

Multilin EPM 6010

Building Automation Power Meter with BacNET®/IP Communications

The Multilin™ EPM 6010 is an industry leading revenue grade power meter with native BACnet/IP communications. This meter is designed to integrate seamlessly into existing and new building management systems using the popular BACnet protocol. The meter allows users to gather data on voltage, current, power and energy usage throughout a facility.

Ideally suited for environmental initiatives, LEED certified projects and smart energy projects the EPM 6010 provides the metrology and revenue testable energy accuracy required by these applications.

Key Benefits

- High accuracy multi-function power meter for energy management systems
- Compact, easy-to-install, program, and use
- 0.2% revenue class accuracy for reliable energy and demand metering
- Flexible mounting fitting both ANSI and DIN cutouts. DIN mount transducer (EPM 6010T) configuration for in-cabinet installation, reducing panel space requirements
- Large 3 line 0.56" bright LED display for better visibility and longer life
- User programmable for different system voltages and current measurements
- Optional Ethernet port for simplified integration into new or existing LAN infrastructures and multi-point connectivity
- Rapid integration into BACnet management systems
- Replaces multiple analog meters saving space and installation costs
- Meter Enclosure option enabling customers to extend metering capabilities without costly downtime or engineering efforts

Applications

- Continuous metering of electrical loads such as generator panels and switchgear
- Low and medium voltage applications
- LEED Projects & HVAC efficiency monitoring
- Energy metering systems in building automation and building management systems



Monitoring & Metering

- True RMS multi-function measurements including voltage, current, power, frequency, and energy
- Meets ANSI C12.20 (0.2%) and IEC 687 (0.2%) accuracy classes
- Field upgradable for added functionality without removing installed meter
- Load percentage graphical bar for instant load visualization
- Samples at 400+ times per cycle and has 24-bit A/D conversion
- Total Harmonic Distortion (%THD)
- Optional Transducer configuration without display (EPM 6010T)

Advanced Communications

- Modbus TCP Protocol through 10/100BaseTX via RJ45 (Ethernet Option)
- Front IrDA Port for laptop communications
- Pulse output for accuracy testing and energy
- BACnet/IP 100BaseT Ethernet support
- 40 pre-defined BACnet objects facilitate rapid integration
- Embedded web-server, allows BACnet/IP interface to be remotely configured and BACnet objects can be remotely viewed via web browser
- Remote status capability when used with GE's EnerVista suite of software



Overview

The Multilin EPM 6010 is an industry leading revenue grade power meter with native BACnet/IP communications. This meter is designed to integrate seamlessly into existing and new building management systems using the popular BACnet protocol. The meter allows users to gather data on voltage, current, power and energy usage throughout a facility.

Designed to be the perfect device for environmental initiatives, LEED certified projects and smart energy projects, the EPM 6010 provides superior metrology, and revenue testable 0.2% energy accuracy. The meter is in compliance with ANSI and IEC accuracy standards, has advanced DSP technology, samples at high rates, and has 24 bit A/D conversion to measure and analyze power accurately and reliably.

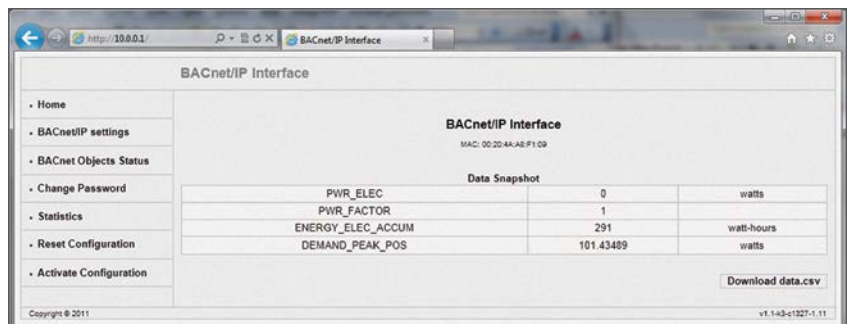
BACnet Communications

The Multilin EPM 6010 with BACnet/IP supports building energy management strategies, LEED certification and other Green Building initiatives. By allowing users to track energy use and power quality, the meters gives users the information they need to accurately identify cost-saving measures and respond to power quality problems when they arise.

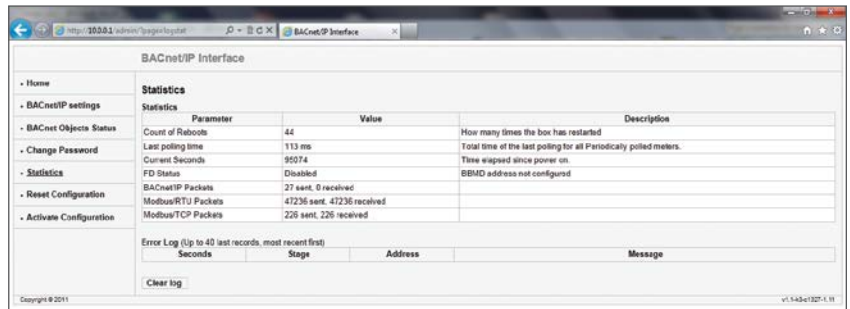
Measured Values

EPM 6010 measures the following values:

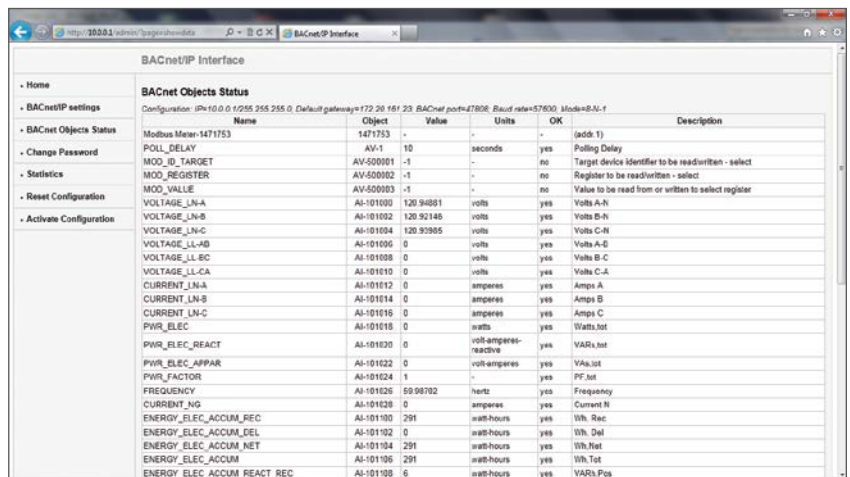
| MEASURED VALUES | REAL-TIME | AVG | MAX | MIN |
|-------------------|-----------|-----|-----|-----|
| Voltage L-N | • | | • | • |
| Voltage L-L | • | | • | • |
| Current Per Phase | • | • | • | • |
| Watts | • | • | • | • |
| VAr | • | • | • | • |
| VA | • | • | • | • |
| PF | • | • | • | • |
| +Watt-hr | • | | | |
| -Watt hr | • | | | |
| Watt-hr net | • | | | |
| +VAr-hr | • | | | |
| -VAr-hr | • | | | |
| VAr-hr net | • | | | |
| VA-hr | • | | | |
| Frequency | • | | • | • |
| Voltage Angles | • | | | |
| Current Angles | • | | | |
| %THD | • | | • | • |
| % of Load Bar | • | | | |



View BACnet Energy Values



View BACnet Meter Statistics



View BACnet objects and their status

Communications Ports

The Multilin EPM 6010 provides two independent communication ports with advanced features:

- **IrDA port** – A unique optical IrDA port allows the unit to be set up and programmed using a remote laptop without needing a communication cable. Simply point at the meter with an IrDA-equipped PC computer to configure it.
- **Ethernet Port** – This port provides connectivity via a 10/100BaseT RJ45 connection. Modbus TCP and BACnet protocols are supported.

BACnet/IP Web Interface

The Multilin EPM 6010 comes standard with a web interface. Use the BACnet/IP interface to remotely set up the BACnet/IP configuration and track energy use with any standard web browser.

EnerVista Software

EnerVista Software

EnerVista Launchpad is a powerful software package that provides users a platform to access all of the setup and support tools needed for configuring and maintaining GE's Multilin Products. Using

Simultaneous Dual Communications Paths



Using Launchpad as the single interface to the setup and analysis software makes it simple to enter setpoints, read metered values, monitor status and evaluate power quality.

Included in Launchpad is a document archiving and management system that ensures critical documentation is up-to-date and available when needed by automatically checking for and downloading new versions of manuals, applications notes, specifications, and service bulletins.

Viewpoint Monitoring

Viewpoint Monitoring is a simple-to-use, full-featured monitoring and data recording software package for small systems. Viewpoint Monitoring provides a complete HMI package that instantly puts critical real-time device data on your PC through pre-configured graphical screens.

Graphical screens provide the following functionality:

- Plug-&-Play Device Monitoring
- System Single-Line Monitoring & Control
- Annunciator Alarm Screens
- Trending Reports
- Automatic Event Retrieval
- Automatic Waveform Retrieval

EnerVista Viewpoint Monitoring Data Recording and Real-Time Status

The screenshot displays the EnerVista Viewpoint Monitoring software interface. It features a 'Trending Reports' section with a 'Chart Selector' set to 'Current Trending' and a 'Date Window' from 'Tue 6 Mar 07 12:00' to 'Tue 6 Mar 07 13:00'. Below this is a 'Trend Report - Current Trending' table with columns for Time, Amps A, Amps B, and Amps C. The table shows data points from 12:00 to 12:24 on March 6, 2007.

Next to the table is a 'Main Menu' with tabs for Overview, Power, Demand, MinMax, and MinMax Power. The 'Power' tab is selected, showing 'EPM6010' data. It includes a 'Current' table with columns for Phase (A, B, C), Min, Max, and Average. The 'Energy' table shows Received watt-hours (0 Wh), Delivered watt-hours (-1 Wh), Net watt-hours (0), Total watt-hours (0), and Positive var-hours (0).

Below the 'Current' table is a 'Voltage' table with columns for Phase (Van, Vbn, Vcn), Min, and Max. The 'Three Phase' table shows Average values for Positive Real (557), Negative Real (0), Positive Reactive (0), Negative Reactive (0), and Apparent (558).

On the right, another 'Main Menu' with tabs for Metering, Power, Demand, MinMax, and MinMax Power is shown. The 'Power' tab is selected, displaying '3 Phase Power' with a bar chart for Real, Reactive, and Apparent power. Below the chart is a '3 Phase Power' table with columns for Real, Reactive, Apparent, and PF. The table shows values: Real (558386 W), Reactive (13378 VAR), Apparent (558657 VA), and PF (99%). Below this is an 'Energy' table with columns for Received watt-hours, Delivered watt-hours, Net watt-hours, Total watt-hours, Positive var-hours, Negative var-hours, Net var-hours, Total var-hours, and Total VA-hours.

Create tabular trending reports of usage data

Historical minimum and maximum values to understand fluctuations on the network

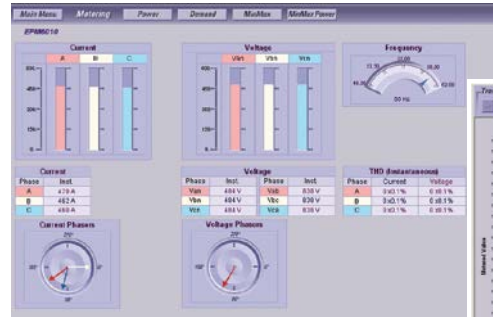
Real-time power values to instantly analyze system capacity

EnerVista Integrator

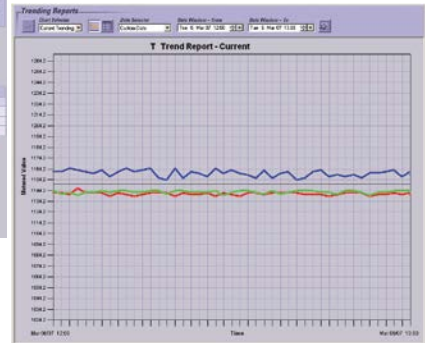
EnerVista Integrator is a toolkit that allows seamless integration of GE's Multilin devices into new or existing automation systems by sending GE device data to HMI, DCS, and SCADA systems. Included in EnerVista™ Integrator is:

- OPC/DDE Server
- GE Multilin Drivers
- Automatic Event Retrieval
- Automatic Waveform Retrieval

EnerVista Viewpoint Monitoring Data Recording and Real-Time Status

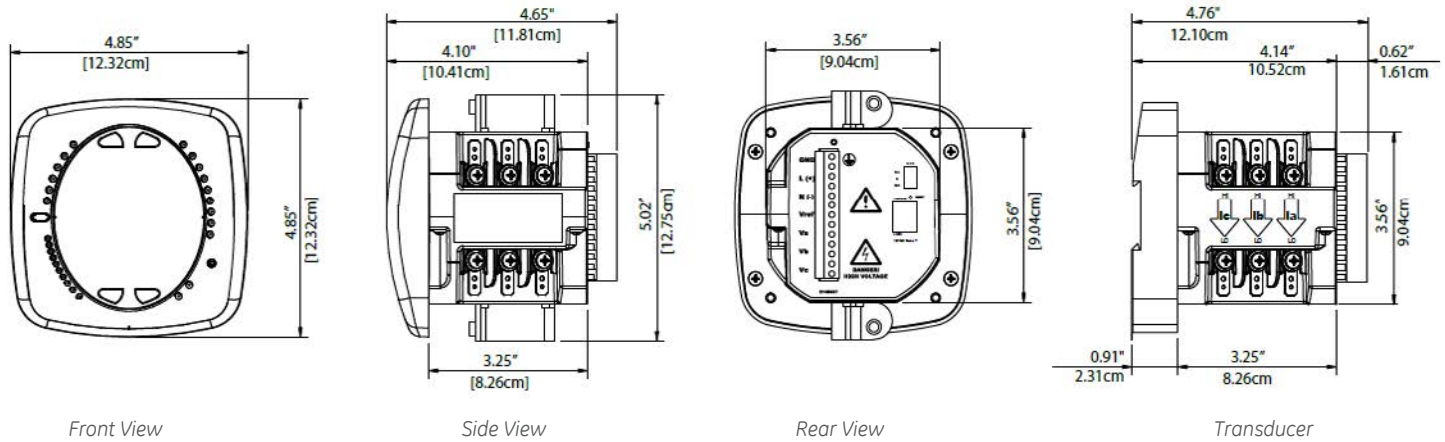


Create graphical trending reports of usage overtime



Real-time metering values and phasors to verify device connection

Dimensions and Mounting



User Interface - EPM 6010



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: 0.36VA per phase max at 600V, 0.014VA at 120 Volts

Input wire gauge max (AWG 12/2.5mm²)

CURRENT INPUTS

Class 10: 0 to 11 Amps Secondary/5 Amps Nominal/10 Amps Max

Class 2: 0 to 2 Amps Secondary/1 Amp Nominal/2 Amps 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 11 Amps

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

Harmonic % THD (% of total harmonic distortion)

UPDATE RATE

Watts, VAR and VA-100msec

All other parameters-1second

POWER SUPPLY

Universal AC/DC Supply

- 90 to 265 Volts AC
- 100 to 370 Volts DC

Optional 24 to 48 Volts DC Supply

Burden: 10VA max

COMMUNICATIONS

2 Com Ports (Back and Face Plate):

- IrDA (Through Faceplate)
 - Protocol Modbus ASCII
 - Com Port Baud Rate: 56.7k
 - Address: 1
- Ethernet (Back Panel)
 - 10/100 BaseT via RJ45 connector
 - Protocol Modbus TCP
 - BACnet/IP

PRE-DEFINED BACNET OBJECTS

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

There are 40 pre-defined BACnet Objects in the EPM 6010's BACnet/IP protocol

METERING ACCURACY

| Measured Parameters | Accuracy% of Reading | Display Range |
|---------------------|----------------------|------------------------------|
| Voltage L-N | 0.1% | 0-9999 Scalable V or kV |
| Voltage L-L | 0.1% | 0-9999 V or kV Scalable |
| Current | 0.1% | 0-9999 Amps or kAmps |
| +/- Watts | 0.2% | 0-9999 Watts, kWatts, MWatts |
| +/-Wh | 0.2% | 5 to 8 Digits Programmable |
| +/-VARs | 0.2% | 0-9999 VARs, kVARs, MVARs |
| +/-VARh | 0.2% | 5 to 8 Digits Programmable |
| VA | 0.2% | 0-9999 VA, kVA, MVA |
| VAh | 0.2% | 5 to 8 Digits Programmable |
| PF | 0.2% | +/- 0.5 to 1.0 |
| Frequency | 0.01 Hz | 45 to 65 Hz |
| %THD | 5% | 0-200% |
| %Load Bar | 1-120% | 10 Digit Resolution Scalable |

PULSE OUTPUT

Front panel Wh infrared test pulse

Back panel Wh pulse output

DIMENSIONS & SHIPPING

Weight: 2 lbs

Basic Unit: H4.85 x W4.82 x L4.25

Mounts in 92mm DIN and ANSI C39.1 Round Cut-outs

Shipping Container Dimensions: 6" cube

ENVIRONMENTAL

Storage -20°C to +70°C

Operating -20°C to +70°C

Humidity to 95% RH Non-Condensing

Faceplate Rating NEMA 12 (Water Resistant) Mounting Gasket Included

COMPLIANCE

IEC 687 (0.2% Accuracy)

ANSI C12.20 (0.2% Accuracy)

ANSI (IEEE) C37.90.1 Surge Withstand

ANSI C62.41 (Burst)

IEC 1000-4-2 – ESD

IEC 1000-4-3 – Radiated Immunity

IEC 1000-4-4 – Fast Transient

IEC 1000-4-5 – Surge Immunity

APPROVALS

ISO Manufactured to an ISO9001 registered program

UL/cUL Listed under E200431

CE Conforms to European CE standards

Ordering

| | PL6010 | * | - | * | - | * | - | * | - | * | Description |
|------------------|--------|------------------|---|---|---|----------|-----|-----------|---|---|--|
| Base Unit | PL6010 | | | | | | | | | | EPM 6010 |
| Enclosure Option | | ENC120 ENC277 | | | | | | | | | NEMA1 Rated Indoor, Single Meter Enclosure, 120V NEMA1 Rated Indoor, Single Meter Enclosure, 277V |
| System | | | | 5 | | | | | | | Frequency Option 50 Hz |
| Frequency | | | | 6 | | | | | | | Frequency Option 60 Hz |
| Current Input | | | | | | 1A 5A | | | | | Current Input 1A Current Input 5A |
| Software (THD) | | | | | | | THD | | | | THD, Limits Alarms and One KYZ Pulse Output |
| Power Supply | | | | | | | | HI LDC | | | HI - AC/DC Power Supply (90-265) VAC or (100-370) VDC LDC - Low Voltage DC Power Supply (18-60) VDC |

Example – EPM 6010 for 60Hz system with 5 Amp secondary and an AC/DC Power supply. PL601065ATHDHI

EPM 6010 is available without a display as the EPM 6010T. Please see the online store for ordering information.

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