



Power Meter Monitor

Business and Mission-

Critical Solutions Provider

BACnet - Modbus Protocol Gateway

Data Sheet



Model: PMM0408

Document: Data Sheet

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DECLARATION OF CONFORMITY

This restriction is subject to protect the operational process of the system in the business environment, which will produce, use, and transmit radiofrequency energy. Harmful interference to radio communication could result if instructions to the correct installation and usage were not applied. The interference prevention cannot be guaranteed even with proper installation according to the manual. If the device causes a bad effect on the radio / TV signal. The user could preclude that by turning the device on/off.

When this device produces some harmful interference, the user can use the following measure to solve the interference problem:

1-Setting the receiving antenna's direction or location to increase the distance between this device and receiver.

2-Plug in the device's power connector into different circuits of the power outlet with the receiver.

3-If any technical support is needed, the dealer or experienced radio/TV technical personnel must be informed.

TECHNICAL SUPPORT AND SERVICE

Visit Pmm-usa.us to browse FAQs and get further details.

User should collect the following information before submitting technical support and service requests:

- Product name, model, and serial number.
- Installed software (operating system, OS version, installed applications and so on).
- Full description of the problem
- Detailed information about every error.

SAFETY INSTRUCTIONS

- Only trained and qualified personnel can install, operate, or maintain the device.
- Before starting the installation, all safety precautions must be read, and warning labels affixed to the device must be observed. Doing so protects the device from damage and ensures your safety.
- Safety precautions provided in this document may not cover all safety aspects, note to always remain mindful of safety.
- PMM is not liable for any consequence that results from violation of regulations pertaining to safe operations or safety codes pertaining to design, production, and equipment usage.
- DO NOT use liquids or decontamination spray to clean the device surface and assure that it is totally disconnected while cleaning.
- Take all measures to prevent device drop before or during installation.
- Prior to connecting the device to power source, ensure the source and device voltage and power are 100% matched.
- Keep the cables in a suitable covered place.
- If the device is not used for a long time, shut off the power to avoid the damages by transient overvoltage.
- DO NOT allow any liquid flow into the device; to avoid fire or short circuit.
- The recommended storage temperature range should NOT be less than 30°C OR higher than 85°C.



Warning:

- Read the power source and device inlet carefully.
- Handle device with both hands.
- Clean and maintain the device using recommended, safe, and suitable methods.



Caution:

If any unauthorized changes of settings or repairs are done without PMM approval; then user's rights of controlling this device will be canceled.

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KEY FEATURES

- Protocol conversion between Modbus RTU/ASCII/TCP and BACnet/IP
- Supports Modbus RTU/ASCII/TCP master/client
- Supports BACnet/IP server
- Connects up to 62 Modbus RTU/ASCII slaves
- Connects up to 32 Modbus TCP servers
- Easy and smooth configuration via web-based server
- Embedded traffic monitoring as well as diagnostic information for fast trouble shooting
- Optional 1 or 2 Ethernet 10/100 ports
- Optional supports 2.4/5 GHz WIFI
- Optional 2x customized Fiber optic ports
- 2 or 4 RS485 - RS232 Serial communication ports (Customizable)
- Baud rate: 110-256000 bps
- Different Power supply options with over voltage and reverse polarity protection
- Operating temperature: -40 to 75°C (-40 to 167°F)
- Storage temperature: -40 to 85°C (-40 to 185°F)
- Ambient relative humidity 5 to 95% (non-condensing)
- EMI, EMS, EMC and shock protected
- Enclosure Ingress Protection Code: IP54

DESCRIPTION

PMM0408 is a highly configurable industrial Ethernet gateway device which is capable of performing protocol conversion between Modbus RTU/ASCII/TCP and BACnet/IP.

PMM0408 provides the flexibility needed to fulfill the various conditions that arise with field devices that use different communication protocols to connect to the SCADA system.

PMM0408 gateways support a system log that main function is to record events so it can be easily monitored; users can easily review log data remotely through the web interface. The gateways also support status monitoring and fault protection functions. The status monitoring function notifies the SCADA system when a device gets disconnected or does not respond or faces any error or failures, in such cases the SCADA system gets alarms of the status of each end device to the operators to make corrective actions immediately.

SOFTWARE SPECIFICATIONS

Ethernet Software Features

Protocols	Modbus TCP Client (Master), Modbus TCP Server (Slave), BACnet IP Server and BACnet IP Client
Configuration Options	Web Console (HTTP/HTTPS), Telnet Console
Time Management	NTP Client

Serial Software Features

Protocols	Modbus RTU/ASCII Master, Modbus RTU/ASCII Slave, BACnet MSTP Server, BACnet MSTP Client, BACnet PTP Server and BACnet PTP Client
Configuration Options	Serial Console

HARDWARE SPECIFICATIONS

PMM0408 can be housed in several PMM CPU platforms such as:

1. PMM0102 (default platform): PMM Industrial Computer, **CPU:** Allwinner H3, Quad-core Cortex-A7, **DRAM:** 512MB RAM and Embedded 8GB eMMC hard drive, **Interfaces:** 2x Ethernet, 4 x Serial ports.
2. PMM0103 (light enclosure): PMM Industrial Computer, **CPU:** Allwinner H3, Quad-core Cortex-A7, **DRAM:** 512MB RAM and Embedded 8GB eMMC hard drive, **Interfaces:** with 3x RS485 Serial ports, and plastic light housing.
3. PMM0105: PMM Industrial Computer, **CPU:** Allwinner H3, Quad-core Cortex-A7, **DRAM:** 512MB RAM and Embedded 8GB eMMC hard drive, **Interfaces:** two customizable fiber optic ports and two Serial ports.

The hardware platform is chosen in the order configuration, refer to PMM website for more details about the CPUs <https://www.pmm-usa.us/Industrial-Computer.php>

ORDERING INFORMATION

Order Configuration Table				
PMM0408	-x	-09xx	-09xx	-09xx
1. CPU Platform: PMM0102				
Power supply				
10-56 VDC	-1			
8-40 VAC	-2			
36-72 VDC	-3			
25-50 VAC	-4			
85-285 VAC/100-300 VDC	-5			
COM Port 1				
RS485		-0912		
CAN Bus		-0910		
ANALOG INPUTS		-0901		
DIGITAL INPUT		-0920		
GSM/GPRS		-0917		
<i>See the COM Ports table for more options</i>				
COM Port 2 (Same as COM Port 1 options)			-09xx	
COM Port 3 (Same as COM Port 1&2 options)				-09xx
COM Port 4 (Same as COM Port 1&2&3 options)				-09xx
PMM0408				
2. CPU Platform: PMM0103				
Power supply				
10-56 VDC	-1			
COM Port 1				
RS485		-0912		
<i>See the COM Ports table for more options</i>				
COM Port 2 (Same as COM Port 1 options)			-09xx	
COM Port 3 (Same as COM Port 1&2 options)				-09xx

Table1* Comm port options

COM Ports Options	
Analog input	PMM0901
Analog output	PMM0902
CANBUS (UART)	PMM0910
CANBUS (UART)	PMM0910i
CANBUS (SPI)	PMM00911
CANBUS (SPI)	PMM0911i
RS485	PMM0912
RS422	PMM0913
RS422	PMM0914
RS232	PMM0915
LTE	PMM0916
Digital input	PMM0920
Digital output	PMM0921

PMM0408

3. CPU Platform: PMM0105

Power Supply					
10-56 VDC	-1				
8-40 VAC	-2				
36-72 VDC	-3				
25-50 VAC	-4				
85-285 VAC / 100-300 VDC	-5				
COM Port 1					
RS485		-0912			
CAN Bus		-0910			
ANALOG INPUTS		-0901			
DIGITAL INPUT		-0920			
GSM/GPRS		-0917			
See the COM Ports table for more options					
COM port 2 (Same as COMport 1 options)			-09xx		
Fiber Optic port 1					
SFP Connector				-SFP0	
Single Mode 20 Km /SC typeconnector				-SC20	
Single Mode 40 Km /SC type connector				-SC40	
Single Mode 80 Km /SC typeconnector				-SC80	
Fiber Optic port 2 (Same as Fiber Optic port 1 options)					-XXXX

CONTACT INFORMATION:

For direct inquiries or any customized orders, contact us on sales@Pmm-usa.us

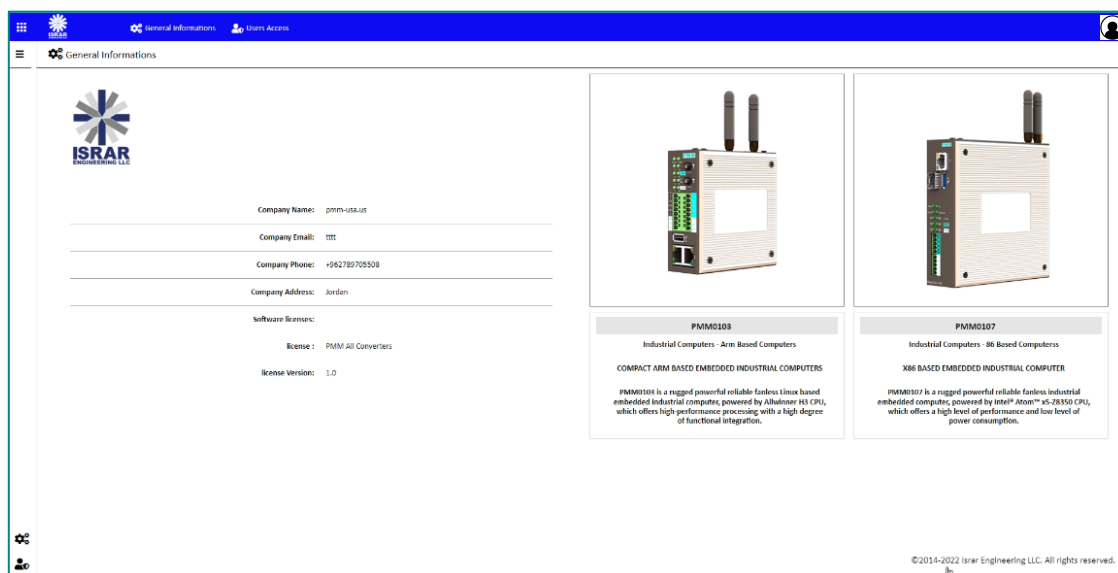
BACnet to MODBUS CONVERTER INTERFACE

login

- Type the username “User@Israr.com” and the password “12345678”.
 - Click on “Login” to login into the system.
- 🔗 **NOTE:** the username must be lowercase because the web server is case sensitive.



Once the user has logged in successfully the default main web page “General Information” will be displayed as shown in the figure below.



Set General Information and Web Page Theme

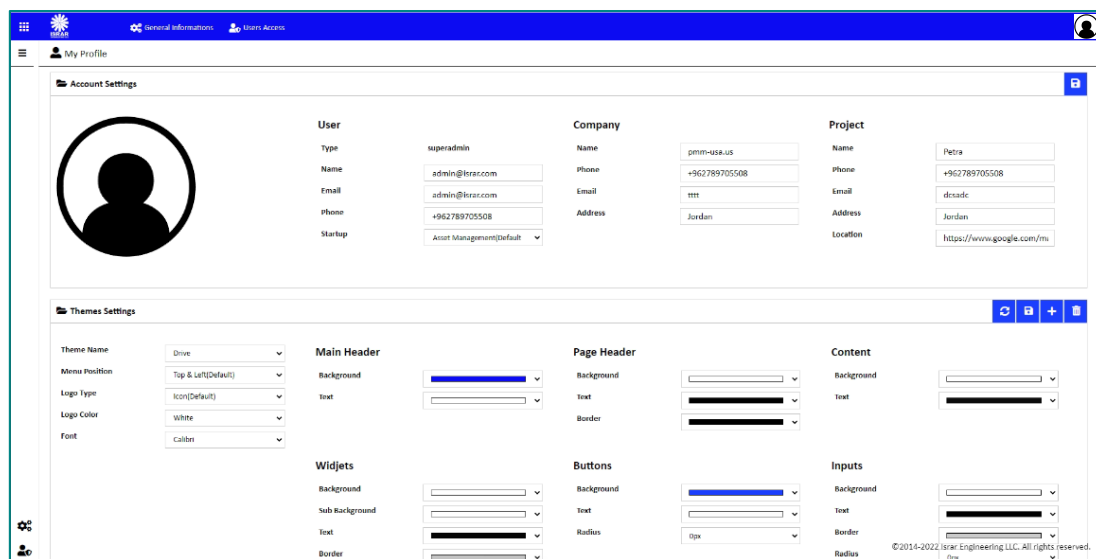
The “general information” that is displayed at the main page must be set originally by the user. As well as, the user can redesign his own theme style to make the web page more comfortable.

Inserting general information instructions:

- Click on “the user’s icon” in the right top of the page.



- Click on “My Profile” then the web page at which the user can modify the information manually will be displayed as shown below.



- Type the user’s name, Email, and phone.
- Select the startup page which will be displayed once the user has logged in to the server.
- NOTE:** The default startup page is “Assets Management”.
- Type the company’s name, phone, Email, and address.
- Type the project’s name, phone, Email, address, and location.
- After completing inserting all the user’s, company’s and project’s information accurately click on “Save”.
- If the information is saved “Updated successfully” will be displayed at the head of the page.
- NOTE:** if the information is updated successfully the user will be able to view the general information at the startup page.

Web page theme settings:

1) Apply existed theme instructions:

- Select the desired theme from the theme name list.
- Click on “Refresh” to apply the theme.

2) Adjust existed theme instructions:

- Edit the chosen theme as wanted.
- Click on “Save”.
- If the theme is saved “Updated Successfully” will be displayed at the head of the page.

 **NOTE:** the default theme is not editable.

3) Create new theme instructions:

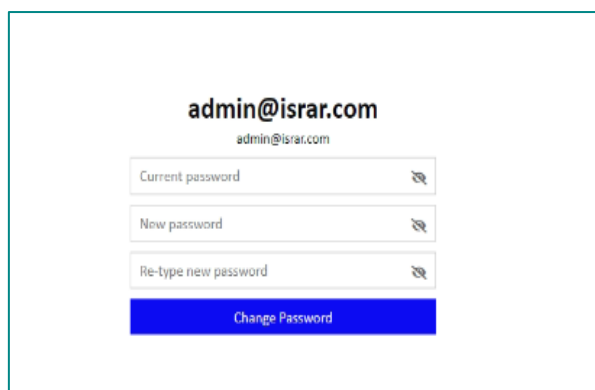
- To add a new theme, click on “Add”.
- Name the theme as wanted.
- Select the theme style.
- Click on “Save”.
- If the theme is saved “Updated Successfully” will be displayed at the head of the page.
- Select the added theme from the theme name list.
- Click on “Refresh” to apply the theme.

Change password

The user can change the password in order to enhance the security after the first login or any other time as necessary.

Change password instructions:

- Type the current password.
- Type the new password.
- Retype the new password for confirmation.
- Click on “Change password”.
- If the new password is saved “Updated Successfully” will be displayed at the head of the page.



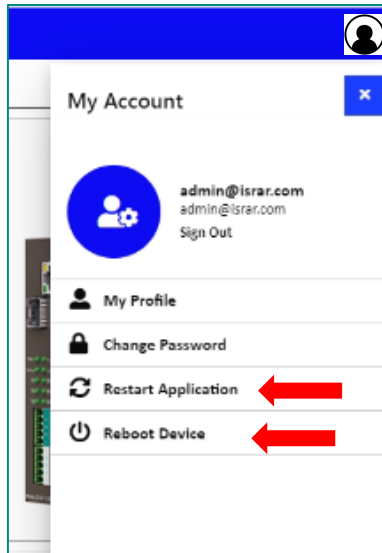
The screenshot shows a web form titled "admin@israr.com" with a subtitle "admin@israr.com". It contains three input fields: "Current password", "New password", and "Re-type new password", each with a password icon (eye) to its right. Below these fields is a blue button labeled "Change Password".

To restart the application

- Click on “Restart Application”.

To reboot the device:

- Click on “Reboot Device”.
- The reboot process may take a while.

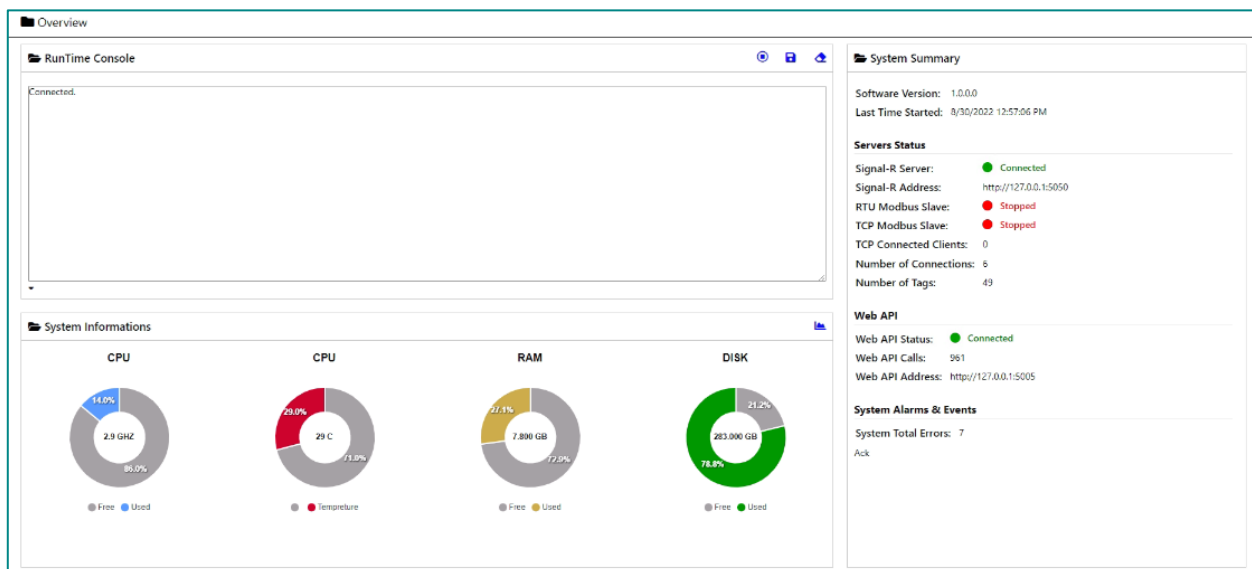


Overview

Overview displays the status of the device and connected devices.

Overview consists of three sections:

- 1) Run Time Console: displays the device status, alarms and operational modes.
- 2) system Information: displays system's performance measures as it illustrates the usage and free percentage of:
 - CPU.
 - CPU.
 - RAM.
 - Disk.
- 3) System Summary which displays:
 - The software version.
 - Last Time Started.
 - Servers' status which displays the status of Signal-R server and its address, RTU Modbus Slave and TCP Modbus slave, the number of connected TCP clients, number of connections and number of tags.
 - Web API status, address, and number of calls.
 - Alarms & Events.



Monitoring:

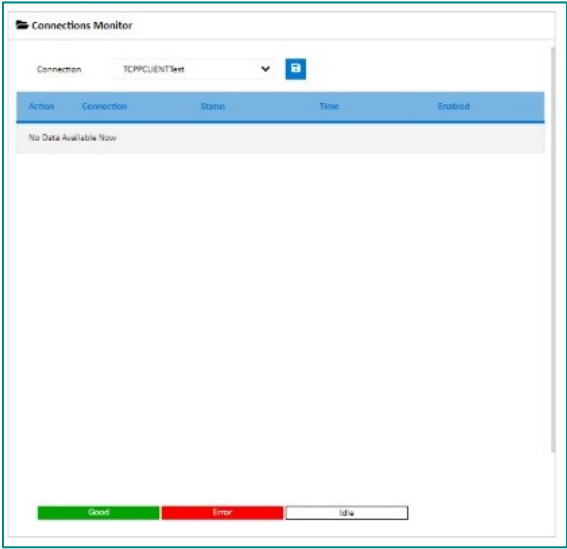
The user is able to monitor the status of connections and tags from this page.

- To the auto refresh of the status check the box “Auto Refresh”

Connections Monitor:

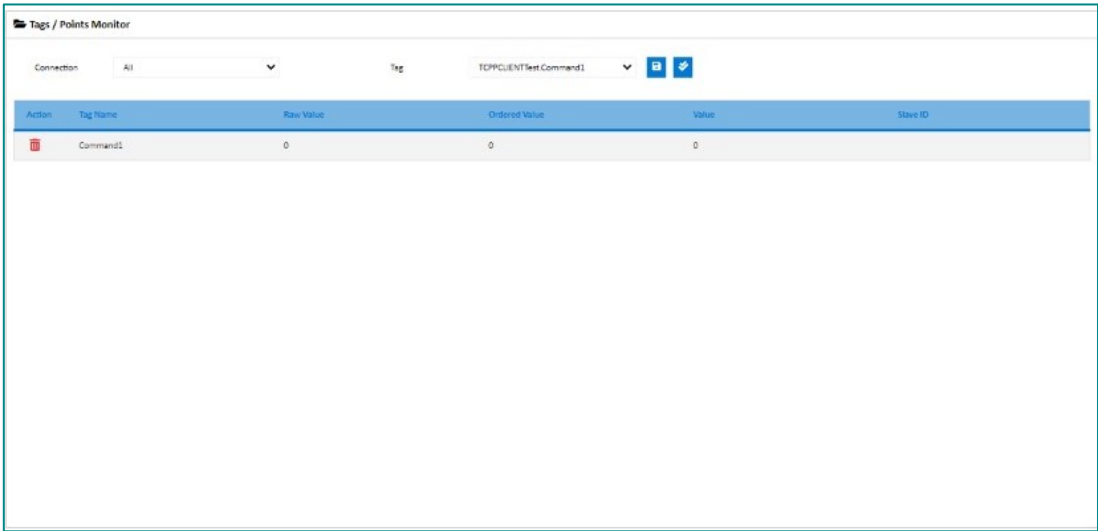
- The user must choose the desired connection to display.
- Displays the connections, their status whether **Good**, **Error**, **Idle**, the time and whether the connection is enabled or disabled.

Status	Description
Good	The connection status is good and has no problem
Error	There is an error with the connection that the user must fix
Idle	The connection is neither connected nor has a problem to fix



Tags/Points Monitor:

- Displays the connection name (COM1, COM2, COM3 or COM4), the tag name which in the form of (command Slave ID Address), slave ID, address and the read value.



Basic Settings

The screenshot displays the 'Basic Settings' web interface. It is divided into three main sections: 'Basic Settings', 'General Servers Configuration', and 'Network Settings'. The 'Basic Settings' section includes fields for 'Server Name' (PMMAllConverter), 'Server Location' (Amman), 'Time Zone' (Amman - 09:31), 'Local Date' (22 / 10 / 04), 'Local Time' (15 : 29 : 50), 'Set time to' (Server (NTP)), and 'NTP/IP Address' (127.0.0.1). The 'General Servers Configuration' section includes 'Server Auto Start' (checked), 'Web UI Auto Start' (checked), 'API Port' (5005), 'Reading cycle' (1000), and 'TCP Port' (502). The 'Network Settings' section shows two Ethernet ports, Ethernet1 and Ethernet2, with fields for Name, IP Assignment, IP Address, Netmask, Gateway, DNS Server 1, DNS Server 2, Max Retry, and Status. Ethernet1 is connected, while Ethernet2 is not available.

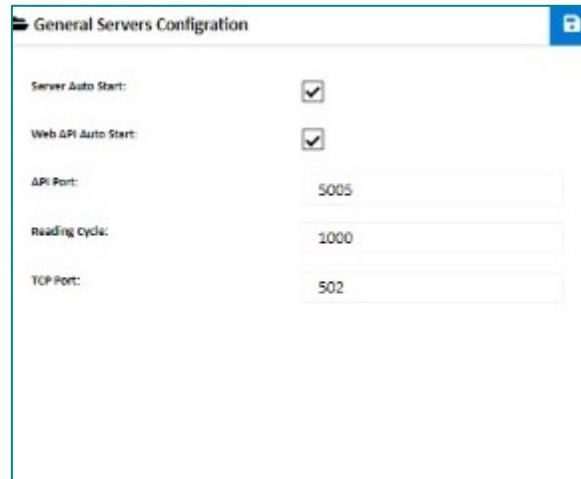
Basic Settings

Basic settings display the server's name, location, time zone, local date and time, set time to and NTP/IP address.

This screenshot shows a close-up of the 'Basic Settings' tab. The fields are: 'Server Name' (PMMAllConverter), 'Server Location' (Amman), 'Time Zone' (Amman - 09:31), 'Local Date' (22 / 10 / 04), 'Local Time' (15 : 29 : 50), 'Set time to' (Server (NTP)), and 'NTP/IP Address' (127.0.0.1).

- The user can adjust the date. Local time and the time zone based on the server location.

General Server Configuration



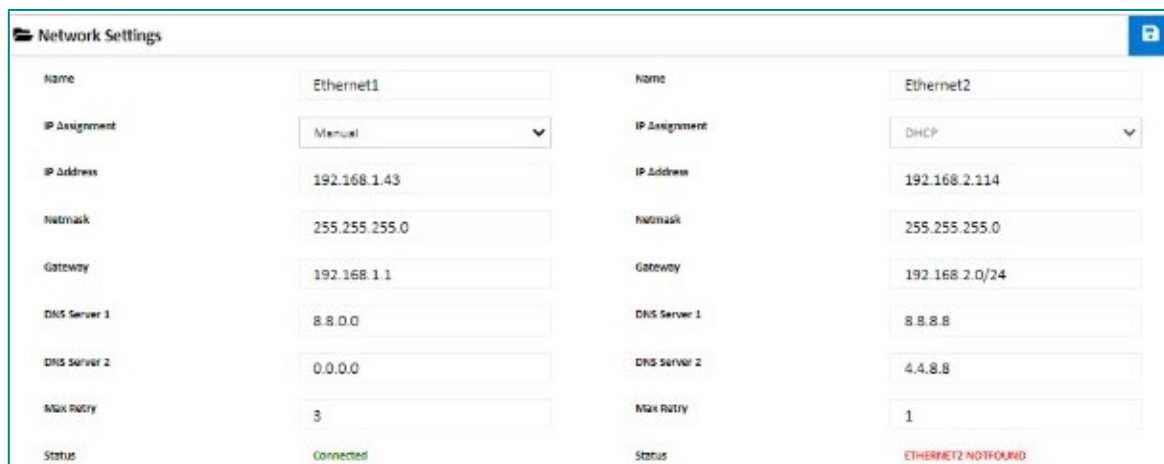
The 'General Servers Configuration' window contains the following settings:

Setting	Value
Server Auto Start:	☒
Web API Auto Start:	☒
API Port:	5005
Reading Cycle:	1000
TCP Port:	502

- To enable the server auto start, check the box “server auto start”.
- Type the API port.
- Type the reading cycle.
- Type the TCP port.

Network Settings

It is required to insert the settings for each port manually by the user for the TCP ports.



The 'Network Settings' window displays two columns of settings for Ethernet1 and Ethernet2.

Ethernet1		Ethernet2	
Name	Ethernet1	Name	Ethernet2
IP Assignment	Manual	IP Assignment	DHCP
IP Address	192.168.1.43	IP Address	192.168.2.114
Netmask	255.255.255.0	Netmask	255.255.255.0
Gateway	192.168.1.1	Gateway	192.168.2.0/24
DNS Server 1	8.8.0.0	DNS Server 1	8.8.8.8
DNS Server 2	0.0.0.0	DNS Server 2	4.4.8.8
Max Retry	3	Max Retry	1
Status	Connected	Status	ETHERNET2 NOTFOUND

- Insert the IP Address, Netmask, Gateway for each port.
- After the user completes inserting the settings for the ports, click on “Save”.
- If the settings are saved “Updated Successfully” will be displayed at the head of the page.

 **NOTE:** once the user has set the ports settings the status of each port will be updated.

Network Settings:

Parameter	Value	Notes
Name	Ethernet 1, Ethernet 2	
IP Address	Default IP Address is 192.168.1.240 (Or other 32-bit number)	The IP (Internet Protocol) address identifies the server on the TCP/IP network.
Netmask	255.255.255.0 (Or other 32-bit number)	Netmask identifies the server as belonging to a Class A, B, or C network.
Gateway	192.168.1.1, 192.168.2.1, 192.168.3.1, 192.168.4.1	This is the IP address of the router that provides network access outside the server's LAN.
DNS Server 1	0.0.0.0 (Or other 32-bit number)	This is the IP address of the primary domain name server.
DNS Server 2	0.0.0.0 (Or other 32-bit number)	This is the IP address of the secondary domain name server.
Status	Connected/ disconnected/ not found	Displays the connection status

Serial Settings

Serial Settings

Port 1 Name

COM11

Baud Rate

9600

Parity

None

Data Bits

8

Stop Bits

1

Flow control

None

Interface

RS-485 2 wire

Timeout

3000

Type

Master

Max retry

0

Status

Available

There are four serial ports the user must set the required parameters for each port.

- Select the Baud Rate ranges from 75 to 128000 bps, Parity, Data Bits, Stop Bits, flow control, interface and type.
- Type the timeout in (ms).
- Click on “Save”
- If the settings are saved “Updated Successfully” will be displayed at the head of the page

 **NOTE:** selecting the mode is adjustable only if the user has chosen Modbus gateway mode.

Serial Settings:

Parameter	Value	Notes
Port Name	COM1, COM2, COM3, COM4	
Baud Rate	75, 110, 134, 150, 300, 600, 1200, 1800, 2100, 4800, 7200, 9600, 14400, 19200, 38400, 57600, 115200, 128000 bps	The serial port baud rate on the server must match the serial baud rate of the connected device.
Parity	None, Odd, Even, Mark, Space	This setting must match the data format of the connected device
Data Bits	7,8	This setting must match the data format of the connected device
Stop Bits	1, 1.5, 2	This setting must match the data format of the connected device
Flow control	None, RTS/CTS, RTS Toggle	
Interface	RS-232, RS-422, RS-485 2 wires, RS-485 4 wires	
Timeout	Any inserted value in ms	Timeout field is used to configure how long the gateway will wait for a response from a Modbus ASCII or RTU slave.  NOTE: This field is set independently for each serial port  NOTE: the timeout is set in ms

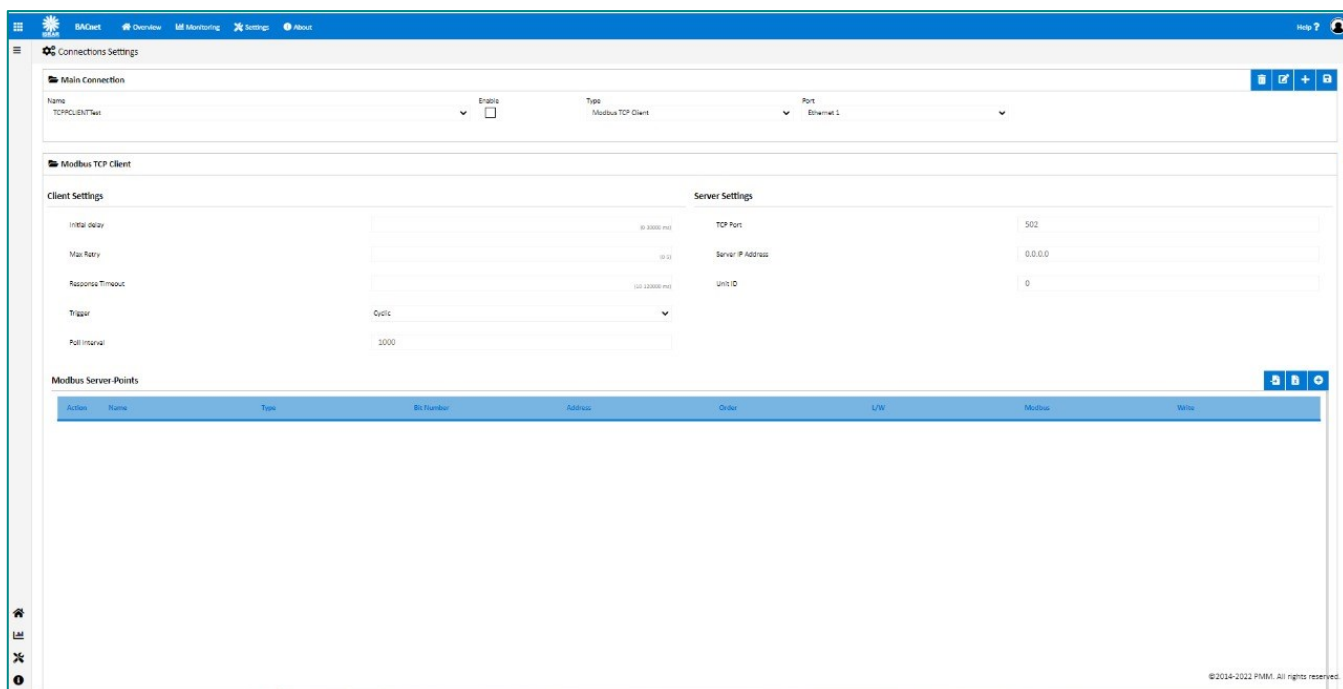
Protocol Settings

PMM 0408 consists of meters/controllers acting as Modbus RTU/ASCII/TCP slave/servers and SCADA/DDC acting as a BACnet/IP client/master. Both of these components use distinct protocols, therefore for them to communicate with one another, a gateway is required. When linked to the BACnet/IP master/client, PMM0408 functions as the BACnet/IP server/slave, and when connected to the Modbus RTU/ASCII/TCP slave/server, it functions as the Modbus RTU/ASCII/TCP client/master.

Modbus TCP Client (Master) Settings

PMM0408 operates as a Modbus client/master in Modbus TCP client/slave mode and actively sends Modbus requests to the Modbus server/slave.

- Choose the type of connection from the drop list "Modbus TCP Client".
- Choose the desired port from the drop list port.
- The following settings will need to be configured as shown below.



Client Settings:

Parameter	Value	Notes
Initial delay	0 to 30000 ms	It's possible that some Modbus servers and slaves take longer to boot up than other devices. This could result in the system as a whole experiencing recurrent exceptions during the initial bootup in particular settings. With the Initial Delay setting, you can force PMM0408 to delay delivering the initial request after booting.
Max. retry	0 to 5	This parameter specifies how many times PMM0408 will attempt to communicate with the Modbus server/slave once a Modbus command timeout occurs.
Response timeout	10 to 120000 ms	The time it takes a slave device to reply to a request is determined by the device maker using the Modbus protocol. A Modbus master can be set to wait for a specific period of time for a server/slave response. If no answer is received within the set period, the master will ignore the request and proceed with the action. This enables the Modbus system to continue operating even if a slave device is disconnected or malfunctioning. The Response timeout field on PMM0408 is used to specify how long the gateway will wait for a response from a Modbus server/slave. To manually set the response timeout, consult the manufacturer's documentation for your device.
Trigger	Cyclic Data Change	Cyclic: The command is sent cyclically at the interval specified in the Poll interval parameter. Data change: A command is issued when a change in data is detected.
Poll interval	100 to 1200000 ms	The polling intervals are measured in milliseconds. Because the module transmits each request in turn, the actual polling interval is affected by the number of requests in the queue as well as their parameters. The time span is 100 to 1,200,000 ms.

Server Settings:

- Type the TCP port
- Type server IP address
- Type the unit ID
- After finishing the configuration click on the icon “Save”

To create your Modbus TCP server/slave device:

- Click on the “Add button”
- Configure Slave ID, Device Name, other parameters. Then, the created Modbus device list will be shown under the “Modbus Slave-Points”.

After creating a Modbus device, it can be edited by s by double-clicking the device list or pressing the Edit icon.

Modbus RTU/ASCII Master Settings

In Modbus RTU/ASCII master mode, the PMM0408 acts as a Modbus RTU/ASCII master, actively sending Modbus requests to Modbus RTU/ASCII slaves.

- Choose the type of connection from the drop list “Modbus RTU/ASCII Master”.
- Choose the desired port from the drop list port.
- The following settings will need to be configured as shown below.

The screenshot displays the 'Connections Settings' window in the PMM software. The 'Main Connection' section shows 'Name' as 'TCPCLIENTTest', 'Type' as 'Modbus RTU ASCII Master', and 'Port' as 'COM1'. The 'Modbus RTU ASCII Master' section contains 'Modbus Master Settings' with fields for 'Mode' (set to RTU), 'Response Timeout' (10000 ms), 'Initial delay' (10000 ms), 'Inter-frame delay' (1000 ms), 'Max Retry' (10), and 'Inter-character timeout' (10000 ms). Below this is a 'Modbus Slave-Points' table with columns: Actions, Name, Type, Set Number, Address, Order, I/O, Modbus, Write, and Slave ID. The table is currently empty. The bottom right corner of the window shows the copyright notice: '©2014-2022 PMM. All rights reserved.'

Modbus Master Settings:

Parameter	Value	Notes
Mode	RTU ASCII	Select the Modbus RTU or Modbus ASCII to communicate with Modbus slave device.
Initial delay	0 to 30000 ms	It's possible that some Modbus servers and slaves take longer to boot up than other devices. This could result in the system as a whole experiencing recurrent exceptions during the initial bootup in particular settings. With the Initial Delay setting, you can force PMM0408 to delay delivering the initial request after booting.
Max. retry	0 to 5	This parameter specifies how many times PMM0408 will attempt to communicate with the Modbus server/slave once a Modbus command timeout occurs.
Response timeout	10 to 120000 ms	The time it takes a slave device to reply to a request is determined by the device maker using the Modbus protocol. A Modbus master can be set to wait for a specific period of time for a server/slave response. If no answer is received within the set period, the master will ignore the request and proceed with the action. This enables the Modbus system to continue operating even if a slave device is disconnected or malfunctioning. The Response timeout field on PMM0408 is used to specify how long the gateway will wait for a response from a Modbus server/slave. To manually set the response timeout, consult the manufacturer's documentation for your device.
Inter-frame delay	10 to 500 ms	For Modbus devices that cannot receive Rx signals within the expected time interval, use this function to determine the timeout interval between characters. If the response timer expires, all received data is lost. If the timeout value is set to 0, PMM0408 will automatically determine the timeout interval.
Inter-character timeout	10 to 500 ms	The time delay for transmitting the data frame received from the slave device to the upstream can be set by the users. If the time interval is set to 0, PMM0408 will determine it automatically.

- After finishing the configuration click on the icon “Save”

To create your Modbus RTU/ASCII slave device:

- Click on the “Add button”
- Configure Slave ID, Device Name, other parameters. Then, the created Modbus device list will be shown under the “Modbus Slave-Points”.

After creating a Modbus device, it can be edited by s by double-clicking the device list or pressing the Edit icon.

BACnet IP Server Settings

- Choose the type of connection from the drop list “BACnet IP Server”.
- Choose the desired port from the drop list port.
- The following settings will need to be configured as shown below.

The screenshot displays the 'Connections Settings' window in the PMM software. The 'Main Connection' section at the top includes a 'Name' dropdown menu set to 'BACnetIPClient/Bus', an 'Enable' checkbox, a 'Type' dropdown menu set to 'BACnet IP Server', and a 'Port' dropdown menu set to 'COM1'. Below this is the 'BACnet IP Server' section, which contains 'Device Settings' and 'Command Parameters'. The 'Device Settings' section has four input fields: 'Port', 'Identifier', 'APDU Timeout', and 'Num Of Retries'. The 'Command Parameters' section is a table with the following columns: Action, Description, Identifier, Name, Object, Instance, Poll, Function, and Enable. The table is currently empty.

Parameter	Notes
Port	
Identifier	Specifies the BACnet ID assigned to the device.
APDU Timeout	Indicates the amount of time in milliseconds between retransmissions of an APDU requiring acknowledgment for which no acknowledgment has been received.
Num of Retries	Sets the number of times that the driver will retry a request when a response is not received.

BACnet IP Client Settings

- Choose the type of connection from the drop list “BACnet IP Client”.
- Choose the desired port from the drop list port.
- The following settings will need to be configured as shown below.

The screenshot shows the 'Connections Settings' window in the PMM software. The 'Main Connection' section has 'Name' set to 'BACNET-IP-Client', 'Enable' checked, 'Type' set to 'BACnet IP Client', and 'Port' set to 'Ethernet 1'. The 'BACnet IP Client' section contains 'Device Settings' and 'Command Parameters'.

Device Settings:

IP	127.0.0.1	Vendor Identifier	1234
Port	502	Model Name	v1
Device name	device1	Firmware Rev	v1.0.0
Identifier	1	Software Version	v1.0.1
Vendor Name	vendor	APDU Timeout	1000
		Num Of Retries	3

Command Parameters:

Action	Description	Identifier	Name	Object	Instance	Out Of Service	Present Value	Reliability	Units	Function
☒	Test BACnet IP Client	1	testbnetip	@Object Analog Input	1234	True	0	@No Fault Detected	@Square-meters	Read

Parameter	Notes
IP	The IP (Internet Protocol) address identifies the server on the TCP/IP network.
Port	
Device Name	Defines the node's name. The device name must be unique across the entire BACnet network.
Identifier	Specifies the BACnet ID assigned to the device.
Vendor Name	Specifies the name of the OEM.
Vendor Identifier	Specifies the BACnet Vendor ID assigned to the OEM.
Model Name	Specifies the model's name of the OEM's product.
Firmware Rev	Specifies the firmware revision
Software Version	Specifies the software revision
APDU Timeout	Indicates the amount of time in milliseconds between retransmissions of an APDU requiring acknowledgment for which no acknowledgment has been received.
Num of Retries	Sets the number of times that the driver will retry a request when a response is not received.

BACnet MSTP Server

- Choose the type of connection from the drop list “BACnet MSTP Server”.
- Choose the desired port from the drop list port.
- The following settings will need to be configured as shown below.

Connections Settings

Main Connection

Name: BACNETClientTest | Enable: ☐ | Type: BACnet MSTP Server | Port: COM1

BACnet MSTP Server

Device Settings

Identifier:
 APDU Timeout:
 Num Of Retries:

Command Parameters

Action	Description	Identifier	Name	Object	Instance	Port	Function	Enable
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Parameter	Notes
Identifier	Specifies the BACnet ID assigned to the device.
APDU Timeout	Indicates the amount of time in milliseconds between retransmissions of an APDU requiring acknowledgment for which no acknowledgment has been received.
Num of Retries	Sets the number of times that the driver will retry a request when a response is not received.

BACnet MSTP Client

- Choose the type of connection from the drop list “BACnet MSTP Client”.
- Choose the desired port from the drop list port.
- The following settings will need to be configured as shown below.

Connections Settings

Main Connection

Name: BACNETClientTest | Enable: ☐ | Type: BACnet MSTP Client | Port: COM1

BACnet MSTP Client

Device Settings

Source Address: | Vendor Identifier:
 Device Name: | Model Name:
 Identifier: | Firmware Rev:
 Vendor Name: | Software Version:
 APDU Timeout:
 Num Of Retries:

Command Parameters

Action	Description	Identifier	Name	Object	Instance	Out Of Service	Present Value	Reliability	Units	Function
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Parameter	Notes
Source Address	Specifies the source address
Device Name	Defines the node's name. The device name must be unique across the entire BACnet network.
Identifier	Specifies the BACnet ID assigned to the device.
Vendor Name	Specifies the name of the OEM.
Vendor Identifier	Specifies the BACnet Vendor ID assigned to the OEM.
Model Name	Specifies the model's name of the OEM's product.
Firmware Rev	Specifies the firmware revision
Software Version	Specifies the software revision
APDU Timeout	Indicates the amount of time in milliseconds between retransmissions of an APDU requiring acknowledgment for which no acknowledgment has been received.
Num of Retries	Sets the number of times that the driver will retry a request when a response is not received.

BACnet PTP Server

- Choose the type of connection from the drop list "BACnet PTP Server".
- Choose the desired port from the drop list port.
- The following settings will need to be configured as shown below.

The screenshot shows the 'Connections Settings' window in the PMM software. The 'Main Connection' section has 'Name' set to 'BACNETPTPClient', 'Enable' checked, 'Type' set to 'BACnet PTP Server', and 'Port' set to 'COM1'. The 'BACnet PTP Server' section is expanded, showing 'Device Settings' with 'APDU Timeout' and 'Num of Retries' input fields. Below this is a 'Command Parameters' table with columns: Action, Description, Identifier, Name, Object, Instance, Poll, Function, and Enable. The interface includes a top navigation bar with 'BACnet', 'Overview', 'Monitoring', 'Settings', and 'About' tabs. A sidebar on the left contains icons for home, list, zoom, and other functions. The bottom right corner of the window displays the copyright notice '© 2014-2022 PMM. All rights reserved.'

Parameter	Notes
ADPU Timeout	Indicates the amount of time in milliseconds between retransmissions of an APDU requiring acknowledgment for which no acknowledgment has been received.
Num of Retries	Sets the number of times that the driver will retry a request when a response is not received.

BACnet PTP Client

- Choose the type of connection from the drop list “BACnet PTP Client”.
- Choose the desired port from the drop list port.
- The following settings will need to be configured as shown below.

The screenshot displays the 'Connections Settings' window. Under 'Main Connection', the 'Name' is 'BACNETPTPClient', 'Enable' is unchecked, 'Type' is 'BACnet PTP Client', and 'Port' is 'COM1'. The 'BACnet PTP Client' section contains a 'Device Settings' table with the following fields:

Parameter	Value
Device Name	
Identifier	
Vendor Name	
Vendor Identifier	
Model Name	
Firmware Rev	
Software Version	
APDU Timeout	
Num Of Retries	

Parameter	Notes
Device Name	Defines the node's name. The device name must be unique across the entire BACnet network.
Identifier	Specifies the BACnet ID assigned to the device.
Vendor Name	Specifies the name of the OEM.
Vendor Identifier	Specifies the BACnet Vendor ID assigned to the OEM.
Model Name	Specifies the model's name of the OEM's product.
Firmware Rev	Specifies the firmware revision
Software Version	Specifies the software revision
APDU Timeout	Indicates the amount of time in milliseconds between retransmissions of an APDU requiring acknowledgment for which no acknowledgment has been received.
Num of Retries	Sets the number of times that the driver will retry a request when a response is not received.

Quick Settings

The screenshot displays the 'Quick Settings' window with three main panels:

- Logging Timer:** Contains settings for a timer. The 'Timer' dropdown is set to 'halfsecond'. There are two checked checkboxes: 'Enabled' and 'Zero Based'. The 'Interval' is set to '500' (ms) and the 'Delay' is set to '0' (ms).
- Tags:** A list of tags including 'TagABCDf', 'TagABCDUint', 'TagABCDint16', 'TagABCDuint16', 'TagCDabf', 'TagABCDInt', 'uint16', 'uint32', and 'TCPPCLIENTTest.Command1'.
- Tag Settings:** Contains 'Basic Settings' and 'Scaling' sections. 'Basic Settings' has an 'Enabled' checkbox. 'Scaling' has 'Enable Scaling' and 'Scale to float' checkboxes. Below these are 'Logging Settings' for Log Timer 1, 2, and 3, each with a dropdown menu. Further down are fields for 'Upper Limit', 'Lower Limit', 'Scale X1', 'Scale X2', 'Scale Y1', and 'Scale Y2'. A formula is shown at the bottom: $V_{out} = V_{in} [(Y2-Y1) / (X2-X1)]$.

Logging Timer

This screenshot shows a zoomed-in view of the 'Logging Timer' panel. It includes the same settings as the first screenshot: 'Timer' set to 'halfsecond', 'Enabled' and 'Zero Based' checkboxes checked, 'Interval' set to '500' (ms), and 'Delay' set to '0' (ms).

- Click on the add icon “+”.
- Type the desired name in “Timer” field.
- Check “Enabled” to enable the timer to save the values in the data base.
- Type the desired interval needed between the readings in (ms).
- Type the desired delay time needed between the readings in (ms).
- Click on “Save”.
- Click on “Delete” to delete any not needed timer.

Tags Settings

Basic Settings

- Check “Enabled” to enable the connection data logging.
- Type the slave ID.
- Choose the data type from the drop list.

Parameter	Value
Type	Bool
	Bitfield 16
	Bitfield 32
	Int16
	UInt16
	Int32
	UInt32
	Float32

- Type the “Bit Number”.
- Type the “Address”.
- Choose the tags “Order”.

Parameter	Value
Order	ABCD
	BADC
	CDAB
	DCBA
	CDBA
	DCAB

- Choose the swap order from the drop list.
- Choose the Modbus type from the drop list which sets the desired function for the tag.

Parameter	Value
Modbus Type	F01: Read Coils
	F02: Read Discrete Input
	F03: Read Holding Registers
	F04: Read Input Registers
	F05: Write Single Coil
	F06: Write Single Register

Logging Settings

- The user can choose up to three log timers for logging the tags in.
- Choose the log timers needed from the drop lists.

Scaling

- To enable the scaling function for the logged values, check the box “Enable scaling”.
- To scale to float, check the box “Scale to float”.
- Set the upper and lower limits.

 **NOTE:** the upper and lower limits values shall only be a number, 0 or NON.

- Set the scaling values: X1, X2, Y1, Y2.

Scaling values conditions:

1) $X2 \neq X1$ && $X2 > X1$

2) $Y2 \neq Y1$ && $Y2 > Y1$

The scaling equation:

$$V_{out} = V_{in} ((Y2 - Y1) / (X2 - X1))$$

- Click on “Save” to save the tags settings.
- All the tags along with their settings will be displayed in “Tags”

About

About Page consists of three sections:

- 1) General Information: Displays general information about the Modbus converter server including:
 - Model Name.
 - Serial Number.
 - Software Version.
 - Firmware Version.
 - Hardware Base.
 - Hardware Version.

 **NOTE:** general information is set by the manufacturer and it is not editable.

- 2) Project settings & Firmware:

- Click on “Backup” to create project settings backup.
- Click on “Restore” to restore a previously created project setting.

 **NOTE:** Same instructions are applicable for Firmware as the user can create firmware backup or restore a previously created firmware.

- 3) Alarms & Events Log: The user may adjust the duration of keeping logs, download logs and delete logs.

Adjust Keeping Alarms & Events Log Duration Instructions:

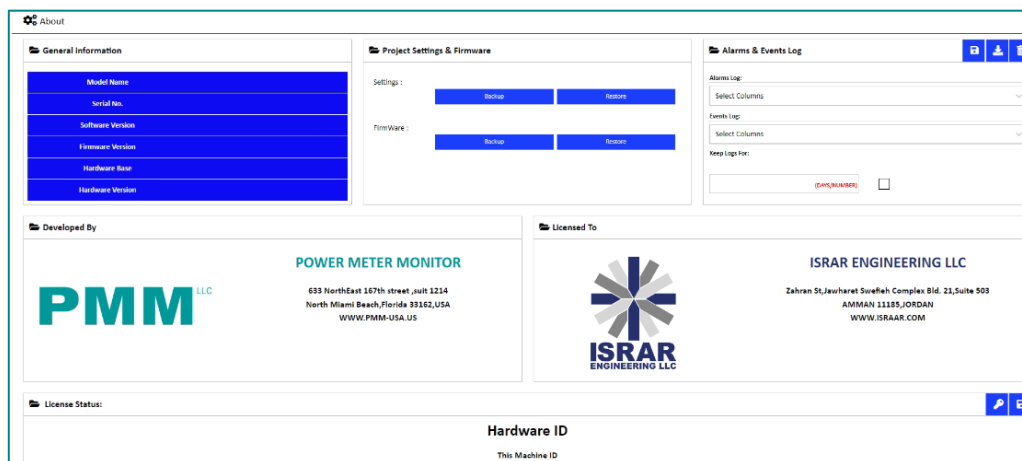
- Type the number of days you want to keep the logs for in the specified field and check the box to enable the setting.
- Click on “Save”.

Download Alarms & Events Log Instructions:

- Choose the required alarms & events log based on the day and date from the drop list.
- Click on “Download”.

Delete Alarms & Events Log Instructions:

- Choose the required alarms & events log based on the day and date from the drop list.
- Click on “Delete”.



Sign Out

After completing settings configuration, the user signs out of the system.

- Click on “Admin”.
- Click on “Sign out” then the log in window will be displayed.

