



Power Meter Monitor

**Business and Mission-  
Critical Solutions Provider**

# AMR – Automatic Meter Reader System

## Data Sheet



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**Document:** Data Sheet  
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[www.pmm-usa.us](http://www.pmm-usa.us)

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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](http://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

- Data collection in terms of quality and quantity
- Consumption monitoring
- Remote monitoring
- Load management
- Monitoring accurate functionality of the socket
- Checking plug insertion
- Checking for the presence of an earth connection
- Checking the status of the fuses
- Sends alerts in case of malfunction
- Operating temperature: -40 to 75°C
- Storage temperature: -40 to 85°C
- EMI, EMS, EMC and shock protected
- Serial port with power surge 2kV isolation protection
- Security features based on IEC 62443

## DESCRIPTION

PMMS0201 is an AMR system that guarantees data logger functions; measuring and recording the energy consumption of any user device over time. Constant monitoring of the system gives statuses and real-time reporting of any phase-related malfunction, presence of earth, status of fuses and power factor. The AMR system guarantees the elimination of waste typical of poor quality supplied energy of and allows preventive maintenance to be carried out so as to zero out equipment repair costs and production downtimes. The AMR managerial software, residing locally on the server or in the cloud environment, makes it possible to receive alarms and manage events, which can be also conveniently scheduled remotely through the calendar function from any connected PC. The integrability of the devices and of the AMR software with PLC, SCADA or other third-party systems, allows the acquired data to be transferred to the company's ERP system. Therefore devices equipped with AMR functionality have obtained INDUSTRY 4.0 COMPLIANT certification.

The AMR system can be combined with PMM protocol convertors that can read data from energy meters via DLMS/NDP/Schneider protocols and convert to Modbus protocol, both TCP and RTU. Integrating commonly used power protocols with the AMR, the system provides the flexibility needed to fulfill the various conditions that arise with field devices that use different communication protocols to connect to a power SCADA system.

Gateways are supported by a log function in the AMR system that records events; users can easily review logged data remotely through the web interface. The gateways also support status monitoring and fault protection functions. The status monitoring function notifies a Power SCADA system when a device gets disconnected or does not respond, in such a case the PSCADA system gets the status of each end device and then issues alarms to notify operators.

PMMS0201 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 industrial embedded computers, covering 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 substations and PV plants requirements. Furthermore, it covers all field standards of power, reliability, easy configuration and long-lasting life.

## Software Features

### Managerial Software and Integration with Existing Systems

The server has the function of monitoring the devices, processing their status and maintaining the latter for a set time, issuing notices in case of anomalous conditions. Through the sampling of energy data, the PC will be able to process information related to the consumption profile, representing the data in graphic form. The software can be structured in relation to customer needs. The system is able to make qualitative measurements: it is also possible to monitor the power factor, avoiding penalties, as well as to eliminate waste by controlling motors, lighting, heating, air-conditioning, compressors, chillers, transformers, distribution lines and other utilities. The AMR software can be integrated with PLC, SCADA or other third-party systems, thus overcoming the typical problems of incompatibility among different platforms, which cause dangerous slowdowns in company processes. Instead, AMR guarantees data acquisition on the company's ERP systems for future strategic evaluations. Lastly, allowing real remote monitoring to be truly remote, the managerial software is accessible, with all data and graphics available on line, via web by connecting to the company server, or by accessing the AMR Storage Cloud, in the latter mode further reducing overhead and maintenance costs tied to the presence of a physical server.

### Data Logger Functionality

PMM AMR functionality comes equipped with a precise and extremely versatile energy meter, specifically designed to adapt itself to the most sophisticated applications that monitor electrical parameters and energy consumption, allowing real-time reading of all the collected data via the Internet. It is also possible to send, via e-mail or text message, local alarms caused by any sort of anomalies, thus informing the Energy Manager in real time on the status of the system, through any device which can display a web page.

### Remote Load Management Functionality

PMM AMR system is preset for load management, also from remote, either as a response to an alarm received or as the result of programming through the convenient calendar feature, which can be used to plan specific actions and activation/deactivation rules on a set day or at a set time. This function is particularly useful for planning routine maintenance or for automatically modulating the energy supply in view of scheduled events. The user can thus set one or more calendars for each device equipped with AMR function and associate alarm rules. During the activation phase, reports are generated on the start of calendar processing and on the true/false status of the calendar itself. The remote load management function, precisely for the fact that it generates an alarm as soon as the system starts to malfunction, represents the best way or preventing overload risks through the subsequent operation of disconnecter switches and the disservice that would result from any machine downtime.

## HARDWARE CPU CHASSIS SPECIFICATIONS (2 Options)

### Computer



**Option1: CPU Chassis PMM0103**

**Option2: CPU Chassis PMM0105**

CPU	All winner H5 processor	All winner H5 processor, Quad-core 64-bit high-performance Cortex A53
DRAM	512 DD3RAM	1 GB
Storage	8GB eMMC	
RTC CHIP	DS3231	DS3231
Pre-installed OS	Ubuntu Core	Ubuntu Core with mainline kernel

### Computer Interface

Ethernet	2x 10/100Base-T RJ45	2x ports 10/100
Fiber	1x 1000Base-X SFP	2x customized fiber optics ports on ordering:nSc1x9 or SFP port
USB	1x USB3.0 Type A 1x Micro USB	1x USB2.0 type A
Wi-Fi	BL-R7601MU5	2.4/5GHz
Serial	1x RS485	1x RS485
Optional Interface	3x customizable communication slots: PMM RS485 Module PMM RS232 Module PMM RS422 Module PMM CAN Bus Module PMM IO Module	2x customizable communication slots: PMM RS485 Module PMM RS232 Module PMM RS422 Module PMM CAN Bus Module PMM IO Module
SD Slot	1x MicroSD	1x MicroSD

### Power Parameters

Power Supply Options	36-75 VDC 10-60 VDC 85-265 VAC / 100-300 VDC	36-75VDC to 5VDC, 4A 10-60VDC to 5VDC, 3A 85-265VAC or 110-300VDC to 5VDC, 2A 85-265VAC or 110-300VDC to 5VDC, 3A
Power Connector	Phoenix Contact 4 pins 3.5mm	Phoenix Contact 6 pins 3.5mm

### Physical Characteristics

Housing	Metal	Metal
Dimensions	3.93*3.93*1.45 inch (100*100*37 mm)	5.27*5.27*1.45 inch (134*134*37 mm)
Mounting Options	Standard 35mm DIN Rail Direct Panel Mounting Front Panel Mounting 19" rack 1U	Standard 35mm DIN Rail Direct Panel Mounting Front Panel Mounting 19" rack 1U

## ORDERING INFORMATION

### Gateway Middleware

Part Number	Description
PMMS0201	AMR – Automatic Meter Reader System

### CPU Chassis Hardware

PMM0103 (CPU chassis Option1)*	X86 Based Embedded Industrial Computer
PMM0105 (CPU chassis Option2)*	Compact Arm Based Industrial Computer

Refer to product page for optional power supply, optional communication interfaces and mounting options for each product

## HAZARDOUS MATERIALS DISCLOSURE

### Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples United States of America (USA) RoHS standards. The table below acknowledges the presence of small quantities of certain materials in the product and is applicable to USA RoHS only.

A label will be placed on each product to indicate the estimated "Environmentally Friendly Use Period" (EFUP). This is an estimate of the number of years that these substances would "not leak out or undergo abrupt change." This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. (These components will be separately marked).

Please refer to the table below.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers(PBDE)
Housing	X	O	O	O	O	X
Housing	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006