PWRM10-01: IoT Energy Monitoring Module

RoHS III COMPLIANT 2015/863 | c UL us LISTED | CE

High-accuracy, Rugged, *Instrument Class*®, Energy Monitoring Module

DESCRIPTION

The PWRM10-01 energy monitoring module is an IoT universal, high-accuracy, compact, self-powered, electrical energy measurement device that interfaces to three-phase and single-phase systems. Specifically designed for industrial and commercial heavy-duty new and retrofit applications, the module provides a wide range of highly accurate power and energy measurement values over an operating temperature range of –40°C to +85°C.

The DIN-rail mounted enclosures have pluggable terminal blocks for connecting to phase voltages and phase currents which simplifies setup and maintenance, and the small format requires minimal space in control cabinets. The PWRM10-01 module interfaces to phase voltages of 85–240VAC, 50/60Hz, and is self-powered from any of the lines. Higher voltages can be interfaced to with the use of voltage transformers (VT) and appropriate scaling factors in the module.

Phase current inputs have an industry-standard range of 0.333VAC full-scale. An external shunt, current transformer, or Rogowski Coil is required to measure currents directly or non-contact.

The PWRM10-01 module measures and reports a wide range of electrical energy parameters required for power quality and energy consumption measurements.

Isolated discrete input is provided for external triggering, reset, or control. Isolated solid state relay outputs are user configurable and can be associated with alarms or events.

Real-time data from the module is accessed via an Ethernet TCP/IP port using an HTTP API and a standard web browser on a host computer, smartphone, or tablet. Data logging is user-configurable and once parameters and ranges are selected, data is automatically downloaded and stored.

FEATURES

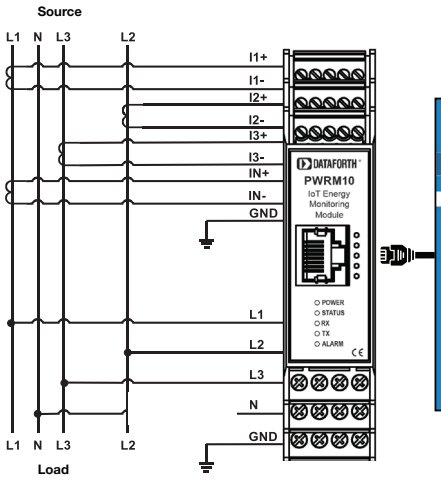
- RMS Voltages and Currents
- Phase Angles
- Line Periods
- Instantaneous Total Active Power
- Instantaneous Total Apparent Power
- Fundamental Active Power
- Power Factors
- Isolated Discrete In and SSR Out
- Total Active Energy
- Fundamental Active Energy
- Fundamental Reactive Energy
- Total Apparent Energy
- Harmonics
- Power Quality
  - Over-voltage
  - Over-current
  - Sag

BENEFITS

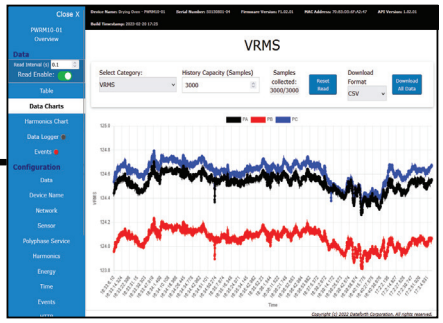
- Power Quality Measurement
- Energy Consumption Monitoring
- Machine Health Monitoring
- Powerful Data Analysis
- User-friendly and Feature-rich IoT Module
- Withstands Harsh Environments
- High-level Noise Immunity

APPLICATIONS

- Energy Metering Systems
- Power Quality Monitoring
- Solar Monitoring
- Process Monitoring
- Health of Machine
- Predictive Maintenance
- Retrofit Applications in Energy Distribution and Industry



Line Powered PWRM10



PWRM10 Web User Interface

For connectivity options, see PWRM User Manual MA1068

PWRM10-01 Block Diagram

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Electrical Specifications Typical* at T_A = +25°C

Module	PWRM10-01
Phase Voltage Range	85-240VAC
Operating Frequency	50/60Hz Input
Measurement Category	CAT III
Mechanical Dimensions (h)(w)(d)	4.01" x 0.89" x 5.04" (102mm x 22.6mm x 128mm)
Material	Polyamide
Mounting	DIN-rail
Weight	0.3lb (0.14kg)
Electrical System	
Voltage Measurement (Direct Connection or VT)	Single-phase (2-wire) Two-phase (3-wire) Three-phase Wye (3-wire) Three-phase Delta (3-wire) Three-phase Wye (4-wire) Three-phase Delta (4-wire)
Current Measurement	Shunt, CT, or Rogowski Coil
Measured Parameters and Accuracy	
RMS Voltage	±0.1% of Full-scale Range
RMS Current	±0.1% of Full-scale Range
Temperature Drifts	±100ppm/°C
Bandwidth	3.3kHz
Active Power	±0.2%
Apparent Power	±0.2%
Reactive Power	±0.2%
Power Factor	±0.2%
Frequency Range	45 – 65Hz
Active Energy	±0.25%
Apparent Energy	±0.25%
Fundamental Active & Reactive Energy	±0.25%
Phase Angles	±0.1%
Line Periods	
General Purpose I/O	
Isolated Discrete Input, DI	3 - 60VDC
Isolated Solid-State Relay Output, DO1, DO2	10 - 60VDC, 100mA max

Features	
Events	Over-voltage, Over-current, Sag
Security	Encryption, Password
Data Logging	Configurable; Automatic Download
Communications Interface	
Connectivity Type	Ethernet, TCP/IP
IP Configuration	DHCP, Static IP
Protocol	HTTP API
Power Supply	
Source	Self-powered from Any Line
Wide Range Power Supply	85-240VAC
Power Consumption	1.7W
Frequency	50 / 60Hz
Environmental	
Operating Temperature	–40°C to +85°C
Storage Temperature	–40°C to +85°C
Relative Humidity	0 to 95%, Non-Condensing
Pollution	Pollution Degree 2
Certifications	
Emissions, EN61000-6-4	ISM Group 1
Radiated, Conducted	Class A
Immunity EN61000-6-2	ISM Group 1
RF	Performance A ± 2% Span Error
ESD, EFT	Performance B
Certifications & Approvals	Heavy Industrial CE
Safety and Compliance	
UL Listed	EC 61010-1:2010 IEC 61010-2-030:201
CB Scheme	IECEE Certified

NOTES:
* Contact factory for maximum values.

Ordering Information

Model	Description
PWRM10-01	85-240VAC, 50/60Hz Input

ATTENTION

Read, understand, and follow all instructions in the Quick Start Guide and Hardware User Manual, including all warnings, cautions, and precautions before installing and using.

PWRM10-01 module literature and software is available for download from the PWRM10-01 Software & User Download Center.

MA1069 PWRM10-01 & PWRM20-01 Quick Start Guide

MA1068 PWRM10-01 & PWRM20-01 Hardware User Manual

MA1067 PWRM10-01 & PWRM20-01 HTTP API User Manual

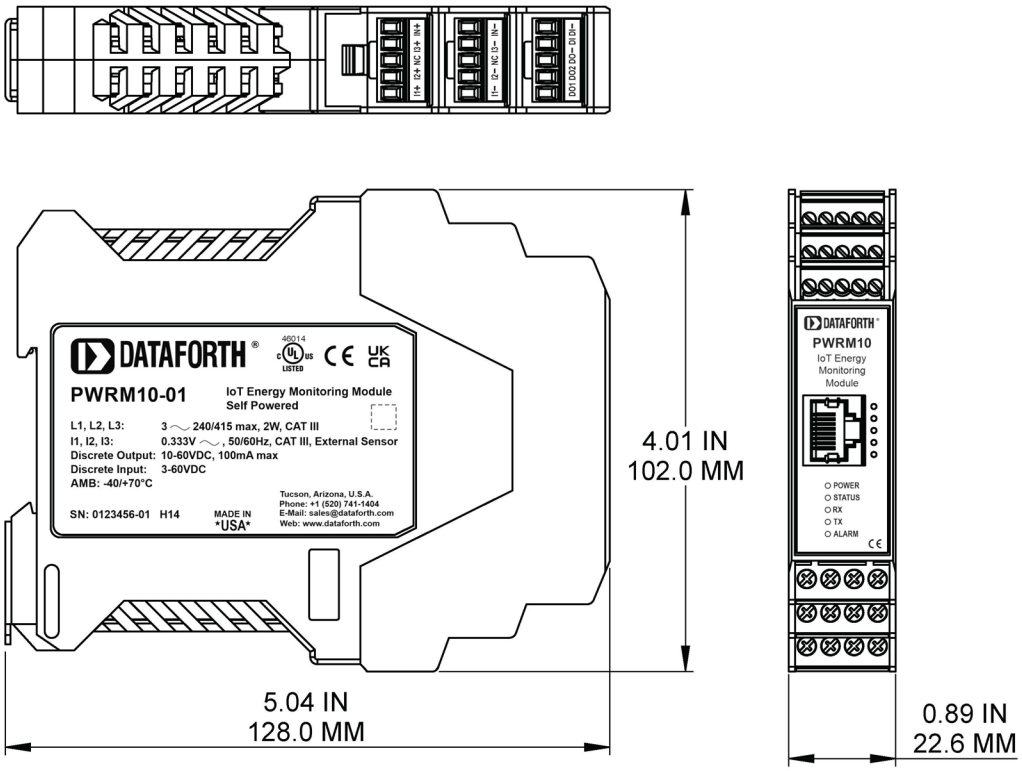
CAUTION – RISK OF ELECTRICAL SHOCK

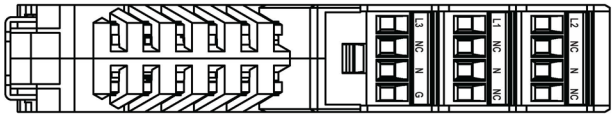
When installing and operating the PWRM10-01 module, there is a potential for shock hazard from dangerous high-voltage. Ensure systems are de-energized before installing or removing the terminal blocks.

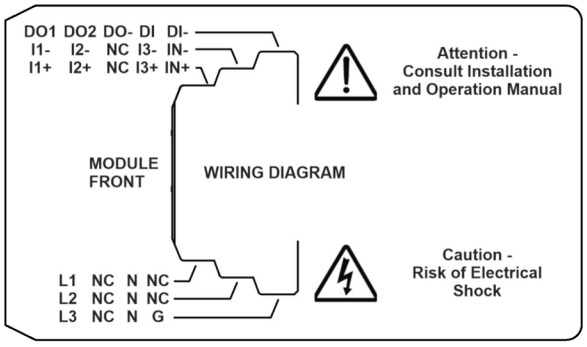
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Module Dimensions and Pinouts







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