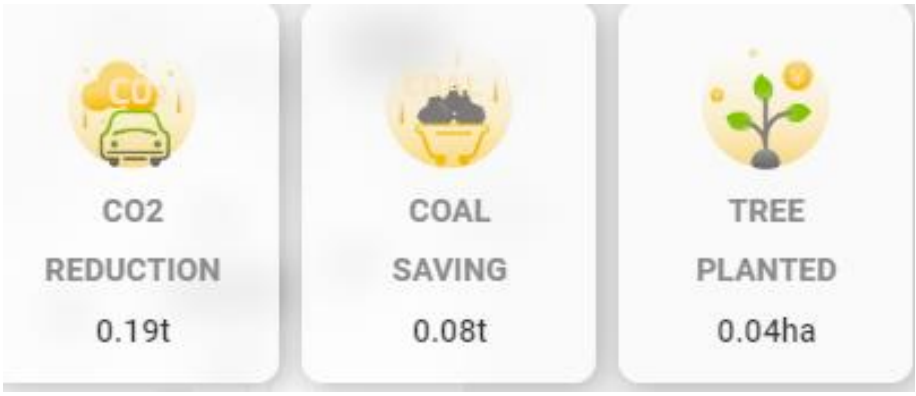
Daily Charge & Daily Generation: If the station has an "Energy Storage Grid-Connected Point Meter", then the energy value for the day is taken from the daily statistics of that meter. If not, the value is taken from the daily statistics on the DC side of the PCS (as shown in the above figure).




There are 4 running states for all systems under each station (as shown in the above figure).




Summarized profit for all stations. Click “More” to go to the Statistical Analysis - Profit Analysis page (as shown in the above figure).



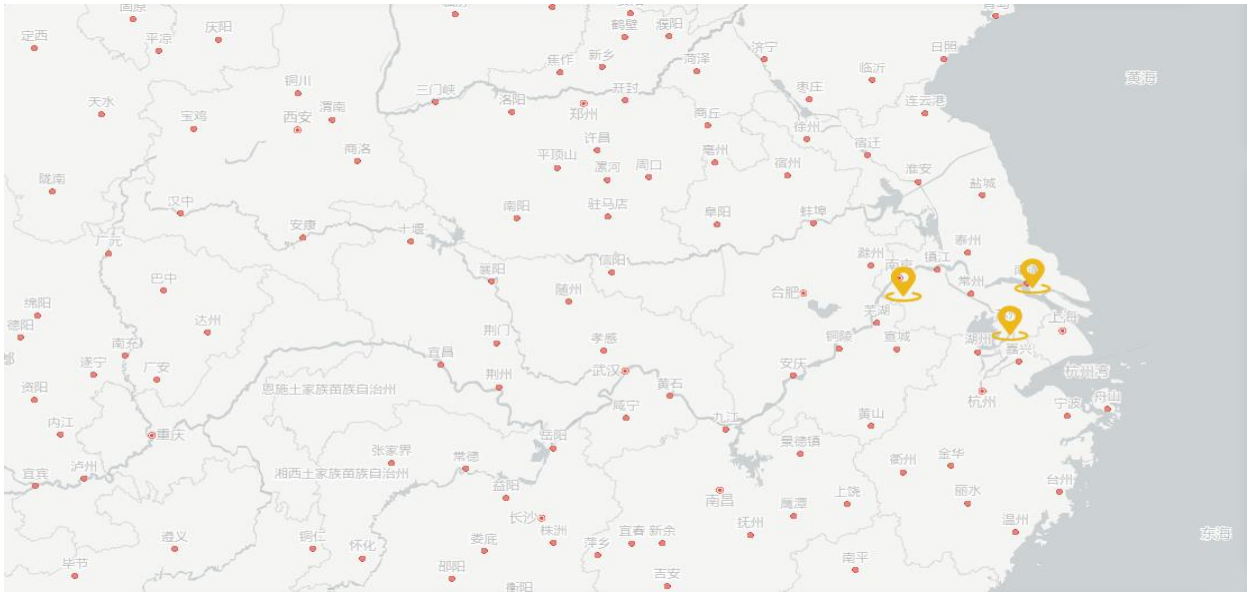

CO2 Emission Reduction: (Total PV Generation + Total Discharge * 0.618) * 0.86 / 1000

Cumulative Coal Savings: (Total PV Generation + Total Discharge * 0.618) * 0.36 / 1000

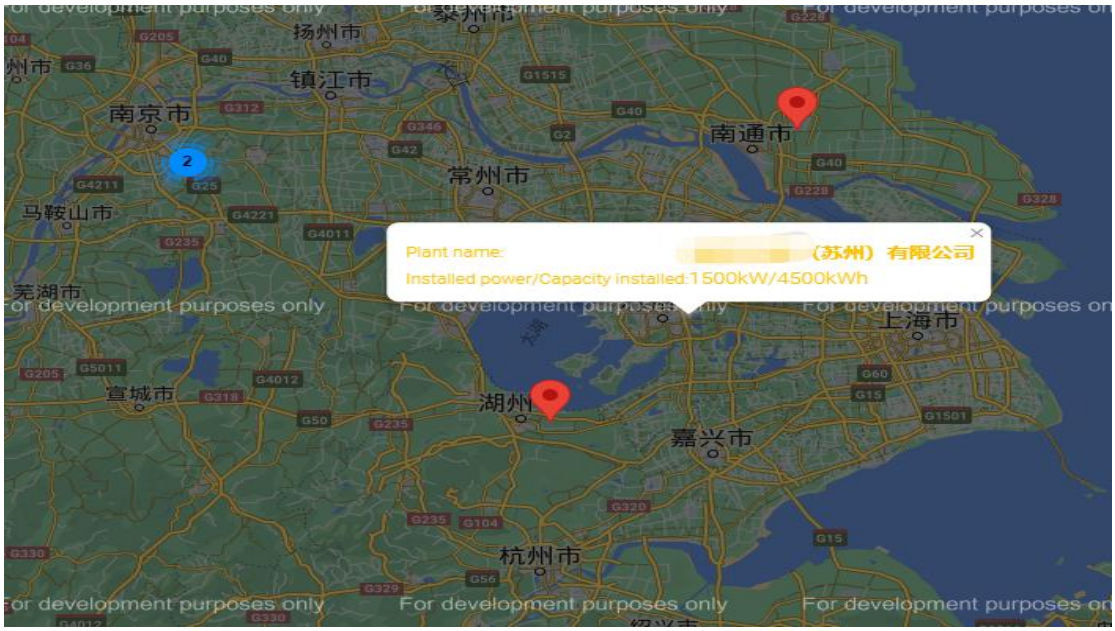
Equivalent Afforestation: (Total PV Generation + Total Discharge * 0.618) * 0.86 / 5023

(as shown in the above figure)

## 2.2 Map

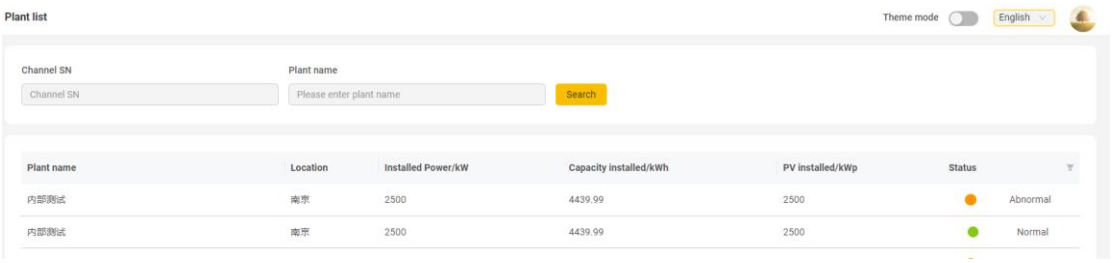


The points shown in the figure represent the locations of end users (as shown in the above figure).




After clicking on the coordinates, an information prompt panel will appear. Clicking on the project name in this information panel will navigate to the station overview (as shown in the above figure).

## 3. Station List

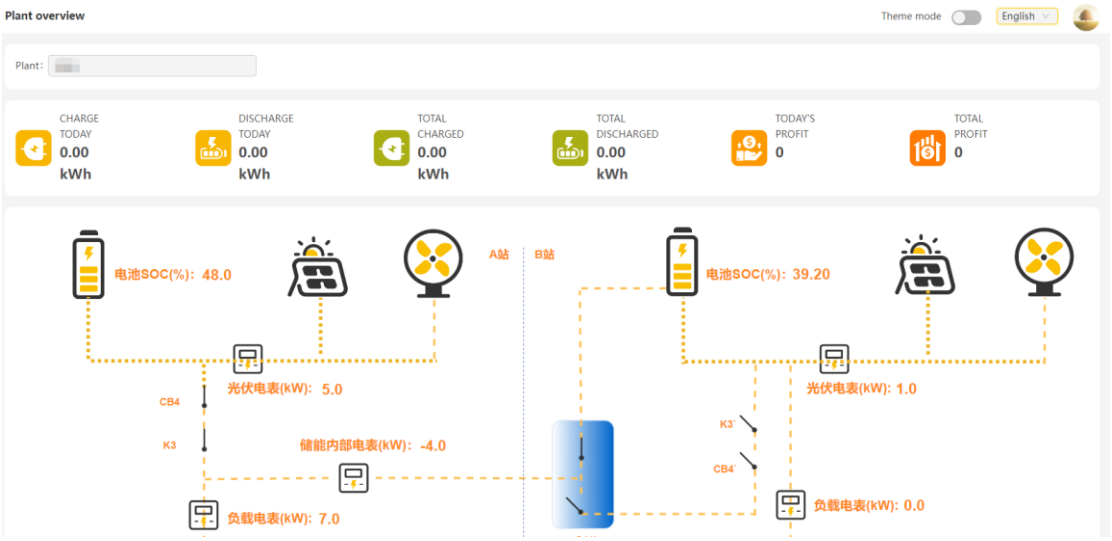



The Admin account can see all station information; the installer can see all station information associated with their linked end users; end users can only see information about stations linked to their own accounts. Clicking on a row in the table allows the selection of that station in the system.

Main Channel: If the station has a SCADA device, it is the SN of that device; otherwise, it is the SN of the EMS.

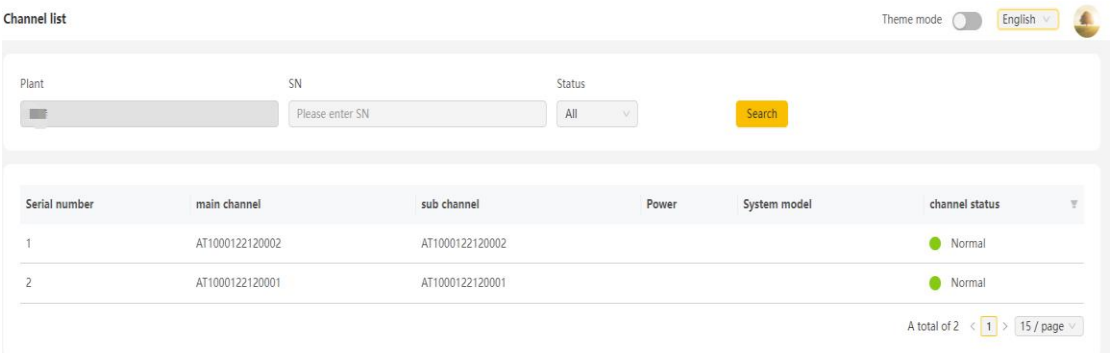
Station Name: Allows for a fuzzy search based on the station name.

## 4. Station Overview




Display options for the station include daily charge and discharge, total charge and discharge, daily profit, and total profit statistics. Above is a topological map showing the deployment status of the station. It can dynamically display real-time information such as the remaining State of Charge (SOC) of batteries, power values of meters, and the direction of current flow (as shown in the above figure).

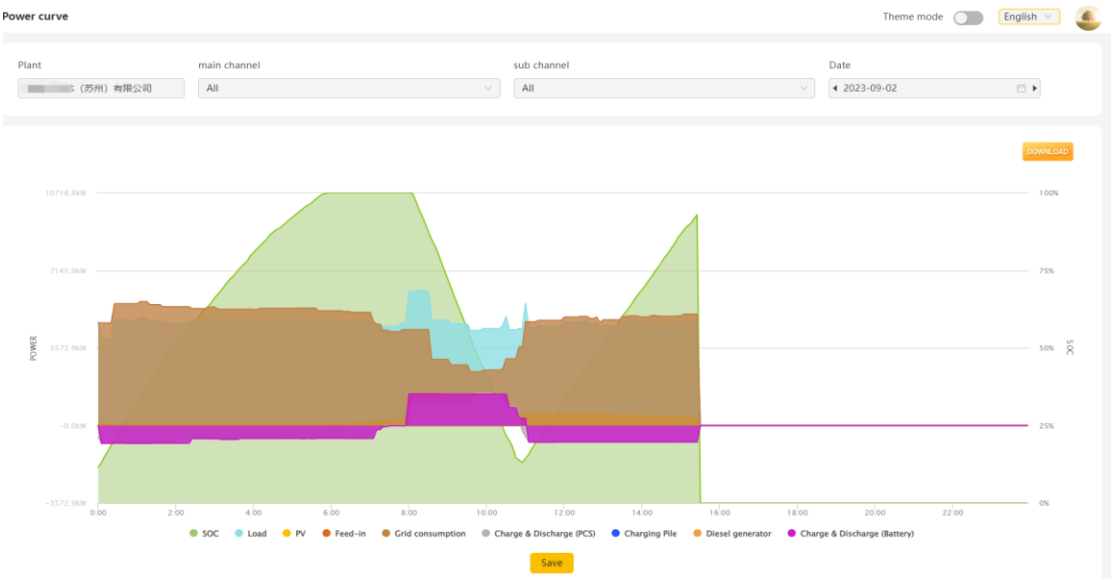
# 5. Channel List




Station (Search Conditions): Not modifiable.

Main Channel: If the station has a SCADA device, it is the SN of that device; otherwise, it is the SN of the EMS, supporting fuzzy search.

Status: Includes Offline, Normal, Alert, Fault. Clicking "Search" allows the filtering of channel lists based on the specified conditions (as shown in the above figure).




1. Station (Filter Conditions): Not modifiable.
   Main Channel: If the station has a SCADA device, it is the SN of that device; otherwise, it is the SN of the EMS.
   Subchannel: The SN of EMS.
   Date: The summary date for the search.
2. Line Chart: When the mouse is placed on the curve, a pop-up box displays various data points corresponding to the selected time.
   SOC: The total remaining capacity of all batteries in the entire station

divided by the total rated capacity of all batteries.

Load: The power value read by the load meter. If there is no load meter, it is calculated as the sum of high-voltage or low-voltage meter grid consumption power + PV meter generation power - DC/AC charging power. If there are no high-voltage or low-voltage meters, it is calculated as the sum of DC/AC discharging power + PV meter generation power.

PV: Power value read by the PV meter.

Feed-in: If there is a high-voltage side meter, use the power value from the high-voltage side meter; otherwise, use the power value from the grid interface meter.

Grid Consumption: If there is a high-voltage side meter, use the power value from the high-voltage side meter; otherwise, use the power value from the grid interface meter.

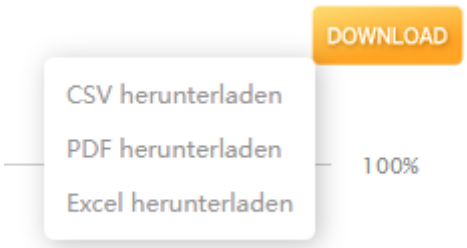
Charge/Discharge (PCS): Read the total power (PAC) of the DC/AC device.

EV Charger (Charging Pile): Power value read by the EV Charger meter.

Diesel Generator: Total power (PAC) uploaded by the diesel generator.

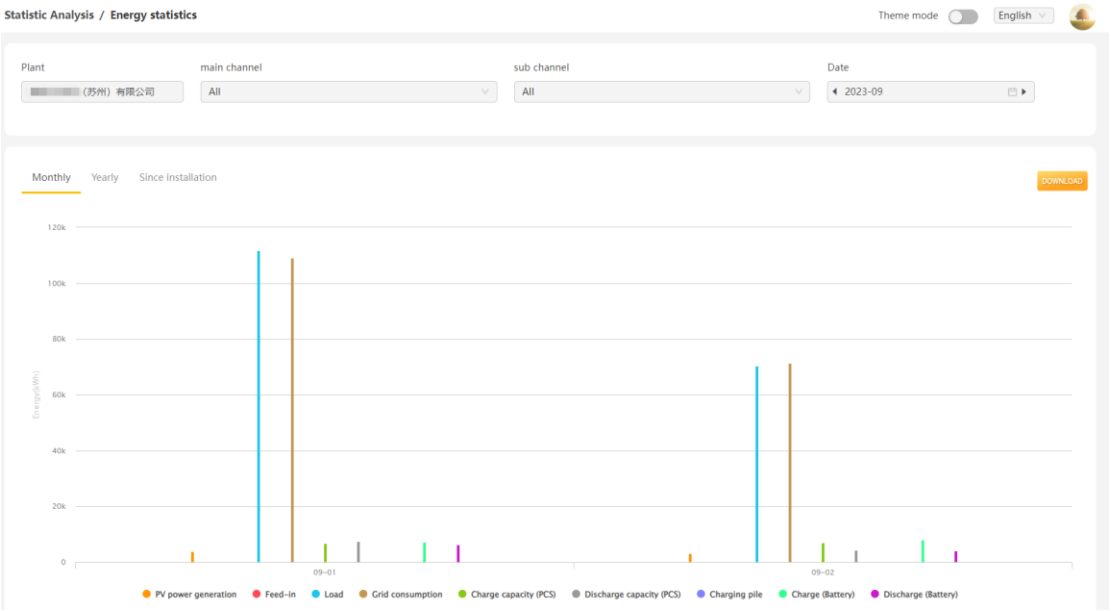
Energy Storage Charge/Discharge (Battery): Power value read by the energy storage side meter.

3. Save Button: Choose to display or hide the selected statistical items below the curve. After saving, the system will remember this setting for the next login, displaying or hiding the selected curves accordingly.
4. Download Button: Download files in the corresponding format (as shown in the figure below).

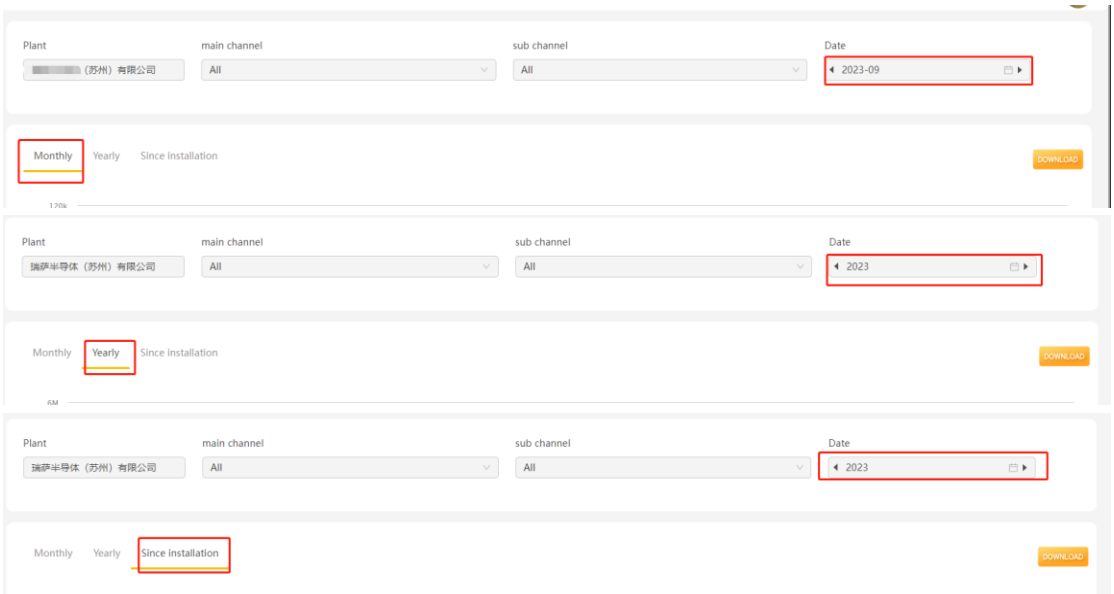


# 6. Statistical Analysis

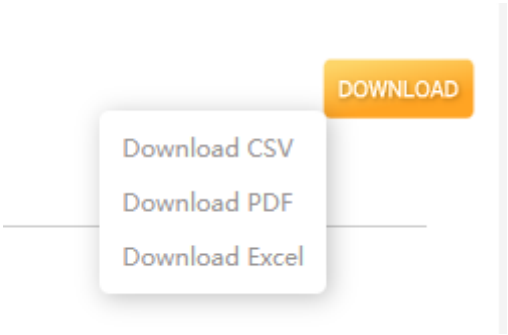
## Power Consumption Statistics




1. Station (Filter Conditions): Not modifiable.
   Main Channel: If the station has a SCADA device, it is the SN of that device; otherwise, it is the SN of the EMS.
   Subchannel: The SN of EMS.
   Date: The summary date for the search. For monthly statistics, the default is the current year and month; for annual statistics, the default is the current year. If selecting from the installation date, it defaults to the current year (as shown in the figure below).



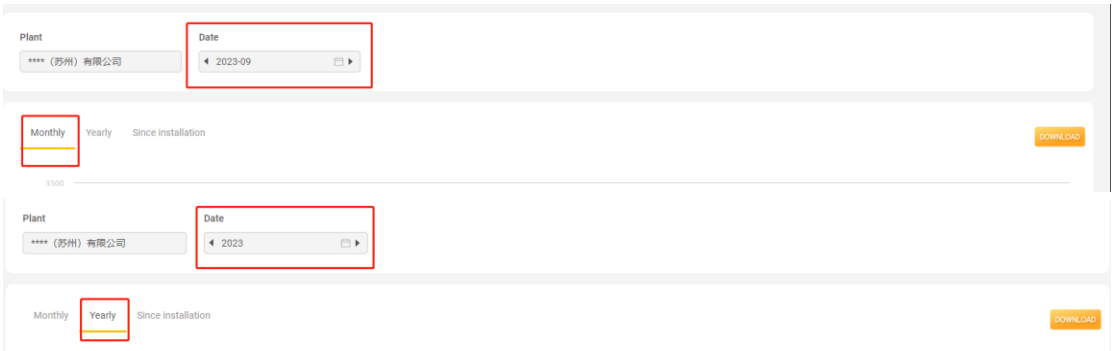
2. Line Chart: When the mouse is placed on the curve, a pop-up box displays various data points corresponding to the selected time.
   PV Generation: Calculate the sum by subtracting the first data point from the last data point of the daily energy values obtained from the PV meter, with a statistical frequency of once per hour.
   Feed-in: Calculate the sum by subtracting the first data point from the last data point of the daily energy values obtained from the grid interface meter, with a statistical frequency of once per hour. (Negative meter readings indicate feed-in.)
   Grid Consumption: Calculate the sum by subtracting the first data point from the last data point of the daily energy values obtained from the grid interface meter, with a statistical frequency of once per hour. (Positive meter readings indicate grid consumption.)
   Charge (PCS): Calculate the sum by subtracting the first data point from the last data point of the total DC charging energy on the DC side of the DC/AC device, with a statistical frequency of once per hour.
   Discharge (PCS): Calculate the sum by subtracting the first data point from the last data point of the total DC discharging energy on the DC side of the DC/AC device, with a statistical frequency of once per hour.
   EV Charger (Charging Pile): Calculate the sum by subtracting the first data point from the last data point of the daily energy values obtained from the EV Charger meter, with a statistical frequency of once per hour.
   Energy Storage Charge (Battery): Calculate the sum by subtracting the first data point from the last data point of the daily charging energy obtained from the energy storage side meter, with a statistical frequency of once per hour.
   Energy Storage Discharge (Battery): Calculate the sum by subtracting the first data point from the last data point of the daily discharging energy obtained from the energy storage side meter, with a statistical frequency of once per hour.
3. Download files in the corresponding format (as shown in the figure below).

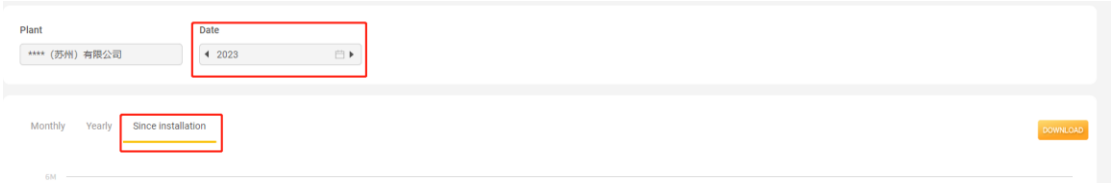



## 6.2 Profit Statistics

Station (Filter Conditions): Not modifiable.

Date: The summary date for the search. For monthly statistics, the default is the current year and month; for annual statistics, the default is the current year. If selecting from the installation date, it defaults to the current year (as shown in the figure below).

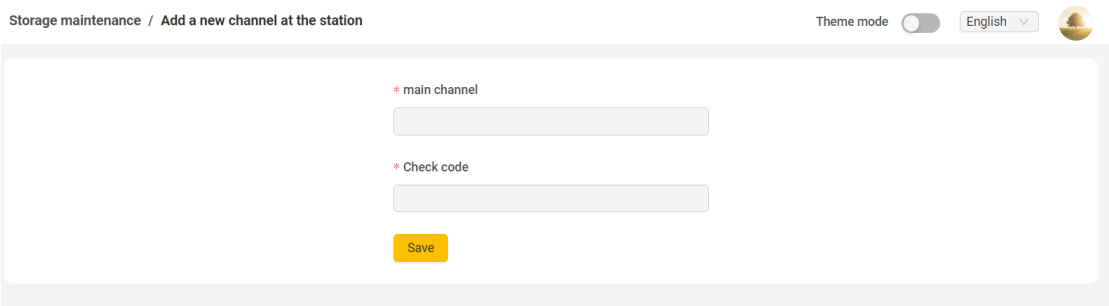





1. Load-shifting: Sum of discharge amount during the time periods set for standard tariff, peak tariff, valley tariff, and critical peak tariff, multiplied by the electricity price. Statistical frequency is once per hour.
2. Discharge Profit: Sum of discharge amount during the time periods set for standard tariff, peak tariff, valley tariff, and critical peak tariff, multiplied by the electricity price for wind and photovoltaic power. Statistical frequency is once per hour. (Negative meter readings indicate feed-in.) Note: There may be duplicate statistics for wind and photovoltaic power.
3. Feed-in Profit: Sum of feed-in amount from the grid interface meter multiplied by the feed-in tariff. Statistical frequency is once per hour. (Negative meter readings indicate feed-in.)
4. Photovoltaic Profit: Sum of discharge amount from the photovoltaic meter and the total DC discharging amount from the total DC branch during the time periods set for standard tariff, peak tariff, valley tariff, and critical peak tariff, multiplied by the electricity price. Statistical frequency is once per hour.
5. Download Button: Download files in the corresponding format (as shown in the figure below).

# 7. Energy Storage System Maintenance

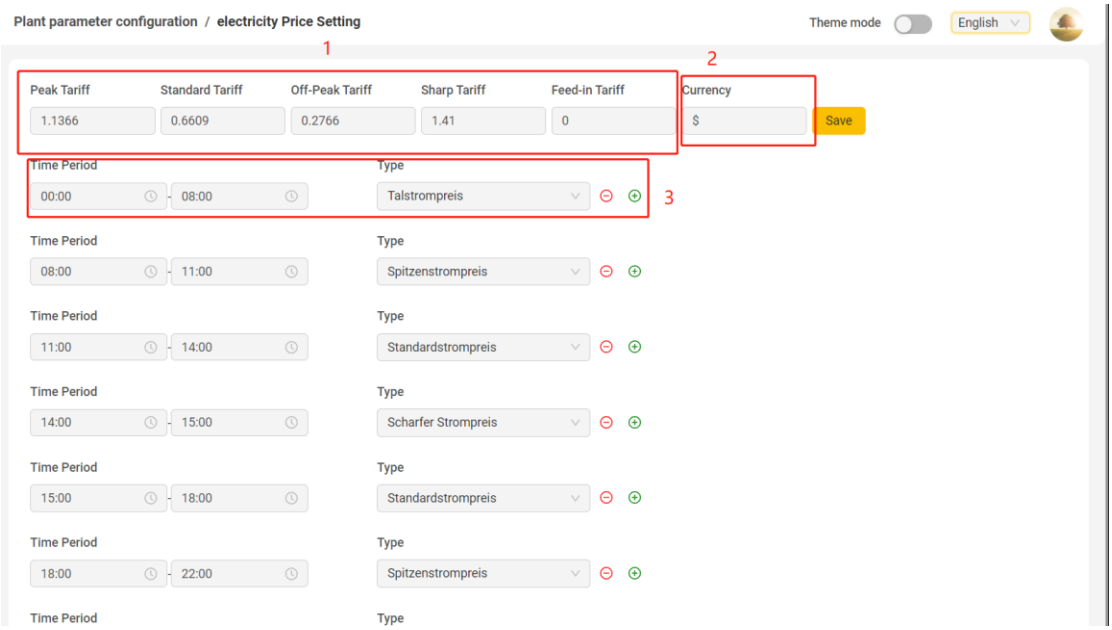
## 7.1 Adding New Channels to the Station




Log in as an end user or installer. Establish an association between the main channel SN and the verification code. If the SN is already associated with a station, it cannot be added again. After clicking “Save”, when the device comes online and uploads device information, the “Channel List” corresponding to this account will display the added SN.

# 8. Station Parameters Configuration

## 8.1 Electricity Price Settings

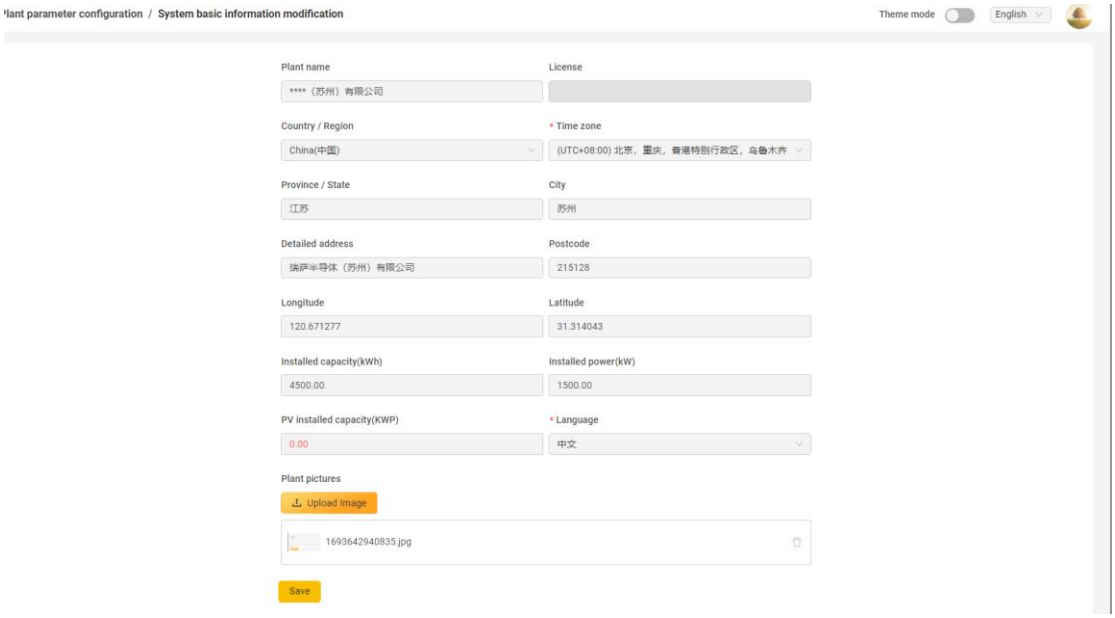



1. Electricity prices are divided into five types: Peak Tariff, Standard Tariff, Valley Tariff, Critical Peak Tariff, Feed-in Tariff (as shown in the red box 1 in the figure above).
2. You can set the currency for electricity prices, and this currency settings are effective for the entire station (as shown in the red box 2 in the figure above).
3. Set the time range and electricity price type for electricity prices. You can set up to

8-time ranges. Click the "+" icon to add a time range and click the "-" icon to delete a time range (as shown in the red box 3 in the figure above).

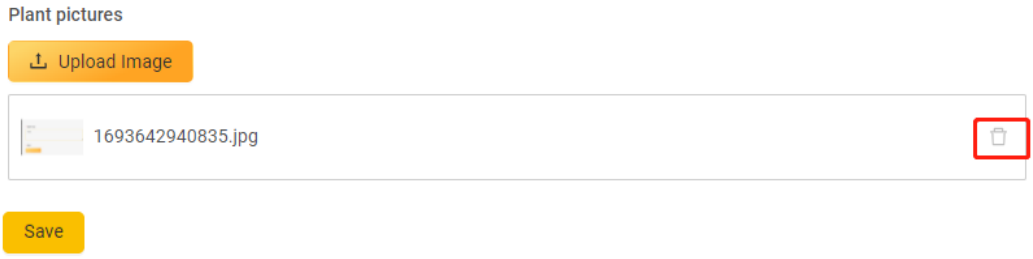
4. Click the "Save Settings" button to save the electricity price settings.

## 8.2 Station Basic Information Modification



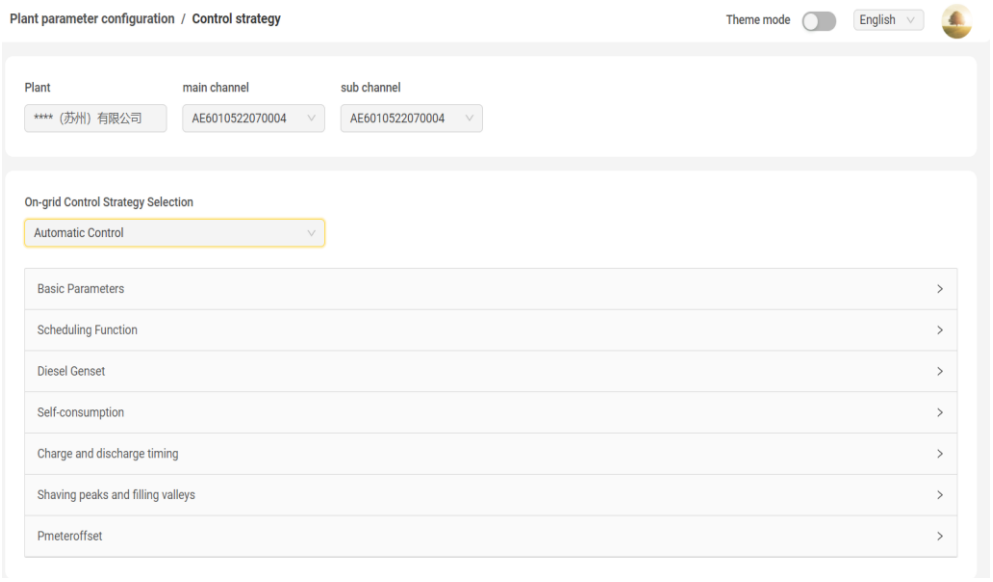

Note:

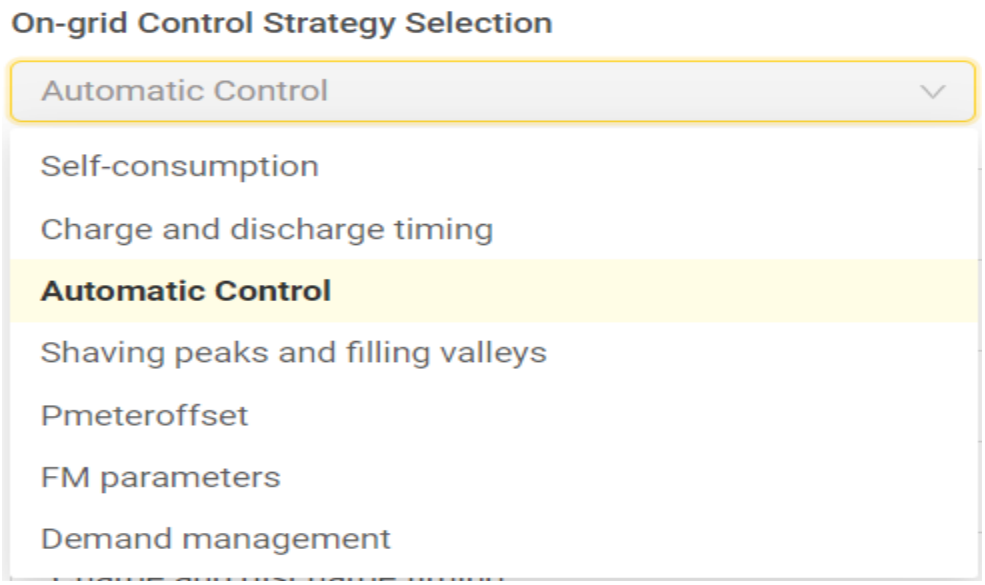
1. License cannot be modified; only the installer has access to the License.
2. The time zone must be selected correctly, as the system relies on accurate time zone settings for data presentation and calculations.
3. Uploading images: As shown in the figure below, after uploading is complete, you can click on the delete icon to upload images, as indicated in the red box below.




4. After completing the settings, click the "Save" button to save the station information.

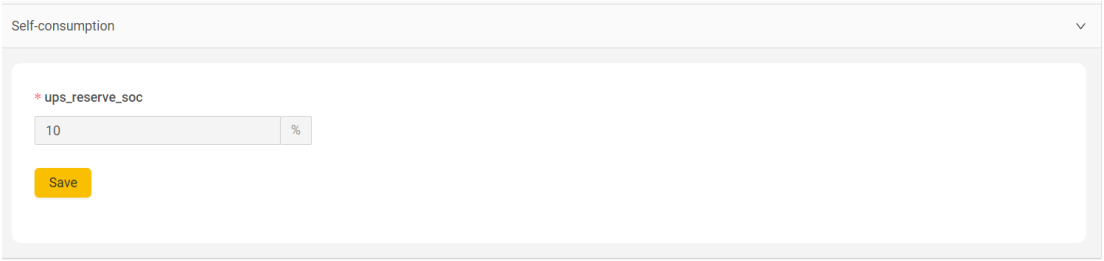
## 8.3 Control Strategies



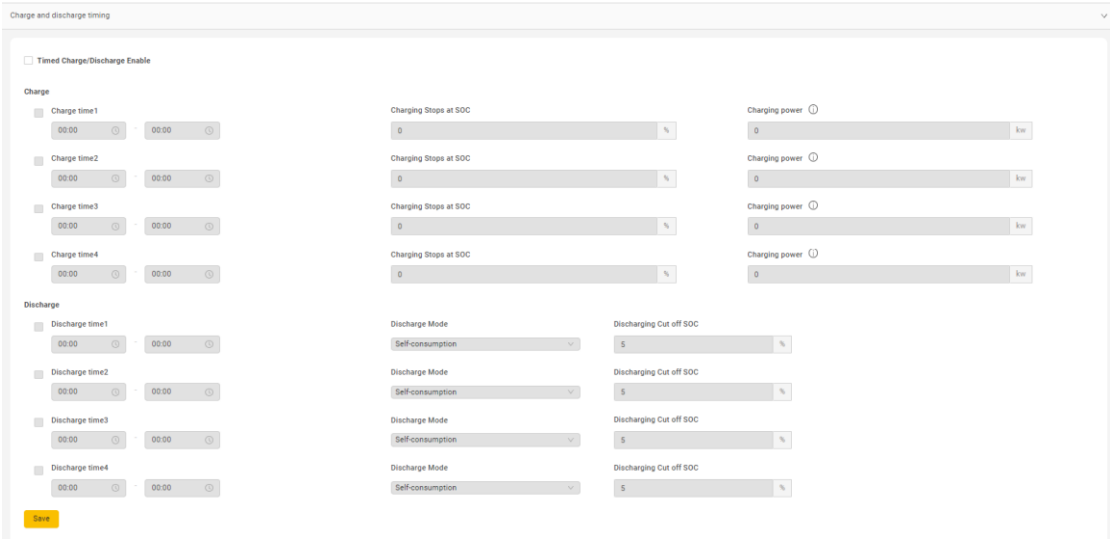




Choose the corresponding parameters for the selected grid connection control strategy. In automatic mode, you can choose to issue instructions for self-consumption, scheduled charge/discharge, peak shaving and valley filling, and limited power support.

1. Self-consumption:
   Application Scenario: Self-consumption reserved SOC, i.e., the discharge cut-off SOC. When SOC < the set value, the system stops discharging, and RRCR is enabled (as shown in the figure below).

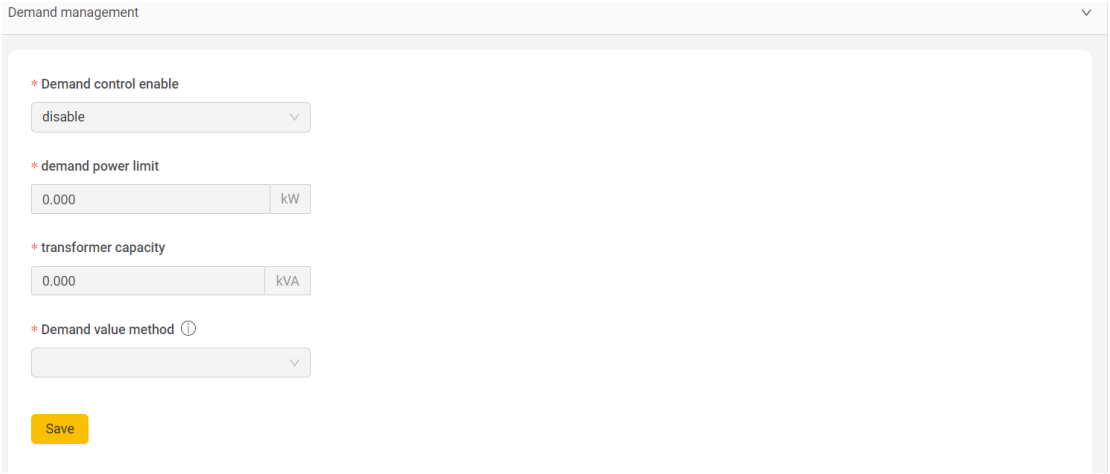



2. Scheduled Charge/Discharge:
   Set the charging time, charging cut-off SOC, and charging power for this time period.
   Set the discharging time, discharging cut-off SOC, and discharging power for this time period (as shown in the figure below).




3. Demand Management:
   Application Scenario: Used in enterprises incurring high demand charges.
   Function Description: When the trigger of the maximum demand threshold occurs, energy storage discharges promptly to support, ensuring that the current maximum power does not exceed the maximum demand value.
   Parameter Introduction:
   - Demand Control Enable: Enable or disable this function.
   - Maximum Demand Threshold: The customer sets the maximum demand value for the current month.
   - Transformer Capacity: Rated capacity of the transformer.
   - Demand Acquisition Method: set_value/meter_value. There are two ways to obtain the demand value: one is to execute based on the user-set value, and the other is to retrieve the maximum demand value

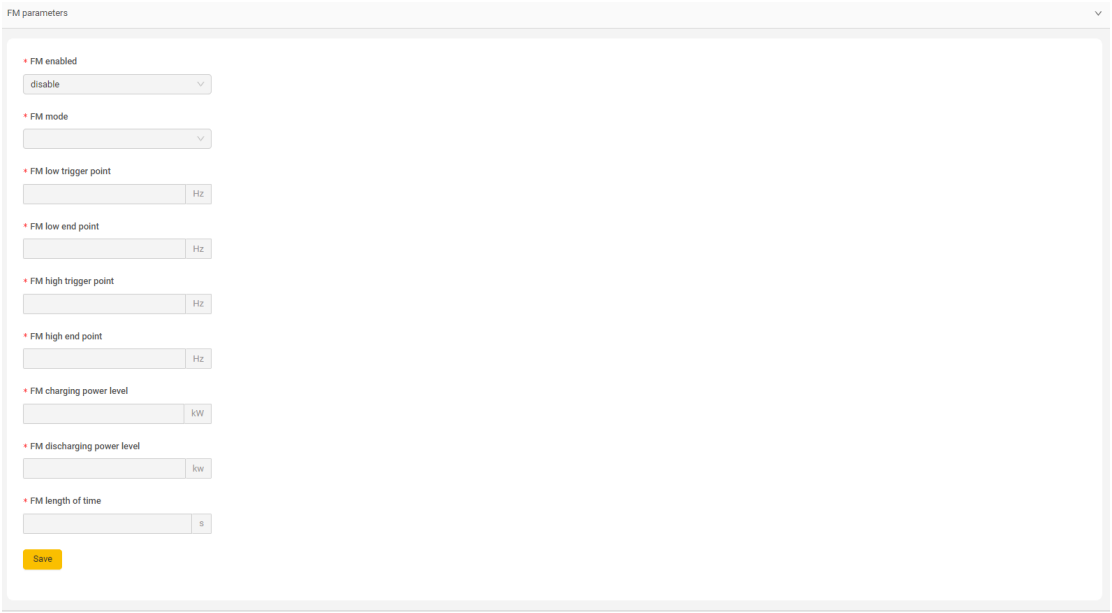
statistically calculated by the meter on the last settlement day (as shown in the figure below).




4. Frequency Regulation Parameters:

   Application Scenario: Weak power grid environment, secondary frequency regulation.

   Function Description: There are slight differences in control execution in different modes (as shown in the figure below).




5. Peak Shaving and Valley Filling:

   Application Scenario: Supports 4 peak shaving time periods and 4 valley filling time periods. The set time periods are accurate to the minute and can be manually set based on local power restriction time periods. Manually set peak and valley power values during peak shaving and valley

filling time periods.

During peak shaving time periods, when the EMS detects that the grid consumption power exceeds the set peak value, the energy storage system supplies power to the load to reduce the grid consumption power below the peak value.

During valley filling time periods, when the EMS detects that the grid consumption power is below the set valley value, the energy storage system charges the battery to increase the grid consumption power above the valley value.

During the time period when the system detects that the grid consumption power is below the peak value and above the valley value, the energy storage system is in standby. The discharge cut-off SOC can be set.

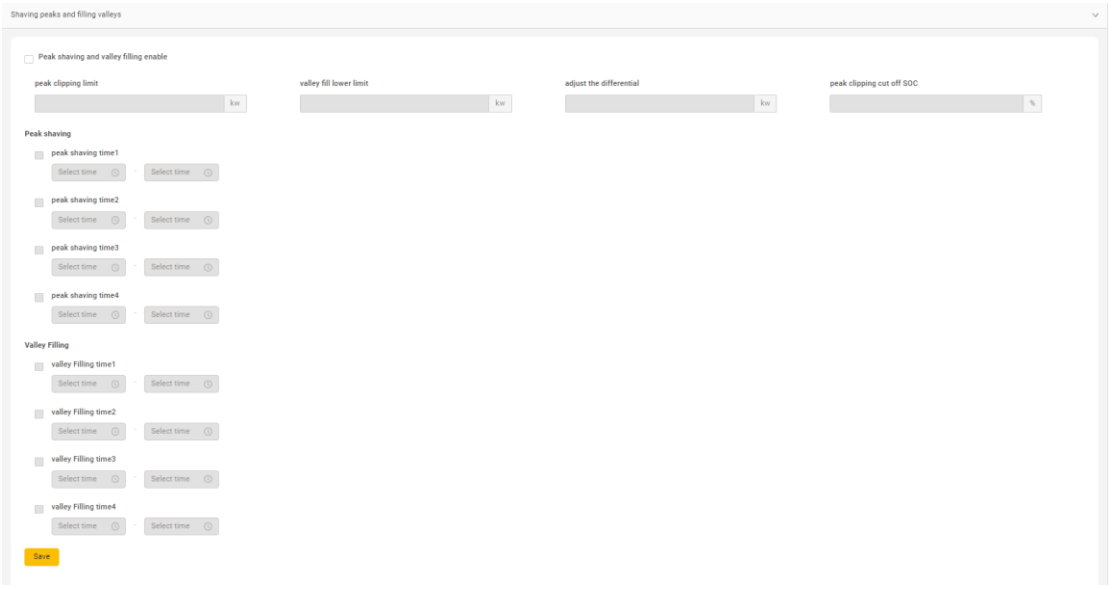
Control Enable:

Peak Shaving Upper Limit: When the high-voltage meter/low-voltage interface meter reaches the set power value, the energy storage system supplies power to the load to reduce the grid consumption power below the peak value.

Valley Filling Lower Limit: When the high-voltage meter/low-voltage interface meter reaches the set power value, the energy storage system charges the battery to increase the grid consumption power above the valley value.

Adjustment Difference: For the purpose of peak shaving, the peak value is reduced to the value after “Peak Shaving Upper Limit - Adjustment Difference”, and for valley filling, it is increased to the value after “Valley Filling Lower Limit + Adjustment Difference”.

Peak Shaving Discharge Cut-Off SOC: The battery capacity reserved for supplying power to the load during peak shaving (as shown in the figure below).




6. Limited Power Support:

Application Scenario: Limited power support for 4 time periods. You can manually set a power value, and the EMS will limit the grid consumption and feed-in power values of the grid around the set power value.

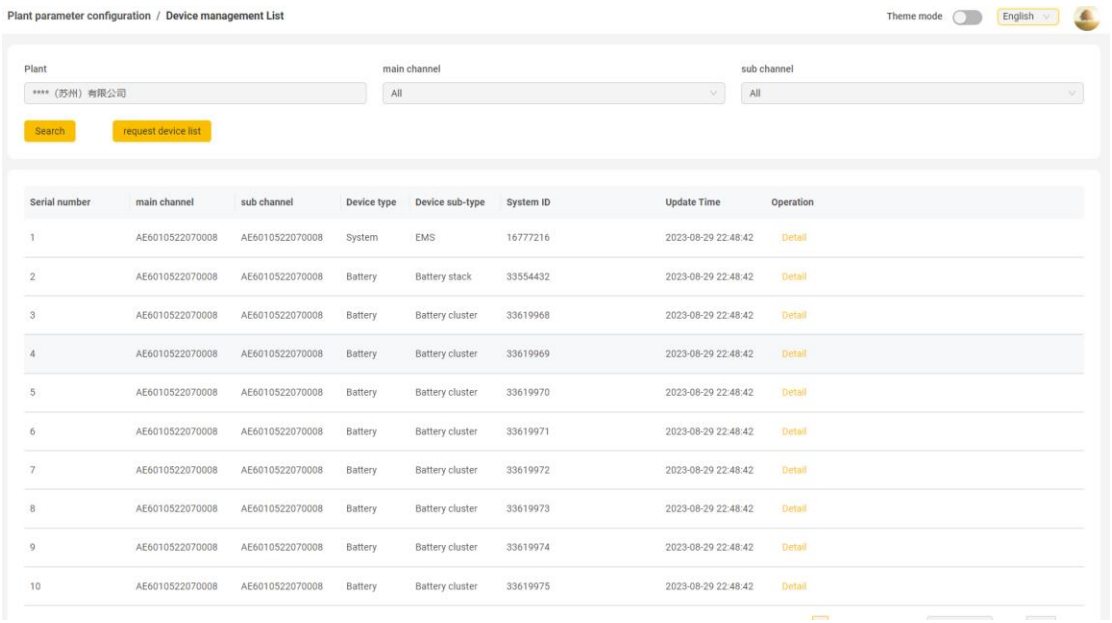
The discharge cut-off SOC can be set.

Control Enable:

Limited Power Support Discharge Cut-Off SOC: The battery capacity reserved for supplying power to the load during limited power support.

Meter Power Adjustment Offset: Set a reasonable value. If the EMS triggers a value greater than this value, the sub-energy storage system supplies power to the load; if it is less than this value, the energy storage system charges to increase the power to the set value (as shown in the figure below).

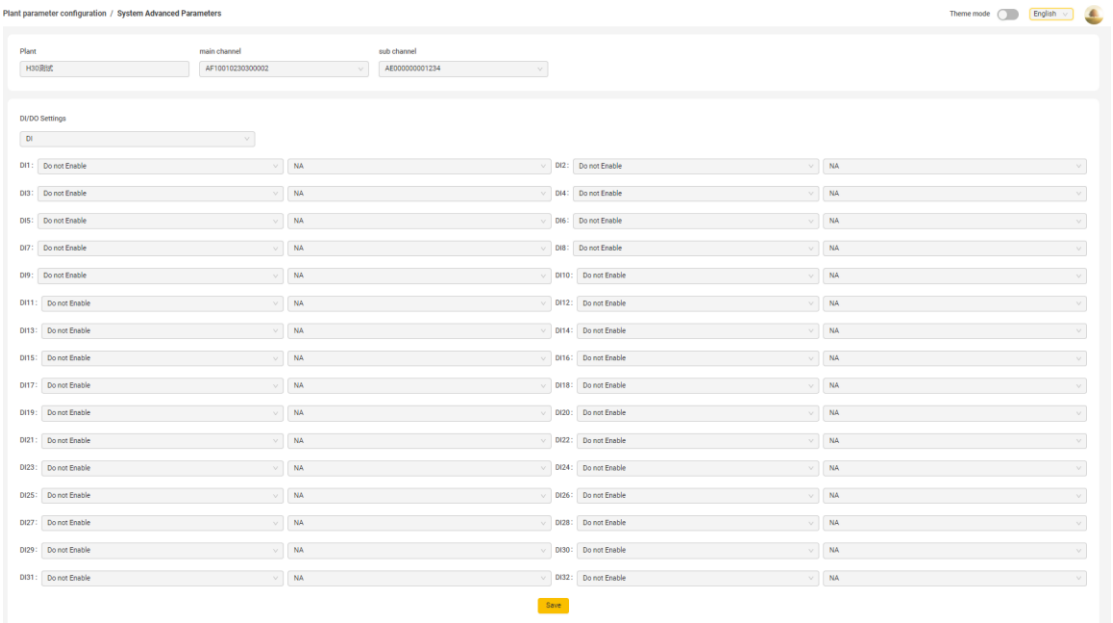
## 8.4 Device List

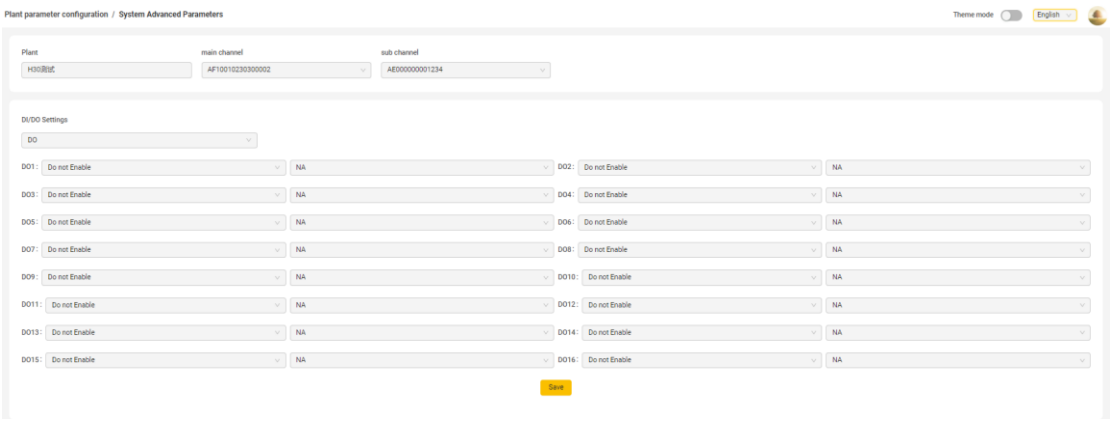



1. By selecting the filter conditions “Main Channel” and “Subchannel” and clicking “Request Device List”, a command will be sent to the corresponding device, prompting the device to upload device information to the cloud for updating.
2. Click the “Details” button in the list will pop up and display the specific details of the device (as shown in the figure below).

## 8.5 Advanced System Parameters

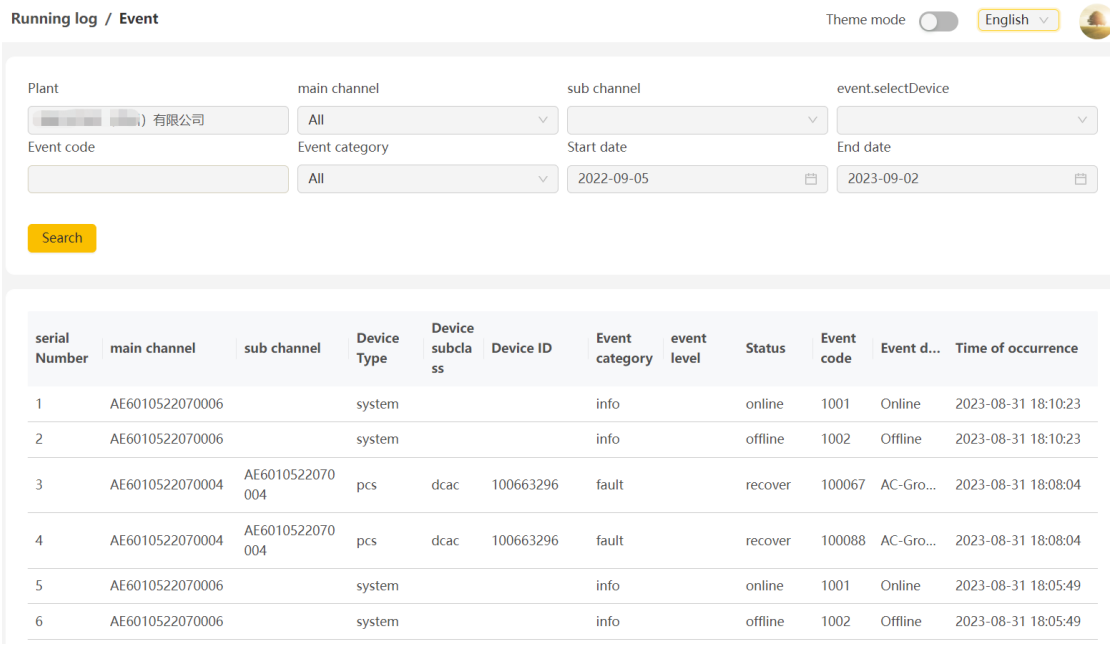
1. In the main channel and subchannel, select the system SN that you want to configure. In the DI/DO Settings dropdown menu, you can choose between DI settings and DO settings (as shown in the figure below). All configuration items must be unique and not duplicated.






# 9. Log List

## 9.1 Event List

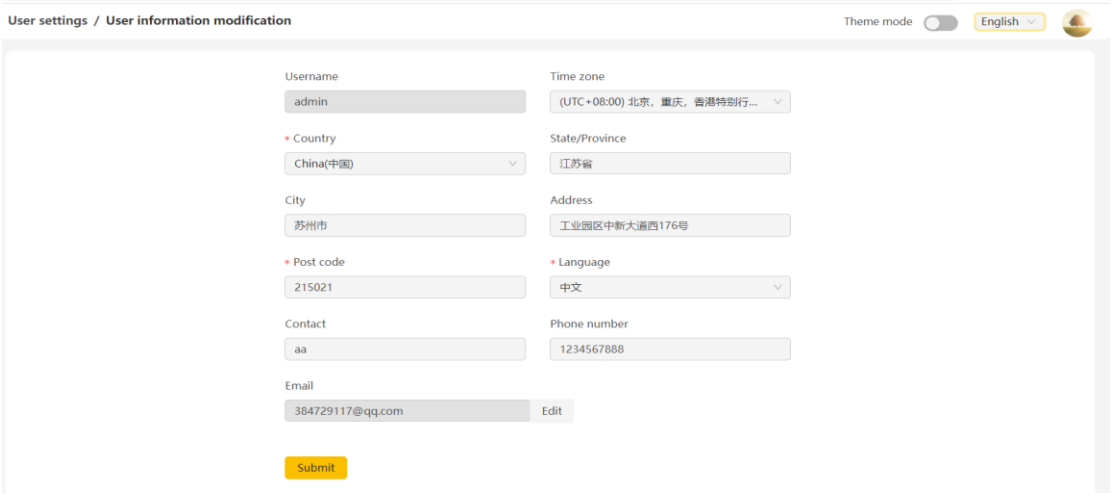



| serial Number | main channel | sub channel | Device Type | Device subclass | Device ID | Event category | event level | Status | Event code | Event d... | Time of occurrence |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | AE6010522070006 | | system | | | info | | online | 1001 | Online | 2023-08-31 18:10:23 |
| 2 | AE6010522070006 | | system | | | info | | offline | 1002 | Offline | 2023-08-31 18:10:23 |
| 3 | AE6010522070004 | AE6010522070004 | pcs | dcac | 100663296 | fault | | recover | 100067 | AC-Gro... | 2023-08-31 18:08:04 |
| 4 | AE6010522070004 | AE6010522070004 | pcs | dcac | 100663296 | fault | | recover | 100088 | AC-Gro... | 2023-08-31 18:08:04 |
| 5 | AE6010522070006 | | system | | | info | | online | 1001 | Online | 2023-08-31 18:05:49 |
| 6 | AE6010522070006 | | system | | | info | | offline | 1002 | Offline | 2023-08-31 18:05:49 |

Use the filtering options in the list to select and view the event information you need.

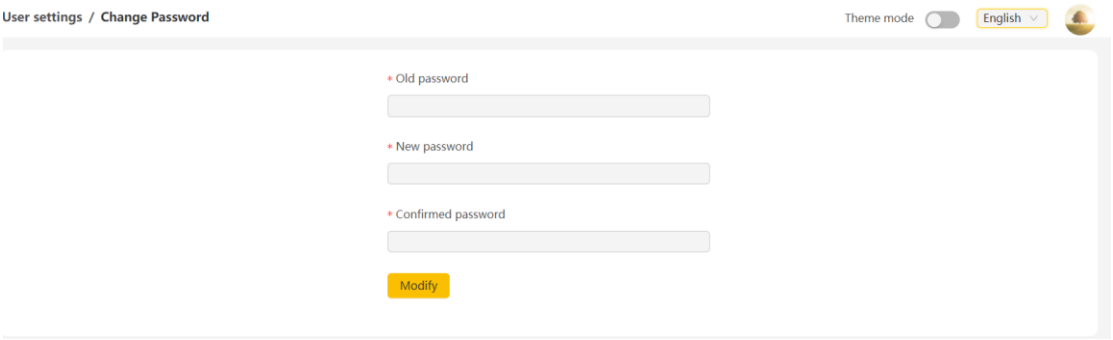
# 10. User Settings

## 10.1 User Information Modification




Apart from the username, all other information can be modified.

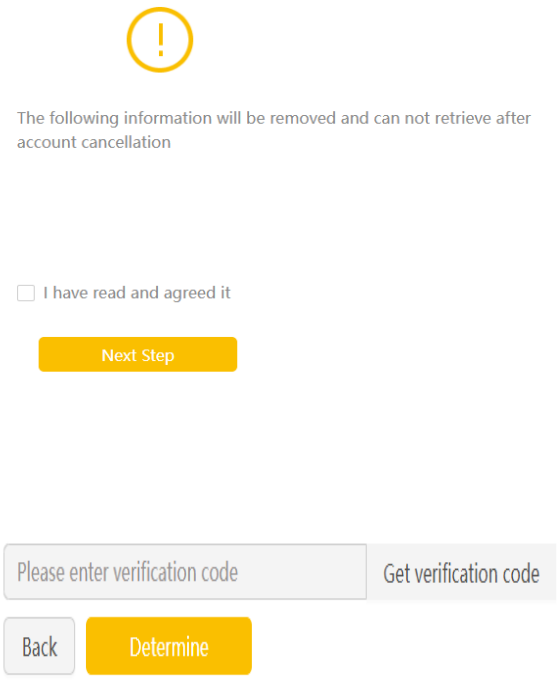
## 10.2 Change Password




Enter the old password and the new password to change the password.

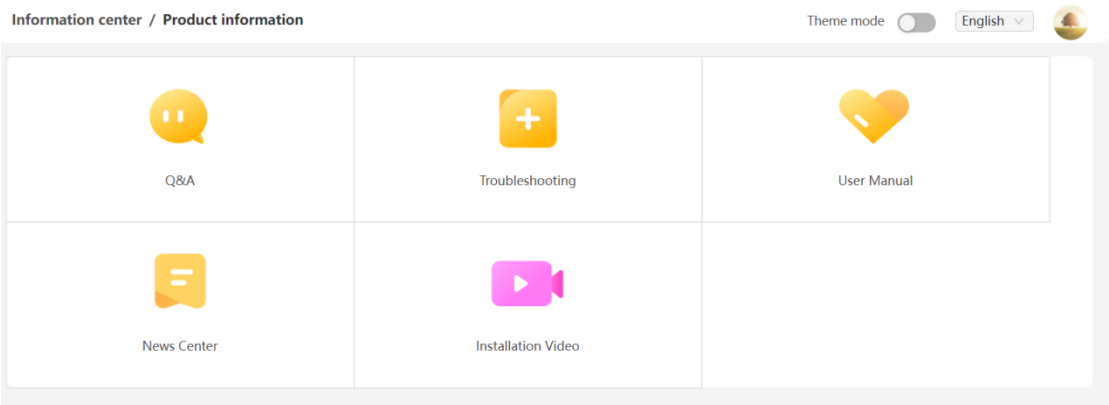
## 10.3 Account Logout

1. Account Logout: User's personal data will be cleared from the system.
2. Procedure: After checking the "I have read and agree" box, click "Next". Then click "Get Verification Code". The user will receive a verification code in their personal email. Enter the verification code and click the "Confirm" button to complete the account logout process.




# 11. 11. Data Center

## 11.1 Product Information




Click on different icons to view the corresponding product information.

# 12. Contact Information

Click on the “Contact Information”, and the page will automatically redirect to a new page about “Company Contact Information”.

## 13. Privacy Policy

Click on “Privacy Policy” to navigate to a new page. Review the privacy policy of AlphaESS about “Personal Privacy”.

## 14. Customer Feedback

Click on the “Customer Feedback” menu to navigate to the customer feedback page in the user system.

## 15. Select Language, Logout, Change Theme

Click on the selection in the red box 1 to choose between black and white themes.
In the dropdown list inside the red box 2, you can choose between Chinese and English.
Click on the button inside the red box 3 to enable the user logout function.

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