Digitized Automation for a Changing World

# DIAEnergie User Manual

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# DIAEnergie User Manual

## Revision History

| Version | Revision | Date |
|---|---|---|
| 1st | The first version was published. | 2018/10/15 |
| 2nd | CH1 Revise contents in section 1.4 and 1.5.<br>CH2 Add an additional note in section 2.1. Revise figure and add field description.<br>CH3 Remove the original contents concerning energy dashboard and change this chapter to “Topology and Tag Mapping” as well as adding field description, figures and DIACloud devices to the contents.<br>CH4 Move the original contents concerning UI design and preview to chapter 5 and rewrite the content of calculation, which is originally the content from Appendix A.<br>CH5 Replace the original contents of basic query with UI design and preview and revise contents in section 5.3.<br>CH6 Replace the original contents of advanced query with basic query and revise contents as well as figures.<br>CH7 Replace the original contents of alarm management with advanced query and add field descriptions.<br>CH8 Replace the original contents of system management with advanced query and add field descriptions as well as alarm-related contents.<br>CH9 Replace the original contents of system log configuration with system settings and add contents of Line setting, IoT Hub setting and all field descriptions.<br>CH10 Replace the original contents of troubleshooting with energy dashboard and revise the contents.<br>CH11 Add a new appendix. | 2023/2/16 |
| 3rd | CH3 Add 3.1.4.5 OPC UA Client device description and add 3.2.5 OPC UA Client tag description.<br>CH4 Add 4.2.1 Demand Tags/4.2.2 Weather Tags/4.2.3 Shift Tags description.<br>CH5 Add page-switching button functionality description and add default page description. For text/CO2/single bar chart/multi-baseline/item comparison/single data comparison/multiple data comparison/gauge/comparable items/ranking list, update emission factor function description.<br>CH6 Add 6.4 Historical Data (Coefficient) – Multi-tag Function.<br>CH8 Add the description for delete function in section 8.3 System Notification.<br>CH9 Update emission coefficient description in section 9.5 Hierarchy. Update Taiwan Electricity Rate Parameter Settings with images and description in section 9.13 Fee | 2023/7/1 |

| Version | Revision | Date |
| --- | --- | --- |
| | Setting. Add emission coefficient setting description in section 9.19 Emission Factor Settings.<br>CH11 11.4 Add the description for modifying the account/password for Product Database. | |

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# Chapter 1 Introduction to DIAEnergie

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## 1.1 Introduction

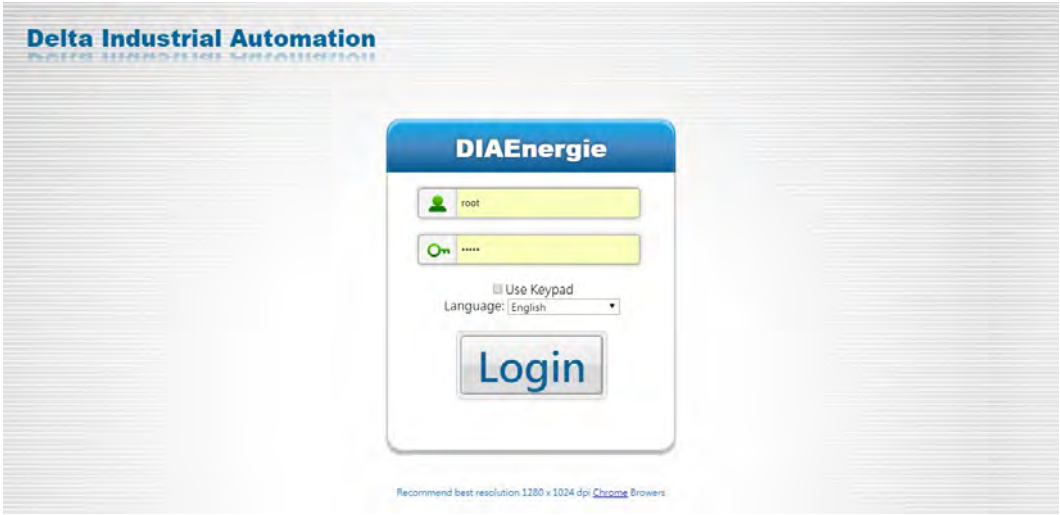
DIAEnergie is an energy management system (EMS). This optimized computer-aided system provides monitoring and managing the production or transportation of electronic components and devices. However, DIAEnergie's main function is on resource management for factories including power consumption, water consumption and air-conditioning.

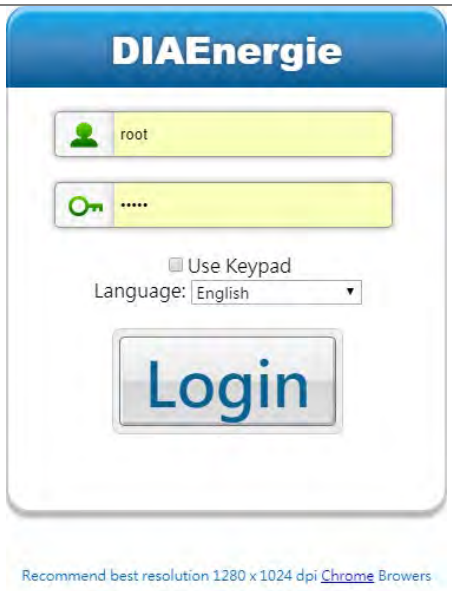
In this chapter, we will explain the major functions and use of DIAEnergie for users to have a better understanding of the system.

## 1.2 Login Page

Users must first log in to the DIAEnergie web page. Then, key-in the IP address http:/127.0.0.1 assumed in default on the browser (default browser: Google Chrome). When connected, users need to enter their User ID/Password on the DIAEnergie login page. The system's administrator User ID by default is Root and Password is admin.

For optimal viewing experience, we strongly suggest Google Chrome as the default browser for logging DIAEnergie. The download location for Chrome browser is https:/www.google.com/chrome/.



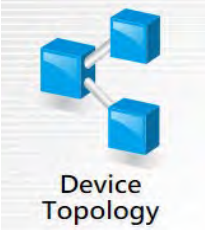
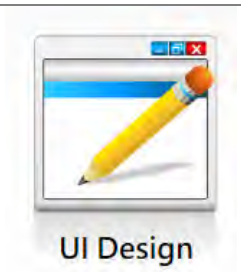
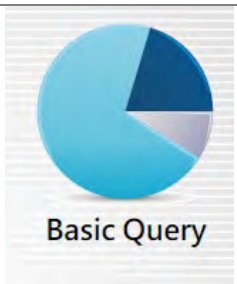

| | |
|---|---|
|   | ● Input User ID<br>● Input User Password<br>● Use Keypad: Enable virtual keyboard.<br>● Multiple Languages: Traditional Chinese / Simplified Chinese / English |

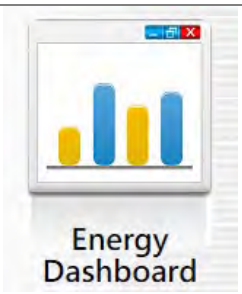
## 1.3 System Main Page

Users are directed to the DIAEnergie “System Main Page” (refer to as “Main Page” in later chapters). The Main Page setting by default is an overview of the system with display of its major functions.

## 1.4 Main Functions

There are ten main functions on the Main Page, including: Device Topology, Tag Mapping, UI Design, Preview, Basic Query, Advance Query, Alarm, User Management, Setting and Energy Dashboard with following brief descriptions :

| Functions | Descriptions |
|---|---|
|  | Easy drag-and-drop design: users can setup device-to-device communication. |
| | Mapping & data acquisition: the system categorizes the tags from Device Topology. |
| | The built-in feature of demand/weather/shift calculation tags can be used with VBScript to write programs and provide users with flexibility of performing data calculation and storage. |
|  | Dynamic user interface with customized webpage design. Featuring the following UI Design components:<br>● Diagram components<br>● Control components<br>● General graphic components |
| | Display all components mentioned in the UI Design for users to create their own page. |
|  | Provides query conditions for historical data search. The results can export into Excel files or image files. |

| | |
|---|---|
| | Offers all kinds of energy performance analytics for enhanced energy efficiency. The results can export into Excel files or image files. |
| | Users can setup alarm event based on their query condition including:<br>1. The alarm query and description base on tags. (Setup Tag Mapping first).<br>2. Report abnormal system events.<br>3. Alarm group setting, you can set the alarm to be sent by Line/SMS/E-mail according to the permission group or personal account. |
| | Users with admin authority can access management. Admin default ID: root / password: admin. |
| | Presents server settings (e.g. Network Setting / Calendar / Energy Type) for users. |
|  | Users can complete the energy dashboard page setting via steps from Hierarchy in domains, Device Topology, Tag Mapping, Factory Setting and Source Configure. |

# 1.5 Shortcut Menu

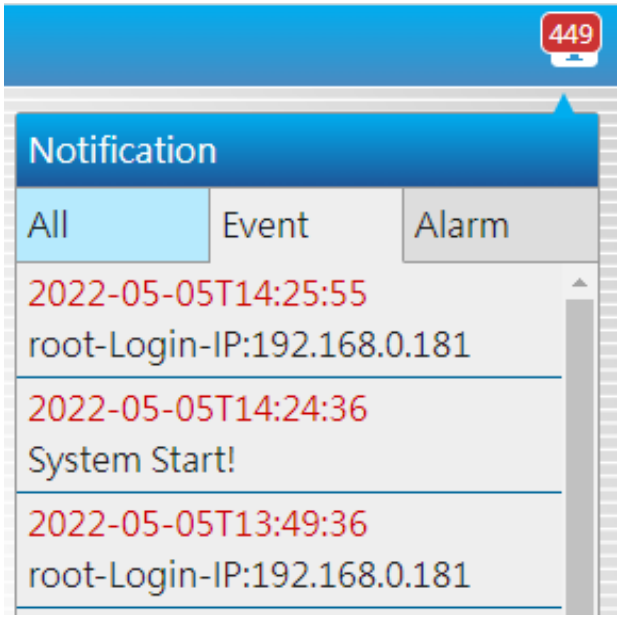
The four major functions in the Shortcut Menu on the upper-right side of the Main Page are described below:

## 1.5.1 Event Notification

List all login User IDs and up to 20 historical data collected in 7 days. These historical data can be categorized into “Event” and “Alarm”. (The number below indicated on the upper-right is the accumulated number of alarms.)

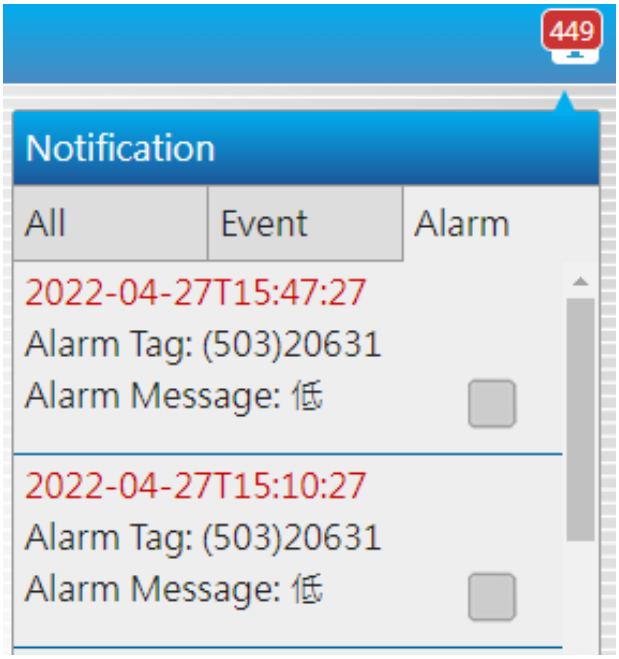
- **Event**

  Contains all user ID login, app launching, SMTP activation, authorization error and disconnected records (up to 20 historical data collected in 7 days). For more details of data inquiry, please refer to chapter 8.3.



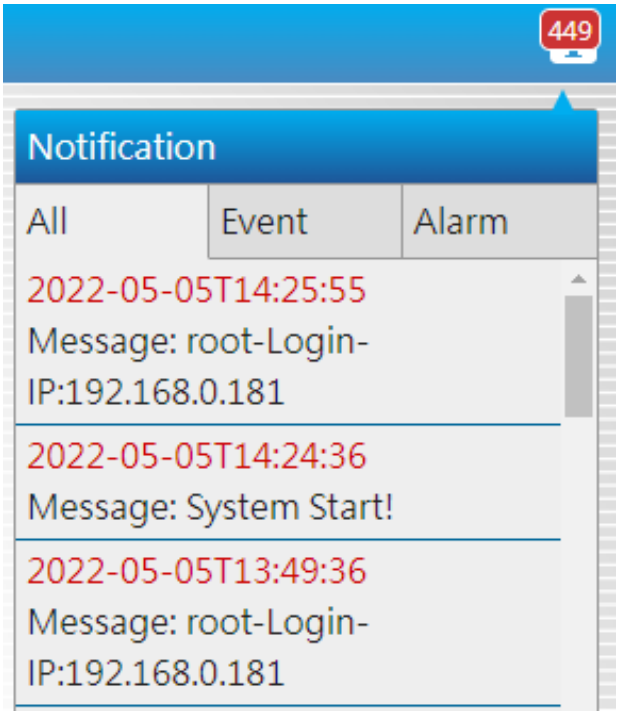
- **Alarm**

Provides records of alarm tags and messages (up to 20 historical data collected in 7 days). Check the box to perform timing update. For more details of data inquiry, please refer to chapter 8.2.




- **All**

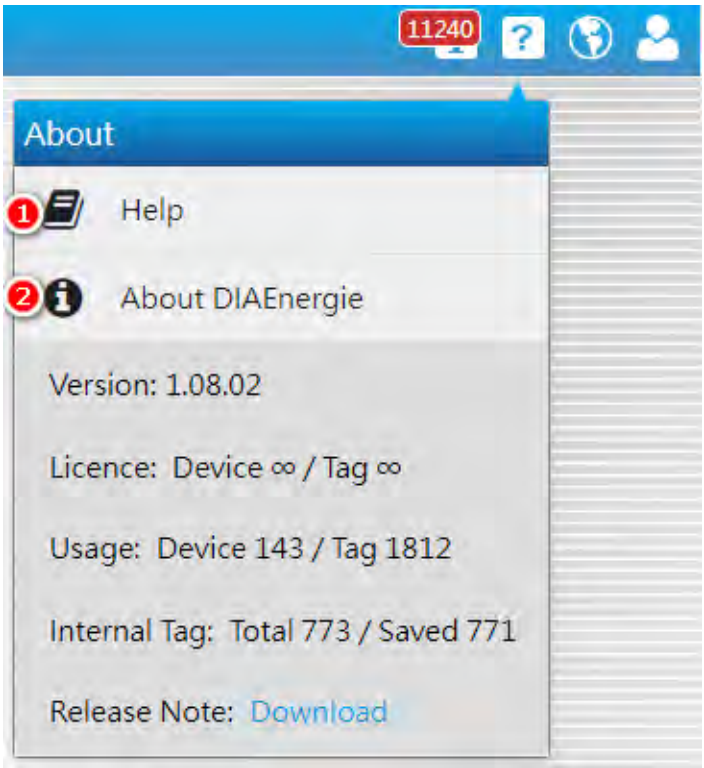
Display all event and alarm notifications (up to 20 historical data collected in 7 days).



### 1.5.2 User Guide

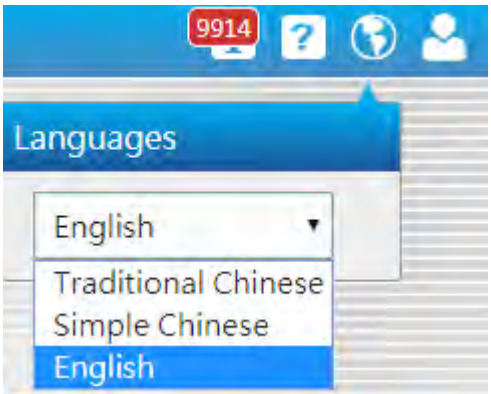
1. Click “Help” to download DIAEnergie operation manual in PDF format.

2. Select “About DIAEnergie” to view the software Version, number of License and Usage of device / tag as well as Internal Tag status.



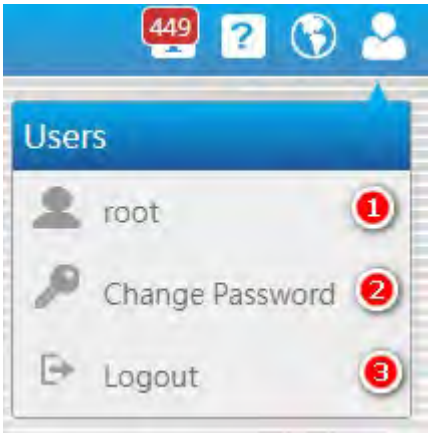

### 1.5.3 Languages

There are three language options: Traditional Chinese / Simplified Chinese / English. When selected, the webpage language will change to the selected language.



### 1.5.4 User Management

Users can select Change Password or Logout.

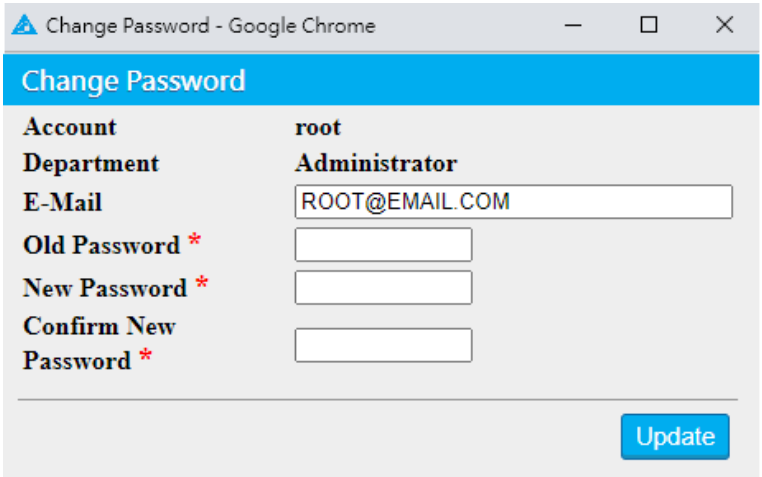



1. Display the login account.

2. Click “Change Password” and the window would pop up.

   - **Account:** Display the current account; cannot be changed.
   - **Department:** Display the department name corresponding to the current account; cannot be changed.
   - **E-Mail:** Display the email address corresponding to the current account; cannot be changed.
   - **Old Password:** Enter the old password.
   - **New Password:** Enter the new password.
   - **Confirm New Password:** Re-enter the new password.

   Click “Update” to update the password.




3. Click “Logout” to return log page.

2

# Chapter 2 User Management

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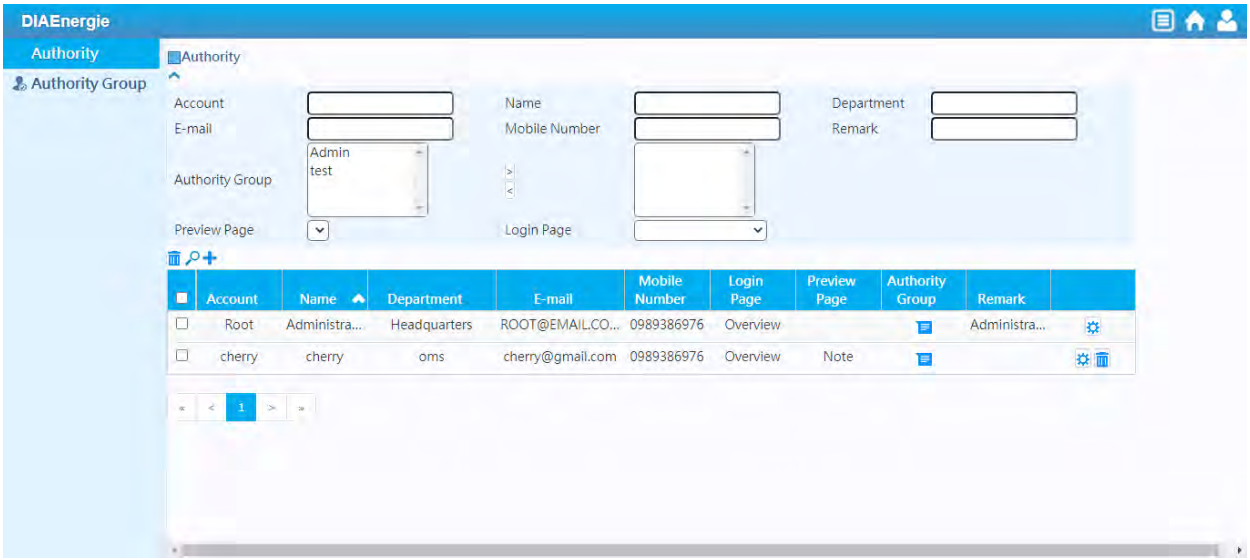
2.3.3 Authority Group List ..... 2-9

## 2.1 Introduction

User Management function allows users to manage the Software login data with listed user accounts / password information and oversee assigned web page authorization. Users can also create multiple accounts to view specified energy dashboard web pages.

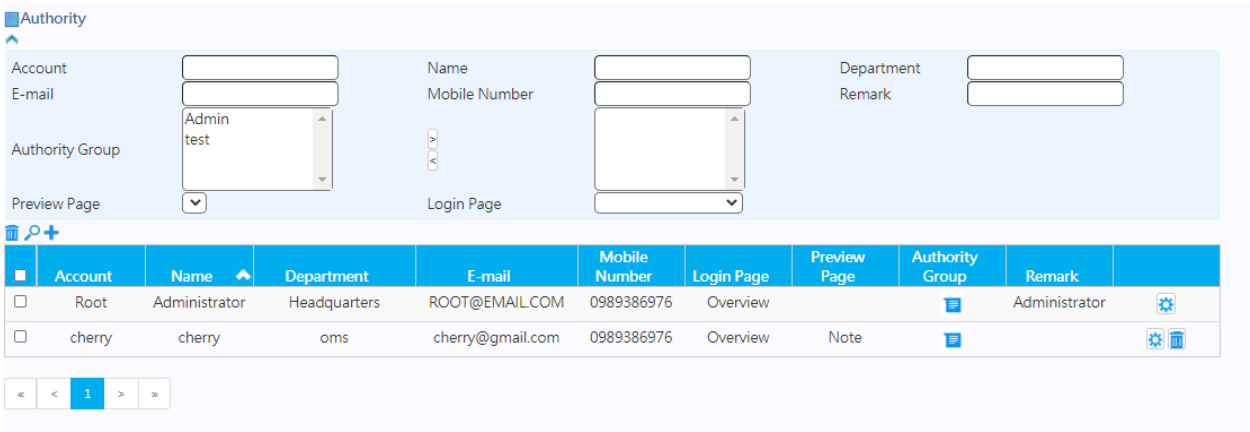
※ **Note:** Please remember the default administrator account/password - root/admin.

※ **Note:** In authority feature, numbers 0 to 9, lowercase a to z, uppercase A to Z, Chinese characters (including Simplified Chinese; Traditional Chinese and Kanji) and special characters "_" " - "are allowed to be used in names.



## 2.2 Authorization Management

Users can add, edit, delete other system accounts, and assign authority group level to provide user authorized access for viewing or editing the web pages.

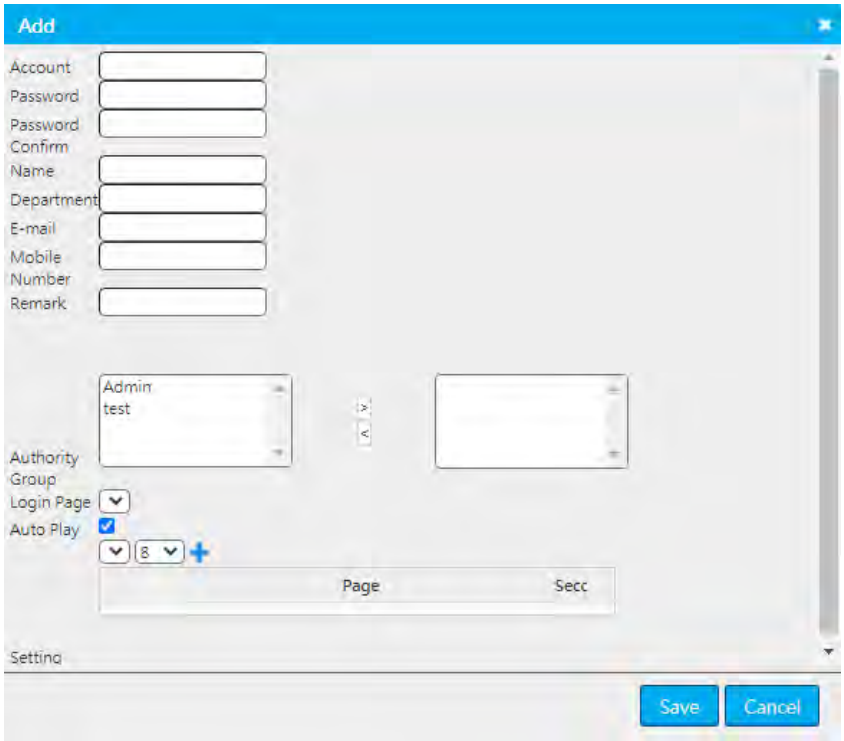



### 2.2.1 Add / Edit / Delete User Account

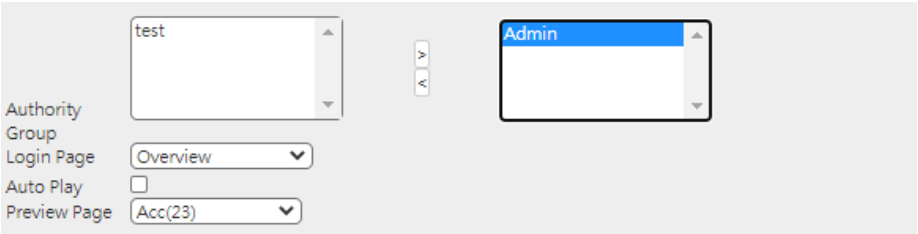
Click ✚ to type-in new user information including account, password, name, department, e-mail, mobile number, authority group and login page. For more information on authority group, please refer to section 2.3. The default group is Admin and is open to all authorized level. If new user wants to be assigned to other authorized group, please refer to section 2.3.

Click ⚙ to edit new user account settings.

Click 🗑 to delete new user account. “Root” is the default account and cannot be deleted.



- **Account:** User account; required.
- **Password:** Set user password; required.
- **Password Confirm:** Re-enter the password; required.
- **Name:** Username; required.
- **Department:** User's department; required.
- **E-mail:** User's E-mail address; required.
- **Mobile Number:** User's mobile number; required.
- **Remark:** For note use.
- **Authority Group:** One or more authority groups used by users can be chosen. Click > to connect the account with the desired group. Click < to disconnect the account and the group; required.



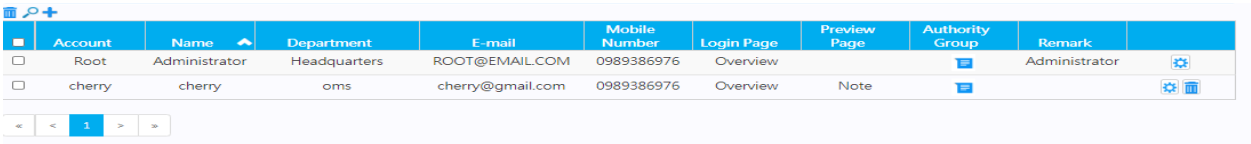

- **Login Page:** According to the authority group settings, the optional pages would be displayed in the drop-down list. The default setting of login page is set to Overview (Homepage); therefore, you would be directed to the overview page after logging in. This setting is required.
- **Preview Page:** Select the desired page to present on the preview page from the options in the drop-down list.
- **Auto Play:** Check the checkbox to enable Auto Play feature. While previewing, pages would be displayed according to the auto play setting. For the reason that memory resource problems may occur if the browser is opened for a long time, we would suggest restarting your browser on a daily basis or use DIAEnergie broadcasting tool.
- **Auto Play Settings:** Set the desired page and duration for the auto play feature.

## 2.2.2 Search Conditions

In the “Authority” section, users can key-in and filter account information of users and authority group for management. Click for listed search result display on the web page.

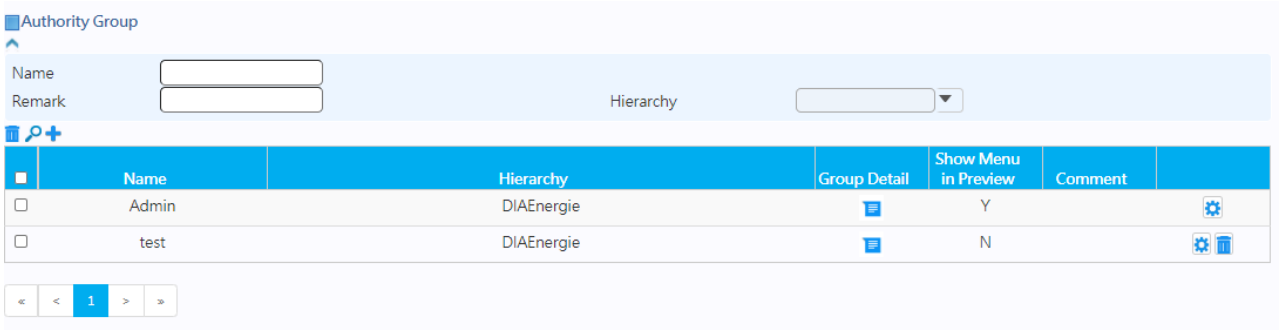
## 2.2.3 Account List

On the lower half of the Authorization Management web page, the current user accounts are listed for users to search.



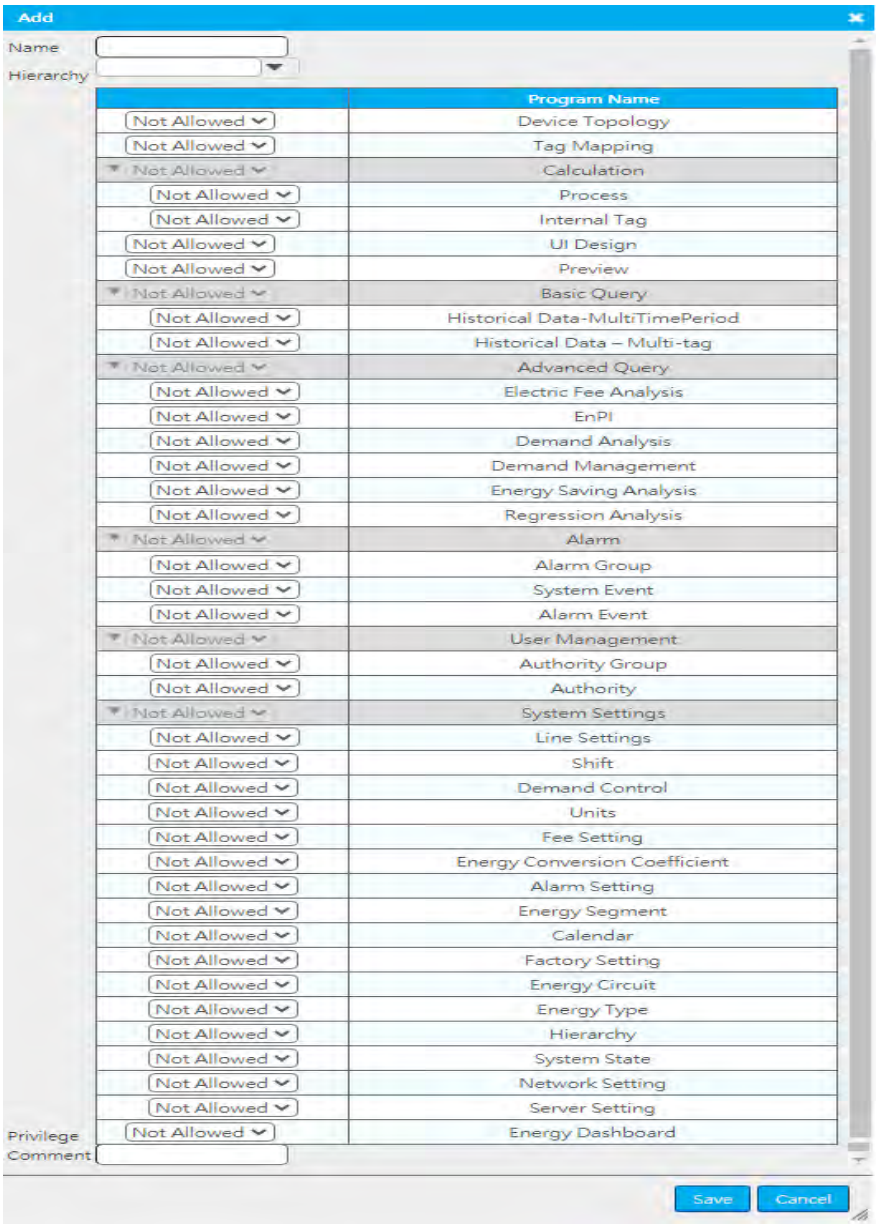
## 2.3 Authority Group

The system offers three kinds of authority levels including Set, View and Not Allowed for authority groups to perform their authorization on the web pages. Apart from the 10 main functions listed on the Main Page, some sub-functions are also included for authority level settings.



### 2.3.1 Add / Edit / Delete Groups

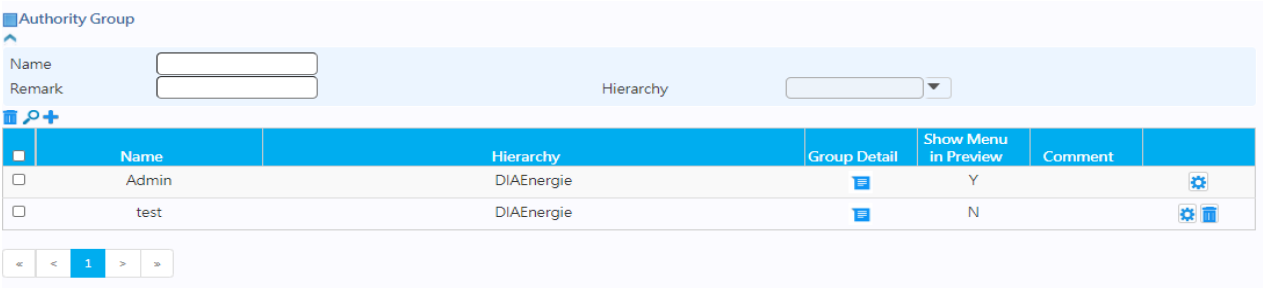
Click ➕ to add a new group. Click ⚙ to edit the settings of the newly added authority groups. Click 🗑 to delete the target groups. Please be noted that Admin as the default cannot be deleted.




- **Name:** Names of authority groups cannot be duplicated.
- **Hierarchy:** Choose the zone hierarchy for the group. Selecting the root node means all hierarchies are selected. If one of the branches is selected, only the nodes under the branch are chosen.
- **Privilege:** All the programs that can be configured by the current user are listed for you to edit privilege setings with options, which are **Not Allowed**: reading and editing are not allowed, **Set**: edit only, and **View**: read only. Please be noted that the priviliege setting of the target program must be set to **Set** so as to performs clicks on control components on the preview page.
- **Comment:** You can search according to the comments. For a quick search, you can also create your own rules for the convenience of the next enquiry.

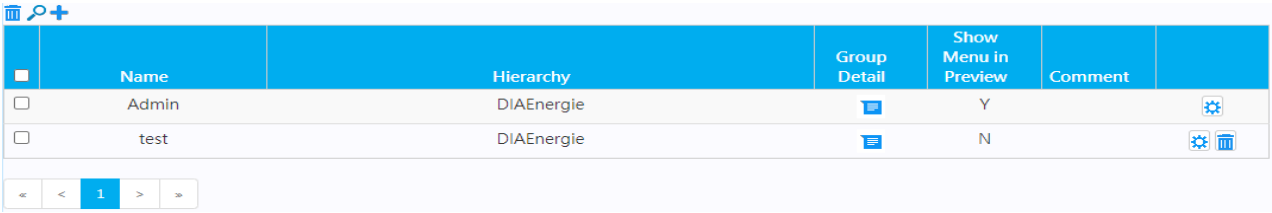
## 2.3.2 Search Conditions

In the “Authority Group” section, users can key-in and filter account information of users and authority group for management. Click for listed search result display on the web page.




## 2.3.3 Authority Group List

On the lower half of the Authorization Management web page, a list of the existing authority groups that can be viewed by the current user accounts are provided for users to search.



3

# Chapter 3 Device Topology and Tag Mapping

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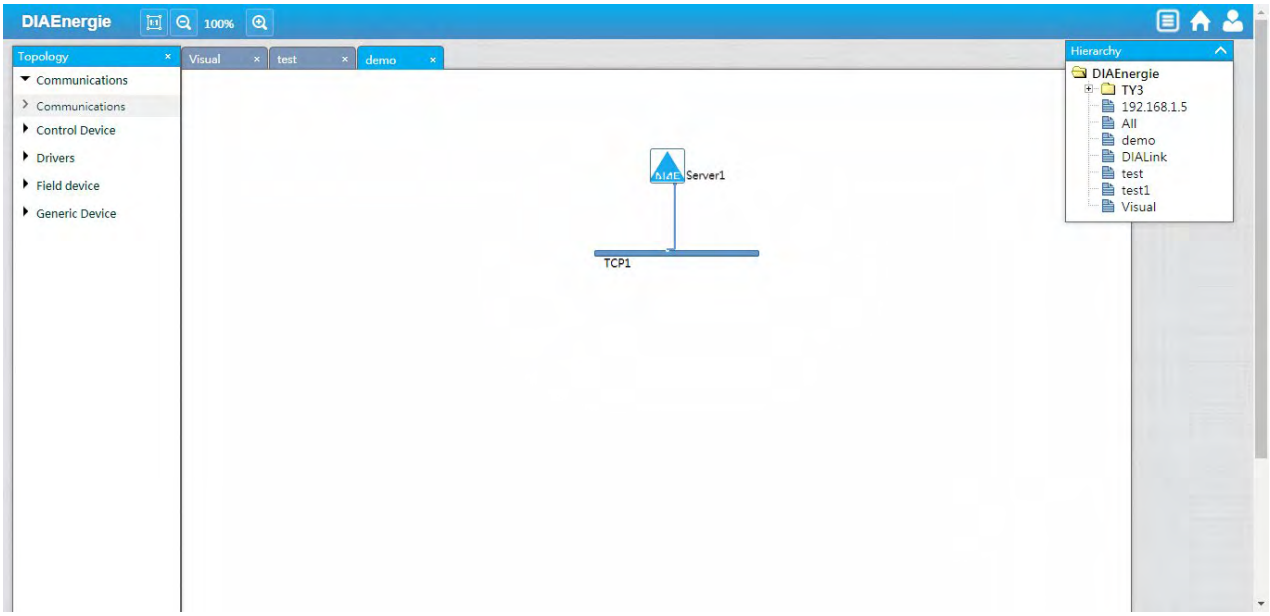
## 3.1 Device Topology

Drag and drop nodes and edges around the topology graph to create communication with devices to understand better the whole topology structure of devices. First, please complete hierarchy configuration according to section 9.5 before creating device topology and configuring communication settings of each hierarchy.

***Note:** Only 0-9, a-z, A-Z, special characters "_""- "and Chinese characters (including Simplified Chinese; Traditional Chinese and Kanji) are accepted in names. For remarks, only 0-9, a-z, A-Z, special characters "_"" +""- "" @"and Chinese (including Simplified Chinese; Traditional Chinese and Kanji) are allowed to be used.

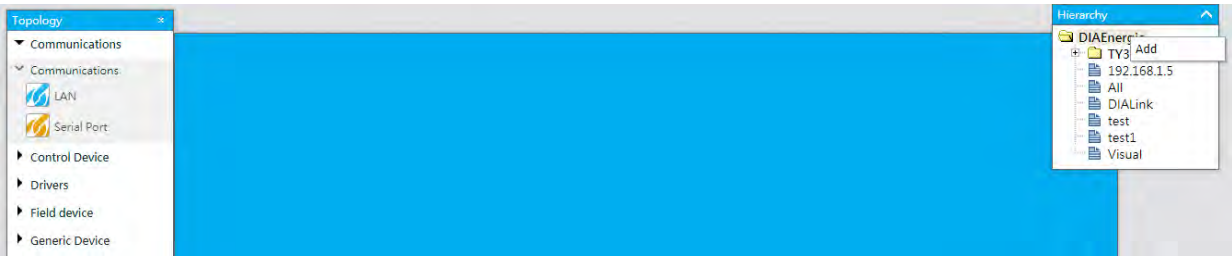


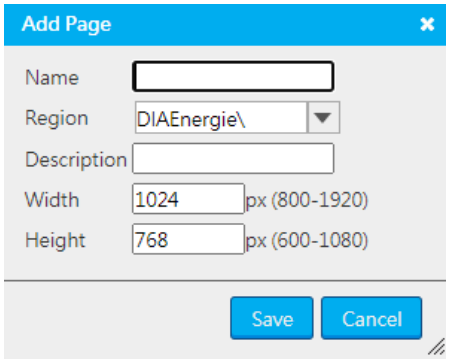

3

### 3.1.1 Add / Modify / Delete Page

- **Add**

Right click on the target node of the hierarchy tree view pane to click Add on the popup menu, then the Add Page window would pop up as shown in the following figure.

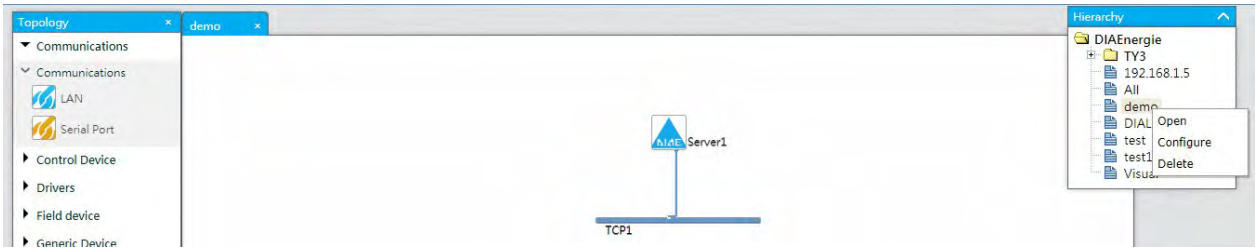


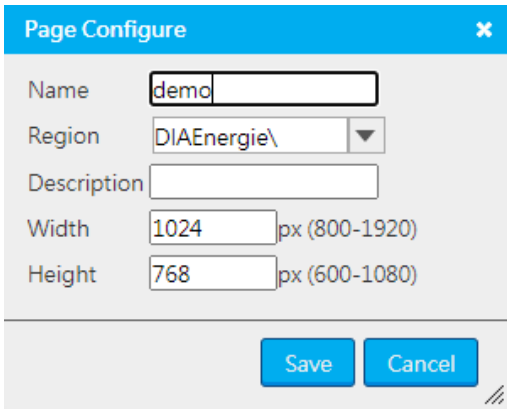




- **Name:** Page name; required field.
- **Region:** The region where the page locates would be the hierarchy corresponding to the node you click and displayed automatically in this required field.
- **Description:** A description of the page.
- **Width:** The width of the page. Only numbers are accepted in this field; required field.
- **Height:** The height of the page. Only numbers are accepted in this field; required field.

- **Configure:**

Right click on the target node of the hierarchy tree view pane to click Configure on the popup menu, then the Page Configure window would pop up as shown in the following figure.

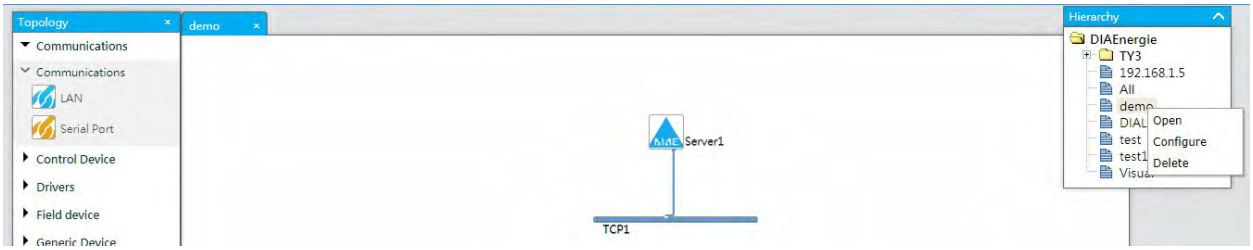


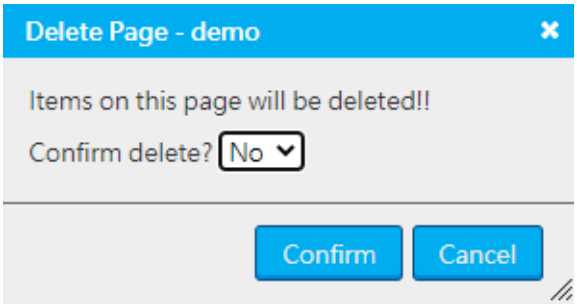




- **Name:** Page name; required field.
- **Region:** The region where the page locates would be the hierarchy corresponding to the node you click and displayed automatically in this required field.
- **Description:** A description of the page.
- **Width:** The width of the page. Only numbers are accepted in this field; required field.
- **Height:** The height of the page. Only numbers are accepted in this field; required field.

- **Delete**

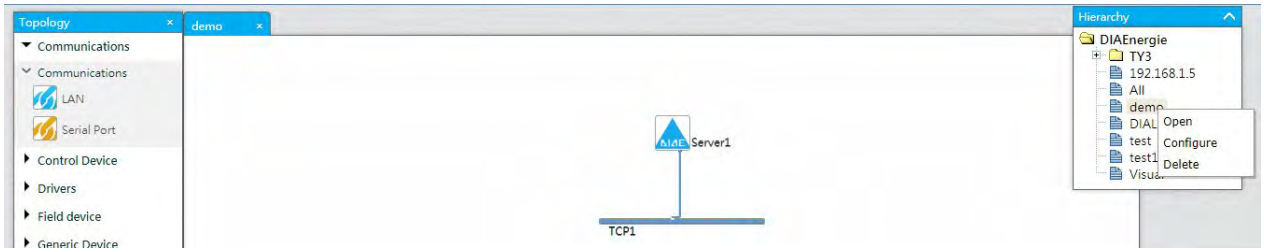
Right click on the target node of the hierarchy tree view pane to click Delete on the popup menu, then the Delete Page window would pop up as shown in the following figure.




To avoid any erroneous deletion, you must click on **Confirm**, or the page would not be deleted successfully.

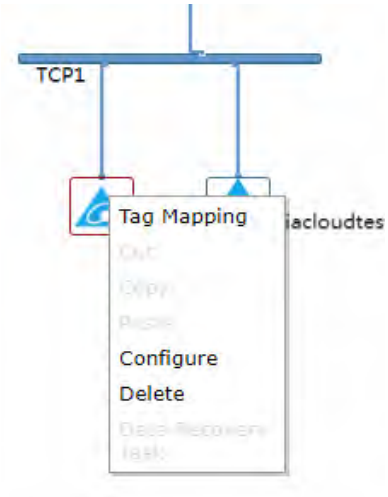
- **Open:**



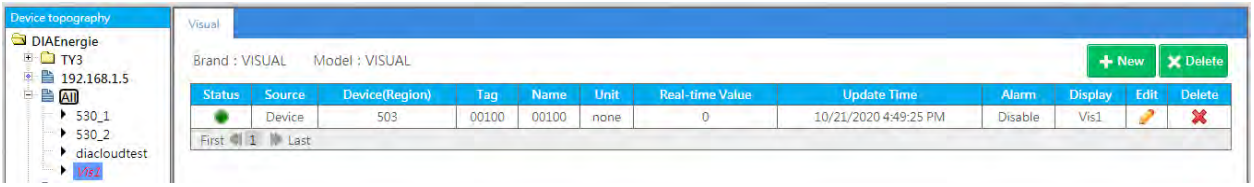
## 3.1.2 Right Click Menu

### 3.1.2.1 Right Click Menu for Components

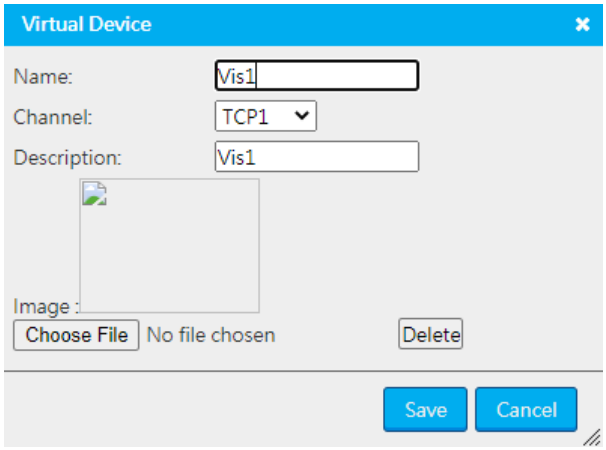
Right click on the target device component to pop up the right-click menu.



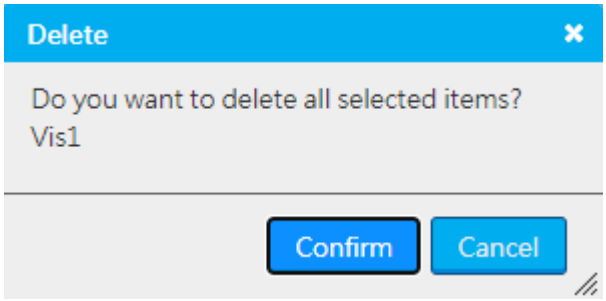

- **Tag Mapping:** Click Tag Mapping from the menu, it will lead you directly to the tag configuration page of the device.




- **Configure:** Click Configure from the menu, the Virtual Device window would pop up for you to modify the settings.

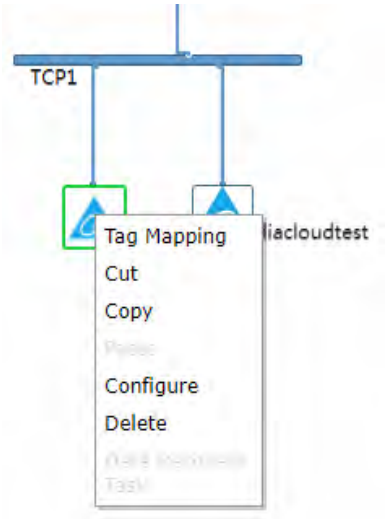



- **Delete:**

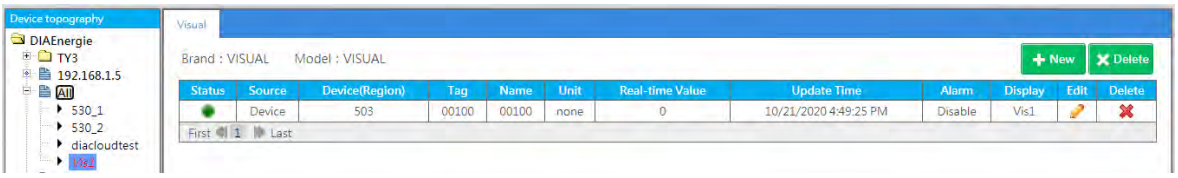


### 3.1.2.2 Right Click Menu for Area Selections

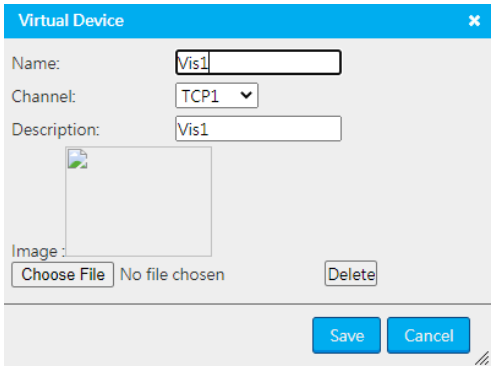
Right click on the device components in the selected area, then the right-click menu would pop up.



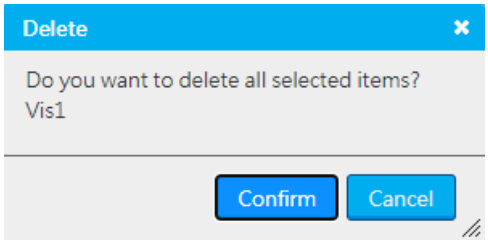

- **Tag Mapping:** Click Tag Mapping from the menu, it will lead you directly to the tag configuration page of the device.




- **Cut:** The target data would be cut and saved temporarily for pasting.
- **Copy:** The copied data would be saved temporarily for pasting
- **Paste:** The copied data would be check for dupplication before being pasted. If the name is duplicated on the page, “CopyX” would be displayed at the end of the name; “X” is a number. For the data being cut, the device would be moved to the next page to display.
- **Configure:** Click on Configutre and the information of the device would pop up for you to modify.

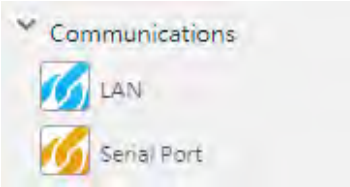
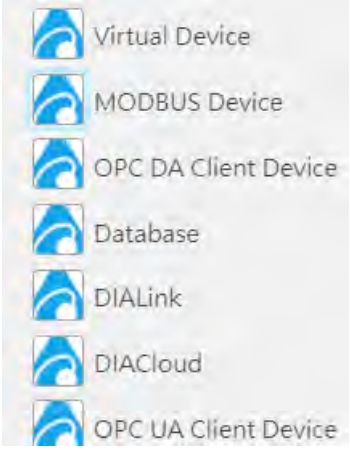



- **Delete:** The delete window would pop up to confirm deletion.



### 3.1.3 Tool Bar

The toolbar has listed five device types for network topology including, Communications, Control Device, Drivers, Field Device and Generic Device. Descriptions are shown in the graph below.

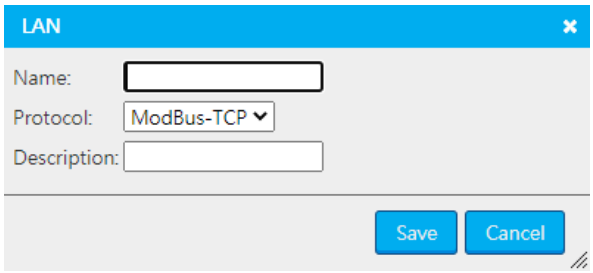
| Device Type | | Description |
|---|---|---|
| Communication |  | The system requires networking for actual device-to-device communication. |
| Control Device | | Include devices like PLC and human machine interface (HMI). |
| Drivers | | Devices include inverters. |
| Field Device | | Conversion devices can provide devices for communication protocols. For example, convert MODBUS Serial into MODBUS TCP. |
| Generic Device |  | Generic devices are used when the system does not support device-to-device communication. |

## 3.1.4 Device Types and Description

### 3.1.4.1 Communications

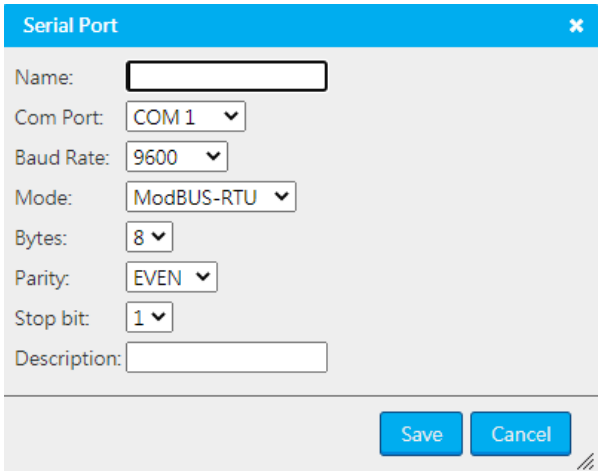
Communication represents methods for device-to-device communication. The setting in this section provides the system for device communication without revising the actual parameters. Descriptions on the types of communication are shown below.

- **LAN:** The Internet Protocol (IP) need to be selected and key-in Name & Description.




  - **Name:** The name displayed on the page.
  - **Protocol:** Modbus-TCP/Modubs-ASCII.
  - **Description:** For explanatory notes.

- **Serial Port:** When using RS232/RS422/RS485 communicaiton protocol, the Baud Rate, Bytes, Parity and Stop Bit setting need to match with the device parameter setting.

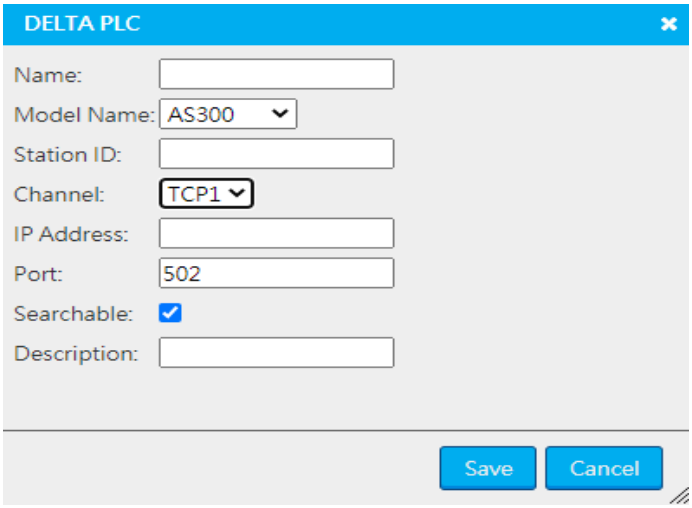


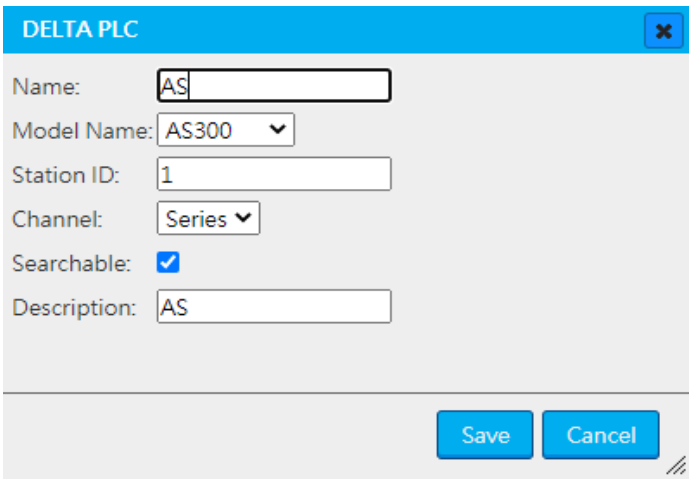

  - **Name:** The name displayed on the page.
  - **COM Port:** Select the desired com port from the drop-down list, which is fixed not created from actual detection.
  - **Baud Rate:** According to the device to communicate, determine the corresponding baud rate.
  - **Mode:** According to the actual transmission format, choose between Modbus-RTU and Modbus-ASCII.
  - **Bytes:** According to the device to communicate, determine the corresponding byte value.
  - **Parity:** According to the device to communicate, determine the corresponding type of parity checking.
  - **Stop Bit:** According to the device to communicate, determine the corresponding number of stop bit.
  - **Description:** For explanatory notes.

### 3.1.4.2 Control Device

The current two main control devices: PLC and HMI with brief descriptions below.

- **Programmable Logical Controller – PLC**

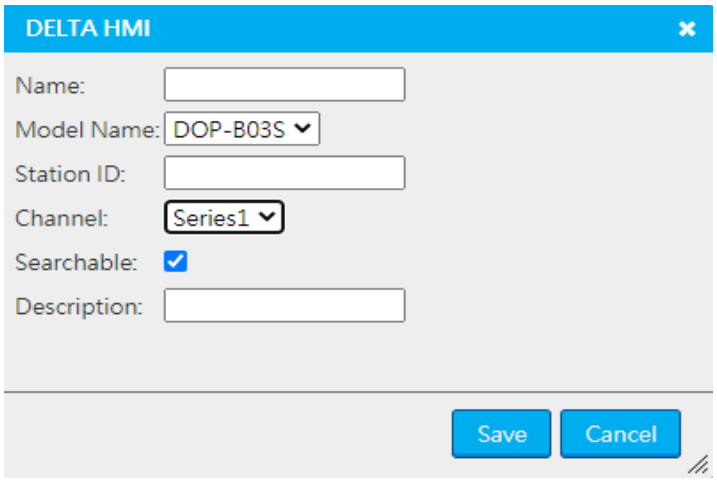


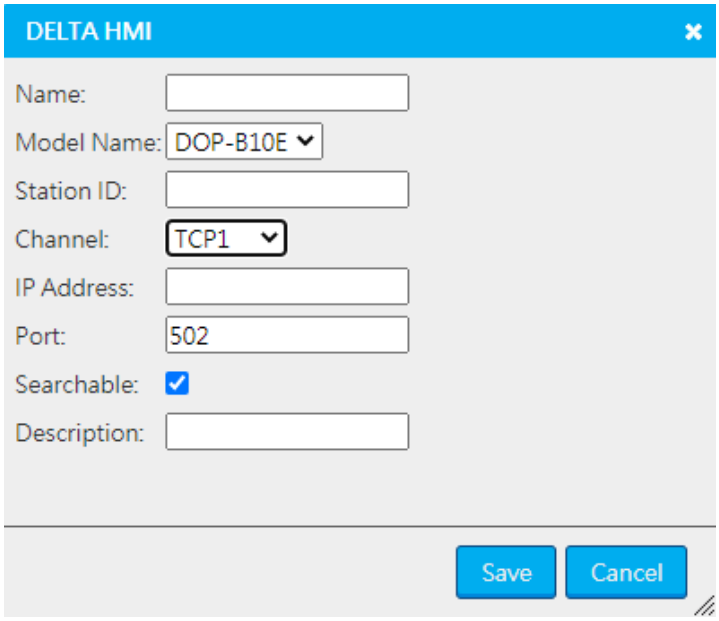




- **Name:** Key-in the device name.
- **Model Name:** The setting is based on the selected model.
- **Extension Module:** The setting is based on the selected communication module. (it is shown in DVP series)
- **Station ID:** Key-in the Station ID.
- **IP Address:** Setup PLC IP address and desired channels for connection.
- **Port:** The default is 502 for Modbus TCP port setting.
- **Searchable:** Check the checkbox so the device can be found while searching.
- **Description:** For explanatory notes.

- **Human Machine Interface – HMI**

Delta HMI is currently provided for selection. There are two model types including S (serial communication) and E (serial and internet communication), the system offers different parameter settings base on the model types.

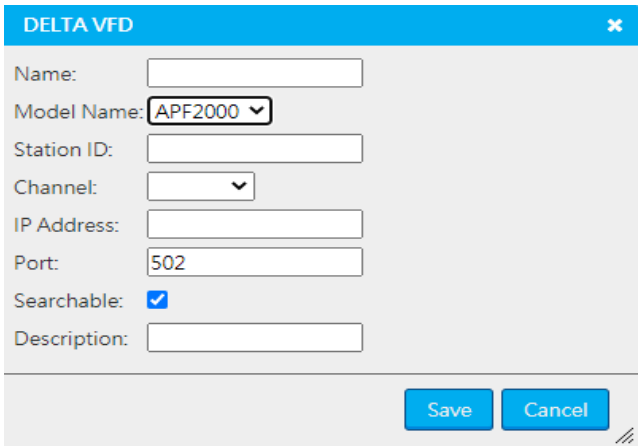


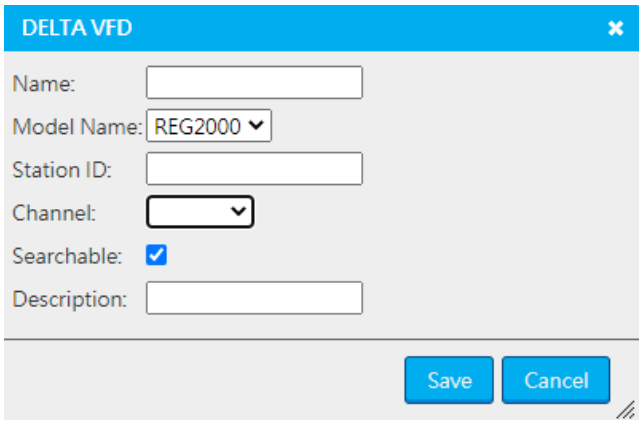




- **Name:** Key-in the device name.
- **Model Name:** The setting is based on the selected model.
- **Station ID:** Key-in the HMI Station ID.
- **Channel:** Select a channel format.
- **IP Address:** Setup the Address for data acquisition.
- **Port:** The default is 502 for Modbus TCP port setting.
- **Searchable:** Check the checkbox so the device can be found while searching.
- **Description:** For explanatory notes.

### 3.1.4.3 Drivers

- **Inverters**



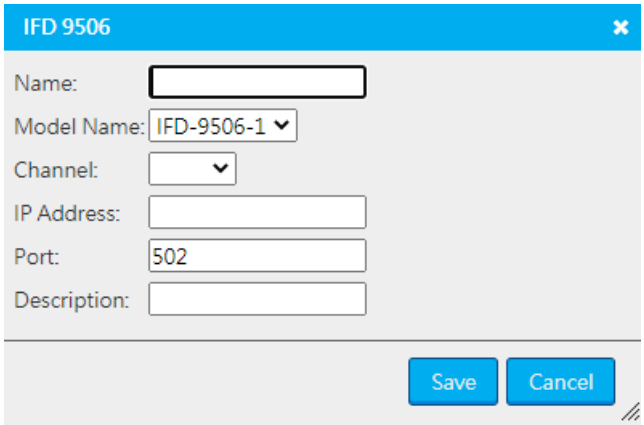

- **Name:** Key-in the device name.
- **Model Name:** The setting is based on the selected model.
- **Station ID:** Key-in the Station ID.
- **Channel:** Select a channel format.
- **IP Address:** Setup the Address for retrieving data from VFDs.
- **Port:** The default is 502 for Modbus TCP port setting.
- **Searchable:** Check the checkbox so the device can be found while searching.
- **Description:** For explanatory notes.

### 3.1.4.4 Field Device

The current field device including converter and power meter are used for data acquisition and categorization. Descriptions of the field device are indicated below:

- **Gateway Converters**

Delta IFD9506 features protocol conversion function that can convert MODBUS RTU serial communication into MODBUS TCP protocol. If the on-site equipment uses converters of other brands, the function can still be completed.

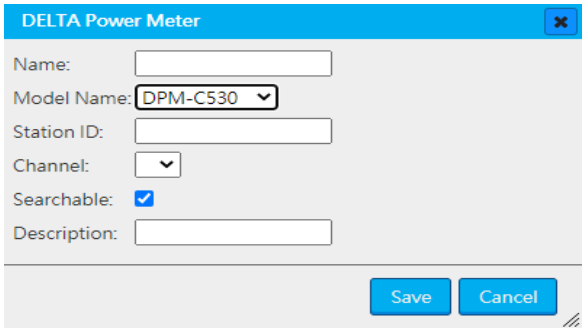



- **Name:** Key-in the device name.
- **Model Name:** The setting is based on the selected model.
- **Channel:** Select a channel format.
- **IP Address:** Setup the Address for data acquisition.
- **Port:** The default is 502 for Modbus TCP port setting.
- **Description:** For explanatory notes.

- **Power Meter**

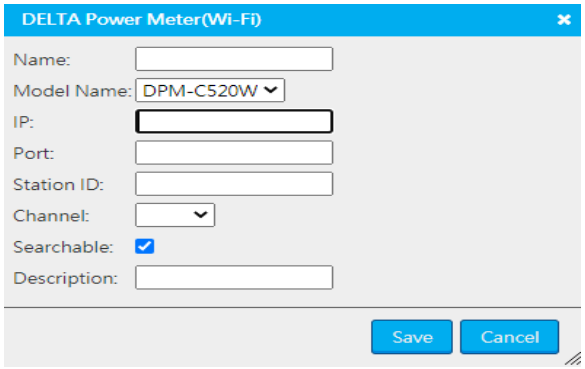
Equipped with built-in power meter types from brands including Delta, Schneider, Arch and RARCO. Different brand's power meter points can be setup base on the built-in MODBUS register location in Delta DIAEnergie. When installing new power meters that share the same MODBUS register location with the built-in power meters in DIAEnergie; For instance, the Schneider power meter PM5320 share the same MODBUS register location with the built-in PM5350 in DIAEnergie, users can select PM5350 in the Model Name category for quick network topology setting.

**Delta power meter:**




- **Name:** Key-in the device name.
- **Model Name:** The setting is based on the selected model.
- **Station ID:** Key-in the Station ID.
- **Channel:** Select a channel format.
- **Searchable:** Check the checkbox so the device can be found while searching.
- **Description:** For explanatory notes.

**Delta power meter (Wifi):**



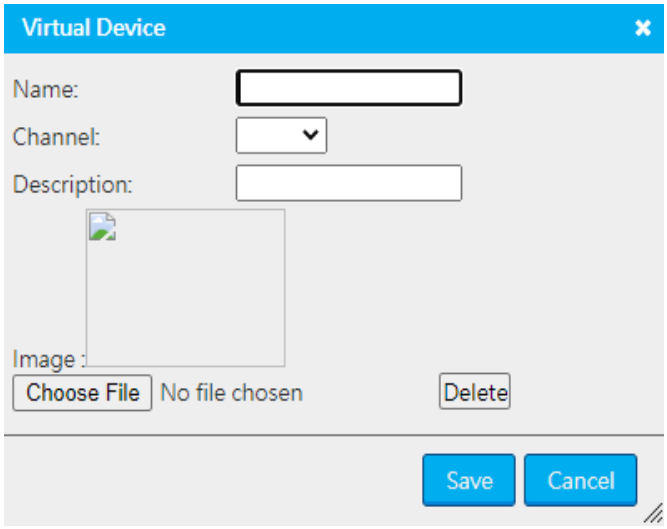

- **Name:** Key-in the device name.
- **Model Name:** The setting is based on the selected model.
- **IP:** Setup the Address for data acquisition.
- **Port:** The default is 502 for Modbus TCP port setting.
- **Station ID:** Key-in the Station ID.
- **Channel:** Select a channel format.
- **Searchable:** Check the checkbox so the device can be found while searching.
- **Description:** For explanatory notes.

### 3.1.4.5 Generic Device

There are 5 generic device types including Virtual Device, MODBUS Device, OPC Client Device, Database and DIALink. When the desired communication protocol is not supported by the system, users can setup connection via the following generic device types. Explanations are as follows:

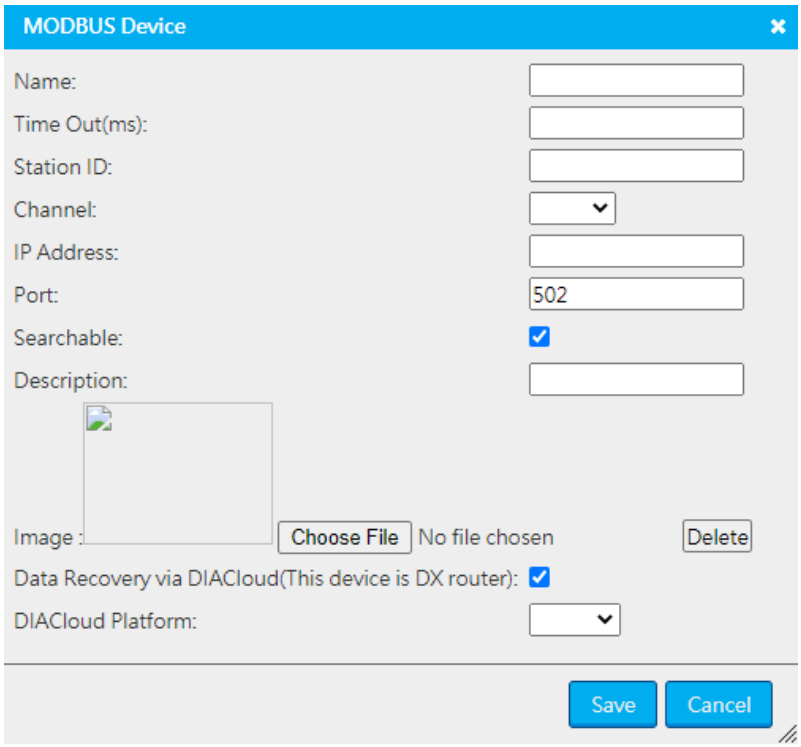
- **Virtual Device Group**

For example, to classify tags inside data collected by Modbus devices, you are allowed to create a virtual device as a group and distribute the actual tags to the virtual devices according to the tag configuration so as to group the tags.




- **Name:** Key-in the device name.
- **Channel:** Select a channel format.
- **Description:** For explanatory notes.
- **Image:** After uploading the desired file, the image would be displayed here for preview.
- **Choose file:** You are allowed to choose a local image to display.
- **Delete:** Delete the chosen file.

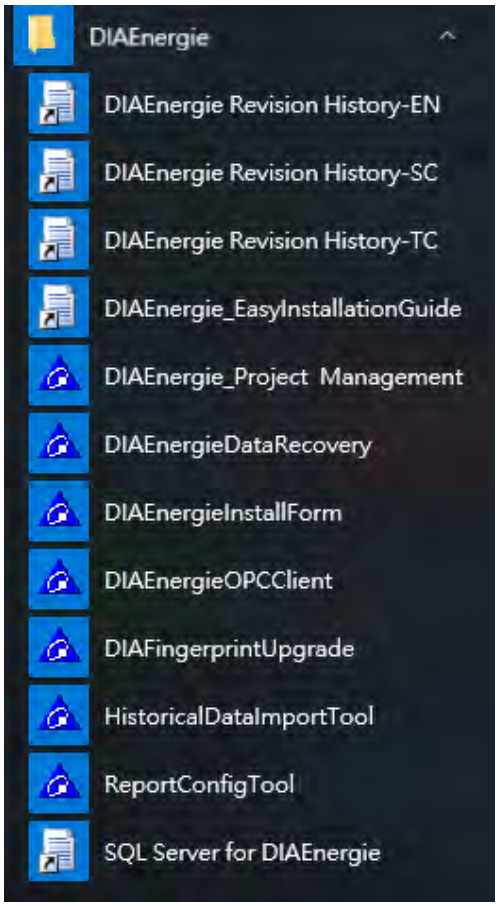
- **MODBUS Device**




- **Name:** Key-in the device name.
- **Time Out (ms):** A time-out error is sent when power meter exceeds communication time. Unit: ms.
- **Station ID:** Setup station ID for data acquisition.
- **Channel:** Select a channel format.
- **IP Address:** Modbus Slave IP**.**
- **Port:** The default is 502 for Modbus TCP port setting.
- **Searchable:** Check the checkbox so the device can be found while searching.
- **Description:** For explanatory notes.
- **Image:** After uploading the desired file, the image would be displayed here for preview.
- **Choose file:** You are allowed to choose a local image to display.
- **Delete:** Delete the chosen file.
- **Data Recovery via DIACloud (This device is DX router):** This option is only supported when DIACloud is set in the device topology. The period in which DIACloud can recover data after disconnecting is 1 days.
- **DIACloud Platform:** Select the DIACloud settings configured via DIAEnergie.

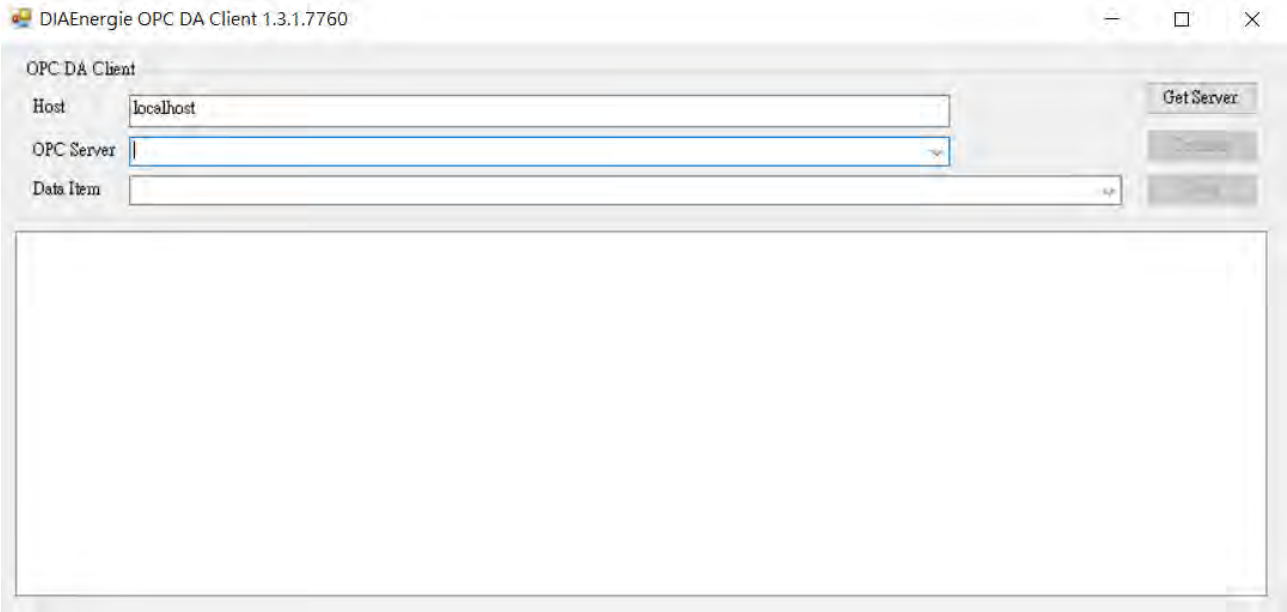
- **OPC Client Device**

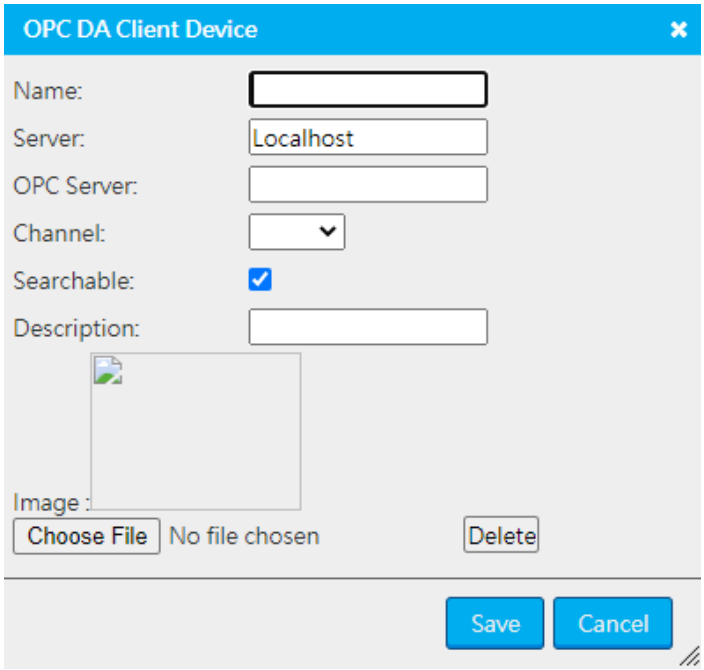
Use DIAEnergieOPCClient to perform testing.




Check if the environment setting of OPCDAServer has been complete, then input Host field and click on "Get Server".

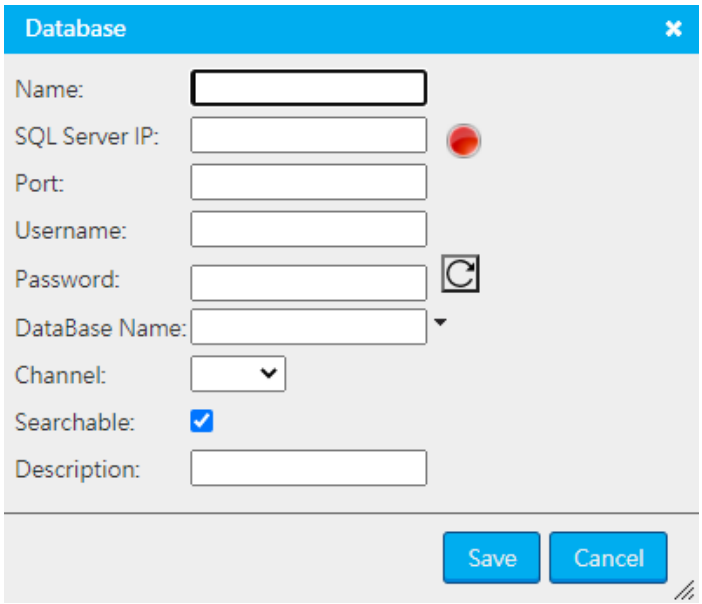
List all OPC DA servers on the PC and check the target device to connect, then copy its name to the field of OPC DA Server under OPC DA Client settings.





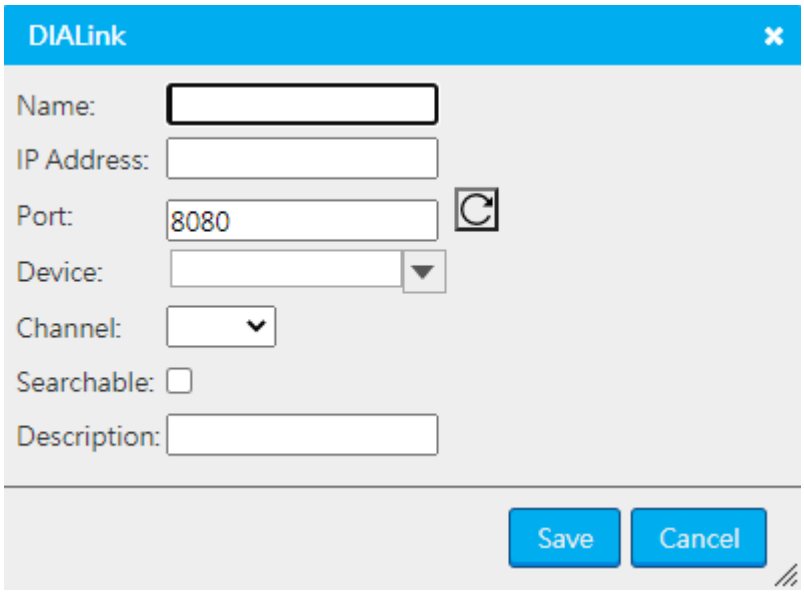

- **Name:** Key-in the device name.
- **Server:** The server IP (Default: Localhost).
- **OPC Server:** The desired OPC Server name.
- **Channel:** Select a channel format.
- **Searchable:** Check the checkbox so the device can be found while searching.
- **Description:** For explanatory notes.
- **Image:** After uploading the desired file, the image would be displayed here for preview.
- **Choose file:** You are allowed to choose a local image to display.
- **Delete:** Delete the chosen file.

- **Database**




- **Name:** Key-in the device name.
- **SQL Server IP:** Key-in SQL Server IP Address. If there is an instance name, please enter it together. ex: TWTY3NB0600\SQLEXPRESS.
- **Port:** Input the port number for SQL Server.
- **Username/Password:** Login SQL username/password.
- **:** After keying in the above information, click this button to update SQL Database Name category.
- **DataBase Name**：Select the DataBase Name users want to connect to.
- **Channel:** Select a channel format.
- **Searchable:** Check the checkbox so the device can be found while searching.
- **Description:** For explanatory notes.

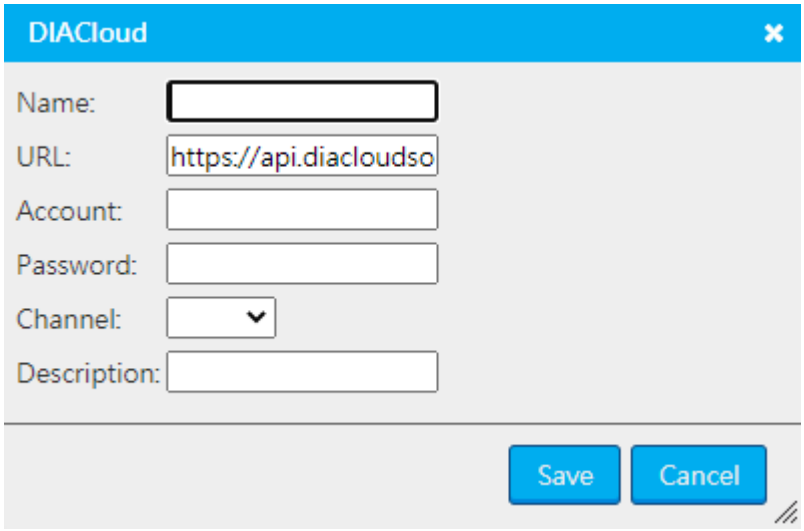
- **DIALink：**




- **Name:** Key-in the device name.
- **IP Address:** Key-in the DIALink Web IP address.
- **Port:** Input the port number for DIALink Web IP address.
- **:** After keying in the above information, click this button to update the Device list.
- **Device**：Select one or multiple devices under DIALink.
- **Channel:** Select a channel format.
- **Searchable:** Check the checkbox so the device can be found while searching.
- **Description:** For explanatory notes.

- **DIACloud :**

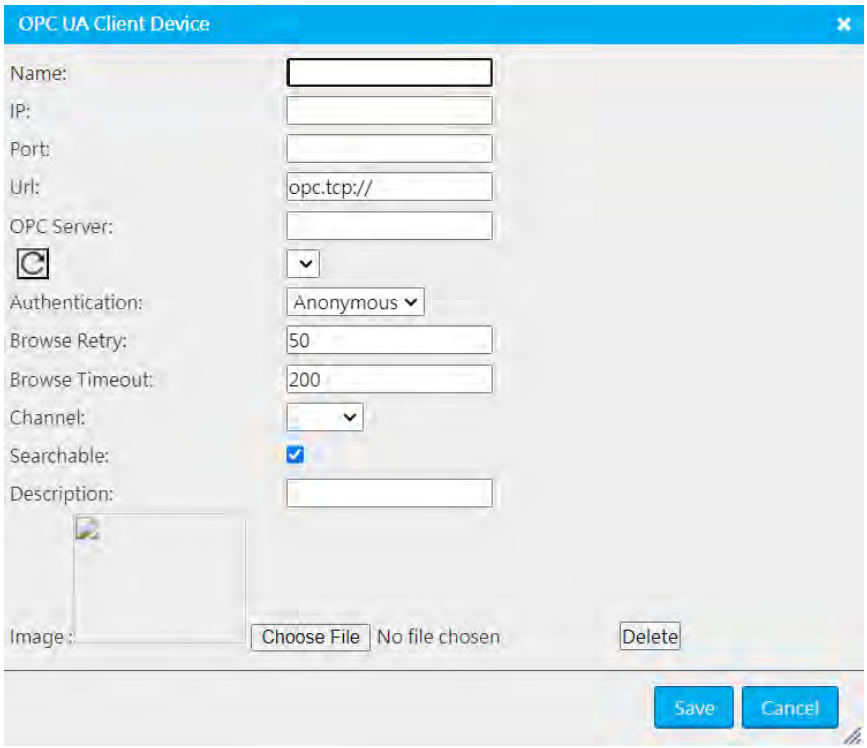
DIACloud devices perform DX Modbus communications when DX routers stay connected with DIACloud. In case that a disconnection occurs, lost data would be retrieved by DIACloud WebAPI according to the settings below after communication is reconnected, with the condition that the duration of disconnection does not exceed one day. Also, the checkbox of Data Recovery via DIACloud under Modbus device settings on DIAEnergie should be checked.




- **Name:** Key-in the device name.
- **URL:** This field is not editable which would display the setting automatically.
- **Account:** The account to login DIACloud.
- **Password:** The password to login DIACloud.
- **Channel:** Select the desired LAN channel.
- **Description:** For explanatory notes.

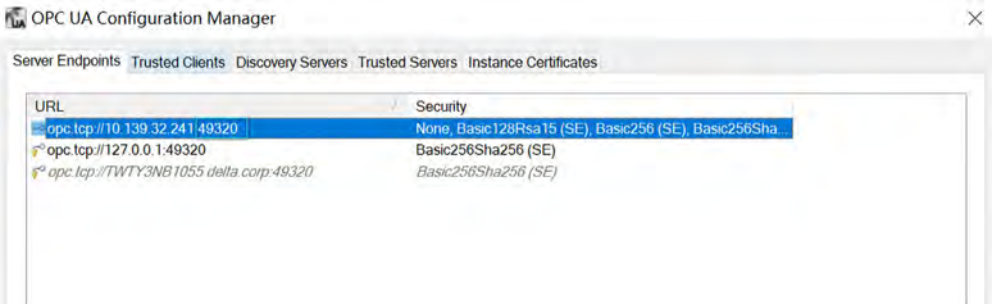
- **OPC UA Client Device：**

Communication with the OPC UA Server can be established using either anonymous access or username/password authentication.




- **Name：** Enter the device name.
- **IP：** Enter OPC UA Server IP。
- **Port：** Enter OPC UA Server communication port.
- In the case of Prosys OPC UA Simulation Server, it refers to the Port: 53530 displayed on the screen.

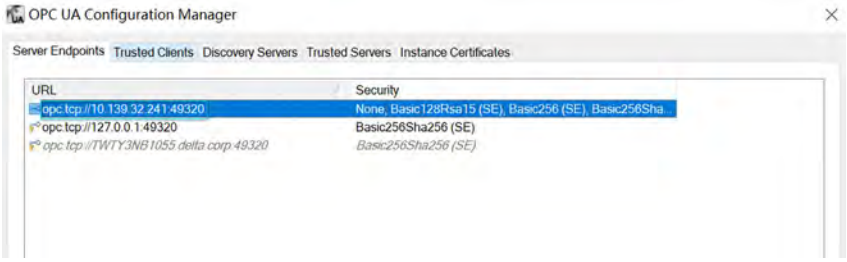
In the case of Keyware OPC UA Server, it refers to the Port: 49320 displayed on the screen.



- **URL：** Enter the endpoint URL for connecting to the OPC UA Server.

  In the case of Prosys, it refers to the **UA TCP: opc.tcp://TWTY3NB1055:53530/SimulationServer** displayed on the screen.

  In the case of Keyware OPC UA Server, it refers to **the part**: **opc.tcp://10.139.32.241:49320** displayed on the screen.




- **OPC Server：**No manual input required.

- **：**Clicking this button will populate the dropdown menu with available instances based on the IP/Port/URL

  Security Policy:

  None: No security

  Basic128Rsa15: 128-bit encryption

  Basic256: 256-bit Encryption

  Basic256sha256: 256-bit Encryption

  Security Mode:

  None: No Security

  Sign: Data Signing

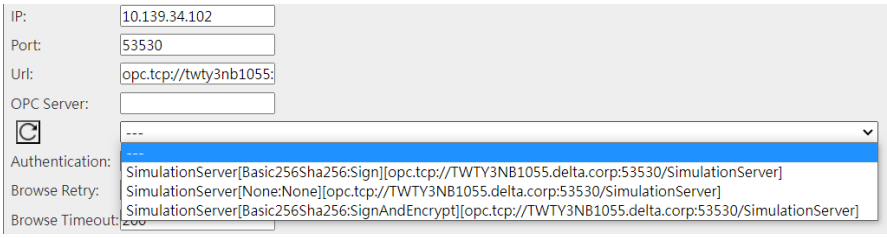
  Sign&Encrypt: Data signing and encrypting.

  Select a security policy and mode to establish a connection with the server:

  **The client uses a self-signed certificate by default.**

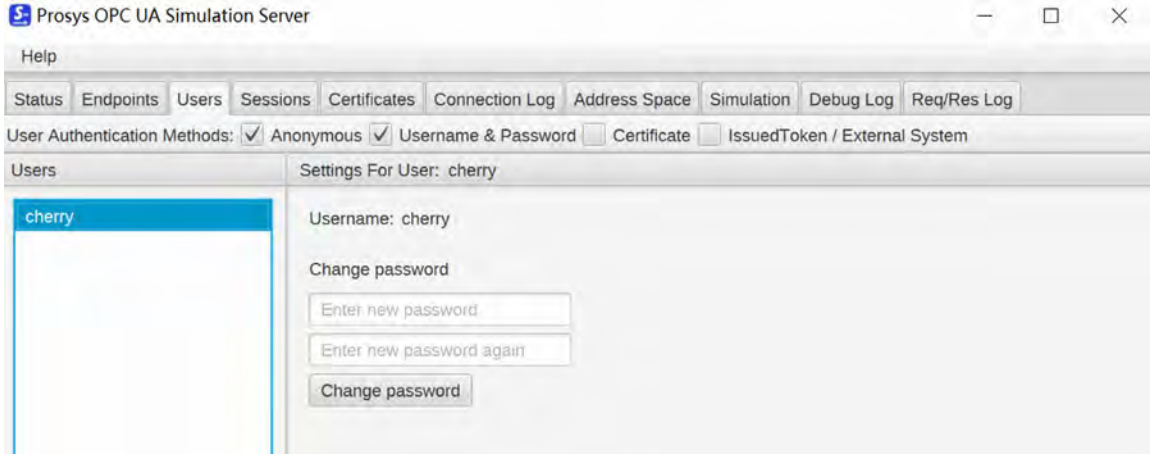
  **The client automatically trusts the server's certificate.**

  **The server needs to configure the client's certificate as a trusted certificate.**



- **Authentication**：Anonymous: Allows anonymous connections/ User: Connects using a username and password/ Certificate: Verifieds login identity using a certificate.

  For example, with Prosys, if you have checked Anonymous, you can communicate anonymously.



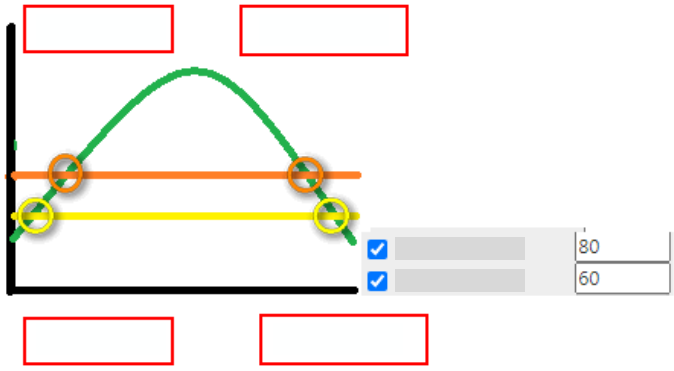

- **Browse Retry**：Number of retries for browsing OPC UA server Node, please keep the default value.
- **Browse Timeout**： Wait time for browsing OPC UA server nodes (in milliseconds), please keep the default value.
- **Channel**：Used for device topology map connections, please select TCP channel.
- **Searchable**：Check this option for the device to be found while searching.
- **Description**： For explanatory notes.
- **Image**： After selecting a file, the chosen file will be displayed here for preview.
- **Choose File**： Users can select a local image file.
- **Delete**： After selecting a file, click delete to remove the file.

## 3.2 Tag Mapping

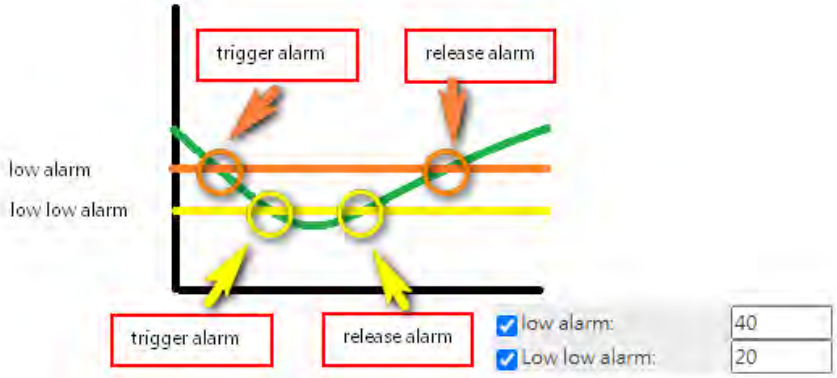
With this feature, users can configure the data to be retrieved from devices and tags can be categorized according to the existing tag types, detailed in the previous chapter "Device Topology". From the project tree on the left side of the page, select the target device and click New / / on the upper-right side to add / edit / delete tags as you required, then you can configure the alarm thresholds and decide whether to send notifications via "Alarm Settings".

### 3.2.1 Alarm Settings

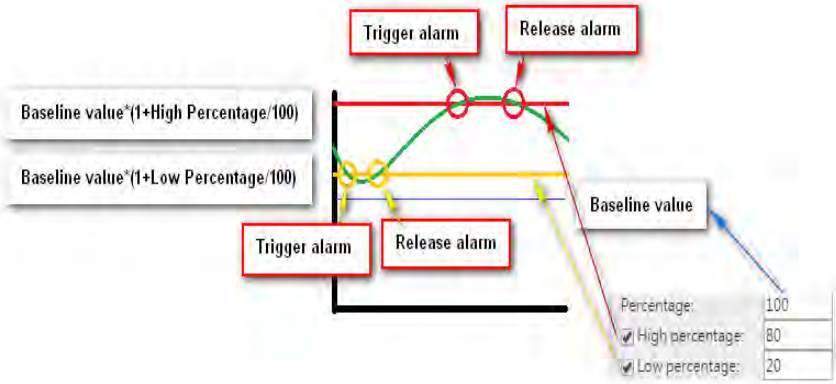
- **High-high and high alarm**



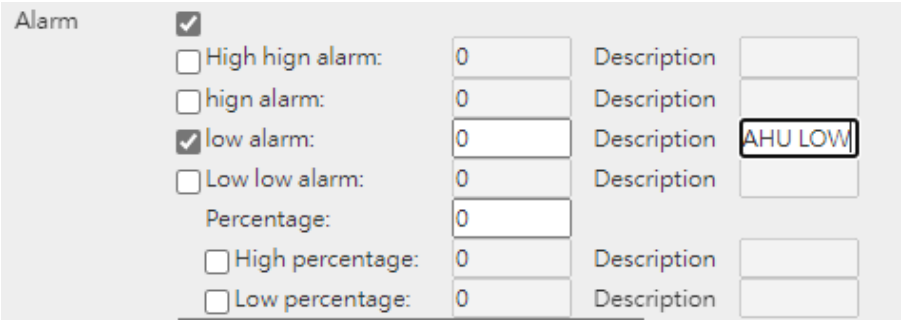

- **Low-low and low alarm**




- **Percentage alarm**



- **Email alarm message setting description**




Mail subject: **{Alarm setting note}** ALARM!

**{Alarm setting note}:** The note set for the corresponding alarm.

The letters in red are fixed.

**Mail content**

**Host Name:** Server Host Name

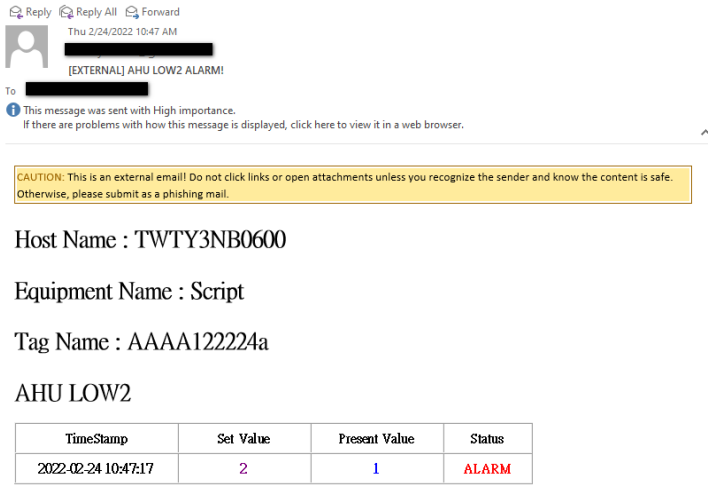
**Equipment Name:** Name of equipment maintained in device topology.

**Tag Name:** Name of tag maintained in tag mapping.

**AHU LOW2:** Note maintained in alarm setting under tag mapping.

**Set Value:** Alarm values set in alarm setting under tag mapping.

**Present Value:** The current value at that time when the alarm is triggered.



- **SMS alarm message setting description**

  **equipmentName**: Name of equipment maintained in device topology.

  **tagName**: Name of tag maintained in tag mapping.

  **alarmComment**: Alarm description set in alarm setting under tag mapping.

  **alarmThreshold**: Alarm threshold set in alarm setting under tag mapping.

  **tagValue**: The current value at that time when the alarm is triggered.

  The letters in red are fixed.

  {**equipmentName**}. {**tagName**} alarm! {**alarmComment**} threshold: {**alarmThreshold**}, current value: {**tagValue**}

- **Line alarm message setting description**

  **equipmentName**: Name of equipment maintained in device topology.

  **tagName**: Name of tag maintained in tag mapping.

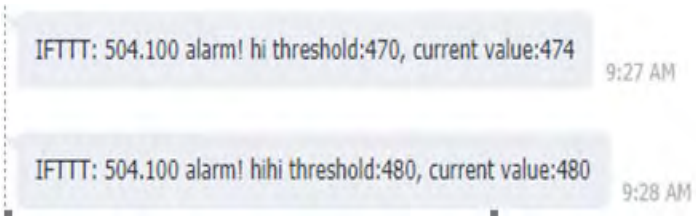
  **alarmComment**: Alarm description set in alarm setting under tag mapping.

  **alarmThreshold**: Alarm threshold set in alarm setting under tag mapping.

  **tagValue:** The current value at that time when the alarm is triggered.

  The letters in red are fixed.

  {**equipmentName**}. {**tagName**} alarm! {**alarmComment**} threshold: {**alarmThreshold**}, current value: {**tagValue**}



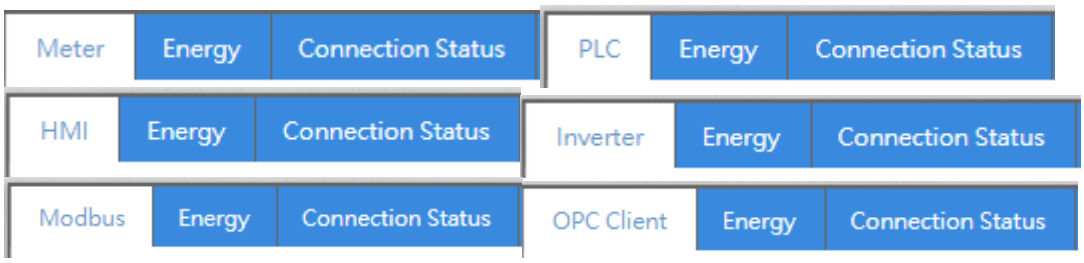
### 3.2.2 Page Description

In Tag Mapping, the following items are also displayed on the page:

- **Status:** Green light indicates connection; Red light indicates disconnection.
- **Real-time Value:** Displays tag value, but " ---- " appears when there is missing value.
- **Edit/Delete:** To edit or delete the tag.

| Status | Address | Name | Unit | Decimal | Data Type | Real Value | Update Time | Alarm | Display | Edit | Delete |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 00CB | +PEt | KWH-Relative | 3 | Float | 860,715.188 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 00CD | -PEt | KWH-Relative | 3 | Float | 3.200 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 0064 | Va | V | 3 | Float | 13,208.000 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 0082 | Vb | V | 3 | Float | 13,310.000 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 00A0 | Vc | V | 3 | Float | 13,520.000 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 0065 | Ia | A | 3 | Float | 0.080 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 0083 | Ib | A | 3 | Float | 0.000 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 00A1 | Ic | A | 3 | Float | 0.080 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 00BF | Ie | A | 3 | Float | 0.000 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 0066 | Pa | kW | 3 | Float | 0.690 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 0084 | Pb | kW | 3 | Float | 0.000 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 00A2 | Pc | kW | 3 | Float | 0.960 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 00C0 | Pt | kW | 3 | Float | 1.710 | 4/20/2016 8:57:55 AM | Enable | _MVCB2 | | |
| | 0000 | Qa | kVAR | 3 | Float | 0.000 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 0000 | Qb | kVAR | 3 | Float | 0.000 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 0000 | Qc | kVAR | 3 | Float | 0.000 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 0000 | Qt | kVAR | 3 | Float | 1.280 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |
| | 0068 | Sa | kVA | 3 | Float | 1.060 | 4/20/2016 8:57:55 AM | Disable | _MVCB2 | | |

### 3.2.3 Page Tabs



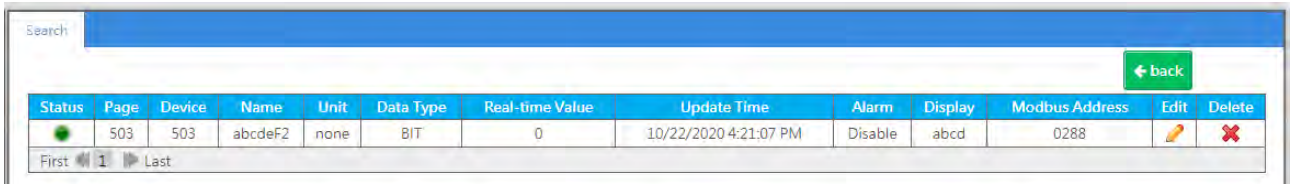

- **Device type tags tab:** PLC\Inveter\HMI\Meter\Modbus\OPC Client\DB\Visual\DIALink
- **Energy:** When device type is PLC\Inveter\HMI\Meter\Modbus\OPC Client, this tab would be shown. Energy tags relating to peak, off-peak and flat energy System energy setting need to be configured on this tab page.
- **Connection Status:** Except for DIACloud and Visual, you are allowed to monitor on the connection status by adding new connection status tags for other device types.

### 3.2.4 Register

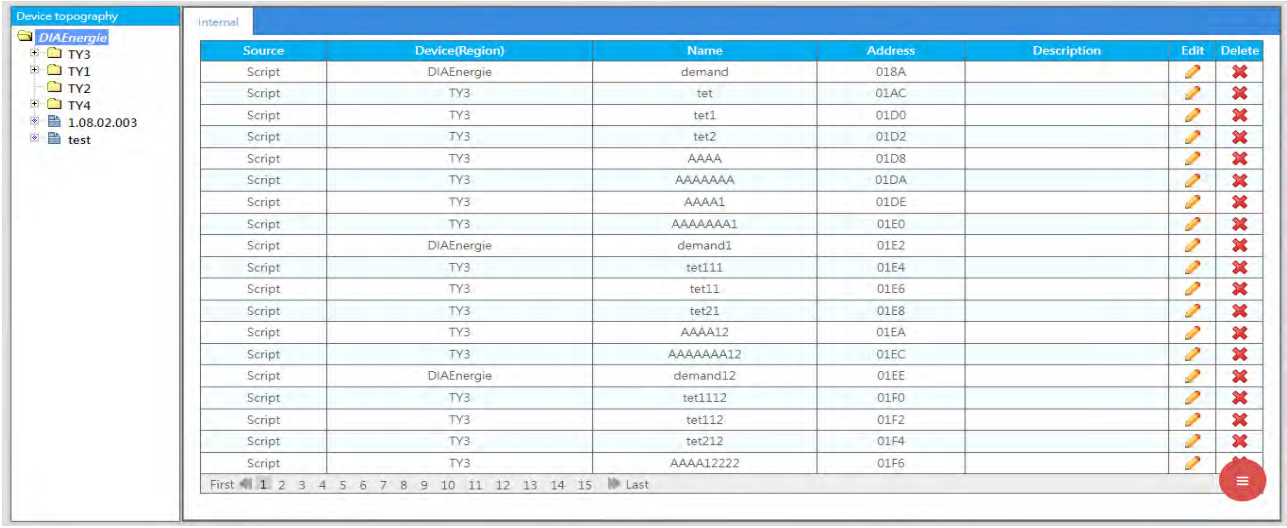
The Register is a special tool in DIAEnergie (shown below) that features MODBUS Slave function in providing users with the highest authority level for data display. DIAEnergie can read the gathered information via MODBUS TCP. A major characteristic of this function is that DIAEnergie can perform data acquisition on all PLC brands with various communication protocols, including MODBUS protocol, BACNet and CANopen. All sorted information will be transmitted to platforms like SCADA via MODBUS TCP.

**Note 1:** Please refer to section 3.2.7 “Search Tags” for more details of Modbus slave address corresponding to tags in DIAEnergie.

**Note 2:** Please refer to section 11.3 in appendix for more details of DIAEnergie Modbus Slave settings.

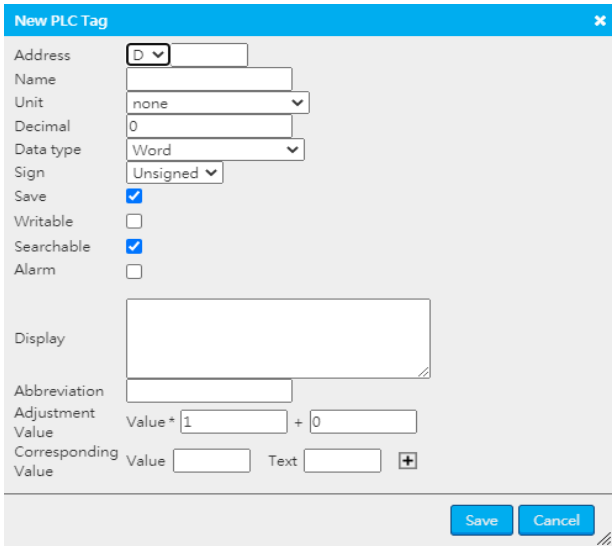



Click on the root node DIAEnergie in device topography, then Modbus slave addresses of all tags created in DIAEnergie would be displayed.



### 3.2.5 Add / Edit / Delete Tags

- **New PLC Tag:**




**Address:** PLC addresses, which would be converted to a corresponding Modbus address by DIAEnergie for a suitable communication.

**Name:** Key-in the tag name.

**Unit:** Select value unit for tags. Please refer to Units under System Settings.

**Decimal:** The system uses the digits for calculation.

**Data Type:** Select a data type with different lengths for reading or analysis.

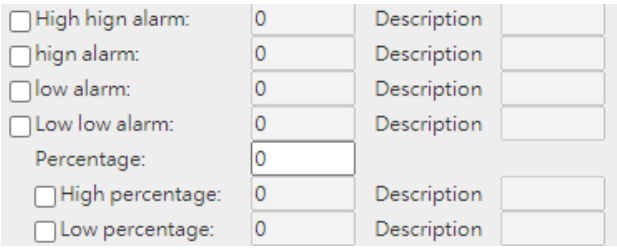
**Sign:** Signed/Unsigned

**Save:** Check the checkbox to store the historical data.

**Writable:** Check the checkbox and the new tag would be shown in the tag setting window of control items under UI Design.

**Searchable:** Check the checkbox and the new tag would be shown while selecting tags in Basic Query, Advanced Query and UI Design.

**Alarm:** Select to enable and identify alarms. Please refer to section 3.2.1 for more details.



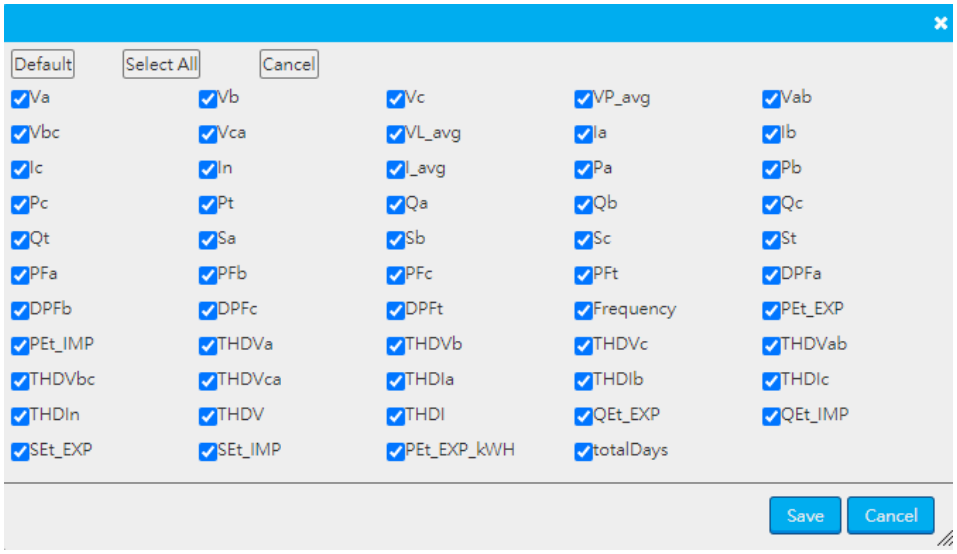

**Display:** Set the text of the tag displayed on the graph in Basic Query, Advanced Query, Preview and UI Design.

**Abbreviation:** Set the tag name displayed on power meter components in UI Design.

**Adjustment Value:** Perform scaling or displacement on the collected data.

**Corresponding Value:** The corresponding text for values would be displayed while selecting the tag in the settings of Text components under UI Design.

- **New Meter Tag:**



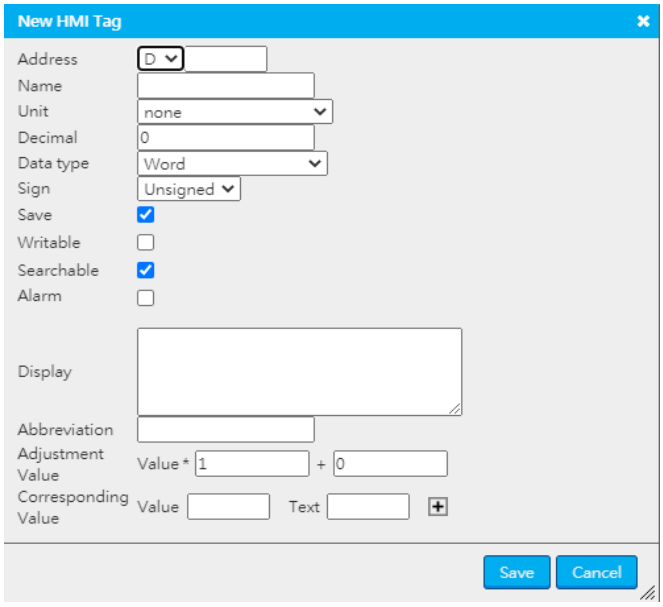

**With this quick add feature, you are allowed to add tags much quicker.**

**Default:** For tags added afterwards, the least used tags would not be selected by default while the selected tags are same as those by choosing Select All.

**Select all:** Select all the existing tags.

**Cancel:** Unselect all the tags.

- **New HMI Tag**




**Address:** HMI addresses, which would be converted to a corresponding Modbus address by DIAEnergie for a suitable communication.

**Name:** Key-in the tag name.

**Unit:** Select value unit for tags. Please refer to Units under System Settings.

**Decimal:** The system uses the digits for calculation.

**Data Type:** Select a data type with different lengths for reading or analysis.

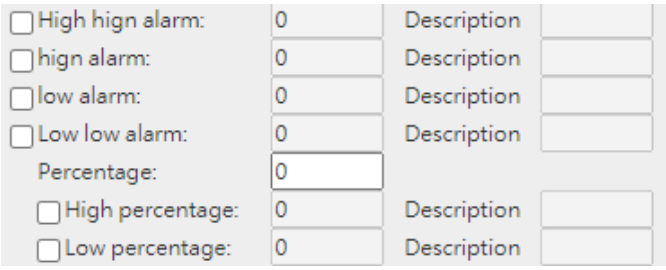
**Sign:** Signed/Unsigned

**Save:** Check the checkbox to store the historical data.

**Writable:** Check the checkbox and the new tag would be shown in the tag setting window of control items under UI Design.

**Searchable:** Check the checkbox and the new tag would be shown while selecting tags in Basic Query, Advanced Query and UI Design.

**Alarm:** Select to enable and identify alarms. Please refer to section 3.2.1 for more details.




**Display:** Set the text of the tag displayed on the graph in Basic Query, Advanced Query, Preview and UI Design.

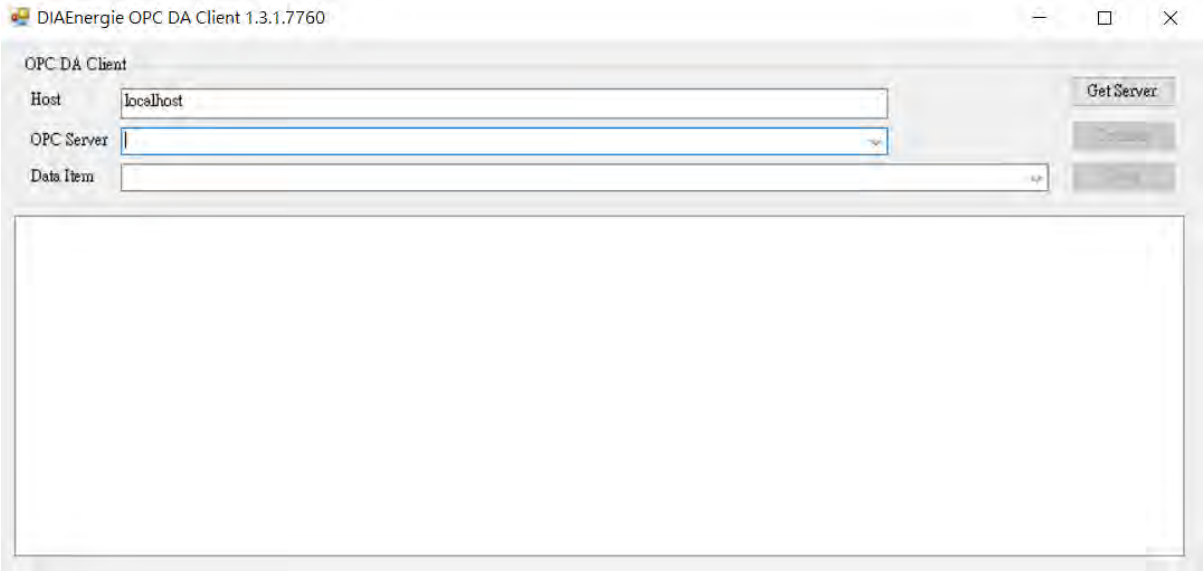
**Abbreviation:** Set the tag name displayed on power meter components in UI Design.

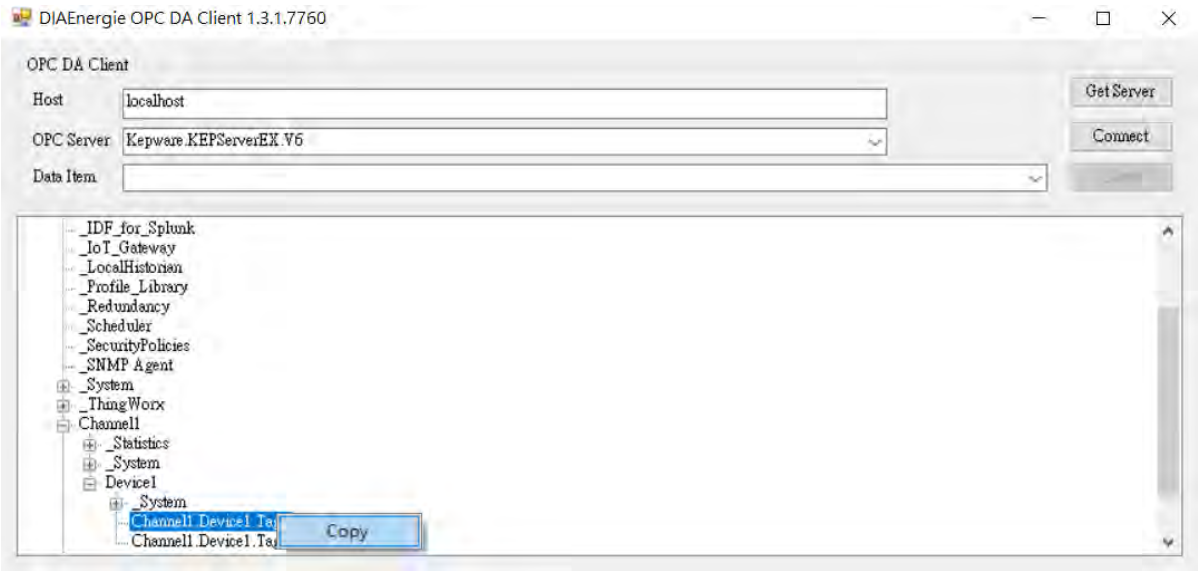
**Adjustment Value:** Perform scaling or displacement on the collected data.

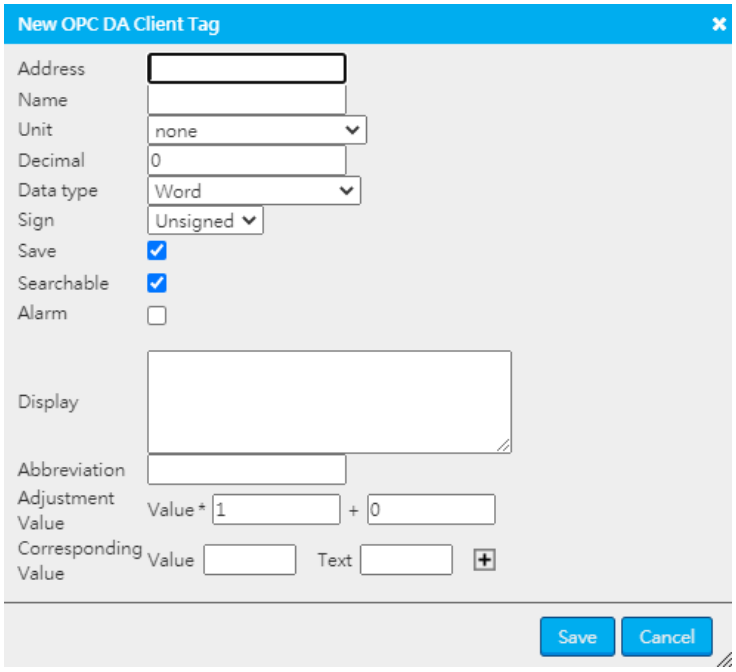
**Corresponding Value:** The corresponding text for values would be displayed while selecting the tag in the settings of Text components under UI Design.

- **New OPC DA Client Tag**

Before using the OPC DA Client tag, please ensure that all relevant OPC DA environment settings have been configured properly. Only then can you view the nodes under its server. You can right-click and copy a specific node, and then paste it into the address field of the OPC DA Client Tag configuration page.






**Address:** OPCDA addresses, which would be converted to a corresponding Modbus address by DIAEnergie for a suitable communication.

**Name:** Key-in the tag name.

**Unit:** Select value unit for tags. Please refer to Units under System Settings.

**Decimal:** The system uses the digits for calculation.

**Data Type:** Select a data type with different lengths for reading or analysis.

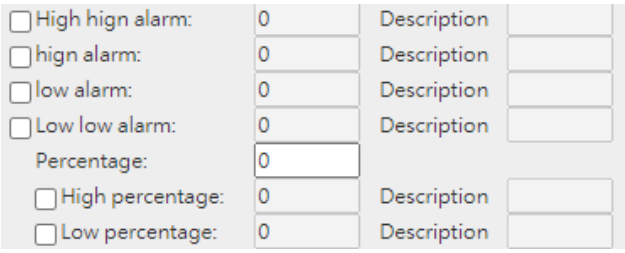
**Sign:** Signed/Unsigned

**Save:** Check the checkbox to store the historical data.

**Writable:** Check the checkbox and the new tag would be shown in the tag setting window of control items under UI Design.

**Searchable:** Check the checkbox and the new tag would be shown while selecting tags in Basic Query, Advanced Query and UI Design.

**Alarm:** Select to enable and identify alarms. Please refer to section 3.2.1 for more details.



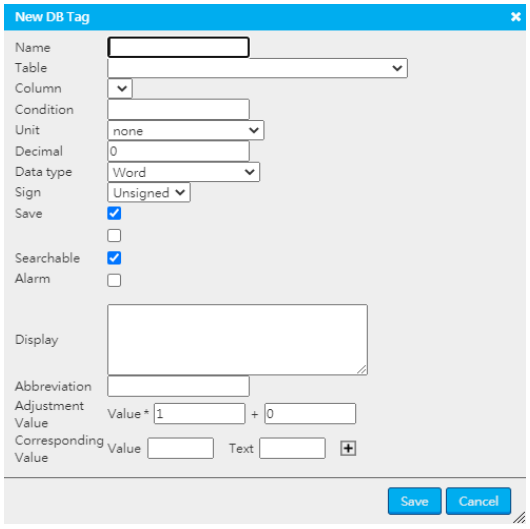

**Display:** Set the text of the tag displayed on the graph in Basic Query, Advanced Query, Preview and UI Design.

**Abbreviation:** Set the tag name displayed on power meter components in UI Design.

**Adjustment Value:** Perform scaling or displacement on the collected data.

**Corresponding Value:** The corresponding text for values would be displayed while selecting the tag in the settings of Text components under UI Design.

- **New DB Tag**




**Name:** Key-in the tag name.

**Table:** Display the database table based on the connection information configured in device topology.

**Column:** According to the selected table, display the name options for columns in the drop-down list.

**Condition:** In case that there is a specified column named tid on and the condition is set to capture tid=3100, please do not add historical data to the data sheet. Featuring real-time data capture, the program only captures the latest saved data with additional programs to constantly update the data sheet.

**Unit:** Select value unit for tags. Please refer to Units under System Settings.

**Decimal:** The system uses the digits for calculation.

**Data Type:** Select a data type with different lengths for reading or analysis.

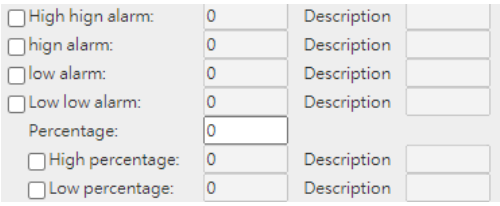
**Sign:** Signed/Unsigned

**Save:** Check the checkbox to store the historical data.

**Writable:** Check the checkbox and the new tag would be shown in the tag setting window of control items under UI Design.

**Searchable:** Check the checkbox and the new tag would be shown while selecting tags in Basic Query, Advanced Query and UI Design.

**Alarm:** Select to enable and identify alarms. Please refer to section 3.2.1 for more details.



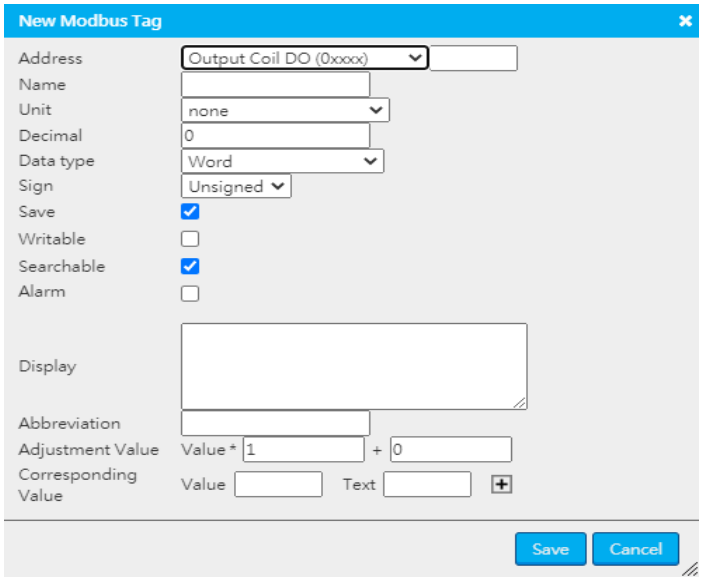

**Display:** Set the text of the tag displayed on the graph in Basic Query, Advanced Query, Preview and UI Design.

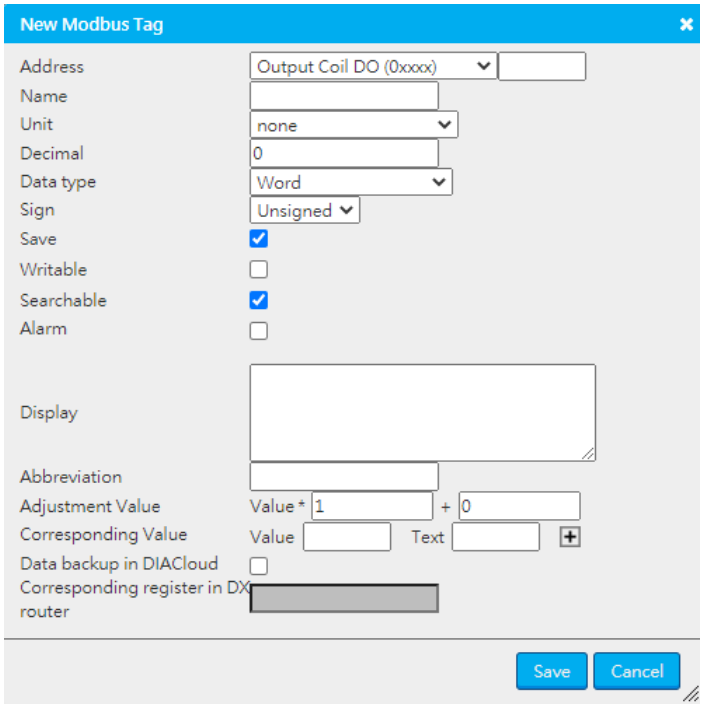
**Abbreviation:** Set the tag name displayed on power meter components in UI Design.

**Adjustment Value:** Perform scaling or displacement on the collected data.

**Corresponding Value:** The corresponding text for values would be displayed while selecting the tag in the settings of Text components under UI Design.

- **New Modbus Tag**




**Address:** Modbus addresses, which would be used directly by DIAEnergie for a suitable communication.

**Name:** Key-in the tag name.

**Unit:** Select value unit for tags. Please refer to Units under System Settings.

**Decimal:** The system uses the digits for calculation.

**Data Type:** Select a data type with different lengths for reading or analysis.

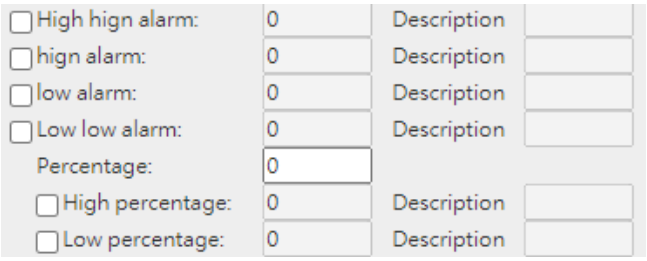
**Sign:** Signed/Unsigned

**Save:** Check the checkbox to store the historical data.

**Writable:** Check the checkbox and the new tag would be shown in the tag setting window of control items under UI Design.

**Searchable:** Check the checkbox and the new tag would be shown while selecting tags in Basic Query, Advanced Query and UI Design.

**Alarm:** Select to enable and identify alarms. Please refer to section 3.2.1 for more details.




**Display:** Set the text of the tag displayed on the graph in Basic Query, Advanced Query, Preview and UI Design.

**Abbreviation:** Set the tag name displayed on power meter components in UI Design.

**Adjustment Value:** Perform scaling or displacement on the collected data.

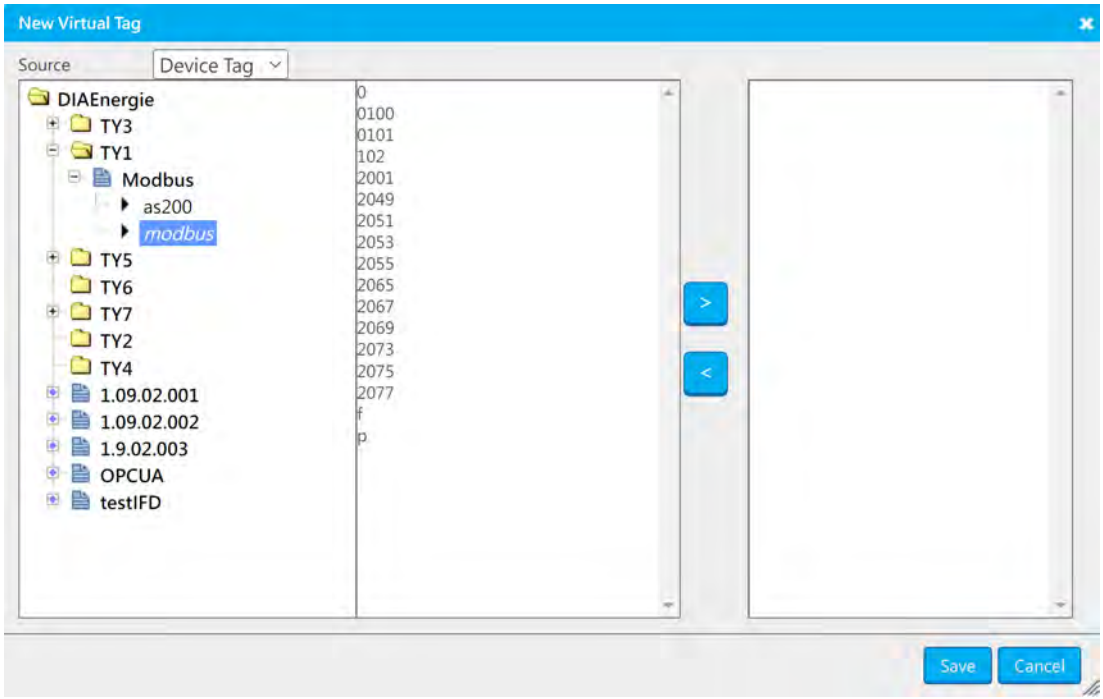
**Corresponding Value:** The corresponding text for values would be displayed while selecting the tag in the settings of Text components under UI Design.

**Data backup in DIACloud:** The checkbox of Data Recovery via DIACloud in Modbus device setting under Device Topology must be cheked so this option would be displayed.

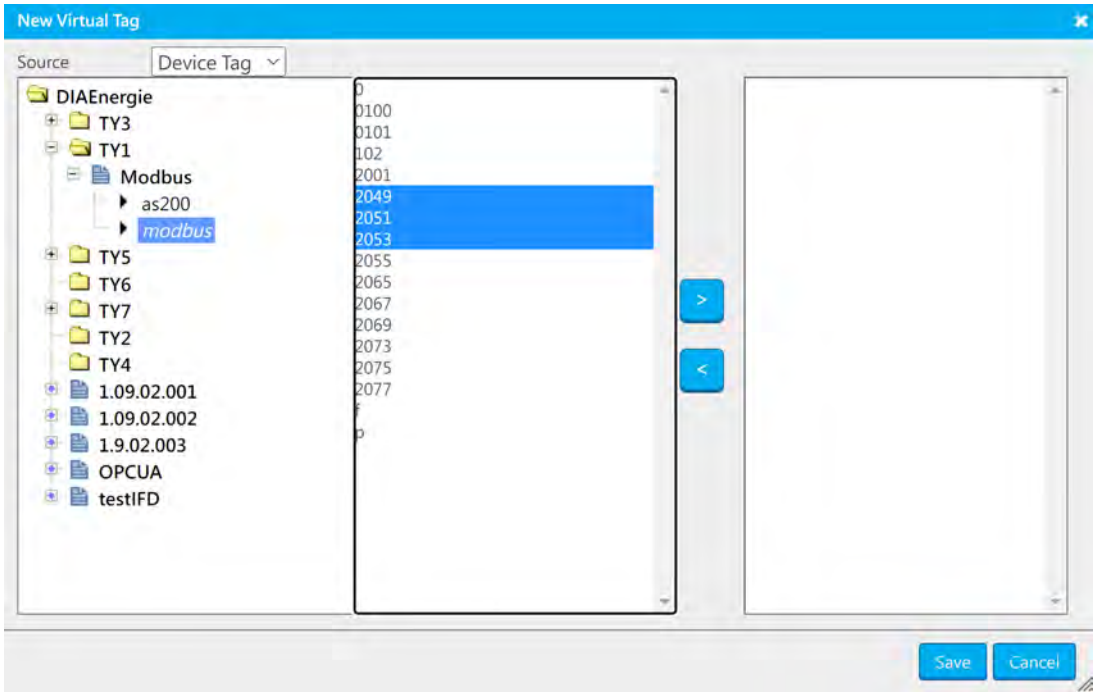
**Corresponding register in DX router:** The checkbox of Data Recovery via DIACloud in Modbus device setting under Device Topology must be cheked so this option would be displayed. After Data backup in DIACloud is checked, the above address would display as Modbus address -1 by default. If the address field is empty, there would be no address being displayed.

- **New Virtual Tag**

To re-group communication tags set for PLC or Modbus, you are allowed to create one or more virtual device groups and assign the desired actual devices to the target group via tag mapping configuration. This feature is designed only for query and UI design to easily find the corresponding tags according to the virtual device groups.

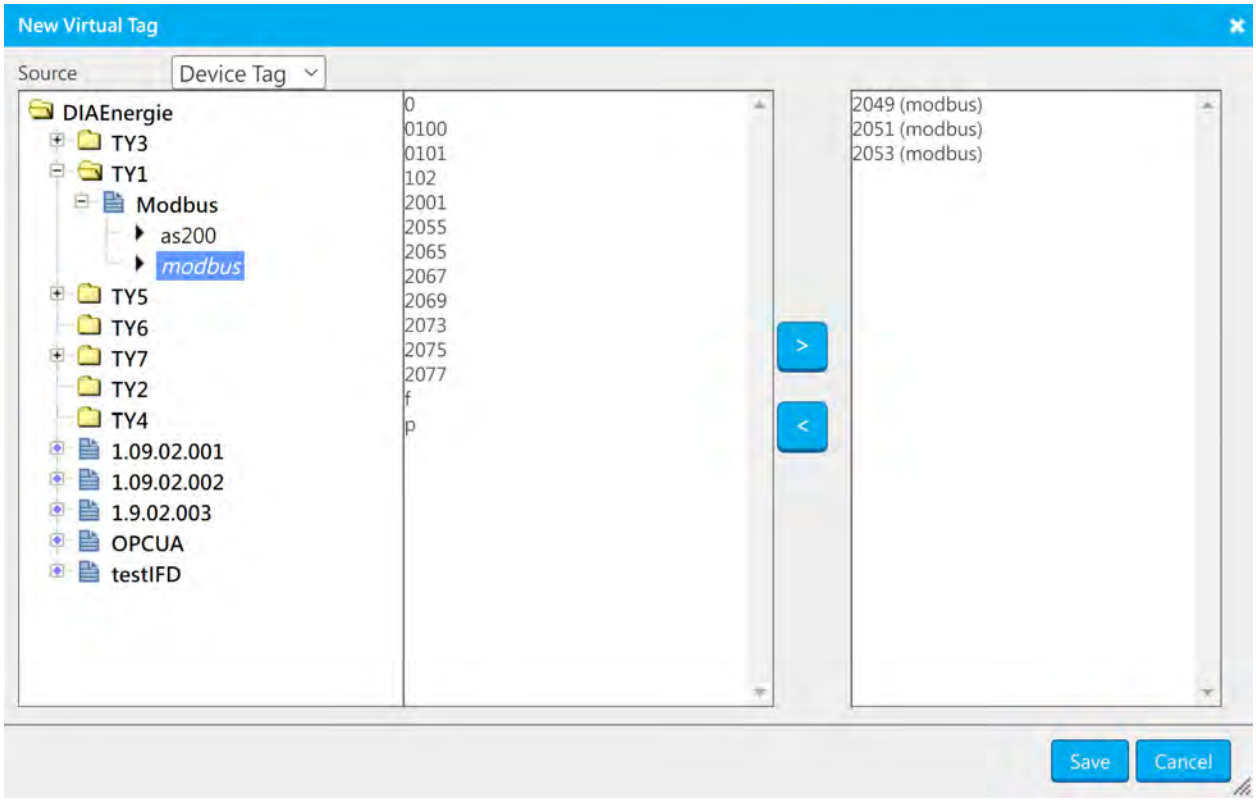



➢ **Click treeview to find the device**.

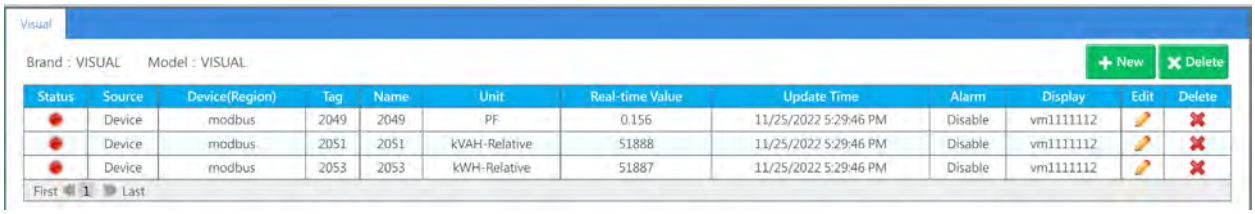



➢ **Select Tags.**

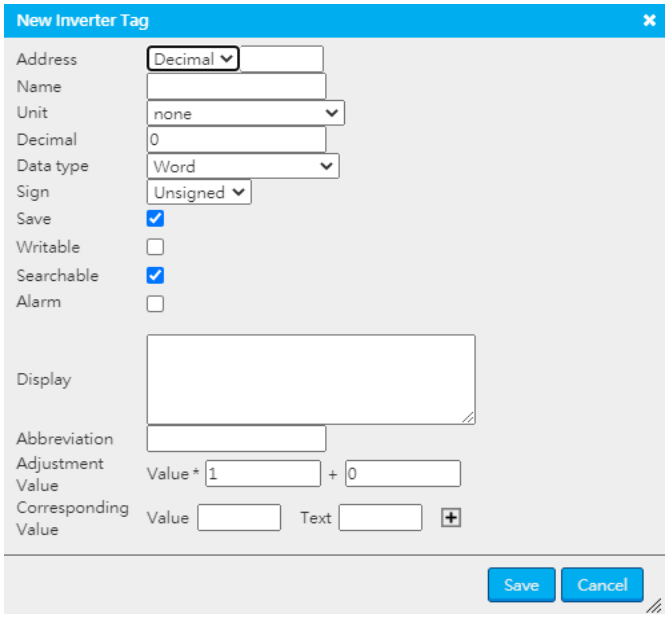
➢ **Click** .


New Virtual Tag
Source
Device Tag
DIAEnergie
TY3
TY1
Modbus
as200
modbus
TY5
TY6
TY7
TY2
TY4
1.09.02.001
1.09.02.002
1.9.02.003
OPCUA
testIFD
0
0100
0101
102
2001
2055
2065
2067
2069
2073
2075
2077
f
p
>
<
2049 (modbus)
2051 (modbus)
2053 (modbus)
Save
Cancel

➢ **Click Save**.


Visual
Brand : VISUAL
Model : VISUAL
New
Delete
Status
Source
Device(Region)
Tag
Name
Unit
Real-time Value
Update Time
Alarm
Display
Edit
Delete
Device modbus 2049 2049 PF 0.156 11/25/2022 5:29:46 PM Disable vm1111112
Device modbus 2051 2051 kVAH-Relative 51888 11/25/2022 5:29:46 PM Disable vm1111112
Device modbus 2053 2053 kWH-Relative 51887 11/25/2022 5:29:46 PM Disable vm1111112
First 1 Last

- **New VFD Tag**




**Address:** Inverter addresses, which would be converted to a corresponding Modbus address by DIAEnergie for a suitable communication.

**Name:** Key-in the tag name.

**Unit:** Select value unit for tags. Please refer to Units under System Settings.

**Decimal:** The system uses the digits for calculation.

**Data Type:** Select a data type with different lengths for reading or analysis.

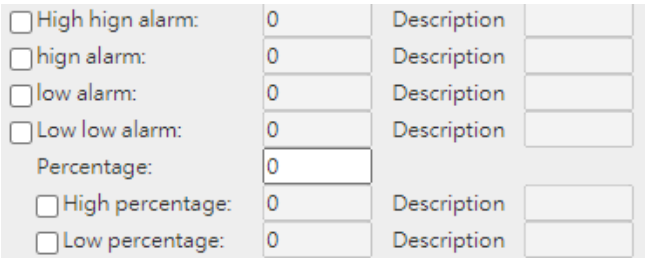
**Sign:** Signed/Unsigned

**Save:** Check the checkbox to store the historical data.

**Writable:** Check the checkbox and the new tag would be shown in the tag setting window of control items under UI Design.

**Searchable:** Check the checkbox and the new tag would be shown while selecting tags in Basic Query, Advanced Query and UI Design.

**Alarm:** Select to enable and identify alarms. Please refer to section 3.2.1 for more details.



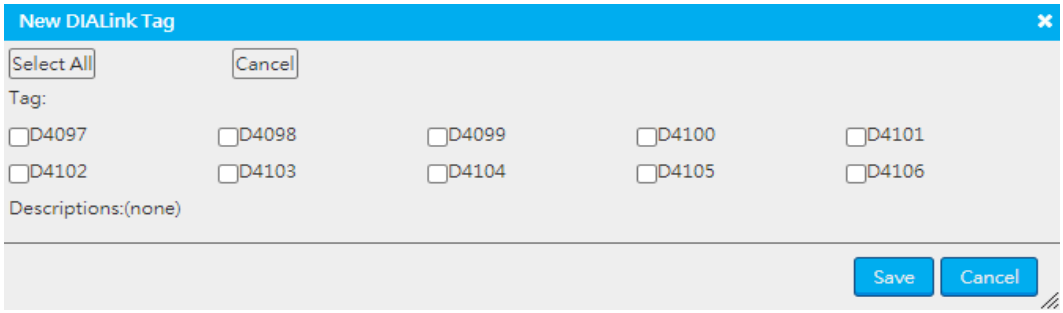

**Display:** Set the text of the tag displayed on the graph in Basic Query, Advanced Query, Preview and UI Design.

**Abbreviation:** Set the tag name displayed on power meter components in UI Design.

**Adjustment Value:** Perform scaling or displacement on the collected data.

**Corresponding Value:** The corresponding text for values would be displayed while selecting the tag in the settings of Text components under UI Design.

- **New DIALink Tag**

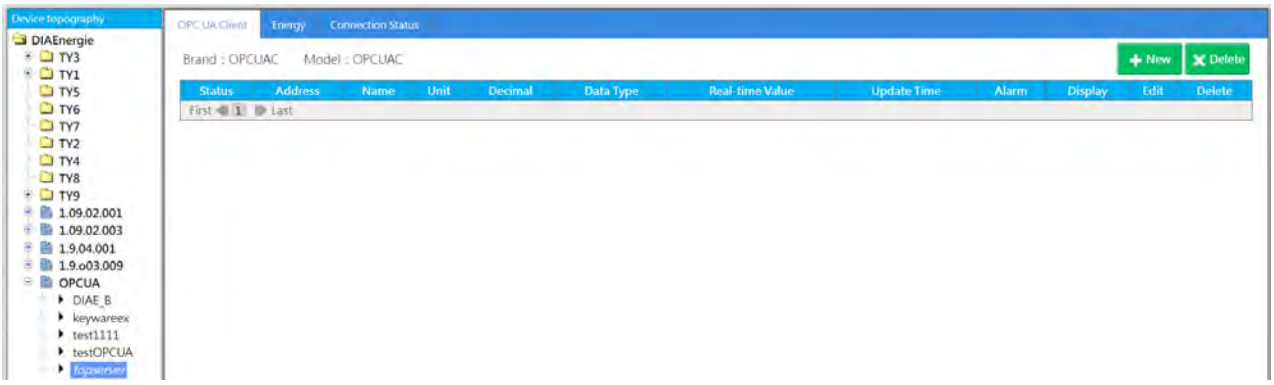



According to the address of the DIALink device in device topology, the above tag list can be required via WebAPI.

**Select All:** Check all checkboxes.

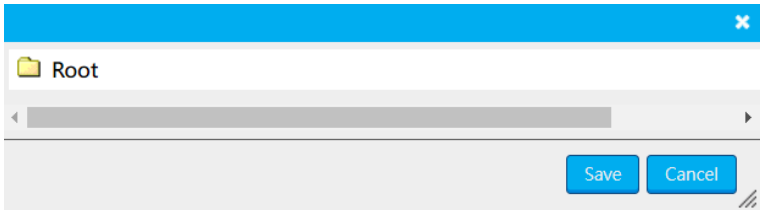
**Canel:** Uncheck all box options.

- **New OPC UA Client**

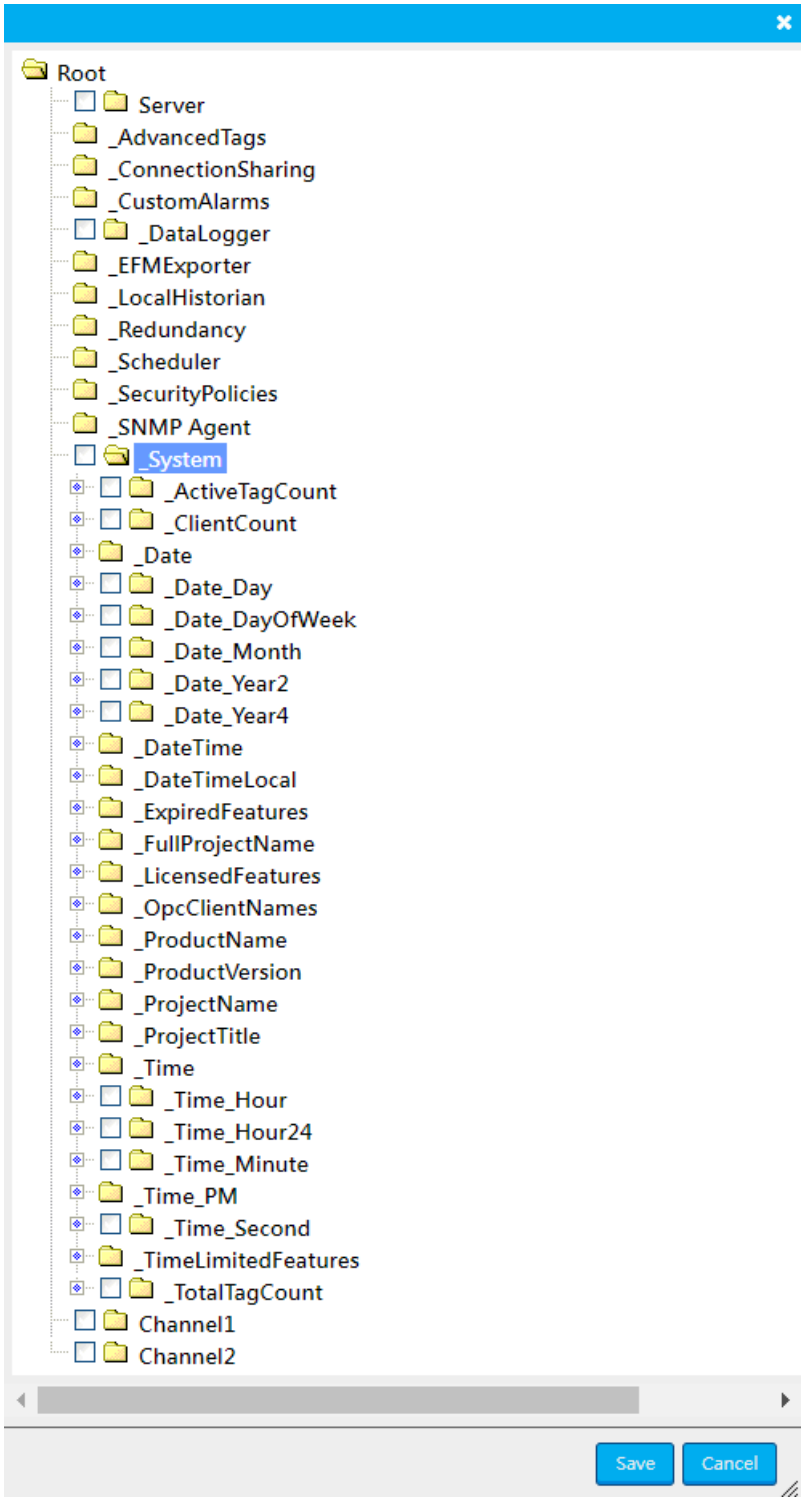



Click

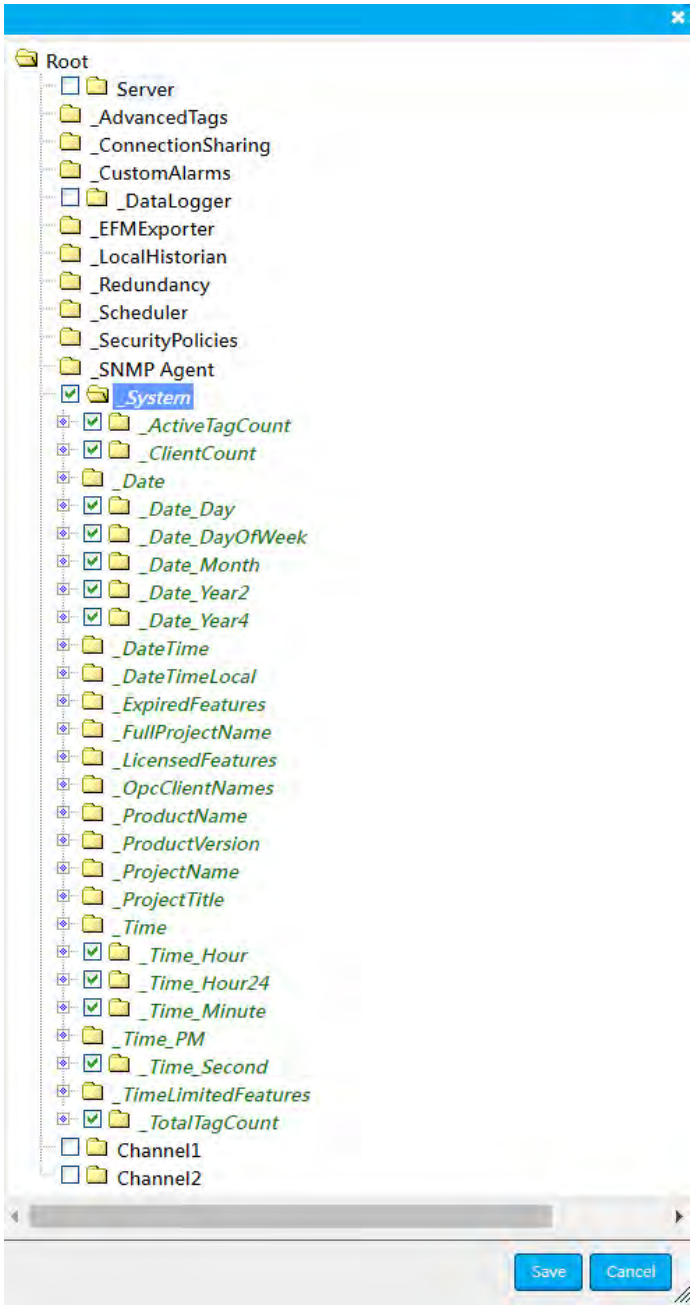
, a window will pop up as follows. The root node is uniformly named “Root”, please click on Root to expand its tree view.



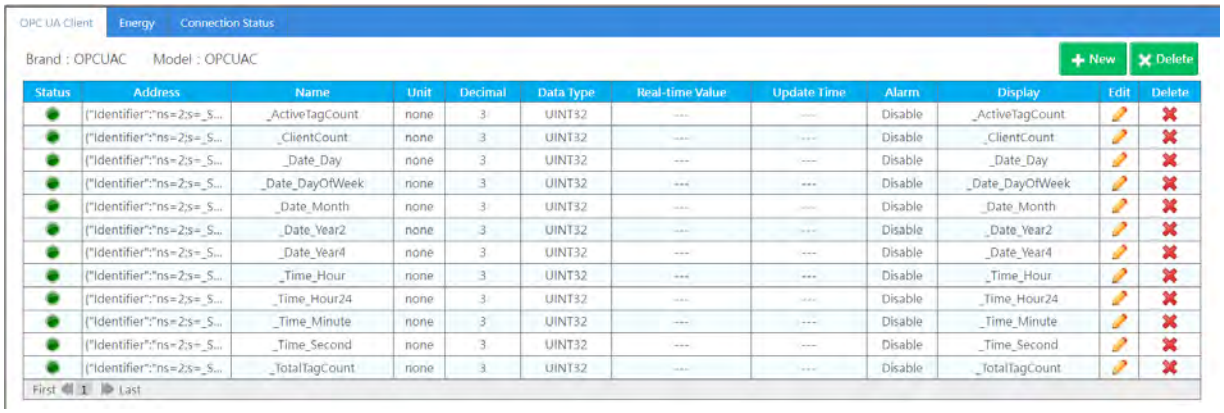

Since DIAEnergie only accepts numeric data tags, only numeric data tags can be selected.




Select the tags you want to add.




Click on Save, and the data will be displayed on the screen after saving.




| Status | Address | Name | Unit | Decimal | Data Type | Real-time Value | Update Time | Alarm | Display | Edit | Delete |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | {"Identifier":"ns=2;s=_S... | _ActiveTagCount | none | 3 | UINT32 | --- | --- | Disable | _ActiveTagCount | | |
| | {"Identifier":"ns=2;s=_S... | _ClientCount | none | 3 | UINT32 | --- | --- | Disable | _ClientCount | | |
| | {"Identifier":"ns=2;s=_S... | _Date_Day | none | 3 | UINT32 | --- | --- | Disable | _Date_Day | | |
| | {"Identifier":"ns=2;s=_S... | _Date_DayOfWeek | none | 3 | UINT32 | --- | --- | Disable | _Date_DayOfWeek | | |
| | {"Identifier":"ns=2;s=_S... | _Date_Month | none | 3 | UINT32 | --- | --- | Disable | _Date_Month | | |
| | {"Identifier":"ns=2;s=_S... | _Date_Year2 | none | 3 | UINT32 | --- | --- | Disable | _Date_Year2 | | |
| | {"Identifier":"ns=2;s=_S... | _Date_Year4 | none | 3 | UINT32 | --- | --- | Disable | _Date_Year4 | | |
| | {"Identifier":"ns=2;s=_S... | _Time_Hour | none | 3 | UINT32 | --- | --- | Disable | _Time_Hour | | |
| | {"Identifier":"ns=2;s=_S... | _Time_Hour24 | none | 3 | UINT32 | --- | --- | Disable | _Time_Hour24 | | |
| | {"Identifier":"ns=2;s=_S... | _Time_Minute | none | 3 | UINT32 | --- | --- | Disable | _Time_Minute | | |
| | {"Identifier":"ns=2;s=_S... | _Time_Second | none | 3 | UINT32 | --- | --- | Disable | _Time_Second | | |
| | {"Identifier":"ns=2;s=_S... | _TotalTagCount | none | 3 | UINT32 | --- | --- | Disable | _TotalTagCount | | |

## 3.2.6 Batch Export / Import

Users can edit the excel files of tags in the system for Batch Upload. Or download the batch and use the Excel file for edit.

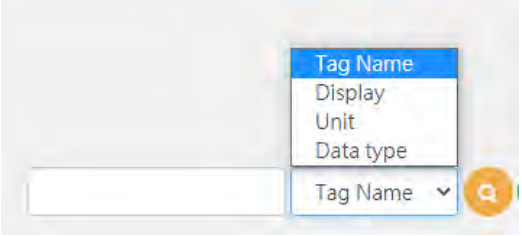
| Update Ty | Tag ID | Tag Name | Device Na | Register | Data Type | Signed | Internal T | Decimal | Unit | 0:R 2:RW | Alarm Ena | Equipmen | Display Na | HighHigh | HighHigh | HighHigh | High Alarr | High Alarr | High Alarr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| None | 147 | Va | test | 0100 | Float | Signed | False | 3 | V | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 148 | Vb | test | 0102 | Float | Signed | False | 3 | V | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 149 | Vc | test | 0104 | Float | Signed | False | 3 | V | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 150 | VP_avg | test | 0106 | Float | Signed | False | 3 | V | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 151 | Vab | test | 0108 | Float | Signed | False | 3 | V | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 152 | Vbc | test | 010A | Float | Signed | False | 3 | V | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 153 | Vca | test | 010C | Float | Signed | False | 3 | V | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 154 | VL_avg | test | 010E | Float | Signed | False | 3 | V | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 155 | Ia | test | 0120 | Float | Signed | False | 3 | A | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 156 | Ib | test | 0122 | Float | Signed | False | 3 | A | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 157 | Ic | test | 0124 | Float | Signed | False | 3 | A | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 158 | In | test | 0128 | Float | Signed | False | 3 | A | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 159 | I_avg | test | 0126 | Float | Signed | False | 3 | A | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 160 | Pa | test | 0146 | Float | Signed | False | 3 | kW | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 161 | Pb | test | 0148 | Float | Signed | False | 3 | kW | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 162 | Pc | test | 014A | Float | Signed | False | 3 | kW | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 163 | Pt | test | 0144 | Float | Signed | False | 3 | kW | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 164 | Qa | test | 014E | Float | Signed | False | 3 | kVAR | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 165 | Qb | test | 0150 | Float | Signed | False | 3 | kVAR | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 166 | Qc | test | 0152 | Float | Signed | False | 3 | kVAR | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 167 | Qt | test | 014C | Float | Signed | False | 3 | kVAR | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 168 | Sa | test | 0156 | Float | Signed | False | 3 | kVA | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 169 | Sb | test | 0158 | Float | Signed | False | 3 | kVA | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |
| None | 170 | Sc | test | 015A | Float | Signed | False | 3 | kVA | 0 | 0 | 0 | test | 0 | 0 | | 0 | 0 | |



DIAEnergie will assign the established tages with Tag ID. Users can directly edit the content of this excel file, except the Tag ID column. The system will edit the data based on the Update Type in the A column.

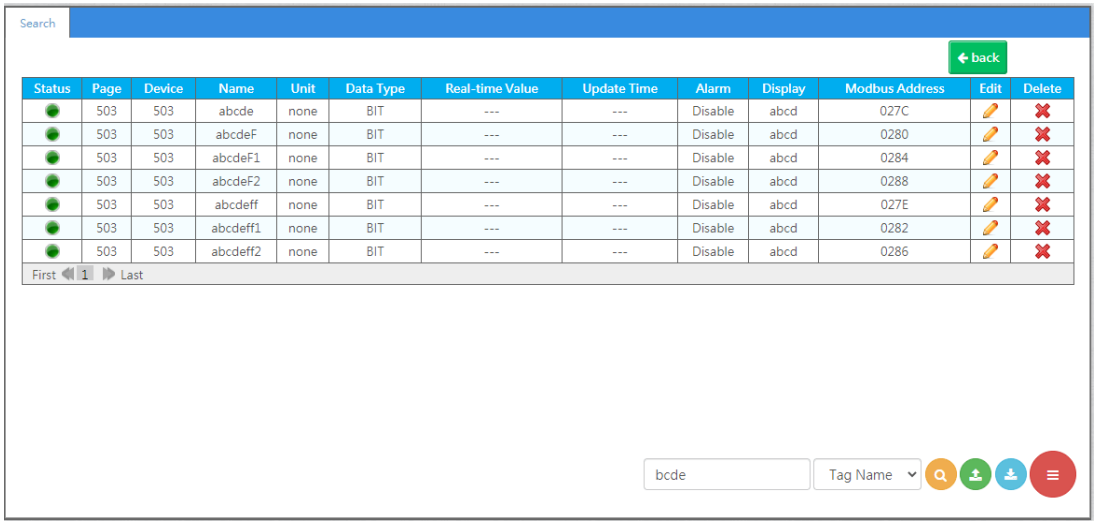
- **None:** No changes for the parameter.
- **Add:** Parameter data added to generate tags in the system.
- **Update:** Updates all parameter data.
- **Delete:** Delete all the tag data in the column.

### 3.2.7 Search Tags




Searh the desired tag according to one of the conditions shown in the drop-down list.

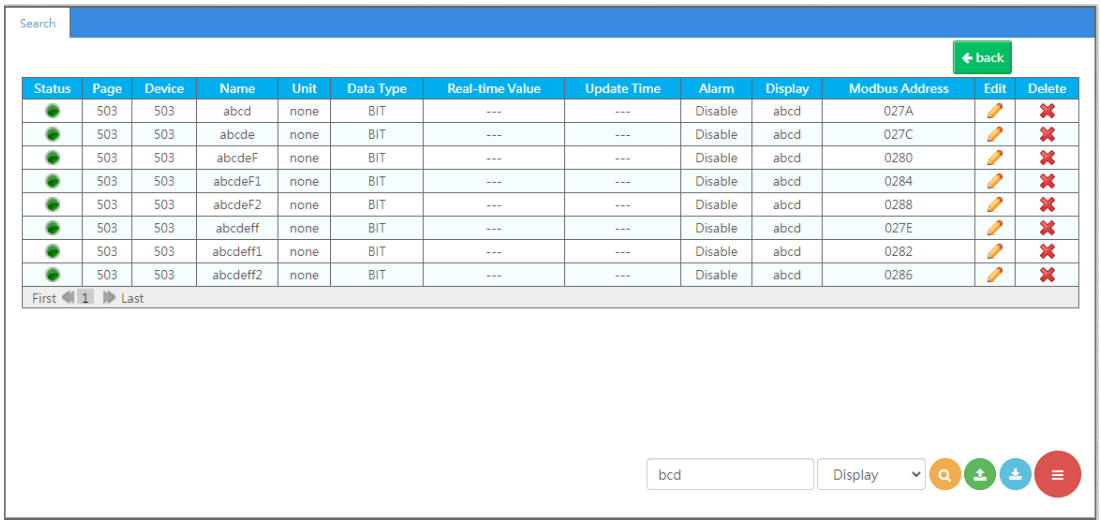
- **Tag Name:** Enter the name of the tag, such as bcde, then all tags with names including “bcde” would be found and listed.




| Status | Page | Device | Name | Unit | Data Type | Real-time Value | Update Time | Alarm | Display | Modbus Address | Edit | Delete |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 503 | 503 | abcde | none | BIT | --- | --- | Disable | abcd | 027C | | |
| | 503 | 503 | abcdeF | none | BIT | --- | --- | Disable | abcd | 0280 | | |
| | 503 | 503 | abcdeF1 | none | BIT | --- | --- | Disable | abcd | 0284 | | |
| | 503 | 503 | abcdeF2 | none | BIT | --- | --- | Disable | abcd | 0288 | | |
| | 503 | 503 | abcdeff | none | BIT | --- | --- | Disable | abcd | 027E | | |
| | 503 | 503 | abcdeff1 | none | BIT | --- | --- | Disable | abcd | 0282 | | |
| | 503 | 503 | abcdeff2 | none | BIT | --- | --- | Disable | abcd | 0286 | | |

First 1 Last

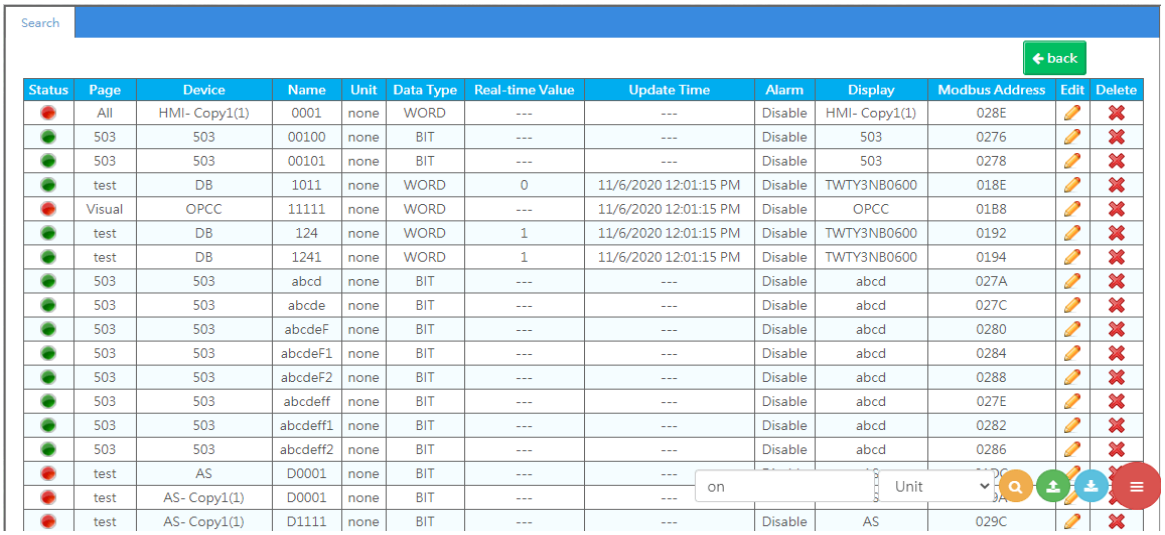
- **Display:** Enter the page name, such as bcd, then all tags with display names including “bcd” would be found.




| Status | Page | Device | Name | Unit | Data Type | Real-time Value | Update Time | Alarm | Display | Modbus Address | Edit | Delete |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 503 | 503 | abcd | none | BIT | --- | --- | Disable | abcd | 027A | | |
| | 503 | 503 | abcde | none | BIT | --- | --- | Disable | abcd | 027C | | |
| | 503 | 503 | abcdeF | none | BIT | --- | --- | Disable | abcd | 0280 | | |
| | 503 | 503 | abcdeF1 | none | BIT | --- | --- | Disable | abcd | 0284 | | |
| | 503 | 503 | abcdeF2 | none | BIT | --- | --- | Disable | abcd | 0288 | | |
| | 503 | 503 | abcdeff | none | BIT | --- | --- | Disable | abcd | 027E | | |
| | 503 | 503 | abcdeff1 | none | BIT | --- | --- | Disable | abcd | 0282 | | |
| | 503 | 503 | abcdeff2 | none | BIT | --- | --- | Disable | abcd | 0286 | | |

First 1 Last

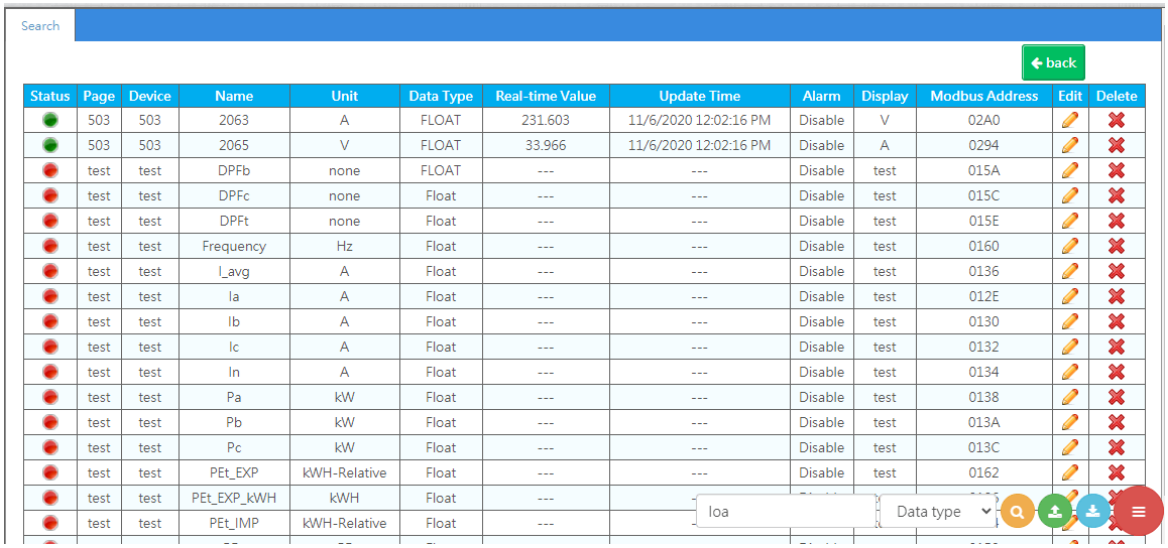
■ **Unit:** Enter the name for units, such as on, then all tags with unit names including “on” would be found and listed.




| Status | Page | Device | Name | Unit | Data Type | Real-time Value | Update Time | Alarm | Display | Modbus Address | Edit | Delete |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All | HMI- Copy1(1) | 0001 | none | WORD | --- | --- | Disable | HMI- Copy1(1) | 028E | | |
| | 503 | 503 | 00100 | none | BIT | --- | --- | Disable | 503 | 0276 | | |
| | 503 | 503 | 00101 | none | BIT | --- | --- | Disable | 503 | 0278 | | |
| | test | DB | 1011 | none | WORD | 0 | 11/6/2020 12:01:15 PM | Disable | TWTY3NB0600 | 018E | | |
| | Visual | OPCC | 11111 | none | WORD | --- | 11/6/2020 12:01:15 PM | Disable | OPCC | 01B8 | | |
| | test | DB | 124 | none | WORD | 1 | 11/6/2020 12:01:15 PM | Disable | TWTY3NB0600 | 0192 | | |
| | test | DB | 1241 | none | WORD | 1 | 11/6/2020 12:01:15 PM | Disable | TWTY3NB0600 | 0194 | | |
| | 503 | 503 | abcd | none | BIT | --- | --- | Disable | abcd | 027A | | |
| | 503 | 503 | abcde | none | BIT | --- | --- | Disable | abcd | 027C | | |
| | 503 | 503 | abcdeF | none | BIT | --- | --- | Disable | abcd | 0280 | | |
| | 503 | 503 | abcdeF1 | none | BIT | --- | --- | Disable | abcd | 0284 | | |
| | 503 | 503 | abcdeF2 | none | BIT | --- | --- | Disable | abcd | 0288 | | |
| | 503 | 503 | abcdeff | none | BIT | --- | --- | Disable | abcd | 027E | | |
| | 503 | 503 | abcdeff1 | none | BIT | --- | --- | Disable | abcd | 0282 | | |
| | 503 | 503 | abcdeff2 | none | BIT | --- | --- | Disable | abcd | 0286 | | |
| | test | AS | D0001 | none | BIT | --- | --- | | | | | |
| | test | AS- Copy1(1) | D0001 | none | BIT | --- | --- | | | | | |
| | test | AS- Copy1(1) | D1111 | none | BIT | --- | --- | Disable | AS | 029C | | |

3

■ **Data Type:** Enter the data type, such as loa, then all tags with names of data type including “loa” would be found.




| Status | Page | Device | Name | Unit | Data Type | Real-time Value | Update Time | Alarm | Display | Modbus Address | Edit | Delete |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 503 | 503 | 2063 | A | FLOAT | 231.603 | 11/6/2020 12:02:16 PM | Disable | V | 02A0 | | |
| | 503 | 503 | 2065 | V | FLOAT | 33.966 | 11/6/2020 12:02:16 PM | Disable | A | 0294 | | |
| | test | test | DPFb | none | FLOAT | --- | --- | Disable | test | 015A | | |
| | test | test | DPFc | none | Float | --- | --- | Disable | test | 015C | | |
| | test | test | DPFt | none | Float | --- | --- | Disable | test | 015E | | |
| | test | test | Frequency | Hz | Float | --- | --- | Disable | test | 0160 | | |
| | test | test | I_avg | A | Float | --- | --- | Disable | test | 0136 | | |
| | test | test | Ia | A | Float | --- | --- | Disable | test | 012E | | |
| | test | test | Ib | A | Float | --- | --- | Disable | test | 0130 | | |
| | test | test | Ic | A | Float | --- | --- | Disable | test | 0132 | | |
| | test | test | In | A | Float | --- | --- | Disable | test | 0134 | | |
| | test | test | Pa | kW | Float | --- | --- | Disable | test | 0138 | | |
| | test | test | Pb | kW | Float | --- | --- | Disable | test | 013A | | |
| | test | test | Pc | kW | Float | --- | --- | Disable | test | 013C | | |
| | test | test | PEt_EXP | kWH-Relative | Float | --- | --- | Disable | test | 0162 | | |
| | test | test | PEt_EXP_kWH | kWH | Float | --- | | | | | | |
| | test | test | PEt_IMP | kWH-Relative | Float | --- | | | | | | |

4

# Chapter 4 Calculation

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## 4.1 Introduction

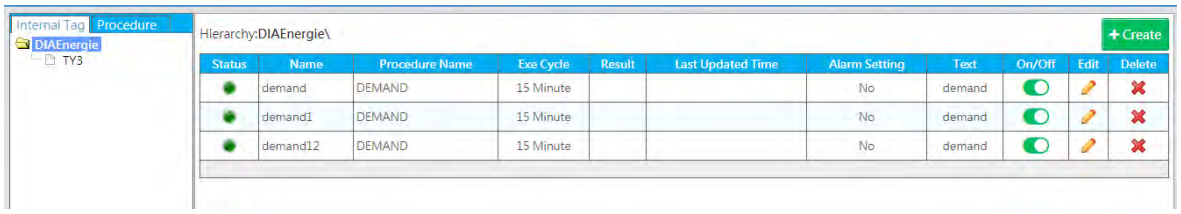
Except for the standard features in DIAEnergie, procedures of numerical calculation, report creation and data capture in different application fields can be customized by creating the corresponding tags under hierarchies via VBScript to meet users' needs. In addition, VBScript is the only supported script language.

***Note:** Only a single value is accepted while adding tags in DIAEnergie.

***Note:** Only numbers 0-9, characters a-z, A-Z, special characters." _" "- ", Chinese characters (including traditional, simplified and Kanji) are accepted in names set in this feature.

## 4.2 Internal Tags

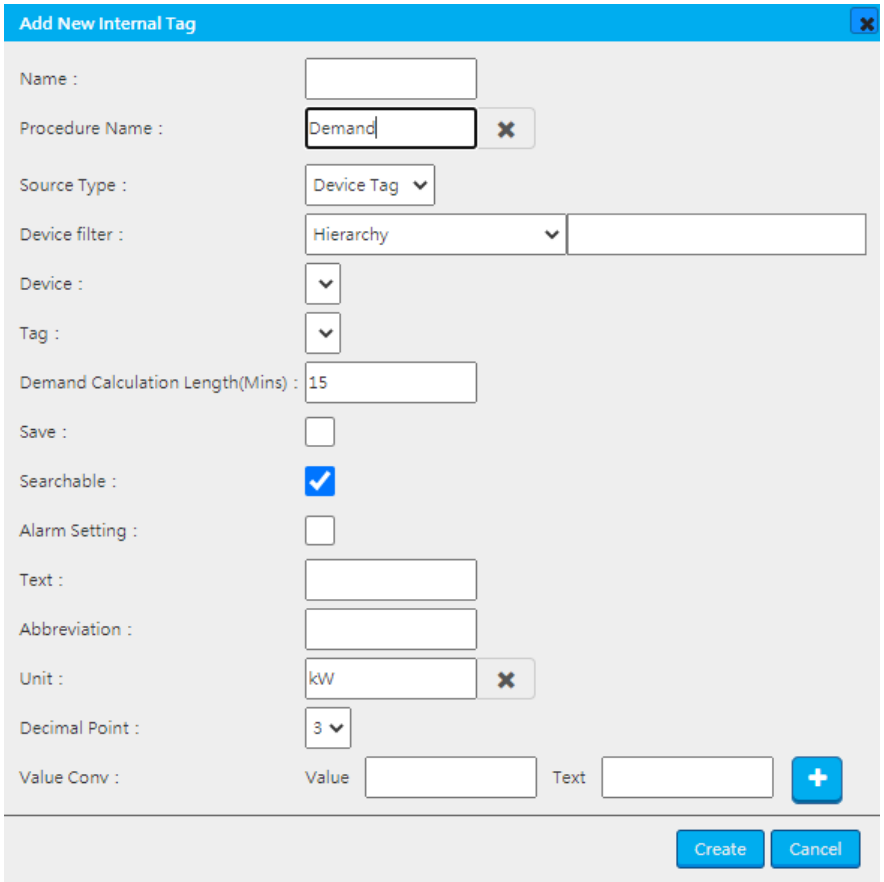
There are four types of calculation tags which are weather, shift, demand, and script. To add new tags, click the target node in the hierarchy tree on the left side of the page, then click on + Create to proceed.




### 4.2.1 Add Demand Tags

This function calculates the moving average over N minutes, where the N value represents the configured demand length time.

Click + Create and set procedure name to “Demand”.



1. **Name:** Tag name; non-duplicable.

2. **Procedure Name:** Demand

3. **Source Type:** Device Tag/ Internal Tag

4. **Device Filter:** Select the desired hierarchy.

5. **Device:** Select the desired device. However, you would not need to choose devices for internal tags.

6. **Tag:** Select a kW tag.

7. **Demand Calculation Length (Min):** The default setting is 15.

8. **Save:** The tag would be saved only when the box is checked.

9. **Searchable:** The tag would be shown in the drop-down list of other tags settings only when the box is checked.

10. **Alarm Setting:** Check the box and the alarm configuration area would be displayed so as to configure the settings of high/ high high/ low/ Low low alarm. Please refer to section **3.2.1** for more details.

11. **Text:** Set the text to display on charts in UI Design, Preview, Basic Query and Advanced Query.

12. **Abbreviation:** Set the tag name to display on power meter components in UI Design.

13. **Unit:** Tag unit. Please go to System Settings- Units for more details of unit settings.

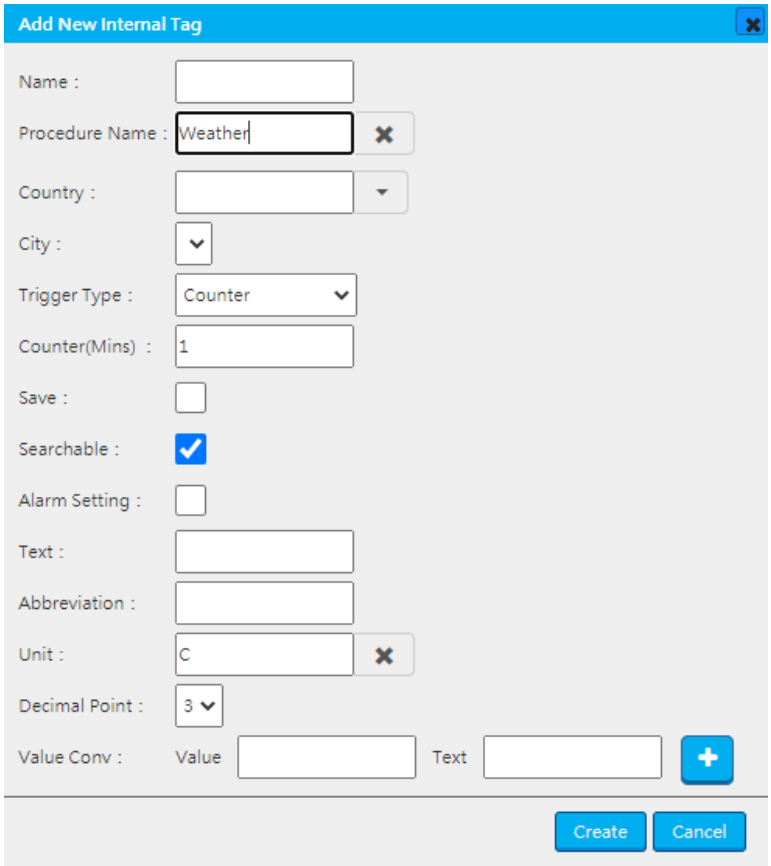
14. **Decimal Point:** Set the number of decimal places for values saved in database.

15. **Value Conv.:** Set the display texts corresponding to values while selecting tags for text components on UI Design.

### 4.2.2 Add Weather Tags

This function retrieves the temperature of a specific country and city using OpenWeather Web API. Please register on the website and obtain a Web API Key, then maintain it in the parameter 'WeatherAPPID' located in the host C:\DIAEnergieDCS\MainAP.ini.

Click on + Create and set Procedure Name to “Weather”.




1. **Name:** Tag name; non-duplicable.
2. **Procedure Name:** Weather
3. **Country:** Select the desired country.
4. **City:** Select the desired city.
5. **Trigger Type:** Counter.
6. **Counter (Mins):** Set the time interval for execution.
7. **Save:** The tag would be saved only when the box is checked.
8. **Searchable:** The tag would be shown in the drop-down list of other tags settings only when the box is checked.

9. **Alarm Setting:** Check the box and the alarm configuration area would be displayed so as to configure the settings of high/ high high/ low/ Low low alarm. Please refer to section **3.2.1** for more details.

10. **Text:** Set the text to display on charts in UI Design, Preview, Basic Query and Advanced Query.

11. **Abbreviation:** Set the tag name to display on power meter components in UI Design.

12. **Unit:** Tag unit. Please go to System Settings- Units for more details of unit settings.

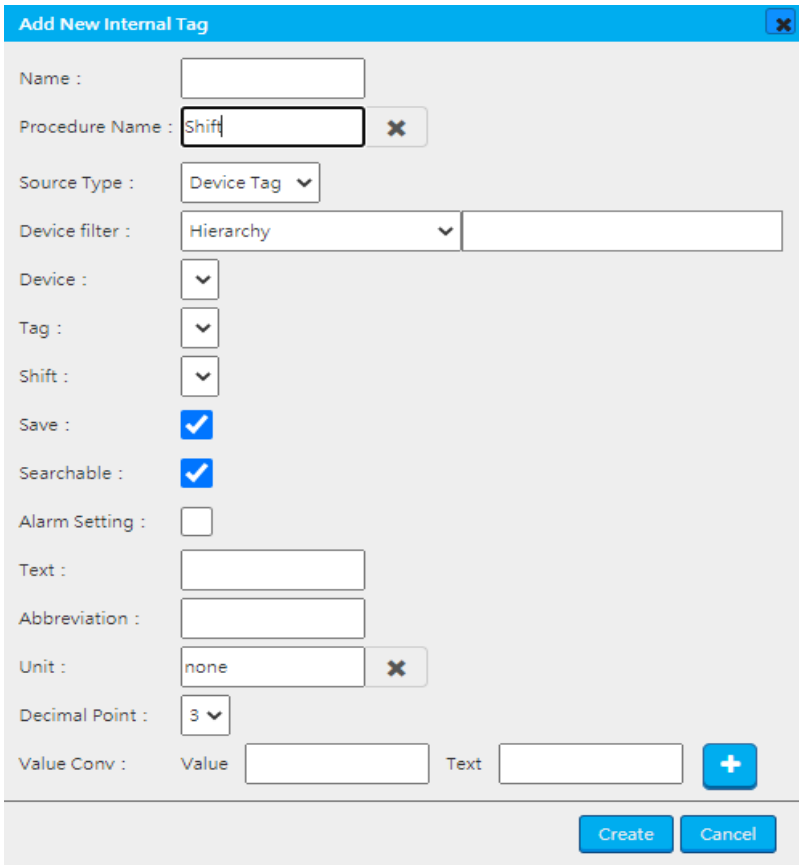
13. **Decimal Point:** Set the number of decimal places for values saved in database.

14. **Value Conv.:** Set the display texts corresponding to values while selecting tags for text components on UI Design.

### 4.2.3 Add Shift Tags

Only store data for specified shift times for subsequent querying and chart presentation.

Click on + Create and set Procedure Name to “Shift”.




1. **Name:** Tag name; non-duplicable.

2. **Procedure Name:** Shift

3. **Source Type:** Device Tag

4. **Device Filter:** Select “Hierarchy”.

5. **Device:** Select the desired device. However, you would not need to choose devices for internal tags.

6. **Tag:** Select the target tag.

7. **Shift:** Select the target shift. Please go to System Settings - Shift to configure shift settings first.

8. **Save:** The tag would be saved only when the box is checked.

9. **Searchable:** The tag would be shown in the drop-down list of other tags settings only when the box is checked.

10. **Alarm Setting:** Check the box and the alarm configuration area would be displayed so as to configure the settings of high/ high high/ low/ Low low alarm. Please refer to section **3.2.1** for more details.

11. **Text:** Set the text to display on charts in UI Design, Preview, Basic Query and Advanced Query.

12. **Abbreviation:** Set the tag name to display on power meter components in UI Design.

13. **Unit:** Tag unit. Please go to System Settings- Units for more details of unit settings.

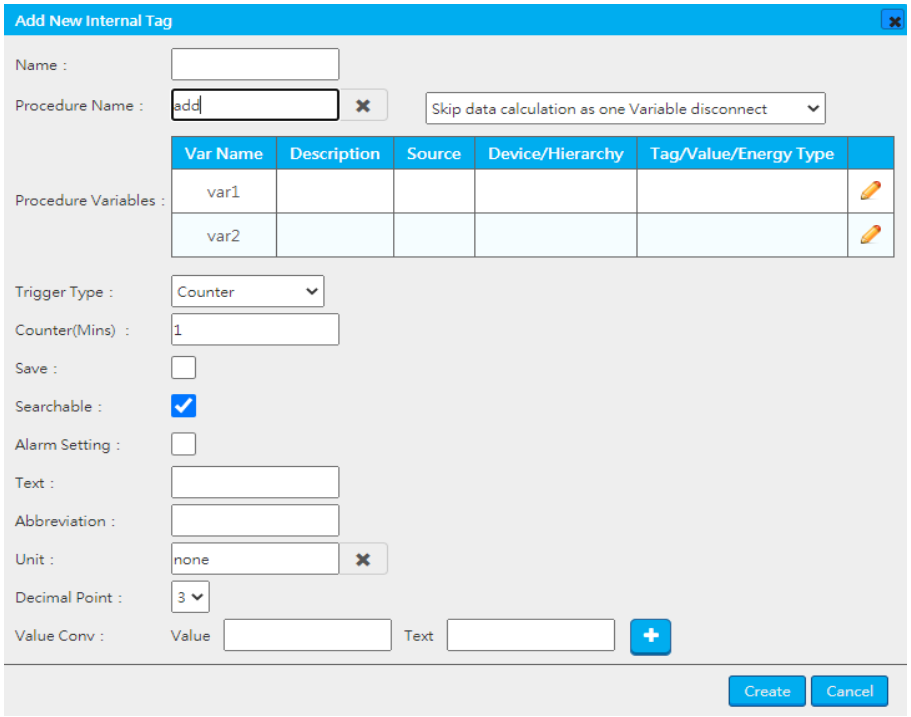
14. **Decimal Point:** Set the number of decimal places for values saved in database.

15. **Value Conv.:** Set the display texts corresponding to values while selecting tags for text components on UI Design.

### 4.2.4 Add Procedure Tags

Click

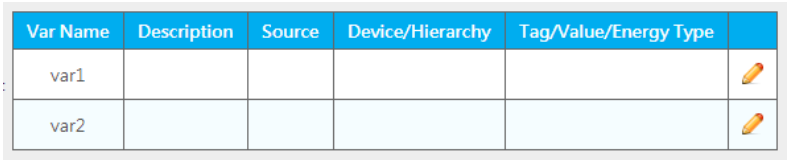
and select the desired script for the procedure name.




1. **Name:** Tag name; non-duplicable.

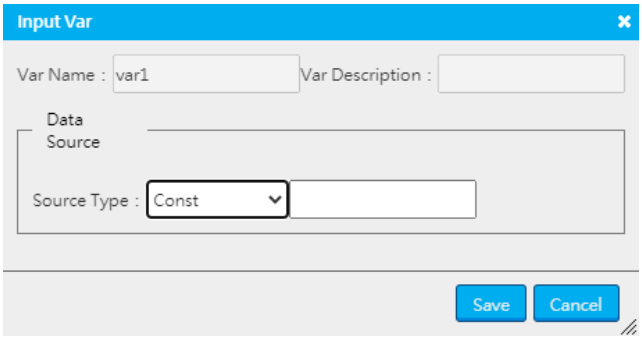
2. **Procedure Name:** Select the desired procedure. In this example, procedure name is set to “add”.

3. **Procedure Variables:** There are two variables in this example.




Click on the edit icon of var1 and the input variable window would pop up.

(1) **Source Type**: Const (constant); input the desired constant in the field behind.



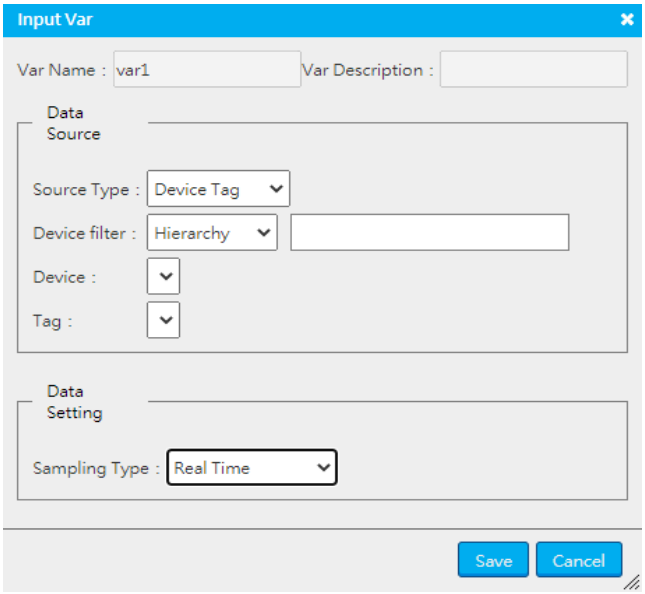
(2) Source Type: Device Tag

a **Device Filter**: Select “Hierarchy”, then click on the field behind to choose the desired hierarchy.

b **Device**: Select the desired device from the screened-in device list.

c **Tag**: Tags related to the chosen device would be displayed in the drop-down list.

d **Sampling Type**: Real Time/ Minute/ Hour/ Day/ Week/ Month/ Year-Last period/ Raw Minute

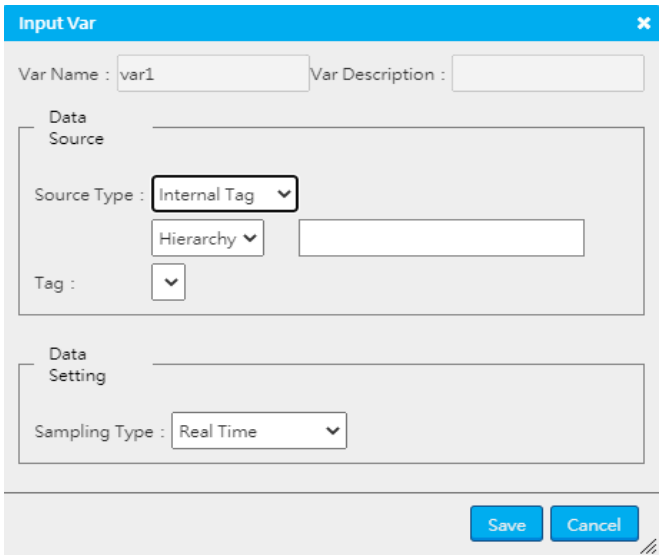



(3) **Source Type**: Internal Tag

a **Device Filter**: Select “Hierarchy”, then click on the field behind to choose the desired hierarchy.

b **Tag**: Tags related to the chosen device would be displayed in the drop-down list.

c **Sampling Type**: Real Time/ Minute/ Hour/ Day/ Week/ Month/ Year-Last period/ Raw Minute

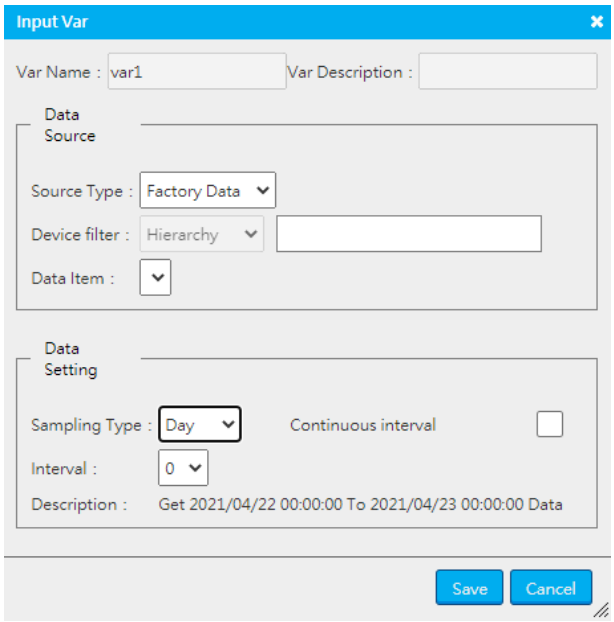


(4) **Source Type**: Factory Data

a **Device Filter**: Select “Hierarchy”, then click on the field behind to choose the desired hierarchy.

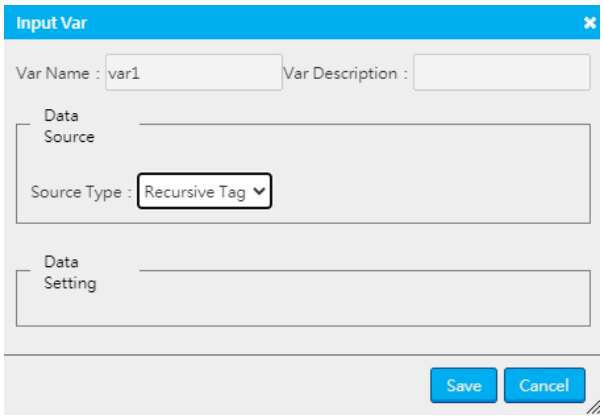
b **Tag**: Factory options related to the chosen hierarchy would be displayed in the drop-down list.

c **Sampling Type**: Day/ Month




(5) **Source Type**: Recursive Tag

Tags would be chosen automatically.



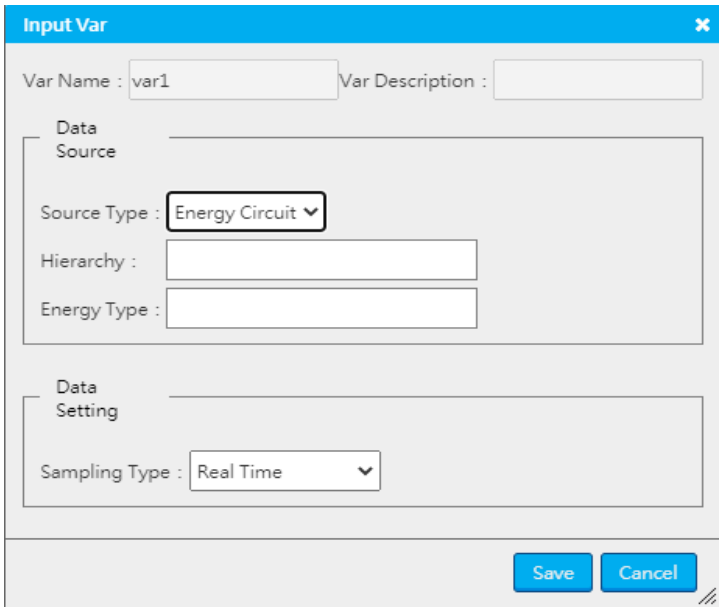

(6) **Source Type**: Energy Circuit

a Hierarchy: Click on the field to choose the desired hierarchy.

b Energy Type: Select the electricity corresponding to the hierarchy and energy type settings.

c The corresponding tags would be chosen and calcilated automatically.

d Sampling Type: Real Time/ Minute/ Hour/ Day/Week/ Month/ Year-Last Period/ Raw Minute




4

4. **Trigger Type:** Counter

5. **Counter (Mins):** Set the time intreval for execution.

6. **Save:** The tag would be saved only when the box is checked.

7. **Searchable:** The tag would be shown in the drop-down list of other tags settings only when the box is checked.

8. **Alarm Setting:** Check the box and the alarm configuration area would be displayed so as to configure the settings of high/ high high/ low/ Low low alarm. Please refer to section 3.2.1 for more details.

9. **Text:** Set the text to display on charts in UI Design, Preview, Basic Query and Advanced Query.

10. **Abbreviation:** Set the tag name to display on power meter components in UI Design.

11. **Unit:** Tag unit. Please go to System Settings- Units for more details of unit settings.

12. **Decimal Point:** Set the number of decimal places for values saved in database.

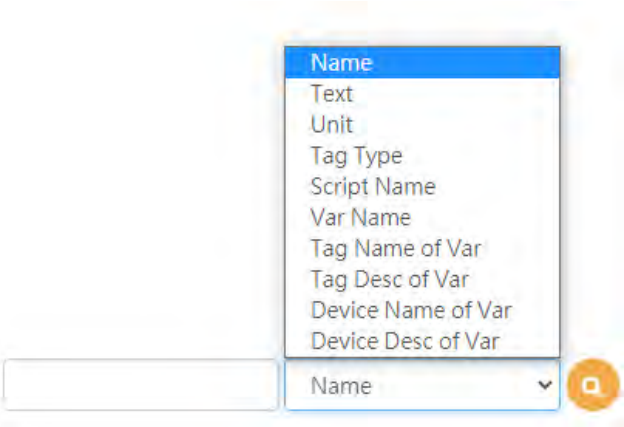
13. **Value Conv.:** Set the display texts corresponding to values while selecting tags for text components on UI Design.

✻ **Pratical Application:** Procedure tags are commonly used on calculationion of electricity consumption. For example, there are two submeters B and C installed under the main meter A in one area while there is no submeter in another area. We normally think that the electricity consumption of the area without submeters can be calculated from the equation Main meter A – Submeter B – Submeter C; however, calculation results are normally smaller than zero because of electricity losses which is not due to system error. Therefore, we would suggest you to set the unit to Minute, interval to 0, in the data setting of input variables. When the time is accumulated over an hour or a day, the calculation results would be closer to the actual values.

### 4.2.5 Tag Query/ Import/ Export

- **Tag Query**

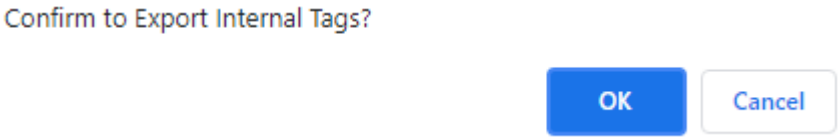
Queries a tag based on one of the following ten conditions.

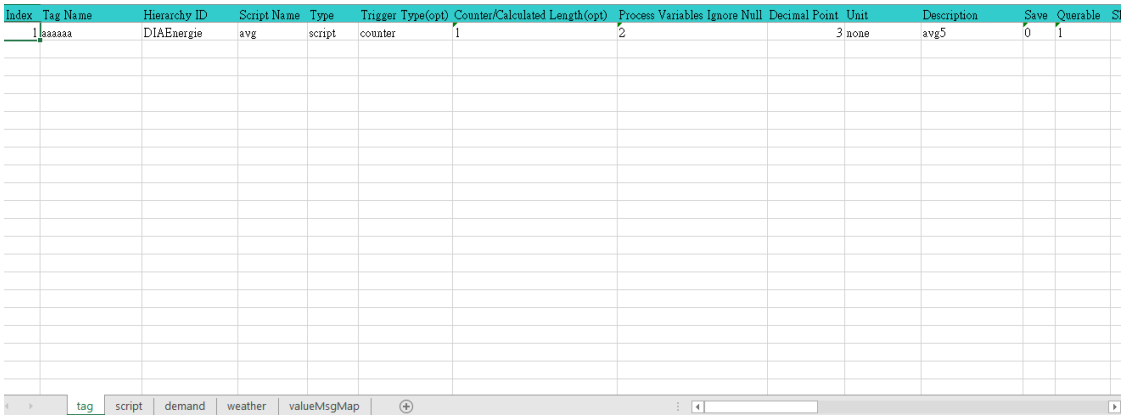



- **Export**

Editing function is not supported here. Except for exporting tags, you are only allowed to import and add tags.

(1) Click Export and the following dialog box would pop up. After clicking OK, a new tab would pop up, then an Excel file would be downloaded to the download folder on your PC. If there's no data to be exported, an empty template would be shown in the excel file.



| Index | Tag Name | Hierarchy ID | Script Name | Type | Trigger Type(opt) | Counter/Calculated Length(opt) | Process Variables Ignore Null | Decimal Point | Unit | Description | Save | Querable |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | aaaaaaa | DIAEnergie | avg | script | counter | 1 | 2 | 3 | none | avg5 | 0 | 1 |

tag | script | demand | weather | valueMsgMap

1. **Tag tab prsents the settings of the internal tags.**

**Index**: Serial numbers, corresponded to tag index in other tabs.

**Tag Name**: Tag names

**Hierarchy ID**: Hierarchy level

**Script Name**: Procedure name

**Type**: Options of Script/Demand/Weather, displayed in the drop-down list.

**Trigger Type(opt)**: Trigger type

**Counter/Calculated Length(opt)**: Counter (Mins)

**Process Variables Ignore Null**: Skip data calculation as one variable disconnect/ Fill “Zero” value in disconnected variable calculation/ Keep last value for disconnected variable calculation.

**Decimal Point**: Decimal points

**Unit**: Unit

**Description**: Display text

**Save**: Savable or not

**Querable**: Whether can be searched or not

**Shift**: Shift

**Var Type(Shift)**: Variable types for shift tags, device tag/ internal tag

**Device Hierarchy(Shift)**: Hierarchies of devices with different source types set for shift tags

**Device Name(opt)(Shift)**: Devices with different source types set for shift tags

**Tag Name(Shift)**: A tag under a source device set for shift tag

**Alarm Enabled**: Alarm setting

**HHAlarm Enabled**: Enable high high alarms

**HHAlarm Value**: Values of high high alarms

**HHAlarm Remarks**: Remarks for high high alarms

**HighAlarm Enabled**: Enable high alarms

**HighAlarm Value**: Values of high alarms

**HighAlarm Remarks**: Remarks for high alarms

**LowAlarm Enabled**: Enable low alarms.

**LowAlarm Value**: Values of low alarms

**LowAlarm Remarks**: Remarks for low alarms

**LLAlarm Enabled**: Enable low low alarms

**LLAlarm Value**: Values of low low alarms

**LLAlarm Remarks**: Remarks for low low alarms

**Percentage Base**: Percentage basis

**HPercentage Enabled**: Enable high percentage alarms

**HPercentage Value**: High percentage values

**HPercentage Remarks**: High percentage remarks

**LPercentage Enabled**: Enable low percentage alarms

**LPercentage Value**: Low percentage values

**LPercentage Remarks**: Low percentage remarks

**Abbreviation**: Abbreviations

2. **Script tab prsents input variable setting of internal tags.**

**Tag Index**: Correspond to indexes in Tag tab.

**Tag Name (opt)**: Correspond to tag names in Tag tab.

**Script Name**: Correspond to script names in Tag tab.

**Var Name**: Correspond to variable names of procedure variables created in DIAEnergie.

**Var Type**: Source type from data source settings

**Device Hierarchy**: This setting is only for certain source types: Device Tag, Internal Tag and Energy Circuit.

**Device Name(opt)**: Device name would be required when source type is set to Device Tag.

**Tag Name/Value**: This setting would be required when source type is set to Device Tag or Internal Tag.

**Scan Type**: Options from the drop-down list of sampling type setting.

**Accumulated/Average**: Continuoius interval setting; 0 means unchecked and 1 means checked.

**Scan Interval**: Interval setting for sampling.

3. **Demand tab prsents variable setting of demand tags.**

**Tag Index**: Correspond to indexes in Tag tab.

**Tag Name(opt)**: Correspond to tag names in Tag tab.

**Source Type**: Setting options can be viewd from the drop-down list.

**Src Device/Tag Hierarchy**: Setting options can be viewd from the drop-down list.

**Src Device Name(opt)**: Device name would be required when source type is set to Device Tag.

**Src Tag Name**: This setting would be required when source type is set to Device Tag or Internal Tag.

4. **Weather tab prsents variable setting of weather tags.**

**Tag Index**: Correspond to indexes in Tag tab.

**Tag Name(opt)**: Correspond to tag names in Tag tab.
**City**: Setting options can be viewd from the drop-down list.

5. **valueMsgMap presents text settings of internal tags.**

**Tag Index**: Correspond to indexes in Tag tab.

**Tag Name(opt)**: Correspond to tag names in Tag tab.

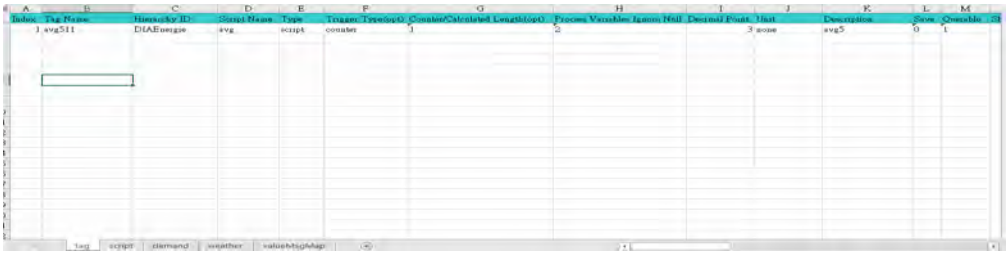
**Value**: Input values

**Message**: Corresponding texts

- **Import**

Editing function is not supported here. You are only allowed to add new tags while tag names would be examined to see if there's any duplication.

Maintain the newly added tags in the Excel file.

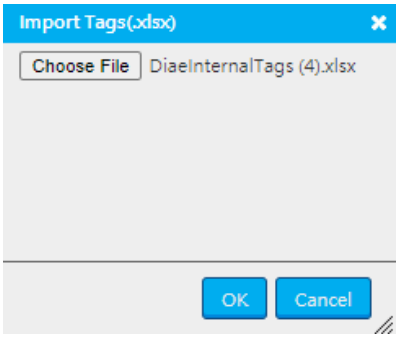


| Tag Index | Tag Name(opt) | Script Name | Var Name | Var Type | Device Hierarchy | Device Name(opt) | Tag Name/Value | Scan Type | Accumulated/Average | Scan Interval |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | avg511 | avg | var1 | Device Tag | DIAEnergie | meter1 | kwh | Min | 0 | 0 |
| 1 | avg511 | avg | var2 | Device Tag | DIAEnergie | meter1 | kwh | Min | 0 | 1 |
| 1 | avg511 | avg | var3 | Device Tag | DIAEnergie | meter1 | kwh | Min | 0 | 2 |
| 1 | avg511 | avg | var4 | Device Tag | DIAEnergie | meter1 | kwh | Min | 0 | 3 |
| 1 | avg511 | avg | var5 | Device Tag | DIAEnergie | meter1 | kwh | Min | 0 | 4 |

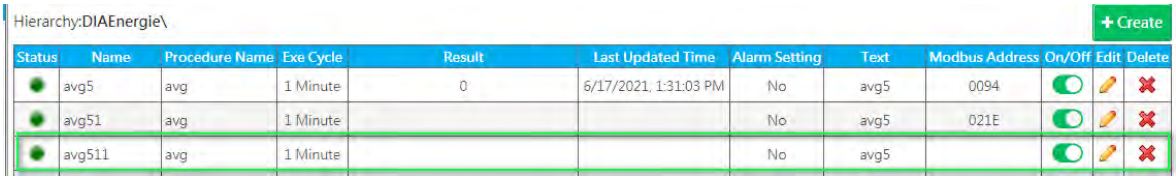
tag | script | demand | weather | valueMsgMap

Click on

Import tags window would pop up, then select the excel file you've just maintained and click on" OK".



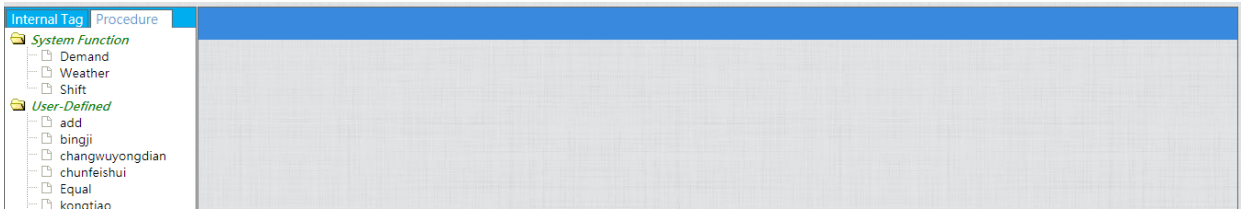

After successfully uploaded, click on the newly imported tag.




| Status | Name | Procedure Name | Exe Cycle | Result | Last Updated Time | Alarm Setting | Text | Modbus Address | On/Off | Edit | Delete |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | avg5 | avg | 1 Minute | 0 | 6/17/2021, 1:31:03 PM | No | avg5 | 0094 | | | |
| | avg51 | avg | 1 Minute | | | No | avg5 | 021E | | | |
| | avg511 | avg | 1 Minute | | | No | avg5 | | | | |

# 4.3 Procedure

Procedures are divided into two types which are System Function and User-Defined. The former is used to write procedures by system default with no need for programming while the latter is for users to write procedures by themselves with VBScript.




## 4.3.1 System Function



### 4.3.1.1 Demand

For calculating demands.

### 4.3.1.2 Weather

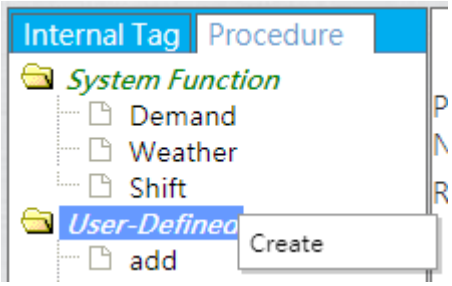
Use OpenWeather to acquire current weather data. WeatherAPPID would need to be maintained in Collector MainAP.ini.

### 4.3.1.3 Shift

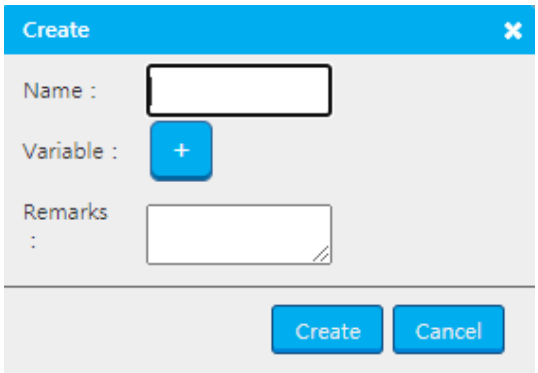
First need to maintain shift settings under system settings.

### 4.3.2 User-defined

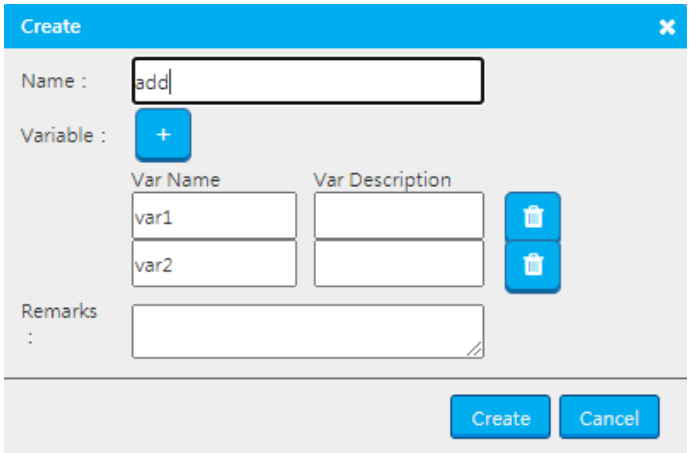
Right click on “User-defined” and click on “Create”.




A create window would pop up as following shown.




Click on to create new variables.

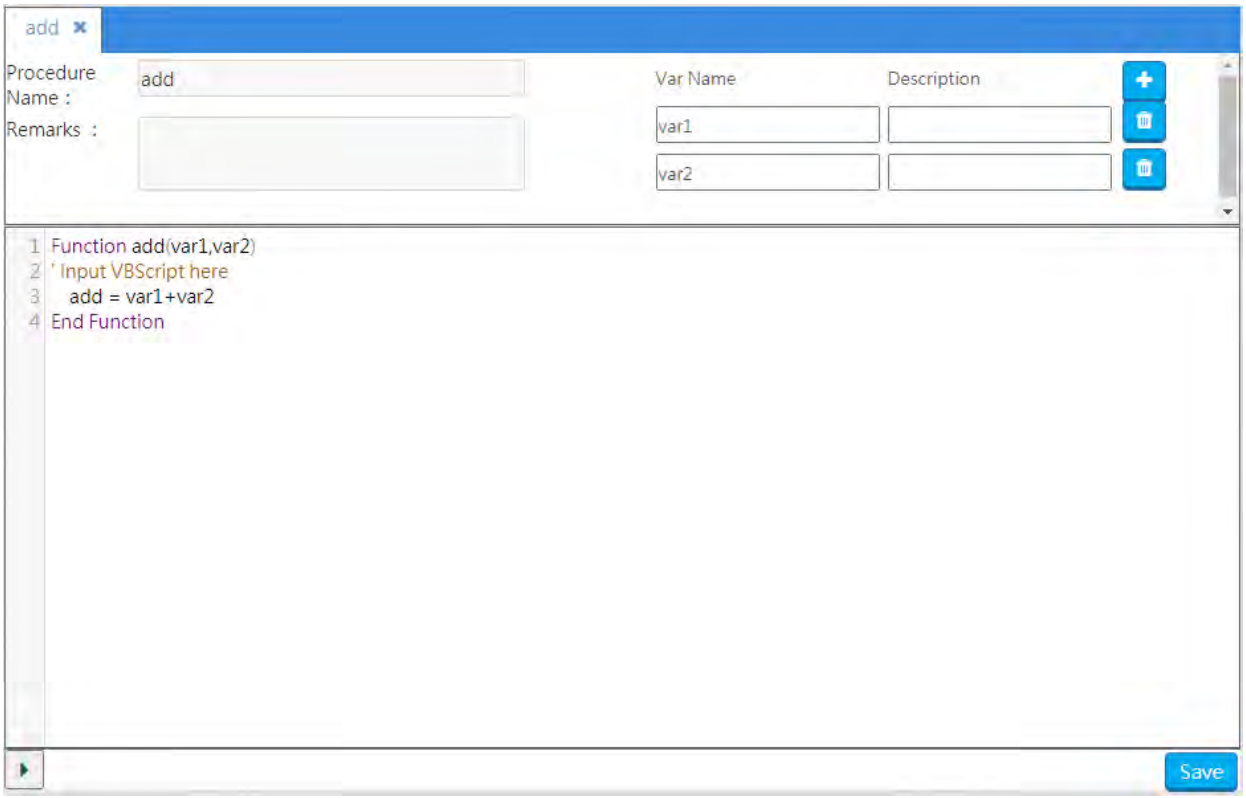



❶ **Name**: Procedure name.

❷ **Var name/ Var Description**: Click to add new variables.

❸ **Remarks**: Maintain descriptions for remarks.

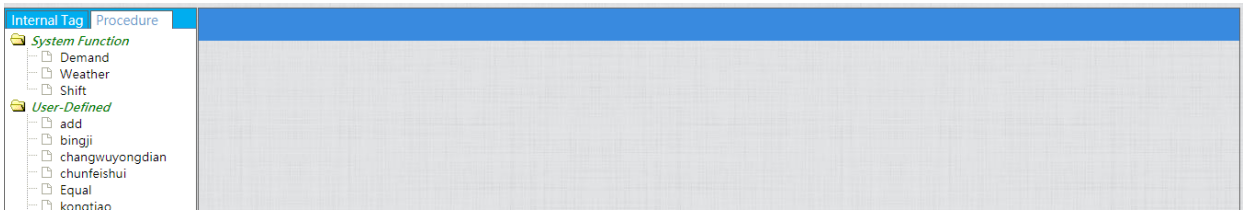
Click on “add” and the following screen would be displayed.




❶ **Procedure block**: Input VBScript between Function and End Function.

❷ : After finish writing, click this button to check if there’s any mistake in the programming.

❸ **Save**: Save the procedure you’ve just written.



5

# Chapter 5 UI Design and Preview

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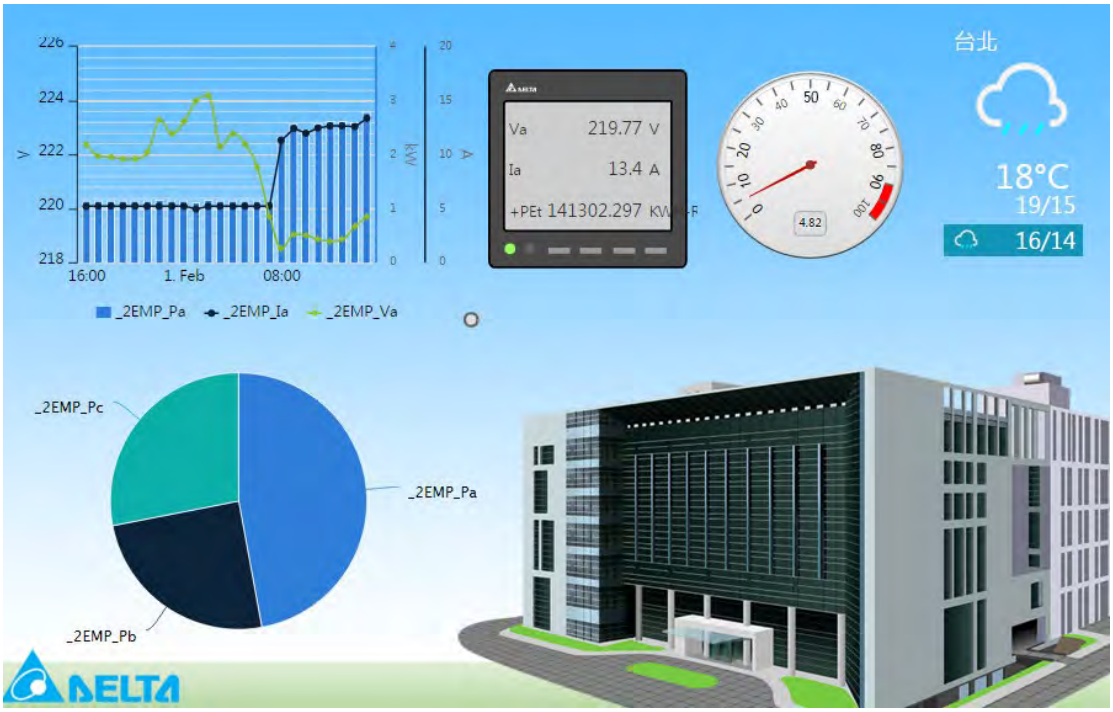
## 5.1 Introduction

The UI Design function provides customized web page design via drag and drop elements from the left Toolbar to the workspace on the page. The user-centered design and layout elements include graph, control, and general drawing components.

The Preview function features components setup from the UI Design function and can be selected as home page. In other words, users need to first complete page settings in the UI Design function and choose Preview to see the result. The Preview pages are designed based on users' requirements, while the entry page is managed under authorized access for users to preview.

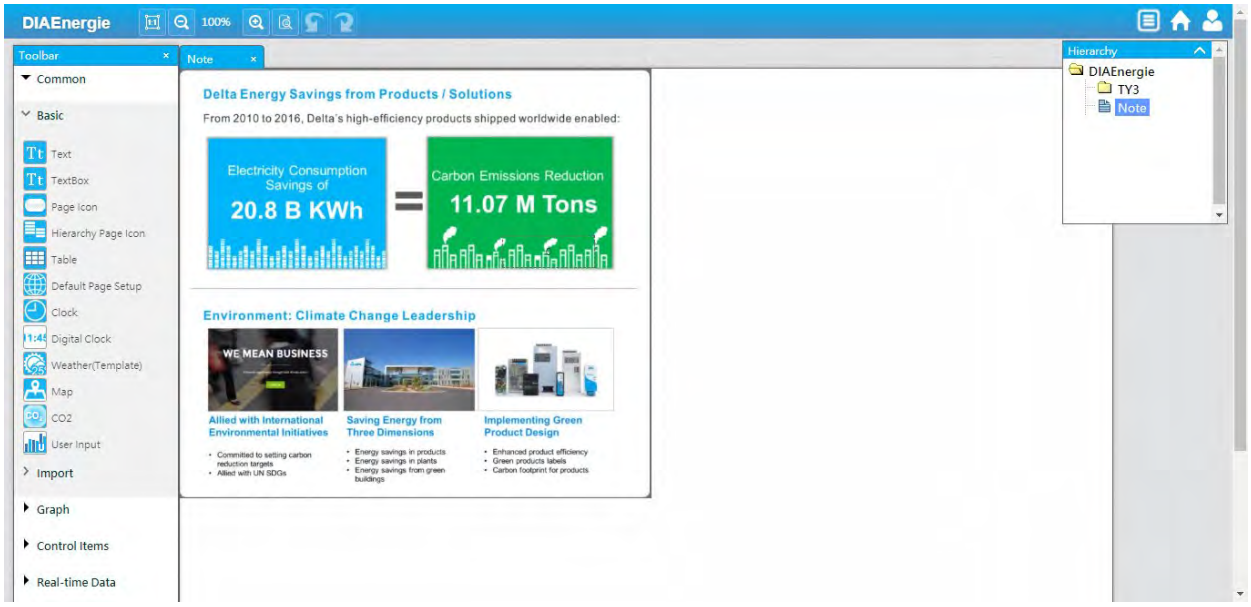
Note: The absolute size of a picture is applied in this feature without supporting RWD.

Note: Only 0-9, a-z, A-Z, special characters "_" "-"and Chinese characters (including traditional, simplified and Kanji) are accepted in names, while 0-9, a-z, A-Z, special characters "_" "-" "'+" "@" and Chinese characters (including traditional, simplified and Kanji) are accepted in remarks.



## 5.2 UI Design

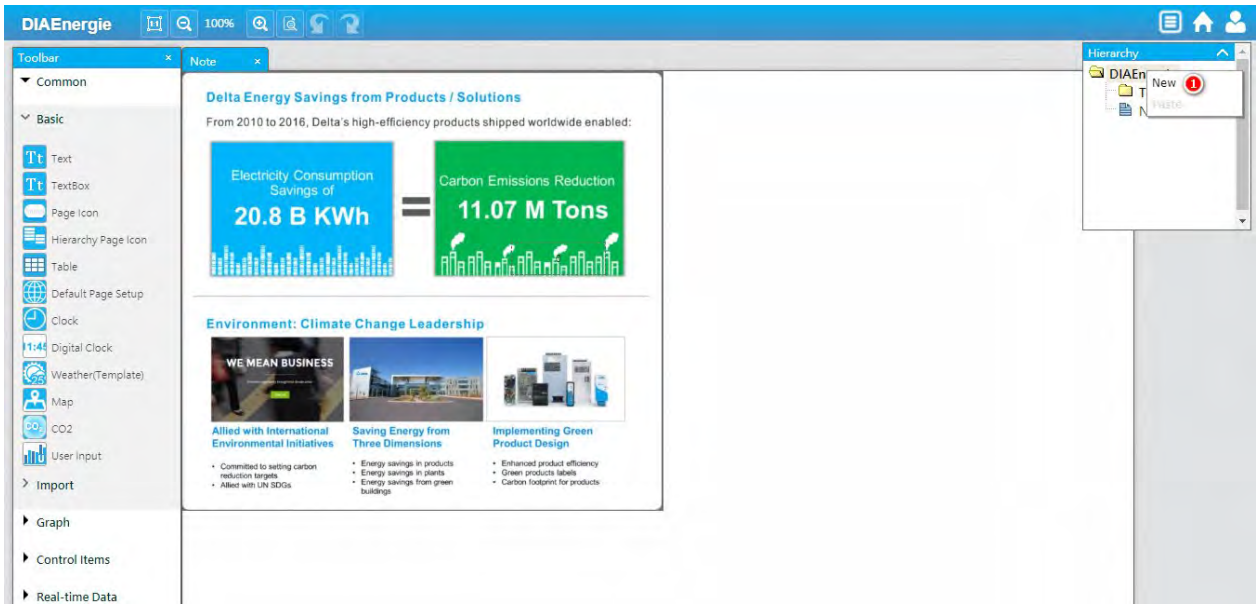
Users can right-click an item from the Hierarchy box on the right side of the UI Design page and select New to add a new page. Then, use the elements from the Toolbar box on the left to create a personal web page.

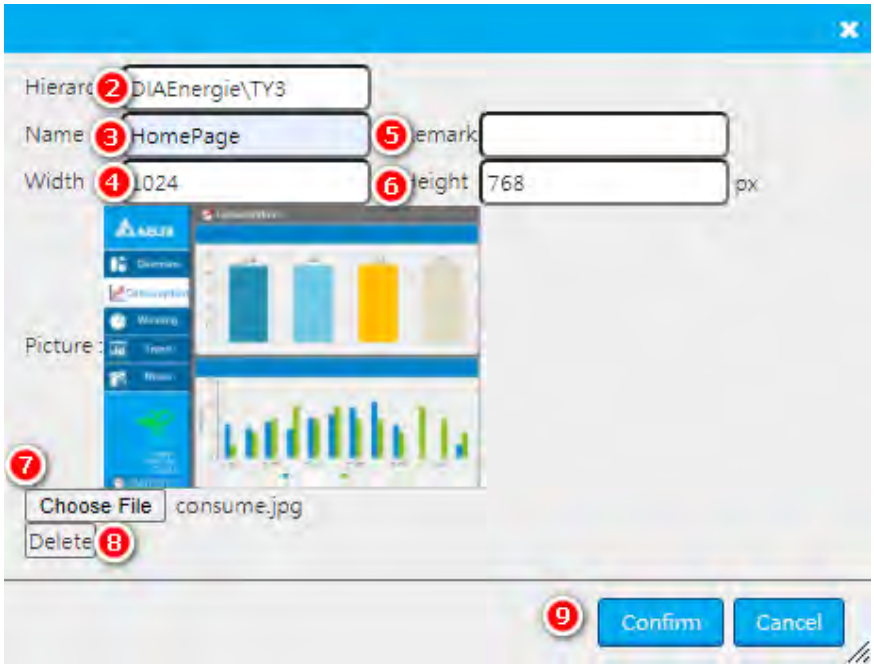


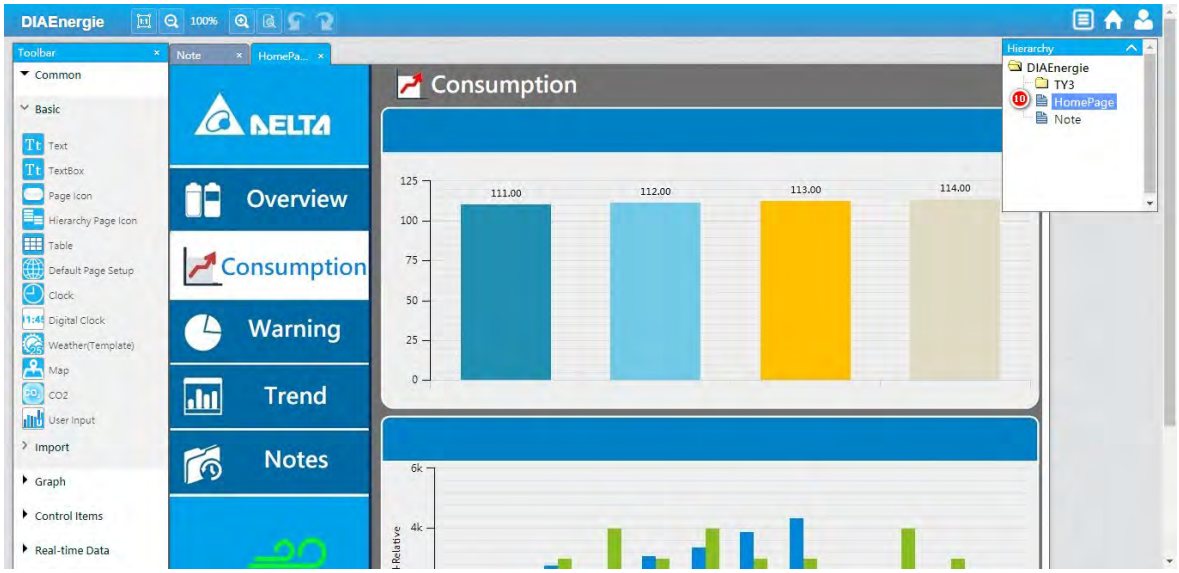

5

### 5.2.1 New Page

When NEW is clicked, users can create their own page by typing width and height as well as choose files to upload pictures. Or work directly on the blank workspace page for design.






1 Right click on the hierarchy node that you want to add a new page and click “New” from the pop-up menu.

2 Hierarchy: Right click the desired hierarchy node to modify this field; required field.

3 Name: Set the page name, which has to be easily identitified; required field.

4 Width: Set the page width with only positive integers being accepted and the unit is px; required field. The default setting would be 1024.

5 Remark: Additional description for the page; optional.

6 Height: Set the page height with only positive integers being accepted and the unit is px; required field. The default setting would be 1024.

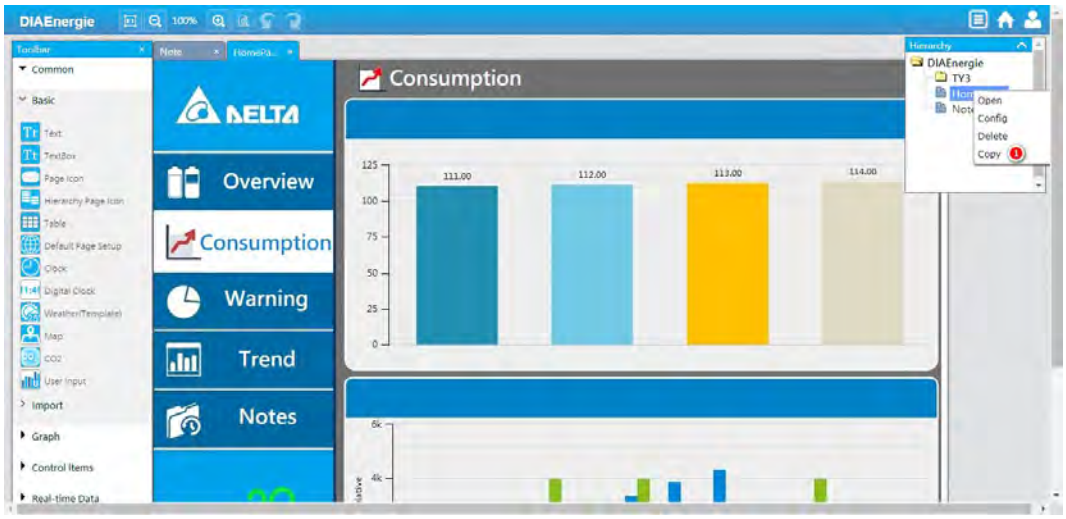
7 Choose file: Select the desired background picture which its size should correspond to the height and width of the page.

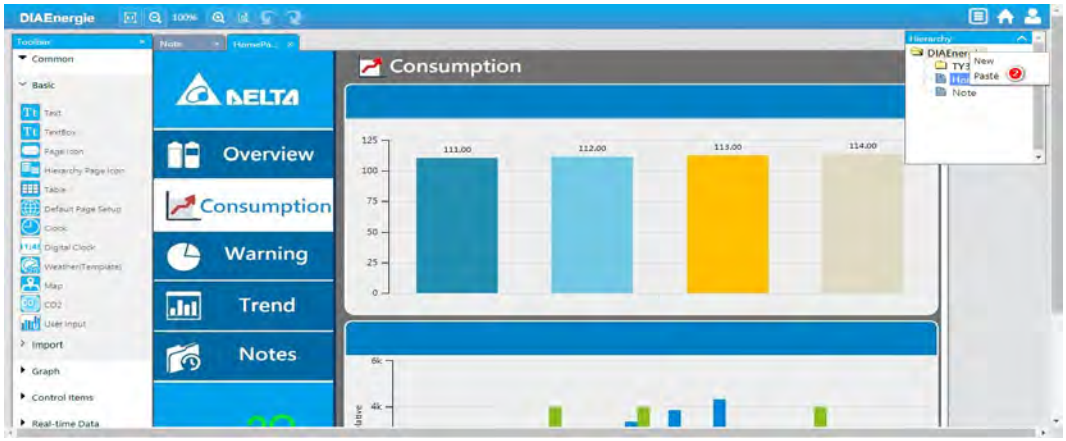
8 Delete: Click to remove the chosen file of background picture.

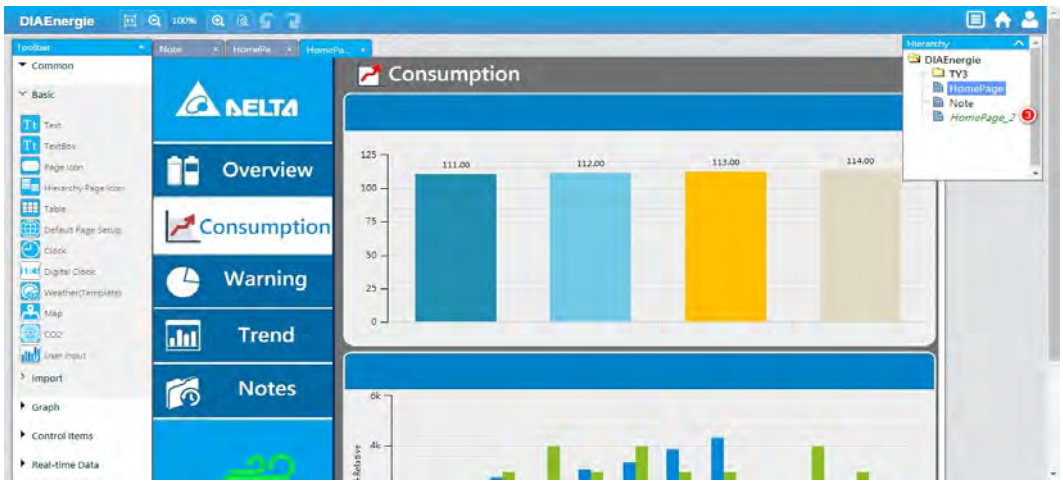
9 Confirm: Click on confirm button to save the settings after checking all information of each field is correct.

10 After saving succesfully, the newly-added page would be shown under the chosen hierarchy node.

## 5.2.2 Copy / Paste Pages



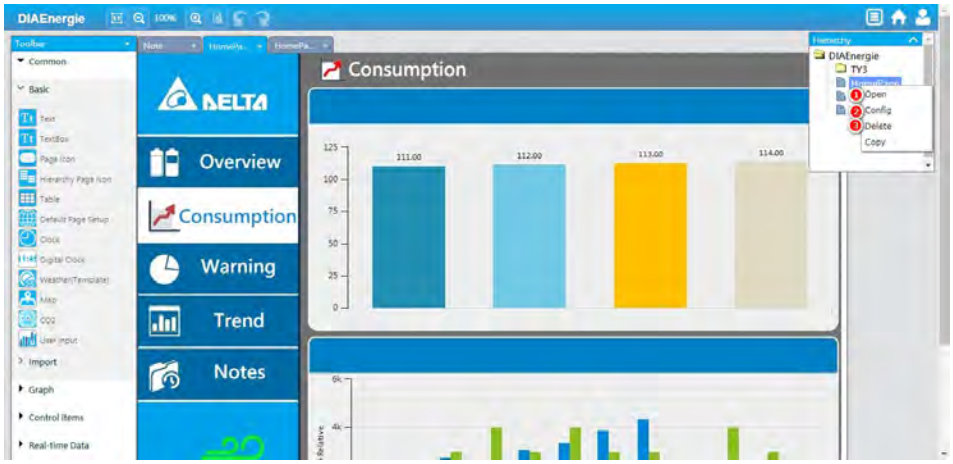




1 Right click on the page you want to copy and click “Copy” from the pop-up menu.

2 Right click on the target hierarchy node you want to insert the copied page and click “Paste” from the pop-up menu.

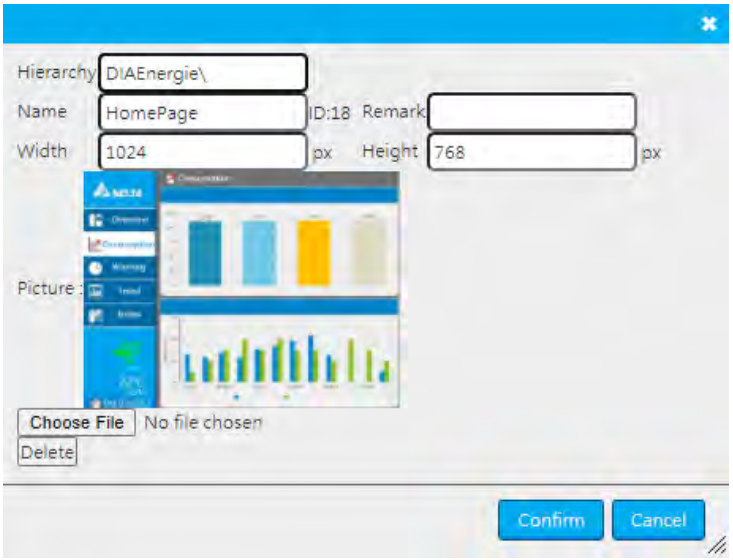
3 After pasting successfully, the pasted page name would be displayed as “name of the copied page _ serial number”.

### 5.2.3 Open / Configure / Delete Pages

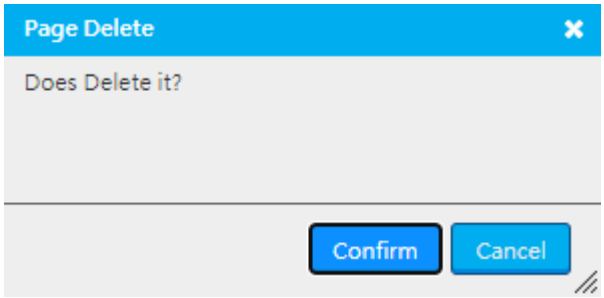



1 Right click on the target page under the hierarchy node and click “Open” from the pop-up menu, then the target page would be displayed on the left side of the screen.

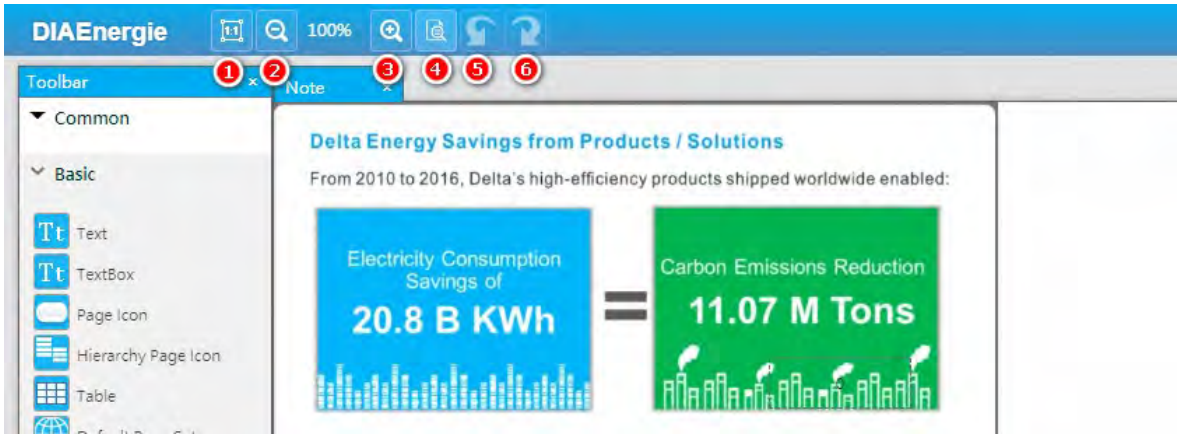
2 Right click on the target page under the hierarchy node and click “Config” from the pop-up menu, then the configuration page would pop-up. Please refer to section 5.2.1 for details of field description.




3 Right click on the target page under the hierarchy node and click “Delete” from the pop-up menu, then the page delete window would pop-up. Click “Confirm” to delete the page or “Cancel” to close the page delete window.



### 5.2.4 Tools




1 : 1:1 view based on its original size.

2 : Zoom in; decrease the display scale of pictures.

3 : Zoom out; increase the display scale of pictures.

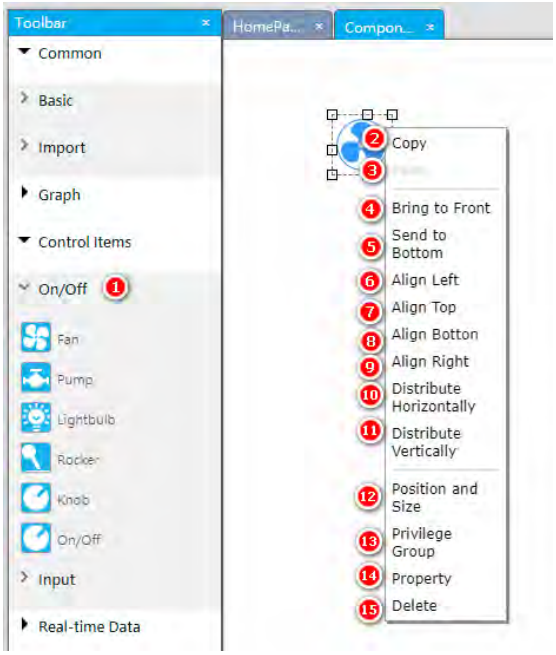
4 : Preview; a preview window would pop-up for you to view the page setting result.

5 : Undo; reverse the most recent action, which could be size adjustment, movement or property modification of items.

6 : Reverse the most recent Undo action.

## 5.2.5 Right Click on Items

### 5.2.5.1 Control Items




1 **On/ Off:** Control items

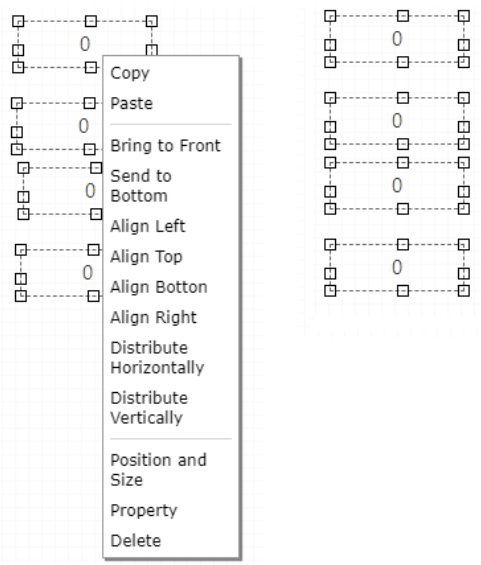
2 **Copy:** Copy the item being right clicked.

3 **Paste:** After copied the desired item, right click on the target position and click “Paste” from the right click menu.

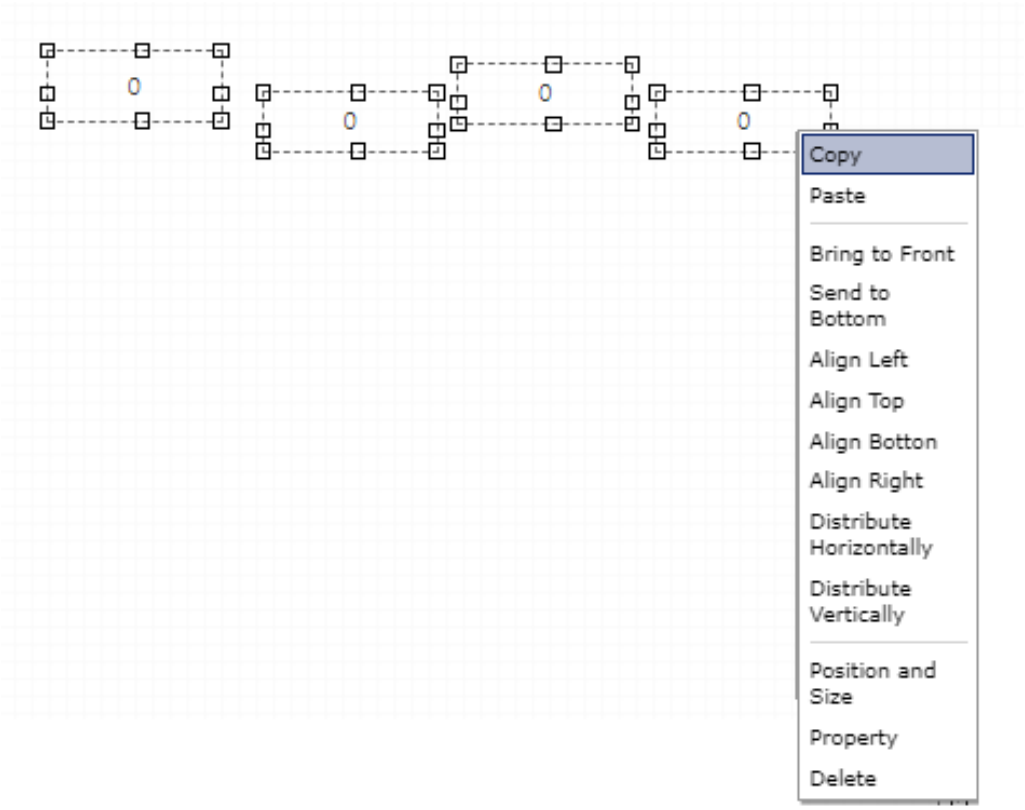
4 **Bring to Front:** Bring the item to the front of other items.

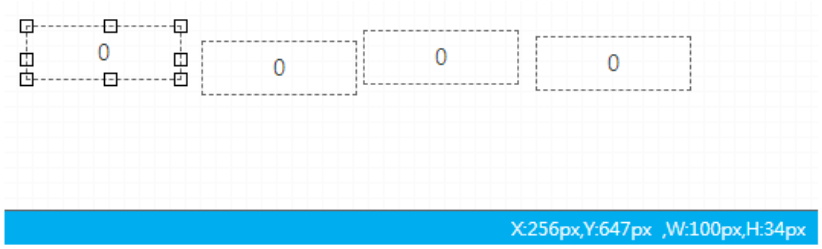
5 **Send to Back:** Send the item to the back of other items.

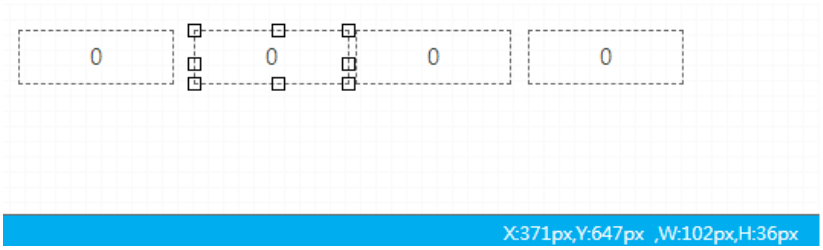
6 **Align Left:** Align all the items along with the left side of the one at the top.



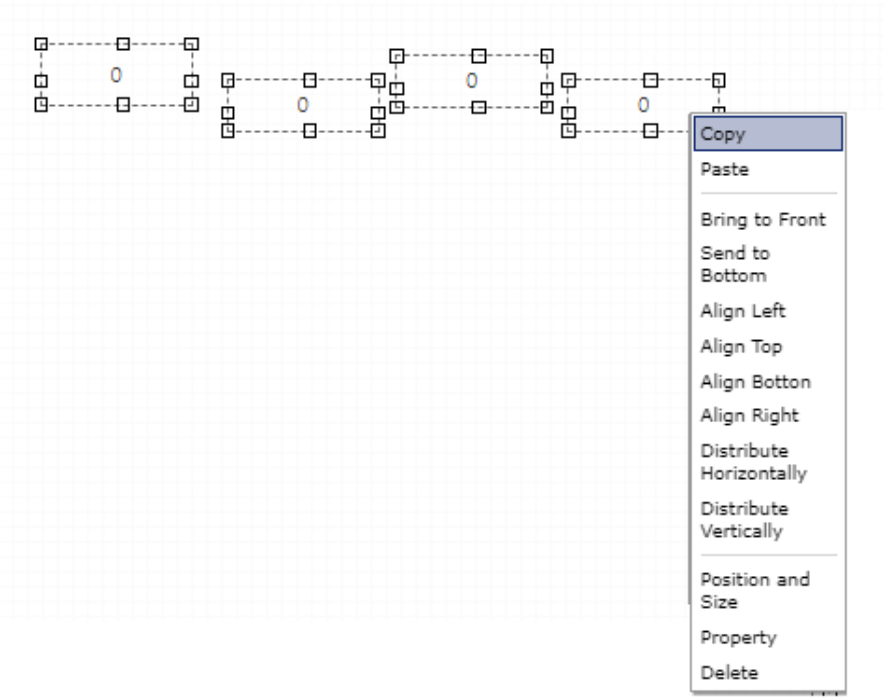
7 **Align Top:** Align items to the top.

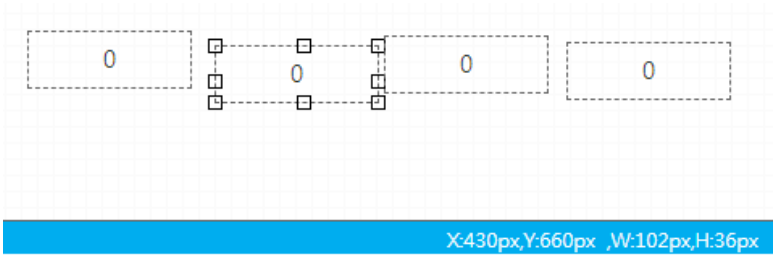


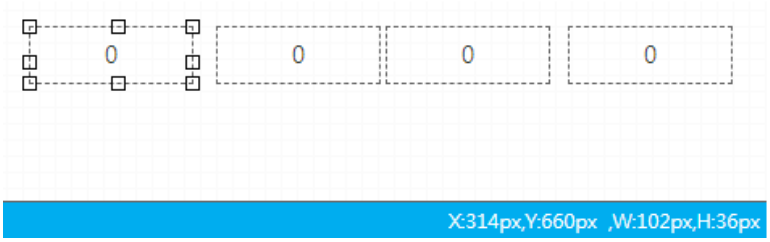



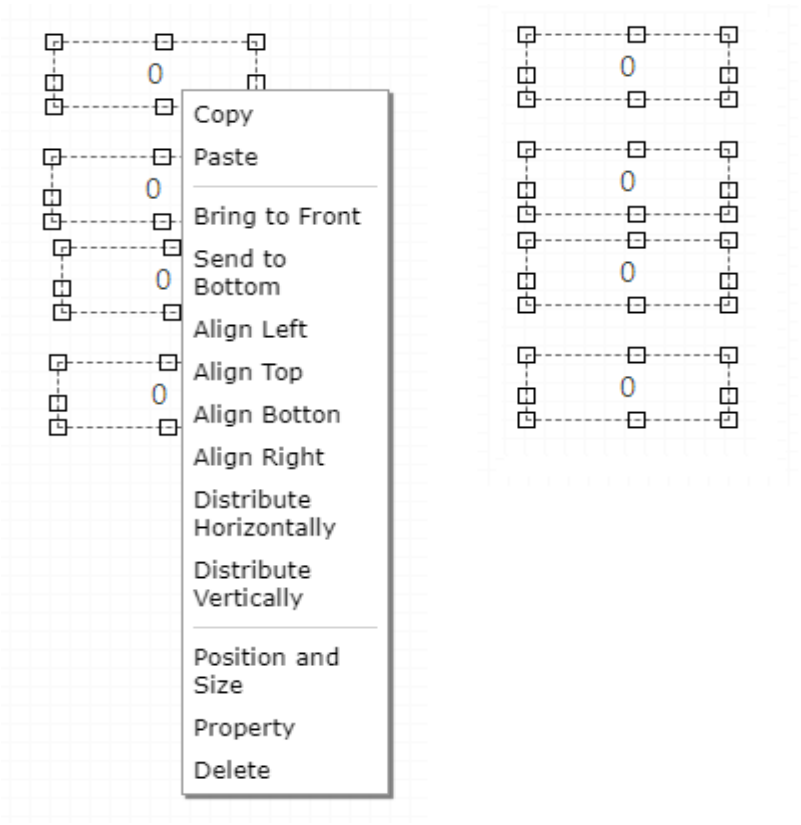
8 **Align Bottom:** Align items to the bottom.



9 **Align Right:** Align all the items along with the left side of the one at the top.




10 **Distribute Horizonally:** After selecting multiple items, choose “Distribute Horizonally” from the right click menu, then the selected objects would be distributed from left to right with equal spacing.

11 **Distribute Vertically:** After selecting multiple items, choose “Distribute Vertically” from the right click menu, then the selected objects would be distributed from top to bottom with equal spacing.

12 **Position and Size:** Set the position of X, Y coordinates and sizes of items, while sizes of some certain items cannot be modified, such as Weather.

13 **Privilege Group:** Set the desired groups which are allowed to control the items. If there’s no authority group being set as privilege group, you would not be able to control the items to be opened or closed.

14 **Property:** A configuration window would pop up for you to set item’s properties according to your requirements.

15 **Delete:** Click to delete the target item.

### 5.2.5.2 Non-control Items (Not including items in 5.2.5.1)

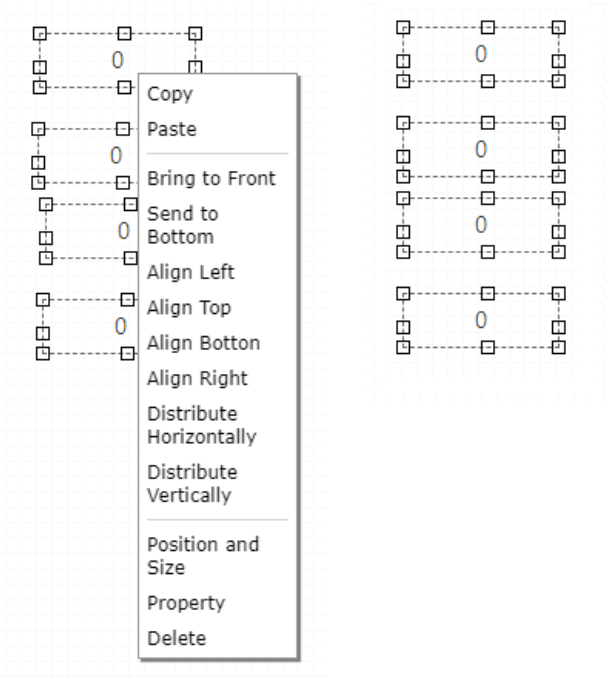
1 **Copy:** Copy the item being right clicked.

2 **Paste:** After copied the desired item, right click on the target position and click “Paste” from the right click menu.

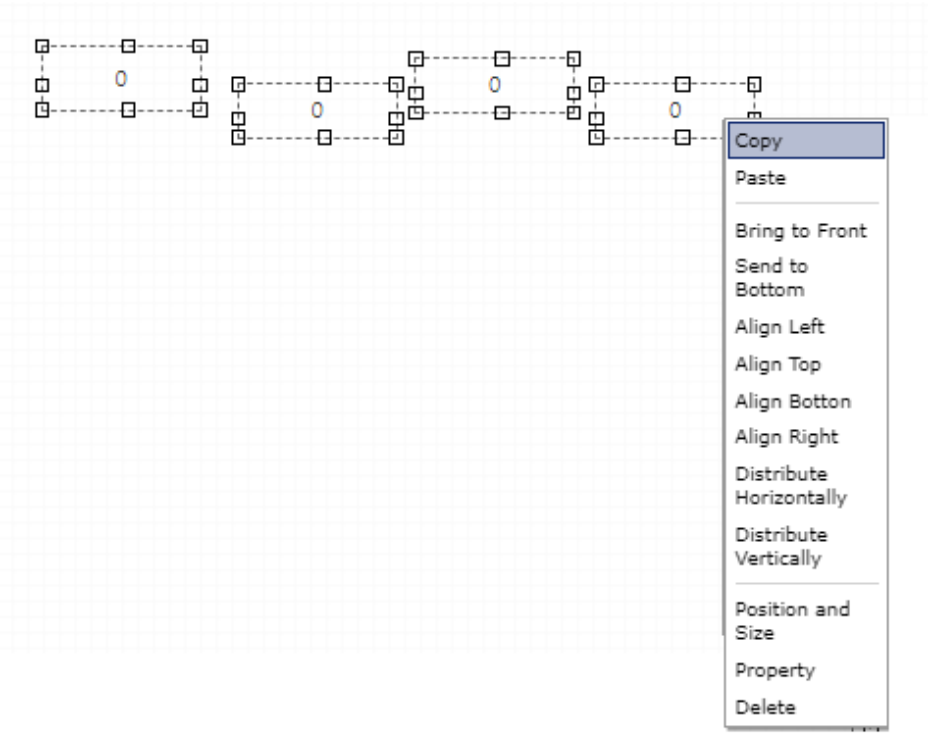
3 **Bring to Front:** Bring the item to the front of other items.

4 **Send to Back:** Send the item to the back of other items.

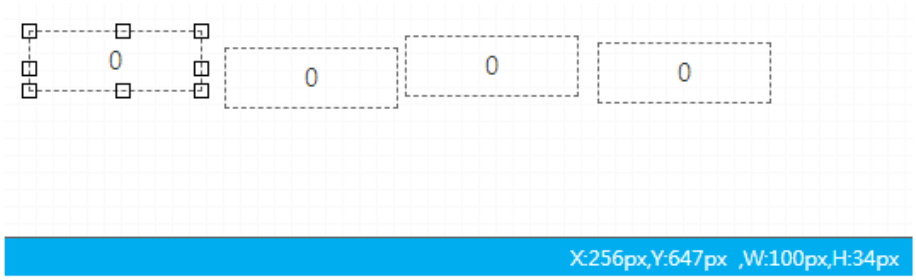
5 **Align Left:** Align all the items along with the left side of the one at the top.

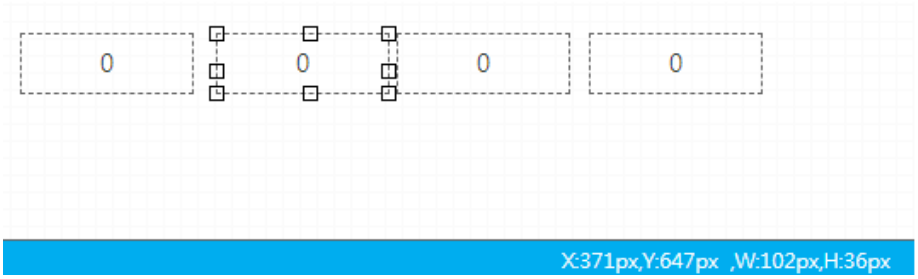


6 **Align Top:** Align items to the top.

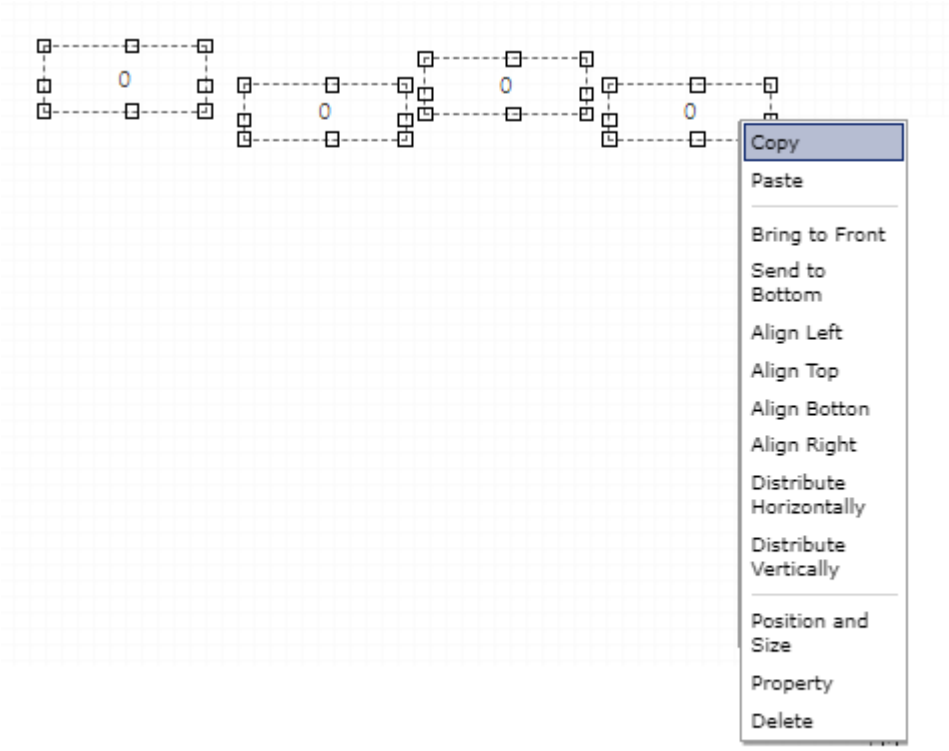


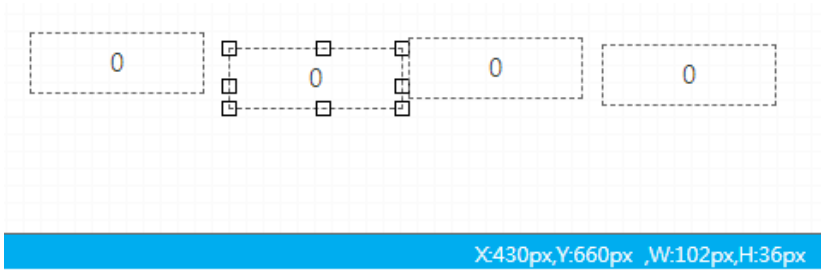


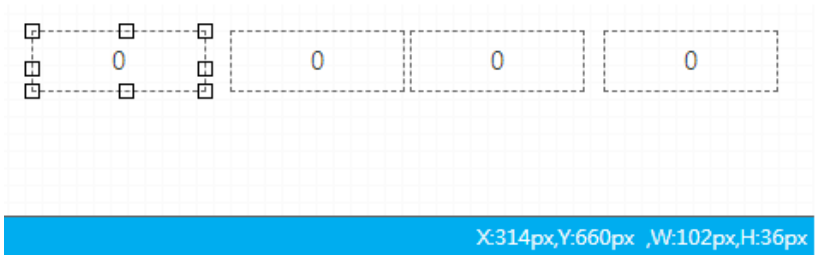



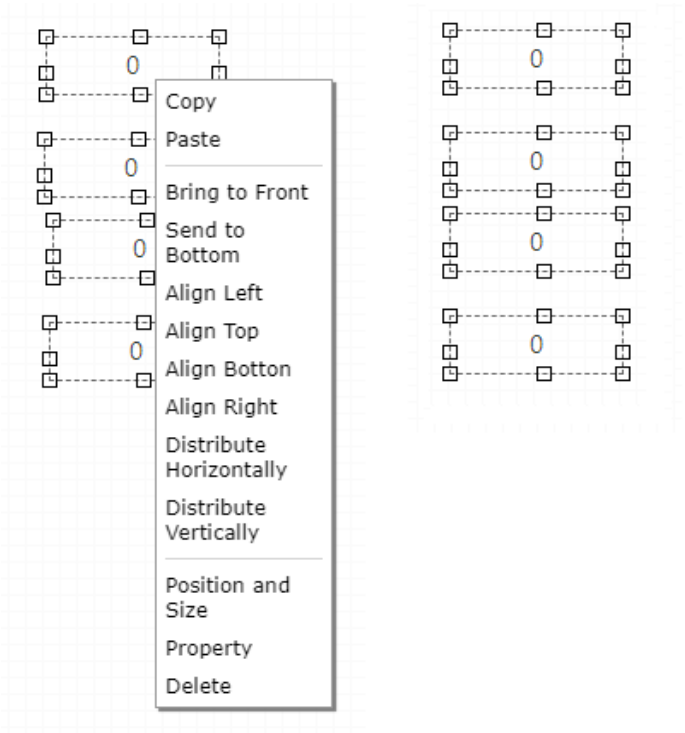
7 **Align Bottom:** Align items to the bottom.



8 **Align Right:** Align all the items along with the left side of the one at the top.






9 **Distribute Horizonally:** After selecting multiple items, choose “Distribute Horizonally” from the right click menu, then the selected objects would be distributed from left to right with equal spacing.

10 **Distribute Vertically:** After selecting multiple items, choose “Distribute Vertically” from the right click menu, then the selected objects would be distributed from top to bottom with equal spacing.

11 **Position and Size:** Set the position of X, Y coordinates and sizes of items, while sizes of some certain items cannot be modified, such as Weather.

12 **Property:** A configuration window would pop up for you to set item’s properties according to your requirements.

13 **Delete:** Click to delete the target item.

### 5.2.6 Toolbar

Users can drag and drop elements from the Toolbar option displayed on the left side of the web page. The Toolbar has 4 major categories including: Common, Graph, Control Items and Rea-time Data. These categories consists of elements to be introduced in the following section.

# 5.3 Items Description

## 5.3.1 Common Tools

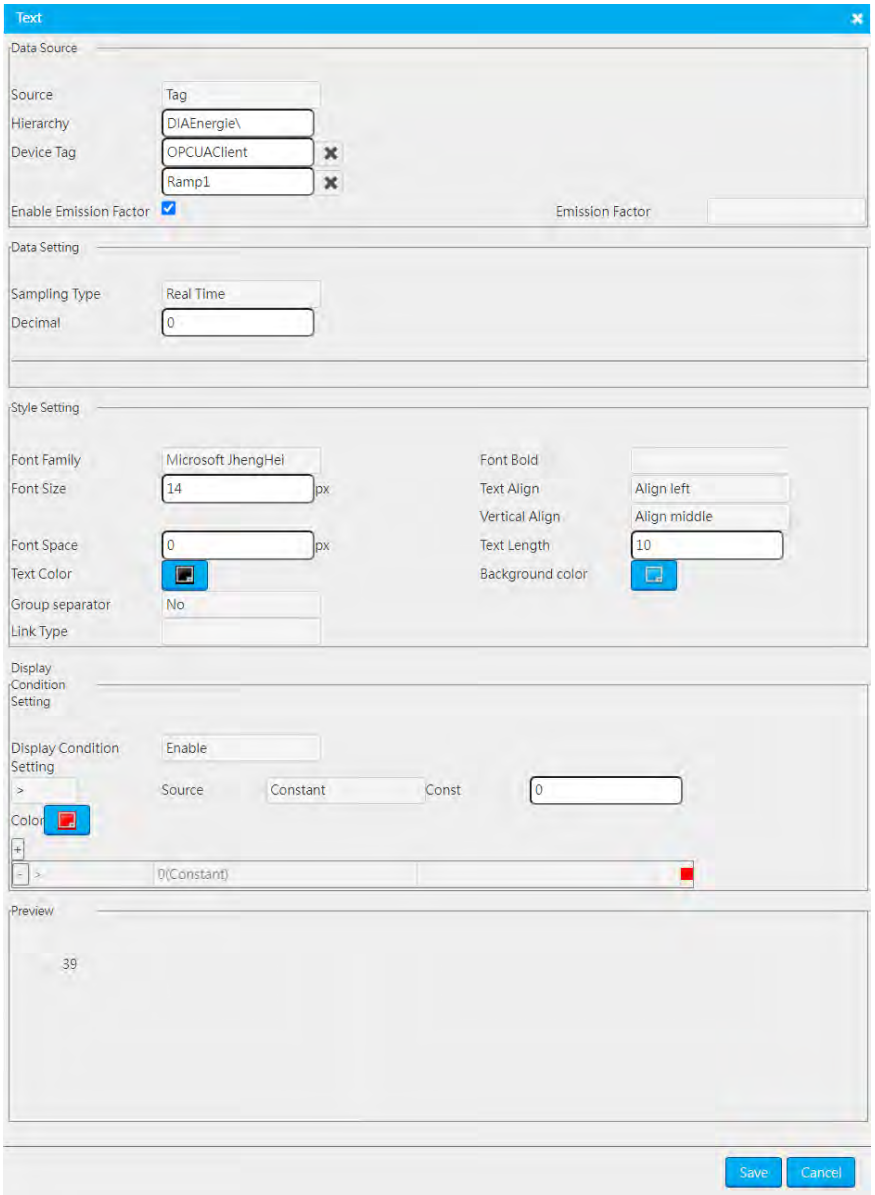
The first category in the Toolbar is Common tool and includes Basic as well as Import tools with descriptions below:

### 5.3.1.1 Basic

The Basic tool section include 12 kinds of items: Text, Textbox, Page Icon, Hierarchy Page Icon, Table, Default Page Setup, Clock, Digital Clock, Weather, Picture, CO2, User Input and Rectangle.

- **Text:**

The Text element allow users to present the desired text. Users can drag and drop the Text option for edit that includes data source such as Text / Text Area/ Tag / Internal Tag/ Energy Circuit. More details on text setting are explained below:



**1 Data Source**

- Source: Select Text/ Text Area/ Tag / Internal Tag/ Energy Circuit.
- **Enable Emission Factor** : It is disabled by default. If selected, a dropdown menu for emission factors will appear. This feature will multiply the tags by the corresponding coefficient set in the menu.
- **Emission Factor** : Dropdown menu, data sources are the emission factors configured in Chapter 9.5 Hierarchy.

**2 Data Setting**

- Sampling Type: Real Time/ Minute/ Hour/ Day/ Week/ Month/ Year

The following fields would be required when you choose Minute/ Hour/ Day/ Week/ Month/ Year as sampling type.

- Continuous interval: Check the box to take N numbers of continuous intervals for sampling. If the box is unchecked, the sampling intervals would be taken N numbers of intervals separated in every 1 hour.
- Interval: Select the desired number of intervals based on different data types.
- Update Frequency: No Update/ 1 Minute/ 5 Minutes/ 10 Minutes



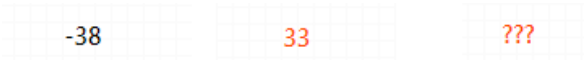
**3 Style Setting**

- **Font Family:** Set the font of your display text.
- **Font Bold:** Blank (Normal)/ Bold/ Italic.
- **Font Size:** Set the size of your display text.
- **Text Align:** Set the text alignment.
- **Vertical Align:** Set the vertical alignment for display text.
- **Font Space:** Change the spaces between texts.
- **Text Length:** Set the length of display text.
- **Text Color:** Select the color of display text.
- **Background Color:** Choose the color for display background.
- **Group Separator:** Choose Yes if thousand separators are required to be used for values.
- **Link Type:** Web/ Custom.
- **Link:** Set a hyperlink for web link type or choose a desired page for custom link type.

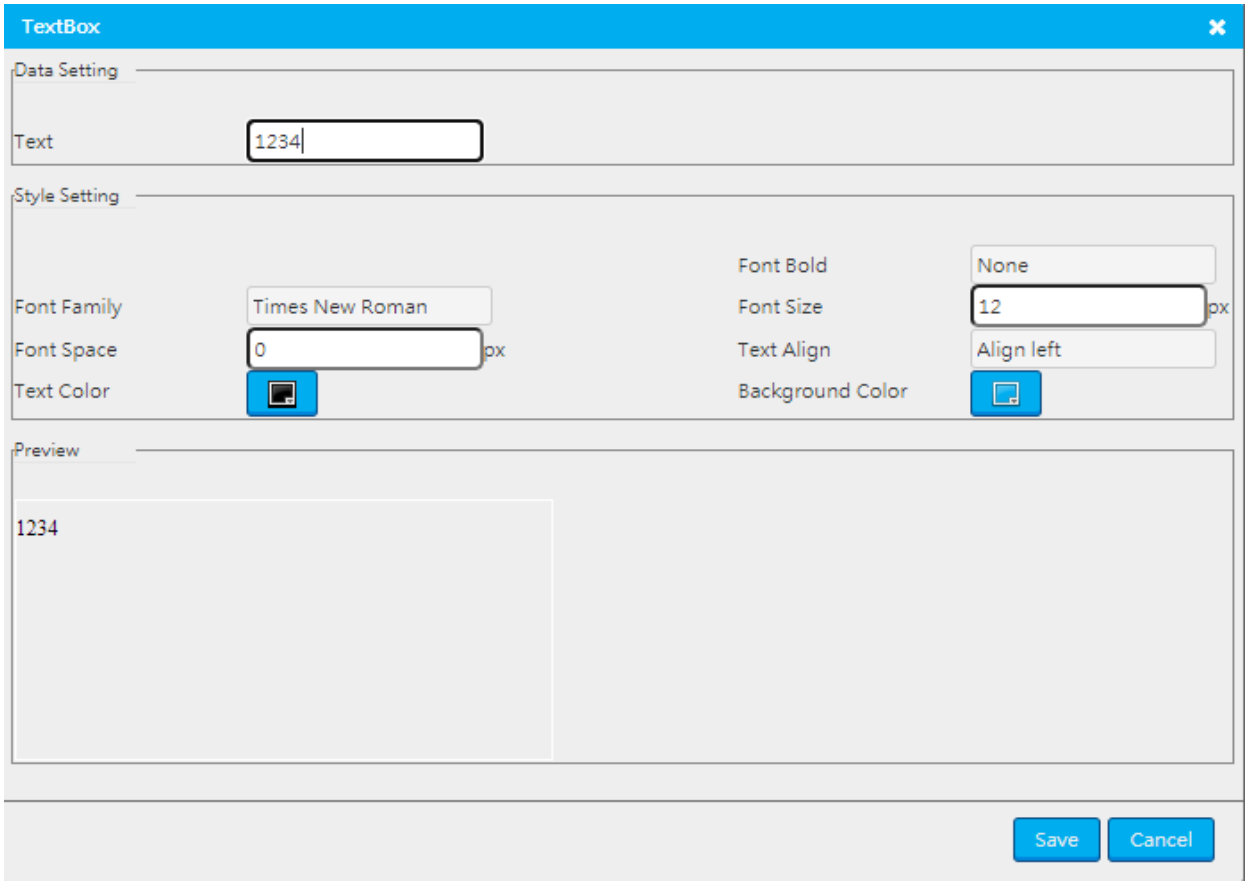
**4 Display Condition Setting:**

- **Display Condition Setting:** Enable/ Disable. The following settings would be required when this setting is set to enable.
- **Comparison Operator:** >/ </ >=/ <=/ =/ between/≠
- **Source:** Constant/ Tag/ Internal Tag/ Energy Circuit
- **Color:** Set the color of display text when the above conditions are met.
- **+:** More additional conditions can be configured in the fields at below, so texts would be displayed in the chosen color when one of these conditions is met.

**When the above conditions are not fulfilled, texts would be displayed in black. If sampling type is set to Real Time and the update frequency is exceeded by over 120 seconds, texts would be displayed as "???" which means disconnection.**



- **Manual Input:** Tt




**1 Data Setting**

- **Text:** Input the text content you would like to display.

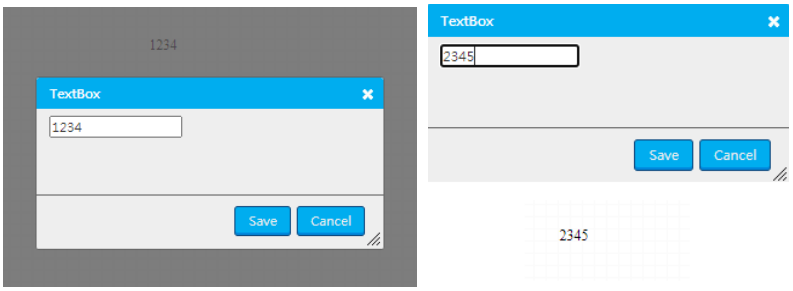
**2 Style Setting**

- **Font Family:** Set the font of your display text.
- **Font Bold:** Blank (Normal)/ Bold/ Italic.
- **Font Size:** Set the size of your display text.
- **Text Align:** Set the text alignment.
- **Vertical Align:** Set the vertical alignment for display text.
- **Font Space:** Change the spaces between texts.
- **Text Color:** Select the color of display text.
- **Background Color:** Choose the color for display background.

**3 Preview**

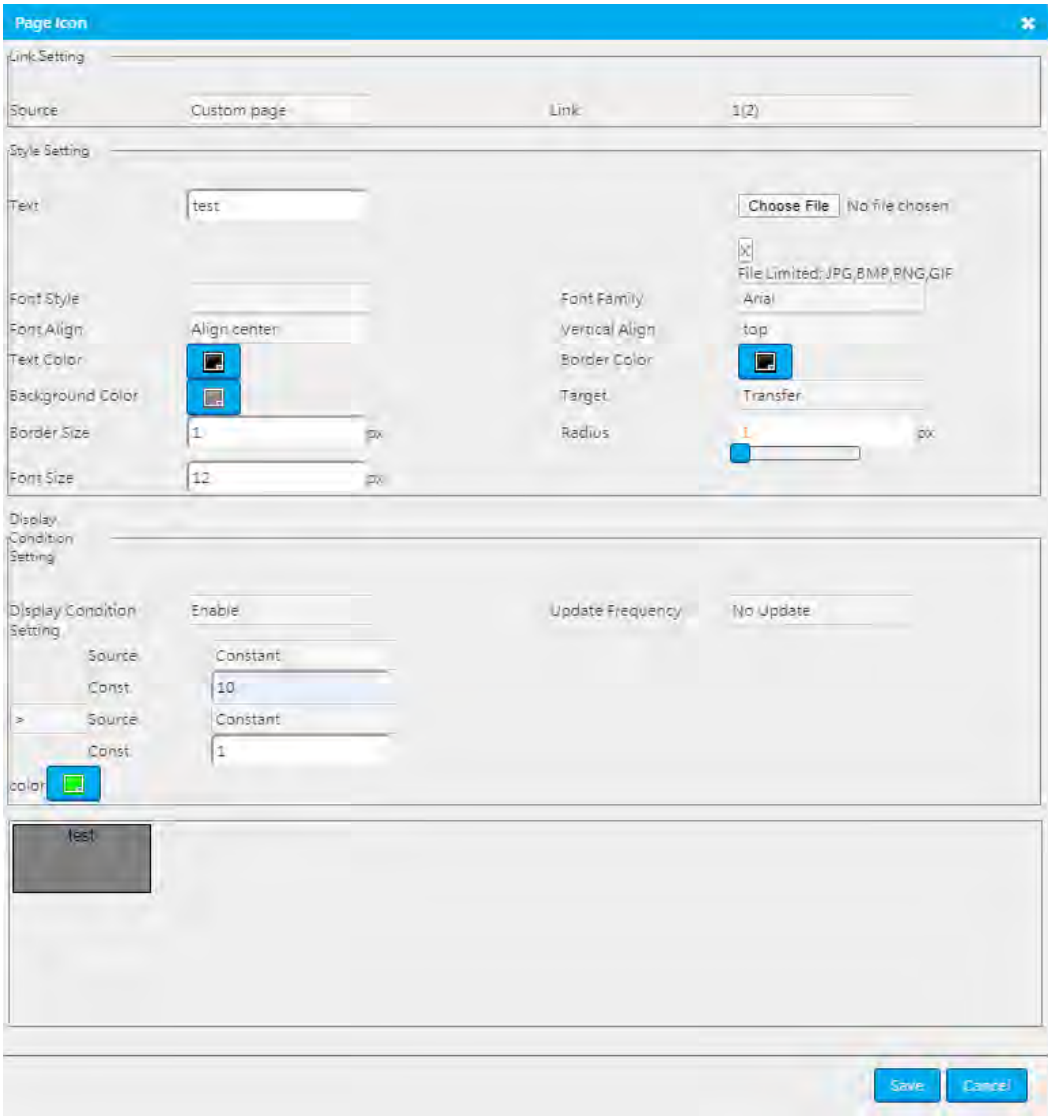
- **Item preview area**

**4 Display on Preview Page**



- **Page Icon:**

Page icon provides you an item with shortcut feature such as a hyperlink. By clicking this item, you would be directed to an internal or external web page which the web link source must be set first in the configuration window. More details on page icon setting are explained below:




1 **Link Setting**

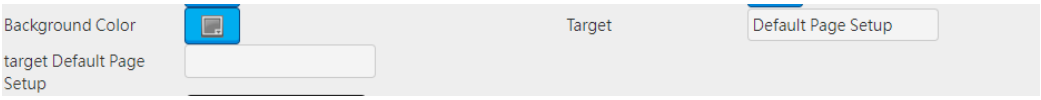
- **Source:** Web/ Custom Page. Web source is set for links to external web pages, while custom page is set for directing to other pages in DIAEnergie.
- **Link:** Enter a web address/ Select a desired page.

2 **Style Setting**

- **Text:** Input the texts or upload a picture to display on the page icon button.
- **Font Bold:** Blank (Normal)/ Bold/ Italic.
- **Font Family:** Set the font of your display text.
- **Text Align:** Set the text alignment.
- **Vertical Align:** Set the vertical alignment for display text.
- **Text Color:** Select the color of display text.
- **Border Color:** Set the color of borders.
- **Background Color:** Choose the color for display background.
- **Target**：Transfer / Pop up Block Window / Default Page Setup.

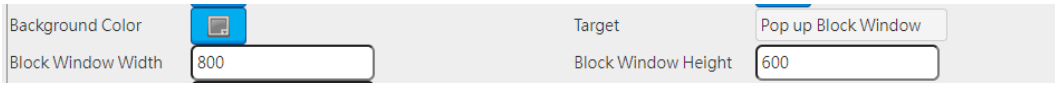
◆ **Default Page Setup**

- **Target Default Page Setup**： The dropdown menu will retrieve web components embedded on the same page, using the component names as the selection criteria.




◆ **Pop up Block Window**

- **Block Window Height**：If target is set to pop up block window, this setting is required to determine the height of pop-up window.
- **Block Window Width**：If target is set to pop up block window, this setting is required to determine the width of pop-up window.




- **Border Size:** Set the border width.
- **Radius:** Set corner radius for the round frame.
- **Font size:** Set the size of display texts.

3 **Display Condition Setting:**

- **Display Condition Setting:** Enable/ Disable. The following settings would be displayed only when this field is set to Enable.
- **Update Frequency:** Set the time interval for updating display conditions.
- **Source 1:** Constant/ Tag/ Internal Tag/ Energy Circuit
- **Comparison Operator:** >/ </ >=/ <=/ =/ between/≠
- **Source 2:** Constant/ Tag/ Internal Tag/ Energy Circuit
- **Color:** Set the color of display text when the conditions are met.

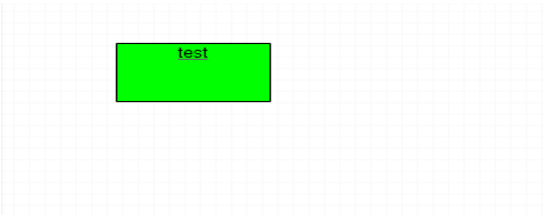
4 **Preview**

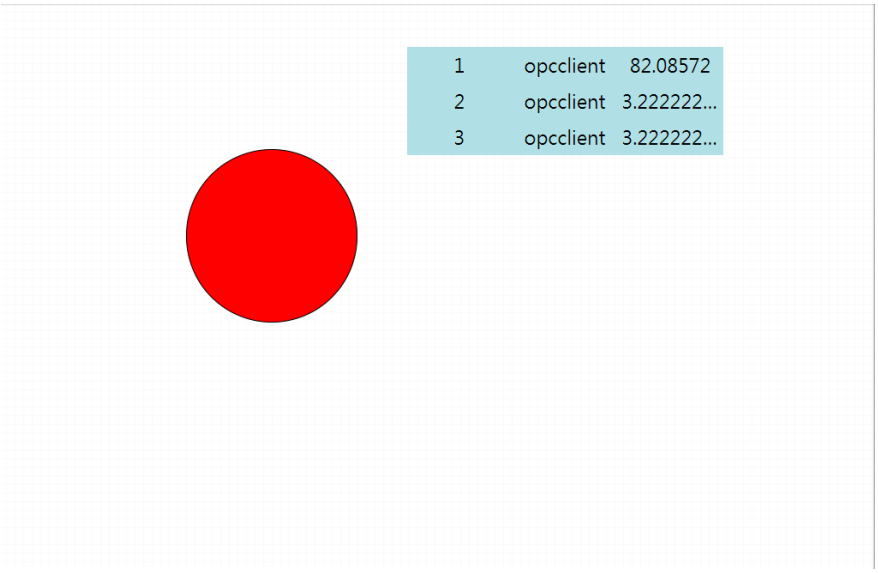
- **Item preview area**

5 **Display on Preview Page**

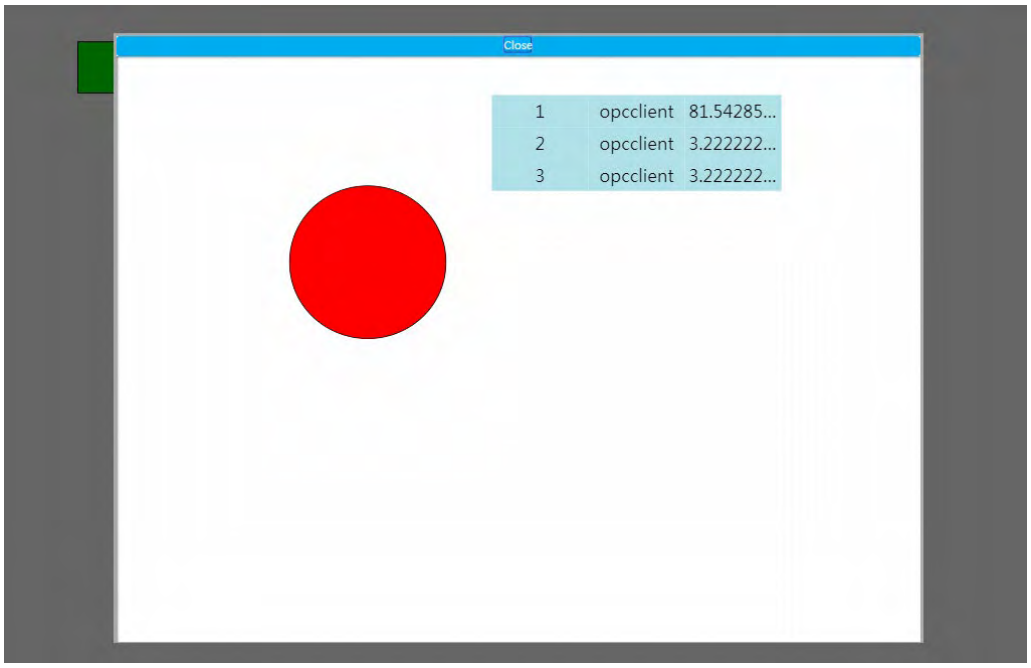


**When the configured conditions are not fulfilled, the background color would be grey which would turn green once the conditions are met. If Source is set to custom page, click the item and you would be directed to the target page selected via Link under link setting.**



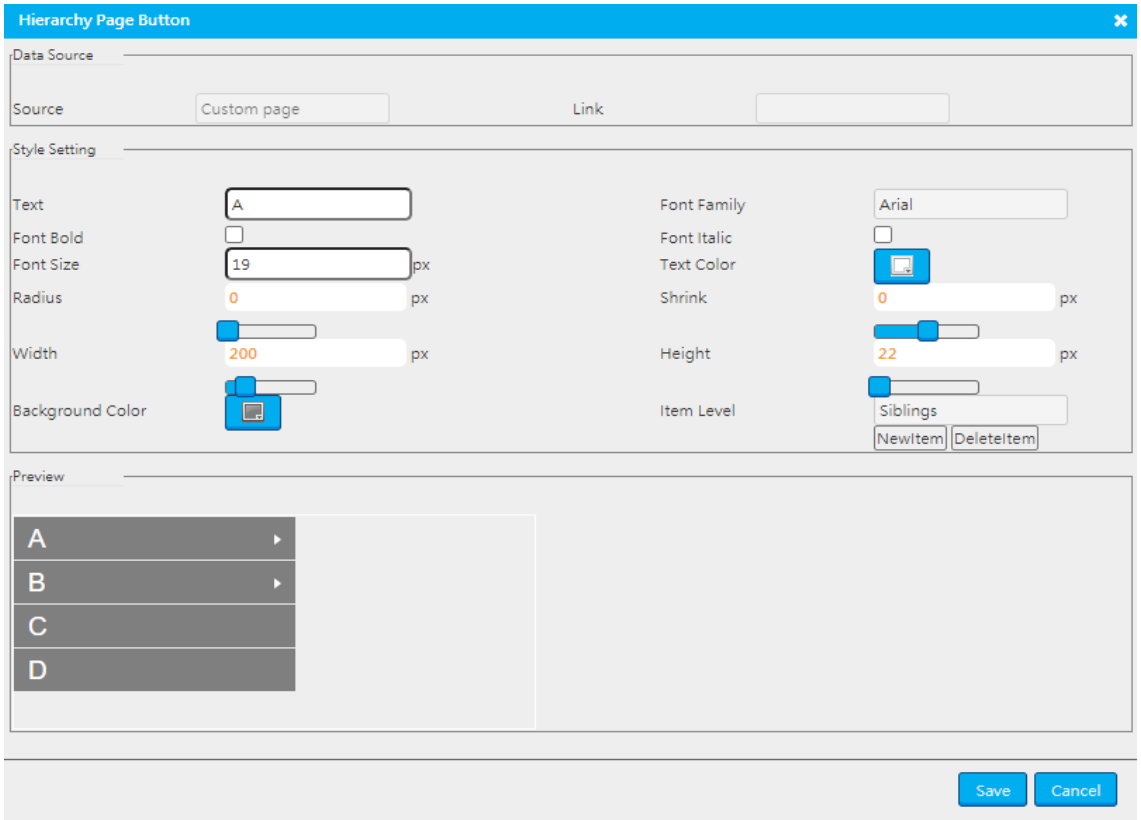



**If Target is set to pop up block window, all linked pages would be shown in the display block.**

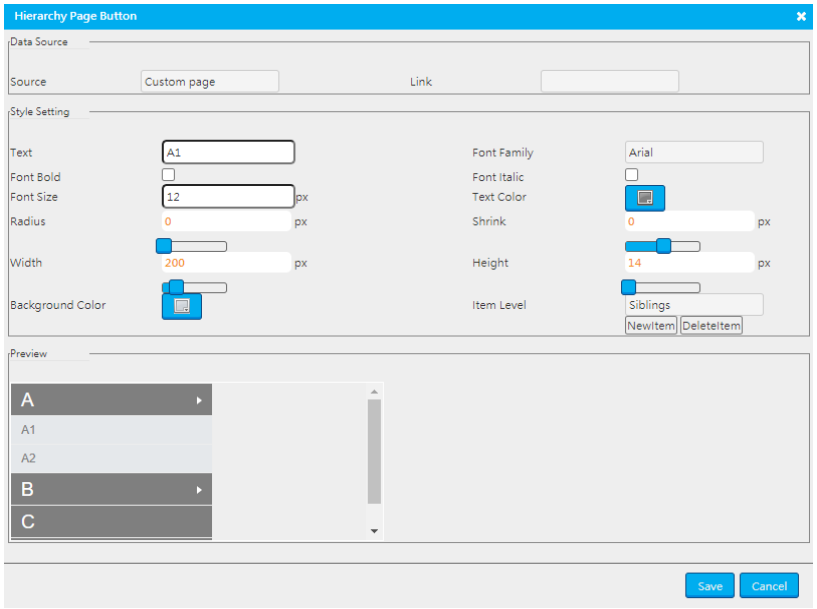


- **Hierarchy Page Icon:**

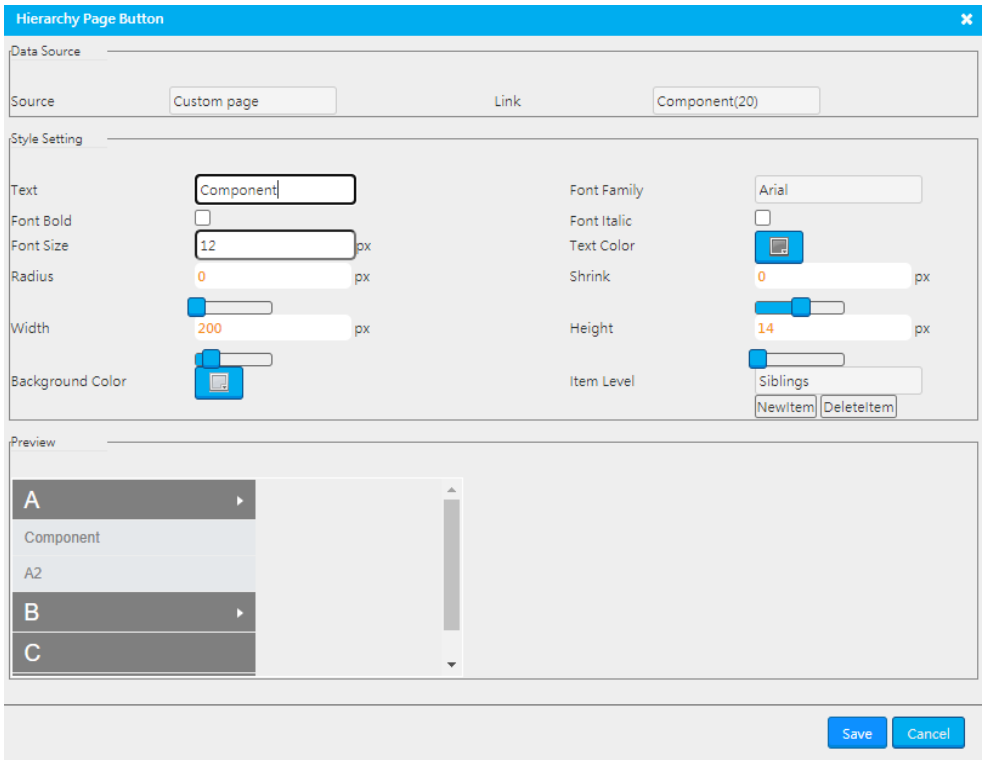
Like Page Icon; however, the difference is that you are allowed to effectively classify items with hierarchy levels based on your needs which the link source must be set first in the configuration window. More details on hierarchy page icon setting are explained below:




Click on the desired parent or child level to configure the settings, while sources of the former can not be specified. Properties would be shown after clicking on the desired child level A1.



Change the display text of A1 to Component and set Source to Custom page as well as setting Link to Component page.




1 **Link Setting**

- **Source:** Web/ Custom Page. Web source is set for links to external web pages, while custom page is set for directing to other pages in DIAEnergie.
- **Link:** Enter a web address/ Select a desired page.

2 **Style Setting**

- **Text:** Input the texts or upload a picture to display on the page icon button.
- **Font Bold:** Check the box to convert regular text into bold text.
- **Font Italic:** Check the box to convert regular text into italic text.
- **Font Family:** Set the font of your display text.
- **Text Color:** Select the color of display text.
- **Background Color:** Choose the color for the button's background.
- **Target:** Transfer/ Pop up Block Window.
- **Height:** If target is set to pop up block window, this setting is required to determine the height of pop-up window.

- **Width:** If target is set to pop up block window, this setting is required to determine the width of pop-up window.
- **Radius:** Set corner radius for the round frame.
- **Font size:** Set the size of display texts.

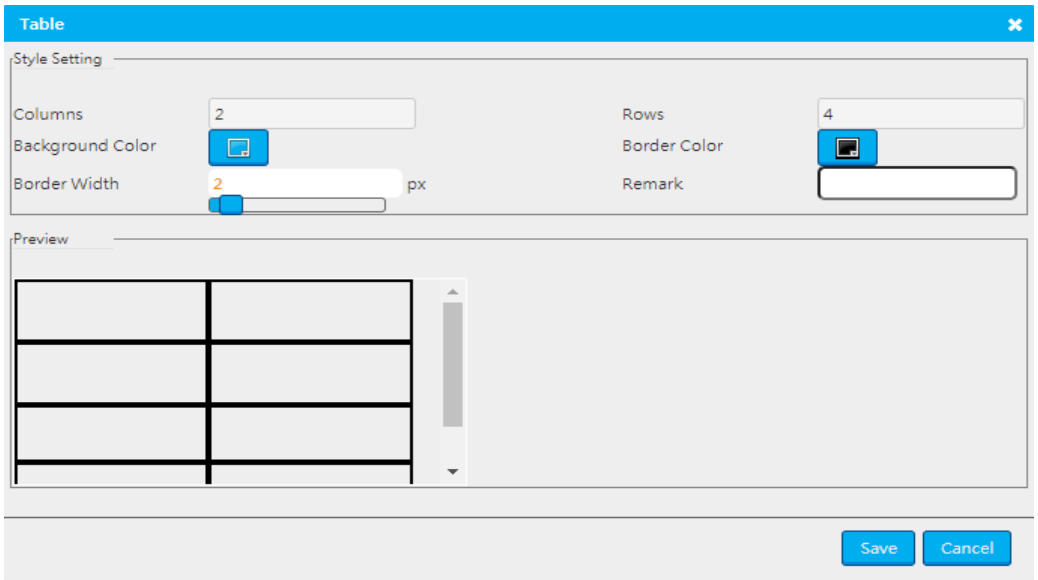
3 **Preview**

- **Item preview area**

4 **Display on Preview Page**

- **Table:**

You can use this item to draw tables. As for adding text above the table, you would still need another item “Text” to complete.




1 **Style Setting**

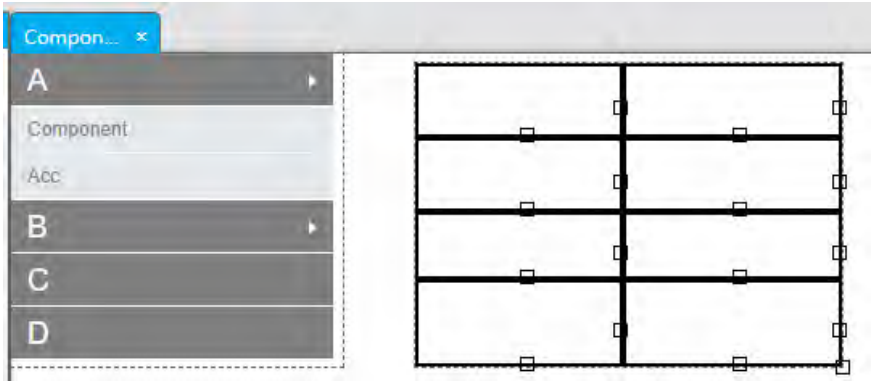
- **Columns:** Set the number of columns.
- **Rows:** Set the number of rows.
- **Border Color:** Select the color of borders.
- **Background Color:** Choose the color for the button’s background.
- **Border Width:** Determine the width of the border using a number.

2 **Preview**

■ **Item preview area**

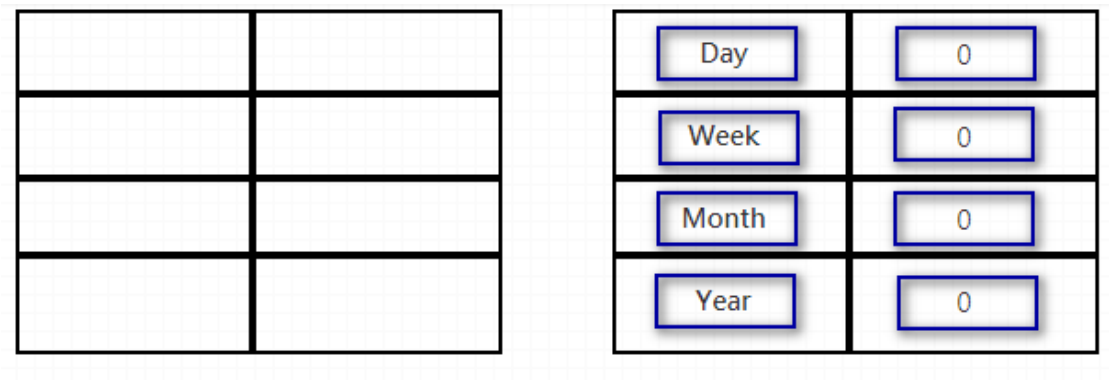
3 **Display on UI Design Page**

■ Click on the table and adjust the size of a table or of columns or rows as easy as dragging with the pointer.



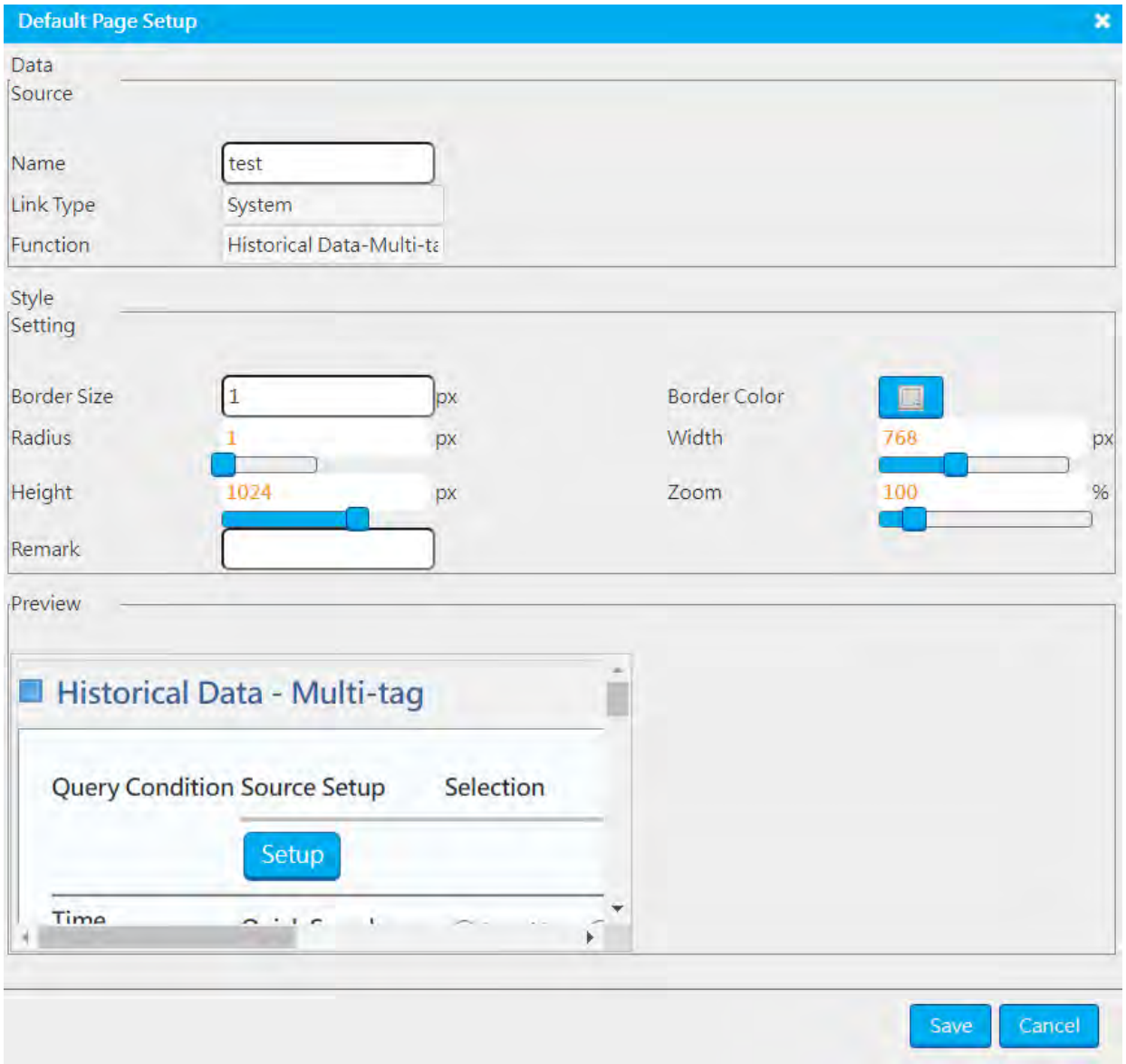

4 **Display on Preview Page**

**A blank table is displayed on the left side. By using Text items, the table can be displayed as the one on the right side. (Those with blue borders are text items.)**



- **Default Page Setup**：

The **Default Page Setup** component is used in conjunction with the page-switching button for navigating between pages.



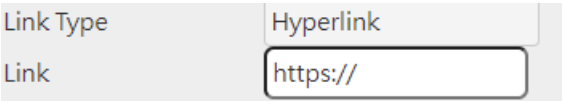

- **Data Source**

  - **Name**：The component name, which should be easily recognizable if needs to be used in conjunction with page-switching buttons.

- **Link Type**：Hyperlink / System / UIDesign。

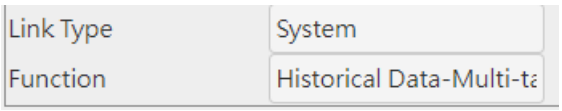
  - **Hyperlink**：It is not recommended to use this feature as most websites have enabled anti-embedding functionality.

    - **Link**：Enter the URL.




  - **System**：

    - **Function**：Dropdown menu with options is Historical Data-Multi-tag/Taiwan Electricity Tariff Analysis.




  - **UIDesign**：

    - **Page**：Dropdown menu, which sourced from pages added by UI design.

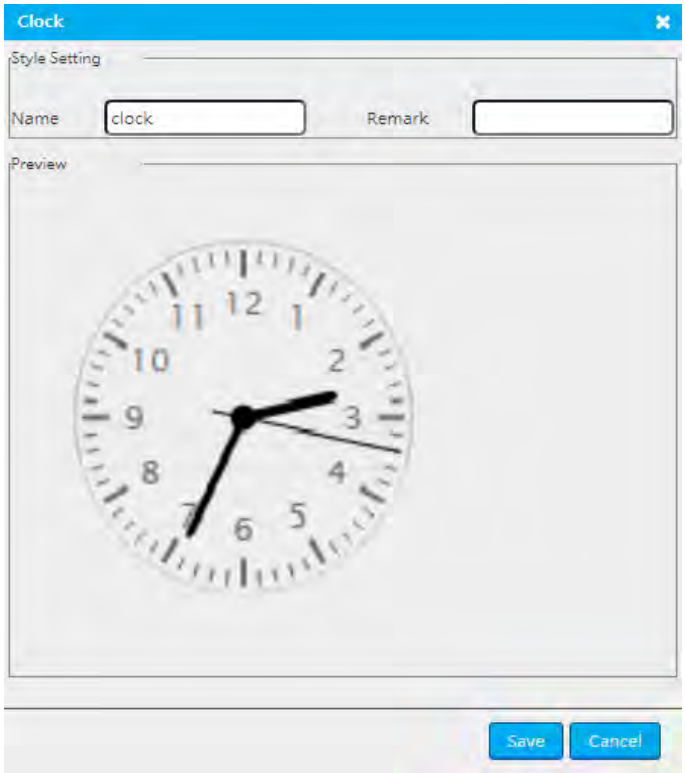
5

- **Style Setting**

  - **Border Size**： Setting for border size in Default Page Setup.
  - **Border Color**： Setting for border color in Default Page Setup.
  - **Radius**： Setting for radius in Default Page Setup.
  - **Width**： Setting for visible range width in Default Page Setup.
  - **Height**： Setting for visible range height in Default Page Setup.
  - **Zoom**： If the size of the default page is larger than the height and width set for the default webpage, users can use this function to shrink the page within the embedded frame.
  - **Remark**：Additional notes.

- **Clock:**

A clock can be displayed on the page by using Clock items. More details on clock setting are explained below:




1 **Style Setting**

- **Name:** Item's name; required.
- **Remark:** Enter additional notes.

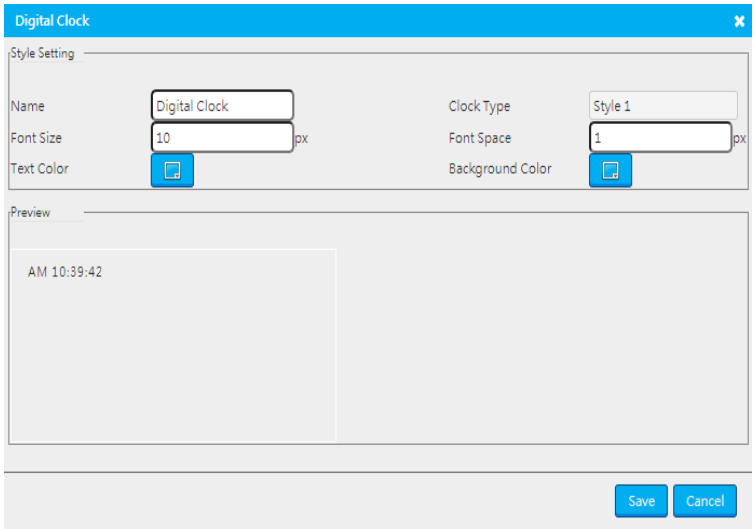
2 **Preview**

- **Item preview area**

3 **Display on Preview Page**

- **Digital Clock:**

Display the time in 12/24-hour format by using this item. More details on digital clock setting are explained below:




1 **Style Setting**

- **Name:** Item's name; required.
- **Clock Type: Style 1/ Style 2/ Style 3/ Style 4**

| | |
|---|---|
| **Style 1** | PM/AM Hour: Minute: Second (12-hour format) |
| **Style 2** | Hour: Minute: Second (24-hour format) |
| **Style 3** | Year / Month / Day Hour : Minute: Second (24-hour format) |
| **Style 4** | Year / Month / Day PM/AM Hour : Minute: Second (12-hour format) |

- **Font Size:** Set the size of display texts.
- **Font Space:** Change the spaces between texts.
- **Text Color:** Select the color of display text.
- **Background Color:** Choose the color for display background.

2 **Preview**

- **Item preview area**

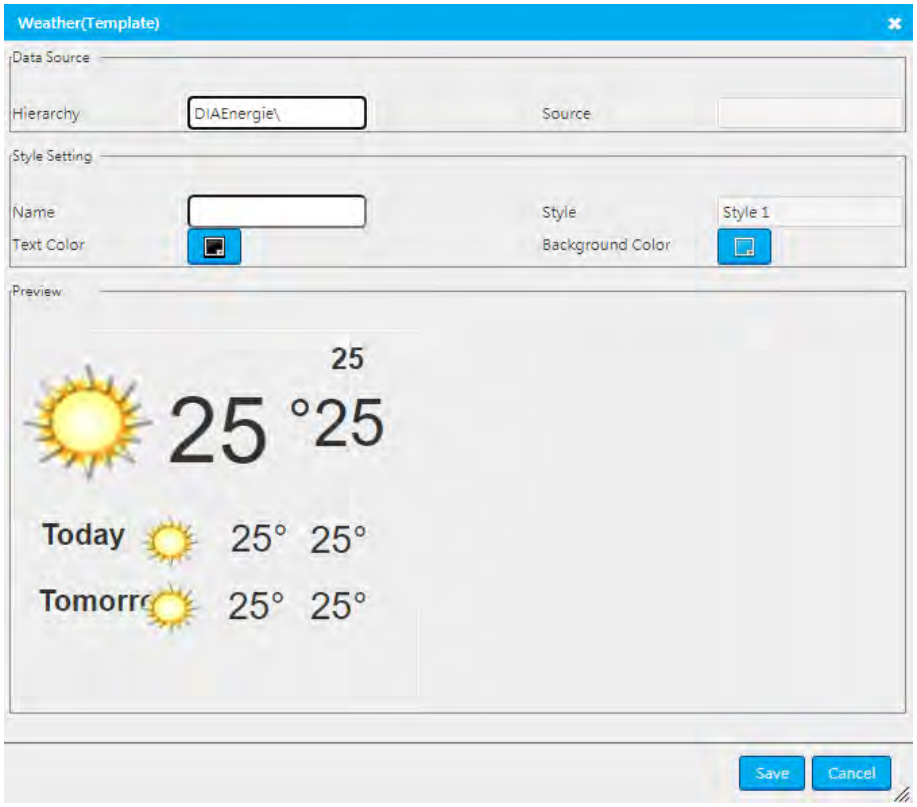
3 **Display on Preview Page**

| Style 1 | Style 2 | Style 3 | Style 4 |
|---|---|---|---|
| AM 10:43:01 | 10:42:25 | 2020/9/30 10:42:39 | 2020/9/30 AM 10:42:49 |

- **Weather (Template):**

Display the real-time weather information of the chosen area by using this item. More details on weather setting are explained below:

**Note:** After getting OpenWeather API Token, create internal tags for weather and edit variables via VBScript which is detailed in appendix.




**1. Data Source**

- **Hierarchy:** Select the desired hierarchy level for the weather tag.
- **Source:** Select the desired weather tag to be displayed.

**2. Style Setting**

- **Name:** User-defined.
- **Text Color:** Select a color for display text.
- **Background Color:** Choose a color for the background.
- **Style:** Style 1/ Style 2/ Style 3

| Style 1 | Style 2 | Style 3 |
|---|---|---|
| | | |

**3. Preview**

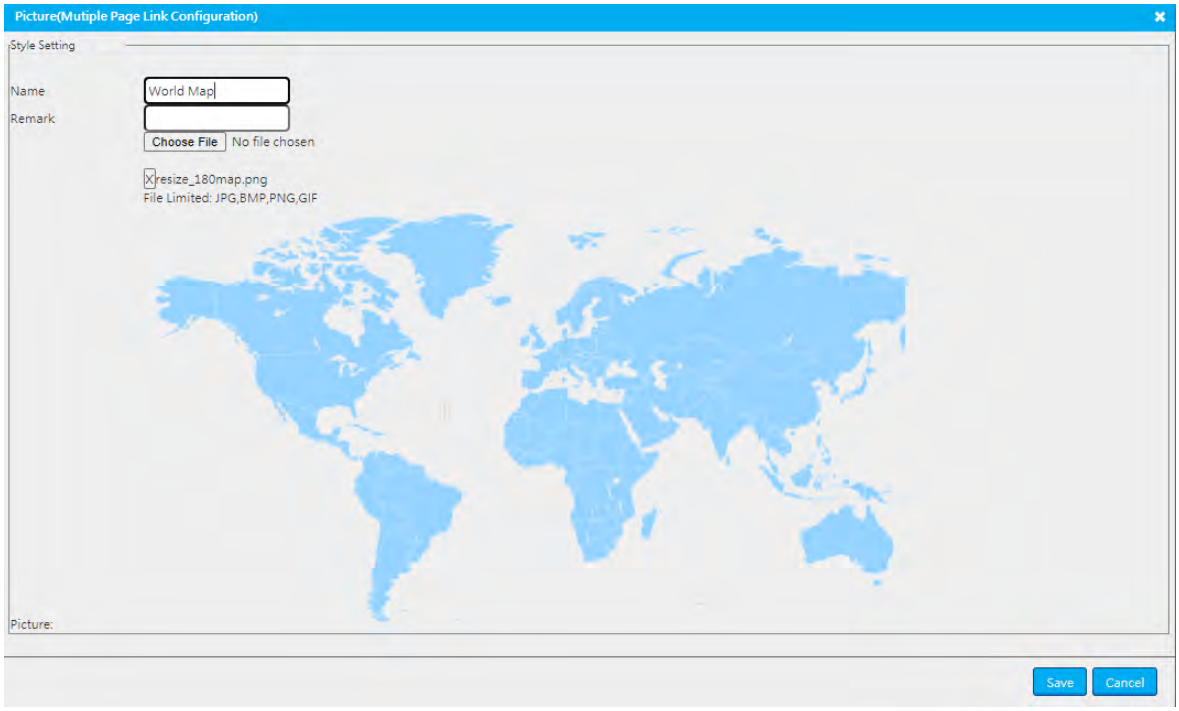
- **Item preview area**

**4. Display on Preview Page**

| Style 1 | Style 2 | Style 3 |
|---|---|---|
| | | |

- **Picture (Multiple Page Link Configuration):**

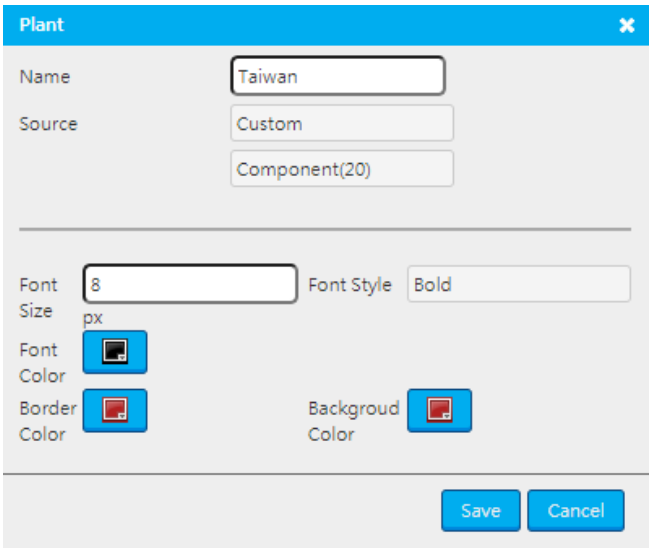
After selecting the desired picture file to upload and inserting the picture to the page, you are allowed to double-click any place on the picture to add hyperlinks or link to custom pages and there would be a tag displayed on the map in Preview.




**1. Style Setting**

- **Name:** Item's name; required.
- **Remark:** Additional notes.
- **Choose File:** Select the desired picture.
- **X:** Remove the selected picture.
- **Picture:** Image previews.

Click on the target place on the picture and the plant setting window would pop up.




- **Name: Enter the tag name; required.**
- **Source: Hyperlink/ Custom**

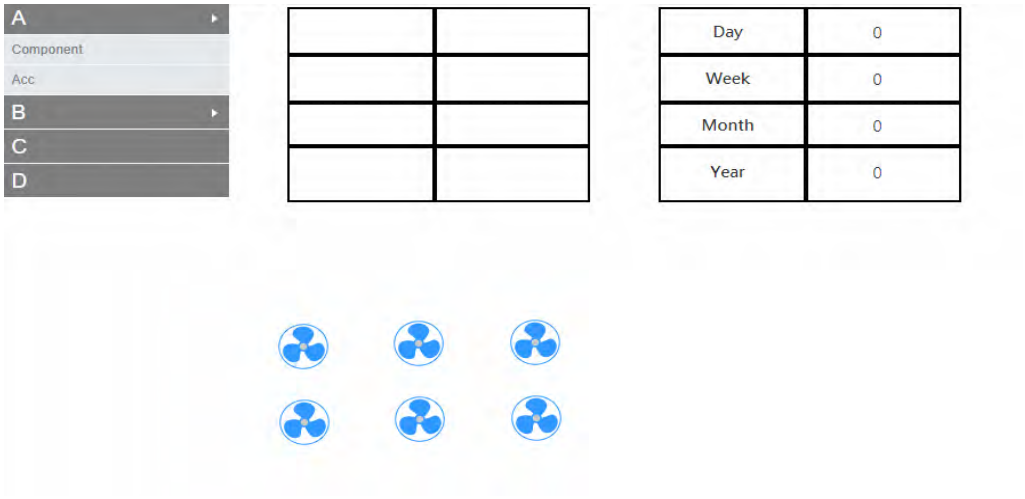
  Hyperlink is set for hyperlink addresses, while custom is set for directing to other pages in DIAEnergie.
- **Font Size:** Set the size of display texts.
- **Font Style:** Change the font of texts.
- **Text Color:** Select the color of display text.
- **Border Color:** Choose the color for borders.
- **Background Color:** Choose the color for display background.

After finishing configuring, the picture would be displayed ass follows.

To delete the tag, right click on it and choose Delete from the pop-up menu. To modify the settings, choose Property.

Go to Preview and click on the tag.

The page would jump to the target page configured in the source settings.



- **CO2:**

Display the real-time status of carbon dioxide concentration by using this item.

1 **Data Source**

- **Name:** User-defined.
- **Source:** Tags including device tags and internal tags.
- **Enable Emission Factor**：Default disabled; when checked, a dropdown menu for emission factors will appear. This function will multiply the tags by the corresponding coefficients set.
- **Emission Factor**：Dropdown menu, data sources are the emission factors configured in Chapter 9.5 Hierarchy.
- **Hierarchy:** Select the hierarchy level where the target tag belongs.
- **Device:** Select the target device.
- **Internal Tag:** Select the target tag.

2 **Style Setting**

- **Text Color:** Select the color of display text.
- **Leaf Style:** Style 1 /Style 2/Style 3

| Style 1 | Style 2 | Style 3 |
|---|---|---|
| | | |

- **Style:** Style 1 /Style 2/Style 3

| Style 1 | Style 2 | Style 3 |
|---|---|---|
| | | |

3 **Preview**

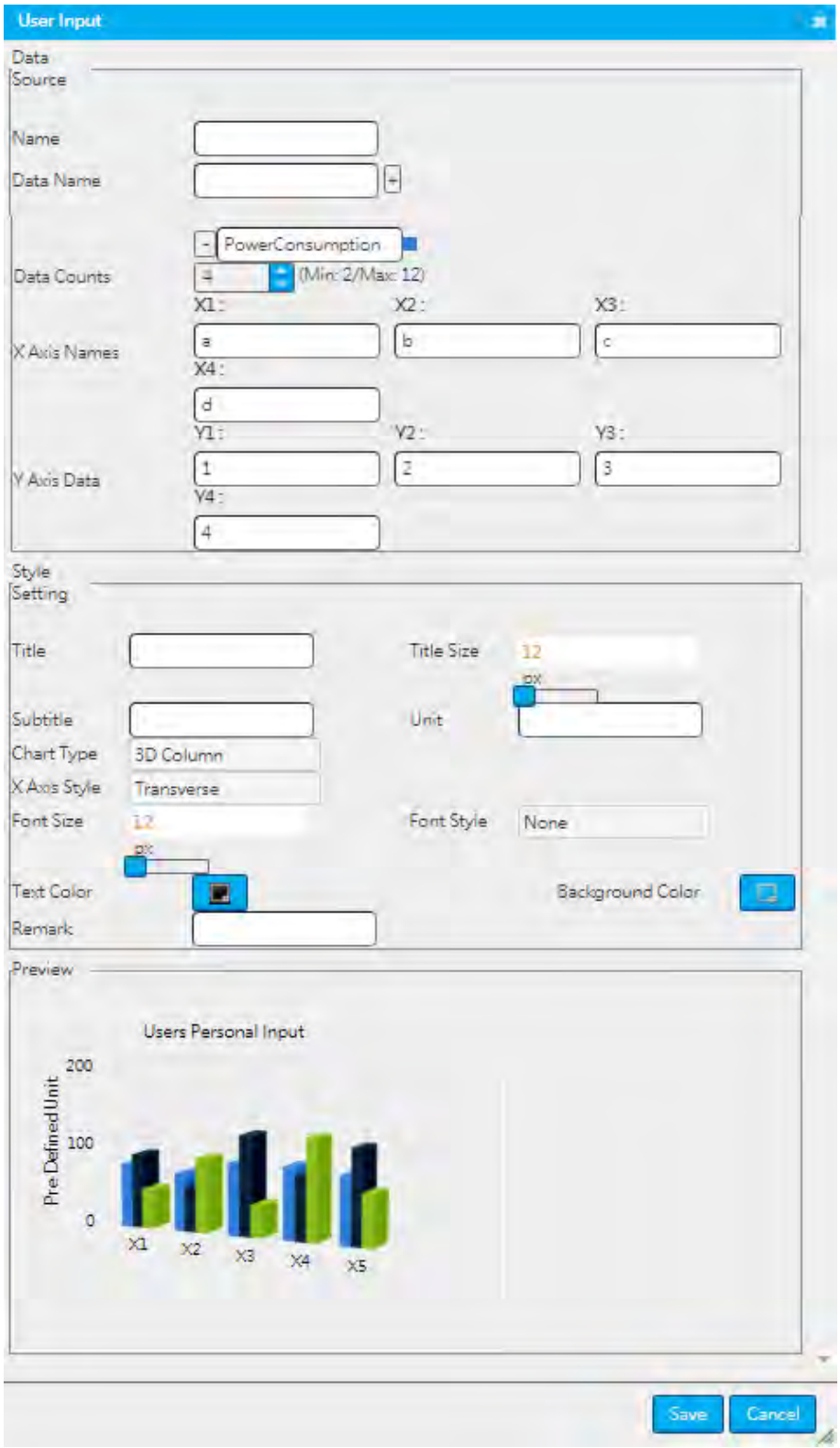
- **Item preview area**

4 **Display on Preview Page**

| Style 1 | Style 2 | Style 3 |
|---|---|---|
| | | |

- **User Input:**

Enter information of X and Y axis and select a proper chart type as well as font-related settings by using this item so as to create charts without device information.



1 **Data Source**

- **Name:** User-defined
- **Data Name:** Sequence name
- **:** Add more sequences.
- **Data Counts:** Counts of X and Y axis data in the sequence
- **X Axis Names:** Set the display name for X axis.
- **Y Axis Data:** Set the display figure for Y axis.

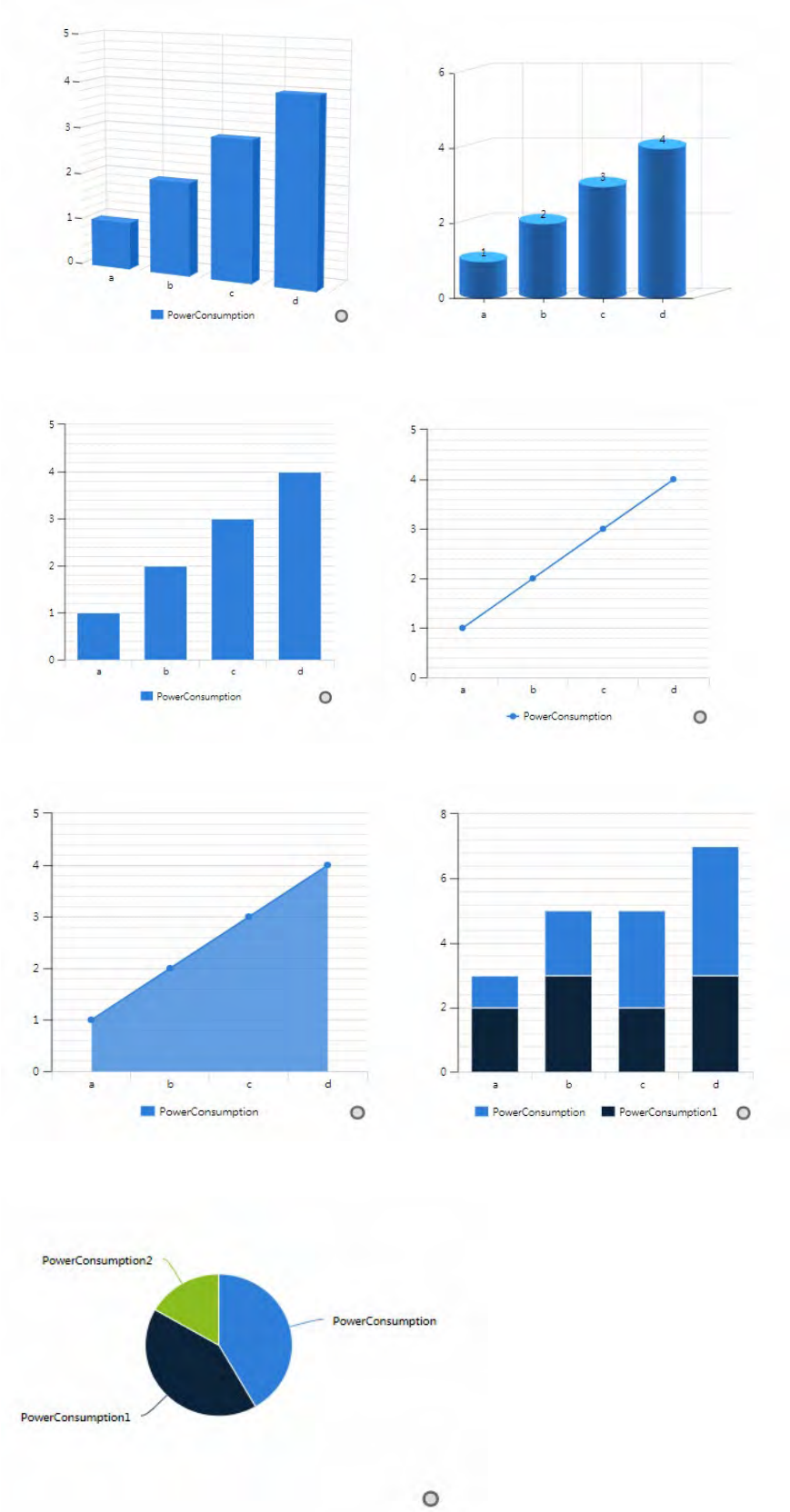
2 **Style Setting**

- **Title:** Set the title for the chart.
- **Title Size:** Set the text size of chart title.
- **Subtitle:** Set the subtitle for the chart.
- **Unit:** Set the unit displayed on the chart.
- **Chart Type:** 3D Column/ Cylinder/ Column/ Bar/ Line/ Curve/ Pie/ 3D Pie/ Area /Stack
- **X Axis Style:** Set the style of X axis toTransverse or Oblique.
- **Font Size:** Set the size of display texts on the chart.
- **Font Style:** Change the font style with options: None, Bold and Italic.
- **Text Color:** Change the color of display texts.
- **Background Color:** Choose the color for display background.
- **Remark:** Additional notes.

3 **Preview**

- **Item preview area**

## 4 Display on Preview Page

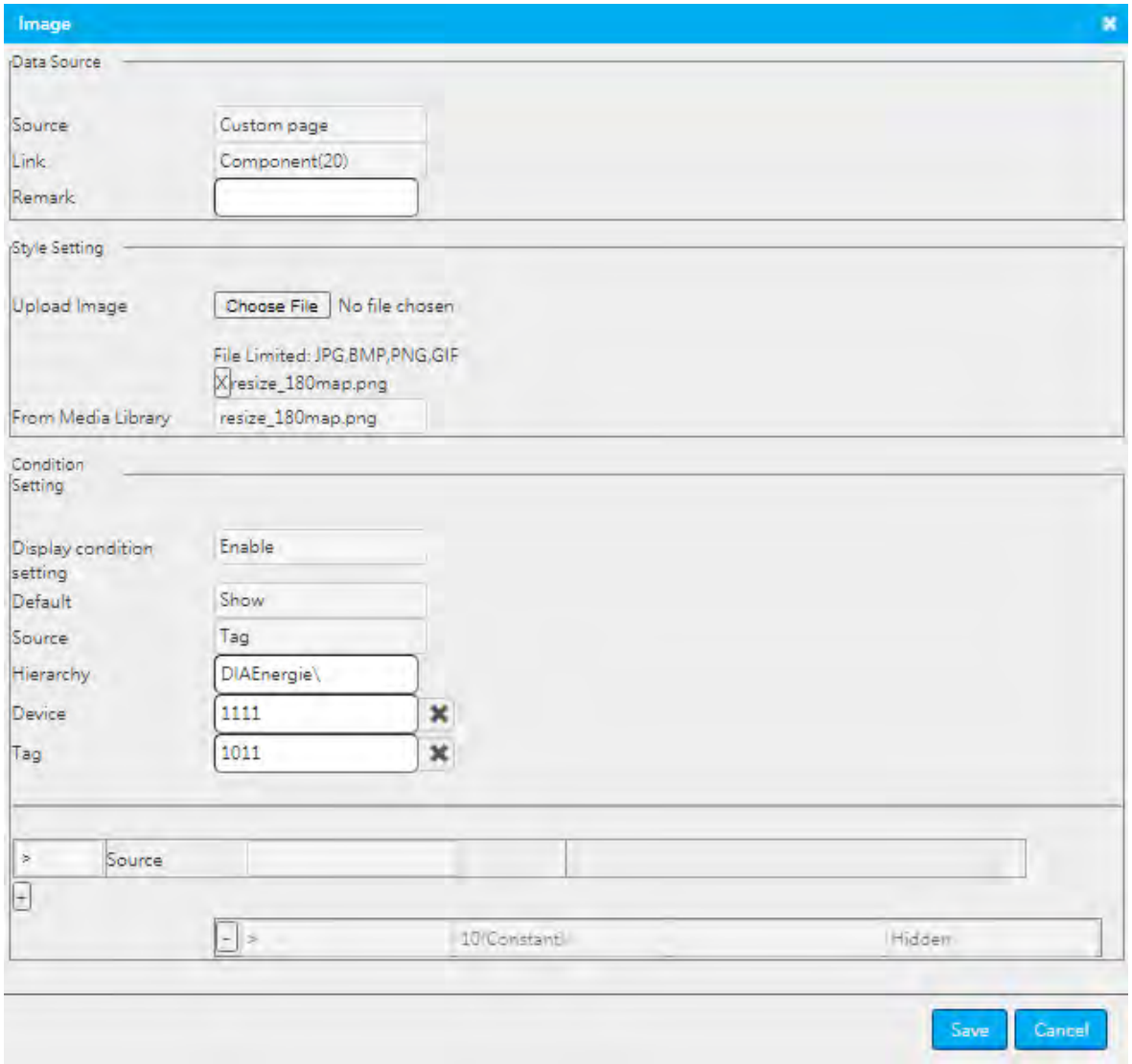


### 5.3.1.2 Import Tools

There are a total of three items under import tools, which are Picture, Video and Flash.

- **Picture:**

You can upload pictures to the page and go to any pages specified in picture settings by using picture items, in other words, this item can be used as a shortcut for user convenience. More details on picture setting are explained below:




1 **Data Source**

- **Source:** Web/ Custom Page
- **Link:** Enter a web address/ Select a desired page in DIAEnergie.

2 **Style Setting**

- **Upload Image:** Select the desired image to upload. (Only accepts JPG, BMP, PNG, GIF)
- **From Media Library:** If the image has been uploaded before, you can find it from the drop-down list of media library.

3 **Condition Setting**

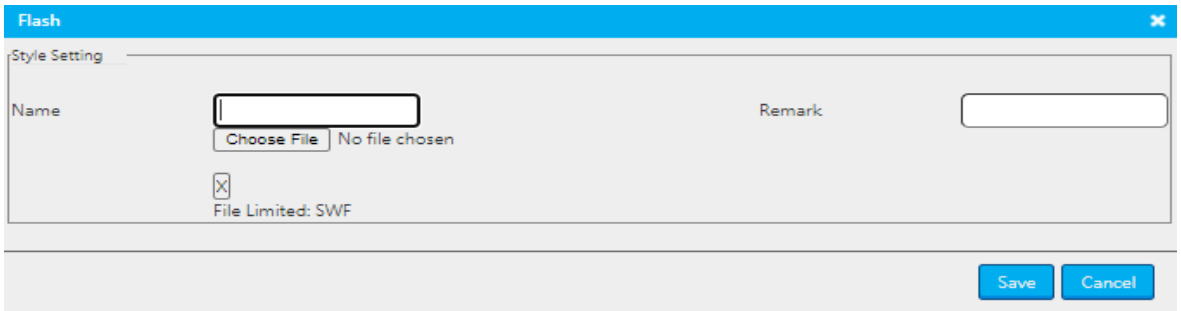
- **Display condition setting:** Enable/ Disable
- **Default:** Show/ Hidden
- **Source:** Tag/ Internal Tag/ Energy Circuit
- **Hierarchy:** Select the target hierarchy.
- **Device:** A specific device needs to be chosen if the source is set to Tag.
- **Tag:** According to Source setting, select a device tag or an internal tag.
- **Energy Type:** A specific energy type needs to be chosen if the source is set to Energy Circuit.
- **Operator:** > / = / < / ≠ / ≦ / ≧ / between
- **Source:** Constant/ Tag/ Internal Tag/ Energy Circuit
- **Constant:** Input the desired constant if Source is set to Constant.
- **Hierarchy:** Hierarchy levels need to be specified when Source is set to Tag, Internal Tag or Energy Circuit.
- **Device:** A specific device needs to be chosen if the source is set to Tag.
- **Tag:** According to Source setting, select a device tag or an internal tag.
- **Energy Type:** A specific energy type needs to be chosen if the source is set to Energy Circuit.
- **+:** Add conditions to the field below.

4 **Display**

In case that Default is set to Show, the picture would be hidden when the conditions are met which would not be disappeared but to change by increasing opacity.

- **Flash:**

Upload flash videos to the page with this item and the configuration which are detailed as follows:




1 **Style Setting**

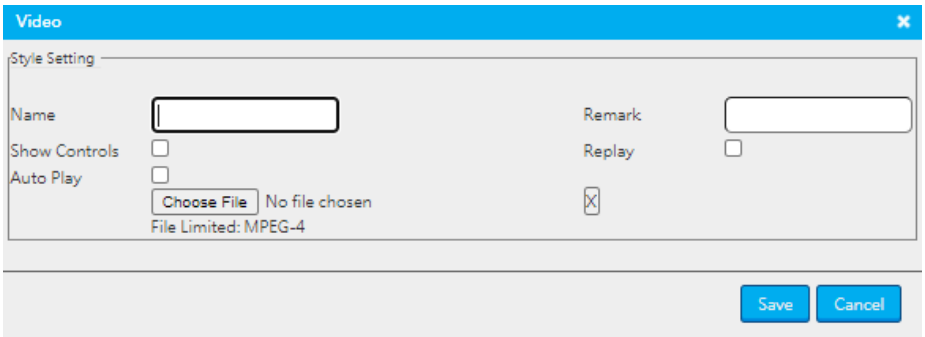
- **Name:** Item's name
- **Remark:** Additional note
- **Choose File:** Select the flash file to upload. (Only SWF files are accepted.)
- : Remove the chosen flash file.

5

2 **Preview**

- **Video:**

Upload videos to the page with this item and the configuration which are detailed as follows:




1 **Style Setting**

- **Name:** Item's name
- **Remark:** Additional notes
- **Show Controls:** Show video controls.
- **Replay:** Play the video repeatedly.
- **Auto Play:** Play the video automatically.
- **Choose File:** Select the video file to upload. (Only SWF files are accepted.)
- ☒: Remove the chosen video file.

2 **Preview**

If the box of show controls is not checked, the control tools would not be displayed.

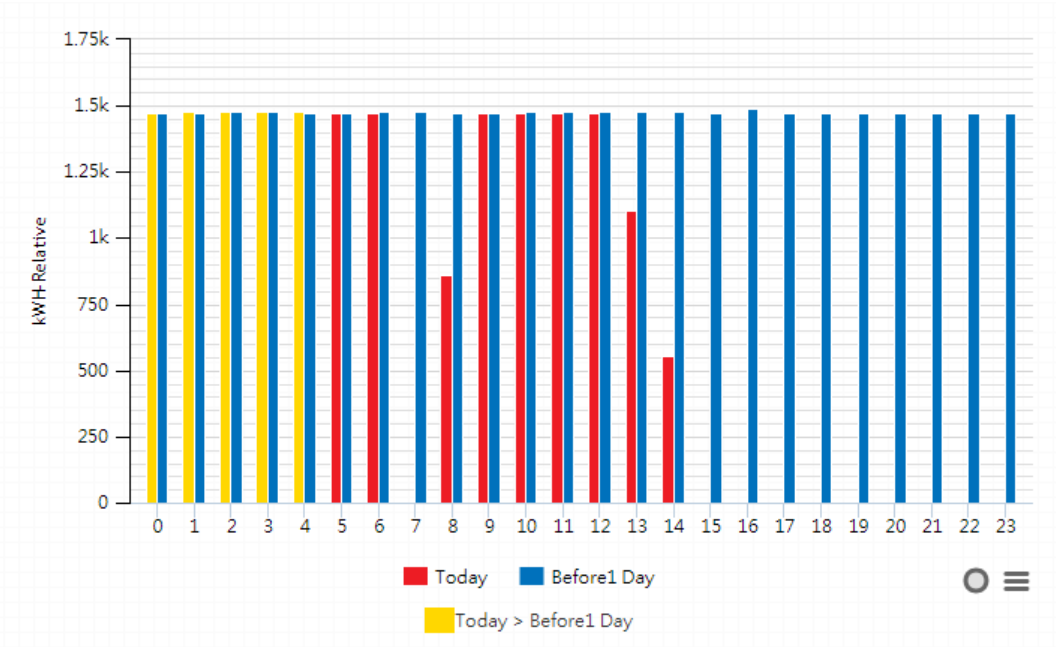
If the box of show controls is checked, the control tools would be displayed as shown in the following picture.

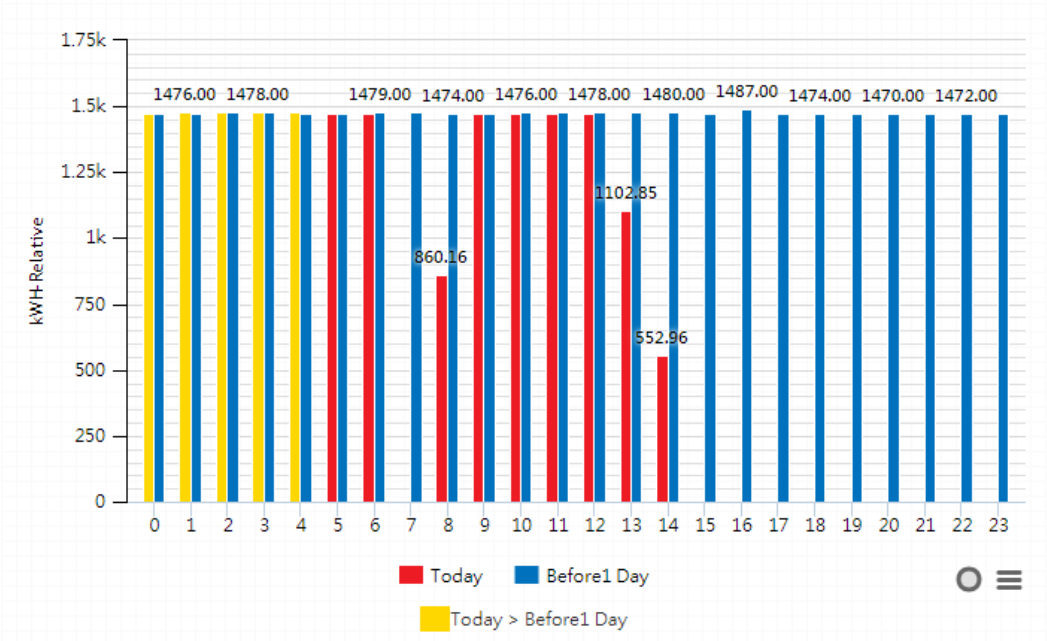
## 5.3.2 Graph Tools

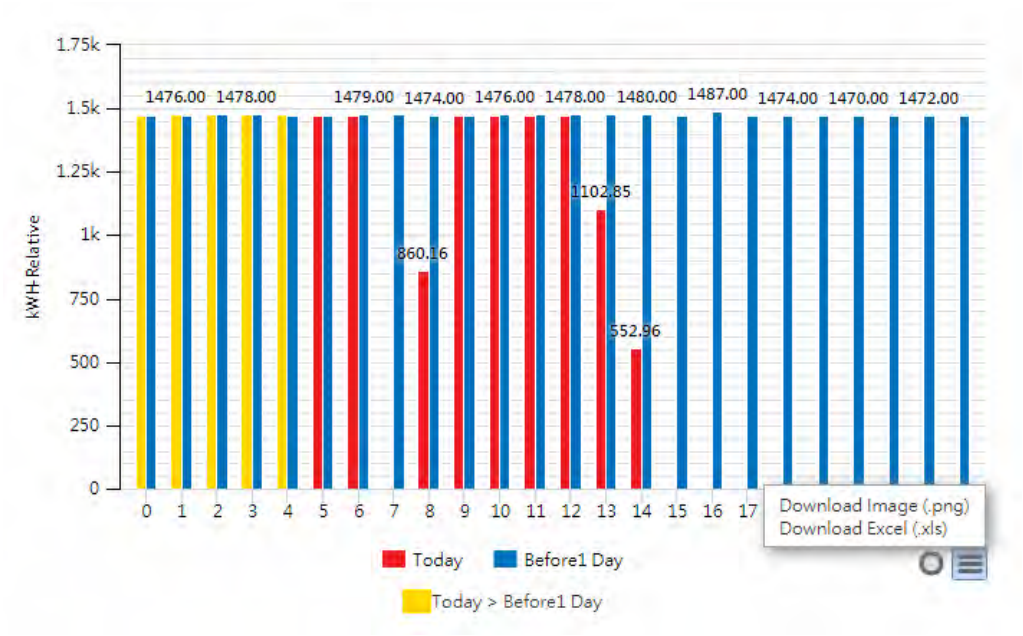
Graph is the second category in the toolbar, which is further divided into comprehensive chart type, gauge and comparables. More details are explained below:

### 5.3.2.1 Comprehensive Chart Types

There are six types of items in comprehensive chart types which are Multi Baseline Display, Item Comparison, Single Data Comparison, Multiple Data Comparison, Avg. Power Consumption and Single Bar. If the buttons, including export button and data label button, are set to be shown on the chart, you can click at the lower right corner to decide whether to display or hide values on the chart as shown below. To export the image and data from the chart, click at the lower right corner.



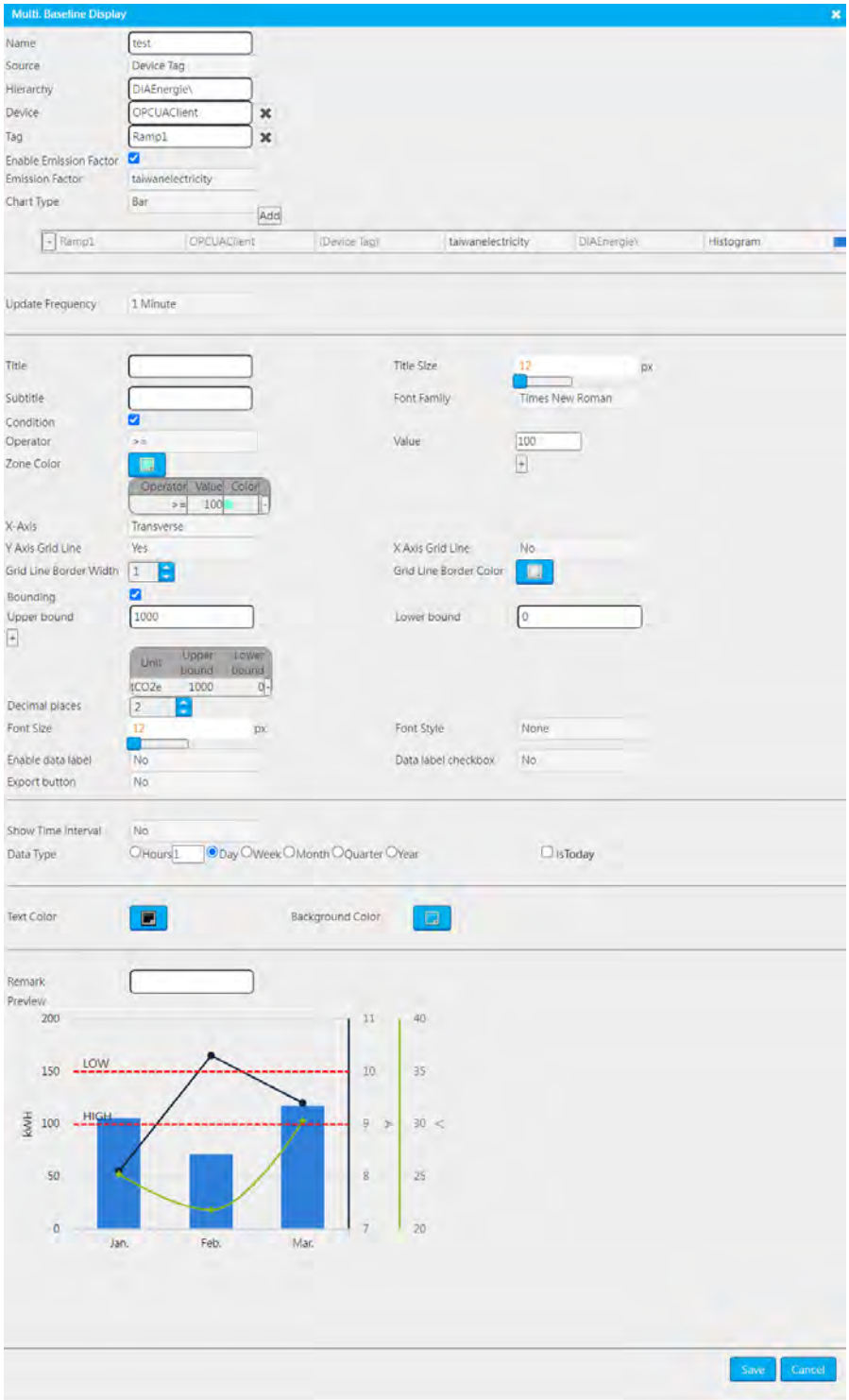




1.75k
1.5k
1.25k
1k
750
500
250
0
kWH-Relative
1476.00
1478.00
1479.00
1474.00
1476.00
1478.00
1480.00
1487.00
1474.00
1470.00
1472.00
860.16
1102.85
552.96
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
Download Image (.png)
Download Excel (.xls)
Today
Before1 Day
Today > Before1 Day

5

- **Multi Baseline Display:**

Simultaneously display data from different sources (units) in bar, line, curve or stack format in DIAEnergie, so as to present the outcome of comparison. When read or view this item on UI Design and Preview page, the display values would be updated according to specified update time or remain unchanged until the page is refreshed. The item configuration window and the example are shown in the following figures.



1. **Source**

- **Source**: Device Tag/ Internal Tag/ Hierarchy/ Energy Type/ Input/ Plant Information.
- **Enable Emission Factor** : It is disabled by default. If selected, a dropdown menu for emission factors will appear. This feature will multiply the tags by the corresponding coefficient set in the menu.
- **Emission Factor** : Dropdown menu, data sources are the emission factors configured in Chapter 9.5 Hierarchy.
- **Chart Type**: Bar/ Line/ Curve/ Stack
- **Update Frequency**: No Update/ 1 minute/ 5 minutes/ 10 minutes

2. **Chart Settings**

- **Title**: Set a title for the chart.
- **Subtitle**: Set a subtitle for the chart.
- **Title Size**: Set the font size of chart title.
- **Condition**: Change a color only for a single condition (Not supported by stacked charts.)

◆ **Operator**: >= or <=

◆ **Value**: Input a desired value.

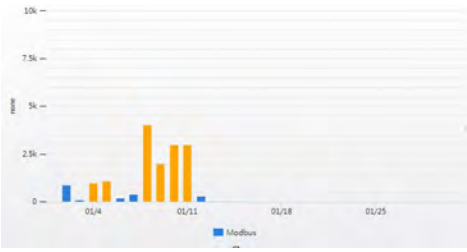
◆ **Zone Color**: Pick a color.

◆ ＋: Add the condition to the table below.

Ex: Condition is set to >= Value 1000; color is set to orange.

When chart type is set to line or curve:

When chart type is set to bar:



- **X-Axis**: Transverse / Oblique
- **Y Axis Grid Line**: Yes / No. Select yes to display the grid lines on Y axis while selecting no to hide the grid lines.
- **X Axis Grid Line**: Yes / No. Select yes to display the grid lines on X axis while selecting no to hide the grid lines.
- **Grid Line Border Width**: Change the width of gridlines on X or Y axis.
- **Grid Line Border Color**: Set the color of gridlines on X or Y axis.
- **Bounding**: Fix the upper and lower bound of Y axis for better comparison between multiple charts.
- **Compare**: Compare data in two different intervals on Y axis.
- **Decimal Places**: Set the number of decimal places displayed on charts.
- **Font Size**: Change the font size of contexts in charts.
- **Font style**: Bold / Italic



- **Enable data label**: Select Yes to show data labels in charts.
- **Data label checkbox**: Select Yes to show the button for showing or hiding data labels or select No to hide the button.
- **Export Button**: Decide whether to show the export button on Preview page.
- **Show Time Interval**: Decide whether to show the drop-down list of time interval on Preview page.
- **Data Type (Day/ Week/ Month/ Quarter/ Year)**: Set the sampling interval.

  Note: Suppose that data type is set to Day and the box of Is Today is checked, the interval would start from 00:00 to 23:59:59 of the current date. If the box is unchecked and the current time is AM08:05, the interval would start from AM08:05 of the previous day to the current time AM08:05.

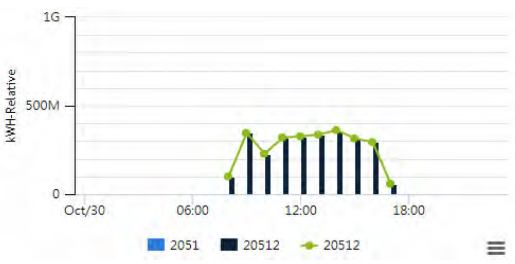
3. **Color Setting:**

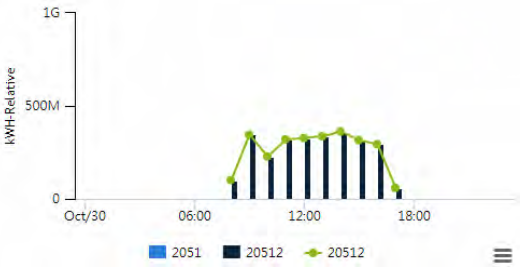
- **Text Color**: Change the color of contexts in charts.
- **Background Color**: Change the color of background in charts.

4. **Item Preview:** Display the result of configuration in the area below.

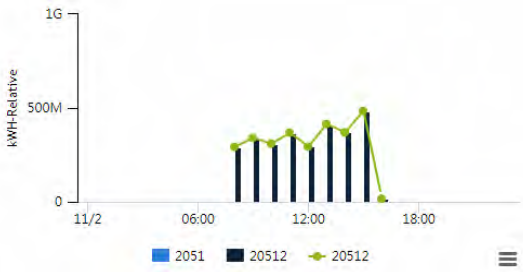
5. **Preview**

Y axis grid line is set to be shown in the left chart, while it is set to be hidden in the right chart as shown in the following figures.

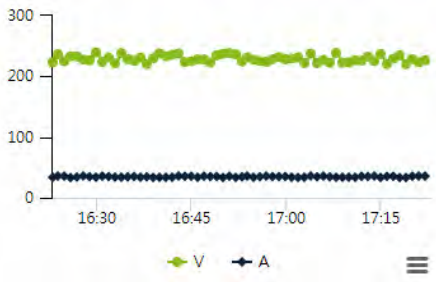


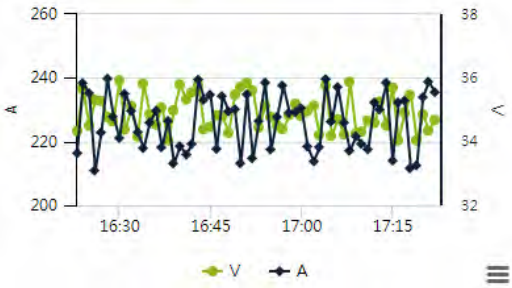




The bounds are set to 0 and 1000000000 respectively in the left chart; there's no bound being set in the right chart.

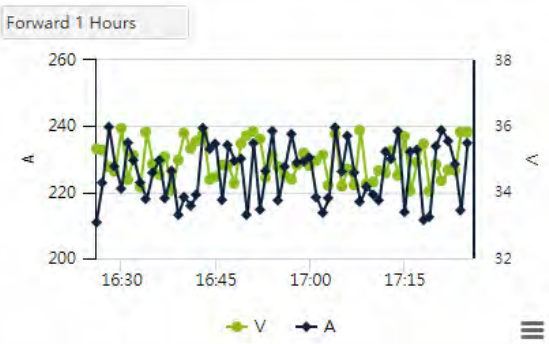


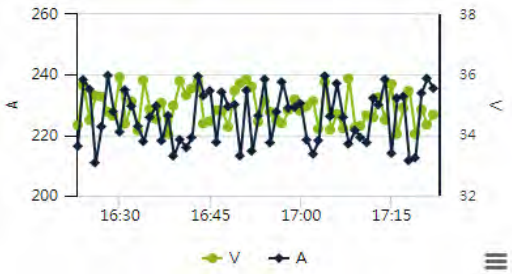
Comparison is enabled in the left chart which is disabled in the right chart.



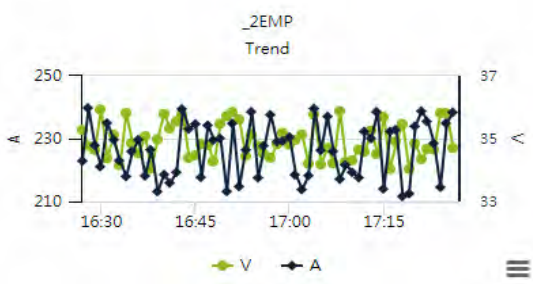



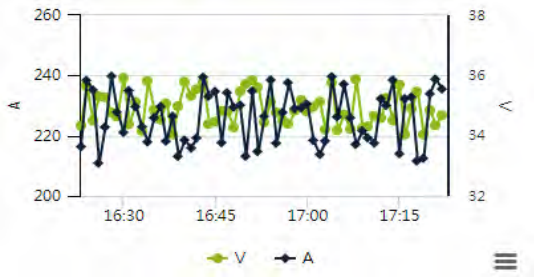

Show Time Interval is enabled in the left chart which is disabled in the right chart.

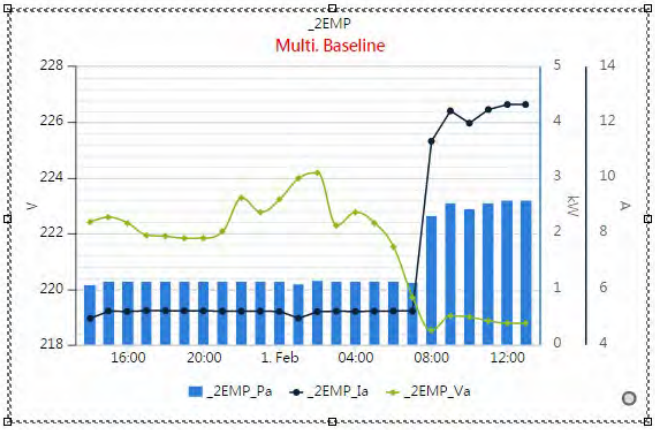


The chart is presented with title and subtitle as shown in the left figure while the right figure shows the chart without title and subtitle.

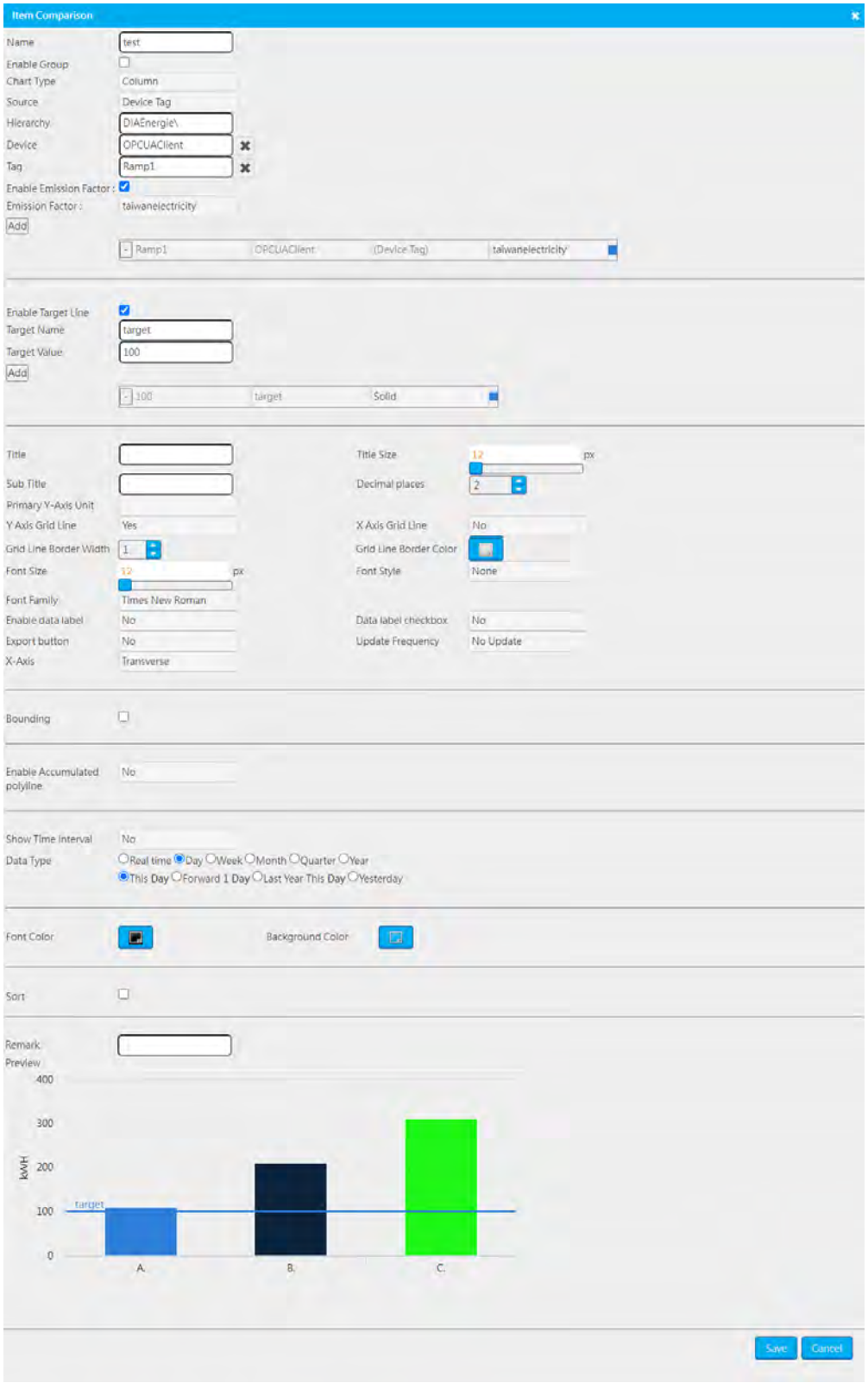


- **Item Comparison:**

This item is used to present the comparison results in pie charts or (general or stacked) bar charts with the real-time proportion data of energy usage from different sources in DIAEnergie. The item configuration window and the example are shown in the follows.



1. **Source**

- **Name**: Item name, which would be shown in the delete window.
- **Enable Group**: See the description below concerning this function.
- **Chart Type**: Include (flat/3D) pie charts, (general/3D/stacked) column or bar charts.
- **Source**: Data sources include device tag, internal tag, hierarchy, energy type and user input.
- **Enable Emission Factor** : It is disabled by default. If selected, a dropdown menu for emission factors will appear. This feature will multiply the tags by the corresponding coefficient set in the menu.
- **Emission Factor** : Dropdown menu, data sources are the emission factors configured in Chapter 9.5 Hierarchy.
- **Stack Group Name**: This setting is for all stacked type charts.
- **Stacked group config window**: Set multiple stack group names.
- **Add**: Click this button to add the selected tag to the configuration table.
- Tag Configuration Table.



2. **Style Setting**

- **Pie Size**: Auto Resize/ Percentage. Normally, we would suggest you set as Percentage to achieve optimal results and you would be allowed to adjust the chart size. For auto resize, the chart size is resized automatically and cannot be adjusted.
- **Value**: Set a percentage value for pie size when Pie Size is set to Percentage.
- **Title**: Set a title for the chart.
- **Subtitle**: Set a subtitle for the chart.
- **Title Size**: Set the font size of chart title.
- **Decimal Places**: Set the number of decimal places displayed in the chart data.
- **Primary Y-Axis Unit**: Select a default unit for the left-side Y axis when Chart Type is not set to pie chart types and the units are different in the tags.
- **Font Size**: Change the font size of contexts in charts.
- **Font style**: None / Bold / Italic
- **Style**: Select the desired style for the pie chart from the four default chart styles.

- **Distance**: Additional setting for style 2 which is the distance between texts and the pie. If the value set for distance is positive, texts will be outside the pie chart. If it's negative, texts would be displayed on the pie chart.
- **Enable data label**: Select Yes to show data labels in charts.
- **Data label checkbox**: Select Yes to show the button for showing or hiding data labels, or select No to hide the button.
- **Export Button**: Decide whether to show the export button on Preview page.
- **X-Axis**: Choose between oblique and transverse for charts other than pie chart type.
- **Update Frequency**: No Update/ 1 minute/ 5 minutes/ 10 minutes
- **Bounding**: If the checkbox is checked, settings of upper bound and lower bound would be required for charts other than pie chart type.
- **Upper Bound**: Specify the upper limit of Y axis. The value of Y axis would be converted automatically to a value that is close to the specified upper limit.
- **Lower Bound**: Specify the lower limit of Y axis. The value of Y axis would be converted automatically to a value that is close to the specified lower limit.
- **Enable Accumulated Polyline**: Display cumulative curves for charts other than pie chart type.
- **Chart Line Type**: Curve/ Line
- **Line Type**: Solid/ Short Dash/ Short Dot/ Short Dash Dot/ Short Dash Dot Dot/ Dot/ Dash/ Dash Dot/ Long Dash Dot/ Long Dash Dot Dot
- **Line Marker**: Display markers on curved lines.
- **Line Width**: Set the width of curved lines.
- **Line Color**: Set the color of curved lines.
- **Show Time Interval**: Select Yes to display the drop-down list on the chart for users to switch between different time intervals.
- **Data Type**: Real time/ Day/ Week/ Month/ Quarter/ Year

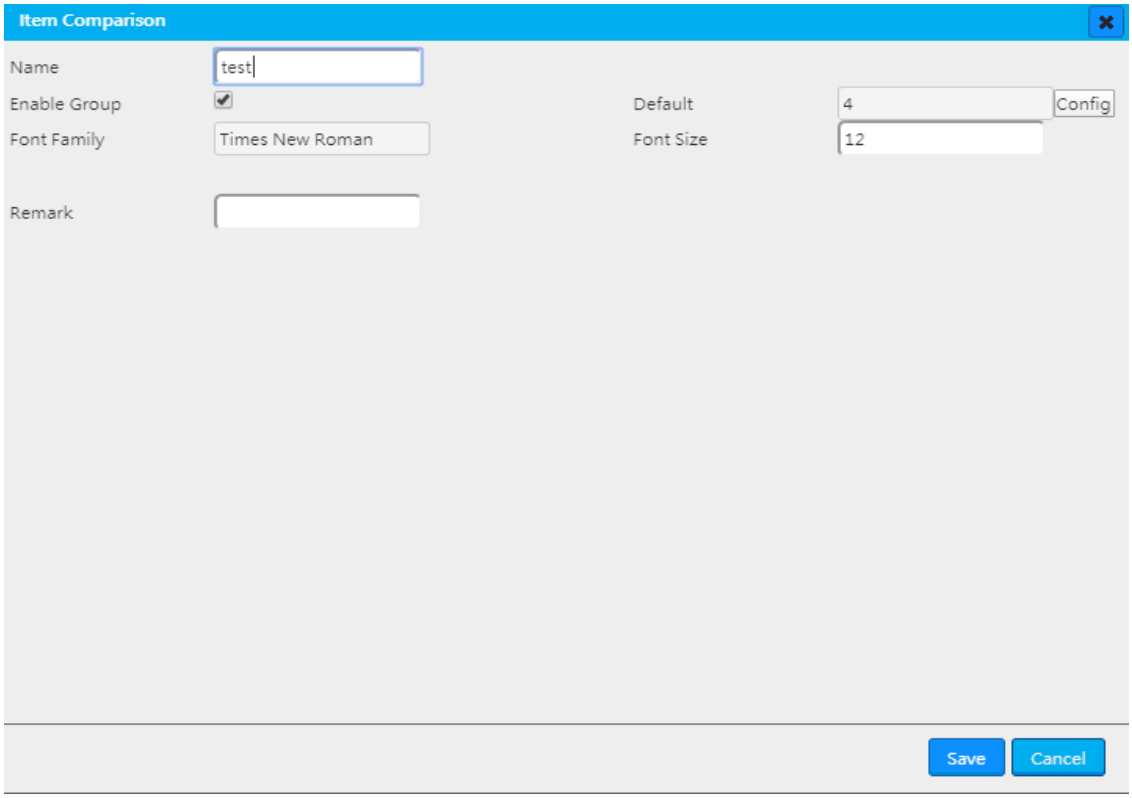
  Note: "Forward" means to present the interval data by starting from the selected time interval prior to the current time. For example, it's AM08:05 and the time interval is set to forward 1 hour; data would be collected from AM07:05 to AM08:05.
- **Font Color**: Change the color of contexts in charts.

- **Background Color**: Change the color of background in charts.
- **Sort**: Decide whether to rank the configured tags by checking or unchecking the box. Check the box to enable this feature and the setting of sort order would be required.
- **Sort By**: Ascending/ Descending
- **Enable Rank Number**: Decide whether to display the number of ranked tags. Check the box to enable this feature and the setting of rank number would be required.
- **Number of Items**: Set the number of tag items to be displayed.
- **Remark**: Additional notes.

3. **Preview:** Display the result of configuration in the area below.

4. **Enable Group:** Check the checkbox and click on the config button.

- **Default**: Set the default value for the drop-down list of groups presented on the chart.



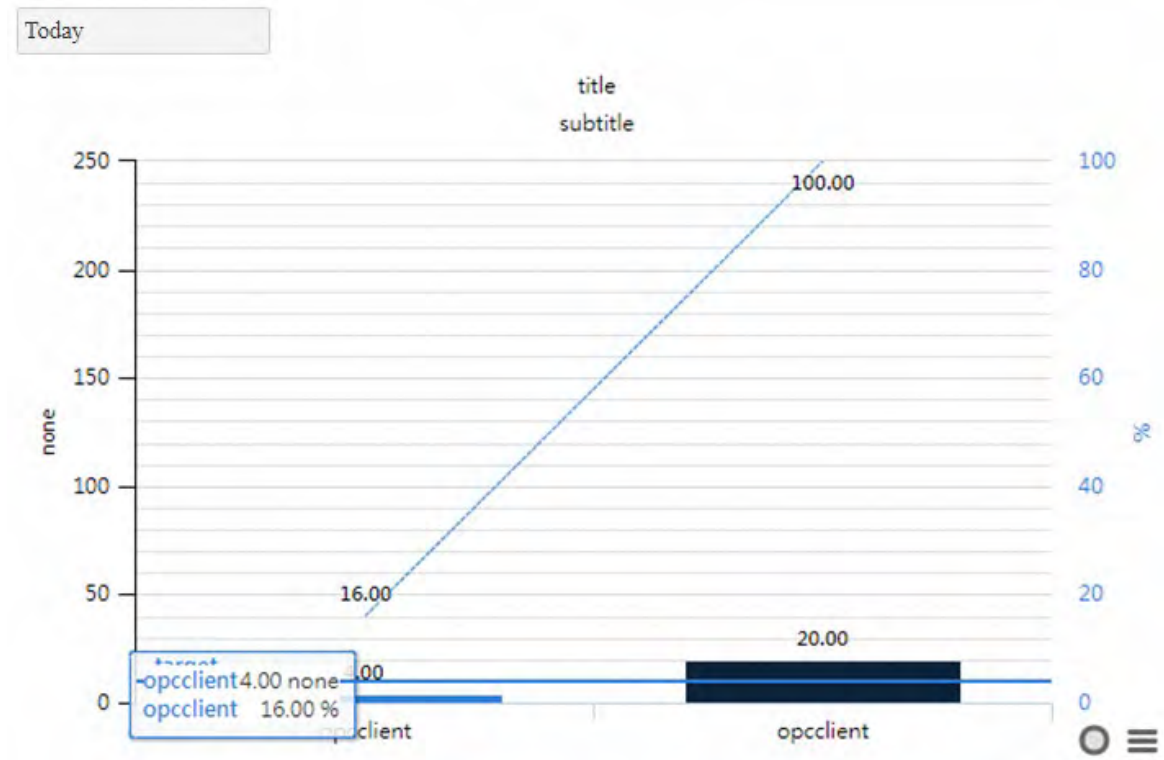
5. **Select Group Items**

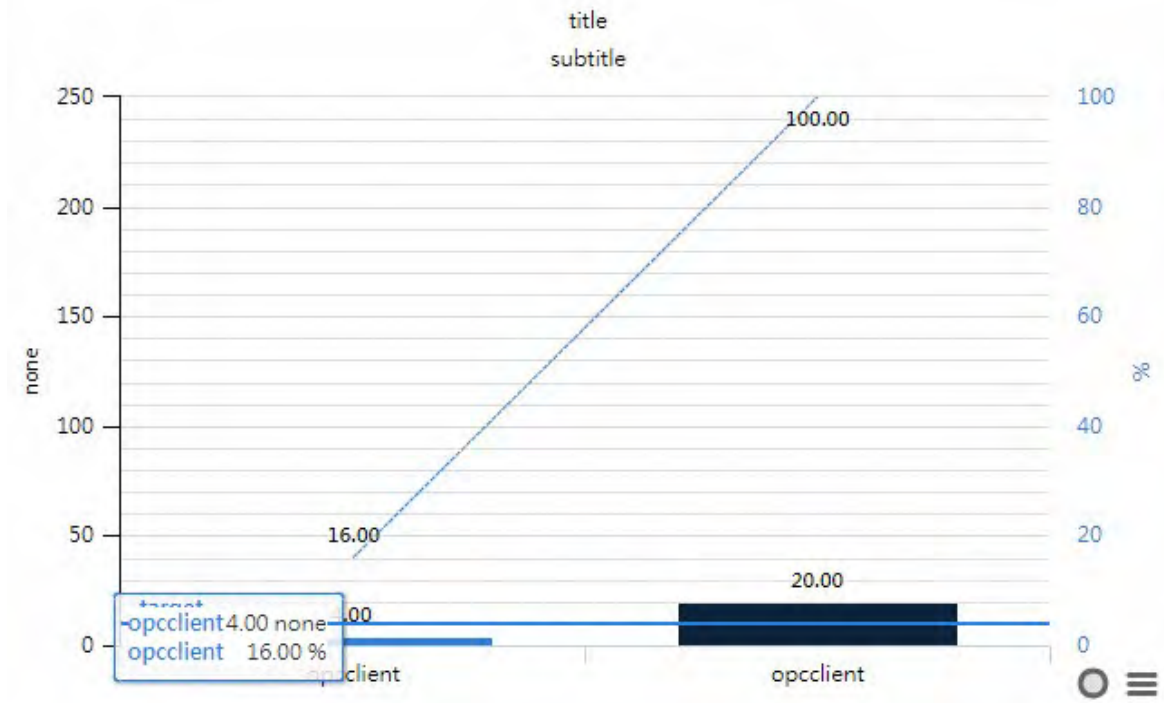
- Display the selected item in the drop-down list of groups on the chart.

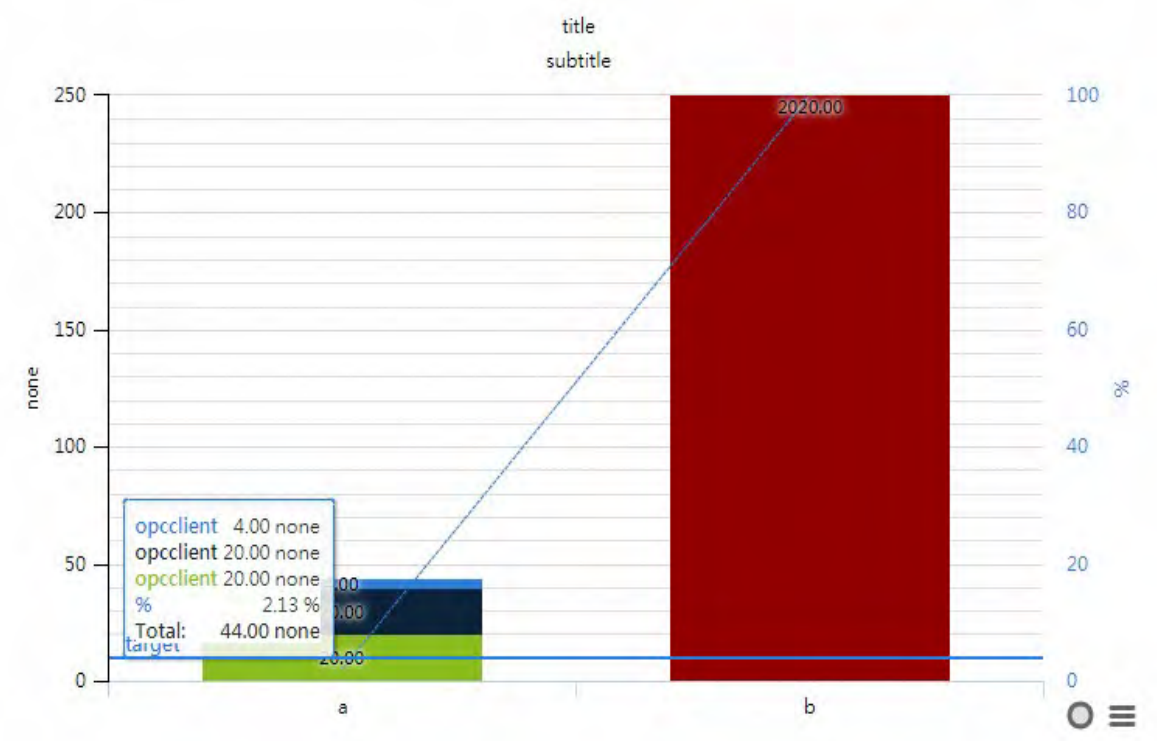
6. **Group Item Configuration**

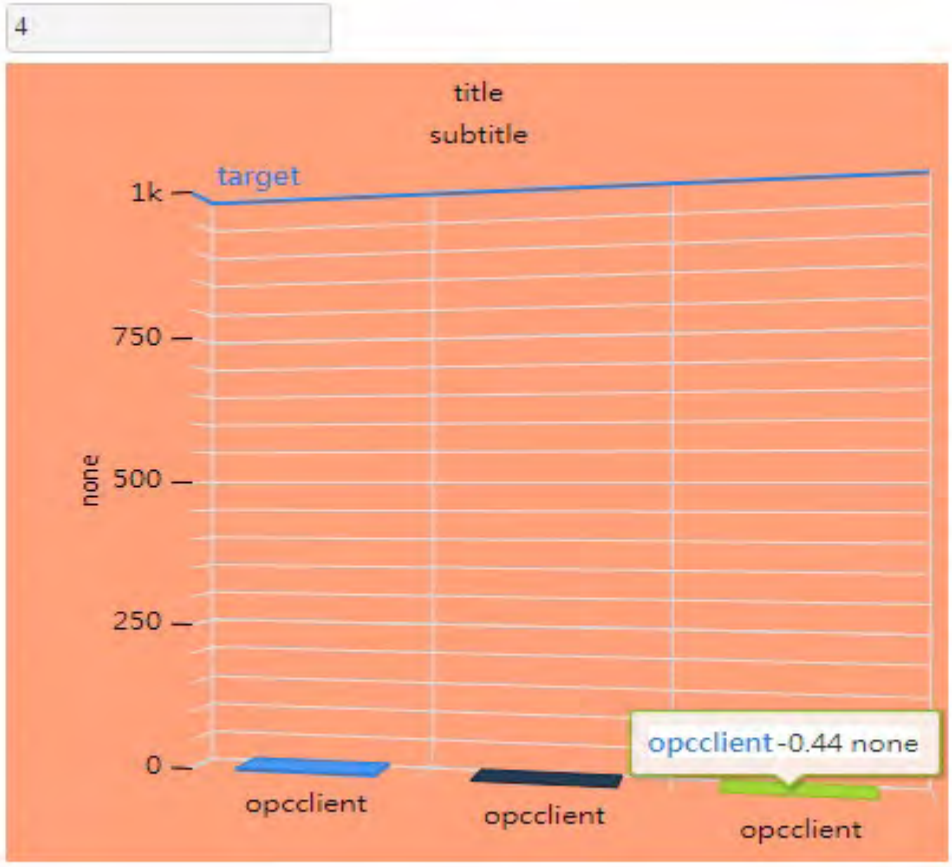
- Click on ⚙ and the configuration window of group items would pop up.
- **Group Name**: Set the item name displayed in the drop-down list.
- **Save**: Save the group settings.
- **Reset**: Click the reset button to clear all settings and return to default.

7. **Preview:**


Today
title
subtitle
250
200
150
100
50
0
none
100
80
60
40
20
0
%
100.00
16.00
20.00
opcclient 4.00 none
opcclient 16.00 %
opcclient


title
subtitle
250
200
150
100
50
0
none
100
80
60
40
20
0
%
100.00
16.00
20.00
opcclient 4.00 none
opcclient 16.00 %
opcclient


title
subtitle
250
200
150
100
50
0
none
100
80
60
40
20
0
%
2020.00
opcclient 4.00 none
opcclient 20.00 none
opcclient 20.00 none
% 2.13 %
Total: 44.00 none
target
a
b

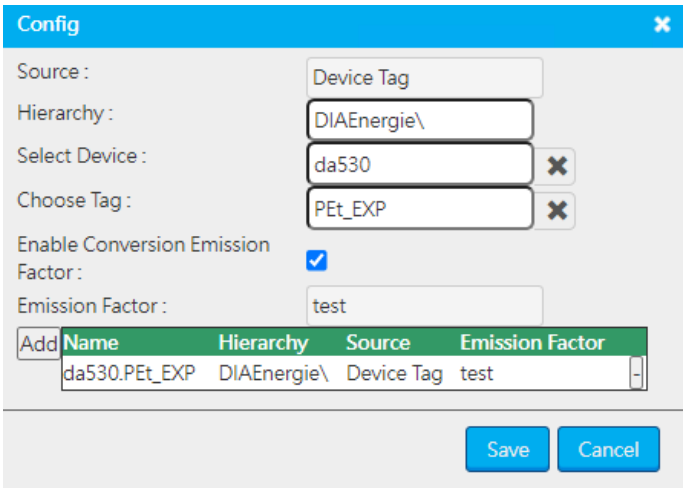

4
title
subtitle
target
1k
750
500
250
0
none
opcclient-0.44 none
opcclient
opcclient
opcclient

- **Single Data Comparison:**

This item is used to understand the changes and differences of data from a certain period in two different time intervals by means of the comparison results. The item configuration window and the example are shown in the follows.

1. **Source**

- **Name**: Enter the item name; required field.
- Config:



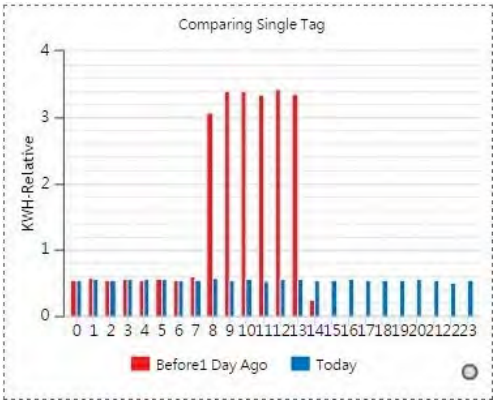

  - **Source**: Device Tag/ Internal Tag/ Energy Circuit
  - **Hierarchy**: Select the target hierarchy level where the tag or circuit at.
  - **Select Device**: This setting would be displayed only when Source is set to Device Tag.
  - **Choose Tag**: This setting would be displayed only when Source is set to Device Tag or Internal Tag.
  - **Energy Type**: This setting would be displayed only when Source is set to Energy Circuit.
  - **Enable Emission Factor** : It is disabled by default. If selected, a dropdown menu for emission factors will appear. This feature will multiply the tags by the corresponding coefficient set in the menu.
  - **Emission Factor**: Dropdown menu, data sources are the emission factors configured in Chapter 9.5 Hierarchy.

2. **Style Setting**

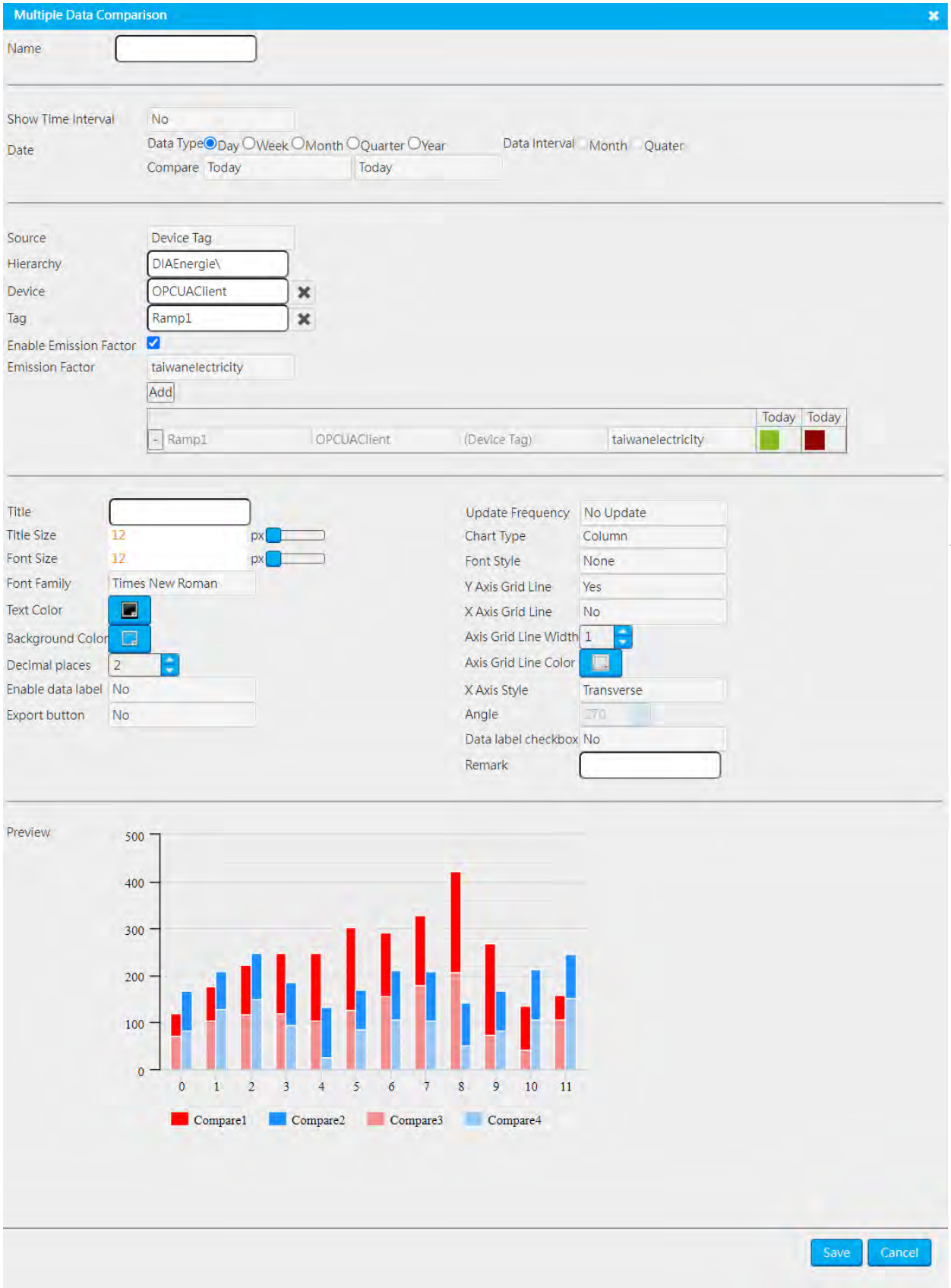
- **Title**: Set a title for the chart.
- **Title Size**: Set the font size of chart title.
- **Update Frequency**: No Update/ 1 Minute/ 5 Minutes/ 10 Minutes
- **Chart Type**: Column/ Line/ Curve/ Area
- **Font Size**: Set the font size of texts displayed on charts.
- **Font style**: None / Bold / Italic

- **Text Color**: Change the color of texts in charts.
- **X Axis Style**: Transverse/ Oblique
- **Background Color**: Change the color of background in charts.
- **Angle**: This setting would be shown when axis style is set to oblique.
- **Show Time Interval**: Select Yes to display the drop-down list on the chart for users to switch between different time intervals.
- **Data Type**: Day/ Week/ Month/ Quarter/ Year
- **Data Interval**: Month/ Quarter
- **Compare**: Specify two-time intervals.
- **Decimal Places**: Set the number of decimal places displayed in the chart data.
- **Enable data label**: Select Yes to show data labels in charts.
- **Data label checkbox**: Select Yes to show the button for showing or hiding data labels, or select No to hide the button.
- **Export Button**: Decide whether to show the export button on Preview page.
- **Remark**: Additional notes.
- **Enable Color Change**: This setting would be shown when chart type is set to column. Check the box to enable color change.
- **Change Color**: After color change feature is enabled, set the change color for values when conditions are fulfilled.
- **Change Condition**: Set for the two specified intervals after color change feature is enabled.
- **Color Change Remark**: This setting would be shown when color change feature is enabled. The remark would be displayed under the chart.

3. **Preview:** Display the result of the configuration as shown below.



- **Multiple Data Comparison:**

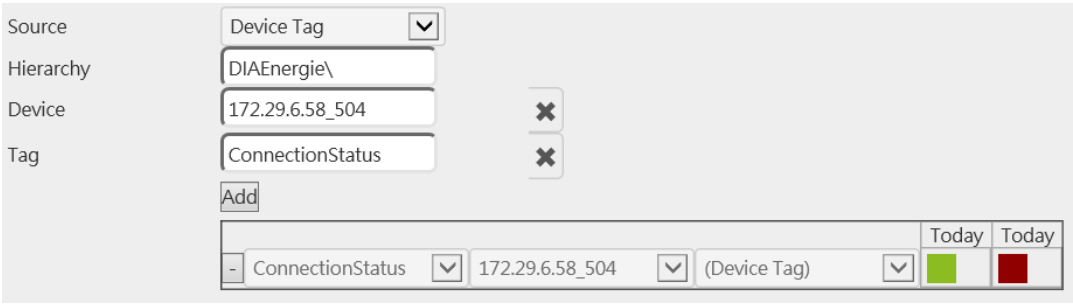


1. **Data Type**

- **Name**: Enter the item name; required field.
- **Show Time Interval**: Select Yes to display the drop-down list on the chart for users to switch between different time intervals.
- **Data Type**: Day/ Week/ Month/ Quarter/ Year
- **Data Interval**: Month/ Quarter

2. **Source**

- **Source**: Device Tag/ Internal Tag/ Energy Circuit
- **Hierarchy**: Select the target hierarchy level where the tag or circuit at.
- **Select Device**: This setting would be displayed only when Source is set to Device Tag.
- **Choose Tag**: This setting would be displayed only when Source is set to Device Tag or Internal Tag.
- **Energy Type**: This setting would be displayed only when Source is set to Energy Circuit.
- **Enable Emission Factor** : It is disabled by default. If selected, a dropdown menu for emission factors will appear. This feature will multiply the tags by the corresponding coefficient set in the menu.
- **Emission Factor** : Dropdown menu, data sources are the emission factors configured in Chapter 9.5 Hierarchy.
- **Add**: Click this button to add the selected tags to the configuration table.
- Tag configuration table:




3. **Style Setting**

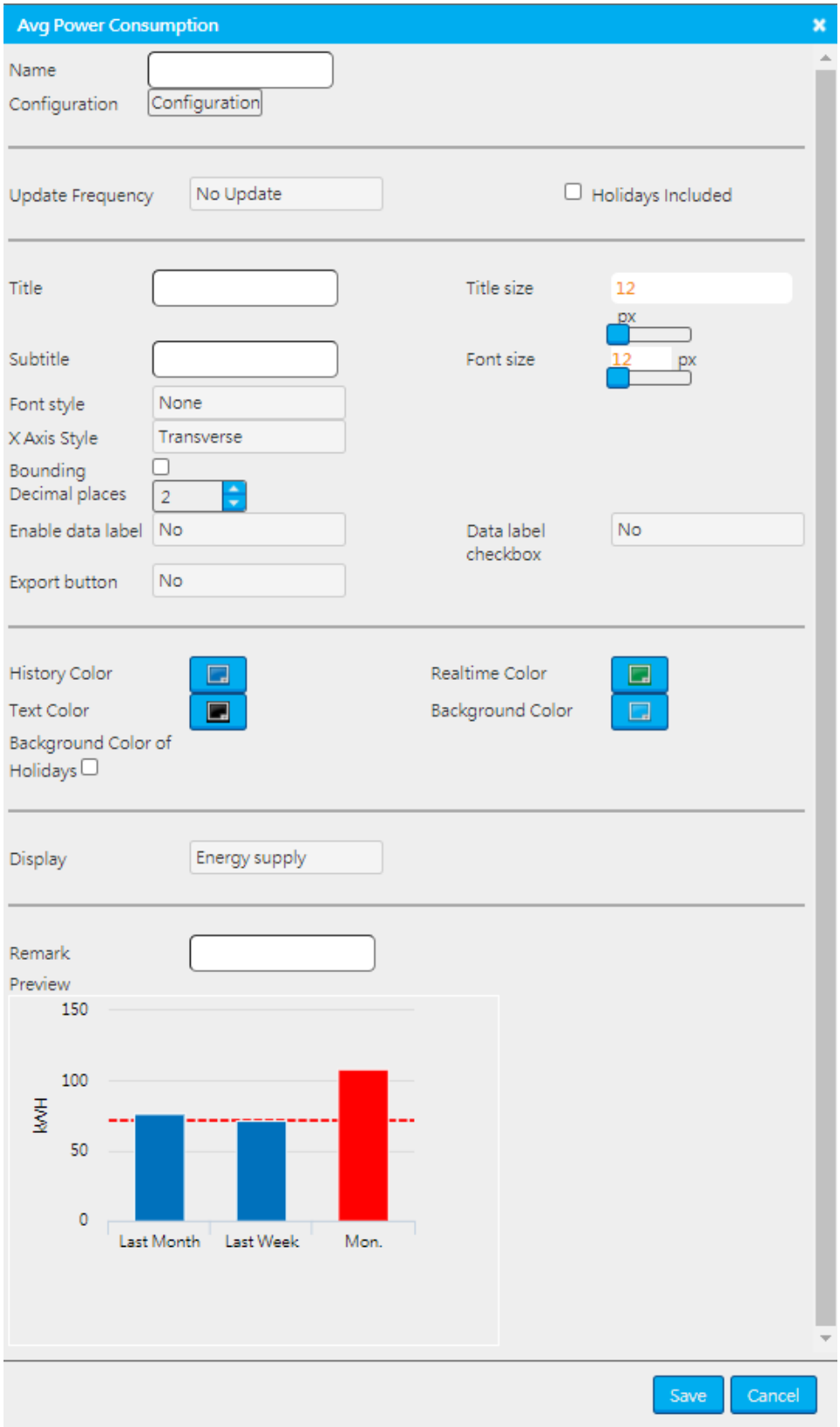
- **Title**: Set a title for the chart.
- **Title Size**: Set the font size of chart title.
- **Update Frequency**: No Update/ 1 Minute/ 5 Minutes/ 10 Minutes

- **Chart Type**: Column/ Line/ Curve/ Area
- **Font Size**: Set the font size of texts displayed on charts.
- **Font style**: None / Bold / Italic
- **Text Color**: Change the color of texts in charts.
- **X Axis Style**: Transverse/ Oblique
- **Angle**: This setting would be shown when axis style is set to oblique.
- **Compare**: Specify two-time intervals.
- **Decimal Places**: Set the number of decimal places displayed in the chart data.
- **Enable data label**: Select Yes to show data labels in charts.
- **Data label checkbox**: Select Yes to show the button for showing or hiding data labels, or select No to hide the button.
- **Export Button**: Decide whether to show the export button on Preview page.
- **Remark**: Additional notes.

4. **Preview:** Display the result of the configuration.

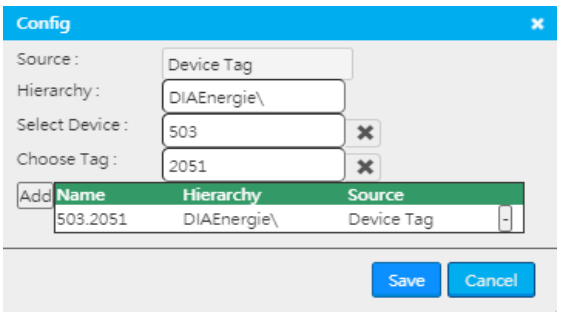
- **Average Power Consumption:**

Display the comparison results of average consumptions during the current week, the previous week and the previous month. The item configuration window and the example are shown in the follows.



1. **Source:**

- **Name**: Enter the item name; required field.
- **Config**:




  - **Source**: Device Tag/ Internal Tag/ Energy Circuit
  - **Hierarchy**: Select the target hierarchy level where the tag or circuit at.
  - **Select Device**: This setting would be displayed only when Source is set to Device Tag.
  - **Choose Tag**: This setting would be displayed only when Source is set to Device Tag or Internal Tag.
  - **Energy Type**: This setting would be displayed only when Source is set to Energy Circuit.

2. **Update Frequency**

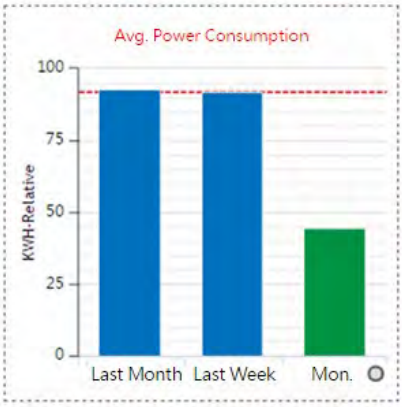
- **Update Frequency**: No Update/ 1 minute/ 5 Minutes/ 10 Minutes
- **Holidays Included**

3. **Style Setting**

- **Title**: Set a title for the chart.
- **Subtitle**: Set a subtitle for the chart.
- **Title Size**: Set the font size of chart title.
- **Font Size**: Change the font size of contexts in charts.
- **Font style**: None / Bold / Italic
- **X-Axis Style**: Choose between oblique and transverse for charts other than pie chart type.
- **Angle**: This setting would be shown when axis style is set to oblique.
- **Bounding**: If the checkbox is checked, settings of upper bound and lower bound would be required for charts other than pie chart type.

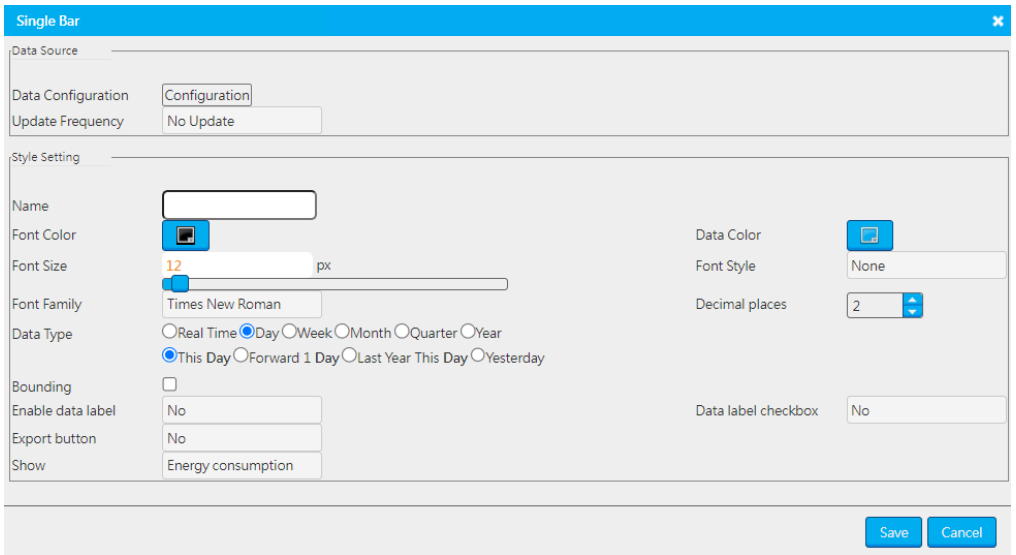
- **Upper Bound**: Specify the upper limit of Y axis. The value of Y axis would be converted automatically to a value that is close to the specified upper limit.
- **Lower Bound**: Specify the lower limit of Y axis. The value of Y axis would be converted automatically to a value that is close to the specified lower limit.
- **Decimal Places**: Set the number of decimal places displayed in the chart data.
- **Enable data label**: Select Yes to show data labels in charts.
- **Data label checkbox**: Select Yes to show the button for showing or hiding data labels, or select No to hide the button.
- **Export Button**: Decide whether to show the export button on Preview page.
- **Remark**: Additional notes.
- **History Color**: Check the box to enable conditions for color changes.
- **Realtime Color**: As the condition is fulfilled, the color of the data would change to the specified color.
- **Text Color**: Change the color of texts in charts.
- **Background Color**: Change the color of background in charts.
- **Background Color of Holidays**: The default is set to disabled.
- **Background Color of Holidays**: Change the background color of holiday intervals.

4. **Preview:** Display the result of the configuration as shown below.



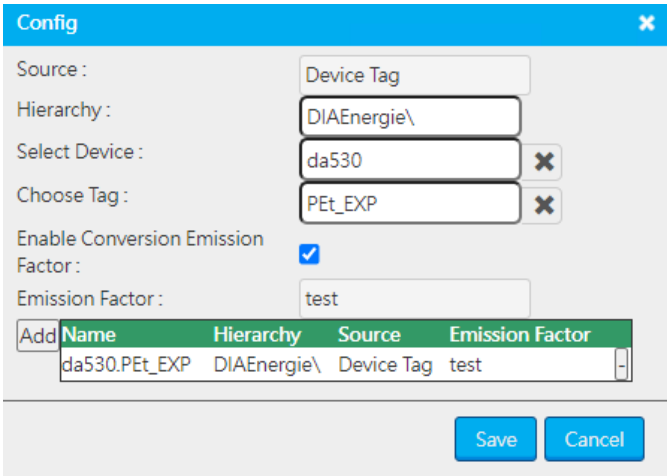
- **Single Bar:**

Present data of a single measurement. If the background is configured by yourself, the upper and lower bounds can be set for a better use on alignment.




1. **Source**

   - **Config**:




   - **Source**: Device Tag/ Internal Tag/ Energy Circuit
   - **Hierarchy**: Select the target hierarchy level where the tag or circuit at.
   - **Select Device**: This setting would be displayed only when Source is set to Device Tag.
   - **Choose Tag**: This setting would be displayed only when Source is set to Device Tag or Internal Tag.
   - **Energy Type**: This setting would be displayed only when Source is set to Energy Circuit.
   - **Enable Emission Factor**: It is disabled by default. If selected, a dropdown menu for emission factors will appear. This feature will multiply the tags by the corresponding coefficient set in the menu.

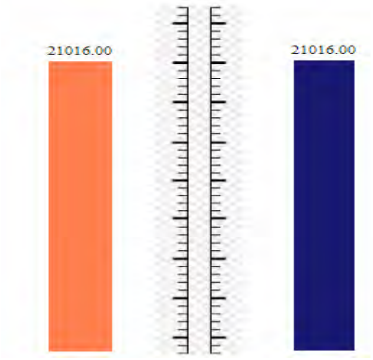
- ◆ **Emission Factor**: Dropdown menu, data sources are the emission factors configured in Chapter 9.5 Hierarchy.

- ■ **Update Frequency**: No Update/ 1 minute/ 5 Minutes/ 10 Minutes

2. **Style Setting**

- ■ **Name**: Enter the item name; required field.
- ■ **Font Size**: Change the font size of contexts in charts.
- ■ **Font Family**: Pick a font style for the display texts.
- ■ **Bounding**: If the checkbox is checked, settings of upper bound and lower bound would be required for charts other than pie chart type.
- ■ **Upper Bound**: Specify the upper limit of Y axis. The value of Y axis would be converted automatically to a value that is close to the specified upper limit.
- ■ **Lower Bound**: Specify the lower limit of Y axis. The value of Y axis would be converted automatically to a value that is close to the specified lower limit.
- ■ **Decimal Places**: Set the number of decimal places displayed in the chart data.
- ■ **Enable data label**: Select Yes to show data labels in charts.
- ■ **Data label checkbox**: Select Yes to show the button for showing or hiding data labels or select No to hide the button.
- ■ **Export Button**: Decide whether to show the export button on Preview page.
- ■ **Font Color**: Select the color of display texts on the chart.
- ■ **Data Color**: Select the color of bars displayed on the chart.
- ■ **Show**: Energy Consumption/ Energy Supply.

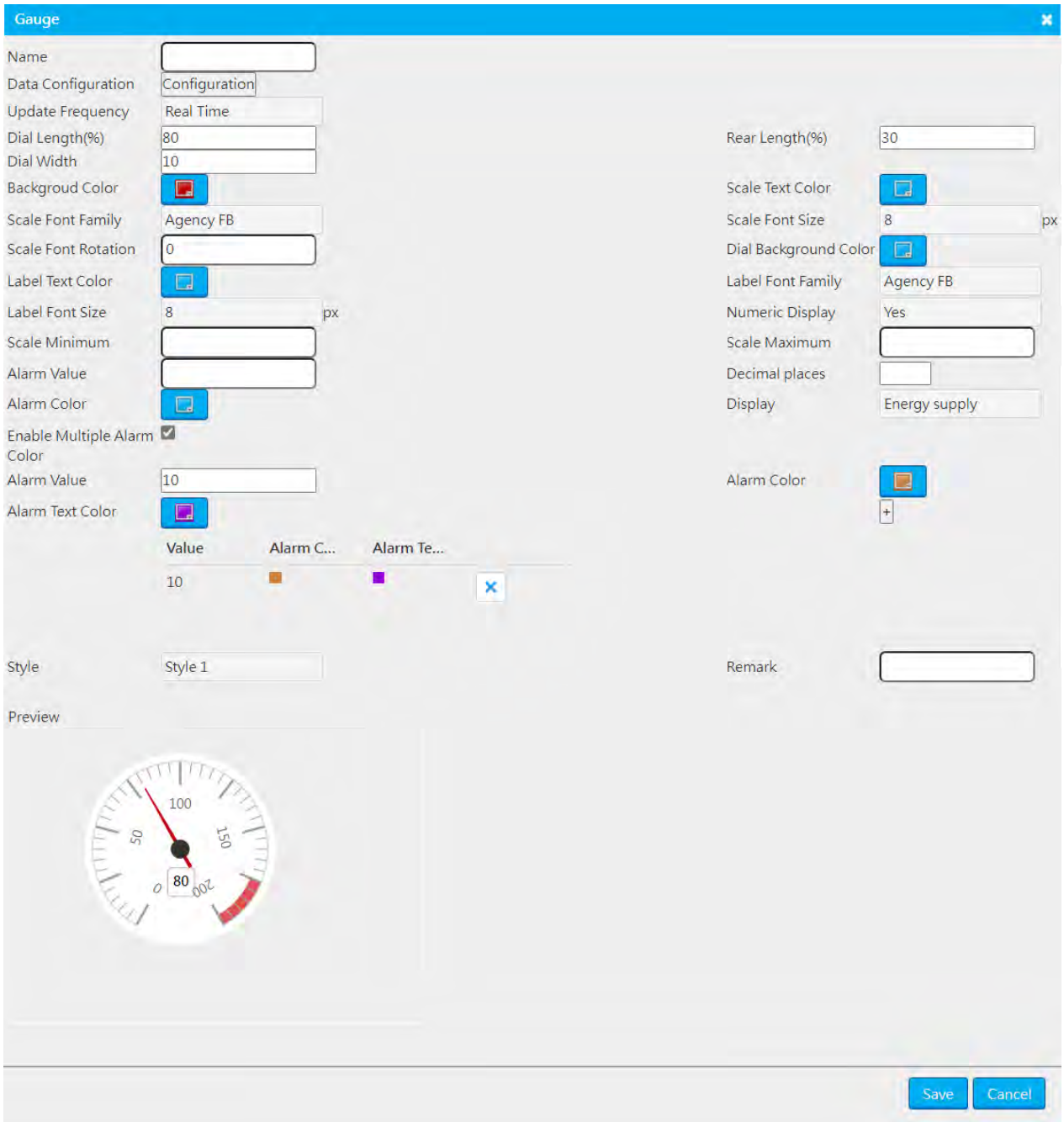
3. **Preview:** The following picture is illustrated with two single bar charts.



### 5.3.2.2 Gauge

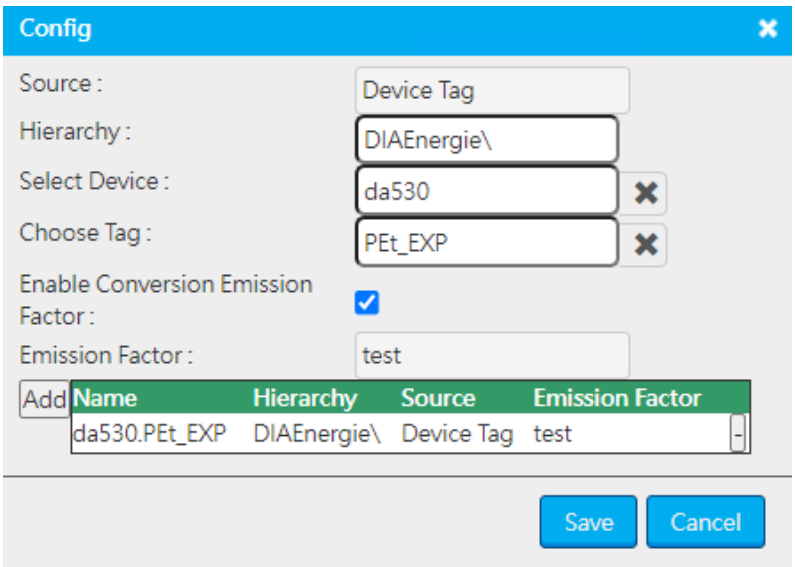
- **Gauge:**

The Gauge option offers display of real-time gauge data regarding the scale and alarm value. The following is an example of the display setting.



1. **Source:**

- **Name**: Enter the item name; required field.
- Data Configuration:




  - **Source**: Device Tag/ Internal Tag/ Energy Circuit
  - **Hierarchy**: Select the target hierarchy level where the tag or circuit at.
  - **Select Device**: This setting would be displayed only when Source is set to Device Tag.
  - **Choose Tag**: This setting would be displayed only when Source is set to Device Tag or Internal Tag.
  - **Energy Type**: This setting would be displayed only when Source is set to Energy Circuit.
  - **Enable Emission Factor**: It is disabled by default. If selected, a dropdown menu for emission factors will appear. This feature will multiply the tags by the corresponding coefficient set in the menu.
  - **Emission Factor**: Dropdown menu, data sources are the emission factors configured in Chapter 9.5 Hierarchy.

2. **Update Frequency**

- **Update Frequency**: Real Time/ 1 Minute/ 5 Minutes/ 10 Minutes/ 30 Minutes/ 60 Minutes

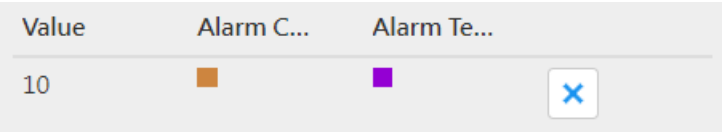
3. **Style Setting**

- **Font Color**: Select the color of display texts on the chart.
- **Scale Text Color**: Select the color of scale texts on the chart.
- **Scale Font Family**: Pick a font style for the scale texts.

- **Scale Font Size**: Change the font size of scale texts.
- **Scale Font Rotation**: Set a rotation angle for scale texts.
- **Label Text Color**: Select the color of label texts on the chart.
- **Label Font Family**: Pick a font style for the label texts.
- **Label Font Size**: Change the font size of label texts.
- **Numeric Display**: Decide whether to display values on charts by default.
- **Scale Minimum**: Set the minimum scale value.
- **Scale Maximum**: Set the maximum scale value.
- **Alarm Value**: Specify an alarm limit for the scale.
- **Alarm Color**: Set the color of display value which exceeds the alarm limit.
- **Enable Multiple Alarm**：Enabling this feature allows users to configure multiple segments of alarm colors for the gauge and the color for displaying values.

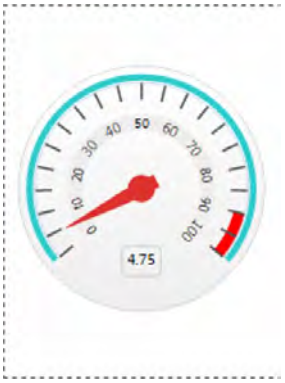
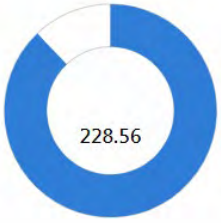


  - **Alarm Value**：Only numerical values are accepted, e.g., if the first setting is 10, it represents the range from 0 to 10.
  - **Alarm Color**：Set the color corresponding to the alert value's numerical range.
  - **Alarm Text Color**：Set the color for displaying the value on the gauge corresponding to the alert value.
  - +：Click this button to add the configuration to the alert settings table.
  - **Alert Settings Table**：Click ✕ to remove the alert range configuration.




- **Remark**: Additional notes.

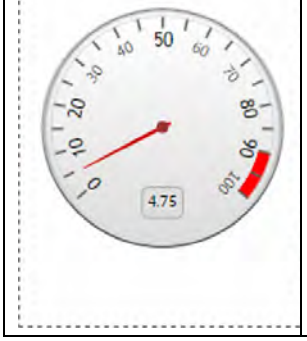
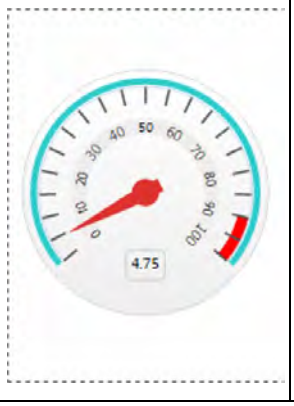
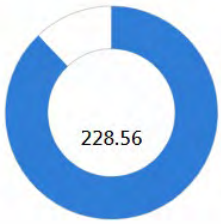
- **Style**: Style 1/ Style 2/ Style 3/ Style 4

| Style 1 | Style 2 | Style 3 | Style 4 |
|---|---|---|---|
| | |  |  |

- **Decimal Places**: Set the number of decimal places displayed in the chart data.

- **Show**: Energy Consumption/ Energy Supply.

4. **Preview**: Display the result of the configuration as shown below.

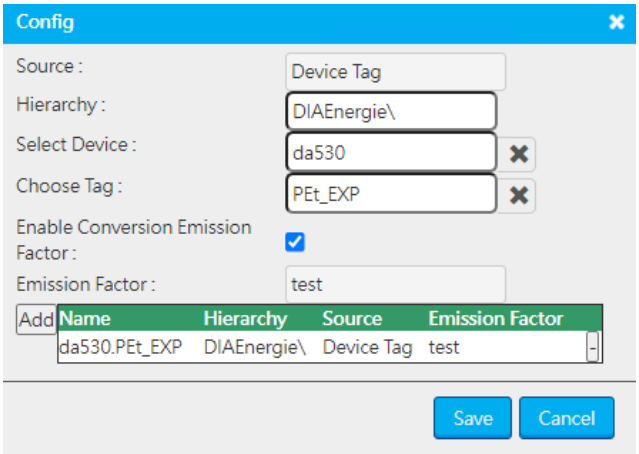
| Style 1 | Style 2 | Style 3 | Style 4 |
|---|---|---|---|
|  | |  |  |

### 5.3.2.3 Comparable Items

- **Compare Components:**


- **Name**: Enter the item name; required field.

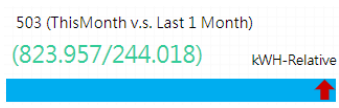
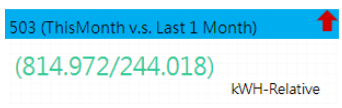
- Data Configuration:



- **Source**: Device Tag/ Internal Tag/ Energy Circuit
- **Hierarchy**: Select the target hierarchy level where the tag or circuit at.
- **Select Device**: This setting would be displayed only when Source is set to Device Tag.
- **Choose Tag**: This setting would be displayed only when Source is set to Device Tag or Internal Tag.
- **Energy Type**: This setting would be displayed only when Source is set to Energy Circuit.
- **Enable Emission Factor**: It is disabled by default. If selected, a dropdown menu for emission factors will appear. This feature will multiply the tags by the corresponding coefficient set in the menu.
- **Emission Factor**: Dropdown menu, data sources are the emission factors configured in Chapter 9.5 Hierarchy.

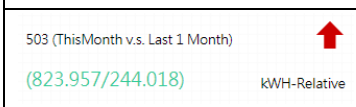
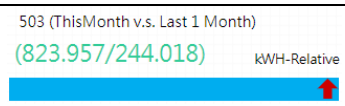
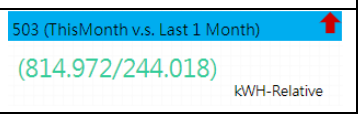
1. **Update Frequency**

- **Update Frequency**: No Update/ 1 Minute/ 5 Minutes/ 10 Minutes
- **Compare Type**: Day/ Week/ Month
- **Intervals for Comparison**: According to the selected compare type, specify the two intervals for comparison.
- **Decimal Places**: Set the number of decimal places displayed in the data.
- **Text Color**: Change the color of texts of the component.
- **Background Color**: Change the color of background of the component.
- **Data Color**: Change the color of display values.
- **Show**: Energy Consumption/ Energy Supply.
- **Style**: Style 1/ Style 2/ Style 3

| Style 1 | Style 2 | Style 3 |
|---|---|---|
| |  |  |

- Remark: Additional notes; non-mandatory.

2. **Preview**

| Style 1 | Style 2 | Style 3 |
|---|---|---|
|  |  |  |

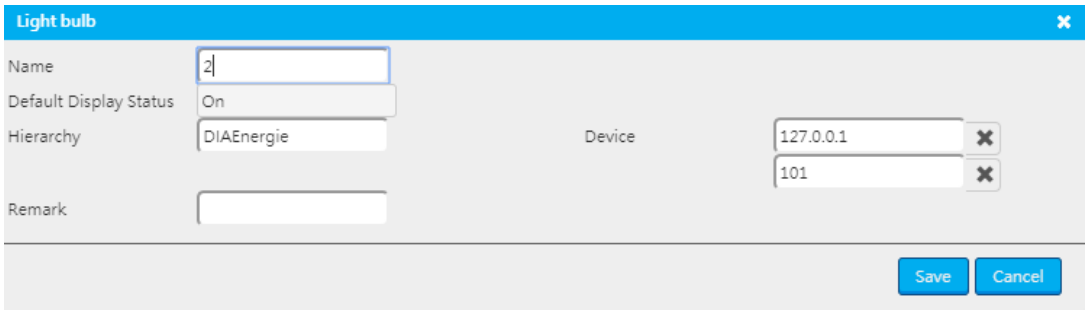
## 5.3.3 Control Items

The third category in the Toolbar box is Control Items, including options like “On/Off” and “Input” with the following descriptions:

### 5.3.3.1 ON / Off

- **Fan, Pump, Lightbulb, Rocker, Knob:**

The Control Items page allows users to execute On and Off demands from sources (only BIT tag is allowed). There are a total of 5 On/Off types (for fan, pump, lightbulb, rocker, and knob). All the types can switch between On and Off mode. The following is an example of the fan type:

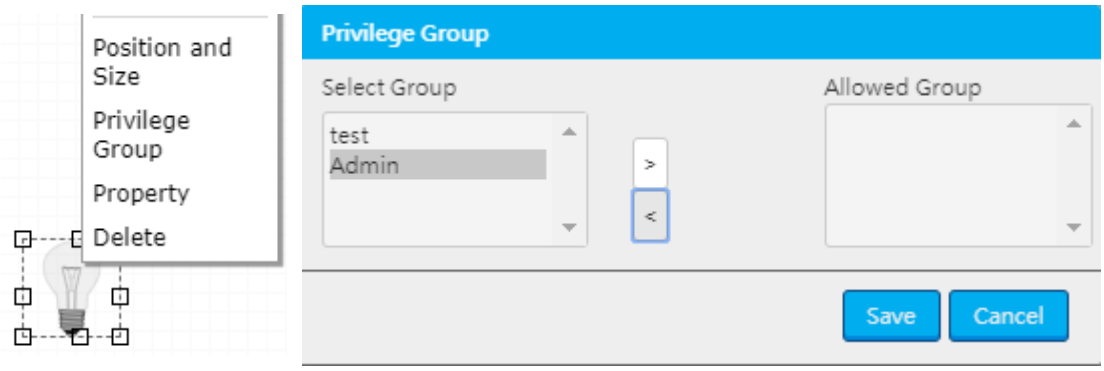


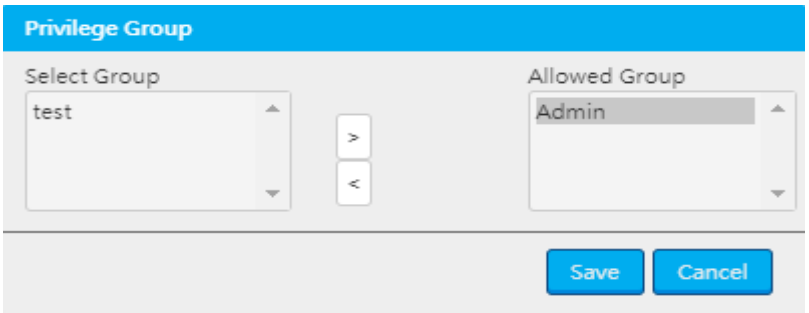

**Configuration**

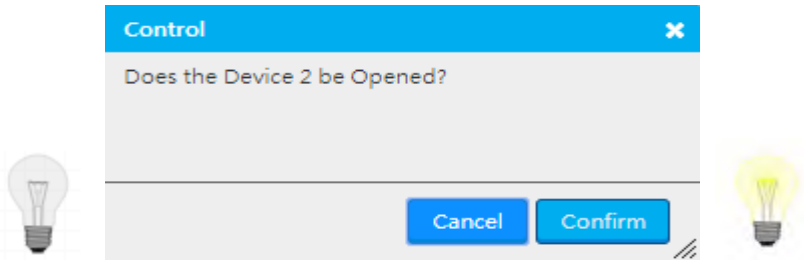
- **Name**: Item name which would be displayed in the dialog box of control actions.
- **Default Status**: Set the default status of the item.
- **Hierarchy**: Select the target hierarchy level where the device at.
- **Device**: Only the devices and BIT-type tags under the selected hierarchy would be displayed for you to choose.

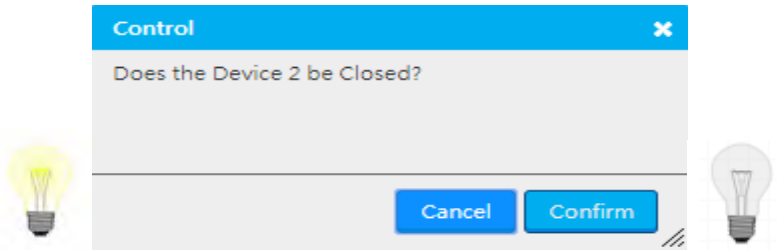
**Preview**

You must allow the group to be privileged before proceeding control actions on Preview page.



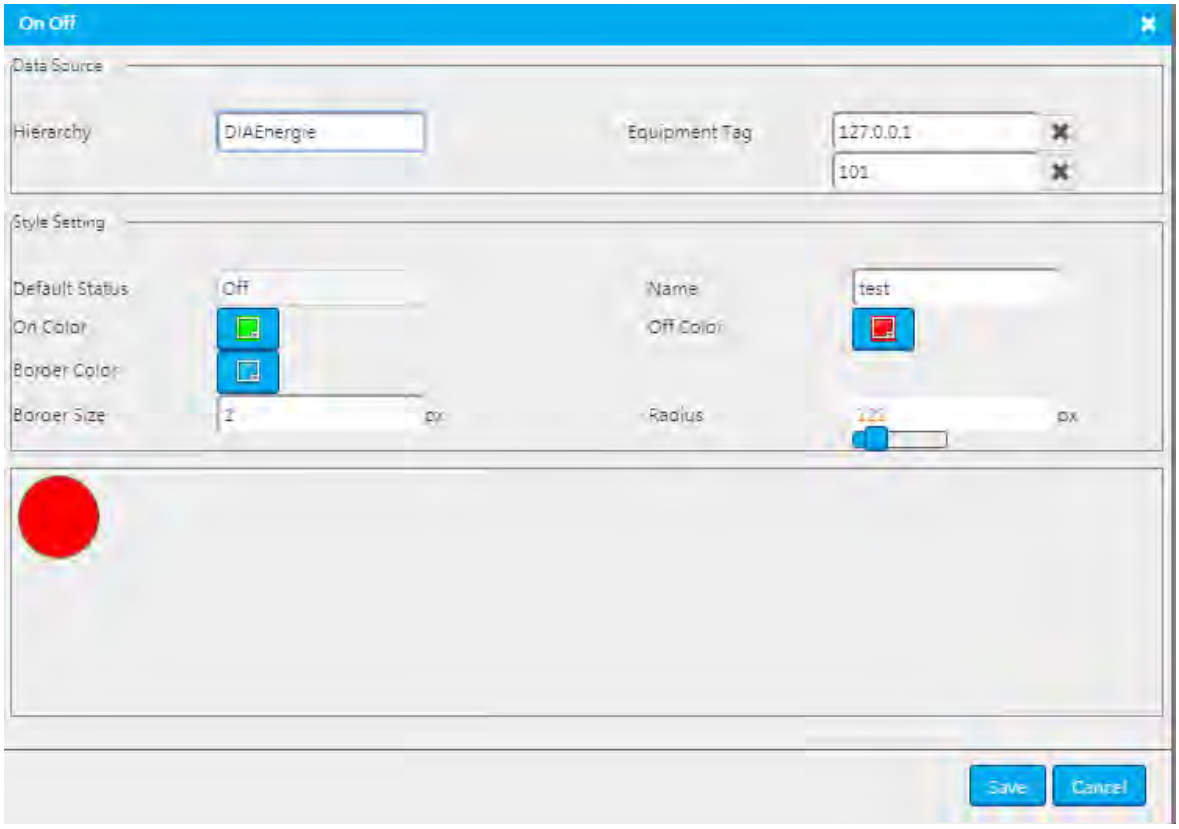



- **On/ Off:**

On/ Off knobs with color setting may be required on the page for users' needs.




1. **Source**

   - **Data Source**: Select an equipment tag. (Only Bit type tags with address 0xxxx can be chosen which the fields of equipment tag are writable.)

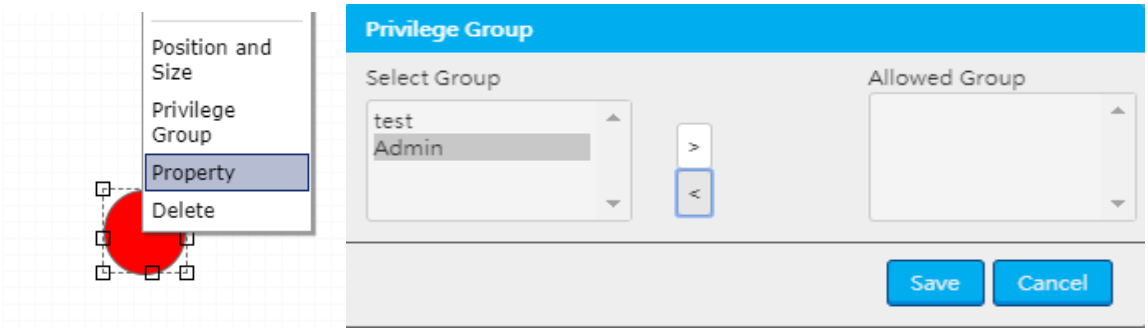
2. **Style Setting**

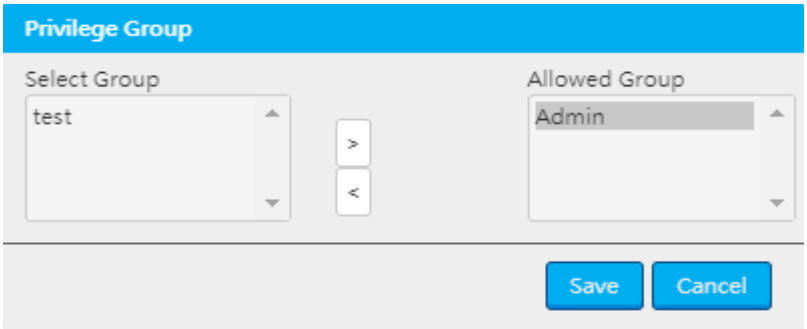
   - **Default Status**: Set the default status to be displayed initially.
   - **Name**: Item name which would be displayed in the dialog box of control actions.
   - **On Color**: Select the color of the item to be displayed when the device status is ON.
   - **Off Color**: Select the color of the item to be displayed when the device status is Off.
   - **Border Size**: Define the border width displayed on the item.
   - **Border Color**: Choose the border color displayed on the item.
   - **Radius**: Set the corner radius displayed on the item.

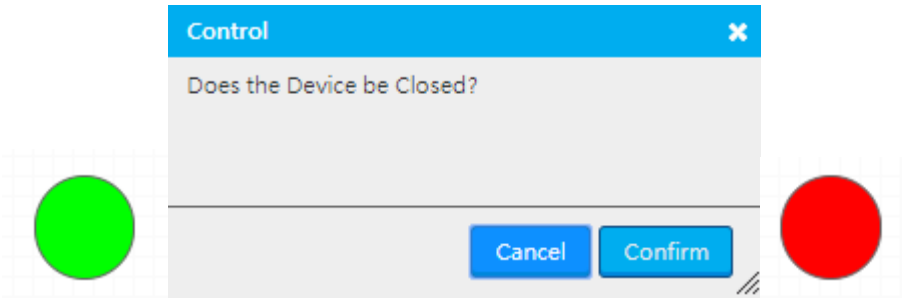
3. **Preview:** Display the result of the configuration.

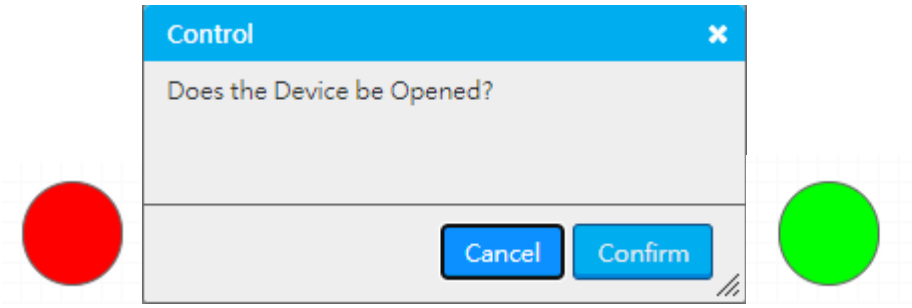
4. **Privilege Group**

Right click on the item and select Privilege group on UI Design page. The target group must be privileged before proceeding control actions on Preview page.



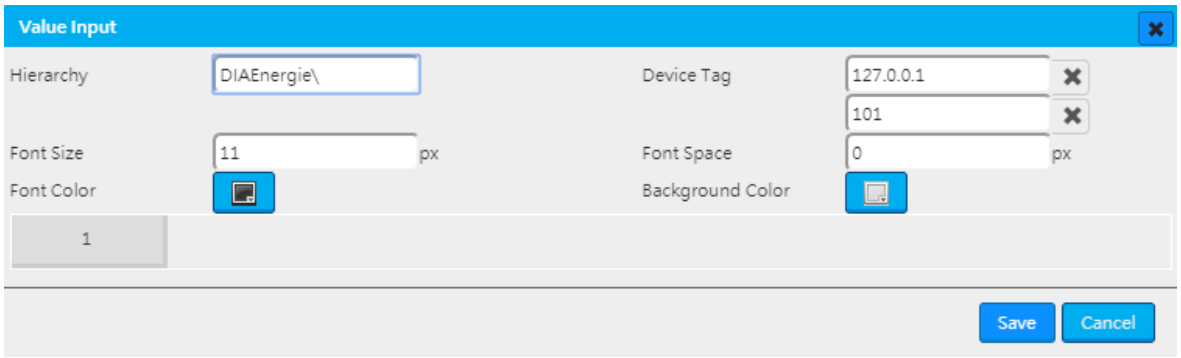



### 5.3.3.2 Input

- **Numeric Entry:** 23

Users can input values of a single source and the DIAEnergie will control the device base on the settings.




1. **Source**

   - **Data Source**: Select the target equipment tag which the fields of equipment tag are writable.

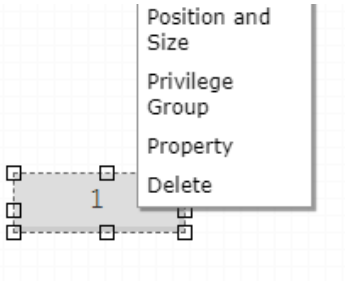
2. **Style Setting**

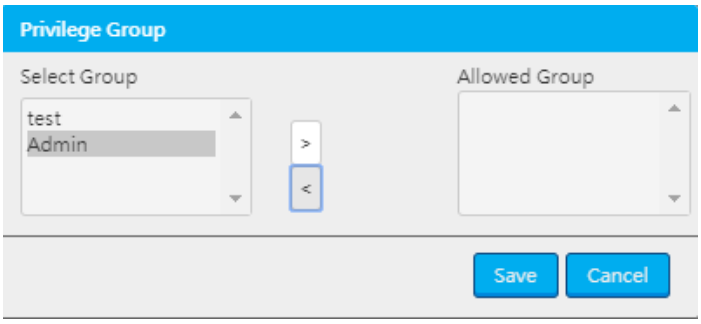
   - **Font Size**: Define the text size displayed on the item.
   - **Font Space**: Define the spaces between texts.
   - **Font Color**: Choose the text color displayed on the item.
   - **Background Color**: Choose the background color of the item.

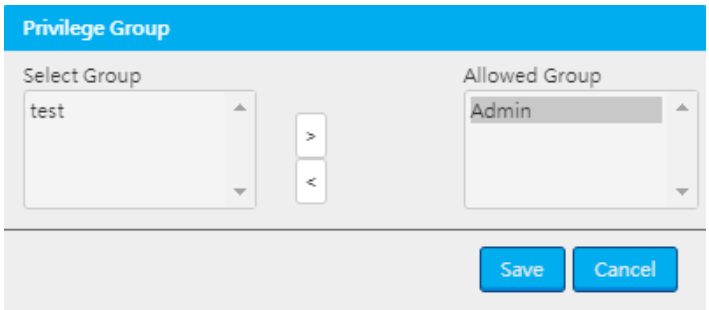
3. **Preview:** Display the result of the configuration.

4. **Privilege Group**

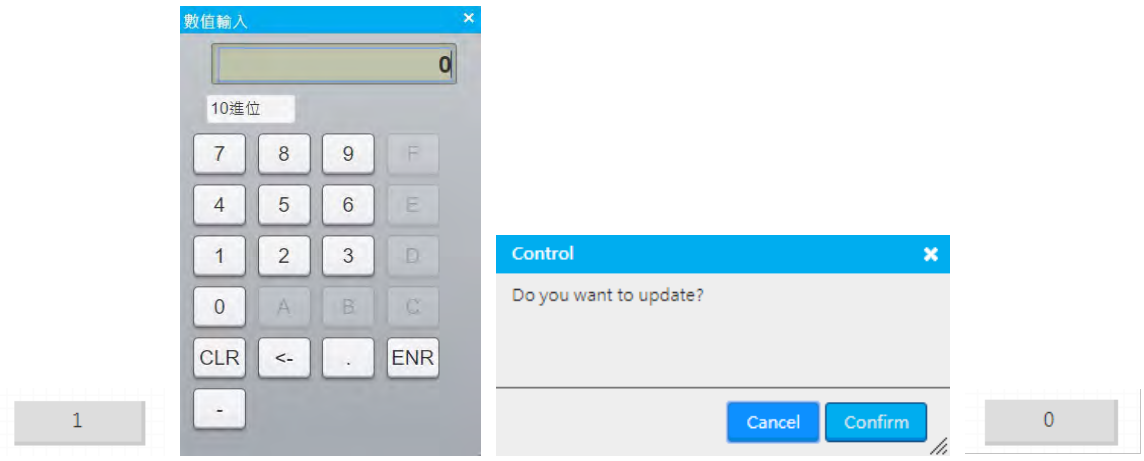
Right click on the item and select Privilege group from the pop-up list on UI Design page. Add or remove the target group to/ from privileged groups by using > and <, then click on Save to finish the setting.




On Preview page, you would only need to click on the numeric entry item and a calculator tool would pop up, then choose the desired number system as well as entering the desired value. A control dialog box asking, “Do you want to update?” would be displayed after you click ENR on the calculator. Hexadecimal, decimal, and binary system are currently supported for the number system.



## 5.3.4 Real-time Data

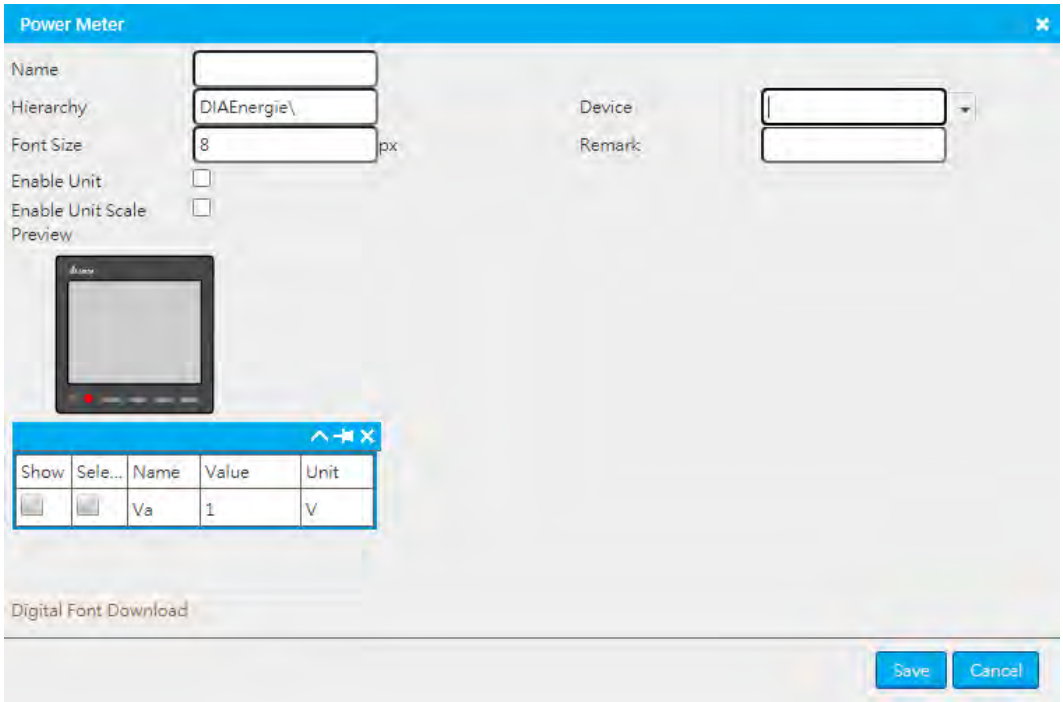
The fourth category in the Toolbar box is Real-time Data and include options like Monitoring Device and List.

### 5.3.4.1 Monitor Device and List

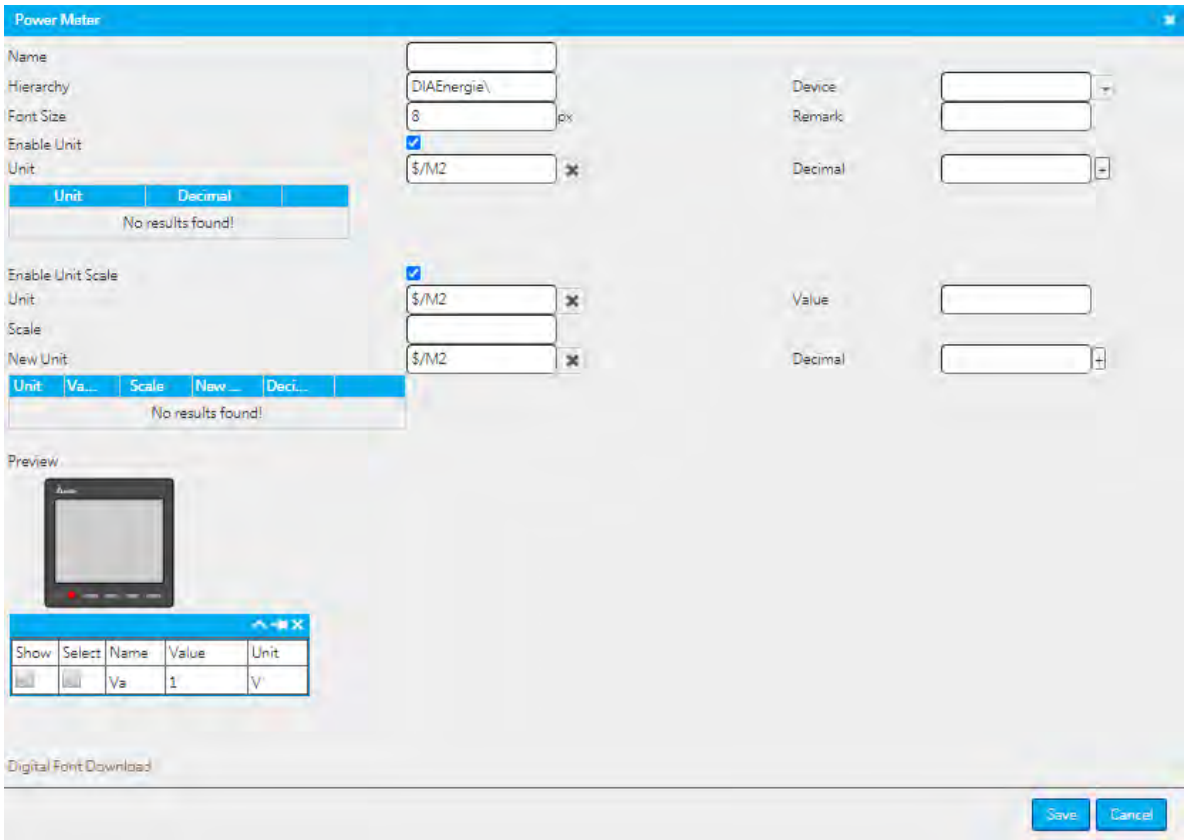
- **Power Meter:**

The page provides information for setting power meters. Users can first setup the device tag and when the item is selected in UI Design and Preview page, a pop-up window will appear to display the real-time power meter data. In addition, the power meter can also be used together with other devices for optimizing data collection. The following is an example of the actual setting:

**Note:** For power meter devices, new tags added via quick-add would be displayed according to the tag sequence. For other devices, new tags would be displayed in the order of being added.



The configuration would be displayed as below after checking the checkboxes of Enable Unit and Enable Unit Scale.




1. **Source**

- **Name**: Enter the item name; required field.
- **Hierarchy**: Select the target hierarchy level where the device at.
- **Device**: Select the target device.

2. **Style Setting**

- **Font Size**: Define the text size displayed on the item.
- **Remark**: Additional notes; not required.
- **Enable Unit**: If checked, decimal setting field would be displayed. The decimal setting would be applied to the corresponding unit.
  - **Unit**: Select the unit you want to change its decimal setting. In case that the unit name is too long, you must go to System Settings→Units→Edit first to configure all abbreviations of units that would be used. Do not configure this unit setting before you edit unit abbreviations in system setting, or the abbreviation settings may be invalid.
  - **Decimal**: Specify the number of decimal places to be displayed.

- ◆ [+]: Add the settings to the decimal conversion table at below.

| Unit | Decimal | |
|---|---|---|
| No results found! | | |

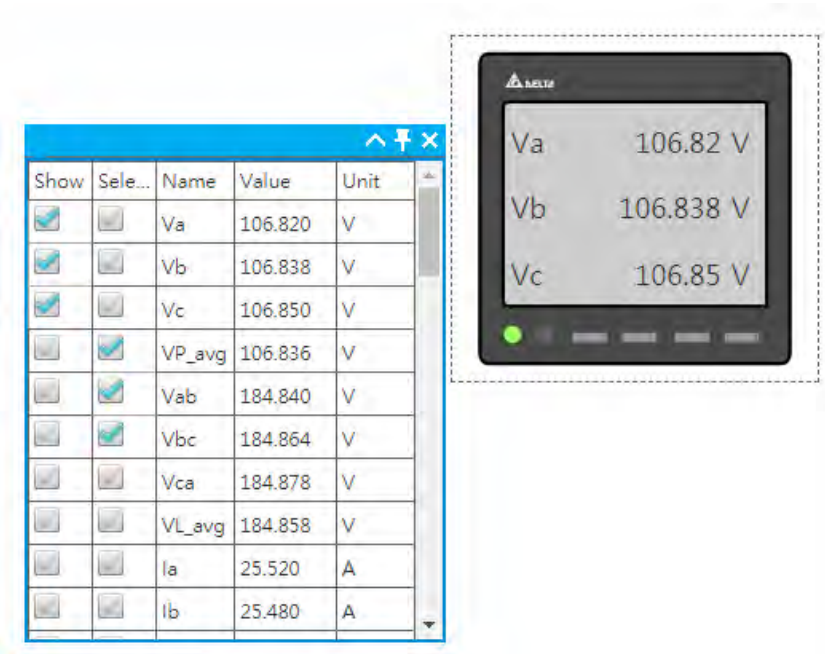
■ **Enable Unit Scale:**

- ◆ **Unit**: Select the original unit you want to modify in unit scale setting. The unit setting here is not abbreviation field.
- ◆ **Value**: When the value of the original unit exceeds this setting value, it would be multiplied with the following scale setting.
- ◆ **Scale**: When the value of the original unit exceeds this setting value, it would be multiplied with the scale setting here.
- ◆ **New Unit**: Select the new unit for the converted value. The unit setting here is not abbreviation field.
- ◆ **Decimal**: Set the number of decimal places to be displayed for the new unit.
- ◆ [+]: Add the settings to the decimal conversion table at below.

| Unit | Va... | Scale | New ... | Deci... | |
|---|---|---|---|---|---|
| No results found! | | | | | |

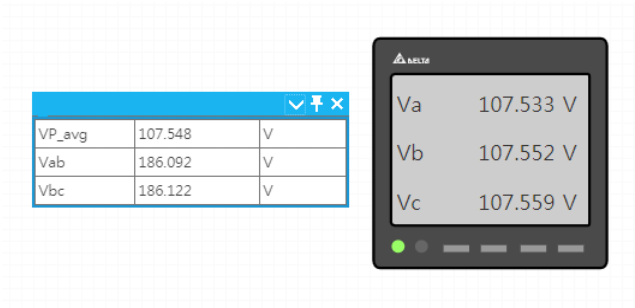
3. **Preview**

The default display of the power meter is shown as below. Click on it and all tags under the power meter would be listed.



4. **Display**

- **Show**: Up to 3 tags can be selected to be shown in the power meter illustration.
- **Select**: Select up to 3 tags can be selected to be shown in the table as default on Preview page.
- **Name**: The name displayed in tag configuration.
- **Value**: The real-time value of the tag.
- **Unit**: Tag unit. In case that the unit name is too long, go to System Settings→Units→Edit to configure the abbreviation of the target unit.
- : Collapse table rows.
- : The table would be displayed at the place where you click on the pin button on Preview page.
- : Close the table.

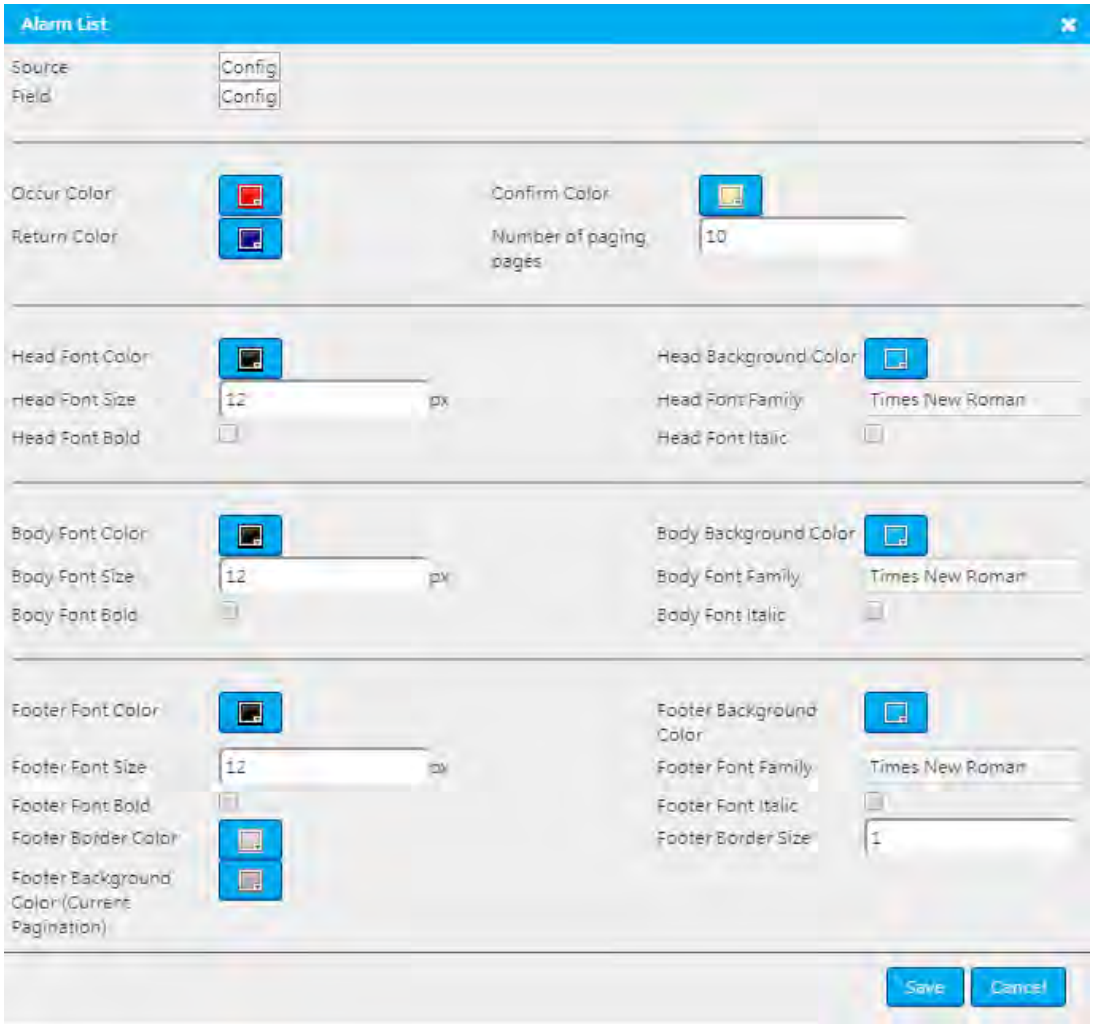



The following picture on left side presents the default view of power meter item, while the one on the right is configured with decimal setting under Enable Unit by selecting Kwh as unit and setting Decimal to 1.

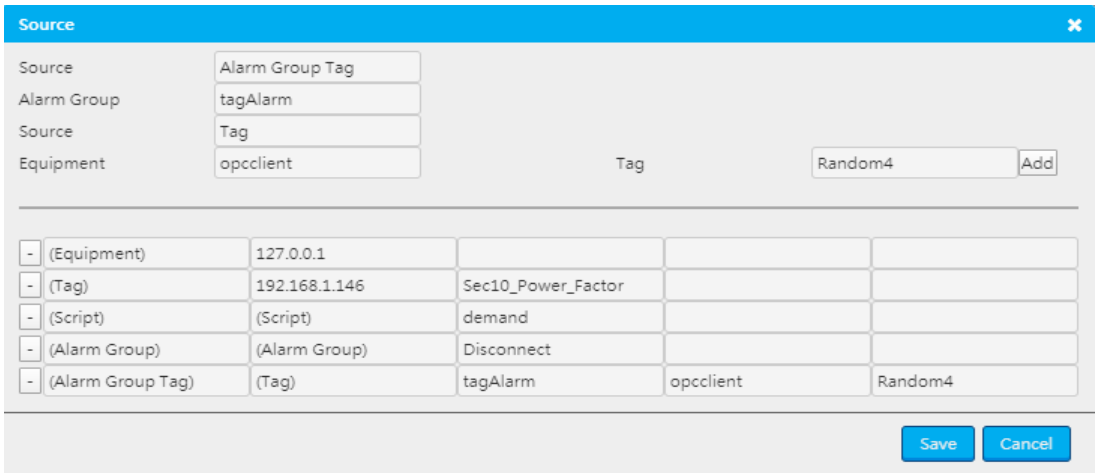
The following picture on left side presents the default view of power meter item, while the one on the right is configured with unit scale settings. The value of unit kWH-Relative is set to be multiplied by 0.001 if it exceeds 1000 and the new unit is set to MWH-Relative as well as setting Decimal to 1.

- **Alarm List:**

You are allowed to configure alarms that may occur to some particular tags, devices or groups. With alarms listed on the page (from the most recent to oldest), it would be easy to tell the status of alarms with different colors. The alarm update frequency would be same as system update frequency.

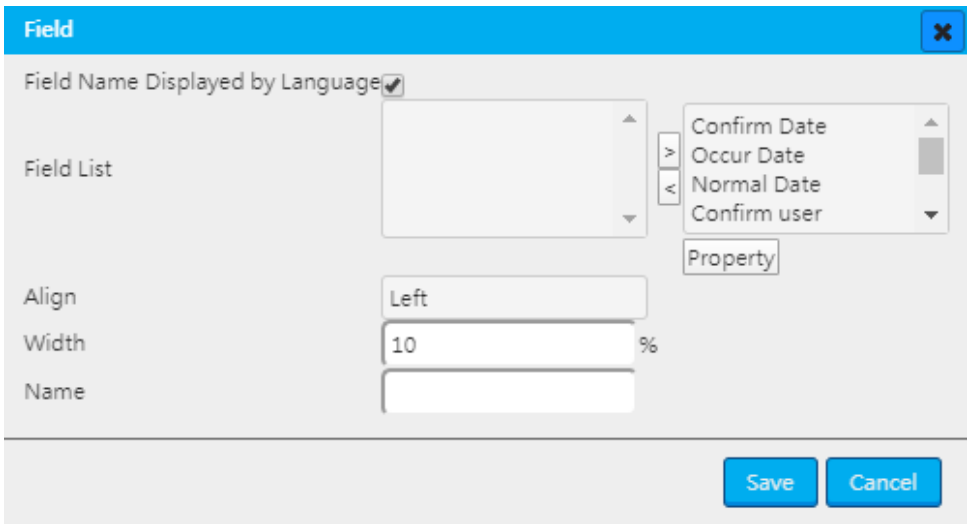


**1. Source:**




- **Source**: Equipment/ Tag/ Script/ Alarm Group/ Alarm Group Tag. (Only for tag alarms, not including events.)
- **Add**: Click this button to add the selected source information to the table below.
- **Display Table**: Display information of all configured settings.

**2. Field:**




- **Field Name Displayed by Language**: Check the box to enable switching the language of the field name to the language set in the system.
- **Field List**: Select fields to be displayed.

- **Property**: After selecting the desired field, click this button to display its settings at below.
- **Name**: Field name.
- **Width**: Set the width of the field.
- **Align**: Set the text alignment.

**3. Alarm Colors**

- **Number of Paging Pages**: Set the number of alarms to be displayed on one page.
- **Occur Color**: Select the color for alarms that have not been returned and confirmed.
- **Return Color**: Select the color for alarms that have been returned.
- **Confirm Color**: Select the color for alarms that have been confirmed.

4. **Head**:

- **Head Font Color**: Select the font color of head texts.
- **Head Background Color**: Select the background color of head texts.
- **Head Font Size**: Select the font size of head texts.
- **Head Font Family**: Select the font style of head texts.
- **Head Font Bold**: Check the box to make the head texts bold.
- **Head Font Italic**: Check the box to make the head texts italic.

**5. Body:**

- **Body Font Color**: Select the font color of body texts.
- **Body Background Color**: Select the background color of body texts.
- **Body Font Size**: Select the font size of body texts.
- **Body Font Family**: Select the font style of body texts.
- **Body Font Bold**: Check the box to make the body texts bold.
- **Body Font Italic**: Check the box to make the body texts italic.

**6. Footer:**

- **Footer Font Color**: Select the font color of footer texts.
- **Footer Background Color**: Select the background color of footer texts.
- **Footer Font Size**: Select the font size of footer texts.
- **Footer Font Family**: Select the font style of footer texts.
- **Footer Font Bold**: Check the box to make the footer texts bold.
- **Footer Font Italic**: Check the box to make the footer texts italic.
- **Footer Border Size**: Set the size of footer borders.
- **Footer Border Color**: Set the color of footer borders.
- **Footer Background Color**: Set the background color of paginations.

**7. Preview:**

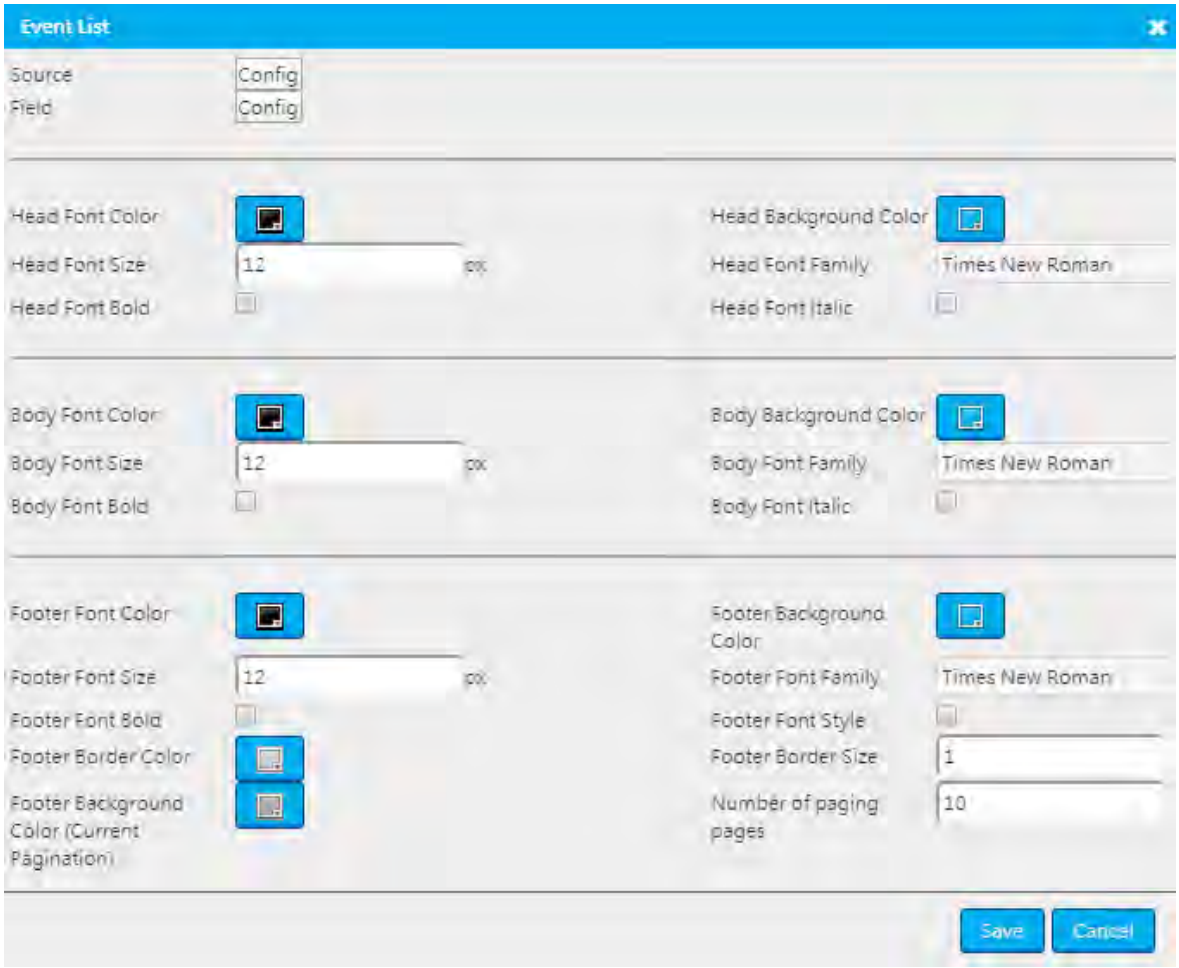
- **Confirm**: This button would be shown when an alarm occurs for you to perform alarm check manually. The confirm time would be recorded in the alarm information as well.

| | Confirm Date | Occur Date | Normal Date | Confirm User | Message | Type | Tag Name |
|---|---|---|---|---|---|---|---|
| Confirm | | 2020-04-01 12:48:26 | | | 206 | High High alarm | Random4 |
| Confirm | | 2020-04-01 12:46:25 | 2020-04-01 12:47:26 | | 860 | High High alarm | Random4 |
| Confirm | | 2020-04-01 12:45:26 | | | -0.985 | Low Low alarm | DPFa |
| Confirm | | 2020-04-01 12:44:25 | 2020-04-01 12:45:25 | | 401 | High High alarm | Random4 |
| Confirm | | 2020-04-01 12:38:25 | 2020-04-01 12:39:25 | | 108 | High High alarm | Random4 |
| Confirm | | 2020-04-01 12:37:26 | 2020-04-01 12:37:55 | | 830 | High High alarm | Random4 |
| Confirm | | 2020-04-01 12:36:25 | 2020-04-01 12:36:55 | | 48 | High High alarm | Random4 |
| Confirm | | 2020-04-01 12:34:56 | 2020-04-01 12:35:25 | | 700 | High High alarm | Random4 |
| Confirm | | 2020-04-01 12:33:42 | 2020-04-01 12:34:13 | | 136 | High High alarm | Random4 |
| Confirm | | 2020-04-01 12:32:05 | 2020-04-01 12:32:56 | | 880 | High High alarm | Random4 |

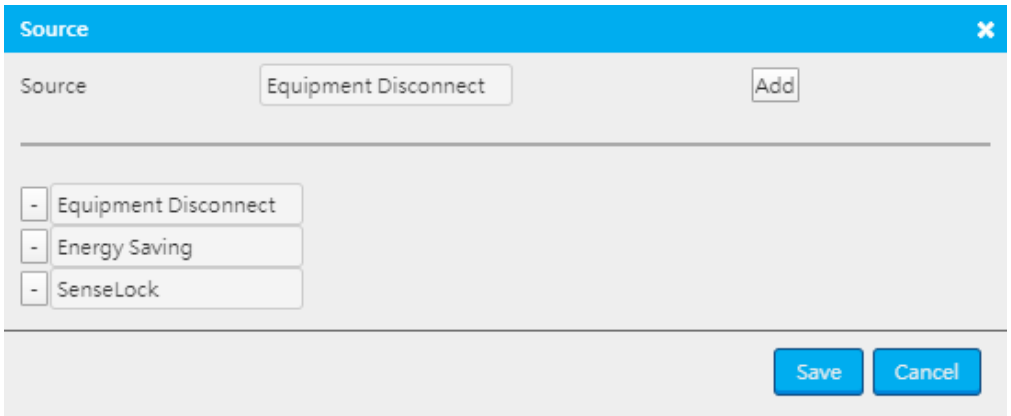
« < 1 2 3 4 5 > »

- **Event List:**

Event display can be configured flexibly which events would be sorted by time order (from newest to oldest) listed on the page. The update frequency is same as the frequency of system updates.



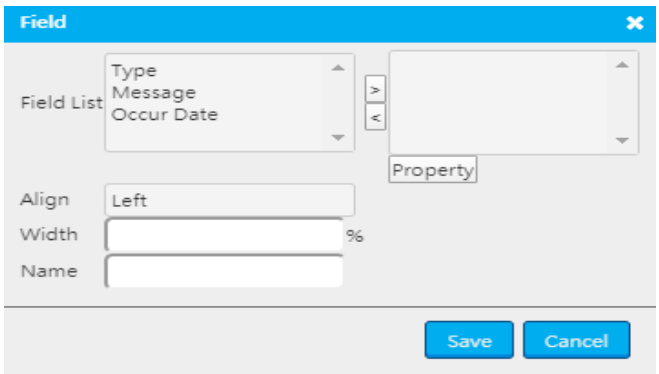

1. **Source:**




- **Source**: There are currently three types of alarms supported in the system: EquipmentDisconnected/ SenseLockVerify/ EnergySaving.

- **Add**: Add the selected source to the table below.
- The lower table: List all the selected source to display events.

2. **Field:**




- **Field List**: Select the desired fields to be displayed.
- **Property**: After selecting the desired field, click this button to display its settings at below.
- **Name**: Display field name.
- **Width**: Set the width of the field.
- **Align**: Set the text alignment.

3. **Head:**

- **Head Font Color**: Select the font color of head texts.
- **Head Background Color**: Select the background color of head texts.
- **Head Font Size**: Select the font size of head texts.
- **Head Font Family**: Select the font style of head texts.
- **Head Font Bold**: Check the box to make the head texts bold.
- **Head Font Italic**: Check the box to make the head texts italic.

4. **Body:**

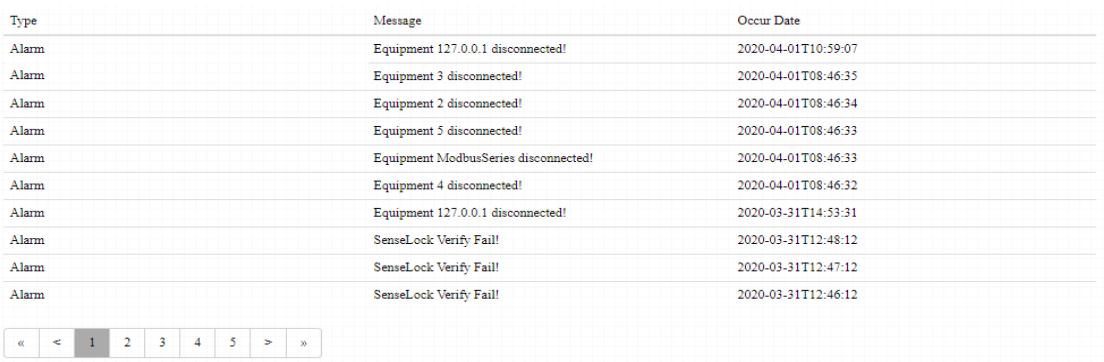
- **Body Font Color**: Select the font color of body texts.
- **Body Background Color**: Select the background color of body texts.
- **Body Font Size**: Select the font size of body texts.
- **Body Font Family**: Select the font style of body texts.

- **Body Font Bold**: Check the box to make the body texts bold.
- **Body Font Italic**: Check the box to make the body texts italic.

5. **Footer:**

- **Footer Font Color**: Select the font color of footer texts.
- **Footer Background Color**: Select the background color of footer texts.
- **Footer Font Size**: Select the font size of footer texts.
- **Footer Font Family**: Select the font style of footer texts.
- **Footer Font Bold**: Check the box to make the footer texts bold.
- **Footer Font Italic**: Check the box to make the footer texts italic.
- **Footer Border Size**: Set the size of footer borders.
- **Footer Border Color**: Set the color of footer borders.
- **Footer Background Color**: Set the background color of paginations.
- **Number of Paging Pages**: Set the number of alarms to be displayed on one page.

6. **Preview**

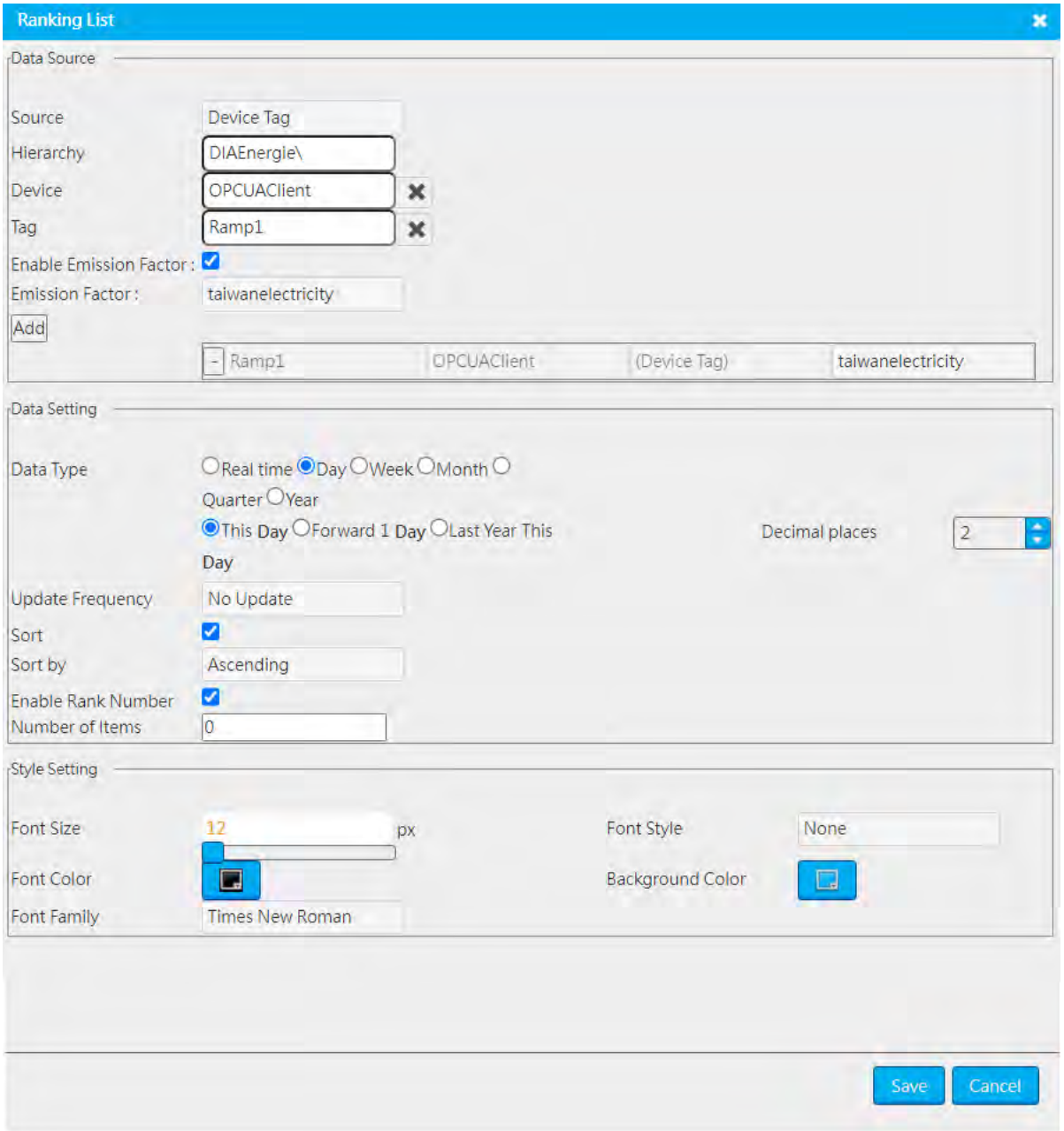


| Type | Message | Occur Date |
|---|---|---|
| Alarm | Equipment 127.0.0.1 disconnected! | 2020-04-01T10:59:07 |
| Alarm | Equipment 3 disconnected! | 2020-04-01T08:46:35 |
| Alarm | Equipment 2 disconnected! | 2020-04-01T08:46:34 |
| Alarm | Equipment 5 disconnected! | 2020-04-01T08:46:33 |
| Alarm | Equipment ModbusSeries disconnected! | 2020-04-01T08:46:33 |
| Alarm | Equipment 4 disconnected! | 2020-04-01T08:46:32 |
| Alarm | Equipment 127.0.0.1 disconnected! | 2020-03-31T14:53:31 |
| Alarm | SenseLock Verify Fail! | 2020-03-31T12:48:12 |
| Alarm | SenseLock Verify Fail! | 2020-03-31T12:47:12 |
| Alarm | SenseLock Verify Fail! | 2020-03-31T12:46:12 |

« < 1 2 3 4 5 > »

- **Ranking List:**

Provide flexible configuration of multiple tags. Tags can be ranked by data type in ascending or descending order while rank number and the number of displayed items can be configured. The minimum of update frequency would one minute.




1. **Source**

- **Source**: Device Tag/ Internal Tag/ Hierarchy/ Energy Type/ User Input
- **Enable Emission Factor** : It is disabled by default. If selected, a dropdown menu for emission factors will appear. This feature will multiply the tags by the corresponding coefficient set in the menu.

- **Emission Factor** : Dropdown menu, data sources are the emission factors configured in Chapter 9.5 Hierarchy.

2. **Data Setting**

- **Update Frequency**: No Update/ 1 Minute/ 5 Minutes/ 10 Minutes
- **Data Type**: Select a time interval for interval data display.
- **Sort**: Check the box to rank the source data.
- **Sort By**: Ascending/ Descending
- **Enable Rank Number**: Check the box to display the specified number of items.
- **Number of Items**: Specify the number of items to be displayed.
- **Decimal Places**: Set the number of decimal places to be shown in display data.

3. **Style Setting**

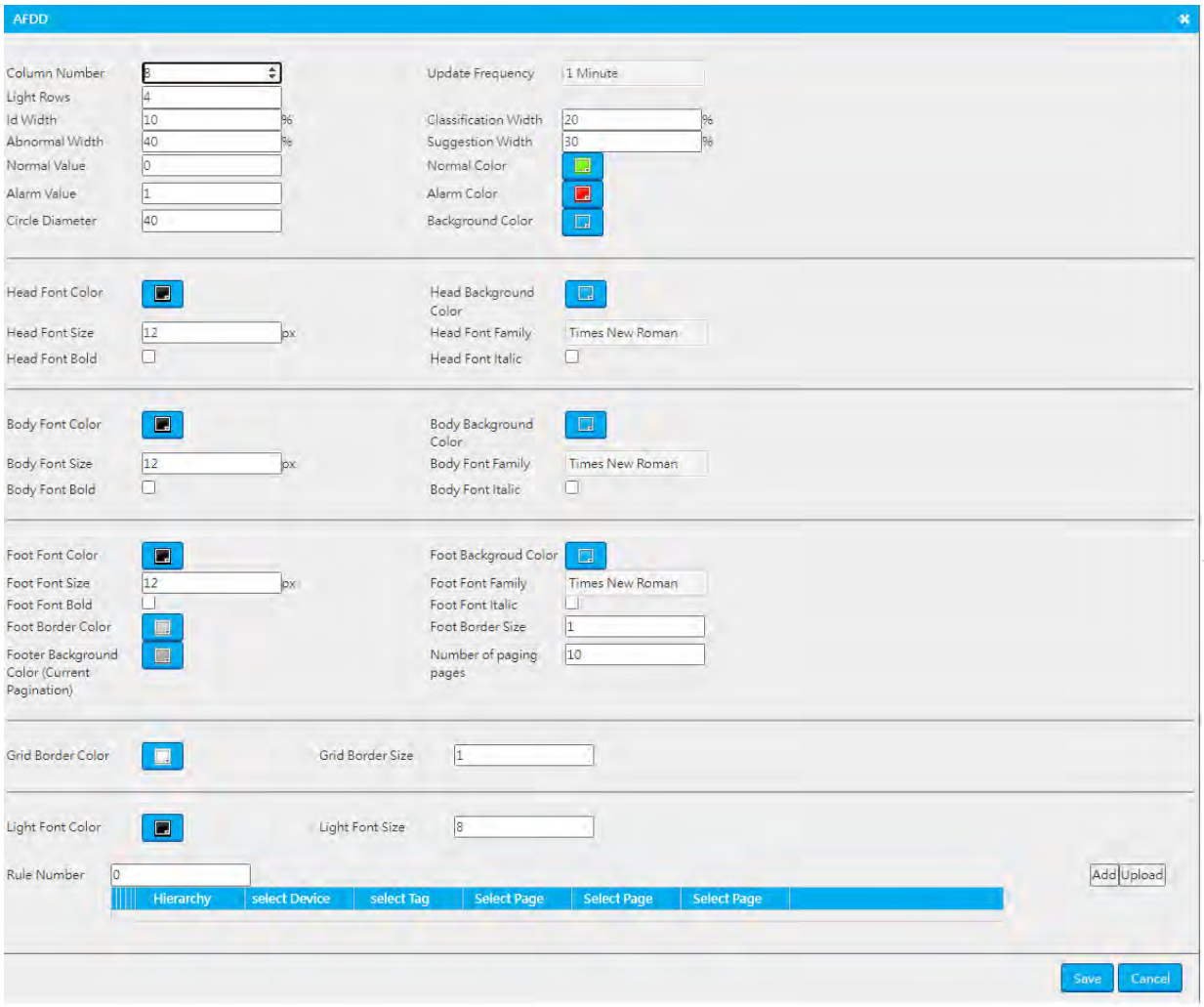
- **Font Size**: Set the font size of display texts on items.
- **Font Style**: Set the font style of display texts; None/ Bold/ Italic.
- **Font Color**: Set the font color of display texts on items.
- **Background Color**: Set the background color displayed on items.
- **Font Family**: Select a font for display texts.

4. **Preview**

| | | |
|---|---|---|
| 1 | opcclient | 853 |
| 2 | opcclient | 3 |
| 3 | opcclient | 0 |
| 4 | opcclient | -40 |

- **AFDD Display:**

This item must be used with Modbus devices. You need to enable AFDD in tag configuration and maintain relating fields with AFDD module so as to display information of tag status and suggestion.




1. **Data Setting:**

- **Column Number**: Set the number of indicator lights displayed in a row.
- **Update Frequency**: No Update/ 3 seconds/ 5 seconds/ 10 seconds/ 20 seconds/ 30 seconds/ 1 Minute/5 minutes/ 10 minutes
- **Light Rows**: Set the number of rows to determine the separation.
- **ID Width**: Set the width of ID column.
- **Classification Width**: Set the width of classification column.
- **Abnormal Width**: Set the width of abnormal column.

- **Suggestion Width**: Set the width of suggestion column.
- **Normal Value**: Specify the number displayed on normal indicator lights.
- **Normal Color**: Select the color of normal indicator light.
- **Alarm Value**: Specify the number displayed on alarm indicator lights.
- **Alarm Color**: Select the color of alarm indicator light.
- **Circle Diameter**: Specify the circle diameter of indicator lights.
- **Background Color**: Select the background color of AFDD items.

2. **Head:**

- **Head Font Color**: Select the font color of head texts.
- **Head Background Color**: Select the background color of head texts.
- **Head Font Size**: Select the font size of head texts.
- **Head Font Family**: Select the font style of head texts.
- **Head Font Bold**: Check the box to make the head texts bold.
- **Head Font Italic**: Check the box to make the head texts italic.

3. **Body:**

- **Body Font Color**: Select the font color of body texts.
- **Body Background Color**: Select the background color of body texts.
- **Body Font Size**: Select the font size of body texts.
- **Body Font Family**: Select the font style of body texts.
- **Body Font Bold**: Check the box to make the body texts bold.
- **Body Font Italic**: Check the box to make the body texts italic.

4. **Footer:**

- **Footer Font Color**: Select the font color of footer texts.
- **Footer Background Color**: Select the background color of footer texts.
- **Footer Font Size**: Select the font size of footer texts.

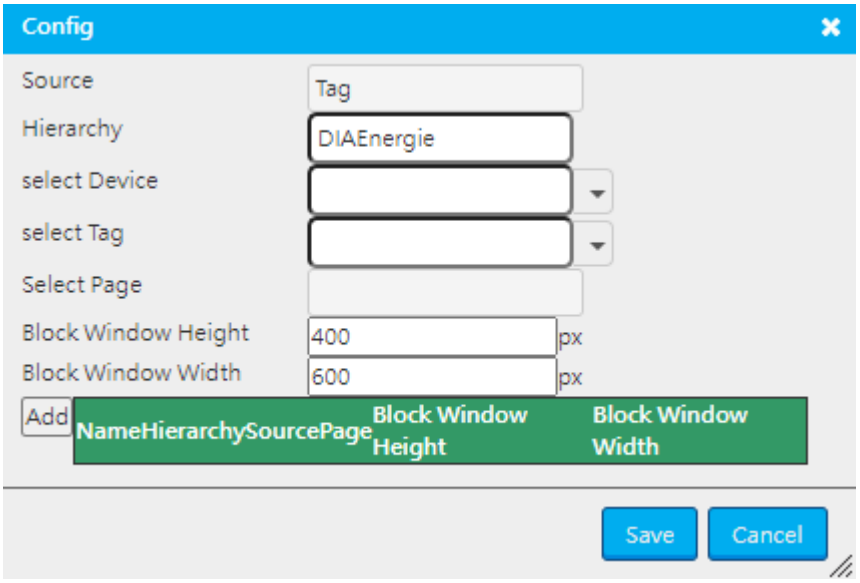
- **Footer Font Family**: Select the font style of footer texts.
- **Footer Font Bold**: Check the box to make the footer texts bold.
- **Footer Font Italic**: Check the box to make the footer texts italic.
- **Footer Border Size**: Set the size of footer borders.
- **Footer Border Color**: Set the color of footer borders.
- **Footer Background Color**: Set the background color of paginations.
- **Number of Paging Pages**: Set the number of alarms to be displayed on one page.

5. **Grid**

- **Grid Border Color**: Select the color of grid border.
- **Grid Border Size**: Select the size of grid border.

6. **AFDD Rule Settings:**

- **Light Font Color**: Select the font color of rules displayed on indicator lights.
- **Light Font Size**: Set the font size of rules displayed on indicator lights.
- **Rule Number**: Specify the number of rules and the corresponding row number would also be added to the table below.
- Click on **Add** and the following window would pop up.

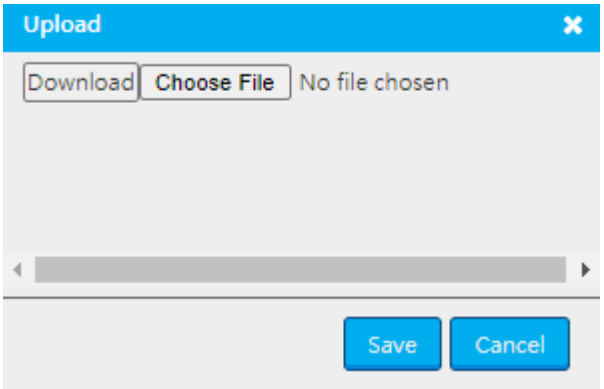



➢ **Source**: Device tag.

➢ **Hierarchy**: Select the hierarchy where the target tag is belonged.

- **Select Device**: Only Modbus devices can be selected.
- **Select Tag**: Select the target tag.
- **Select Page**: Leave blank or select a target page for block window if needed.
- **Block Window Height**: This setting would pop up if a page is selected.
- **Block Window Width**: This setting would pop up if a page is selected.
- **Add**: Add the configuration to the table below:
- **Save**: Click Save to add the configuration table to the rule configuration table.

■ **Upload**




- **Download**: Download the sample of AFDD rules.
- **Choose File**: Select the desired AFDD file to upload.
- **Save**: Perform uploads and paste the rules to the AFDD rule table.

■ **Preview**

6

# Chapter 6 Basic Query

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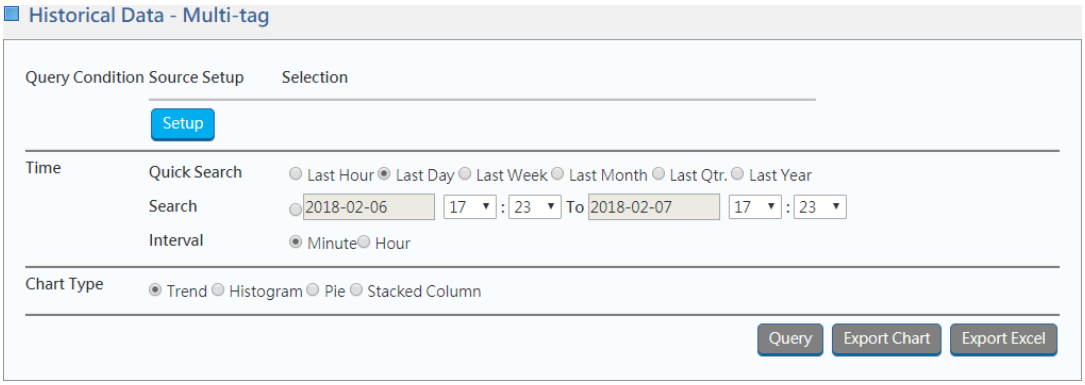
## 6.1 Introduction

The Basic Query function provides a query section for users to do setup and view these data collection of devices via analytical methods along with charts for download. The chapter also introduces two items under this function: Historical Data – Multi-Tag and Historical Data- Multi-Time Period.

## 6.2 Historical Data – Multi-Tag

The item provides all kinds of charts for query condition. A major function includes data query of y-axis from multiple tags at the same period. Users can first click Setup to select the source settings; choose the time range in Time section; select desired chart from the Chart Type section; finally, click Query or Export Chart/Excel file to the server for completion.



### 6.2.1 Setup

Users can click Setup button in the Query Condition section. A pop-up window appears, and users can select Type and complete other selectable items for the setting. In addition, click + to add more conditions.

**Select Tag**

- Type: ❶ Device Tag ❷ Internal Tag ❸ Energy Circuit
- Select from the following items based on the Type.

  ❶ Device Tag \ Hierarchy \ Device \ Tag ( Unit )

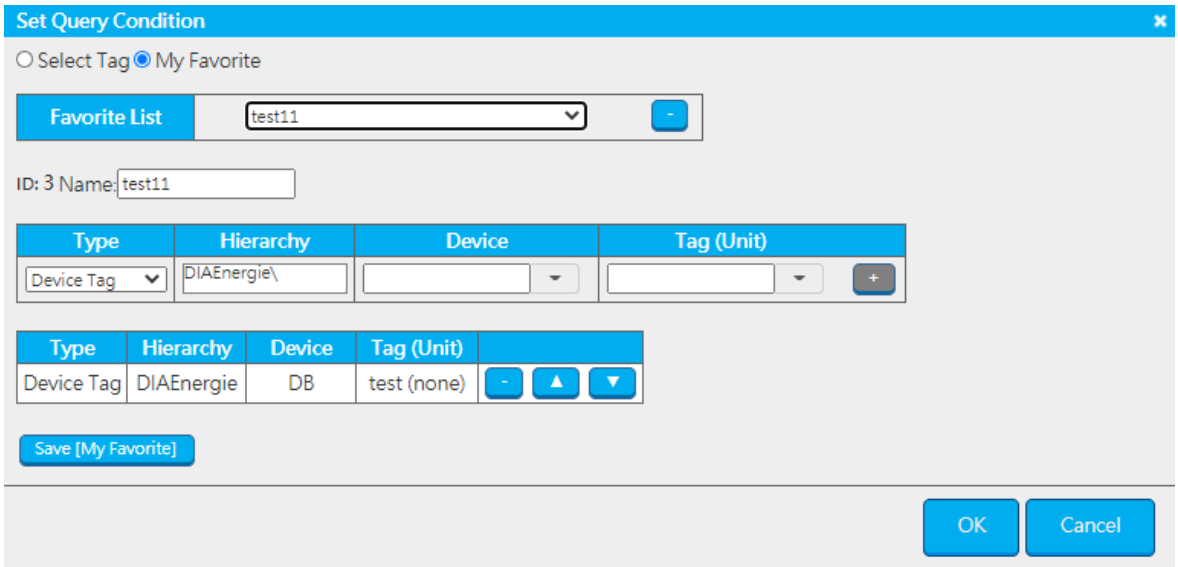
  ❷ Internal Tag \ Hierarchy \ Tag ( Unit )

  ❸ Energy Circuit \ Hierarchy \ Energy

- Add the query tags (max. 12 tags)

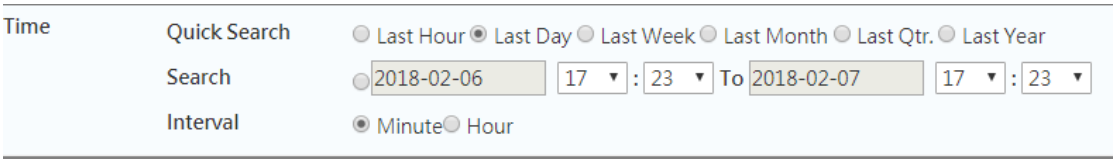
**My Favorite**

After selecting My Favorite, information of favorite list would be displayed at below. You can add + or delete - tags based on your demand, then click “Save [My Favorite]” to complete.



### 6.2.2 Time

In the Time section, users can set up their own time range from Quick Serach or Search. The software will create the appropriate interval for the setting.



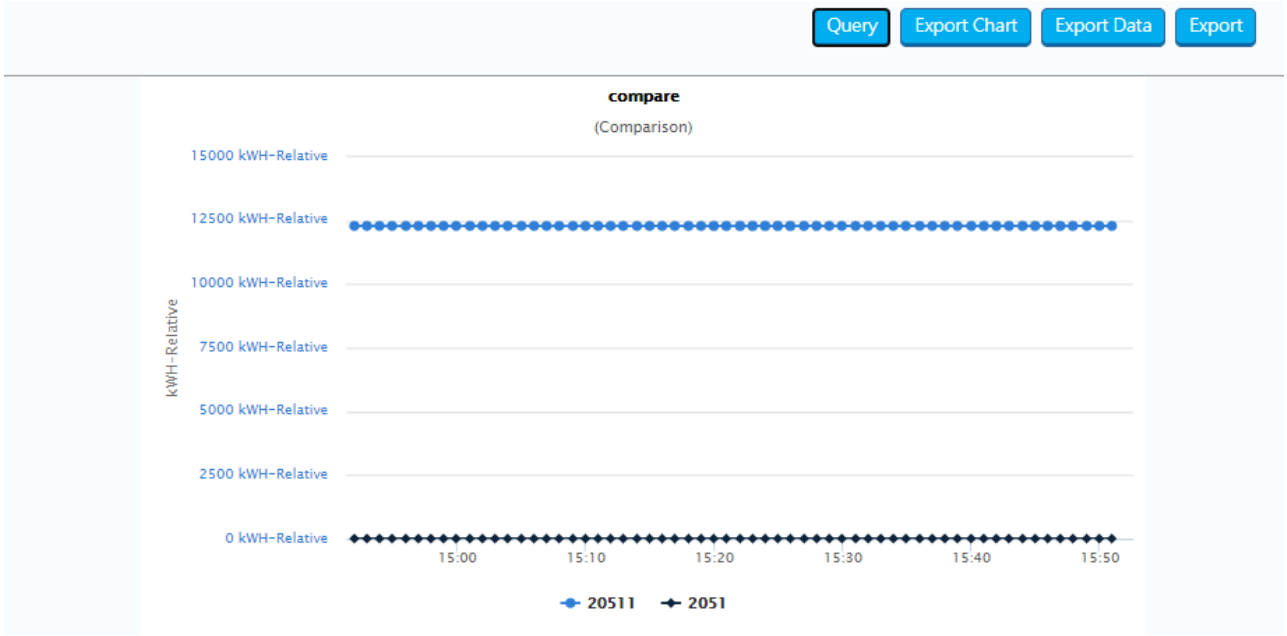

- Default time setting is based on the selected time range: E.g., “Near an hour” is within 60 minutes from the current time.
- User-defined Search range.
- Appropriate time setting based on the selected conditions.
  - ❶ Quick Search \ List the specified time unit next to the selected time period.
  - ❷ Search \ List all the selected time unit.

### 6.2.3 Chart Type

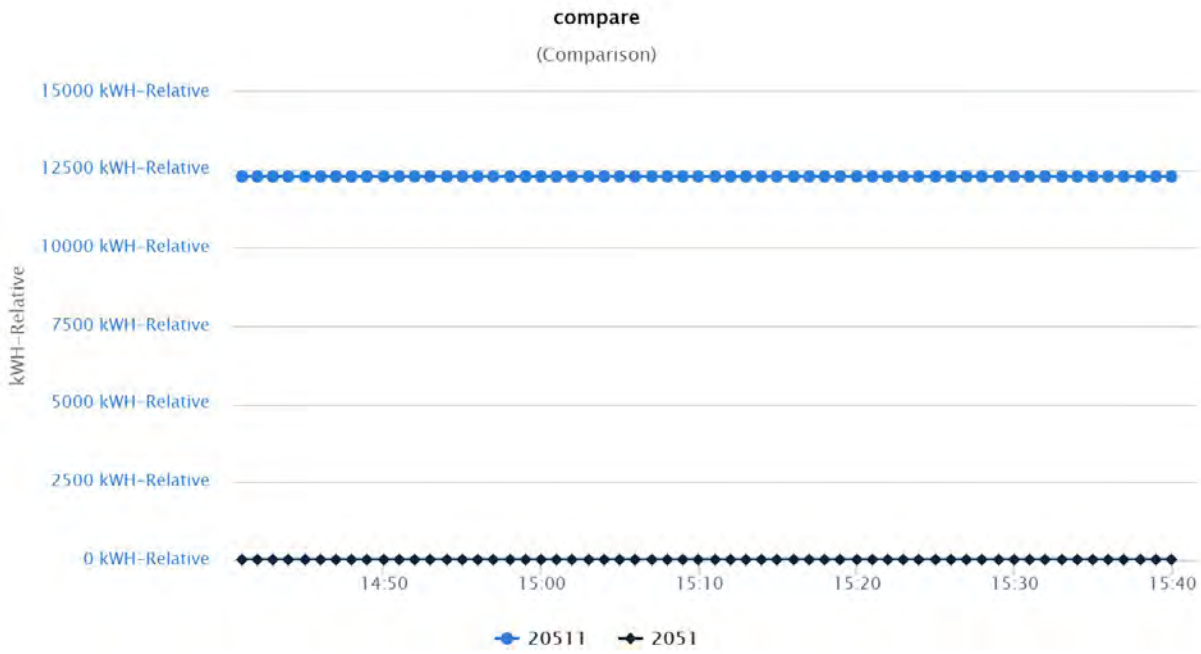
There are four chart types including Trend, Histogram, Pie and Stacked Column for users to select and make their own charts. The following examples display specified Delta information of y-axis in three different units via trend, histogram, pie, and stacked column chart types (from left to right) during a specific period.

### 6.2.4 Query / Export Chart / Export Excel

Select Query for a result preview of the setting; choose “Export Chart” to download charts or “Export Excel” to transfer recorded data into Excel files, or “Export” to download both charts and recorded data into Excel files.




【Export Chart】: Download charts to local PC.

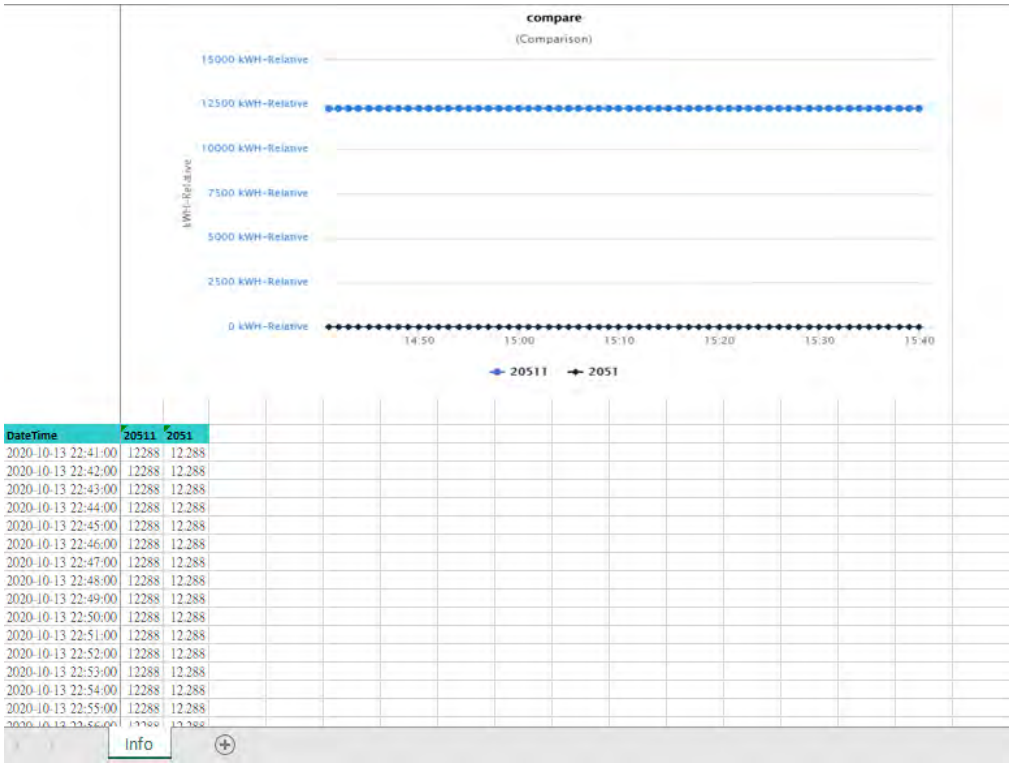


【Export Excel】: Transfer recorded data into Excel files.

| | A | B | C | D |
|---|---|---|---|---|
| 1 | DateTime | 20511 | 2051 | |
| 2 | 10/13/2020 14:45 | 12288.00 | 12.29 | |
| 3 | 10/13/2020 14:46 | 12288.00 | 12.29 | |
| 4 | 10/13/2020 14:47 | 12288.00 | 12.29 | |
| 5 | 10/13/2020 14:48 | 12288.00 | 12.29 | |
| 6 | 10/13/2020 14:49 | 12288.00 | 12.29 | |
| 7 | 10/13/2020 14:50 | 12288.00 | 12.29 | |
| 8 | 10/13/2020 14:51 | 12288.00 | 12.29 | |
| 9 | 10/13/2020 14:52 | 12288.00 | 12.29 | |
| 10 | 10/13/2020 14:53 | 12288.00 | 12.29 | |
| 11 | 10/13/2020 14:54 | 12288.00 | 12.29 | |
| 12 | 10/13/2020 14:55 | 12288.00 | 12.29 | |
| 13 | 10/13/2020 14:56 | 12288.00 | 12.29 | |
| 14 | 10/13/2020 14:57 | 12288.00 | 12.29 | |
| 15 | 10/13/2020 14:58 | 12288.00 | 12.29 | |
| 16 | 10/13/2020 14:59 | 12288.00 | 12.29 | |
| 17 | 10/13/2020 15:00 | 12288.00 | 12.29 | |
| 18 | 10/13/2020 15:01 | 12288.00 | 12.29 | |
| 19 | 10/13/2020 15:02 | 12288.00 | 12.29 | |
| 20 | 10/13/2020 15:03 | 12288.00 | 12.29 | |
| 21 | 10/13/2020 15:04 | 12288.00 | 12.29 | |
| 22 | 10/13/2020 15:05 | 12288.00 | 12.29 | |
| 23 | 10/13/2020 15:06 | 12288.00 | 12.29 | |
| 24 | 10/13/2020 15:07 | 12288.00 | 12.29 | |
| 25 | 10/13/2020 15:08 | 12288.00 | 12.29 | |

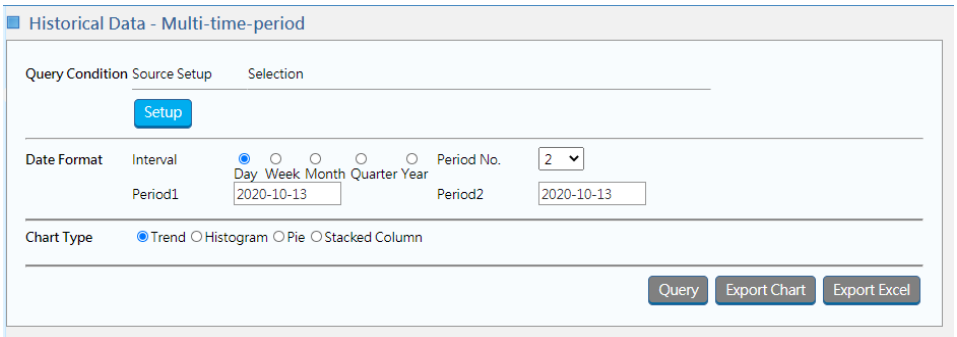
Ark1

【Export Chart】: Download both charts and recorded data into Excel files.



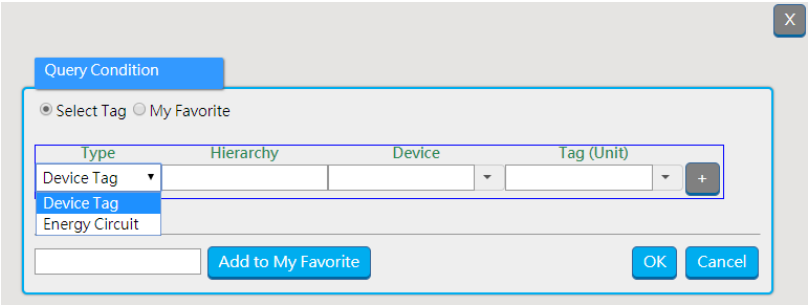
## 6.3 Historical Data- Multi-Time Period

The page has a critical function that provides users to setup query condition of device tags at different time for data comparison. Add query conditions via Setup and select the query interval in data format setting as well as selecting the desired chart type. Then click Query to search for historical data or export Excel file to local PC.




### 6.3.1 Query Condition

Users can first click the Setup button and complete the setting by selecting items including Type as well as other items provided in the pop-up window. In addition, click + to add more conditions.




- Type: ❶ Device Tag ❷ Energy Circuit ❸ Internal Tag
- Select from the following items based on the Type.

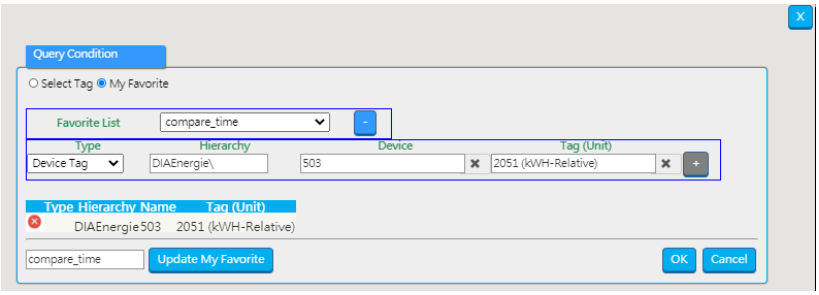
  ❶ Device Tag \ Hierarchy \ Device \ Tag ( Unit )

  ❷ Energy Circuit \ Hierarchy \ Energy

  ❸ Internal Tag \ Hierarchy \ Tag ( Unit )

- Only 1 query tag can be added.

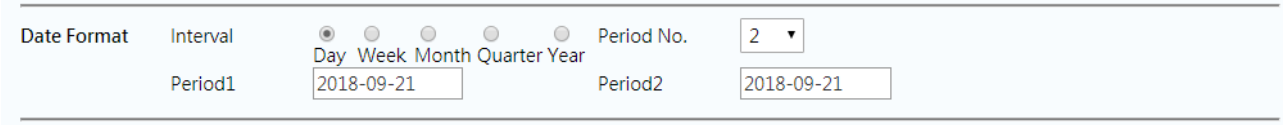
**My Favorite**




After selecting My Favorite, information of favorite list would be displayed at below. You can add + or delete - tags based on your demand, then click “Update My Favorite” to complete.

## 6.3.2 Date Format

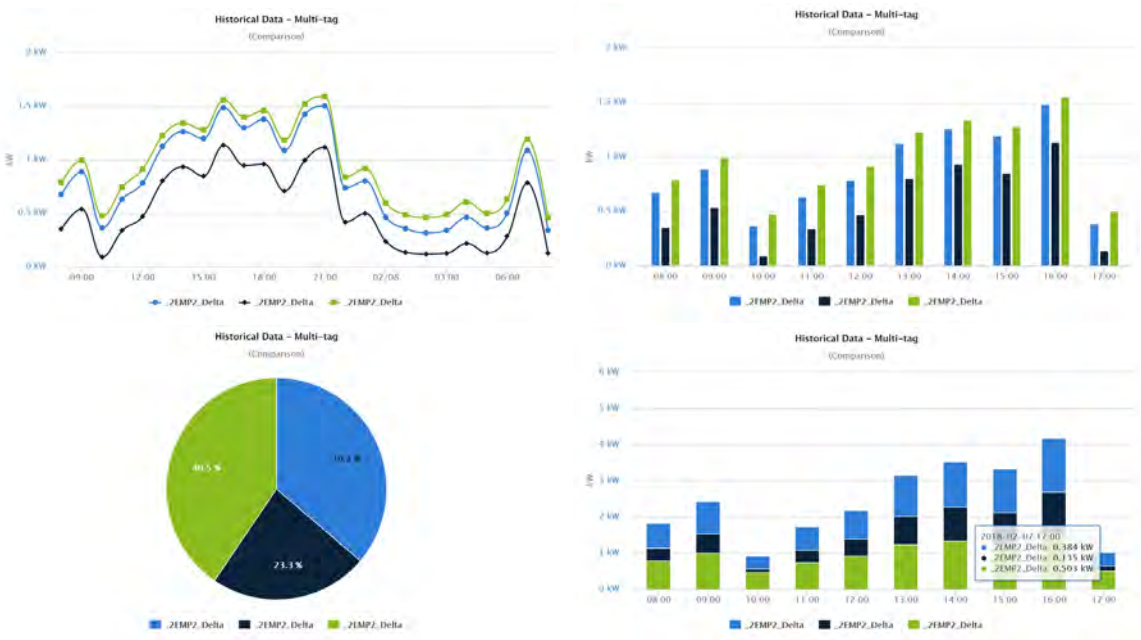
In time settings, users can select the desired period in the query section based on the data types.




- Date Format: Choose the time interval.
- Period No.: Set the number of periods. (Max. number of period: 7)
- Period: Choose the desired periods after setting the Period No.

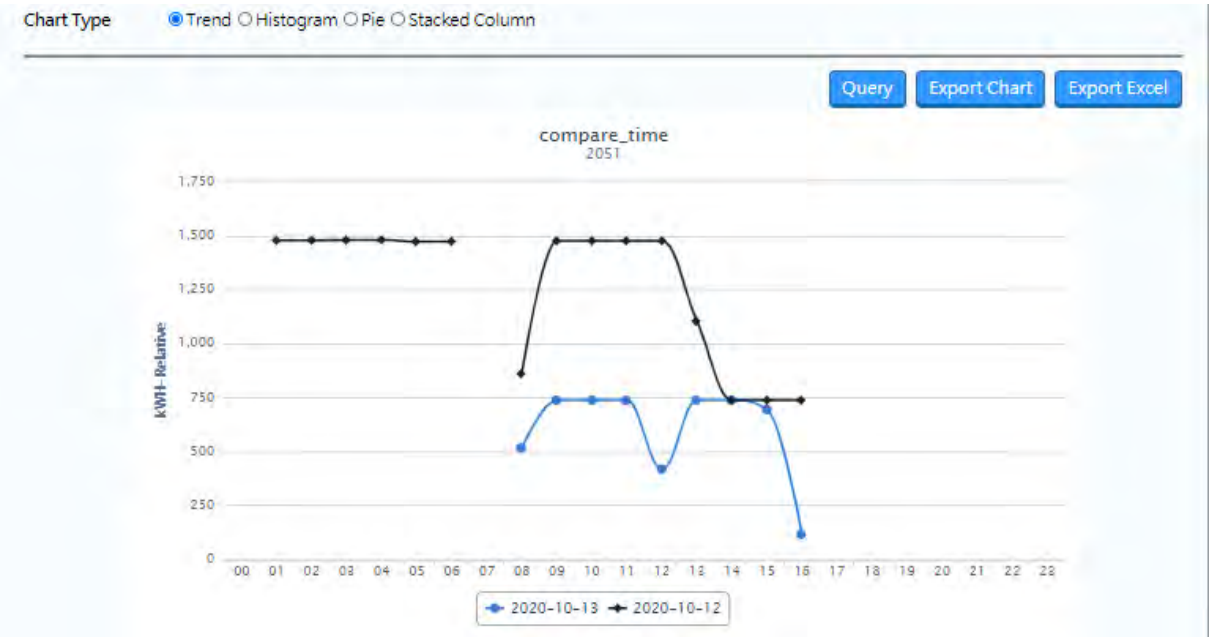
## 6.3.3 Chart Type

There are four chart types including Trend, Histogram, Pie and Stacked Column for users to select and make their own charts. The following examples display specified Delta power data via trend, histogram, pie and stacked column chart types (from left to right) during a specific period.

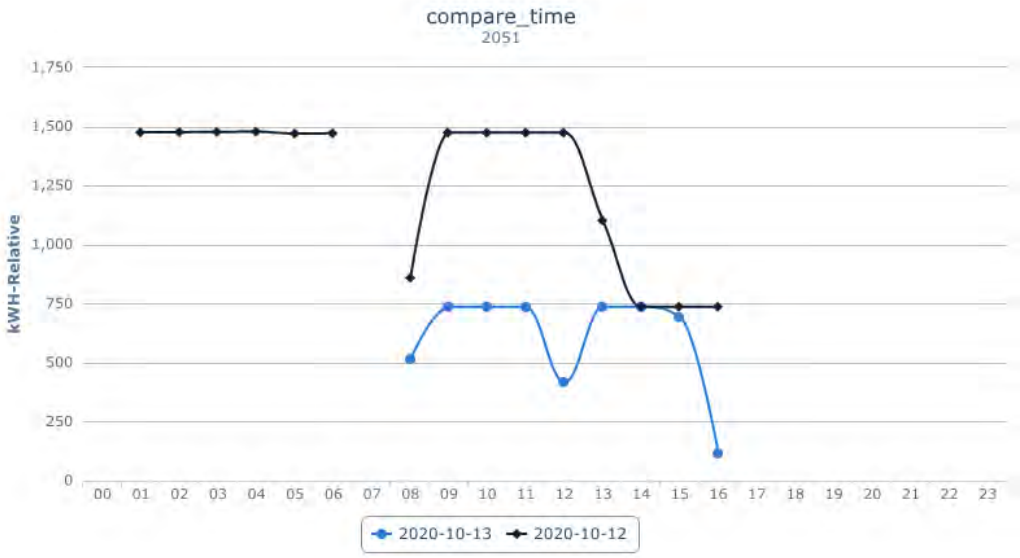


### 6.3.4 Query / Export Chart / Export Excel

Select Query for a result preview of the setting; choose Export Chart to download charts and Export Excel to transfer recorded data into Excel files.




【Export Chart】: Download charts to local PC.



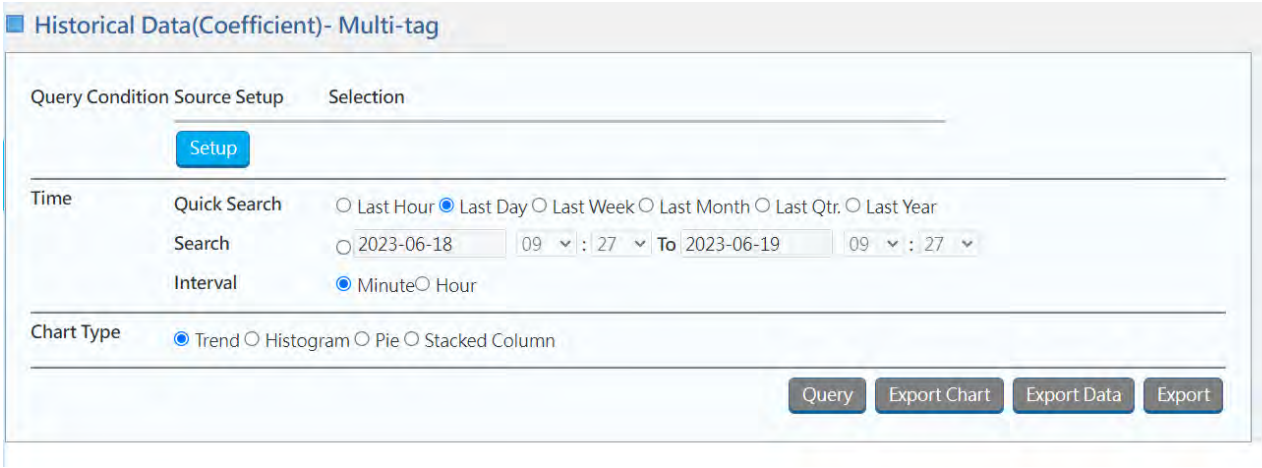
【Export Excel】: Transfer recorded data into Excel files.

| Category | 10/13/2020 | 10/12/2020 |
|---|---|---|
| 0 | null | null |
| 1 | null | 1476.00 |
| 2 | null | 1477.00 |
| 3 | null | 1478.00 |
| 4 | null | 1479.00 |
| 5 | null | 1471.00 |
| 6 | null | 1472.00 |
| 7 | null | null |
| 8 | 516.10 | 860.16 |
| 9 | 737.28 | 1474.56 |
| 10 | 737.28 | 1474.56 |
| 11 | 736.26 | 1474.56 |
| 12 | 418.82 | 1474.56 |
| 13 | 737.28 | 1102.85 |
| 14 | 737.28 | 737.28 |
| 15 | 693.76 | 737.28 |
| 16 | 116.74 | 737.28 |
| 17 | null | null |
| 18 | null | null |
| 19 | null | null |
| 20 | null | null |
| 21 | null | null |
| 22 | null | null |
| 23 | null | null |

Ark1

## 6.4 Historical Data (Coefficient) - Multi-tag

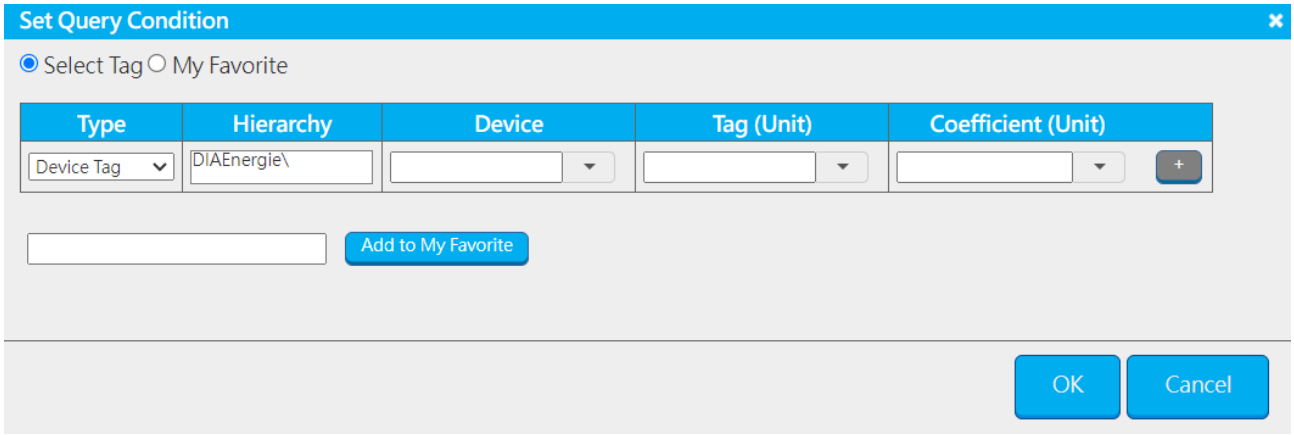
**Historical Data (Coefficient) - Multi-tag** provides a variety of reporting and chart query functions, with the primary feature being the simultaneous query of data for multiple units on the Y-axis within the same time interval, multiplied by specified coefficients for numerical transformation and presentation. Users can add query conditions through **1. Setup**, specify the query time range using **2. Time**, choose preferred statistical chart type with **3. Chart Type**, and finally, directly query or export images/Excel files to local computers using **4. Query or Export** on the web page.



### 6.4.1 Setup

Users can first click the Setup button and complete the setting by selecting items including Type as well as other items provided in the pop-up window. In addition, click + to add more conditions.

**Select Tag**




- Type: ❶ Device Tag ❷ Internal Tag ❸ Energy Circuit
- Select from the following items based on the Type

  ❶ Device Tag \ Hierarchy \ Device \ Tag ( Unit ) \ Coefficient ( Unit )

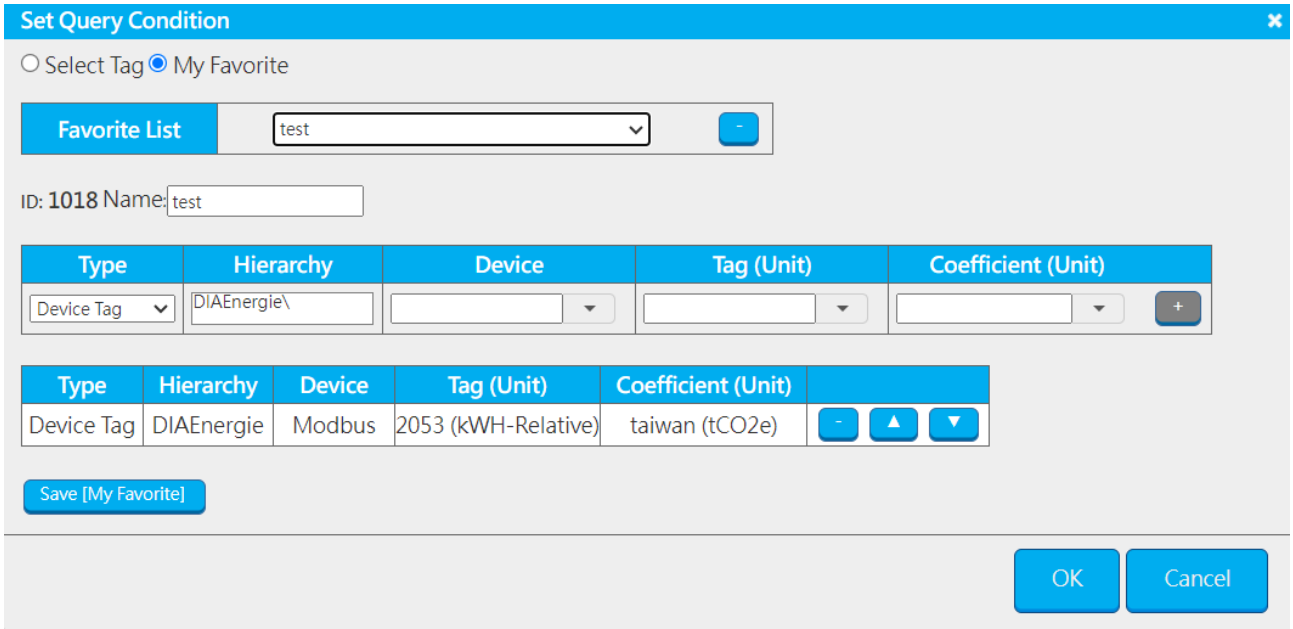
  ❷ Internal Tag \ Hierarchy \ Tag ( Unit ) \ Coefficient ( Unit )

  ❸ Energy Circuit \ Hierarchy \ Energy\ Coefficient ( Unit )

- Add the query tags (max. 12 tags)

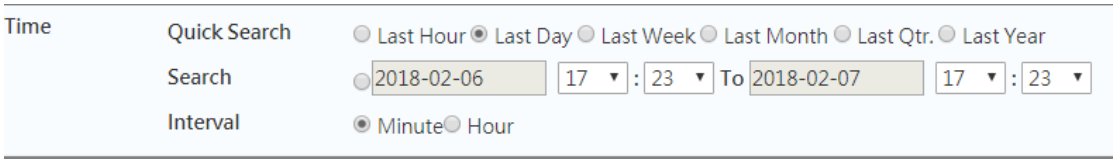
**My Favorite**

After selecting My Favorite, information of favorite list would be displayed at below. You can add + or delete - tags based on your demand, then click “Save [My Favorite]” to complete.



## 6.4.2 Time

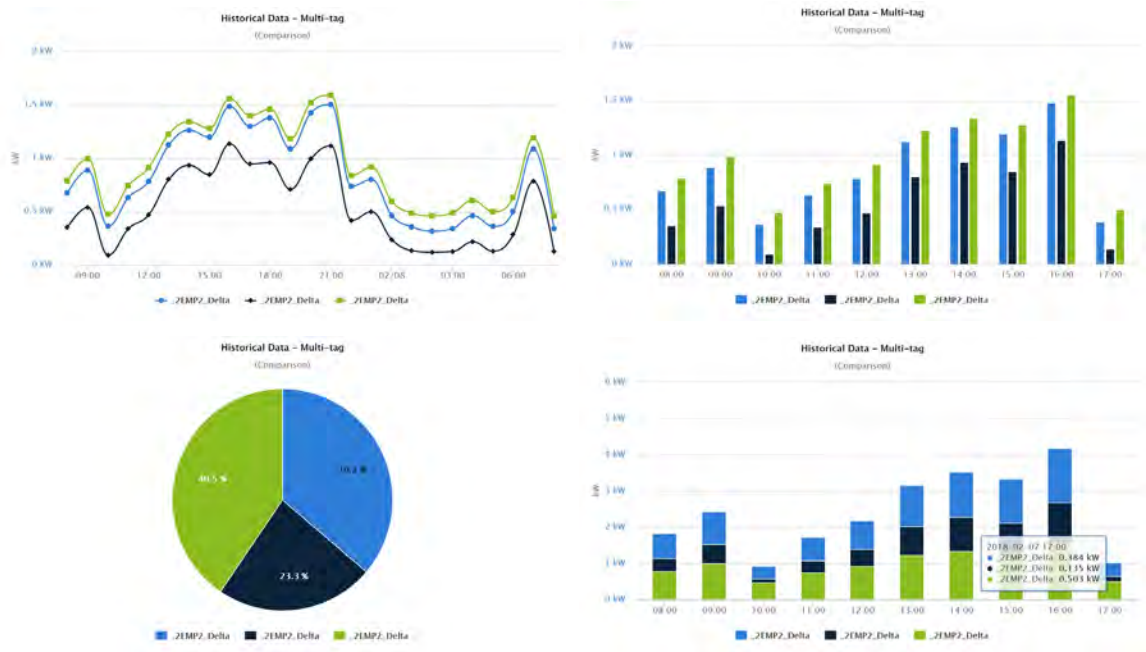
In the Time section, users can set up their own time range from Quick Serach or Search. The software will create the appropriate interval for the setting.




- Default time setting is based on the selected time range: E.g., “Near an hour” is within 60 minutes from the current time.
- User-defined Search range.
- Appropriate time setting based on the selected conditions.
  - ❶ Quick Search \ List the specified time unit next to the selected time period.
  - ❷ Search \ List all the selected time unit.

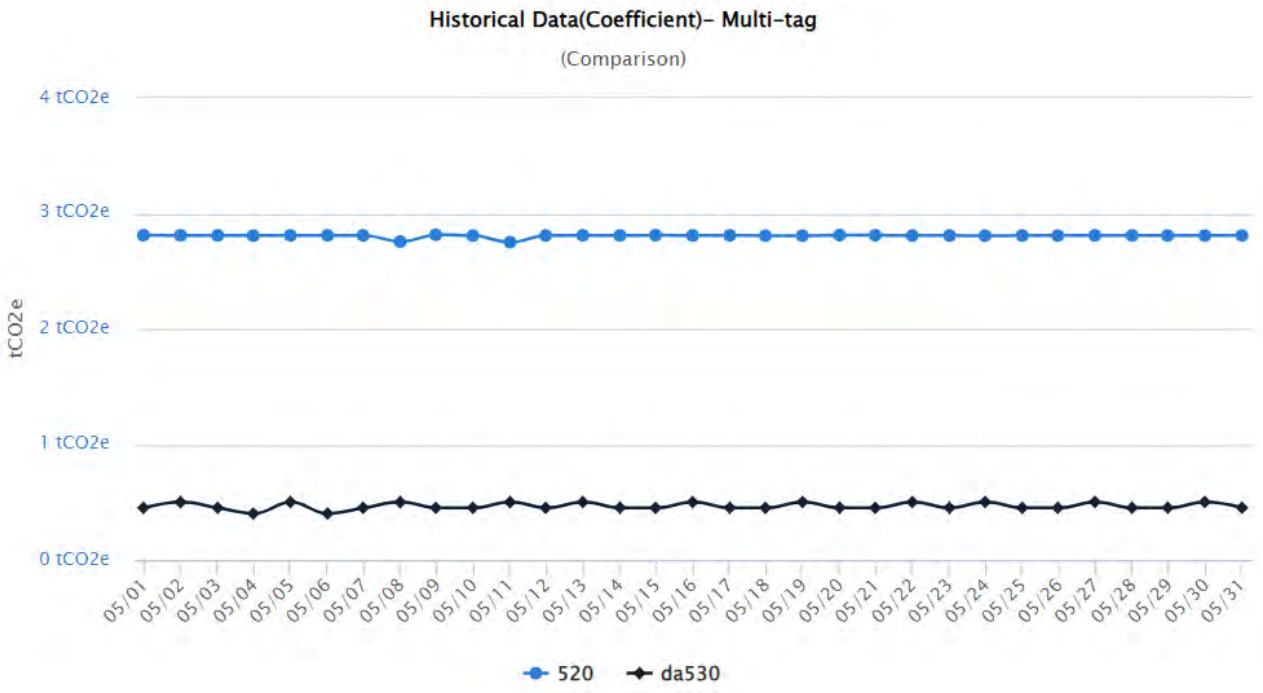
## 6.4.3 Chart Type

There are four chart types including Trend, Histogram, Pie and Stacked Column for users to select and make their own charts. The following examples display specified Delta information of y-axis in three different units via trend, histogram, pie and stacked column chart types (from left to right) during a specific period.



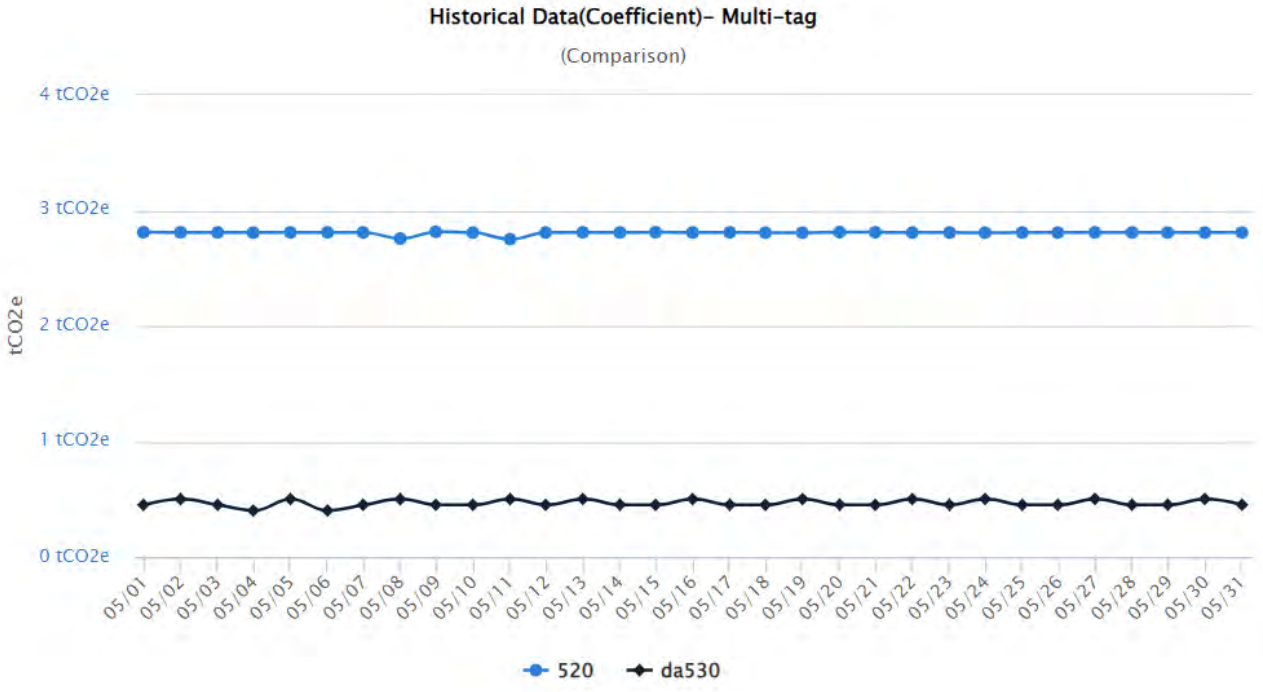
### 6.4.4 Query / Export Chart / Export Excel

Select Query for a result preview of the setting; choose “Export Chart” to download charts or “Export Excel” to transfer recorded data into Excel files, or “Export” to download both charts and recorded data into Excel files.




6

【Export Chart】: Download charts to local PC.

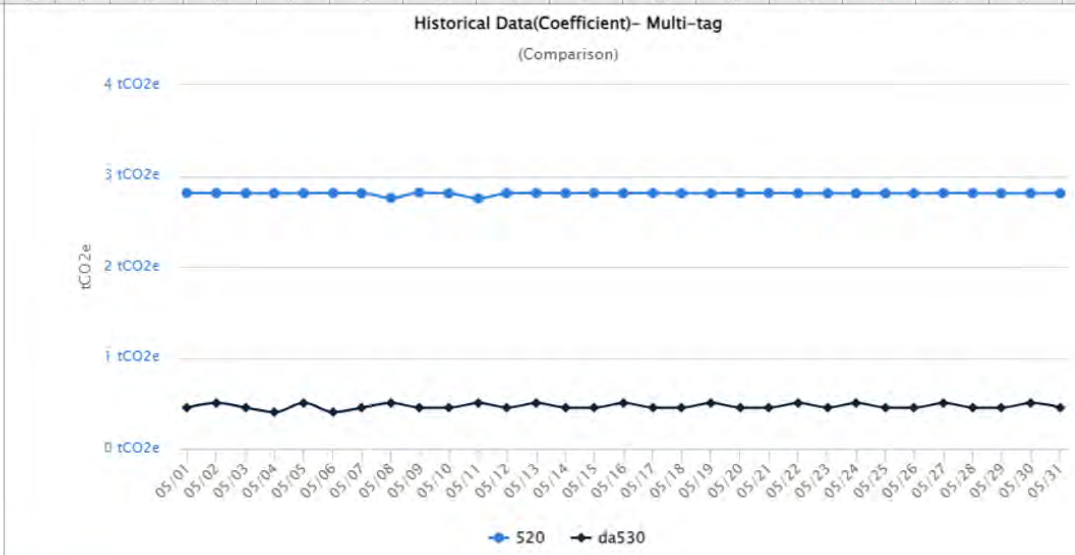


【Export Excel】: Transfer recorded data into Excel files.

| | A | B | C |
|---|---|---|---|
| 1 | DateTime | 520 | da530 |
| 2 | 5/1/2023 0:00 | 2.81 | 0.45 |
| 3 | 5/2/2023 0:00 | 2.81 | 0.50 |
| 4 | 5/3/2023 0:00 | 2.81 | 0.45 |
| 5 | 5/4/2023 0:00 | 2.81 | 0.40 |
| 6 | 5/5/2023 0:00 | 2.81 | 0.50 |
| 7 | 5/6/2023 0:00 | 2.81 | 0.40 |
| 8 | 5/7/2023 0:00 | 2.81 | 0.45 |
| 9 | 5/8/2023 0:00 | 2.76 | 0.50 |
| 10 | 5/9/2023 0:00 | 2.82 | 0.45 |
| 11 | 5/10/2023 0:00 | 2.81 | 0.45 |
| 12 | 5/11/2023 0:00 | 2.75 | 0.50 |
| 13 | 5/12/2023 0:00 | 2.81 | 0.45 |
| 14 | 5/13/2023 0:00 | 2.81 | 0.50 |
| 15 | 5/14/2023 0:00 | 2.81 | 0.45 |
| 16 | 5/15/2023 0:00 | 2.81 | 0.45 |
| 17 | 5/16/2023 0:00 | 2.81 | 0.50 |
| 18 | 5/17/2023 0:00 | 2.81 | 0.45 |
| 19 | 5/18/2023 0:00 | 2.81 | 0.45 |
| 20 | 5/19/2023 0:00 | 2.81 | 0.50 |
| 21 | 5/20/2023 0:00 | 2.81 | 0.45 |
| 22 | 5/21/2023 0:00 | 2.81 | 0.45 |
| 23 | 5/22/2023 0:00 | 2.81 | 0.50 |

Ark1

【Export】saves the queried data and chart presentation results as an Excel file.




| DateTime | 520 | da530 |
|---|---|---|
| 2023-05-01 00:00:00 | 2.811 | 0.452 |
| 2023-05-02 00:00:00 | 2.81 | 0.502 |
| 2023-05-03 00:00:00 | 2.809 | 0.452 |
| 2023-05-04 00:00:00 | 2.808 | 0.402 |
| 2023-05-05 00:00:00 | 2.809 | 0.502 |
| 2023-05-06 00:00:00 | 2.81 | 0.402 |
| 2023-05-07 00:00:00 | 2.809 | 0.452 |
| 2023-05-08 00:00:00 | 2.756 | 0.502 |
| 2023-05-09 00:00:00 | 2.816 | 0.452 |
| 2023-05-10 00:00:00 | 2.808 | 0.452 |
| 2023-05-11 00:00:00 | 2.751 | 0.502 |
| 2023-05-12 00:00:00 | 2.809 | 0.452 |
| 2023-05-13 00:00:00 | 2.81 | 0.502 |
| 2023-05-14 00:00:00 | 2.809 | 0.452 |
| 2023-05-15 00:00:00 | 2.811 | 0.452 |
| 2023-05-16 00:00:00 | 2.809 | 0.502 |
| 2023-05-17 00:00:00 | 2.81 | 0.452 |
| 2023-05-18 00:00:00 | 2.807 | 0.452 |
| 2023-05-19 00:00:00 | 2.807 | 0.502 |
| 2023-05-20 00:00:00 | 2.812 | 0.452 |
| 2023-05-21 00:00:00 | 2.811 | 0.452 |
| 2023-05-22 00:00:00 | 2.808 | 0.502 |
| 2023-05-23 00:00:00 | 2.808 | 0.452 |
| 2023-05-24 00:00:00 | 2.807 | 0.502 |
| 2023-05-25 00:00:00 | 2.808 | 0.452 |
| 2023-05-26 00:00:00 | 2.808 | 0.452 |
| 2023-05-27 00:00:00 | 2.81 | 0.502 |
| 2023-05-28 00:00:00 | 2.809 | 0.452 |
| 2023-05-29 00:00:00 | 2.808 | 0.452 |
| 2023-05-30 00:00:00 | 2.808 | 0.502 |
| 2023-05-31 00:00:00 | 2.808 | 0.452 |

7

# Chapter 7 Advanced Query

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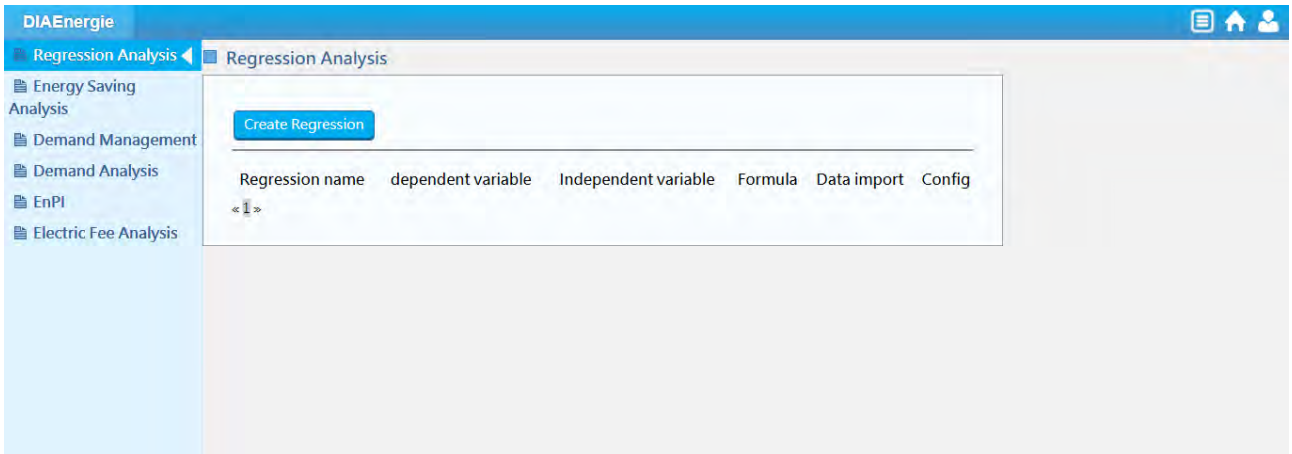
## 7.1 Introduction

**Advanced Query** allows users to generate various kinds of data analysis and achieve targets of advanced energy management control via stored data in DIAEnergie and provide chart types for query as well as downloads. User can also do several kinds of data analysis for energy management. This chapter will introduce six items including **Regression Analysis Report, Energy Saving Analysis, EnPI and Electricity Tariff Analysis**.

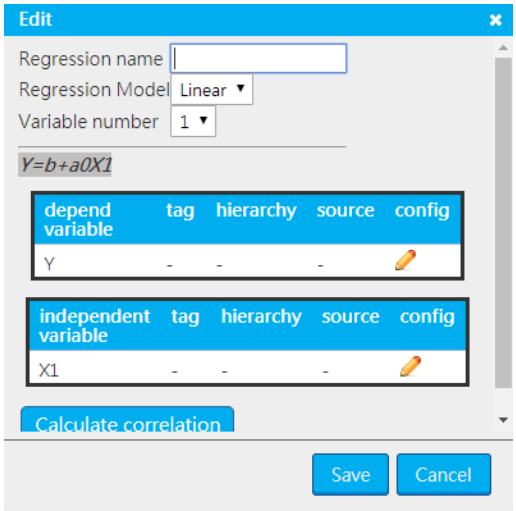


## 7.2 Regression Analysis

Users can click **(1) Create Regression** to select dependent variable and independent variable to construct a customized regression model for future usage. They can adopt the formula for data under specified time interval via **(2) Data Import**. Or click **(3) Config** to edit or delete the saved formula.

### 7.2.1 Regression Analysis Report

Choose **Create Regression** and a pop-up window appears for edit.

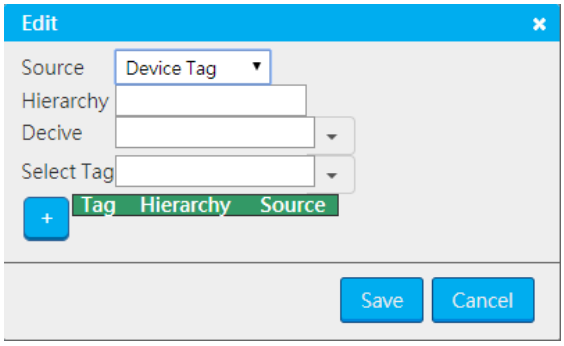



❶ Define the regression name.

❷ Select the regression model.

❸ Select the variable number: The maximum is 3.

❹ Click to edit the source tags of dependent / independent variables.




1 Source: Device Tag / Energy Circuit / Internal Tag

2 Hierarchy: Select the target hierarchy.

3 Device: Select the target device when Source is set to Device Tag.

4 Select Tag: Select the target tag when Source is set to Device Tag/ Internal Tag.

5 Energy Type: Select the target energy type when Source is set to Energy Circuit.

6 [+]: Click this button to add the selected data to the table below

7 Click the Save button.

❺ Calculate correlation between the dependent and independent variables. (The following example is a data recorded less than 24 hours and shows a highly positive correlation of 0.99.)

## 7.2.2 Data Import

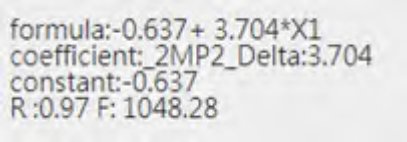
User can setup the specified time interval and unit via **Date Type, Start Date / End Date**. By clicking **Calculate formula**, the box shows the regression formula that calculated the data in the specified time interval. Also, users can view the scatter plot and regression base lines via selecting **Show chart**.

❶ Data Type: Select the time unit between day and hour.

❷ Start Date: Specify a start date.

❸ End Date: Specify an end date.

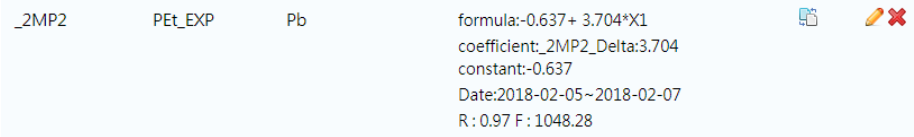
❹ Calculate formula: Display the formula and related calculation data on the right side.




❺Show Chart: Display the scatter diagram and baseline data according to the data range chosen by users.

## 7.2.3 Configuration

Users can edit or delete the data saved for the configuration.



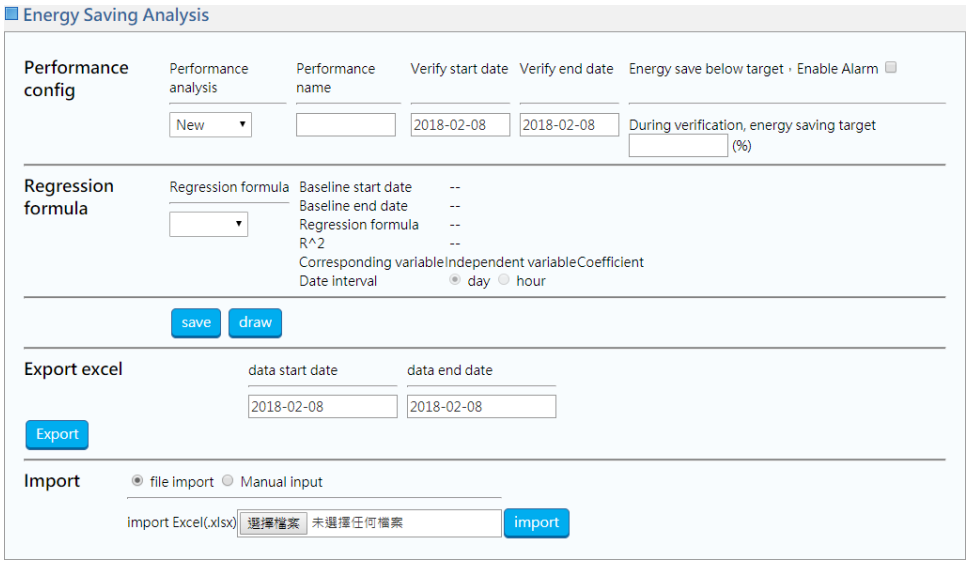

❶ : Edit the content in dependent and independent variables.

❷ : Delete the saved data.

❸ : Import data to re-model.

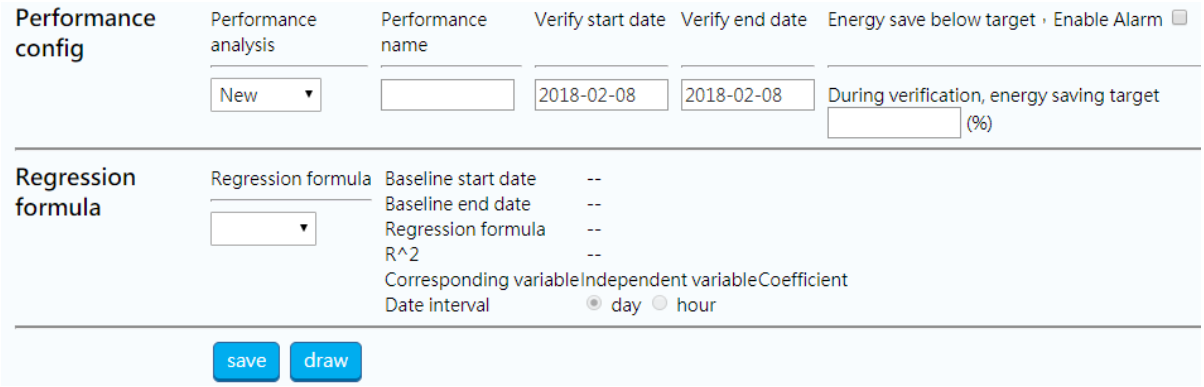
# 7.3 Energy Saving Analysis

Energy Saving Analysis allows users to setup the details in energy saving verification via (**1) Performance config.** Then, select from the **(2) Export excel / Import file** to control the data points for analysis. Finally, when users select **(3) Regression formula**, they can use the formula from the regression analysis report to generate baselines and actual values for comparison analysis.




## 7.3.1 Energy Saving Analysis

Users can select New to add performance analysis or choose previous analysis from the drop-down list and complete the energy saving target.




❶ Performance Analysis: Select “New” to add new items; “Test” and “Prueba” are selected for the saved analysis lists.

❷ Performance Name: Specify the performance name.

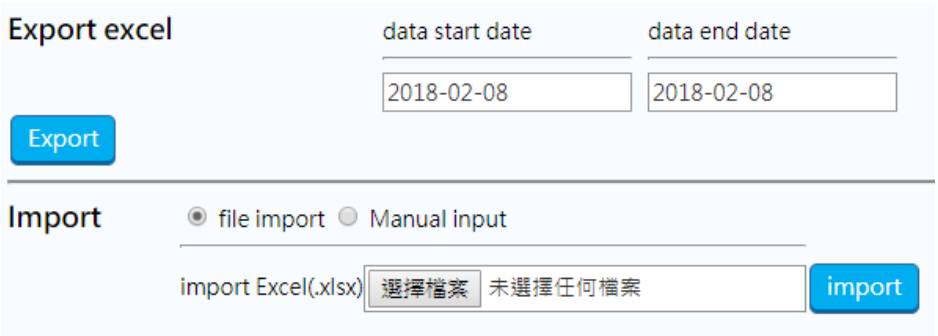
❸ Verify start date: Specify the start date.

❹ Verify end date: Specify the end date.

❺ Decide whether to check the checkbox of Enable Alarm and set the energy saving target (%).

❻ Energy saves below target, Enable Alarm: If the box is checked and energy saving is below target, an alarm occurs.

## 7.3.2 Export Excel / Import File



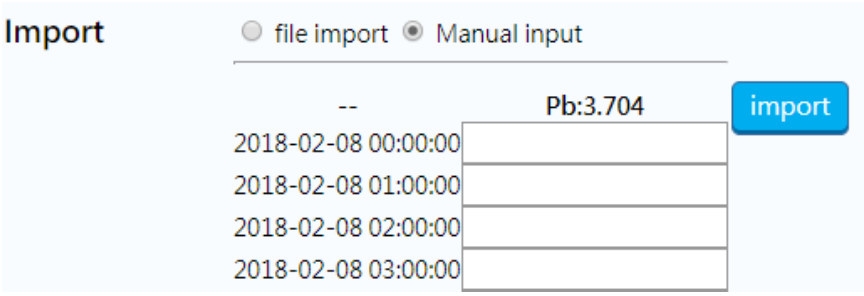

- Setup the desired time interval to export a fixed template for users to input data.

| | A | B |
|---|---|---|
| 1 | Date | X:Pb |
| 2 | 2018-02-05 00:00:00 | |
| 3 | 2018-02-05 01:00:00 | |
| 4 | 2018-02-05 02:00:00 | |
| 5 | 2018-02-05 03:00:00 | |
| 6 | 2018-02-05 04:00:00 | |
| 7 | 2018-02-05 05:00:00 | |
| 8 | 2018-02-05 06:00:00 | |
| 9 | 2018-02-05 07:00:00 | |
| 10 | 2018-02-05 08:00:00 | |
| 11 | 2018-02-05 09:00:00 | |
| 12 | 2018-02-05 10:00:00 | |
| 13 | 2018-02-05 11:00:00 | |
| 14 | 2018-02-05 12:00:00 | |
| 15 | 2018-02-05 13:00:00 | |

- Import

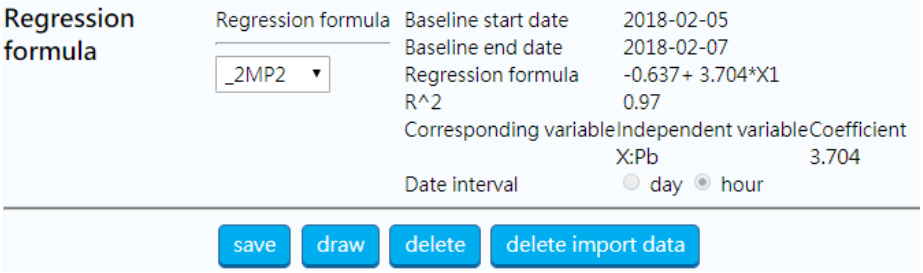
❶ File import / import fixed Excel file（input completed file）

❷ Manual input / input data manually based on the time setting.



### 7.3.3 Regression Formula

Users can select the appropriate regression formula from the pull-down list to create a baseline model. The 'draw' button provides drawings of comparison between predicted and actual values based on the formula. When independent variable data is imported to the Export Excel / Import File item, future predicted values are simultanenously displayed on the charts and users can choose to Save / Delete or Delete Import Data.




1 Regression Formula: Choose the listed regression formula from the report.

2 Save

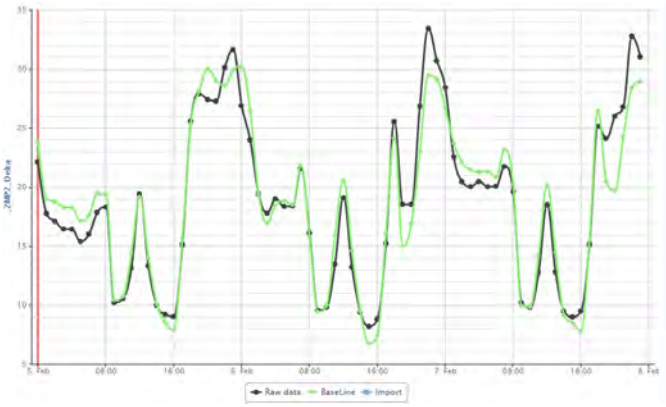
3 Draw

- Charts content include:

❶ Raw data as collected values.

❷ Baseline data as predicted data via the formula

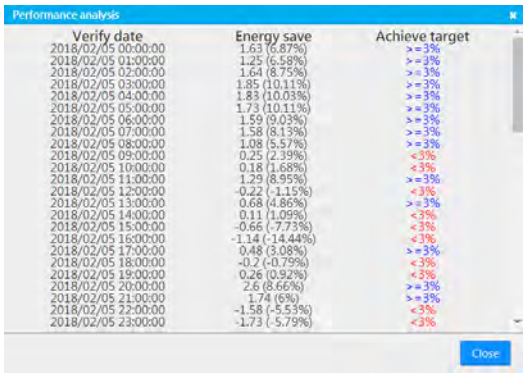
❸ Import data (if needed)



❹ Delete: Delete this performance analysis.

❺ Delete import data: Delete imported data. For more details of importingdata, please refer to section 7.3.2.

❻ Display verification of energy savings and target assessment.



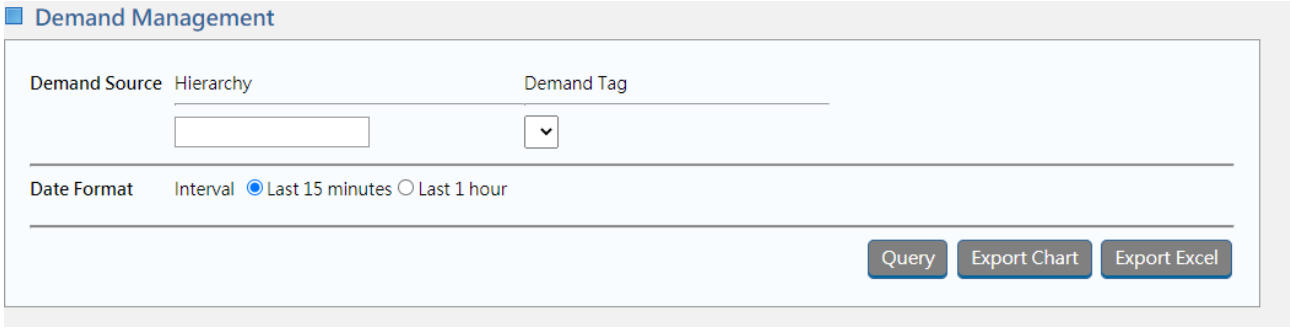
Performance analysis

| Verify date | Energy save | Achieve target |
|---|---|---|
| 2018/02/05 00:00:00 | 1.63 (6.87%) | >=3% |
| 2018/02/05 01:00:00 | 1.25 (6.58%) | >=3% |
| 2018/02/05 02:00:00 | 1.64 (8.75%) | >=3% |
| 2018/02/05 03:00:00 | 1.85 (10.11%) | >=3% |
| 2018/02/05 04:00:00 | 1.83 (10.03%) | >=3% |
| 2018/02/05 05:00:00 | 1.73 (10.11%) | >=3% |
| 2018/02/05 06:00:00 | 1.59 (9.03%) | >=3% |
| 2018/02/05 07:00:00 | 1.58 (8.13%) | >=3% |
| 2018/02/05 08:00:00 | 1.08 (5.57%) | >=3% |
| 2018/02/05 09:00:00 | 0.25 (2.39%) | <3% |
| 2018/02/05 10:00:00 | 0.18 (1.68%) | <3% |
| 2018/02/05 11:00:00 | 1.29 (8.95%) | >=3% |
| 2018/02/05 12:00:00 | -0.22 (-1.15%) | <3% |
| 2018/02/05 13:00:00 | 0.68 (4.86%) | >=3% |
| 2018/02/05 14:00:00 | 0.11 (1.09%) | <3% |
| 2018/02/05 15:00:00 | -0.66 (-7.73%) | <3% |
| 2018/02/05 16:00:00 | -1.14 (-14.44%) | <3% |
| 2018/02/05 17:00:00 | 0.48 (3.08%) | >=3% |
| 2018/02/05 18:00:00 | -0.2 (-0.79%) | <3% |
| 2018/02/05 19:00:00 | 0.26 (0.92%) | <3% |
| 2018/02/05 20:00:00 | 2.6 (8.66%) | >=3% |
| 2018/02/05 21:00:00 | 1.74 (6%) | >=3% |
| 2018/02/05 22:00:00 | -1.58 (-5.53%) | <3% |
| 2018/02/05 23:00:00 | -1.73 (-5.79%) | <3% |

Close

## 7.4 Demand Management

This is not a feature for settings. You are allowed to check the trend of the desired demand tag configured in internal tags within the last 15 minutes or an hour.

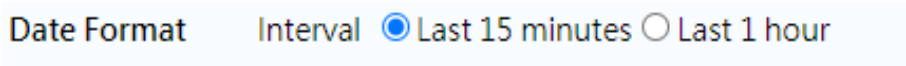



### 7.4.1 Demand Source

❶ Hierarchy: Select the target hierarchy.

❷ Demand Tag: The corresponding demand tags would be displayed in the drop-down list according to the selected hierarchy. (Demand tags must be set in the internal tag configuration first.)

### 7.4.2 Date Format




❶ Interval: Last 15 minutes/ Last 1 hour. Display the chart by using system data saved according to the interval.

### 7.4.3 Query/ Export Chart/ Export Excel

❶ Query: After completing the settings above,

would change to 

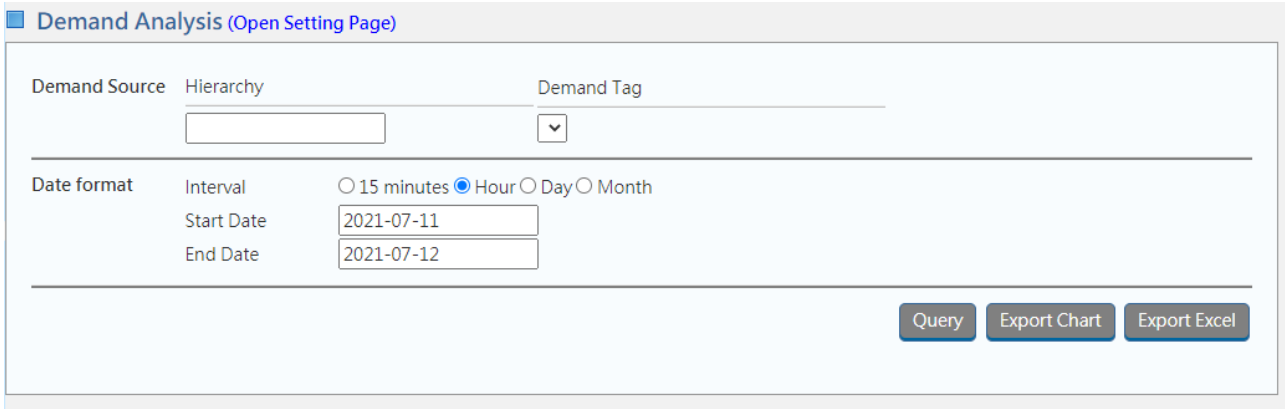
, then query clicks would be available.

❷ Export Chart: Display and download the chart as a png image after clicking query.

❸ Export Excel: Display and download the chart data as an excel file after clicking query.

## 7.5 Demand Analysis

You are allowed to check trend of the desired demand tag, which is configured in internal tags, for a longer period.

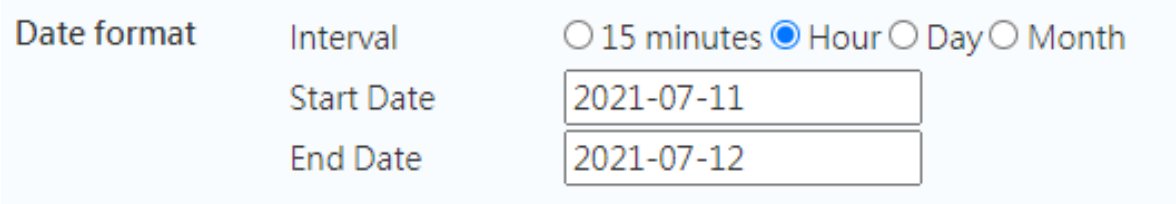



### 7.5.1 Demand Source

❶ Hierarchy: Select the target hierarchy.

❷ Demand Tag: The corresponding demand tags would be displayed in the drop-down list according to the selected hierarchy. (Demand tags must be set in the internal tag configuration first.)

### 7.5.2 Date Format




❶ Interval: 15 minutes/ Hour/ Day/ Month. Display the chart by using system data saved according to the selected interval.

❷ Start Date: Select the start date.

❸ End Date: Select the end date.

### 7.5.3 Query/ Export Chart/ Export Excel

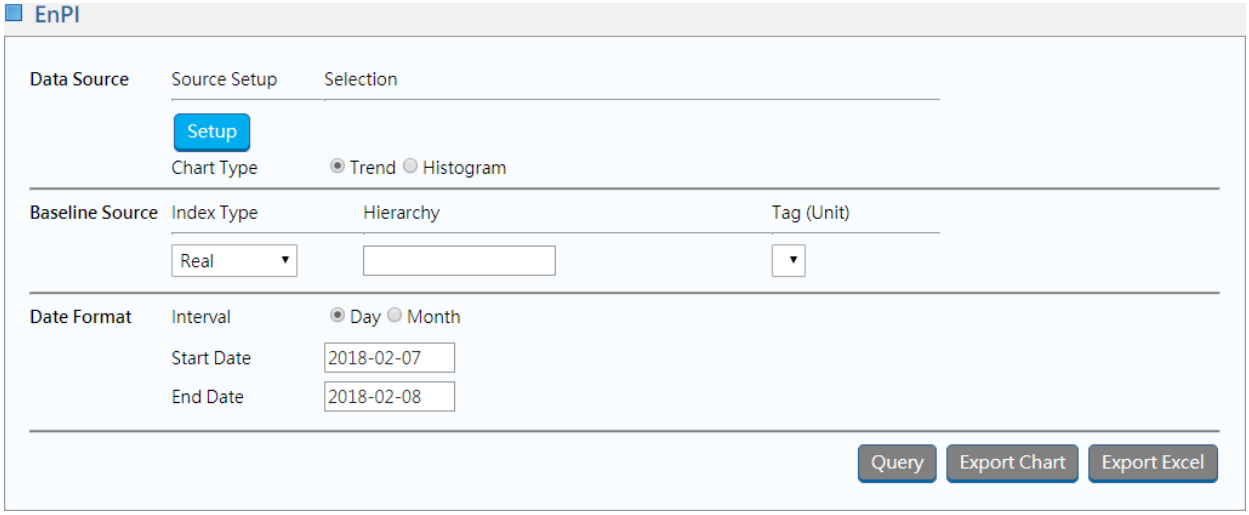
❶ Query: After completing the settings above, Query would change to Query, then query clicks would be available.

❷ Export Chart: Display and download the chart as a png image after clicking query.

❸ Export Excel: Display and download the chart data as an excel file after clicking query.

## 7.6 EnPI

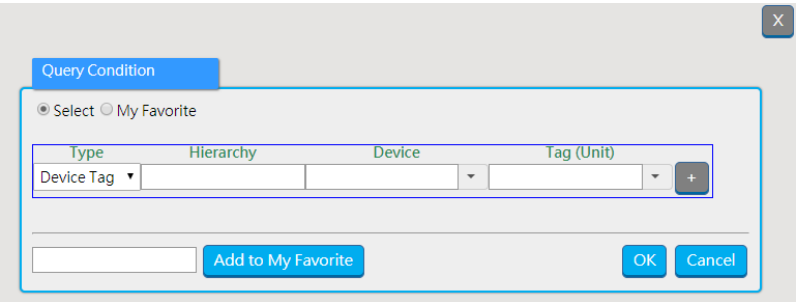
Energy Performance Indicator or EnPI function provides select query and preferred chart types for users in the **1. Data Source** section. The **2. Baseline Source / Date Format** sections provides baseline and time settings. Finally, users can choose **3. Export Chart / Excel** files to the server.




### 7.6.1 Data Source

Click the **Setup** button in the **Data Source** section and complete the query conditions via the pop-up window. The window contains settings for **Type** and other selectable items for completion. Last, click + to add the condition to My Favorite.

❶ Click the **Setup** button to complete the pop-up window for query tags.

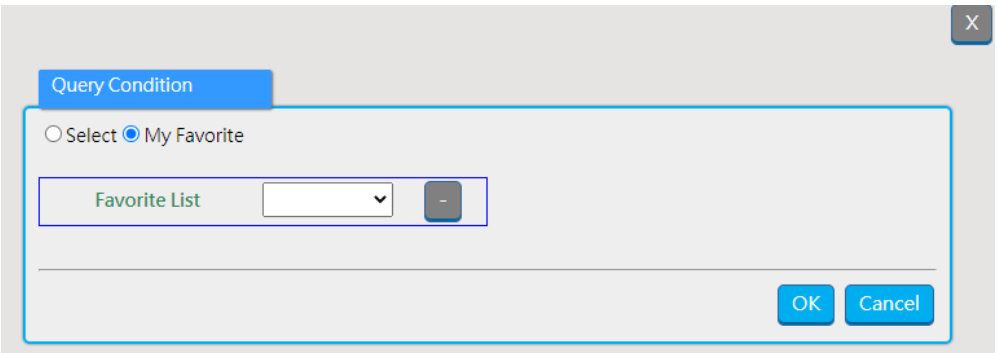



❷ **Select**

- Type: Device Tag / Internal Tag
- Hierarchy: Select the desired hierarchy level.
- Device: Select the desired device if Type is set to Device Tag.
- Tag (Unit): Select the desired tag.

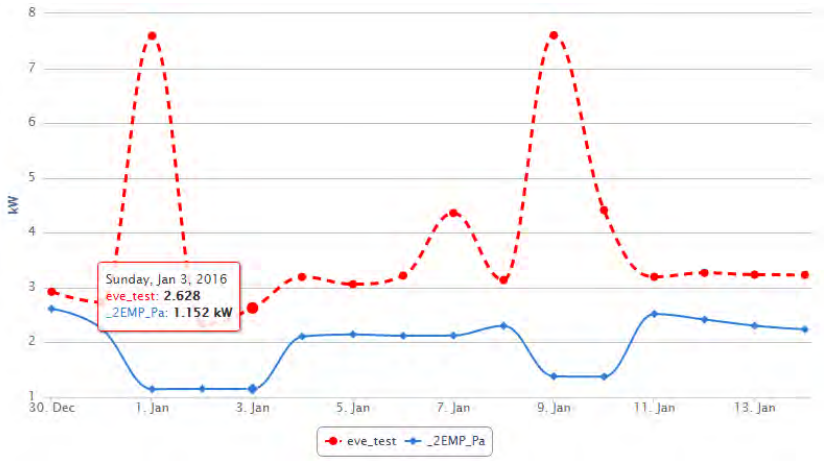
- +: Add the selected tag to the table below.
- Add to My Favorite: Add query conditions to My Favorite (Max. 5 query tags for the same unit)
- Click OK to complete and return to the previous page.

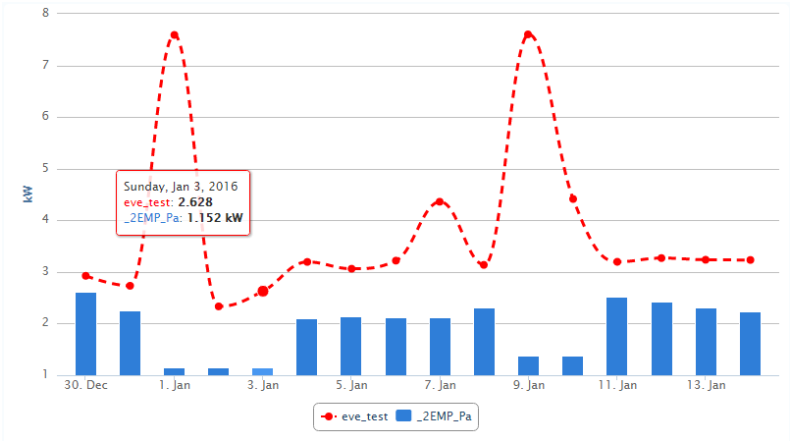
**❸ My Favorite**



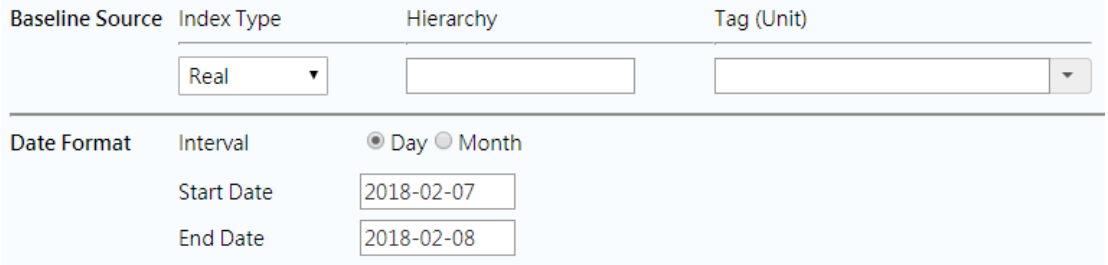

- Favorite List: Select the desired favorite list.
- Click OK to complete and return to the previous page.

Choose trend or histogram from **Chart Type** in **Data Source** section. Below are examples of query charts for user-defined and actual electric power indicator (eve_test) from 2015.12.30 to 2016.01.15. The upper chart type is trend, while the lower is histogram.



### 7.6.2 Baseline Source / Date Format




❶ Baseline Source Type: Real (real numbers) / CALC

❷ Value: Input a value if Index Type is set to Real; select the target hierarchy and tag if Index Type is set to CALC.

❸ Data Format:

- Interval: Day/ Month
- Start Date: Select the start date.
- End Date: Select the end date.

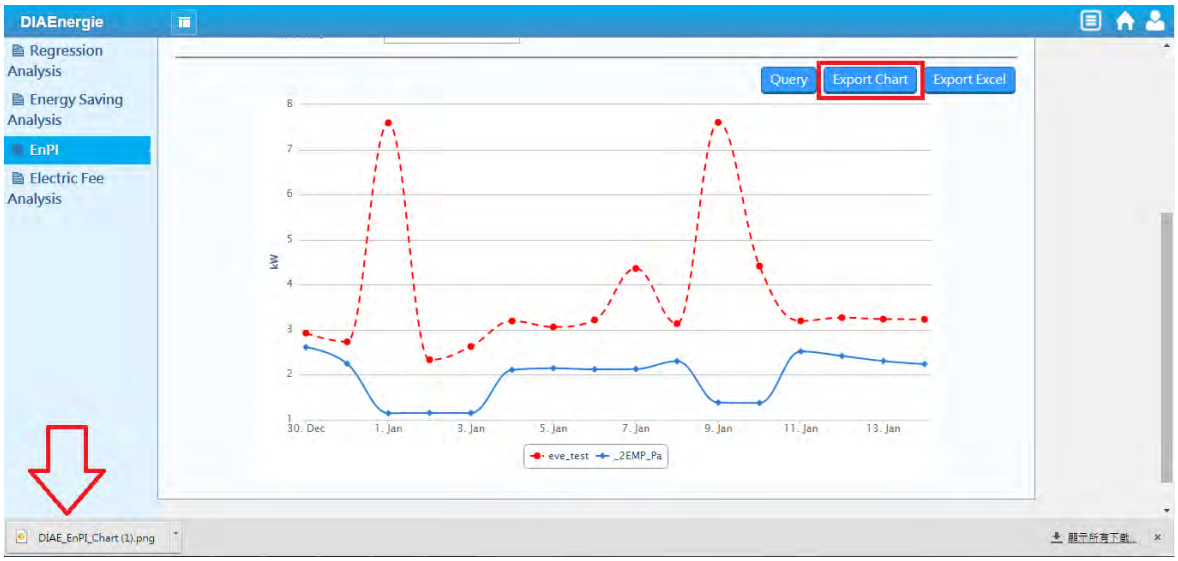
### 7.6.3 Query / Export Chart / Export Excel

❶ Query: After completing the settings above, Query would change to Query, then query clicks would be available.

❷ Export Chart: Display and download the chart as a png image after clicking query.

❸ Export Excel: Display and download the chart data as an excel file after clicking query.

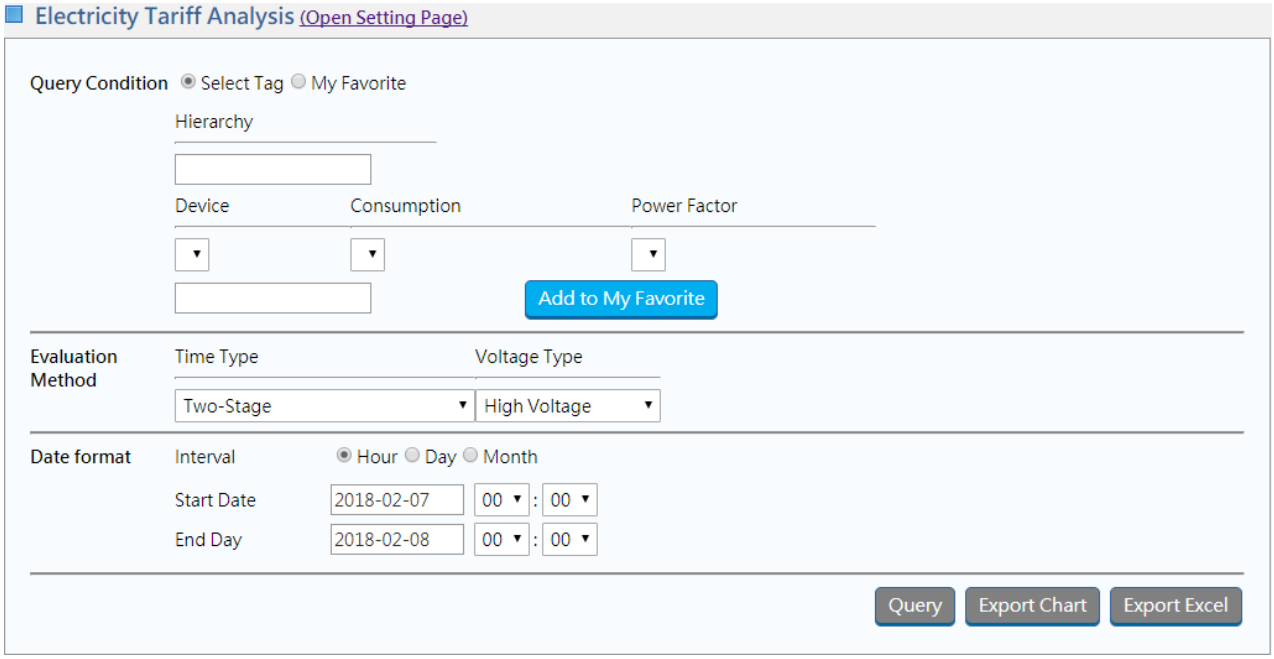
Select **Export Chart** for downloading the charts to the server and choose **Export Excel** to save query results in Excel.



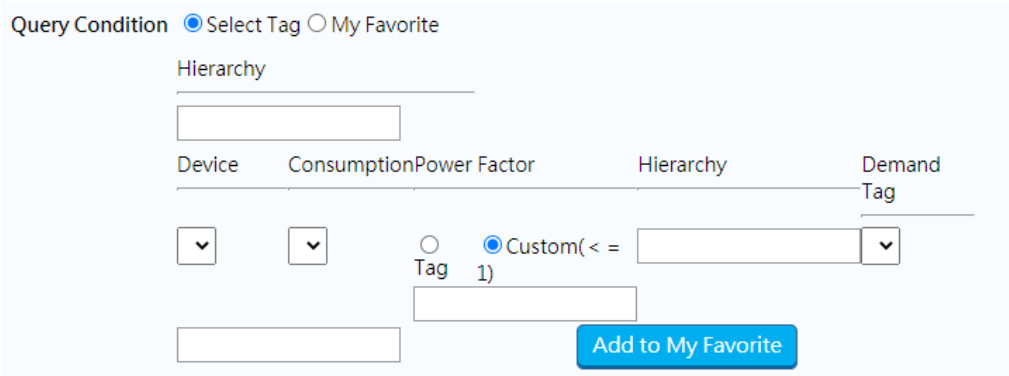

| | A | B | C |
|---|---|---|---|
| 1 | DateTime | _2EMP_Delta | eve_test |
| 2 | 2018/1/1 00:00 | 23.17 | 72.25 |
| 3 | 2018/1/2 00:00 | 78.33 | 72.25 |
| 4 | 2018/1/3 00:00 | 84.06 | 72.25 |
| 5 | 2018/1/4 00:00 | 86.16 | 72.25 |
| 6 | 2018/1/5 00:00 | 88.04 | 72.25 |
| 7 | 2018/1/6 00:00 | 36.56 | 22.61 |
| 8 | 2018/1/7 00:00 | 36.68 | 22.15 |
| 9 | 2018/1/8 00:00 | 85.41 | 72.25 |
| 10 | 2018/1/9 00:00 | 78.81 | 72.25 |
| 11 | 2018/1/10 00:00 | 83.51 | 72.25 |

## 7.7 Electricity Tariff Analysis

The electricy tariff analysis provides users to effectively manage the electricity costs. The **1. Query Condition** contains selectable source items and power factors. Then, **2. Evalation Method / Date Format** include evaluation methods on tariffs and time interval; click **3. Query** to generate a chart or choose **4. Export Chart/ Excel** to save the files on the server. In addition, users can use the **5. Open Setting Page** to edit or modify the evaluation methods of electricity tariffs based on different contracts with Taiwan Power Company.



## 7.7.1 Query Condition




**Select Tag**

❶ Hierarchy: Select the desired hierarchy level.

❷ Device: Select the desired device.

❸ Consumption: Select the desired tag.

❹ Power Factor: Tag/ Custom. Select the desired power factor tag or input the desired power factor.

❺ Hierarchy: Select the hierarchy level where the demand tag is belonged.

❻ Demand Tag: Select the desired demand tag.

❼ My Favorite Name: Enter the name of favorite list before adding the query condition to my favorite.

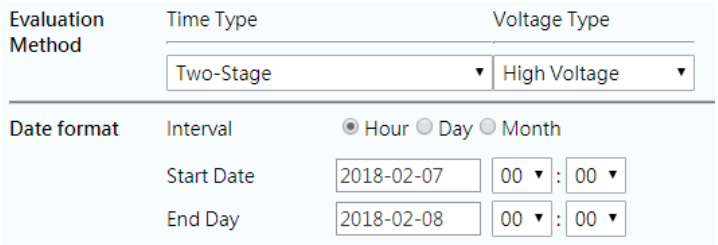
❽ Add to My Favorite: Click this button to add the configuration to My Favorite.

**My Favorite**

❶ Favorite List: Select the desired favorite list.

7

## 7.7.2 Evalation Method / Date Format




❶ Time Type: Two-Stage/ Three-Stage (Fixed Peak Time)/ Three-Stage (Variable Peak Time)

❷ Voltage Type: High Voltage/ Ultra High Voltage

❸ Time interval: Hour/ Day/ Month

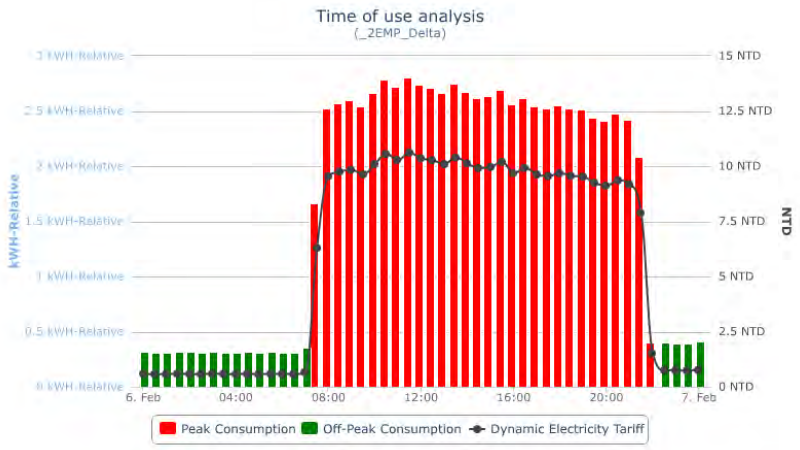
❹ Start Date: Set the query start date.

❺ End Date: Set the query end date.

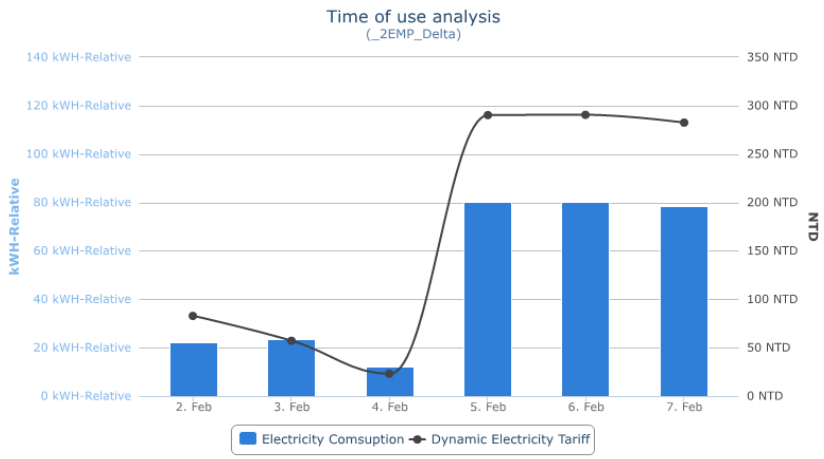
### 7.7.3 Query

Click **Query** to view the results on electricity tariffs for different time period.

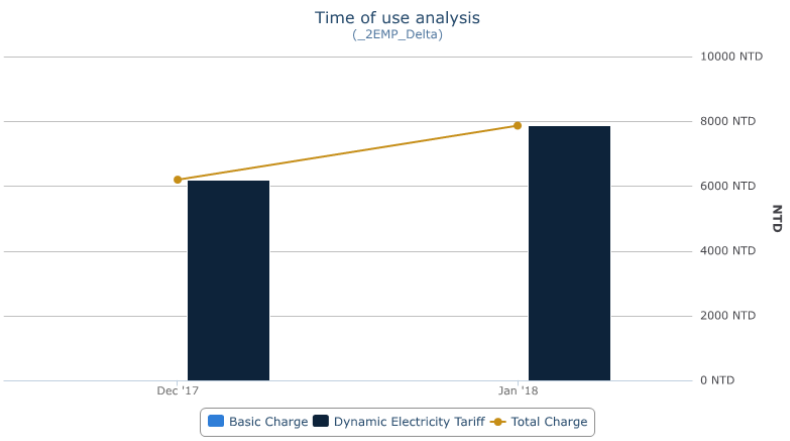
- Electricity Tariff Analysis (Time)




- Electricity Tariff Analysis (Daily)

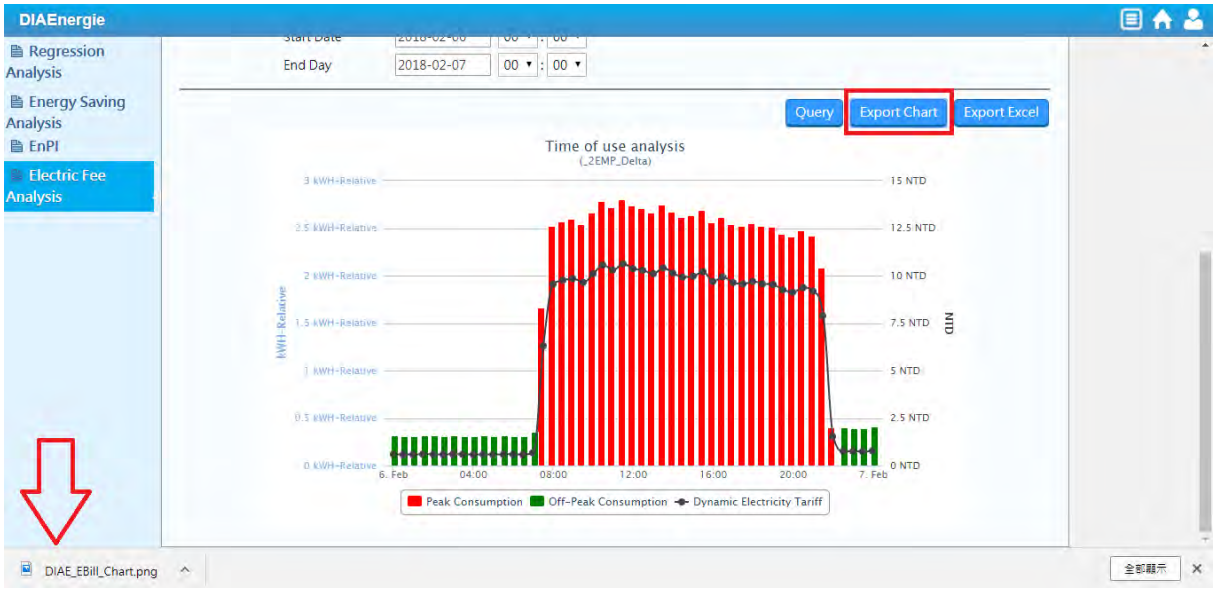



- Electricity Tariff Analysis (Monthly)



## 7.7.4 Export Chart / Excel

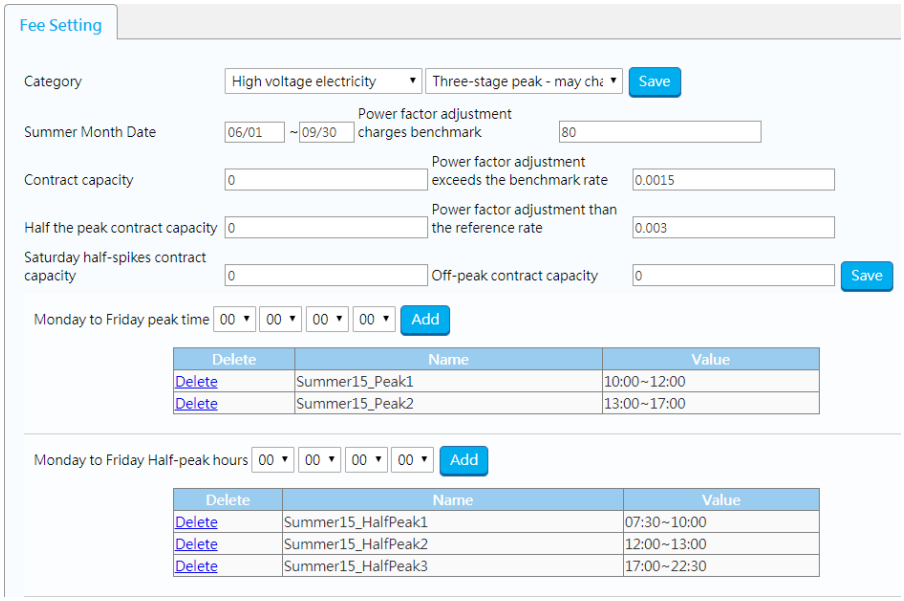
Select **Query** to view the result on screen or choose **Export Chart** to download the charts to the server and choose **Export Excel** to save query results in Excel. (See below)




| | A | B | C | D |
|---|---|---|---|---|
| 1 | DateTime | Basic Charge | Dynamic Electricity Tariff | Total Charge |
| 2 | 2017/12/1 00:00 | 572.00 | 6201.43 | 6773.43 |
| 3 | 2018/1/1 00:00 | 572.00 | 7870.77 | 8442.77 |

## 7.7.5 Open Setting Page

The Taiwan Power Company (Taiwpower) has many evaluation methods for electricity tariffs. Users can complete the setting items on this page based on the contract signed with Taipower for further calculation.



8

# Chapter 8 Alarm Management

## Table of Contents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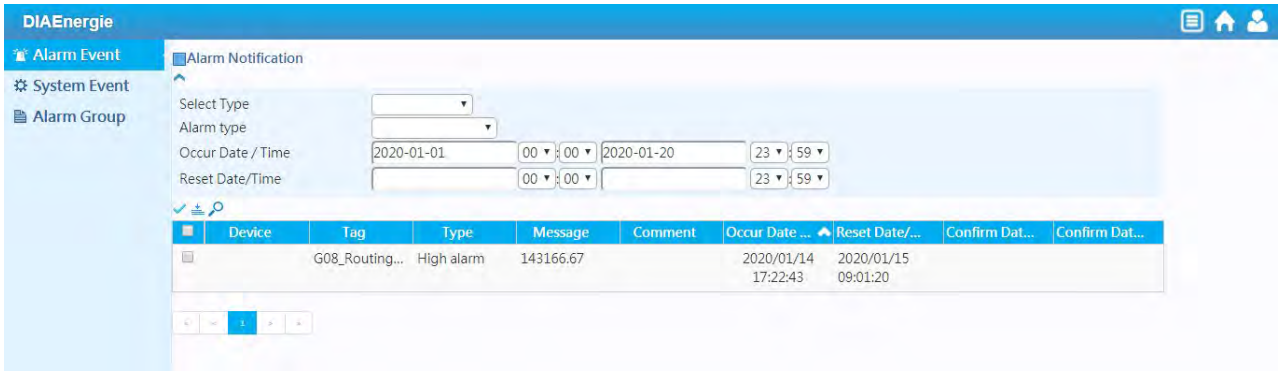
8.2 Alarm Notification ..... 8-4
8.3 System Notification ..... 8-5
8.4 Alarm Group ..... 8-6

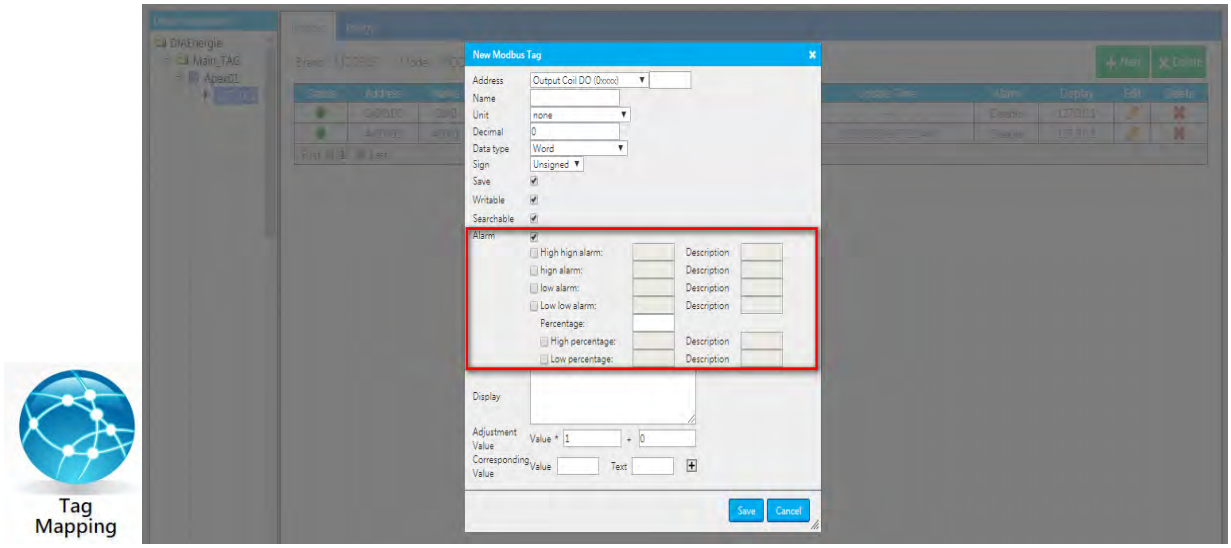
## 8.1 Introduction

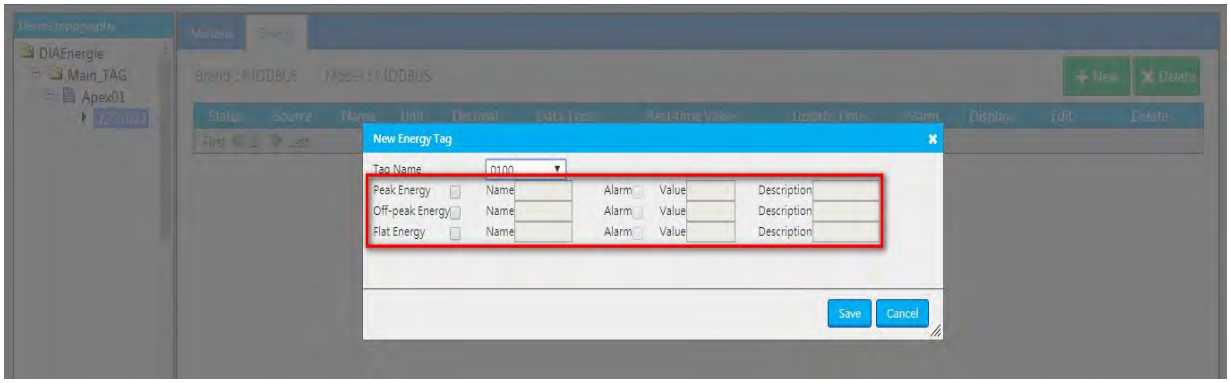
**Alarm Management** function features events that are stored in the DIAEnergie with reports displayed and search interface for query. There are two types of events: (1) Alarm Notification (2) System Notification.

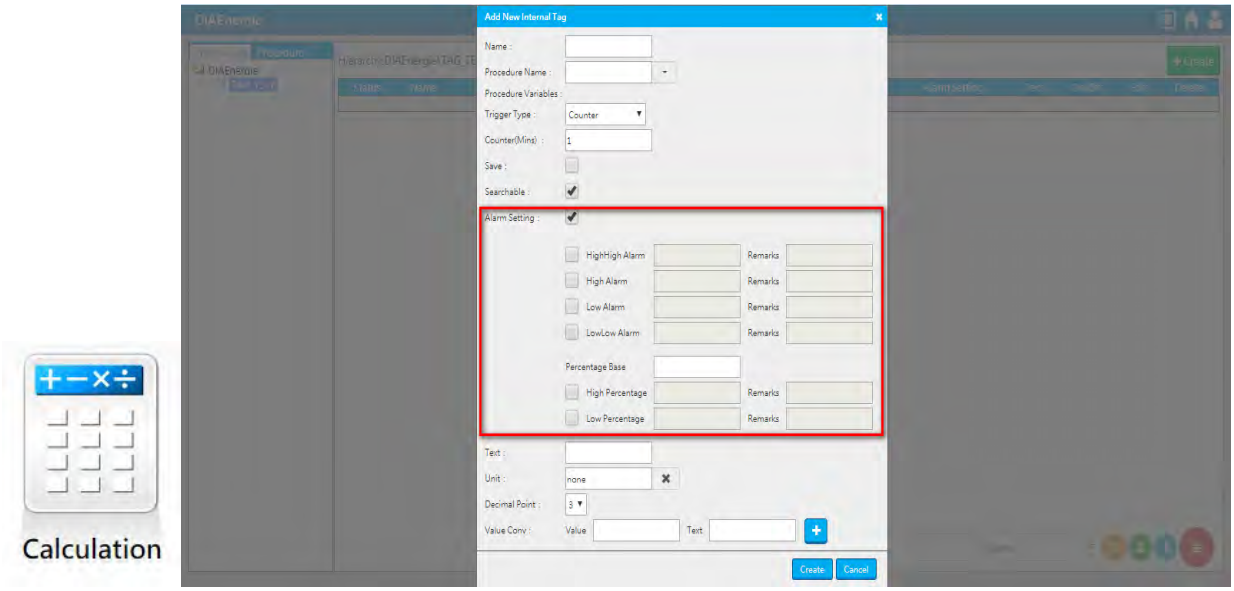



***Note:** Only 0-9, a-z, A-Z, special characters "_" "- ", Chinese characters (including traditional, simplified Chinese and Kanji) are allowed in names here. For remarks, only 0-9, a-z, A-Z, special characters "_" "-" "+" "@", Chinese characters (including traditional, simplified Chinese and Kanji) are accepted.

***Note:** Alarm type must be configured via Tag Mapping and Calculation before adding new tags.

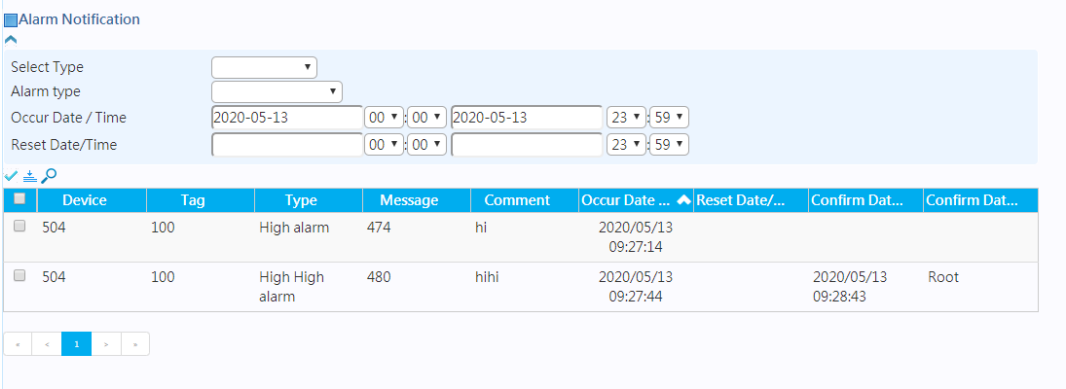



Calculation
Add New Internal Tag
Name :
Procedure Name :
Procedure Variables :
Trigger Type :
Counter
Counter(Mins) :
1
Save :
Searchable :
Alarm Setting :
HighHigh Alarm
Remarks
High Alarm
Remarks
Low Alarm
Remarks
LowLow Alarm
Remarks
Percentage Base
High Percentage
Remarks
Low Percentage
Remarks
Text :
Unit :
none
Decimal Point :
3
Value Conv :
Value
Text
Create
Cancel

## 8.2 Alarm Notification

The **Alarm Notification** contains settings of trigger points that cause alerts based on the selected tag. Users can click for query alert of specified date/time, then select the alerts and click to manually confirm the events. Or click to export the results in Excel and save in the server.




| | C | D | E | H | I | J | K | M |
|---|---|---|---|---|---|---|---|---|
| 1 | Device | Type | Tag | Message | Confirm D | Occur Dat | Normal Date / Time | Confirm |
| 2 | B1ML | High alarn | Pt | 17430470 | 2018-02-0 | 2017-04-1 | 2017-04-13 21:38:02 | derek |
| 3 | B1ML | High alarn | Pt | 25445420 | 2018-02-0 | 2017-04-2 | 2017-04-21 20:26:24 | derek |
| 4 | B1ML | High alarn | Pt | 23426450 | 2018-02-0 | 2017-04-2 | 2017-04-27 14:56:44 | derek |
| 5 | B1ML | High alarn | Pt | 17875.99 | 9999-12-3 | 2017-04-2 | 2017-04-29 08:09:53 | |
| 6 | B1ML | High alarn | Pt | 3867963 | 9999-12-3 | 2017-04-3 | 2017-04-30 02:50:41 | |
| 7 | B1ML | High alarn | Pt | 4187327 | 9999-12-3 | 2017-04-3 | 2017-04-30 04:42:13 | |
| 8 | B1ML | High alarn | Pt | 19679380 | 9999-12-3 | 2017-09-0 | 2017-09-04 19:54:40 | |
| 9 | B1ML | High alarn | Pt | 46389.852 | 9999-12-3 | 2017-09-0 | 2017-09-08 02:25:21 | |
| 10 | B1ML | High alarn | Pt | 1397265 | 9999-12-3 | 2017-09-1 | 2017-09-10 02:54:01 | |
| 11 | B1ML | High alarn | Pt | 170757.09 | 9999-12-3 | 2017-10-0 | 2017-10-07 01:02:34 | |
| 12 | B1ML | High alarn | Pt | 23319160 | 9999-12-3 | 2017-06-1 | 2017-06-16 14:39:32 | |
| 13 | B1ML | High alarn | Pt | 20167480 | 9999-12-3 | 2017-08-1 | 2017-08-14 16:51:01 | |
| 14 | B1ML | High alarn | Pt | 1164.96 | 9999-12-3 | 2017-08-1 | 2017-08-19 05:36:39 | |
| 15 | B1ML | High alarn | Pt | 126367.79 | 9999-12-3 | 2017-08-1 | 2017-08-19 10:55:40 | |

- **Select Type**

  ❶ Tag: Search for device type alarms.

  ❷ Internal Tag: Search for internal tag type alarms.

  ❸ Alarm Group: According to the selected alarm group, continue to choose the target device and tag for queries, if there has been device tags or internal tags set in the alarm group.

- **Alarm Type**

  High High Alarm/ High Alarm/ Low Alarm/ Low Low Alarm/ High percentage/ Low percentage/ Peak Alarm/ Off-peak Alarm/ Flat Alarm

- **Occur Date/ Time:** Alarm occur time.

- **Reset Date/ Time:** Alarm reset time.

- **Confirm** : Select the desired alarms by checking the checkboxes, then ckick on to confirm. After confirmed successfully, the user name would be recorded.

- **Query / Export**

Select Query to view the list of alarm messages or save the result in Excel files.

| Device | Type | Tag | Message | Confirm Date / Time | Occur Date / Time | Reset Dat | Confirm D | Comment |
|---|---|---|---|---|---|---|---|---|
| 504 | High alarn | 100 | 474 | | 2020/05/13 09:27:14 | | | hi |
| 504 | High High | 100 | 480 | 2020/05/13 09:28:43 | 2020/05/13 09:27:44 | | Root | hihi |

## 8.3 System Notification

The System Notification features a list of alarms that occurred. Users can select the Level or type the query words or condition in the Message box, then click query / export to list all the query conditions of system notifications set between specific time periods. Or save the results in Excel and on the server.

- **Level**

  ❶ **Information**：

  Users log in / log out. Ex: root-Login-IP:10.139.32.45

  System service activated. Ex: System Start!

  Alarm group modification records. Ex:

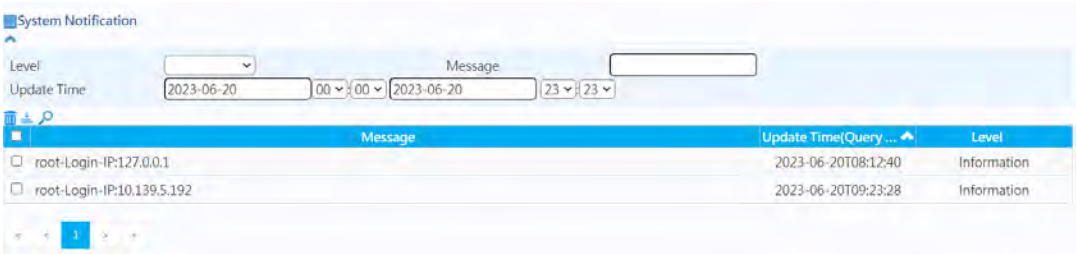
  {"DIAE_alarmGroupNotifyPeriods":[{"startTime":"0000","endTime":"0000"}],"updateUser":"root"}

  ❷ **Warning**：Abnormal system setting. Ex: Send Mail failed

  ❸ **Alarm**：EquipmentDisconnected / SenseLock / EnergySaving Alarm Notification.

- **Message**

  Users can type characters in the Message box to find the alarm messages with the exact same characters. For instance, characters 'Login'is typed in the Message box and alarms with these characters are listed in the workspace below.




- **Update Time:** Message created time

- **Query / Export**

  Select Query to view the list of alarm messages or save the result in Excel files.

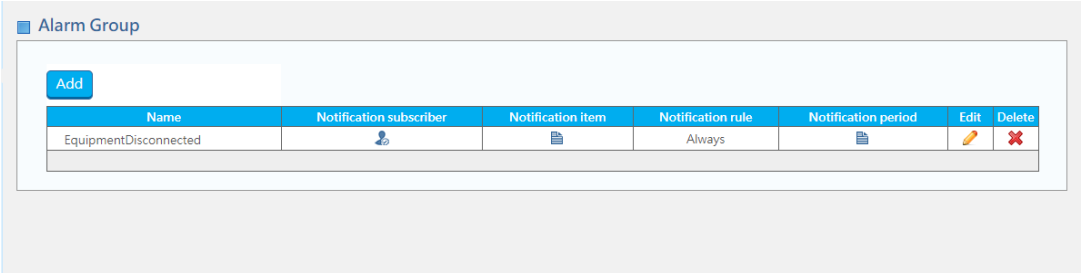
| Message | Level | Update Time(Query time interval) |
|---|---|---|
| root-Login-IP:10.139.32.45 | Information | 5/12/2020 10:06:52 AM |
| root-Login-IP:10.139.32.45 | Information | 5/12/2020 12:06:10 PM |
| root-Login-IP:10.139.32.45 | Information | 5/12/2020 1:31:06 PM |
| root-Login-IP:10.139.32.45 | Information | 5/12/2020 2:29:04 PM |
| root-Login-IP:10.139.32.45 | Information | 5/12/2020 2:55:55 PM |
| root-Login-IP:127.0.0.1 | Information | 5/12/2020 2:54:57 PM |

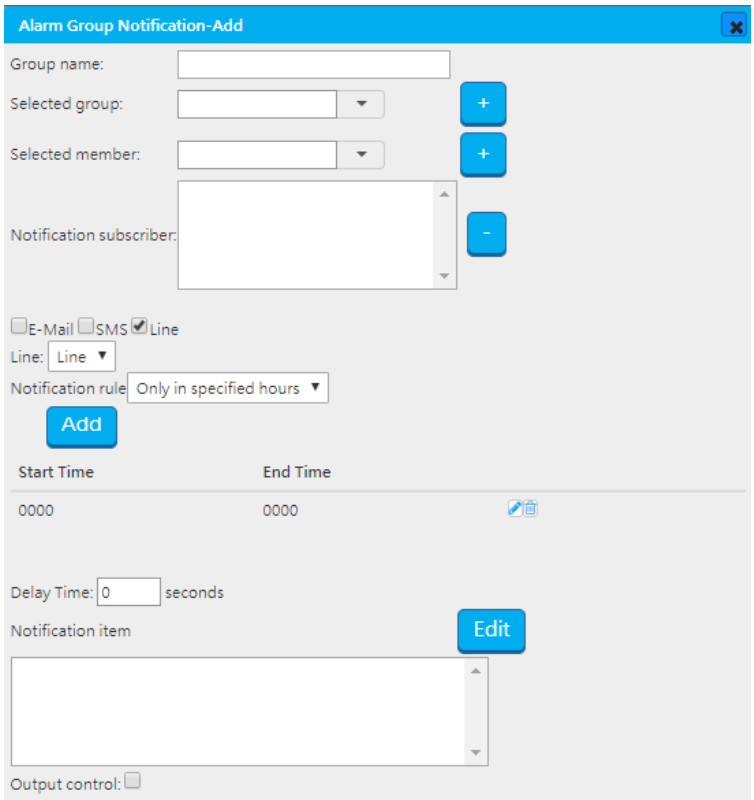
- **Delete**

  Users can choose to delete system event information with single or multiple selections.

## 8.4 Alarm Group

The **Alarm Group** provides notifications to alert related staffs. Users can click **Add** to setup more alarm groups or **Edit/Delete** the saved groups. In the Authority Group under User Management, choose group members from **Selected Group** and **Selected Member** item. When Output Control is selected, the system outputs the control value of alarms from specific devices. Click **Add** besides the Notification item to select the source tag and hierarchy of specified devices along with alarm levels. The current methods for notifying include **E-mail**, **SMS,** and **Line messages**. More notification will be offered soon.




(1) **Add**: Click Add and the dialog window of alarm group notification-add would pop up for you to add more alarm notification groups.

(2) **Edit**: Click Edit and the dialog window of alarm group notification-edit would pop up for you to edit the setting of alarm notification groups.

(3) **Delete**: Click Delete and the dialog window of alarm group notification-edit would pop up to confirm whether to delete the alarm notification group.

(4) **Notification Item**: Check all the notification items.

(5) **Notification Period**: Check the specified interval set for notification groups.

**Click (1) to Add.**

(6) **Group Name**: Specify names of alarm groups.

(7) **Selected Group**: Select the desired privileged group from the drop-down list, then click + to add the selected group to the list of notification subscriber at below. To remove the selected group, select the target group in the list of notification subscriber and click - to remove.

(8) **Selected Member**: Select the desired member from the drop-down list, then click + to add the selected member to the list of notification subscriber at below. To remove the selected member, select the target member in the list of notification subscriber and click - to remove.

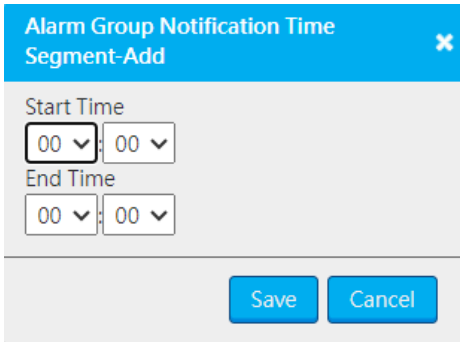
(9) **E-Mail**: Check to enable E-Mail notifications. Please go to System Settings – Server Setting – SMTP Setting to make sure all settings are complete before enabling this feature.

(10) **SMS**: Check to enable SMS notifications. Please go to System Settings – Alarm Setting – SMS device settings to make sure all settings are complete before enabling this feature.

(11) **Line**: Check to enable Line notifications. Please go to System Settings – Line Settings to make sure all settings are complete before enabling this feature. (Refer to CH11 IFTTT Line Settings.)

(12) **Notification Rule**: Always / Only in specified hours.

(13) **Alarm Group Notififcation Time Segment-Add**: Specify time intervals to add. Notifications would only be sent within these specific time intervals.




❶ Start Time: Specify the start time of the interval in HH:mm time format (Hour: Minutes).

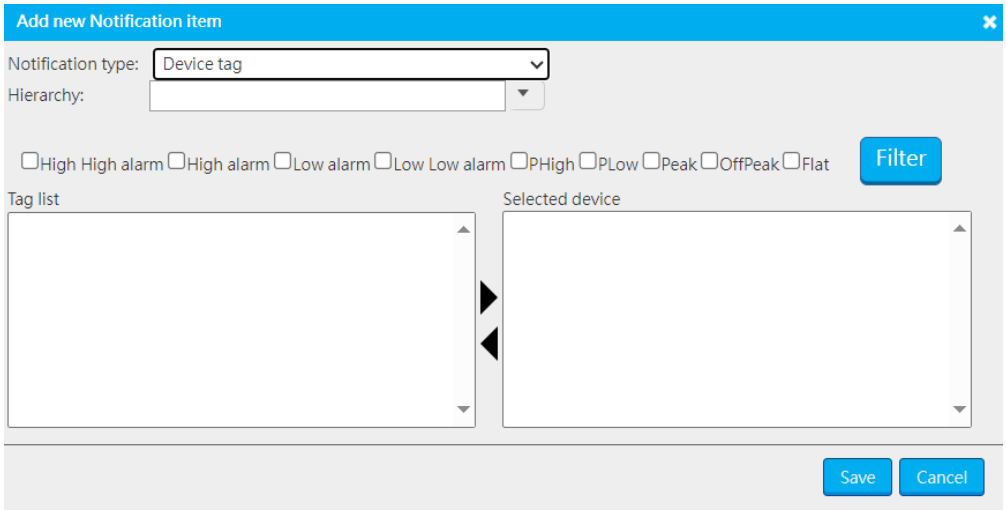
❷ End Time: Specify the end time of the interval in HH:mm time format (Hour: Minutes).

❸ Save: Click Save and the small configuration window would be closed to return to the main screen.

❹ Cancel: Click Cancel to close the small configuration window and return to the main screen.

(14) **Delay Time**: Alarm notification would be delayed by a few seconds before being sent.

(15) **Edit**: Click Edit and the configuration window of "**Add new Notification item**" wuld pop up.




❶ Notification Type: Device tag/ Internal tag/ System event.

❷ Hierarchy: Select the desired hierarchy level.

❸ Alarm Types: High High Alarm/ High Alarm/ Low Alarm/ Low Low Alarm/ PHigh/ Plow/ Peak/ OffPeak/ Flat.

❹ Filter: Shortlist tags according to the settings of notification type, hierarchy and alarm type and display the selected tags in the tag list.

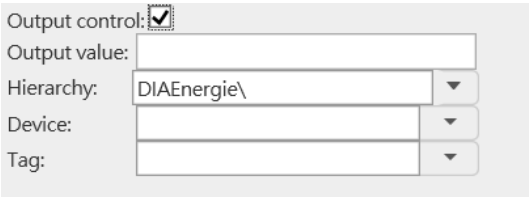
❺ Selected Device: Select the target device on the tag list and click ▶ to add it to the selected devices list.

❻ Select the target tag you want to remove from the selected device list and click ◀ .

❼ Save: Click to save the settings of selected tags for notification items.

❽ Cancel: Close the dialog box and return to the previous screen.

(16) Output Control: If the checkbox is checked, the following fields would be displayed for you to configure tags and output value.




❶ Output Value: Enter the desired value.

❷ Hierarchy: Select the target hierarchy where the device is belonged.

❸ Device: Select the target device.

❹ Tag: Select the target tag.

9

# Chapter 9 System Settings

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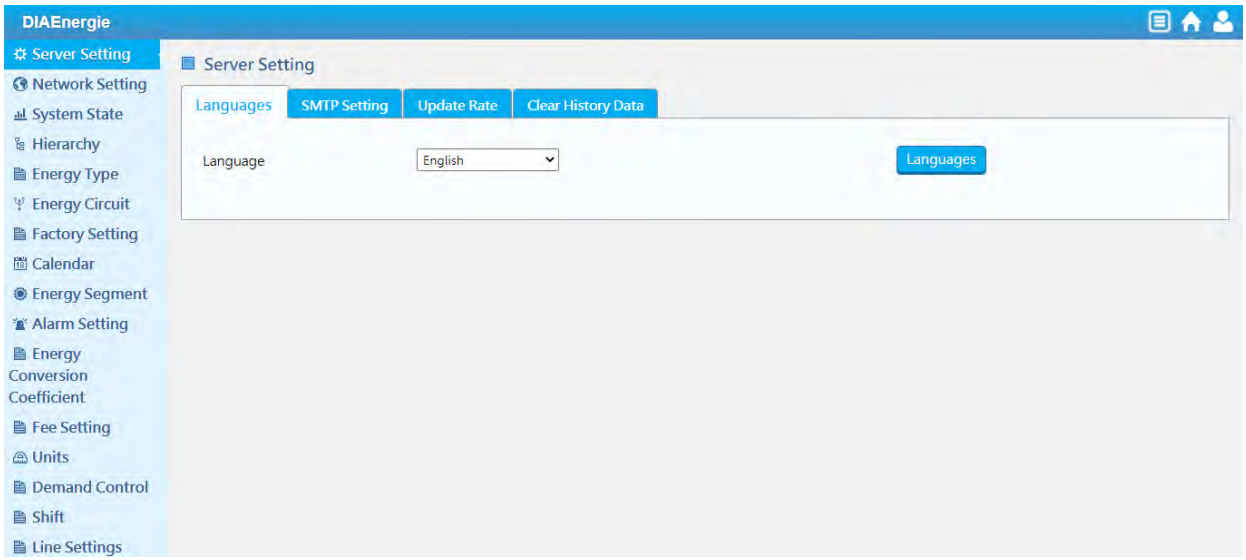
## 9.1 Introduction

You are allowed to configure operation settings in DIAEnergie via system settings page with a total of 16 setting items which would be detailed as follows.

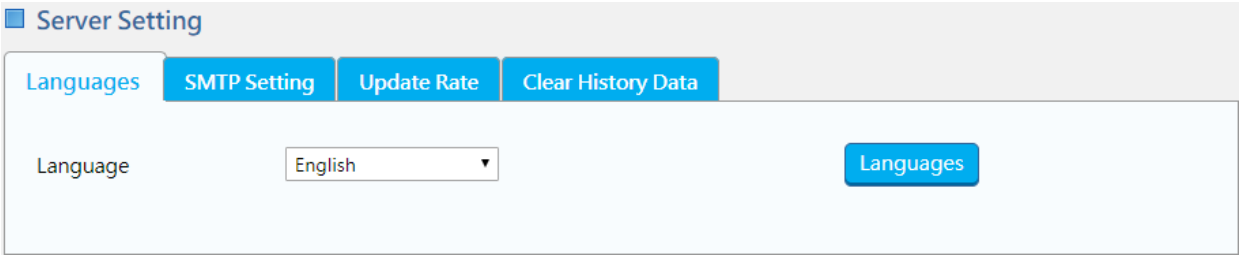
## 9.2 Server Setting

The first setting displayed on the left side of the page which is categorized into “Languages”, “SMTP Setting”, “Update Rate” and “Clear History Data”.



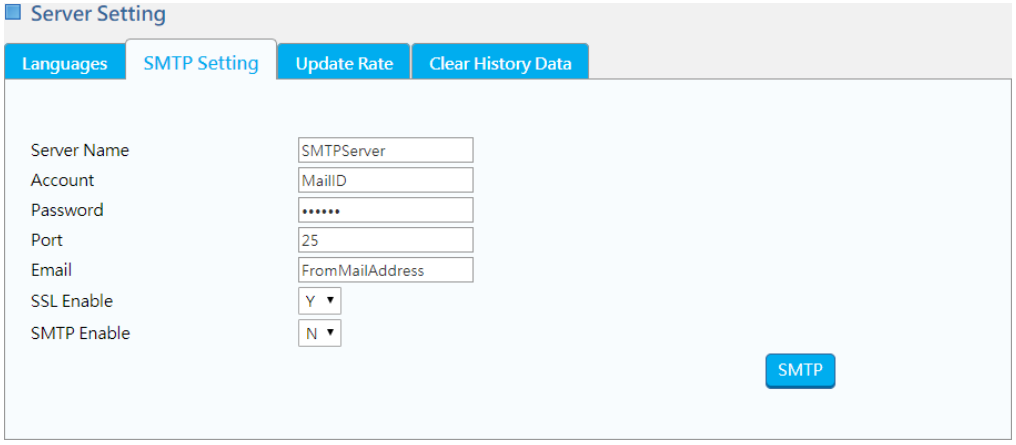

### 9.2.1 Languages

Change system language in DIAEnergie with supported languages including Traditional Chinese, Simplified Chinese and English by clicking “Languages” to save the setting successfully, then refresh the page in the browser to display the new language setting.



## 9.2.2 SMTP Setting

Through SMTP Setting, you can specify the target server, account and password so as to receive real-time email notifications when an alarm is detected. You can further enable SSL for greater security. Also, you can determine whether to enable SMTP feature based on your needs. Please refer to appendix for more details.




❶ Server Name: Specify the name of SMTP server.

❷ Account: Set SMTP account

❸ Password: Set SMTP password

❹ Port: Set SMTP port.

❺ Email: Sender's mail address

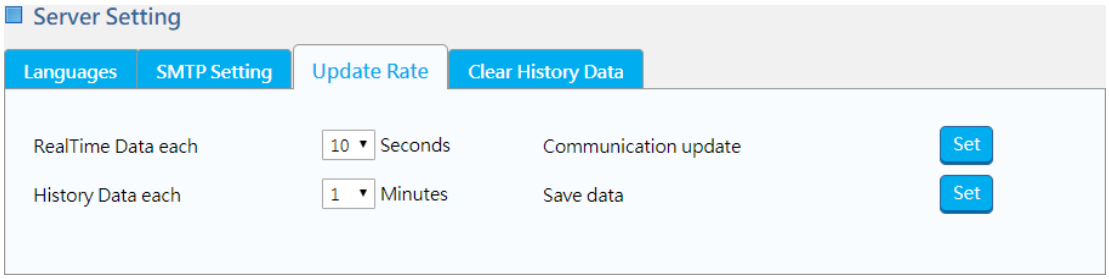
❻ SSL Enable: Decide whether to enable SSL. If yes, please make sure you've checked the SSL port.

❼ SMTP Enable: Only when set to Y, the above connection information would be accessed by system so as to send notification mails.

## 9.2.3 Update Rate

You can specify the update frequency and the time interval for saving data on Update Rate page. The former setting is relateed to system efficiency (the higher the frequency, the slower the efficiency and vice versa.). The latter setting would be related to the system remaining storage space (the shorter the interval, the more the data to be saved and vice versa)

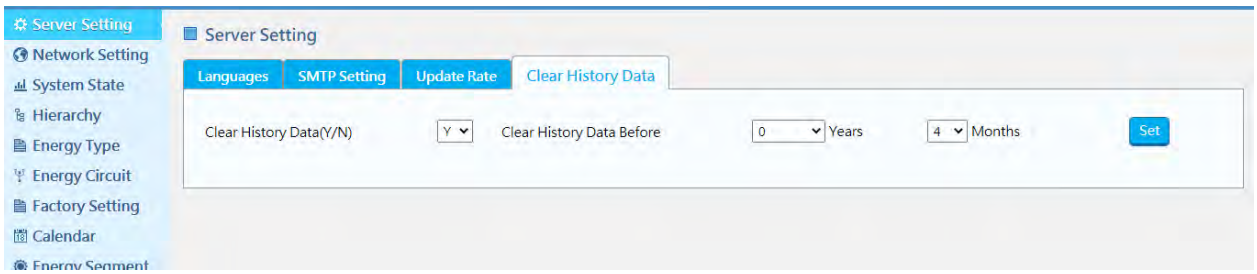
***Note:** The update frequency here is the frequency of collecting device data; not the update frequency of internal tags



### 9.2.4 Clear History Data

Clear all the history data or data before a specific time, which is user-defined. After completing the configuration, data would be clear each day at 3 a.m.

Take the following figure for example, only data during the past four months would be saved.

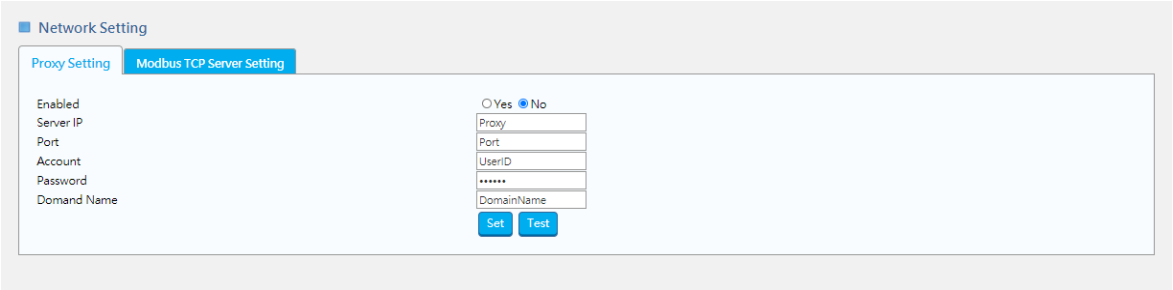


# 9.3 Network Setting

Network setting is the second setting displayed on the left side of the page which is categorized into “Proxy Setting”, and “Modbus TCP Server Setting”.

## 9.3.1 Proxy Setting

You are allowed to assign system IP addresses via Network Setting. In case that you want to connect to devices outside the local network while the system’s internet is restricted to be used in the local network, configure “Proxy Setting” to satisfy your demand.




❶ Enabled: Select Yes and the following settings would be accessed to create connections via Proxy.

❷ Server IP: The IP address of Proxy server.

❸ Account: Set Proxy account.

❹ Port: Specify a Proxy port.

❺ Password: Set Proxy password.

### 9.3.2 Modbus Server Setting

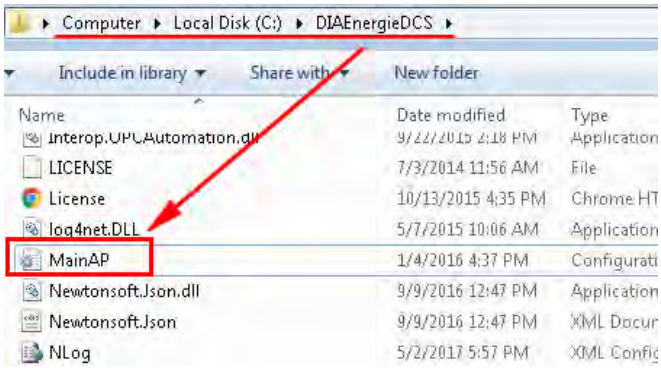
You can choose whether to turn on this feature to let other systems access data in DIAEnergie via Modbus TCP Server.

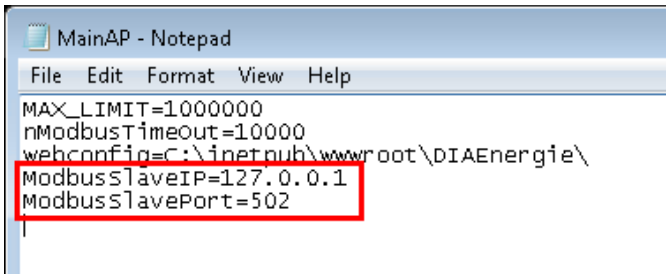
Specify the IP address and port for Modbus Server via C:\DIAEnergieDCS\MainAP.ini in the DIAEnergie server.

- **Specify the IP address and port according to your needs.**

ModbusSlaveIP=127.0.0.1

ModbusSlavePort=502

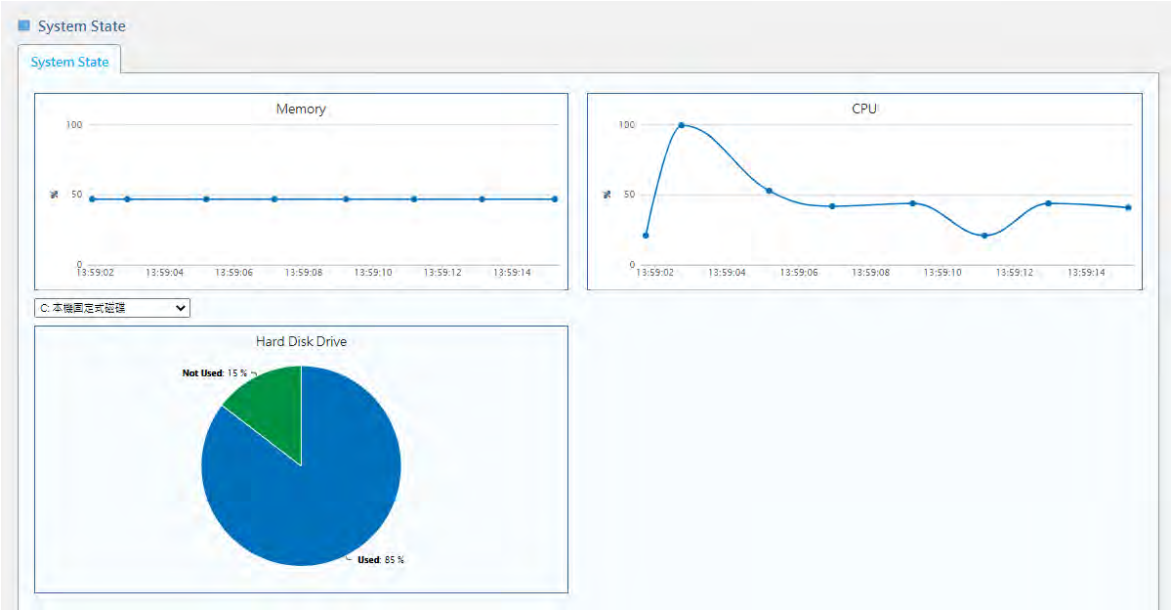



After completing settings in MainAP.ini, restart DIAEnergie AP (CEBC.exe) in Task Manager or reboot the PC.

## 9.4 System State

You can directly observe resource use on the local PC, including memory, CPU and hard disk drive through System State.



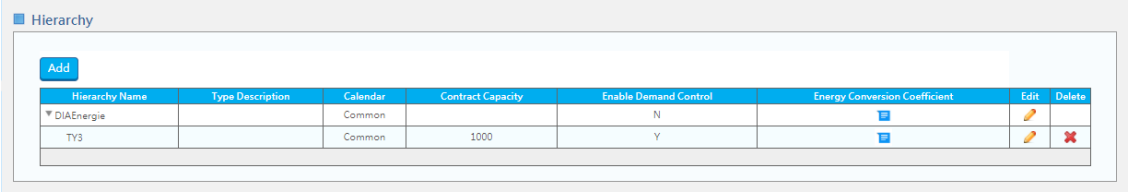

❶ Memory: Display the memory status of the system installed on the PC.

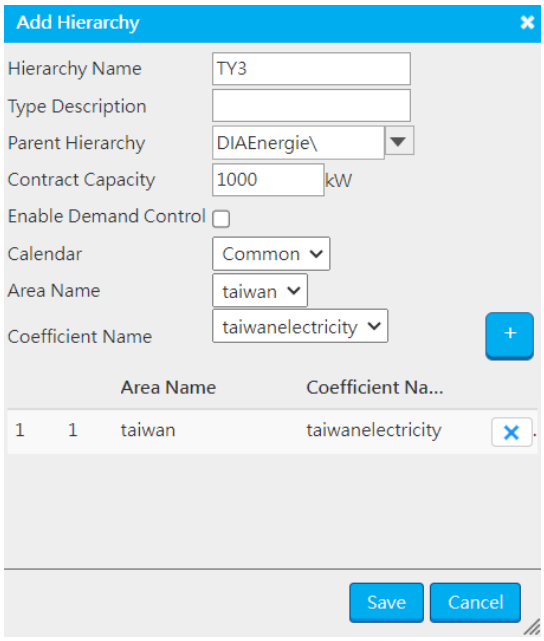
❷ CPU: Display the CPU status of the system installed on the PC. The CPU performance is read from basic services which would not be able to be displayed if there's no basic service being activated

❸ Hard Disk Drive: Display the hard disk status of the system installed on the PC by selecting the target item from the drop-down list.

## 9.5 Hierarchy

**The system devices can be effectively categorized based on the factory environment for** better **management and inquiries. Click** Add **to create new hierarchy levels;** **to edit or** **to delete the target hierarchy.**




❶ Hierarchy Name

❷ Parent Hierarchy: Choose the top-level domain assigned to manage other subdomains.

❸ Contract Capacity: Contract capacity on power usage signed with Taiwan Power Company.

❹ Enable Demand Control: Click the box to edit the alarm value regarding the contract capacity.

❺ Calendar: User-defined calendar or default calendar.

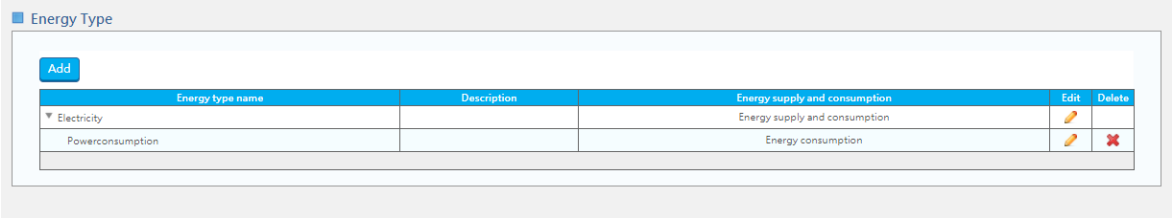
❻ **Area Name：**Not mandatory; users can choose it when needed. Subsequently, in the query and charts, available coefficients will be displayed based on the selected level (sourced from chapter 9.19 Emission Factor Settings)

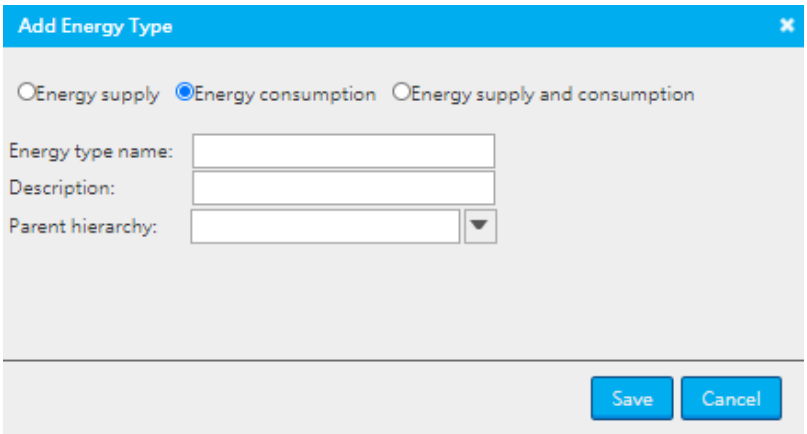
❼ **Coefficient Name：**Not mandatory; users can choose it when needed. Subsequently, in the query and charts, available coefficients will be displayed based on the selected level (sourced from chapter 9.19 Emission Factor Settings)

❽ + ：Please add the coefficients selected from ❻ and ❼ to the list of coefficients required for that level, and click ✕ to remove coefficients from the list.

## 9.6 Energy Type

Energy types can be effectively categorized with this setting according to user's needs for better management and inquiries, such as fuel, electricity, water, gas and so on. Click Add to create newenergy types; to edit or to delete the existing items.




- Add Energy Type

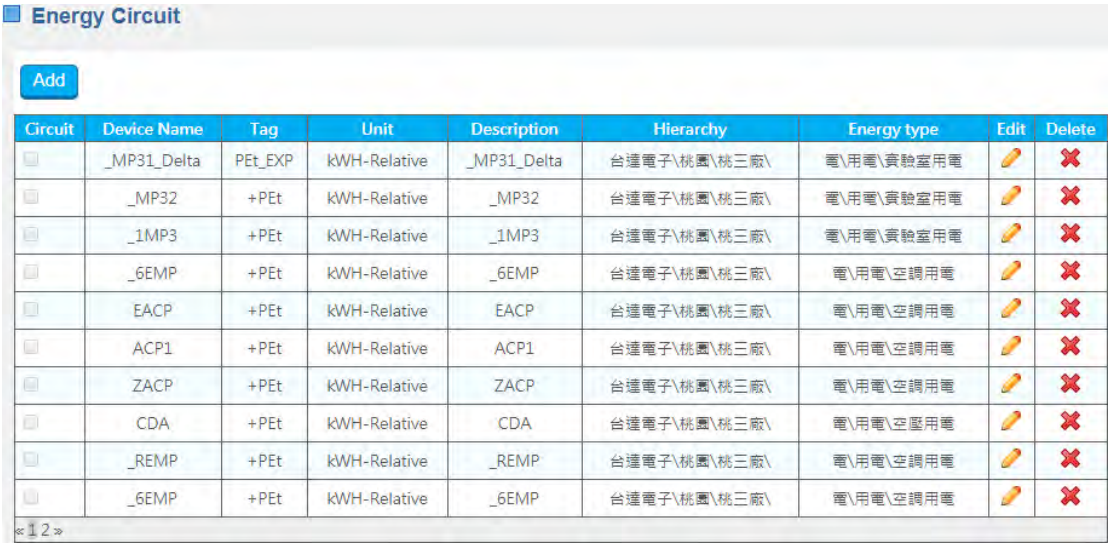
  ❶ Select energy type: Energy supply/ Energy consumption/ Energy supply and consumption

  ❷ Energy Type Name: Specify the name of energy type.

  ❸ Description: Additional information of the energy type

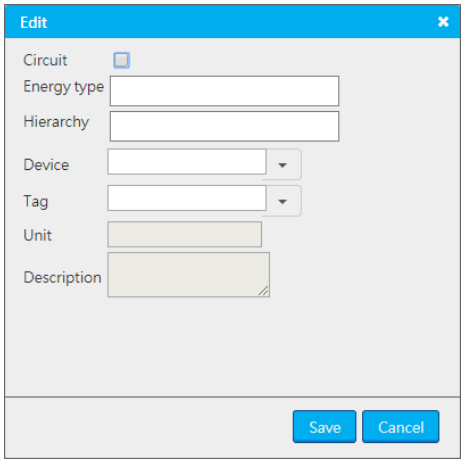
  ❹ Parent Hierarchy: Select the parent hierarchy that the newly-added item is belonged to.

## 9.7 Energy Circuit




| Circuit | Device Name | Tag | Unit | Description | Hierarchy | Energy type | Edit | Delete |
|---|---|---|---|---|---|---|---|---|
| | _MP31_Delta | PEt_EXP | kWH-Relative | _MP31_Delta | 台達電子\桃園\桃三廠\ | 電\用電\實驗室用電 | | |
| | _MP32 | +PEt | kWH-Relative | _MP32 | 台達電子\桃園\桃三廠\ | 電\用電\實驗室用電 | | |
| | _1MP3 | +PEt | kWH-Relative | _1MP3 | 台達電子\桃園\桃三廠\ | 電\用電\實驗室用電 | | |
| | _6EMP | +PEt | kWH-Relative | _6EMP | 台達電子\桃園\桃三廠\ | 電\用電\空調用電 | | |
| | EACP | +PEt | kWH-Relative | EACP | 台達電子\桃園\桃三廠\ | 電\用電\空調用電 | | |
| | ACP1 | +PEt | kWH-Relative | ACP1 | 台達電子\桃園\桃三廠\ | 電\用電\空調用電 | | |
| | ZACP | +PEt | kWH-Relative | ZACP | 台達電子\桃園\桃三廠\ | 電\用電\空調用電 | | |
| | CDA | +PEt | kWH-Relative | CDA | 台達電子\桃園\桃三廠\ | 電\用電\空壓用電 | | |
| | _REMP | +PEt | kWH-Relative | _REMP | 台達電子\桃園\桃三廠\ | 電\用電\空調用電 | | |
| | _6EMP | +PEt | kWH-Relative | _6EMP | 台達電子\桃園\桃三廠\ | 電\用電\空調用電 | | |

After finishing configuration of “Hierarchy” and “Energy Type”, add energy circuits to combine the desired device tags in the system via Energy Circuit, as well as clicking to edit and to delete the existing items. So, you would be able to perform relevant data analysis by means of relations between designated areas and energy types.




- Add energy circuits

  ❶ Circuit: Select energy type: Energy supply/ Energy consumption/ Energy supply and consumption

  ❷ Energy Type: Select the desired energy type.

  ❸ Hierarchy→Device→Tag

  ❹ Unit: Automatically display the unit corresponding to the selected tag.

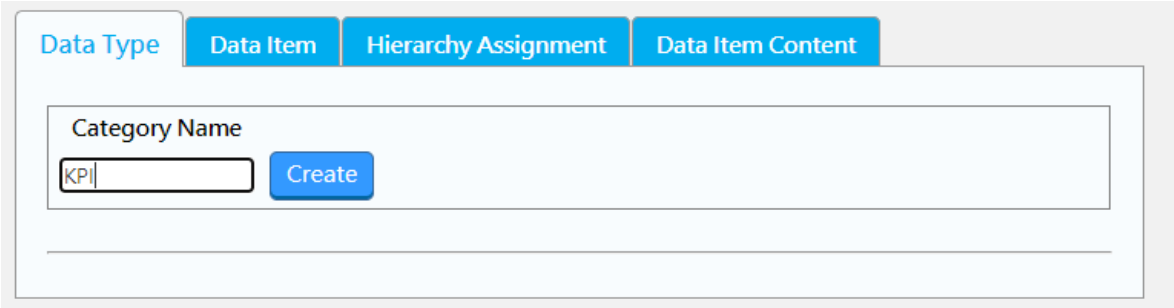
  ❺ Description: Automatically display the description corresponding to the selected device.

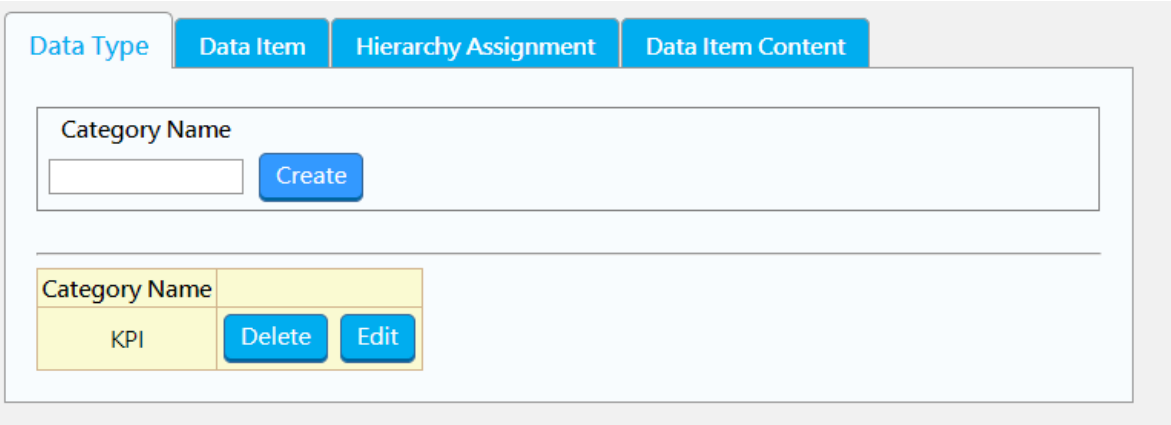
## 9.8 Factory Setting

You are allowed to create constant values that cannot be obtained from device tags, such as monthly production capacity, production values and so on, as well as classifying the values with categories and being shown on charts so as to be analyzed with device tags.

- **Data Type:** Create different data types to be classification of a broader scope, such as KPI, target production capacity, target energy conservation, etc.

  ❶ **Category Name:** Specify the category name.



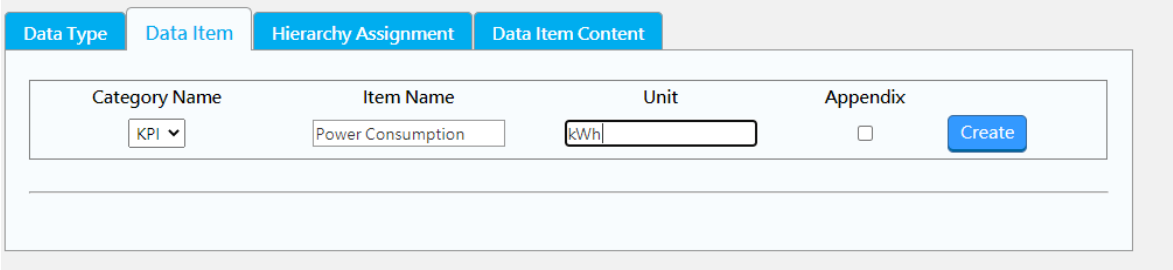

- **Data Item:** Create items of different categories. For example, classify consumptions into main power consumption, front building power consumption, car-park power consumption, etc.

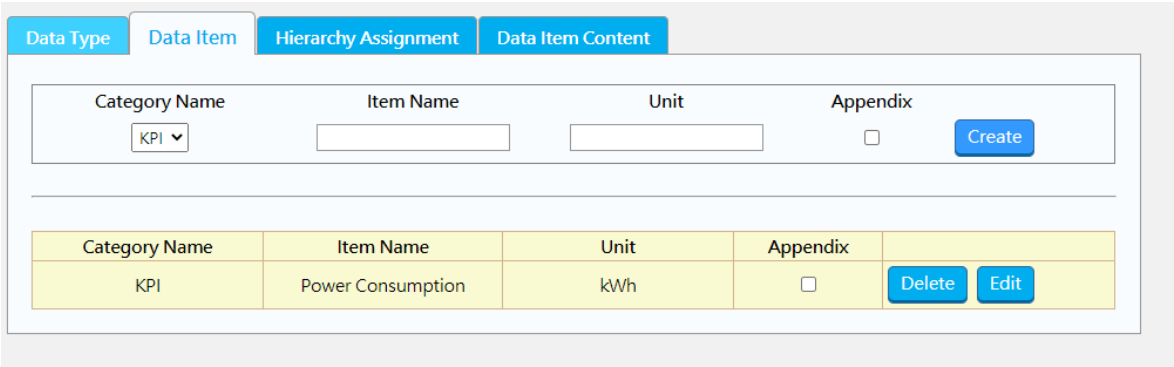
  ❶ Category Name: Select the target category.

  ❷ Item Name: Specify the item name.

  ❸ Unit: Automatically display the unit corresponding to the selected item.

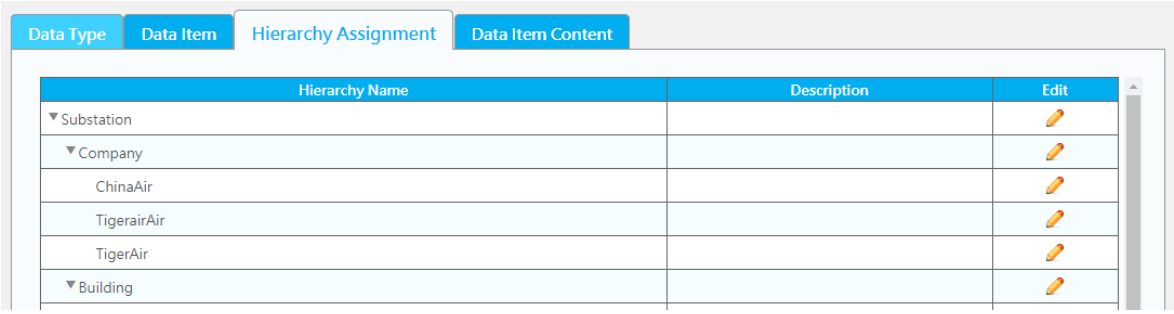
  ❹ Appendix: This feature is disabled by unchecking the box in the following figure.

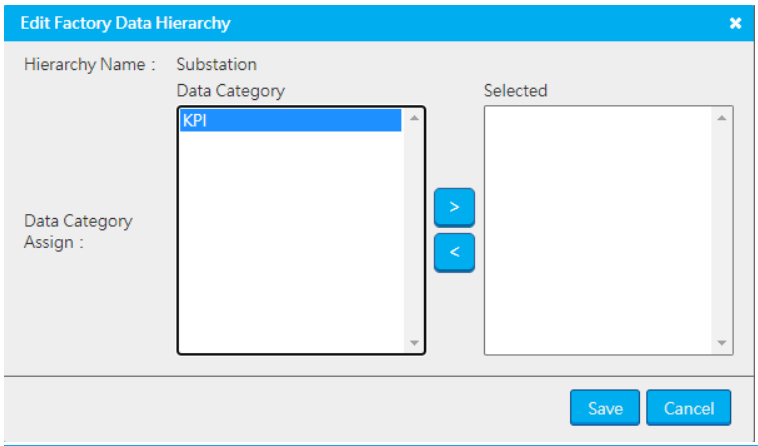


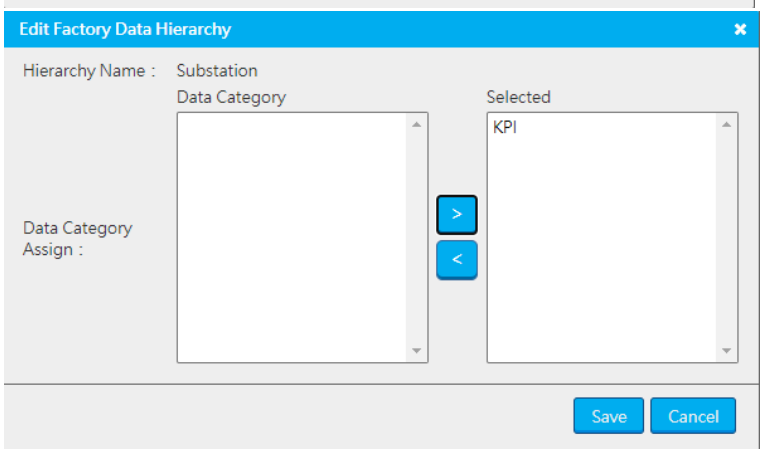



- **Hierarchy:** Click to edit items and click > to classify the selected item to the specific hierarchy.
- Edit Factory Data Hierarchy

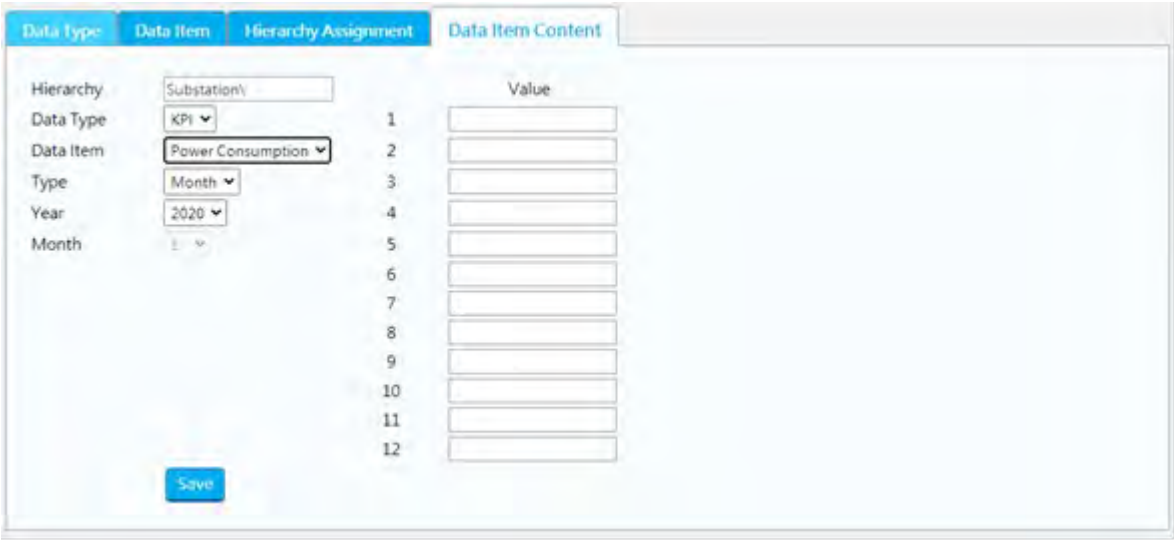
  ❶ Data Category Assign: Select one or more target categories to move them to the selected area by clicking >, then click save.



- **Data Item Content:** Enter values that cannot be obtained from device tags, displayed in daily or monthly basis, such as monthly production capacity, production values, daily target consumption for a single device and so on. Then you can perform a better analysis from the combination of the input values and the actual device tags with comparison charts displayed on energy dashboard.




❶ Hierarchy: Select the target hierarchy for configuration.

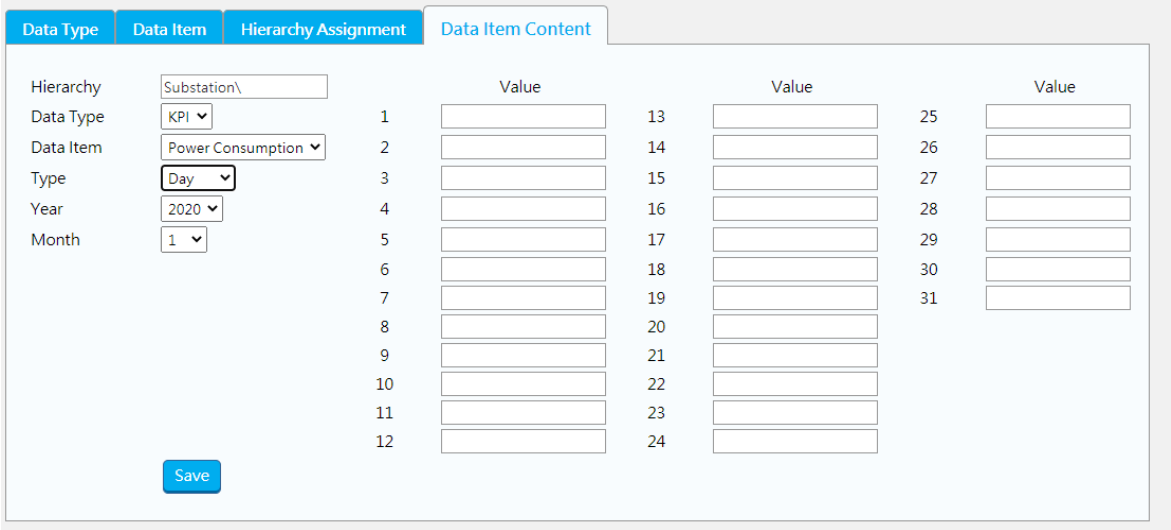
❷ Data Type: Select the target data type from the drop-down list corresponding to the selected hierarchy.

❸ Data Item: Select the target data item from the drop-down list corresponding to the selected data type.

❹ Type: Time type, select Month to enter monthly data.

❺ Year: Set the year of the input data. For example, if the year is set to 2020 and the type is set to Month, values during 2020-01 to 2020-12 would be displayed in the fields on the right section.

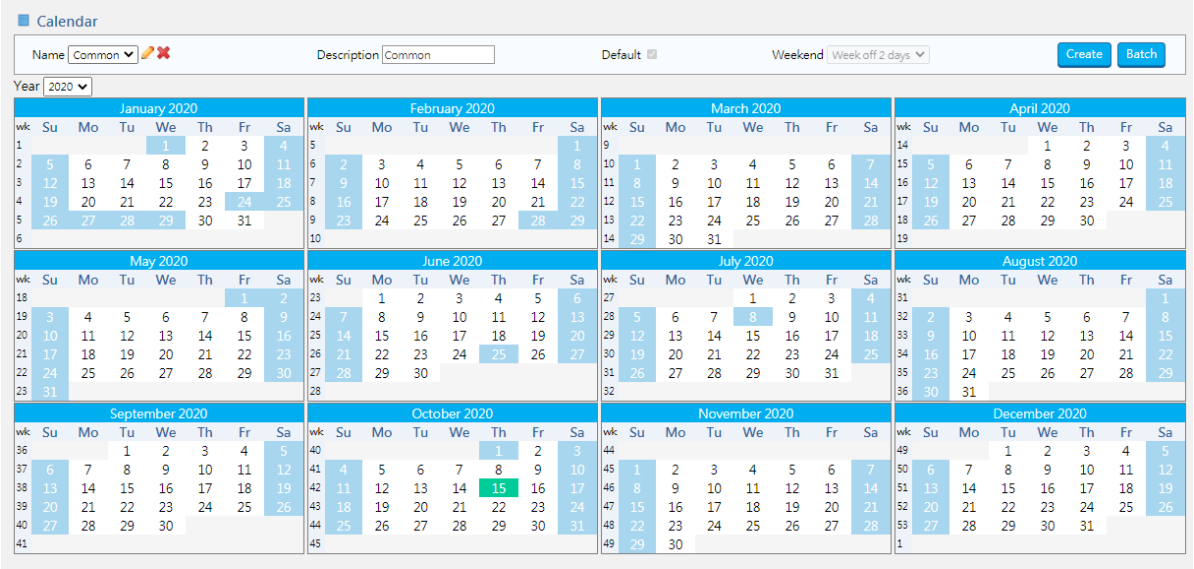
❻ Month: This setting would only be available when type is set to Day. As illustrated in the figure below, if the year is set to 2020 and the month is set to 1, values during 2020-01-01 to 2020-01-31 would be displayed in the fields on the right section.



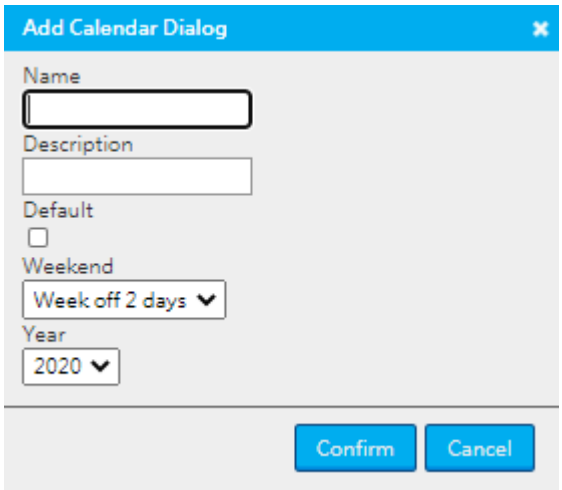
## 9.9 Calender

The system can differentiate workdays and holidays by means of this feature, while you are also allowed to set holiday or workday to any day in calendar as well as modifying description and other related information. Click Create to add new calenders.

Properties of items including “Multi Baseline Display” and “Item Comparison” on UI Design page may be related to the holiday settings here, which we would suggest you pre-arrange and maintain holidays in the next year at the end of each year for better distinguishing between workdays and holidays.




- **Add Calender Dialog**




❶ Name: Name the calender.

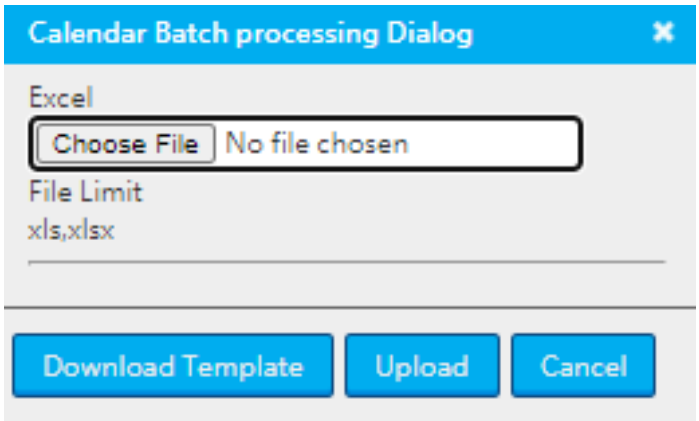
❷ Description: Specify the description for the calender.

❸ Default: Check the box to set the calender as the default calender.

❹ Weekend: Week of 2 days/ Week of 1 day

❺ Year: Select the year of the calender.

- **Calender Batch Processing Dialog**

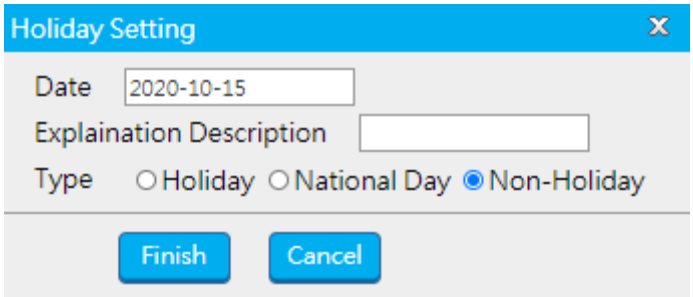



❶ Download Template: Click to download the template file to fill in the information and save it after complete.

❷ Upload: Select the file to upload for updating in system.

❸ Cancel: Close this dialog box.

- **Holiday Setting**



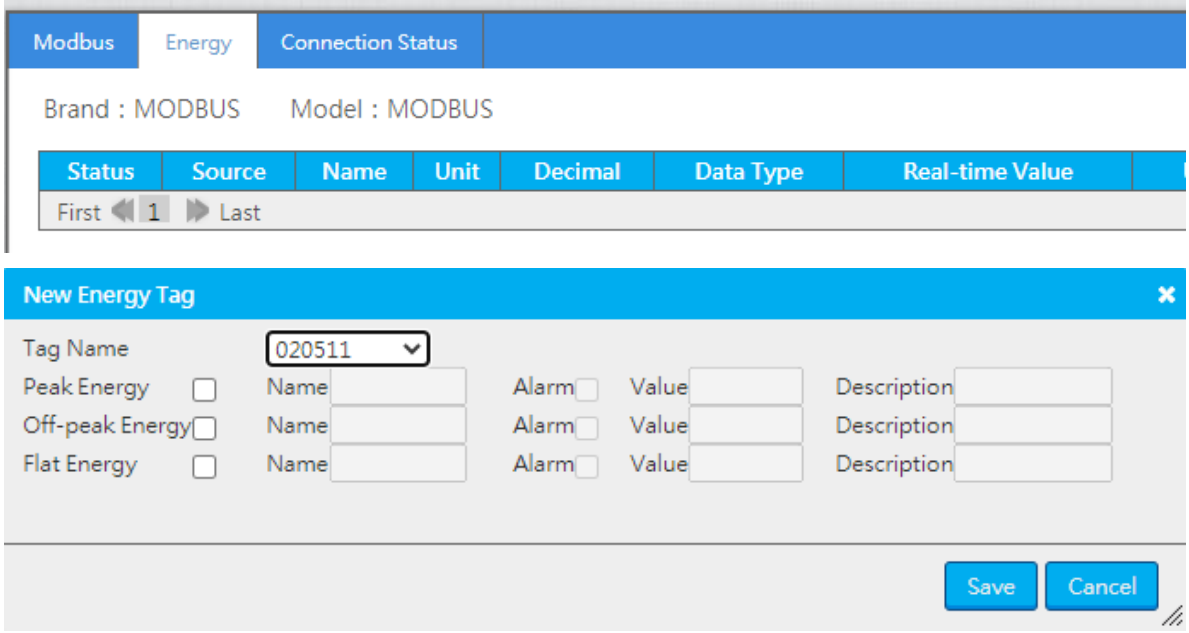

❶ Date: Display the date that you choose.

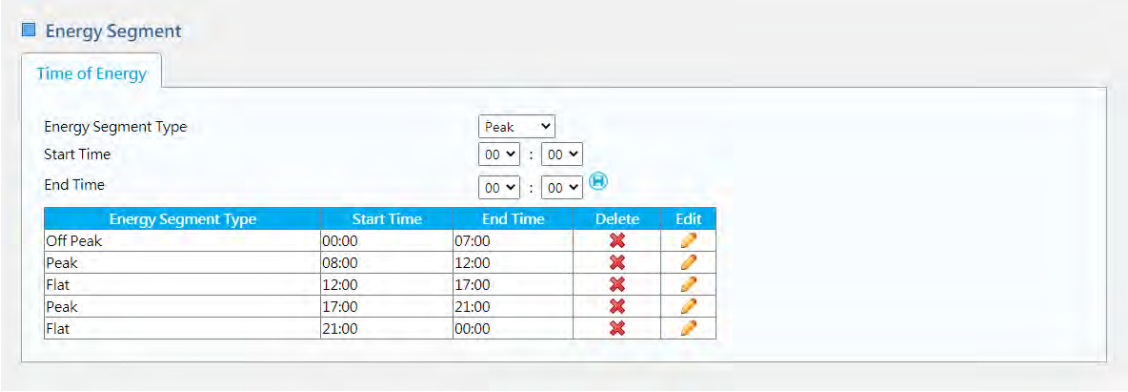
❷ Explanation Description: Specify the description of the holiday.

❸ Type: Holiday/ National Day/ Non-Holiday.

## 9.10 Energy Segment

You can set the energy segment type of time intervals to "Peak", "Off Peak" or "Flat" based on the consumption level so as to calculate the related electricity consumption which the segment types are also related to the configuration of adding new energy tags on Energy tab page under Tag Mapping.




❶ : Click to save new or the updated energy segments.

❷ : Click to delete the target segments.

❸ : Click to edit the target time segment in the boxes above.

❶ **Energy Segment Type:** Peak/ Off Peak/ Flat

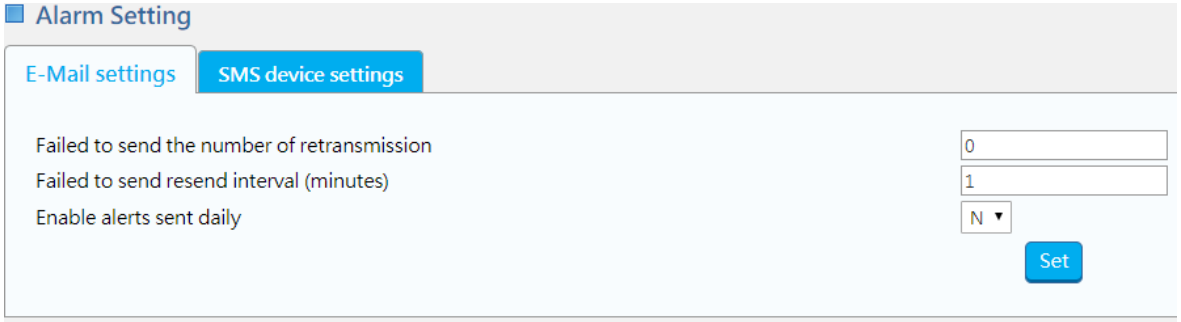
❷ **Start Time:** Set the start time of the energy segment type.

❸ **End Time:** Set the end time of the energy segment type.

## 9.11 Alarm Setting

Alarm notifications can be configured in alarm setting with configurations concerning resent intervals and number of retransmissions for transmission failures of alarm notifications.

**E-Mail Settings**



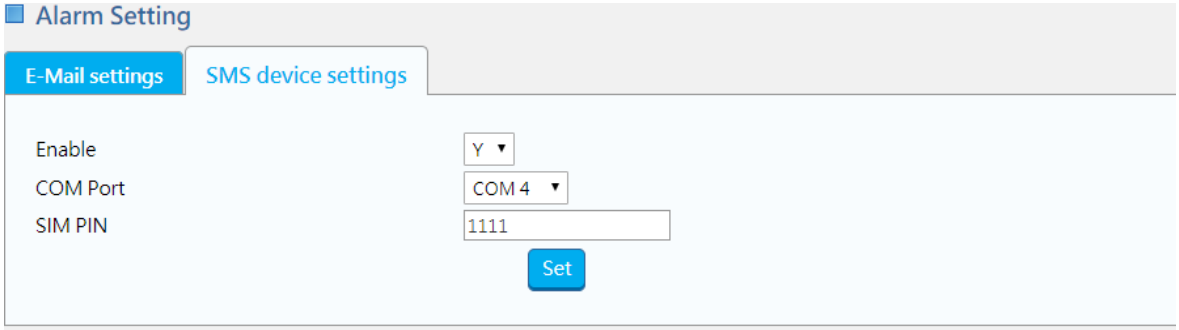

- Configure with DIAEnergie

  ❶ **Failed to send the number of retransmissions:** Set the number of e-mail retransmission attempts when alarm notification delivery fails.

  ❷ **Failed to send resend interval (minutes):** Set the time interval between each mail retransmission attempt.

  ❸ **Enable alerts sent daily:** If enabled, all e-mail notifications of existing alarms would be sent every day at 3:00 a.m.

**SMS Device Settings**



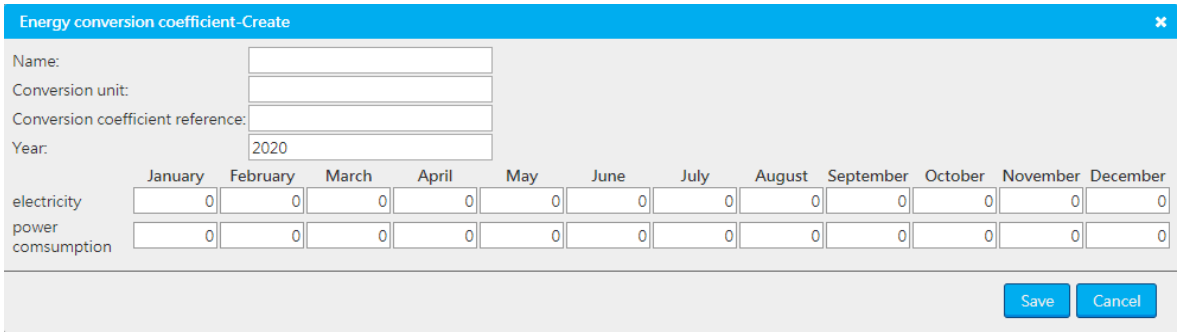

To enable this feature, you would need to provide yourself with a SMS alarm controller and a SIM card, then connect the PC and the controller via the I/O port. The supported versions of DIAEnergie are V 1.7.4.0 and above. For more details of alarm controllers, please refer to section 11.2 in Appendix.

- Configure with DIAEnergie

  ❶ **Enable:** Select Y to enable this feature.
  ❷ **Com Port:** Enter the numbering of At command port displayed in Device Manager.
  ❸ **SIM PIN:** Enter the PIN code of the SIM card. Leave blank if no password has been set.

## 9.12 Energy Conversion Coefficient

You can create different types of energy coefficients to convert energy to standard oil or coal which coefficients should be updated by yourself. Setting values here are all set to 0 by default. (This feature has been removed in Version 1.9)




❶ Name: Enter the name of the energy conversion coefficient.

❷ Conversion Unit: Set the conversion unit.

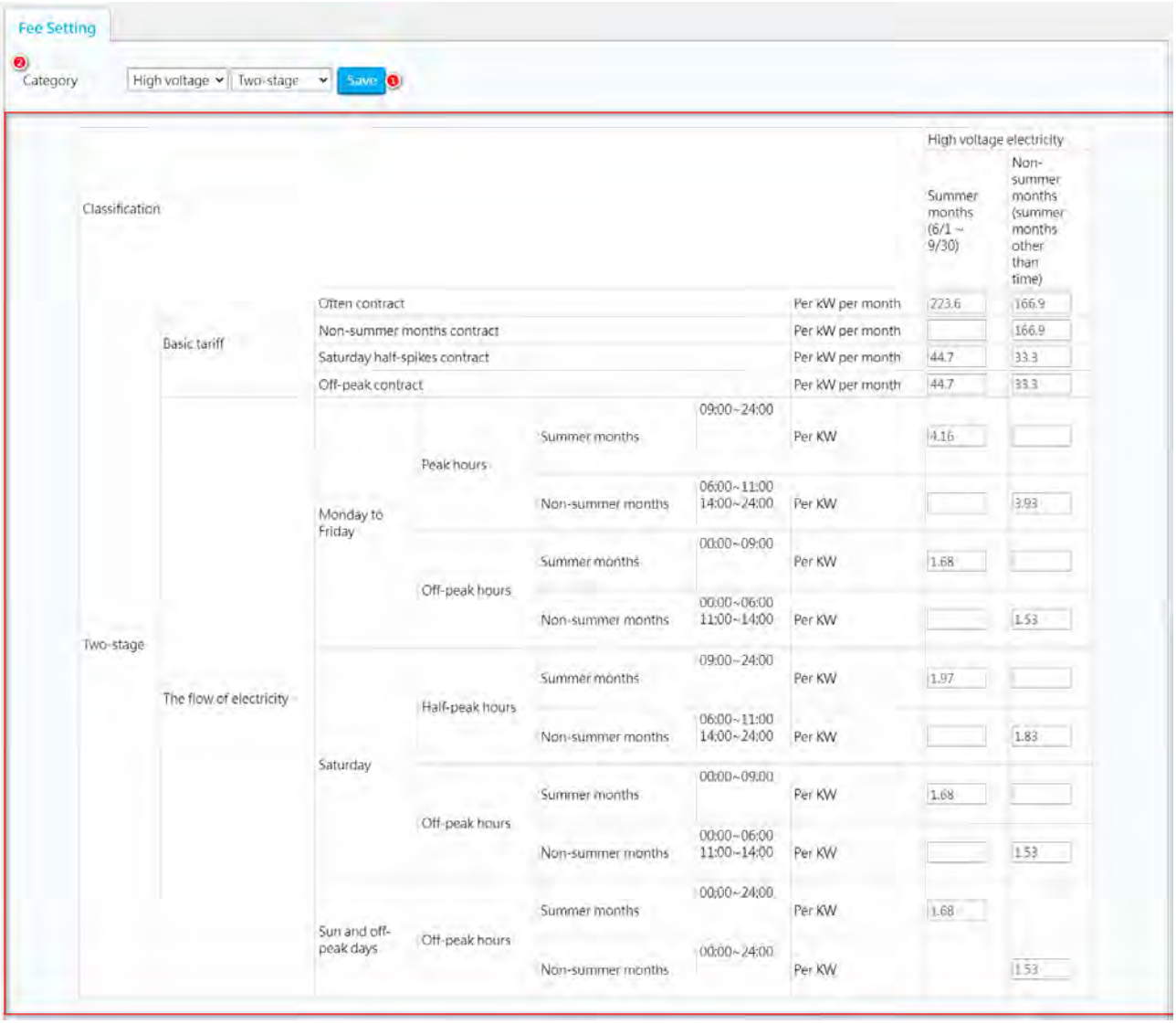
❸ Conversion coefficient reference: Enter additional remarks.

❹ Year: Select the year of the coefficient.

❺ Coefficient fields at below: Maintain coefficients between energy types (refer to section 9.6) and months. The value of energy type would be multiplied to the coefficient corresponding to the month after selecting the target energy conversion coefficient on UI Design page.

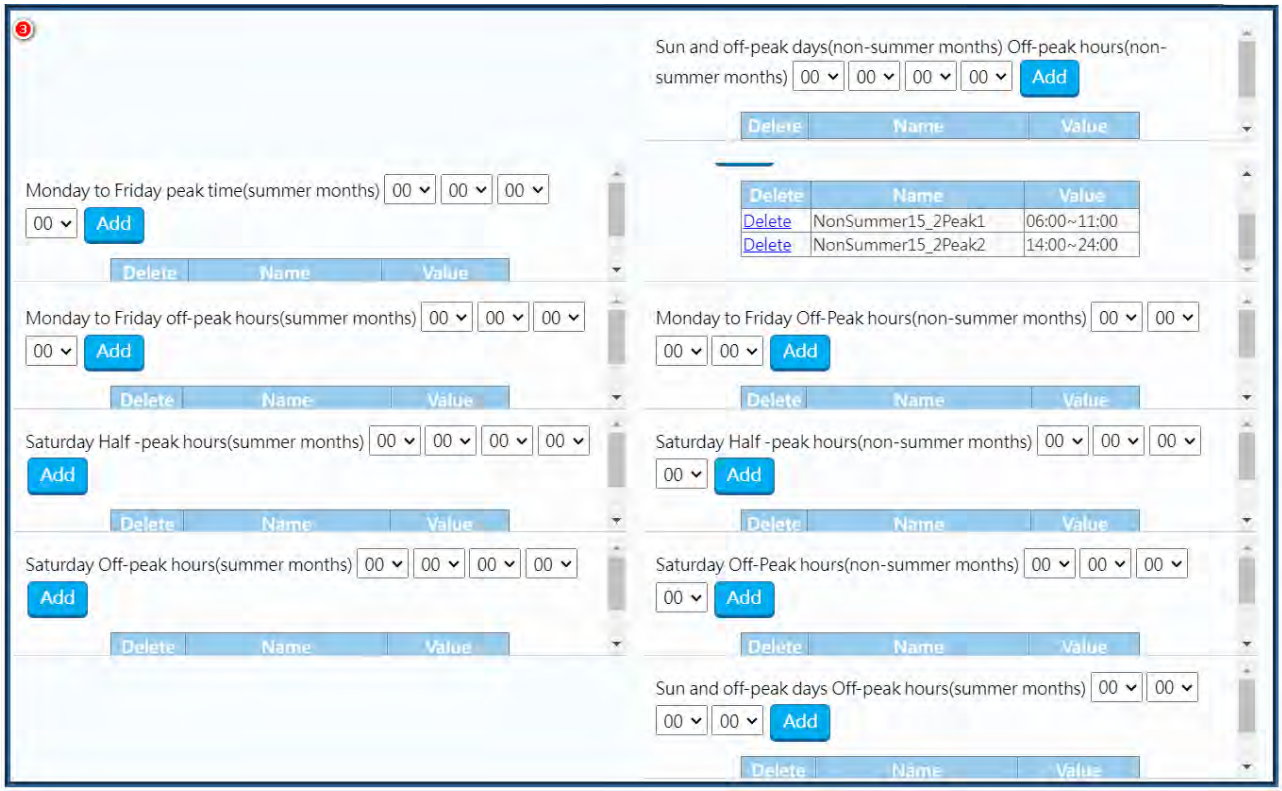
## 9.13 Fee Setting

User can configure the electricity fee parameters, including High voltage/UHV(Ultra-high-voltage) electricity, two-stage/three-stage peak, and time intervals, in the **Taiwan Eletricity Tariff Parameters** interface. Please refer to the electricity rate table provided by the Taiwan Power Company for this maintenance. This functionality should be used in conjunction with **Chapter 7.7 Taiwan Electricity Tariff Analysis.**




❶Save：The button in this area refers to saving the parameter settings for the red-boxed time-of-use electricity rates.

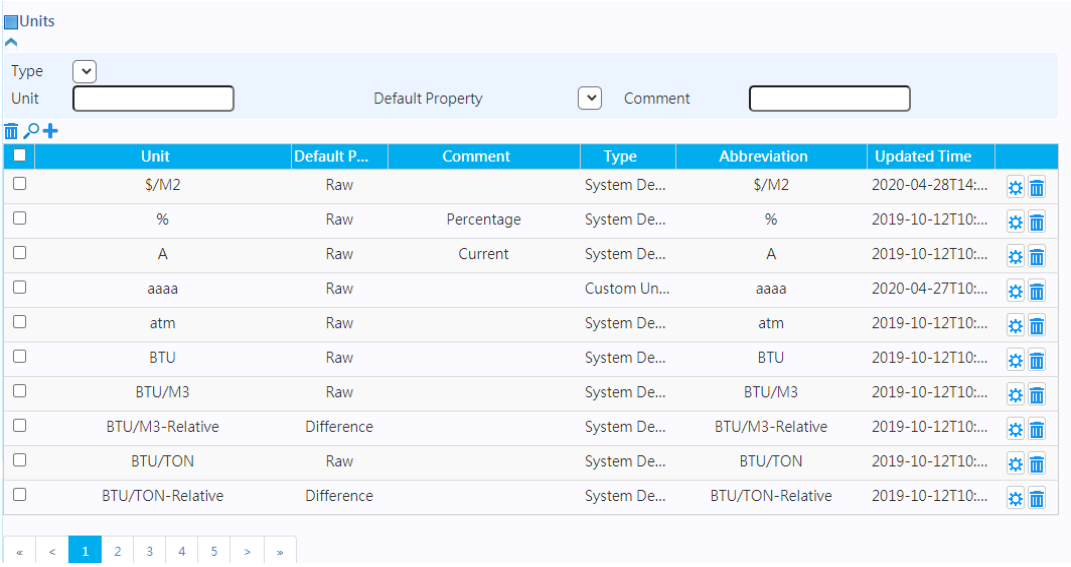
❷Category： Selecting high voltage/ultra-high voltage, two-stage/three-stage will display different time-of-use electricity rate parameters as shown in the red-boxed section.




❸This section is for setting the time intervals for time-of-use electricity rates. It only needs to be modified if there are changes to the time intervals by Taiwan power company. The display in this section is switched based on the selection made in ❷.

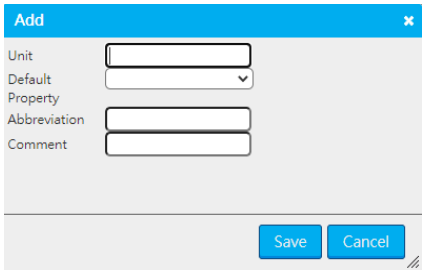
# 9.14 Units

For the sources and the corresponding units of the collected data usually need to be defined by users, settings and management of units can be configured via this feature which also correspond to the units of specific data in Tag Mapping. Since unit's setting would affect tag calculation, you must be sure that the settings of units are correct.




Except for searching a target default setting or an existing unit on the upper side of the interafce, you can also setup units of different properties according to your needs by clicking Add button as well as editing or deleting existing units via setting buttons.

- **Add**




❶ Unit: Name of the unit.

❷ Default Property:

1. Raw: Collected raw data of units that have not been used for any calculation.
2. Difference: Dfference between unit at the beginning and the end of the period.
3. Accumulative (Second/ Minute/ Hour/ Day): Accumulated data of units during a specific time period.
4. Maximum/ Minimum

❸ Abbreviation: Abbreviations of unit names which would be displayed on corresponding units of components on UI Design.

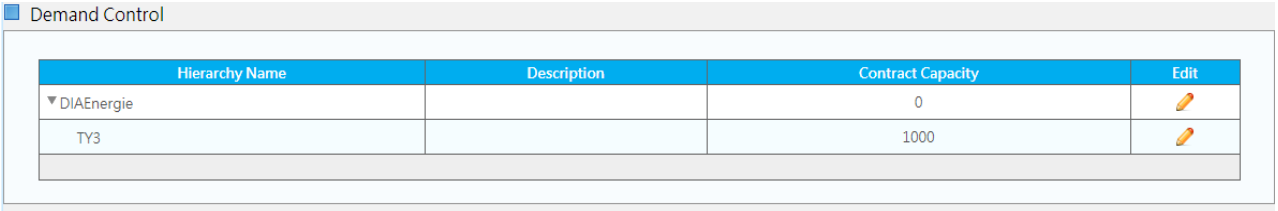
❹ Comment: Additional notes.

- **Settings**

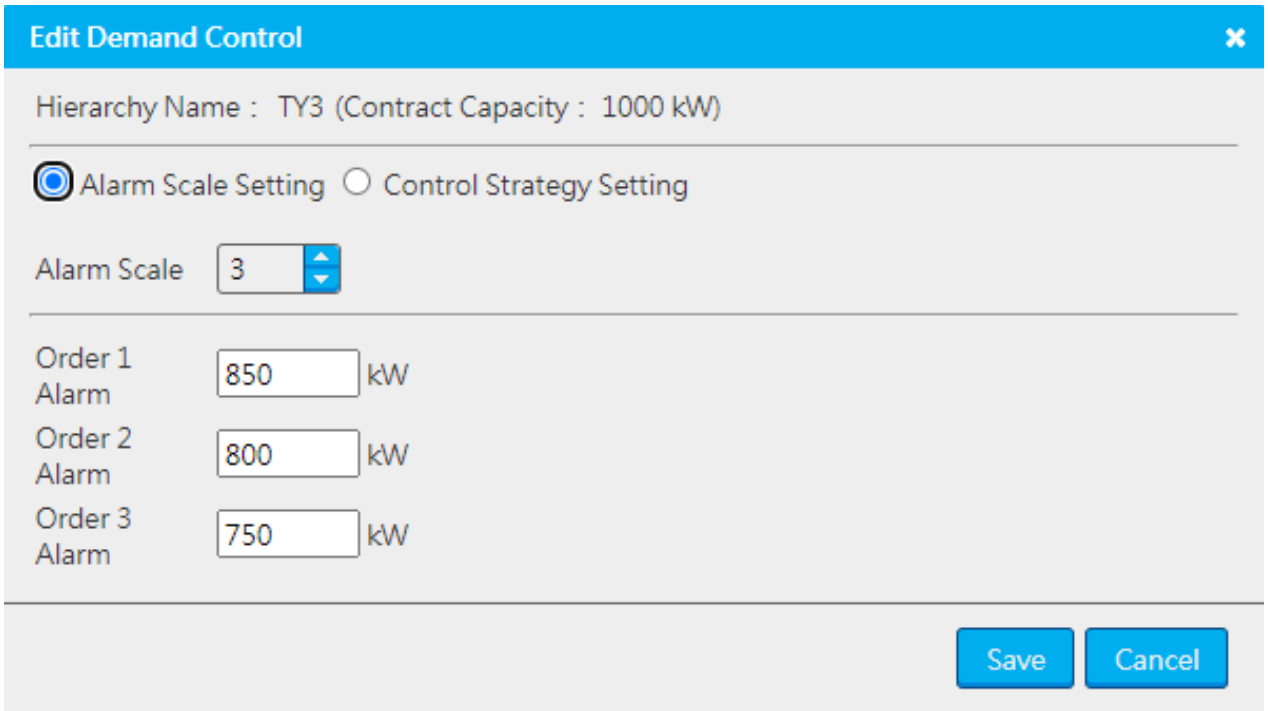
Only units added by users are allowed to be edited or deleted while the default units can not be modified.

## 9.15 Demand Control

Users can setup alarm control base on the contract capacity for each assigned hierarchy. The alarm scale is categorized into 5 levels for selection in Alarm Scale Setting. As for Control Strategy Setting, users can execute device control and input values via selecting the device, tag and alarm scale after enabling demand control privilege under Hierarchy.



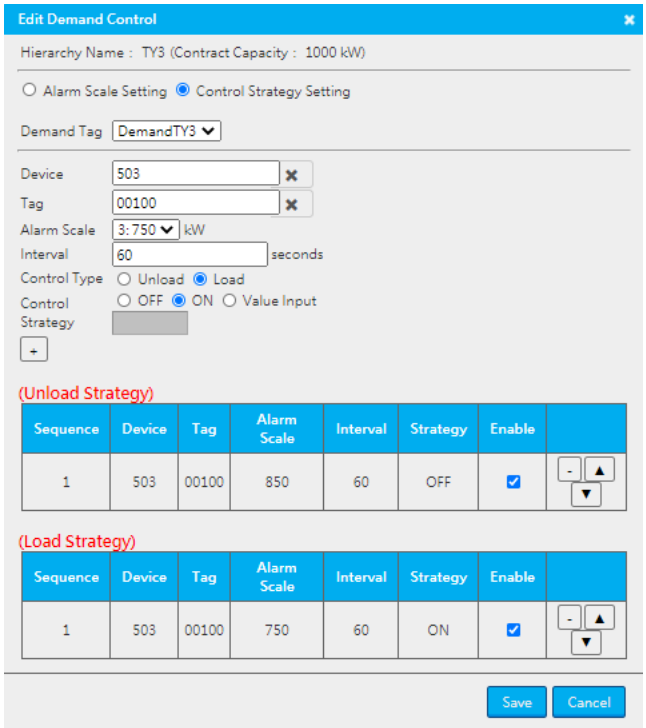

**Alarm scale settings**




❶ Alarm Scale: Select the desired scale number with up to a maximum of 5 alarm scales.

❷ Order ___ Alarm: Display alarm values according to the set number of alarm scale.

### Control Strategy Setting




❶ Demand Tag: The datat source is from each demand tag set for the corresponding internal tag.

❷ Device: Select the desired device from the drop-down list, which is in accordance with the devices in the hierarchy level.

❸ Tag: Select the desired tag from the drop-down list and make sure that the tag is writable.

❹ Alarm Scale: Select the desired alarm scale which you setup previously.

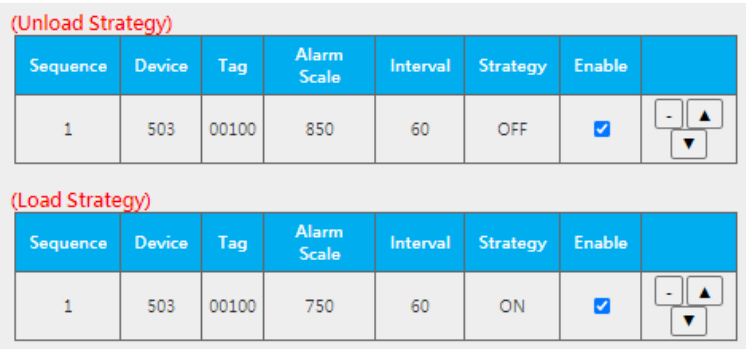
❺ Interval: Set the time interval between each execution.

❻ Control Type: Unload/ Load

❼ Control: OFF/ ON / Value Input

❽ [+] : Add the settings to the configuration table at below.

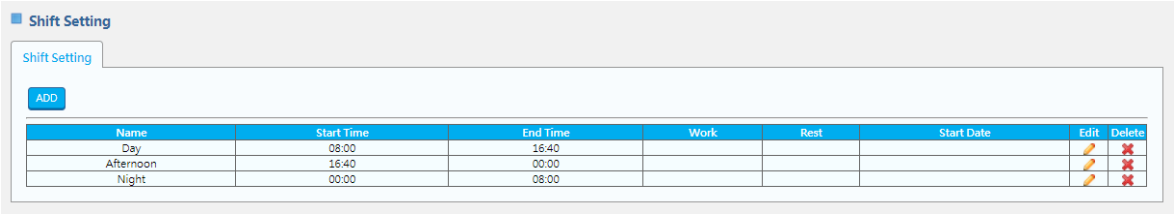
❾ Settings of unload and load type would be separated in the display as the following figure shown.



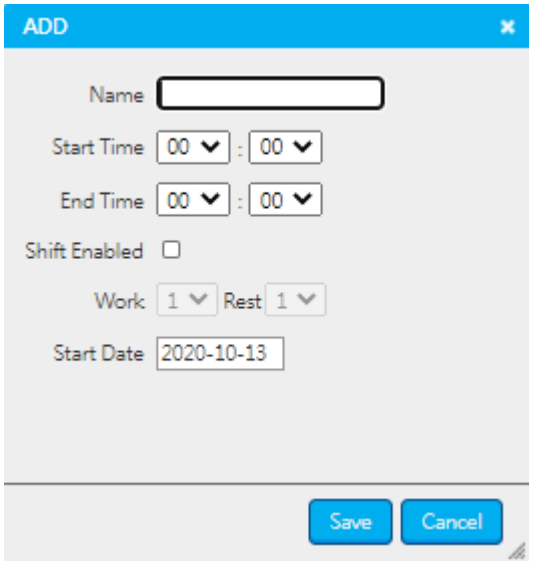

Unload and load type indicates that the value is greater or lower than alarm scale. Strategy is set to turn on or off the specific device, or input values.

# 9.16 Shift Setting

According to the demand for work shifts, you can add new shifts in shift setting after specifying the start and end time of shift or enabling Shift Enabled to set the duty period.




- **Add**




❶ Name: Shift name.

❷ Start Time: Set when the shift would start.

❸ End Time: Set when the shift ends.

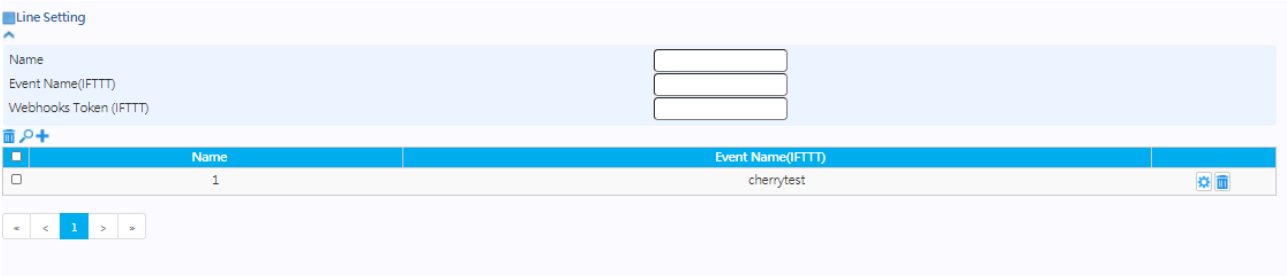
❹ Shift Enabled: Check the checkbox to enable the shift setting.

❺ Work __ Rest __: This setting is required when the checkbox of Shift Enabled is ckecked.

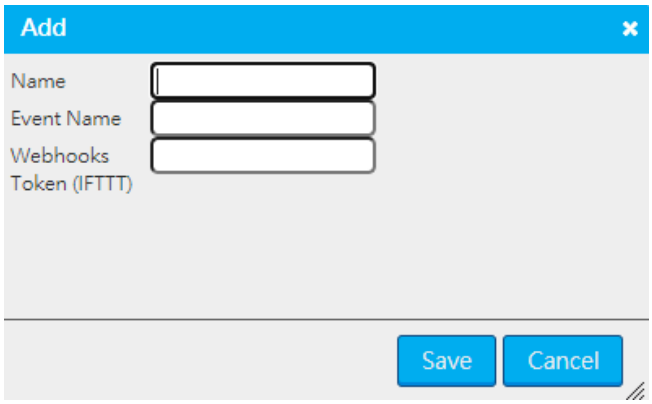
❻ Start Date: Set the first day of the shift.

## 9.17 Line Setting

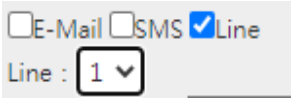
By means of IFTTT, alarm notifications can be sent to alarm groups via Line app after event name and Web Hook Token are configured. Please refer to Appendix for more details of setup procedure.




- **Add**




❶ Name: Set the name to be displayed in the drop-down list of Line notification group as shown in the following figure.

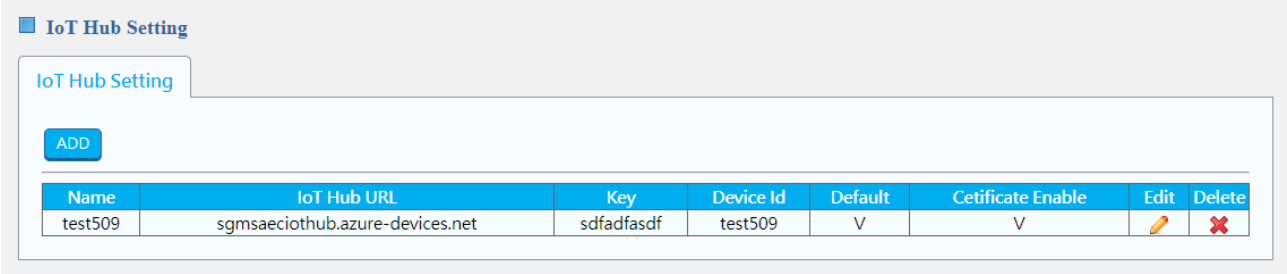



❷ Event Name: Set the name of IFTTT event.

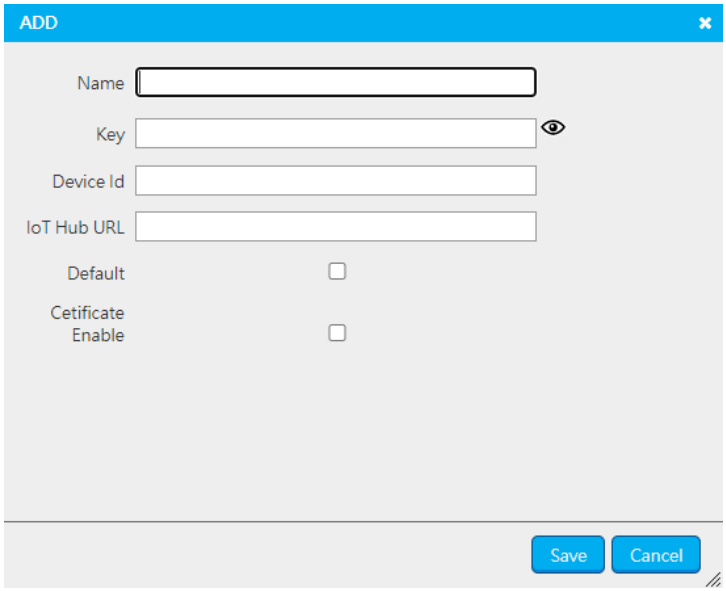
❸ Webhooks Token (IFTTT): IFTTT Webhooks Token.

# 9.18 IoT Hub Setting

Upload the raw data and in DIAEnergie to Azure IoT Hub via this setting.

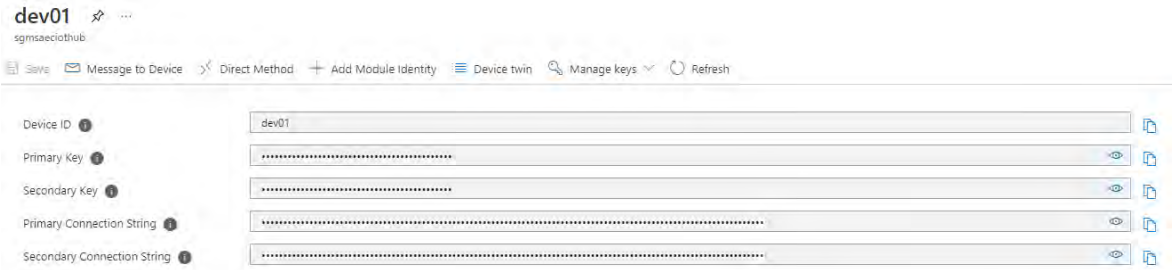



- **Add**




❶ Name: Set the name.

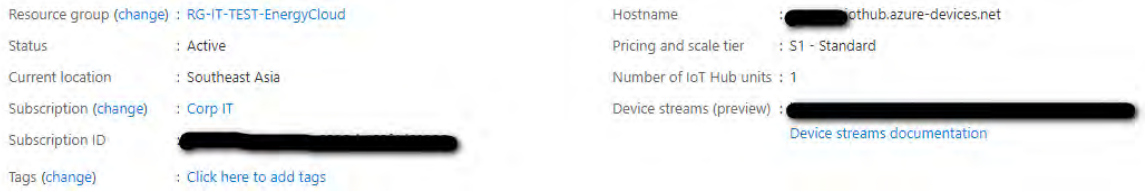
❷ Key: Enter the primary key of the IoT Hub device which is requied when X509 is not enabled.




❸ Device ID: Enter the device ID of the IoT Hub device, which is created in Azure IoT Hub by users.

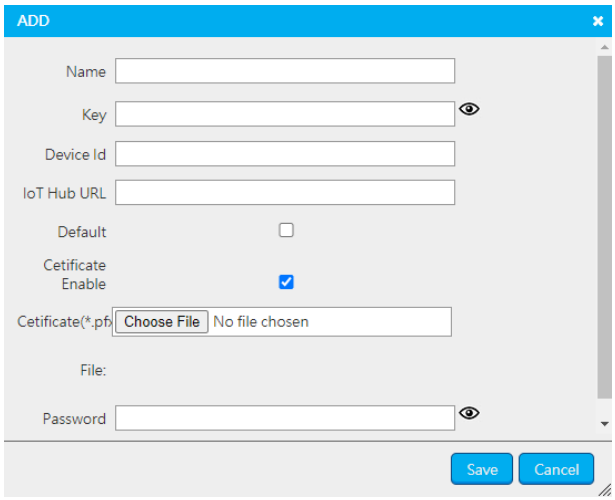
| Device ID | Status | Last Status Update (UTC) | Authentication Type | Cloud to Device Message Count |
|---|---|---|---|---|
| test509 | Enabled | -- | CertificateAuthority | 0 |
| dev01 | Enabled | -- | Sas | 0 |

❹ IoT Hub URL: Enter the hostname of the IoT Hub device.




❺ Default: Only one device can be set as default to perform data transfer. Do not make any unnecessary adjustments change, unless the data is moved.

❻ Certificate Enable: Check the box to enable the 509 certificate.



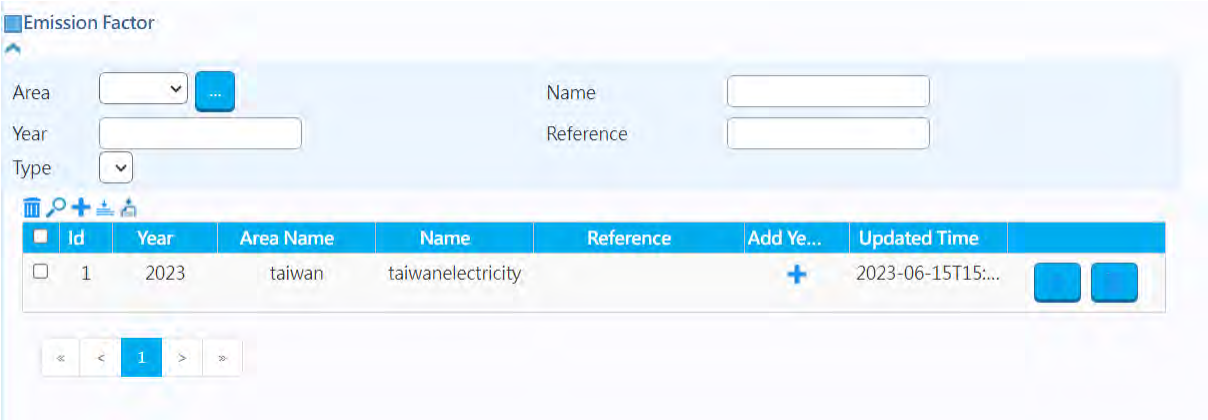

❼ X509 (*.pfx): To enable 509 certificate, the pfx file needs to be uploaded after installing the pfx file to Collector devices which the X509 certificate must be registered to IoT Hub first

❽ File: If an X509 certificate file has been selected, the file name would be shown at below which would be renamed to be starting with Cert_ after saving the configuration successfully.

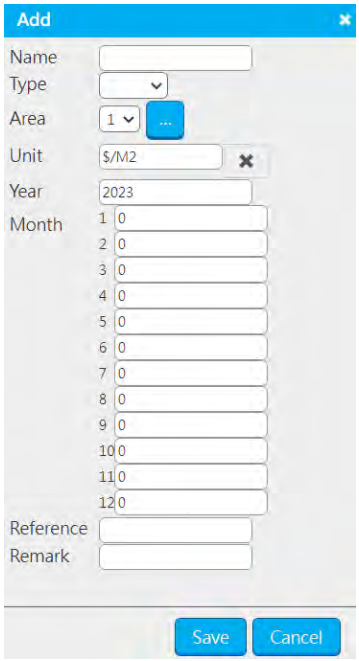
❾ Password: Enter the password of the certificate.

# 9.19 Emission Factor Settings

This setting is related to the reporting tool/basic query - historical data(coefficient)- multi-tags/UI design. It involves selecting coefficients through UI for numerical conversion.




- **Add**




❶**Name**：Set the name.

❷**Type**：Optional, can be left empty.

❸**Area**：Required field, can be configured to specify the region for filtering coefficients.

❹**Unit**：Required field, dropdown menu, sources are data configured in Chapter 9.14 Units.

❺**Year**：Year of coefficients.

❻**Month**：Month of coefficients, if the same coefficient applies for the entire year, only input the value for January and press the Enter key.

❼**Reference**：Explanation of the coefficient's reference source.

❽**Remark**：Used for explanatory notes.

● **Download**

Clicking 'Download' will download a file named 'DiaeCarbon.xlsx'.

| ❶ | ❷ | ❸ | ❹ | ❺ | ❻ | ❼ | ❽ |
|---|---|---|---|---|---|---|---|
| | Id | Area | Name | Unit | Reference | Remark | Type |
| None | 1 | 1 | taiwan | tCO2e | Ministry of economic Affair | Ministry of economic Affair | Cate1 |
| None | 4 | 1 | china | tCO2e | Custom Emission Factor | Custom Emission Factor | Cate1 |
| None | 5 | 1 | india | 1 | Custom Emission Factor | Custom Emission Factor | Cate1 |

CarbonDetail | Carbon

**Tab 'Carbon' Field Descriptions:**

❶**Data Processing Options**：None/Add/Update/Delete。

None：No processing.

Add：Add new.

Update：Modify.

Delete：Delete.

❷**Id**：Please do not make any changes. In the case of addition, please maintain a number that does not exist in the file.

❸**Area**：Required field, dropdown menu.

❹**Name**：Required field, coefficient name.

❺**Unit**：Required field, dropdown menu.

❻**Reference**：Explanation of the coefficient's reference source.

❼**Remark**：Used for explanatory notes.

❽**Type**：Optional, can be left empty.

| | ❶ | ❷ | ❸ | ❹ | E | F | G | H | I | J | K | L | M | N | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Id | Year | Month | Value | | | | | | | | | | | |
| 2 | 1 | 2022 | 1 | 0.509 | | | | | | | | | | | |
| 3 | 1 | 2022 | 2 | 0.509 | | | | | | | | | | | |
| 4 | 1 | 2022 | 3 | 0.509 | | | | | | | | | | | |
| 5 | 1 | 2022 | 4 | 0.509 | | | | | | | | | | | |
| 6 | 1 | 2022 | 5 | 0.509 | | | | | | | | | | | |
| 7 | 1 | 2022 | 6 | 0.509 | | | | | | | | | | | |
| 8 | 1 | 2022 | 7 | 0.509 | | | | | | | | | | | |
| 9 | 1 | 2022 | 8 | 0.509 | | | | | | | | | | | |
| 10 | 1 | 2022 | 9 | 0.509 | | | | | | | | | | | |
| 11 | 1 | 2022 | 10 | 0.509 | | | | | | | | | | | |
| 12 | 1 | 2022 | 11 | 0.509 | | | | | | | | | | | |
| 13 | 1 | 2022 | 12 | 0.509 | | | | | | | | | | | |
| 14 | 1 | 2023 | 1 | 0.502 | | | | | | | | | | | |
| 15 | 1 | 2023 | 2 | 0.502 | | | | | | | | | | | |
| 16 | 1 | 2023 | 3 | 0.502 | | | | | | | | | | | |
| 17 | 1 | 2023 | 4 | 0.502 | | | | | | | | | | | |
| 18 | 1 | 2023 | 5 | 0.502 | | | | | | | | | | | |
| 19 | 1 | 2023 | 6 | 0.502 | | | | | | | | | | | |
| 20 | 1 | 2023 | 7 | 0.502 | | | | | | | | | | | |
| 21 | 1 | 2023 | 8 | 0.4 | | | | | | | | | | | |
| 22 | 1 | 2023 | 9 | 0.4 | | | | | | | | | | | |
| 23 | 1 | 2023 | 10 | 0.4 | | | | | | | | | | | |
| 24 | 1 | 2023 | 11 | 0.4 | | | | | | | | | | | |
| 25 | 1 | 2023 | 12 | 0.4 | | | | | | | | | | | |

CarbonDetail | Carbon

**Tab 'CarbonDetail' Field Descriptions:**

❶**Id**：If it's in the 'Add' mode, please maintain an ID that is the same as what was added in the 'Carbon' tab. If it's for modification, please also ensure that the ID falls within the time range of the newly added IDs you want to modify.

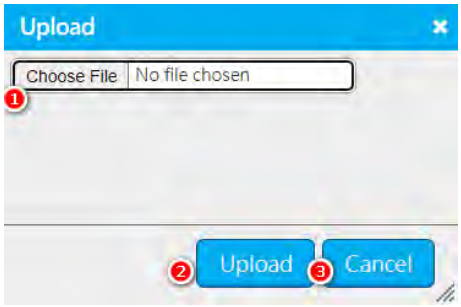
❷**Year**：Year of coefficients.

❸**Month**：Month of coefficients.

❹**Value**：Value of coefficients.

- **Upload**

Clicking the upload button will trigger the upload window as follows:




❶**Choose File**：Click 'Choose File' and select the xlsx file you want to upload.

❷**Upload**：Click 'Upload' to upload the file to the system and initiate data updates.

❸**Cancel**：Click 'Cancel' to abort the data update process and close this upload window.

10

# Chapter 10 Energy Dashboard

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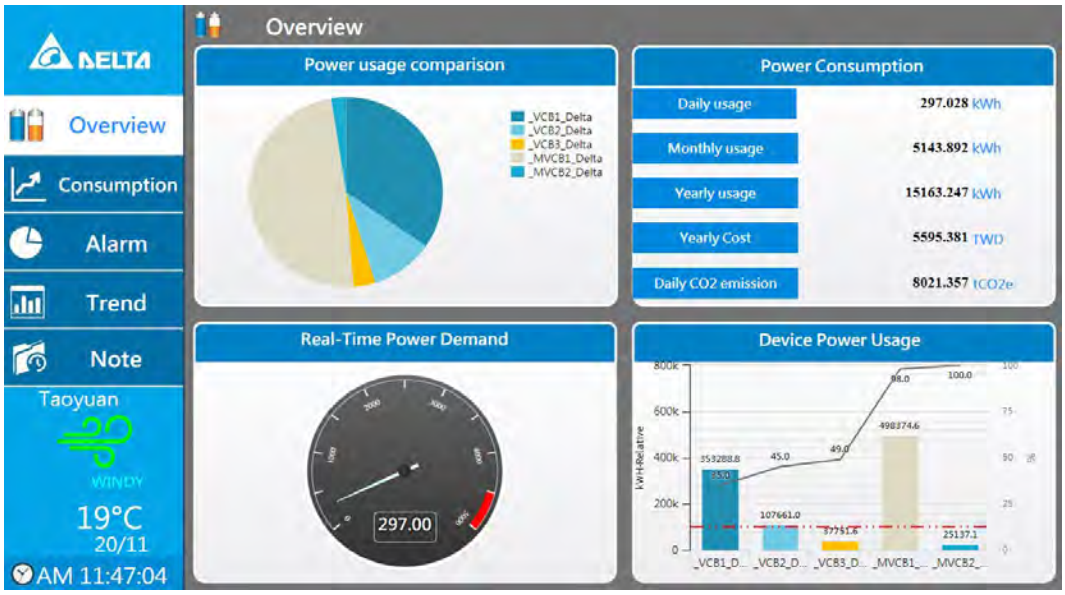
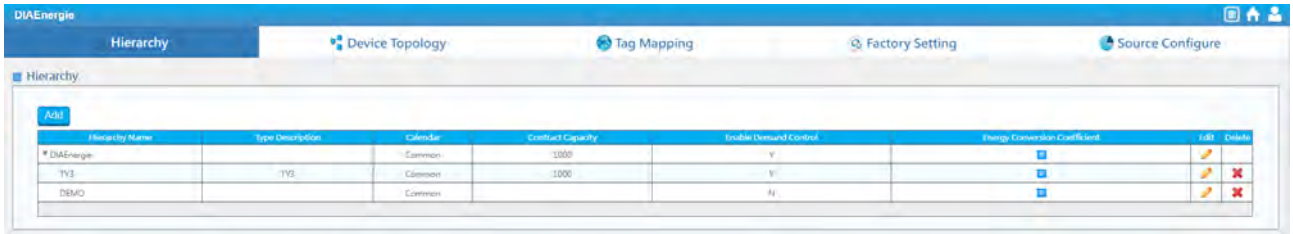
## 10.1 Introduction

The **Energy Dashboard** is a standard **UI Design** based on establishing the hierarchy, device topology, tag mapping, factory setting, and source configure settings. These elements are added on the dashboard for display via the **Preview** function. In addition, users can set the Energy Dashboard as the main page for preview after logging.




## 10.2 Energy Dashboard

Hierary is the first step for dashboard setting. The system devices can be effectively categorized base on the factory environment. After adding the hierarchy, click Next to configure network topology.




### 10.2.1 Hierarchy

Please refer to section 9.5.

### 10.2.2 Device Topology

Please refer to section 3.1.

### 10.2.3 Tag Mapping

Please refer to section 3.2.

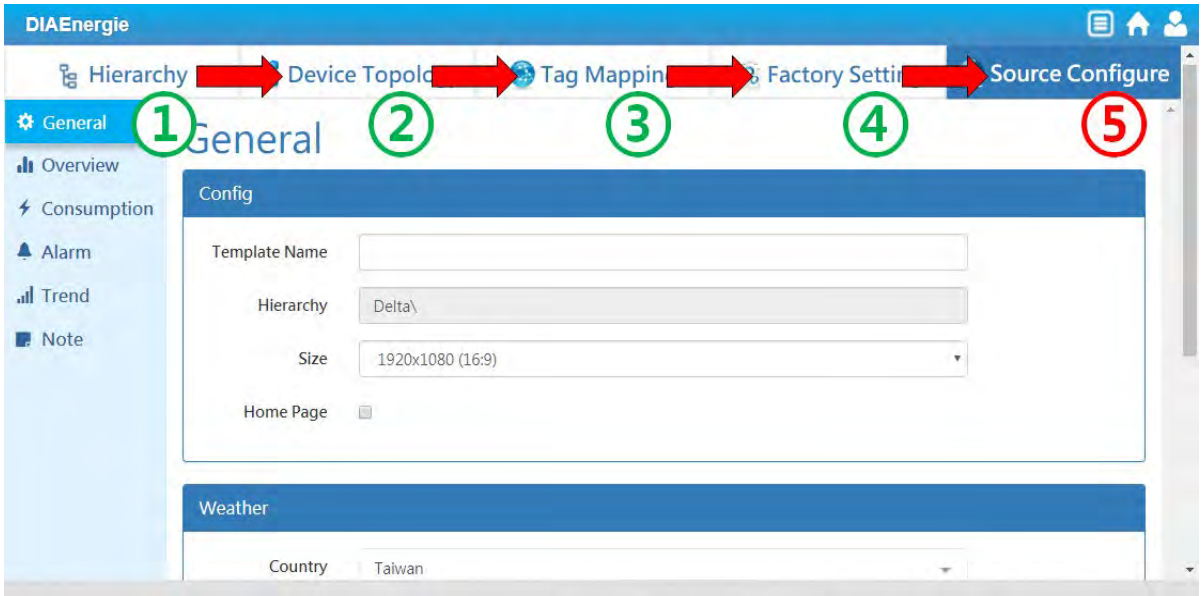
### 10.2.4 Factory Setting

Please refer to section 9.8.

### 10.2.5 Source Configure

The fifth step is Source Configure. Five source tabs are listed under the General menu including Overview, Consumption, Alarm, Trend and Note. Users can create desired pages by adding device tags to the parameters of the page. After adding the tags, click + Create Pages and the page is displayed on the Energy Dashboard.

※**Note:** When the Energy Dashboard is completed, five default page names ("STD_*Template Name*") will be generated. We suggest you define the page name by yourselves; otherwise, two or more pages with the same name may exist at the same time.

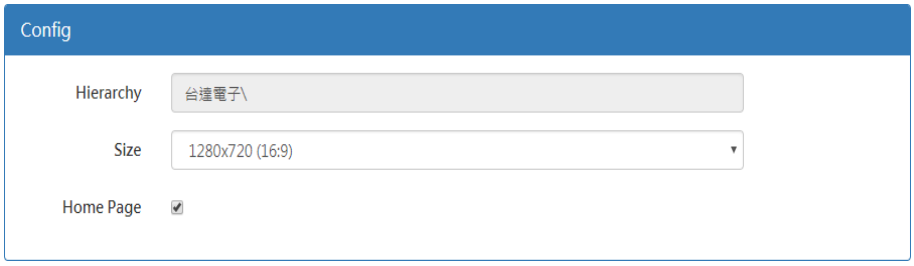



When adding page parameters, users can click on the specified thumbnail page image to enlarge and view current editing on graphs in the page.

### 10.2.6 General Settings

The **General** settings include dashboard page Config and Weather configuration.

●**Setting:** Displays the page hierarchy, size selection and homepage setting.



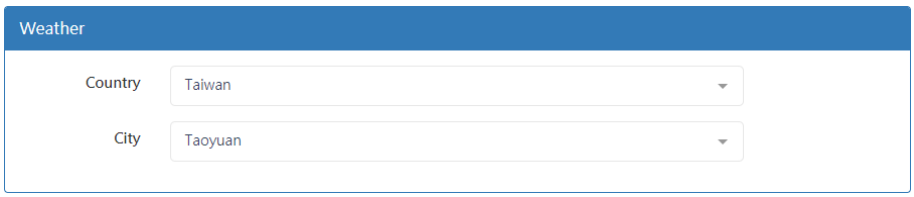

❶ **Template Name: the preposition of the page that user creates**.

❷ **Hierarchy:** Choose the page hierarchy.

❸. **Size:** Select the screen resolution with 4:3 or 16:9 display ratio from the drop-down list

❹ **Home Page:** When selected, it becomes the user's home page

●**Weather:** The left corner on the energy dashboard will display the weather from selected country and city.



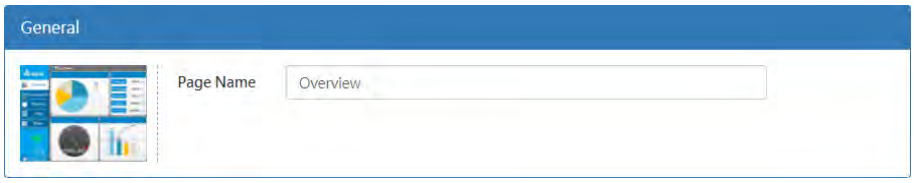

❶ **Country:** Select the country from the drop-down list.

❷ **City:** Select the city from the drop-down list.

## 10.2.7 Overview

The **Overview** page for energy consumption include General setting, Real-Time Power Demand (kW), Device Power Usage and Power Consumption Data. As for Power Consumption Yearly Cost and Daily CO2 Emission are hidden by default and are only displayed when new consumption data are added.

●**General:**




❶ **Page Name:** The default name is “Overview”. Users can modify the name accordingly.

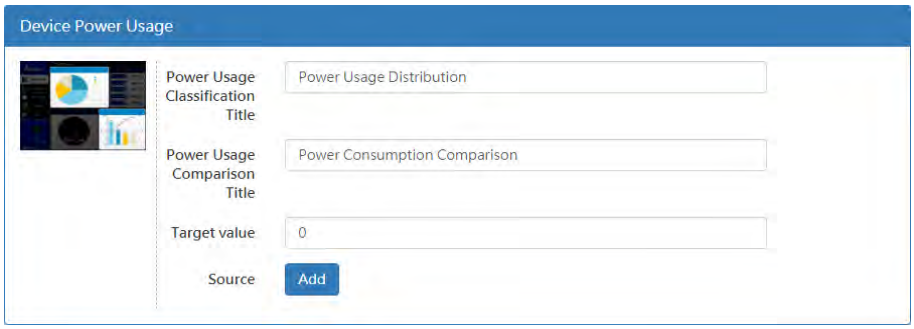
●**Real-Time Power Demand (kW):** Users can select the device tag and device to display at the bottom left graph on the Energy Dashboard overview page.

❶ **Name:** The default name for the bottom left graph is “Real-Time Power Demand”. Users can modify the name accordingly.

❷ **Source:** Click ‘Config’ to select the tag source, hierarchy, and device.

Below is a graph of the real-time power demand:

●**Device Power Usage:** The power usage is presented on the upper left with Power Usage Comparison pie chart and at the lower right with Device Power Usage graph on the Energy Dashboard overview page. Device tags can be added for classification and comparison.



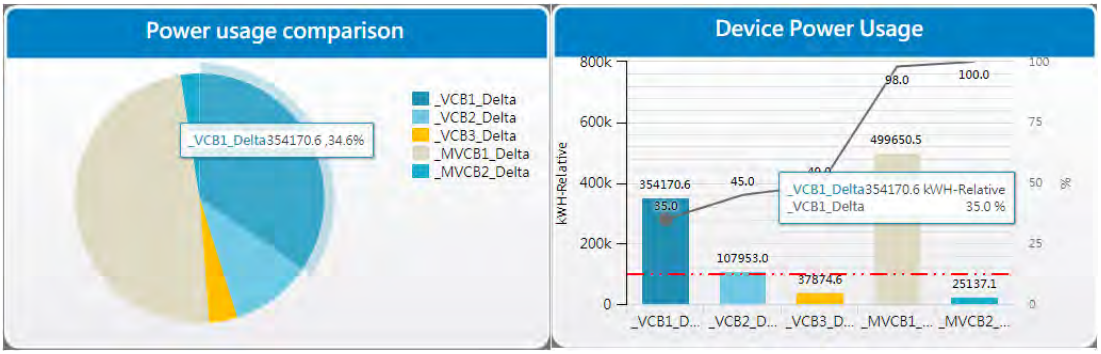

❶ **Power Usage Classification Title:** The default name for the upper left pie chart is “Device Power Usage”. Users can modify the name accordingly.

❷ **Power Usage Comparison Title:** The default name for the lower right graph is “Power Usage Comparison”. Users can modify the name accordingly.

❸ **Target Value:** Create a horizontal dashed line as the target line in the Device Power Usage graph for users to view the difference in comparison with the actual power usage of devices.

❹ **Source:** Click Add to select the desired source via source, hierarchy, and device settings on the configuration window.

Examples of Power Usage Comparison pie chart and Device Power Usage graph are shown below:



●**Power Consumption:** An overview of the power consumption data is shown on the upper right corner of the energy dashboard page. The data consists of daily/monthly/yearly power usage (kWh). Users can also add device tags and modify the daily/monthly/yearly usage title and edit the average cost per unit in yearly power consumption as well as the settings of coefficient and unit for CO2 emission.

❶ **Name:** The default name for the upper right section is “Power Consumption”. Users can modify the name accordingly.

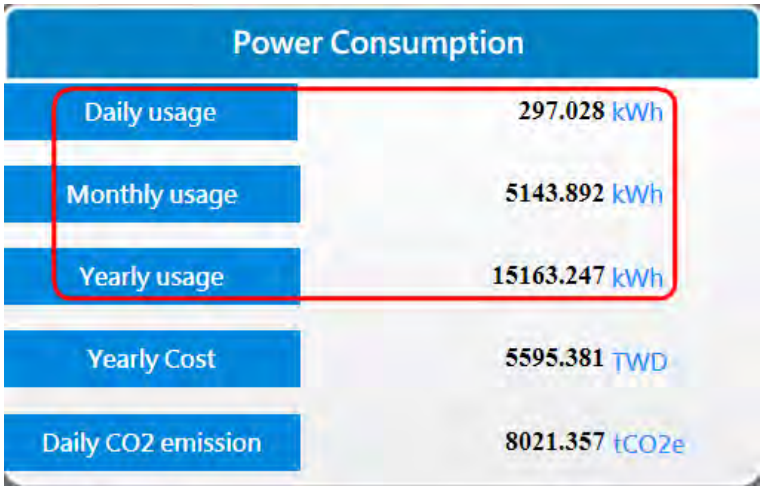
❷ **Source:** Click **Add** to select the source, hierarchy, and device for tags. When device tags are added, the Daily/Monthly/Yearly Usage (❸/❹/❺) appear, and users can modify the titles accordingly.

❸ **Daily Usage:** A default item name listed under Power Consumption on the upper right corner of the energy dashboard page. Users can modify the title accordingly.

❹ **Monthly Usage:** A default item name listed under Power Consumption on the upper right corner of the energy dashboard page. Users can modify the title accordingly.

❺ **Yearly Usage:** A default item name listed under Power Consumption on the upper right corner of the energy dashboard page. Users can modify the title accordingly.

Below is an example of the Power Consumption section:



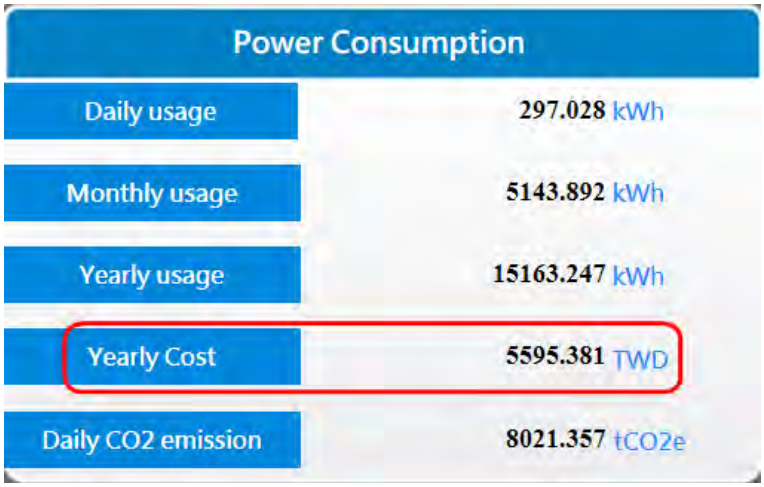
- **Yearly Cost:** Type the unit and average cost per unit in the Yearly Cost section. The total cost are calculated together with new device tags to display on the upper right corner of the energy dashboard page.

❶ **Cost Title:** The default name for power consumption cost on the upper right corner is “Yearly Cost”. Users can modify the name accordingly.

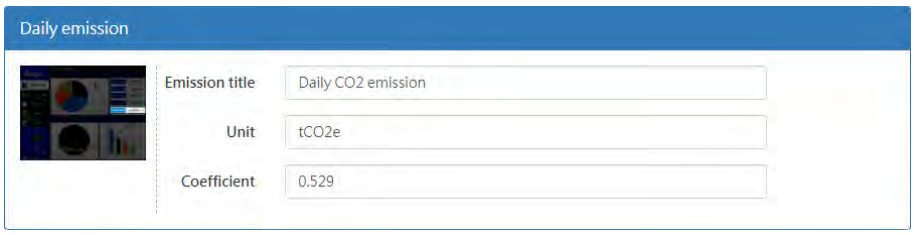
❷ **Unit:** Type the cost unit. The default unit is “TWD”.

❸ **Average Cost Per Unit:** Type the cost.

The Yearly Cost indicated on the Power Consumption section is shown below:



- **Daily Emission:** Type the unit and coefficient in the Daily Emission section. The Daily CO2 Emission is displayed on the upper right corner of the energy dashboard page.

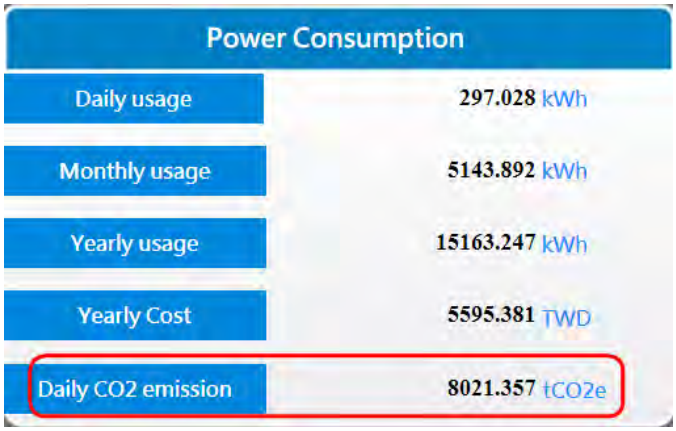



❶ **Emission Title:** The default name for power consumption daily emission on the upper right corner is “Daily CO2 Emission”. Users can modify the name accordingly.

❷ **Unit:** Type the unit. The default unit is “tCO2e”.

❸ **Coefficient:** Type the CO2 coefficient value.

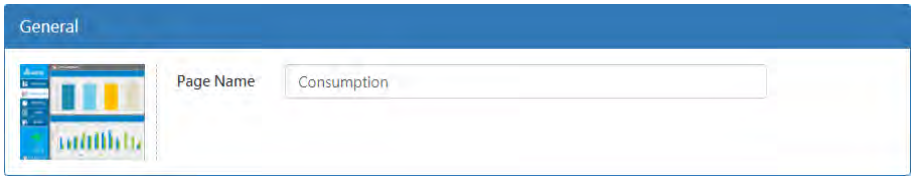
The Daily CO2 Emission indicated on the Power Consumption section is shown below:



### 10.2.8 Energy Consumption

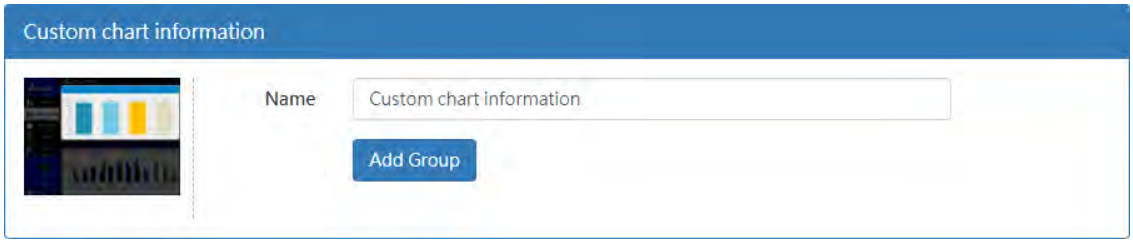
The Energy Consumption page is categorized into General setting, Custom Chart Information and Target Performance Comparison Information. Users can add group tags in the Custom Chart Information section and display or switch graphs of different group tags.

- **General:**



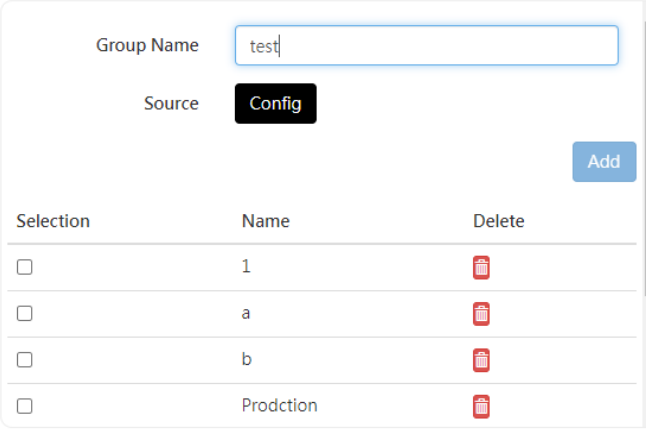

❶ **Page Name:** The default name for the page is “Consumption”. Users can modify the name accordingly.

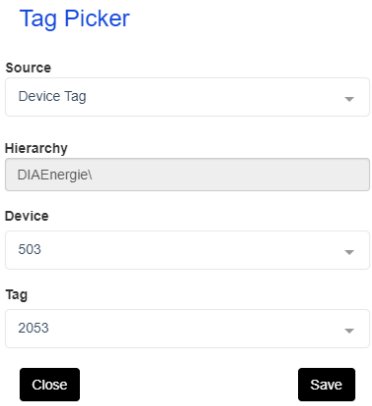
●**Custom Chart Information:** The custom chart displayed on the upper part of the Consumption page presents different group tag comparison in energy consumption. Users can view desired graphs via selecting the group tag on the upper left corner of the graph. To modify the graph, users need to make the changes via the specified page.



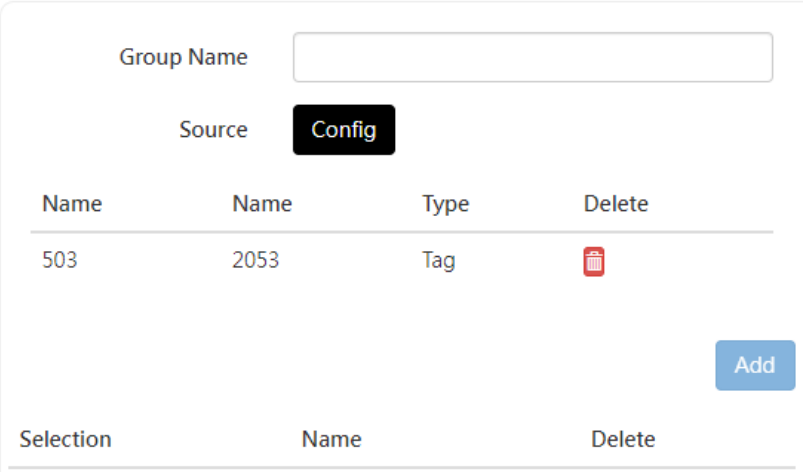

❶ **Name:** The default name for the upper graph on the page is “Custom Chart Information”.

❷ **Add Group:** Click Add Group and type the group name & click Config to select the source, hierarhchy and device for the source tags.

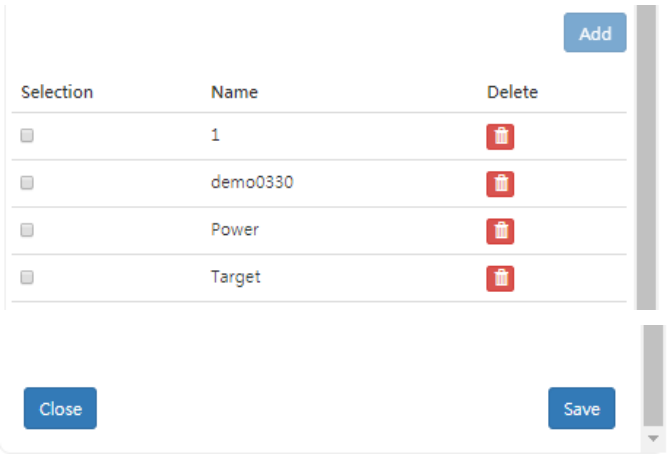


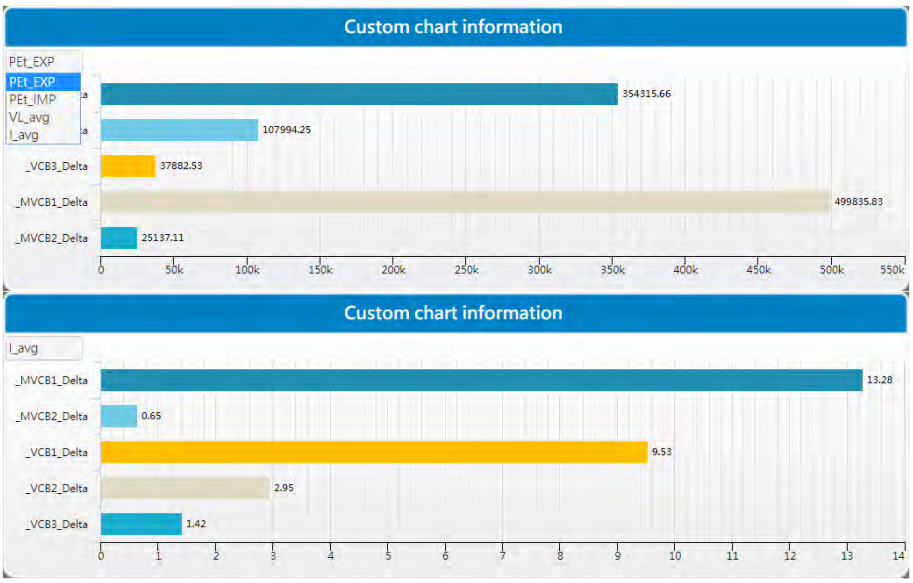

All the added groups will be displayed in the section.



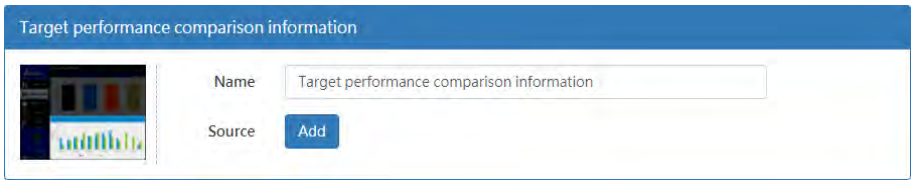
❸ **Selection:** Select the groups to be displayed on the graph and click Save.




Below is an example of the Custom Chart Information graphs:

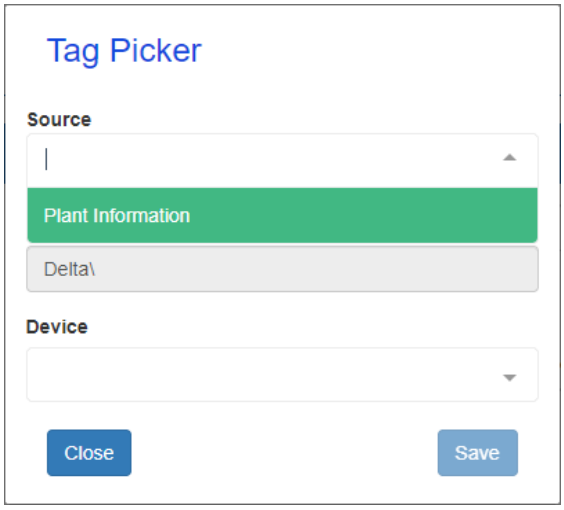


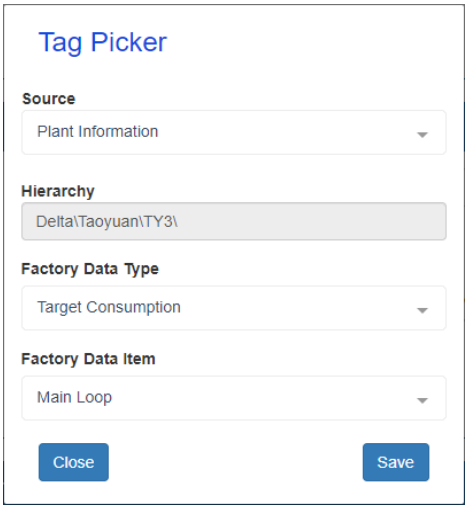
●**Target Performance Comparison Information:** The graph summarizes this year's power usage from on-site device tags in comparison with the target performance of energy consumed each month. To modify the graph, users need to make the changes via the specified page.



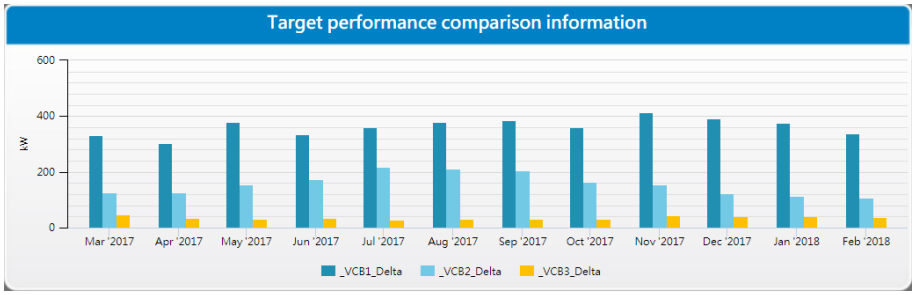

❶ **Name:** The default name for the lower graph on the page is "Target Performance Comparison Information".

❷ **Source:** Click Add to select the source, hierarchy, and device for the tags. The bar graphs are generated based on the on-site device tags with energy consumed values as monthly target vaues. Below is an example for setting up the selected tag.



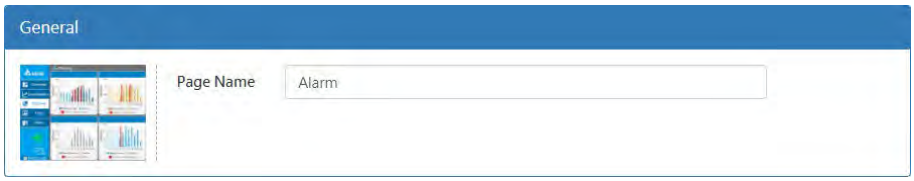

An example of the Target Performance Comparison Information graph is show below:



## 10.2.9 Alarm

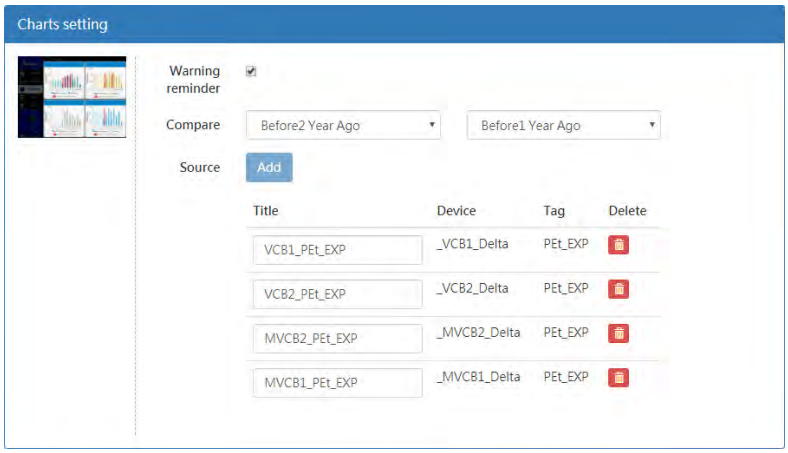
The Alarm page features General and 4 bar graph settings. Each graph is used to compare with its historical data.

●**General:**




❶ **Page Name:** The default page name is “Alarm”. Users can modify the name accordingly.

●**Charts Setting:** The page displays up to 4 charts of monthly energy consumed this year and can each compare with a historical data. To modify the graphs, users need to make the changes via the specified page.



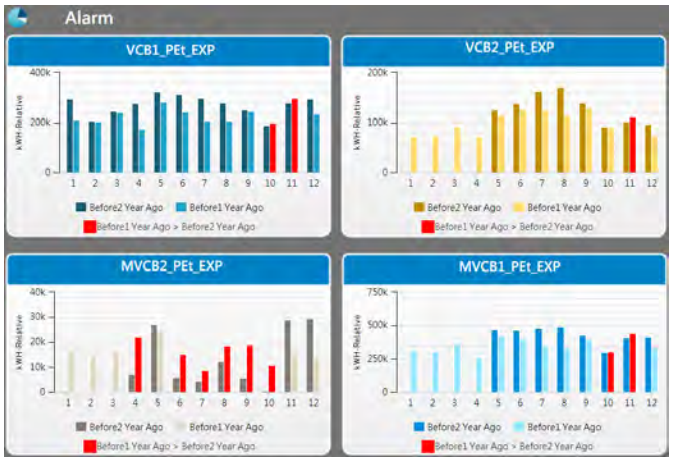

❶ **Warning Reminder:** When clicked, if the bar graph for energy consumption of this year is greater than the year before, then this year’s bar color will turn red for easy identification.

❷ **Compare:** Users can select data regarding this year, 1 year ago, 2 years ago and 3 years ago for comparison.

❸ **Source:** Click Add to select the source, hierarchy, and device of the tag.

❹ **Edit Title / Delete Tag:** When sources are added, the charts are listed below with their titles and in clockwise order. The tags can also be deleted.

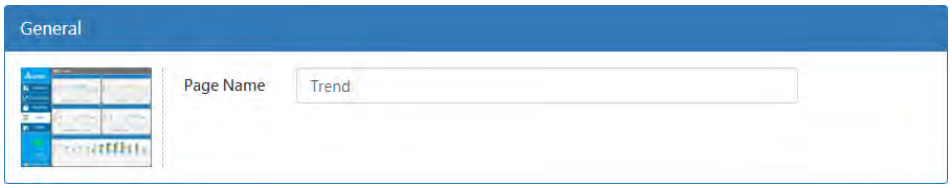
Below is an example of the alarm graphs:



## 10.2.10 Trends

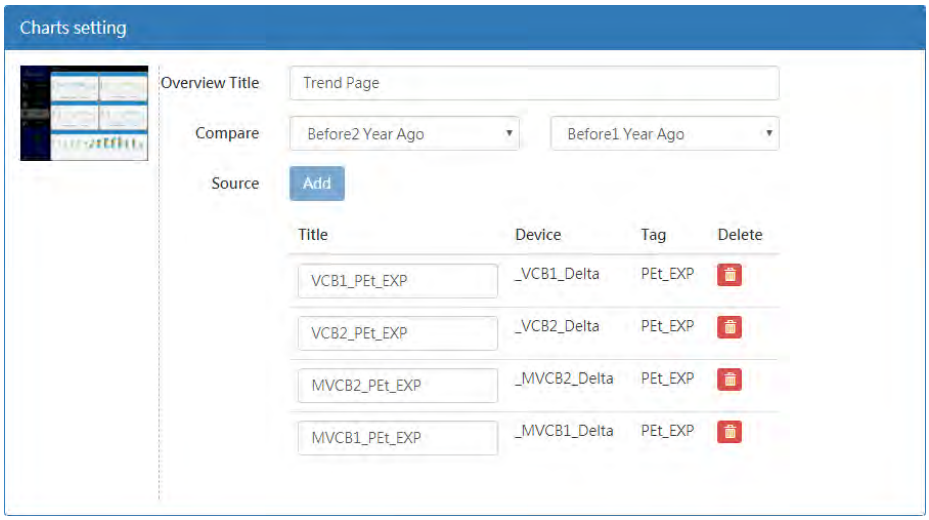
The Trends page include General and 4 trend charts settings. Every chart is displayed in comparison with historical trend data. Users can have better understanding of the energy consumption trend monthly. An overall Power Consumption Trend stacked chart of selected tags is also shown below the 4 charts.

●**General:**




❶ **Page Name:** The default page name is “Trend”. Users can modify the name accordingly.

●**Charts setting:** The page displays up to 4 charts of energy trends with comparisons regarding the consumption values of this year and historical trend data. When a consumption value is higher than the other, the tag point color will turn red for easy identification. To modify the graphs, users need to make the changes via the specified page.



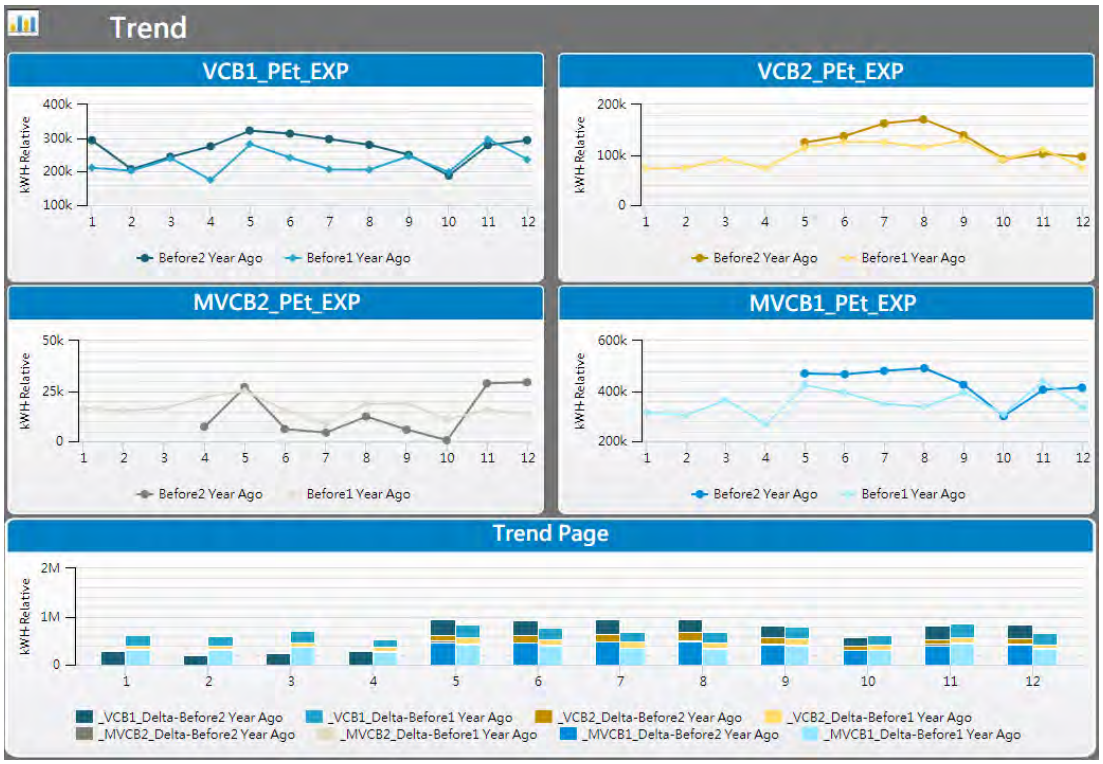

❶ **Overview Title:** The default title for the stacked chart at the bottom of the page is “Power Consumption Trend”. Users can modify the name accordingly.

❷ **Compare:** Users can select data regarding this year, 1 year ago, 2 years ago and 3 years ago for comparison.

❸ **Source:** Click Add to select the source, hierarchy, and device of the tag.

❹ **Edit Title / Delete Tag:** When sources are added, the charts are listed below with their titles and in clockwise order. The tags can also be deleted.

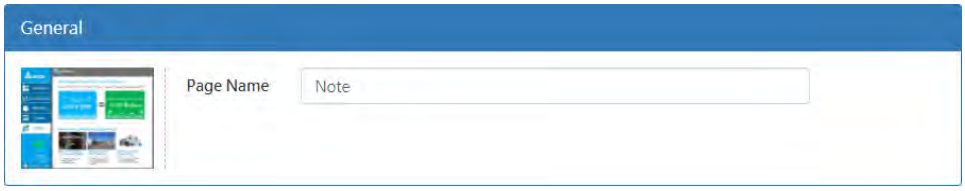
Below is an example of the Trend charts for energy consumption:



### 10.2.11 Notes

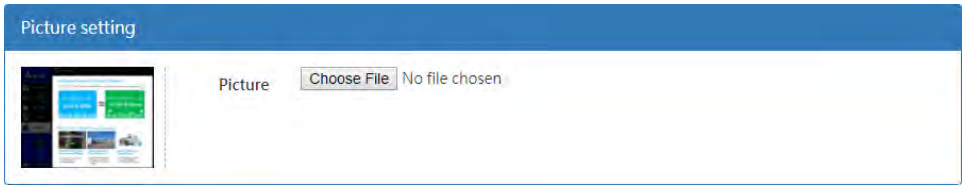
The Notes page include General and Picture Settings with custom headings regarding energy saving.

●**General:**



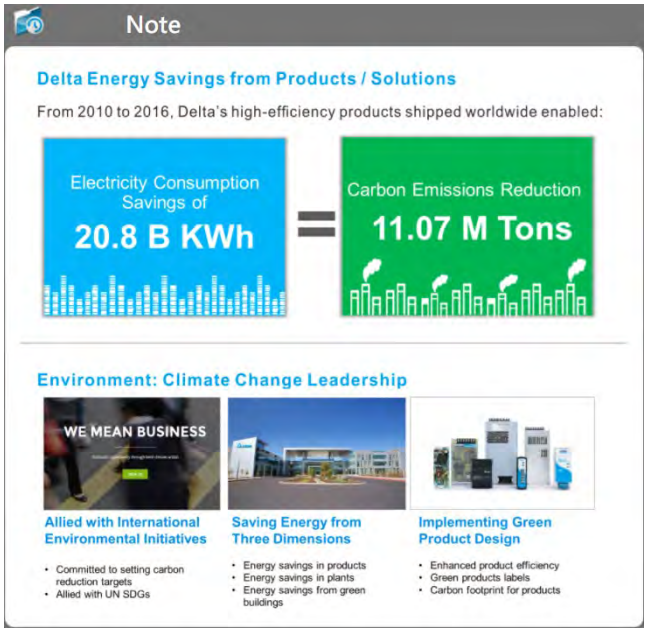

❶ **Page Name:** The default page name is “Note”. Users can modify the name accordingly.

●**Picture Setting:** For picture upload, please view the energy dashboard page display ratio for detail.




❶ **Picture:** Users can upload their energy-saving headings in JPG, JPEG, BMP, PNG, GIF file format.

Below is an example of the Note page:



11

# Chapter 11 Appendix

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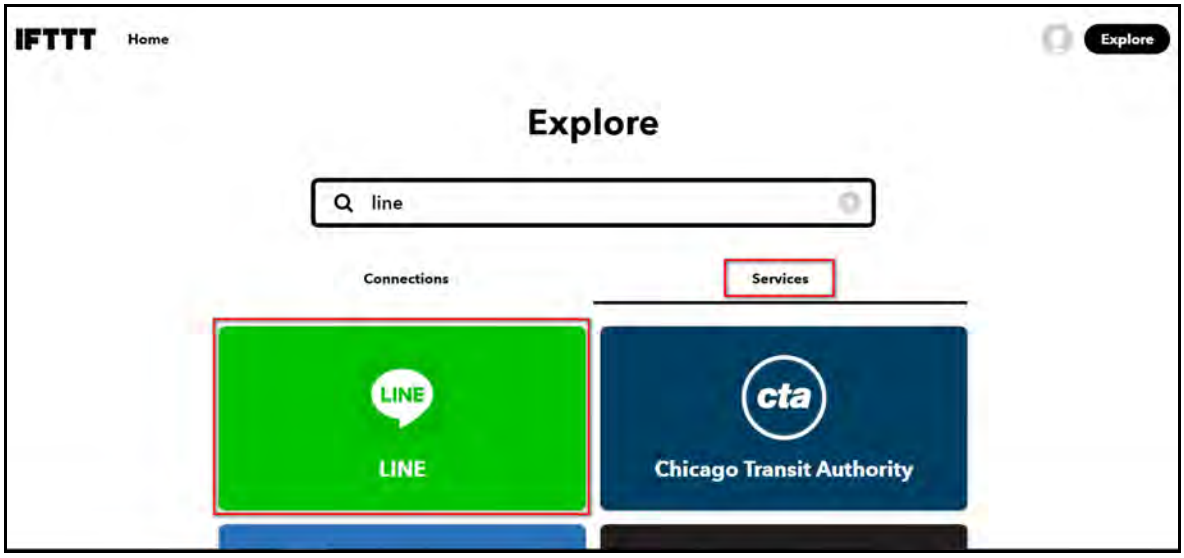
## 11.1 IFTTT Line Setup

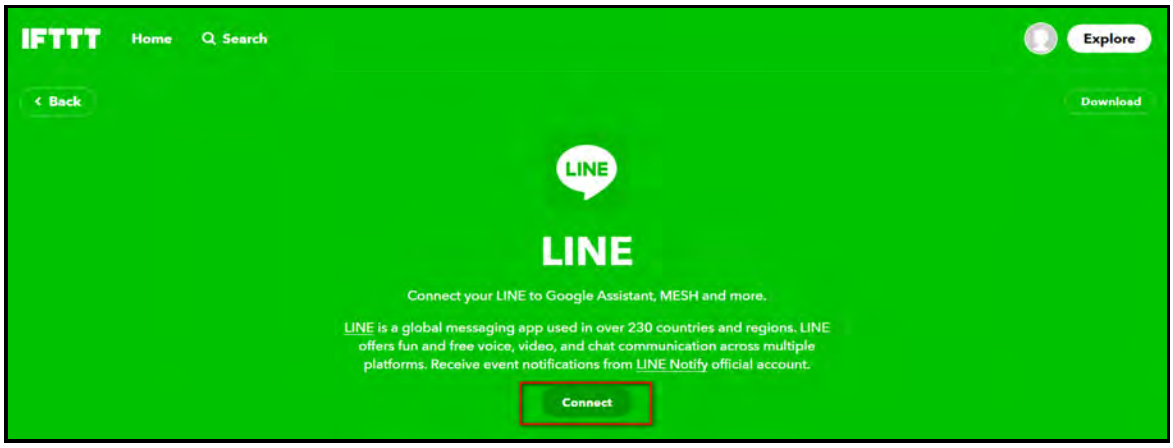
IFTTT is a freeware web-based service, also known as “If This Then That”, which reflects that IFTTT gets all your apps and devices talking to each other.

Follow the setup procedure to receive event notifications from LINE Notify with IFTTT:

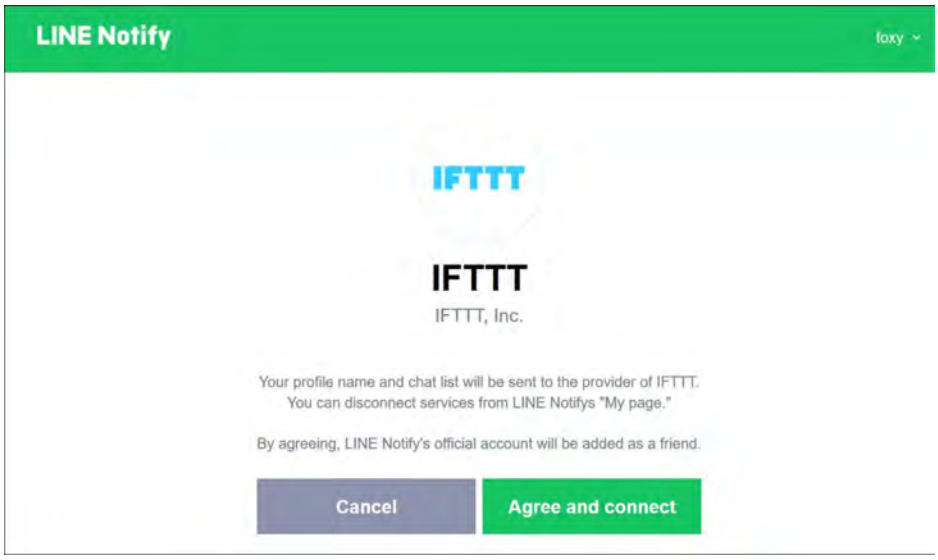
**Step 1:** Click on the link (https://ifttt.com) to enter IFTTT official website. Select “Sign Up” to create a new account and sign in. Search for “LINE”, then clicking “LINE” in “Services”.



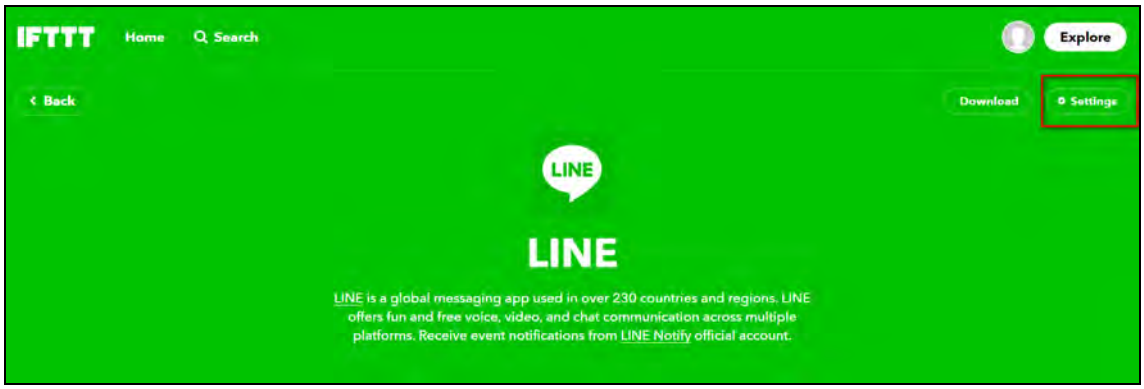
**Step 2:** Click on the “Connect” button to connect your service with LINE Notify service.

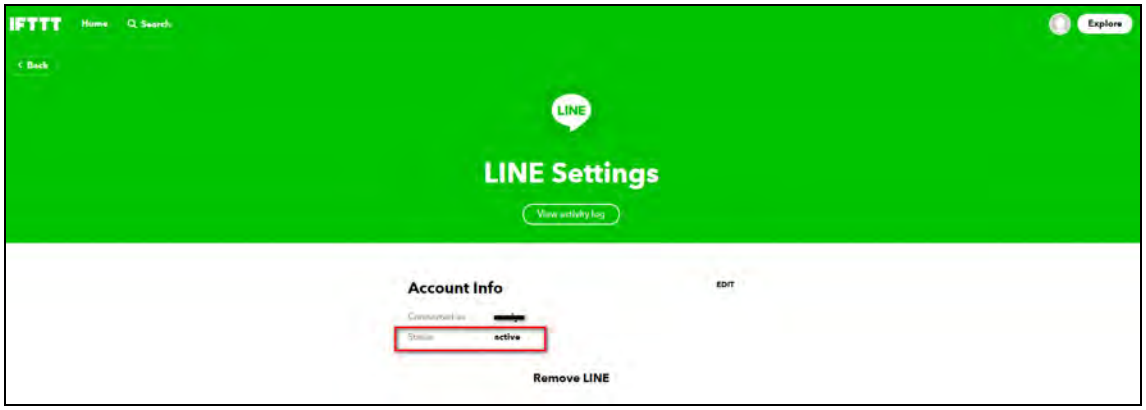



**Step 3:** Click to display the login screen. By logging into your own LINE account and then clicking “Agree and connect”, “LINE Notify” is added as your friend at the same time and will send you web service notifications in the future.

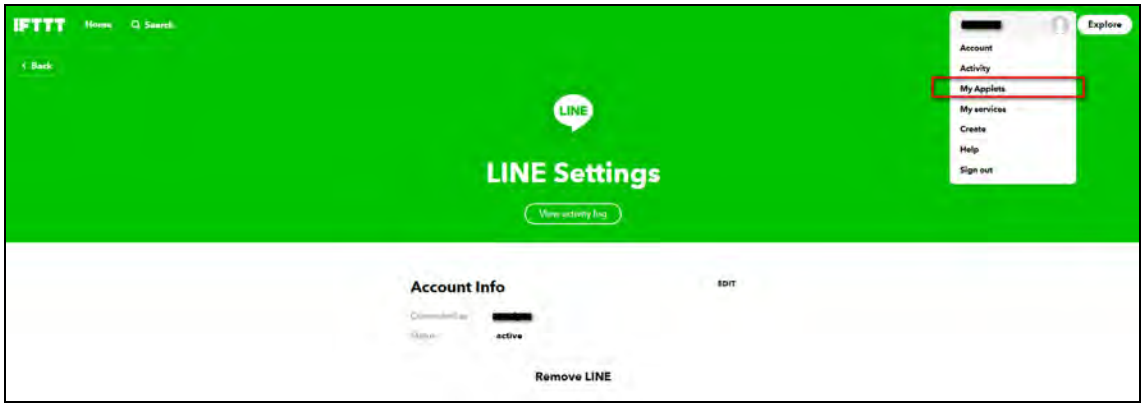


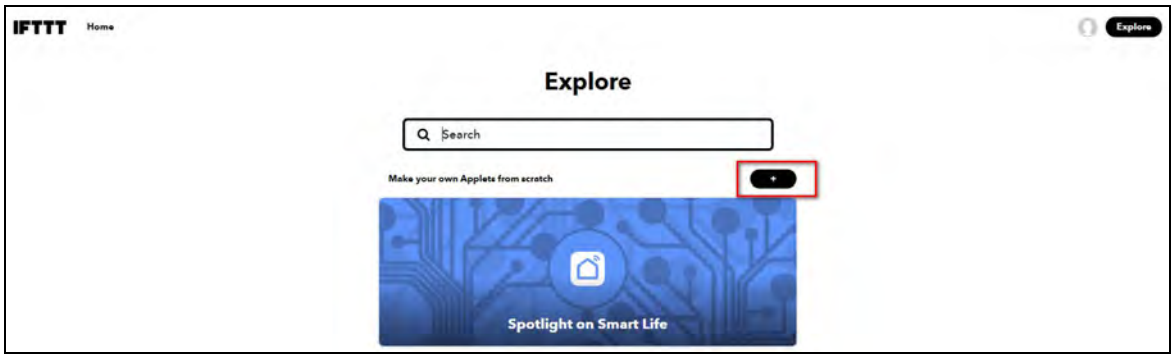
**Step 4:** Once the connection completes, the screen will automatically return to IFTTT page. Click “Settings” on the upper right of the screen to make sure the status shows “Active”, indicating the activation is completed successfully. When in doubt, you can click “Remove LINE” to disconnect at any time.



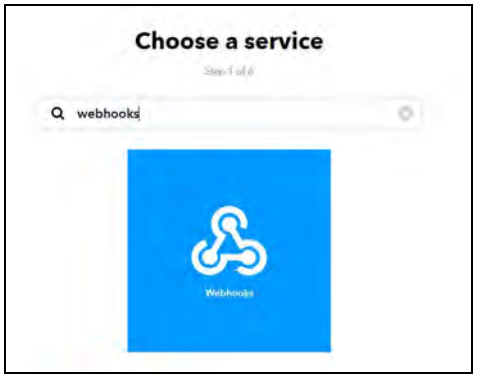

**Step 5:** After connected to LINE Notify, click the profile photo on the upper right and select “My Applets” , then “Get More”. Finally click on + to create a new Applet.

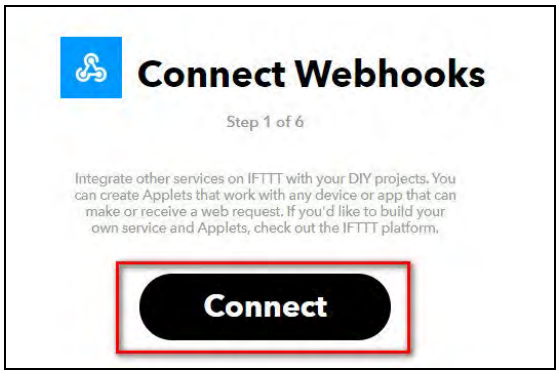




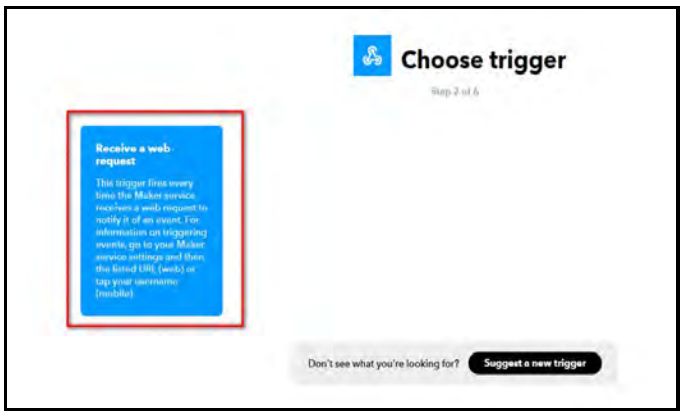

**Step 6:** A paragraph “If + This Then That” is displayed. Click “ + This" marked in a red box as shown below.

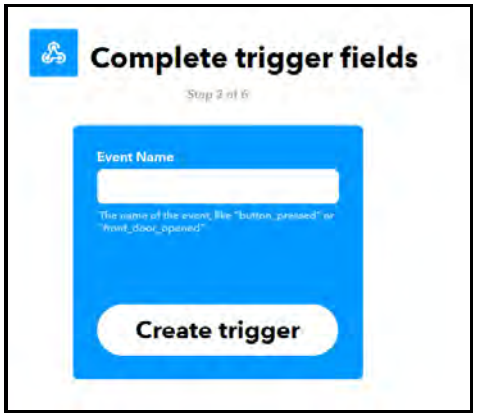
**Step 7:** Click to search for desired services. Enter “Webhook” into the search field, then click on the Webhook icon and click “Connect”.



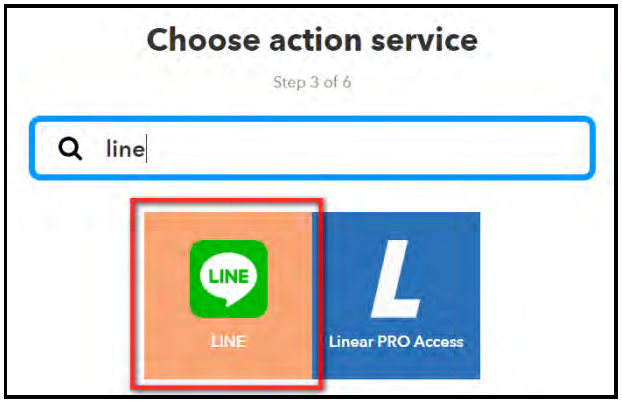
**Step 8:** Continue to click “Receive a web request”. An event name would be required to enter the field, then click “Create trigger”. The screen would return to the previous page.



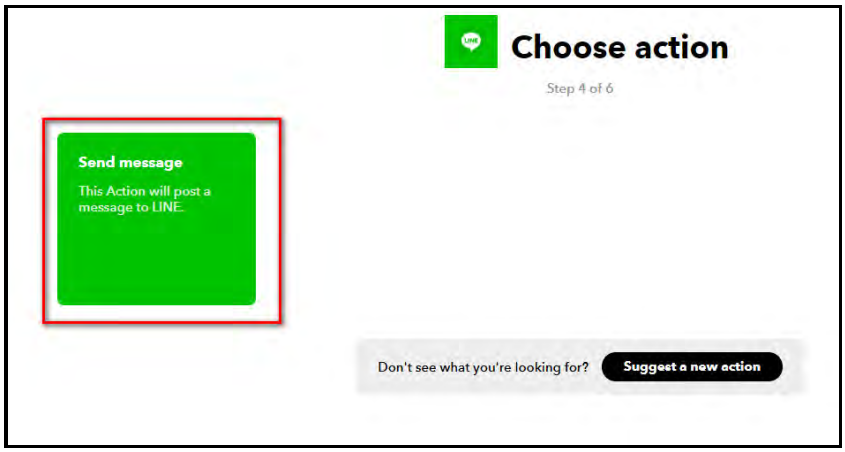




**Step 9:** Click “ + That” on the previous page.

**Step 10:** Enter “LINE” into the search field. Then select the LINE icon to add the service.



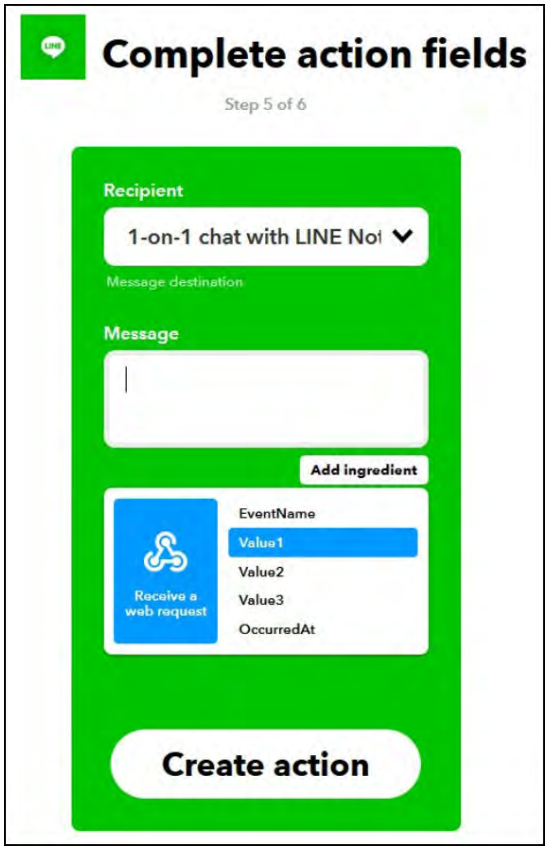
**Step 11:** Choose “Send message” action.




**Step 11-1:** Enter the setting page of sending messages.

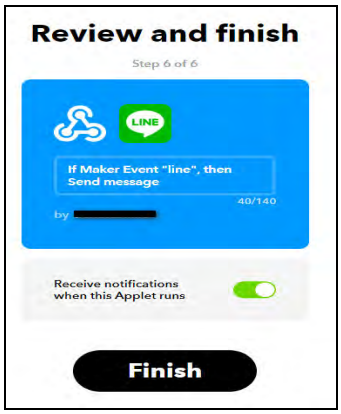
**Step 11-2:** Choose Recipient from the drop-down list, which also includes groups in the list. Messages can be sent to the designated LINE group as well. The default setting is “1-on-1 chat with Line Notification”.

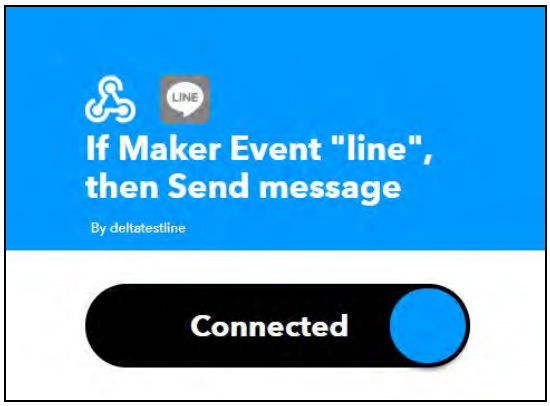
**Step 11-3:** Leave Message field blank and click “Add ingredient”, then choose “Value 1”.



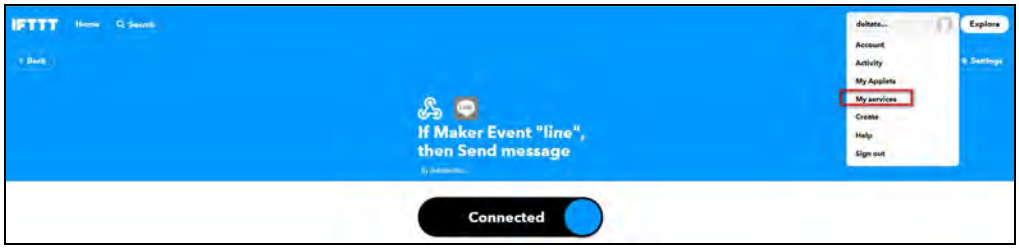
**Step 11-4:** Click “Create action” to proceed.

**Step 11-5:** Enter “Review and finish” page and click “Finish” to complete the setting.

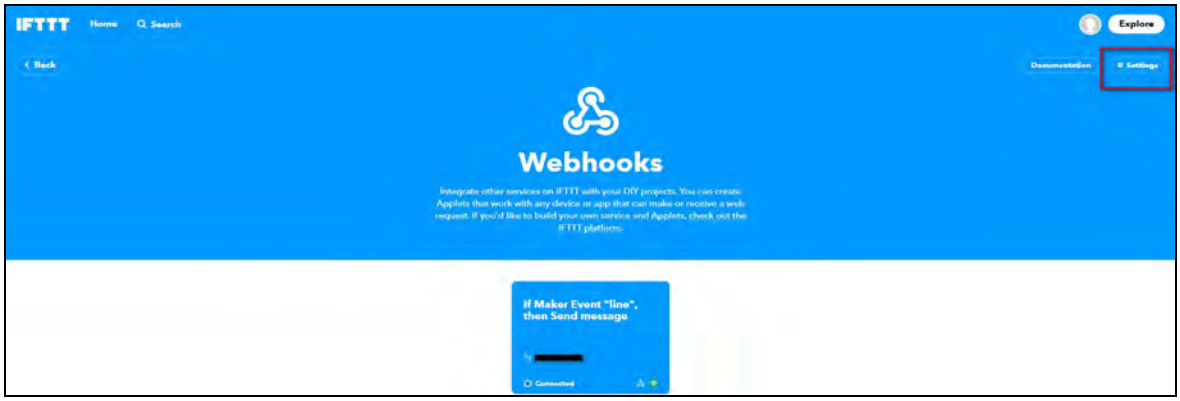


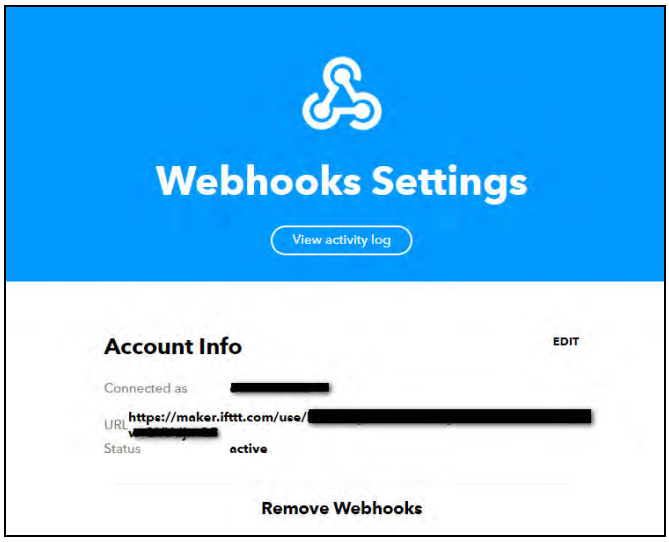

**Step 12:** Click the Profile picture on the upper right of the screen and choose “My Services”. Then choose “Webhook” on next page.



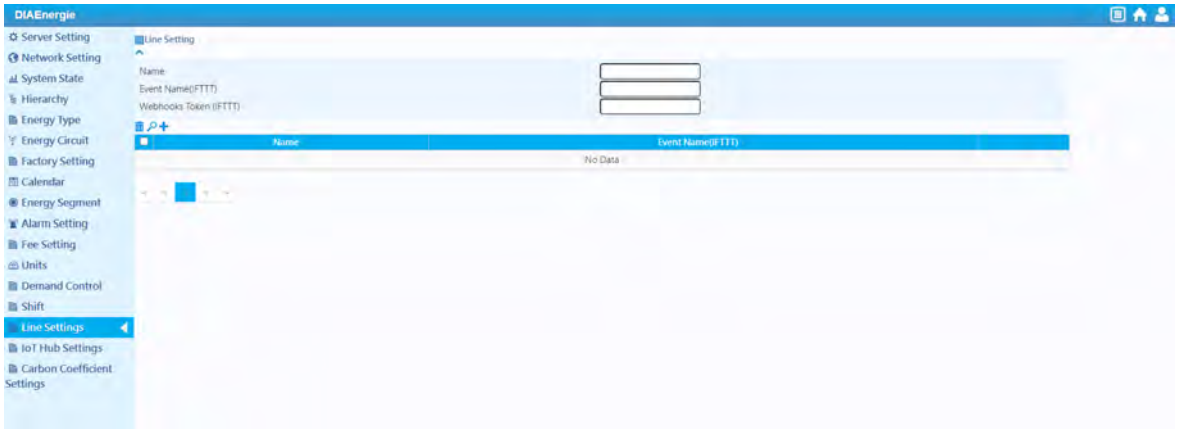
**Step 13:** Entering Webhook, click “Setting” on the upper right. Unreadable characters behind the URL are the key. (Please make sure the key is not leaked to others)



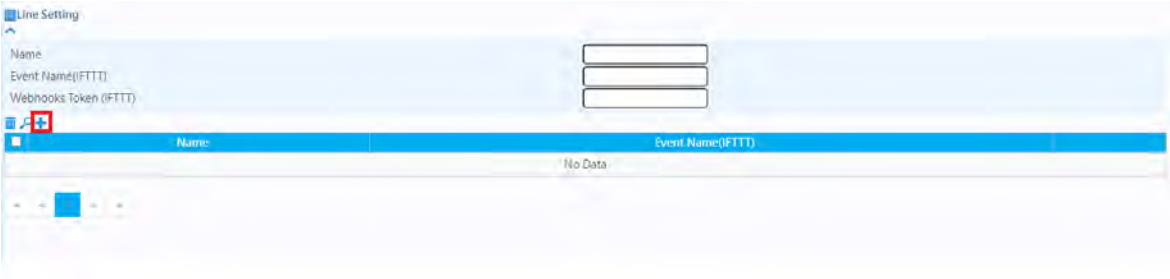

**Note:** A new key would be generated by clicking “Edit connection”, which would need resynchronization with the system.



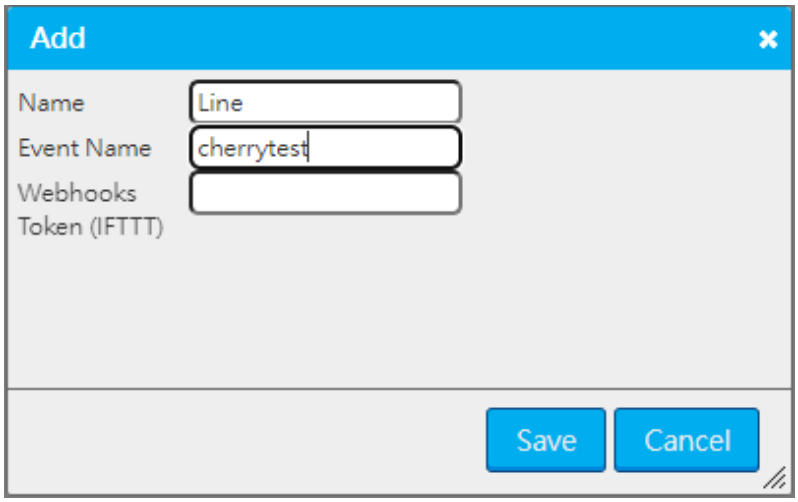
**Step 14:** Open DIAEnergie webpage, then choose “Line Setting” from “System Settings”.




**Step 15:** Click on icon on the upper left of the Line Setting page.



**Step 16:** By following the above procedure and entering the event name and Webhooks Token (IFTTT), Line setting can be completed. (Name: Line, Event Name: cherrytest)




**Step 17:** The newly added Line setting would be displayed on the list as shown below.

- **Alarm message format**

**equipmentName:** .The eqipment name set in Device Topology.

**tagName:** The tag name set in Tag Mapping.

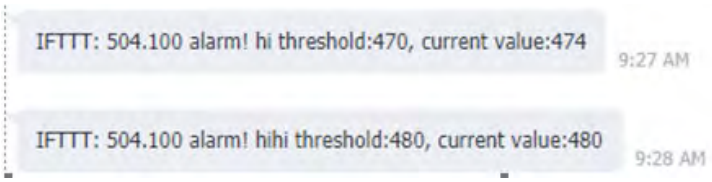
**alarmComment:** The alarm description configured in Alarm and Tag Mapping.

**alarmThreshold:** The threshold value set in Alarm and Tag Mapping.

**tagValue:** The current value shown when the alarm is triggered.

The red words are fixed.

{**equipmentName**}.{**tagName**} alarm! {**alarmComment**} threshold:{**alarmThreshold**}, current value:{**tagValue**}



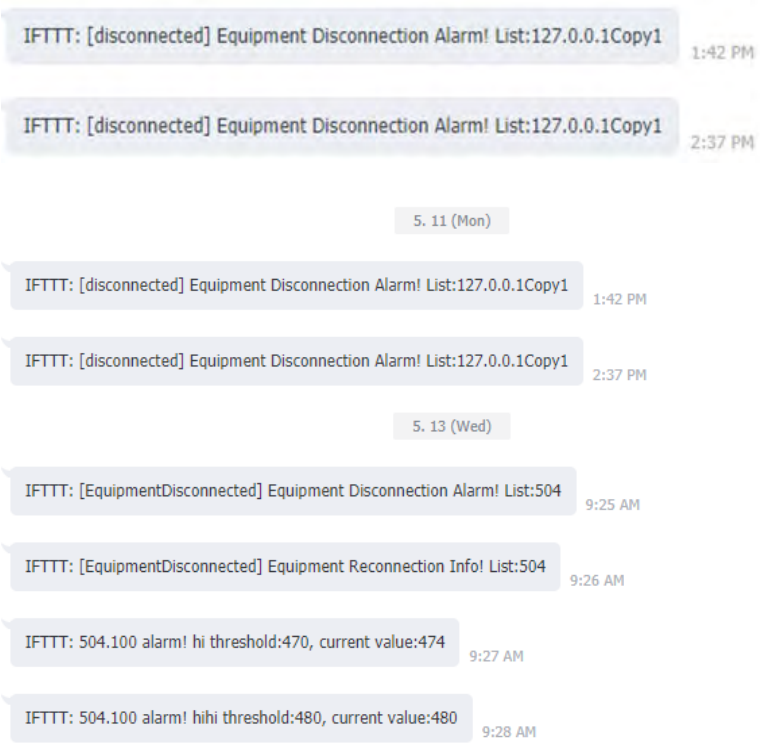

- **Disconnection alarm message format**

**alarmGroupName:** Name of the alarm group.

**equipmentNameList:** List of the devices which trigger the disconnection alarm.

The red words are fixed.

[{**alarmGroupName**}] Equipment Disconnection Alarm! List:{ **equipmentNameList**}



## 11.2 SMS Text Message Setup

SMS alarm notification feature can be performed via external cellular modems, which you would need to purchase the external devices on your own.

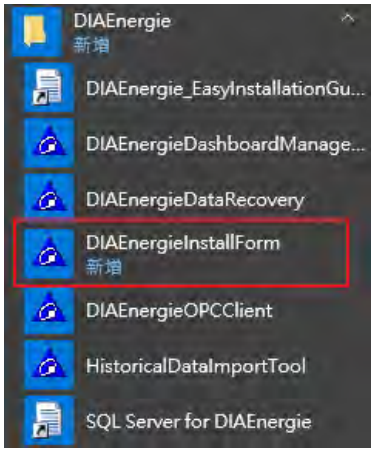
SW Version: DIAEnergie 1.7.4.0 and above.

Modem models:

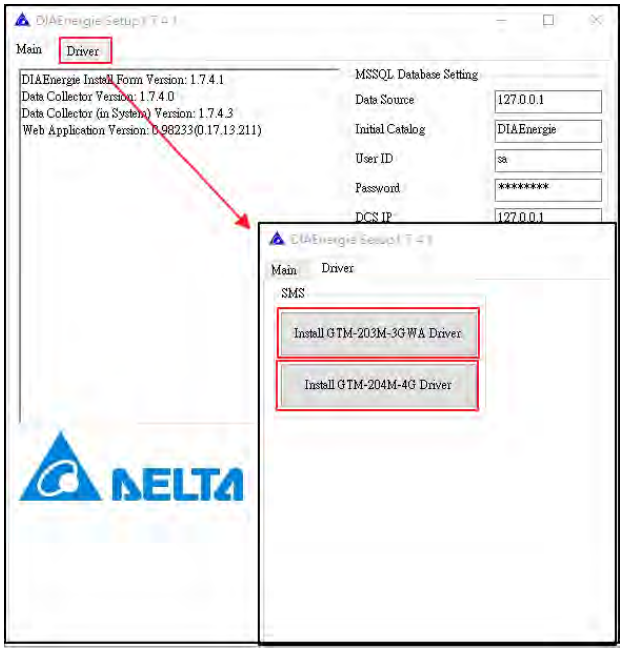
GTM-203M-3GWA (http://m2m.icpdas.com/gtm-203m-3gwa.html)

GTM-204M-4GE (http://m2m.icpdas.com/gtm-204m-series.html)

**Step 1:** Run the DIAEnergie setup program.




**Step 2:** Install the driver corresponding to the modem model.



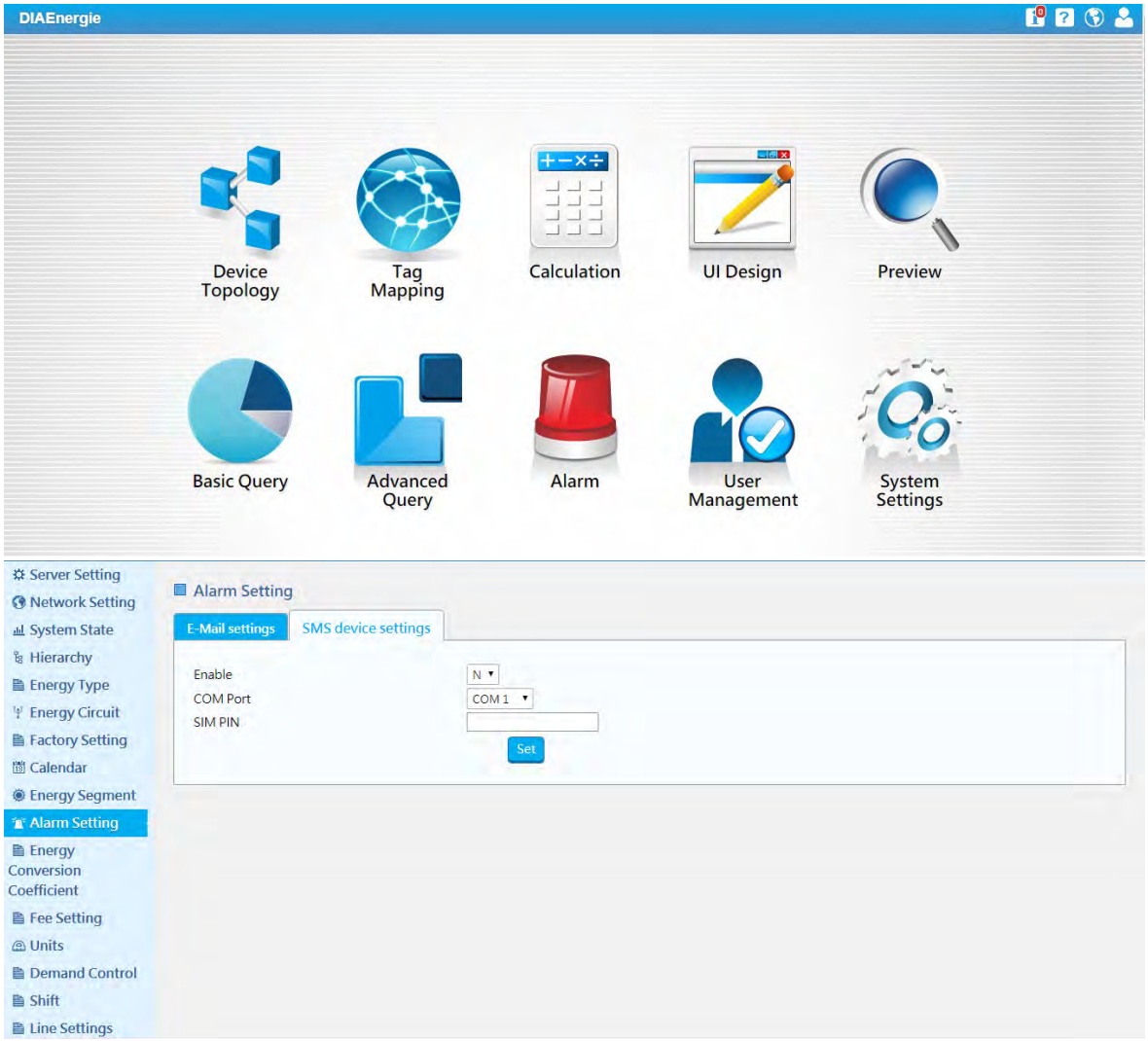
**Step 3:** Communication ports of the SMS cellular modem can be seen in the Device Manager. Select between two AT command ports and configure DIAEnergie settings.

- 連接埠 (COM 和 LPT)
  - GTM-203-3GWA AT command port (COM6)
  - GTM-203-3GWA AT command port (COM7)
  - GTM-203-3GWA Reserve port (COM10)
  - GTM-203-3GWA Reserve port (COM11)
  - GTM-203-3GWA Reserve port (COM12)
  - GTM-203-3GWA Reserve port (COM9)

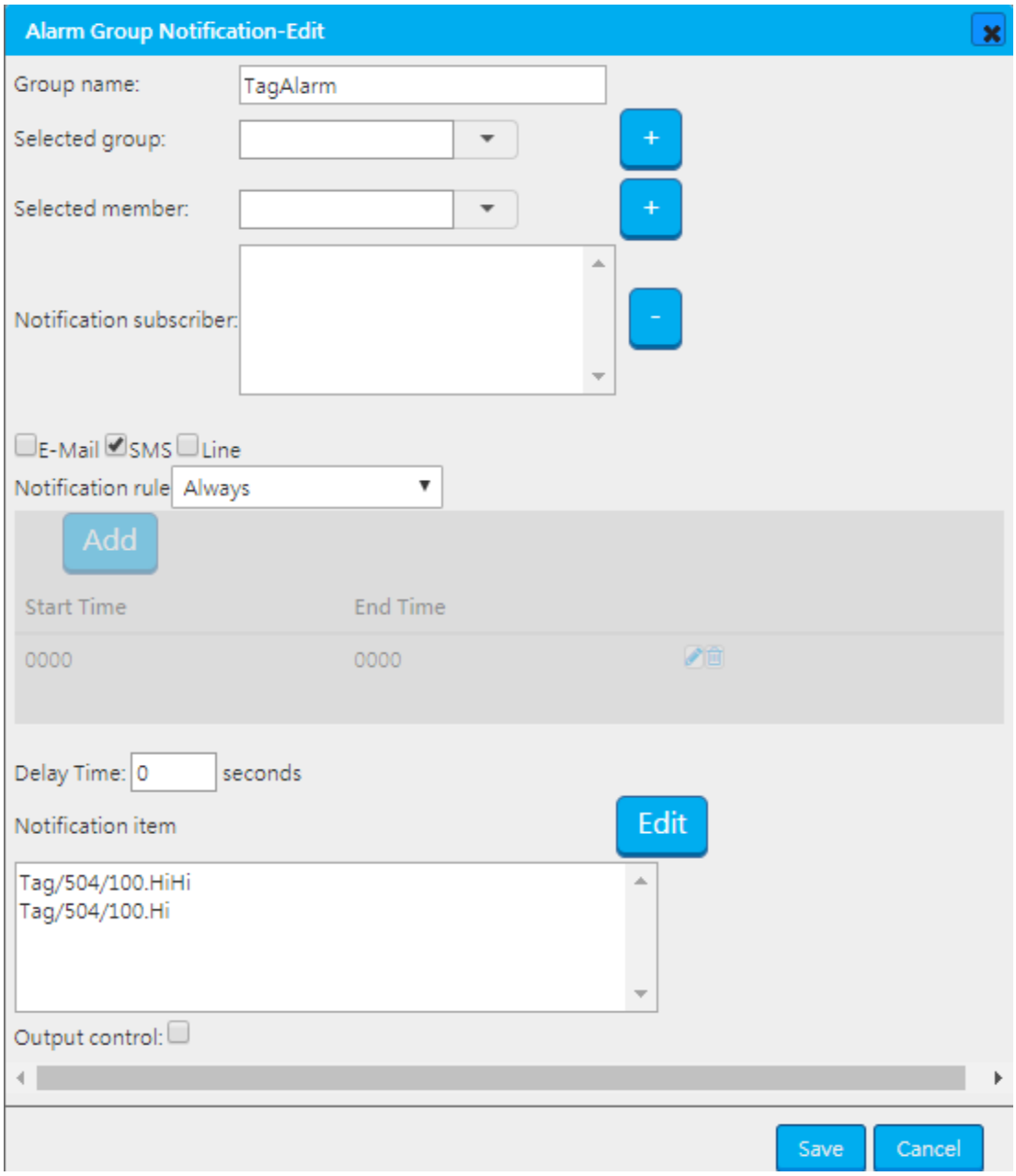
**Step 4:** Verify with your mobile phone or set a SIM card pin. (Note: Please make sure you have the correct pin code since SIM cards may possibly be locked and suspended due to wrong pin code inserts.)

**Step 5:** Insert the SIM card into the cellular modem. Before connecting the modem to the PC, make sure you have set up the SIM card pin and the COM port of the cellular modem.

**Step 6:** Go to System Settings ➔ Alarm Setting ➔ SMS Device Settings in DIAEnergie and set Enable to Y. Set COM Port as the number of At command port on SMS cellular modem and input SIM PIN according to the pin code set in the SIM card (Leave this field blank if there's no pin code being set.)



**Step 7:** After the setting above is complete, connect the cellular modem to the PC. SMS alarm notification setup process is basically the same as email notification via DIAEnergie. But for the alarm group notification setup, the SMS option must be selected.



**Step 8:** SMS text message

Tag alarm notification format:

**equipmentName:** The device name set in Device Topology.
**tagName:** The tag name set in Tag Mapping.
**alarmComment:** The comment set in Alarm and Tag Mapping.
**alarmThreshold:** The threshold value set in Alarm and Tag Mapping.
**tagValue**: The value recorded when the alarm is triggered.

The red words are fixed.

{**equipmentName**}.{**tagName**} alarm! {**alarmComment**} threshold:{**alarmThreshold**}, current value:{**tagValue**}

Disconnection alarm notification format

**alarmGroupName:** Name of the alarm group.
**equipmentNameList:** List all devices that trigger the disconnection alarm.

The red words are fixed.

[{**alarmGroupName**}] Equipment Disconnection Alarm! List:{ **equipmentNameList**}

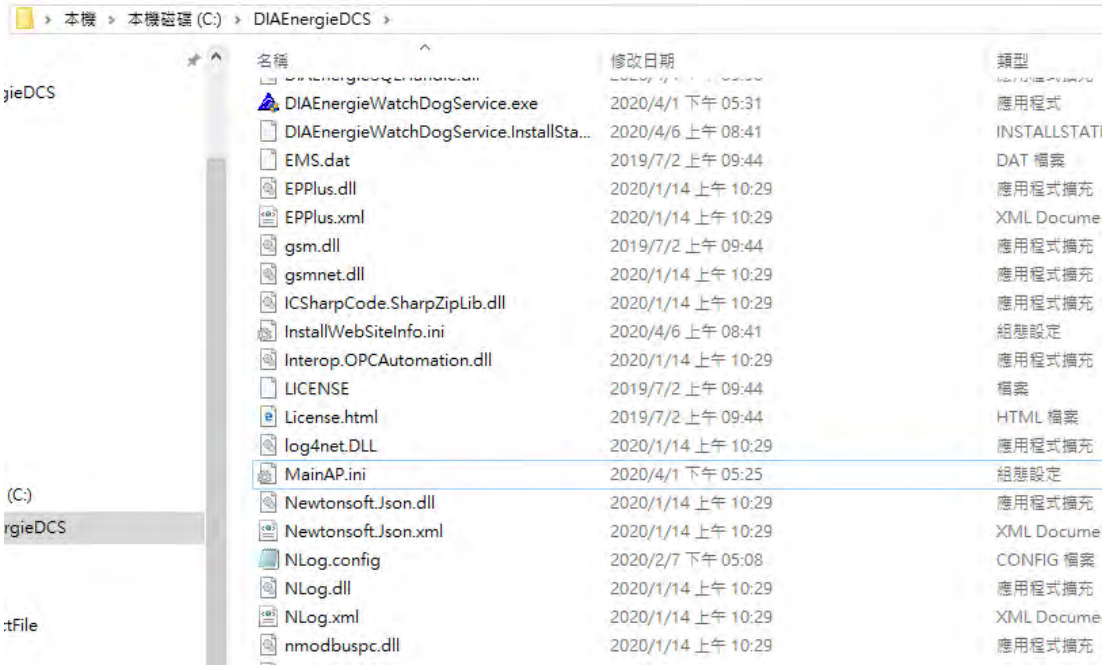
## 11.3 DIAEnergie Modbus Slave Settings

Step 1: Please make sure Modbus Slave Port is open.



Use telnet 10.136.128.91 502 and press Enter key, then a black screen without any error message would be displayed. If the port is not open, an error message “Could not open connection to the host, on port 503, connection failed” would be displayed on the screen.

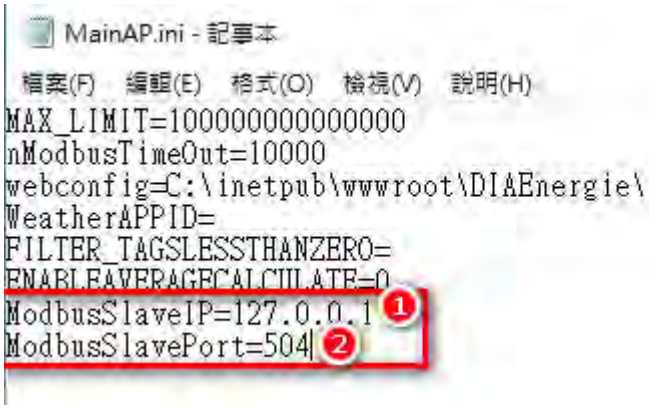
Step 2: Please go to C:\DIAEnergieDCS under the DIAEnergie installation path to find MainAP.ini.




Step 3: Add the following two settings:

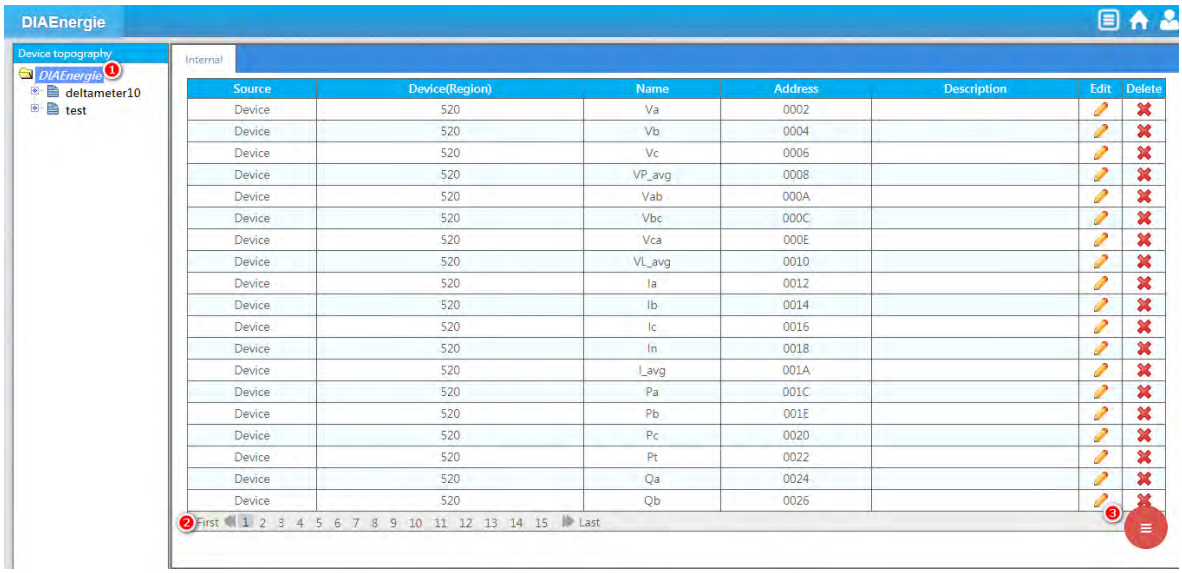
ModbusSlaveIP=10.136.128.91 (Please configure this setting according to the server IP.)

ModbusSlavePort=502 (Please configure this setting according to the use of Server Port.)

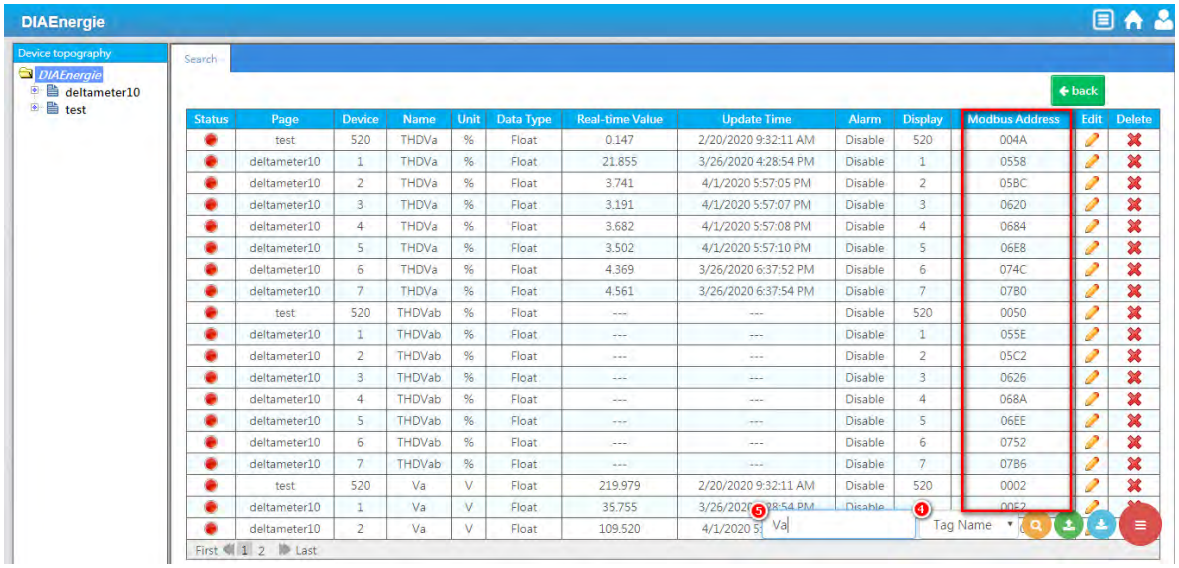


Step 4

Go to Tag Mapping and find the corresponding tags by clicking each node and searching through each page. Or you are allowed to search the tags by conditions (Tag Name/Display/Unit/Data Type). It is illustrated to search tags by using Tag Name with “Va” in the following figure. Then the column of Modbus Address (Holding Register) would be displayed which the displayed address is the tag’s address on DIAEnergie Modbus Slave.




| Source | Device(Region) | Name | Address | Description | Edit | Delete |
|---|---|---|---|---|---|---|
| Device | 520 | Va | 0002 | | | |
| Device | 520 | Vb | 0004 | | | |
| Device | 520 | Vc | 0006 | | | |
| Device | 520 | VP_avg | 0008 | | | |
| Device | 520 | Vab | 000A | | | |
| Device | 520 | Vbc | 000C | | | |
| Device | 520 | Vca | 000E | | | |
| Device | 520 | VL_avg | 0010 | | | |
| Device | 520 | Ia | 0012 | | | |
| Device | 520 | Ib | 0014 | | | |
| Device | 520 | Ic | 0016 | | | |
| Device | 520 | In | 0018 | | | |
| Device | 520 | I_avg | 001A | | | |
| Device | 520 | Pa | 001C | | | |
| Device | 520 | Pb | 001E | | | |
| Device | 520 | Pc | 0020 | | | |
| Device | 520 | Pt | 0022 | | | |
| Device | 520 | Qa | 0024 | | | |
| Device | 520 | Qb | 0026 | | | |

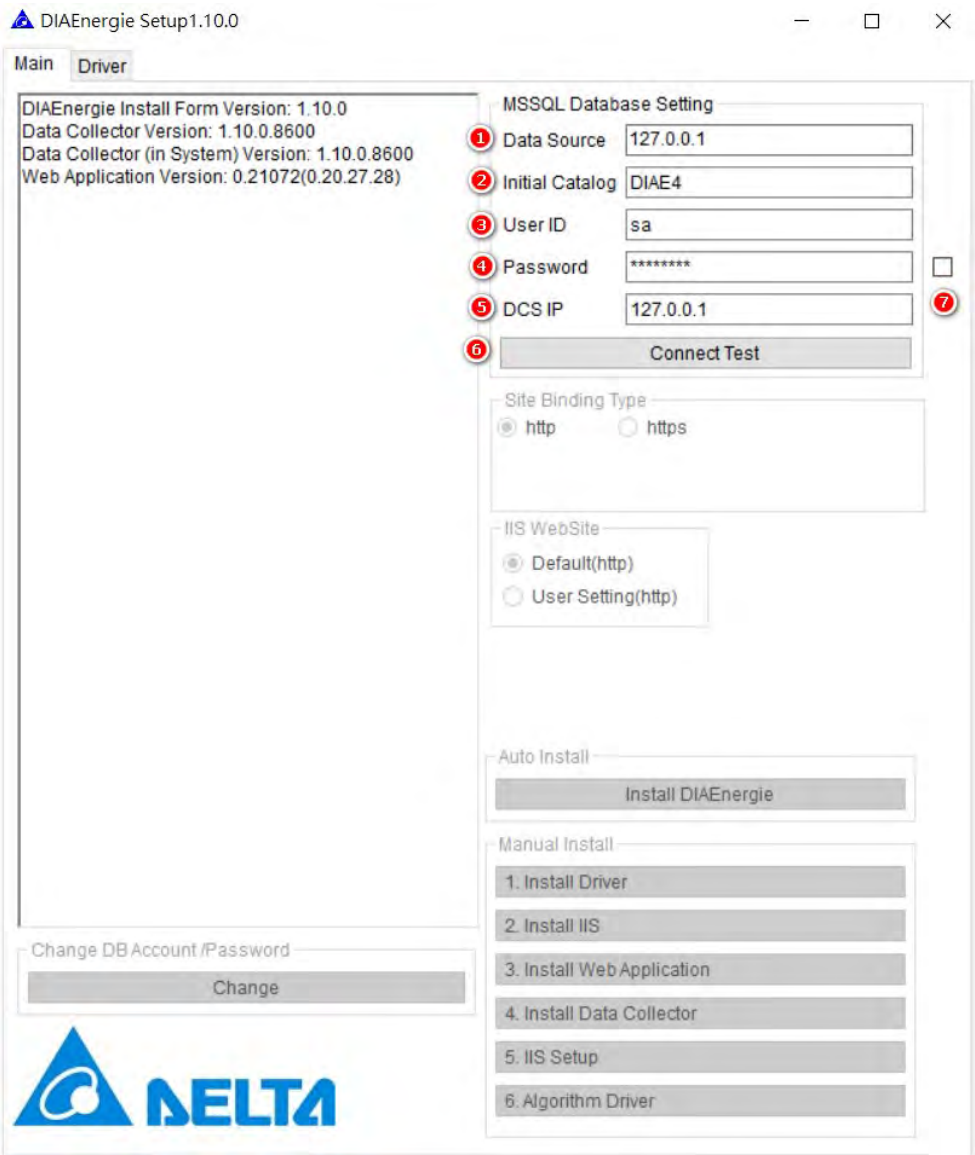


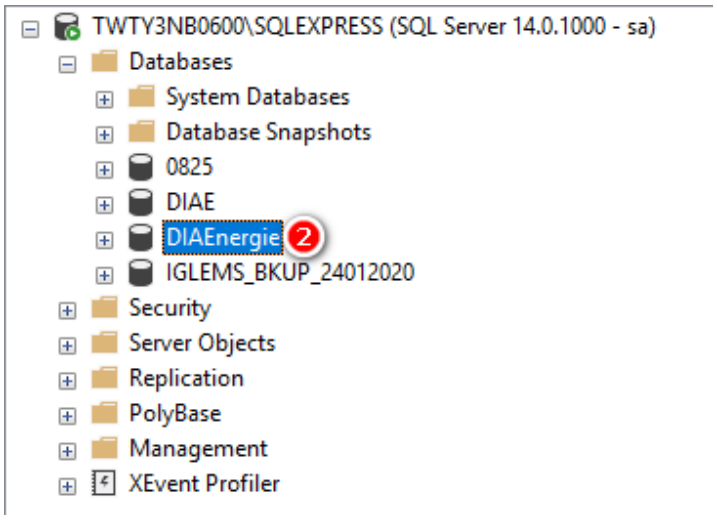

| Status | Page | Device | Name | Unit | Data Type | Real-time Value | Update Time | Alarm | Display | Modbus Address | Edit | Delete |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | test | 520 | THDVa | % | Float | 0.147 | 2/20/2020 9:32:11 AM | Disable | 520 | 004A | | |
| | deltameter10 | 1 | THDVa | % | Float | 21.855 | 3/26/2020 4:28:54 PM | Disable | 1 | 0558 | | |
| | deltameter10 | 2 | THDVa | % | Float | 3.741 | 4/1/2020 5:57:05 PM | Disable | 2 | 05BC | | |
| | deltameter10 | 3 | THDVa | % | Float | 3.191 | 4/1/2020 5:57:07 PM | Disable | 3 | 0620 | | |
| | deltameter10 | 4 | THDVa | % | Float | 3.682 | 4/1/2020 5:57:08 PM | Disable | 4 | 0684 | | |
| | deltameter10 | 5 | THDVa | % | Float | 3.502 | 4/1/2020 5:57:10 PM | Disable | 5 | 06E8 | | |
| | deltameter10 | 6 | THDVa | % | Float | 4.369 | 3/26/2020 6:37:52 PM | Disable | 6 | 074C | | |
| | deltameter10 | 7 | THDVa | % | Float | 4.561 | 3/26/2020 6:37:54 PM | Disable | 7 | 07B0 | | |
| | test | 520 | THDVab | % | Float | --- | --- | Disable | 520 | 0050 | | |
| | deltameter10 | 1 | THDVab | % | Float | --- | --- | Disable | 1 | 055E | | |
| | deltameter10 | 2 | THDVab | % | Float | --- | --- | Disable | 2 | 05C2 | | |
| | deltameter10 | 3 | THDVab | % | Float | --- | --- | Disable | 3 | 0626 | | |
| | deltameter10 | 4 | THDVab | % | Float | --- | --- | Disable | 4 | 068A | | |
| | deltameter10 | 5 | THDVab | % | Float | --- | --- | Disable | 5 | 06EE | | |
| | deltameter10 | 6 | THDVab | % | Float | --- | --- | Disable | 6 | 0752 | | |
| | deltameter10 | 7 | THDVab | % | Float | --- | --- | Disable | 7 | 07B6 | | |
| | test | 520 | Va | V | Float | 219.979 | 2/20/2020 9:32:11 AM | Disable | 520 | 0002 | | |
| | deltameter10 | 1 | Va | V | Float | 35.755 | 3/26/2020 [illegible] | Disable | [illegible] | 00E2 | | |
| | deltameter10 | 2 | Va | V | Float | 109.520 | 4/1/2020 5[illegible] | | | | | |

## 11.4 Installing DIAEnergie

MS SQL installation is not included in the package. Therefore, you are advised to install MS SQL (Microsoft SQL Server Standard or above) and create the database for DIAEnergie on your own in advance with local user level privileges.

See the descriptions of the fields numbered in the figures below.






1. **Data Source:** Please enter the character string displayed in the field of Server Name when successfully connecting to Microsoft SQL Server Management Studio.

2. **Initial Catalog:** Please enter the database for DIAEnergie created under the SQL server.

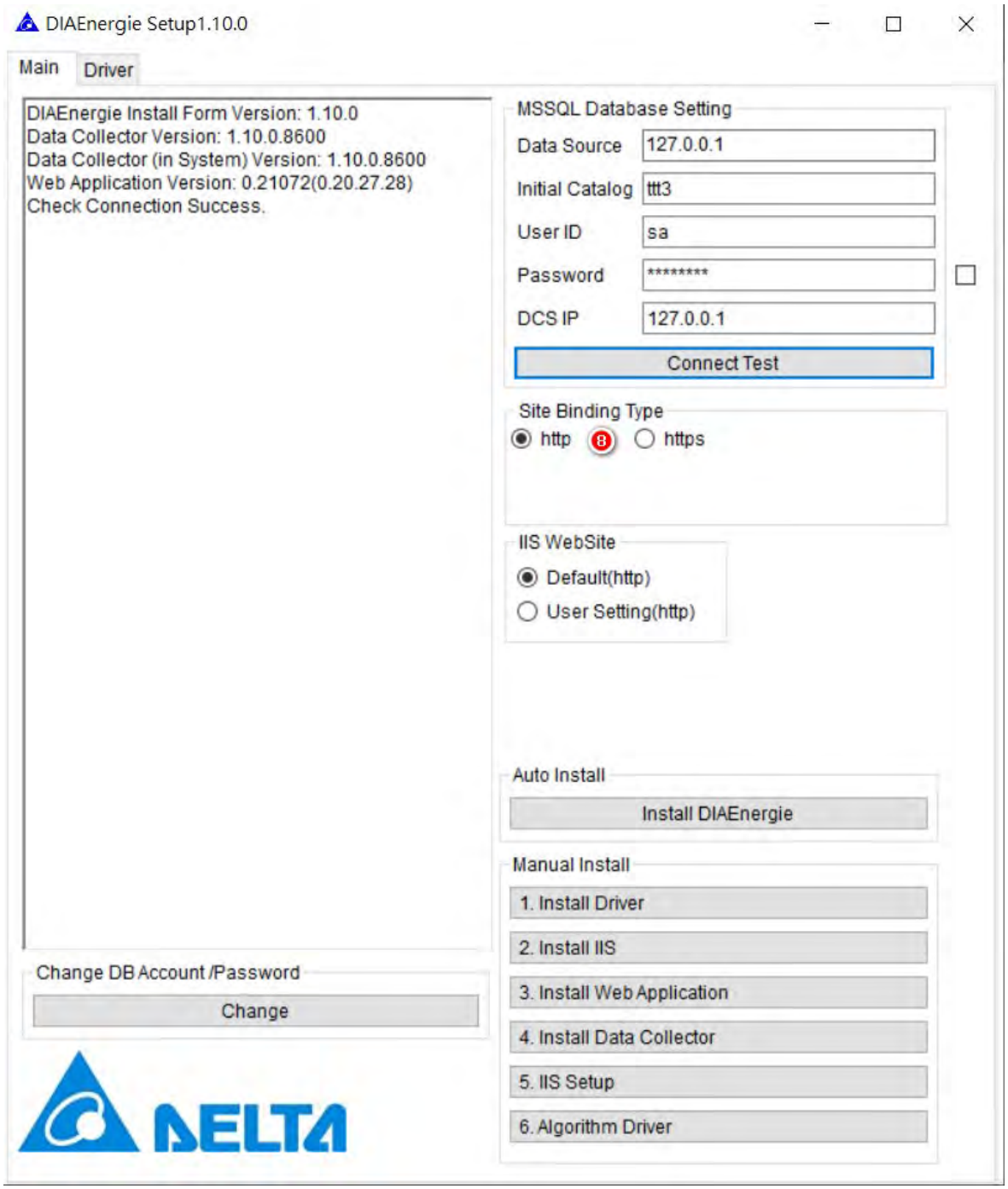
3. **User ID:** Please enter the string displayed in Login field when successfully connecting to Microsoft SQL Server Management Studio.

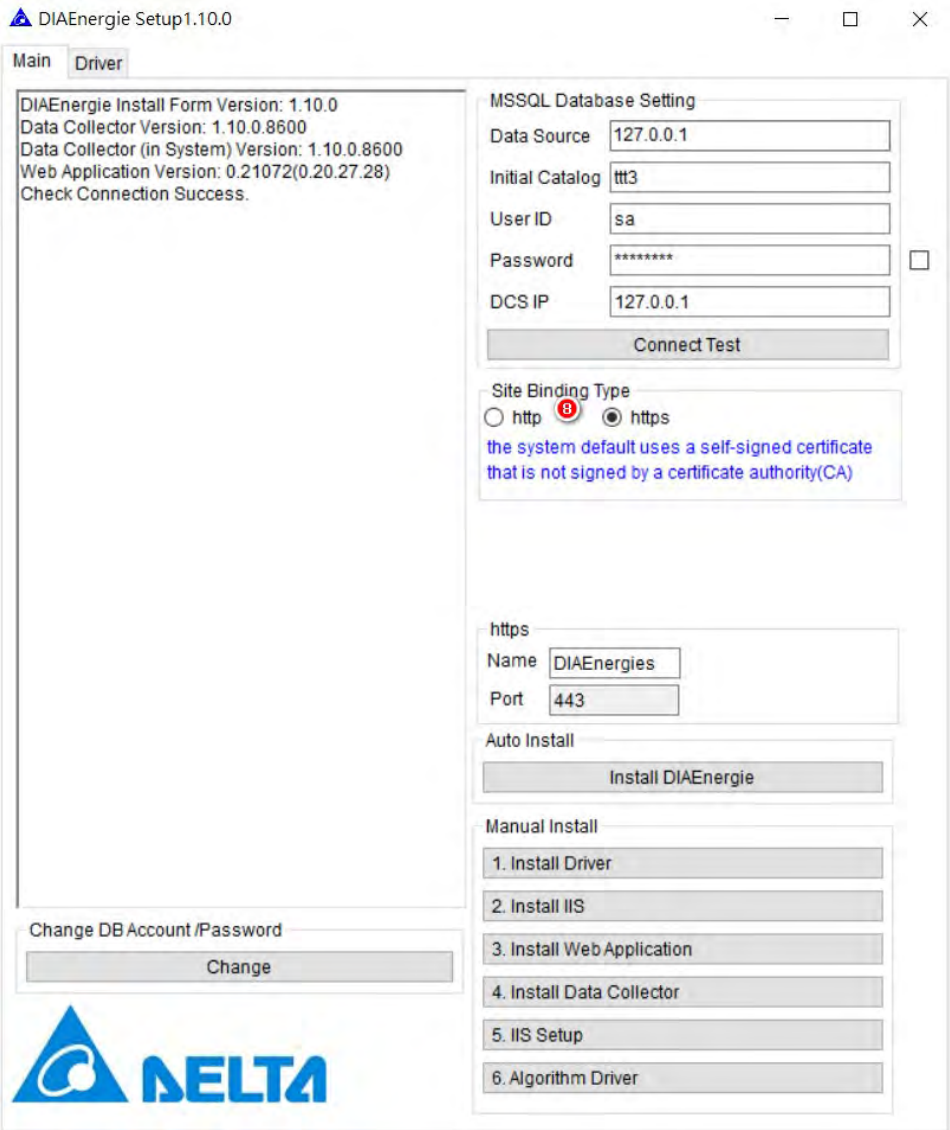
4. **Password:** Please enter the string displayed in Password field when successfully connecting to Microsoft SQL Server Management Studio.

5. **DCS IP:** The default is set to 127.0.0.1. There's no need to be changed.

6. **Connect Test:** DIAEnergie can be installed only after the connection test is passed.

7. **View Password**: Check the box to convert the password to plaintext, uncheck the box to present the password as *.

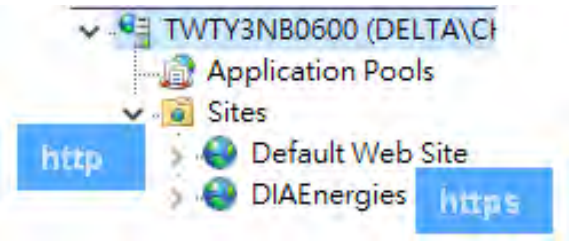

DIAEnergie Setup1.10.0
Main
Driver
DIAEnergie Install Form Version: 1.10.0
Data Collector Version: 1.10.0.8600
Data Collector (in System) Version: 1.10.0.8600
Web Application Version: 0.21072(0.20.27.28)
Check Connection Success.
MSSQL Database Setting
Data Source
127.0.0.1
Initial Catalog
ttt3
User ID
sa
Password
********
DCS IP
127.0.0.1
Connect Test
Site Binding Type
http
8
https
IIS WebSite
Default(http)
User Setting(http)
Auto Install
Install DIAEnergie
Manual Install
1. Install Driver
2. Install IIS
3. Install Web Application
4. Install Data Collector
5. IIS Setup
6. Algorithm Driver
Change DB Account /Password
Change
DELTA

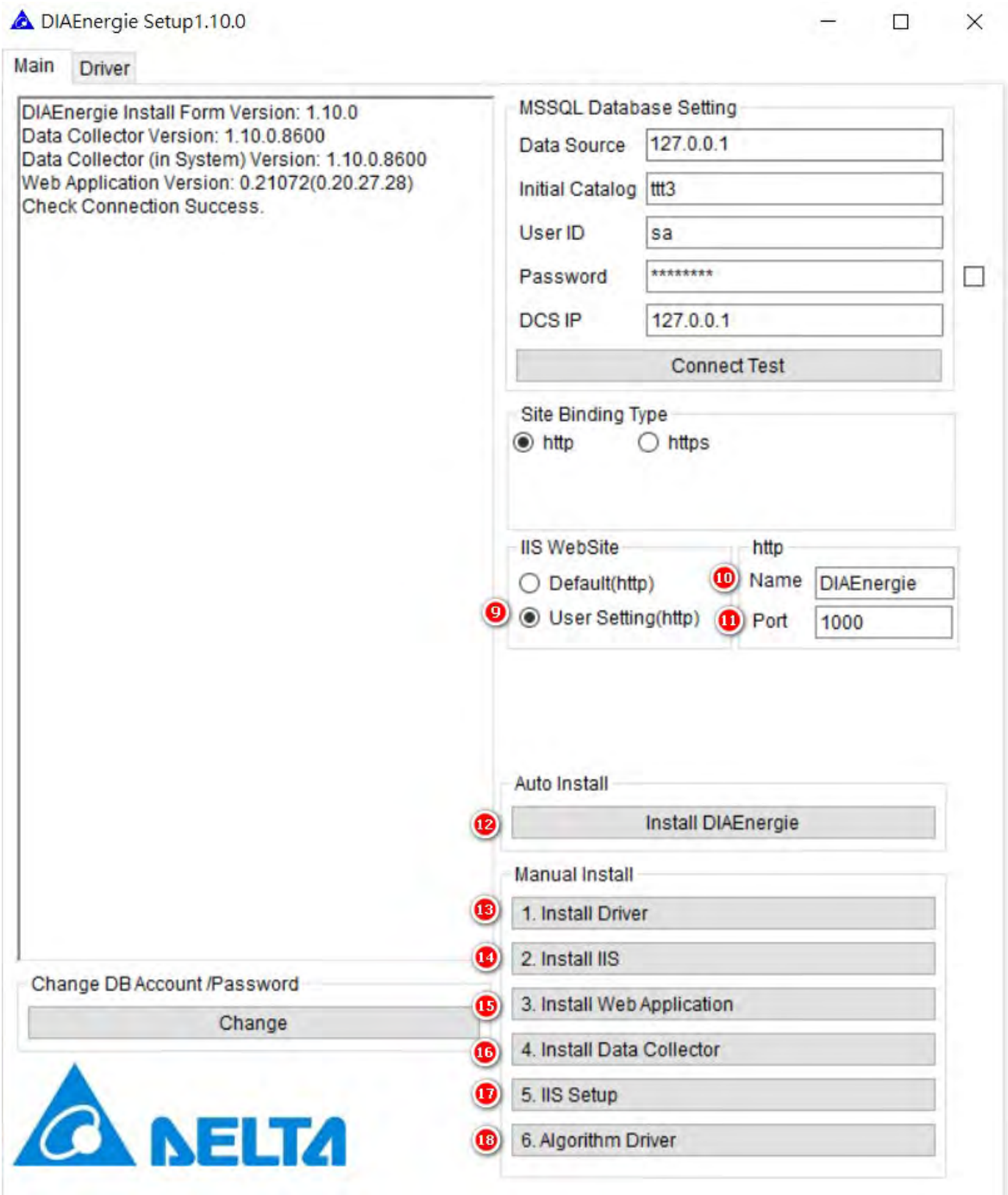



**Site Binding Type → http**

**IIS Web Site**

7. **Site Binding Type**: The default is "**http**" and you should ensure that the port 80 is not occupied by other application. If the port 80 is not occupied, you can select the "**http**" option for **Site Binding Type** field. Note that https is not enabled for the default product installation website. If the site needs to enable https, please select "**https**" in **Site Binding Type** field. Be aware that by default, the system uses a self-signed certificate that is not signed by a certificate authority (CA). If the official certificate signed by CA is obtained later, refer to the steps in section 11.6 for change after the product installation is finished.






8. **User Setting**：The contents in Name and Port fields are displayed by default since the default port 80 has been occupied by an application.

9. **Name**：Website Name

10. **Port**：Port 1000 (default). If this port has been occupied by an application, please type another port that has not been occupied yet in this field.

**Auto Install**

11. **Install DIAEnergie**: Click on the **Install DIAEnergie** button to start the auto installation.

Follow the steps to proceed as below.

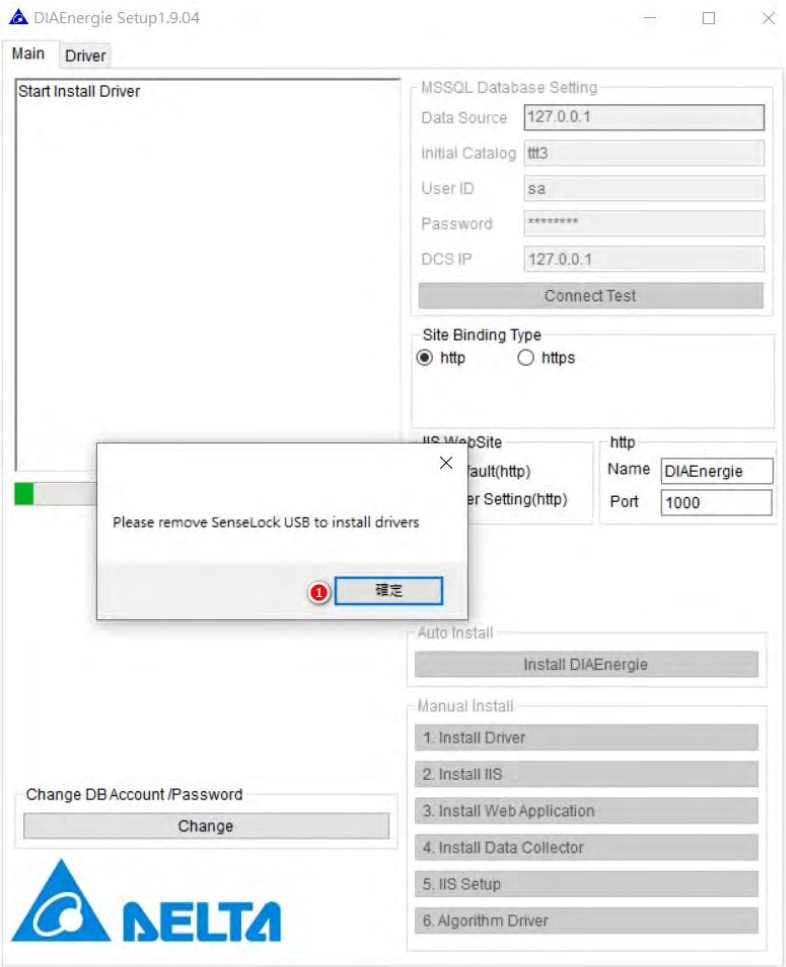
(1) "Please remove SenseLock USB to install drivers" box shows up and then please click "OK" button.

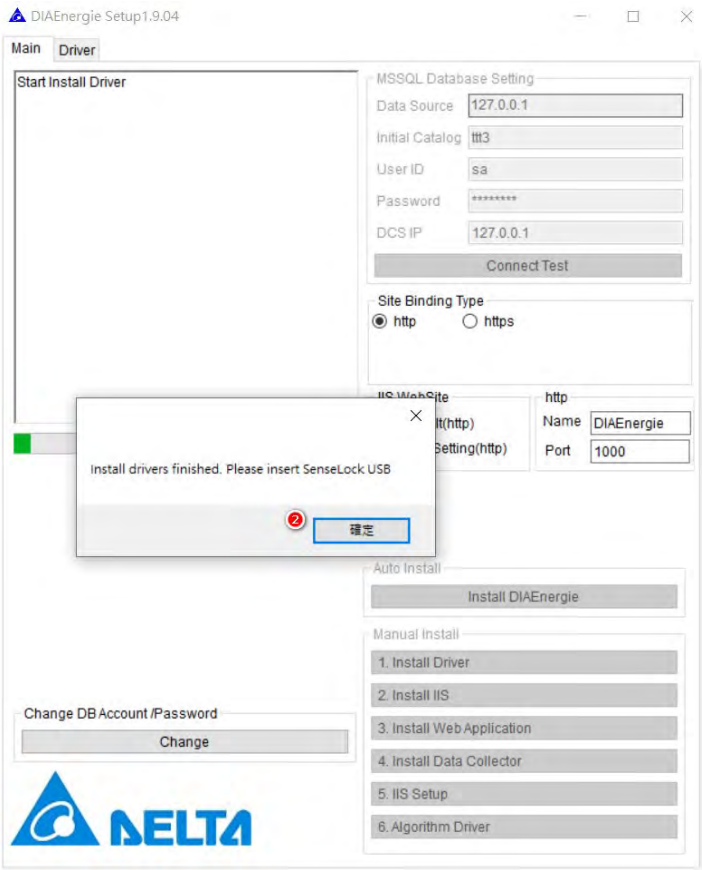
(2) "Install drivers finished. Please insert SenseLock USB" box shows up and then please click "OK" button.

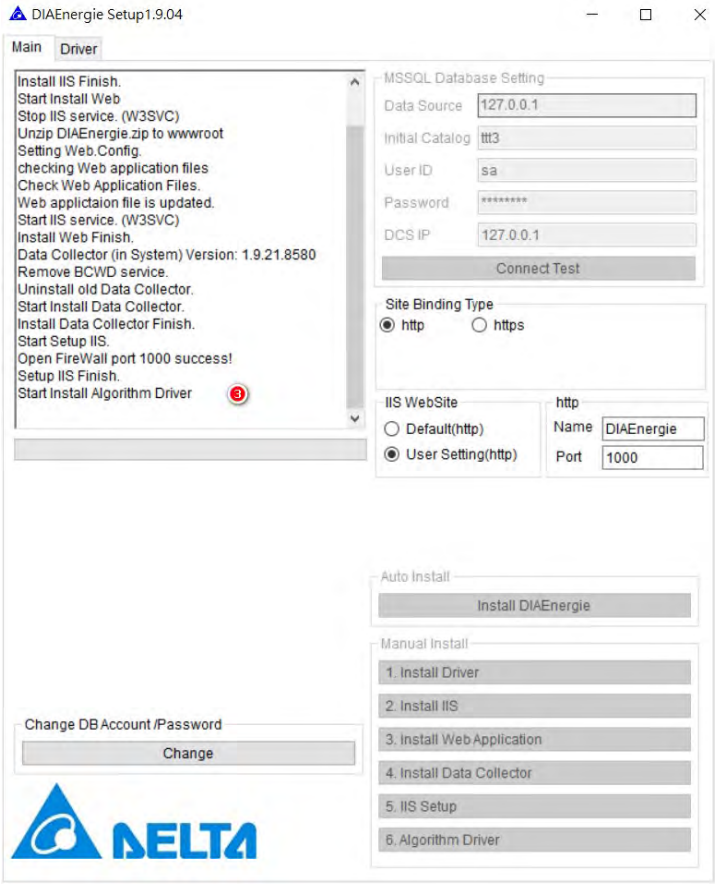
(3) Here you can see which actions have been done and which actions are being performed now.

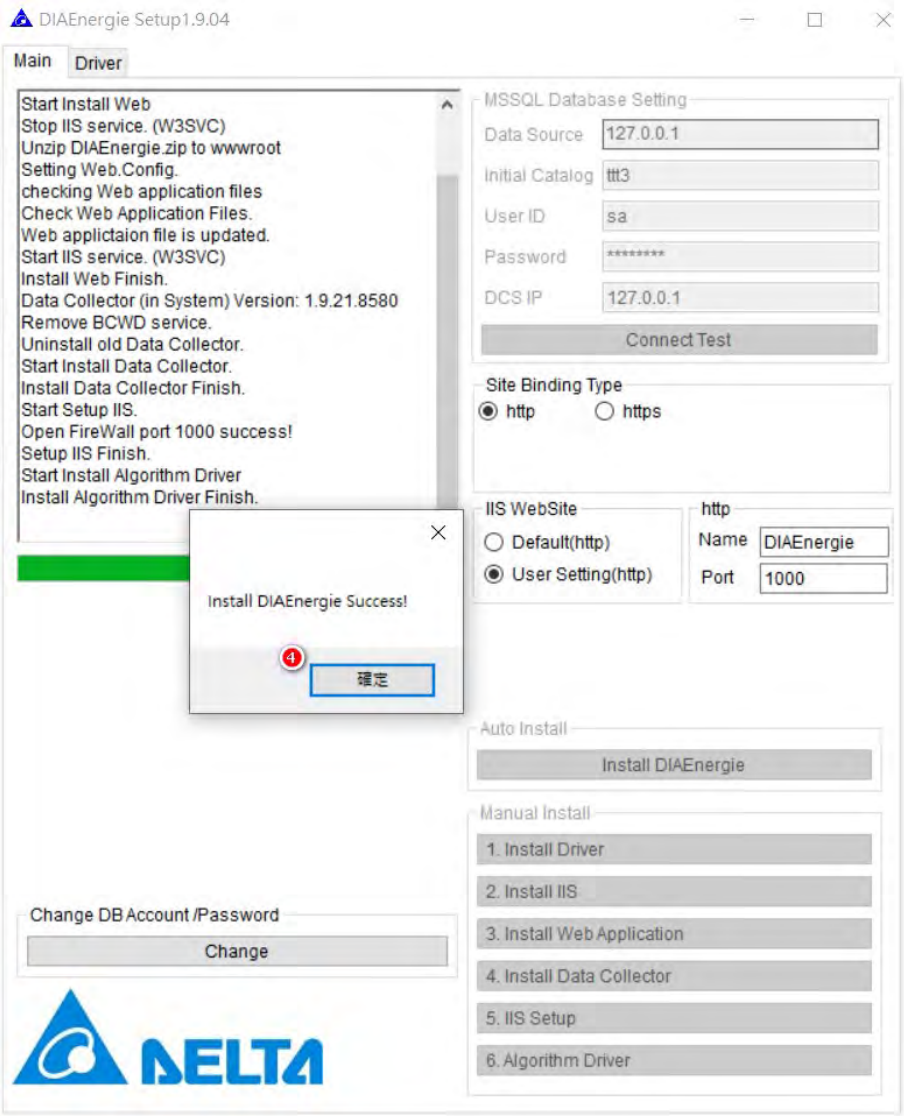
(4) When the installation is completed, the reminder box pops up to prompt you.

(5) In this example, DIAEnergie Web is installed at the local host port 1000. Open your browser and type http://localhost:1000, then the DIAEnergie Web login screen will appear for login.




DIAEnergie Setup1.9.04
Main
Driver
Start Install Driver
MSSQL Database Setting
Data Source
127.0.0.1
Initial Catalog
ttt3
User ID
sa
Password
********
DCS IP
127.0.0.1
Connect Test
Site Binding Type
http
https
IIS WebSite
http
Name
DIAEnergie
Port
1000
Install drivers finished. Please insert SenseLock USB
2
確定
Auto Install
Install DIAEnergie
Manual Install
1. Install Driver
2. Install IIS
3. Install Web Application
4. Install Data Collector
5. IIS Setup
6. Algorithm Driver
Change DB Account /Password
Change
DELTA


DIAEnergie Setup1.9.04
Main
Driver
Install IIS Finish.
Start Install Web
Stop IIS service. (W3SVC)
Unzip DIAEnergie.zip to wwwroot
Setting Web.Config.
checking Web application files
Check Web Application Files.
Web applictaion file is updated.
Start IIS service. (W3SVC)
Install Web Finish.
Data Collector (in System) Version: 1.9.21.8580
Remove BCWD service.
Uninstall old Data Collector.
Start Install Data Collector.
Install Data Collector Finish.
Start Setup IIS.
Open FireWall port 1000 success!
Setup IIS Finish.
Start Install Algorithm Driver
3
MSSQL Database Setting
Data Source
127.0.0.1
Initial Catalog
ttt3
User ID
sa
Password
********
DCS IP
127.0.0.1
Connect Test
Site Binding Type
http
https
IIS WebSite
Default(http)
User Setting(http)
http
Name
DIAEnergie
Port
1000
Auto Install
Install DIAEnergie
Manual Install
1. Install Driver
2. Install IIS
3. Install Web Application
4. Install Data Collector
5. IIS Setup
6. Algorithm Driver
Change DB Account /Password
Change
DELTA


DIAEnergie Setup1.9.04
Main
Driver
Start Install Web
Stop IIS service. (W3SVC)
Unzip DIAEnergie.zip to wwwroot
Setting Web.Config.
checking Web application files
Check Web Application Files.
Web applictaion file is updated.
Start IIS service. (W3SVC)
Install Web Finish.
Data Collector (in System) Version: 1.9.21.8580
Remove BCWD service.
Uninstall old Data Collector.
Start Install Data Collector.
Install Data Collector Finish.
Start Setup IIS.
Open FireWall port 1000 success!
Setup IIS Finish.
Start Install Algorithm Driver
Install Algorithm Driver Finish.
MSSQL Database Setting
Data Source
127.0.0.1
Initial Catalog
ttt3
User ID
sa
Password
********
DCS IP
127.0.0.1
Connect Test
Site Binding Type
http
https
IIS WebSite
Default(http)
User Setting(http)
http
Name
DIAEnergie
Port
1000
Install DIAEnergie Success!
4
確定
Auto Install
Install DIAEnergie
Manual Install
1. Install Driver
2. Install IIS
3. Install Web Application
4. Install Data Collector
5. IIS Setup
6. Algorithm Driver
Change DB Account /Password
Change
DELTA

Delta
localhost:1000
Delta Industrial Automation
DIAEnergie
使用螢幕小鍵盤
語系切換(Language):
繁體中文
登 入

**Manual Install**

12. **Install Driver**：Install the driver for the SMS device.

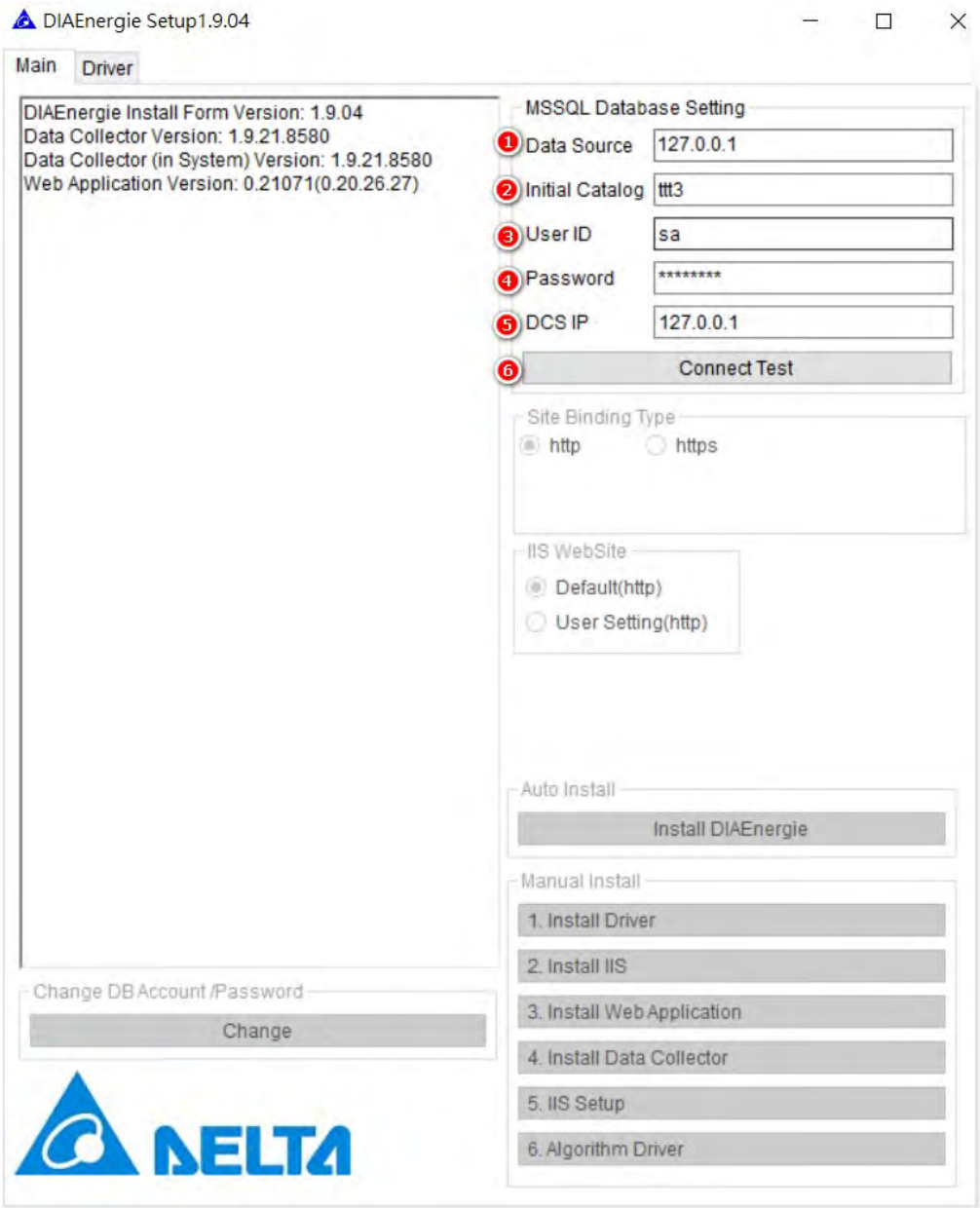
13. **Install IIS**：Enable Windows IIS Feature.

14. **Install Web Application**：Install the Web application for DIAEnergie.

15. **Install Data Collector**：Install the Data Collection application for DIAEnergie.

16. **IIS Setup**：Perform the Website-related setup.

17. **Algorithm Driver**：Install R.



1. **Data Source:** Please enter the character string displayed in the field of Server Name when successfully connecting to Microsoft SQL Server Management Studio.

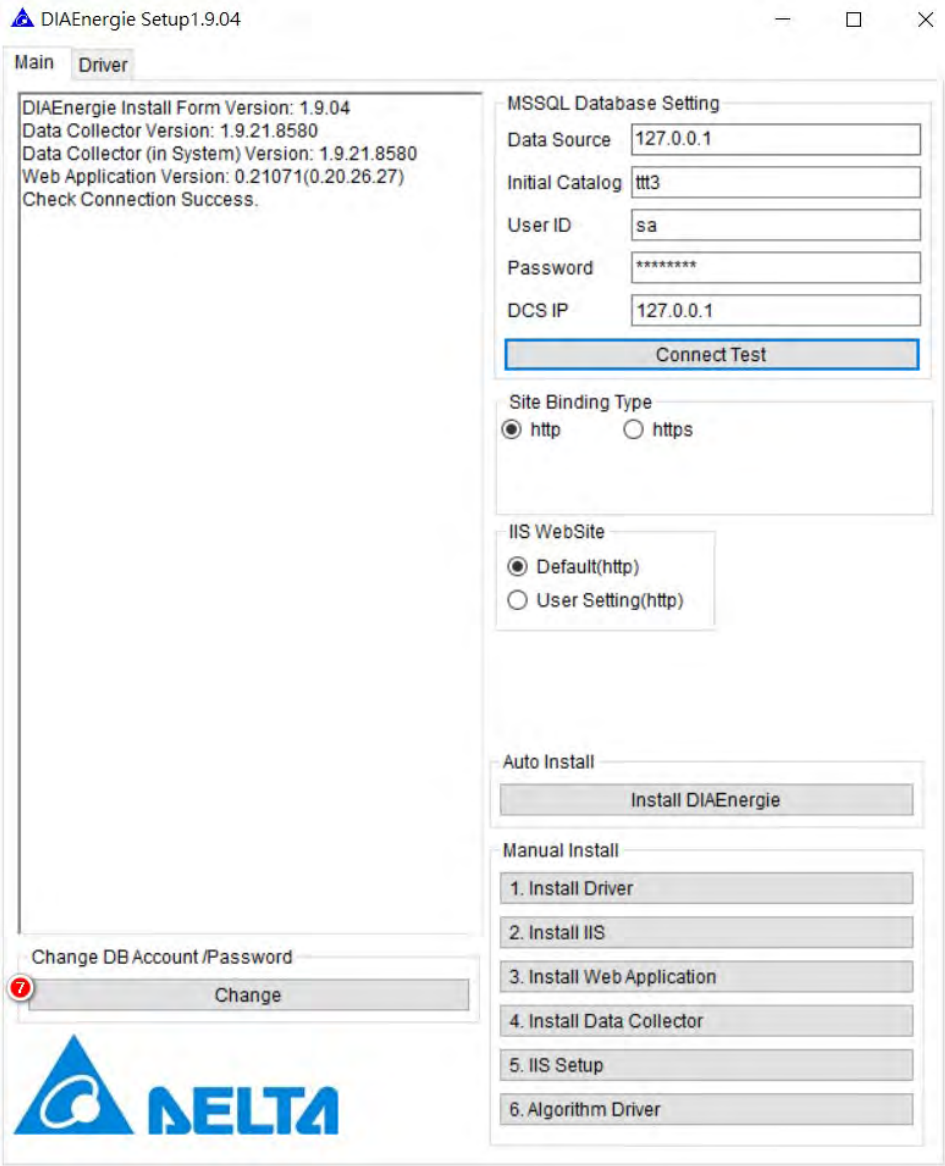
2. **Initial Catalog:** Please enter the database for DIAEnergie created under the SQL server.

3. **User ID:** Please enter the string displayed in Login field when successfully connecting to Microsoft SQL Server Management Studio.

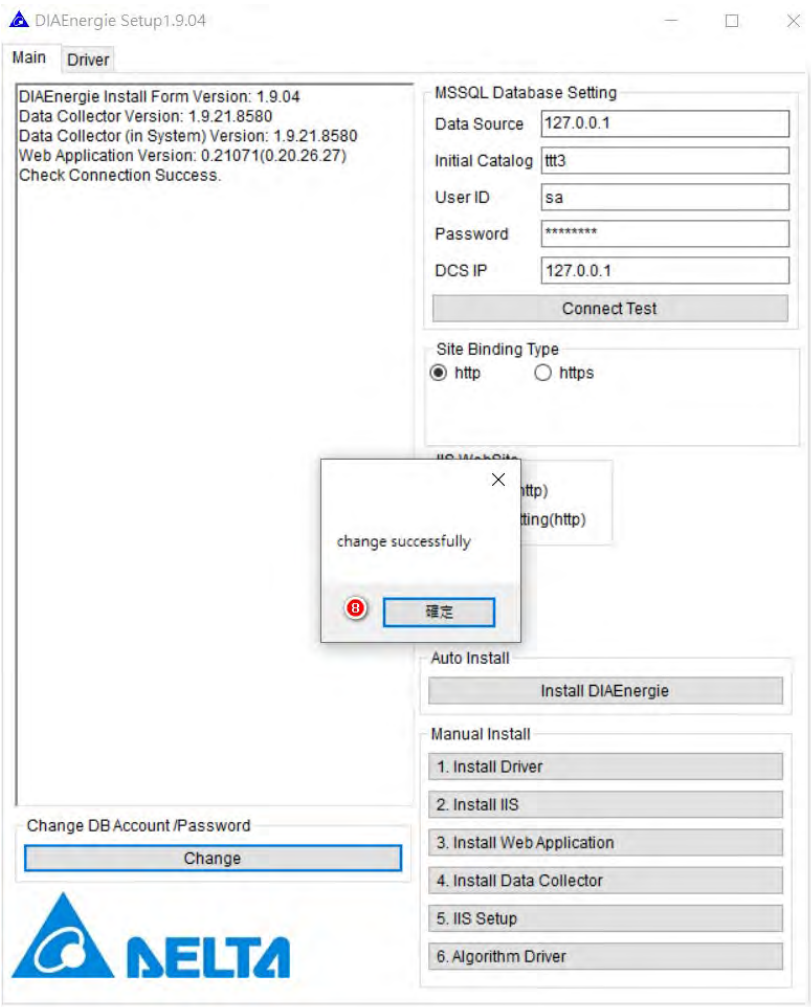
4. **Password:** Please enter the string displayed in Password field when successfully connecting to Microsoft SQL Server Management Studio.

5. **DCS IP:** The default is set to 127.0.0.1. There's no need to be changed.

6. **Connect Test:** DIAEnergie can be installed only after the connection test is passed.



7. **Change:** Update the new account User ID and Password in the product's connection information and then restart the product service.




8. After the change is completed, you will see 'Change successfully'.

## 11.5 Descriptions on Fields Uploaded to Azure IoT Hub



1. The JSON format that DIAEnergie uses to upload data to Azure IoT Hub is as follows.


```
{"equipName": "meter1",
  "equipId":1,
  "tagName":"kwh",
    "tagId":1,
    “ts”:"2020-03-01 00:00:00" ,
    "result": 1.1,
    "datatype":0},
```


❶ equipId: Eqipment ID. But it is 0 for calculation tags.

❷ equipName: Eqipment name. But it is null for calculation tags.

❸ tagId: Tag ID

❹ tagName: Tag name

❺ ts: The time when values are stored for a tag. The time is a local time (UTC)

❻ result: The value stored for a tag.

❼ datatype: Data type. The value 0 stands for Raw Data and 1 for Minute Data.

## 11.6 IIS Https Setup

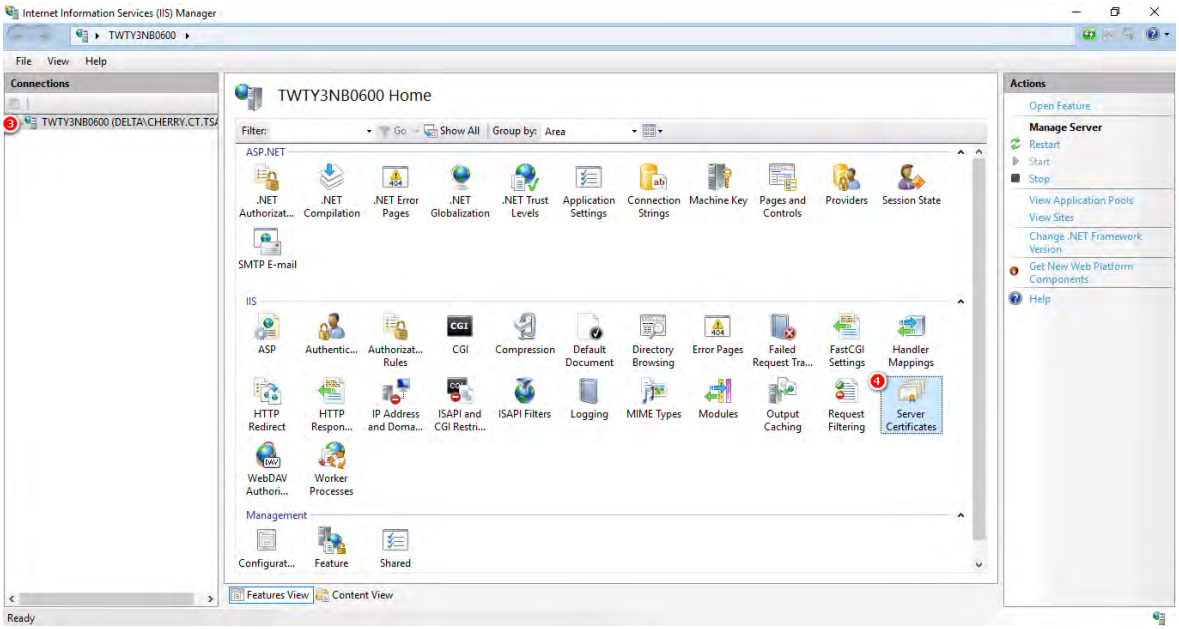
After DIAEnergie software has been installed, the default protocol for the website is **http**, mainly used for internal and test purposes. Considering the information security, make sure that **https** is enabled rather than http. Here are the steps to enable https. But you must apply for a legal and valid certificate before enabling https. Note that an IP address cannot be used to access DIAEnergie website and applying for a legal domain name is required as well.

1. Click on **Windows Administrative Tools**.

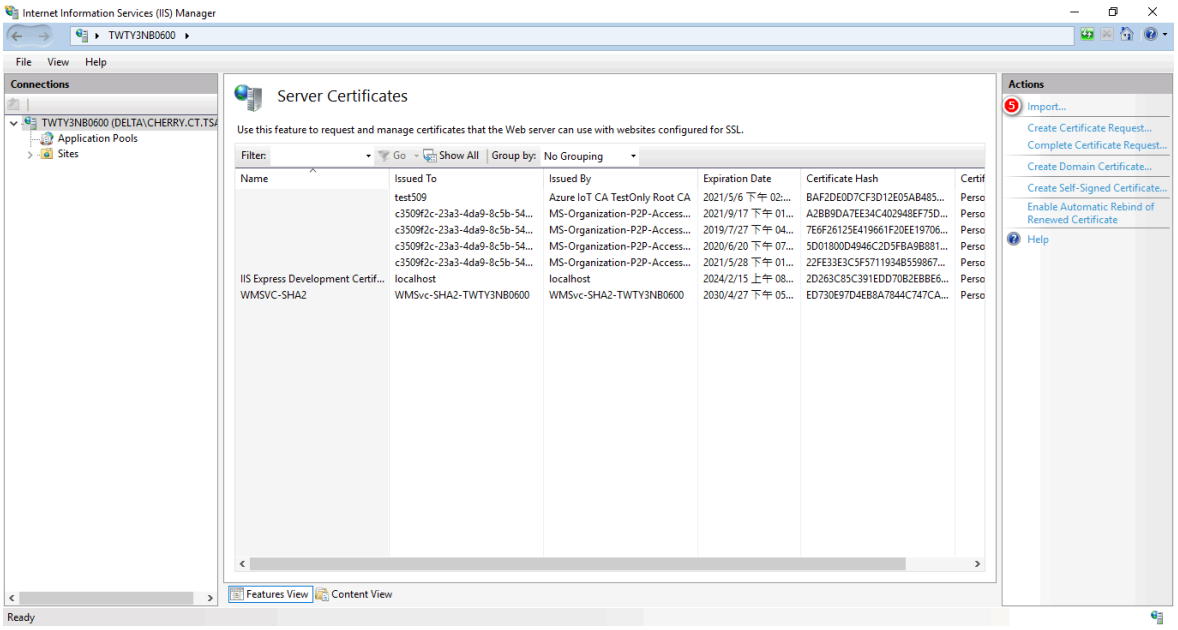
2. Then select **Internet Information Services (IIS) Manager**.

3. Click your computer node on the left side of the following window.

4. Select **Server Certificates** in the following window.




5. Click **Import** on the right side of the following window.



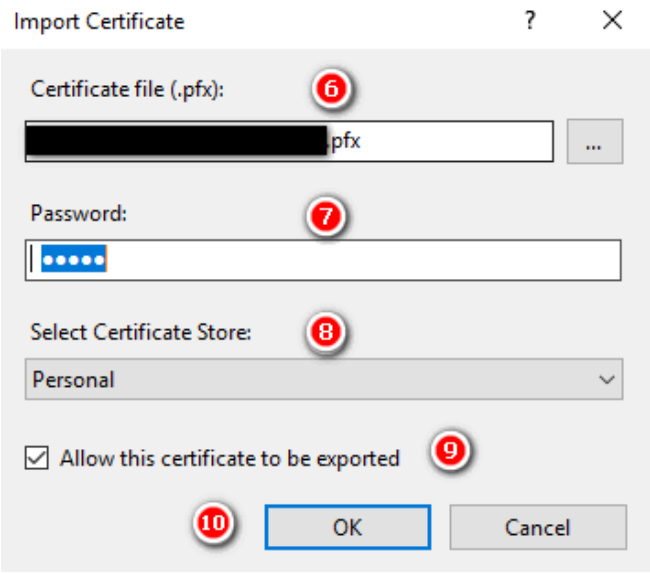

6. Certificate file (.pfx): Select the certificate file you have applied for. Only pfx files are accepted by IIS.

7. Password: Enter the certificate password.

8. Select Certificate Store: **Personal**.

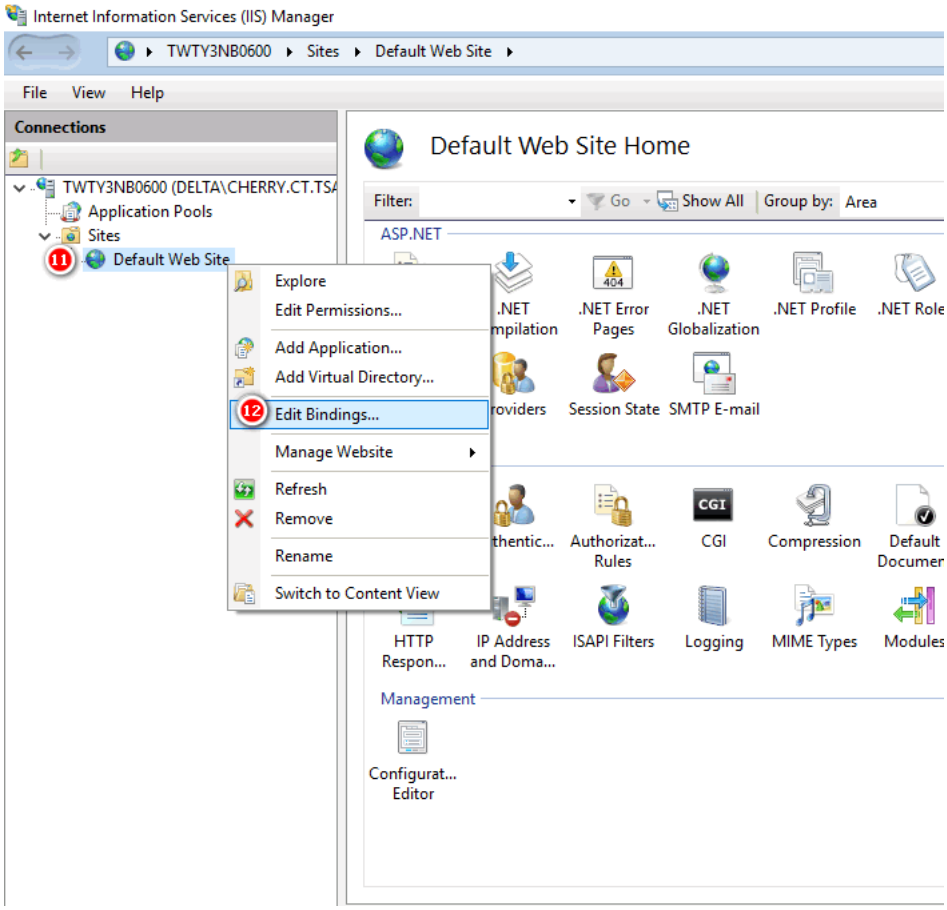
9. Allow this certificate to be exported: the check box selected by default.

10. Click **OK** button.

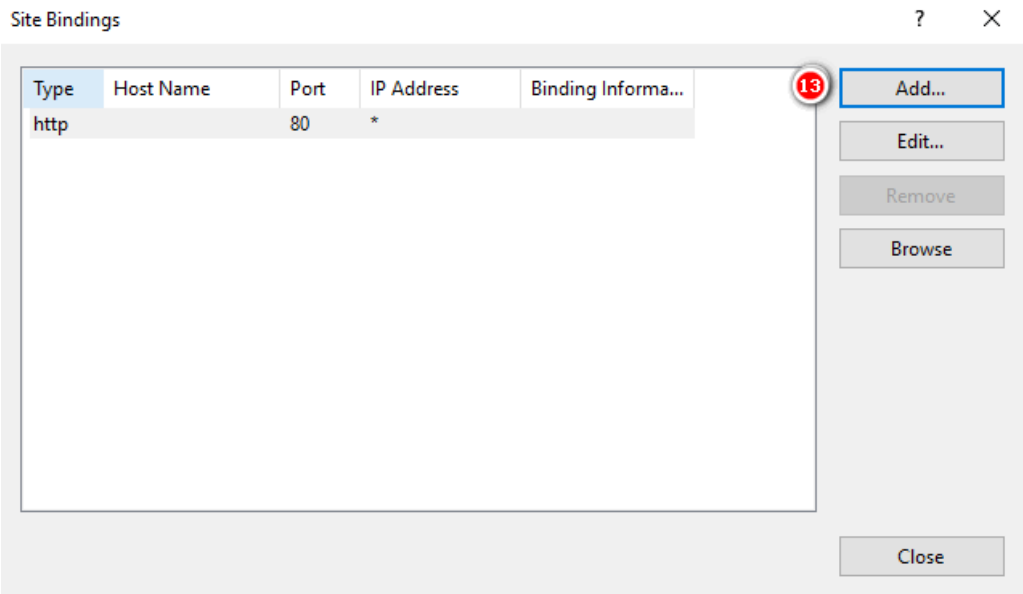



11. Find out and right-click the website "**Default Web Site**" for DIAEnergie.

12. Click "**Edit Binding...**" on the context menu that pops up.



13. Click **Add** button.



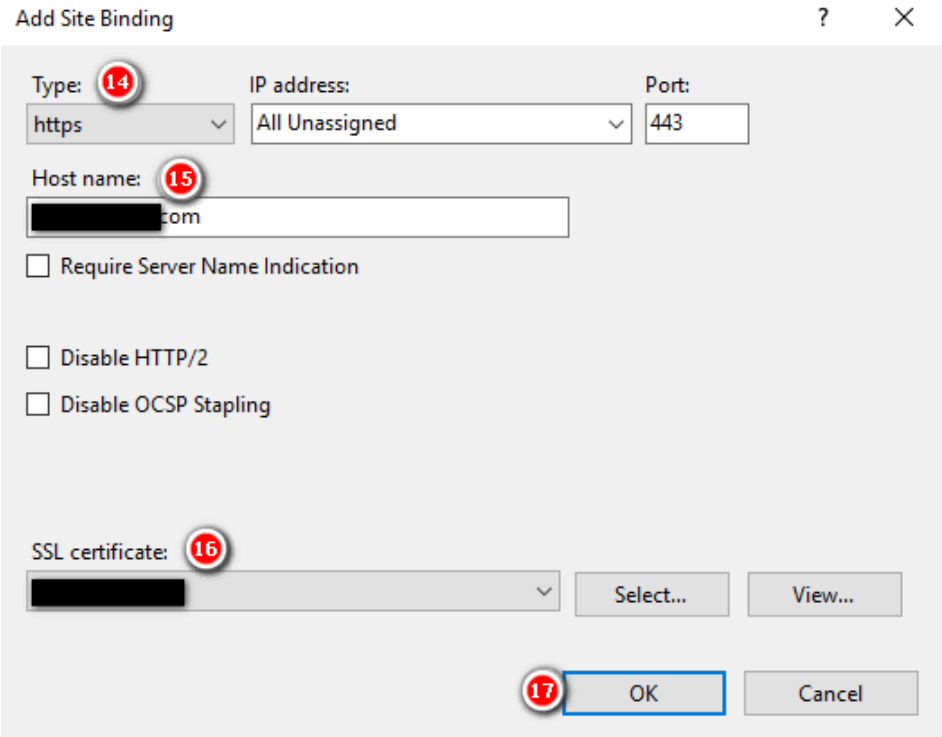

14. **Type**: Choose **https**. Then 443 comes out automatically in **Port** field.

15. **Host name**: Enter the domain name.

16. **SSL certificate**: Choose the certificate that you just imported.

17. Click **OK** button.

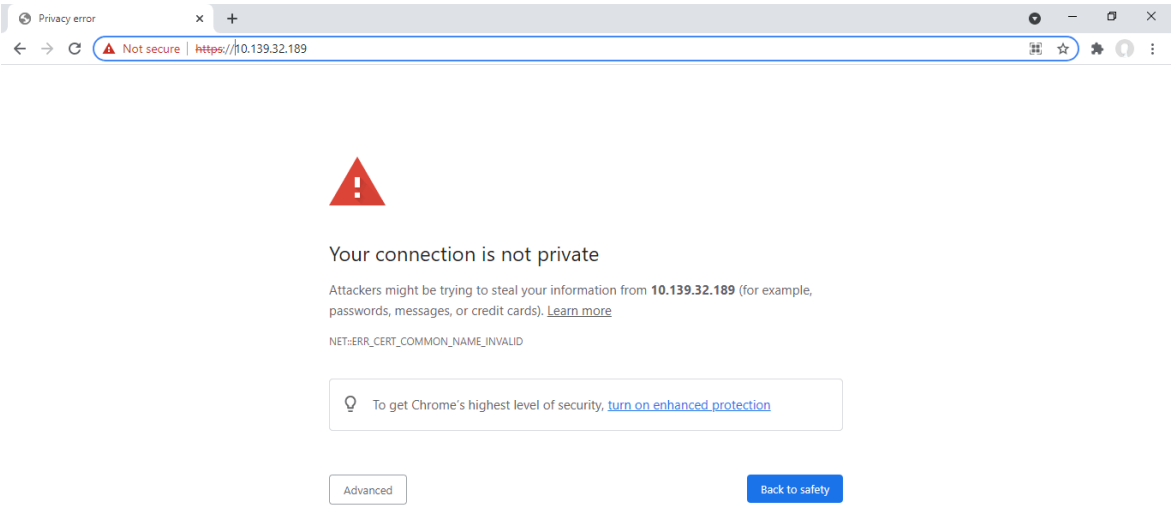
Go to the web browser, using the domain name you applied for (https://), which is to use **https** for website communication.



In this example, we use https://IP:Port to verify whether the website supports the https protocol. For external use, please do use https://hostname.



**Note:** If the file is an untrusted self-signed certificate (e.g., test certificate file under the default path of the system), the following security alert screen will appear at the beginning, which will also affect the running of the system.



Smarter. Greener. Together.

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Mount Waverley, Victoria 3149 Australia
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