

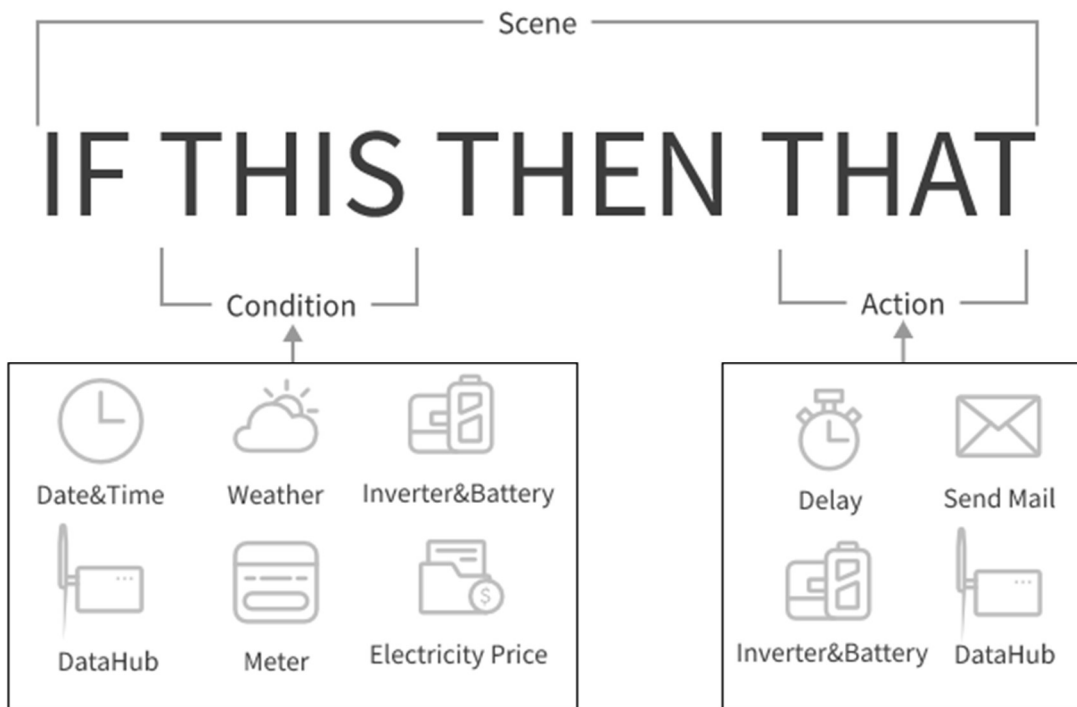
[DataHub1000 Smart Scene]



Introduction

The Smart Scene function on the DataHub web page comes pre-loaded with a variety of conditions and executable actions. Customers can customize combinations of conditions and actions based on their actual needs, thereby creating automatically executed custom scenes. By creating the “IF” conditions the user-defined “Then” actions will be executed automatically such as inverter charge or discharge, inverter startup or shutdown, e-mail sending, etc. With DataHub as the center, the equipment in the system are connected to create a smart control scene.

IF Conditions: Date&Time, Weather, Inverter&Battery, DataHub, Meter, and Electricity Price.
Then Actions: Delay, Send Mail, Inverter&Battery, DataHub.



The screenshot shows the SOLAX Power web interface for configuring a Smart Scene. The interface includes a sidebar with navigation options: Overview, Site Management, Site Setting, Inverter Setting, Smart Scene, Device Upgrade, and DataHub Setting. The main content area displays the configuration for a Smart Scene, including fields for title and description, and lists of IF conditions and Then actions.

IF (When all conditions are met):

- Date & Time
- Weather
- Inverter & Battery
- DataHub
- Meter
- Electricity Price

Then:

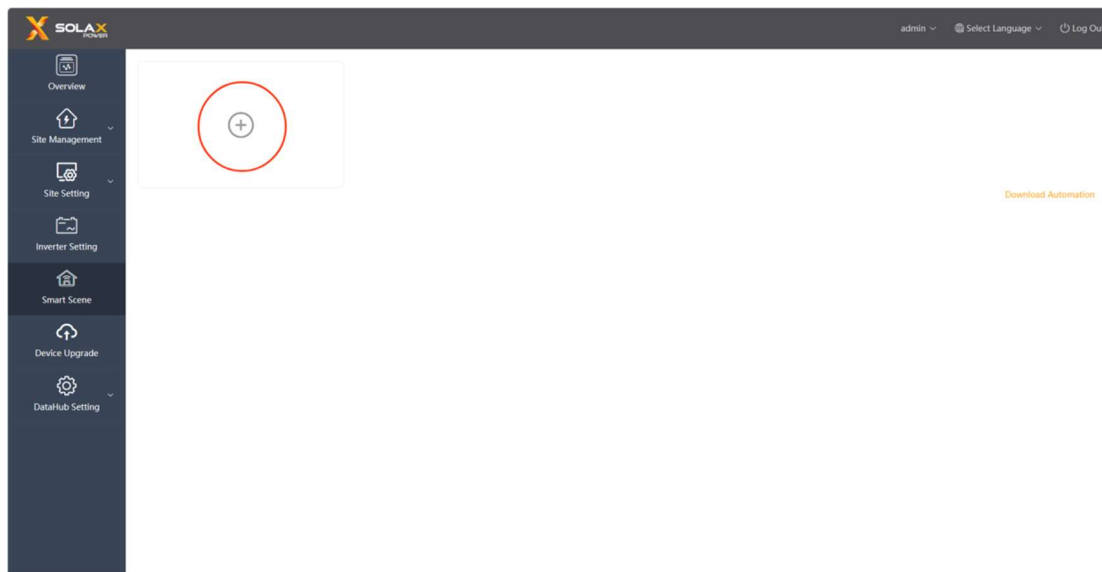
- Delay
- Send Mail
- Inverter & Battery
- DataHub

Buttons: Cancel, Save

How to create scene?

Step 1

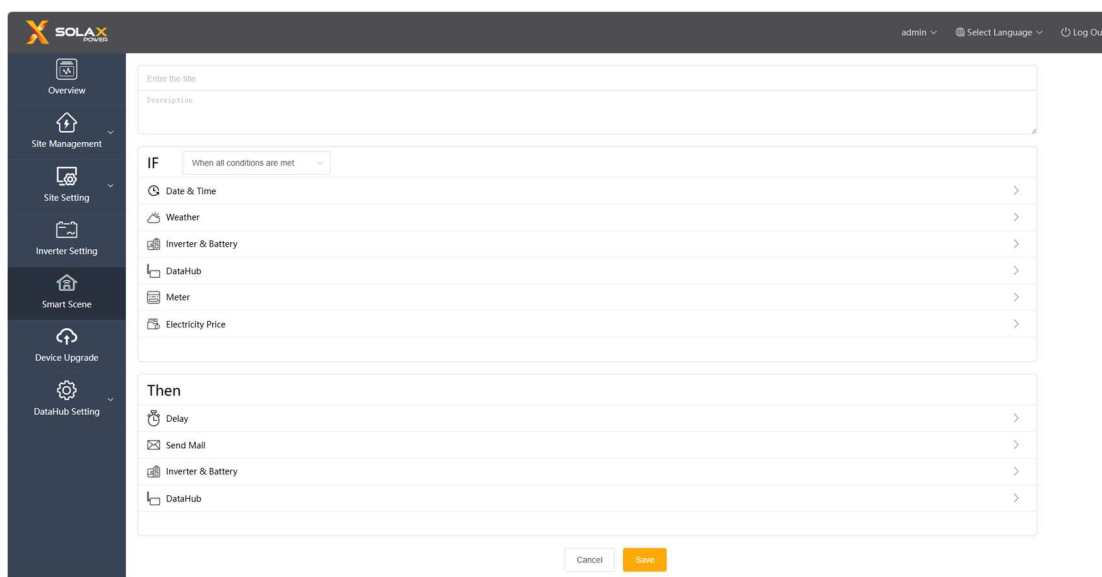
Click the plus button to create scene, set the IF conditions and Then actions.



Step 2

Enter the title and description of the scene.

Set the conditions and actions and save.



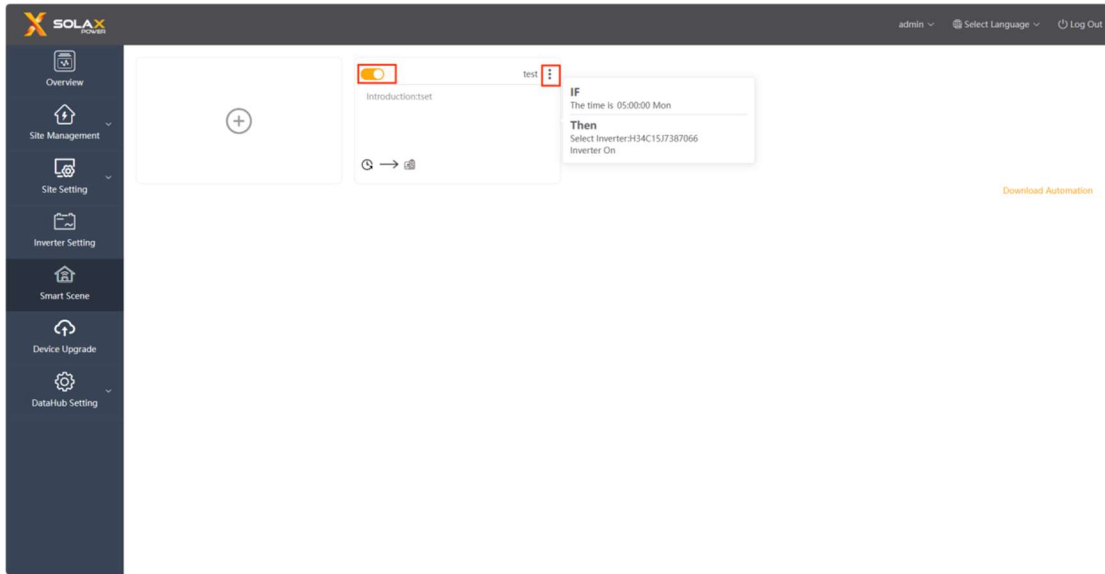
Note:

There is no limit to the number of conditions and actions set. Multiple combinations of conditions and actions can be added.

Step 3

Once created, hover the mouse over the scene to display its content. Use the enable switch to turn the scene on and off.

Click on the three dots next to the title to edit or delete the scene.

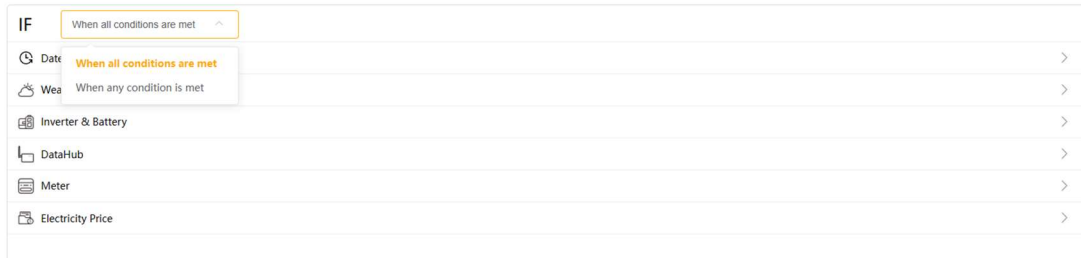


Multiple IF conditions combinations

Conditions combinations can be categorized as: "When all Conditions are met" and "When any condition is met", which correspond to the "and" and "or" relationships respectively.

(The following documents using "and" and "or" to express these two combinations.)

- 1) When all conditions are met: actions are executed when all conditions in the set are met.
- 2) When any condition is met: actions are executed when any condition in the set is met.



Note:

Under the "or" combinations, any conditions changed, as long as one of them are still met. The action will be executed immediately.

What IF conditions can be set?

1. Date&Time

Date&Time condition can only be selected once in a scene.

A. The time is

- 1) Set a specific time point from Monday to Sunday. Multiple days of the week can be selected, and the action will be executed at the set time point each week.
- 2) Set a specific time point once. After the scene is turn on, the action will be executed at

the first time reaching this time point.

Date & Time

The time is The time is from Every hour at Every month at Every year at

00 : 00 : 00 at Mon Tue Wed Thu Fri Sat Sun Once

Cancel Save

Date & Time

The time is 07:00:00 at Mon Tue

Date & Time

The time is 07:00:00 Once

B. The time is from

Set a start time and end time. You can choose weekly/monthly, meaning the condition is met during the set start and end times every week or month, and the scene action continues throughout this time period. Multiple weeks/months can be selected.

The time is The time is from Every hour at Every month at Every year at

00:00:00 to 23:59:59 at Weekly Mon Tue Wed Thu Fri Sat Sun

Cancel Save

Date & Time

The time is from 01:00:00 to 20:57:58 at Mon Tue Wed

The time is The time is from Every hour at Every month at Every year at

00:00:00 to 23:59:59 at Monthly Jan Feb Mar Apr May Jun Jul Aug Sept Oct Nov Dec

Cancel Save

Date & Time

The time is from 01:00:00 to 21:56:59 at Jan Mar

C. Every hour

Set a specific time point within each hour.

The time is The time is from Every hour at Every month at Every year at

00 : 00 : 00

Cancel Save

Date & Time

Every hour at 00:56:27

D. Every month

Set a specific time point each day of the month dates. Multiple dates can be selected.

The time is The time is from Every hour at Every month at Every year at

00 : 00 : 00 on the Please Select

Cancel Save

Date & Time

Every month at 07:05:06 on the 01,04

E. Every year

Set a specific time point each day for a certain period of the year.

Date & Time

The time is The time is from Every hour at Every month at Every year at

00 : 00 : 00 Start time End time

Cancel Save

Date & Time

Every year at 08:12:11 from 09-30 to 10-28

2. Weather

Weather conditions include Solar Radiation, Temperature, Humidity, Rain, Wind Speed, Pressure, and Forecast to rain during next X hours.

Weather

Solar Radiation W/m²

Temperature °C

Humidity %

Rain Y N

Wind Speed m/s

Pressure hPa

Forecast to rain during next hours

Temperature Solar Radiation Rain Humidity Pressure Wind Speed

Weather in the next 24 hours

Cancel Save

Weather

Solar Radiation > 10 W/m²

Forecast to rain during next 3 hours

Forecast to rain during next X hours:

- 1) When a time condition exists, the combinations is "and": When the set time point is reached, this time point is used as the standard time to calculate whether it will rain in the following hours.
- 2) When the combination is "or": the time point when it starts raining is used as the standard time, and the condition is met a few hours before that.

E.g. If the combinations condition is "or", and the current time is 9:00, and the condition is to forecast to rain during next 3 hours, and it actually rains at 15:00, then the condition is met at 12:00.

Note:

- 1) To obtain weather information, DataHub needs to be linked to a power site on Solaxcloud. If not linked, weather data will not be displayed.
- 2) Weather data is sourced from Solcast.
- 3) The line chart displays data for the next 24 hours, with one data point every 15 minutes.
- 4) It is judged to be raining when rainfall exceeds 2.5mm/h

3. Inverter&Battery

Inverter&Battery condition counts the value of inverter parallel system.

Conditions include:

- 1) PV to the Inverter Power
- 2) Inverter to Battery Charge Power
- 3) Battery to Inverter Discharge Power
- 4) Inverter Output Power
- 5) Inverter Feed-in to Grid Power
- 6) Inverter Buy Power from Grid
- 7) Home Loads Power
- 8) Inverter Generate Energy Daily/Monthly/Annual/Total Over XX kWh
- 9) Inverter Status
- 10) Inverter Fault
- 11) Battery SOC
- 12) Inverter Work Mode as. (Work Mode includes: Self-Use, Feed-in Priority, Backup, Manual, EPS)

The screenshot displays the 'Inverter & Battery' configuration window. It contains 12 items, each with a checkbox and a control element (input field, dropdown, or buttons). The items are: PV to Inverter power (checkbox, +/- buttons, kW), Inverter to Battery Charge Power (checkbox, +/- buttons, kW), Battery to Inverter Discharge Power (checkbox, +/- buttons, kW), Inverter Output Power (checkbox, +/- buttons, kW), Inverter Feed-in to Grid Power (checkbox, +/- buttons, kW), Inverter Buy Power from Grid (checkbox, +/- buttons, kW), Home Loads Power (checkbox, +/- buttons, kW), Inverter Generate Energy (checkbox, dropdown, 'Over', kW/h), Inverter Status (checkbox, On/Off buttons), Inverter Fault (checkbox), Battery SOC (checkbox, +/- buttons, %), and Inverter Work Mode as (checkbox, dropdown). At the bottom right are 'Cancel' and 'Save' buttons.

Item	Value	Unit
PV to Inverter power	10	kW
Inverter Output Power	5	kW
Inverter Work Mode as	self-use	

Note:

- 1) Feed-in to Grid Power can only be input as a positive value.
- 2) Home Loads Power = AC Output Power - Feed-in to Grid Power.
- 3) Inverter Power represents the sum of parallel system's power.
- 4) Battery SOC represents the average of parallel system's SOC.
- 5) Inverter status, Inverter Fault, and Inverter Work Mode will met when all inverters have the same status.

4. DataHub

On DataHub, there are DI (Digital Input) and AI (Analog Input) signals. The voltage range for

AI is 0-12V, and the voltage is calculated based on its analog input.

The screenshot shows a configuration window for 'DataHub'. It contains several rows of settings:

- DataHub DI1 is: 0 1 Reverse
- DataHub DI2 is: 0 1 Reverse
- DataHub DI3 is: 0 1 Reverse
- DataHub DI4 is: 0 1 Reverse
- DataHub AI1: [0] [12] [Select] V
- DataHub AI2: [0] [12] [Select] V

Buttons for 'Cancel' and 'Save' are located at the bottom right. Below the configuration window is a summary table:

DataHub		>
DataHub DI1 is	Reverse	...
DataHub DI2 is	1	...

Note:

Reverse means the opposite of the current state.

5. Meter

The conditions for the electric meter data connected to DataHub include: Meter Grid Power, Meter Feed-in Energy, Meter Consume Energy.

The screenshot shows a configuration window for 'Meter'. It contains the following settings:

- Select Electricity Meter > meter-1
- Meter Grid Power: [0] [12] [Select] kW
- Meter Feed-in Energy: [0] [12] [Select] kWh
- Meter Consume Energy: [0] [12] [Select] kWh

Buttons for 'Cancel' and 'Save' are located at the bottom right. Below the configuration window is a summary table:

Meter		>
Select Electricity Meter	meter-1	...
Meter Grid Power	> 10 kW	...

Note:

1) Only the data from "meter-1" is compiled here. In DataHub, "meter-1" is designated as the on-grid meter, with its Modbus address set to 1.

2) Meter Grid Power can only be input as a positive value, meaning feed-in power to grid.

6. Electricity Price

A. Query Electricity price

User can select a country and region to query electricity prices. User view both today's and tomorrow's electricity price. The unit for the electricity price is euro cents per kWh.

Electricity price data is sourced from Nord pool.

The bar chart displays data for 24 hours, with one data point every 1 hour.



B. Electricity price condition

Conditions includes:

- 1) Electricity Price
- 2) Find the most expensive price X hours during Start time to End time
- 3) Find the cheapest price X hours during Start time to End time

Electricity Price

Find the most expensive price 2 hours during 03:00 to 02:00

Note:

The time range set for the most expensive/cheapest electricity price cannot exceed 24 hours.

C. DataHub Electricity Price Setting

- 1) User can set Distribution Fee, Commission Fee, and Taxes in the 'Electricity Price Setting' under the 'Site Setting' on the DataHub web page to calculate the actual buying and selling electricity price. If not set, the default values are all 0.
- 2) The Electricity Price condition is based on the calculated price.
- 3) Electricity Buying Cost = (Electricity Buying Price+Distribution Fee) * (1+Taxes)
- 4) Electricity Selling Revenue = Electricity Selling Price-Commission Fee

SOLAX POWER admin | Select Language | Log Out

Electricity Price Setting

Electricity Price Setting(per kWh)

Enter

Distribution Fee(per kWh) Fixed Unfixed

Enter

Commission Fee(per kWh)

Enter

Taxes(%)

Enter

Cancel Save

SOLAX POWER admin | Select Language | Log Out

Electricity Price Setting

Electricity Price Setting(per kWh)

12.0

Distribution Fee(per kWh) Fixed Unfixed

*Week Distribution Fee(per kWh) [Edit](#)

Rule01

at Mon Thu

from 00:00 to 22:00 price is 11
from 22:00 to 24:00 price is 12

Holiday Distribution Fee(per kWh) [Edit](#)

Rule01

everyday from 2023-09-21 to 2023-10-27

from 00:00 to 05:00 price is 12
from 05:00 to 24:00 price is 14

Commission Fee(per kWh)

13.0

Taxes(%)

2.0

Cancel Save



What Then actions can be set?

1. Delay

Set a delay time before executing an action.

Then

Delay

00 : 00 : 00

Cancel Save

Delay

06:10:07

2. Send Mail

Set the sender and receiver information, SMTP server, and email content for sending emails. Click "Test", and if the email is sent successfully, it will display "success."

Send Mail

Outgoing Address: Sender Address

Login Account: Login Account

Password: Password

SMTP Server: SMTP Server

SMTP Port: SMTP Port

Recipient: Use ; to split multiple E-mail address.

Test

Enter the title

Email content

Cancel Save

Then

Delay

Send Mail

Outgoing Address: lzy812459586@outlook.com

Login Account: lzy

Password: 9790aa@0

SMTP Server: smtp.office365.com

SMTP Port: 587

Recipient: lzy812459586@163.com

Succeed

Title

INFO

Cancel Save

Send Mail

Send Mail lzy812459586@163.com

Note:

- 1) The sender's email only supports Outlook and Gmail.
Outlook server: smtp.office365.com, Port: 587; Gmail server: smtp.gmail.com, Port: 465
- 2) There are no restrictions on the receiver's email.
- 3) Password: for Outlook, you can use the email user's password; for Gmail, you need to use the SMTP password.

3. Inverter&Battery

Inverter&Battery action can only be selected once in a scene.

Multiple inverters can be controlled in a scene.

Actions include:

DataHub	>
DataHub DO 1 Status: Reverse	...
DataHub DO 2 Status: 1	...

Note:

Reverse means the opposite of the current state.

Scene execution logic

When the 'IF' condition is met, the action set in the 'Then' action is automatically executed once and stop.

However, Electricity Price condition is different. When the Electricity Price condition is met, and subsequently the Electricity Price condition changes to being unmet, the Inverter&Battery action will be recovered.

Inverter&Battery action recover:

- 1) Inverter Switch: On -> Off; Off -> On
- 2) Export Limit Control: Restored to the value manually set or remotely set before scene executed.
- 3) Inverter Output Max.AC Power: Restored to the value manually set or remotely set before scene executed.
- 4) Inverter Charge/Discharge: Inverter exits remote control mode and returns to Self-Use.
- 5) Inverter Work Mode: Restored to the value manually set or remotely set before scene executed.

Scene examples

- 1) When solar radiation is high, inverter work mode is switched to feed-in priority.

Radiation high selling electr... ⋮

Introduction:Radiation high selling electricity

☀️ → 🔋

IF
Solar Radiation > 400 W/m²

Then
Select Inverter:X3G060I3G04004
Inverter Work Mode as feed-in priority

- 2) When the electricity price is below a certain value, charge the battery.

Low electricity price charging ⋮

Introduction:Low electricity price charging

📄 → 🔋

IF
Electricity Price < 2,€ cents/kWh

Then
Select Inverter:X3G060I3G04004
Grid Charge Battery Power as 10 kW till 80 %

3) Find the most expensive price hours within a certain time period, discharge the battery.

IF
Find the most expensive price 3 hours during 00:00 to 24:00

Then
Select Inverter:X3G060I3G04004
Inverter Discharge as 10 kw till Battery SOC 10 %

Selling electricity with high ...

Introduction:Selling electricity with high electricity prices

→

4) When the DI of DataHub is set to 1, turn a specific inverter's export limit control to 0.

Power grid DI signal control...

Introduction:Power grid DI signal control system output

→

IF
DataHub DI1 is 1

Then
Select Inverter:X3G060I3G04004
Export Limit Control is 0 kW

5) When the electricity price is below a certain value, turn a specific inverter's export limit control to 0.

Low electricity price control ...

Introduction:Low electricity price control system output

→

Power grid DI signal control...

IF
Electricity Price < 0,€ cents/kWh

Then
Select Inverter:X3G060I3G04004
Export Limit Control is 0 %

→

Version requirements

The Smart Scene function requires the following internal code for DataHub:

Datahub Internal Codes ≥ 14.03

DataHub Info	
SN	SKPYDBTDAG
Firmware Version	3.09
Internal Codes	V015.00
System Time	2023-09-22 13:31:31
Memory Usage	20.0%
Free Disk Space	3.6G
Free TF Space	NA
Wi-Fi Connection	SolarGuest
LAN IP Address	
LAN MAC Address	6a:c3:e5:f9:e4:dc
WiFi IP Address	192.168.111.142
WiFi MAC Address	20:50:a7:19:85:2d