



# Multilin EPM 4600

## Consolidated, Cost Effective, Multiple Point Metering

The Multilin™ EPM 4600 Multi-feed Power and Energy Meter is a submetering solution that allows owners and operators to quickly, accurately, and centrally measure power and energy usage of specific areas to reduce operating expenses.

The EPM 4600 empowers users with greater energy awareness leading to improved tenant attraction and retention and greater overall energy efficiency throughout facilities.

### Key Benefits

- Simple space and cost saving installation with the capability of measuring 8 – three phase or 24 – single phase inputs
- Powerful Ethernet, Wi-Fi, RS485 and USB communications allowing easy installation in existing or new infrastructure
- Class 0.5% revenue accuracy measurements with comprehensive logging capabilities providing intelligent insight to bill individual sub-tenants for energy usage
- 4 KYZ pulse counting inputs to aggregate energy information from other devices such as gas, water and steam meter sources and 2 relay outputs for control applications
- User-Friendly, preconfigured, color touchscreen displays for easy setup and ongoing operator energy monitoring
- Identification of departmental usage costs to specific groups or processes to reduce energy inefficiencies and carbon footprint through end user awareness and ownership of energy savings
- Support energy management initiatives such as peak demand reduction by identifying peak energy usage periods and initiating energy reduction control schemes at a detailed user level

### Applications

- Multi-feed Submetering and Tenant Cost Allocation for:
  - Commercial Building Management Systems (BMS)
  - LEED Projects and Green/Smart Buildings
  - Data Centers Power Usage Effectiveness (PUE calculations)
  - Hospital Healthcare/University Campuses
  - Load Management and Load Curtailment applications

## Energy Awareness

- Multiple circuit capability identified usage of specific groups or processes
- Class 0.5% Revenue accuracy per circuit
- Advanced load profiling and logging with up to 2400 days (32 MB) of logged energy information

## Space Saving Installation

- Simple, space, and cost saving installation with capability of measuring 8 – three phase or 24 – single phase inputs
- Powerful Ethernet, Wi-Fi, RS485 and USB communications capabilities allowing easy installation existing or new infrastructures & networks
- User-friendly, optional touch screen, color display for remote viewing of metering information
- Available as NEMA 1, UL/CUL certified, factory-wired, tested enclosure with installed EPM 4600 meter, display and optional protocol converter eliminating ordering, wiring and installation effort and challenges

## Energy Management

- Reduce Peak Demand by identifying Peak Periods and initiating Energy Reduction Control schemes
- Provide accountable, detailed, metrics-based end user awareness to drive ownership of energy savings



# Application Overview

## Multi-Tenant Metering

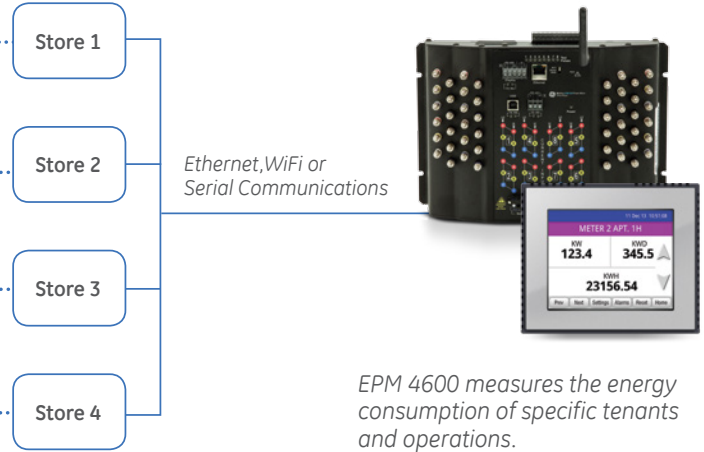
### Challenge

In a commercial shopping mall, multiple tenants distributed throughout the building and various building operation elements such as heating/cooling systems, water management, lighting and transportation (escalators/ elevators) all consume energy.



### Solution

The EPM 4600 provides a multi-feed energy sub-metering solution that allows owners and operators to quickly, accurately and centrally measure power and energy usage of specific areas. With its extensive communications capabilities, installation of the single multi-feed meter is simple and allows for existing secure Wi-Fi networks to be utilized to perform data collection.



## Hardware Options

The EPM 4600 is available in two different feed configurations for single and three phase monitoring.

### EPM 4600 Single Phase (Feed Configuration S)

*Supports 24 Single Phase Inputs*



### EPM 4600 Three Phase (Feed Configuration T)

*Supports 8 Three Phase Inputs*



## Energy Metering

The EPM 4600 has the capability of aggregating energy information from other energy sources such as gas, water and steam meter sources through its 4 KYZ pulse counting, dry contact inputs. This allows the EPM 4600 to collect information from multiple sources and perform as a key metering information source in an energy management system.

## Control

The EPM 4600 has 2 relay outputs to control equipment and trigger alarms with up to 16 limits that can be assigned.

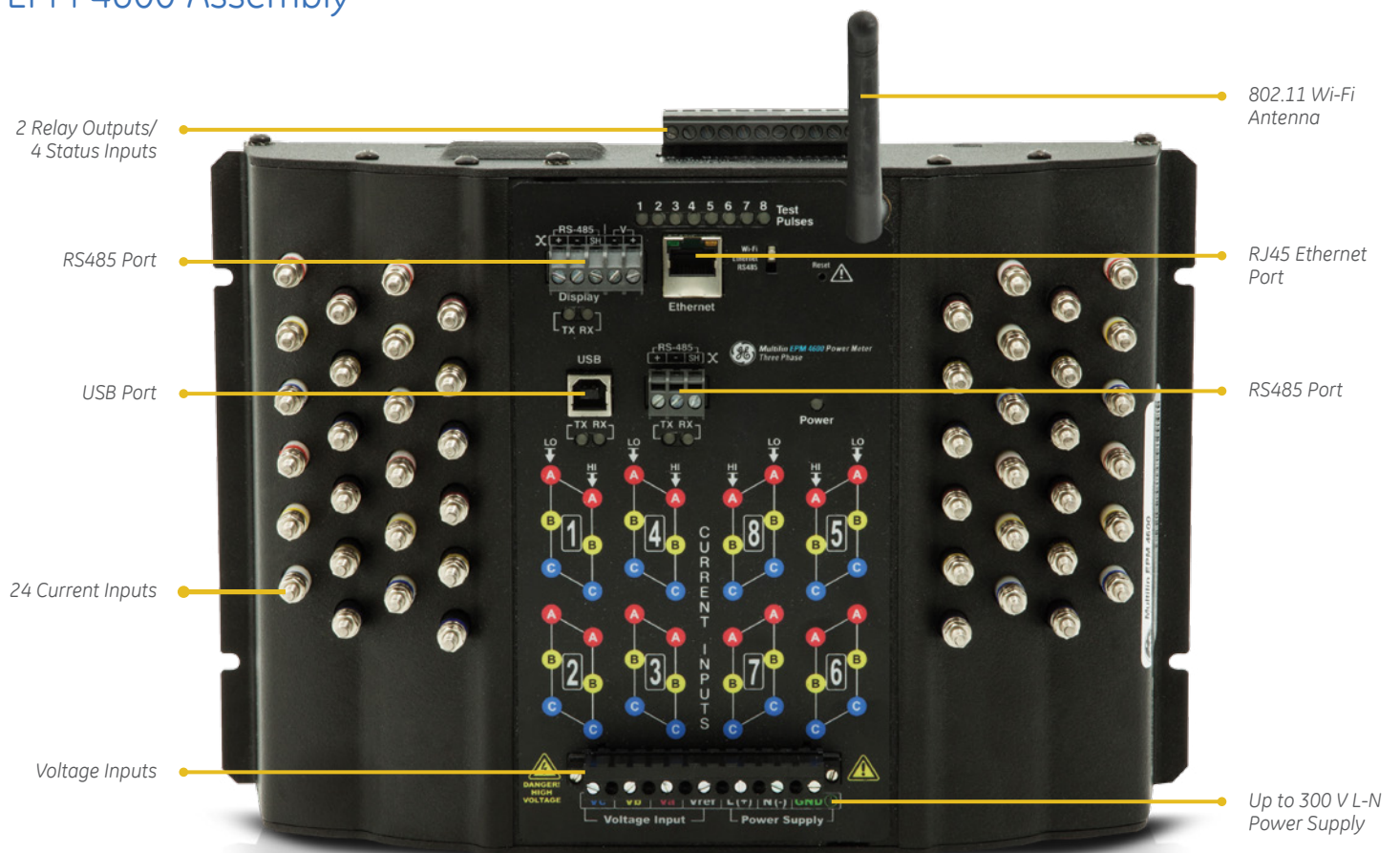
For example, the EPM 4600 can be set to trigger a relay output to shut down equipment and generate a peak demand alarm when a particular energy level is reached. This is particularly useful when monitoring peak demand.

## Logging

The EPM 4600 is available in three logging options to suit a variety of energy data collection requirements. This provides users with flexibility depending upon their energy management system needs.

- Transducer: Provides real-time values without logging.
- Basic (2MB): Provides approximately 100-300 days of logged data
- Advanced (32MB): Provides up to approximately 2400 days of logged data

## EPM 4600 Assembly



## User-Friendly, Optional, Touch-Screen Display

### Two Size Options for Flexible Installation

Energy and metering information is easily presented to users via pre-configured, user friendly, optional, touch-screen, color LED displays that connect to the EPM 4600.

These low power consumption, 65K color displays are available in two sizes: a larger 5.7" (PL4600-DIS5700) and a smaller 3.5" (PL4600-DIS3500) display.



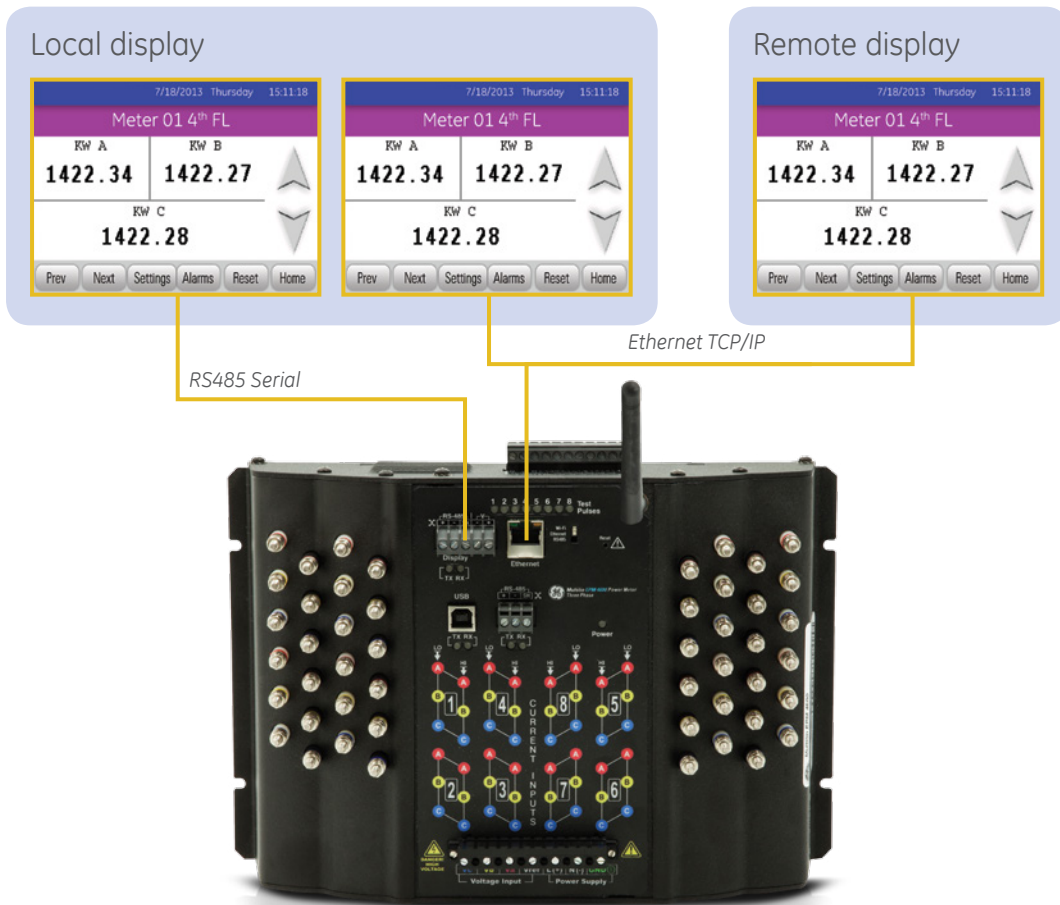
### User-Friendly Installation and Setup

Installation is quick and simple using the included display installation kit and a standardized 22mm panel mount, circular cutout. The lower power consumption display is remotely powered by a supplied 24VDC standard plug power supply.

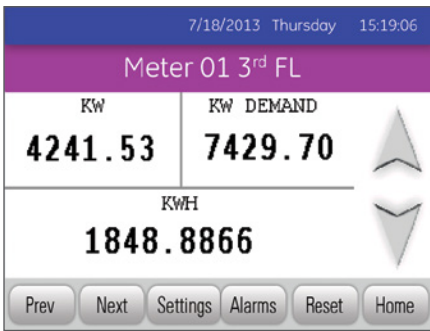
Each display comes with pre-configured screens and communications for plug-and-play, out of the box use. Further customization of the display settings such as changing the default display screen or communications settings are available through on-screen setup menus.

### Local and Remote Display Connectivity

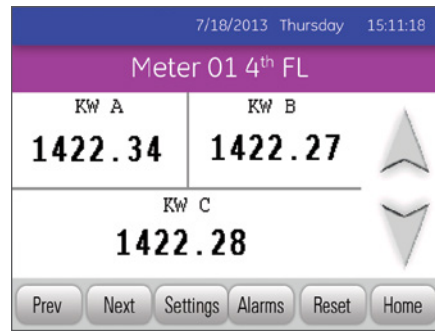
Communications to the display are provided via the EPM 4600 RS485 serial communications port and/or optional RJ45 Ethernet port. This allows users the capability and flexibility of installing local or remote displays depending upon visualization requirements.



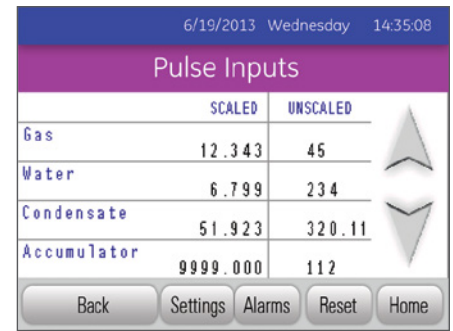
## Display Screens



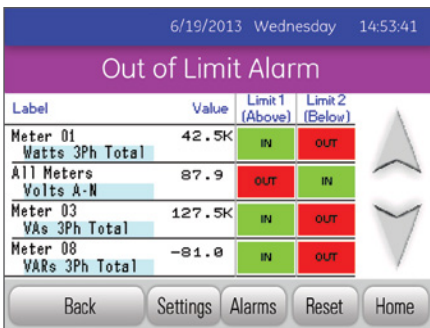
Single Phase Energy Readings (EPM4600-S)  
KWatts, KW Demand, KWatt-hours



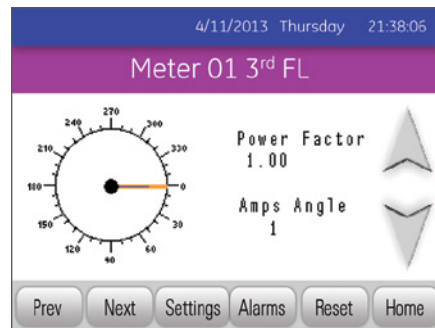
Three Phase Energy Readings (EPM4600-T)  
KWatts Phase A, KWatts Phase B, KWatts Phase C



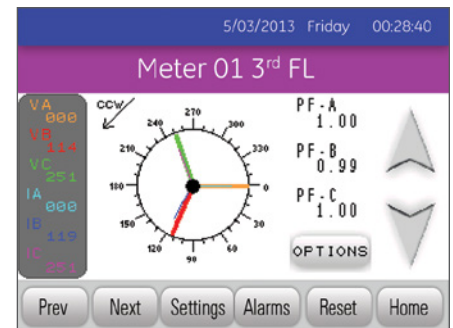
Consolidate Pulse Inputs to Measure Various Energy Types



Limit Based Alarms



Single Phase Phasor Diagram (EPM4600-S)



Three Phase Phasor Diagram (EPM4600-T)

## Software

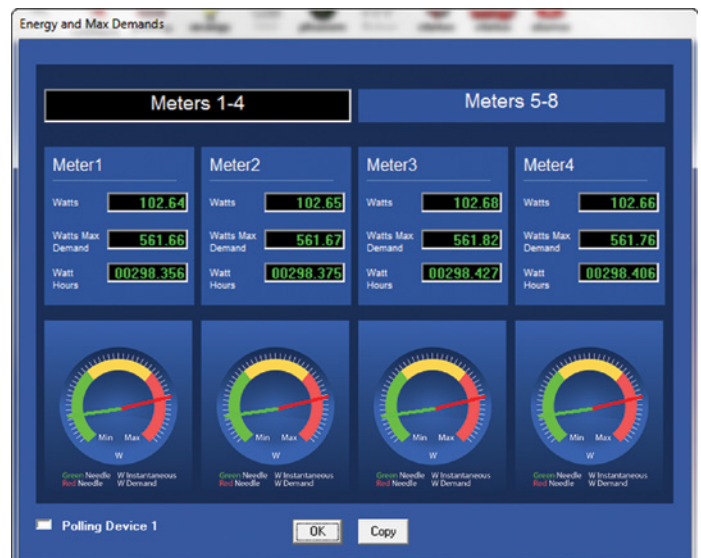
### GE Communicator Software

GE Communicator setup software provides users an easy to use interface to initially setup EPM meters and visualize meter data through a simple and powerful graphical format.

The software offers comprehensive views, including capabilities to display various specific meter functionality such as:

- Voltage, Current, Power & Energy
- Time of Usage & Accumulations
- Power Quality
- Harmonics
- Waveform/Events
- Alarms & Limits
- Max.& Min. for Each Parameter
- I/O Device Information

GE Communicator supports the entire family of EPM meters: EPM 2200, EPM 4600, EPM 6000 Series, EPM 7000 Series, EPM 9450, EPM 9650, EPM 9800 and EPM 9900P.



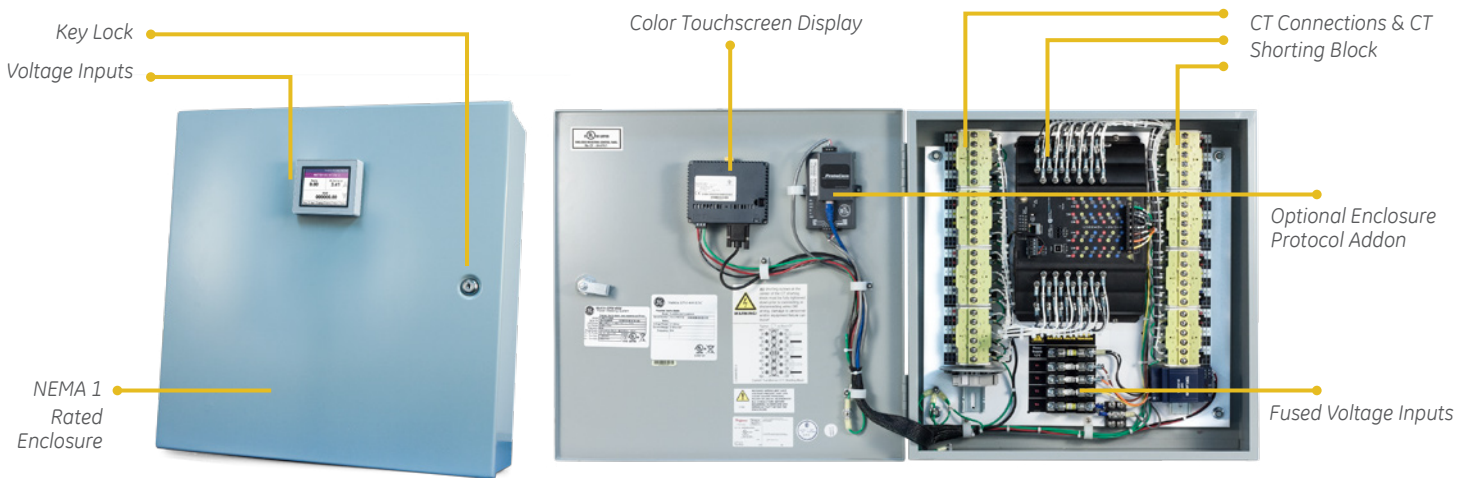
Visualize and analyze energy and maximum demand information from the EPM 4600

## Multilin Meter Enclosure

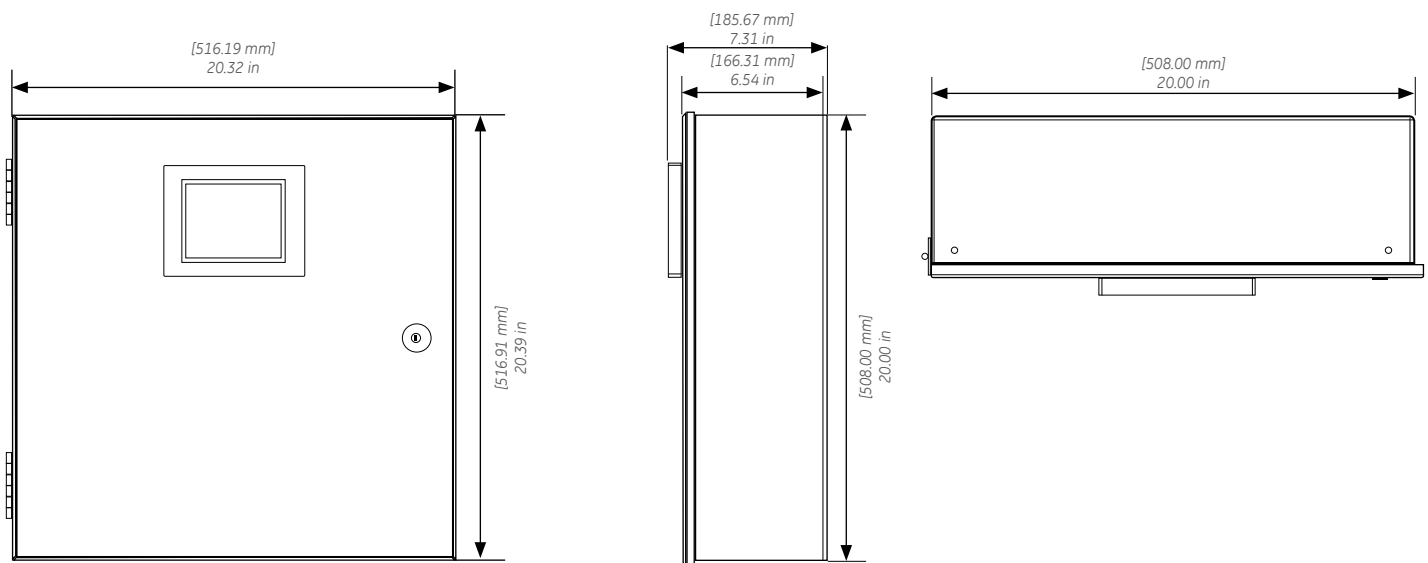
The EPM 4600 enclosure provides a cost-effective, low commissioning effort solution with the EPM 4600 meter and component factory prewired, tested and configured greatly reducing facility and integration effort. Operator safety and ease of maintenance is provided through the NEMA 1 rating which houses standard components such as voltage fuses and shorting blocks for current transformers. The enclosure solution will work directly with 120/208 and 277/480 Volt power systems.

The enclosure can be ordered with single or three-phase configurations as per the EPM 4600 meter configuration along with the EPM 4600 supported communications (Ethernet, Serial). Optional BACnet®\* and LonWorks®\* enclosure protocol addons enable the EPM 4600 to integrate seamlessly into new and existing Building/Energy Automation Systems (BMS).

Finally the enclosure is equipped with either a user friendly, prewired and configured 3.5" or 5.7" color touchscreen display easing startup and ongoing monitoring. The display provides extensive circuit data for every load, including circuit analysis.



### Meter Enclosure Dimensional Drawings



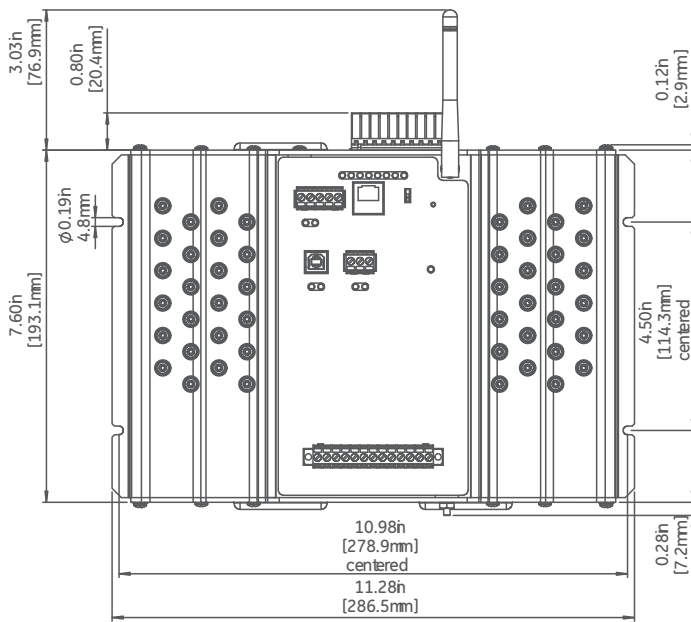
EPM 4600 Enclosure Front Dimensions

EPM 4600 Enclosure Side Dimensions

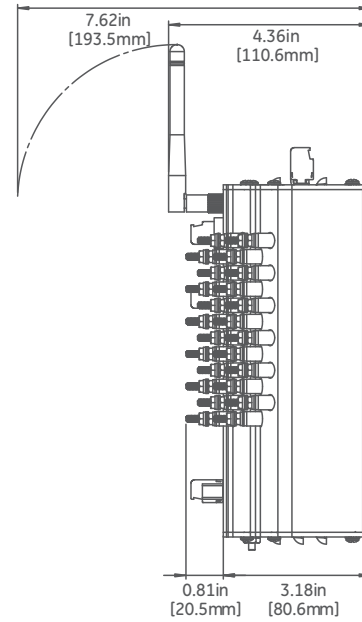
EPM 4600 Enclosure Top Dimensions

## EPM 4600 Dimensions

### EPM 4600 Front Dimensions

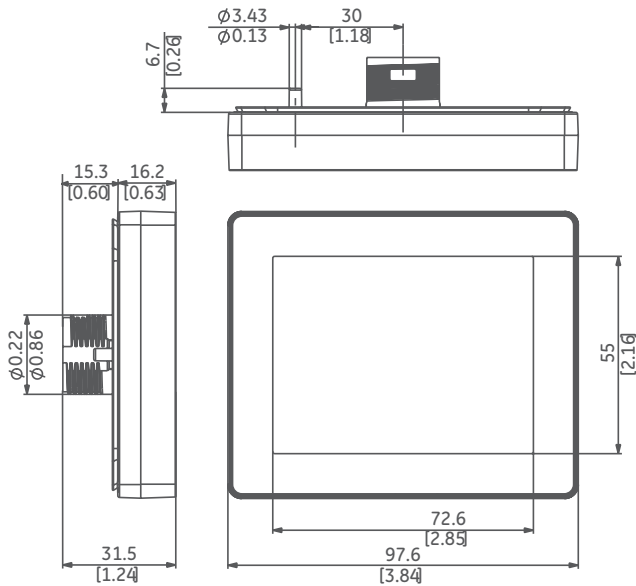


### EPM 4600 Side Dimensions

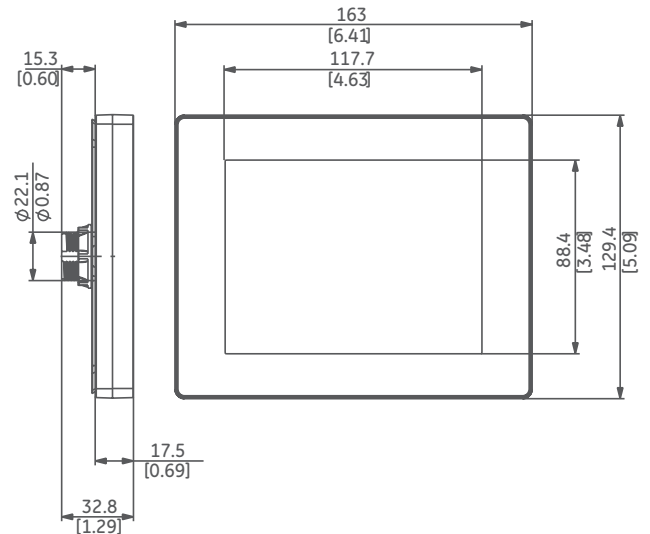


## Display Dimensions

### EPM 4600 3.5" Display Dimensions



### EPM 4600 5.7" Display Dimensions



## Display Specifications

### 3.5" AND 5.7" DISPLAYS

- Installation: Standardized 22mm circular cutout
- QVGA (320x240)
- 65K LED Backlight - 50,000 MBTF
- UL, CE and RoHs Compliant
- NEMA Type 4X (Indoor use)
- Operating: 0 to +50°C
- Power Consumption: 6.8W
- 24 VDC Power Input

# Technical Specifications

## VOLTAGE INPUTS

- 0-576V Line to Neutral
- 0-721V Line to Line
- Universal Voltage Input
- Input withstand capability: Meets IEEE C37.90.1 (Surge Withstand Capability)
- Programmable Voltage Range to any PT Ratio
- Voltage Inputs Burden:
  - 0.09Va/Phase Max at 600 Volts,
  - 0.014Va at 120 Volts

## WIRING

- Supports: 3 element Wye, Single Phase 2 and 3 Wire
- Input wire gauge: AWG 12-26 (0.08-2.5)mm<sup>2</sup>

## CURRENT INPUTS

- Class 10: (0 to 10)A, 5A nominal, 10A Maximum
- Class 2: (0 to 2)A, 1A nominal, 2A Maximum
- Programmable Current to any CT Ratio
- Current Inputs Burden: 0.005VA Per Input
- Max at 11A
- Pickup Current: 0.1% of nominal
  - Class 10: 5mA
  - Class 2: 1mA
- Continuous Current Withstand: 20A

## ISOLATION

- All inputs to outputs are isolated to 2500 VAC

## TEMPERATURE RATING

- Storage: (-20 to +70)°C / (-4 to +158)°F
- Operating: (-20 to +60)°C / (-4 to +140)°F
- Humidity: to 95% RH Non-Condensing

## SENSING METHOD

- RMS
- Sampling at 400+ Samples per cycle on all channels Measured Readings Simultaneously

## UPDATE TIME

- Every 60 Cycles

## POWER SUPPLY

- (90-300) Volts AC @50/60Hz or (150) Volts DC

## COMMUNICATION

### RS485 (COM 1 AND COM 3)

- Baud Rate: 9,600 to 57,600
- Address: 001-247
- 8 Bit, Even, Odd, No Parity
- Modbus RTU, Modbus ASCII

### ETHERNET/WI-FI (OPTIONAL FOR COM 1)

- RJ45 or 802.11b Wireless
- 10/100BaseT Ethernet
- Modbus TCP

### USB (COM 2)

- Port Baud Rate: 57,600
- Modbus ASCII

## SHIPPING

- 7.6(L) x 11.28(W) x 4.36(H) in/  
19.3(L) x 28.65(W) x 11.07(H) cm
- Weight: 7 lbs
- Display Weight : 0.62 kg/1.36 lb. or less (main unit)

## METER ACCURACY

- Voltage L-N 0.3% of reading @ (69 to 480)V
- Voltage L-L 0.5% of reading @ (120 to 600)V
- Current Phase: 0.3% of reading @ (0.15 to 5)A
- W/Wh: 0.5% of reading @ (0.15 to 5)A @ (69 to 480)V @ +/- (0.5 to 1) lag/lead PF
- VAR/VARh: 1.0% of reading @ (0.15 to 5)A @ (69 to 480)V @ +/- (0 to 0.8) lag/lead PF
- VA/VAh/PF: 1.0% of reading @ (0.15 to 5)A @ (69 to 480)V @ +/- (0.5 to 1) lag/lead PF
- Frequency: +/- 0.01Hz

## COMPLIANCE

- UL Listing: UL61010-1, CAN/CSA C22.2 No. 61010-1, UL file number E250818
- IEC 62053-22 (0.5% Class)
- ANSI C12.20 (0.5% Accuracy)
- ANSI (IEEE) C37.90.1 Surge Withstand
- ANSI C62.41 (Burst)
- EN61000-6-2 Immunity for
- Industrial environments: 2005
- EN61000-6-4 emission Standards for Industrial environments: 2007
- EN61326 EMC Requirements: 2006

# Ordering

## EPM 4600 Unit

PL4600	*	*	*	*	*	*	*	Description
Enclosure	ENC350							NEMA 1 Enclosure with 3.5" display
	ENC570							NEMA 1 Enclosure with 5.7" display
Feed Configuration		T						Three Phase
		S						Single Phase
Frequency			5					50 Hz AC Frequency System
			6					60 Hz AC Frequency System
Current Inputs				10A				Up to 10A Current
				02A				Up to 2A Current
Software					A			Transducer
					B			Basic Logging-2MB Memory
					C			Advanced Logging-32MB Memory
Communications						S		Serial (RS485) Modbus
						W		WiFi, RJ45 100BaseT Ethernet
Enclosure Protocol Addon							XXX	None
							PBA	Enclosure Serial BACNet Protocol Converter (Requires S Communications option. Cannot be ordered with Communications option W)
							PLW	Enclosure Serial LonWorks Protocol Converter (Requires S Communications option. Cannot be ordered with Communications option W)

## EPM 4600 Displays

PL4600	*	Description
Displays	DIS3500	3.5" Touch Screen Display with Installation Kit
	DIS5700	5.7" Touch Screen Display with Installation Kit

## EPM 4600 Accessories

PL4600	*	*	Description
Accessories	ACC		
Protocol Converters		PBA	Serial BACNet Protocol Converter
		PLW	Serial LonWorks Protocol Converter
WiFi Antenna		WFA	Remote Mounted WiFi Antenna Kit (Antenna, Magnetic Base)

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