Datasheet

PMM

Power Meter Monitor

SINGLE-PHASE ELECTRICITY METER

STS ASSOCIATION

DLMS™

Model: PMM1220

Document: Datasheet

Document Version: V1.0

Date: January 2026

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DECLARATION OF CONFORMITY

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:

1. Reorient or relocate the receiving antenna.
2. Increase the distance between the device and the receiver.
3. 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 usage

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

PRODUCT OVERVIEW

The PMM1220 is a new generation single-phase multifunction smart electricity meter with modular design, developed for residential and light commercial applications.

The meter supports hybrid prepaid and postpaid modes, Advanced Metering Infrastructure (AMI), bi-directional energy measurement, and secure remote communications for smart metering and renewable energy applications.

KEY FEATURES

Feature	Details
Latching Relay	Single-pole or double-pole latching relay for remote connect/disconnect and load control
Multi-Tariff	Supports multiple tariff configurations for flexible billing
DLMS / COSEM	DLMS/COSEM compliant (IEC 62056-5-3 / 62056-6-1) Complies with DLMS/COSEM Green Book Suite 2 security profile
STS Encryption	20-digit STS-compliant prepayment encryption
AMI Support	Supports Advanced Metering Infrastructure (AMI) integration and remote meter management
Tamper Detection	Detects and records of events such as terminal cover opening
Bi-Directional Energy	Import and export active and reactive energy measurement for renewable energy systems
LCD Display	Readable without mains power (battery or super-capacitor supported)
Communication Interfaces	Optical port (IEC 62056-21), RS-485, PLC, RF, LoRa / LoRaWAN, Wi-SUN, 2G / 3G / 4G cellular, eSIM with NB-IoT support, Mbus, Wireless Mbus
	Automatic fallback between communication media Modular plug-and-play communication modules DLMS/COSEM application layer (IEC 62056-5-3) Remote configuration and diagnostics Remote modem diagnostics
Load Management	Disconnects on overload and low/zero credit
Programmable Load Limit	Set user load limit and low-credit warnings
Dual Power Source	Automatic swap between grid and solar supply
Maximum Demand	Demand measurement & load profiling (on request)
Double CT (Phase & Neutral)	Dual current transformers for improved accuracy
Prepayment / Post-Payment Modes	Switchable between prepaid (STS) and postpaid billing
Firmware Upgrade	Local and remote OTA firmware upgrade with secure dual-image support
Load Profile	Interval load profiling with time-stamped records and local & remote retrieval
Power Quality	Under/over-voltage detection, sag/swell, THD, harmonics, and power cut detection
Friendly Hours	Configurable friendly hours, weekends, and holidays for prepaid customers
Event Logging	Time-stamped event logs for tamper, power quality, and meter operations
Remote Configuration & Diagnostics	Remote meter configuration, diagnostics, and firmware management via HES
Display Scroll Button / STS Keypad	Optional keypad or scroll button for user interaction

TARGET APPLICATION

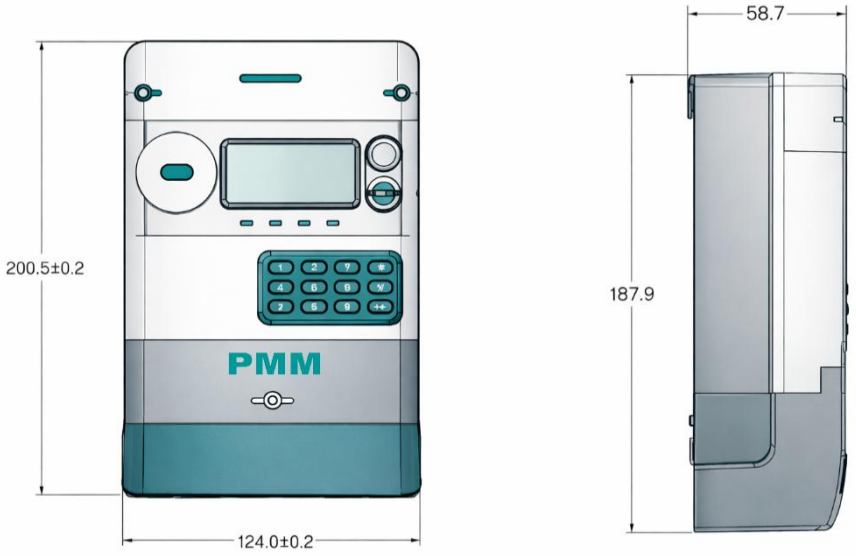
Application Area	Examples / Use Cases
Residential Prepayment	Apartments, villas, standalone homes using STS keypad tokens
Commercial & Small Businesses	Shops, restaurants, kiosks, salons, small offices with single-phase supply
Utility Prepayment Programs	STS-compliant prepaid rollouts, CIU/MCU split installations, revenue protection
Smart Metering / AMI Systems	Remote reading via PLC/GPRS/3G/4G/RF, integration with DCU and utility platforms
Sub-Metering & Tenant Billing	Hotels, dormitories, commercial buildings, rental units requiring individual metering

TECHNICAL SPECIFICATION

Parameter	Specification
Electrical Parameters (Voltage / Frequency / Current)	
Nominal Voltage (Un)	220 V (phase-to-neutral)
Voltage Range (Variation)	-40% to +30% Un
Frequency	50 Hz ±5%
Basic Current (Ib)	5 A
Maximum Current (Imax)	80 A (100 A optional)
Starting Current	≤ 0.4% Ib
Energy Constant	1000 imp/kWh
Accuracy	
Active Energy (IEC 62053-22)	Class 0.5s
Reactive Energy (IEC 62053-23)	Class 2
Burden (Power Consumption)	
Voltage Circuit	< 2 W / < 8 VA
Current Circuit	< 1 VA
Temperature Range	
Operating Temperature	–25°C to +70°C
Storage Temperature	–40°C to +85°C
Insulation	
Insulation Level	4 kV RMS for 1 min
Impulse Withstand Voltage	8 kV (1.2/50 µs)
Electrostatic Discharges / Electromagnetic Compatibility (EMC)	
Contact Discharge	8 kV
Air Discharge	15 kV
Electromagnetic RF Fields	
27 MHz – 500 MHz	10 V/m
100 kHz – 1 GHz	30 V/m
Fast Transient Burst Test	4 kV
Mechanical Requirements	
Meter Shell Protection	IP54
Insulation System Classification	Protective Class II
Maximum Cable Size	10 mm

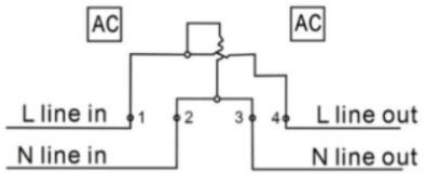
ENCLOSURE DIMENSIONS

Parameter	Value
Height	200.5 ± 0.2 mm
Width	124.0 ± 0.2 mm
Depth	58.7 mm
Weight	~300 g (typical, MCU only)
Mounting Method	35 mm DIN-rail
Material	Polycarbonate / Flame-retardant ABS
Protection Rating	IP54 (MCU enclosure)



Wiring / Terminal Description Table

Terminal No.	Description
1	Line (L) – Input
2	Neutral (N) – Input
3	Neutral (N) – Output
4	Line (L) – Output

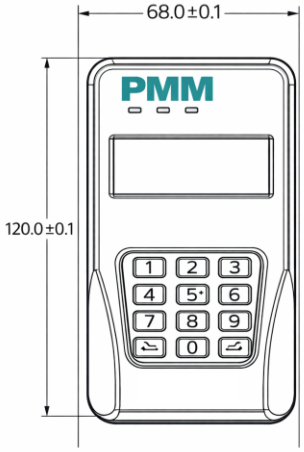


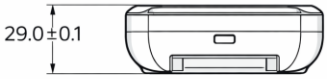
INSTALLATION NOTES

- Ensure the meter is securely mounted on a 35 mm DIN-rail inside a protected distribution board or meter box.
- Connect Line (L) and Neutral (N) inputs to the appropriate input terminals as shown in the wiring diagram.
- Connect the load outputs to the corresponding output terminals (L' and N').
- Tighten all terminal screws to the recommended torque to guarantee reliable electrical contact.
- Maintain correct wiring polarity; reversing Line and Neutral may affect metering accuracy or cause improper operation.
- Keep communication or pulse terminals (if present) connected only to approved AMR/AMI devices.
- Reserved terminals must remain unconnected unless specifically instructed by the utility or system integrator.
- Avoid installing the meter in areas with excessive heat, moisture, dust, or vibration.
- Provide adequate ventilation space around the meter to prevent overheating.
- The CIU (Customer Interface Unit), if used, should be installed indoors in an accessible location for easy customer operation.
- Follow all applicable wiring color codes, safety requirements, utility regulations, and sealing/tamper-protection procedures.

Split Configuration for Increased Revenue Protection

The CIU (Customer Interface Unit) is optional. The MCU (Metering & Control Unit) and CIU are linked via Mbus 2 wires communication, galvanically-isolated PLC or RF wireless communication. The communication method is on request. The CIU is installed within consumer's home, while MCU is installed in a meter cabinet away from consumers.





MECHANICAL SPECIFICATIONS

Parameter	Specification
Meter Type	Single-phase, two-wire
Case Material	Flame-retardant polycarbonate
Terminal Block	Fire-resistant
Protection Class	IP54
Mounting	DIN-rail (35 mm) / Wall-mounted
Terminal Material	Brass or copper
Terminal Bore Diameter	8 mm

DISPLAY

Parameter	Specification
Display Type	Illuminated LCD
Digits	≥ 9
OBIS Codes	Supported
Power Direction Symbols	Supported
Language	English, Arabic
Instantaneous Values	V, I, PF
Energy	Import / Export
Max Demand	Supported
Credit Level	Supported
Time & Date	Supported
Relay Status	Supported
Battery Status	Supported
Tamper Status	Supported

FIRMWARE

Parameter	Specification
Dual Firmware Image	Yes
OTA Upgrade	Yes
Local Upgrade	Optical Port
Upgrade Scheduling	Yes
Integrity Check	Yes

In addition to:

- Scheduled firmware activation
- Firmware execution at defined date & time
- Firmware self-check after update
- Firmware update event logging

CYBERSECURITY

Parameter	Specification
Encryption (Private Network)	AES-256 CBC/GCM
Encryption (Public Network)	ECC-256 + AES-256
Firmware Encryption	Yes
Dual Firmware Image	Yes
Authentication	LLS & HLS
DLMS Suite	Green Book Suite 2
Remote Key Management	Supported
Secure Token Transfer	Supported

RENEWABLE ENERGY

Parameter	Specification
Bi-Directional Metering	Supported
Import / Export Registers	Supported
Distributed Generation	Supported
Absolute active energy	Supported
Export enable/disable configuration	Supported

POWER QUALITY

Parameter	Specification
Harmonics	Up to 50th order
THD	Supported
Sag / Swell / Dip	Supported
Flicker	PLT & PST
Compliance	IEC 61000
Under-voltage and over-voltage event recording	Yes
Programmable voltage thresholds	Yes
Power cut detection (short and long duration)	Yes
Event time-stamping	Yes
Remote event retrieval	Yes

RELAY SPECIFICATIONS

Parameter	Specification
Relay Type	Latching relay
Poles	2-pole (Phase + Neutral)
Max Switching Voltage	400 V
Max Switching Current	100 A
Min Switching Power	20,000 VA
Switching Time	≤ 20 ms
Mechanical Life	≥ 100,000 cycles
Electrical Life	≥ 10,000 cycles
Dielectric Strength	≥ 3 kV

TIME & CLOCK

Parameter	Specification
RTC	Built-in
Clock Drift	< 30 s/month
Battery Backup	≥ 10 years
Battery Monitoring	Yes
Change Battery Alarm	Yes
Time synchronization with HES	Yes
Periodic automatic clock sync	Yes

LOAD PROFILE

Parameter	Specification
Channels	≥ 8 programmable (energy + voltage/current/power)
Interval	1 – 60 minutes
Storage	≥ 60 days
Time Stamp	Yes
Retrieval	Local & Remote

PAYMENT MODES

Parameter	Specification
Prepayment	STS compliant
Post-payment	Supported
Mode Switching	Remote or Local
Friendly Hours	Supported
Weekend	Supported
Holidays	Supported
Low Credit Warning	Yes
Load Limiting	Yes
Two-Stage Demand Limiting	Yes

ACCESSORIES

Accessory	Description	Availability
CIU (Customer Interface Unit)	Indoor keypad & display for prepaid token entry	Standard (Prepaid)
User Manual	Installation & operation guide	Standard
Test Certificate	Type test & accuracy cert	Standard
Sealing Kit	Utility ferrules & wires	Standard
Mounting Bracket	Wall-mount / meter box plate	Standard
Terminal Cover	Transparent terminal cover	Standard
RTC Backup Battery	≥ 10-year battery	Standard
NB-IoT / eSIM Module	Cellular communication module	Optional
LoRaWAN Module	Long-range RF module	Optional
Wi-SUN Module	FAN mesh module	Optional
External Antenna	Outdoor antenna for RF / cellular	Optional
Optical Probe	IEC 62056-21 optical probe	Optional
Surge Protection Device	External SPD	Optional

COMPLIANCE STANDARDS

IEC 62052-11, IEC 62053-21, IEC 62053-22, IEC 62053-23, IEC 62055, IEC 62056 (DLMS/COSEM), IEC 61000, EN 50470, IEC 60068, IEC 60529, IEC 62054 (RTC), STS.

CONTACT INFORMATION

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