EPM 5500P

POWER METERING SYSTEM

Multi-Function Meter with Power Quality.

KEY BENEFITS

- 3-phase true RMS measurements of voltage, current & power
- THD and individual Current and Voltage harmonics up to 31st order for facility wide power quality monitoring
- Bidirectional energy measurement with min/max for electrical parameters
- Advanced control features for relay activation at user definable set points
- Large bright blue backlit LCD graphical display for values, relay status and graphical load display.
- Graphical diagram of voltage and current unbalance
- Economical design, small footprints fits in 90x90mm cut out
- Digital outputs used as KYZ pulse outputs for energy information to PLC, RTU and other non digital communication devices
- Digital outputs used as alarm
- Open Modbus protocol over RS 485 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
- Measures 3-phase real-time amps, volts, power, energy, power factor and frequency

User Interface

- User programmable Modbus communication over RS 485
- Form A control relays with programmable set-points
- KYZ pulse output for PLC and other device interfaces
- Provides remote status when used with PC software

Standard Features

Description

The EPM 5500P Multi-Function Power Meter System provides complete access to electrical energy, power, demand as well as voltage, current and other parameters through an easy to use interface. As an option, the unit also provides control, events and alarms with time stamps along with digital outputs. Additional features include Total Harmonic Distortion (THD) as well as individual harmonics to the 31st order.

The EPM 5500P can be used to replace multiple traditional analog and digital multifunction electric meters. When used with a SCADA system, the meter can also be used as a Remote Terminal Unit (RTU) for monitoring and controlling. All the measured data is available via digital RS485 communication ports over open architecture Mobus RTU protocol.

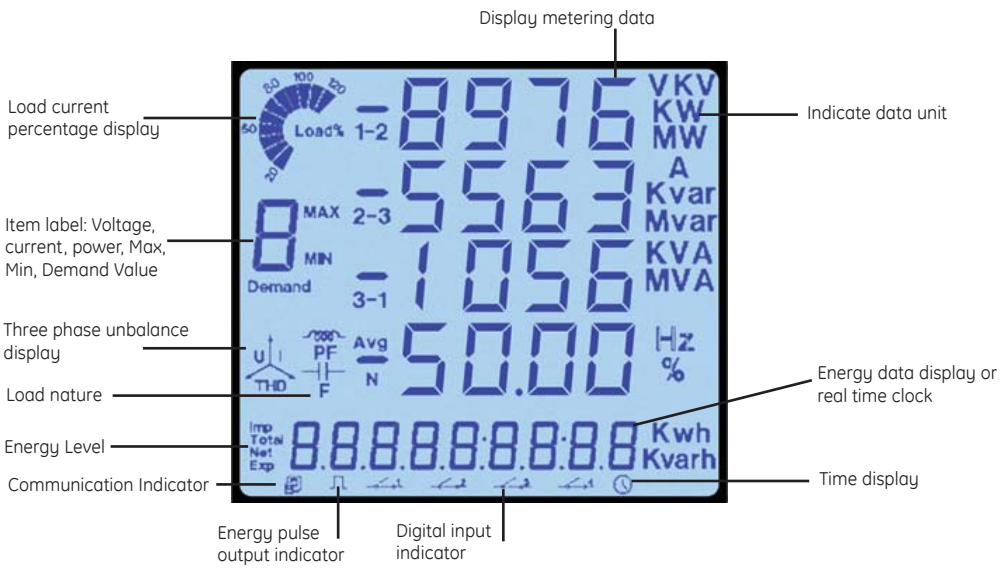
Graphical User Display Features

The EPM 5500P has a large backlit alphanumeric graphical LCD display that can display electrical parameters, open close status of contacts, a graphical load bar as well as phasors. A four-button keypad at the bottom provides a simple, easy-to-use interface to read all metered data. Voltage, current, energy and power values can be displayed by the push of a button.

FUNCTION			PARAMETERS	PL 5500	PL 5500 IO
Metering	Real Time Measuring	Phase Voltage	V1,V2,V3,Vlnavg	■	■
		Line Voltage	V12,V23,V31,Vllavg	■	■
		Current	I1,I2,I3,In,Iavg	■	■
		Power	P1,P2,P3,Psum	■	■
		Reactive Power	Q1,Q2,Q3,Qsum	■	■
		Apparent Power	S1,S2,S3,Ssum	■	■
		Power Factor	PF1,PF2,PF3,PF	■	■
		Frequency	Frequency	■	■
	Energy & Demand	Energy	Ep_imp,Ep_exp,Ep_total,Ep_net	■	■
		Reactive Energy	Eq_imp,Eq_exp,Eq_total,Eq_net	■	■
		Demand	Dmd_P,Dmd_Q,Dmd_S	■	■
Monitoring	Power Quality	Voltage Unbalance Factor	U_unbl	■	■
		Current Unbalance Factor	I_unbl	■	■
		Voltage THD	THD_V1,THD_V2,THD_V3, THD_Vavg	■	■
		Current THD	THD_I1, THD_I2, THD_I3, THD_Iavg	■	■
		Harmonics	Harmonics 2nd to 31st	■	■
		Voltage Crest Factor	Crest Factor	■	■
		TIF	THFF	■	■
		Current K factor	K Factor	■	■
	Statistic	MAX with Time Stamp		■	■
		MIN with Time Stamp		■	■
	I/O	Switch Status(DI)		■	■
		Relay Output			■
		Pulse Output			■
Others	Alarm	Over/Under Limit Alarm			■
	COMM	RS485 Port	ModbusTM Protocol	■	■
	Time	Real Time Clock	Year, Month, date, Hour, minute, Second	■	■

Note:
1. There are two DIs in the model - PL5500.
2. The model PL5500 IO can provide additional 2 DIs, DI power, 2 DOs and 2 Relay outputs. The 2 DOs can serve as Alarm or Pulse output.

User Interface



Metering and Measurements

The EPM 5500P is a true RMS multifunction meter and an ideal choice when continuos monitoring of electrical parameters is required. In addition to realtime metering, the standard meter also provides voltage, current and total harmonic distortion for each phase. The measured accuracy of voltage and current is 0.2%, power and energy is 0.5% of full scale reading

Additionally, voltage and current unbalance is also monitored and displayed as graphical phasor diagrams.

This meter can measure energy in both directions (import/export) with four quadrants Kwh and Kvarh with an accuracy of 0.5%. It can also provide high accuracy energy demand data.

EPM 5500P measures and displays the following parameters.

Harmonic / Power Quality Measurements

With a powerful digital signal processing capability, the EPM 5500P power meter can be used to monitor power quality. The meter continuously provides power quality analysis for data such voltage and current, harmonics up to 31st harmonic as well as Crest Factor, TIF and K Factor.

Communication

The EPM 5500 is offered with RS485, Modbus communications. Using its non-proprietary open protocol, the EPM 5500P communicates with most utility RTUs, industrial PLCs and commercial energy-management systems. Integration into existing systems is simple and quick.

Options Advanced Measurement Features

Control Options:

The EPM 5500P includes multiple advanced measurement features to support power analysis and control through the use of two form A relays. Two digital outputs can also be used to provide alarm signals.

Up to nine set points can be programmed with specified time limits. If a parameter value varies above or below a given set point for a programmed time interval, then an event with a time stamp is generated. One digital output (DO) can also be activated to send a control signal. When the alarming parameter returns to normal, it will be time stamped and logged, providing the user with the duration of the over/under condition.

Any of the following 34 parameters can be programmed to activate 1 DO and generate an event.

- Frequency
- Volts - per phase, per phase average, phase-phase, phase-phase average
- Currents - per phase, average, neutral
- Power - per phase and sum
- Reactive Power - per phase and sum
- Apparent Power - per phase and sum
- Power Factor - per phase and sum
- Voltage and current unbalance
- Demand - Power, Apparent and Reactive

KYZ Pulse Output Options:

The two digital outputs (DO) can be selected as energy pulse outputs. Both the pulse width and pulse ratio can be programmed as required.

Any of the two digital outputs can be assigned to the following eight energy and reactive energy parameters for pulse output.

- KWh (import, export, net, total)
- KVarh (import, export, net, total)

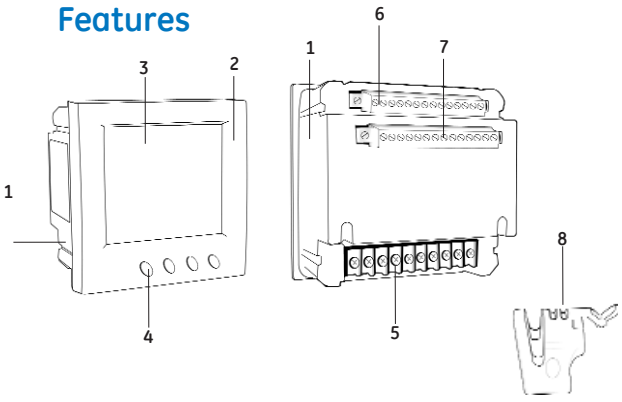
PC software:

The software is used to communicate with the meter for the setting of EPM5500P energy, alarm and meter settings. The software tool can be used for real time monitoring of metered parameters, voltage and current harmonics, alarm parameters, phase angle parameters and maximum/minimum statistical information with time stamps.

EPM 5500P Guideform Specifications

For an electronic version of the EPM 5500 guideform specifications, please visit: www.GEMultilin.com/ specs, fax your request to 905-201-2098 or email to literature. multilin@ge.com.

Features

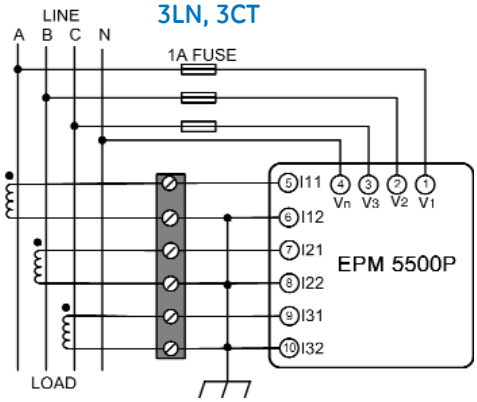


Features of EPM 5500P

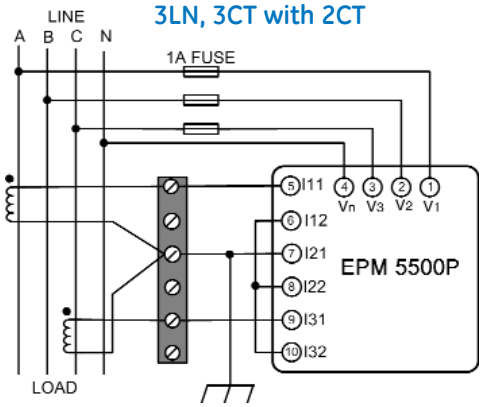
Part Name	Description
1. Enclosure	The EPM 5500P enclosure are made of high strength anti-combustion engineering plastic
2. Front casing	Front casing encloses the LCD and the keypad
3. LCD Display	Large bright blue backlight LCD Display
4. Key	Four keys are used to select display and to set parameters of the meter
5. Input Wiring Terminals	Used for Voltage and Current input
6. Auxiliary Wiring Terminals	Used for auxiliary power, communication and DI
7. Extension Wiring Terminals	Auxiliary I/O wiring terminals
8. Installation clip	When installing, the clips are used for fixing the meter to the panel

Typical Wiring

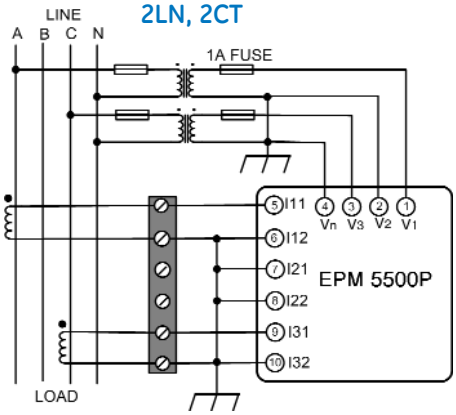
3LN, 3CT



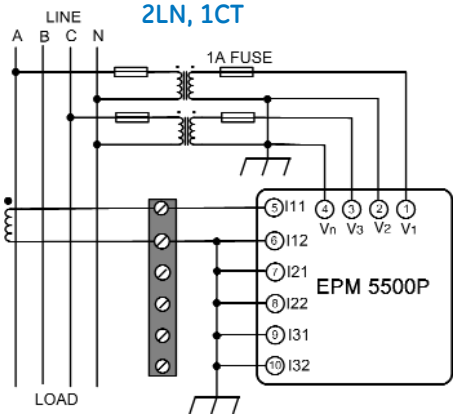
3LN, 3CT with 2CT



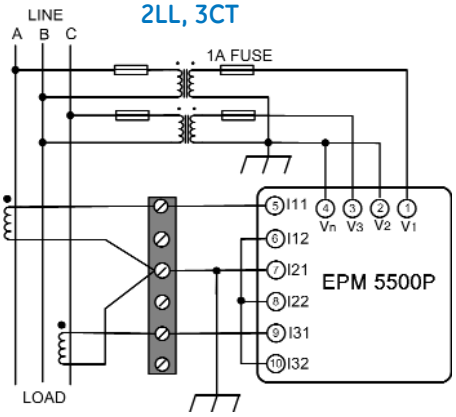
2LN, 2CT



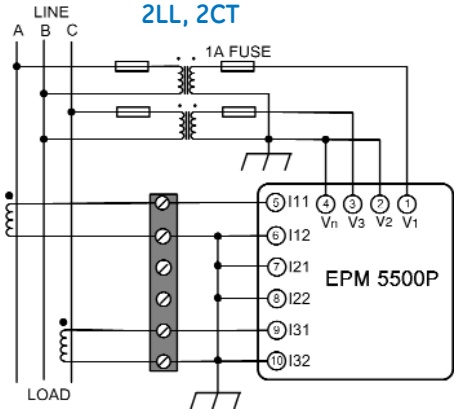
2LN, 1CT



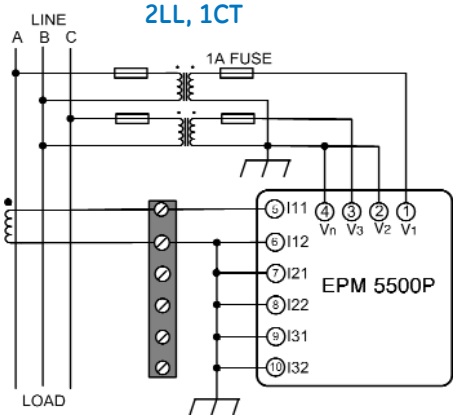
2LL, 3CT



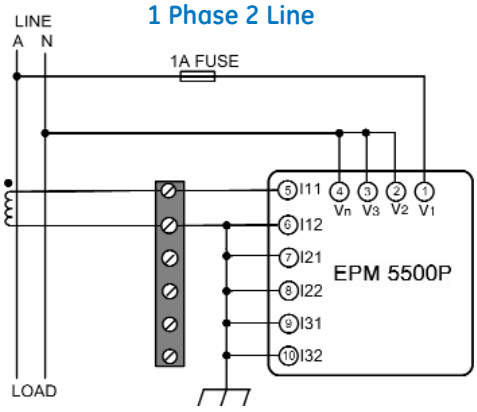
2LL, 2CT



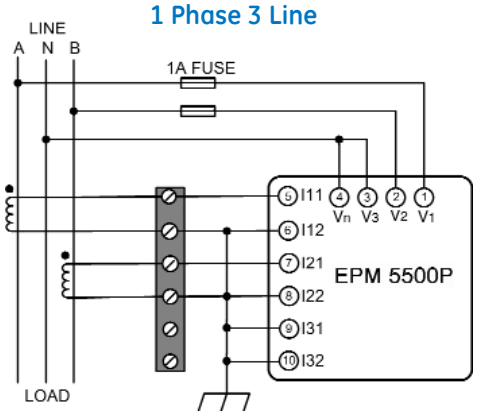
2LL, 1CT



1 Phase 2 Line

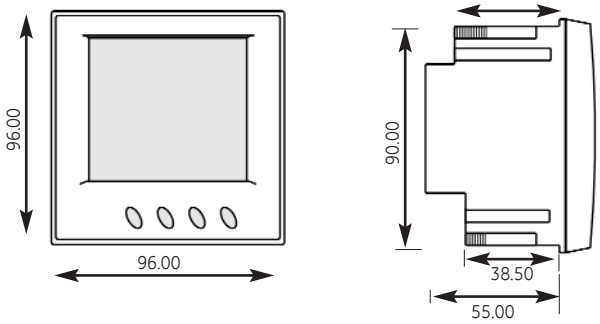


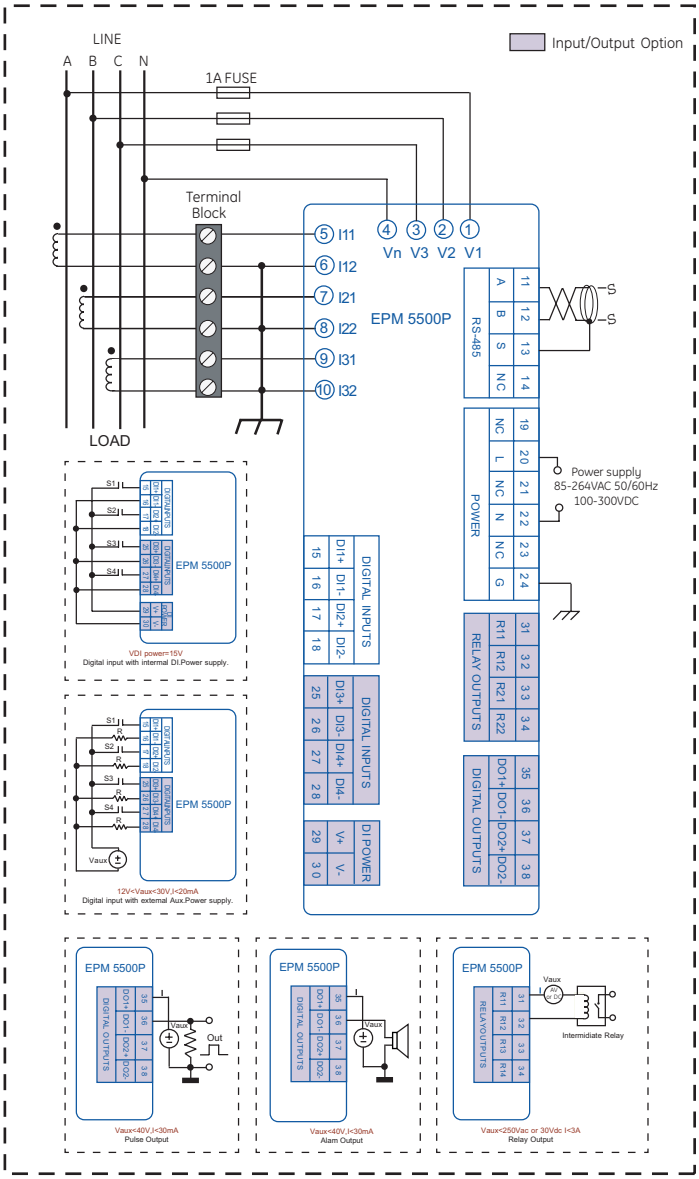
1 Phase 3 Line



Dimensions

dimensions in mm





EPM 5500P Technical Specifications

Nominal Input (Supporting 3ph, 2ph, and single phase systems)

VOLTAGE INPUT

PT primary:	Max. 500KVAC
PT secondary:	20-100VAC with 20% over range
Not from PT:	40-230VAC with 20% over range
Frequency:	45~65Hz
Overload:	2 × Rated voltage (continued), 2500Vac/1sec(No cycling)
Burden:	less than 0.2VA
Measurement:	AC True-RMS

CURRENT INPUT

CT Primary:	9999Amp AC
CT Secondary:	5Amps AC, with 20% over-range; Min. initial current: 20mA
Overload:	10A (Continued), 100A/1sec (No Cycling)
Burden:	< 0.1VA
Measurement:	AC True-RMS

METERING

Parameter	Accuracy (% of full scale)	Resolution	Range
Voltage	±0.2%	0.1%	20-100Vac(PT) 40-230Vac(D)
Current	±0.2%	0.1%	1%-120% CT
Neutral current	±1.0%	0.1%	1%-120%CT
Volt. Unbalance	±1.0%	0.1%	0-200%
Current unbalance	±1.0%	0.1%	0-200%
Power	±0.5%	0.1%	0-±9999MW
Reactive Power	±0.5%	0.1%	0-±9999MVar
Apparent Power	±0.5%	0.1%	0-±9999MVA
Energy	±0.5%	0.1KWh	0-99999999.9KWh
Reactive Energy	±0.5%	0.1KVarh	0-99999999.9KVarh
Power Factor	±1.0%	0.01	±0.02-1.00
Frequency	±0.2%	0.01Hz	45-65Hz
Power demand	±0.5%	0.1%	0-±9999MW
Reactive power demand	±0.5%	0.1%	0-±9999MVar
Apparent power demand	±0.5%	0.1%	0-9999MVA
Volt. THD	±2.0%	0.01%	0-100%
Current THD	±2.0%	0.01%	0-100%

Note:

1.Directly measured Voltage: Accuracy±0.2%;
Calculated Voltage: Accuracy ±0.5%.

2.Directly measured Current: Accuracy ±0.2%;
Calculated Current: Accuracy ±0.5%. See the following table for the calculated parameters.

Wiring mode	Calculated parameter
3LN Voltage wiring	VL-L
2LN Voltage wiring	V2, VL-L
2LL Voltage wiring	V3-1
2CT Current wiring	I3

COMMUNICATIONS

Type:	RS485 2 wire, half duplex, Optical isolated
Baud Rate:	1200 to 38400 bps
Protocol:	Modbus-RTU

DIGITAL INPUT (DI)

Optical Isolated Voltage:	2500Vac RMS
Input Type:	Wet contact
Input resistance:	2K Ohm (Typical)
Input voltage:	5~30Vdc
Close voltage:	> 10Vdc
Max input current:	20mA
DI Aux Power:	15Vdc/100mA

DIGITAL OUTPUT (DO)

Output Form :	Photo-MOS, NO
Optical Isolation:	2500Vac (rms)
Max operating voltage:	100Vdc
Max operating current:	50mA

RELAY OUTPUT (RELAY)

Output Form:	Mechanical Contact, Silver alloy
Contact Resistance:	100m ohm@1A, initial value
Max Break Voltage:	250Vac, 30Vdc
Max Break Current:	3A
Endurance Voltage of Contact and Coil:	2500Vac (rms)

POWER SUPPLY

Power supply:	85-264VAC or 100-300VDC
Power consumption:	3W(Max)

ENVIRONMENTAL

Humidity:	5%-95% non-condensing
Temperature:	-10°C ~+70°C (operation) -40°C ~+85°C (storage)
Dimension (mm):	96X96X72 (Cut out90X90)
Weight:	350g

STANDARD AND APPROVALS

Metering:	GB/T 13729-2002, DL/T630-1997
Environmental:	GB/T 15153.2-2002 idt. IEC 60870-2-2: 1996
EMC:	GB/T 15153.1-1998 idt. IEC 60870-2-1: 1995 GB/T 17626.4-1998 idt. IEC 61000-4-4: 1995
Dimension:	DIN43700

Ordering

PL5500	*	*	Description
PL5500			Metering, Max./Min. and Time Tag, Energy, Demand, THD, Individual Harmonic, CF, THFF, K Factor
	0		2 Digital Inputs
	IO		4 Digital Inputs(15V DC Provided by Meter), 2 Form A Outputs, 2 Digital Outputs for Alarm or Pulse Output
		PT	20-100V(From PT)
		D	40-230V(Not From PT)