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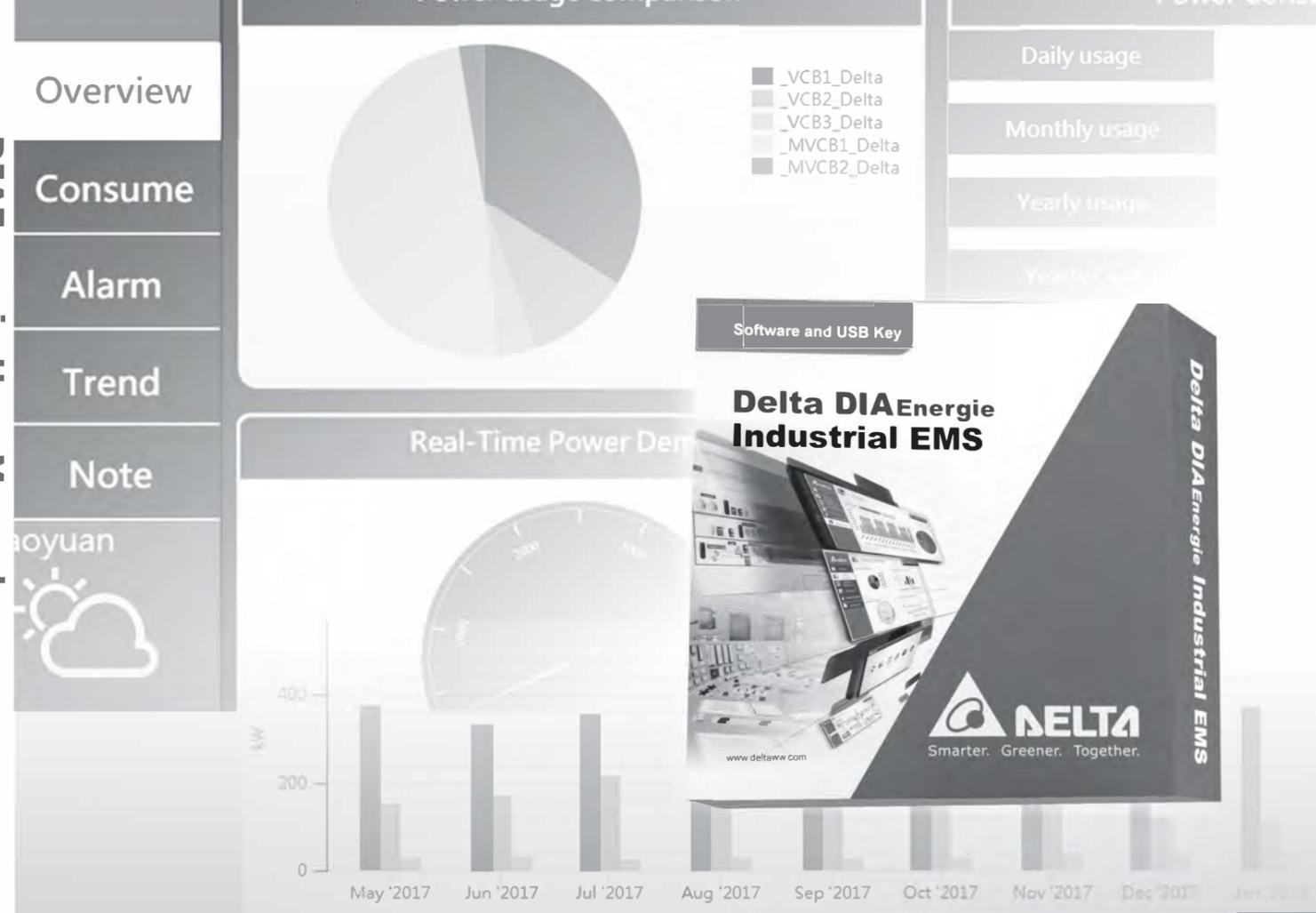
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DIAEnergie User Manual



DIAEnergie User Manual

www.deltaww.com



DIAEnergie User Manual

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DIAEnergie User Manual

Contents

Chapter 1 Introduction

1.1	Introduction	1-2
1.2	Login Page	1-2
1.3	System Main Page	1-3
1.4	Main Functions	1-3
1.5	Shortcut Menu	1-6
1.5.1	Event Notification	1-6
1.5.2	User Guide	1-6
1.5.3	Languages.....	1-7
1.5.4	User Management	1-8

Chapter 2 User Management

2.1	Introduction	2-2
2.2	Authorization Management	2-2
2.2.1	Add/Edit/Delete User Account	2-2
2.2.2	Search Conditions	2-3
2.2.3	Account List.....	2-3
2.3	Authority Group	2-3
2.3.1	Search Conditions	2-4
2.3.2	Authority Group List	2-4

Chapter 3 Energy Dashboard

3.1	Introduction	3-2
3.2	Hierarchy	3-2
3.2.1	Establish Hierarchy	3-3
3.3	Device Topology	3-3
3.3.1	Toolbar	3-4
3.3.2	Device Types and Description	3-5
3.3.3	Device Types and Settings	3-11
3.3.4	Page Function.....	3-14
3.4	Tag Mapping	3-14
3.4.1	Add Tags.....	3-15
3.4.2	Alarm Settings.....	3-16
3.4.3	Page Description.....	3-17

3.4.4	Register	3-17
3.4.5	Batch Export/Import	3-18
3.5	Factory Setting	3-18
3.6	Source Configure	3-20
3.6.1	General Settings.....	3-21
3.6.2	Overview	3-21
3.6.3	Energy Consumption	3-25
3.6.4	Alarm.....	3-28
3.6.5	Trends.....	3-29
3.6.6	Notes	3-30

Chapter 4 UI Design and Preview

4.1	Introduction	4-2
4.2	UI Design.....	4-2
4.2.1	New Page	4-3
4.2.2	Toolbar.....	4-3
4.3	Elements Description	4-3
4.3.1	Common Tools.....	4-3
4.3.2	Graph.....	4-12
4.3.3	Control Items.....	4-18
4.3.4	Real-time Data	4-20

Chapter 5 Basic Query

5.1	Historical Data – Multi-Tag	5-2
5.1.1	Setup.....	5-2
5.1.2	Time	5-3
5.1.3	Chart Type.....	5-3
5.1.4	Query/Export Chart/ Export Excel	5-4
5.2	Historical Data- Multi-Time Period	5-4
5.2.1	Query Condition	5-4
5.2.2	Date Format.....	5-5
5.2.3	Chart Type.....	5-5
5.2.4	Query/Export Chart/ Export Excel	5-6

Chapter 6 Advanced Query

6.1	Introduction	6-2
6.1.1	Regression Analysis Report.....	6-2

6.1.2	Data Import	6-4
6.1.3	Configuration.....	6-5
6.2	Energy Saving Analysis	6-5
6.2.1	Energy Saving Analysis	6-5
6.2.2	Export Excel / Import File.....	6-6
6.2.3	Regression Formula	6-6
6.3	EnPI	6-7
6.3.1	Data Source	6-8
6.3.2	Baseline Source / Date Format	6-9
6.3.3	Export Chart/ Excel	6-10
6.4	Electricity Tariff Analysis	6-10
6.4.1	Query Condition	6-11
6.4.2	Evaluation Method / Date Format	6-11
6.4.3	Query	6-12
6.4.4	Export Chart / Excel	6-13
6.4.5	Open Setting Page.....	6-13

Chapter 7 Alarm Management

7.1	Alarm Notification.....	7-1
7.2	System Notification	7-3
7.3	Alarm Group	7-4

Chapter 8 System Setup

8.1	Server Setting	8-2
8.1.1	Languages	8-2
8.1.2	SMTP Setting.....	8-3
8.1.3	Update Rate	8-3
8.1.4	Clear History Data.....	8-3
8.2	Network Setting	8-4
8.2.1	Proxy Setting	8-4
8.2.2	MODBUS TCP Server Setting	8-4
8.3	System State	8-5
8.4	Hierarchy	8-6
8.5	Energy Type	8-7
8.6	Energy Circuit	8-8

8.7	Factory Setting	8-9
8.8	Calendar	8-10
8.9	Energy Segment	8-11
8.10	Alarm Setting	8-12
	8.10.1 SMS Device Settings	8-12
8.11	Energy Conversion Coefficient	8-15
8.12	Fee Setting	8-15
8.13	Units	8-16
8.14	Demand Control	8-17
8.15	Shift Setting	8-18

Chapter 9 System Log Configuration

9.1	Log File Location	9-2
9.2	Log Files	9-2
	9.2.1 Main Log File.....	9-2
	9.2.2 Description of Subfolders in Log files.....	9-3
	9.2.3 Log File Descriptions.....	9-4

Chapter 10 Troubleshooting

10.1	Device Connection and Communication	2
	10.1.1 Device Disconnection / Tag Disconnected Status.....	2
	10.1.2 Tag Status is Green, Time Not Updated	4
10.2	Operating System, Web Server, Database in IIS	5
	10.2.1 After login, error web page displayed	5
	10.2.2 Type account and password but unable to access the software	6
	10.2.3 No system information recorded during a specific time	8

Appendix Calculation

A.1	Introduction	2
A.2	Procedure	3
A.3	Internal-Tag	4

Chapter 1 Introduction to DIAEnergie

Table of Contents

- 1.1 Introduction 1-2
- 1.2 Login Page 1-2
- 1.3 System Main Page..... 1-3
- 1.4 Main Functions 1-3
- 1.5 Shortcut Menu 1-6
 - 1.5.1 Event Notification 1-6
 - 1.5.2 User Guide 1-6
 - 1.5.3 Languages 1-7
 - 1.5.4 User Management..... 1-8

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.

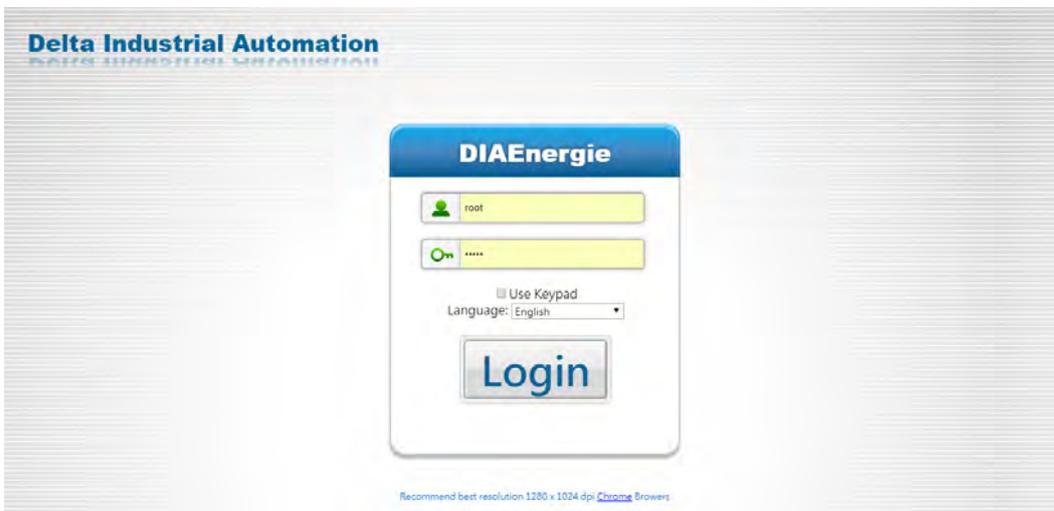
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In this chapter, we will explain the major functions and use of DIAEnergie for users to have a better understanding of the system.

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/>.



 <p>The login form features a blue header with the 'DIAEnergie' logo. Below it are two yellow input fields: the first contains the text 'root' and is preceded by a person icon; the second contains six dots and is preceded by a key icon. A checkbox labeled 'Use Keypad' is positioned above a language dropdown menu currently set to 'English'. A large 'Login' button is centered below these elements. At the bottom, a note reads 'Recommend best resolution 1280 x 1024 dpi Chrome Browsers'.</p>	<ul style="list-style-type: none"> ● Input User ID ● Input User Password ● Use Keypad: Enable virtual keyboard ● Multiple Languages: Traditional Chinese / Simplified Chinese / English
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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
 <p data-bbox="240 600 416 685">Device Topology</p>	<p data-bbox="515 479 1339 539">Easy drag-and-drop design: users can setup device-to-device communication.</p>
 <p data-bbox="256 965 421 1050">Tag Mapping</p>	<p data-bbox="515 848 1339 909">Mapping & data acquisition: the system categorizes the tags from Device Topology.</p>
 <p data-bbox="256 1346 427 1386">UI Design</p>	<p data-bbox="515 1144 1339 1205">Dynamic user interface with customized webpage design. Featuring the following UI Design components :</p> <ul data-bbox="515 1218 911 1335" style="list-style-type: none"><li data-bbox="515 1218 820 1249">● Diagram components<li data-bbox="515 1258 807 1290">● Control components<li data-bbox="515 1299 911 1335">● General graphic components
 <p data-bbox="268 1704 408 1744">Preview</p>	<p data-bbox="515 1574 1339 1635">Display all components mentioned in the UI Design for users to create their own page.</p>

 <p>Basic Query</p>	<p>Provides query conditions for historical data search. The results can export into Excel files or image files.</p>
 <p>Advance Query</p>	<p>Offers all kinds of energy performance analytics for enhanced energy efficiency. The results can export into Excel files or image files.</p>
 <p>Alarm</p>	<p>Users can setup alarm event based on their query condition including:</p> <ol style="list-style-type: none">1. The alarm query and description base on tags. (Setup Tag Mapping first).2. Report abnormal system events.
 <p>User Management</p>	<p>Users with admin authority can access management. Admin default ID: root / password: admin.</p>
 <p>Setting</p>	<p>Presents server settings (e.g. Network Setting / Calendar / Energy Type) for users.</p>



Energy Dashboard

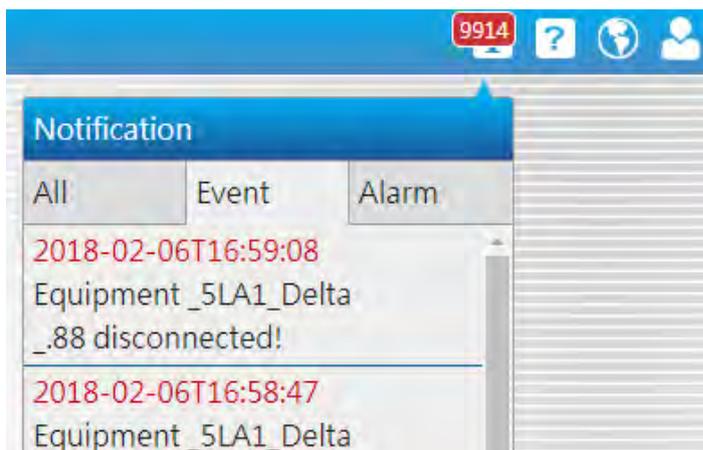
Users can complete the energy dashboard page setting via steps from Hierarchy in domains, Device Topology, Tag Mapping, Factory Setting and Source Configure.

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

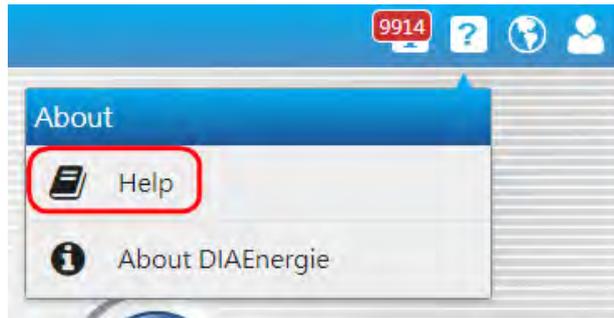
List all login User IDs and up to 20 historical data collected in 7 days. These historical data can be categorized into “Event” and “Alarm”. (The number below indicated on the upper-right is the accumulated number of alarms.)



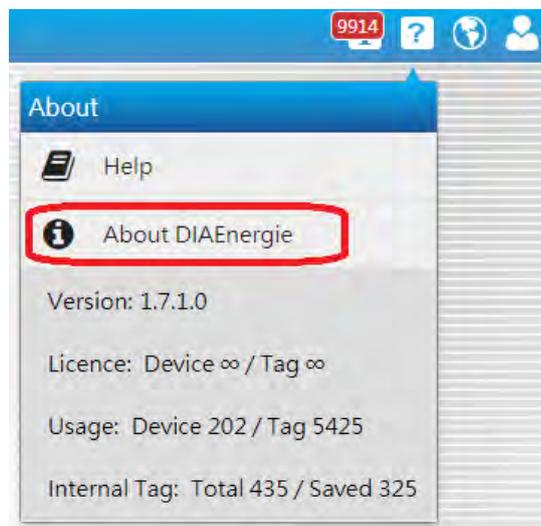
- **Event**
Contains all user ID login records and disconnected records.
- **Alarm**
Provides records of alarm tags and messages.

1.5.2 User Guide

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

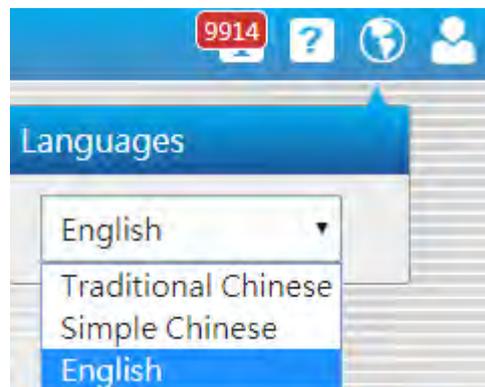


Select "About DIAEnergie" to view the software Version, number of License and Usage of device / tag as well as Internal Tag status.



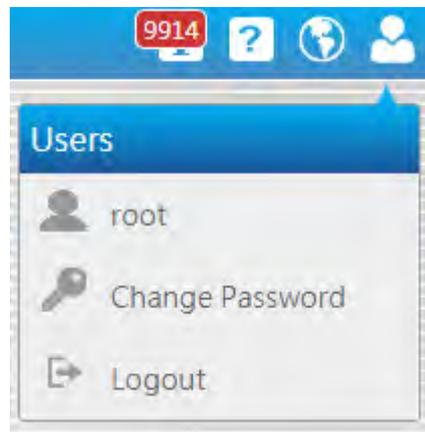
1.5.3 Languages

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.



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Chapter 2 User Management

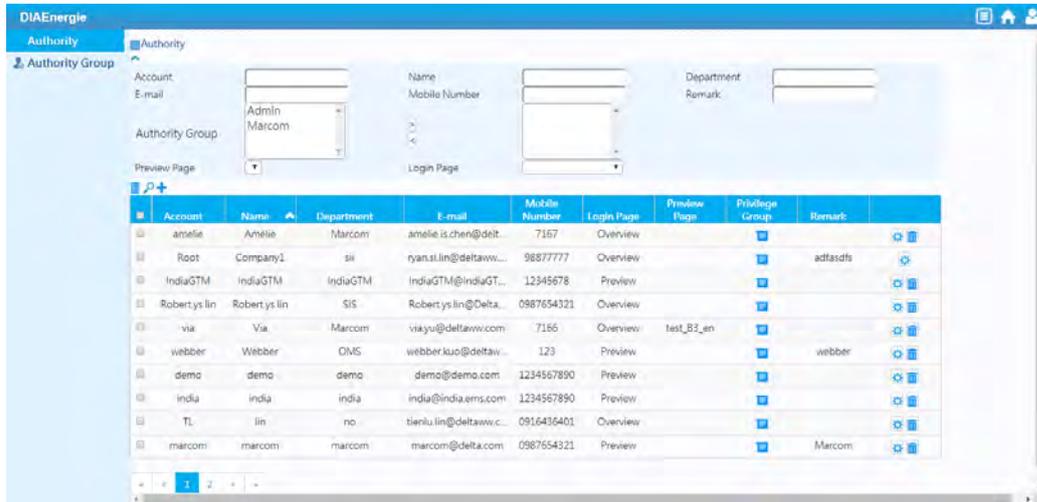
Table of Contents

- 2.1 Introduction..... 2-2**
- 2.2 Authorization Management 2-2**
 - 2.2.1 Add/Edit/Delete User Account..... 2-2
 - 2.2.2 Search Conditions..... 2-3
 - 2.2.3 Account List 2-3
- 2.3 Authority Group 2-3**
 - 2.3.1 Search Conditions 2-4
 - 2.3.2 Authority Group List 2-4

2.1 Introduction

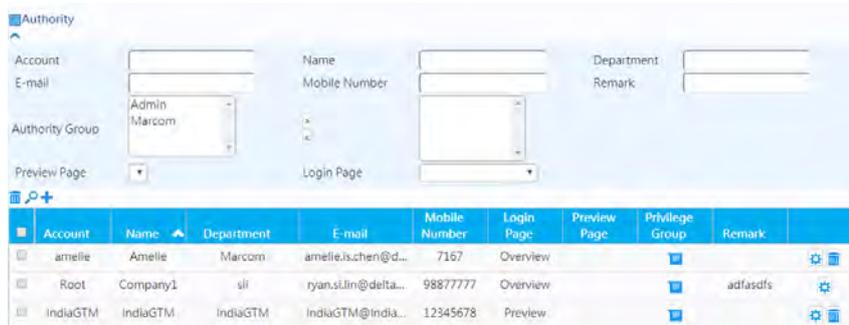
User Management function allows users to manage the Software login data with listed user accounts / password information and oversee assigned web page authorization. Users can also create multiple accounts to view specified energy dashboard web pages.

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



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 want to be assigned to other authorized group, please refer to section 2.3. Select a group and click **>** to connect the account with the group, click **<** to disconnect the account from the group. The default login page is the Main Page and will be displayed when users enter the system.

Click  to edit new user account settings.

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

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.

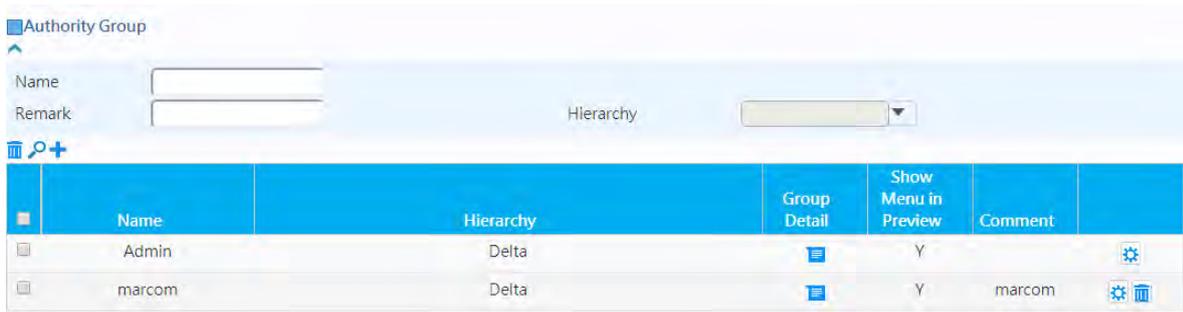
2.2.3 Account List

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

Account	Name	Department	E-mail	Mobile Number	Login Page	Preview Page	Privilege Group	Remark	
amelie	Amelie	Marcom	amelie.is.chen@d...	7167	Overview				 
Root	Company1	sii	ryan.sl.in@delta...	98877777	Overview	用電總覽		adfasdfs	
IndiaGTM	IndiaGTM	IndiaGTM	IndiaGTM@India...	12345678	Preview	PHP_各層...			 
Robertys.lin	Robertys.lin	SIS	Robertys.lin@Del...	0987654321	Overview				 
via	Via	Marcom	via.yu@deltaww.c...	7166	Overview	test_B3_en			 
webber	Webber	OMS	webber.kuo@delt...	123	Preview	桃三用電總...		webber	 
demo	demo	demo	demo@demo.com	1234567890	Preview	用電總覽			 
india	india	india	india@india.ems...	1234567890	Preview	桃三用電總...			 
TL	lin	no	tienlu.lin@deltaw...	0916436401	Overview				 
marcom	marcom	marcom	marcom@delta.c...	0987654321	Preview	PHP_各層...		Marcom	 

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.



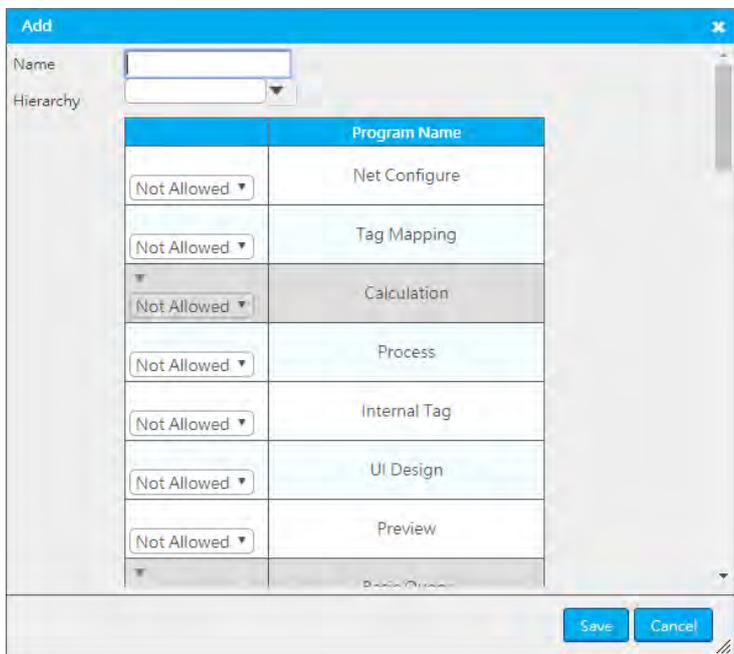
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2.3.1 Search Conditions

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.

2.3.2 Authority Group List

On the lower half of the Authorization Management web page, a list of the current user accounts are provided for users to search. When the admin (or a person assigned to the administrator account) needs to create or edit the authority level, they must login with the default account/password. Then, users can add authority groups and set up web page authority levels (Set: Allows editing; View: Viewing ONLY; Not Allowed: No editing or viewing of the web page.); Or Browse Authority Group and Edit/Delete saved authority groups.



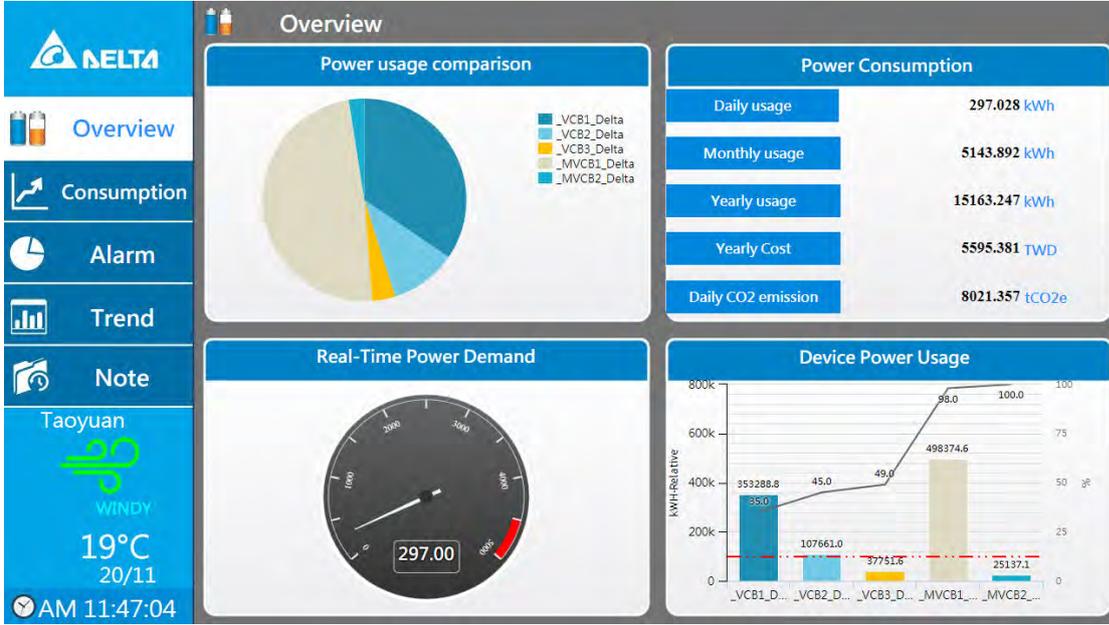
Chapter 3 Energy Dashboard

Table of Contents

3.1	Introduction	3-2
3.2	Hierarchy.....	3-2
3.2.1	Establish Hierarchy	3-3
3.3	Device Topology	3-3
3.3.1	Toolbar.....	3-4
3.3.2	Device Types and Description.....	3-5
3.3.3	Device Types and Settings	3-11
3.3.4	Page Function.....	3-14
3.4	Tag Mapping.....	3-14
3.4.1	Add Tags	3-15
3.4.2	Alarm Settings.....	3-16
3.4.3	Page Description.....	3-17
3.4.4	Register.....	3-17
3.4.5	Batch Export/Import	3-18
3.5	Factory Setting	3-18
3.6	Source Configure	3-20
3.6.1	General Settings.....	3-21
3.6.2	Overview	3-21
3.6.3	Energy Consumption	3-25
3.6.4	Alarm.....	3-28
3.6.5	Trends.....	3-29
3.6.6	Notes	3-30

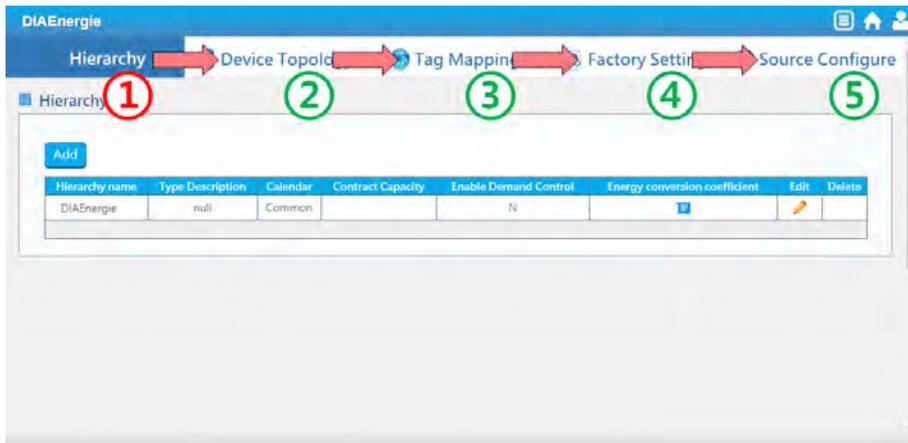
3.1 Introduction

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.



3.2 Hierarchy

Hierarchy is the first step for dashboard setting. The system devices can be effectively categorized based on the factory environment. After adding the hierarchy, click **Next** to configure network topology.



3.2.1 Establish Hierarchy

Click **Add** to establish new hierarchy and use tools including  edit and  delete to categorize these specified domains based on user requirements with enhanced efficiency.

Hierarchy

Add

Hierarchy name	Type Description	Calendar	Contract Capacity	Enable Demand Control	Energy conversion coefficient	Edit	Delete
▼ Delta		Common		N			
▼ Taoyuan		Common		N			
▼ TY3		Common		N			
▼ RD_Building		Common		N			
7F		Common	123	Y			
2F		Common		N			
Dormitory		Common		N			

- **Hierarchy Name**
- **Parent Hierarchy:** Choose the top-level domain assigned to manage other subdomains.
- **Contract Capacity:** Contract capacity on power usage signed with Taiwan Power Company.
- **Enable Demand Control:** Click the box to edit the alarm value regarding the contract capacity.
- **Calendar:** User-defined calendar or default calendar.
- **Energy Conversion Coefficient:** Convert all energy into standard oil or coal coefficient.

Add Hierarchy ✕

Hierarchy name

Type Description

Parent Hierarchy ▼

Contract Capacity kW

Enable Demand Control

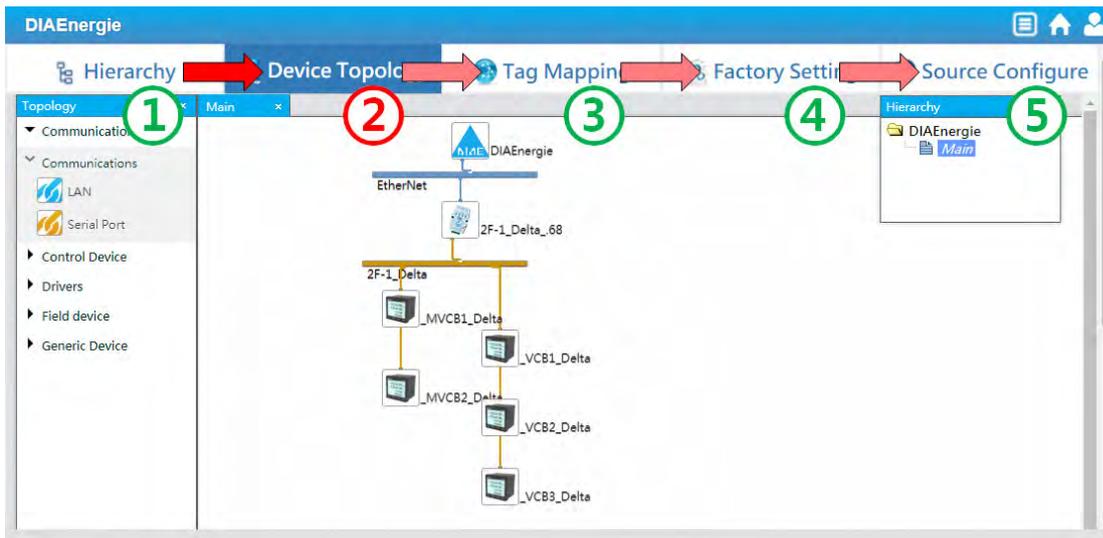
Calendar ▼

Energy conversion coefficient ▼

Save **Cancel**

3.3 Device Topology

The second step is Device Topology. Users can setup topology including network, serial port, power meter, programmable logic controller (PLC) or MODBUS. After adding the topology, click **Next** at the bottom of the web page to proceed with Tag Mapping. Or click **Previous** and return to Hierarchy.



Device Topology provides users with information on data acquisition and compatible network structures as well as to categorize them.

3

3.3.1 Toolbar

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 LAN Serial Port	The system requires networking for actual device-to-device communication.
Programmable Logic Controller DELTA PLC HMI DELTA HMI	Include devices like PLC and human machine interface (HMI).

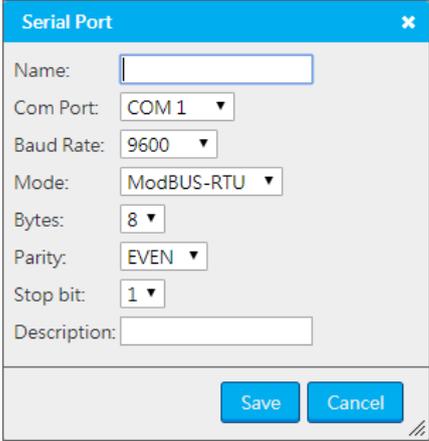
Device Type		Description
Drivers	Inverter  DELTA VFD	Devices include inverters.
Field Device	Gateway  IFD 9506 Gauge  DELTA Power Meter  Schneider Power Meter	Conversion devices can provide devices for communication protocols. For example, convert MODBUS Serial into MODBUS TCP.
Generic Device	Generic Device  Virtual Device  MODBUS Device  OPC Client Device  Database  DIALink	Generic device are used when the system does not support device-to-device communication.

3.3.2 Device Types and Description

3.3.2.1 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.

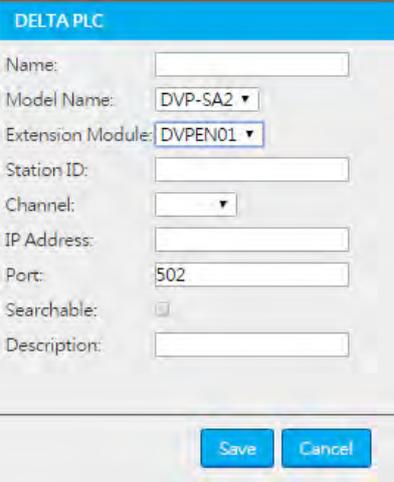
<div data-bbox="338 1503 759 1758"> <p>LAN</p> <p>Name: <input type="text"/></p> <p>Protocol: <input type="text" value="ModBus-TCP"/></p> <p>Description: <input type="text"/></p> <p><input type="button" value="Save"/> <input type="button" value="Cancel"/></p> </div>	<ul style="list-style-type: none"> ● LAN : The Internet Protocol (IP) need to be selected and key-in Name & Description.
---	--

	<ul style="list-style-type: none"> ● Serial Port :When using RS232/RS422/RS485 communication protocol, the Baud Rate, Bytes, Parity and Stop Bit setting need to match with the device parameter setting.
---	---

3.3.2.2 Control Device

3

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

<p>● Programmable Logical Controller – PLC </p>	
	<ul style="list-style-type: none"> ● 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. ● Station ID: Key-in the Station ID. ● IP Address : Setup PLC IP address and desired channels for connection.

● **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.

DELTA HMI

Name:

Model Name:

Station ID:

Channel:

IP Address:

Port:

Searchable:

Description:

- **Name:** Key-in the device name.
- **Channel:** Select a channel format.
- **IP Address:** Setup the Address for data acquisition.
- **MODBUS TCP Port:** The default is 502.

3.3.2.3 Drivers

● **Inverters** 

DELTA VFD

Name:

Model Name:

Station ID:

Channel:

Searchable:

Description:

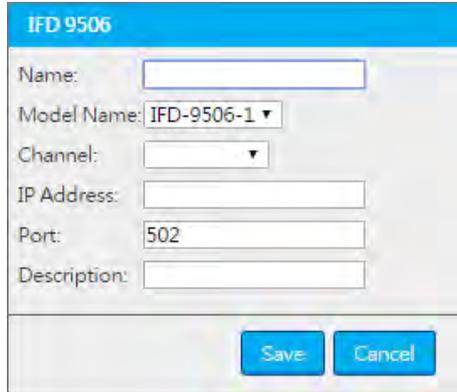
- **Name:** Key-in the device name.
- **Model Name:** The setting is based on the selected model, but related to system alarm setting.
- **Station ID:** Setup the ID for data acquisition.

3.3.2.4 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:

● **Converter** 

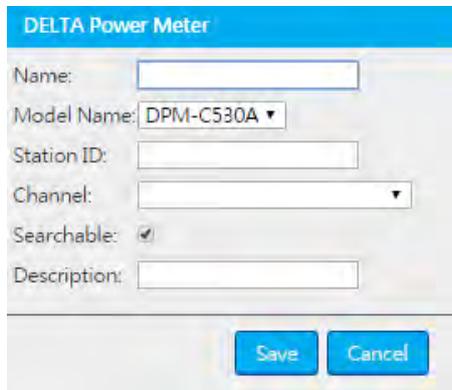
Delta IFD9506 features protocol conversion function that can convert MODBUS RTU serial communication into MODBUS TCP protocol. If the on-site equipment uses converters of other brands, the function can still be completed.



- **Name:** Key-in the device name.
- **Channel:** Select a channel format.
- **IP Address:** Setup the Address for data acquisition of the bottom layer equipment.
- **MODBUS TCP Port:** The default is 502.

● **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.



- **Name:** Key-in the device name.
- **Model Name:** Select a power meter model.
- **Station ID:** Setup station ID for data acquisition.
- **Channel:** Select channel format.

3.3.2.5 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** 

Virtual Device

Name:

Channel:

Description:

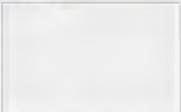


Image: No file chosen

- **Name:** Key-in the device name.
- **Channel:** Select a channel format.
- **Image:** Upload image file.

● **MODBUS Device** 

MODBUS Device

Name:

Time Out(ms):

Station ID:

Channel:

IP Address:

Port:

Searchable:

Description:

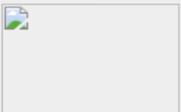


Image: No file chosen

- **Name:** Key-in the device name.
- **Time Out:** A time-out error is sent when power meter exceeds communication time.
- **Station ID:** Setup station ID for data acquisition.
- **Channel:** Select a channel format.
- **IP Address:** Setup the Address for data collection.
- **MODBUS TCP Port:** The default is 502.
- **Image:** Upload image file.

● OPC Client Device 

OPC Client Device

Name:

Server:

OPC Server:

Channel:

Searchable:

Description:

Image:

- **Name:** Key-in the device name.
- **Server:** The server IP (localhost).
- **OPC Server:** The desired OPC Server name.
- **Channel:** Select a channel format.
- **Image:** Upload image file.

● Database 

Database

Name:

SQL Server IP:

Port:

Username:

Password:

DataBase Name:

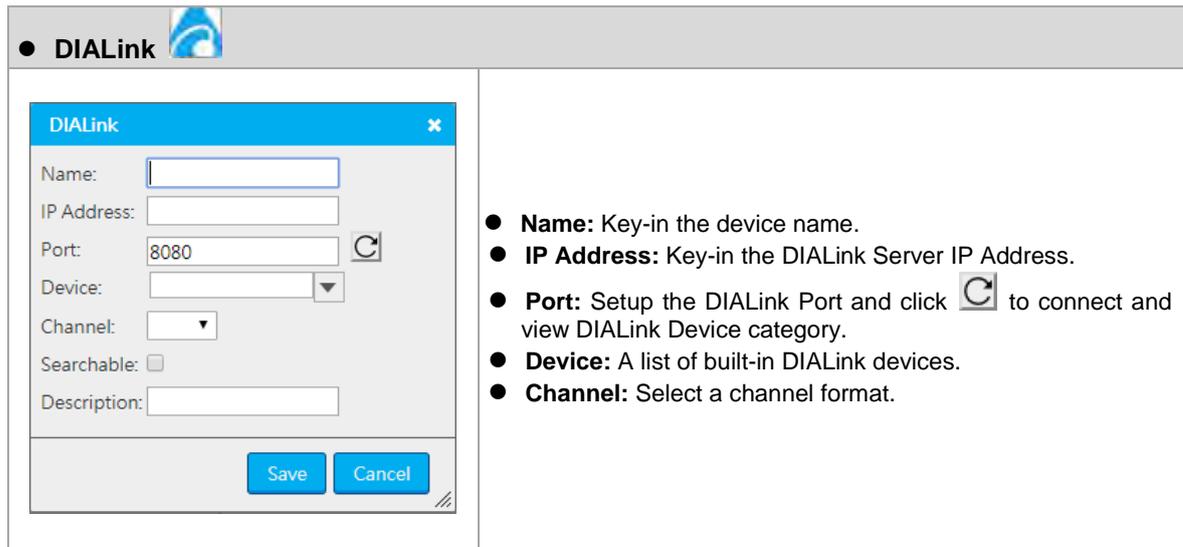
Channel:

Searchable:

Description:

- **Name:** Key-in the device name.
- **SQL Server IP:** Key-in SQL Server IP Address.
- **Port:** The port is 1433 for SQL Server.
- **Username/Password:** Login SQL username/password and click to view SQL Database Name category.
- **Database Name:** A list of SQL Database Names.
- **Channel:** Select a channel format.

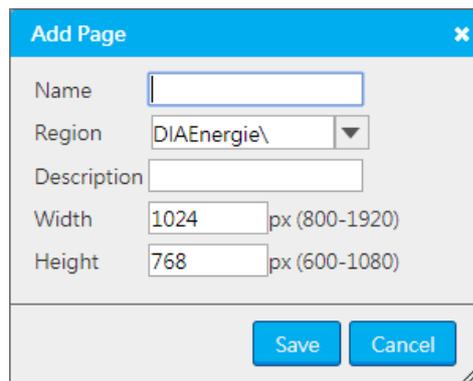
3



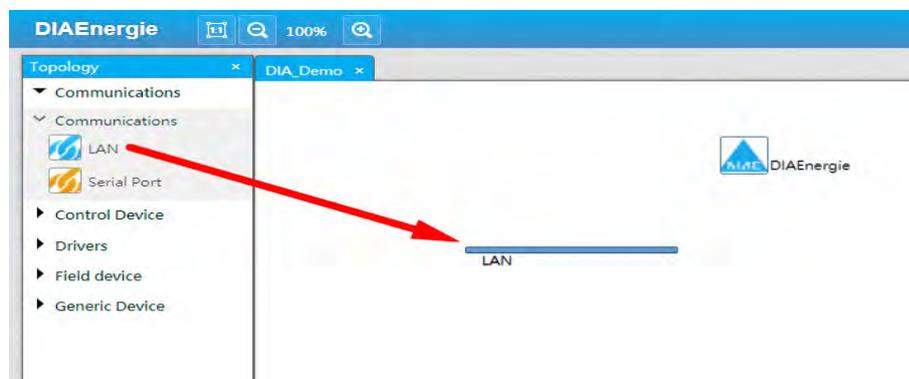
3.3.3 Device Types and Settings

3.3.3.1 Communication Interface

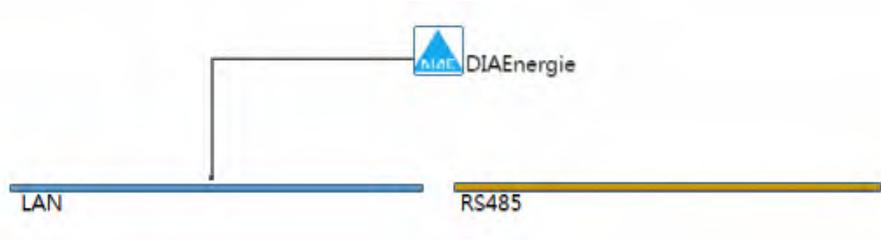
1. Right click on the selected layer and choose **Add Page** to key-in the name and width/height of the page.



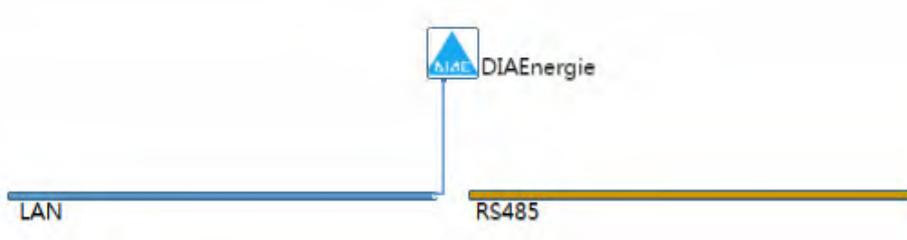
2. Select the communication device from the Toolbar on the left and drag it to any place on the right configuration area.



- 3. Select the system device located on top and press the left mouse button to move the line towards the communication device.



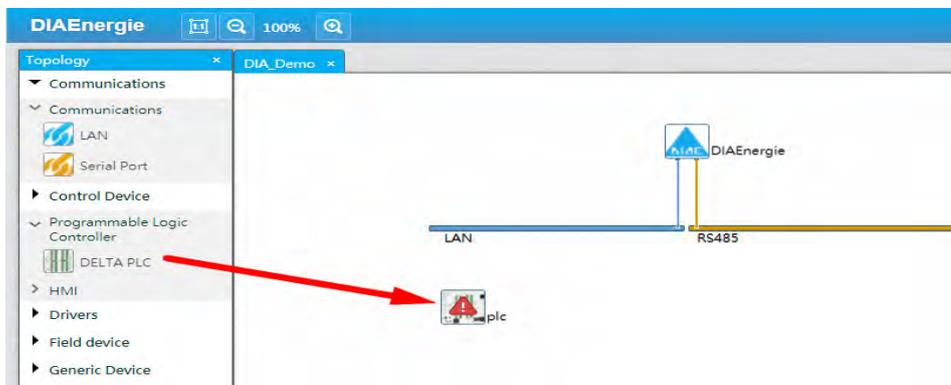
- 4. When the line of communication appears, place the cursor on the desired system device.



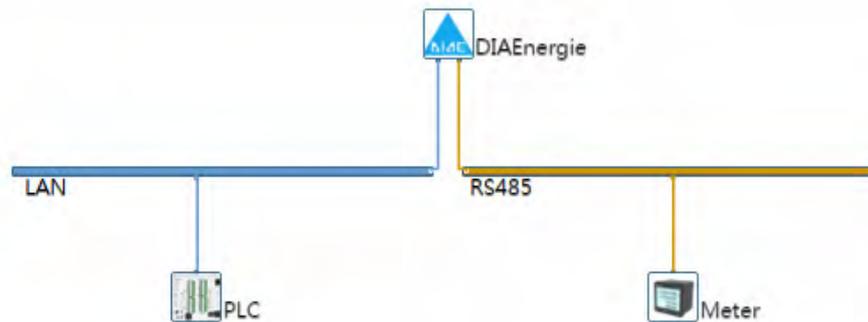
- 5. When connected, the system will focus on equipment data acquisition under LAN & RS485 communications.



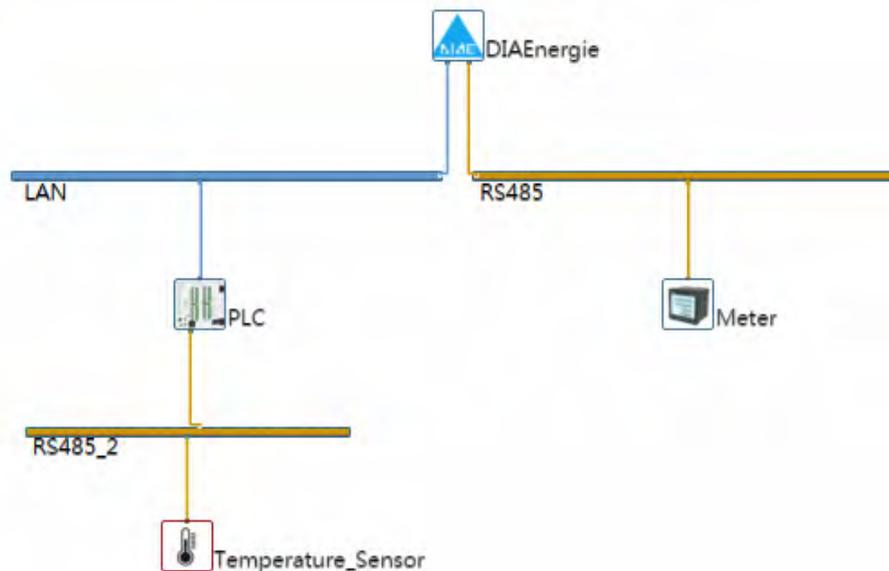
- 6. The above graph shows the system executing equipment data acquisition located under MODBUS TCP & RS232/422/485 (MODBUS RTU/ASCII) in Communications. Users can drag a control device on the left Toolbar to the right configuration area.



7. The PLC in the above graph can be dragged to any location. (For more setting information, please refer to the Control Device section.) Since the demo displayed above is not connected to a real IP address, an alarm of failed communication will show. (For more detail on system detection rate setting, please refer to the Update Rate section in Chapter 8.)
8. DIAEnergie connects the added PLC and power meter via LAN and RS485 for data acquisition. In this example, users must setup the correct communication, otherwise the error alarm for setting will appear.



9. In addition, a terminal temperature sensor equipped with MODBUS communication can be added to the PLC.

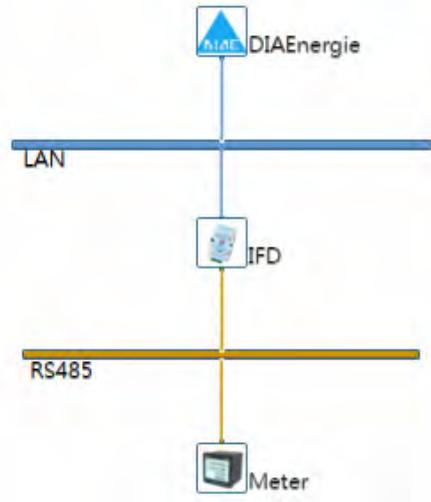


Base on the above system architecture, the device adopts the following data collection methods:

- [Internet] ↔ [PLC] ↔ [Virtual Device] gathers temperature data
- [RS485] ↔ [Meter] gathers power usage data

The basic configuration is completed and users can select Tag Mapping tab for data acquisition.

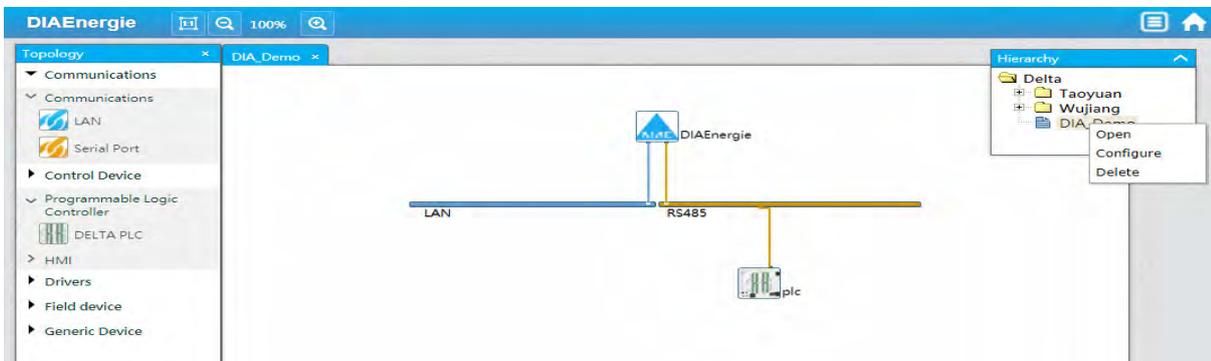
Below, another example shows the DIAEnergie using IFD-9506 as converter from TCP LAN to RS485 MODBUS for power meter data acquisition.



3

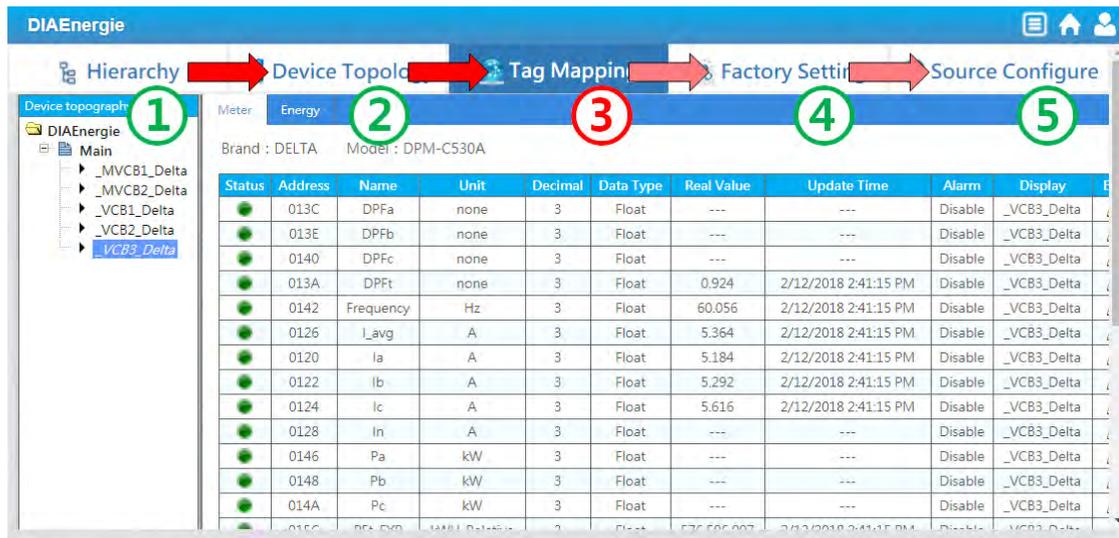
3.3.4 Page Function

The page function in Device Topology provides users to manage their page with great efficiency. When right-click the mouse to configure the Page Name created by users, a pop-out window will appear for users to modify the page setting (e.g. Name / Width & Height) or close the page. In addition, users can right-click the Page Name in the Hierarchy box on the right and choose to either open, configure or delete the page.



3.4 Tag Mapping

The third step is Tag Mapping. The tags are created to match with the devices in the previous Device Topology. The tag values can be used for image display or value comparison in the energy dashboard setting. When new tags are added, click [Next](#) at the bottom of the web page to enter the Factory Setting step. Or click [Previous](#) to go back to Device Topology.



3.4.1 Add Tags

The main function of Tag Mapping is to allow users to execute equipment data acquisition. DIAEnergie categorizes the tags base on the Device Topology. We can first select the target device from the left Topology diagram, click the upper-right **+ New** to add, edit and delete the tag.

Users can click the icon to complete adding the tag as needed. In addition, the Alarm Status provides settings on alarm threshold and in alerting the users.

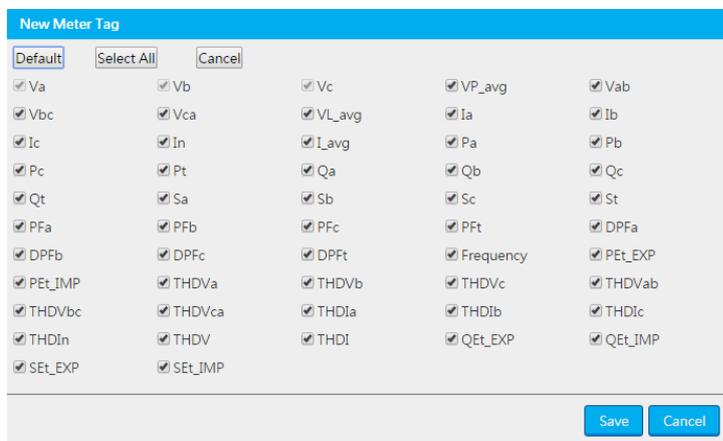
Descriptions for new PLC and Meter tags are shown below:

● **New PLC Tag:**

- **Address:** Capture or control PLC register type/ selects the PLC models base on Device Topology and switch to a suitable communication.
- **Unit:** Select value unit.
- **Decimal:** The system uses the digits for calculation.
- **Data Type:** Select a data type with different lengths for reading or analysis.
- **Writable/Searchable (for PLC register):** Select if preferred.
- **Alarm:** Select to enable and identify alarms
- **Corresponding Value:** Set the corresponding value and for display.

● **New Meter Tag:**

The description of the new terminal device window is basically the same as the PLC window. The Meter tag is less complicated, therefore, users can directly click the assigned tags shown below:



3

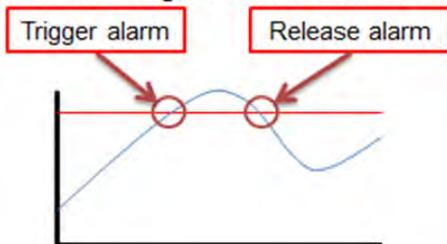
3.4.2 Alarm Settings

There are two kinds of Alarm Settings:

- High Alarm: The tag value is “above” the trigger point to cause an alert.
- Low Alarm: The tag value is “below” the trigger point to cause an alert.

Both settings are explained in the graphs below:

High Alarm:
If the value of this tag is “above” the criteria, alarm shows.



Low Alarm:
If the value of this tag is “below” the criteria, alarm shows.



In short, the purpose of Alarm Setting in DIAEnergie allows User/Admin to react immediately when tags with abnormal conditions occurs.

3.4.3 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.

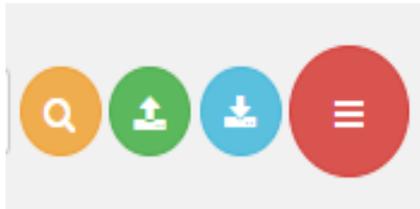
Status	Address	Name	Unit	Decimal	Data Type	Real-time Value	Update Time	Alarm	Display	Edit	Delete
●	013C	DPFa	none	3	Float	-0.984	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		
●	013E	DPFb	none	3	Float	-0.986	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		
●	0140	DPFc	none	3	Float	-0.970	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		
●	013A	DPFd	none	3	Float	-0.977	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		
●	0142	Frequency	Hz	3	Float	60.072	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		
●	0126	L_avg	A	3	Float	16.480	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		
●	0120	Ia	A	3	Float	14.780	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		
●	0122	Ib	A	3	Float	15.280	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		
●	0124	Ic	A	3	Float	19.400	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		
●	0128	In	A	3	Float	4.220	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		
●	0146	Pa	kW	3	Float	3.194	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		
●	0148	Pb	kW	3	Float	3.314	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		
●	014A	Pc	kW	3	Float	3.996	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		
●	015C	PET_EXP	KWH-Relative	3	Float	71,861.836	9/21/2018 3:26:22 PM	Disable	2F		
●	015E	PET_IMP	KWH-Relative	3	Float	---	---	Disable	_2ML_DELTA		
●	0134	PFa	PF	3	Float	-0.978	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		
●	0136	PFb	PF	3	Float	-0.979	9/21/2018 3:26:22 PM	Disable	_2ML_DELTA		

3.4.4 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 is able to 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.

Source	Device(Region)	Name	Address	Description	Edit	Delete
Device	IMR	Va	0040			
Device	IMR	Vb	0042			
Device	IMR	Vc	0044			
Device	IMR	Ia	0046			
Device	IMR	Ib	0048			
Device	IMR	Ic	004A			
Device	IMR	Ie	004C			
Device	IMR	Pa	004E			
Device	IMR	Pb	0050			
Device	IMR	Pc	0052			
Device	IMR	Pt	0054			
Device	IMR	Qa	0056			
Device	IMR	Qb	0058			
Device	IMR	Qc	005A			
Device	IMR	Qt	005C			
Device	IMR	Sa	005E			
Device	IMR	Sb	0060			
Device	IMR	Sc	0062			
Device	IMR	St	0064			

3.4.5 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.

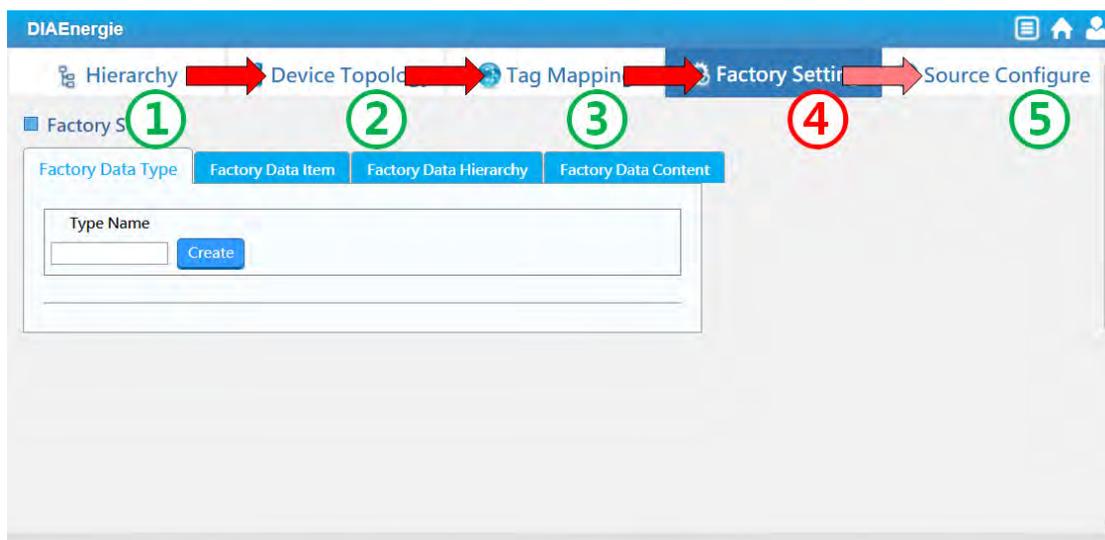
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Update Ty	Tag ID	Tag Name	Equipment	Register	Data Type	Signed	Internal T.	Decimal	Unit	0:R 1:W 2:	Alarm Ena	Equipment	Display Ne
2	None	1	Va	1EMP	0064	Float	Unsigned	False	3	V	0	0	DIAE_pow	1EMP_Va
3	None	2	Vb	1EMP	0082	Float	Unsigned	False	3	V	0	0	DIAE_pow	1EMP
4	None	3	Vc	1EMP	00A0	Float	Unsigned	False	3	V	0	0	DIAE_pow	1EMP
5	None	4	Ia	1EMP	0065	Float	Unsigned	False	3	A	0	0	DIAE_pow	1EMP
6	None	5	Ib	1EMP	0083	Float	Unsigned	False	3	A	0	0	DIAE_pow	1EMP
7	None	6	Ic	1EMP	00A1	Float	Unsigned	False	3	A	0	0	DIAE_pow	1EMP
8	None	7	Ie	1EMP	00BF	Float	Unsigned	False	3	A	0	0	DIAE_pow	1EMP
9	None	8	Pa	1EMP	0066	Float	Unsigned	False	3	kW	0	0	DIAE_pow	1EMP
10	None	9	Pb	1EMP	0084	Float	Unsigned	False	3	kW	0	0	DIAE_pow	1EMP

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.

3.5 Factory Setting

The fourth step is Factory Setting. Users can create values unlike device tags from for instance, monthly production and monthly output for data hierarchy. The added values can be established in some of the graphs along with the device tags for analysis. After the parameter settings are complete, users can click [Next](#) to Source Configure or click [Previous](#) to return to Tag Mapping.



- **Data Category:** Users can create various data folders as general indicators, for example, target consumption, production and energy-saving value for data categorization.

Factory Data Type **1** Factory Data Item Factory Data Hierarchy Factory Data Content

Type Name **2** **3** Create

Type Name	
Target Consumption	Delete Edit

- **Data Item:** Different items can be established under the data category, for instance main loop consumption, main building consumption, parking building consumption can be created under the Target Consumption data category.

Data Type Data Item Hierarchy Assignment Data Item Content

Type Name **1** Item Name **2** Unit **3** Appendix **4** Create

Type Name	Item Name	Unit	Appendix	
Target Consumption	Main Loop	kw	<input type="checkbox"/>	Delete Edit
Target Consumption	Main Buildings	kw	<input type="checkbox"/>	Delete Edit
Target Consumption	Parking Buildings	kw	<input type="checkbox"/>	Delete Edit

- **Data Hierarchy:** Click edit and assign the desired data category by clicking to complete the hierarchy.

Hierarchy Name	Description	Edit
▼ Delta		
▼ Taoyuan		
▼ TY3		
▼ RD_Building		
2F		
7F		

Edit Hierarchy Assignment

Hierarchy Name : Delta **3**

Type Assign :

4

5 Save Cancel

- **Data Content:** Users can enter values including monthly production target, monthly energy consumption or daily single device energy consumption target which are unable to generate via device tags. The data item content and actual device tags information are updated in the comparative graphs regarding energy consumption for output on the energy dashboard.

Data Type	Data Item	Hierarchy Assignment	Data Item Content
Hierarchy Assignment	Delta\Taoyuan\TY3\		Value
Data Type	Target Consumprion	1	300
Data Item	Main Buildings	2	280
Type	Month	3	320
Year	2018	4	280
Month	1	5	340
		6	360
		7	380
		8	380
		9	360
		10	360
		11	380
		12	360

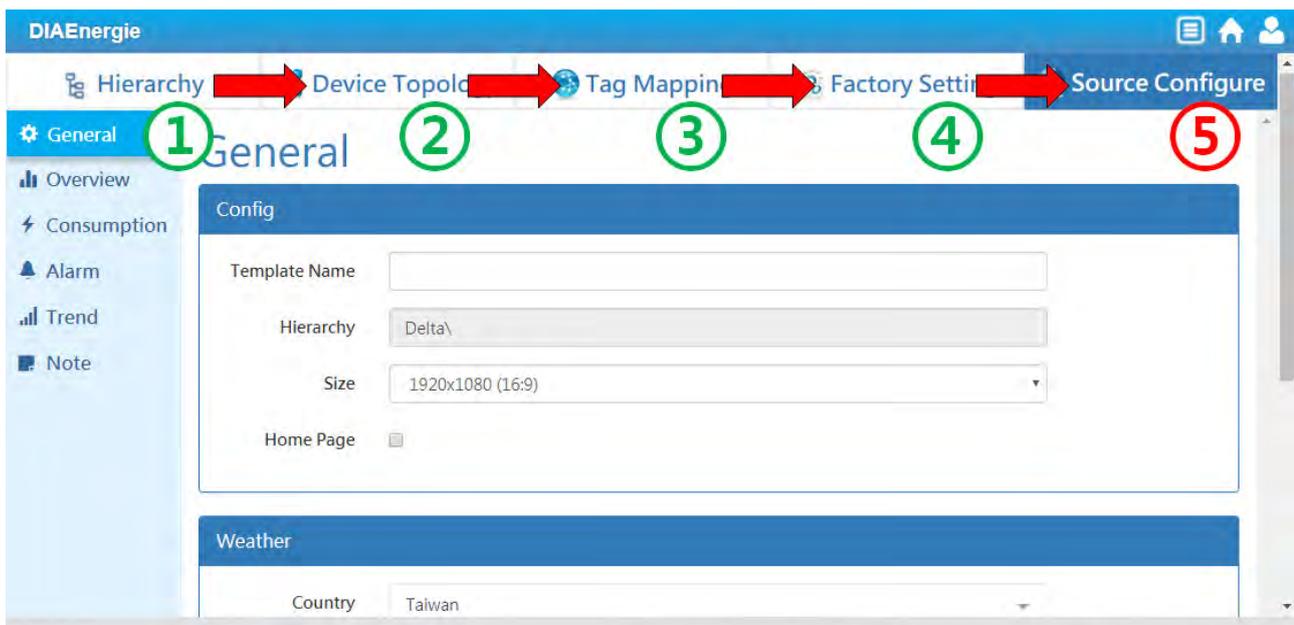
[Save](#)

3

3.6 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.



When adding page parameters, users can click on the specified thumbnail page image to enlarge and view current editing on graphs in the page.



3.6.1 General Settings

The **General** settings include dashboard page Config and Weather configuration.

- **Setting:** Displays the page hierarchy, size selection and homepage setting.

Config	
Template Name	<input type="text"/>
Hierarchy	Delta\
Size	1920x1080 (16:9)
Home Page	<input type="checkbox"/>

- 1 **Template Name:** Create template name.
- 2 **Hierarchy:** Choose the page hierarchy.
- 3 **Size:** Select the screen resolution with 4:3 or 16:9 display ratio from the drop-down list.
- 4 **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.

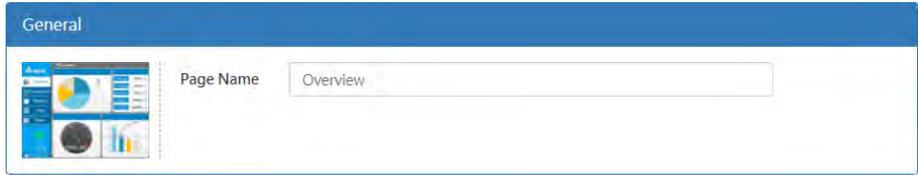
Weather	
Country	Taiwan
City	Taoyuan

- 1 **Country:** Select the country from the drop-down list.
- 2 **City:** Select the city from the drop-down list.

3.6.2 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.



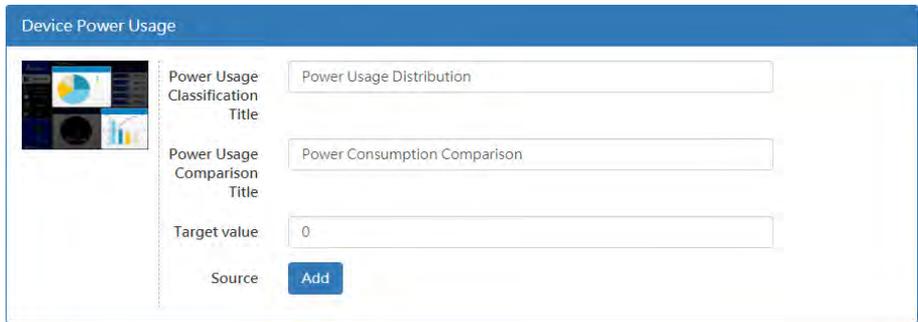
❶ **Name:** The default name for the bottom left graph is “Real-Time Power Demand”. Users can modify the name accordingly.

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 are 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.

- ② **Power Usage Comparison Title:** The default name for the lower right graph is “Power Usage Comparison”. Users can modify the name accordingly.
- ③ **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.

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.

The screenshot shows the "Power Consumption" configuration page. It includes a "Name" field with the value "Power Consumption", an "Add" button for "Source", and a table with columns for "Device", "Tag", and "Delete". The table contains one entry: "KW_01_總用電" with a delete button. Below the table are three input fields for "Daily usage", "Monthly usage", and "Yearly usage", all containing their respective default titles.

- ① **Name:** The default name for the upper right section is “Power Consumption”. Users can modify the name accordingly.
- ② **Source:** Click **Add** to select the source, hierarchy and device for tags. When device tags are added, the Daily/Monthly/Yearly Usage (③/④/⑤) appear and users can modify the titles accordingly.
- ③ **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.
- ④ **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.
- ⑤ **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:

Power Consumption	
Daily usage	297.028 kWh
Monthly usage	5143.892 kWh
Yearly usage	15163.247 kWh
Yearly Cost	5595.381 TWD
Daily CO2 emission	8021.357 tCO2e

- 3
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.

Yearly Cost

Cost title	<input type="text" value="Yearly Cost"/>
Unit	<input type="text" value="TWD"/>
Average cost per unit	<input type="text" value="3.69"/>

- ①
Cost Title: The default name for power consumption cost on the upper right corner is “Yearly Cost”. Users can modify the name accordingly.
- ②
Unit: Type the cost unit. The default unit is “TWD” .
- ③
Average Cost Per Unit: Type the cost.

The Yearly Cost indicated on the Power Consumption section is shown below:

Power Consumption	
Daily usage	297.028 kWh
Monthly usage	5143.892 kWh
Yearly usage	15163.247 kWh
Yearly Cost	5595.381 TWD
Daily CO2 emission	8021.357 tCO2e

- **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.

Daily emission

Emission title: Daily CO2 emission

Unit: tCO2e

Coefficient: 0.529

- 1 **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.
- 2 **Unit:** Type the unit. The default unit is “tCO2e” .
- 3 **Coefficient:** Type the CO2 coefficient value.

The Daily CO2 Emission indicated on the Power Consumption section is shown below:

Power Consumption	
Daily usage	297.028 kWh
Monthly usage	5143.892 kWh
Yearly usage	15163.247 kWh
Yearly Cost	5595.381 TWD
Daily CO2 emission	8021.357 tCO2e

3.6.3 Energy Consumption

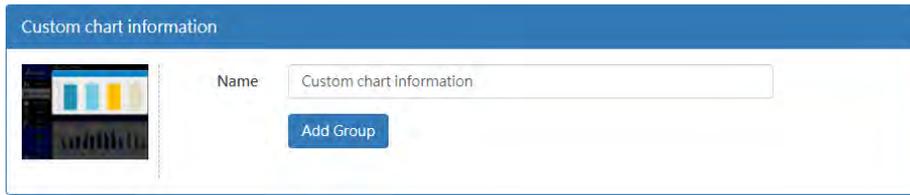
The Energy Consumption page is categorized into General setting, Custom Chart Information and Target Performance Comparison Information. Users can add group tags in the Custom Chart Information section and display or switch graphs of different group tags.

- **General:**

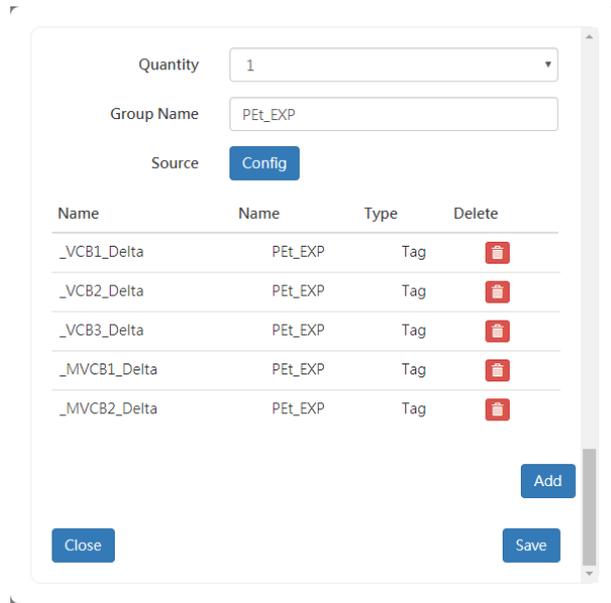
General

Page Name: Consumption

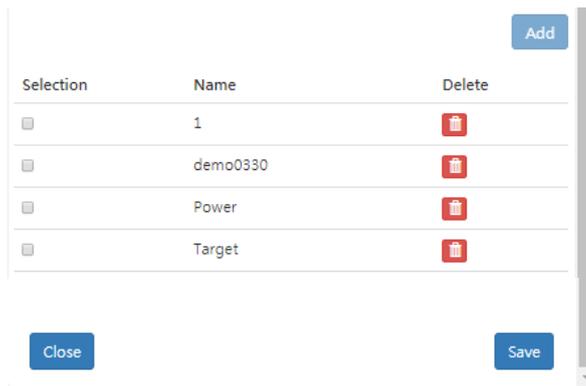
- 1 **Page Name:** The default name for the page is “Consumption”. Users can modify the name accordingly.
- **Custom Chart Information:** The custom chart displayed on the upper part of the Consumption page presents different group tag comparison in energy consumption. Users can view desired graphs via 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.



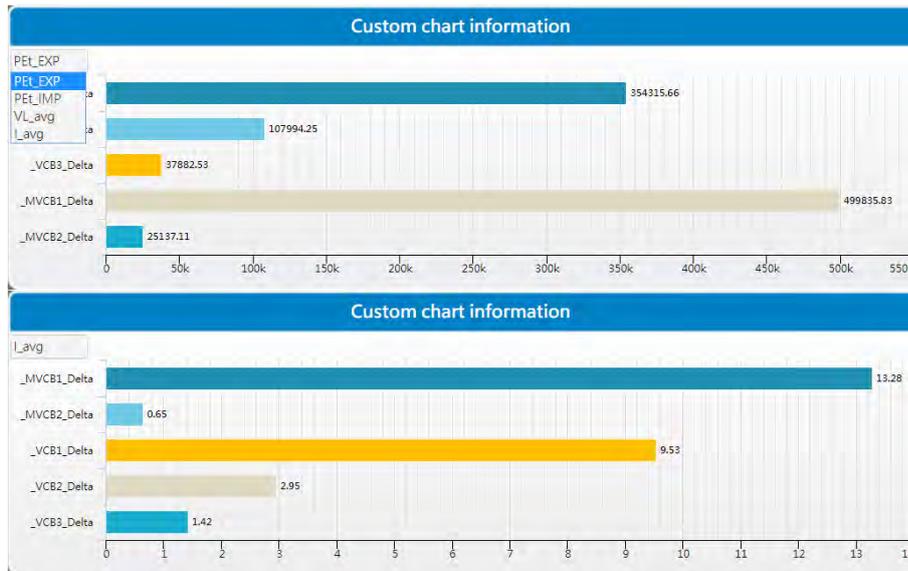
- 1 **Name:** The default name for the upper graph on the page is “Custom Chart Information”.
- 2 **Add Group:** Click Add Group and type the group name & click Config to select the source, hierarchy and device for the source tags. All the added groups will be displayed in the section.



- 3 **Selection:** Select the groups to be displayed on the graph and click Save.



Below is an example of the Custom Chart Information graphs:

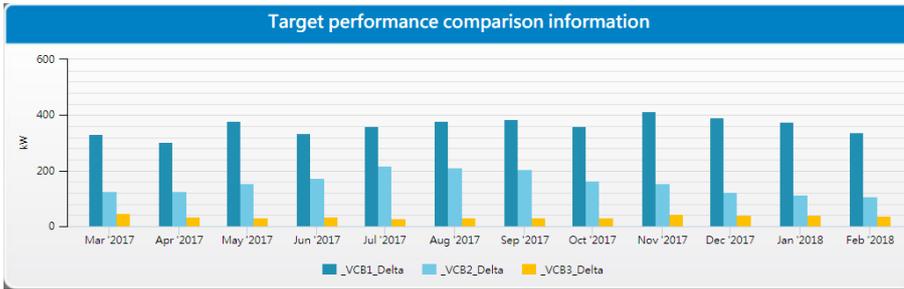


- **Target Performance Comparison Information:** The graph summarizes this year’s power usage from on-site device tags in comparison with the target performance of energy consumed each month. To modify the graph, users need to make the changes via the specified page.

3

- 1 **Name:** The default name for the lower graph on the page is “Target Performance Comparison Information”.
- 2 **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 values. Below is an example for setting up the selected tag.

An example of the Target Performance Comparison Information graph is show below:

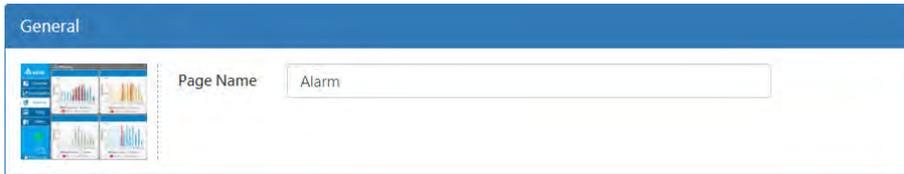


3.6.4 Alarm

The Alarm page features General and 4 bar graph settings. Each graph is used to compare with its historical data.

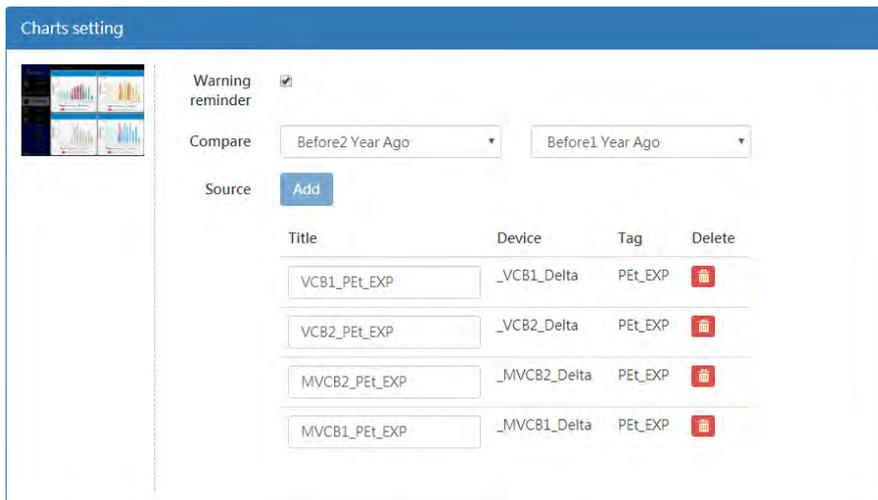
- **General:**

3



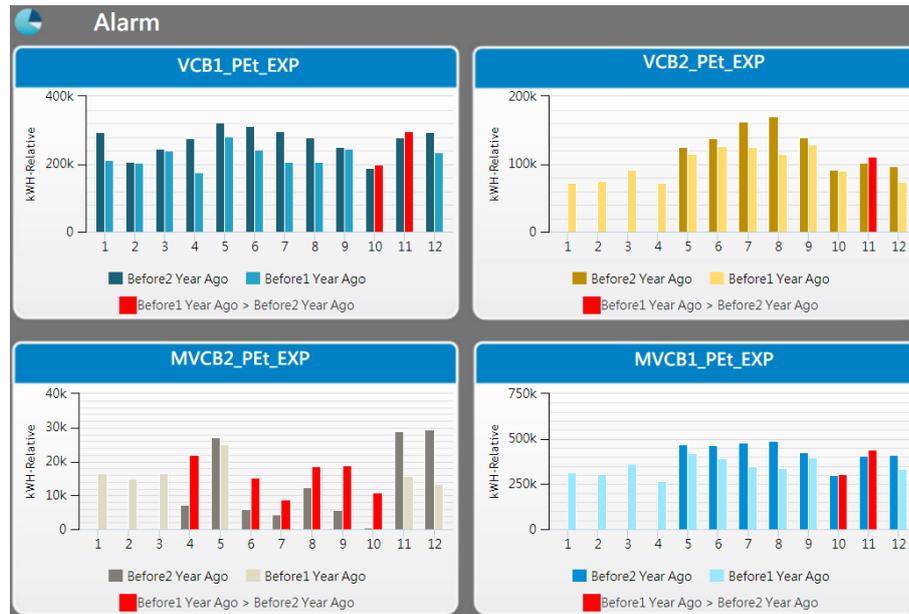
❶ **Page Name:** The default page name is “Alarm”. Users can modify the name accordingly.

- **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 year ago and 3 year 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:



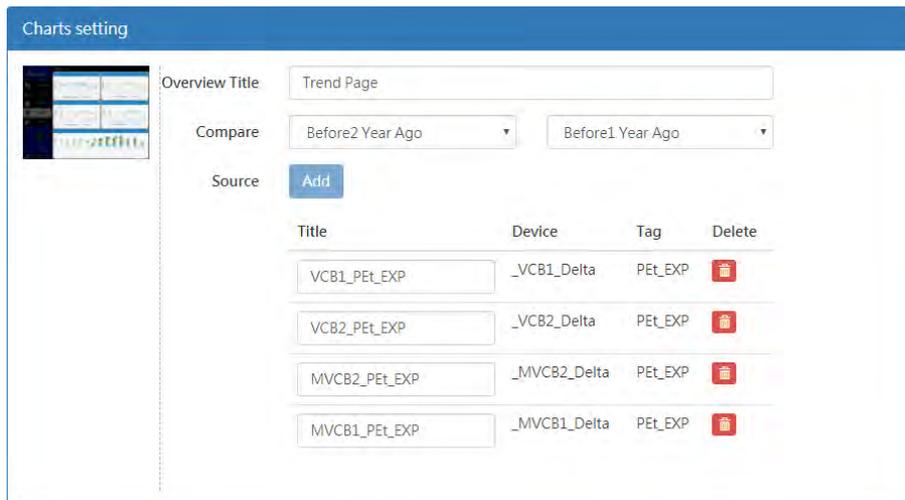
3.6.5 Trends

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 on a monthly basis. An overall Power Consumption Trend stacked chart of selected tags is also shown below the 4 charts.

- **General:**

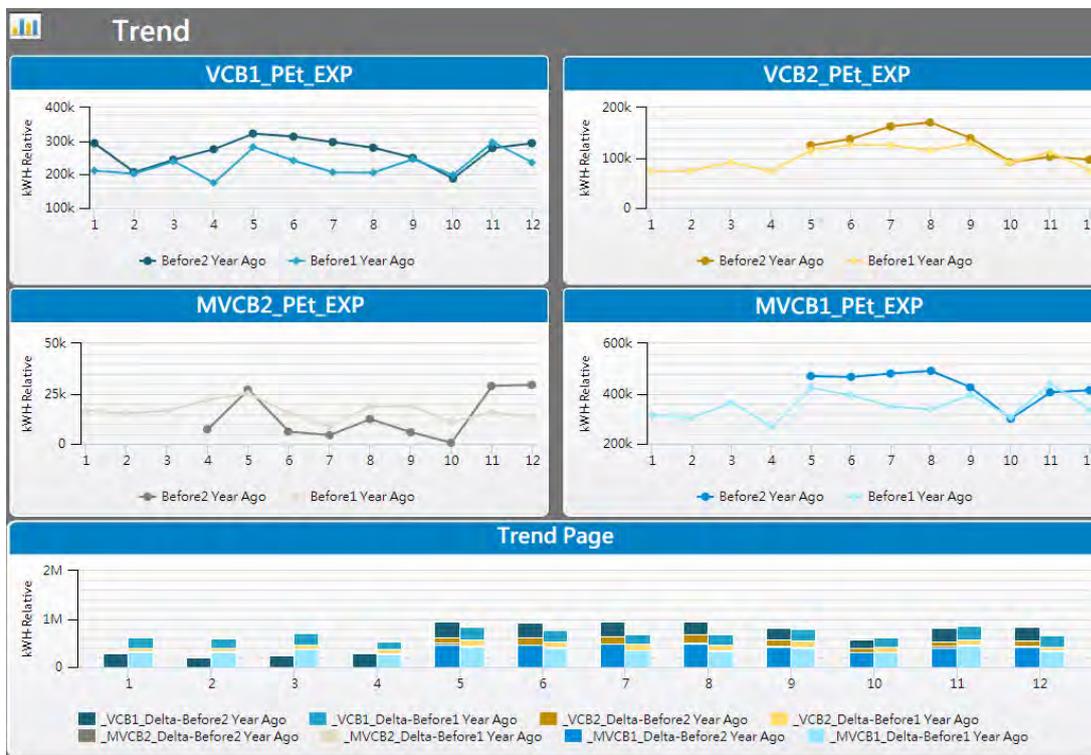


- **1 Page Name:** The default page name is "Trend". Users can modify the name accordingly.
- **Charts setting:** The page displays up to 4 charts of energy trends with comparisons regarding the consumption values of this year and historical trend data. When a consumption value is higher than the other, the tag point color will turn red for easy identification. To modify the graphs, users need to make the changes via the specified page.



- 1 **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.
- 2 **Compare:** Users can select data regarding this year, 1 year ago, 2 year ago and 3 year ago for comparison.
- 3 **Source:** Click Add to select the source, hierarchy and device of the tag.
- 4 **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:



3.6.6 Notes

The Notes page include General and Picture Settings with custom headings regarding energy saving.

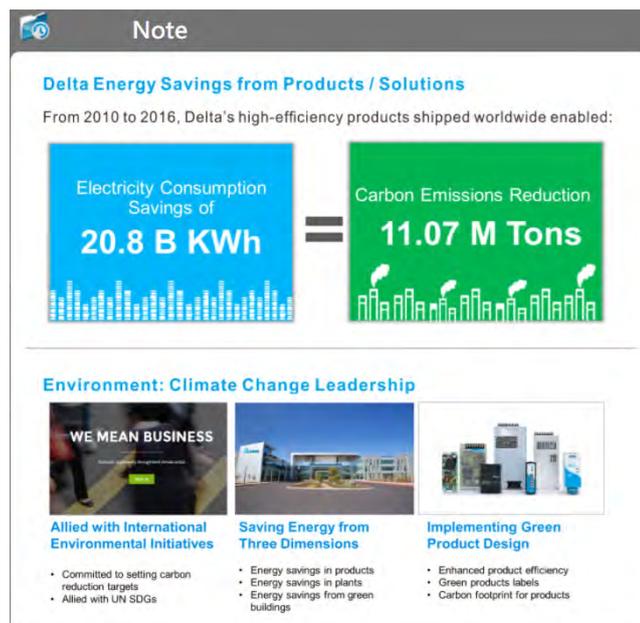
- **General:**

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:



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Chapter 4 UI Design and Preview

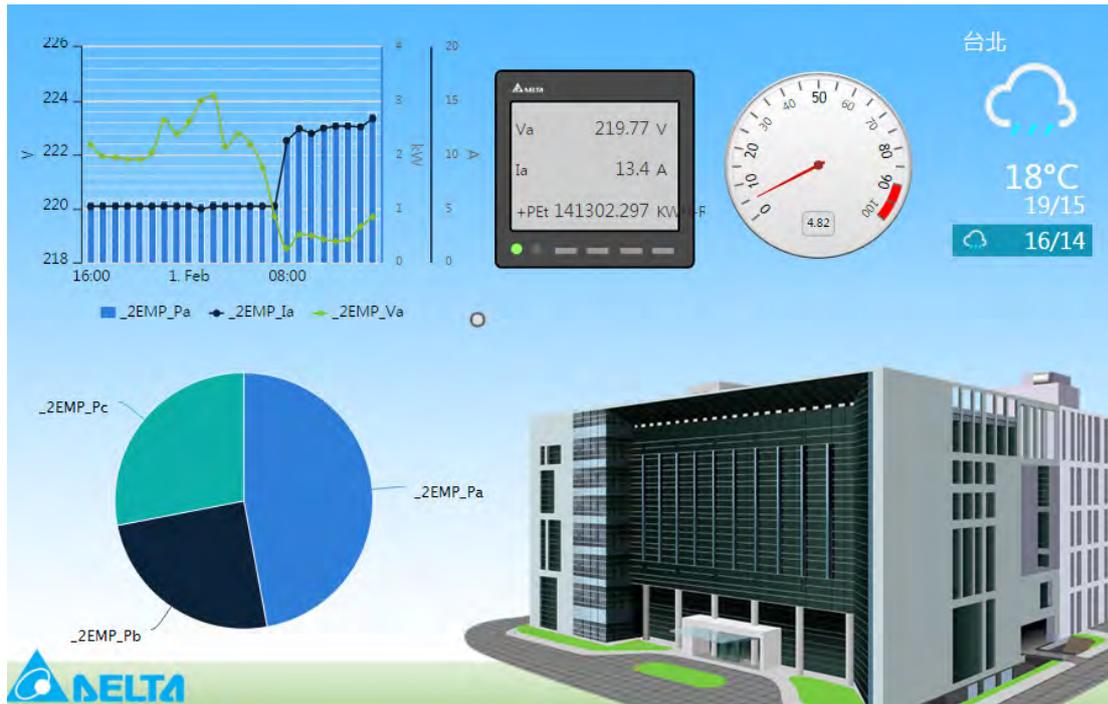
Table of Contents

4.1	Introduction	4-2
4.2	UI Design	4-2
4.2.1	New Page	4-3
4.2.2	Toolbar	4-3
4.3	Elements Description.....	4-3
4.3.1	Common Tools	4-3
4.3.2	Graph	4-12
4.3.3	Control Items.....	4-18
4.3.4	Real-time Data.....	4-20

4.1 Introduction

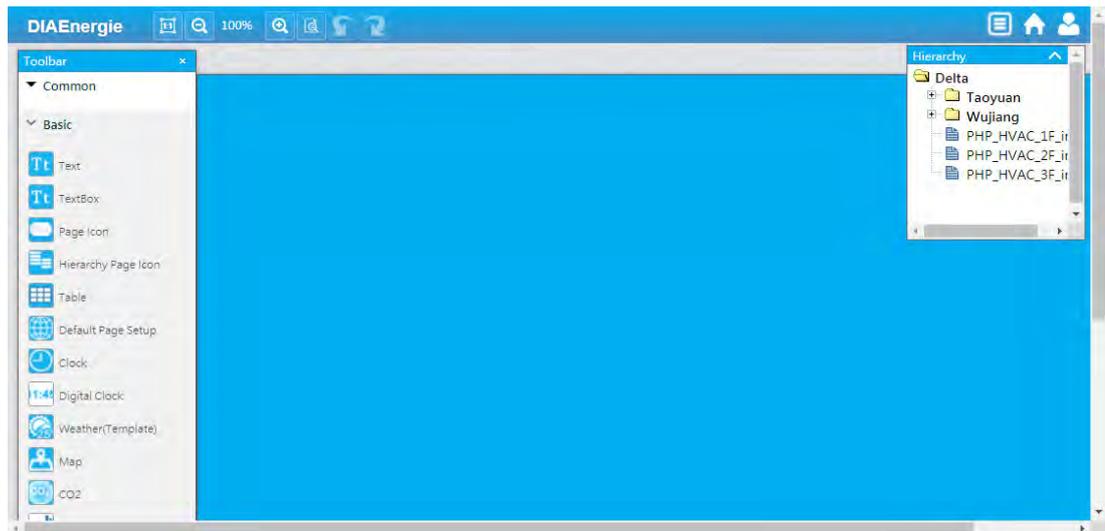
The **UI Design** function provides customized web page design via drag and drop elements from the left Toolbar to the workspace on the page. The user-centered design and layout elements include graph, control and general drawing components.

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 base on users' requirements, while the entry page is managed under authorized access for users to preview.



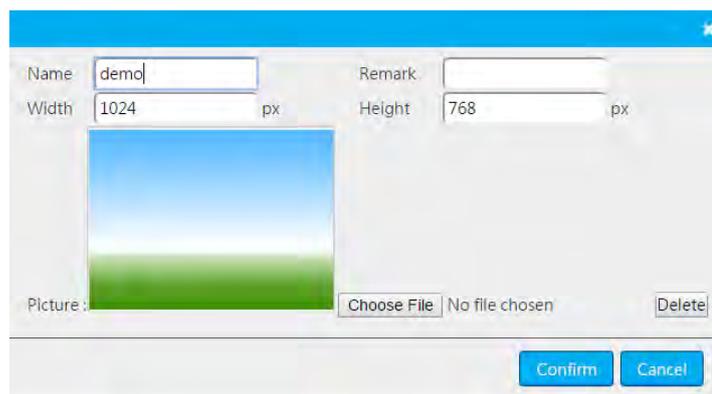
4.2 UI Design

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.



4.2.1 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.



4.2.2 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.

4.3 Elements Description

4.3.1 Common Tools

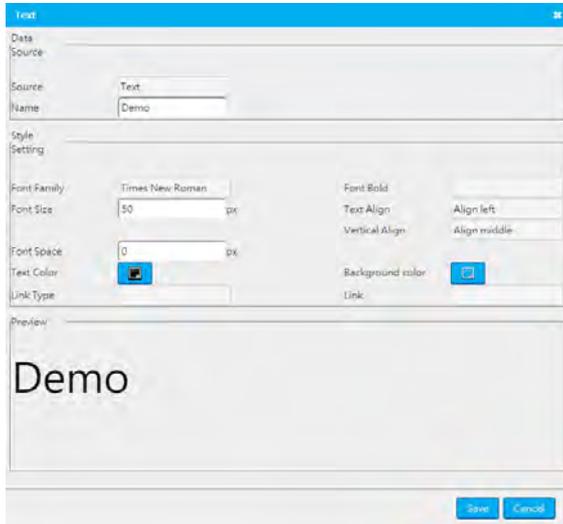
The first category in the Toolbar is **Common** tool and includes Basic as well as Import tools with descriptions below:

4.3.1.1 Basic

The Basic tool section include 10 elements: Text, Page Icon, Hierarchy Page Icon, Table, Default Page Setup, Clock, Weather, Map, CO2 and User Input.

● **Text :** 

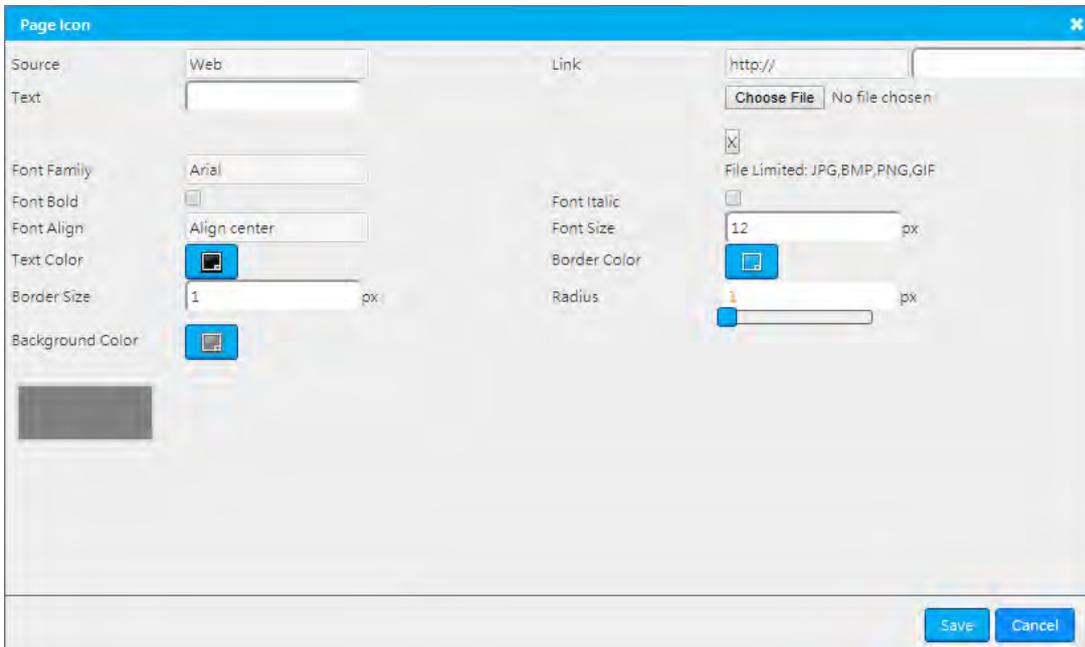
The Text element allow users to present the desired text. Users can drag and drop the Text option for edit that includes data source such as Text / Tag / Energy Circuit. More details on text setting are explained below:



- **Source:** Select Text/ Tag / Energy Circuit or choose textbox for text input.
- **Font / Font Size / Font Type** (e.g.Bold)
- **Font Space / Text Align**
- **Text Color / Background Color:** pick a color from the palette pane.
- **Lower Blank Area:** provides preview.

● **Page Icon:** 

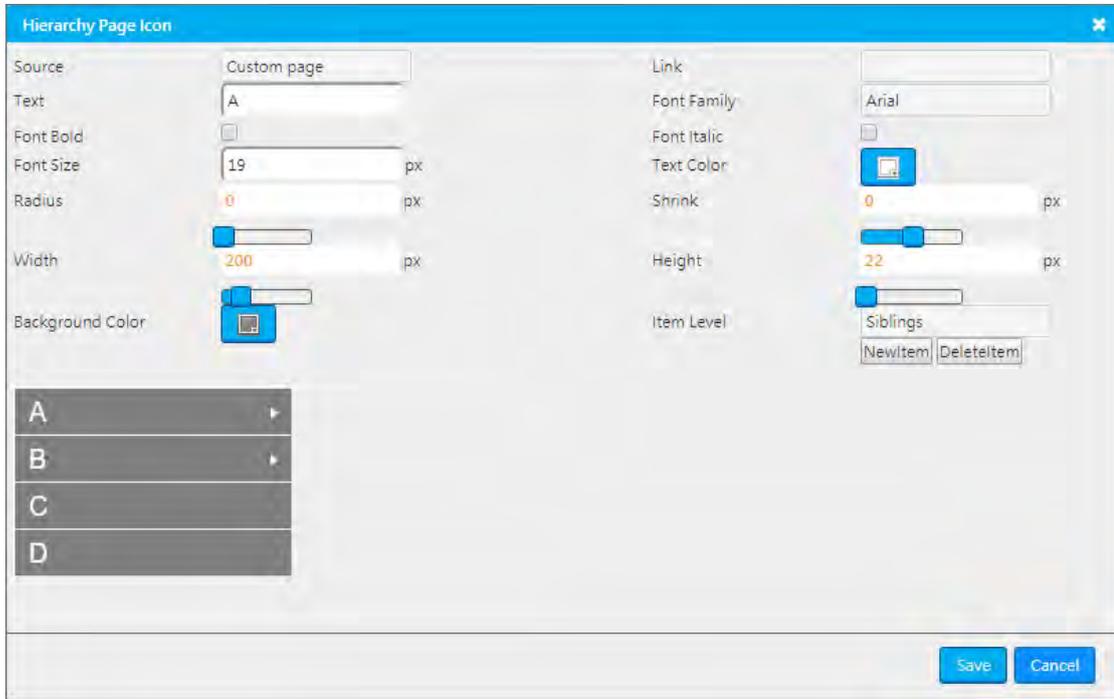
Page Icon is a shortcut to display specified internal or external websites and serves like hyperlinks. Therefore, users need to complete the settings from the page shown below:



- **Source:** Select Web / Custom page. For web, an external link is provided. Or choose custom page and a design setting page is displayed.
- **Link:** Type the web address / choose a page.
- **Text:** Type text or upload files for display
- **Font/ Font Size; Border Size/ Radius**
- **Text / Border/ Background Color:** Pick a color from the palette pane.
- **Lower Blank Area:** Provides preview.

- **Hierarchy Page Icon:** 

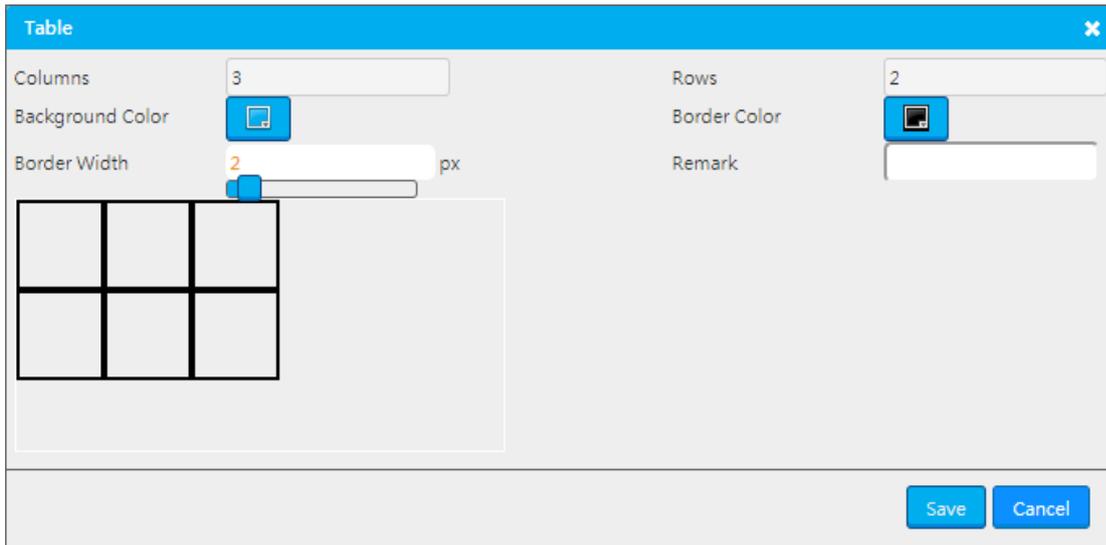
The concept of Hierarchy Page Icon is similar to that of the Page Icon, except that it consists of the hierarchy settings based on the categories. Users will need to complete the following source and other settings shown below:



- **Source:** Select Web / Custom page. For web, an external link is provided. Or choose custom page and a design setting page is displayed.
- **Link:** Type the web address / choose a page.
- **Text:** Type text or upload files for display
- **Font/ Font Size; Border Size/ Radius**
- **Text / Border/ Background Color:** Pick a color from the palette pane.
- **Lower Blank Area:** Provides preview and choose a hierarchy for edit.

- **Table:** 

The page allows users to setup Tables; (the text displayed on the Tables require settings from the Text icon option as well).



- **Columns / Rows:** Max. 15x15
- **Border Width:** Choose the width accordingly.
- **Background/ Border Color:** Pick a color from the palette pane.
- **Lower Blank Area:** For preview.

4

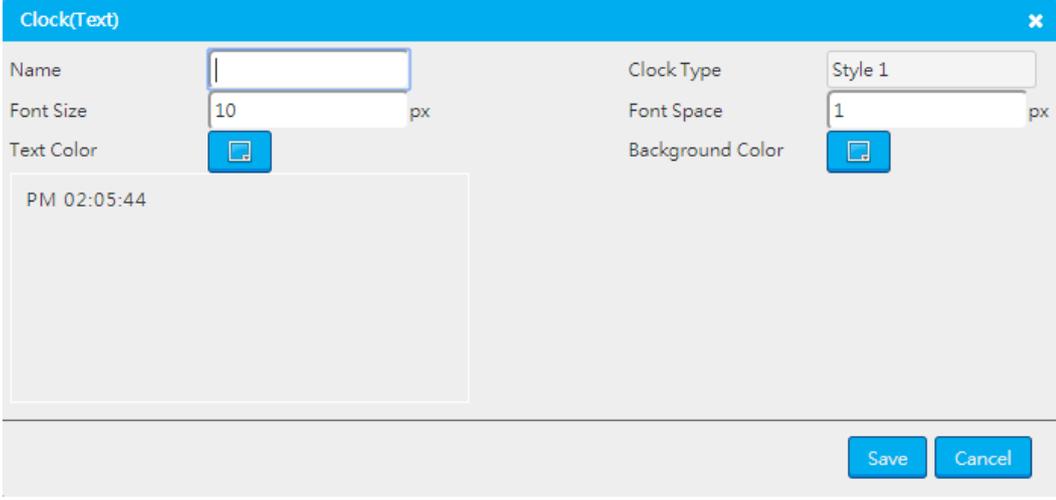
- **Clock:** 

The icon offers a clock setting for display on the page. More details on the settings are shown below:



- **Digital Clock:** 

The page presents a digital clock format with settings shown below:

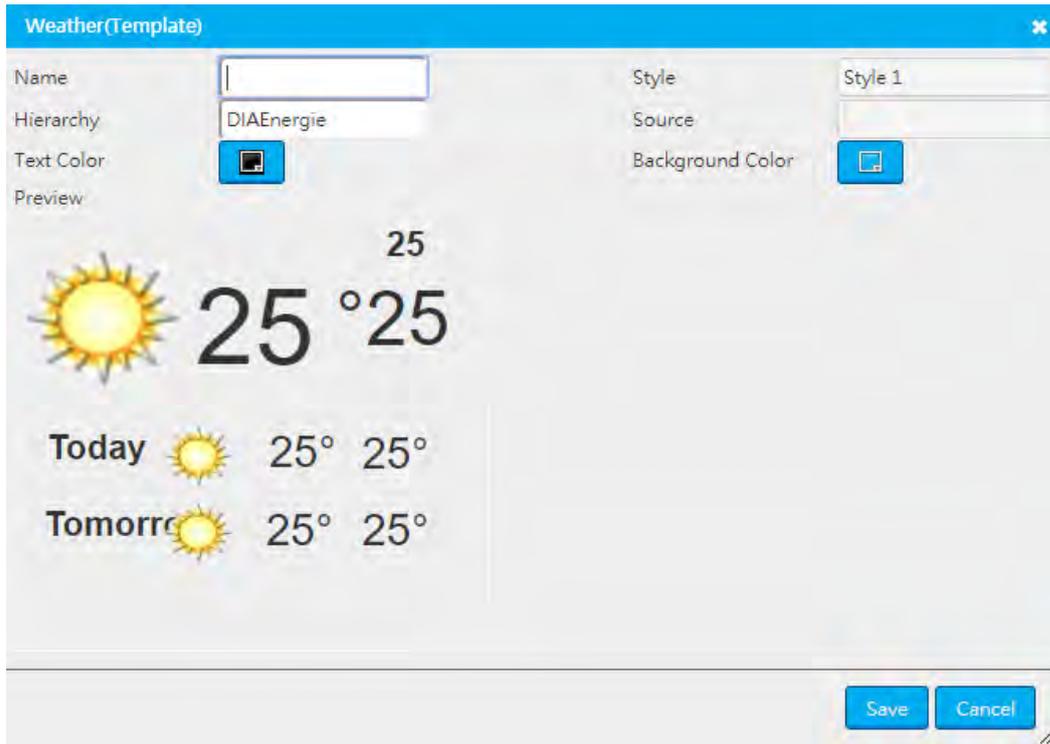


- **Font Size / Font Space**
- **Clock Type:** See the list below for reference. (Style 1~ Style 4)
- **Text / Background Color:** Pick a color from the palette pane.
- **Lower Blank Area:** Provides preview.

Style 1 :	PM / AM Hours : Minutes : Seconds (12 hour)
Style 2 :	Hours : Minutes : Seconds (24 hour)
Style 3 :	Year / Month / Day Hours : Minutes : Seconds (24 hour)
Style 4 :	Year / Month / Day PM / AM Hours : Minutes : Seconds (12 hour)

- **Weather (Template):** 

The page displays real-time weather information of the selected region. Details for the page setting is shown below:

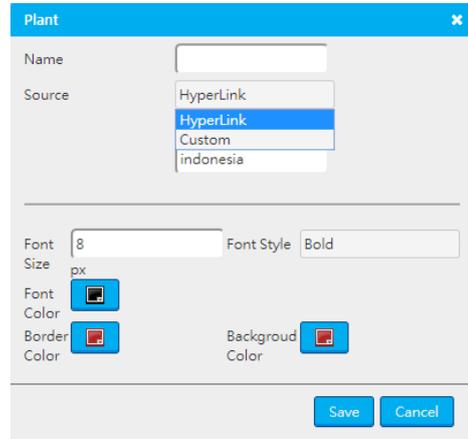
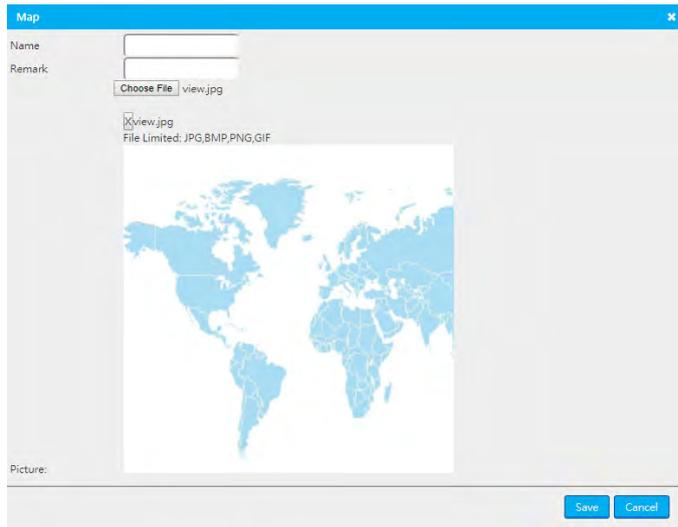


- **Hierarchy:** Choose a hierarchy level.
- **Style:** See 3 weather styles listed below.
- **Text / Background Color:** Pick a color from the palette pane.
- **Preview:** Displays the setting result.

Style 1	Style 2	Style 3

- **Map:**

Users can choose a map file for upload. Double-click the image to add hyperlinks or custom page and preview the location on the page. (The default tag setting is Taiwan).



● **CO2:** 

The page displays real-time CO2 emission for indoor environment.

- **Source:** Setup the source tag.
- **Text Color:** Pick a color from the palette pane.
- **Template / Leaf Style:** See 3 styles listed below for reference.
- **Preview:** Displays the setting result.

4

➤ Template

Style 1	Style 2	Style 3

➤ Leaf

Style 1	Style 2	Style 3

● **User Input:**

Users can input x-y axis data on the page and choose their graph type with text settings to create a non-tag graph.

- **Name:** Type a name for the input and data name.
- **Data Counts:** Input X-Y axis data. (Minimum: 2 sets; Maximum: 12 sets)
- **Title/ Chart Type/ Unit**
- **Preview:** Displays the setting result.

4.3.1.2 Import Tools

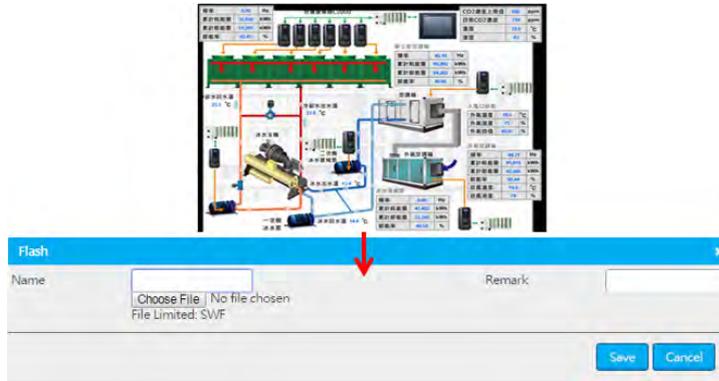
There are three import tool options: Image, Flash and Video.

- **Image:** 

The page allows users to upload images and setup directed internal or external links to other web pages. Details of the setting is shown below:

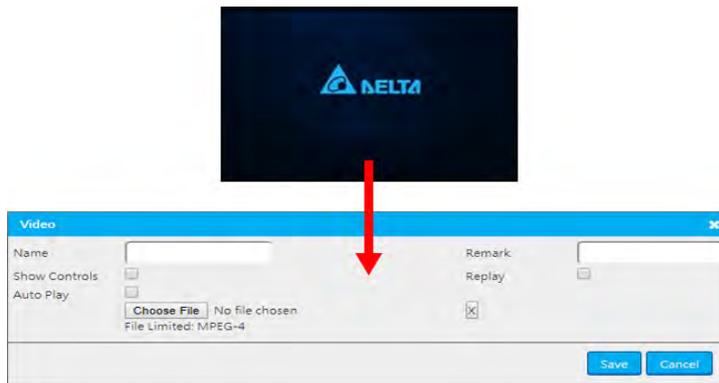
● **Flash:** 

Users can upload a flash file for display on the page. Details of the setting is shown below:



● **Video:** 

Users can upload a video file for display on the page. Details of the setting is shown below:



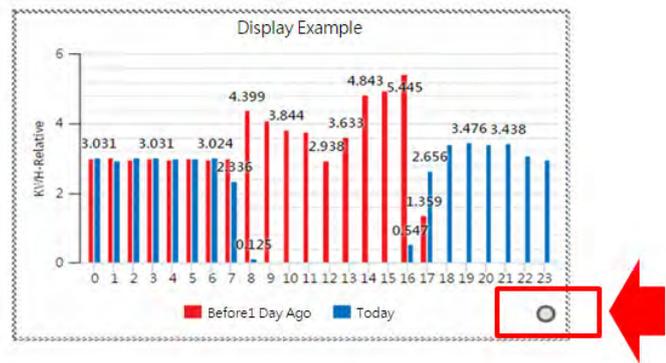
4

4.3.2 Graph

The second category is Graph which includes Comprehensive Chart Types, Gauge and Average Power Consumption options with explanations below.

4.3.2.1 Comprehensive Chart Types

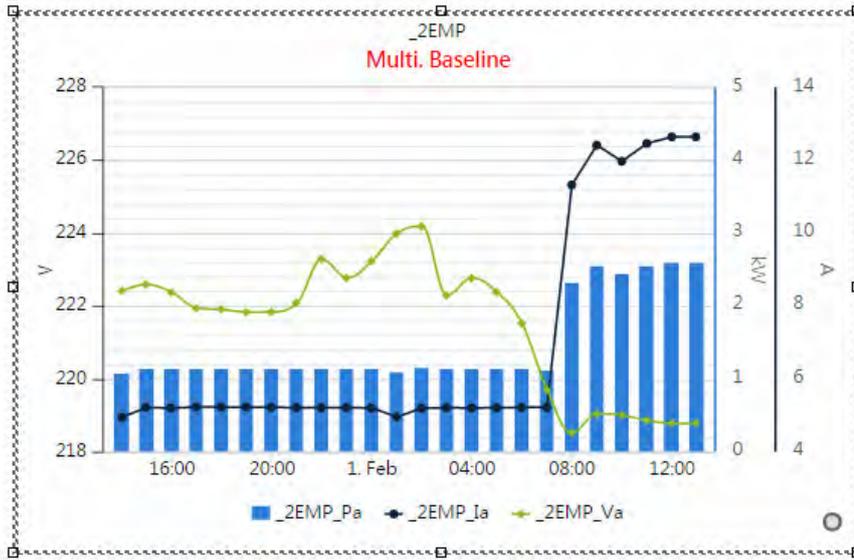
The Comprehensive Chart Types consists of four items: multiple baseline display, item comparison, single data comparison, multiple data comparison and average power consumption. For chart display, users can select the button at the bottom right corner.



● **Multiple Baseline Display:** 

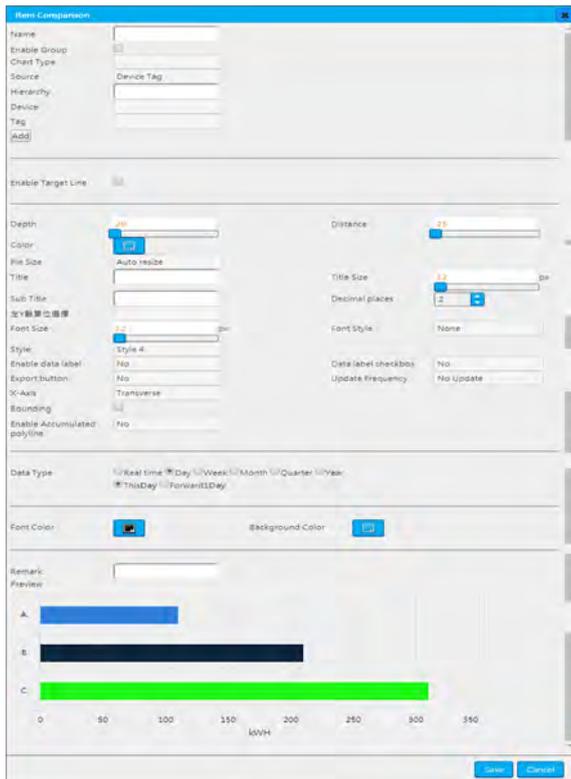
The page provides data display of graphs in various types such as bar, line, curve or stack when making comparisons in DIAEnergy. The recorded values in the graph are updated based on the assigned time or fixed until readers enter the page. The following is an example of the display setting:

- **Source:** Select sources e.g. device tag/hierarchy/ energy type/ input.
- **Update Frequency:** Select no update/ 1 Min/ 5 Min/ 10 Min.
- **Text Setting**
- **Color Setting:** Choose text and background color.
- **Preview:** Displays the setting result.

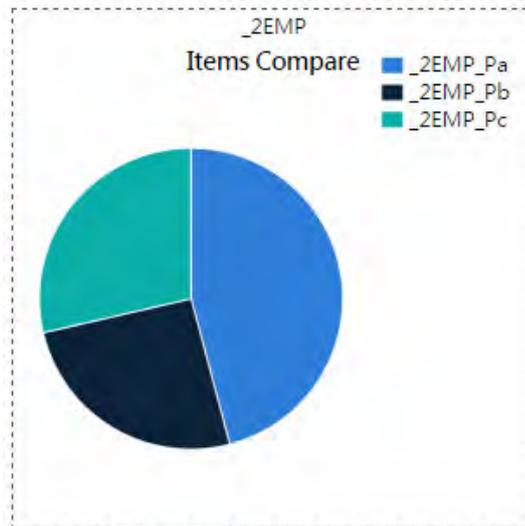


● **Item Comparison:** 

The page provides real-time ratio of the energy consumption for different sources, along with display in pie charts, bar graphs (general or stacked) and column charts (general or stacked) to compare information. The following is an example of the display setting:



- **Chart Type:** Select type including pie/ 3D pie chart, bar graphs (general or stack) and column charts (general or stacked).
- **Source:** Select sources e.g. device tag/hierarchy/energy circuit/input.
- **Update Frequency:** Select no update/1 Min/ 5 Min/10 Min.
- **Text Settings.**
- **Bounding Display:** Select upper or lower bound of energy consumption.
- **Sort by ascending or descending order.**
- **Preview:** Displays the setting result.



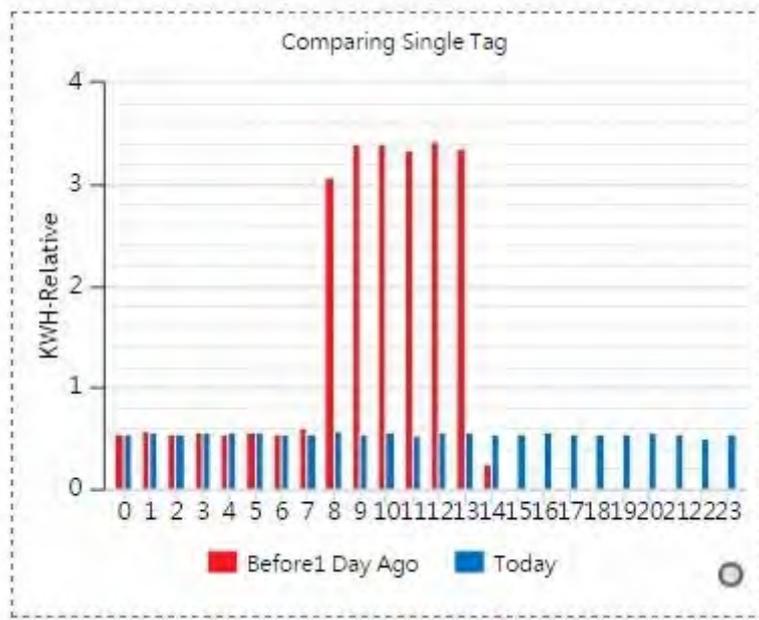
● Single Data Comparison:



The page provides display of data comparison between two assigned time periods at the same time. Users can view the difference from the chart. The following is an example of the display setting.

The screenshot shows the 'Single Data Comparison' configuration window. The 'Configuration' tab is active, displaying various settings for the chart. The 'Chart' section includes options for Title, Title Size (12 px), Font Size (12 px), Text Color, Background Color, Data Type (Day, Week, Month, Quarter), Compare (Today), Data Color, Enable data label, Export button, Remark, and Enable color change. The 'Update' section includes Update Frequency (No Update), Chart Type (Column), Font Style (None), X Axis Style (Transverse), Angle, Data Interval (Month, Quarter), and Decimal places (2). The 'Display' section shows 'Energy supply' as the data source. The 'Preview' section shows a bar chart with two series, 'Compare1' (red) and 'Compare2' (blue), plotted against a time axis from 0 to 11. The chart shows varying values for each series over the 12-hour period.

- **Configuration:** Click Configuration and select source e.g. device tag / internal tag/energy circuit.
- **Update Frequency:** Select no update/1 Min/ 5 Min/ 10 Min.
- **Chart Type:** Select column/line/curve/area chart.
- **Text Settings.**
- **Data Type:** Select time unit e.g. day/week/month/quarter/year.
- **Compare:** Select two time period for comparison.
- **Data Color:** Choose a color for each time period.
- **Preview:** Displays the setting result.



● **Average Power Consumption:** 

The page displays a comparison between daily and last week or month average power consumption. The following is an example of the display setting.

4

Avg Power Consumption
✕

Name

Configuration

Update Frequency Holidays Included

Title

Subtitle

Font style

X Axis Style

Bounding

Decimal places

Enable data label

Export button

Title size px

Font size px

Data label checkbox

History Color

Text Color

Background Color of Holidays

Realtime Color

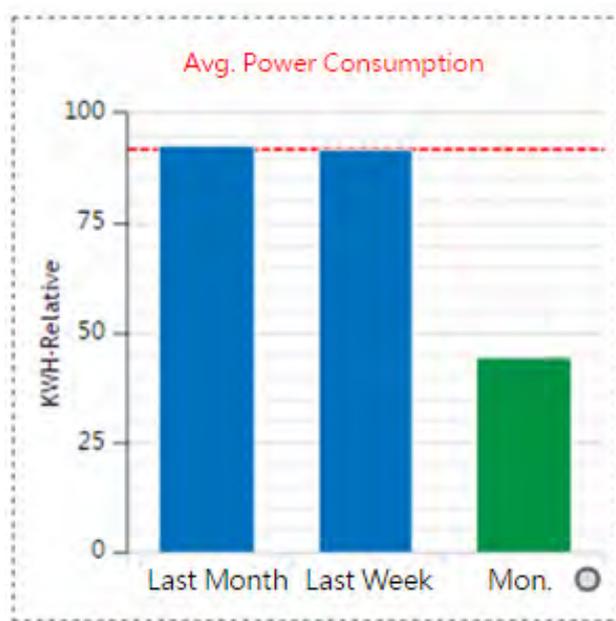
Background Color

Display

Remark

Preview

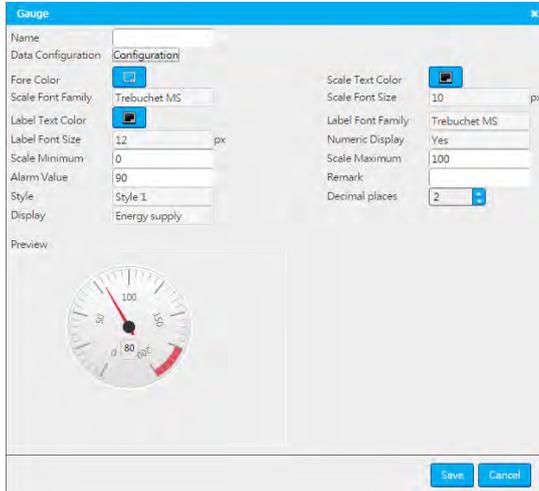
- **Configuration:** Click Configuration and select settings of source, hierarchy, device and tag.
- **Update Frequency:** Select no update/ 1 Min/ 5 Min/ 10 Min.
- **Holidays Included-** Click if required.
- **Text Settings.**
- **Color Settings:** Choose historical and current data color.
- **Preview:** Displays the setting result.



4.3.2.2 Gauge

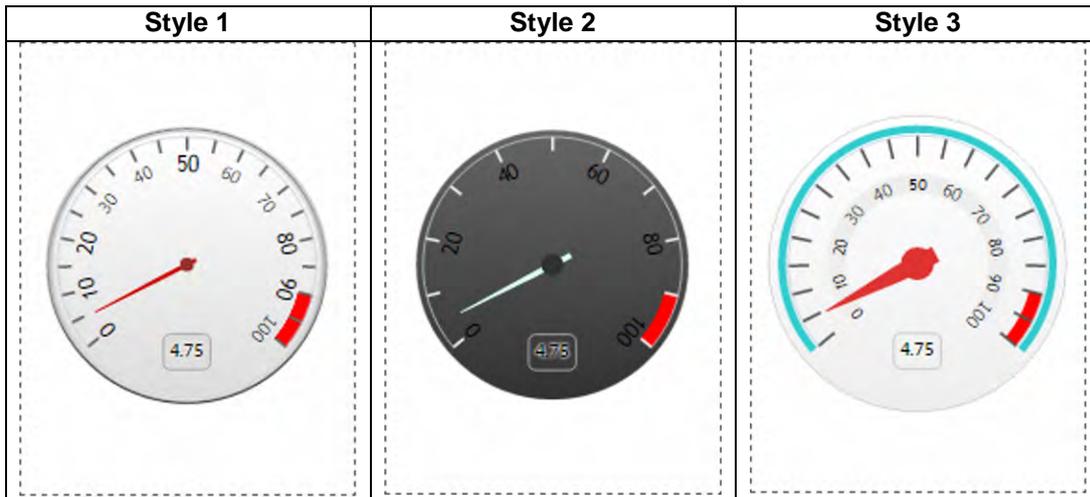
● **Gauge:** 

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.



- **Data Configuration:** Click Configuration and select settings of source, hierarchy, device and tag.
- **Scale Range:** User-defined set of scale range.
- **Numeric Display** – Choose yes or no for real-time scale display.
- **Alarm Value:** the alarm value color is displayed in red.
- **Preview:** Displays the setting result.

4



4.3.3 Control Items

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

4.3.3.1 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 of the types can switch between On and Off mode. The following is an example of the fan type:

- **Hierarchy/ Device:** Select a hierarchy and device to control.
- **Tag:** Only BIT tag is allowed. If the tag is not BIT type, then choose “ ”.



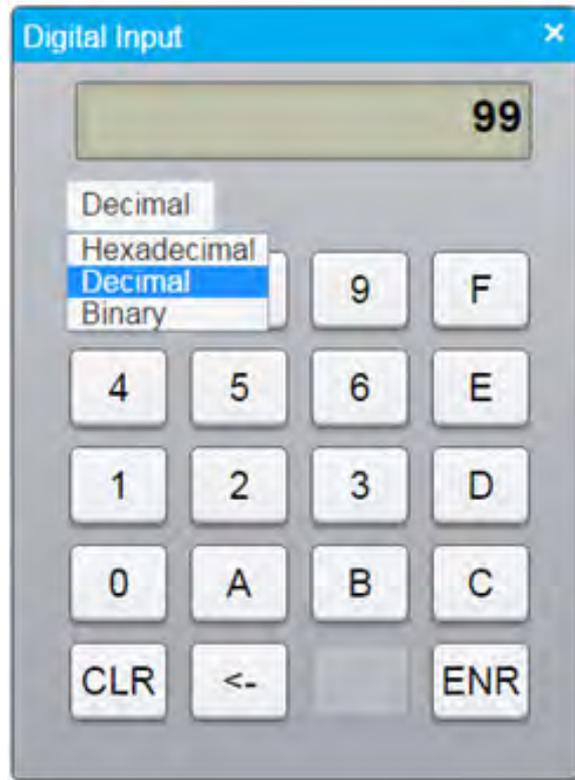
4.3.3.2 Input

- **Numeric Entry:**

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

- **Hierarchy/ Device/Tag:** Select the hierarchy and device to control.
- **Font Size/ Font Space/ Font Color/ Background Color**
- **Text (lower) Box:** Preview the setting result.

When users choose Numeric Entry, a pop-up window for digital input will appear (see below). This calculator mode setting provides hexadecimal, decimal or binary number system to update/input current source value for Preview.



4

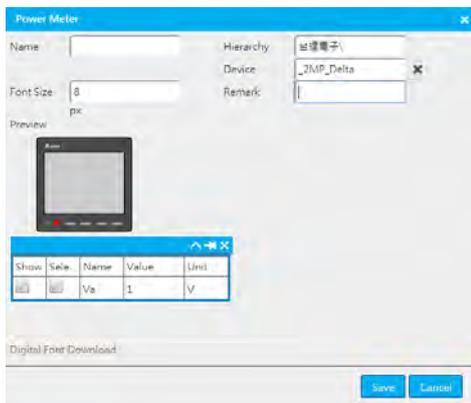
4.3.4 Real-time Data

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

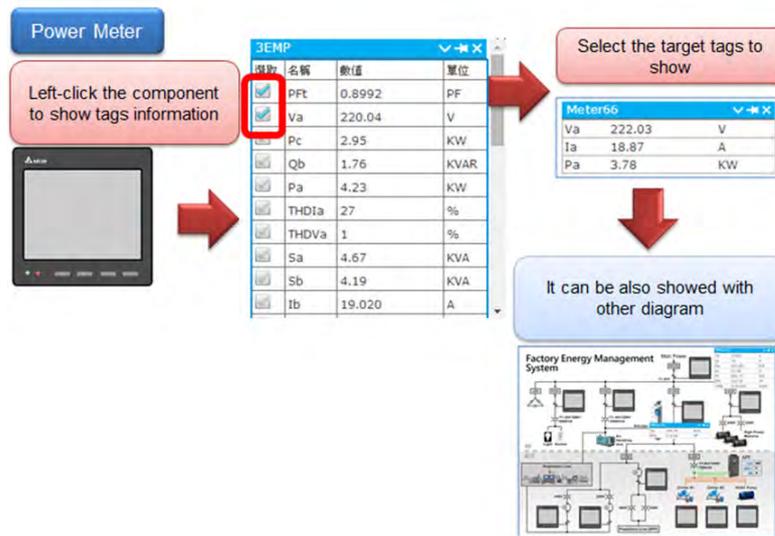
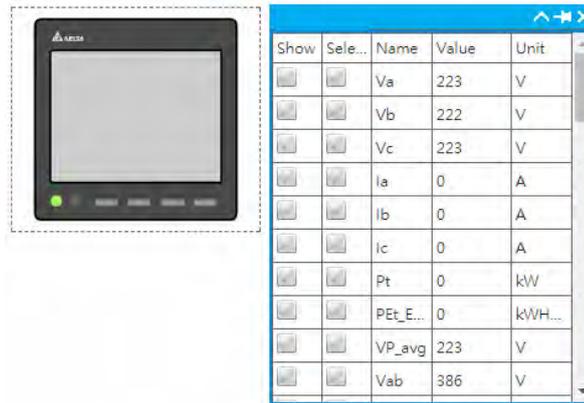
4.3.4.1 Monitoring Device and List

● **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:



- **Hierarchy:** Select the hierarchy for power meter.
- **Device:** Select all the device tags to be listed on the chart.
- **Value Font Size**
- **Text (lower) Box:** Preview the setting result.



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Chapter 5 Basic Query

Table of Contents

- 5.1 Historical Data – Multi-Tag..... 5-2**
 - 5.1.1 Setup 5-2
 - 5.1.2 Time 5-3
 - 5.1.3 Chart Type 5-3
 - 5.1.4 Query/Export Chart/ Export Excel 5-4
- 5.2 Historical Data- Multi-Time Period..... 5-4**
 - 5.2.1 Query Condition 5-4
 - 5.2.2 Date Format..... 5-5
 - 5.2.3 Chart Type 5-5
 - 5.2.4 Query/Export Chart/ Export Excel 5-6

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**.

5.1 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.

5.1.1 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.

5

- Type ① Device Tag ② Energy Circuit
- Select from the following items based on the Type
 - ① Device Tag \ Hierarchy \ Device \ Tag (Unit)
 - ② Energy Circuit \ Hierarchy \ Energy
- Add the query tags (max. 12 tags)

5.1.2 Time

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

Time	Quick Search	<input type="radio"/> Last Hour	<input checked="" type="radio"/> Last Day	<input type="radio"/> Last Week	<input type="radio"/> Last Month	<input type="radio"/> Last Qtr.	<input type="radio"/> Last Year			
	Search	<input type="radio"/> 2018-02-06	17	:	23	To	2018-02-07	17	:	23
	Interval	<input checked="" type="radio"/> Minute	<input type="radio"/> Hour							

- Default time setting is base 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.

5.1.3 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.



5.1.4 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.



	A	B	C	D
1	DateTime	_2EMP2_Delta	_2EMP2_Delta	_2EMP2_Delta
2	2018/2/7 08:00	7.42	5.65	6.64
3	2018/2/7 09:00	3.70	2.86	3.42
4	2018/2/7 10:00	3.44	2.83	3.56
5	2018/2/7 11:00	3.99	4.00	4.76
6	2018/2/7 12:00	6.14	5.61	6.53
7	2018/2/7 13:00	4.19	4.07	4.64
8	2018/2/7 14:00	3.37	2.65	3.36
9	2018/2/7 15:00	3.24	2.46	3.45
10	2018/2/7 16:00	3.56	2.28	3.52
11	2018/2/7 17:00	4.07	2.31	3.83

5

5.2 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.

Historical Data - Multi-time-period

Query Condition Source Setup Selection

Setup

Date Format Interval Day Week Month Quarter Year Period No. 2

Period1 2018-02-08 Period2 2018-02-08

Chart Type Trend Histogram Pie Stacked Column

Query
Export Chart
Export Excel

5.2.1 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 ① Device Tag ② Energy Circuit
- Select from the following items based on the Type
 - ① Device Tag \ Hierarchy \ Device \ Tag (Unit)
 - ② Energy Circuit \ Hierarchy \ Energy
- Only 1 query tag can be added

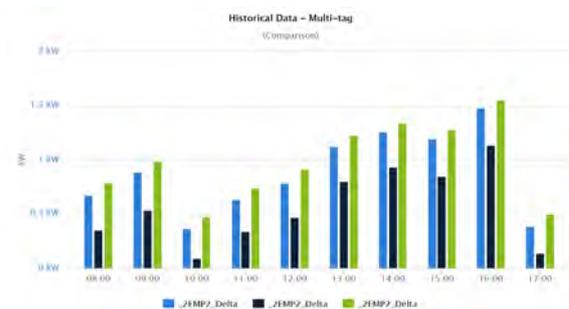
5.2.2 Date Format

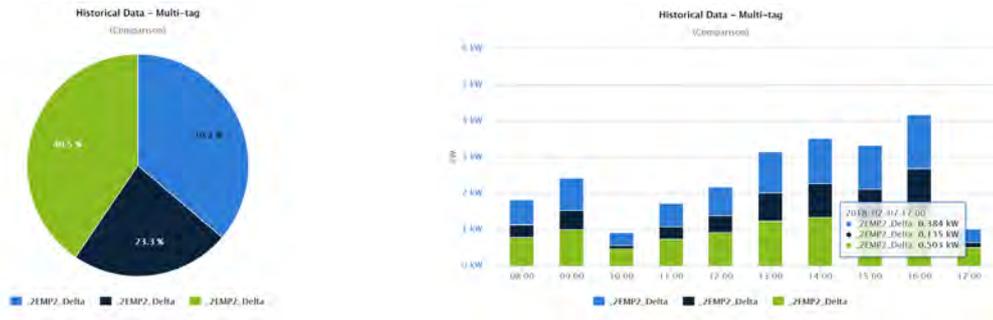
In time settings, users can select the desired period in the query section based on the data types.

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

5.2.3 Chart Type

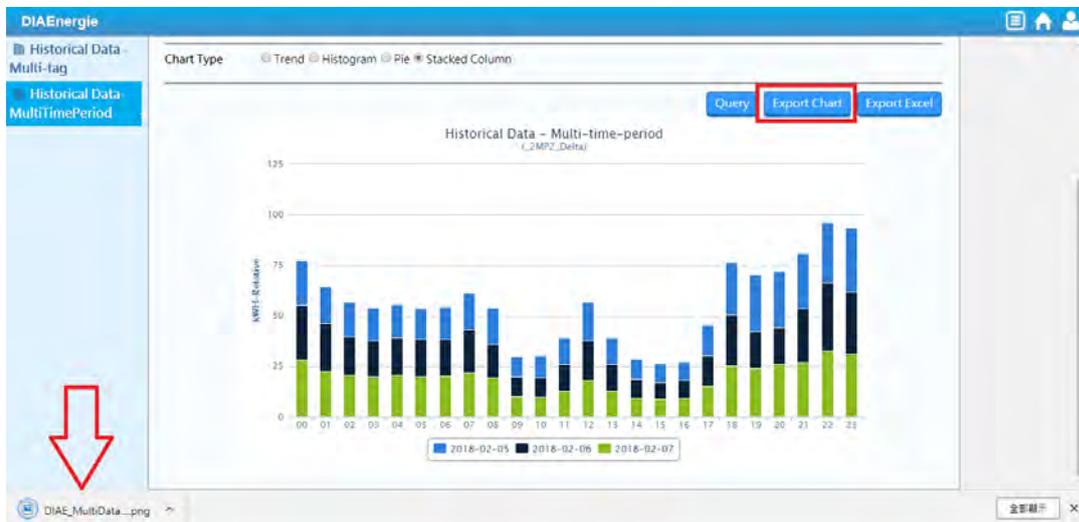
There are four chart types including Trend, Histogram, Pie and Stacked Column for users to select and make their own charts. The following examples display specified Delta power data via trend, histogram, pie and stacked column chart types (from left to right) during a specific period.





5.2.4 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.



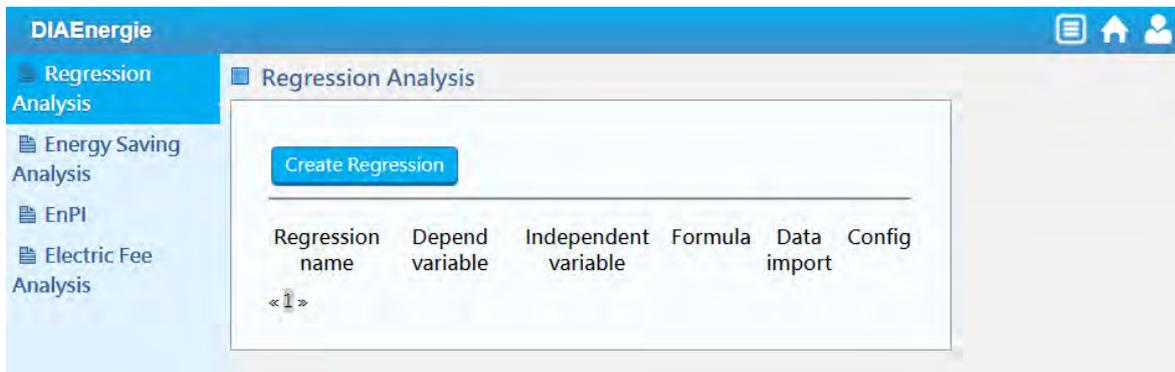
	A	B	C	D	E
1	Category	2018/2/5	2018/2/6	2018/2/7	
2	0	22.11	26.88	28.40	
3	1	17.74	23.98	22.53	
4	2	17.10	19.40	20.45	
5	3	16.45	17.78	20.03	
6	4	16.42	18.99	20.46	
7	5	15.38	18.36	20.02	
8	6	16.02	18.39	20.06	
9	7	17.86	21.56	21.73	
10	8	18.30	16.11	19.61	
11	9	10.20	9.57	10.20	
12	10	10.56	9.82	9.81	
13	11	13.13	13.46	12.74	
14	12	19.40	19.09	18.49	
15	13	13.32	13.22	12.79	
16	14	10.00	9.38	9.48	
17	15	9.20	8.19	8.99	
18	16	9.03	8.81	9.49	
19	17	15.11	15.23	15.13	
20	18	25.55	25.52	25.14	
21	19	27.27	18.52	24.10	

Chapter 6 Advanced Query

Table of Contents

6.1 Introduction	6-2
6.1.1 Regression Analysis Report	6-2
6.1.2 Data Import	6-4
6.1.3 Configuration	6-5
6.2 Energy Saving Analysis	6-5
6.2.1 Energy Saving Analysis.....	6-5
6.2.2 Export Excel / Import File	6-6
6.2.3 Regression Formula	6-6
6.3 EnPI	6-7
6.3.1 Data Source	6-8
6.3.2 Baseline Source / Date Format	6-9
6.3.3 Export Chart/ Excel.....	6-10
6.4 Electricity Tariff Analysis	6-10
6.4.1 Query Condition	6-11
6.4.2 Evaluation Method / Date Format	6-11
6.4.3 Query.....	6-12
6.4.4 Export Chart / Excel.....	6-13
6.4.5 Open Setting Page	6-13

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.**



6.1 Introduction

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.



6.1.1 Regression Analysis Report

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

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

- Type the regression name / choose regression model / select variable number
- Edit the source tags of dependent / independent variables.
- Source ① Device Tag ② Energy Circuit
 - ① Device Tag / Hierarchy / Device / Select Tag
 - ② Energy Circuit / Hierarchy / Energy Type
- Add the edited variables

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.)

Edit

Regression name:

Regression Model:

Variable number:

$Y=b+a0X1$

depend variable	tag	hierarchy	source	config
Y	PEt_EXP	台達電子 桃園\桃二 廠\	Device Tag	

independent variable	tag	hierarchy	source	config
X1:0.99	Pb	台達電子 桃園\桃三 廠\	Device Tag	

6.1.2 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**.



- Choose day or hour for time interval
- Specify the start and end date
- List the formula and correlation coefficient on the right
- Show the specified scatter plot and regression base line (linear only)

6.1.3 Configuration

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

_2MP2	Pt_EXP	Pb	formula:-0.637+ 3.704*X1 coefficient:_2MP2_Delta:3.704 constant:-0.637 Date:2018-02-05~2018-02-07 R : 0.97 F : 1048.28	  
-------	--------	----	--	---

- Edit the content in dependent and independent variables
- Delete the saved data

6.2 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.

Energy Saving Analysis

Performance config

Performance analysis	Performance name	Verify start date	Verify end date	Energy save below target · Enable Alarm <input type="checkbox"/>
<input type="text" value="New"/>	<input type="text"/>	<input type="text" value="2018-02-08"/>	<input type="text" value="2018-02-08"/>	During verification, energy saving target <input type="text" value=""/> (%)

Regression formula

Regression formula	Baseline start date	Baseline end date	Regression formula	R^2
<input type="text"/>	--	--	--	--
Corresponding variable		Independent variable	Coefficient	
Date interval		<input checked="" type="radio"/> day <input type="radio"/> hour		

Export excel

data start date	data end date
<input type="text" value="2018-02-08"/>	<input type="text" value="2018-02-08"/>

Import

file import Manual input

import Excel(xlsx) 未選擇任何檔案

6.2.1 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.

Performance config

Performance analysis	Performance name	Verify start date	Verify end date	Energy save below target · Enable Alarm <input type="checkbox"/>
<input type="text" value="New"/>	<input type="text"/>	<input type="text" value="2018-02-08"/>	<input type="text" value="2018-02-08"/>	During verification, energy saving target <input type="text" value=""/> (%)

Regression formula

Regression formula	Baseline start date	Baseline end date	Regression formula	R^2
<input type="text"/>	--	--	--	--
Corresponding variable		Independent variable	Coefficient	
Date interval		<input checked="" type="radio"/> day <input type="radio"/> hour		

- New / Performance name/ Verify start & end date
- Select from previous performance analysis list

- Set energy-saving target (%) and click enable alarm box if energy saving is below target

6.2.2 Export Excel / Import File

Export excel

data start date

data end date

Import

file import
 Manual input

import Excel(xlsx)

未選擇任何檔案

- 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

Import

file import
 Manual input

	Pb:3.704	<input type="button" value="import"/>
2018-02-08 00:00:00		
2018-02-08 01:00:00		
2018-02-08 02:00:00		
2018-02-08 03:00:00		

6.2.3 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 simultaneously displayed on the charts and users can choose to Save / Delete or Delete Import Data.

Regression formula

Regression formula

Baseline start date
 2018-02-05

Baseline end date
 2018-02-07

Regression formula
 $-0.637 + 3.704 * X1$

R^2
 0.97

Corresponding variable

Independent variable

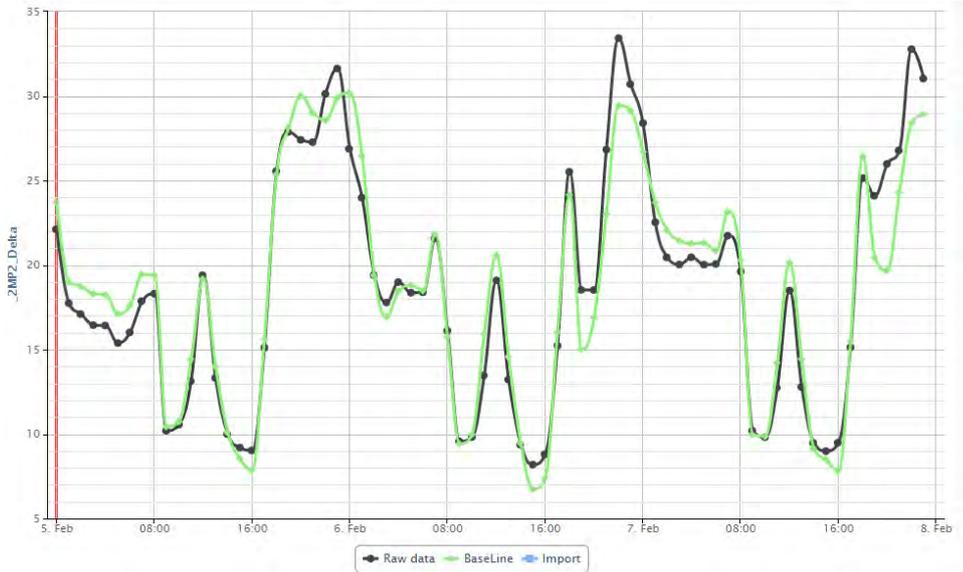
Coefficient

X:Pb

3.704

Date interval
 day hour

- Choose the listed regression formula from the report
- Charts content include
 - ❶ Raw data as collected values
 - ❷ Baseline data as predicted data via the formula
 - ❸ Import data (if needed)
 - ❹ Display verification of energy savings and target assessment



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	0.75 (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	-0.7 (-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%

- Users can choose to keep the modified content, or delete inappropriate energy performance analysis and import data as well.

6.3 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.

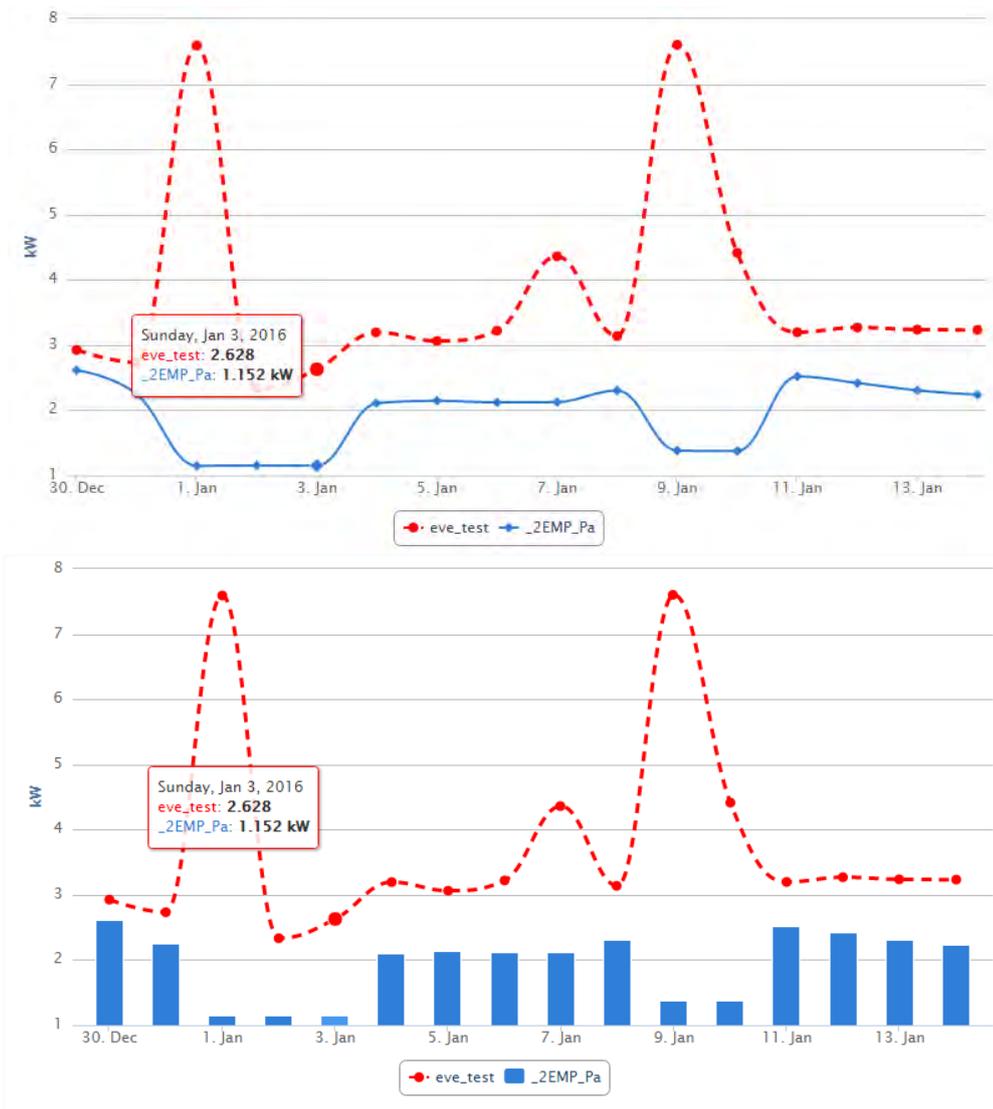
6.3.1 Data Source

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.

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

- Type includes device tag
- Selectable items based on Type
 - ① Device Tag / Hierarchy / Device / Tag (Unit)
- Add query conditions to My Favorite (Max. 5 query tags for the same unit)

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.



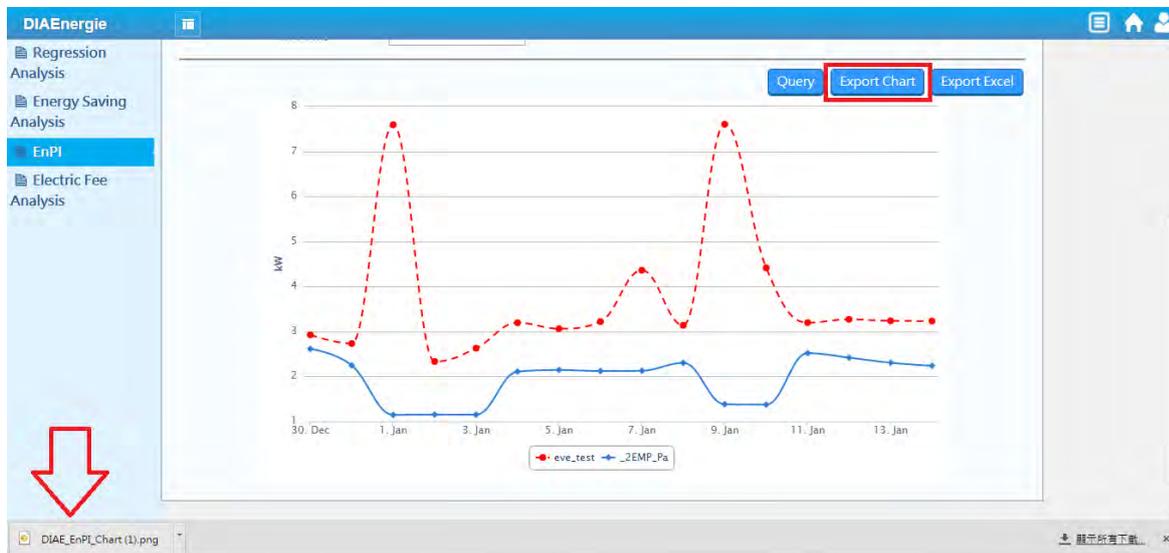
6.3.2 Baseline Source / Date Format

Baseline Source	Index Type	Hierarchy	Tag (Unit)
	Real		
Date Format	Interval	<input checked="" type="radio"/> Day <input type="radio"/> Month	
	Start Date	2018-02-07	
	End Date	2018-02-08	

- Baseline Source Type: select Real (real numbers) and input value
 - ① Real / Value
- Date Format
 - ① Select the query interval
 - ② Start and end date setting

6.3.3 Export Chart/ Excel

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

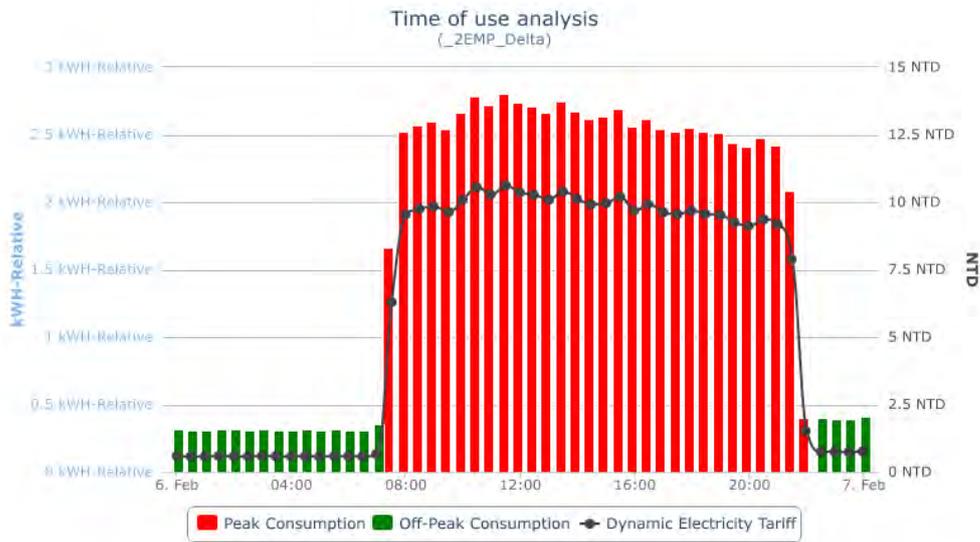
6.4 Electricity Tariff Analysis

The electricity tariff analysis provides users to effectively manage the electricity costs. The **1. Query Condition** contains selectable source items and power factors. Then, **2. Evaluation 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.

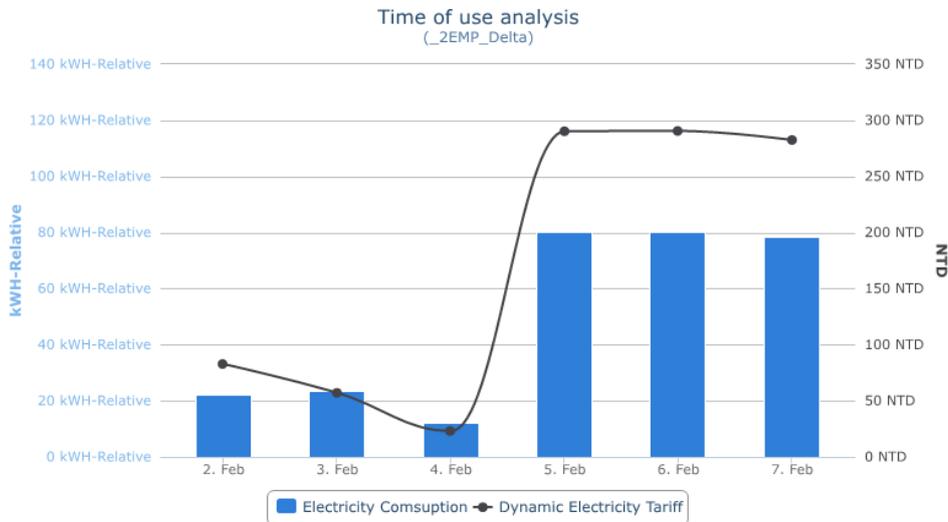
6.4.3 Query

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

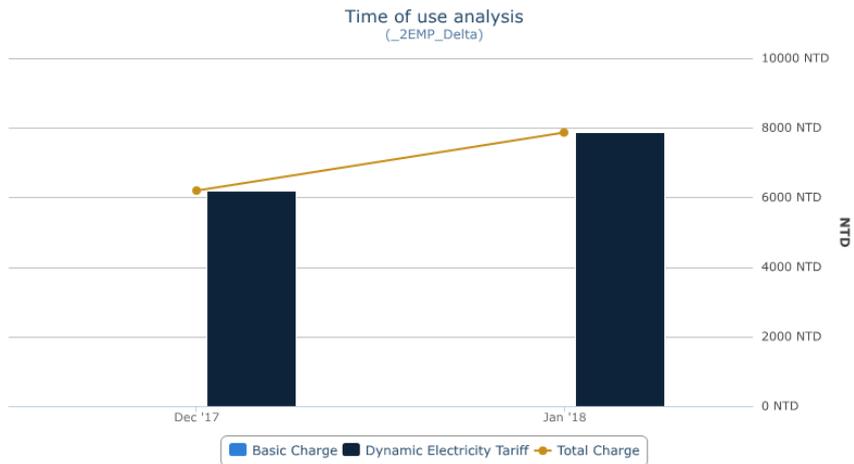
- Electricity Tariff Analysis (Time)



- Electricity Tariff Analysis (Daily)

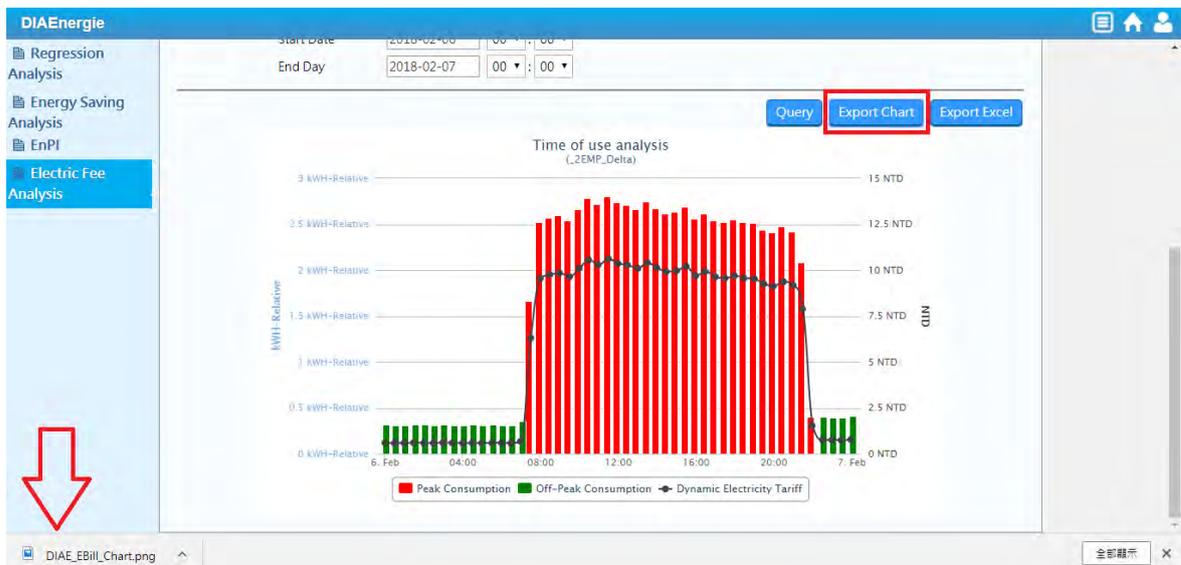


- Electricity Tariff Analysis (Monthly)



6.4.4 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
	DateTime	Basic Charge	Dynamic Electricity Tariff	Total Charge
1	2017/12/1 00:00	572.00	6201.43	6773.43
3	2018/1/1 00:00	572.00	7870.77	8442.77

6.4.5 Open Setting Page

The Taiwan Power Company (Taipower) 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.

Fee Setting

Category: High voltage electricity | Three-stage peak - may ch | **Save**

Summer Month Date: 06/01 ~ 09/30 | Power factor adjustment charges benchmark: 80

Contract capacity: 0 | Power factor adjustment exceeds the benchmark rate: 0.0015

Half the peak contract capacity: 0 | Power factor adjustment than the reference rate: 0.003

Saturday half-spikes contract capacity: 0 | Off-peak contract capacity: 0 | **Save**

Monday to Friday peak time: 00 | 00 | 00 | 00 | **Add**

Delete	Name	Value
Delete	Summer15_Peak1	10:00~12:00
Delete	Summer15_Peak2	13:00~17:00

Monday to Friday Half-peak hours: 00 | 00 | 00 | 00 | **Add**

Delete	Name	Value
Delete	Summer15_HalfPeak1	07:30~10:00
Delete	Summer15_HalfPeak2	12:00~13:00
Delete	Summer15_HalfPeak3	17:00~22:30

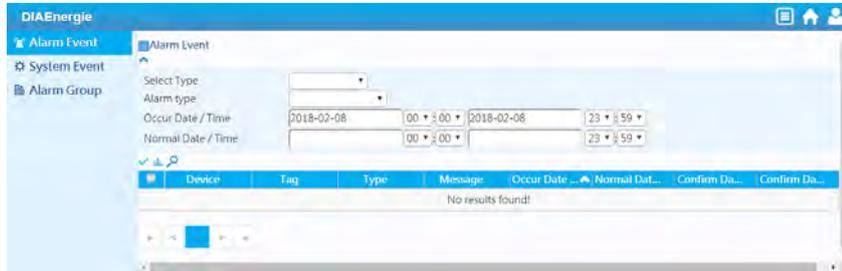
Chapter 7 Alarm Management

Table of Contents

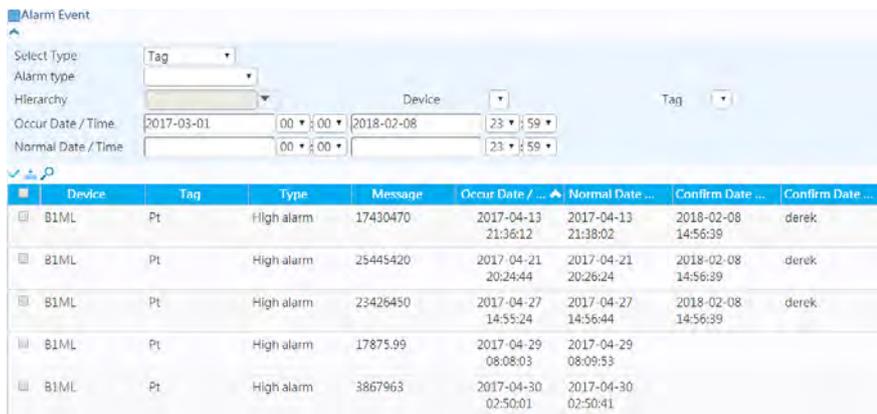
- 7.1 Alarm Notification 7-2
- 7.2 System Notification 7-3
- 7.3 Alarm Group 7-4

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: Users need to first select Type before setting the Alarm Type.



7.1 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 alarm	Pt	17430470	2018-02-08	2017-04-13	2017-04-13 21:38:02	derek
3	B1ML	High alarm	Pt	25445420	2018-02-08	2017-04-21	2017-04-21 20:26:24	derek
4	B1ML	High alarm	Pt	23426450	2018-02-08	2017-04-27	2017-04-27 14:56:44	derek
5	B1ML	High alarm	Pt	17875.99	9999-12-31	2017-04-29	2017-04-29 08:09:53	
6	B1ML	High alarm	Pt	3867963	9999-12-31	2017-04-30	2017-04-30 02:50:41	
7	B1ML	High alarm	Pt	4187327	9999-12-31	2017-04-30	2017-04-30 04:42:13	
8	B1ML	High alarm	Pt	19679380	9999-12-31	2017-09-04	2017-09-04 19:54:40	
9	B1ML	High alarm	Pt	46389.852	9999-12-31	2017-09-08	2017-09-08 02:25:21	
10	B1ML	High alarm	Pt	1397265	9999-12-31	2017-09-10	2017-09-10 02:54:01	
11	B1ML	High alarm	Pt	170757.09	9999-12-31	2017-10-07	2017-10-07 01:02:34	
12	B1ML	High alarm	Pt	23319160	9999-12-31	2017-06-16	2017-06-16 14:39:32	
13	B1ML	High alarm	Pt	20167480	9999-12-31	2017-08-14	2017-08-14 16:51:01	
14	B1ML	High alarm	Pt	1164.96	9999-12-31	2017-08-19	2017-08-19 05:36:39	
15	B1ML	High alarm	Pt	126367.79	9999-12-31	2017-08-19	2017-08-19 10:55:40	

7.2 System Notification

System Event

Level Message

Update Time 2018-02-08 00:00 2018-02-08 23:23

Message	Update Time(Query time interval)	Level
Equipment_SMR disconnected!	2018-02-08T00:00:59	Alarm
Equipment_SEMP disconnected!	2018-02-08T00:03:07	Alarm
Equipment_SMR disconnected!	2018-02-08T00:03:22	Alarm
Equipment_SMR disconnected!	2018-02-08T00:06:08	Alarm
Equipment_SMP_Delta disconnected!	2018-02-08T00:06:24	Alarm
Equipment_SLA1_Delta disconnected!	2018-02-08T00:06:35	Alarm
Equipment_SEMP disconnected!	2018-02-08T00:06:50	Alarm
Equipment_SMR disconnected!	2018-02-08T00:09:31	Alarm
Equipment_SMP_Delta disconnected!	2018-02-08T00:09:47	Alarm
Equipment 172.16.159.41 disconnected!	2018-02-08T00:10:33	Alarm

< < 1 2 3 4 5 > >

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**

- ① **Information** : User log in / log out
- ② **Warning** : Abnormal system setting
- ③ **Alarm** : Abnormal connection error

- **Message**

Users can type characters in the Message box to find the alarm messages with the exact same characters. For instance, characters '_5EMP' is typed in the Message box and alarms with these characters are listed in the workspace below.

System Event

Level Message

Update Time 2017-03-01 00:00 2018-02-08 23:23

Message	Update Time(Query time interval)	Level
Equipment _5EMP disconnected!	2018-01-09T00:05:18	Alarm
Equipment _5EMP disconnected!	2018-01-09T00:18:13	Alarm
Equipment _5EMP disconnected!	2018-01-09T00:21:19	Alarm
Equipment _5EMP disconnected!	2018-01-09T00:23:35	Alarm
Equipment _5EMP disconnected!	2018-01-09T00:27:34	Alarm
Equipment _5EMP disconnected!	2018-01-09T00:31:11	Alarm
Equipment _5EMP disconnected!	2018-01-09T00:42:36	Alarm
Equipment _5EMP disconnected!	2018-01-09T00:52:48	Alarm
Equipment _5EMP disconnected!	2018-01-09T00:56:06	Alarm
Equipment _5EMP disconnected!	2018-01-09T01:01:23	Alarm

< < 1 2 3 4 5 > >

• **Query / Export**

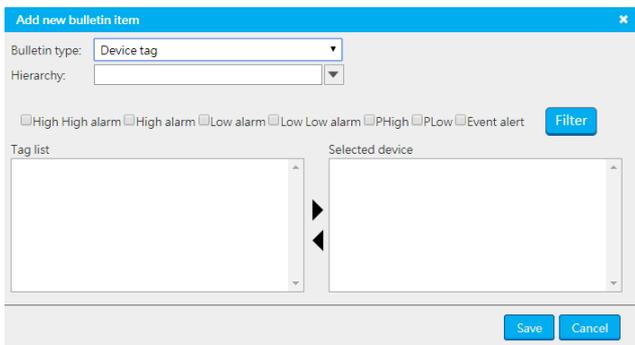
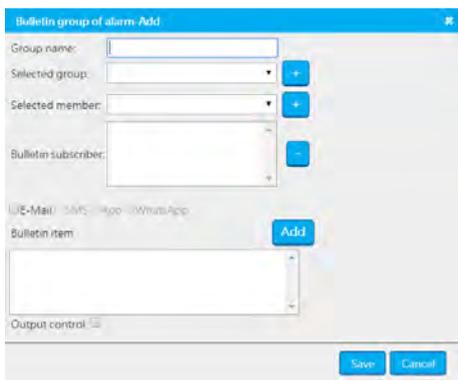
Select Query to view the list of alarm messages, or save the result in Excel files.

	C	E	F	G	H
1	Message	Level	Update Time(Query time interval)		
2	Equipment _5EMP disconnected!	Alarm	1/9/2018 12:05:18 AM		
3	Equipment _5EMP disconnected!	Alarm	1/9/2018 12:18:13 AM		
4	Equipment _5EMP disconnected!	Alarm	1/9/2018 12:21:19 AM		
5	Equipment _5EMP disconnected!	Alarm	1/9/2018 12:23:35 AM		
6	Equipment _5EMP disconnected!	Alarm	1/9/2018 12:27:34 AM		
7	Equipment _5EMP disconnected!	Alarm	1/9/2018 12:31:11 AM		
8	Equipment _5EMP disconnected!	Alarm	1/9/2018 12:42:36 AM		
9	Equipment _5EMP disconnected!	Alarm	1/9/2018 12:52:48 AM		
10	Equipment _5EMP disconnected!	Alarm	1/9/2018 12:56:06 AM		
11	Equipment _5EMP disconnected!	Alarm	1/9/2018 1:01:23 AM		
12	Equipment _5EMP disconnected!	Alarm	1/9/2018 1:10:51 AM		

7.3 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 Alarm Notification Group-Add page, 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. Two alert notifications including E-mail and SMS are provided. More notification will be offered soon.



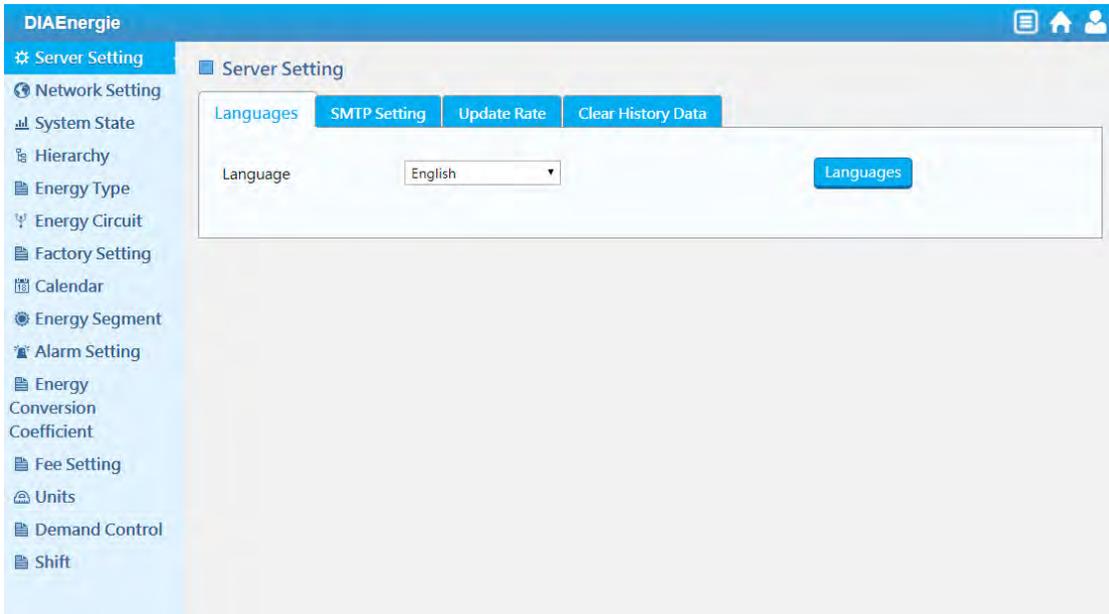


Chapter 8 System Setup

Table of Contents

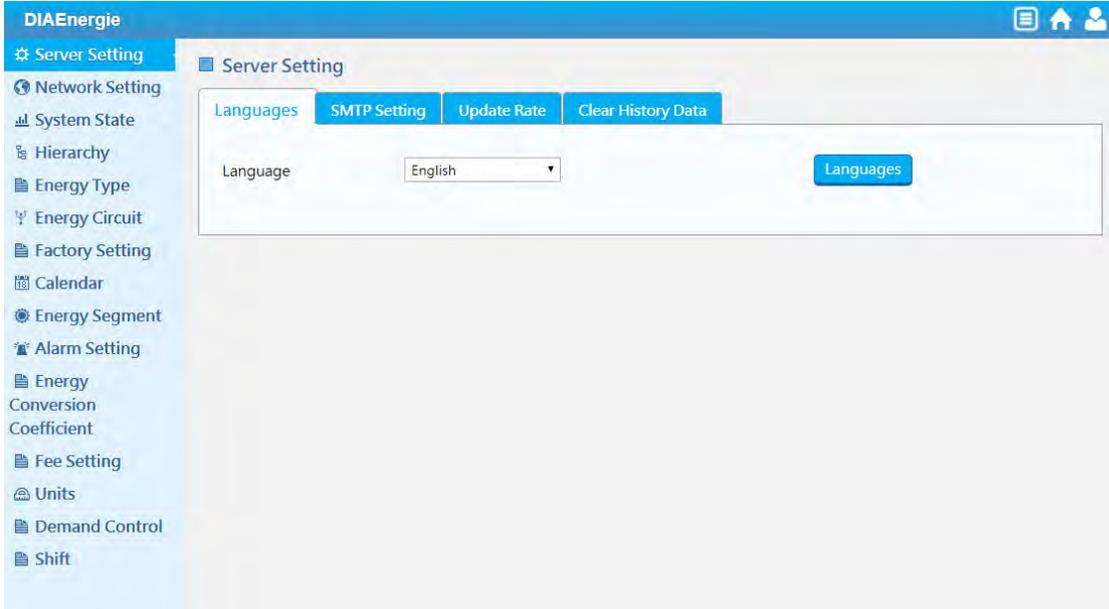
- 8.1 Server Setting 8-2**
 - 8.1.1 Languages 8-2
 - 8.1.2 SMTP Setting 8-3
 - 8.1.3 Update Rate 8-3
 - 8.1.4 Clear History Data 8-3
- 8.2 Network Setting 8-4**
 - 8.2.1 Proxy Setting 8-4
 - 8.2.2 MODBUS TCP Server Setting 8-4
- 8.3 System State 8-5**
- 8.4 Hierarchy 8-6**
- 8.5 Energy Type 8-7**
- 8.6 Energy Circuit 8-8**
- 8.7 Factory Setting 8-9**
- 8.8 Calendar 8-10**
- 8.9 Energy Segment 8-11**
- 8.10 Alarm Setting 8-12**
 - 8.10.1 SMS Device Settings 8-12
- 8.11 Energy Conversion Coefficient 8-15**
- 8.12 Fee Setting 8-15**
- 8.13 Units 8-16**
- 8.14 Demand Control 8-17**
- 8.15 Shift Setting 8-18**

System Settings helps users to manage the system setup in DIAEnergie. Currently, there are 15 items in DIAEnergie for setup and are described below.



8.1 Server Setting

Server Setting is the first item listed in the left column. The item also has the following optional settings including **Languages**, **SMTP Setting**, **Update Rate** and **Clear History Data** described below.



8

8.1.1 Languages

Users can switch DIAEnergie languages (including: Traditional Chinese/ Simplified Chinese/ English). Click Language button and refresh the web page to view the setting result.

Server Setting

[Languages](#)
[SMTP Setting](#)
[Update Rate](#)
[Clear History Data](#)

Language: [Languages](#)

8.1.2 SMTP Setting

Users can setup the server name, account and password as well as sent an alert notification via real-time e-mail to the managing staff. In addition, users can also choose to enable SSL for high secure transmission and enable SMTP if needed.

Server Setting

[Languages](#)
[SMTP Setting](#)
[Update Rate](#)
[Clear History Data](#)

Server Name:
 Account:
 Password:
 Port:
 Email:
 SSL Enable:
 SMTP Enable:

[SMTP](#)

8.1.3 Update Rate

The Update Rate provides settings regarding intervals for Communication update and Saved data. The setup of communication update is related to system efficiency (higher update rate generates slower efficiency and vice versa). The Saved data setup is related to saved data storage (shorter interval leads to more file-saving and vice versa.)

Server Setting

[Languages](#)
[SMTP Setting](#)
[Update Rate](#)
[Clear History Data](#)

RealTime Data each: Seconds [Set](#)
 History Data each: Minutes [Set](#)

8.1.4 Clear History Data

Users can choose to clear history data from the past year up to the past 10 years in this section.

Server Setting

[Languages](#)
[SMTP Setting](#)
[Update Rate](#)
[Clear History Data](#)

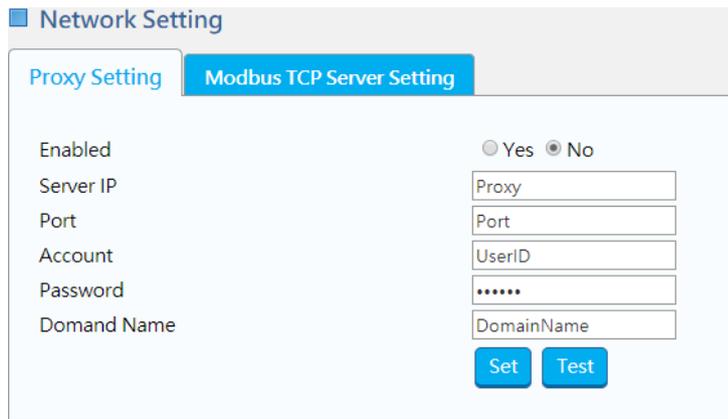
Clear History Data(Y/N): Clear History Data Before(Years): [Set](#)

8.2 Network Setting

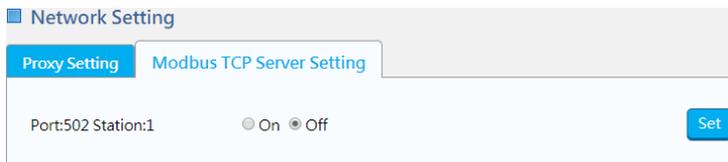
Network Setting is the second item listed in the left column. The item also has the following optional settings including **Proxy Setting** and **MODBUS TCP Server Setting** described below.

8.2.1 Proxy Setting

The page provides setup for IP distribution. The **Proxy Setting** function also allows the system when limited to area network to link with other devices outside the area. As for **MODBUS TCP Server Setting**, users can choose to enable the function for collecting DIAEnergie information.

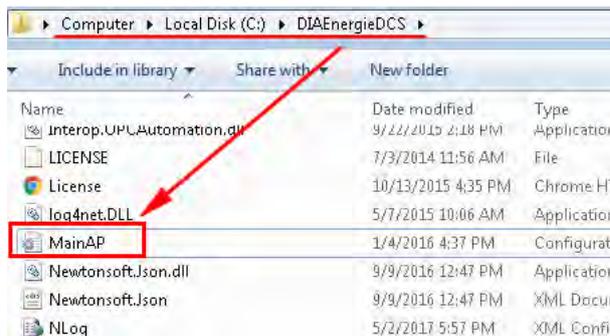


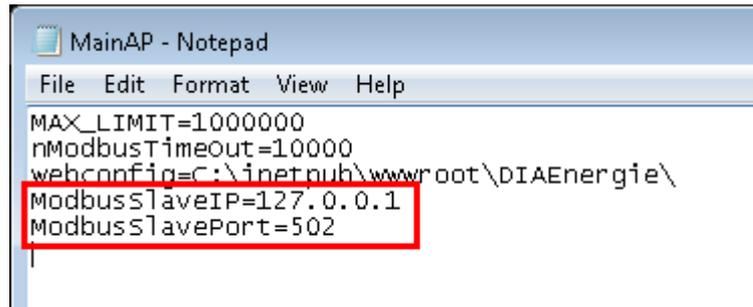
8.2.2 MODBUS TCP Server Setting



The **MODBUS Server** setting requires a specified IP and communication port which is available in DIAEnergie server. Users can go to C:\DIAEnergieDCS\MainAP.ini for setup.

- Please setup IP address and communication port if required:
ModbusSlaveIP=127.0.0.1
ModbusSlavePort=502





```

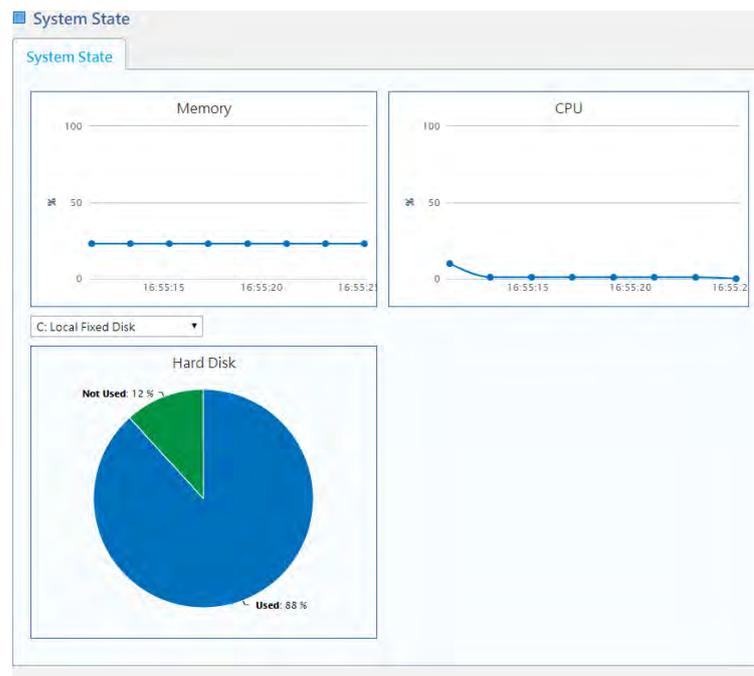
MainAP - Notepad
File Edit Format View Help
MAX_LIMIT=1000000
nModbusTimeout=10000
webconfig=C:\inetpub\wwwroot\DIAEnergie\
ModbusSlaveIP=127.0.0.1
ModbusSlavePort=502

```

When MainAP.ini setting is complete, users need to restart DIAEnergie AP (CEBC.exe) or the computer.

8.3 System State

Users can track the server status from **1. Drop-down menu** to select hard drives for various monitoring. Currently, the system offers three monitoring status including **2. Memory**, **3. Hard Disk Drive** and **4. CPU**.



1. **Drop-down menu** : choose a disk for monitoring
2. **Memory Usage**
3. **Hard Disk Drive Usage**
4. **CPU Usage**

8.4 Hierarchy

Hierarchy

Add

Hierarchy name	Type Description	Calendar	Contract Capacity	Enable Demand Control	Energy conversion coefficient	Edit	Delete
▼ Delta		Common		N			
▼ Taoyuan		Common		N			
▼ TY3		Common		N			
▼ RD_Building		Common		N			
7F		Common	123	Y			
2F		Common		N			
Dormitory		Common		N			

When users want to setup different domains for hierarchy attributes, the **Hierarchy** function provides settings via clicking the top **Add** button to create new hierarchy and to edit and to delete the selected hierarchy. All information are categorized into domains for users to execute query and management with enhanced efficiency.

Add Hierarchy ✕

Hierarchy name

Type Description

Parent Hierarchy ▼

Contract Capacity kW

Enable Demand Control

Calendar ▼

Energy conversion coefficient ▼

- **Hierarchy Name**
- **Parent Hierarchy:** Select a top level in hierarchy
- **Contract Capacity:** The contract capacity of electricity signed with Taiwan Power Company
- **Enable Demand Control:** Choose the option to edit the alert value of the contract capacity
- **Calendar:** User-defined or apply default calendar
- **Energy Conversion Coefficient:** Convert energy into coefficients of standard oil or coal

8.5 Energy Type

Energy Type

Add

Energy type name	Description	Energy supply and consumption	Edit	Delete
▼ Water		Energy supply and consumption		
Rainwater		Energy supply		
Daily Water		Energy consumption		
▼ Electricity		Energy supply and consumption		
▼ Supply		Energy supply		
Elevator Regen.		Energy supply		
Solar Energy		Energy supply		
▼ Consumption		Energy consumption		
Socket		Energy consumption		
Illumination		Energy consumption		
A/C		Energy consumption		
Regulation		Energy consumption		
Dom.		Energy consumption		
Lab.		Energy consumption		
Compressor		Energy consumption		

The page allows users to setup required energy consumption types including oil, electricity, water and gas. Click **Add** for new consumption type or choose to edit and to delete the selected item. The function categorizes the information for query and management base on the energy consumption types with enhanced efficiency.

Add Energy Type

Energy supply
 Energy consumption
 Energy supply and consumption

Energy type name:

Description:

Parent hierarchy: ▼

Save Cancel

- **Create Energy Consumption Type**
 - ① **Choose energy category:** Energy supply / Energy consumption / Energy supply and consumption
 - ② **Parent hierarchy:** Select a top level in hierarchy
- **Edit/Delete**

8.6 Energy Circuit

Energy Circuit									
Add									
Circuit	Device Name	Tag	Unit	Description	Hierarchy	Energy type	Edit	Delete	
<input type="checkbox"/>	_MP31_Delta	PET_EXP	kWH-Relative	_MP31_Delta	Delta\Taoyuan\TY3\	Electricity\Consumption\Lab.			
<input type="checkbox"/>	_MP32	+PEt	kWH-Relative	_MP32	Delta\Taoyuan\TY3\	Electricity\Consumption\Socket			
<input type="checkbox"/>	_1IMP3	+PEt	kWH-Relative	_1IMP3	Delta\Taoyuan\	Electricity\Supply\Elevator Regen.			
<input type="checkbox"/>	_6EMP	+PEt	kWH-Relative	_6EMP	Delta\Taoyuan\	Electricity\Supply\Elevator Regen.			
<input type="checkbox"/>	EACP	+PEt	kWH-Relative	EACP	Delta\Taoyuan\TY3\	Electricity\Consumption\Lab.			
<input type="checkbox"/>	ACP1	+PEt	kWH-Relative	ACP1	Delta\Taoyuan\TY3\	Electricity\Consumption\Socket			
<input type="checkbox"/>	ZACP	+PEt	kWH-Relative	ZACP	Delta\Taoyuan\TY3\	Electricity\Consumption\Illumination			
<input type="checkbox"/>	CDA	+PEt	kWH-Relative	CDA_番電表	Delta\Taoyuan\TY3\	Electricity\Consumption\A/C			
<input type="checkbox"/>	_REMP	+PEt	kWH-Relative	_REMP	Delta\Taoyuan\TY3\	Electricity\Consumption\Compressor			
<input type="checkbox"/>	_6EMP	+PEt	kWH-Relative	_6EMP	Delta\Taoyuan\TY3\	Electricity\Consumption\Regulation			

When users have completed the settings for Hierarchy and Energy Type, the Energy Circuit function combines the previous settings along with assigned device tags to edit or delete on selected items. As a result, the setting provides data analysis for specified domains with assigned energy consumption types.

Edit
✕

Circuit

Energy type

Hierarchy

Device

Tag

Unit

Description

Save
Cancel

- **Create Energy Circuit**
 - ① **Circuit:** Click the Circuit box. If the box is selected, all circuit information is collected ; if not selected, then all information will be added from the system.
 - ② **Energy type:** Choose the type of energy
 - ③ Hierarchy > Device > Tag

- **Edit/Delete**

8.7 Factory Setting

The setting features constant values that are unable to be produced via device tags e.g. production or output value per months for data hierarchy. The new factory tag values can be established in some charts and analyzed together with device tags.

- **Factory Data Type:** Create data types as general indicators for the top hierarchy level including Target Consumption, Target Production and Energy Efficiency Target.

Factory Data Type **1** Factory Data Item Factory Data Hierarchy Factory Data Content

Type Name **2** **3** Create

Type Name
Target Consumption

- **Factory Data Item:** Create target consumption data regarding items including the main loop, main building and parking building.

Data Type Data Item **1** Hierarchy Assignment Data Item Content

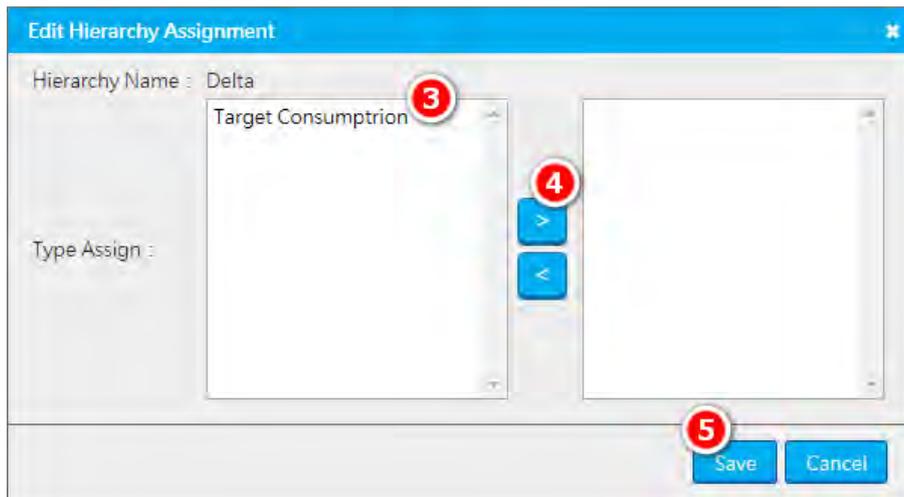
Type Name **1** Item Name **2** Unit **3** Appendix **4** Create

Type Name	Item Name	Unit	Appendix	
Target Consumption	Main Loop	kw	<input type="checkbox"/>	Delete Edit
Target Consumption	Main Buildings	kw	<input type="checkbox"/>	Delete Edit
Target Consumption	Parking Buildings	kw	<input type="checkbox"/>	Delete Edit

- **Factory Data Hierarchy:** Click  edit and select a data in the Type Assign box, then click  to move the data into the assigned hierarchy.

Data Type Data Item Hierarchy Assignment **1** Data Item Content

Hierarchy Name	Description	Edit 2
▼ Delta		
▼ Taoyuan		
▼ TY3		
▼ RD_Building		
2F		
7F		



- Factory Data Content:** Enter the monthly/daily values of factory data including monthly target consumption, total energy consumption or daily device target consumption which are not gathered via device tags. The data content settings combine with the actual device tag values for analysis. This new data is used on the energy dashboard that compares real output energy consumption graphs.

Data Type	Data Item	Hierarchy Assignment	Data Item Content
Hierarchy Assignment	Delta\Taoyuan\TY3\		Value
Data Type	Target Consumption	1	300
Data Item	Main Buildings	2	280
Type	Month	3	320
Year	2018	4	280
Month	1	5	340
		6	360
		7	380
		8	380
		9	360
		10	360
		11	380
		12	360

8.8 Calendar

This function provides identification for work days / weekends. Users can also directly select the date on the calendar to change details for any work days/ weekends. Click Create or Batch for additional calendars.

Calendar

Name: Common Description: Common Default: Weekend: Week off 2 days

Year: 2018

January 2018							February 2018							March 2018							April 2018										
wk	Su	Mo	Tu	We	Th	Fr	Sa	wk	Su	Mo	Tu	We	Th	Fr	Sa	wk	Su	Mo	Tu	We	Th	Fr	Sa	wk	Su	Mo	Tu	We	Th	Fr	Sa
1		1	2	3	4	5	6	5					1	2	3	9					1	2	3	13							
2	7	8	9	10	11	12	13	6	4	5	6	7	8	9	10	10	4	5	6	7	8	9	10	14	1	2	3	4	5	6	7
3	14	15	16	17	18	19	20	7	11	12	13	14	15	16	17	11	11	12	13	14	15	16	17	15	8	9	10	11	12	13	14
4	21	22	23	24	25	26	27	8	18	19	20	21	22	23	24	12	18	19	20	21	22	23	24	16	15	16	17	18	19	20	21
5	28	29	30	31				9	25	26	27	28				13	25	26	27	28	29	30	31	17	22	23	24	25	26	27	28
6								10								14								18	29	30					

May 2018							June 2018							July 2018							August 2018										
wk	Su	Mo	Tu	We	Th	Fr	Sa	wk	Su	Mo	Tu	We	Th	Fr	Sa	wk	Su	Mo	Tu	We	Th	Fr	Sa	wk	Su	Mo	Tu	We	Th	Fr	Sa
18			1	2	3	4	5	22					1	2	26								31				1	2	3	4	
19	6	7	8	9	10	11	12	23	3	4	5	6	7	8	9	27	1	2	3	4	5	6	7	32	5	6	7	8	9	10	11
20	13	14	15	16	17	18	19	24	10	11	12	13	14	15	16	28	8	9	10	11	12	13	14	33	12	13	14	15	16	17	18
21	20	21	22	23	24	25	26	25	17	18	19	20	21	22	23	29	15	16	17	18	19	20	21	34	19	20	21	22	23	24	25
22	27	28	29	30	31			26	24	25	26	27	28	29	30	30	22	23	24	25	26	27	28	35	26	27	28	29	30	31	
23								27								31	29	30	31					36							

September 2018							October 2018							November 2018							December 2018										
wk	Su	Mo	Tu	We	Th	Fr	Sa	wk	Su	Mo	Tu	We	Th	Fr	Sa	wk	Su	Mo	Tu	We	Th	Fr	Sa	wk	Su	Mo	Tu	We	Th	Fr	Sa
35							1	40		1	2	3	4	5	6	44					1	2	3	48							1
36	2	3	4	5	6	7	8	41	7	8	9	10	11	12	13	45	4	5	6	7	8	9	10	49	2	3	4	5	6	7	8
37	9	10	11	12	13	14	15	42	14	15	16	17	18	19	20	46	11	12	13	14	15	16	17	50	9	10	11	12	13	14	15
38	16	17	18	19	20	21	22	43	21	22	23	24	25	26	27	47	18	19	20	21	22	23	24	51	16	17	18	19	20	21	22
39	23	24	25	26	27	28	29	44	28	29	30	31				48	25	26	27	28	29	30		52	23	24	25	26	27	28	29
40	30							45								49								1	30	31					

Holiday Setting x

Date: 2018-01-02

Explanation Description:

Type: Holiday National Day Non-Holiday

8.9 Energy Segment

The dialog box provides three types of energy segment in a day: Off Peak, Peak and Flat (the types are based on the power usage) for measuring consumed power.

Energy Segment

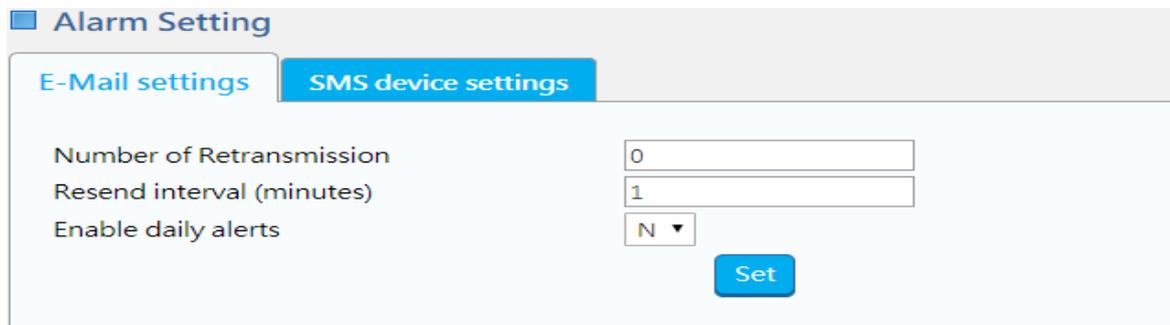
Time of Energy

Energy Segment Type: Start Time: : End Time: :

Energy Segment Type	Start Time	End Time	Delete
Off Peak	00:00	08:00	✘
Peak	08:00	12:00	✘
Flat	12:00	17:00	✘
Peak	17:00	21:00	✘
Flat	21:00	00:00	✘

8.10 Alarm Setting

Users can setup alarm notification in the **Alarm Setting** page. When alarm notification sent fails, the **E-Mail Settings** tab provides users to reset including interval (minutes).

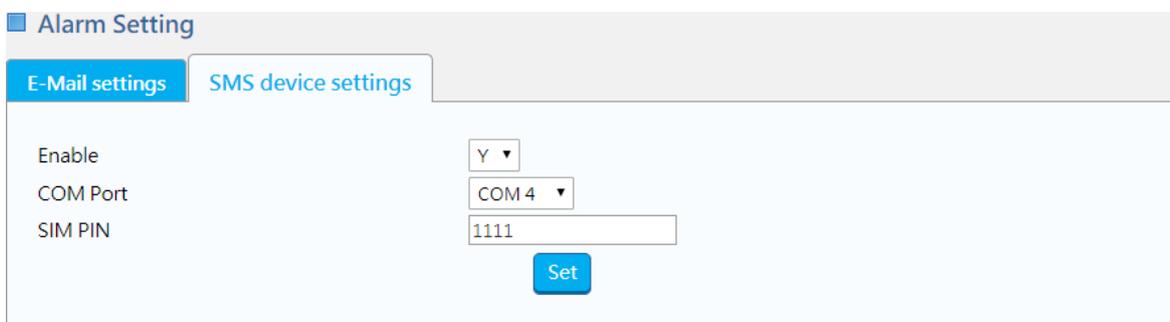


The screenshot shows the 'Alarm Setting' page with the 'E-Mail settings' tab selected. The 'SMS device settings' tab is also visible. The settings include:

- Number of Retransmission: 0
- Resend interval (minutes): 1
- Enable daily alerts: N

A 'Set' button is located at the bottom right of the settings area.

8.10.1 SMS Device Settings



The screenshot shows the 'Alarm Setting' page with the 'SMS device settings' tab selected. The settings include:

- Enable: Y
- COM Port: COM 4
- SIM PIN: 1111

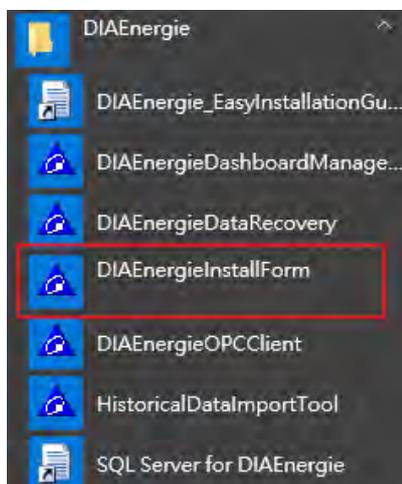
A 'Set' button is located at the bottom right of the settings area.

For the **SMS Device Settings**, users need to purchase the following SMS module and prepare an SIM card to connect with the I/O for SMS notification. The DIAEnergie V1.7.4.0 or above version supports the function.

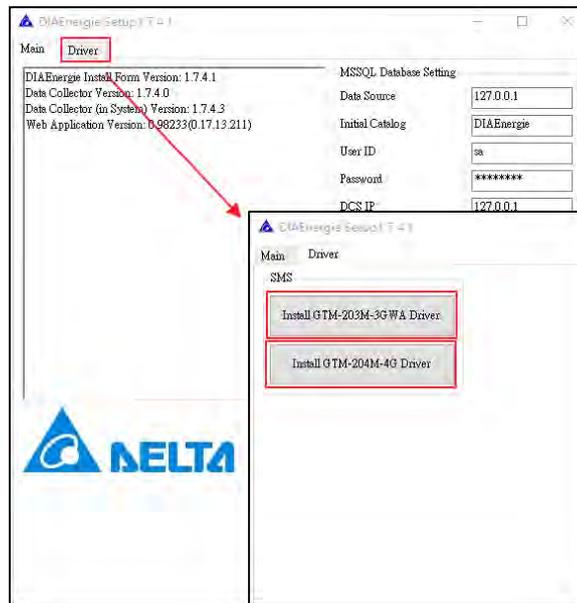
Currently, the DIAEnergie provides quick driver installation that supports SMS model including GTM-203M-3GWA (<http://m2m.icpdas.com/gtm-203m-3gwa.html>) and GTM-204M-4GE (<http://m2m.icpdas.com/gtm-204m-series.html>).

- **Guide to Installing the Driver**

Quick installation via selecting **DIAEnergieinstallForm** in the program. Or choose Local Disk (C:) > DIAEnergieDCS > Setup and click on the execution file.



Install driver base on the SMS model.



Please choose AT command port (select 1 from 2 options) for SMS module communication ports.

- Ports(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)

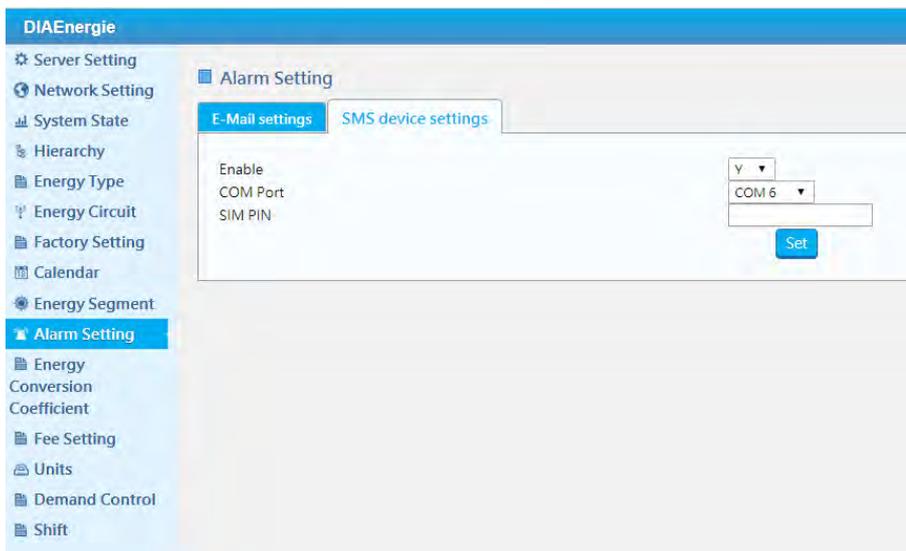
● Installing and Setting SIM Card

Use mobile phone to verify and setup SIM card password. (Note: wrong password can cause the SIM card to be locked, please confirm the SIM card password first) and install the SIM card to the SMS device. Complete installing DIAEnergie first then connect the device with a computer.

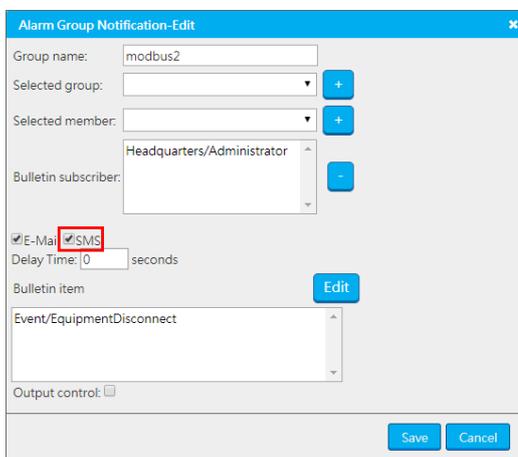


● **DIAEnergie Setup**

Select Enable (Y) DIAEnergie Setup/ Alarm Setting/ SMS Device Setting and choose an AT command port no. of the SMS module for COM Port. Enter the SIM card password for SIM PIN, if the password is not setup, the SIM PIN section can be blank.



When the setting is complete, the SMS device is connected with DIAEnergie and the alarm notification process is the same as in the E-mail settings. The only difference is to select SMS in the alarm group notification dialog box.



8.11 Energy Conversion Coefficient

Energy conversion coefficient-Create
✕

Name:

Conversion unit:

Conversion coefficient reference:

Year:

	January	February	March	April	May	June	July	August	September	October	November	December
A/C	0	0	0	0	0	0	0	0	0	0	0	0
Compressor	0	0	0	0	0	0	0	0	0	0	0	0
Consumption	0	0	0	0	0	0	0	0	0	0	0	0
Daily Water	0	0	0	0	0	0	0	0	0	0	0	0
Dom.	0	0	0	0	0	0	0	0	0	0	0	0
Electricity	0	0	0	0	0	0	0	0	0	0	0	0
Elevator Regen.	0	0	0	0	0	0	0	0	0	0	0	0
Illumination	0	0	0	0	0	0	0	0	0	0	0	0
Lab.	0	0	0	0	0	0	0	0	0	0	0	0
Rainwater	0	0	0	0	0	0	0	0	0	0	0	0
Regulation	0	0	0	0	0	0	0	0	0	0	0	0
Socket	0	0	0	0	0	0	0	0	0	0	0	0
Solar Energy	0	0	0	0	0	0	0	0	0	0	0	0
Supply	0	0	0	0	0	0	0	0	0	0	0	0
Water	0	0	0	0	0	0	0	0	0	0	0	0

8.12 Fee Setting

Users can estimate electricity fee via the **Fee Setting** page. The estimated fee is the sum of the pricing based on the Taiwan Power Company times by the total power usage gathered in DIAEnergie and can be viewed as an analysis of current electricity fee.

Fee Setting

Category High voltage elec Three-stage peal

Summer Month Power factor adjustment charges benchmark

Date 06/01 ~09/30

Contract capacity Power factor adjustment exceeds the benchmark rate

Half the peak contract capacity Power factor adjustment than the reference rate

Saturday half-spikes contract capacity Off-peak contract capacity

Monday to Friday peak time 00 00 00 00

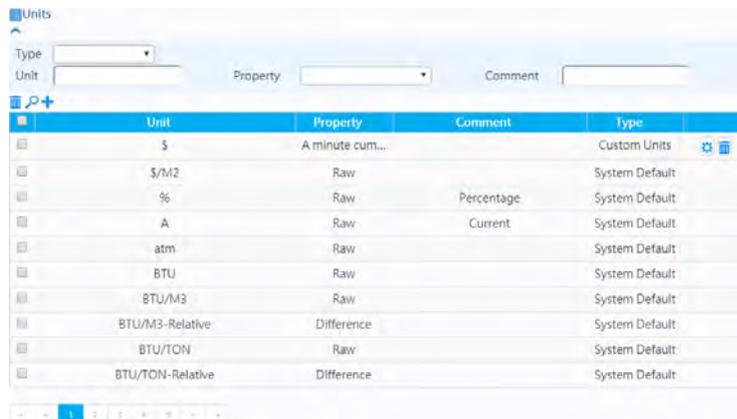
Delete	Name	Value
Delete	Summer15_Peak1	10:00~12:00
Delete	Summer15_Peak2	13:00~17:00

Monday to Friday Half-peak hours 00 00 00 00

Assigned Date in Summer
 ~

8.13 Units

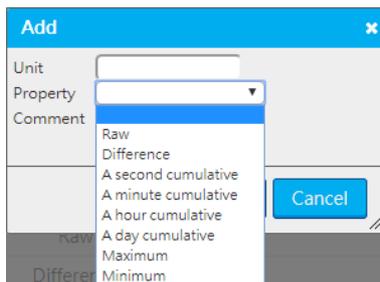
The page provides users to setup the units with associated type in DIAEnergie and it can be used with the assigned data in Tag Mapping.



Unit	Property	Comment	Type
\$	A minute cum...		Custom Units
\$/M2	Raw		System Default
%	Raw	Percentage	System Default
A	Raw	Current	System Default
atm	Raw		System Default
BTU	Raw		System Default
BTU/M3	Raw		System Default
BTU/M3-Relative	Difference		System Default
BTU/TON	Raw		System Default
BTU/TON-Relative	Difference		System Default

Besides the query section to search for default or saved units (see the above graph), users can **Add** units base on associated **Property** and choose edit or delte saved units in the Units setting page.

- **Add**



- **Property**

- ① **Raw Data:** Collected data with uncalculated units
- ② **Difference:** Units in the later period minus units in the early period
- ③ **Cumulative (a second / a minute / an hour / a day) :** Cumulative units of a specified period
- ④ **Maximum / Minimum** value

- **Setting**

Only the added units can be deleted or edited in the setting page. The default units cannot be modified.

8.14 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.

Demand Control

Hierarchy Name	Description	Contract Capacity	Edit
▼ Delta		0	
▼ Taoyuan		0	
▼ TV3		0	
▼ RD_Building		0	
2F		0	
7F		0	
▼ Wujiang		0	
Factory1_PS		0	
Factory2		0	
Factory3_IA		0	
Factory5_FM		0	

Edit Demand Control

Hierarchy Name : Delta (Contract Capacity : 1000 kW)

Alarm Scale Setting Control Strategy Setting

Alarm Scale

Order 1 Alarm kW

Order 2 Alarm kW

In **Edit Demand Control** dialog box, select Unload or Load for Control Type to indicate the device value either greater or smaller than that of the alarm value. The Control Strategy option can be selected to turn a device OFF / ON or to input value.

Edit Demand Control

Hierarchy Name : 桃三廠 (Contract Capacity : 1000 kW)

Alarm Scale Setting Control Strategy Setting

Demand Tag

Device

Tag

Alarm Scale kW

Interval seconds

Control Type Unload Load

Control Strategy OFF ON Value Input

(Unload Strategy)

Sequence	Device	Tag	Alarm Scale	Interval	Strategy	Enable

(Load Strategy)

Sequence	Device	Tag	Alarm Scale	Interval	Strategy	Enable

8.15 Shift Setting

The **Shift Setting** provides users to add shifts base on the latest starting and ending time for work or select Shift Enabled to setup the working period.

■ Shift Setting

Shift Setting

ADD

Name	Start Time	End Time	Work	Rest	Start Date	Edit	Delete
A	00:00	09:00					
B	09:00	18:00					
A1	09:05	10:00					
B1	10:00	11:00					

ADD

Name

Start Time :

End Time :

Shift Enabled

Work Rest

Start Date

Save Cancel

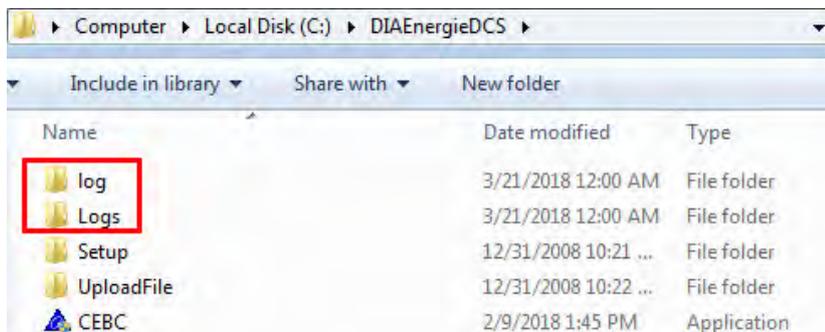
Chapter 9 System Log Configuration

Table of Contents

9.1	Log File Location	9-2
9.2	Log Files.....	9-2
9.2.1	Main Log File.....	9-2
9.2.2	Description of Subfolders in Log files.....	9-3
9.2.3	Log File Descriptions	9-4

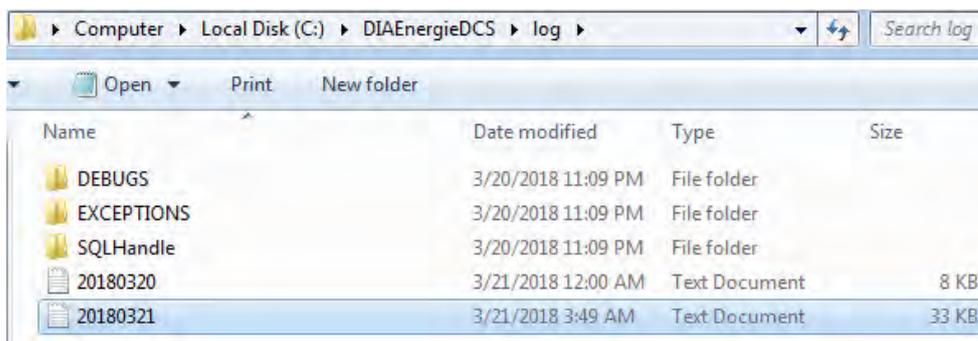
9.1 Log File Location

To find the log files, choose Local Disk (C:) > DIAEnergieDCS. Two files named log and Logs store logs for up to a month.



9.2 Log Files

The main log files contain basic information including Text (.txt) file with date and year in 6 digits, daily unsend emails or alarm report (e.g. 20180109_AlarmDailyReport.csv) and log exceptions via webpage.



9.2.1 Main Log File

Activate the main log files including ② enabling data ③ authorization status ① device or tag parameter modification of the system.

```

20171218.txt - Notepad
File Edit Format View Help
1.6.17.0] 11:59:15 EQ List Update!
1.6.17.0] 11:59:15 Tag List Update!
1.6.17.0] 11:59:20 Restart OPC Thread!
1.6.17.0] 13:03:15 EQ List Update!
1.6.17.0] 13:03:15 Tag List Update!
1.6.17.0] 13:03:20 Restart OPC Thread!
1.6.17.0] 13:03:45 Tag List Update!
1.6.17.0] 13:09:15 Get file C:\DIAEnergieDCS\Data_IN.xlsx start Check Tag.
1.6.17.0] 13:09:18 Import Tag Success!
1.6.17.0] 13:09:18 Tag List Update!
1.6.17.0] 13:11:15 Get file C:\DIAEnergieDCS\Data_IN.xlsx start Check Tag.
1.6.17.0] 13:11:15 Import Tag Success!
1.6.17.0] 13:11:15 Tag List Update!
1.6.17.0] 16:24:42 InternalTagPVNWork Exception Message : Cannot find column [it].
1.6.17.0] 16:24:42 InternalTagShiftWork Exception Message : Cannot find column [it].
1.6.17.0] 17:22:01 InternalTagPVNWork Exception Message : Cannot find column [it].
1.6.17.0] 17:22:02 InternalTagShiftWork Exception Message : Cannot find column [it].
2017-12-18 17:29:32 DIAEnergie Starting!
[ ] 17:29:33 SYSTEM INITIAL!
[ ] 17:29:33 Database: Data Source=127.0.0.1;Initial Catalog=DEMO
1.6.17.0] 17:29:40 Verify CPUID Success!
1.6.17.0] 17:29:40 Lock Timer Start!
1.6.17.0] 17:29:40 System Start!
1.6.17.0] 17:31:45 Tag List Update!
1.6.17.0] 18:11:45 Tag List Update!
2017-12-18 20:21:12 BCWD Start!
2017-12-18 20:21:12 DIAEnergie Starting!
[ ] 20:21:13 SYSTEM INITIAL!
[ ] 20:21:13 Database: Data Source=127.0.0.1;Initial Catalog=DEMO
1.6.17.0] 20:21:20 Verify CPUID Success!
1.6.17.0] 20:21:20 Lock Timer Start!
1.6.17.0] 20:21:20 System Start!

```

9.2.2 Description of Subfolders in Log files

- Communication
- DataBaseCreator
- DEBUGS
- EXCEPTIONS
- ReportWork
- ScriptDLL
- SQLHandle

- **Communication:** The file name of device communication logs for abnormal functioning are based on the device' s IP address or Gateway.

```

> DIAEnergieDCS > log > Communication
Name
20171226_005.001.010.137.txt
20171226_127.000.000.001.txt
20171227_005.001.010.136.txt
20171227_005.001.010.137.txt
20171228_005.001.010.136.txt
20171228_005.001.010.137.txt

```

- **DataBaseCreator:** Updates on log files initialized in the database
- **DEBUGS/EXCEPTION:** Error logs for web browsing
- **ReportWork :** Report on working status
- **ScriptDLL :** DIAEnergie VBScript Library error logs
- **SQLHandle:** Error handling in SQL



```

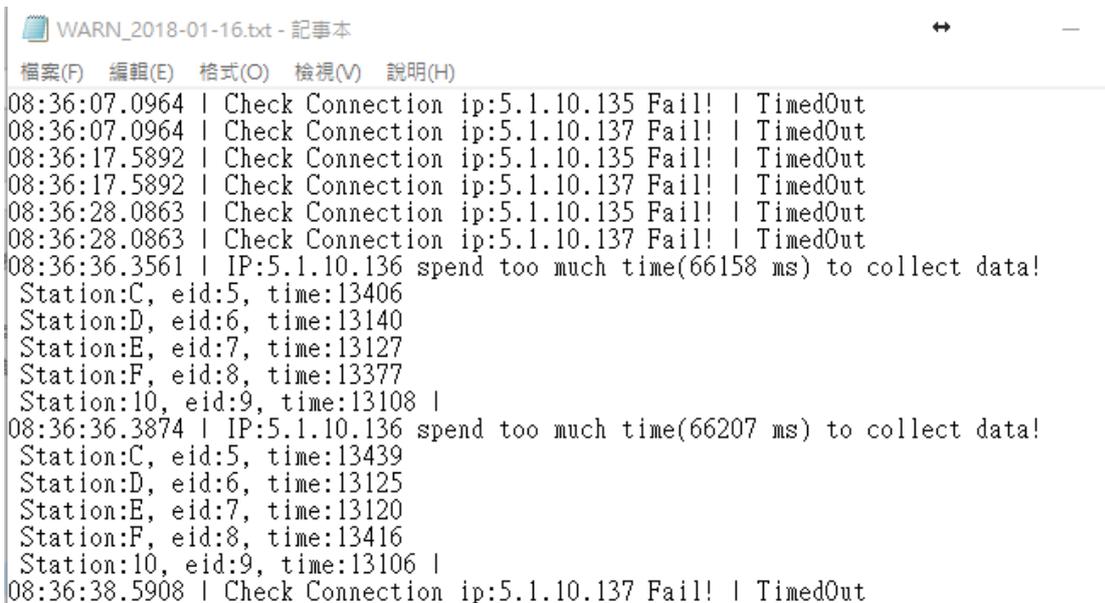
20171128.txt - Notepad
File Edit Format View Help
[Exception] 18:34:06      67 SELECT eid,tp,pt FROM DIAE_eq WHERE del='0'
      A connection was successfully established with the server, but
then an error occurred during the pre-login handshake. (provider: TCP
Provider, error: 0 - 指定的網路名稱無法使用。 )
[Exception] 18:34:06      0 SELECT eid,pt,tp,fc FROM DIAE_eq WHERE
del='0'
      A connection was successfully established with the server, but
then an error occurred during the pre-login handshake. (provider: TCP
Provider, error: 0 - 指定的網路名稱無法使用。 )
[Exception] 18:34:07      0 SELECT eid,pt,tp,fc FROM DIAE_eq WHERE
del='0'

```

9.2.3 Log File Descriptions

The file contains more detailed information including TRACE, WARN, ERROR and DEBUG. Direct message is recorded for WARN and ERROR by default.

- TRACE and DEBUG are error logs and need to be configured first for logging.
- Warn logs include information like device ping timeout and collecting data time exceeds saving time.



```

WARN_2018-01-16.txt - 記事本
檔案(F) 編輯(E) 格式(O) 檢視(V) 說明(H)
08:36:07.0964 | Check Connection ip:5.1.10.135 Fail! | TimedOut
08:36:07.0964 | Check Connection ip:5.1.10.137 Fail! | TimedOut
08:36:17.5892 | Check Connection ip:5.1.10.135 Fail! | TimedOut
08:36:17.5892 | Check Connection ip:5.1.10.137 Fail! | TimedOut
08:36:28.0863 | Check Connection ip:5.1.10.135 Fail! | TimedOut
08:36:28.0863 | Check Connection ip:5.1.10.137 Fail! | TimedOut
08:36:36.3561 | IP:5.1.10.136 spend too much time(66158 ms) to collect data!
      Station:C, eid:5, time:13406
      Station:D, eid:6, time:13140
      Station:E, eid:7, time:13127
      Station:F, eid:8, time:13377
      Station:10, eid:9, time:13108 |
08:36:36.3874 | IP:5.1.10.136 spend too much time(66207 ms) to collect data!
      Station:C, eid:5, time:13439
      Station:D, eid:6, time:13125
      Station:E, eid:7, time:13120
      Station:F, eid:8, time:13416
      Station:10, eid:9, time:13106 |
08:36:38.5908 | Check Connection ip:5.1.10.137 Fail! | TimedOut

```

Chapter 10 Troubleshooting

Table of Contents

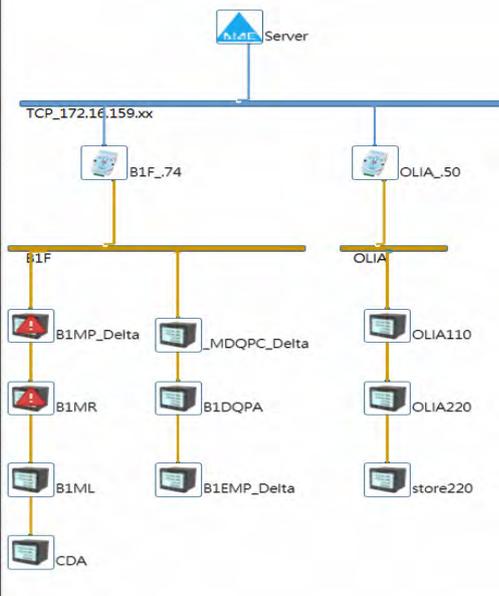
10.1 Device Connection and Communication	2
10.1.1 Device Disconnection / Tag Disconnected Status	2
10.1.2 Tag Status is Green, Time Not Updated.....	4
10.2 Operating System, Web Server, Database in IIS.....	5
10.2.1 After login, error web page displayed	5
10.2.2 Type account and password but unable to access the software.....	6
10.2.3 No system information recorded during a specific time	8

10.1 Device Connection and Communication

10.1.1 Device Disconnection / Tag Disconnected Status



When the red exclamation mark icon  is on the device topology page or red circle light appears in the tag status column indicates the device has disconnected.



Brand : DELTA Model : DPM-C530A

Status	Address	Name	Unit
	013C	DPFa	none
	013E	DPFb	none
	0140	DPFc	none
	013A	DPFt	none
	0142	Frequency	Hz
	0126	I_avg	A
	0120	Ia	A
	0122	Ib	A
	0124	Ic	A
	0128	In	A
	0146	Pa	kW

Step 1: Check the device or the default gateway IP

- Verify gateway IP, and ping gateway IP via commands.

IFD 9506
✕

Name:

Model Name:

Channel:

IP Address:

Port:

Description:

The following image verifies the IP. Check the devices or power meters to be ON, or any serial communication link malfunction.

```

C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\user>ping 172.16.159.74

Pinging 172.16.159.74 with 32 bytes of data:
Reply from 172.16.159.74: bytes=32 time<1ms TTL=126

Ping statistics for 172.16.159.74:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

```

The image below shows the IP does not exist. Please check the network cables or installation to be correct, or confirm the gateway is ON and functioning normally.

```

C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\user>ping 172.16.159.39

Pinging 172.16.159.39 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.16.159.39:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

```

Step 2: Confirm the device status or communication link on-site are working properly

Condition 1: The communication was working, but suddenly disconnected:

- ① Check the devices or power meters to be ON
- ② Verify serial port communication (RS232 /RS422/RS485) is connected
- ③ Test the cable for looseness
- ④ On-site devices or equipment (e.g. fans) may generate serial port communication issues. Please pay attention to the wiring.

Condition 2: The communication was not working:

- ① Check the communication parameter setting for devices or power meters and the serial port communication parameter setting for gateway are the same.
- System Log View
 - ① Test the system log view as main program to be working properly
 - ② Check for unusual event logs in Log\Communication file
 - ③ Check the detail status of Logs\WARN Log

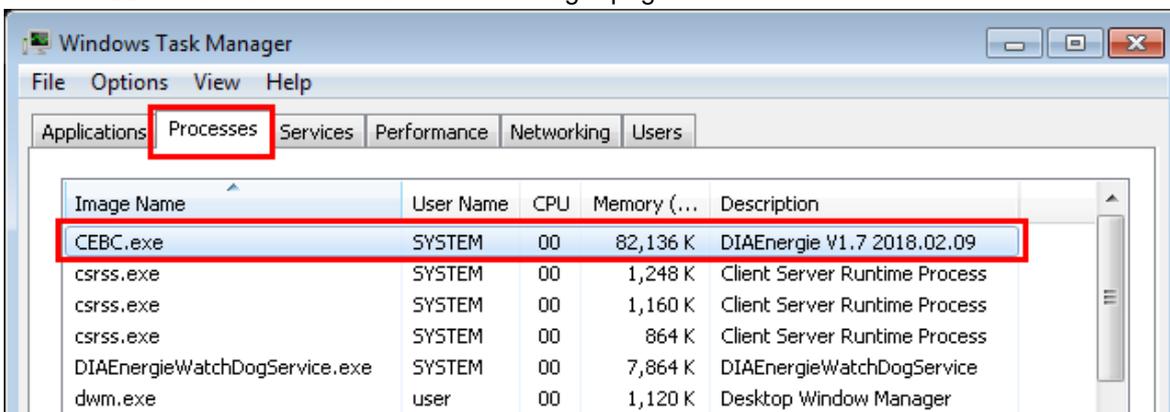
10.1.2 Tag Status is Green, Time Not Updated

The tag status column shows green light, but the information in the updated data time column only displays a specified time in the past with no updates.

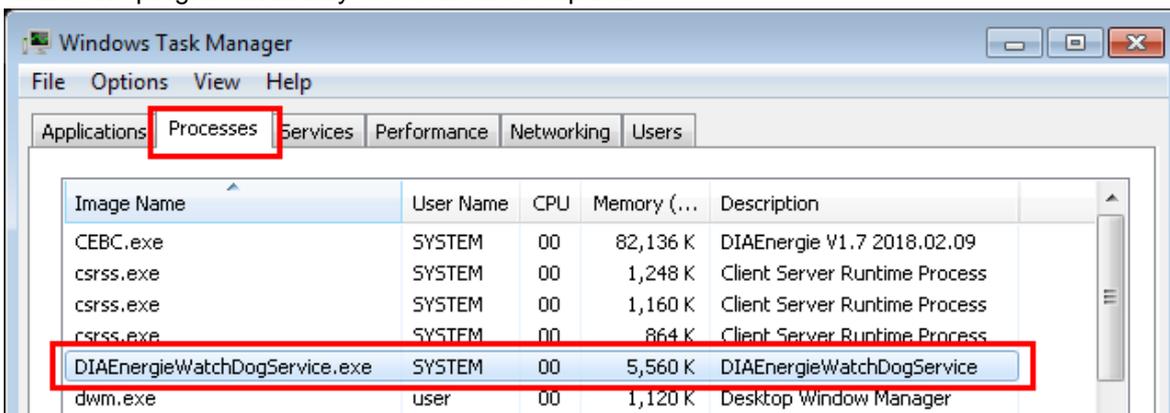
Status	Address	Name	Unit	Decimal	Data Type	Real Value	Update Time
●	013C	DPFa	none	3	Float	0.000	3/20/2018 3:51:54 PM
●	013E	DPFb	none	3	Float	0.000	3/20/2018 3:51:54 PM
●	0140	DPFc	none	3	Float	0.000	3/20/2018 3:51:54 PM
●	013A	DPFt	none	3	Float	0.000	3/20/2018 3:51:54 PM
●	0142	Frequency	Hz	3	Float	59.961	3/20/2018 3:51:54 PM
●	0126	I_avg	A	3	Float	0.640	3/20/2018 3:51:54 PM
●	0120	Ia	A	3	Float	1.440	3/20/2018 3:51:54 PM

Step 1: Confirm the main program to be functioning normally

Check CEBC.exe is in the Windows Task Manager page.



If CEBC.exe is not present, please check that DIAEnergieWatchDog.exe is enabled; if not, please enable the program manually or restart the computer.



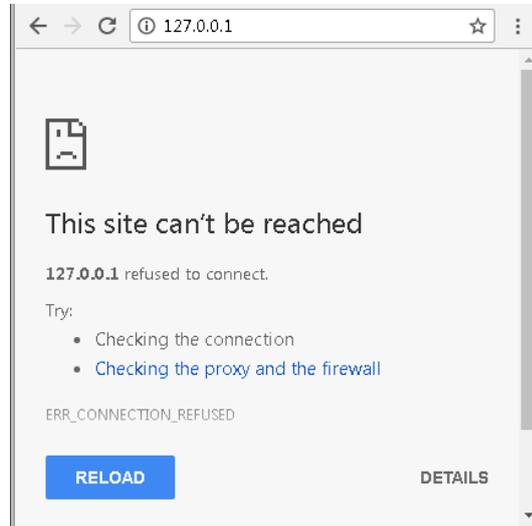
Step 2: Enable the main program to view the log

- ① Check the system and the log view as main program to be functioning normally.
- ② The log view in SQLHandle file may be affected by abnormal saving function of the database which cannot save the latest communication data to update the system.

10.2 Operating System, Web Server, Database in IIS

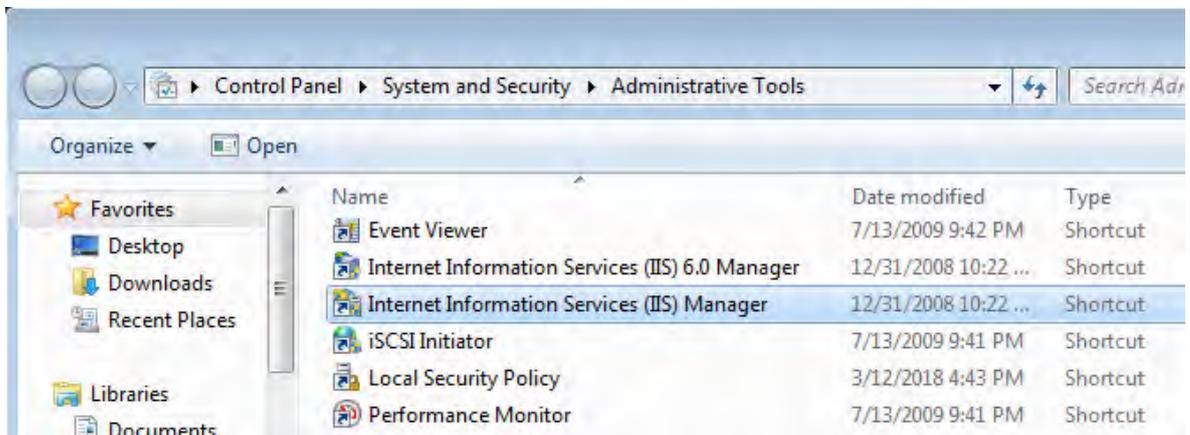
10.2.1 After login, error web page displayed

Type the server IP, the web page shows "This site cannot be reached" .



Step 1: Confirm Internet Information Services (IIS) web server status

Select the Internet Information Services (IIS) Manager option.



If IIS appears inactivated, please click Start in the Action toolbox on the right of the web page; when activated, please select the Restart option.



Step 2: Check the communication ports to make sure other system or software does not use the same port.

Step 3: Check the web page for any blocking from firewall or IT network management

10.2.2 Type account and password but unable to access the software

When users type their account and password, the software does not activate immediately and the image of login area appears to shift from left to right on the screen.

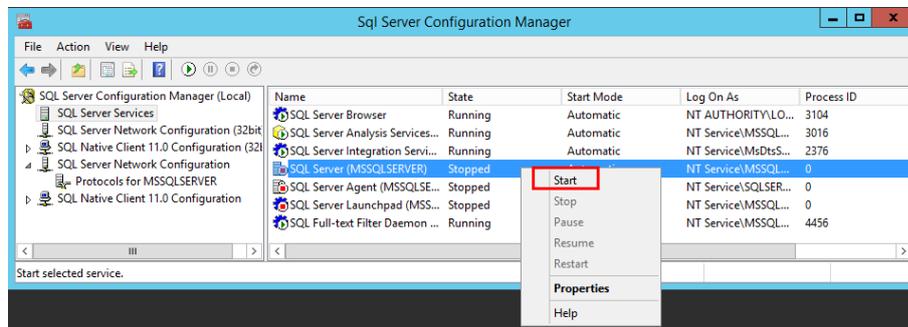


Step 1: Verify the account and password to be correct and are not changed

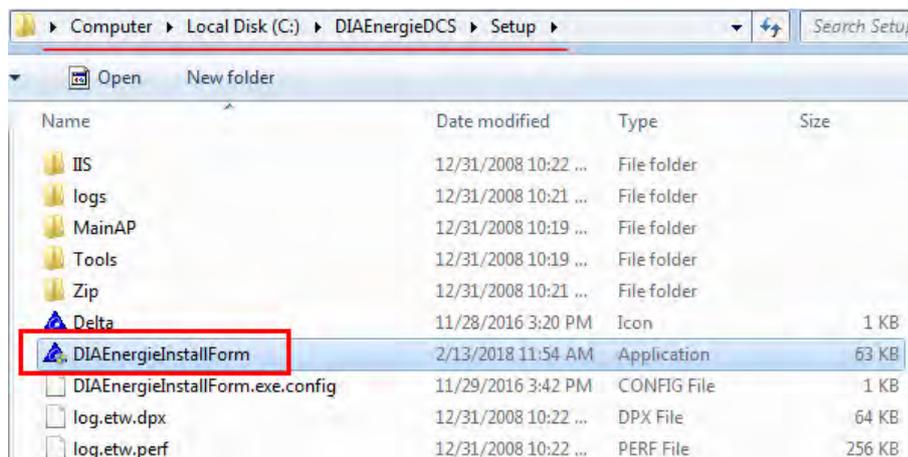
Use default account - Root/Admin to login and make changes. Please notify the administrator to setup the user account and password again.

Step 2: Check database status to be correct

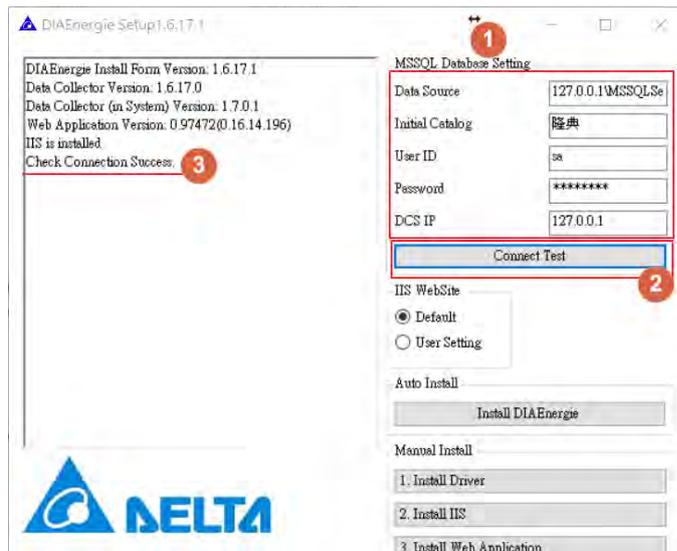
Start SQL Server Configuration Manager and verify the database is in start mode; when stopped, right-click **SQL Server (xxxx)** to initiate the SQL Server.

**Step 3: Check the database information to be correct**

A convenient verification approach is through executing the **DIAEnergieInstallForm.exe** in C:\DIAEnergieDCS\Setup. (However, the error status can be verified only when the database status is activated.)



The image below shows the DIAEnergie Setting parameters in MSSQL Database (e.g. User ID & Password) in section ①. Click **Connect Test** in section ②. Information regarding Connection Success will display in section ③. Successful connection also refers to correct database and connection parameters.



10.2.3 No system information recorded during a specific time

The graph below indicates no information records from 4pm on 9/18 to 8am on 9/19.

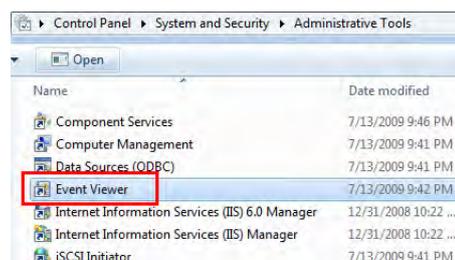


Step 1: View Log Files

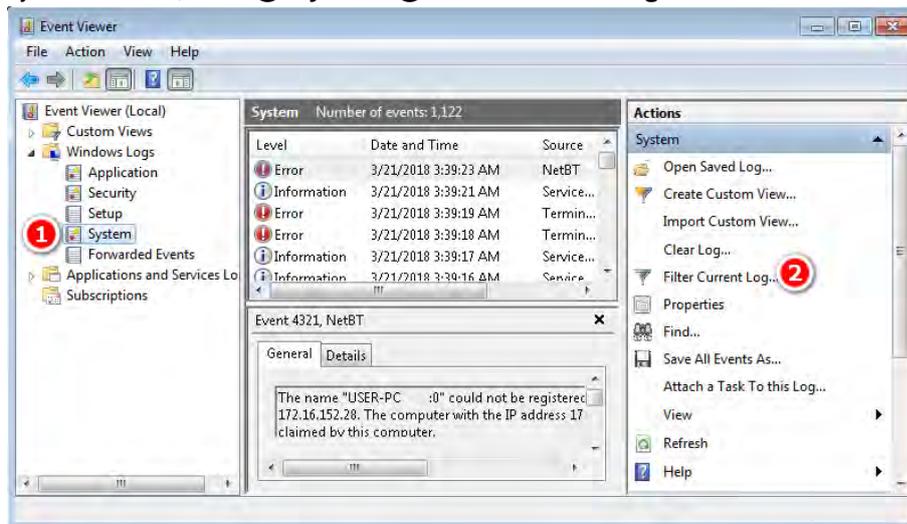
- ① View the log information in the main program for any abnormal functioning or restart during the error time.
- ② Check for abnormal internet connection during the error time.

Step 2: Check the operating system on restarts or crashes in the computer

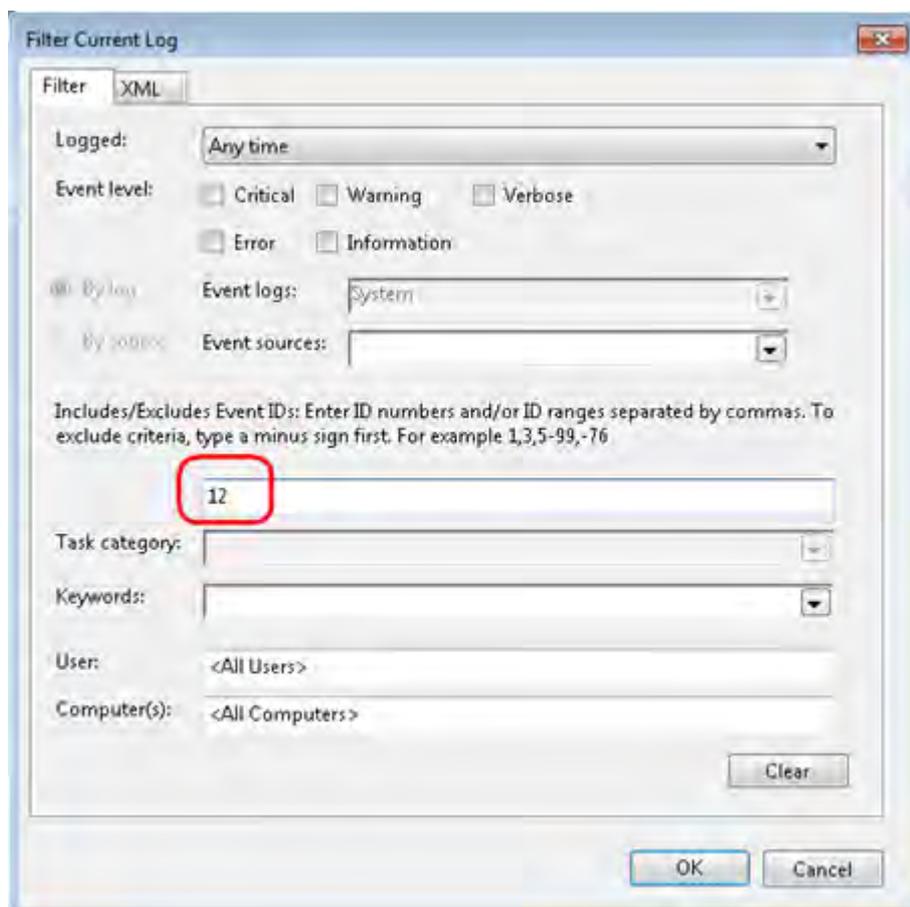
- Users can check on the operating system for abnormal events via Control Panel > System and Security > Administrative Tools > Windows **Event Viewer**.



- To filter system events, click **1** System **2** Filter Current Log.



- Type the ID number to filter events. Please search for more information on detailed ID number.



MEMO



Appendix Calculation

Table of Contents

A.1 Introduction	2
A.2 Procedure.....	3
A.3 Internal-Tag.....	4

A.1 Introduction

The **Calculation** function is available for Delta model types including DIAE-010200, DIAE-0105000, DIAE-0110000, DIAE-0115000, DIAE-0120000, DIAE-0100000. For the models mentioned above, the system homepage contains the Calculation icon shown below.



The function features numerical calculation and analysis in DIAEnergie. Users can easily create their own platform via VBScript to meet the procedures of different fields. In addition, Calculation is widely used in other functions such as UI Design and Basic Query with additional tag calculation option. This additional calculation has two functions, one is the Internal-Tag and the other is the Procedure function to calculate the tags.

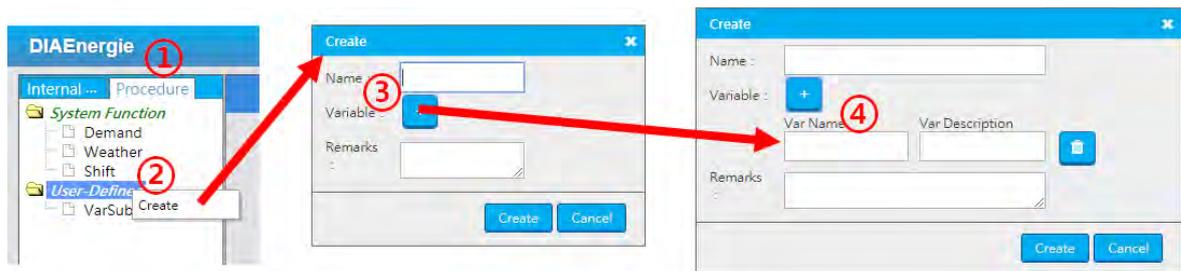


A.2 Procedure

The Procedure function include System Function and User-Defined. The System Function is a default procedure used to calculate tags and cannot add new functions or make modifications; the User-Defined section allows users to create variable in VBScript for tag calculation.

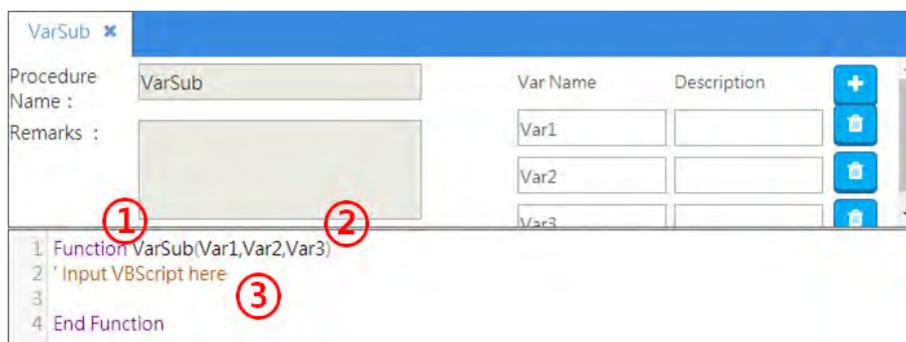


- **User-Defined:** Create VBScript procedure to meet the demand.



- 1 Select Procedure
- 2 Right-click on User-Defined file/Create and enter a procedure name as the dependent variable
- 3 Click **+** to create one or more variables.
- 4 Type only numbers and alphabets for the variable name. The independent variable uses source types including real numbers, device tags for calculation.

- **VBScript Procedure**

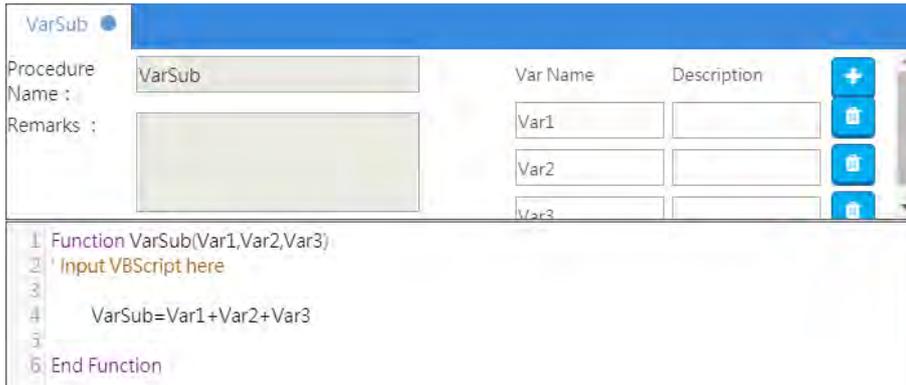


- 1 The procedure name is a dependent variable

- ② The Variable is an independent variable
- ③ VBScript function starts and ends with Function and End Function statements

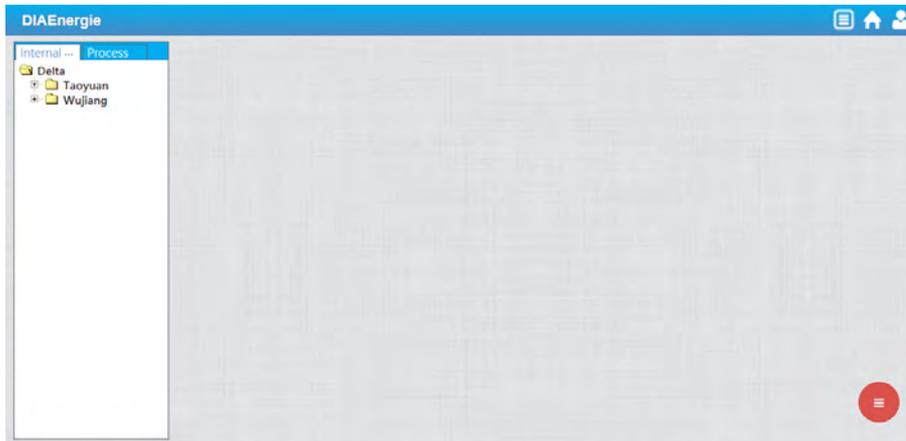
When writing the program, users can add or delete variables in the upper part of the dialog box, while the lower part contains functions of the program. The coding tools in the toolbox on the right of the page are available to enhance efficiency in writing codes.

Below is a simple programming example, the dependent variable is the VarSub, while the Var1, Var2, Var3 are the independent variables and the sum of these three variables equals to the dependent variable, VarSub.

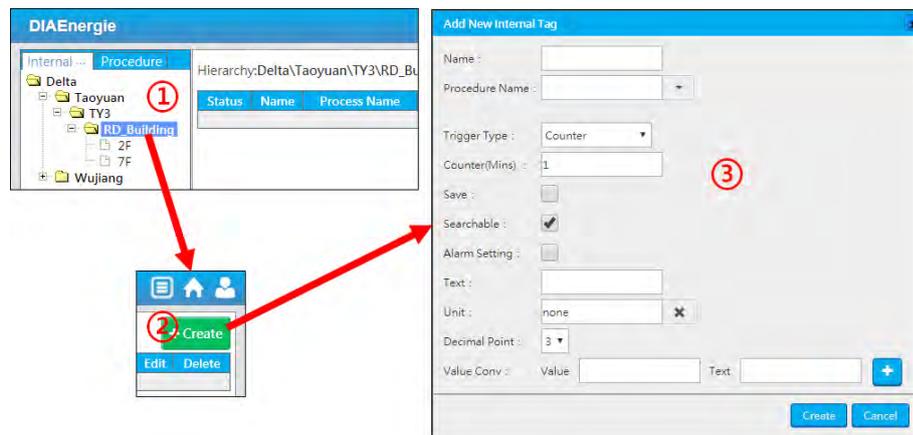


A.3 Internal-Tag

The function provides internal tag values that can be calculated via using VBScript in the Procedure function.

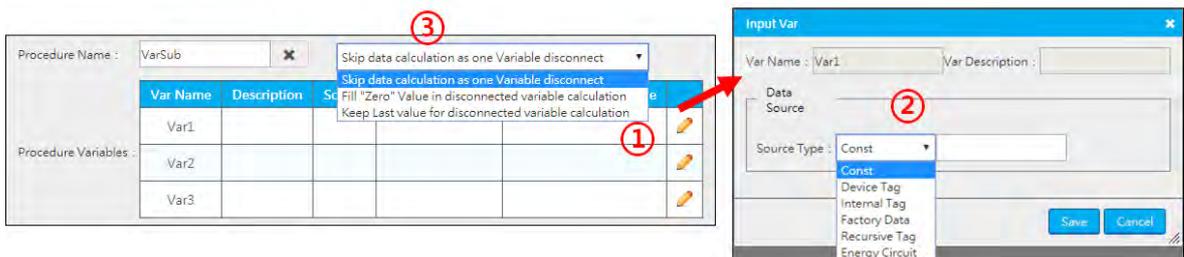


● **Create Internal-Tag:**



- ❶ Choose the hierarchy of the calculated tag
- ❷ Click **+ Create** on the upper right to view the tag parameter setting page
- ❸ Enter including tag name and select the appropriate procedure

● **Input Variables :**



- ❶ Click  to edit the variable as an independent variable in VBScript
- ❷ Select the Source Type
- ❸ Select the setting to preserve the tag value when disconnected

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