

# EPM 1500

Single-point submetering system

Engineered for retrofit and new construction  
with power line communication capability



imagination at work

# EPM 1500 at a Glance



- Single part number provides a complete package that includes CTs
- Low cost, wall mount is simple to use, saves installation costs
- Rugged metal enclosure is designed for fast installation and is tamper resistant
- Use with Eneractive software package with Power Line Communications (Modbus protocol over standard RS485 optional)

## Applications

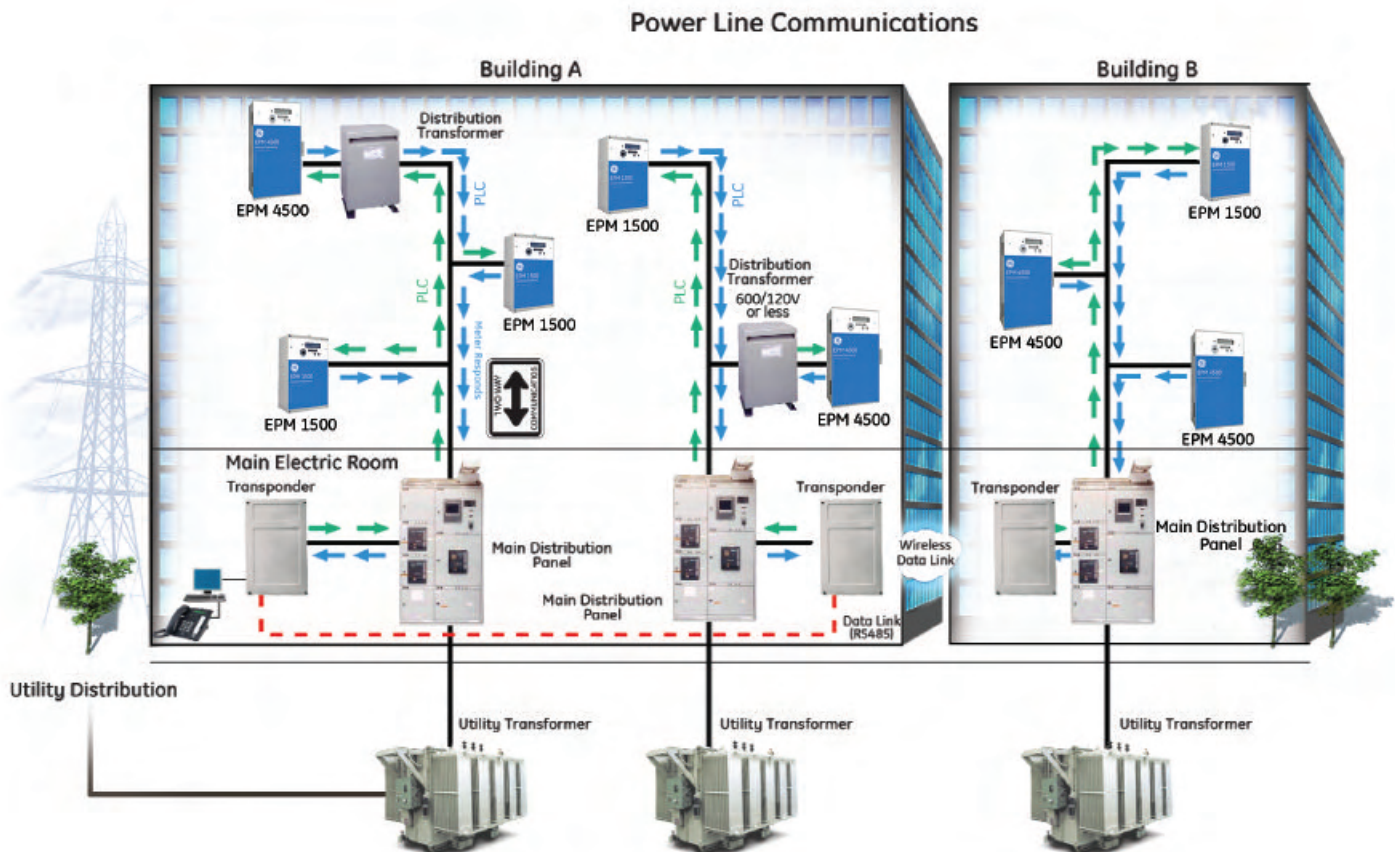
Ideal for commercial and industrial sub-metering applications

## Features

- Monitoring and Metering
  - Real-time per-phase viewing of voltage, current, power factor, phase angle, watts, VARs, VA and frequency
  - Event reporting with time and date stamps regarding power consumption, demand resets, power-ups/downs, and is available via LCD for viewing
- User Interface
  - Modbus RS-485 (optional)
  - Up to 4 pulse inputs (optional)
  - IEC optical front panel interface for programming

## Key benefits

- Revenue certifiable metering
- Meets ANSI C12.1 and C12.16 accuracy
- Local LCD viewing
- Easy to use energy/demand data logging meter, suitable for new construction or retrofit application
- Provides all basic information required for billing purposes
- Power Line Communication (PLC) over the existing power lines. No additional wiring installation is necessary



# Ordering

## EPM 1500 Without CTs

Family	Voltage	Version	CTs	Delta	Options	Description					
PL1500	*	*	*	*	*						
	120					120/208V 3 phase					
	277					277/480V 3 phase					
	347					347/600V 3 phase					
			K				KWh version				
			D				Demand version				
				L				0.1 amps CT secondary input			
				H				5 amps CT secondary input			
						P		Pulse data module			
						MOD		Modbus communications			
	480					480V Delta					
	600					600V Delta					
			D				Demand version				
							L			0.1 amps CT secondary input	
							H			5 amps CT secondary input	
									DTA		Delta 3P3W
									P		Pulse data module
									MOD		Modbus communications

## EPM 1500 With CTs

Family	Voltage	Version	CTs	Option	Description		
PL1500	*	*	*	*			
	120				120/208V 3 phase		
	277				277/480V 3 phase		
	347				347/600V 3 phase		
			D			KWh version	
						Demand version	
						SP050	Split core 50A CTs - set of 3
						SP100	Split core 100A CTs - set of 3
						SP200	Split core 200A CTs - set of 3
						SP400	Split core 400A CTs - set of 3
						SP800	Split core 800A CTs - set of 3
						SP3200	Split core 3200A CTs - set of 3
						SL050	Solid core 50A CTs - set of 3
						SL100	Solid core 100A CTs - set of 3
						SL200	Solid core 200A CTs - set of 3
						SL400	Solid core 400A CTs - set of 3

## CTs

Type	Description	Cat. No.
Solid Core - 0.1 A Secondary	CT-50 (50/0.1A)	PLSUBCTSL050
	CT-1 (100/0.1A)	PLSUBCTSL101
	CT-2 (200/0.1A)	PLSUBCTSL201
	CT-4 (400/0.1A)	PLSUBCTSL401
Solid Core - Canadian	CT-2/5DARL (200A/5A)	PLSUBCTSL201CDN
	CTSP-50 (50/0.1A)	PLSUBCTSP050
Split Core - 0.1 A Secondary	CTSP-1 (100/0.1A)	PLSUBCTSP101
	CTSP-2 (200/0.1A)	PLSUBCTSP201
	CTSP-4 (400/0.1A)	PLSUBCTSP401
	CTSP-8 (800/0.1A)	PLSUBCTSP801
	CTSP-12 (1200/0.1A)	PLSUBCTSP1201
	CTSP-20 (2000/0.1A)	PLSUBCTSP2001
	CTSP-30 (3000/0.1A)	PLSUBCTSP3001
	CTSP-40 (4000/0.1A)	PLSUBCTSP4001

## Transponders

### 1. Order Back Box

Description	Cat. No.
120V service back box	TRANS BBA 120V
277V service back box	TRANS BBA 277V
347V service back box	TRANS BBA 347V

### 2. Order Transponder Model with options

Description	Cat. No.
120/208V with modem	TRANS120M
120/208V with RS485 and RS232 connections	TRANS120RS
277/480V with modem	TRANS277M
277/480V with RS485 and RS232 connections	TRANS277RS
347/600V with modem	TRANS347M
347/600V with RS485 and RS 232 connections	TRANS347RS

## Pulse Modules

Description	Cat. No.
KYZ Pulse output option	PL1500 KYZ
Input module for 4 pulse inputs	PL1500PULSIN10

## Standard Features

GE's EPM 1500 is an easy-to-use energy/demand data logging meter suitable for new construction or retrofit applications. The integral LCD display provides access to electrical parameters in real-time or historical format. The EPM 1500 is available in numerous packages for either kWh or demand applications. These packages can be purchased as 120/208V or 277/480V ranges with either solid or split core CTs.

### Mounting Versatility

EPM 1500 is wall mountable, tamper resistant and can be located near the electrical circuit to be monitored. Its small, rugged metal enclosure is designed for fast installation. Meter is shipped with the required CTs and correct system voltages etc. to minimize installation time and to reduce contractor errors and labor costs.

### Metering

EPM 1500 meter provides real-time viewing, per-phase of voltage, current, power factor, phase angle, watts, kVARs, kVA, and frequency. Event reporting with time and date stamps regarding consumption, demand resets, power ups/downs, and time changes is available through LCD Display. Non-volatile flash memory retains daily and interval metering data during power outages. Backup battery is also provided to maintain time during power outages.

- Ia Ib Ic
- Va Vb Vc Vab Vbc Vca
- PF
- W var VA
- Wh
- F

## Communications

The EPM 1500 provides standard communication over PLC (Power Line Communication) where the AC lines act as the communication medium - perfect for retrofit applications, where placing new communication lines can be difficult and expensive. Data can be retrieved by Eneractive software through use of transponder. Modbus communication is also available as an option.

EPM 1500 utilizes a patented, two-way Power Line Communication technology as a standard feature to send and receive data over the existing power lines without the need of additional communication wiring. GE's PLC technology is an extremely reliable and cost-effective solution.

### Modbus Communication

Optional RS-485 modbus open protocol communication is available for networking to GE Multilin and third party systems.

### Transponder Communication

The transponder is the central data collector for the Power Line Communication (PLC) system. It is installed on the secondary of the utility transformer and will communicate with all meters installed on the load side of the transformer. The transponder is typically installed in the main electric room close to the service entrance of the utility transformer secondary. In

properties with multiple utility services, a transponder is required for each transformer/service and can handle as many as 240 metering points.

Multiple transponders can be tied together as a data link network utilizing RS-485. In some applications, a wireless network approach can replace the data link network, and may be preferable. The transponder network is accessed utilizing a telephone modem or local RS-232 connection to an on-site PC for data transfers.

Each transponder has a database or "cross reference" of installed meters (by serial number) on its particular electrical service.

The transponder collects data for each of these meters and stores it in internal non-volatile flash memory for up to 40 days for typical billing requirements. This design provides data redundancy for the data stored in the meter.

Using the transponder the signal can communicate through distribution transformers. With the transponder installed at the main (277/480 or 347/600) distribution panel, the transponder will communicate through any existing stepdown transformer with any meter fed from that particular distribution panel.

GE's PLC complies with IEC Signaling Standard (10-90Khz), and less than 4W is transmitted. It does not interfere with any existing equipment. The system produces a round signal with no harmonics.

### Local Viewing Display

Simple pushbutton access allows instant viewing of real-time and historical data on easy-to-read front LCD.

- Push button scroll
- 32 digit liquid crystal display (16 digit x 2 rows)
- 6 whole digit consumption register
- Data digit height: 0.31"
- Programmable display scroll & decimal place display

### Comprehensive Package

EPM 1500 is available as a complete package with solid or split core current transformer options. A comprehensive packaged selection of CT sizes, amperes and dimensions, is available for new construction (solid core/lower cost options) or split core (for retrofit/existing) applications.

### EPM 1500 Package

Package includes wall mountable metal enclosure with built-in LCD, IEC optical port, fuse block and three CTs.

### Accuracy Requirements

EPM 1500 meets ANSI C12.1 and C12.16 revenue certifiable accuracy specifications.

## Options

There are a variety of options available to the user, allowing a range of custom configurations:

### Pulse Inputs

Up to 4 Form A Pulse Inputs are available for additional

energy information inputs derived from water, gas, steam, and similar meters that utilize Form A outputs. Information can then be read on LCD display.

### Energy Demand Logging

KW is programmable in 15 minutes time interval block demand. This feature also allows local reset of peak demand register.

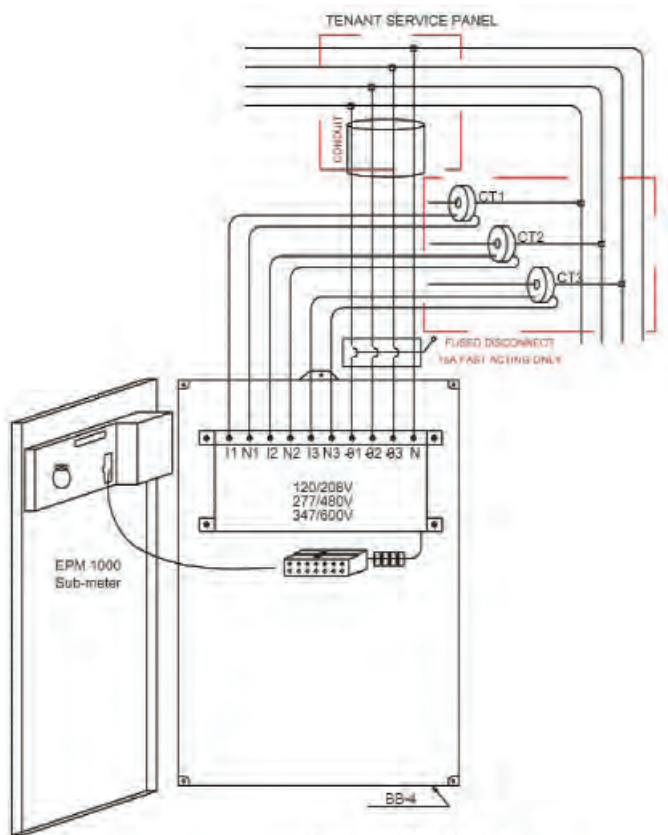
## Eneractive Energy Management Software

The Eneractive Energy Management Software provides a complete reporting and billing solution for electrical, water, gas and BTU submetering. It consists of three software modules:

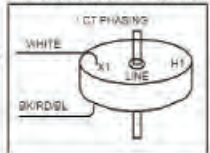
- Eneractive Configurator
- Eneractive Logger
- Eneractive Custom Reports for billing.

The Software is qualified for Windows XP Professional. It uses the Microsoft.Net Framework and MSDE. The system comes with MS Excel for reporting / billing and PcAnywhere for Remote Access Support.

## Typical Wiring

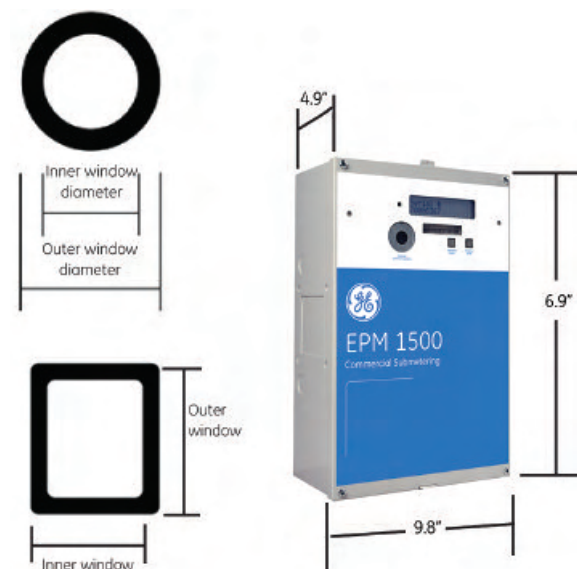


\* CT's SECONDARY = 0.1 AMP



\* FOLLOW LOCAL CODES for Installation Requirement, e.g. Conduit, Fused disconnect, Distance & Wiring

## Dimensions



### Solid Core

50 amp Solid Core CTs:

Outer window diameter 1.35"

Inner window diameter 0.60"

100 & 200 amp Solid Core CTs:

Outer window diameter 2.7"

Inner window diameter 1.1"

400 amp Solid Core CTs:

Outer window diameter 3.56"

Inner window diameter 1.56"

### Split Core

50 amp Split Core CTs:

Outer window 2.8" x 3.5"

Inner window 1.8" x 1.3"

100, 200 & 400 amp

Split Core CTs:

Outer window 4.9" x 4.3"

Inner window 3.5" x 2.4"

800 amp Split Core CTs:

Outer window 7.3" x 5.9"

Inner window 5.0" x 3.0"

# EPM 1500 Technical Specifications

## Demand Monitoring

Consumption & Demand: kW & kWh

Interval Data & Peak

- Demand Commercial: 15-min block demand interval & peak demand with date & time stamp
- Data Logging: 120 days with kW & kWh Internal battery maintains time and current interval metering data during power outage only
- Battery Backup: During power outage, long time lithium battery maintains time, logs, incoming pulses and stores the current time and interval data.
- Memory: 521K byte non-volatile memory retains daily and interval metering data even during power outage
- Demand Reset: Allows local reset of peak demand register

## Control Power Supply

- Input: 120V Phase A to Neutral  
277V phase A to Neutral  
480V phase to phase  
(Internally powered through metered voltage no external source is required)
- Frequency: 50-60Hz
- Operating Power: 2 Watts for 120V  
5 Watts for 277V & 480V

## Metering

### Measured Values

Parameter	Real Time per Phase	Data Logging
Voltage	x	
Current	x	
kW	x	
kVAR	x	
kVA	x	
kWh		x
Power factor	x	
Frequency	x	
kW demand		x
Phase Angle	x	

## Accuracy

0.5 class accuracy  
+ 0.5% @ unity and 50% power factor; 1-100% of full-scale  
Meets revenue certifiable ANSI C12.1 & C12.16 accuracy standards

## Liquid Crystal Display (LCD)

32 digit liquid crystal display  
(16 digit x 2 rows)  
Data digit height: .31"  
6 whole digit consumption register  
Scrollable display  
Push button scroll

## Inputs

### AC Current Inputs

CT input: 50 amp to 3,200 amp primary available  
Secondary inputs: 0.1 A (50-800), 5A (1600, 3200)

### AC Voltage Inputs

Metered voltage: 120/208V Wye, 277/480V Wye, 480V Delta 50-60Hz  
Rated voltage: 90% to 110%

### Pulse Inputs

Inputs: Up to 4 Form A Pulse Inputs logged in programmable intervals also count during power outage

Min. wire gauge: 20 AWG  
Max. wire length: 300 feet  
Max rate: 5 transitions/sec  
Min pulse width: 100 ms.

## Communications

Power Line Communications (PLC)  
RS-485 Modbus (optional)  
IEC Front Optical Point of Access (POA) port  
Built-in Internal Modem (19.2K) (optional)

## Environmental

Humidity: 0 to 95% Relative Humidity (non-condensing)  
Temperature: -20°C to + 60°C  
Meter Dimensions: 13.5"H x 8.5"W x 4.5"D  
CT Dimensions: Variable sizes (see drawings)

## Packaging

Shipping Weight: 1 meter box with CTs:11.5lbs approx  
Shipping Dimensions: 15"L x 11"W x .65"D

## Type Tests

TVSS: ANSI C37.90.1-1989  
Voltage: Rated Voltage (90% to 110%)

## Approvals

ANSI: C12.1 & C12.16 accuracy  
UL & CUL: Recognized under E204142

Information provided is subject to change without notice. Please verify all details with GE. All values are design or typical values when measured under laboratory conditions, and GE makes no warranty or guarantee, express or implied, that such performance will be obtained under end-use conditions.

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