

Multilin™ EPM 4600

Multi-Feed Power and Energy Metering Solution



Consolidated, Cost Effective, Multiple Point Metering

To support and implement an effective energy management strategy a baseline of energy measurements are required. The Multilin EPM 4600 Multi-feed Power and Energy Meter is a sub-metering 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.

By combining the capability of multiple meters in a single unit, the EPM 4600 provides simple, space saving installation that saves costs over individual meter installations. Furthermore, the EPM 4600 has a wide variety of communications capabilities such as Wi-Fi, Ethernet RS485 or USB allowing for easy installation within both existing and new infrastructure. Finally with comprehensive data logging and trending capabilities and 0.5% revenue accuracy tenants and operators can be assured of thorough and accurate energy insight.

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 capabilities allowing easy installation in existing or new infrastructure
- Class 0.5% revenue grade 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
- 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

The EPM 4600 Multi-feed Power and Energy Metering Solution has key applications commercial and industrial applications including:

- Shopping Malls/ Shopping Centers
- Apartments/ Condominiums
- University Campuses
- Data Centers
- Hospital Loads
- LEED Projects
- Tenant Sub-Metering
- Industrial Circuit Cost Allocation
- Load Management and Load Curtailment

Simple, Space Saving Installation

- 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 capabilities allowing easy installation in existing or new infrastructure
- User-friendly, optional touch screen, color display for remote viewing of metering information

Comprehensive Energy Awareness

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

Effective 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

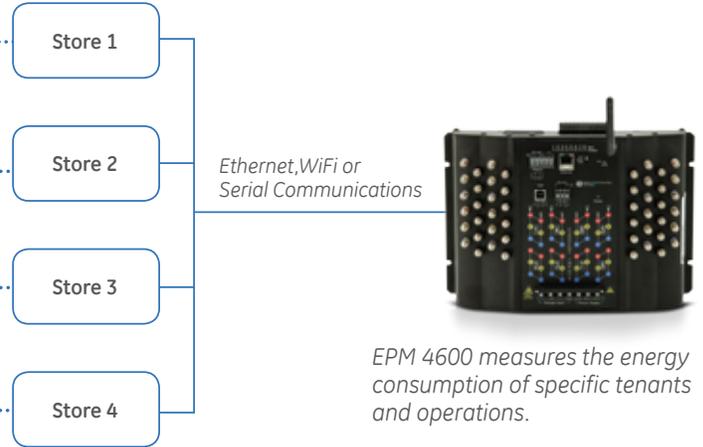
Multi-Tenant Metering

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.

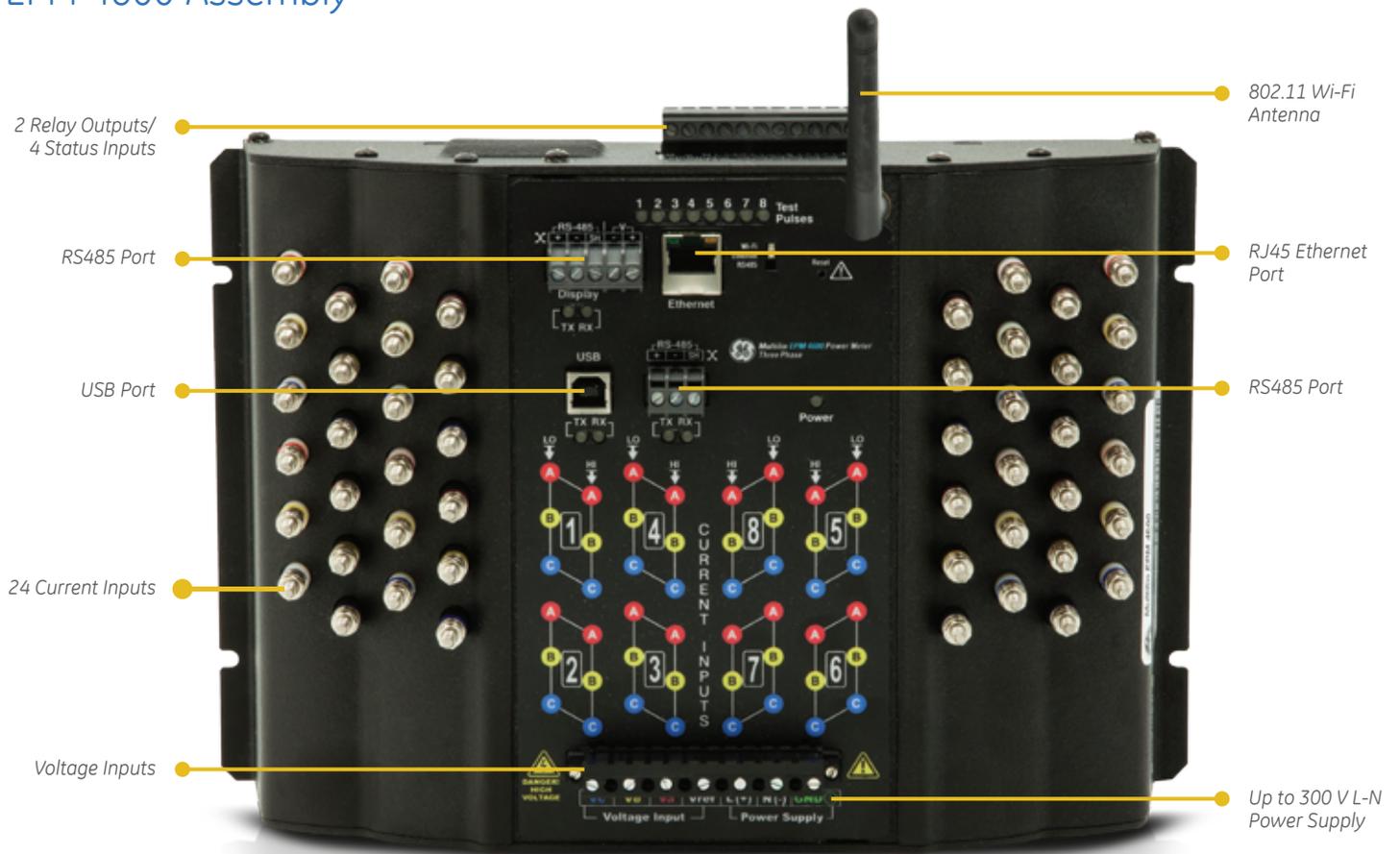
For example, the EPM 4600 can be set to trigger a relay output to shut down equipment and generate a peak demand alarm when a particular energy level is reached. This is particularly useful when monitoring peak demand.

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.



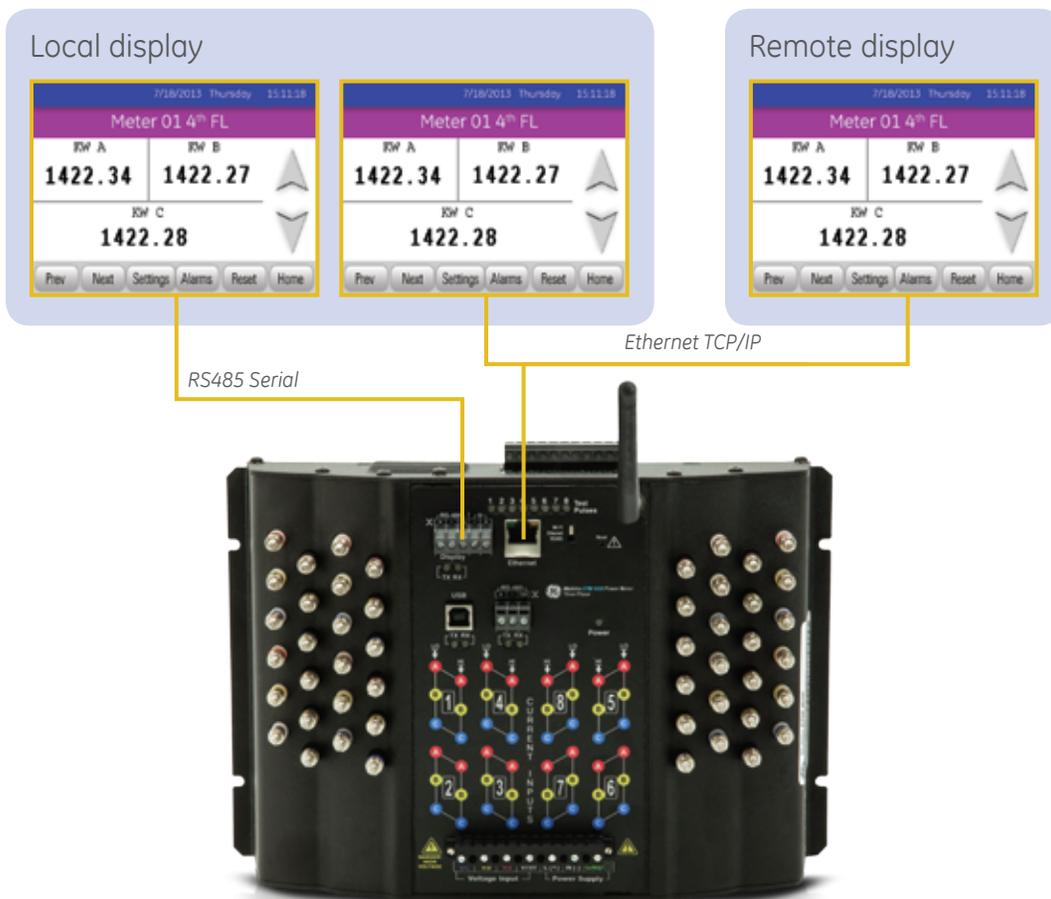
User-Friendly Installation and Setup

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

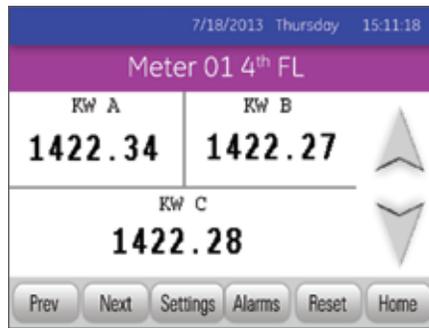
Communications to the display are provided via the EPM 4600 RS485 serial communications port and/or optional RJ45 Ethernet port. This allows users the capability and flexibility of installing local or remote displays depending upon visualization requirements.



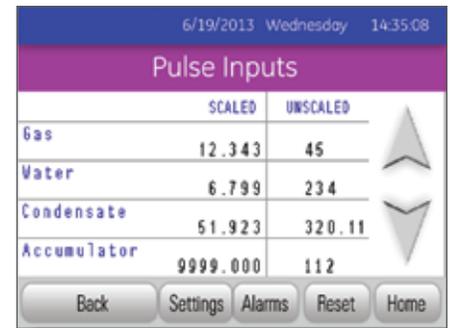
Display Screens



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 connects to meters via serial, Ethernet or modem. It allows users to configure a meter; view real-time metered data and analyze collected information from remote EPM power meters. GE Communicator works with the entire family of EPM meters: EPM 2200, EPM 4600, EPM 6000 Series, EPM 7000 Series, EPM 9450, EPM 9650, EPM 9800 and EPM 9900 meters.

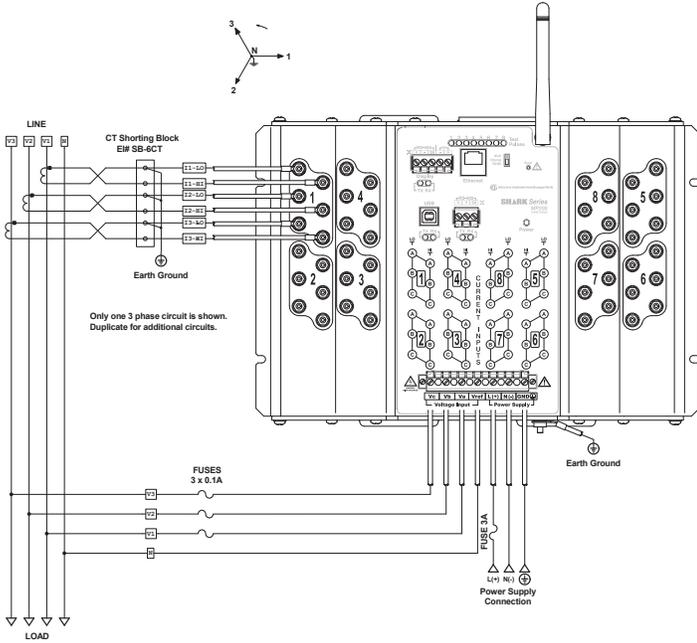
GE Communicator displays real time data from supported meters in a user-friendly, simple and powerful graphical format. The software offers many views, including capabilities to display various specific meter functionality such as:

- Voltage, Current, Power & Energy
- Time of Usage & Accumulations
- Power Quality
- Harmonics to the 255thOrder
- Actual Real-time Waveform Scopes
- Alarms & Limits
- Max.& Min. for Each Parameter
- I/O Device Information



Obtain energy and maximum demand information from the EPM 4600.

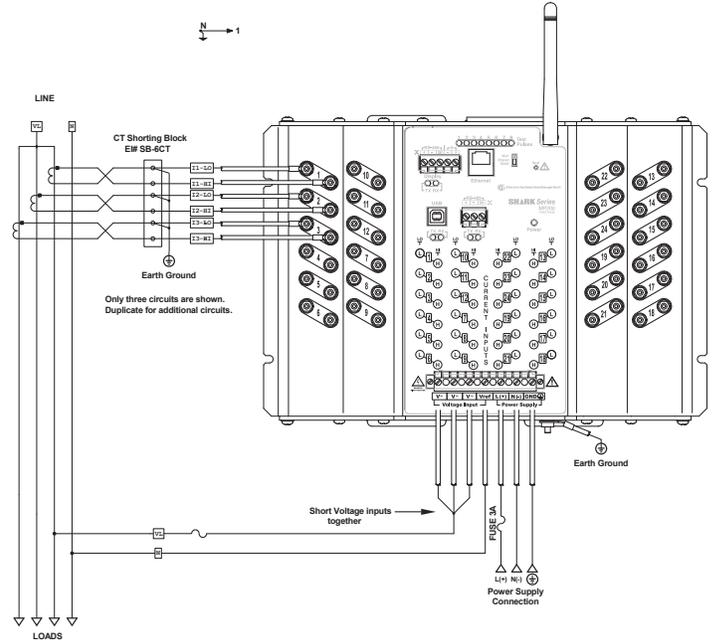
Wiring Diagrams



Three Phase, 4-Wire WYE System with 3 CTs: EPM4600-T

One 3 Phase circuit shown. Multiply by up to 8 circuits.

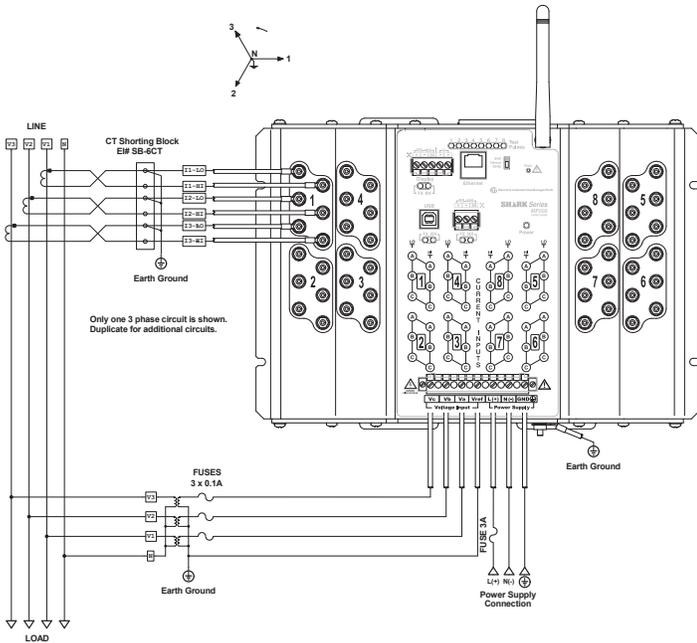
Note: All Voltages must be common per phase on each circuit.



Single Phase, 2-Wire Direct: EPM4600-S

3 Circuits are shown. Multiply by up to 24 circuits.

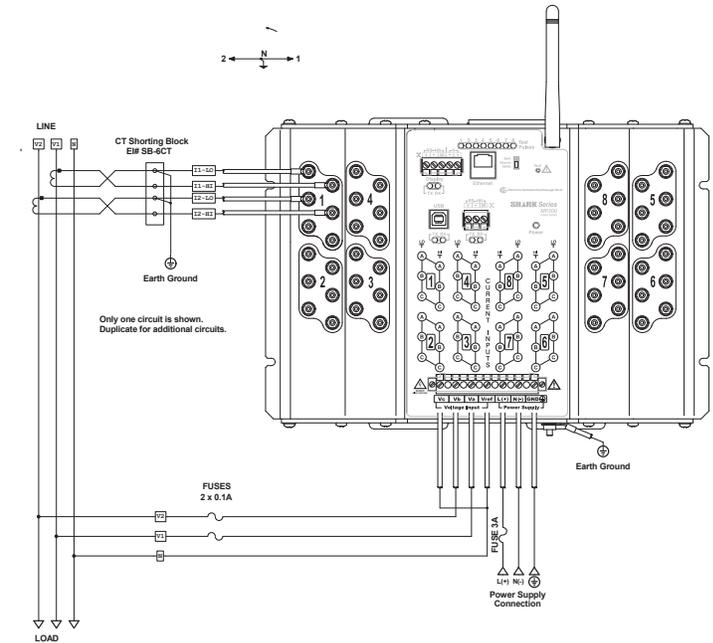
Note: All Current must originate from a common Voltage source.



Three Phase, 4-Wire WYE System with 3 PTs, 3CTs: EPM4600-T

One 3 Phase circuit shown. Multiply by up to 8 circuits.

Note: All Voltages must be common per phase on each circuit.



Single Phase, 3-Wire Direct with 1 CT: EPM4600-S

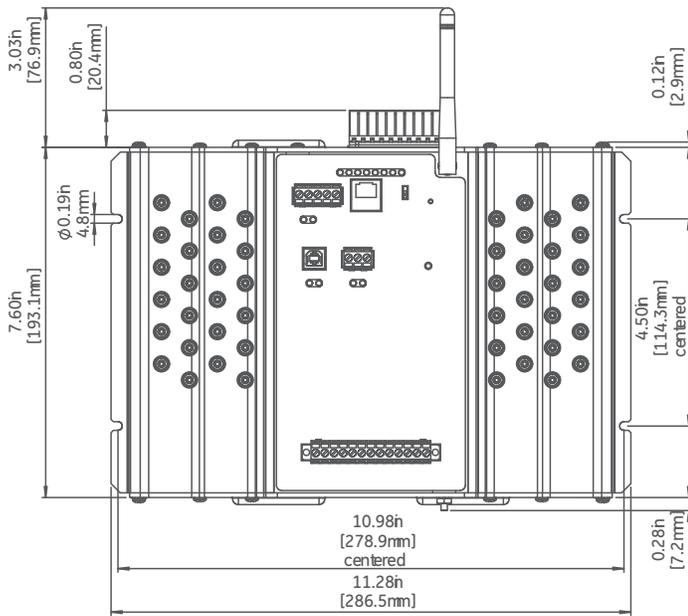
1 Circuit is shown. Multiply by up to 24 circuits.

Note: All Current must originate from a common Voltage source.

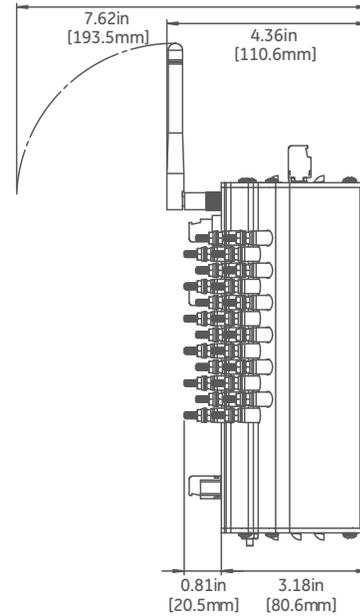
Note: The EPM 4600 Instruction Manual provides additional installation information and wiring diagrams.

EPM 4600 Dimensions

EPM 4600 Front Dimensions



EPM 4600 Side Dimensions



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)mm²

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/W_h: 0.5% of reading @ (0.15 to 5)A @ (69 to 480)V @ +/- (0.5 to 1) lag/lead PF
- VAR/VAR_h: 1.0% of reading @ (0.15 to 5)A @ (69 to 480)V @ +/- (0 to 0.8) lag/lead PF
- VA/VA_h/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

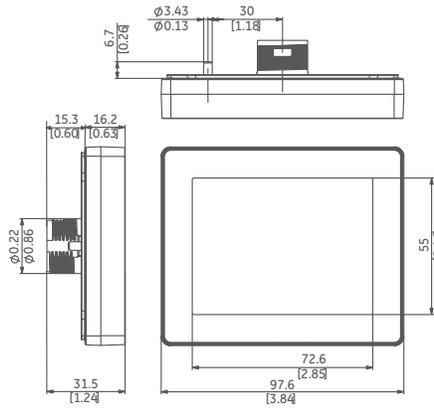
Display Specifications

Display Dimensions

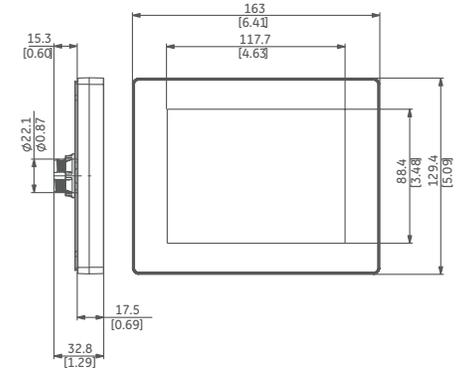
3.5" AND 5.7" DISPLAYS

- 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

EPM 4600 3.5" Display Dimensions



EPM 4600 5.7" Display Dimensions



Ordering

EPM 4600 Unit

PL4600	*	*	*	*	*	Description
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

EPM 4600 Displays

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

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