

# EPM 5300/5350

## POWER METERING SYSTEM

### Multi-Function Meter with Power Quality

#### KEY BENEFITS

- 3-phase true RMS measurements of voltage, current & power
- Power quality (THD & K Factor) to 31st order for facility wide power quality monitoring
- Bidirectional energy measurement with min/max on all electrical parameters
- Advanced control features for relay activation at user definable set points
- Rugged metal enclosure utility grade construction for panel mounting - fits in standard ANSI cut out
- Large, bright three line (.56" character height) LED display visible even in complete darkness
- Economical design, small footprint easy to program and simple to install
- Control relays can open and close at the pre-programmed (min, max etc) set-points for alarms and notifications
- KYZ pulse outputs for energy information to PLCs, RTU and other non digital communication devices
- Open Modbus protocol over RS 485 or over built in Ethernet TCP/IP allows easy integration to EnerVista or third party systems

#### APPLICATIONS

- Ideal circuit monitoring for main feeds, branch circuits, gensets and equipment
- Programmable set-point for alarms and control
- Pulse energy outputs to PLCs for load shedding
- Panel mount low and medium voltage applications

#### FEATURES

##### Monitoring and Metering

- True RMS measurement of over 80 electrical parameters with ANSI accuracy standards.
- Measures 3-phase real-time amps, volts, power, energy, power factor and frequency

##### User Interface

- EPM 5300: User programmable Modbus or DNP communication over RS-485
- EPM 5350: Modbus over Ethernet TCP/IP
- Form C control relays with programmable set-points
- KYZ pulse output for PLC and other device interfaces
- Provides remote status when used with EnerVista suite of software

## Standard Features

### Description

The EPM 5300 Multi-Function Power Meter System provide complete access to all voltage, current, and power values through an easy to use interface. The unit provides advanced features like harmonic analysis that make this instrument useful for most power monitoring and control applications.

### Rugged Utility Grade Construction

The meter is housed in a rugged metal enclosure protected from EMI and RFI emission. Internal protection circuits protect the power supply from damaging spikes and transients. With the small footprint, meters can easily fit into the existing standard ANSI 39.1 switchboard meter cutouts.

### Display Features

All 5300 meters have a large three-lined LED display with .56" character height. Extra bright LEDs and large character size of the display provides easy readability from a distance in bright or dark conditions. The LED display provides long life and durability. It is ideal for harsh temperature environments.

A five-button keypad at the bottom provides a simple, easy-to-use interface to read all metered data. Meter can be programmed to scroll through different values. Voltage, Current, and Power values can also be simultaneously displayed.

### Metering & Measurements

The EPM 5300 is a four-quadrant, multi-function power meter that measures the following parameters:

- 3 Phase Voltage (L-N)
- 3 Phase Voltage (L-L)
- 3 Phase Current
- Neutral Current
- Bi-directional kW (3 Phase and Total)
- Bi-directional kVAR (3 Phase and Total)
- kVA (3 Phase and Total)
- PF (3 Phase and Total)
- Bi-directional kWh
- kVAh
- Frequency
- %THD
- K Factor

### Advanced Measurement Features

The EPM 5300 includes multiple advanced measurement features to support power analysis and control. The meter includes the following Max/Min readings:

- Voltage Max/Min
- Amps Demand Max/Min
- kW Demand Max/Min
- kVAR Demand Max/Min
- kVA Demand Max/Min
- PF Max/Min
- Frequency Max/Min
- %THD Max/Min
- K-Factor Max/Min

### Harmonic / Power Quality Measurements

The harmonic option calculates harmonic values on each phase of voltage and current through the 31st order.

- Phase Voltage %THD
- Phase Current %THD
- Phase Current K Factor

- Harmonic Magnitudes
- Harmonic Angles

## Options

### Control Options:

EPM 5300 Power Metering Systems provide relay options which can be programmed to be activated at user-defined set points for most of the measured values including:

- Over/Under Voltage
- Over/Under Current
- Over/Under kVA
- Over/Under kW
- Over/Under kVAR
- Over/Under PF
- Over/Under Frequency
- Over %THD
- Phase Reversal
- Reverse Power
- Logic and Hysteresis Functions on Set Points
- Relay Output Control for all Limits

### Output Options:

The EPM 5300 Power Metering Systems output option has two control relays and one KYZ pulse:

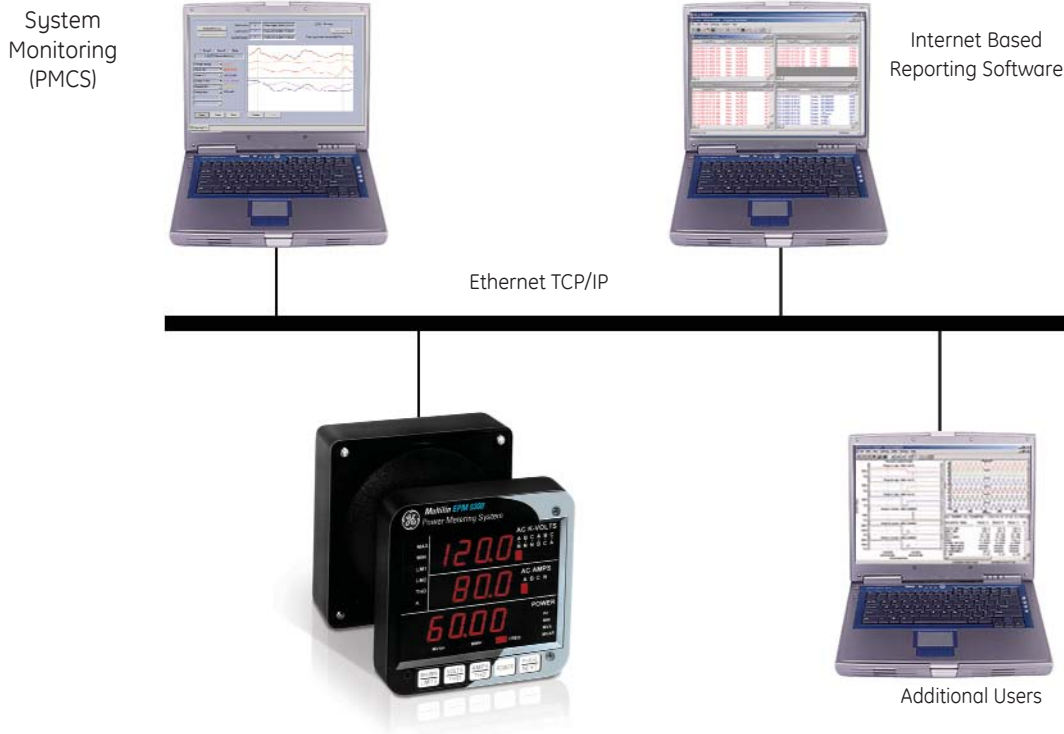
- Two Form C relays - Relays operate automatically through user programmable set points or through the digital commands using programmable logical descriptors
- One KYZ pulse output - KYZ pulses can be configured for positive or negative Watt-hour and VA/Hr

### EPM 5300: RS-485 Multi-Point Communication Modbus/DNP 3.0



## EPM 5350: Multi-Socket Ethernet/Internet Access

(12 Simultaneous Requests)



### Multiple Communication & Interface Options

The EPM 5300 is offered with RS-485, Modbus and DNP communications. EPM 5350 provides Modbus over Ethernet TCP/IP. EPM 5300 has the following user selectable open protocols:

- Modbus
- RTU/ASCII
- DNP

Using its non-proprietary open protocols EPM 5300 communicates with almost all utility RTUs, industrial PLCs and commercial energy-management systems. Integration into existing systems is simple and quick.

### Software

#### EnerVista Software

With the Modbus option, EPM 5300/5350 are both fully supported by GE Multilin EnerVista suite of software. EnerVista is the easy-to-use software suite designed for tracking and controlling facility power. With just a few clicks of a mouse, you can gain real-time access to the family of

Multilin IEDs and even to third party devices or systems. With EnerVista's powerful analytical tools, you can do complete set-up for Multilin devices, perform advanced power quality analysis and generate bills by monitor energy consumption. It's all available through sophisticated graphics and a highly intuitive interface.

**EnerVista PMCS:** Power Management Control System is a full-featured HMI that can be used for managing, tracking and controlling your entire facility's power system. With a few simple clicks of your mouse, you can gain real-time access to any power management device anywhere in your facility. PMCS offers a fully customizable solution that will automatically record all important system data and allow you to receive automatic warning messages of device events.

Using PMCS you will have a detailed up-to-the-minute profile of your power system and will allow you to identify trends, improve power usage efficiency and avoid peak demand surcharges which can mean saving thousands of dollars each and every year.

**EnerVista Energy Aggregator:** Built on state-of-the-art technology and boasting a sophisticated viewer, the Energy Aggregator enables users to compile data, provide statistical analysis and generate billing reports. This package is an ideal tool for managing energy usage in multiple locations (floors, tenants, sites, etc.). It provides financial analysis with a user friendly tool for generating bills in simple steps while simultaneously furnishing facility management teams with detailed technical data. Your business firm will have the best of both worlds.

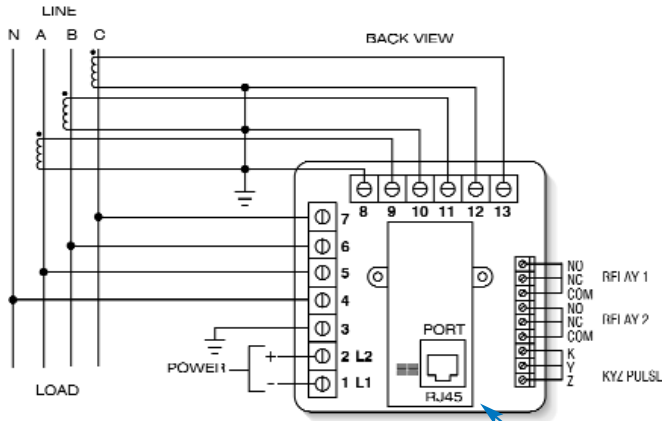
**EnerVista Viewpoint:** EnerVista Viewpoint instantly puts critical real-time device data on your PC through pre-configured graphical screens. Now you can spend your time managing your GE Multilin devices - not creating monitoring screens.

- Pre-configured screens
- Out-of-the-box communications
- Simple and powerful diagram editor
- Built-in data logging
- Powerful notification

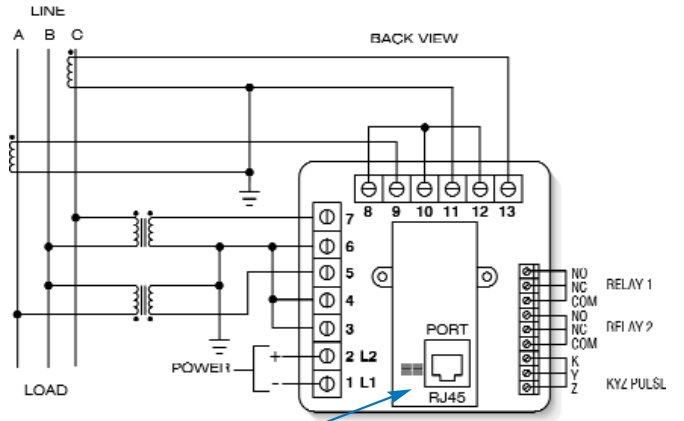
## Typical Wiring

### EPM 5350

3 phase wye with CTs



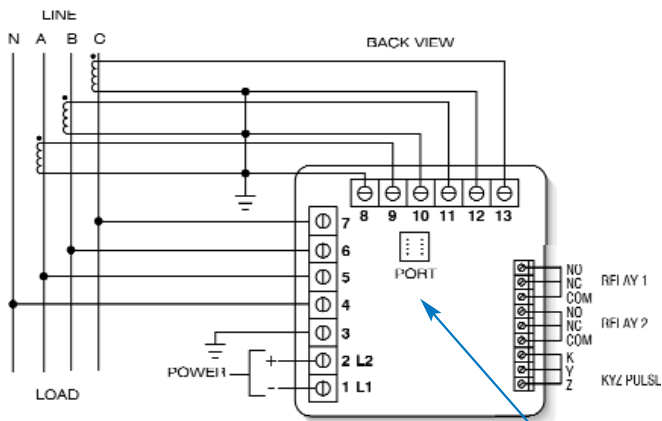
3 phase open delta



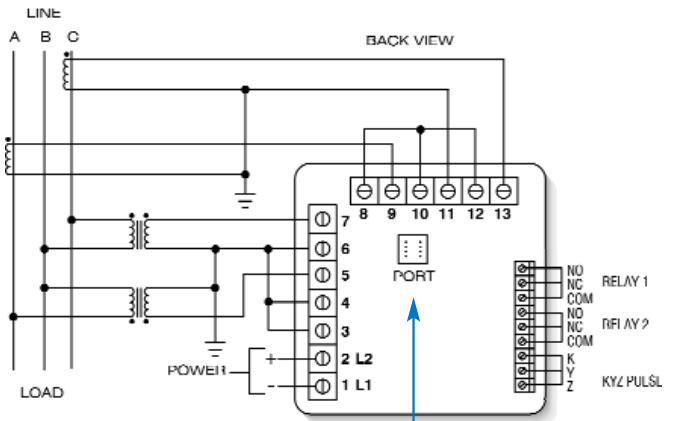
Built in TCP/IP Ethernet port

### EPM 5300

3 phase wye with CTs



3 phase open delta



RS-485 port

## EPM 5300/5350 Technical Specifications

DEMAND MONITORING	
<b>Measured values:</b>	Phase A/B/C/N current (A) 3 $\phi$ real power (kW) 3 $\phi$ reactive power (kvar) 3 $\phi$ apparent power (kVA)
<b>Measurement type:</b>	Thermal exponential Programmable block interval

POWER SUPPLY	
<b>CONTROL POWER</b>	
<b>Input options:</b>	95-135 Volt AC Power Supply 100-150 Volt AC/DC Power Supply 24-48 Volt DC Power Supply
<b>Frequency:</b>	45-75 Hz
<b>Operating Power:</b>	6 VA max

METERING			
MEASURED VALUES			
MEASUREMENTS	ACCURACY	RESOLUTION	RANGE
Volts(All Channels)	0.3%	0.1%	0 - 2000
Volt Max/Min Demand	0.3%	0.1%	0 -100%
Ampere	0.3%	0.1%	0 - 2000
Amp Max/Min Demand	0.3%	0.1%	0 - 100.0%
kW	0.5 %	0.1%	0 - 2000
kVA	0.5 %	0.1%	0 - 2000
KVAR	0.5 %	0.1%	0 - 2000
PF	0.5 %	1.0%	0 - 2000
kW Max/Min Demand	0.5 %	0.1%	1.0 - 5%
kW-Hour	0.5 %	1 kW Hour	0 -100%
kVA-Hour	0.5 %	1kVA Hour	0 - 999,999
Frequency	0.02Hz	0.01Hz	45-75Hz
Harmonics	0.50%	0.1%	0-100%

INPUTS	
<b>INPUT VOLTAGE RANGE</b> 150V phase to neutral, 300V phase to phase* 300V phase to neutral, 600V phase to phase *To be used also with PTs for extended input voltage.	
<b>INPUT CURRENT RANGE</b> 5A input at full scale, 10A maximum (programmable with any CT ratio)	
<b>FREQUENCY RANGE</b> Fundamental 45-75 Hz	
<b>BURDEN</b> Voltage: 0.1 VA, maximum Current: 0.1 VA, maximum	
<b>SENSING METHOD</b> True RMS Sampling at 64 samples per cycle	
<b>UPDATE TIME</b> 1 second	

COMMUNICATIONS	
<b>Format:</b>	1 start bit, 8 data bits, 1 stop bit; programmable up to 9600 baud
<b>Media:</b>	RS485 2-wire, half duplex, isolated CAT 5 TCP/IP T base 10
<b>Baud rate:</b>	5300: 1,200 - 9,600 RS485 bps 5350: Ethernet 10 BASE T
<b>Protocol:</b>	5300: ModBus® RTU/ASCII, DNP 5350: ModBus® over Ethernet
<b>Functions:</b>	Read/write setpoints Read actual values

OUTPUTS	
<b>Pulse Outputs:</b>	One programmable KYZ
<b>Parameters:</b>	+ve kWh, -ve kWh, VAh
<b>Demand Interval:</b>	1-9999 in steps of 1 sec.
<b>Control Relay Output:</b>	form C No/NC

\*Specifications subject to change without notice.

ENVIRONMENTAL	
<b>Humidity:</b>	95% non-condensing
<b>Temperature:</b>	-20° C to +70° C ambient
<b>CONSTRUCTION</b> Metal housing with standard switchboard dimensions and cutout per ANSI 39.1	
<b>PACKAGING</b>	
<b>Shipping box:</b>	11" L x 9.5" H x 8" D (275 mm x 238 mm x 200 mm)
<b>Ship weight:</b>	5 lbs (2.3 kg)

TYPE TESTS	
<b>Type tests as per UL® &amp; CE®</b>	
<b>Emissions:</b>	EN55011
<b>Immunity:</b>	EN50082
<b>Accuracy:</b>	ANSI C-12 Revenue Certifiable
<b>Communication isolation:</b> 2500 volts AC 60 Hz V and A continuous 200% rated: surge 10 x maximum input for 3 seconds	
<b>Input withstand:</b>	IEEE C37.90.1
<b>Surge withstand:</b>	IEEE C37.90.1

APPROVALS	
<b>ISO:</b>	Manufactured to an ISO9001 registered program
<b>UL:</b>	Recognized under E142921
<b>CE:</b>	Conforms to EN 55011/ EN 50082

## EPM 5300/5350 Guideform Specifications

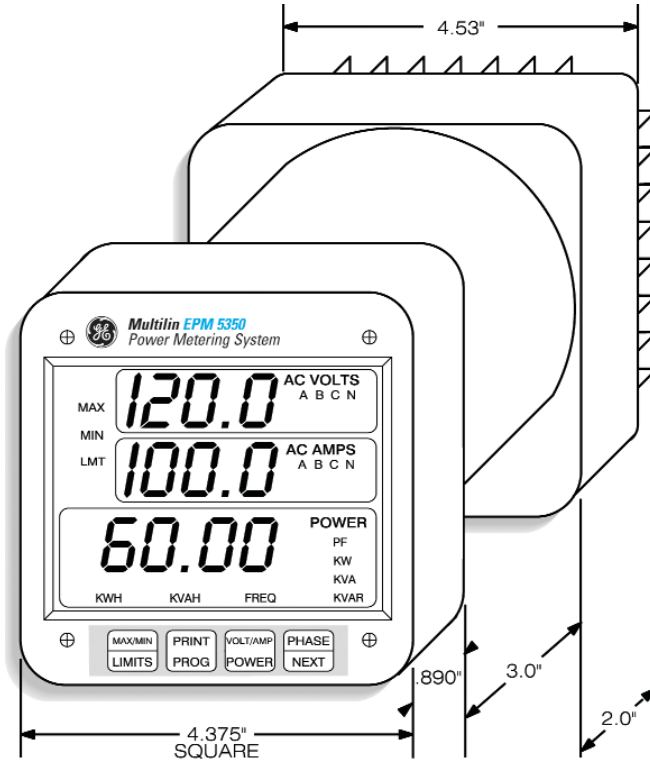
For an electronic version of the EPM 5300/5350 guideform specifications, please visit: [www.GEMultilin.com/specs](http://www.GEMultilin.com/specs), fax your request to 905-201-2098 or email to [literature.multilin@ge.com](mailto:literature.multilin@ge.com).

**Guideform Specifications**  
Available Online or from your Sales Representative.  
[www.GEMultilin.com](http://www.GEMultilin.com)

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## Dimensions

EPM 5300/5350



## Ordering

**EPM 5300** - 3-phase multi-function advanced meter

PL 5300	*	*	*	*	* 0000	Description
Voltage Input	0					120/208 Volt, 3 Element, 3 voltages, 3 currents, Wye
	1					277/480 Volt, 3 Element, 3 voltages, 3 currents, Wye
	2					120 Volt, 2 Element, 2 voltages, 2 or 3 currents, Open Delta
	3					347/600 Volt, 3 Element, 3 voltages, 3 currents, Wye
Control Power	A					95-135 Volt AC Power Supply
	B					100-150 Volt AC/DC Power Supply
	C					24-48 Volt DC Power Supply
Relays	0					No Relay Outputs
	1					Two Relay Outputs and One kyz Pulse Output
Communication	A					No Communications Output
	B					RS-485 Digital Communication w/ Modbus RTU/ASCII, DNP Protocol
Labeling				0		Labeling - Volts V, Amps A, Power kW
				1		Labeling - Volts kV, Amps A, Power MW

**EPM 5350** - 3-phase multi-function advanced meter with built in Ethernet

PL 5350	*	*	*	A	* 0000	Description
Voltage Input	0					120/208 Volt, 3 Element, 3 voltages, 3 currents, Wye
	1					277/480 Volt, 3 Element, 3 voltages, 3 currents, Wye
	2					120 Volt, 2 Element, 2 voltages, 2 or 3 currents, Open Delta
	3					347/600 Volt, 3 Element, 3 voltages, 3 currents, Wye
Control Power	A					95-135 Volt AC Power Supply
	B					100-150 Volt AC/DC Power Supply
	C					24-48 Volt DC Power Supply
Relays	0					No Relay Outputs
	1					Two Relay Outputs and One kyz Pulse Output
Communication				A		Modbus TCP/IP Communication
Labeling					0	Labeling - Volts V, Amps A, Power kW
					1	Labeling - Volts kV, Amps A, Power MW

### Accessories:

**PL 35MNTKT** - EPM 5000 Mounting Kit