

PWRM20-01: IoT Energy Monitoring Module

High-Accuracy, Rugged, Instrument Class®, Energy Monitoring Module

DESCRIPTION

The Energy Monitoring Module PWRM20-01 is an IoT capable, universal, high accuracy, compact, self-powered, electrical energy measurement device that interfaces to three-phase and single-phase energy 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 phase voltage and phase current which simplifies setup and maintenance, and the small format requires little space in control cabinets. The PWRM20-01 module interfaces to phase voltages of 85–525VAC, 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 0VAC to 0.333VAC. An external shunt, current transformer, or Rogowski Coil is used to measure currents directly or non-contact.

FEATURES

The PWRM20-01 module measures and reports a wide range of electrical energy parameters which include, but are not limited to:

- RMS Voltages and Currents
- Phase Angles
- Line Periods
- Instantaneous Total Active and Apparent Powers
- Fundamental Active Power
- Power Factors
- Total and Fundamental Active Energy
- Fundamental Reactive Energy
- Total Apparent Energy
- Harmonics
- Power Quality
 - Over-Voltage
 - Over-Current
 - Sag

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



Figure 1: PWRM20-01 Module

BENEFITS

With the ease of use and many features, measuring power quality, monitoring energy consumption, determining machine health, and other powerful data analysis turn into simple operations.

APPLICATIONS

- Energy Metering Systems
- Power Quality Monitoring
- Solar Monitoring
- Process Monitoring
- Health of Machine
- Predictive Maintenance
- Retrofit applications in energy distribution and industry

The PWRM20-01 module is designed for installation in harsh industrial environments and has a high level of noise immunity.

Ordering Information

Model	Description
PWRM20-01	85 – 525VAC, 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.

PWRM20-01 module literature and software is available for download from the [PWRM20-01 Software & User Download Center](#).

[MA1069](#) [PWRM10-01 & PWRM20-01 Quick Start Guide](#)

[MA1068](#) [PWRM10-01 & PWRM20-01 Hardware User Guide](#)

[MA1067](#) [PWRM10-01 & PWRM20-01 HTTP API User Manual](#) (note: links are just a placeholder for real link)



CAUTION – RISK OF ELECTRICAL SHOCK

When installing and operating the PWRM20-01 module, there is a potential for shock hazard from dangerous high voltage. Ensure systems are de-energized before installing product.

Electrical Specifications: Typical* at T_A = +25°C

Model Number	PWRM20-01
Phase Voltage Range	85 – 525VAC
Phase Frequency	50/60Hz Input
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
Active Power	±0.2%
Apparent Power	±0.2%
Reactive Power	±0.2%
Power Factor	±0.2%
Frequency Range	45 – 65Hz
Frequency Accuracy	±0.1%
Active Energy	±0.25%
Apparent Energy	±0.25%
Fundamental Active & Reactive Energy	±0.25%

Measurement Bandwidth	
RMS Voltage & Current (-3dB)	3.3kHz
Total Active Energy (-3dB)	3.3kHz
Fundamental Reactive Energy (-3dB)	3.3kHz
Harmonic (-3dB)	3.3kHz (2.8kHz no attenuation pass band)

Temperature drift	±100ppm/°C
Events	Over-voltage, Over-current, Sag

Security	Password for Access Control
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Data Logging	Configurable; Automatic Download and Storage
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Communications Interface	
Technology	Ethernet, TCP/IP
IP Configuration	DHCP, Static IP
Port	Selectable (default 502)
Number of simultaneous connections	6
Protocol	HTTP API

Power Supply	
Source	Self-Powered from any line
Wide Range Power Supply	85 – 525VAC
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

Compliance and Conformity	
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

NOTES :

* Contact factory for maximum values.