

MULTILIN™ EPM 2200



Economical Power and Energy Measurement

The Multilin™ EPM 2200 meter is an economical, multifunction power meter providing accurate energy measurements to baseline, support and implement an effective energy management strategy. Its flexible communications options provides easy integration into both electrical monitoring and Building Management systems (BMS). The EPM 2200 provides energy visibility, allowing owners and operators to quickly, accurately and centrally verify system uptime, measure power and energy usage to reduce operating expenses as well as support reporting to qualify for environmental standards (LEED) or various incentive programs.

The EPM 2200 empowers users with greater energy and operational awareness providing opportunities to lower energy costs, improve tenant attraction and retention and ensure standards compliance throughout facilities. Furthermore, the EPM 2200's compact size provides easy panel or enclosure mounting for energy monitoring for generator, substation automation, and industrial applications.

Key Benefits

- Easy integration to both electrical monitoring systems or Building Management (BMS) through optional Modbus Serial or optional simultaneous BACnet MS/TP and Modbus Ethernet communications
- 0.5% Class revenue accuracy to support detailed reporting requirements
- Reliable, compact, industrial rated design with easy ANSI/DIN installation
- Ultra compact, easy to install, program and use
- Highly visible, long life, large 3 line 0.56" bright LED display to easily read measured values
- Application flexibility with user programmability for different system voltages and current measurement requirements
- Available pre-wired meter enclosure option enabling easy new installations or extension of existing metering capabilities without operational downtime or expensive engineering efforts

Applications

- Low and medium voltage applications including circuit/operational monitoring for main feeders, branch circuits, and gensets
- Building Management Systems (BMS)/HVAC Monitoring
- Energy metering for LEED Projects and Green/Smart Buildings
- Industrial/Commercial Energy Management and Data Center Power Usage Effectiveness (PUE)
- Tenant sub-metering and cost allocation
- Load management and load curtailment

Comprehensive Energy Awareness

- 0.5% Class revenue accuracy to support detailed reporting requirements
- Measures 3-phase, real-time amps and volts
- Provide accountable, detailed, metrics-based end user awareness to drive ownership of energy savings
- Flexible and economical ordering options for Power, Energy, Frequency and Power Factor measurements

Easy Integration

- Optional Serial RS485 Modbus communications (up to 57.6k Baud and Pulse output) or Simultaneous BACnet MS/TP & Modbus Ethernet communications
- Easy remote data retrieval through Modbus/ BACnet as well as front panel 3 Line, 0.56" bright red LED display for local reading

Flexible and Economical Installation

- Easy to use, software based configuration using GE Communicator meter setup software
- Reliable, compact, industrial rated design with easy ANSI/DIN installation
- Available option for factory pre-wired, tested installation ready meter in compact NEMA1 tested and UL/cUL certified enclosure



Features

The EPM 2200 meter measures more than 40 electrical power parameters providing a low-cost, multifunction monitoring solution for industrial and power generation applications. EPM 2200 can easily be mounted in a panel for generator monitoring, substation automation and more. The meter can also provide data to RTUs, PLCs and other control devices.

Metering

The following electrical parameters are measured and displayed locally on the LED display and can be remotely accessed from the EPM 2200.

Universal Voltage and Current

This meter allows voltage input measurements up to 416 Volts Line to Neutral and 721 volts Line to Line. This insures proper meter safety when wiring directly to high voltage systems. The unit will perform to specification on 69 Volt, 120 Volt, 230 Volt, 277 Volt and 347 Volt power systems.

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Unique Current Input Connections

EPM 2200 meter uses two current input wiring methods.

- **Method One** - CT pass through. Directly pass the CT through the meter without any physical termination on the meter. This insures that the meter cannot be a point of failure on the CT circuit. This is preferable to utility users when sharing relay class CTs. No Burden is added to the secondary CT circuit.
- **Method Two** - Current "Gills." The meter additionally provides ultra-rugged termination pass through bars allowing the CT leads to be terminated on the meter. This also eliminates any possible point of failure at the meter.

This method is also a preferred technique for ensuring relay class CT integrity does not get compromised. No terminal blocks are required and this stud based design ensures that CTs will not open under a fault condition.

Software Option	Measured Values	Real-Time	Avg	Max	Min
A1 Voltage and Current	Voltage L-N	•		•	•
	Voltage L-L	•		•	•
	Current Per Phase	•	•	•	•
	Current Neutral	•			
	% of Load Bar	•			
	Voltage Angles	•			
	Current Angles	•			
B1 The above plus: Power and Frequency	Watts	•	•	•	•
	VAR	•	•	•	•
	VA	•	•	•	•
	PF	•	•	•	•
	Frequency	•		•	•
C1 The above plus: Energy	+Watt-hr	•			
	-Watt-hr	•			
	Watt-hr Net	•			
	+VAR-hr	•			
	-VAR-hr	•			
	VAR-hr Net	•			
	VA-hr	•			

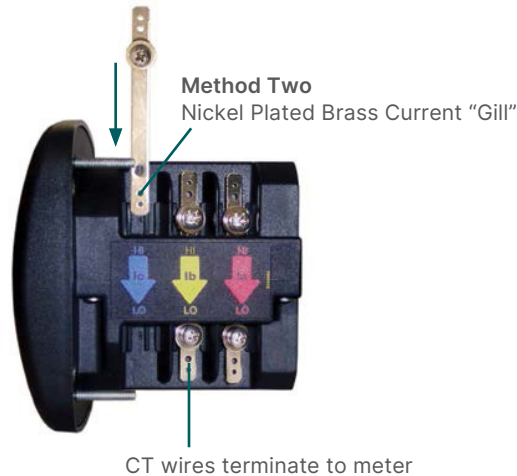
BN The above plus: BACnet MS/TP and Modbus Ethernet communications

Communications

Through an optional serial Modbus communications interface, the EPM 2200 can also provide data to RTUs, PLCs and other control devices at baud rates ranging from 9600 baud to 57.6 kbaud.

The EPM 2200 meter also supports optional, simultaneous BACnet MS/TP and Modbus Ethernet communications for easy integration into BMS and electrical monitoring systems.

Current Input Connections



Solid Construction with Mounting Versatility

The EPM 2200 has a rugged design for harsh environment. This is especially important in power generation, utility substation, and critical user applications. The structural and electrical design of this meter was developed based on the recommendations and approvals of many of our utility customers.

EPM 2200 can easily be mounted in a panel for generator monitoring substation automation and more. The unique dual design combines ANSI and DIN mounting structure and allows easy installation for both new metering applications and retrofit of existing analog meters.

The unit mounts directly in an ANSI C39.1 (4" Round form) or an IEC 92 mm DIN square form.

Simple Installation and Programming

EPM 2200 is intuitive so that a new user can easily program and set-up the meter. All wiring inputs are color coded with clear labeling to avoid cross wiring mistakes by installers. The meter has built in programmable auto scroll features to display multiple values without having to press keys.

Web Server for Configuration and Data Visualization

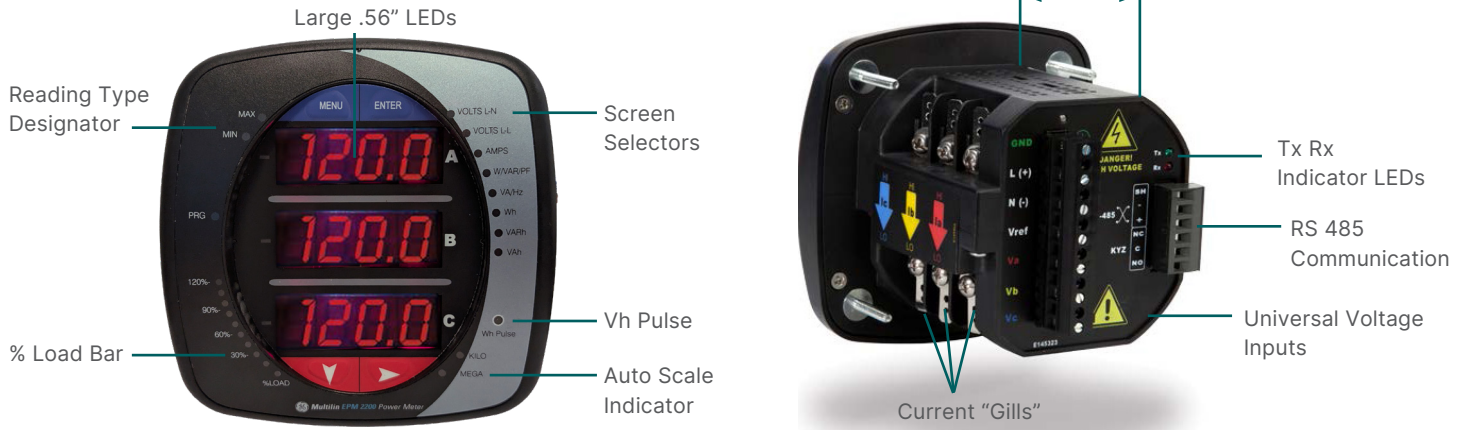
The EPM 2200 with BACnet is field configurable and easy to use, with a builtin web server that provides both meter configuration of BACnet structure and data visualization of real-time meter data.

In addition, the EPM 2200 with BACnet provides users with communications and system integration flexibility through serial BACnet MS/TP protocol as well as a web enabled meter simultaneously.

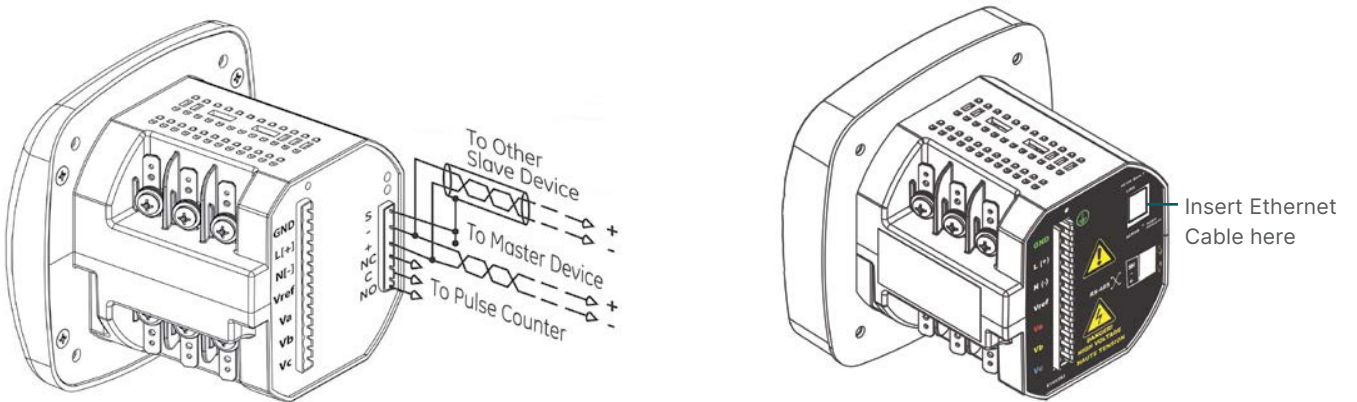
BACnet MS/TP Interface					
BACnet Objects Status					
Configuration: IP=10.0.0.1/255.255.255.0; Default gateway=10.0.0.254; Baud rate=57600; Mode=8-N-1					
Object Name	Object ID	Present Value	Units	OK	Description
Modbus Meter-1481486	1481486	-	-	-	
POLL_DELAY	AV-1	10	-	yes	Polling Delay
VOLTAGE_LN-A	AI-1001	121.60356	volts	yes	Volts A-N
VOLTAGE_LN-B	AI-1003	121.5973	volts	yes	Volts B-N
VOLTAGE_LN-C	AI-1005	121.63878	volts	yes	Volts C-N
VOLTAGE_LL-AB	AI-1007	0	volts	yes	Volts A-B
VOLTAGE_LL-BC	AI-1009	0	volts	yes	Volts B-C
VOLTAGE_LL-CA	AI-1011	0	volts	yes	Volts C-A
CURRENT_LN-A	AI-1013	0	amperes	yes	Amps A
CURRENT_LN-B	AI-1015	0	amperes	yes	Amps B
CURRENT_LN-C	AI-1017	0	amperes	yes	Amps C
PWR_ELEC	AI-1019	0	watts	yes	Watts,tot
PWR_ELEC_REACT	AI-1021	0	volt-amperes-reactive	yes	VARs,tot
PWR_ELEC_APPAR	AI-1023	0	volt-amperes	yes	VAs,tot
PWR_FACTOR	AI-1025	1		yes	PF,tot
FREQUENCY	AI-1027	60.01939	hertz	yes	Frequency
CURRENT_NG	AI-1029	0	amperes	yes	Current N
ENERGY_ELEC_ACCUM_REC	AI-1101	0	watt-hours	yes	Wh, Rec
ENERGY_ELEC_ACCUM_DEL	AI-1103	0	watt-hours	yes	Wh, Del
ENERGY_ELEC_ACCUM_NET	AI-1105	0	watt-hours	yes	Wh,Net
ENERGY_ELEC_ACCUM	AI-1107	0	watt-hours	yes	Wh,Tot
ENERGY_ELEC_ACCUM_REACT_REC	AI-1109	0	volt-ampere-hours-reactive	yes	VARh,Pos

View and obtain BACnet MS/TP data to use with Building Management Systems through standard web browsers.

Current Input Connections



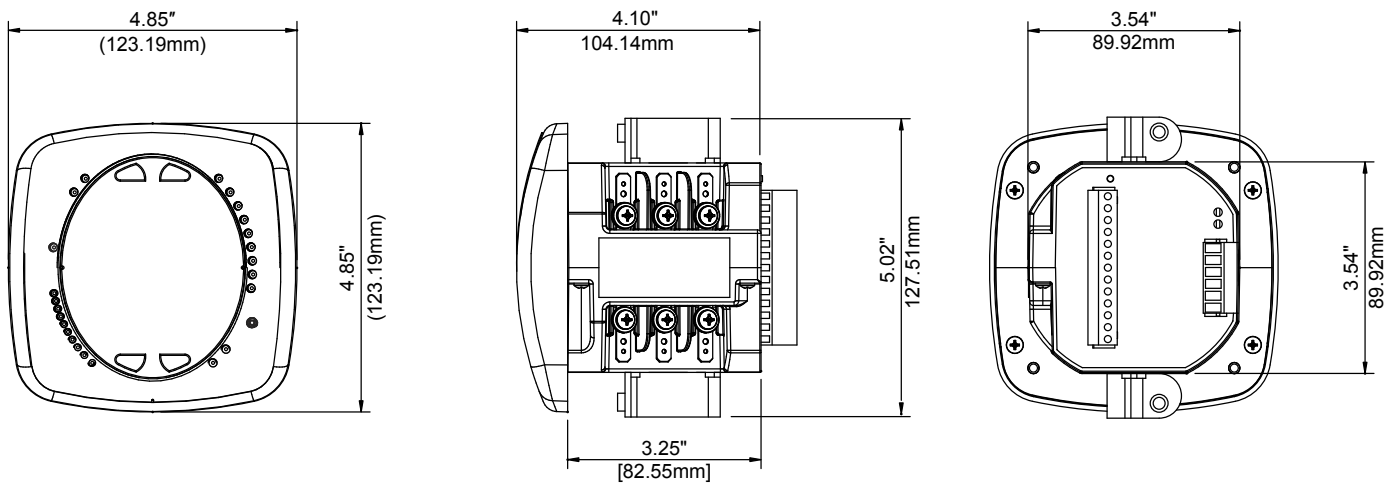
Communications Wiring



EPM 2200 with Serial (RS485) and KYZ pulse output

EPM2200 (BN) with Serial BACnet MS/TP & Ethernet Modbus TCP/IP communications option

Dimensions and Mounting



Technical Specifications

VOLTAGE INPUTS

Universal Voltage Input

- 0-416 Volts Line To Neutral, 0-721 Volts Line To Line
- Input withstand capability – Meets IEEE C37.90.1 (surge withstand Capability)
- Programmable voltage range to any PT ratio
- Supports: 3 element WYE, 2.5 element WYE, 2 Element Delta, 4 Wire Delta Systems
- Burden: 0.0144VA/Phase at 120 Volts
- Input wire gauge max (AWG 12 / 2.5mm2)

CURRENT INPUTS

- Class 10: 5 Amps Nominal / 10Amps Max
- Fault Current Withstand:
 - 100 Amps for 10 Seconds
 - 300 Amps for 3 Seconds
 - 500 Amps for 1 Second
- Programmable Current to Any CT Ratio
- Burden 0.005VA per phase Max at 11Amps
- 5mA Pickup Current
- Frequency 50 Hz or 60 Hz +/- 3Hz above and below nominal range
- Pass through wire gauge dimension: 0.177" / 4.5mm

ISOLATION

All Inputs and Outputs are galvanically isolated to 2500 Volts AC.

SENSING METHOD

- True RMS
- Sampling at 400+ Samples per Cycle on all channels measured readings simultaneously

UPDATE RATE

- All parameters up to 1 second

POWER SUPPLY

- 90-265 VAC @50/60Hz
- Consumption 5VA

COMMUNICATIONS

- EPM 2200: Optional RS485 Communications Port
 - Through Backplate
 - Protocol Modbus RTU or ASCII
 - Com Port Baud Rate: 9600 to 57.6K
 - Com Port Addresses: 001-247
 - 8 Bit, No Parity
- EPM 2200 BACnet (BN)
 - BACnet Serial MS/TP (RS485)
 - Modbus Ethernet TCP/IP (10/100 BaseT)

METERING ACCURACY

Measured Parameters	Accuracy% of Reading	Display Range
Voltage L-N	0.20%	0-9999 V or kV
Voltage L-L	0.40%	0-9999 V or kV
Current	0.20%	0-9999 Amps or kAmps
+/- Watts	0.50%	0-9999 Watts, kWatts, Mwatts
+/-Whr	0.50%	5 to 8 Digits Programmable
+/-VARs	1.00%	0-9999 VARs, kVARs, MVARs
+/-VARh	1.00%	5 to 8 Digits Programmable
VA	1.00%	0-9999 VA, kVA, MVA
VAh	1.00%	5 to 8 Digits Programmable
PF	1.00%	+/- 0.5 - 1.0
Frequency	+/- 0.01 Hz	45-65 Hz
% Load	+/- 1 segment	10 Segment Scale

Note: Typical results are more accurate. Applies to 3 Element WYE and 2 Element Delta Connections. Add 0.1% of Full Scale plus 1 digit to Accuracy specs for 2.5 Element connections.

PULSE OUTPUT

Optional KYZ pulse on back plate

DIMENSIONS & SHIPPING

- Weight: 2 lbs
- Basic Unit: H4.85 x W4.82 x L4.25 inches
- Mounts in Either 92mm Square DIN or ANSI C39.1 4" Round Cut-outs
- Shipping Container Dimensions: 6" cube

ENVIRONMENTAL

- Storage: -20° C to +70° C
- Operating: -10° C to +60° C
- Humidity: to 95% RH Non-Condensing
- Faceplate Rating: NEMA12 (Water Resistant) Mounting Gasket Included

COMPLIANCE

- IEC 62053-22 (0.5% Accuracy)
- ANSI C12.20 (0.5% Accuracy)
- ANSI (IEEE) C37.90.1 Surge Withstand
- ANSI C62.41 (Burst)
- EN/IEC 61000-4-2 Electrostatic Discharge (ESD)
- EN/IEC 61000-4-3 Radiated Immunity
- EN/IEC 61000-4-4 Electrical Fast Transient/Burst
- EN/IEC 61000-4-5 Surge
- EN/IEC 61000-4-6 Conducted
- EN/IEC 61000-4-11 Voltage Dips and Interrupts

APPROVALS

- ISO: Manufactured to an ISO9001 registered program
- UL: Recognized under UL USA (E200431)
- cUL: Recognized under UL Canada
- CE: Conforms to European CE standards

BACNET OBJECTS

- Volts A-N
- Volts B-N
- Volts C-N
- Volts A-B
- Volts B-C
- Volts C-A
- Amps A
- Amps B
- Amps C
- Total Watts
- Total VARs
- Total VA
- Total PF
- Total VAh
- Total VARh
- VARh Net
- Frequency
- Neutral Current
- Whr Received
- Whr Delivered
- Whr Net Total Whr
- Positive VARh
- Negative VARh
- Positive Watts, 3-Phase, Average Demand
- Positive VARS 3-Phase, Average Demand
- Negative Watts, 3-Phase, Average Demand
- Negative VARs, 3-Phase, Average Demand
- Positive VARS 3-Phase, Max Average Demand
- Negative Watts, 3-Phase, Max Average Demand
- Negative VARs, 3-Phase, Max Average Demand
- Positive Watts 3-Phase, Max Average Demand
- VAs, 3-Phase, Average Demand
- VAs, 3-Phase, Max Average Demand

The EPM2200 BACnet MS/TP supports 34 pre-defined BACnet objects

EPM2200

Ordering

ENCLOSURE	SOFTWARE OPTION	COMMUNICATIONS	DESCRIPTION
PL2200			
XXXXXX			None
ENC120			NEMA1 Rated - Indoor, Single Meter Enclosure, 120V
ENC277			NEMA1 Rated - Indoor, Single Meter Enclosure, 277V
ENN120			NEMA4X Rated - Indoor/Outdoor, Single Meter Enclosure, 120V
ENN277			NEMA4X Rated - Indoor/Outdoor, Single Meter Enclosure, 277V
	A1		Volts and Amps meter
	B1		Volts, Amps, Power and Frequency meter
	C1		Volts, Amps, Power, Frequency and Energy Counters meter
	BN		BACnet Volts, Amps, Power, Frequency and Energy Counters meter
		S	RS485 Serial/KYZ Pulse
		X	None
		B	BACnet MS/TP Serial and Modbus TCP/IP Ethernet

Notes: If Software Option BN (BACnet Volts, Amps, Power, Frequency and Energy Counters meter) is chosen only the EPM 2200 Communications 'B' option is available

If Software Option A1, B1,C1 is chosen only the EPM 2200 Communications 'S' option or 'X' will be available

Accessories

PART NUMBER	DESCRIPTION
PL2200-ACC-DIN	DIN Mounting Brackets

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