

PMM

Power Meter Monitor

DLMS/COSEM to Modbus Gateway



Model: PMM0402
Document: User Manual
Document version: v1.2
Date: August 2026



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This device is designed for use in business environments where it may generate, use, and radiate radio frequency energy. If not installed and used in strict accordance with the instructions, it may cause harmful interference to radio communications.

Although every effort is made to minimize interference, there is no guarantee that interference will not occur in a particular installation. If this device causes interference in radio or television reception, the user may mitigate the issue by applying one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the device and the receiver.
- Connect the device's power supply to a separate power circuit than that of the receiver.

TECHNICAL SUPPORT AND SERVICE

For technical support and service, please visit pmm-usa.us to access FAQs and additional resources.

Before contacting support, users should prepare the following information:

- Product name, model, and serial number.
- Installed software details (operating system, version, and applications).
- Complete description of the issue.
- Detailed error information and any observed conditions.

SAFETY INSTRUCTIONS

Only trained and qualified personnel should install, operate, or maintain this device. Failure to follow safety precautions may result in damage to the equipment and personal injury.

Key safety guidelines include:

- Carefully read all safety instructions and heed warning labels before installation.
- Do not use liquids or spray cleaners; ensure the device is completely disconnected from power before cleaning.
- Take precautions to prevent the device from dropping during transport or installation.
- Ensure input voltage and power match device specifications before connecting to the power source.
- Keep cables properly routed and protected.
- If the device is not used for an extended period, disconnect power to prevent transient overvoltage damage.
- Do not allow liquids to enter the device to avoid fire hazards or short circuits.
- Recommended storage temperature -40°C to +85°C.

PMM is not liable for consequences arising from failure to comply with safety standards, regulations, or codes related to design, production, and equipment use.

WARNINGS & CAUTIONS

⚠ Warning

- Read the power source and device inlet specifications carefully before connecting.
- Always handle the device with both hands.
- Clean and maintain the device only with safe, recommended methods.

⚠ Caution

Unauthorized modifications, settings changes, or repairs without **PMM approval** will void the user's rights to operate or control this device.

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1. Introduction

The PMM0402 is a highly configurable industrial DLMS/COSEM gateway device capable of reading data from any device using the DLMS protocol, such as energy meters, and converting it to Modbus RTU/TCP protocol. It reads IEC 62056 compliant energy meters over RS-485 serial or TCP/IP and exposes the data as Modbus registers for SCADA, HMI, and building management systems. The PMM0402 supports up to 32 meters and provides the flexibility needed to fulfill the various conditions that arise with field devices using different communication protocols to connect to a SCADA system.

The gateway supports a system log function that records events; users can review log data remotely through a web interface. It also supports status monitoring and fault protection functions – if a meter disconnects or stops responding, the SCADA system is notified so operators can be alerted.

The PMM0402 can be housed in multiple hardware chassis options, each offering a range of configurable communication ports. All chassis are sturdy, fanless, and support a wide selection of power supply options, purpose-built for the demands of power substations.

NOTE

The PMM industrial-computer chassis described in this document apply to the integrated gateway appliance delivery option. When the software-only license is purchased, the gateway application is installed on a compatible customer-supplied computer or industrial PC. In that case, the available communication interfaces, power requirements, mounting arrangement, environmental ratings, and certifications are determined by the selected host platform.

1.1 Key Features

- DLMS/COSEM meter-data acquisition over serial or Ethernet communication
- Modbus TCP support and Modbus RTU support where included in the ordered configuration
- Supports meters such as: Iskraemeco, Landis+Gyr, EMH meter, Actaris SL7000, Elster A1700, Elster A1500, Kamstrup, DPEE – and any IEC 62056 DLMS/COSEM compliant meter
- Web-based configuration and monitoring interface
- Configurable meter definitions, authentication, addressing, polling, and OBIS mapping
- Available as a complete PMM industrial gateway appliance or as a software-only licensed application for installation on a compatible customer-supplied computer or industrial PC
- Built-in Ethernet cascading for easy wiring
- MicroSD card for configuration backup and event log duplication
- Communication and traffic monitoring, diagnostic information, event logging, and device-status reporting for easy troubleshooting
- Operating temperature: -40 to 75°C | Storage temperature: -40 to 85°C
- EMI, EMS, EMC, and shock protected
- Serial port with 2kV power surge isolation protection
- Redundant dual power inputs (DC-DC) or (AC-DC)
- Security features based on IEC 62443
- Fanless industrial enclosure and DIN-rail, panel, front-panel, or 19-inch rack mounting options, depending on the hardware configuration

1.2 Typical System Architecture



Typical PMM0402 integration architecture. The exact number and type of meter links depend on the ordered hardware and project design.

1.3 Product Delivery and Licensing Options

The PMM0402 DLMS/COSEM to Modbus Gateway is available in the following delivery options:

Delivery Option	Description
Integrated Gateway Appliance	The gateway software is supplied preinstalled and licensed on a PMM industrial hardware device. This option provides a complete, ready-to-configure industrial gateway solution.
Software-Only License	The DLMS/COSEM to Modbus Gateway is supplied as a licensed software application without PMM hardware. The application can be installed and operated on a compatible customer-supplied computer, industrial PC, or other supported computing platform.

The software-only option allows customers to use their existing computing infrastructure while retaining the gateway’s DLMS/COSEM meter-integration, Modbus communication, configuration, monitoring, and diagnostic functions.

The customer-supplied platform must meet the applicable operating-system, processor, memory, storage, network-interface, and serial-interface requirements.

NOTE

Hardware compatibility, operating-system support, license activation, and available communication interfaces must be verified before purchasing or installing the software-only version.

2. Hardware

2.1 Hardware Platform Overview

The PMM0402 DLMS/COSEM to Modbus Gateway is available as an integrated appliance installed on a compatible PMM industrial hardware platform.

Depending on the ordered configuration, the gateway may be supplied using one of the following hardware CPU chassis platforms:

- PMM0102
- PMM0103
- PMM0105
- PMM0107
- PMM0304-based configuration

The selected platform determines the processor, operating system, memory, storage, communication interfaces, power-input range, physical dimensions, and mounting arrangement. The gateway application and Web Console functions remain generally consistent; however, the available serial, Ethernet, fiber, Wi-Fi, and expansion interfaces depend on the ordered hardware.

NOTE

Not every interface listed for a hardware platform is included in every PMM0402 order. Optional communication modules, power supplies, fiber interfaces, and wireless functions must be specified when ordering.

SOFTWARE-ONLY VERSION

The hardware information in this chapter applies only to the integrated gateway appliance. When the PMM0402 is purchased as a software-only license, the hardware specifications are determined by the customer-supplied computer or industrial PC.

2.2 Available Hardware Platforms

Hardware Platform (CPU Chassis)	Platform Type	Main Characteristics	Typical Application
PMM0102	Compact ARM-based embedded computer	Linux platform, two Ethernet ports, four configurable communication interfaces (RS-485, 4232, 422)	Compact gateway applications requiring several configurable serial or I/O interfaces
PMM0103		Linux platform, one Ethernet port, three configurable communication interfaces (RS-485, 4232, 422)	General-purpose serial and Ethernet gateway applications
PMM0105	ARM-based embedded computer with fiber	Linux platform, two Ethernet ports, two SC fiber ports, one base RS-485 port, and two configurable communication slots	Applications requiring direct fiber-optic connectivity
PMM0107	Higher-performance x86 platform	Windows-based platform, increased memory and storage, Gigabit Ethernet, SFP fiber, and configurable communication interfaces	Larger applications requiring additional processing capability
PMM0304-Based Configuration	Network- and fiber-oriented project configuration	Multiple Ethernet interfaces, selectable fiber interface, Wi-Fi, and serial communication	Projects requiring integrated Ethernet switching or fiber-network connectivity



PMM0102



PMM0103



PMM0105



PMM0107



PMM0304

2.3 Computing Specifications

Parameter	Processor	Memory	Storage	RTC	Pre-installed OS
PMM0102	Allwinner H3, quad-core Cortex-A7	512 MB	8 GB eMMC	DS3231	Linux
PMM0103	Allwinner H3, quad-core 64-bit Cortex-A53*	512 MB	8 GB eMMC	DS3231	
PMM0105	Allwinner H3, quad-core 64-bit Cortex-A53*	512 MB	8 GB eMMC	DS3231	
PMM0107	Intel® Atom™ x5-Z8350	4 GB DDR3	16 GB eMMC	CR2032	Windows 10 Lite

NOTE

The PMM0304-based PMM0402 is a project-specific hardware configuration that may provide integrated Ethernet, fiber-optic, Wi-Fi, and serial communication interfaces. Its processor, operating system, memory, storage, and gateway-hosting specifications are configuration-dependent.

2.4 Communication Interfaces

Platform	Ethernet and Fiber	USB and Wi-Fi	Serial and Optional Interfaces	Removable Storage
PMM0102	2 × 10/100Base-T No fiber interface	1 × USB 2.0 Type-A 2 × Micro-USB 2.4 GHz Wi-Fi	4 × factory-fitted optional interfaces including RS-232, RS-485, RS-422, CAN, analog I/O, or digital I/O	1 × microSD Up to 64 GB
PMM0103	2 × 10/100Base-T No fiber interface	1 × USB 3.0 Type-A 1 × Micro-USB 2.4/5 GHz Wi-Fi	4 × factory-fitted optional interfaces including RS-485, RS-232, or RS-422 slots	1 × microSD Up to 64 GB
PMM0105	2 × 10/100Base-T 2 × 1000Base-X SC	1 × USB 2.0 Type-A 2.4/5 GHz Wi-Fi Ext. Antenna	2 × factory-fitted optional interfaces including RS-485, RS-232, or RS-422 slots	1 × microSD Up to 64 GB
PMM0107	1 × 10/100/1000Base-T 1 × 1000Base-X SFP	1 × USB 3.0 Type-A 2.4/5 GHz Wi-Fi Ext. Antenna	1 × RS-485 2 × factory-fitted optional interfaces including RS-232, RS-485, RS-422, CAN, analog I/O, or digital I/O	1 × microSD Up to 256 GB
PMM0304-Based Configuration	4 × 10/100Base-T Ordered SC or SFP fiber option	1 × USB 2.0 Type-A Built-in Wi-Fi	2 × factory-fitted optional interfaces including RS-485, RS-232, or RS-422 slots	1 × microSD Up to 64 GB

NOTE

The removable storage is customer-supplied unless specifically ordered.

2.5 Power Supply and Physical Characteristics

Platform	Power Options	USB and Wi-Fi	Housing	Dimensions	Mounting
PMM0102	10–56 VDC 8–40 VAC 36–72 VDC 25–50 VAC 85–285 VAC / 100–300 VDC	Phoenix Contact, 4-pin, 3.5 mm	Metal	103 × 103 × 44 mm	35 mm DIN rail Direct panel Front panel 19-inch rack 1U
PMM0103				100 × 100 × 37 mm	
PMM0105				134 × 134 × 37 mm	
PMM0107					
PMM0304-Based Configuration					

WARNING

Check the product nameplate and order code before connecting the power source. The available input range depends on the ordered power-supply module. Applying an incorrect AC or DC voltage can permanently damage the gateway and create a safety hazard.

2.6 Ethernet and Fiber Connections

- Use industrial Ethernet cabling and network equipment suitable for the installation environment
- Connect the SCADA or engineering network to the selected Ethernet interface according to the approved network design
- Where the selected platform provides two Ethernet ports, built-in Ethernet cascading may be used where supported by the ordered configuration
- For PMM0105, PMM0107, and PMM0304-based configurations, verify the ordered fiber connector, wavelength, fiber type, and transmission distance before connecting the optical link
- Install the required SFP transceiver before connecting fiber to an SFP-equipped platform
- Keep engineering and configuration interfaces separated from untrusted networks and apply the site cybersecurity policy

NOTE

Fiber availability and connector type are hardware- and order-dependent. Do not assume that every PMM0402 appliance includes a fiber interface.

2.7 RS-485 Serial Connection

Use a shielded twisted-pair cable suitable for RS-485 communication.

- Maintain consistent signal polarity throughout the complete bus
- Route the serial cable away from high-voltage and high-frequency conductors
- Ground the cable shield according to the approved site EMC design
- Configure the baud rate, parity, data bits, and stop bits to match the connected meters
- Avoid unnecessary branches and excessive stub lengths

NOTE

Install a 120-ohm termination resistor at the physical end of the RS-485 bus when required by the cable and network design. Do not install termination at every device.

2.8 Hardware Installation Procedure

1. Verify the PMM0402 order code, selected hardware platform, fitted communication modules, power-input option, and approved site drawings
2. Confirm that all required Ethernet, fiber, serial, power, and mounting accessories are available
3. Isolate all power sources and verify a safe working condition
4. Install the specified DIN-rail, wall, panel, front-panel, or rack-mounting hardware
5. Secure the gateway and maintain adequate ventilation and cable-bend clearances
6. Connect protective earth and cable shields according to the approved installation design
7. Connect the DLMS/COSEM meter Ethernet or RS-485 communication links
8. Connect the SCADA or engineering Ethernet interface
9. Where applicable, install the ordered SFP module and connect the fiber-optic cable
10. Connect the verified power source and check polarity for DC-powered versions
11. Tighten all terminal screws according to the applicable connector requirements
12. Apply power and verify the expected power, Ethernet, fiber, and serial communication indications
13. Continue with the network and gateway configuration procedure

3. Getting Started

3.1 Equipment and Information Required

Item	Purpose
PMM0402 gateway	Installed with the ordered hardware, communication modules, and power-input option. Or;
Engineering computer	Web browser and Ethernet interface
Ethernet cable / network connection	Access to the gateway web consol
Meter communication cable or Ethernet network	Connection to the DLMS/COSEM meter
Meter communication parameters	Transport, IP/port or serial settings, client/server address, authentication, referencing type, serial number, manufacturer profile, and credentials.

3.2 Connect the Gateway

1. Mount and wire the gateway as explained in Chapter 2
2. Connect the engineering computer to the same Ethernet network as the PMM0402
3. Connect the meter network or RS-485 bus
4. Apply the correct power source and wait for the gateway to complete its startup sequence
5. Set the engineering computer to an IP address in the same subnet as the gateway, without duplicating another address

3.3 Users Roles

Role	Default credential	Access level
Operator	Password: 0000	Read-only access to dashboards, register maps, and load-profile results
Administrator	Configurable password	Configuration access for meters, system settings, AMR functions, backup, and restore

3.4 Access the Web Interface

1. Open a supported web browser, such as Microsoft Edge, Google Chrome, Mozilla Firefox, or Safari
2. Enter the gateway IP address. The supplied reference uses `http://192.168.1.1`
3. Select the user role, enter the password, and select Sign In
4. After the first login, change the default passwords and record the new credentials using the site password management process.

3.5 Converter Modes

The supplied software reference defines the following converter modes. Mode availability is firmware- and license-dependent.

Mode	Registers per meter	Load-profile rows/page	Functions
Runtime	1,000	N/A	Real-time polling only; load profile and AMR functions hidden
AMR-Basic	1,000	33	Load profile and AMR with a small buffer
AMR-Mid	10,000	380	Load profile and AMR; approximately 16 days at one-hour intervals
AMR-Advanced	65,000	2,495	Load profile and AMR; approximately 3.5 months at one-hour intervals

3.6 First-Time Configuration Workflow

1. Log in using an administrator account
2. Open Basic Settings and confirm the server's name, location, time zone, date/time source, and local time
3. Configure Ethernet and, if applicable, Wi-Fi settings. Save the new network settings and reconnect using the new IP address
4. Configure the serial port used by the meter, if the meter is connected by RS-485
5. Open the DLMS Gateway page and configure the working mode, Modbus TCP port, and polling interval
6. Add the first meter using the meter manufacturer data and project communication schedule
7. Run Test Connection. Correct all authentication, addressing, transport, and OBIS errors before enabling routine polling
8. Configure or verify the Modbus register map
9. Create the SCADA Modbus connection and test a small poll list before adding the complete tag database
10. Create a configuration backup after successful commissioning

4. Web Console Overview

4.1 Login Page

The Login Page is displayed when the user accesses the PMM0402 Web Console through the gateway IP address. It authenticates the user and determines the functions and configuration pages available according to the selected access type.

Field / Control	Description
Application	Select the application to be accessed. Select Gateway to open the DLMS/COSEM to Modbus Gateway Web Console
Access Type	Selects the user access level. Available access types include Operator and Administrator
Password	Enter the password assigned to the selected access type. The default Operator password is 0000, unless it has been changed
Access Gateway	Validates the entered credentials and opens the Web Console

Login Procedure

1. Open a supported web browser
2. Enter the PMM0402 IP address in the browser address bar
3. From the Application list, select Gateway
4. From the Access Type list, select the required user role
5. Enter the corresponding password
6. Select Access Gateway

NOTE

The Operator account provides read-only access to monitoring pages and operating data. The Administrator account provides access to meter configuration, communication settings, system settings, backup, restore, and other administrative functions.

SECURITY RECOMMENDATION

Change all default passwords during initial commissioning and store the updated credentials according to the site password-management procedure.

The screenshot shows the login interface of the PMM0402 Web Console. At the top left is the ISRAR logo, and to its right is the word 'LOGIN'. Below these are two dropdown menus. The first, labeled 'Application', has 'Gateway' selected. The second, labeled 'Access Type', has 'Operator' selected. Below the dropdowns is a text input field with the placeholder text 'Enter Password'. At the bottom of the form is a blue button with the text 'Access Gateway'. Below the button, the text 'Login | DLMS - Modbus Gateway' and '©2014-2026 ISRAR ENGINEERING LLC. ©' is displayed.

4.2 Navigation Menu

Menu	Description
Overview	Product information, system summary, performance gauges.
Settings	Basic Settings Server Information, Serial Settings, Wi-Fi, Network, VPN, Project Settings & Firmware <i>Administrator access required</i>
	DLMS Gateway Add / edit / delete meters, test connection, debug console.
	Register Map Modbus register assignments, custom OBIS mapping
	AMR/HES Sync Scheduled tasks, FTP/DB/API export (AMR modes only)
Load Profile	Historical interval data (AMR modes only)
Help	User manual and troubleshooting

4.3 Overview

The Overview page is the main dashboard displayed after a successful login. It provides a consolidated view of the gateway product information, operating status, communication interfaces, connected meters, and system-resource usage.

It displays:

- Product description
- Device identity and configuration parameters
- System connectivity and communication status
- Number of online meters
- Network and Wi-Fi status
- System performance indicators

4.3.1 Product Description

The Product Description panel provides a brief description of the PMM0402 DLMS/COSEM to Modbus Gateway and summarizes its main capabilities.

The panel also includes a Key Features section describing supported meter communication, protocol-conversion functions, monitoring features, and hardware capabilities.

Use the vertical scroll bar to view the complete product description and feature list.

Product description

The PMM0402 is a highly configurable industrial ethernet gateway device which is capable of reading data from any device.

Containing DLMS protocol like energy meters, and converting it to RTU/TCP Modbus protocol, PMM0402 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.

PMM0402 gateways support a system log function that record events: users can easily review log data remotely through a 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, in such case the SCADA system gets the status of each end device and then issues alarms to notify operators.

PMM0402 can be contained within multiple hardware chassis which are designed with a wide range of highly configurable communication ports needed in the field. All hardware chassis are rugged, powerful, reliable, fanless and cover a wide range of power supply options that offer a high level of performance and low level of power consumption. The system is especially designed to meet all power substation requirements. Furthermore, it covers all field standards of power, reliability, easy configuration and long-lasting life.

Key Features

- ✓ Supports up to 10 meters with single converter .
- ✓ Tested with all major meter brands such as: Iskraemeco, Landis+Gyr, EMH meter, Actaris

4.3.2 Product Information

The Product Information panel displays key device parameters. Some fields may be editable depending on system permissions and configuration stage.

NOTE

The displayed fields and available editing functions may depend on the installed hardware, software version, license, and user access level.

Product Information

Model Name: PMM0501

Serial No.: SN456789

Software Ver: 1.3.0

Firmware Ver: v1.0.9 OS: Ubuntu

Hardware Base: NanoPiCore Input Voltage:

Hardware Ver: V1.2

Serial Ports: 4

Ethernet Ports: 2 F.O Ports:

Ethernet Mode: Individual

RTC: ☐ WIFI: ☒

I2C Port No.: -1 (-1 = not present)

Web Server: ☒ Port: 5010

Web Mode: Built-in

Number of Meters: 36

Field	Description
Model Name	Model or product designation assigned to the gateway
Serial No.	Unique serial number of the gateway
Software Ver	Installed gateway application version
Firmware Ver	Installed device firmware version
OS	Operating system installed on the gateway platform
Hardware Base	Hardware platform or CPU chassis used by the gateway
Input Voltage	Configured or specified power-input rating
Hardware Ver	Hardware revision of the gateway
Serial Ports	Number of available serial communication ports
Ethernet Ports	Number of available Ethernet interfaces
F.O Ports	Number of available fiber-optic communication ports
Ethernet Mode	Configured operating mode of the Ethernet interfaces
RTC	Indicates whether the real-time clock function is available or enabled
Wi-Fi	Indicates whether the Wi-Fi interface is available or enabled
I2C Port No.	Identifies the assigned I ² C port. A value of -1 indicates that the port is not available
Web Server	Enables or disables the gateway Web Server
Port	TCP port used to access the Web Server
Web Mode	Indicates whether the Web Console is built into the gateway or provided through another supported mode
Number of Meters	Maximum or configured number of meters supported by the gateway application

4.3.3 System Summary

The System Summary panel displays the current operating condition of the gateway. The information is organized into several groups.

Section	Displayed Information
Server Date & Time	Current date and time, server uptime, and last startup time.
Gateway Status	Working mode, gateway status, configured and online meters, active TCP/RTU ports, and connected TCP clients.
Ethernet Network	Connection status, IP address, subnet mask, and gateway for each Ethernet interface.
Wi-Fi	SSID, connection status, IP settings, and wireless signal strength.
Web API	Current Web API operating status.



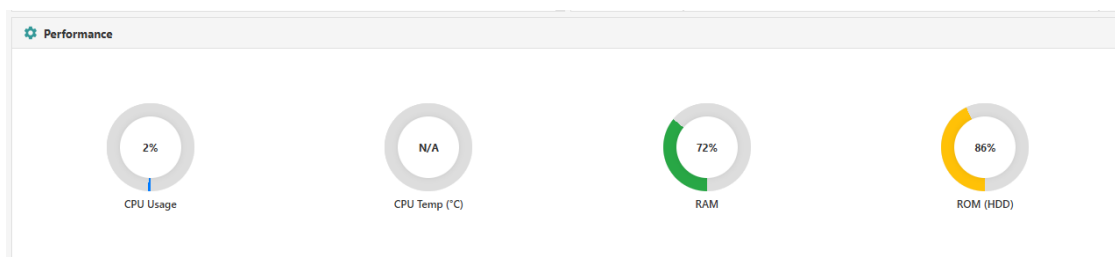
4.3.4 Performance

The Performance panel shows the main system-resource indicators to help detect issues.

Indicator	Description	Operator Interpretation
CPU Usage	Processor load (%)	High values may indicate overload
CPU Temp	Temperature (°C)	High values may indicate cooling issues
RAM	Memory usage (%)	May indicate memory limitations
ROM / HDD	Storage usage (%)	High usage may affect logging and updates

CAUTION

Continuously high CPU, RAM, or storage utilization may affect polling performance, data logging, and Web Console operation. Review the gateway configuration and stored records when resource usage remains unusually high.



4.4 Basic Settings

The Settings page is used to configure the gateway identification, communication interfaces, network connections, VPN parameters, and system backup or restore functions.

NOTE

Administrator access is required to modify and save system settings.

ISRARModBus - GatewayOverviewSettingsLoad ProfileHelp

Server Information

Project Name:123

Project Prefix:

Country:

Country Prefix:

Date:01 - Aug - 2026

Time:06 : 44

Serial Settings

Port Name:COM 1

Enabled☒

Actual Device:identity50

Direction Pin:-1

Baud Rate:9600

Parity:None

Data Bits:8

Stop Bits:1

Mode:RTU

Timeout:502

Interface:Rs485

Status:Available

Network Settings

Network Interface:Ethernet 1

Actual Interface:eth0

IP Address:192.168.1.159

Netmask:255.255.255.0

Gateway:192.168.1.1

DNS-1:8.8.8.8

DNS-2:8.8.8.8

Control:Static

Status:Connected

WiFi Settings

Available Networks:Select a network

WiFi Name:

WiFi Password:

Status:Connected

ConnectDisconnect

VPN Settings

Private Key:

Tunnel IP:

Peer Public Key:

Allowed IPs:

End Point:

Status:DisconnectedAuto-start OFF

TestConnectDisconnect

Project Settings & Firmware

Settings:

RestoreBackup

Firmware:

RestoreBackup

Restore Default:

Factory Restore

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4.4.1 Server Information

The Server Information section defines the general project and location information used by the gateway.

Field	Description
Project Name	Name assigned to the gateway project or installation
Project Prefix	Optional prefix used to identify the project
Country	Country in which the gateway is installed
Country Prefix	Optional country or regional identification prefix
Date	Current gateway system date
Time	Current gateway system time

Server Information

Project Name:123

Project Prefix:

Country:

Country Prefix:

Date:01 - Aug - 2026

Time:06 : 44

4.4.2 Serial Settings

The Serial Settings section configures the communication parameters of each available serial port. The serial settings must match the communication parameters of the connected meter or field device.

Field	Description
Port Name	Select the serial port to be configured
Enabled	Enables or disables the selected port
Actual Device	Displays the operating-system device assigned to the port
Direction Pin	Identifies the hardware direction-control pin. A value of -1 indicates that it is not assigned
Baud Rate	Communication speed of the serial port
Parity	Parity-checking method
Data Bits	Number of data bits in each serial frame
Stop Bits	Number of stop bits in each serial frame
Mode	Selects the serial communication mode, such as RTU
Timeout	Maximum waiting time for a serial communication response
Interface	Selects the physical interface, such as RS-485
Status	Displays whether the selected serial interface is available

 **Serial Settings** 

Port Name

COM 1

Enabled

☒

Actual Device

/dev/ttyS0

Direction Pin

-1

Baud Rate

9600

Parity

None

Data Bits

8

Stop Bits

1

Mode

RTU

Timeout

502

Interface

Rs485

Status

Available

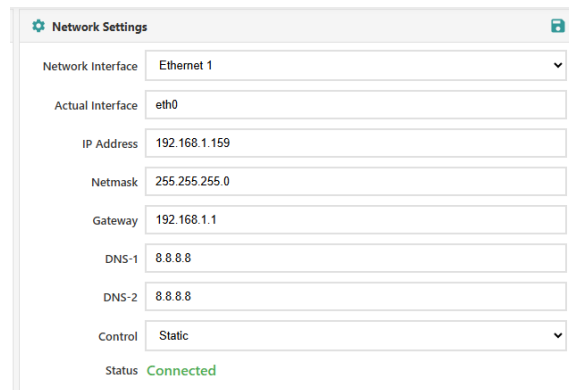
4.4.3 Network Settings

The **Network Settings** section configures the selected Ethernet interface.

Field	Description
Network Interface	Select the Ethernet port to configure
Actual Interface	Displays the operating-system name assigned to the interface
IP Address	IP address assigned to the gateway
Netmask	Subnet mask of the selected network
Gateway	Default network gateway address
DNS-1 / DNS-2	Primary and secondary DNS server addresses
Control	Select static or automatically assigned network parameters
Status	Displays the current Ethernet connection status

CAUTION

Changing the gateway IP address may disconnect the current Web Console session. Reconnect using the newly configured IP address.



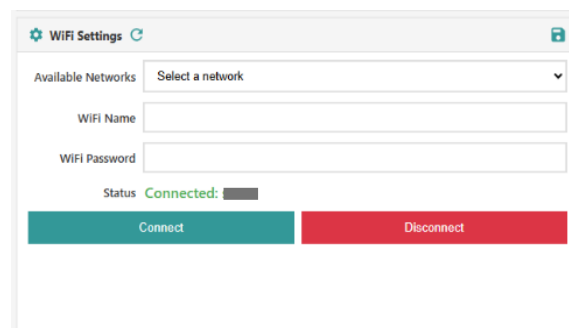
The screenshot shows the 'Network Settings' window. It contains several input fields: 'Network Interface' is a dropdown menu set to 'Ethernet 1'; 'Actual Interface' is a text field showing 'eth0'; 'IP Address' is '192.168.1.159'; 'Netmask' is '255.255.255.0'; 'Gateway' is '192.168.1.1'; 'DNS-1' and 'DNS-2' are both '8.8.8.8'; 'Control' is a dropdown menu set to 'Static'; and 'Status' is 'Connected' in green text.

4.4.4 Wi-Fi Settings

The Wi-Fi Settings section is used to connect the gateway to an available wireless network.

1. Select the refresh icon to scan for available networks
2. Select a network from the Available Networks list
3. Enter the Wi-Fi name and password where required
4. Select Connect
5. Confirm that the status changes to Connected

Select **Disconnect** to close the active wireless connection.



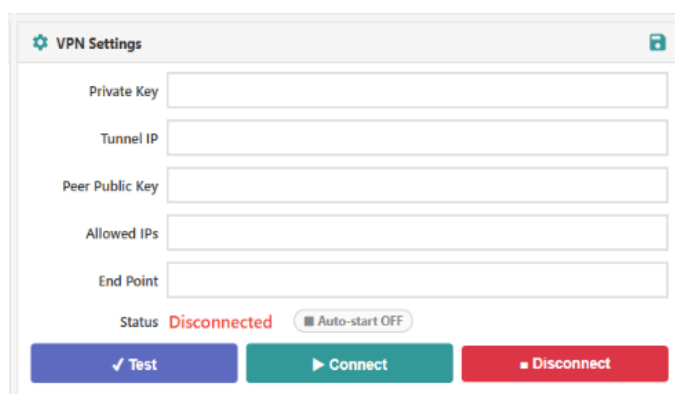
The screenshot shows the 'WiFi Settings' window. It includes an 'Available Networks' dropdown menu with the placeholder 'Select a network'. Below are text fields for 'WiFi Name' and 'WiFi Password'. The 'Status' is 'Connected' with a green indicator. At the bottom, there are two buttons: 'Connect' (teal) and 'Disconnect' (red).

4.4.5 VPN Settings

The VPN Settings section configures the secure VPN connection used for remote access.

Field	Description
Private Key	Private security key assigned to the gateway
Tunnel IP	IP address assigned to the VPN tunnel
Peer Public Key	Public key of the remote VPN peer
Allowed IPs	IP addresses or networks permitted through the VPN tunnel
End Point	Address and port of the remote VPN server or peer
Auto-start	Enables or disables automatic VPN connection during gateway startup
Status	Displays the current VPN connection status

Use Test to validate the entered configuration, Connect to establish the VPN tunnel, and Disconnect to close it.



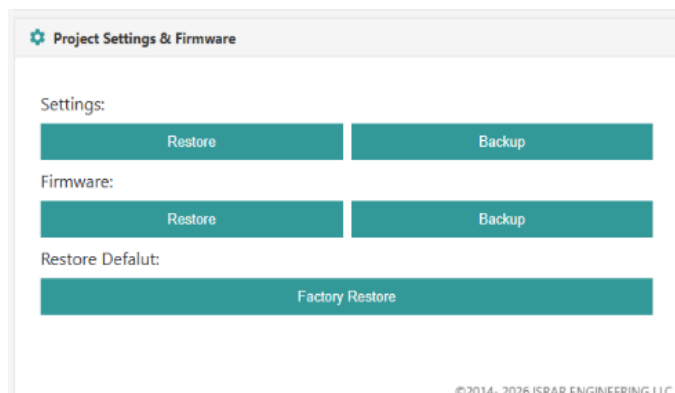
4.4.6 Project Settings & Firmware

The Project Settings & Firmware section provides maintenance and recovery functions.

Function	Description
Settings – Backup	Creates a backup of the current project and gateway settings
Settings – Restore	Restores previously backed-up project settings
Firmware – Backup	Creates a backup of the installed gateway firmware
Firmware – Restore	Restores firmware from a supported backup package
Factory Restore	Returns the gateway configuration to its factory-default state

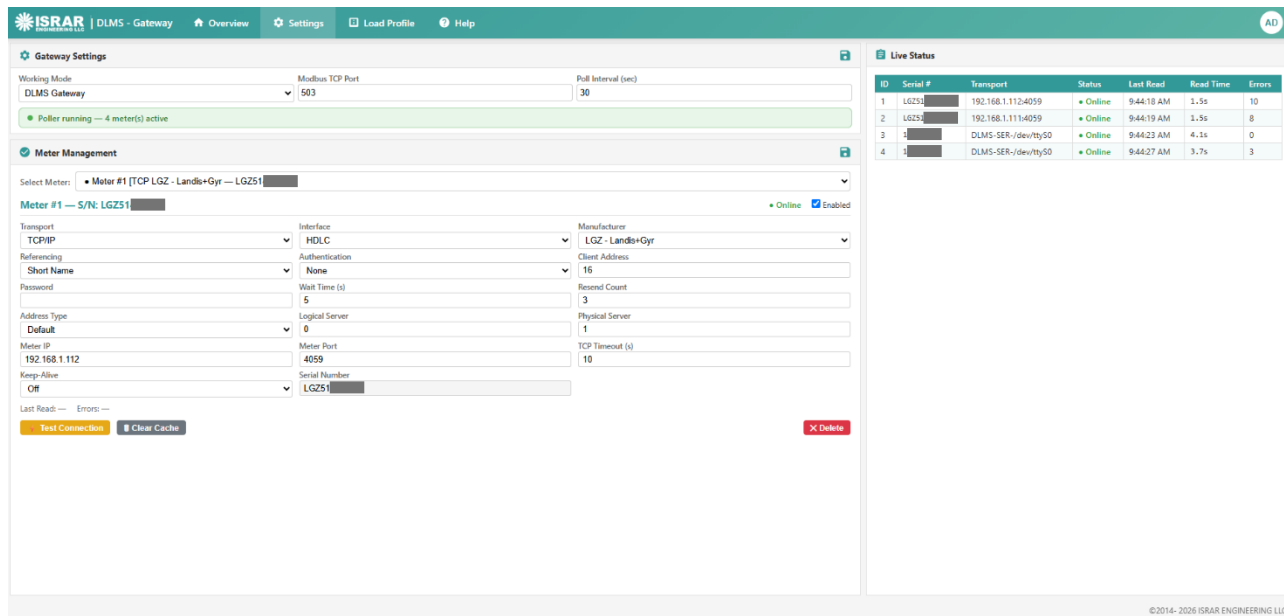
WARNING

Restoring settings, firmware, or factory defaults may interrupt gateway operation and overwrite the existing configuration. Create a current backup before performing any restore operation.



4.5 DLMS Gateway

The DLMS Gateway page is used to configure the gateway polling operation, add and manage DLMS/COSEM meters, test meter communication, and monitor the live status of all configured meters.



The page is divided into three main sections:

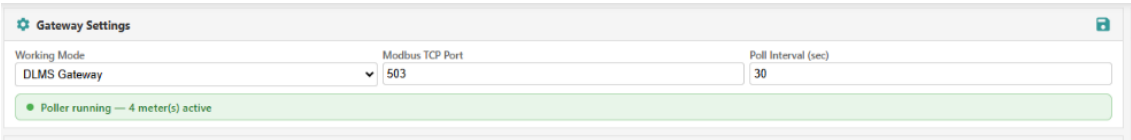
Section	Description
Gateway Settings	Configures the operating mode, Modbus TCP port, and meter polling interval
Meter Management	Adds, edits, tests, enables, disables, or deletes DLMS/COSEM meters
Live Status	Displays the current communication status, last reading time, response time, and error count for each meter

4.5.1 Gateway Settings

Field	Description
Working Mode	Selects the operating mode of the gateway. Available modes may include DLMS Gateway for normal meter polling and Setup Mode for configuration or testing
Modbus TCP Port	TCP port used by SCADA, HMI, AMR/HES, or other Modbus TCP clients to access meter data
Poll Interval (sec)	Time, in seconds, between consecutive meter polling cycles
Poller Status	Indicates whether the polling service is running and displays the number of active meters

NOTE

Increasing the polling interval reduces communication traffic but also increases the time required to update meter values. The selected interval should consider the number of meters, communication speed, and required SCADA update rate.



4.5.2 Meter Management

The screenshot shows the 'Meter Management' interface. At the top, there's a 'Select Meter' dropdown menu with 'Meter #1 [TCP LGZ - Landis+Gyr - LGZ51]' selected. Below this, the 'Meter #1 - S/N: LGZ51' is displayed. The interface is divided into several sections: 'Transport' (TCP/IP), 'Interface' (HDLC), 'Manufacturer' (LGZ - Landis+Gyr), 'Referencing' (Short Name), 'Authentication' (None), 'Client Address' (16), 'Password' (blank), 'Wait Time (s)' (5), 'Resend Count' (3), 'Address Type' (Default), 'Logical Server' (0), 'Physical Server' (1), 'Meter IP' (192.168.1.112), 'Meter Port' (4059), 'TCP Timeout (s)' (10), 'Keep-Alive' (Off), and 'Serial Number' (LGZ51). There are 'Test Connection' and 'Clear Cache' buttons at the bottom left, and a 'Delete' button at the bottom right. The status 'Online' and 'Enabled' are shown in the top right corner.

4.5.2.1 Meter Configuration Fields

Field	Description	Example
Select Meter	Selects an existing meter for viewing or modification.	Meter #1 – LGZ51413827
Enabled	Enables or disables routine polling of the selected meter.	Yes
Transport	Selects TCP/IP or serial communication.	TCP/IP
Interface	Selects the DLMS communication interface, such as HDLC or WRAPPER.	HDLC
Manufacturer	Selects the meter-manufacturer communication profile.	LGZ – Landis+Gyr
Referencing	Selects Short Name or Logical Name referencing.	Short Name
Authentication	Selects the DLMS authentication method, such as None, Low, or High.	None
Client Address	DLMS client address used when establishing the meter association.	16
Password	Authentication password required by the selected authentication method. Leave blank when authentication is set to None.	Blank
Wait Time (s)	Maximum waiting period for a meter response before the request is considered unsuccessful.	5 s
Resend Count	Number of retry attempts following an unsuccessful communication request.	3
Address Type	Selects the addressing method used to identify the DLMS server.	Default
Logical Server	Logical server address of the DLMS meter.	0
Physical Server	Physical server address of the DLMS meter.	1
Meter IP	IP address of the meter when TCP/IP transport is selected.	192.168.1.112
Meter Port	TCP communication port of the meter. DLMS over TCP commonly uses port 4059.	4059
TCP Timeout (s)	Maximum time allowed for establishing or receiving a TCP response.	10 s
Keep-Alive	Enables or disables the TCP keep-alive function.	Off
Serial Number	Meter serial number used for identification or address calculation.	LGZ51413827

NOTE

The required settings depend on the meter manufacturer, firmware, security configuration, and communication method. Obtain the correct parameters from the meter documentation or project communication schedule.

4.5.2.2 Test Connection

Select Test Connection to verify communication with the selected meter. The test checks the configured transport, addressing, authentication, DLMS association, and meter response. Where supported, the test also loads and stores the meter association-view information for later polling. A successful test should be completed before enabling routine polling.

Status indication	Meaning
Green	Successful communication or completed operation
Blue	Informational or diagnostic message
Red	Communication, authentication, addressing, or meter-response error

4.5.2.3 Clear Cache

Select Clear Cache to delete the stored DLMS association-view information for the selected meter.

Clear the cache when:

- The meter firmware has been updated
- The meter configuration or OBIS objects have changed
- The displayed register values do not match the current meter configuration
- A successful connection test is followed by repeated polling errors

After clearing the cache, run Test Connection again before returning the meter to normal polling

4.5.2.4 Adding a Meter

To add a new DLMS/COSEM meter:

1. Select + Add Meter
2. Assign a unique meter ID between 1 and 32 (becomes Modbus slave ID)
3. Select the communication transport: TCP/IP or Serial
4. Select the DLMS interface type, such as HDLC or WRAPPER
5. Select the meter manufacturer
6. Configure the referencing method, authentication level, addressing information, and communication timeouts
7. Enter the meter IP address and port for TCP communication, or select the appropriate serial port for RS-485 communication
8. Enter the meter serial number where required
9. Enable the meter
10. Select the Save icon
11. Select Test Connection to verify communication

NOTE

The assigned meter ID is also used as the Modbus slave ID when the meter data is accessed through Modbus.

4.5.3 Live Status

The Live Status table provides a real-time summary of all configured meters.

Column	Description
ID	Meter ID and corresponding Modbus slave ID
Serial #	Configured meter serial number
Transport	Meter communication path, such as TCP/IP or serial
Status	Current meter status, such as Online or Offline
Last Read	Time of the most recent successful or attempted reading
Read Time	Time required to complete the latest polling cycle
Errors	Accumulated communication-error count

Live Status						
ID	Serial #	Transport	Status	Last Read	Read Time	Errors
1	L6Z51	192.168.1.112:4059	Online	9:44:18 AM	1.5s	10
2	L6Z51	192.168.1.111:4059	Online	9:44:19 AM	1.5s	8
3	1	DLMS-SER-/dev/ttyS0	Online	9:44:23 AM	4.1s	0
4	1	DLMS-SER-/dev/ttyS0	Online	9:44:27 AM	3.7s	3

4.6 Register Map

The Register Map page displays the mapping between DLMS/COSEM OBIS objects and the Modbus registers exposed to the connected SCADA, HMI, AMR/HES, or building-management system.

DLMS - Register Map					
Registers	OBIS Code	Description	Data Format	Unit	Scale
Energy Registers					
0-1	1.1.1.8.0.255	Active Energy Import	Float32	kWh	+1000
2-3	1.1.2.8.0.255	Active Energy Export	Float32	kWh	+1000
4-5	1.1.3.8.0.255	Reactive Energy Import	Float32	kVARh	+1000
6-7	1.1.4.8.0.255	Reactive Energy Export	Float32	kVARh	+1000
32-33	1.1.73.7.0.255	Active Power L3	Float32	W	+1
Instantaneous Values					
8-9	1.1.16.7.0.255	Active Power Total	Float32	W	+1
10-11	1.1.131.7.0.255	Reactive Power Total	Float32	VAR	+1
12-13	1.1.32.7.0.255	Voltage L1	Float32	V	+10
14-15	1.1.52.7.0.255	Voltage L2	Float32	V	+10
16-17	1.1.72.7.0.255	Voltage L3	Float32	V	+10
18-19	1.1.31.7.0.255	Current L1	Float32	A	+1000
20-21	1.1.51.7.0.255	Current L2	Float32	A	+1000
22-23	1.1.71.7.0.255	Current L3	Float32	A	+1000
24-25	1.1.13.7.0.255	Power Factor	Float32	—	+1000
26-27	1.1.14.7.0.255	Frequency	Float32	Hz	+10
28-29	1.1.33.7.0.255	Active Power L1	Float32	W	+1
30-31	1.1.53.7.0.255	Active Power L2	Float32	VA	+1
Meter Identity & Status					
40-49	0.8.42.0.0.255	Meter Serial Number	ASCII	20 chars	—
50	—	Meter Status	uint16	0=off, 1=on, 2=err	—
51-52	—	Last Read Timestamp	uint32	epoch (sec)	—
53	—	Read Error Count	uint16	—	—
54	—	Consecutive Failures	uint16	—	—
Tariff Registers					

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Each configured meter uses the same register offsets but is accessed using its own meter ID as the Modbus slave ID.

Modbus Slave ID = Meter ID, Modbus Register = Register Offset

Each meter is allocated **1,000 holding-register offsets from 0 to 999**. Values using the Float32 data format occupy two consecutive 16-bit Modbus registers.

4.6.1 Register Map Columns

Column	Description
Registers	Modbus register offset or register range
OBIS Code	DLMS/COSEM OBIS code read from the meter
Description	Description of the associated meter value
Data Format	Modbus data type, such as Float32, UInt16, UInt32, or ASCII
Unit	Engineering unit of the value
Scale	Scaling operation applied to the meter value before it is exposed through Modbus

4.6.2 Standard Register Groups

Register range	Group	Typical contents
0–7	Energy Registers	Imported and exported active and reactive energy
8–33	Instantaneous Values	Power, voltage, current, power factor, and frequency
40–54	Meter Identity & Status	Serial number, meter status, last-read timestamp, and communication errors
60–67	Tariff Registers	Energy values for individual tariff periods
100–111	Load Profile Control	Commands, status, date range, record count, page selection, and error codes
120 onward	Load Profile Data	Historical interval-data buffer accessed using Modbus FC4

4.6.3 Common Default Registers

Register	OBIS Code	Description	Unit	Type
0-1	1.1.1.8.0.255	Active Energy Import	kWh	float32
2-3	1.1.2.8.0.255	Active Energy Export	kWh	float32
4-5	1.1.3.8.0.255	Reactive Energy Import	kVARh	float32
6-7	1.1.4.8.0.255	Reactive Energy Export	kVARh	float32
8-9	1.1.16.7.0.255	Active Power Total	W	float32
10-11	1.1.131.7.0.255	Reactive Power	VAR	float32
12-17	1.1.32/52/72.7.0.255	Voltage L1, L2, L3	V	float32
18-23	1.1.31/51/71.7.0.255	Current L1, L2, L3	A	float32
24-25	1.1.13.7.0.255	Power Factor	–	float32
26-27	1.1.14.7.0.255	Frequency	Hz	float32
28-33	1.1.33/53/73.7.0.255	Active Power L1, L2, L3	W	float32
40-49	0.0.42.0.0.255	Meter Serial Number	–	ASCII
50	–	Meter Status (0/1/2)	–	uint16
51-52	–	Last Read Timestamp	–	uint32
60-67	–	Tariff Registers T1–T4	kWh	float32

NOTE

Register availability and OBIS codes may vary according to the selected manufacturer profile, meter configuration, firmware version, and customized register map.

4.6.4 Float32 Encoding

Measurement values use the IEEE 754 Float32 format and occupy two consecutive Modbus registers.

The default byte order is:

32-bit Float, Big-Endian, ABCD or MSB first

For example, a value of **230.5 V** may be represented as:

First register: 0x4366, Second register: 0x8000

Configure the SCADA data type as 32-bit Float, Big-Endian.

CAUTION

Incorrect word or byte ordering can produce unrealistic, unstable, or extremely large values even when communication is functioning correctly.

4.7 AMR/HES Sync

The AMR/HES Sync page configures automatic meter-reading tasks and exports meter or load-profile data to an FTP server, database, or REST API.

This page is available only when the installed license and converter mode support AMR functions.

4.7.1 Scheduled Tasks

Scheduled tasks automatically read meter or load-profile data at a defined interval and transmit the results to one or more enabled destinations.

To create a task:

1. Select **+ Add Task**
2. Enter a descriptive task name
3. Select the required meter
4. Select the action, such as reading the load profile
5. Select the execution frequency and time
6. Select the required export destinations
7. Enable the task
8. Save the configuration

4.7.2 FTP Settings

Field	Description
Host	Hostname or IP address of the FTP server
Port	FTP or SFTP communication port
Username	Username used to access the server
Password	Password associated with the configured username
Remote Path	Destination directory on the server
Project Name	Project identifier included in the exported data or filename
File Format	Export format, such as XML, CSV, or JSON where supported
SFTP	Enables secure file transfer over SSH
Passive	Enables FTP passive mode
Enabled	Enables FTP as an export destination

Use the connection-test control to verify the entered server information, and then select Save.

4.7.3 Database Settings

Field	Description
Database Type	Selects the supported database type (MySQL, PostgreSQL, MS SQL)
Host	Hostname or IP address of the database server
Port	Database communication port
Database Name	Name of the target database
Username	Database login username
Password	Password associated with the database account
Project Name	Project identifier stored with the exported records
Enabled / Active	Enables the database export destination

The database server must be reachable from the gateway network, and the configured account must have the required permissions.

4.7.4 API Settings

Field	Description
Endpoint URL	Full address of the REST API endpoint.
Method	HTTP method used to send the data, such as POST or PUT.
Authentication	Authentication method required by the API.
Token / API Key	Bearer token, API key, or other required authentication value.
Project Name	Project identifier included in the transmitted data.
Include Meta	Includes additional gateway and meter metadata in the transmitted payload.
Enabled	Enables API transmission.
Extra Headers (JSON)	Optional HTTP headers entered as a JSON object.

SECURITY RECOMMENDATION

Use encrypted protocols and restrict export credentials to the minimum permissions required. Do not use administrator-level FTP, database, or API accounts.

4.8 Load Profile

The Load Profile page reads historical interval data stored inside a DLMS/COSEM meter. Load-profile functions are available only in supported AMR converter modes.

Read Load Profile

Read historical interval data (OBIS 1.0.99.1.0.255) from a DLMS meter. The poller for the selected meter will be **paused** during the read and **resumed** automatically. Data will be available on **input registers (FC4)** at registers **120-9999**. Mode: **AMR-Mid** (380 rows/page).

Meter: **— select meter —** From: **31-Jul-2026 06:45** To: **01-Aug-2026 06:45** **Read**

Results **Load From Registers** **Prev** Page 1/1 **Next**

Modbus Register Map — Load Profile

SCADA can trigger load profile reads and access data via Modbus registers. All registers are relative to each meter's base address (Slave ID = Meter #).

Register	FC	R/W	Type	Description
100	FC3/6/16	R/W	UINT16	LP Command — Write: 1=Read Profile, 2=Abort, 10=Restart Service
101	FC3	R	UINT16	LP Status — 0=Idle, 1=Connecting, 2=Reading, 3=Done, 4=Error
102-103	FC3/6/16	R/W	UINT32	From Date — Unix epoch timestamp (hi/lo words)
104-105	FC3/6/16	R/W	UINT32	To Date — Unix epoch timestamp (hi/lo words)
106-107	FC3	R	UINT32	Record Count — Total records read (hi/lo words)
108	FC3/6/16	R/W	UINT16	Page Index — Write to navigate data pages (0-based)
109	FC3	R	UINT16	Error Code — 0=None, 1=Timeout, 2=Auth, 3=No Data, 99=Other
110	FC3	R	UINT16	Total Pages — Number of pages available
111	FC3	R	UINT16	Columns — Number of value columns per row (max 12)
120-9999	FC4	R	Mixed	Data Buffer — 380 rows × 26 regs: Timestamp(2) + 12×Float32(24)

SCADA Read Flow: ① Write FROM/TO epoch to reg 102-105 — ② Write 1 to reg 100 (CMD=Read) — ③ Poll reg 101 until Status=3 (Done) — ④ Read data from input registers 120-9999 (FC4) — ⑤ Write page# to reg 108 to navigate pages

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The default load-profile object shown by the Web Console is:

OBIS: 1.0.99.1.0.255

During a load-profile read, routine polling of the selected meter is temporarily paused and automatically resumed when the operation finishes.

4.8.1 Reading Load-Profile Data

To read historical meter data:

1. Select the required meter
2. Enter the beginning date and time in the From field
3. Enter the ending date and time in the To field
4. Select Read
5. Wait for the operation to progress from Connecting to Reading and then Done
6. Results appear in paginated table. Use ◀ Prev / Next ▶ to navigate
7. Use Previous and Next to move between result pages
8. Use the download control to export the results where required

Select Load From Registers to display load-profile data already available in the Modbus input-register buffer

NOTE

Select a date range for which the meter contains stored interval records. An empty date range may return a No Data result.

4.8.2 Load-Profile Modbus Registers

Register	Access	Type	Description
100	R/W	UInt16	Command: 1 = Read, 2 = Abort, 10 = Restart Service
101	R	UInt16	Status: 0 = Idle, 1 = Connecting, 2 = Reading, 3 = Done, 4 = Error
102–103	R/W	UInt32	From date and time as a Unix epoch timestamp
104–105	R/W	UInt32	To date and time as a Unix epoch timestamp
106–107	R	UInt32	Total number of records read.
108	R/W	UInt16	Result-page index
109	R	UInt16	Error code
110	R	UInt16	Total number of available pages
111	R	UInt16	Number of value columns in each row
120 onward	R	Mixed	Load-profile data buffer containing timestamps and interval values

Typical error codes are:

Error code	Meaning
0	No error
1	Communication timeout
2	Authentication error
3	No data available for the requested period
99	Other or unspecified error

4.8.3 Reading the Load Profile from SCADA

A SCADA or HES system can trigger and retrieve a load-profile read through Modbus as follows:

1. Write the From Unix epoch timestamp to registers 102–103
2. Write the To Unix epoch timestamp to registers 104–105
3. Write 1 to register 100 to start the read
4. Poll register 101 until the status becomes 3 – Done or 4 – Error
5. Read the total record count from registers 106–107
6. Read the total page count from register 110
7. Read the data buffer beginning at register 120 using Modbus function code FC4
8. For additional pages, write the required page number to register 108, then read the buffer again

IMPORTANT

Registers beginning at 120 are Modbus Input Registers and must be read using Function Code 4. They must not be read as Holding Registers using Function Code 3.

5. Modbus Integration Guide

The PMM0402 exposes the data collected from each DLMS/COSEM meter through a Modbus TCP server. A SCADA, HMI, BMS, or other Modbus TCP client can connect to the gateway and read the configured meter values.

Each configured meter is assigned a unique Meter ID, which is also used as its Modbus Slave ID. All meters use the same register offsets.

5.1 Connection Settings

Configure the Modbus TCP client using the following parameters:

Parameter	Value
Protocol	Modbus TCP
Gateway IP Address	IP address configured in the gateway Network Settings
TCP Port	Configured in the DLMS Gateway Settings; this guide uses port 502
Slave ID	1–32; matches the configured Meter ID
Holding Register Read	Function Code 3
Holding Register Write	Function Code 6 or 16, where supported
Input Register Read	Function Code 4 for load-profile data
Measurement Data Type	32-bit Float, IEEE 754
Byte Order	Big-Endian, ABCD / MSB first
Register Addressing	Register offset shown in the Register Map

NOTE

Confirm the active Modbus TCP port on the DLMS Gateway page before configuring the SCADA connection.

IMPORTANT

Measurement values normally occupy two consecutive 16-bit registers. Configure the SCADA tag as a single 32-bit Float rather than two independent 16-bit values.

5.2 SCADA Poll List Example

The following example shows a basic SCADA poll list for a meter configured with **Meter ID 1**.

Tag Name	Slave ID	Function Code	Register	Data Type	Description
Energy_Import_kWh	1	FC3	0	Float32	Imported active energy
Voltage_L1	1	FC3	12	Float32	Phase L1 voltage
Voltage_L2	1	FC3	14	Float32	Phase L2 voltage
Voltage_L3	1	FC3	16	Float32	Phase L3 voltage
Current_L1	1	FC3	18	Float32	Phase L1 current
Power_Factor	1	FC3	24	Float32	Total power factor
Frequency	1	FC3	26	Float32	Meter frequency
Meter_Status	1	FC3	50	UInt16	Meter communication status
LP_Status	1	FC3	101	UInt16	Load-profile operation status

The values should be updated within one completed gateway polling cycle.

NOTE

The available values depend on the meter model, manufacturer profile, configured OBIS mapping, and supported meter objects.

5.3 Multiple Meters

Each meter uses a different Modbus Slave ID while retaining the same register offsets.

For example:

Meter	Slave ID	Value	Register
Meter 1	1	Voltage L1	12
Meter 2	2	Voltage L1	12
Meter 3	3	Voltage L1	12

Therefore:

Meter 1 Voltage L1 = Slave ID 1, Register 12
Meter 3 Voltage L1 = Slave ID 3, Register 12

The SCADA database should create a separate group of tags for each meter using the appropriate Slave ID.

5.4 Verifying Modbus Communication

To verify communication between the gateway and SCADA:

1. Confirm that the gateway status is Running
2. Confirm that the required meter is shown as Online
3. Note the gateway IP address and configured Modbus TCP port
4. Confirm the meter ID used as the Modbus Slave ID
5. Create a Modbus TCP connection in the SCADA software
6. Add a small number of test tags, such as Meter Status, Voltage L1, and Frequency
7. Configure measurement tags as Float32, Big-Endian
8. Start polling and confirm that valid values are received
9. Add the remaining tags after the test values are verified

If all registers return zero or invalid values, confirm the meter status, register addresses, OBIS mapping, and SCADA data format.

6. Common Tasks

6.1 Adding the First Meter

1. Log in using an Administrator account
2. Open Settings → DLMS Gateway
3. Select Add Meter
4. Assign a unique Meter ID from 1 to 32
5. Configure the transport, DLMS interface, addressing, authentication, manufacturer, and communication parameters
6. Enter the meter IP address and port for TCP communication, or select the appropriate serial port for RS-485 communication
7. Enter the meter serial number where required
8. Enable the meter
9. Save the configuration
10. Select Test Connection
11. Confirm that the test completes successfully
12. Verify that the meter displays a green Online status during the next polling cycle

6.2 Verifying Meter Data in SCADA

1. Open the Overview page and confirm that the gateway is running
2. Open the DLMS Gateway page and confirm that the meter is online
3. Note the configured Modbus TCP port and meter ID
4. Create a Modbus TCP connection from the SCADA system to the gateway IP address
5. Use the Meter ID as the Modbus Slave ID
6. Add the required registers from the Register Map
7. Configure measurement values as 32-bit Float, Big-Endian
8. Start the SCADA polling connection
9. Confirm that the values appear within one gateway polling cycle

6.3 Setting Up AMR Export

AMR export is available only when supported by the installed converter mode and license.

1. Confirm that an AMR-enabled converter mode is active
2. Open AMR/HES Syn
3. Configure at least one export destination:
 - FTP or SFTP
 - Database
 - REST API
4. Enter the required destination and authentication settings
5. Test the connection where the function is available
6. Save the destination settings
7. Select Add Task
8. Select the meter, reading action, schedule, and export destination
9. Enable and save the task
10. Confirm that the data is exported at the configured time

NOTE

The destination must be enabled in both its configuration panel and the scheduled task.

6.4 Creating a Configuration Backup

Create a backup after successful commissioning and before making major configuration changes.

1. Open Settings
2. Locate Project Settings & Firmware
3. Under Settings, select Backup
4. Save the backup file in a secure project location
5. Record the gateway model, serial number, software version, and backup date

6.5 Restoring Project Settings

1. Open Settings → Project Settings & Firmware
2. Under Settings, select Restore
3. Select the required backup package
4. Confirm the restore operation
5. Wait for the operation to complete
6. Reconnect to the Web Console if the network settings or Web Server are restarted
7. Verify the configured meters and communication services

WARNING

Restoring a backup may replace the current project, meter, network, and communication settings.

6.6 Factory Restore

A factory restore deletes the current configuration and returns the gateway to its factory-default settings.

1. Create a current settings backup
2. Open Settings → Project Settings & Firmware
3. Select Factory Restore
4. Review the warning message
5. Confirm the operation
6. Wait for the gateway to restart
7. Reconnect using the applicable default network settings
8. Reconfigure the gateway or restore a previously created backup

WARNING

Factory Restore erases the configured meters, communication parameters, network settings, schedules, and export destinations. This operation cannot be undone without a valid backup.

7. Troubleshooting

7.1 General Troubleshooting

Problem	Possible Cause	Corrective Action
Cannot open the Web Console	Incorrect IP address or gateway is unreachable	Confirm the gateway IP address, check the Ethernet connection, and ping the gateway.
Login is rejected	Incorrect role or password	Select the correct access type and enter the assigned password.
Gateway status is Stopped	Configuration error, service failure, or TCP port conflict	Review the configured settings, confirm the TCP port is available, and restart the gateway service.
Meter is Offline	Meter disconnected, incorrect parameters, or communication failure	Check meter power, network or serial wiring, and the configured communication parameters.
Test Connection timeout	Incorrect IP address, TCP port, serial parameters, or firewall settings	Verify the meter address, communication port, cabling, network route, and firewall configuration.
AARQ association rejected	Incorrect authentication, password, client address, or referencing mode	Confirm the meter security settings. For public access where supported, use Authentication None and Client Address 16.
Test Connection works but routine polling fails	Configuration not saved, meter disabled, or stale association cache	Save the meter configuration, enable the meter, clear the cache, and run Test Connection again.
Modbus registers contain zeros	Meter offline, unsupported OBIS object, or incorrect mapping	Confirm the meter is online, run Test Connection, and verify the OBIS and register mapping.
Values are incorrect or unstable	Incorrect Float32 byte order, scaling, OBIS mapping, or stale cache	Configure Float32 Big-Endian, verify the scale value, clear the cache, and retest the meter.
SCADA cannot connect to Modbus TCP	Incorrect gateway IP, TCP port, or network path	Confirm the active TCP port, check network connectivity, and verify that the gateway service is running.
One meter responds under the wrong SCADA tags	Incorrect Slave ID	Confirm that each SCADA device uses the Meter ID assigned in the gateway.
Load Profile returns No Data	Requested period contains no stored meter records	Select a wider or different date range and confirm that the meter supports and stores load-profile data.
Load Profile remains in Connecting or Reading	Slow meter response or communication interruption	Wait for the configured timeout, check meter communication, and use Abort if the operation does not complete.
Load Profile data cannot be read by SCADA	FC3 used instead of FC4	Read the data buffer beginning at register 120 using Modbus Function Code 4.
Load Profile or AMR/HES menu is unavailable	Current mode or license does not include AMR functions	Confirm the installed converter mode and license.
FTP connection test fails	Incorrect host, port, credentials, path, or firewall settings	Verify all FTP settings and enable Passive mode where required.
Database export fails	Incorrect database settings or insufficient account permissions	Confirm the host, port, database name, credentials, network access, and account permissions.
API export fails	Incorrect endpoint, method, authentication, or headers	Verify the endpoint URL, HTTP method, token or API key, and additional JSON headers.
VPN remains disconnected	Incorrect keys, tunnel address, endpoint, or network access	Verify the VPN parameters, test the configuration, and confirm that the remote endpoint is reachable.

7.2 Errors / Status Codes Reference List

Meter Status Values

Value	Meaning
0	Offline
1	Online
2	Communication error

Load-Profile Status Values

Value	Meaning
0	Idle
1	Connecting
2	Reading
3	Done
4	Error

Load-Profile Error Codes

Code	Meaning
0	No error
1	Timeout
2	Authentication error
3	No data available
99	Other or unspecified error

Status Colors

Color	Meaning
Green	Online, running, connected, or operating normally
Orange	Connecting, waiting, available, or standby
Red	Offline, disconnected, stopped, or error

8. Contact Information

For direct inquiries or any customized orders, contact us on: info@pmm-usa.us.