PMD-420x Brief User Guide

[Version 3.4.3]



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1 Introduction

This document is intended to guide users to quickly implement settings of PMD-420x. This document can be divided into three parts from basic to advanced settings:

a. Before Installation

- Complete the setting of the power meters that are connected to the PMD-420x.
- Network Setting.

b. Basic Settings

- Scan and add the connected power meters.
- Quickly build up a power monitoring system.

c. Advanced Settings

- Enable the Data Logger function.
- Settings for advanced functions of PMD-420x.

This document will give quick guides for basic power meter connection settings and advanced function settings.

Please Note:

1. PMD-420x provides COM1 (RS-485) and COM2 (RS-485) interfaces for connections to ICP DAS Modbus RTU power meters, and PMD-420x also provides LAN interface for connections to ICP DAS Modbus TCP power meters.
2. A single PMD-420x allows connections to at most 24 ICP DAS Modbus TCP/RTU power meters (with maximum 16 Modbus TCP Power Meters), and 8 Modbus I/O modules.
   - Each RS-485 interface (with Modbus RTU Master) can connect to Max. 16 power meters.
   - Support at most 4 ICP DAS PM-4324 series Power Meters.

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2 Before Installation

2.1 Verify the Status of ICP DAS Power Meter

Before starting the setting of PMD-420x, user can use the Power Meter Utility that PMD-420x provides to perform the parameter setting of the power meters that are connected to the PMD-420x. During the operation of the PMD-420x, if user finds the power meter is in abnormal status, user can also use the Power Meter Utility to verify the status of the power meter, and change the parameter of the power meter to let the power meter can work in normal status.

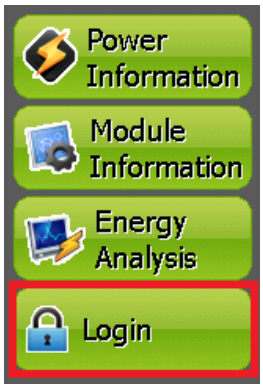
Please Note:

The Power Meter Utility enables to retrieve and display the power measurement values that measured by power meter, and also perform the parameter settings of the power meters. Before using Power Meter Utility, please make sure following items.

- Modbus RTU Power Meter：Please finish the hardware installation of the ICP DAS power meters, and make sure the RS-485 wiring connection between power meters and PMD-420x is accurate.
- Modbus TCP Power Meter：Please finish the hardware installation of the ICP DAS power meters, and make sure the Ethernet connection between power meter and PMD-420x is accurate. The PMD-420x and power meter must be in the same Domain.

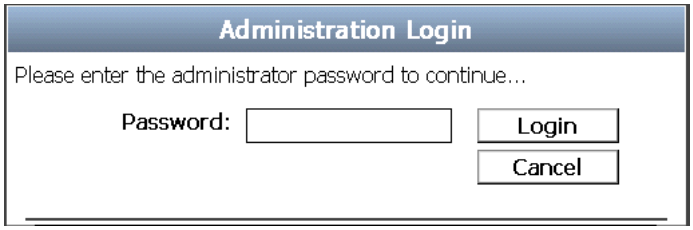
The setting steps to enable the Power Meter Utility of PMD-420x are as below:

(1) Click “Login” button. The Login page of PMD-420x will be shown as below.



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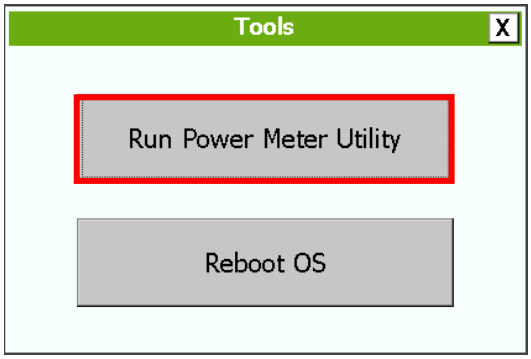
Please login PMD-420x as the Administrator (Default password: Admin), then you will have the authority to perform the settings of system, power meter, I/O modules and tools.



(2) Click on “Tools” to launch the Tools dialog Box.

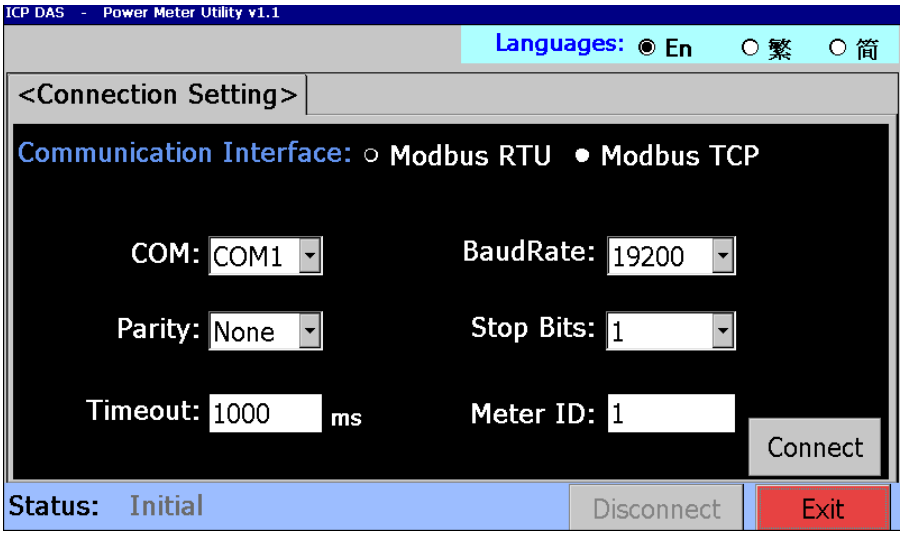


(3) Click on “Run Power Meter Utility” to enable Power Meter Utility.



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(4) The Power Meter Utility will be launched as below.



(5) Please refer to "Power Meter Utility User's Manual" for the operation interface and setting steps of the parameters setting of ICP DAS power meter. User can download the document from the following link.
http://ftp.icpdas.com/pub/cd/powermeter/pm-4324/utility/

2.2 Network Settings

The default network setting of PMD-420x's LAN1 is as follow:

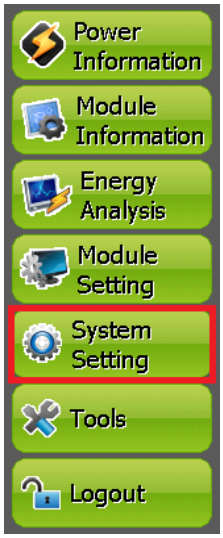
- **IP**：192.168.255.1
- **Subnet mask**：255.255.0.0
- **Gateway**：192.168.0.1

The user can modify the Network setting of PMD-420x by two interfaces **(local side display interface and remote side Web page interface)**. The Network setting steps of PMD-420x are as below:

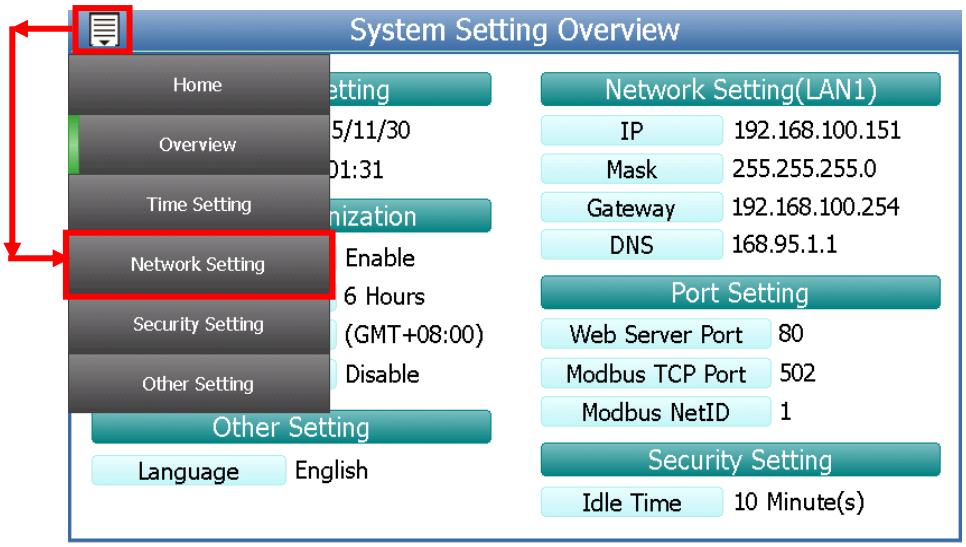
2.2.1 Network setting by Local Side Display Interface

(1) Login PMD-420x as the Administrator. Click the "System Setting" button.

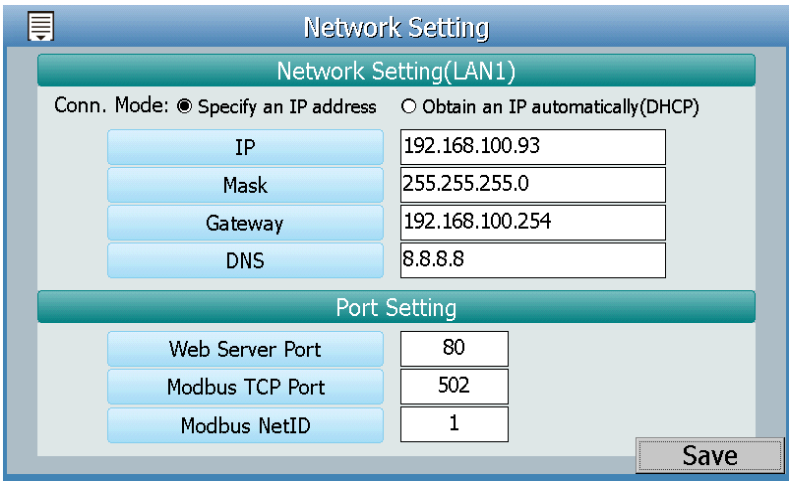
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(2) Click the “Network Setting” on the “System Setting” menu.



(3) Modify the PMD-420x network setting to fit current network environment.



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(4) Clicking on the “Save” button to save the setting.

Now you can use the Browser to connect to the PMD-420x’s IP address to open the Webpage of PMD-420x. If Browser cannot open the webpage of PMD-420x, please verify the Network status between PC and PMD-420x.

2.2.2 Network Setting by Remote Side Web page Interface

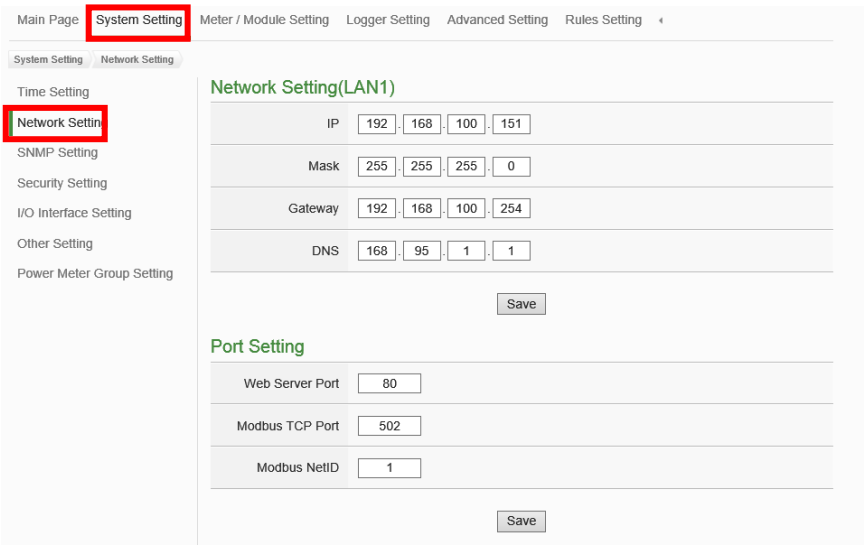
(1) Modify the network settings of the PC or Notebook to be the same network domain as PMD-420x. For example:
- IP：192.168.255.10
- Subnet mask：255.255.0.0
- Gateway：192.168.0.1

(2) Connect PMD-420x LAN1 to PC by network cable (there is no need for crossover cables).

(3) Start the browser and input http://192.168.255.1 in the address bar.

(4) Input default administrator password “Admin” to login into the Web page.

(5) After login into the page, go to “System Setting”→”Network Setting” and modify the LAN1 network setting to fit current network environment.



(6) After clicking on “Save” button, for the network domain of the

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PMD-420x and PC are different, it is normal being not able to connect to the webpage, please connect PMD-420x and PC to the actual network environment and then modify the network settings of PC to correct settings to connect to the PMD-420x.

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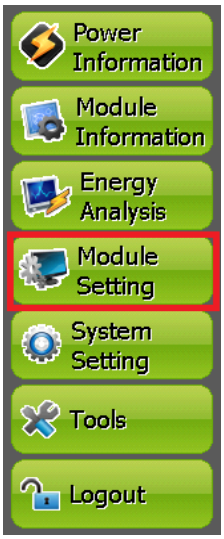
3 Basic Setting

PMD-420x provides two interfaces **(local side display interface and remote side Web page interface)** for users to scan the ICP DAS power meters that are connected to the PMD-420x. Users can also complete the setting of ICP DAS power meters by the two interfaces. The detailed setting steps are as below:

3.1 Scan ICP DAS Power Meter by Local Side Display Interface

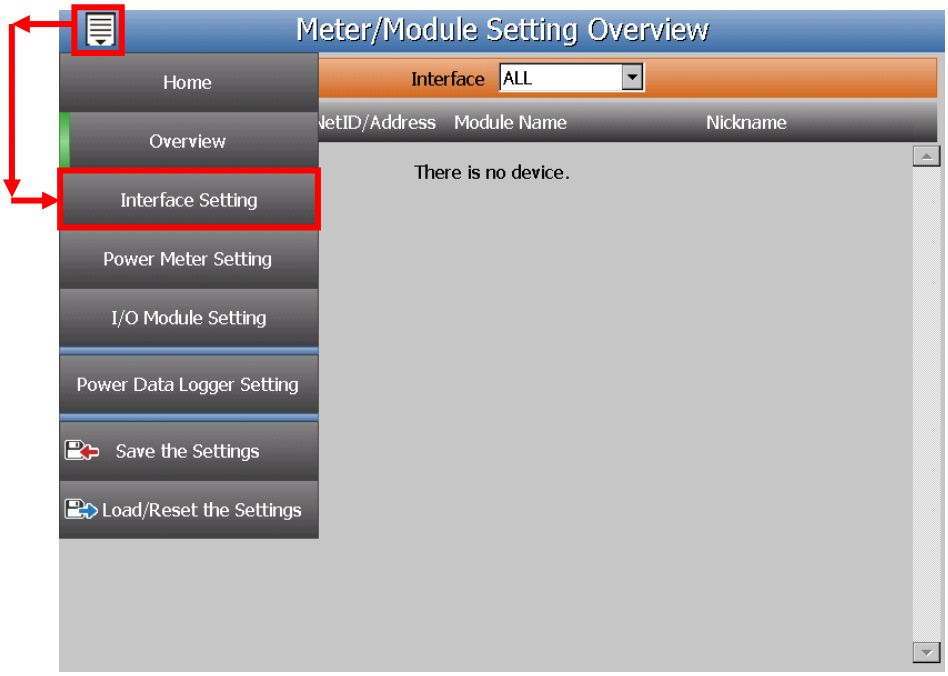
(1) Please refer "Chapter 2 Before Installation" to complete the parameter settings of the ICP DAS power meters, verify the hardware installation of the power meters, and make sure the RS-485/Ethernet wiring connection between power meters and PMD-420x is accurate.

(2) Login PMD-420x as the Administrator. Click the "Module Setting".

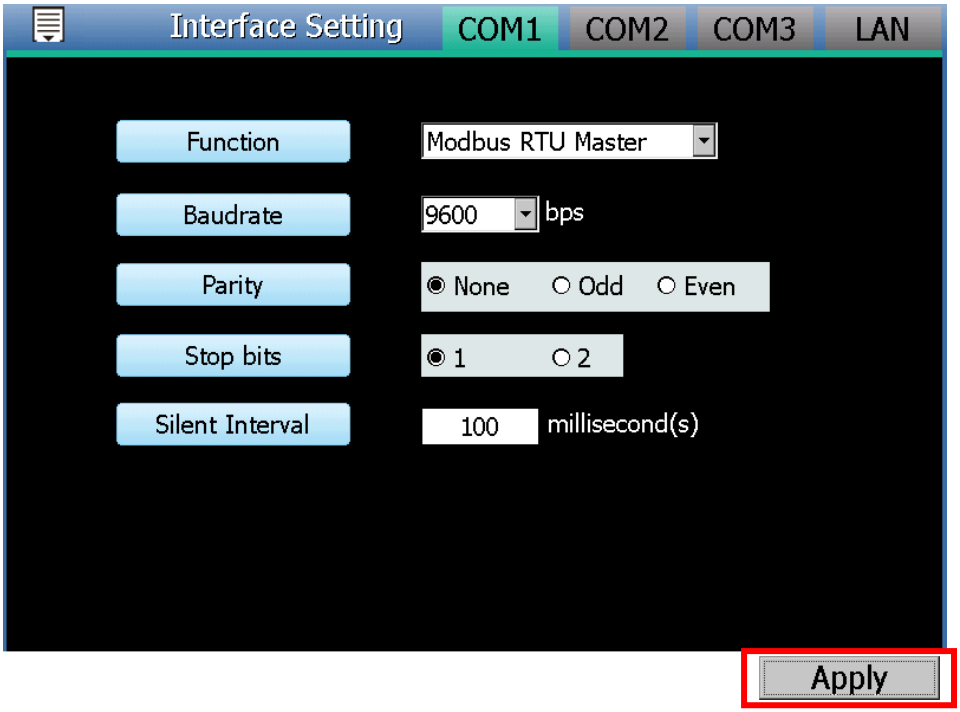


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(3) Click the “Interface Setting” on the “Module Setting” menu.

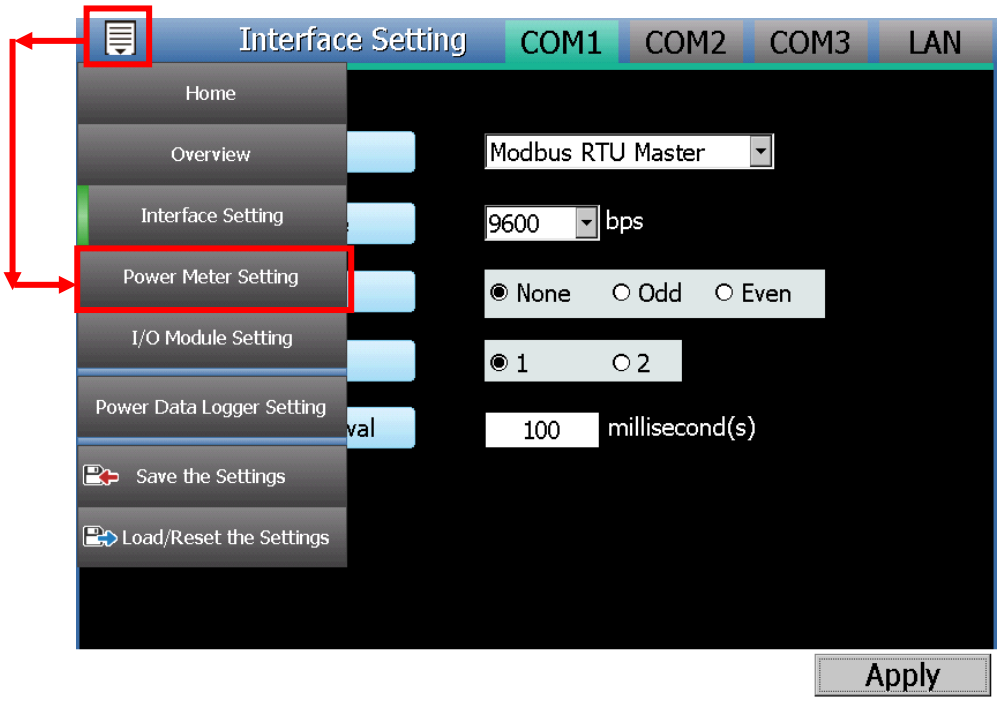


(4) Modify and make sure the settings of the parameters (Baudrate / Parity / Stop bits) of the COM Port that are connected to the power meter are accurate. After all settings are completed, click “Apply” to save the changes.



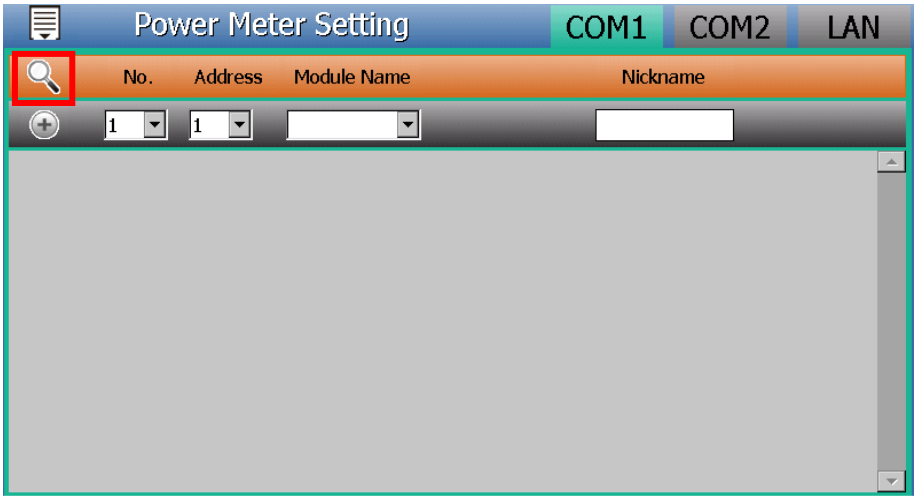
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(5) Click the “Power Meter Setting” on the “Module Setting” menu, and then follow the steps below to scan or add power meters.



(6) Scan ICP DAS Modbus RTU Power Meters：

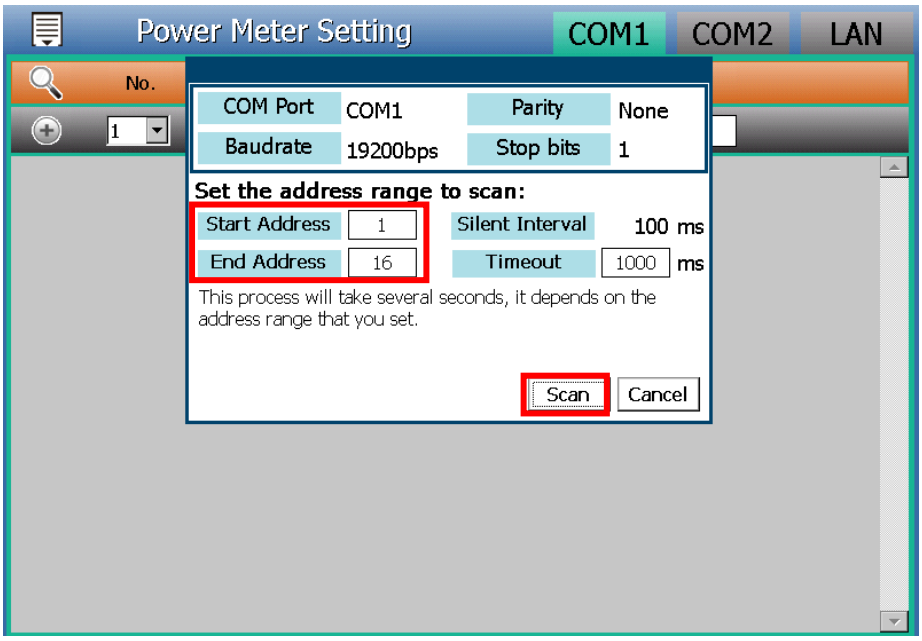
a. Select the COM Port interface that is used to connect the power meters from the right-top corner **(assuming the power meters are connected to the COM1)**. Click  icon to scan the Modbus RTU power meters that are connected to the PMD-420x.



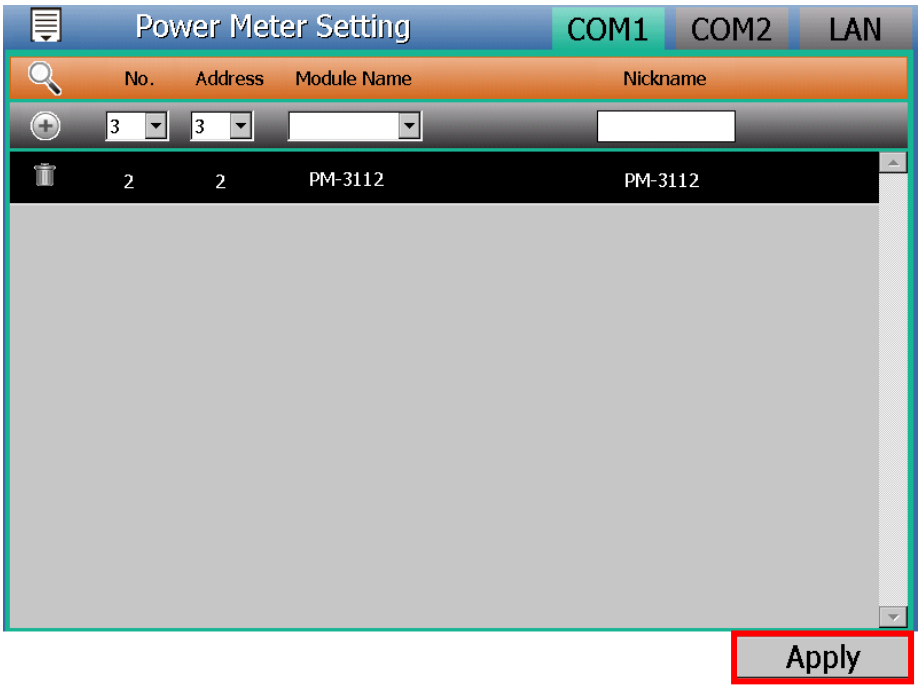
b. When the Scan page appears, input the starting address and the ending address of the Modbus address that are going to perform scan.

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Click on “Scan”, the system will start to scan the power meters that match the settings previously set.



c. After the Scan operation is completed, a Modbus RTU power meter list will appear. After all settings are completed, click “Apply” button to save the changes.



Please Note：

If the Scan process is failed, please verify following item again.

➢ The RS-485 wiring connection between power meters and

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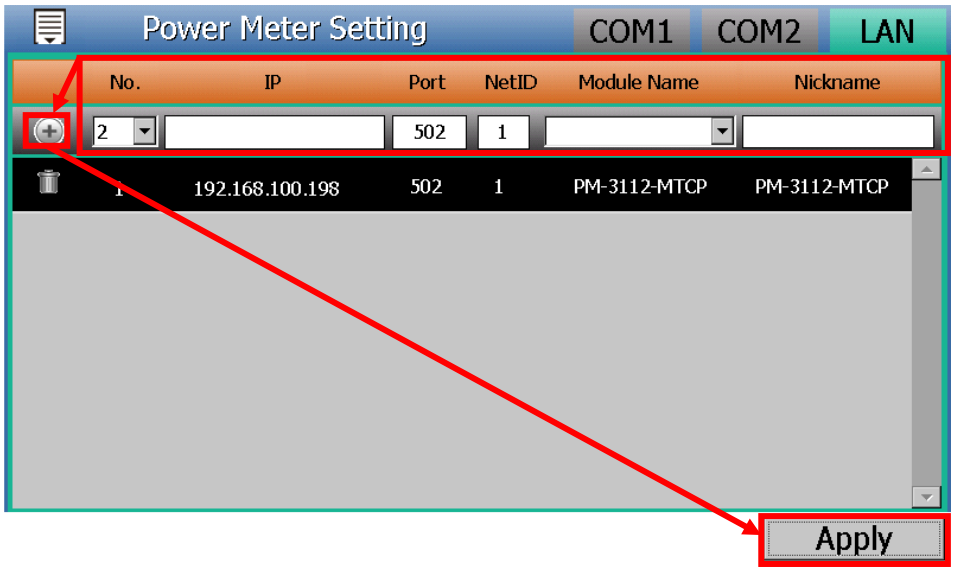
PMD-420x.

- The parameter settings of the power meters.
- The parameter settings of the Com Port of PMD-420x.

If there is any parameter modification, please remember to click “Apply” button, to save the change and start the Scan process again.

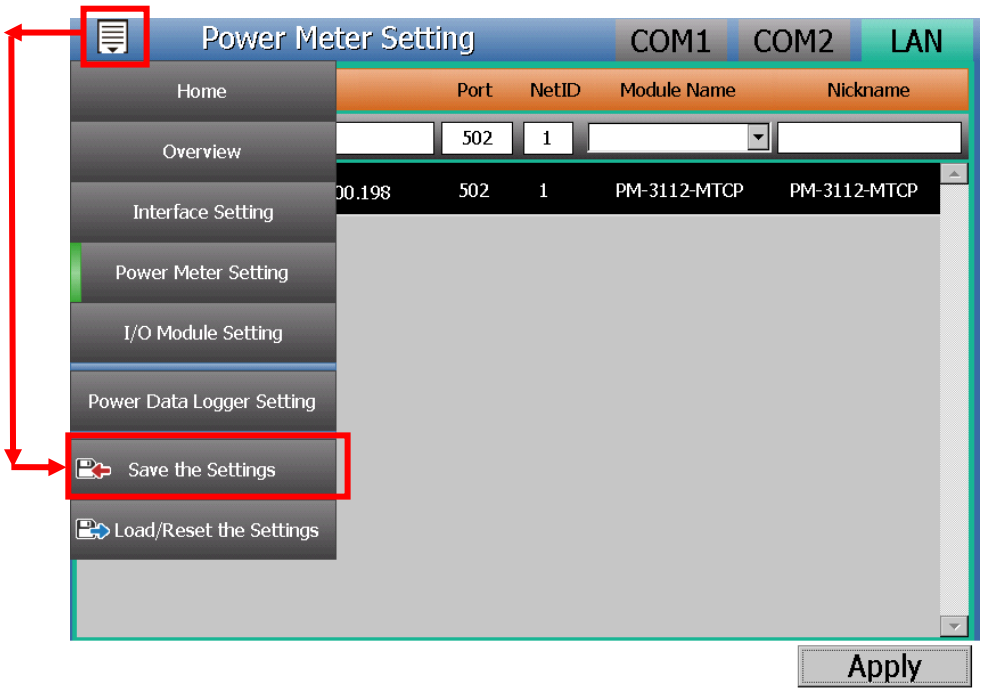
(7) Add ICP DAS Modbus TCP Power Meter manually.

PMD-420x allows connection to ICP DAS Modbus TCP power meters via Ethernet. The user could select the “LAN” interface on the right-top corner first, set up the settings (No, IP, Port and NetID, Power Meter type, Nickname) of the Modbus TCP power meters appropriately as required, then click  button to add the Modbus TCP power meter to the list manually. After complete the setting, please click “Apply” button to save the changes



(8) After complete the setting of Modbus RTU/TCP power meter, please click the “Save the Settings” on the “Module Setting” menu, and then the new setting will take effect.

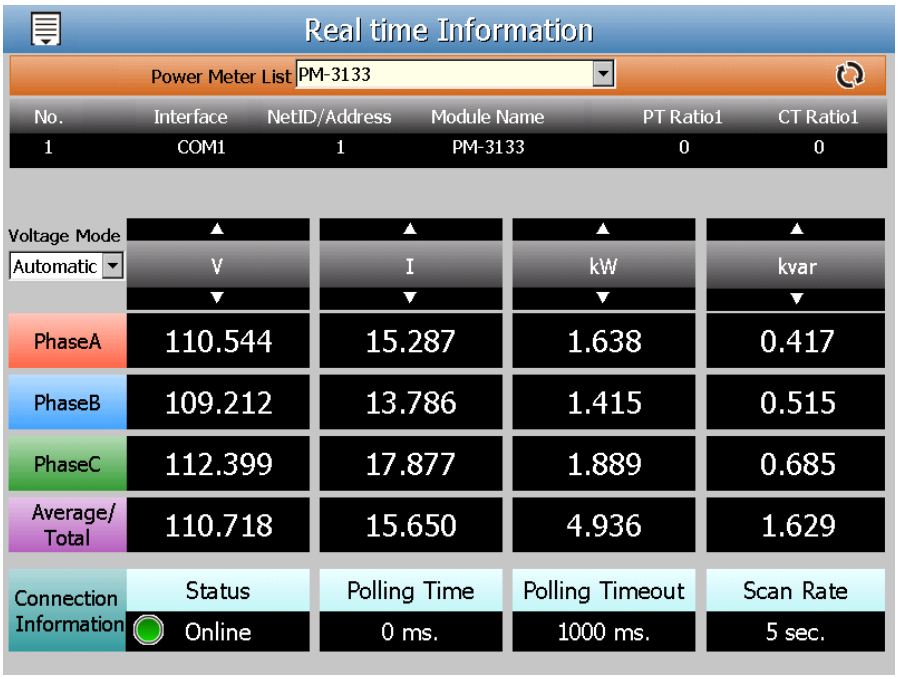
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(9) Now user can click the "Power Information" to view the Power information of the power meters that are connected to the PMD-420x.

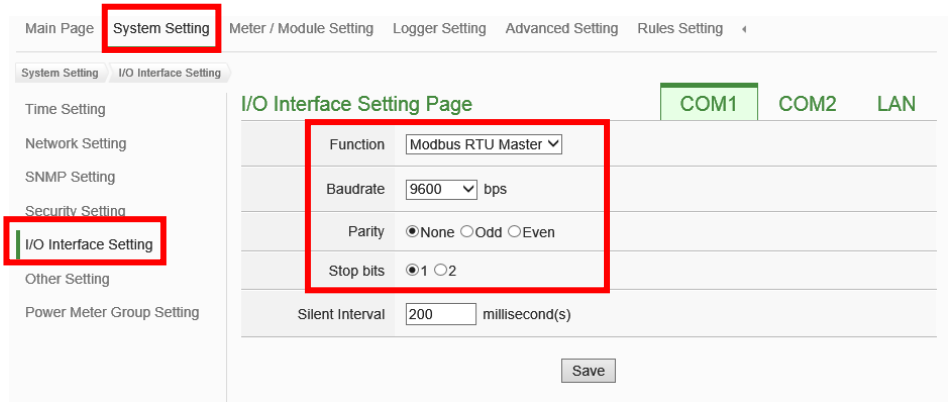


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3.2 Scan ICP DAS Power Meter by Remote Side Web page Interface

(1) Please complete the RS-485 wiring connections of the power meters first and then login into the PMD-420x web page as Administrator, select "System Setting"→"I/O Interface Setting"; make sure the settings of the parameters (Baudrate/Parity/Stop bits) of the COM Port that are connected to the power meter are accurate. After all settings are completed, click "Save" button to save the changes.



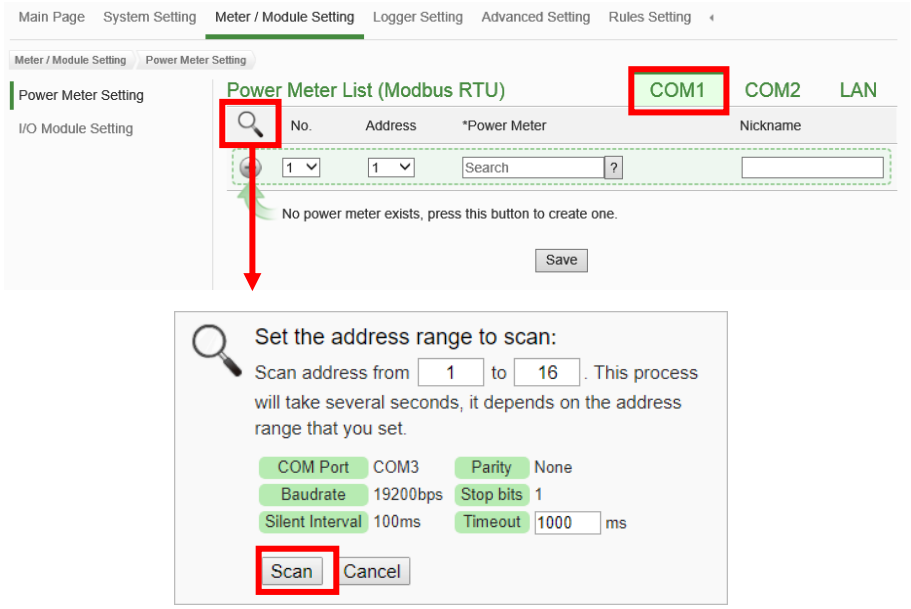
(2) Select "Meter / Module Setting"→"Power Meter Setting", and then follow the steps below to scan or add power meters.

(3) Scan ICP DAS Modbus RTU Power Meters:

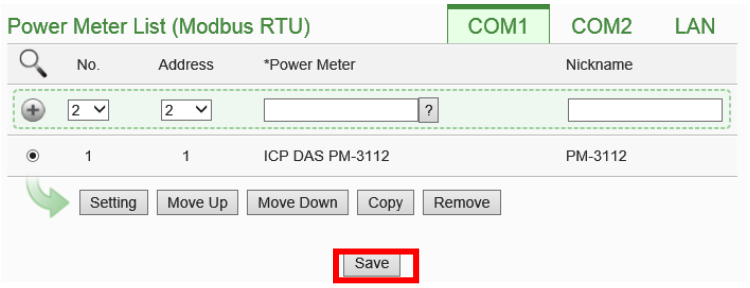
a. Scan the power meters on the interface of the COM Port (**assuming**

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the power meters are connected to the COM1).



b. After the scanning is completed, the power meters connected to the COM Port interface will be displayed, click “Save” to complete the settings of the power meter list.

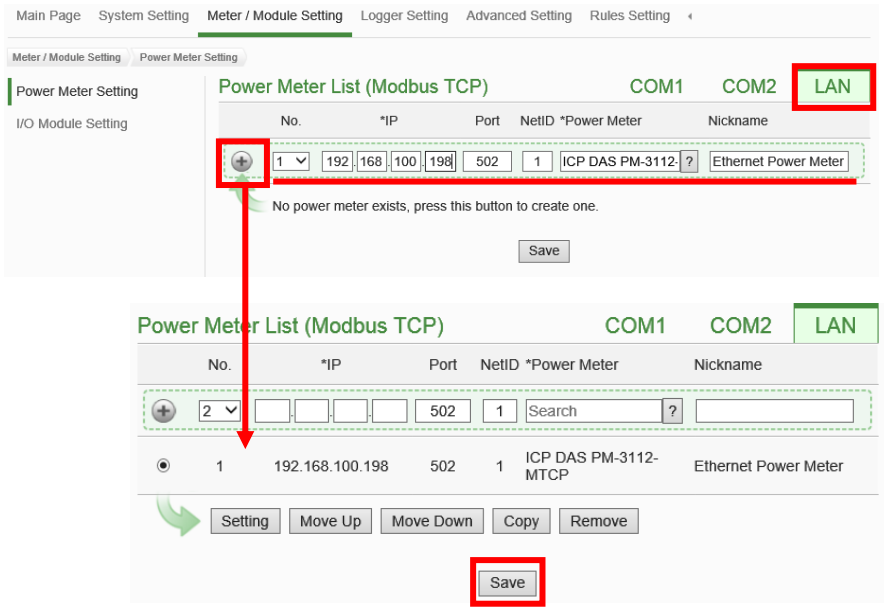


Please note: if failed to scan the power meters, please make sure the RS-485 cable is properly connected. And then go to Step 1: “System Setting”→”I/O Interface Setting” to make sure the settings of the COM Port that are connected to the power meter are accurate. After all settings are completed, click “Save” button to save the changes and repeat Step3.a to perform scanning of the power meters again.

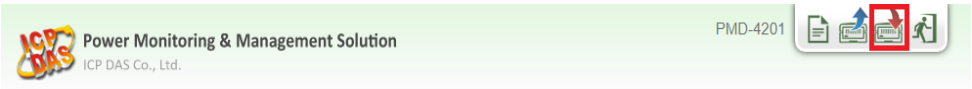
(4) Add ICP DAS Modbus TCP Power Meter manually

If there is power meter connected via network, please select LAN to set up the settings (No, IP, Port, NetID, and Nickname) of the Modbus TCP Power Meter. After all settings are completed, click “+” to add the Modbus TCP Power Meter to the list and then click “Save” to save the settings.

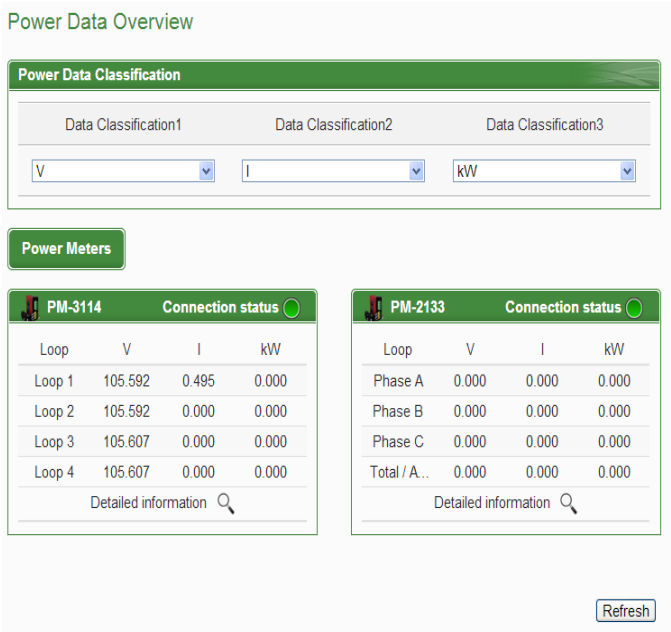
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(5) Save the settings to the PMD-420x.



(6) After saving the settings to the PMD-420x, the settings of the connections to the power meters are completed. After the system is initialized, the power information of the connected power meters will be displayed on the home page.



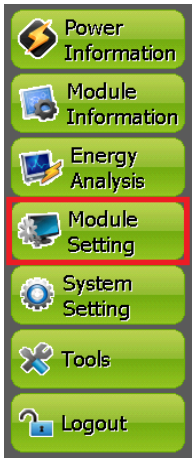
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4 Advanced Setting

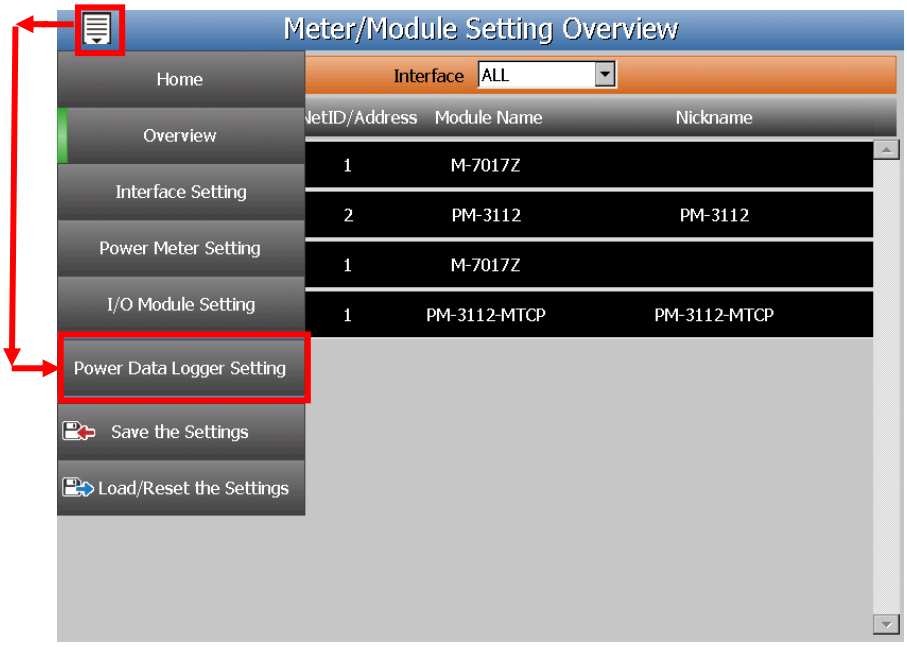
4.1 Enable Data Logger from Local Side Screen Interface

User can enable the Power Data Logger function from the local side screen interface of PMD-420x. The detailed setting steps are as below:

(1) Login PMD-420x as the Administrator. Click the “Module Setting”.

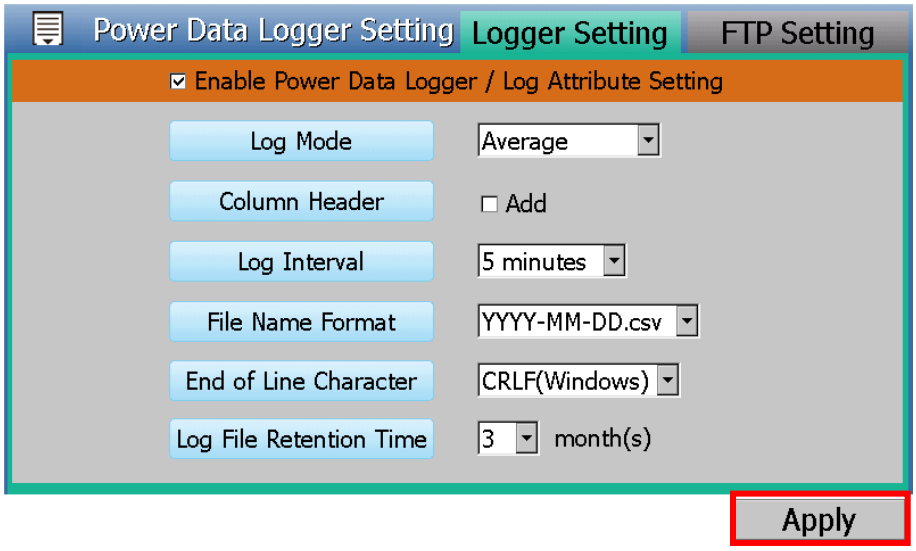


(2) Click the “Power Data Logger Setting” on the “Module Setting” menu.

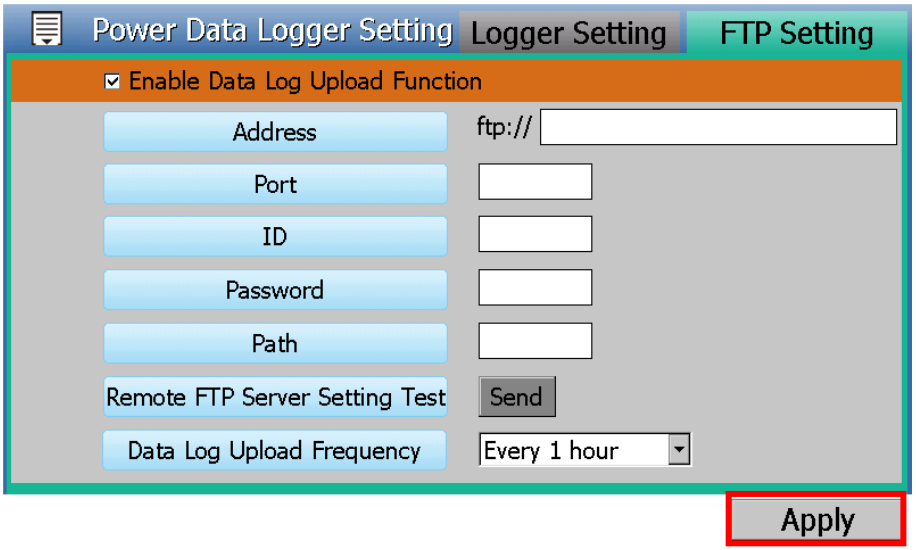


(3) Check “Enable Power Data Logger/Log Attribute Setting” to enable the Power Data Logger function. Modify and make sure the settings of the parameters. After all settings are completed, click “Apply” to save the changes.

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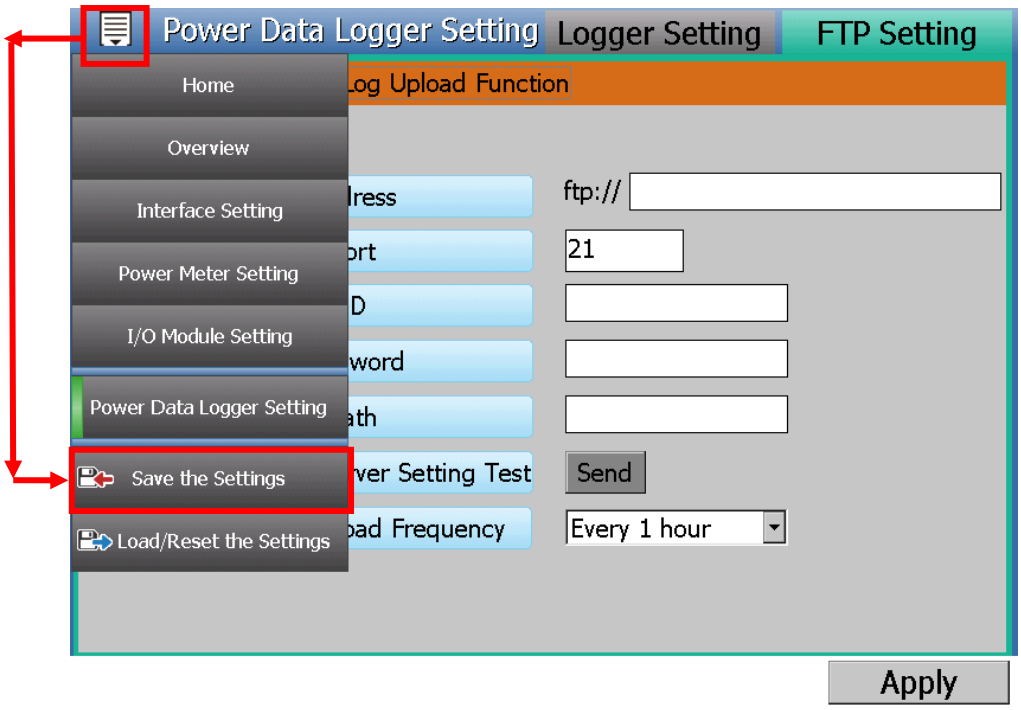


(4) If the user would like to send the power data file to the FTP server of the control center, please click the "FTP Setting" at the right-top corner of the page to enter the "FTP Setting" page.
Check "Enable Data Log Upload Function" to enable the FTP Upload function. Modify and make sure the settings of the parameters. After all settings are completed, click "Apply" to save the changes.



(5) Save the settings to PMD-420x, and then the Power Data Logger function will be enabled. The system will start to save the power data in the MicroSD card.

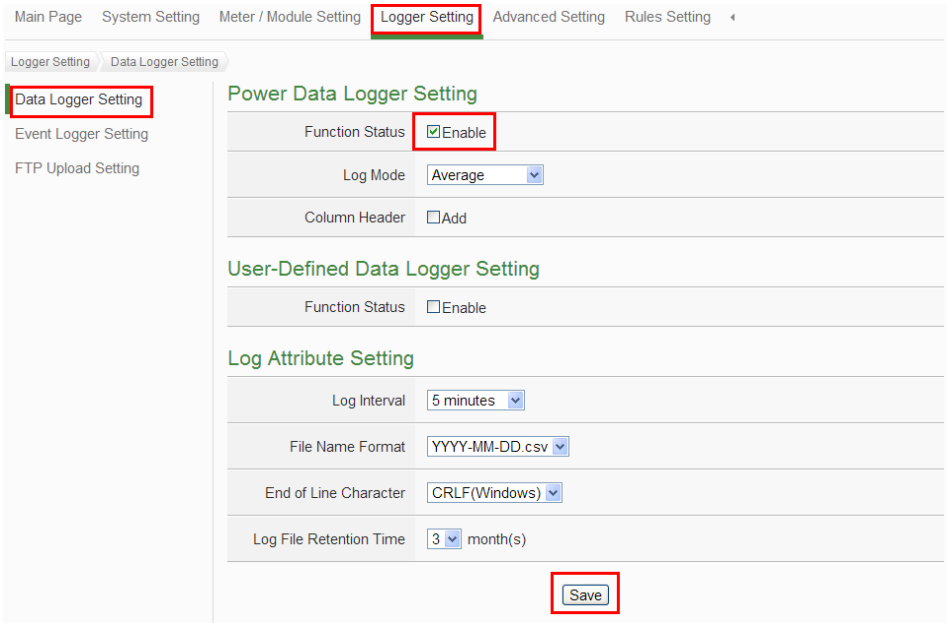
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4.2 Enable Data Logger From Web Page Interface

User also can enable the power data Logger function from the Web page interface. The detailed setting steps are as below:

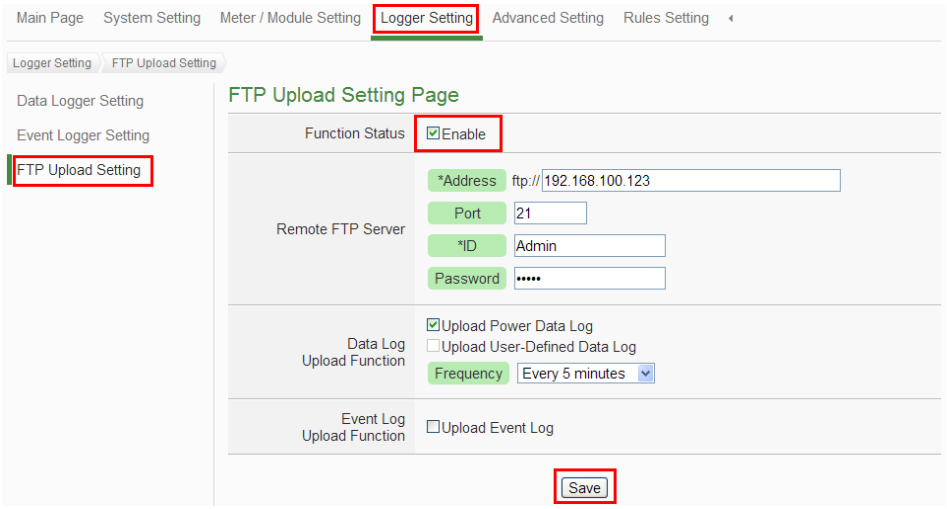
(1) Login into the PMD-420x as administrator and select "Logger Setting"→ "Data Logger Setting"→ "Enable" Function Status, after the setting is completed, click "Save" to save the settings.



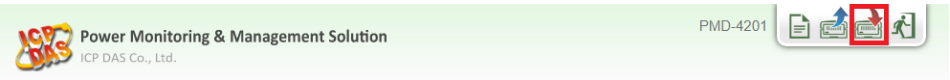
(2) If the user would like to send the power data file to the FTP server of the

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control center, please click “Enable” and complete settings on the “FTP Upload Setting” Page. After all settings are completed, click “Save” button to save the changes.



(3) Save the settings to PMD-420x, and then the Data Logger function will be enabled. The system will start to save the power data in the MicroSD card.



4.3 Others Setting

In addition to collection, statistical analysis, recording and display of the power data, PMD-420x also provides **I/O module control**, **Email sending** and **Schedule** functions. With the **IF-THEN-ELSE** logic rules function, PMD-420x offers more thought-out power demand management and monitoring functions.

Please Note：Some advanced functions of PMD-420x only can be enabled from the Web page interface. They cannot be enabled by the local side display interface of PMD-420x.

The following application is an example that will give more introductions of these functions:

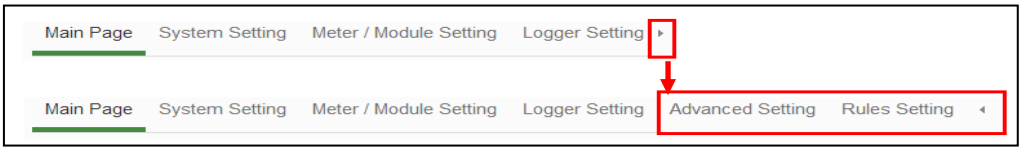
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Set up a power monitoring system that will monitor if the electricity usage is unusual during weekdays ((Monday to Friday / 8.00a.m. to 5:00p.m.). If any unusual condition is detected, the system will send email message to related personnel and the DO channel of the Modbus I/O module will be set as "ON" to turn on the waning light.

The user has to complete the Condition/Action settings of adding I/O modules, Schedule and Email first, and then these settings can be included in the IF-THEN-ELSE logic settings for editing rules for monitoring, shown as below:

IF	THEN	ELSE
Schedule: Weekdays	Send Email	
Unusual electricity usage	Turn on warning light	Turn off warning light

Please note: The Advanced Setting function is hidden by default, click on the expand button to display the option, shown as below:



4.3.1 Scan and add ICP DAS Power Meter

PMD-420x provides two interfaces **(local side display interface and remote side Web page interface)** for users to scan and add the ICP DAS power meters that are connected to the PMD-420x. Please refer to 【3. Basic Setting】for the detailed setting steps.

4.3.2 Scan and add ICP DAS M-7000 I/O Module

Description: Set up the "Modbus I/O modules" for the application example.

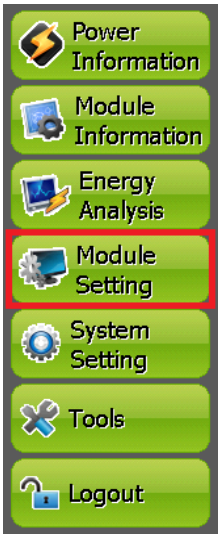
PMD-420x provides two interfaces **(local side display interface and remote side Web page interface)** for users to scan the ICP DAS M-7000 I/O modules that are connected to the PMD-420x. Users can also complete the setting of ICP DAS M-7000 I/O modules by the two interfaces. The detailed setting steps of PMD-420x are as below:

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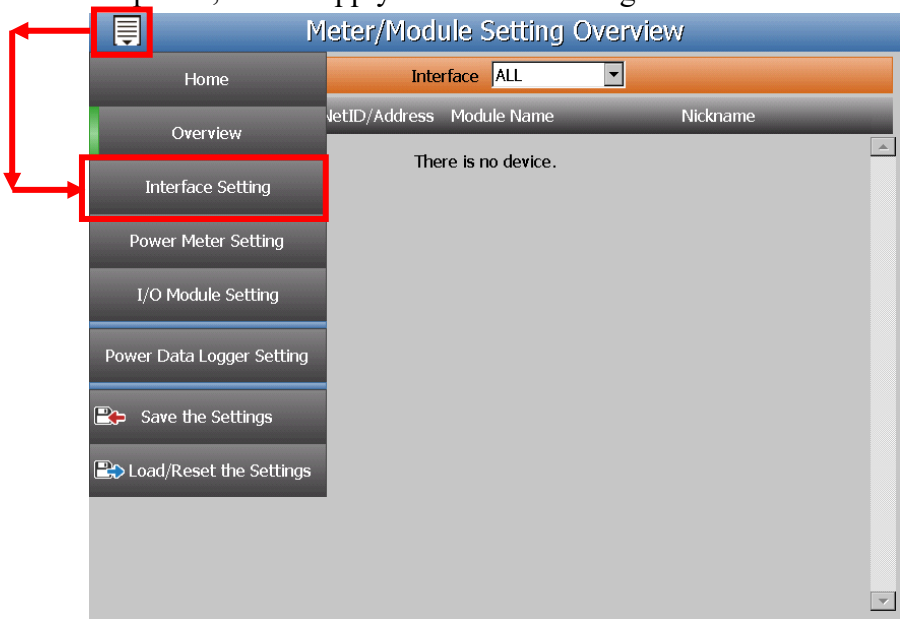
- **Scan M-7000 I/O modules by Local Side Display Interface**

  (1) Please verify the hardware installation of the ICP DAS M-7000 I/O modules, and make sure the RS-485 wiring connection between ICP DAS M-7000 I/O modules and PMD-420x is accurate.

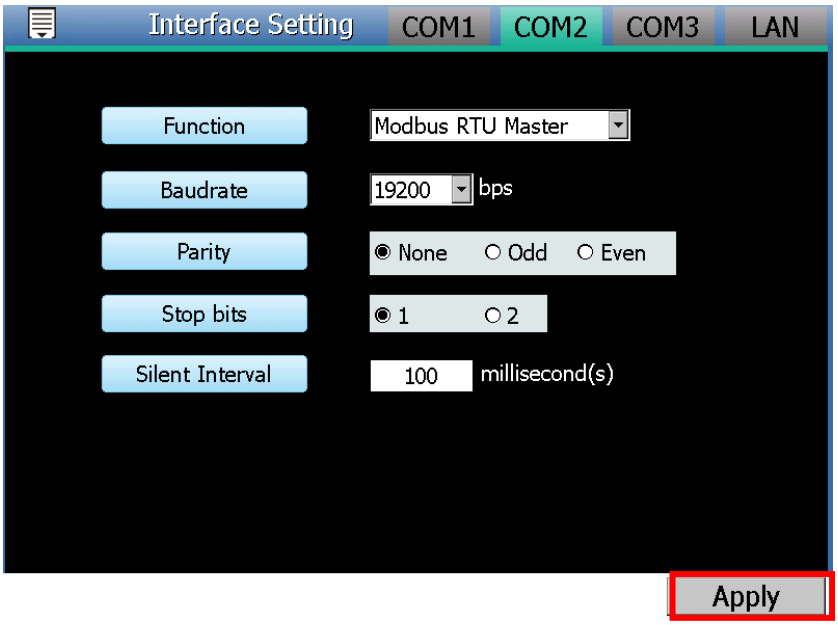
  (2) Login PMD-420x as the Administrator. Click the "Module Setting".



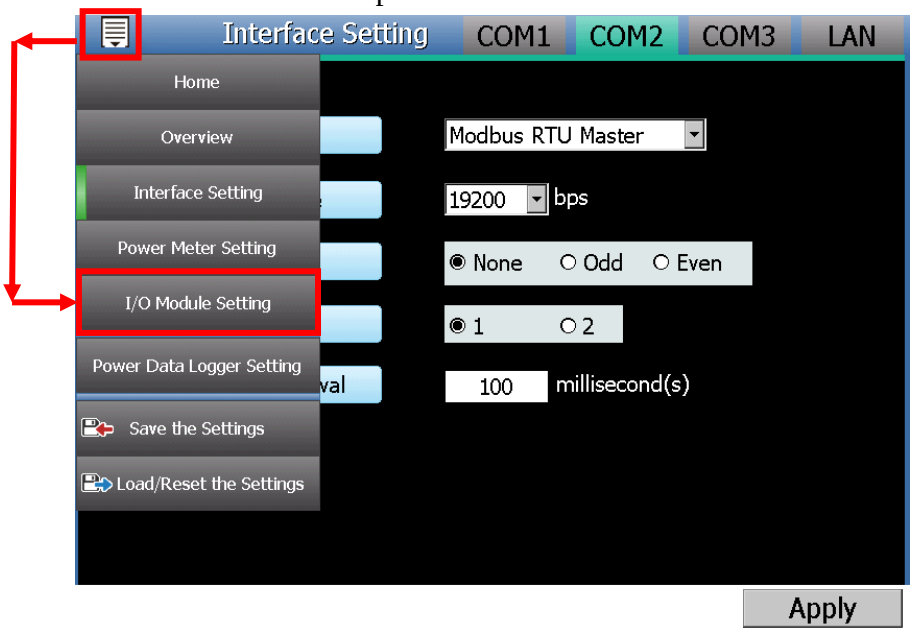
  (3) Click the "Interface Setting" on the "Module Setting" menu. Modify and make sure the settings of the parameters (Baudrate / Parity / Stop bits) of the COM Port that are connected to the M-7000 I/O modules are accurate. After all settings are completed, click "Apply" to save the changes.



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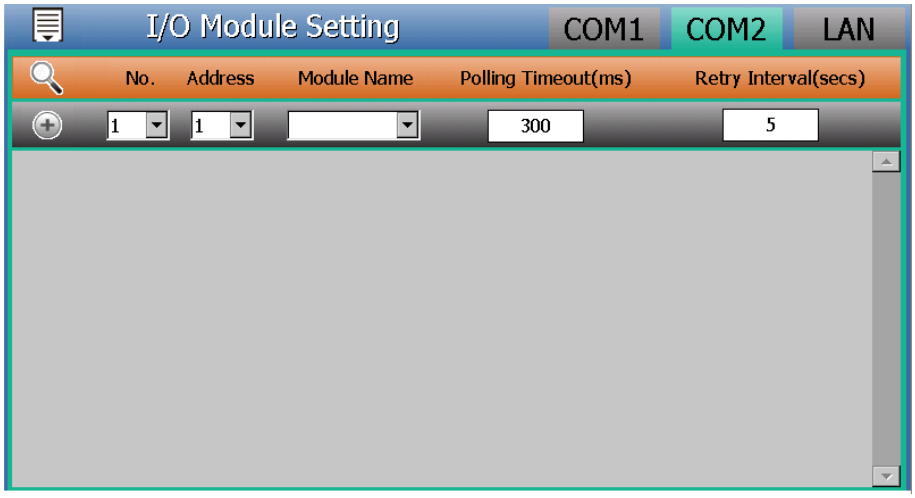
(4) Click the "I/O Module Setting" on the "Module Setting" menu, and then follow the steps below to scan M-7000 I/O modules.



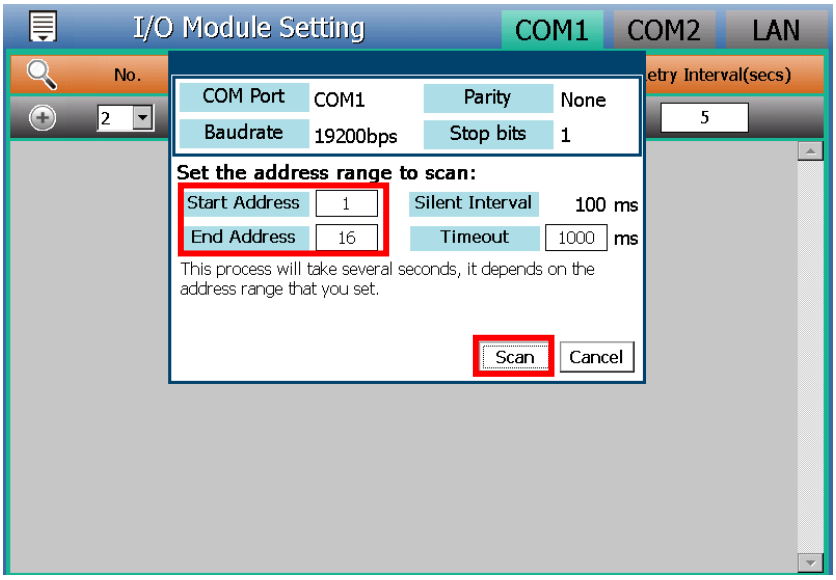
(5) Scan ICP DAS M-7000 I/O module

a. Select the COM Port interface that is used to connect the M-7000 I/O Module from the right-top corner **(assuming the M-7000 I/O modules are connected to the COM2)**. Click the  button to scan the ICP DAS M-7000 I/O modules that are connected to the PMD-420x.

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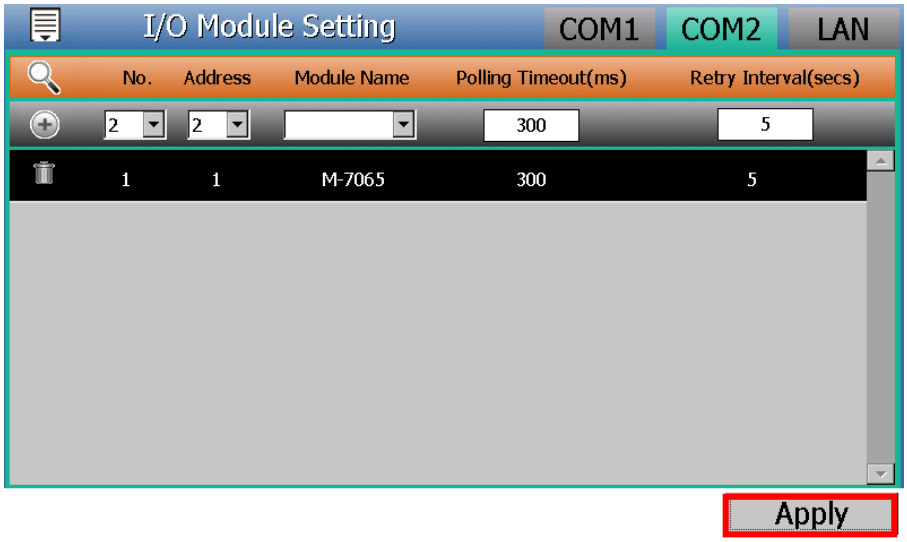


b. When the Scan page appears, input the starting address and the ending address of the Modbus address that are going to perform scan. Click on “Scan”, the system will start to scan the M-7000 I/O module that match the settings previously set.

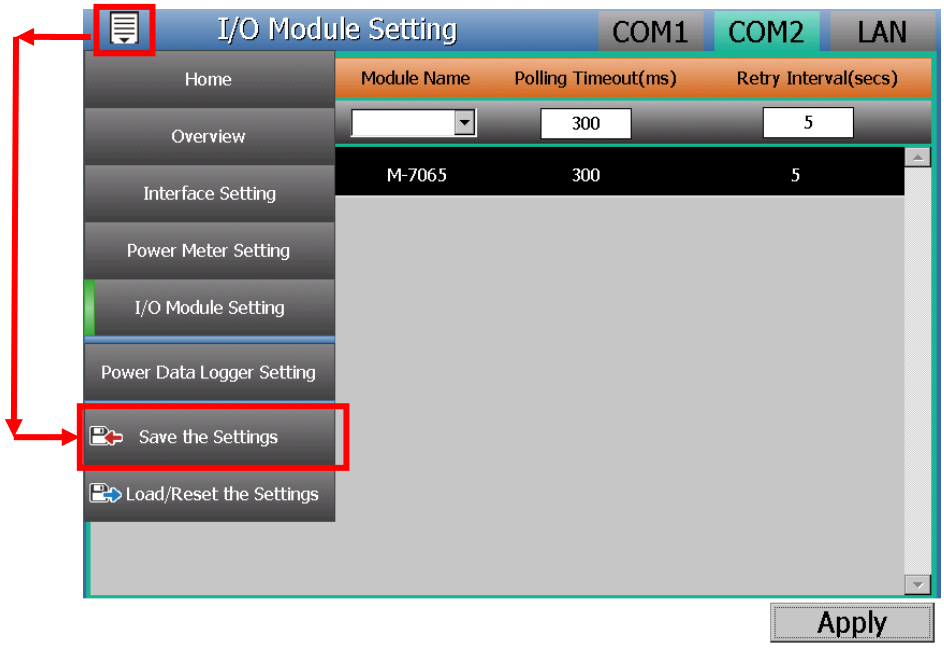


c. After the Scan operation is completed, an M-7000 I/O module list will appear. After all settings are completed, click “Apply” button to save the changes.

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d. Click the “Save the Settings” on the “Module Setting” menu, and then the new setting will take effect.



Please Note：

If the Scan process is failed, please verify the settings of following items again.

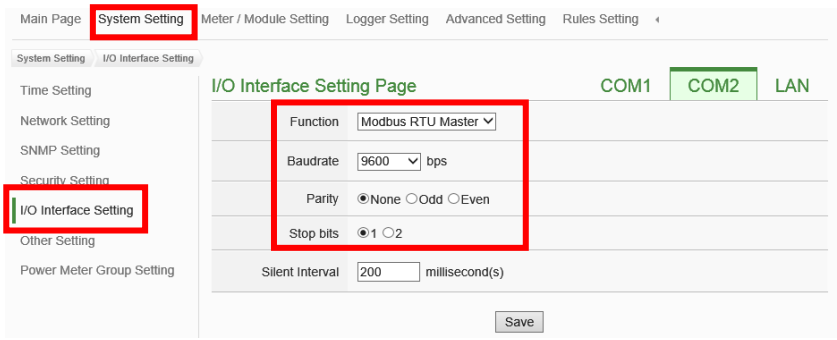
- The RS-485 wiring connection between M-7000 I/O modules and PMD-420x.
- The parameter settings of the M-7000 I/O modules.
- The parameter settings of the Com Port of PMD-420x.

If there is any parameter modification, please remember to click Apply button, to save the change and start the scan process again.

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- **Scan M-7000 I/O modules by Remote Side Web page Interface**

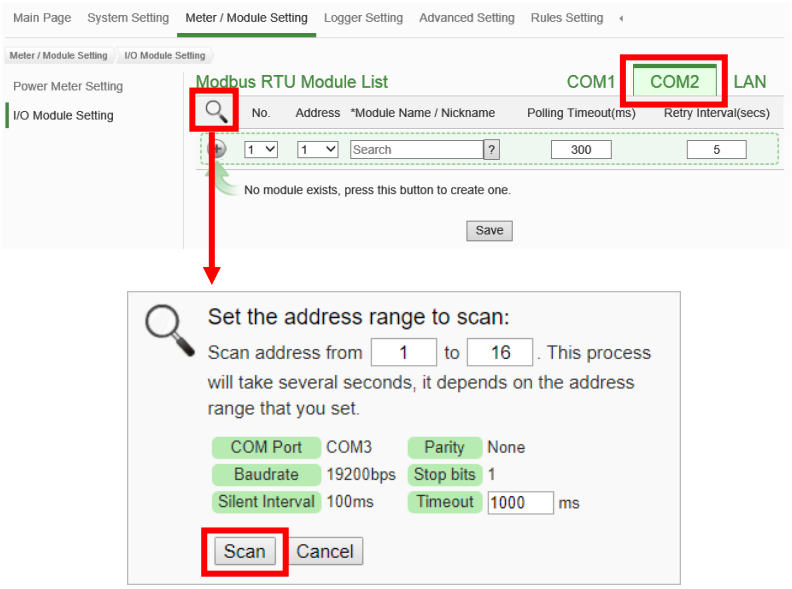
(1) Please complete the RS-485 wiring connections of the ICP DAS M-7000 I/O modules first and then login into the PMD-420x web page as the Administrator, select "System Setting"→"I/O Interface Setting" to make sure the parameters (Baudrate/Parity /Stop bits) of the COM Port connected are accurate. After all settings are completed, click "Save" button to save the changes.



(2) Select "Meter / Module Setting"→"I/O Module Setting", and then follow the steps below to scan or add I/O Modules to the list.

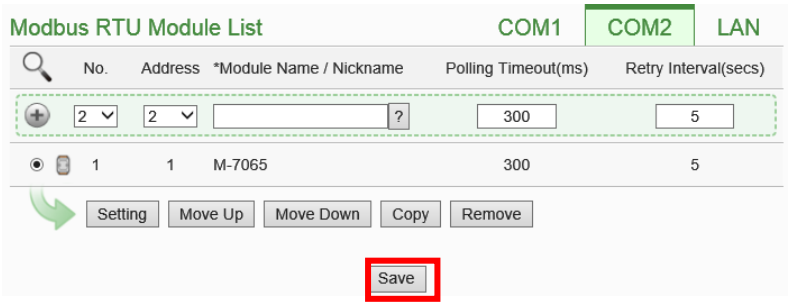
(3) Scan ICP DAS M-7000 I/O Modules

a. Scan the I/O modules on the interface of the COM Port that are connected to the M-7000 I/O Modules **(assuming the M-7000 I/O Modules are connected to the COM2)**.



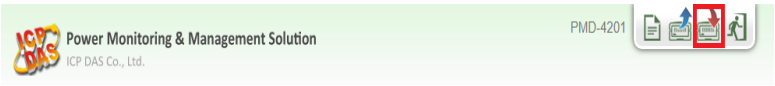
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b. After the scanning is completed, the M-7000 I/O Modules connected to the COM Port interface will be displayed, click “Save” to complete the settings of the M-7000 I/O Module List.



Please note: if fail to scan the I/O modules, please make sure the RS-485 cable is properly connected. And then go to Step 1: “System Setting”→”I/O Interface Setting” to make sure the settings of the COM Port that are connected to the I/O Module are accurate. After all settings are completed, click “Save” button to save the changes and repeat Step 3.a to perform scanning of the I/O modules again.

(4) Save the settings to the PMD-420x **(the user could also save the settings later after all other settings are completed)**

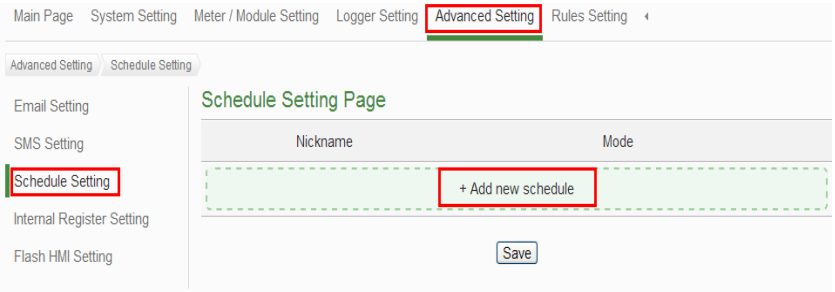


4.3.3 Schedule Setting (From Webpage side)

Description: Set up the "weekdays (Monday to Friday / 8.00a.m. to 5:00p.m.)" setting for the application example.

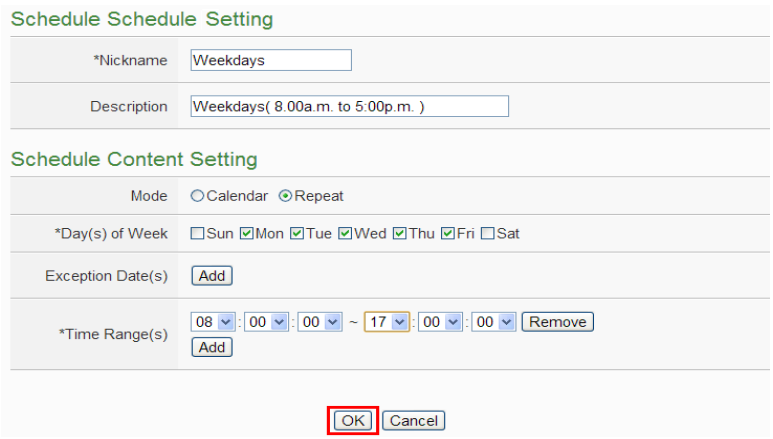
Weekday Schedule setting steps:

(1) Login into the PMD-420x web page as the Administrator, select “Advanced Setting”→“Schedule Setting”→“Add new schedule”.

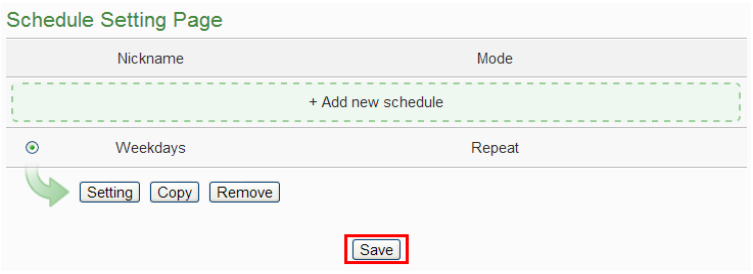


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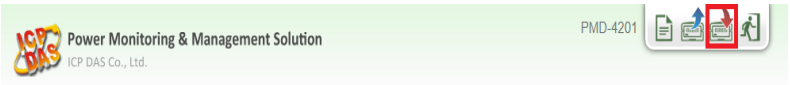
(2) Follow the figures and descriptions below to complete the settings, after all settings are completed, click “OK” button.



(3) Save schedule settings.



(4) Save the settings to the PMD-420x (the user could also save the settings later after all other settings are completed).

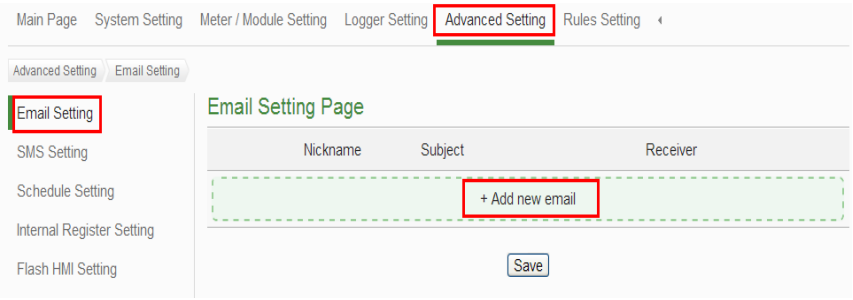


4.3.4 Email Setting (From Webpage side)

Description: Set up the "Email" setting for the application example.

Email setting steps:

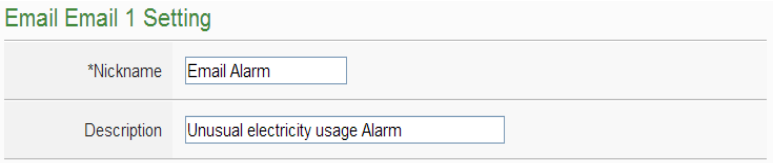
(1) Login into the PMD-420x web page as the Administrator, select “Advanced Setting”→“Email Setting”→”Add new email”.



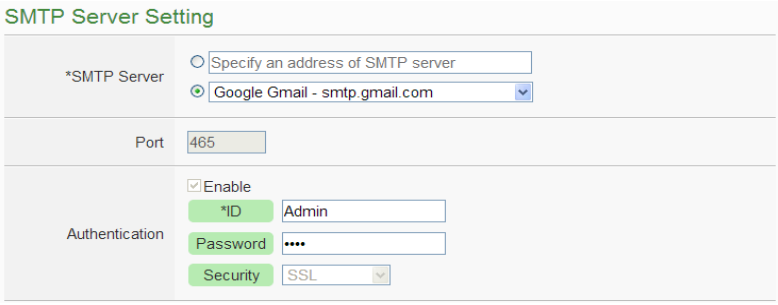
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(2) Please follow the figures and descriptions below to complete the settings.

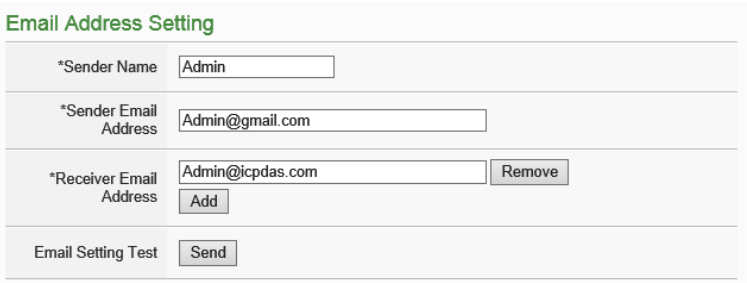
■ Input the Nickname and Description of the Email.



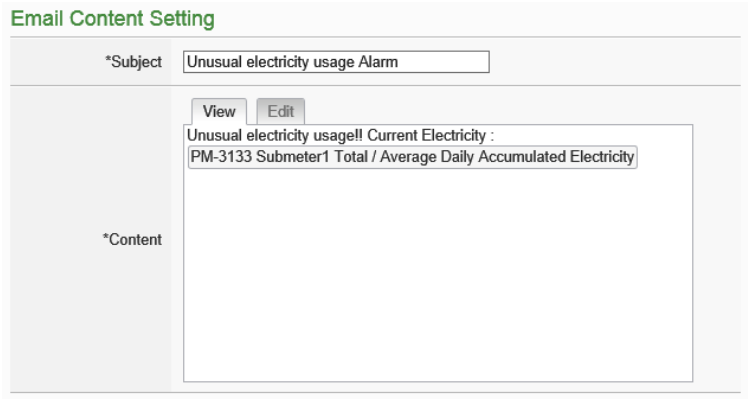
■ Set up SMTP Server and its ID/Password.



■ Set up Sender Name and Receiver information



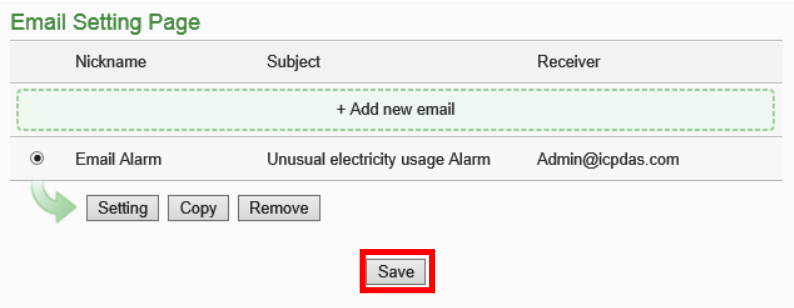
■ Input Email content.



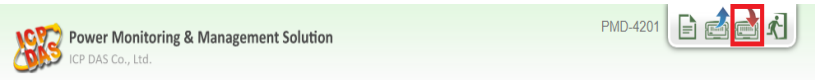
■ Click “OK” to complete the settings.

(3) Save Email Settings.

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(4) Save the settings to the PMD-420x (the user could also save the settings later after all other settings are completed).



4.3.5 IF-THEN-ELSE Rule Setting (From Webpage side)

Description: Edit the "IF-THEN-ELSE Rule" in the application example. Please implement the settings of the following configuration before editing the IF-THEN-ELSE Rule: adding new Power Meter / adding new Modbus I/O Module / Schedule / Email.

Rule Setting steps:

(1) Login into the PMD-420x web page as the Administrator, select “Rules Setting”→“Add new rule”.



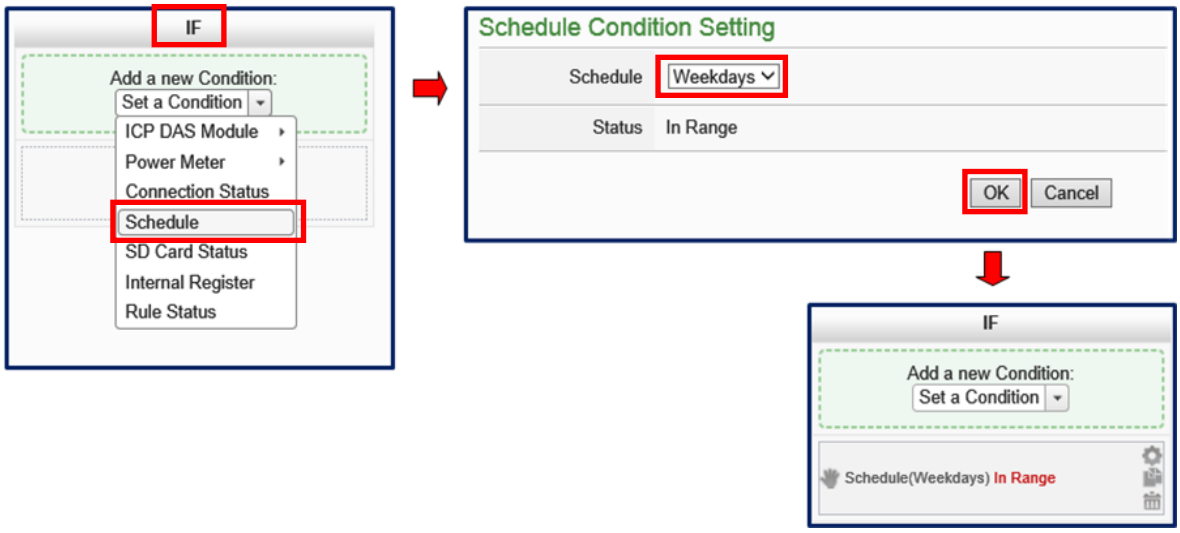
(2) Please follow the figures and descriptions below to complete the settings.

■ Input the Nickname and Description, and then click “Enable”.

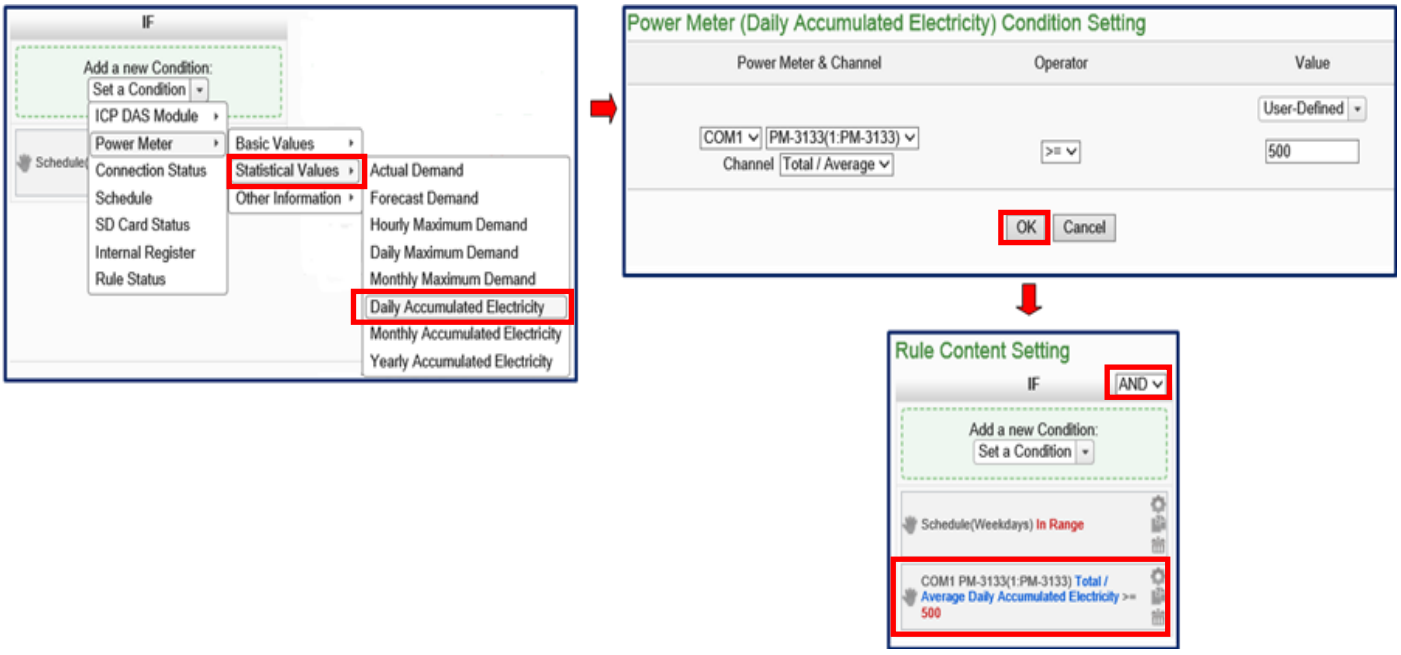


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■ **Set up IF Condition:** Set up the time range to be weekdays.

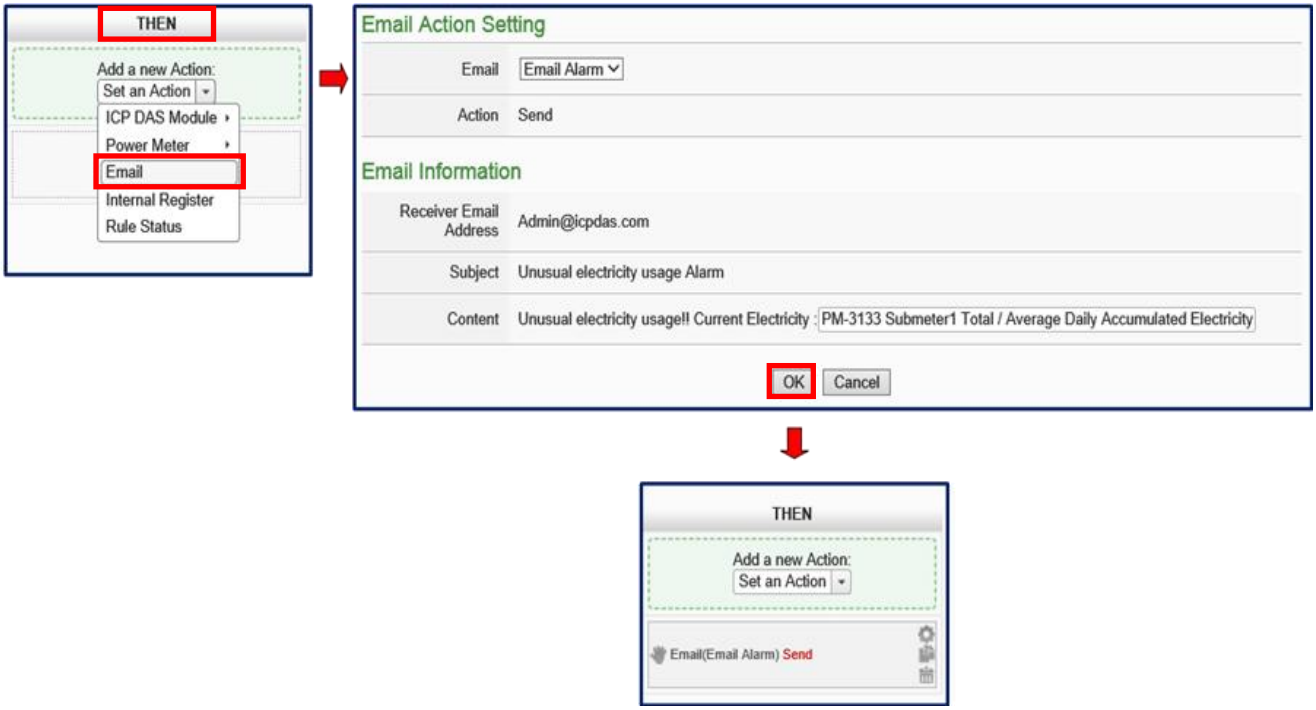


■ **Set up IF Condition:** When Daily Accumulated Electricity is over 500 kWh.



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■ **Set up THEN Action:** Send Email

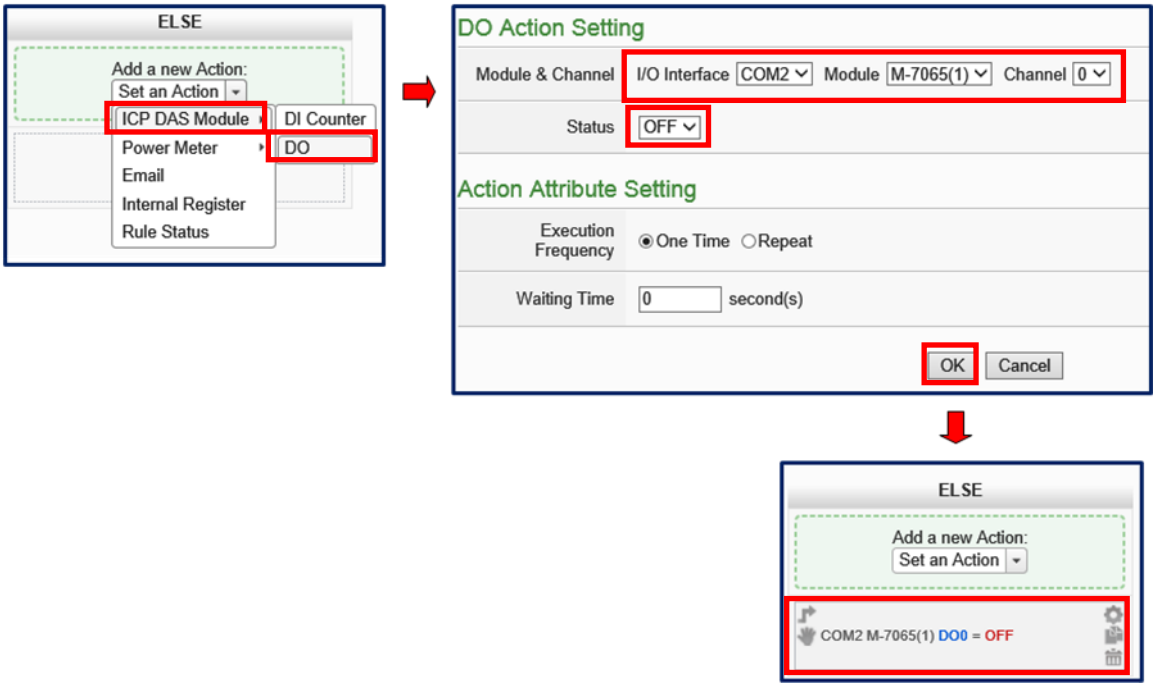


■ **Set up THEN Action:** Turn on warning light (M-7065 DO0=ON)

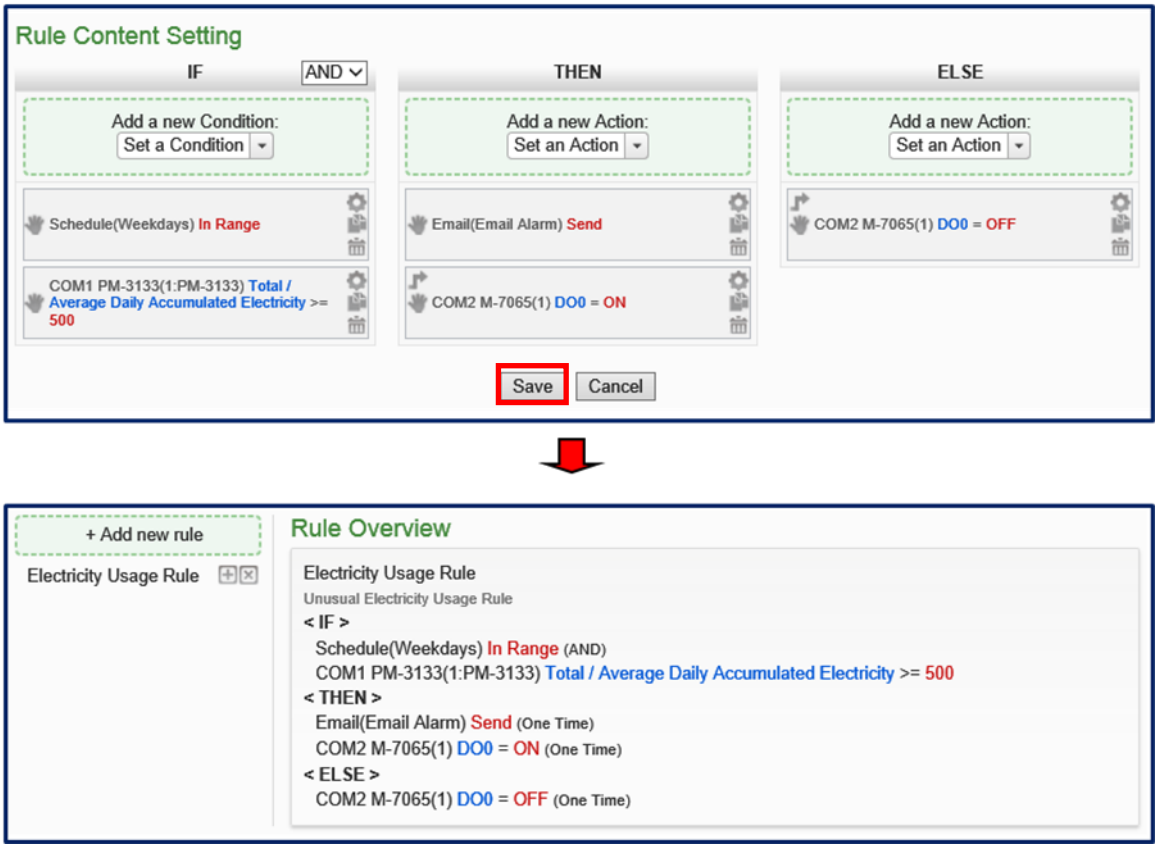


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■ **Set up ELSE Action:** Turn off warning light (M-7065 DO0=OFF)

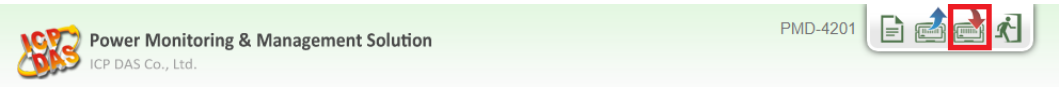


(3) Save Rule Settings



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(4) Save the settings to the PMD-420x



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