

PMC-5151 Brief User Guide

[Version 2.0.0]



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Introduction

This document is intended to guide users to quickly implement settings of PMC-5151. This document can be divided into three parts from basic to advanced settings:

1. **Before Installation:** PMC-5151 Network Setting.
→ [Required settings before installing PMC-5151.](#)
2. **Basic Settings:** Scan the connected power meters and start the data logger function.
→ [Quickly build up a power monitoring system.](#)
3. **Advanced Settings:** Given example scenarios for logic rule settings for advanced functions such as I/O module monitoring & control, Email/ SMS sending and Schedule functions.
→ [Settings for advanced functions of PMC-5151.](#)


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

Please Note:

- PMC-5151 provides COM2 (RS-485) and COM3 (RS-485) interfaces for connections to Modbus RTU power meters, and PMC-5151 also provides LAN interface for connections to Modbus TCP power meters.
- A single PMC-5151 can connect to at most 24 ICP DAS Modbus power meters (including Modbus RTU power meters and Modbus TCP power meters)
- A single I/O interface (COM2, COM3, or LAN) can connect to at most 16 ICP DAS Modbus power meters.

■ Before Installation

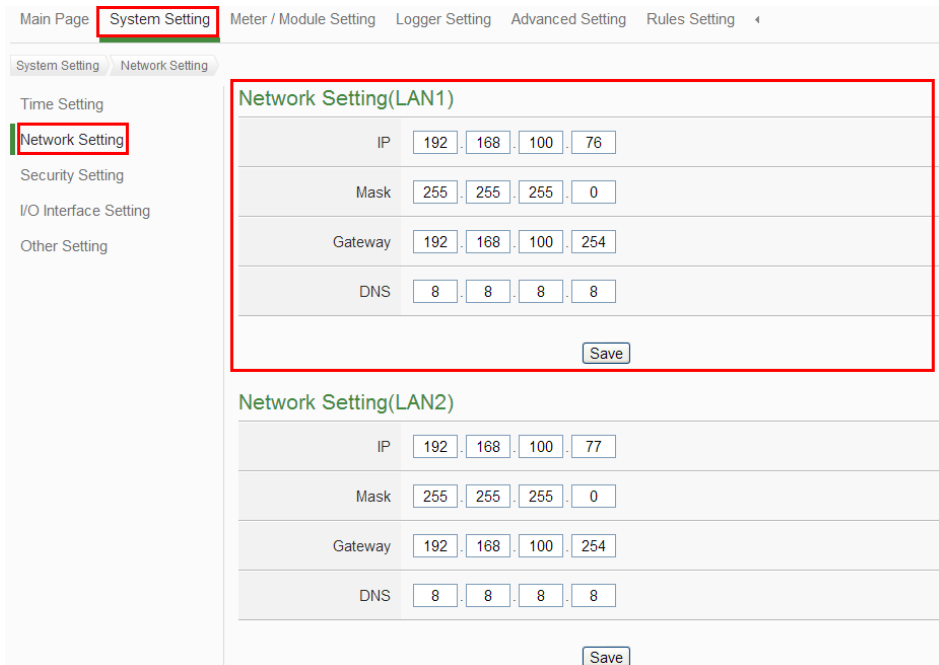
◆ Network Settings



The default network setting of **LAN1** on PMC-5151 is as follow:

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

- (1) Modify the network settings of the PC or Notebook to be the same network domain as PMC-5151. For example:
 - IP : 192.168.255.10
 - Subnet mask : 255.255.0.0
 - Gateway : 192.168.0.1
- (2) Connect PMC-5151 **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 page.
- (5) After login into the page, go to “System Setting”→”Network Setting” and modify the **LAN1** network setting to fit current network environment.



The screenshot shows a web interface with a navigation menu on the left. The 'System Setting' menu item is highlighted with a red box. Under 'System Setting', the 'Network Setting' sub-item is also highlighted with a red box. The main content area displays two sections: 'Network Setting(LAN1)' and 'Network Setting(LAN2)'. The LAN1 section is enclosed in a red border and contains the following settings:

Network Setting(LAN1)				
IP	192	168	100	76
Mask	255	255	255	0
Gateway	192	168	100	254
DNS	8	8	8	8
<input type="button" value="Save"/>				

The LAN2 section is also visible below, with the following settings:

Network Setting(LAN2)				
IP	192	168	100	77
Mask	255	255	255	0
Gateway	192	168	100	254
DNS	8	8	8	8
<input type="button" value="Save"/>				

- (6) After clicking on “Save” button, for the network domain of the PMC-5151 and PC are different, it is normal being not able to connect to the webpage, please connect PMC-5151 and PC to the actual network environment and then modify the network settings of PC to correct settings to connect to the PMC-5151.

■ Basic Setting

◆ Setup and Scan Power Meters

- (1) Please complete the RS-485 wiring connections of the power meters first and then login into the PMC-5151 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.

Main Page **System Setting** Meter / Module Setting Logger Setting Advanced Setting Rules Setting

System Setting I/O Interface Setting

Time Setting
Network Setting
Security Setting
I/O Interface Setting
Other Setting

I/O Interface Setting Page COM1 **COM2** COM3 LAN

Function	Modbus RTU Master
Baudrate	19200 bps
Parity	<input checked="" type="radio"/> None <input type="radio"/> Odd <input type="radio"/> Even
Stop bits	<input checked="" type="radio"/> 1 <input type="radio"/> 2
Silent Interval	100 millisecond(s)

Save

- (2) Select “Meter/Module Setting”→“Power Meter Setting”, and then follow the steps below to scan or add power meters.
- (3) Scan Modbus RTU Power Meters:
 - 3.1 Scan the power meters on the interface of the COM Port(**assuming the power meters are connected to the COM2**).

Main Page System Setting **Meter / Module Setting** Logger Setting Advanced Setting Rules Setting

Meter / Module Setting Power Meter Setting

Power Meter Setting
XW-Board Setting
I/O Module Setting

Power Meter List (Modbus RTU) **COM2** COM3 LAN

No.	Address	*Power Meter	Nickname
1	1		

No power meter exists, press this button to create one.

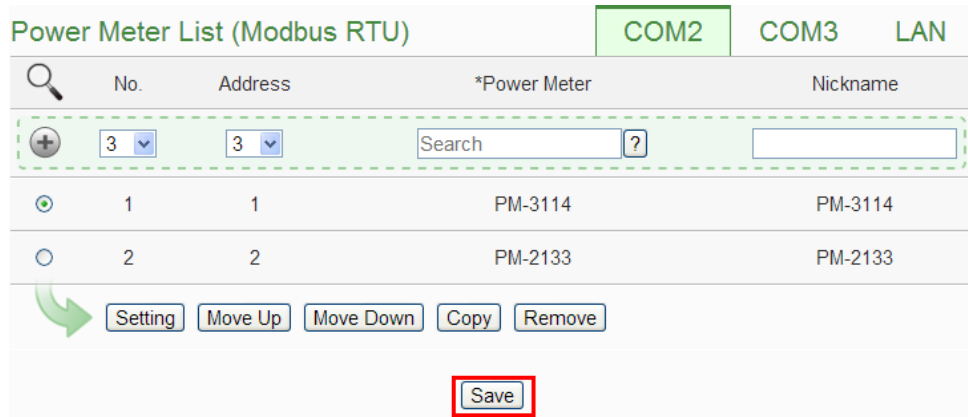
Save

Set the address range to scan:

Scan address from to . This process will take several seconds, it depends on the address range that you set.

COM Port COM2 Parity None
Baudrate 19200bps Stop bits 1 **Scan** Cancel

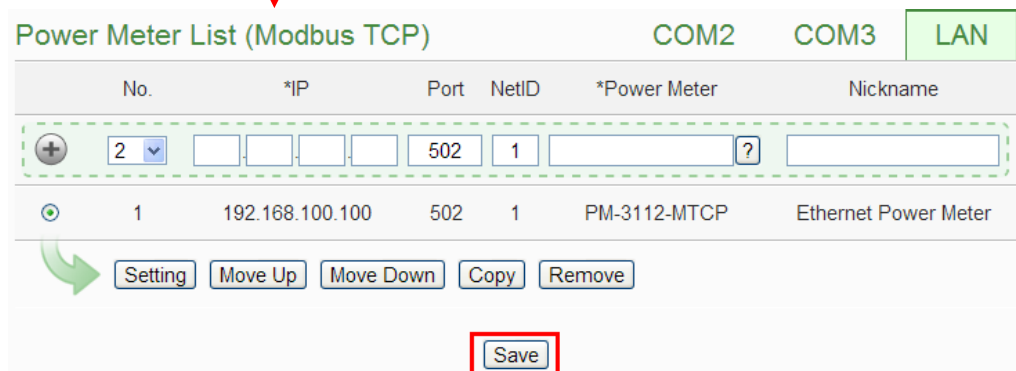
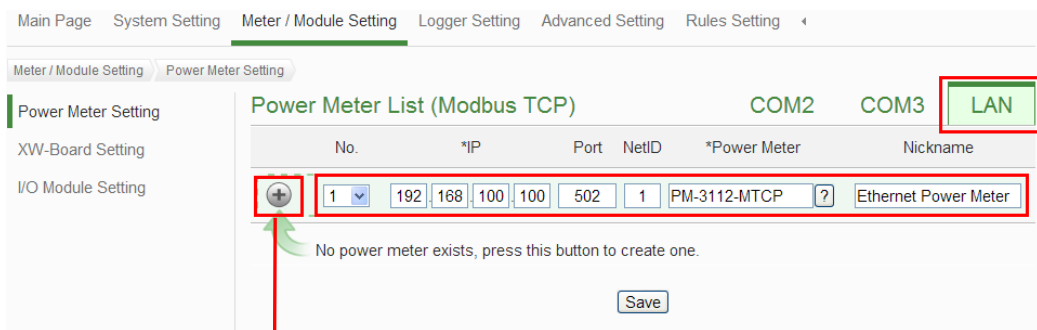
3.2 After the scanning is completed, the power meters connected to the COM Port interface will be displayed, click “Save” to complete the settings of the power meter list.



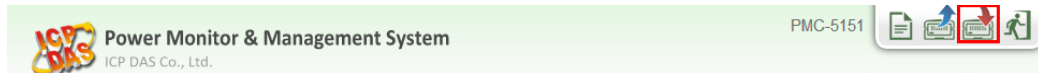
Please note: if fail to scan the power meters, please make sure the RS-485 cable is properly connected. And then go to [Step 1](#): “System Setting”→”I/O Interface Setting” to make sure the settings of the COM Port that are connected to the power meter are accurate. After all settings are completed, click “Save” button to save the changes and repeat [Step 3.1](#) to perform scanning of the power meters again.

(4) Add Modbus TCP Power Meters:

If there is power meter connected via network, please select LAN to set up the settings(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.



- (5) Save the settings to the PMC-5151.



- (6) After saving the settings to the PMC-5151, 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.

The screenshot displays the 'Power Data Overview' page. At the top, there is a 'Power Data Classification' section with three dropdown menus for 'Data Classification1', 'Data Classification2', and 'Data Classification3'. The first dropdown is set to 'V', the second to 'I', and the third to 'kW'. Below this is a 'Power Meters' section containing two data tables. The first table is for 'PM-3114' and the second is for 'PM-2133'. Both tables show 'Loop' or 'Phase' information, voltage (V), current (I), and power (kW). A 'Refresh' button is located at the bottom right of the page.

Power Data Overview

Power Data Classification

Data Classification1	Data Classification2	Data Classification3
V	I	kW

Power Meters

PM-3114 Connection status ●

Loop	V	I	kW
Loop 1	105.592	0.495	0.000
Loop 2	105.592	0.000	0.000
Loop 3	105.607	0.000	0.000
Loop 4	105.607	0.000	0.000

Detailed information

PM-2133 Connection status ●

Loop	V	I	kW
Phase A	0.000	0.000	0.000
Phase B	0.000	0.000	0.000
Phase C	0.000	0.000	0.000
Total / A...	0.000	0.000	0.000

Detailed information

[Refresh](#)

◆ Start Data Logger

- (1) Login into the PMC-5151 as administrator and select “Logger Setting”→ “Data Logger Setting”→ “Enable” Function Status, after the setting is completed, click “Save” to save the settings.

Main Page System Setting Meter / Module Setting **Logger Setting** Advanced Setting Rules Setting

Logger Setting Data Logger Setting

Data Logger Setting
Event Logger Setting
FTP Upload Setting

Power Data Logger Setting

Function Status	<input checked="" type="checkbox"/> Enable
Log Mode	Average
Column Header	<input type="checkbox"/> Add

User-Defined Data Logger Setting

Function Status	<input type="checkbox"/> Enable
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Log Attribute Setting

Log Interval	5 minutes
File Name Format	YYYY-MM-DD.csv
End of Line Character	CRLF(Windows)
Log File Retention Time	3 month(s)

Save

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

Main Page System Setting Meter / Module Setting **Logger Setting** Advanced Setting Rules Setting

Logger Setting FTP Upload Setting

Data Logger Setting
Event Logger Setting
FTP Upload Setting

FTP Upload Setting Page

Function Status	<input checked="" type="checkbox"/> Enable
Remote FTP Server	*Address ftp://192.168.100.123
	Port 21
	*ID Admin
	Password ****
Data Log Upload Function	<input checked="" type="checkbox"/> Upload Power Data Log
	<input type="checkbox"/> Upload User-Defined Data Log
	Frequency Every 5 minutes
Event Log Upload Function	<input type="checkbox"/> Upload Event Log

Save

- (3) Save the settings to PMC-5151, and then the Data Logger function will be enabled. The system will start to save the power data in the MicroSD card.

■ Advanced Setting

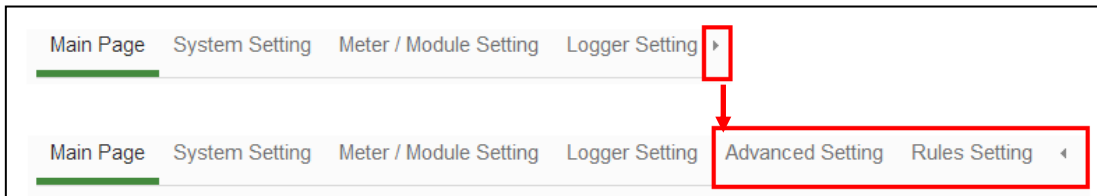
In addition to collection, statistical analysis, recording and display of the power data, PMC-5151 also provides **I/O module control**, **Email/SMS sending** and **Schedule** functions. With the **IF-THEN-ELSE** logic rules function, PMC-5151 offers more thought-out power demand management and monitoring functions. The following application is an example that will give more introductions of these functions:

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 and SMS message** to related personnel and **the DO channel of the Modbus I/O module will be set as “ON” to turn on the warning light**.

The user has to complete the Condition/Action settings of adding I/O modules, Schedule, Email and SMS 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	Send SMS	
	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:



◆ Setup and Scan Modbus I/O Modules

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

Steps:

- (1) Please complete the RS-485 wiring connections of the M-7000 modules first and then login into the PMC-5151 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.

Main Page **System Setting** Meter / Module Setting Logger Setting Advanced Setting Rules Setting ◀

System Setting / I/O Interface Setting

I/O Interface Setting Page COM1 COM2 **COM3** LAN

Function	Modbus RTU Master
Baudrate	115200 bps
Parity	<input checked="" type="radio"/> None <input type="radio"/> Odd <input type="radio"/> Even
Stop bits	<input checked="" type="radio"/> 1 <input type="radio"/> 2
Silent Interval	15 millisecond(s)

Save

- (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 Modules

3.1 Scan the I/O modules on the interface of the COM Port that are connected to the M-7000 Modules (**assuming the M-7000 Modules are connected to the COM3**).

Main Page System Setting **Meter / Module Setting** Logger Setting Advanced Setting Rules Setting ◀

Meter / Module Setting / I/O Module Setting

Power Meter Setting

XW-Board Setting

I/O Module Setting

Modbus RTU Module List COM2 **COM3** LAN

No.	Address	*Nickname / Module Name	Polling Timeout(ms)	Retry Interval(secs)
1	1	Search	300	5

No module exists, press this button to create one.

Save

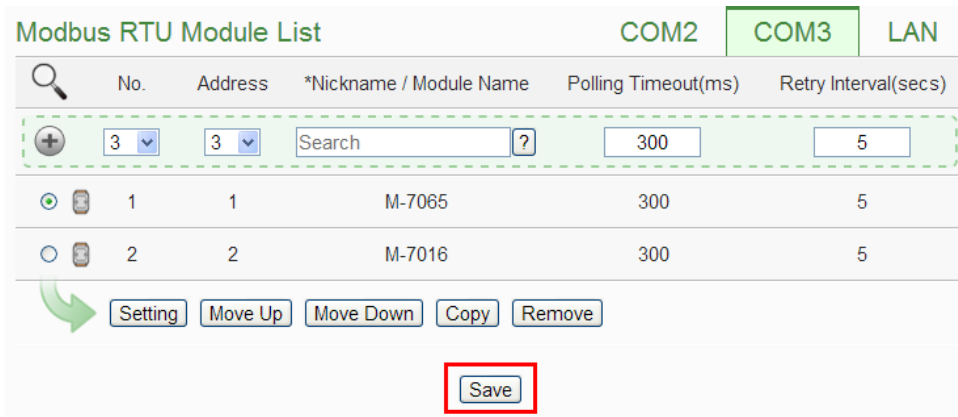
Set the address range to scan:

Scan address from to . This process will take several seconds, it depends on the address range that you set.

COM Port COM3 Parity None

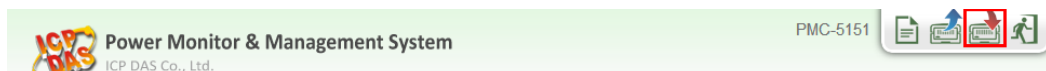
Baudrate 115200bps Stop bits 1 **Scan** Cancel

3.2 After the scanning is completed, the M-7000 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 3.1](#) to perform scanning of the I/O modules again.

- (4) To add other Modbus RTU or Modbus TCP I/O Modules, please refer to Chapter 7 in the PMC-5151 User manual.
- (5) Save the settings to the PMC-5151 (the user could also save the settings later after all other settings are completed)

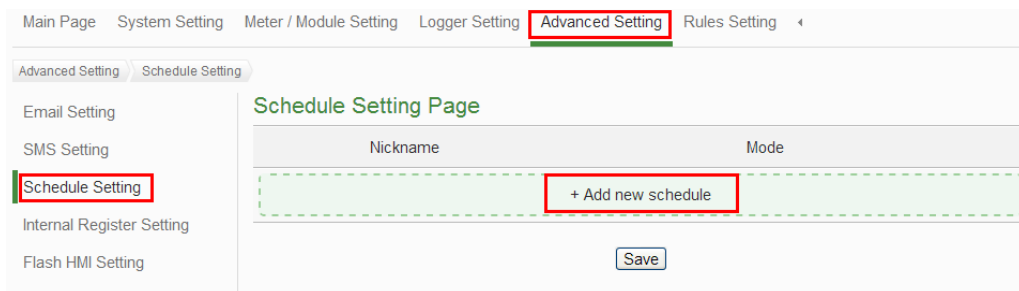


◆ Schedule Setting

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

Weekday Schedule setting steps:

- (1) Login into the PMC-5151 web page as the Administrator, select “Advanced Setting”→“Schedule Setting”→“Add new schedule”.



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

Schedule Schedule Setting


*Nickname	<input type="text" value="Weekdays"/>
Description	<input type="text" value="Weekdays(8.00a.m. to 5:00p.m.)"/>

Schedule Content Setting

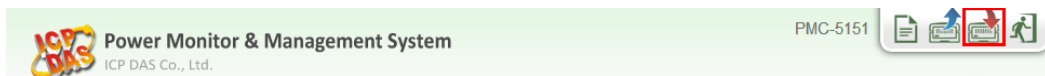
Mode	<input type="radio"/> Calendar <input checked="" type="radio"/> Repeat
*Day(s) of Week	<input type="checkbox"/> Sun <input checked="" type="checkbox"/> Mon <input checked="" type="checkbox"/> Tue <input checked="" type="checkbox"/> Wed <input checked="" type="checkbox"/> Thu <input checked="" type="checkbox"/> Fri <input type="checkbox"/> Sat
Exception Date(s)	<input type="button" value="Add"/>
*Time Range(s)	<input type="text" value="08 : 00 : 00"/> ~ <input type="text" value="17 : 00 : 00"/> <input type="button" value="Remove"/>
	<input type="button" value="Add"/>

(3) Save schedule settings.

Schedule Setting Page

Nickname	Mode
+ Add new schedule	
<input checked="" type="radio"/> Weekdays	Repeat
 <input type="button" value="Setting"/> <input type="button" value="Copy"/> <input type="button" value="Remove"/>	
<input type="button" value="Save"/>	

(4) Save the settings to the PMC-5151 (the user could also save the settings later after all other settings are completed).

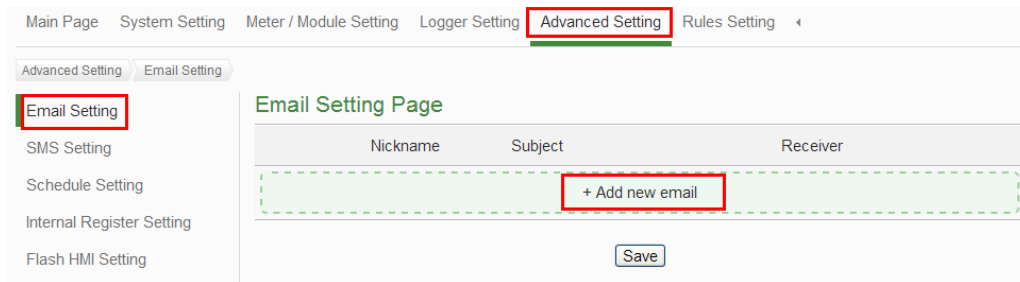


◆ Email Setting

Description: Set up the "Email" settings for the application example

Email setting steps:

- (1) Login into the PMC-5151 web page as the Administrator, select “Advanced Setting”→“Email Setting”→”Add new email”.



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

- Input the Nickname and Description of the Email.

Email Email 1 Setting

*Nickname	<input type="text" value="Email Alarm"/>
Description	<input type="text" value="Unusual electricity usage Alarm"/>

- Set up SMTP Server and its ID/Password.

SMTP Server Setting

*SMTP Server	<input type="radio"/> Specify an address of SMTP server <input checked="" type="radio"/> Google Gmail - smtp.gmail.com
Port	<input type="text" value="465"/>
Authentication	<input checked="" type="checkbox"/> Enable *ID <input type="text" value="Admin"/> Password <input type="password" value="****"/> Security <input type="text" value="SSL"/>

- Set up Sender Name and Receiver information.

Email Address Setting

*Sender Name	<input type="text" value="Admin"/>
*Sender Email Address	<input type="text" value="Admin@gmail.com"/>
*Receiver Email Address	<input type="text" value="Admin@gmail.com"/> <input type="button" value="Remove"/> <input type="button" value="Add"/>
Email Setting Test	<input type="button" value="Send"/>

- Input Email content.

Email Content Setting

*Subject	<input type="text" value="Unusual electricity usage Alarm"/>
*Content	<div style="border: 1px solid gray; padding: 5px;"><p style="text-align: right;">View Edit</p><p>Unusual electricity usage!! Current Electricity : PM-2133 Total / Average Daily Accumulated Electricity</p></div>

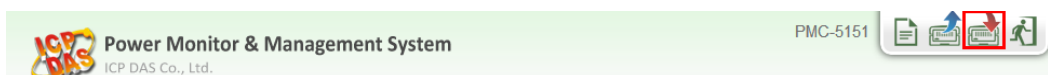
- Click “OK” to complete the settings.

(3) Save Email Settings.

Email Setting Page

Nickname	Subject	Receiver	
+ Add new email			
<input checked="" type="radio"/>	Email Alarm	Unusual electricity usage Alarm	Admin@gmail.com
Setting Copy Remove			
Save			

- (4) Save the settings to the PMC-5151 (the user could also save the settings later after all other settings are completed).



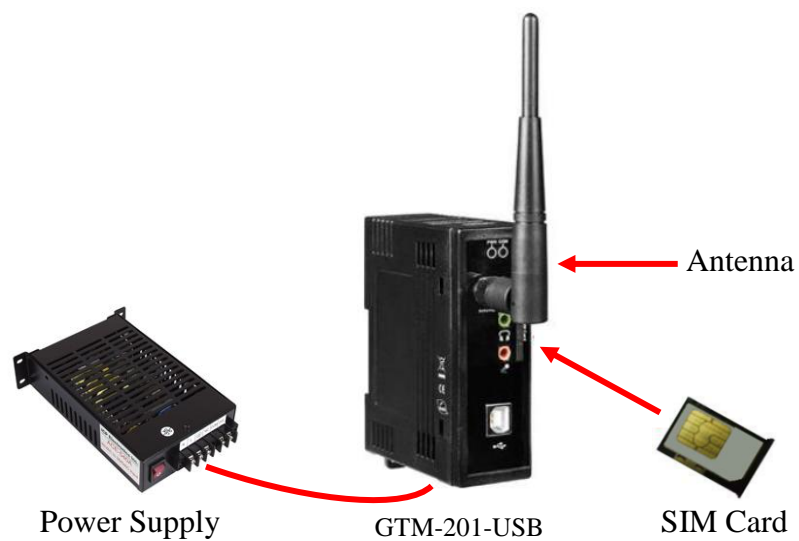
◆ SMS Setting

Description: Set up the "SMS" settings for the application example.

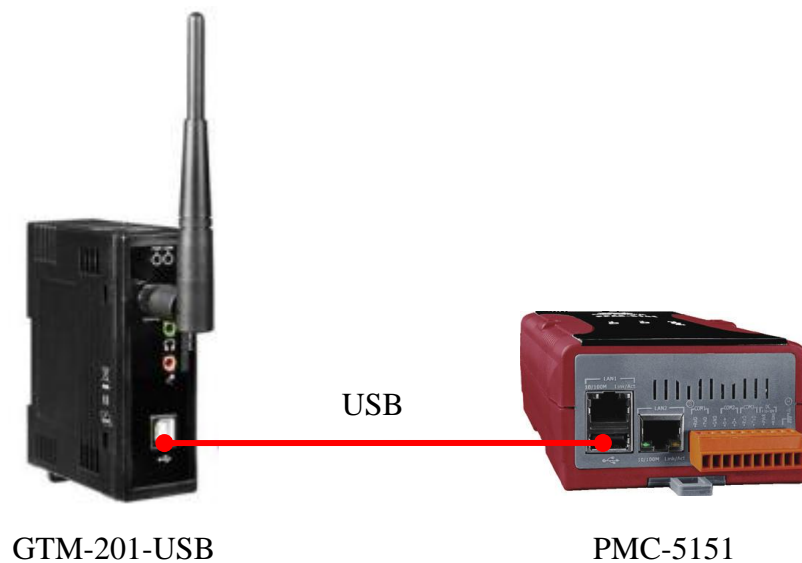
SMS setting steps:

(1) First, please implement the installation of PMC-5151 and GTM-201-USB, the installation steps are as below:

1.1 Install the antenna and SIM card on the GTM-201-USB and connect GTM-201-USB to +10 VDC ~ +30 VDC power supply.



1.2 Connect the GTM-201-USB to the PMC-5151 via USB line.



- (2) Login into the PMC-5151 web page as the Administrator, select “Advanced Setting”→“SMS Setting”→“Add new SMS alarm”.

Main Page System Setting Meter / Module Setting Logger Setting **Advanced Setting** Rules Setting

Advanced Setting SMS Setting

Email Setting
SMS Setting
Schedule Setting
Internal Register Setting
Flash HMI Setting

SMS Setting Page **SMS Alarm** SMS Command

PIN Code

SMS Alarm List

Nickname	Phone Numbers	Message
+ Add new SMS alarm		

Save

Please note: if the SIM card is protected with PIN, input the PIN code.

- (3) Please follow the figures and descriptions below to complete the settings, after all settings are completed, click “OK” button.

SMS Alarm SMS Alarm 1 Setting


*Nickname	<input type="text" value="SMS Alarm"/>
Description	<input type="text" value="Unusual electricity usage Alarm"/>
*Phone Number	<input type="text" value="0912345678"/> <input type="button" value="Remove"/> <input type="button" value="Add"/>
*Message	<input checked="" type="checkbox"/> Multilingual Support(Unicode) <input type="button" value="View"/> <input type="button" value="Edit"/> <input type="text" value="Unusual electricity usage!! Current Electricity: PM-2133 Total / Average Daily Accumulated Electricity"/>

(4) Save SMS settings.

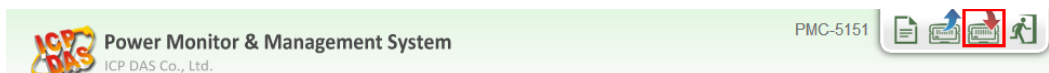
SMS Setting Page SMS Alarm SMS Command

PIN Code

SMS Alarm List

	Nickname	Phone Numbers	Message
+ Add new SMS alarm			
<input checked="" type="radio"/>	SMS Alarm	0912345678	Unusual electricity usage!! Current Electricity: \$C2M2m58
	<input type="button" value="Setting"/>	<input type="button" value="Copy"/>	<input type="button" value="Remove"/>
<input type="button" value="Save"/>			

(5) Save the settings to the PMC-5151 (the user could also save the settings later after all other settings are completed).



◆ IF-THEN-ELSE Rule Setting

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 / SMS.

Rule Setting steps:

- (1) Login into the PMC-5151 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”.

Rule Information Setting

*Nickname	Electricity Usage Rule
Description	Unusual Electricity Usage Rule
Status	<input checked="" type="radio"/> Enable <input type="radio"/> Disable

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

The process involves selecting the 'Schedule' condition in the IF configuration window, which leads to the 'Schedule Condition Setting' window. In this window, the 'Schedule' dropdown is set to 'Weekdays' and the 'Status' is set to 'In Range'. The 'OK' button is clicked to confirm the settings. The final result is the 'IF' configuration window showing the rule as 'Schedule(Weekdays) In Range'.

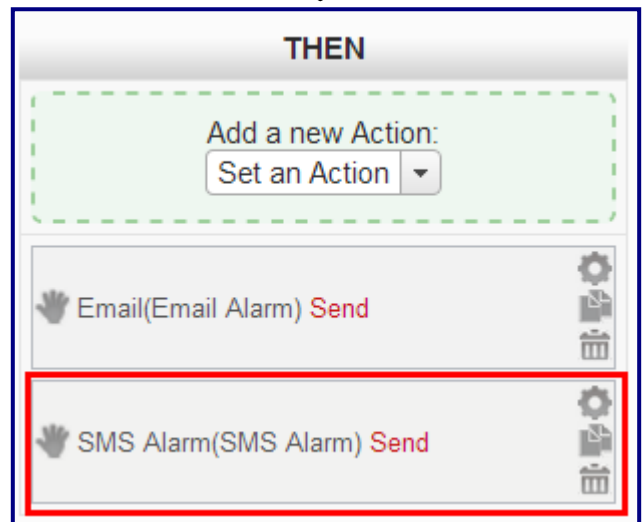
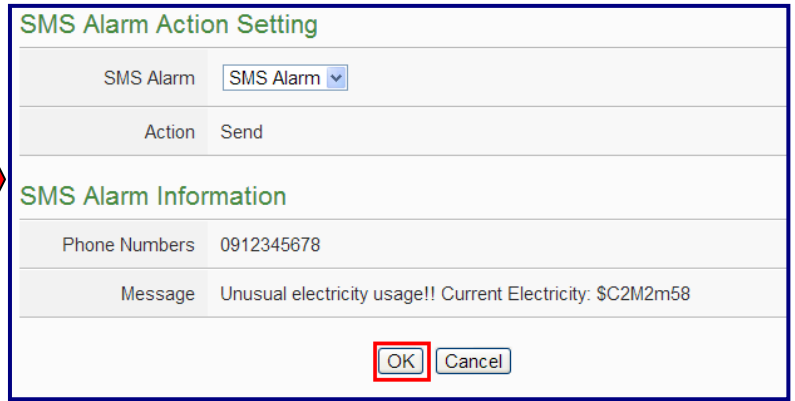
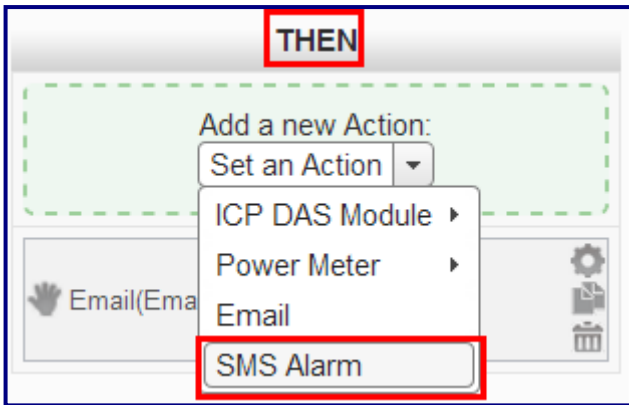
■ **Set up IF Condition: When Daily Accumulated Electricity is over 500 kWh**

The process starts with selecting the condition type 'IF'. A menu is shown with 'Power Meter' selected, leading to a list of power-related metrics. 'Daily Accumulated Electricity' is highlighted. This leads to the 'Power Meter (Daily Accumulated Electricity) Condition Setting' dialog box. In this dialog, the 'Power Meter & Loop / Phase' is set to 'COM2 PM-2133(2:PM-2133)' and the 'Operator' is set to '>=' with a 'Value' of '500'. The 'OK' button is highlighted. This results in an 'IF' condition card with the text: 'COM2 PM-2133(2:PM-2133) Total / Average Daily Accumulated Electricity >= 500 kWh'.

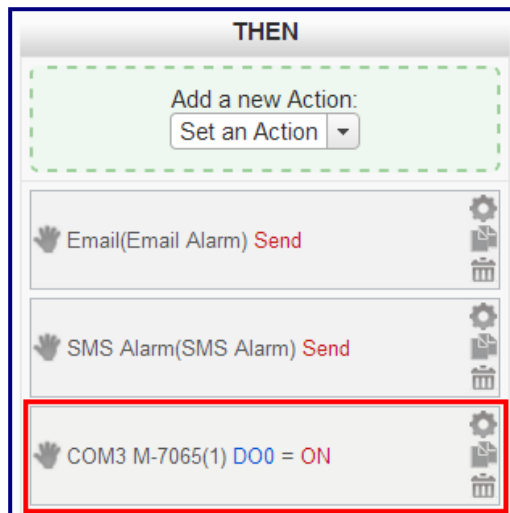
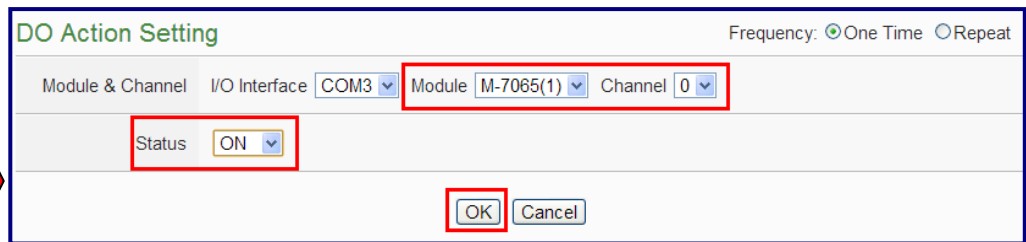
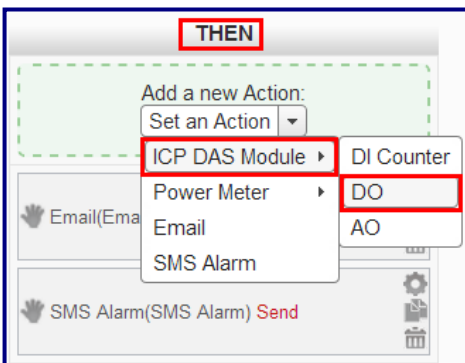
■ **Set up THEN Action: Send Email**

The process starts with selecting the action type 'THEN'. A menu is shown with 'Email' selected. This leads to the 'Email Action Setting' dialog box. In this dialog, the 'Email' is set to 'Email Alarm' and the 'Action' is 'Send'. Below this, the 'Email Information' section shows the 'Receiver Email Address' as 'Admin@gmail.com', the 'Subject' as 'Unusual electricity usage Alarm', and the 'Content' as 'Unusual electricity usage!! Current Electricity: \$C2M2m58'. The 'OK' button is highlighted. This results in a 'THEN' action card with the text: 'Email(Email Alarm) Send'.

■ Set up THEN Action: Send SMS Alarm



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



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

The process starts with selecting an action in the 'ELSE' section. The 'ICP DAS Module' is chosen, which opens a sub-menu where 'DO' is selected under the 'Power Meter' category. This leads to the 'DO Action Setting' dialog box. In this dialog, the 'Module' is set to 'M-7065(1)' and the 'Channel' is '0'. The 'Status' is set to 'OFF'. The 'OK' button is highlighted with a red box. An arrow points down to the final 'ELSE' section of the rule configuration, which now displays the action: 'COM3 M-7065(1) DO0 = OFF'.

(3) Save Rule Settings

The 'Rule Content Setting' dialog is shown with three columns: 'IF', 'THEN', and 'ELSE'. The 'IF' column contains two conditions: 'Schedule(Weekdays) In Range' and 'COM2 PM-2133(2:PM-2133) Total / Average Daily Accumulated Electricity >= 500 kWh'. The 'THEN' column contains three actions: 'Email(Email Alarm) Send', 'SMS Alarm(SMS Alarm) Send', and 'COM3 M-7065(1) DO0 = ON'. The 'ELSE' column contains one action: 'COM3 M-7065(1) DO0 = OFF'. The 'Save' button is highlighted with a red box. An arrow points down to the 'Rules Setting' screen, which shows a 'Rule Overview' for the 'Electricity Usage Rule'. The overview lists the rule name, type, and the logic: '< IF > Schedule(Weekdays) In Range (AND) COM2 PM-2133(2:PM-2133) Total / Average Daily Accumulated Electricity >= 500 kWh < THEN > Email(Email Alarm) Send (One Time) SMS Alarm(SMS Alarm) Send (One Time) COM3 M-7065(1) DO0 = ON (One Time) < ELSE > COM3 M-7065(1) DO0 = OFF (One Time)'.

(4) Save the settings to the PMC-5151