



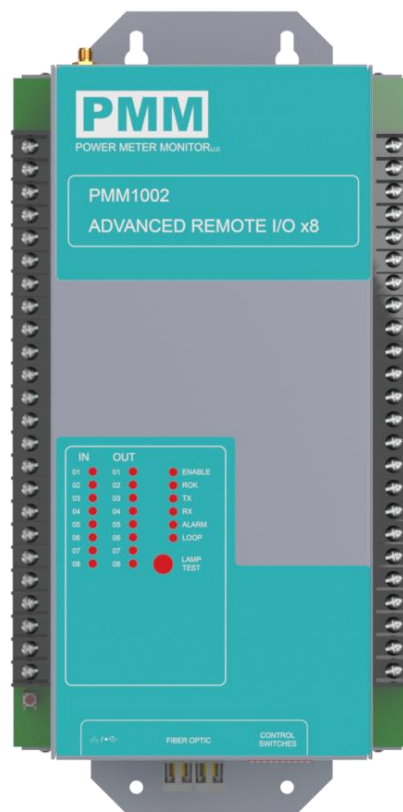
Power Meter Monitor

**Business and Mission-**

**Critical Solutions Provider**

## 8xIO Mirror-Basic

# Data Sheet



**Model:** PMM1002

**Document:** Data Sheet

**Document version:** 1.2

**Date:** November 2022



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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

- 8x Digital input
- 8x Output relays
- 1x 10/100 Ethernet port
- 1x Customized fiber optic port
- 1x Serial communication port RS485
- Reducing installation cost while increasing workers safety
- High data transmission reliability
- Simple to set up
- High operating speed
- Built to meet stringent industrial standards
- Wide range of power supply options
- Direct Panel Mounting
- EMI, RFI, shock and vibration protected
- RoHS, CE and FCC certifications
- System operating temperature -40 to 85°C (-40 to +185°F)

## DESCRIPTION

PMM1002 is a reliable, secure, simple to set up remote I/O module that communicates with remote devices using Mirrored Bits® through a fiber optic port. Each contact input controls one of the eight MIRRORED BITS transmit bits, while each of the eight received MIRRORED BITS controls an output contact.

PMM1002 ensuring data transmission between remote devices for extended distances through the fiber optic port with high security and lower project costs as fiber optic replaces the large wires that are conventionally used.

PMM1002 is covered within a durable metal chassis that is designed and tested on field to withstands vibration, electrical surges, fast transients, and extreme temperatures as well as harsh environmental conditions.

## TARGET APPLICATION

PMM1002 is especially designed to meet industrial standards, increasing the reliability and security for remote data transmission.

There are many applications can be performed by PMM1002 with high efficiency, including:

- Enhancing communication between existing relays
- Enhancing and isolating remote communication through fiber optic links
- Ensuring that relays are functioning properly by performing self-testing
- Transmitting data directly to existing cogeneration interconnections
- Enabling tele protection through digital multiplexers which allows monitoring transmission lines, isolating faults and preventing permanent damage with minimum possible cost
- Increasing I/O relay capability through MIRRORED BIT communications protocol

## TECHNICAL SPECIFICATIONS

### Power Parameters

|                      |                         |
|----------------------|-------------------------|
| Power Supply Options | 10-60 VDC<br>85-240 VAC |
|----------------------|-------------------------|

### Data Transmission Rate

|                            |   |
|----------------------------|---|
| Operating Time (Baud Rate) | 38400 (5-10 mS)<br>19200 (8-13mS)<br>9600 (14-19mS) |
|----------------------------|---|

### Input Contact

|                       |   |
|-----------------------|---|
| Input Voltage Options | 24 VDC<br>48 VDC<br>110 VDC<br>110 VAC<br>220 VAC |
|-----------------------|---|

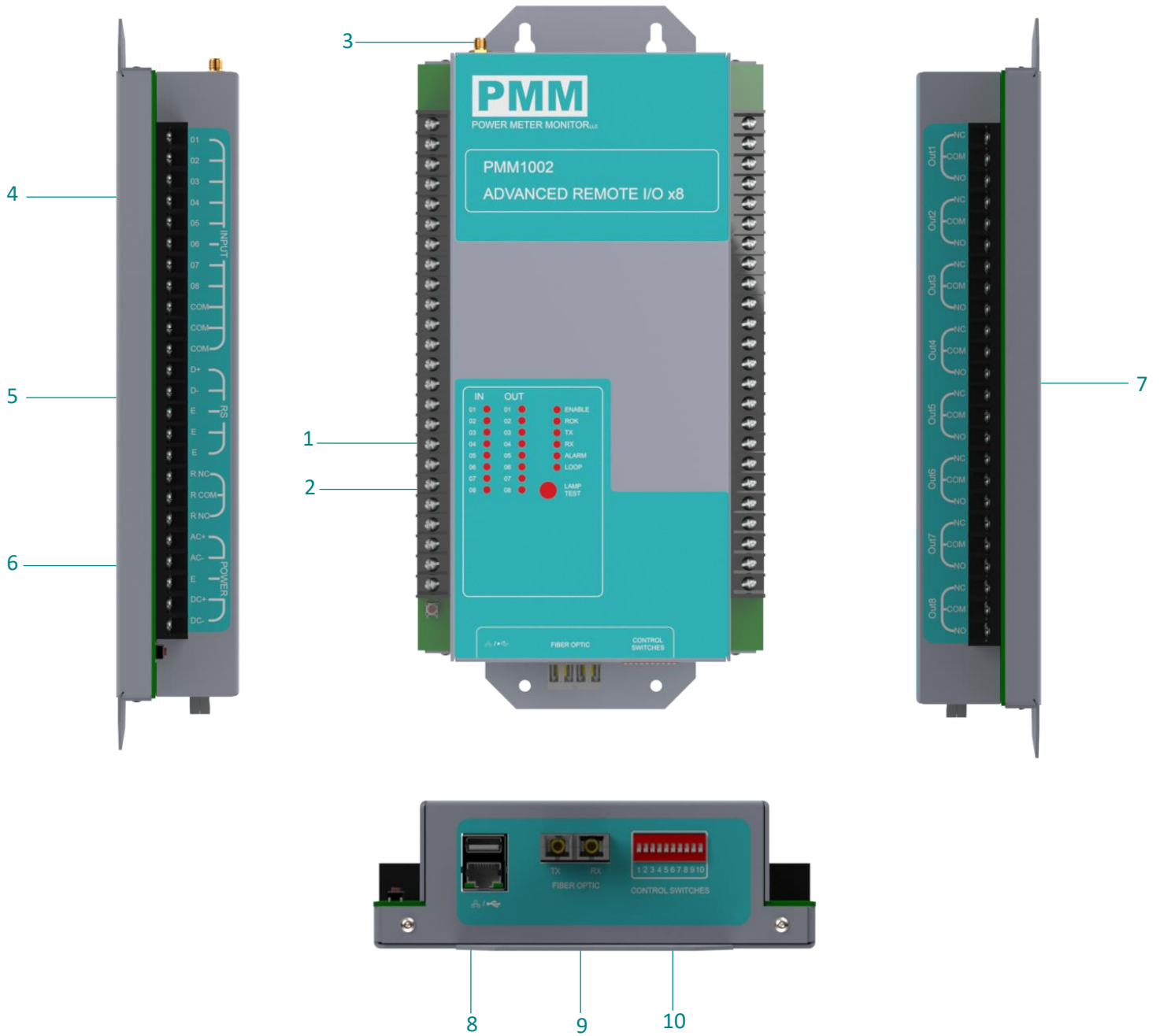
### Output Contact

|                 |                                   |
|-----------------|-----------------------------------|
| Maximum Current | 6A                                |
| MOV Protected   | 270 VAC rms<br>360 VDC continuous |

### Physical Characteristics

|                  |   |
|------------------|---|
| Housing          | Aluminum                                  |
| Dimensions       | 11.1 x 6.5 x 2.1 inch (282 x 165 x 55 mm) |
| Mounting Options | Direct Panel Mounting                     |
| Certifications   | RoHS, CE and FCC                          |

# ENCLOSURE ASSEMBLY INFORMATION



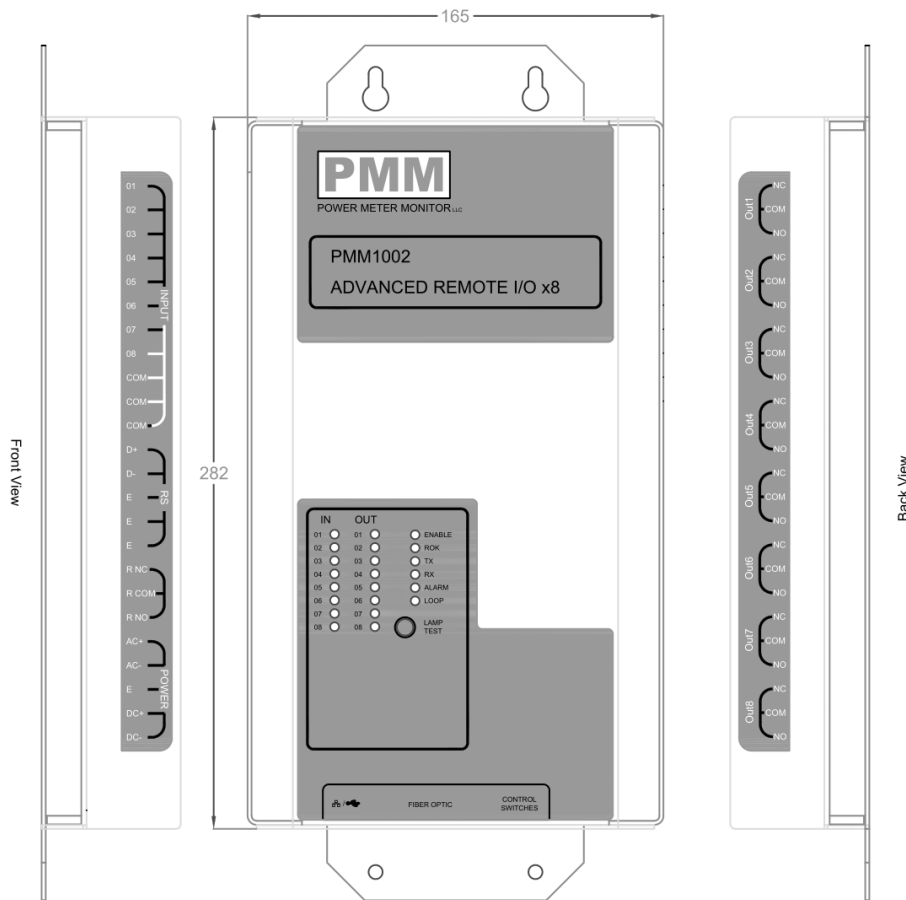
| ITEM | DESCRIPTION        |
|------|--------------------|
| 1    | 38x LED indicators |
| 2    | LAMP TEST          |
| 3    | Antenna            |
| 4    | 8x Digital Input   |
| 5    | 1x RS485           |

|    |                  |
|----|------------------|
| 6  | Power Supply     |
| 7  | 8x Relay Output  |
| 8  | 1x Ethernet Port |
| 9  | Fiber Optic Port |
| 10 | DIP Switch       |

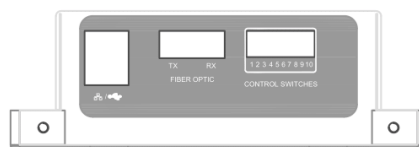
# ENCLOSURE DIMENSIONS



Top View



Side View

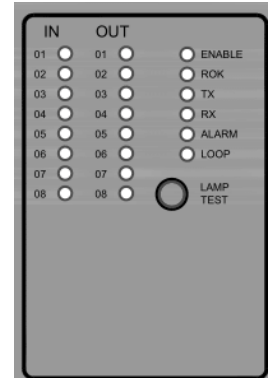


Bottom View

## LED INDICATORS

There are 22x LED Indicators on the front panel of the device, each indicator is designed to give the user and indicator of a specific function as illustrated in the table below, the indicators are steady red in the On status.

| LED            | Function  |
|----------------|---|
| 01-08 IN       | Indicates the 8x digital input status:<br><b>On:</b> input X in on<br><b>Off:</b> input X in off  |
| 01-08 OUT      | Indicates the 8x relay input status:<br><b>On:</b> output X in on<br><b>Off:</b> output X in off  |
| System ready   | Indicates the readiness of the system:<br><b>On:</b> the system is ready.<br><b>Off:</b> the system is not ready.   |
| Fiber Link     | Indicates the wiring status of the fiber link:<br><b>On:</b> the fiber link is connected correctly.<br><b>Off:</b> the fiber link is not connected correctly.   |
| Ethernet Link  | Indicates the wiring status of the Ethernet link:<br><b>On:</b> The Ethernet link is connected correctly.<br><b>Off:</b> the Ethernet link is not connected correctly.  |
| Send Packet    | <b>On:</b> Packets are being sent.<br><b>Off:</b> Packets are not being sent.   |
| Receive Packet | <b>On:</b> Packets are being received.<br><b>Off:</b> Packets are not being received.   |
| Alarm          | Indicates if there is issue with the wiring at any port of connection or any dangerous situation.<br><b>Note:</b> PMM1002 supports fail safe feature as in the case of a wiring interruption: <ul style="list-style-type: none"> <li>• If the device is operating as slave: the alarm LED is on and the inputs/outputs are disconnected immediately for protection purposes.</li> <li>• If the device is operating as a master: alarm LED is on and keeps the connection with the inputs/outputs for a specific period in order to give the operator a chance to fix the problem, after timeout the device will restart.</li> </ul> |



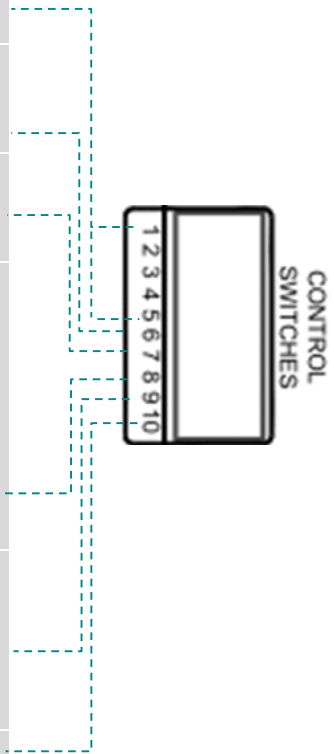
- LAMP TEST: press on this button before starting operating the device to ensure all the LEDs are working properly.



# HARDWARE CONFIGURATION

PMM1002 must be configured by the user through the dip switch as illustrated in the table below:

| Pin No. | Function  |
|---------|---|
| 1-5     | To set the device ID Address<br><b>Note:</b> the device address can be set as a binary address (0-31), examples: 00000,00001,00011..ect.  |
| 6       | To set the device mode<br>0: Slave<br>1: Master   |
| 7       | To set the device Modbus protocol:<br>0: Modbus RTU<br>1: Modbus TCP  |
| 8       | 0: normal operating<br>1: factory default<br><b>Note:</b> when the user chooses the normal operating mode; this configuration enables him to change the device’s default IP and MAC addresses through the device web interface.<br>Otherwise, the IP and MAC addresses remain as factory default:<br>Default IP address: 192.168.1. (5 digits ID address as configured by the user)<br>Default MAC address: |
| 9       | 0: normal operating<br>1: debug mode<br><b>⚠ Warning!</b> : as end user always keep the device on the normal operating mode, as the debugging mode is only used for maintenance purposes carries by PMM specialists.  |
| 10      | Termination resistor<br>0: termination resistor of 120Ω between D+ and D- lines.<br>1: no termination resistor of 120Ω between D+ and D- lines.   |



## QUICK SETUP

### 1. Individual IO:

The user must configure the device using the dip switch configuration as follows:

- Set the device ID address using (1-5) pins.
- Set the device mode to be slave.
- Set the Modbus protocol based on the required connection method whether it is Modbus RTU through RS485 (0) or Modbus TCP through Fiber or Ethernet (1).
- Set the operating mode, **Note:** if there is more than one slave in the network make sure that each one has a unique IP address.

### 2. IO Mirror:

The user must configure each device using the dip switch configuration as follows:

- Set the device ID address for each device using (1-5) pins.
- Set the device mode for one device to be the slave and the other to be the master.
- Set the Modbus protocol for each device based on the required connection method whether it is Modbus RTU through RS485 (0) or Modbus TCP through Fiber or Ethernet (1).
- Set the operating mode for each device.