Datasheet

PMM
Power Meter Monitor

WIRELESS MBUS 433 MHz BOOSTER

Model: PMM1201R
Document: Datasheet
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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 MMS1201R is a hybrid intelligence system designed to enhance and extend wireless communication in metering and industrial applications. It operates by receiving, refining, and retransmitting signals through its integrated 433 MHz wireless module, ensuring stable data coverage even in challenging environments.

With its solar-powered operation, integrated battery charger, and anti-jamming protection, the MMS1201R provides a fully autonomous outdoor solution. The rugged IP65 housing ensures long-term operation in harsh environments, making it particularly suited for remote water metering and utility networks.

KEY FEATURES

Feature	Description	
Intelligent Signal Handling	Receives, cleans, and retransmits data to improve communication range and reliability	
Data Export	Automatic reporting in CSV or custom formats to FTP servers at configurable intervals	
Anti-Jamming Protection	Intelligent self-reset in the event of communication interference	
Watchdog Functionality	Automatic system recovery from lockups or unexpected faults	
Power Management	Powered by integrated PV solar panel with Lithium-ion / Lithium-polymer charger, providing extended backup operation with low-power sleep/wake cycles.	
Secure Communication	AES-128 encryption for data integrity and protection	
Reliability & Protection	**Automatic Restart**	Watchdog-controlled automatic restart
	Anti-Jamming	Auto-reset logic to recover from interference
	Battery Protection	Integrated protection circuits
	Backup Operation	Extended operation up to 48 hours on battery backup
	Surge Protection	Optional surge & lightning protection
	ESD Protection	Up to 15 kV
	Ingress Protection	Certified IP65
Compliance & Certifications	**Safety & Environmental**	CE, FCC, RoHS (in progress / planned)
	EMC	EN55032
	Protocol Compliance	Wireless M-Bus EN13757-4
	Immunity Standards	IEC 61000 for surge and immunity
Performance Metrics	**Battery Runtime**	Operates up to 48-hours without **sunlight** or external supply
	Communication Range	Up to 2 km line-of-sight (depending on antenna)
	Data Reliability	>99% packet success rate with retransmission logic
	Latency	Typically, < 200 ms per hop

TARGET APPLICATION

Application Area	Examples / Use Cases
Water Metering & Utility Systems	Smart water metering, AMR/AMI networks, district metering, leak monitoring
Renewable Energy & Industry	PV and wind plant monitoring, substation data collection, industrial automation
Broadband Private Networks	Transportation, education campuses, oil & gas, finance, government facilities
Public Infrastructure	Railways, electric power distribution, public security
Multimedia Transmission	Video conferencing, telepresence, integrated image/voice/data systems

ELECTRICAL SPECIFICATIONS

Parameter	Specification
Frequency Range	433.05 – 434.70 MHz
Transmission Power	up to 14 dBm
Receiver Sensitivity	–108 dBm (at 32.768 kbps)
Number of Channels	12
Data Rates	4.8 / 32.768 / 100 kbps
Protocols	Wireless M-Bus, EN 13757-4 (S, T, C modes)
Encryption	AES-128 with configurable keys
Supply Voltage (Module)	2.0 – 3.6 V DC
System Power Supply	7–60 V DC, redundant input
Current Consumption	TX ~33 mA @ 14 dBm, RX ~9 mA, Sleep ~1 µA
Interfaces	UART (default 19200 bps, 8N1)
Operating Temperature	–40 °C to +80 °C
Storage Temperature	–50 °C to +105 °C
Humidity Tolerance	Up to 95% RH non-condensing

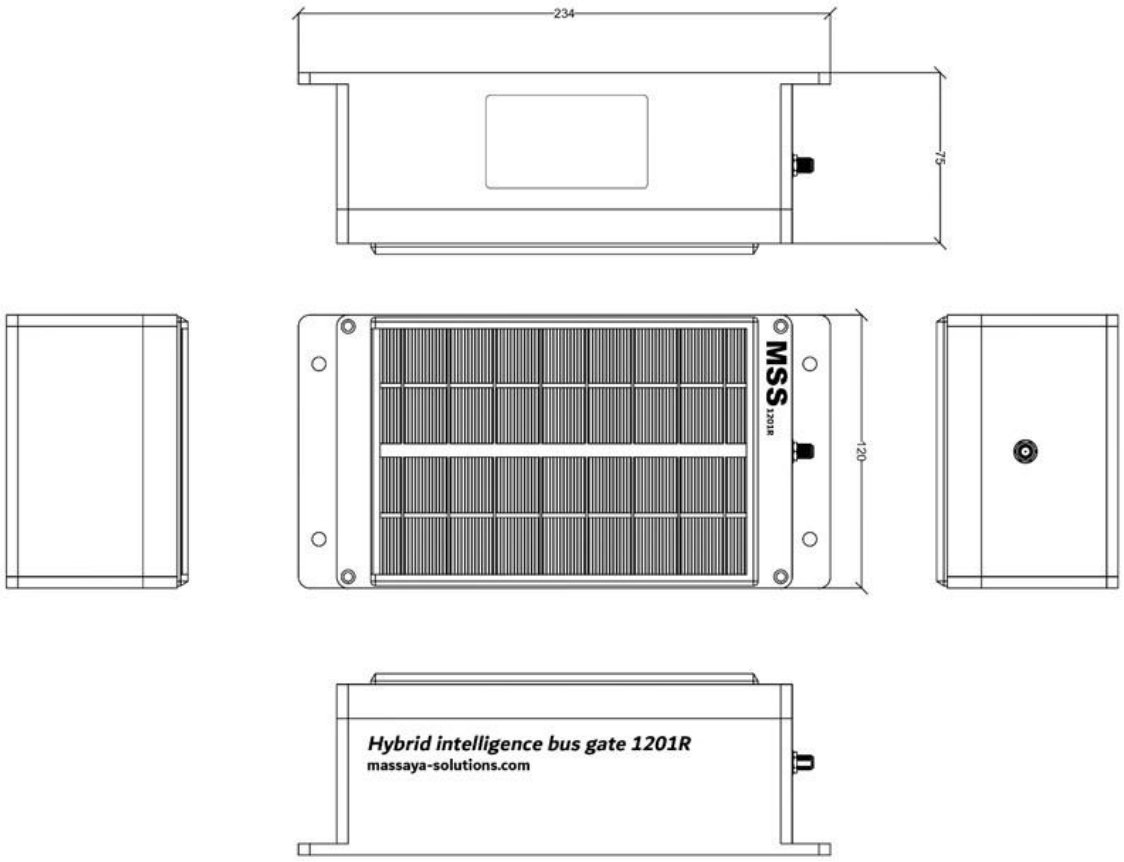
ENCLOSURE SPECIFICATIONS

Parameter	Description
Material	ABS Plastic
Size	234w × 120d × 75h mm
Ingress Protection	IP65 – waterproof & dustproof
Durability	UV and impact resistant for long-term outdoor use
Mounting Options	Wall, pole, or panel mount (DIN rail kit optional)

INSTALLATION GUIDELINES

Guideline	Description
Mounting	Secure installation with 4 screws on wall, panel, or pole
Clearance	Maintain at least 20 cm from walls and metallic structures for reliable RF transmission
Deployment	Suitable for meter pits, outdoor cabinets, rooftops, and substation environments
Protection	Grounding and surge protection recommended for stability and long-term reliability

ENCLOSURE DIMENSIONS



STANDARDS COMPLIANCE

CONTACT INFORMATION

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