Grid Solutions

MULTILIN™ EPM 9850

Socket and Switchboard Meter with Revenue & Power Quality

The Multilin™ EPM 9850 is a revenue and power quality meter designed to monitor usage and power quality, addressing the evolving needs of distributed generation and industrial customers.

The EPM 9850 delivers 0.1% energy accuracy, advanced revenue metering, load profiling, and power quality monitoring. It logs precise power quality and event data with limit alarms, enabling historical trend analysis and post-fault investigations to enhance system uptime and reliability. With flexible communication options—including multiple serial and Ethernet ports and support for Modbus, Level 2 DNP3, IEC 61850, and MV90—it integrates easily into SCADA and energy monitoring systems.

The EPM 9850 is also an enhanced, retrofit upgrade replacement for the EPM 9800.

Key Benefits

- Ideal power quality monitoring and revenue metering solution for utility substations, renewables, advanced industrial manufacturing, datacenter and hospital applications.
- Easy system integration with support for Modbus (RTU, TCP/IP), DNP 3.0, IEC 61850 and GE Vernova EGD Protocols.
- Field-upgradable with communication and I/O cards, software options, and up to 128MB logging memory to store years of data.
- Flexible installation with standard ANSI cutout, optional meter enclosures for retrofit applications, and a no-display transducer version (EPM 7000T) for DIN rail mounting.
- Direct retrofit upgrade for EPM 7000/7000T with the same wiring and cutout for Meter Unit installation.

Applications

- New/retrofit revenue energy monitoring, submetering, or reconciliation (demand, time of use) for customer applications such as grid metering, power generation/co-generation, or distributed energy.
- Power quality studies, alarming, and event capture for utility or industrial investigations/ reconciliation, ensuring uptime and supporting predictive maintenance of power-quality-sensitive assets (utility substations, data centers, manufacturing facilities, hospitals).
- Remote utility or industrial asset monitoring requiring a rugged form factor, wireless communications, and/or support for Advanced Metering Infrastructure (AMI).

Advanced Monitoring and Metering

- ANSI C12.20 0.1% Accuracy Class Tested
- Supports Time of Use (TOU); CT/PT compensation; Transformer/Line loss compensation; Test mode and energy presets, pulse accumulation
- Harmonics to the 40th order (Voltage, Current)
- Up to 512 samples/cycle & Waveform recording, and available 128 MB of logging memory to capture surge/sag and fault events
- Comprehensive revenue energy measurement with onboard time of use

Flexible Communications and Control

- Multiple communications ports including standard USB front port and up to 2 optional serial RS485 ports or up to 2 optional Ethernet ports (RJ45 or ST Fiber Optic) with independent unique IP addresses.
- Support for Modbus (RTU, TCP/IP), DNP 3.0, and IEC 61850
- Customizable and upgradable software options for increased functionality

Easy Installation and Commissioning

- Rugged Design with primary surge suppression
- Available socket and draw-out switchboard case
- Screen designer for creating customized display screens
- Pre-configured diagnostic screens
- Role-based cybersecurity with IP firewalls, encryption, and digital fault recorder
- Firmware signature (INP100S Card)
- Sealing switch and physical locks
- Retrofit for EPM 9800

GE VERNOVA

Key Applications – Utilities

Accurate Revenue Metering at Key Grid Intersections

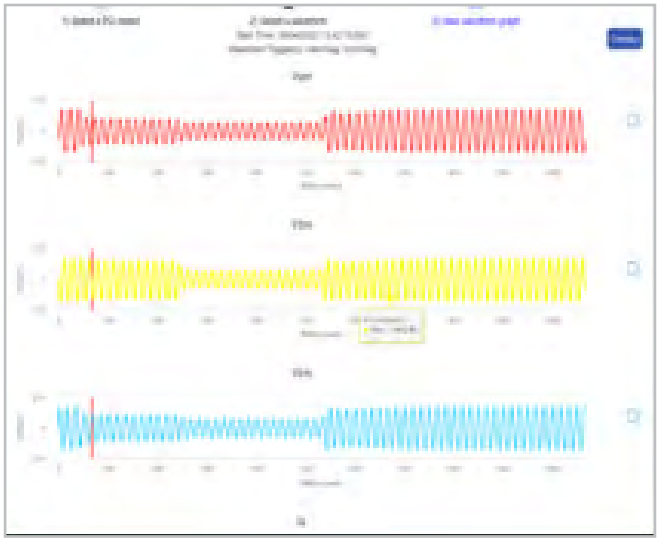
The EPM 9850 provides accurate, revenue measurements for Grid metering, power generation, and distributed energy applications. With high sampling rate, the EPM 9850 provides reliable and accurate measurements including intertie billing and distributed energy solutions.

Improve Reliability with Detailed Power Quality and Fault Analysis

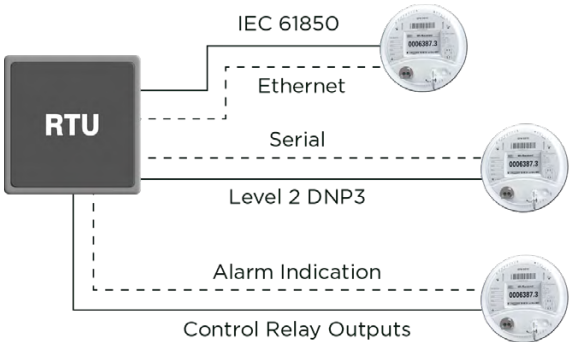
The EPM 9850 captures power quality information and fault data to support analysis and problem determination. The meter measures and records critical power quality data, such as harmonics, power factor (PF), and phase imbalance, to provide advanced analysis options for improving power system reliability.

Flexible and Easy Integration for Substation Solutions

The EPM 9850's advanced communication capabilities with multiple available I/O options, network and communications protocols (including IEC 61850 and DNP3) support integration to numerous applications, providing current information as well as logged measurements. For example, the EPM 9850 can communicate with an RTU to bring SCADA information back via one protocol, and at the same time support communication or I/O with other software systems for interval or power quality analysis.



Analyze detailed power quality information



Easy integration with EPM 9850 advanced communication capabilities

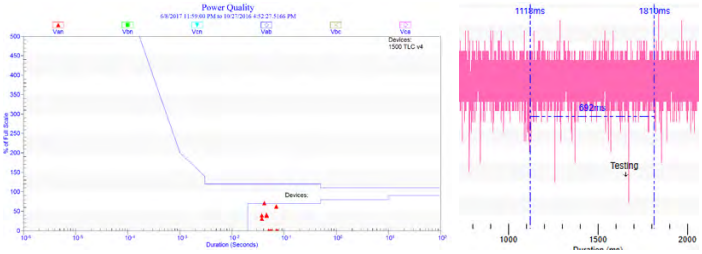
Key Applications – Industrial Facilities

Reconcile Revenue and Diagnose Power Quality Events at Incoming Circuits

The EPM 9850 supports Industrial users by capturing revenue and power quality information at the incoming service point, enabling reconciliation of billing with the utility or generation source as well as analysis to determine the cause of power quality and help implement solutions. This is valuable in determining consumption and power quality effects on owned assets. This data at the incomer, as well from other EPM 9850 meters, installed throughout the facility can be collected and centrally aggregated for system-wide analysis.

Upgrade Metering with Lower Retrofit Installation Time and Cost

The EPM 9850 is an ideal for retrofitting existing non-communicating mechanical or older solid state meters. Available in a socket or a switchboard case, the EPM 9850 can replace the existing meter with reduced installation time and effort, transforming existing basic metering capability into a power quality, logging and communicating solution with its standard Serial RS485 Modbus port and optional Ethernet module. The upgrade provides a more detailed perspective than standard energy management and building automation systems, as well as SCADA systems.



Reconcile revenue and capture power quality information

Available Socket and switchboard case to upgrade for easy retrofit installation

Enhanced Revenue and Power Quality Metering

The EPM 9850 is designed with features to support revenue and power quality metering for utility substations and various industrial applications.

Accurate Revenue Energy Metering

The EPM 9850 provides several features to support accurate revenue energy metering including an Energy Test Pulse; ANSI C12.20 0.1% and IEC 62053-22 CL 0.2S Accuracy Class certification; Time of Use; CT/PT Compensation.

This allows the EPM 9850 the flexibility and capability to be installed in applications helping with accurate readings; assisting with reconciliation of energy consumption to set a baseline and monitor continued improvements.

PARAMETERS	ACCURACY
Voltage L-N [V]	0.1% of Reading
Voltage L-L [V]	0.2% of Reading
Current Phase [A]	0.1% of Reading
Current Neutral Calculated [A]	2% of Full Scale
Active Power Total [W]	0.1% of Reading
Active Energy Total [Wh]	0.1% of Reading
Reactive Power Total [VAR]	0.2% of Reading
Reactive Energy Total [VARh]	0.2% of Reading
Apparent Power Total [VA]	0.2% of Reading
Apparent Energy Total [VAh]	0.2% of Reading
Power Factor	0.2% of Reading
Frequency [Hz]	+/- 0.007 Hz
Harmonic Distortion (1 to 99.99)%	+/- 2%

Note: Full accuracy specifications are provided in the EPM 9850 Instruction Manual

Time of Use (TOU)

The EPM 9850 is enhanced with a Time of Use (TOU) perpetual calendar that requires setup only initially and accounts for calendar updates over time (leap years, months) without further manual intervention.

The TOU implementation allows the user to set up and account for rate schedules:

- Setup up to four customized seasons; 12 months (set independently from seasons; flexible billing periods, rates, holidays, schedules.
- Perform TOU on up to 16 configurable datasets consisting of 38 channels of data, including energy channels, pulse data, readings per quadrant and phase, and pulse aggregators.
- Record values for cumulative and continuous cumulative demandAuto-Sectionalizer for Switch Applications.

CT/PT Compensation

The EPM 9850 can compensate for the inaccuracies of the instrument transformers by allowing for adjustments to amplitude and phase angle adjustments. CT reversal setting is also supported.

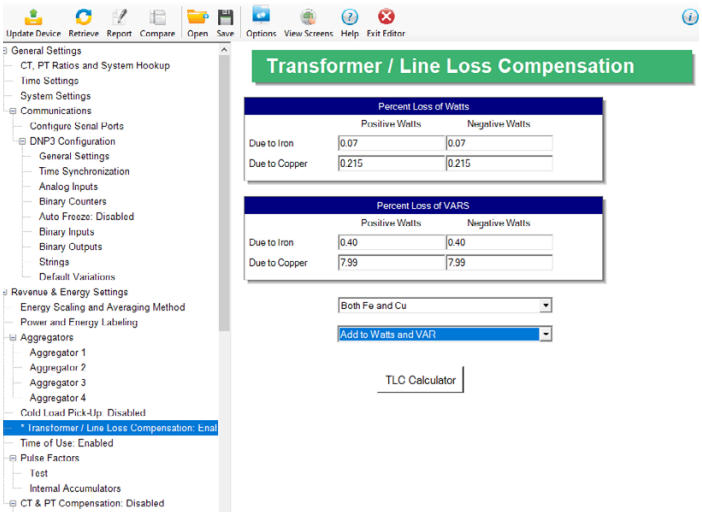
Transformer/Line Loss Compensation

The EPM 9850 can compensate for energy readings for transformer and line losses. A utility can properly bill a customer for usage even if the meter is placed on the secondary side of the transformer.

KYZ Pulse Outputs/Inputs

The EPM 9850 has one standard KYZ pulse output and up to eight optional pulse outputs, enabling it to deliver energy pulses to a separate recorder, RTU, or other type of energy data collector.

With the eight optional pulse inputs, energy values can be logged by the meter's internal profiling memory, supporting energy flow analysis over time. This is useful for billing, planning, and/or circuit efficiency analysis. Input values can also be totalized in the meter's aggregators.



Configure transformer/line losses

Actionable Power Quality Insight and Analysis

Accurate, high resolution, comprehensive power quality information is essential in resolving and mitigating both post fault potential future system uptime challenges as well as protect valuable essential assets and processes.

The EPM 9850 captures and stores comprehensive power quality information, including harmonics, waveforms, sags and swells providing a detailed log of power quality information, faults and disturbances for analysis.

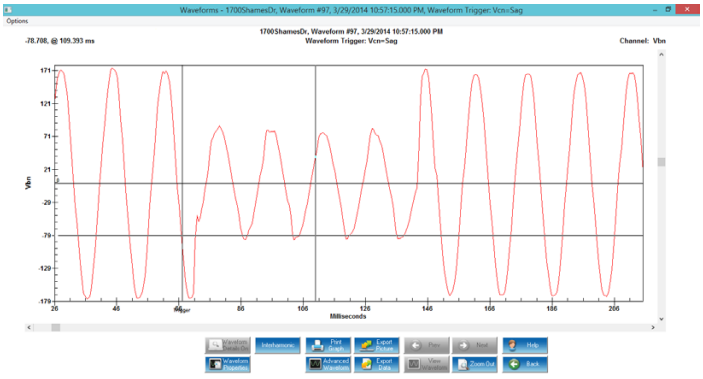
Along with logged data the EPM 9850 also has the ability to set multiple programmable limits and available notifications such as email on alarm for operators.

Harmonic Analysis

- Available real-time harmonic magnitudes to the 40th order for each voltage and current channel
- With stored waveforms, harmonic analysis is available to the 255th order

Waveform Recording

To troubleshoot, remedy and predictively analyze potential system challenges, the EPM 9850 can optionally record waveforms at a sampling rate of up to 512 samples/cycle to capture power quality events, such as sags or swells and log these records in up to 128MB of storage. Waveform data is stored in a circular buffer, ensuring that data is recorded. Its advanced DSP design allows power quality triggers to be based on as low as a 1 cycle updated RMS. The table below shows the meter's pre and post recording capability.



SOFTWARE OPTION	SAMPLES PER CYCLE	PRE EVENT CYCLES	POST EVENT CYCLES	MAX WAVEFORM PER EVENT
D	16	32	96	256
	32	16	48	128
	64	8	24	64
	128	4	12	32
E	256	2	6	16
	512	1	3	8

Note: Sampling rate based on 60 Hz systems. For 50 Hz systems, multiply by 1.2.

Extensive Logging Capability

The EPM 9850 offers up to 128MB of logging memory.

Through upgradable software options, the memory can be upgraded as requirements change from a multifunction meter with no logging to a logging capability up to 128MB.

The logging capability of the EPM 9850 provides:

- Detailed information for analysis during power quality and/or load studies.
- Logged data for historical logs; meter system events; I/O changes; and limits/alarms.

Historical Logs

- Configure logging values with up to 6 assignable historical logs.
- Independently programmed trending profiles.
- Up to 64 parameters per log.

System Events Log

To protect critical information captured by the EPM 9850, the meter records and logs the following system events with a time stamp to log and track:

- System startup
- Programmable settings changes
- Password requests/sealing switch changes
- Demand/Energy/Log resets
- Critical data repairs

Input/Output (I/O) Change Log

- Provides a time stamped log of meter I/O relay outputs; input status changes
- Ability to capture up to 2048 events

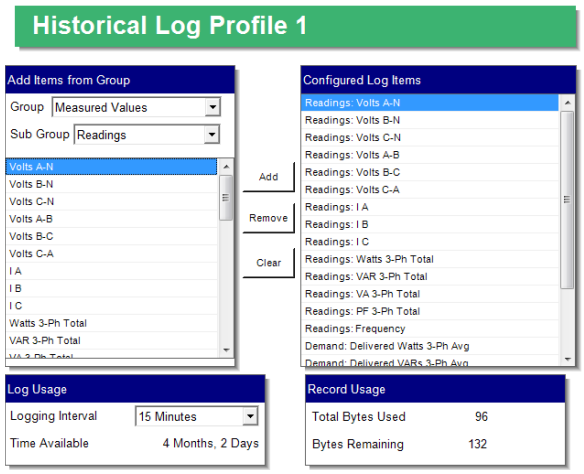
Limit/Alarm Log

- Provides magnitude and duration of an event
- Includes time stamps and alarm value
- Ability to capture up to 2048 events
- Capability to send Alarm Email with E1 Ethernet card option

Limit Alarms and Control Capability (Software option D,E)

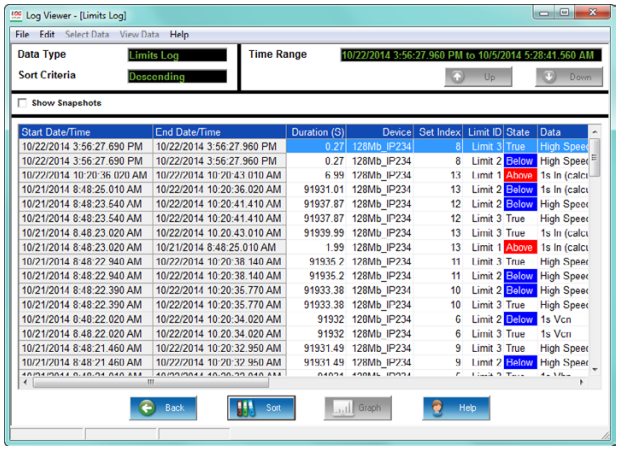
- Ability to set up to 16 Limit Alarms on measured parameters
- Monitor Voltage/Current unbalance
- Set Alarms based on % of full scale settings

EPM 9850 FEATURES	SOFTWARE OPTION D	SOFTWARE OPTION E
Storage and Logging Memory	10MB	128MB
Waveform Recording	Up to 128 Samples/cycle	Up to 512 Samples/cycle
Estimated Logging Capability	• 36 months of recording and storage for 4 energy values recorded every 15 mins • Up to 79 Waveform records	• 76 months of recording and storage for 4 energy values recorded every 15 mins • Up to 319 Waveform records



Configure up to 6 Historical Logs

View System Events



Limit Log Viewer

Customizable Screen Designs

The EPM 9850 has preprogrammed display screens as well as the capability to customize ones using the screen designer for specific applications and user requirements.

Screen Designer to Configure Display for Specific Needs

- Create custom screens that display meter readings with customizable scaling.
- Customize screen labels and screen order.
- Display values for water, gas, and other types of usage.
- Provide other critical operational data and diagnostic information.
- Show aggregated information and display total usage.

3 Display View Modes/250 Screens

The EPM 9850 provides up to 250 custom and/or pre-programmed screens. These screens can be allocated to any of the three view modes, with any number of screens used in each of the modes.

Normal Mode

- Wh, VAh, VARh delivered and received.
- Communication port settings.
- Peak Rolling Window/Block Window demand

Time of Use Mode

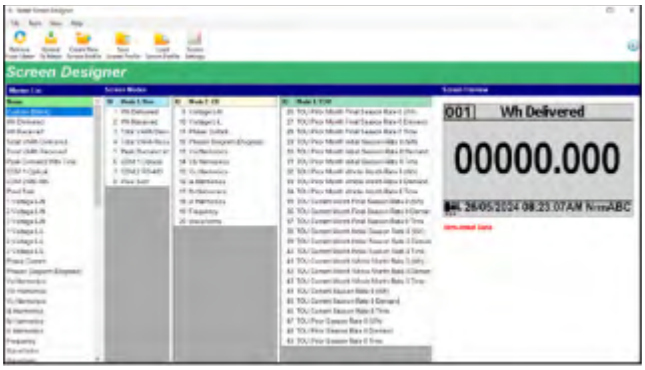
Display Time of Use information including:

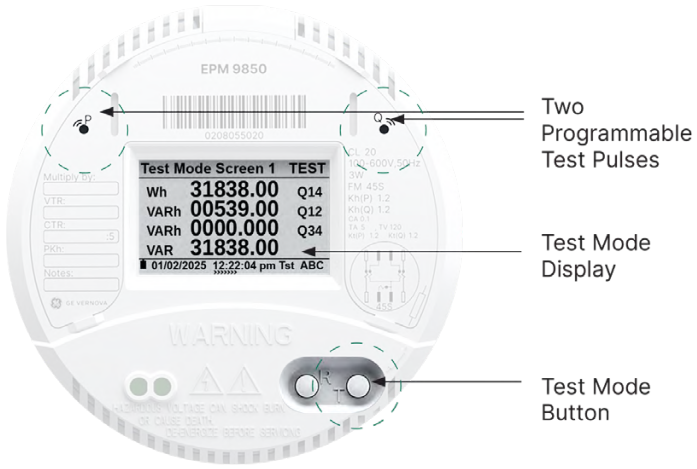
- Wh and W demand delivered and received, total.
- VARh and VAR demand delivered and received for each register.
- VAh delivered and received for each register.
- VAh delivered and received, total.
- Current season and month, past season and month.

Pre-configured Diagnostic Screens

Select from a variety of diagnostic screens, including:

- Voltage phase angles.
- Harmonic magnitudes.
- Firmware versions.
- Meter status.
- Phasor diagram.
- Per phase current and power measurements.
- Segment checks.
- Meter configuration.





Display Shows Test Status

Test Mode and Energy Presets

To help meet utility market requirements, two test pulses are located on the meter's face to simultaneously test watt hour and VAR hour readings for accuracy verification. When in test mode, the EPM 9850 captures and stores all energy parameters, allowing testing and verification of energy accuracy without changing meter readings.

The meter can also receive preset energy values, so that it can replace an existing field installation without disturbing faceplate monthly energy readings.

Comprehensive, Upgradable Features

Along with basic standard features (Software Option A) the EPM 9850 provides field upgradeable, post installation software options that can be added in the future. An unlock key for the features in the higher software option can be entered via connecting to the meter using communicator setup software. The following table illustrates the available features and upgrades.

EPM 9850 FEATURES	SOFTWARE OPTION A	SOFTWARE OPTION B	SOFTWARE OPTION C	SOFTWARE OPTION D	SOFTWARE OPTION E
BASIC MEASUREMENTS					
Multifunction Measurement (Voltage, Current)	•	•	•	•	•
Programmable Display	•	•	•	•	•
CT/PT Compensation	•	•	•	•	•
Transformer/Line Compensation	•	•	•	•	•
Time of Use	•	•	•	•	•
System Events		•	•	•	•
Input Status Change		•	•	•	•
Limits		•	•	•	•
POWER QUALITY MEASUREMENTS					
THD and Harmonics			•	•	•
Waveform Recording Sampling Rate				128 Samples/Cycle	512 Samples/Cycle
STORAGE					
Memory for logging		2MB	4MB	10MB	128MB
System Events		•	•	•	•
Waveform Log				•	•
Limit Log		•	•	•	•
Input Status Change		•	•	•	•
COMMUNICATION					
Modbus	•	•	•	•	•
DNP 3.0 Level 2			•	•	•
IEC 61850 (E2 Option)			•	•	•

Variety of Communication Options

The EPM 9850 communication options provides flexibility for easy integration to systems. Standard protocols include Modbus RTU/ASCII and Level 2 DNP3. Standard ports include a Type 2 ANSI optical port and an RS485/KYZ port.

Available Internal Antenna Wireless Cellular Communication Option for Socket Installations

- Cost-effective solution to supplement or replace costly AMI infrastructure.
- Internal socket case antenna.
- Collect data via GE Vernova software and solution offerings and/or MV90.
- Collect metering data and power quality waveforms from the same wireless connection.
- Secure communication using virtual private network (VPN) infrastructure communication keeps meters secure and off of public IP Networks.
- Supports Modbus TCP/IP protocol.
- 4G LTE™ communication with certified Verizon wireless cellular.
- Available external antenna kit to support installations. LTE is a trademark of ETSI.

Flexible, Expandable Communications and I/O Cards

The EPM 9850 provides two universal option slots for communications and/or I/O. The unit can be easily configured to accept new I/O cards even after installation by auto-detecting installed I/O option cards. Up to 2 cards can be used for communications and/or I/O per meter, providing a range of integration possibilities.

Along with I/O expandability, the EPM 9850 can integrate with many different systems, using multiple standardized protocols such as Modbus RTU/ASCII/TCP, Level 2 DNP3 and IEC 61850. Expandable communications cards allows customization for system requirements at time of purchase as well as in the future if requirements change

S1 E1 E2 C1 C1 C2 RS PS IB

S1: Serial RS232/RS485 Communications)

- Programmable RS485 or RS232 Port.
- Adds up to 2 ports per meter in addition to the standard Serial RS485 port.
- Supports Modbus and Level 2 DNP3.

E1: 100BaseT Ethernet Card (Modbus, DNP3)

- Supports IPv4 and IPv6.
- Embedded HMTL5-based web server, smartphone compatible.
- Network Time Protocol support for clock sync.
- 12 simultaneous Modbus TCP/IP connections.
- 5 simultaneous Level 2 DNP3 over TCP/IP connections.
- Encrypted alarm emails (with SMTPS) and periodic email notification of meter status/ reading data.
- Firewalls to prevent unauthorized access.
- Digital firmware signature.

E2: 100BaseT Ethernet with IEC 61850 Protocol

- Simultaneous Modbus TCP/IP and IEC 61850.
- 5 simultaneous MMS clients.
- Multiple Logical Nodes, including LLN0, LPHD, MMXU, MHAI, MMTR, and others.
- Polled operation mode (queried reports) and buffered and unbuffered reports.
- Configurable .CID file.
- Enhanced security to prevent unauthorized access.

C1: Four Channel Bi-directional 0-1mA Outputs

- Assignable to any parameter.
- 0.1% of Full Scale.
- Max Load Impedance 0 to 10KΩ.
- Range: +/- (0-1) mA.
- Designed for RTUs and generating stations.

C2: Four Channel Bi-directional 4-20mA Outputs

- Assignable to any parameter.
- 0.1% of full scale.
- 850Ω at 24VDC.
- Loop powered using up to 24VDC.
- Ideal for process control applications.

RS: Two Output Relays/Two Status Inputs

- 250VAC/30VDC – 5A Relays, Form C.
- Trigger on user set alarms.
- Set delays and reset delays.
- Status inputs – dry contact status detection only.
- Allows for control, alarms, and status (Requires software option D or higher for limit alarms and control).
- Provides KYZ outputs and pulse inputs counting.

PS: Four Pulse Outputs/Four Status Inputs

- Programmable to any energy parameter or pulse value.
- Form A: Normally Open Contacts.
- 120mA continuous load current.
- Status inputs - dry contact status detection only.
- Provides KYZ outputs and pulse inputs counting.

IB: IRIG-B and 4 Pulse Outputs

- Enables IRIG-B clock synchronization
- KYZ pulse outputs programmable to any energy parameter and pulse value; programmable for end of interval.
- Form A: Normally open contacts.

Switchboard Case for Easy Retrofit Installation

A switchboard option is available as a retrofit for designs or existing installations of GE Vernova style S1 relay cases.

The switchboard option provides a draw out case has the same measurements as the S1 case and the wiring follows industry conventions, eliminating the need for new wiring for easy retrofit.

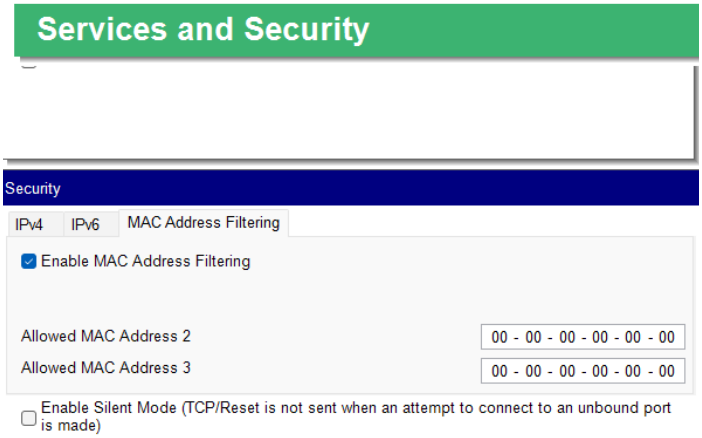
Enhancements to the case include features such as:

- Draw-out meter cradle for easy testing and replacement.
- Easy-remove hinged paddle to simplify installation.
- NEMA 4X-rated cover with seal and optical port extension for use in outdoor substation control panel installations.
- One button cover release for simpler installation and testing.

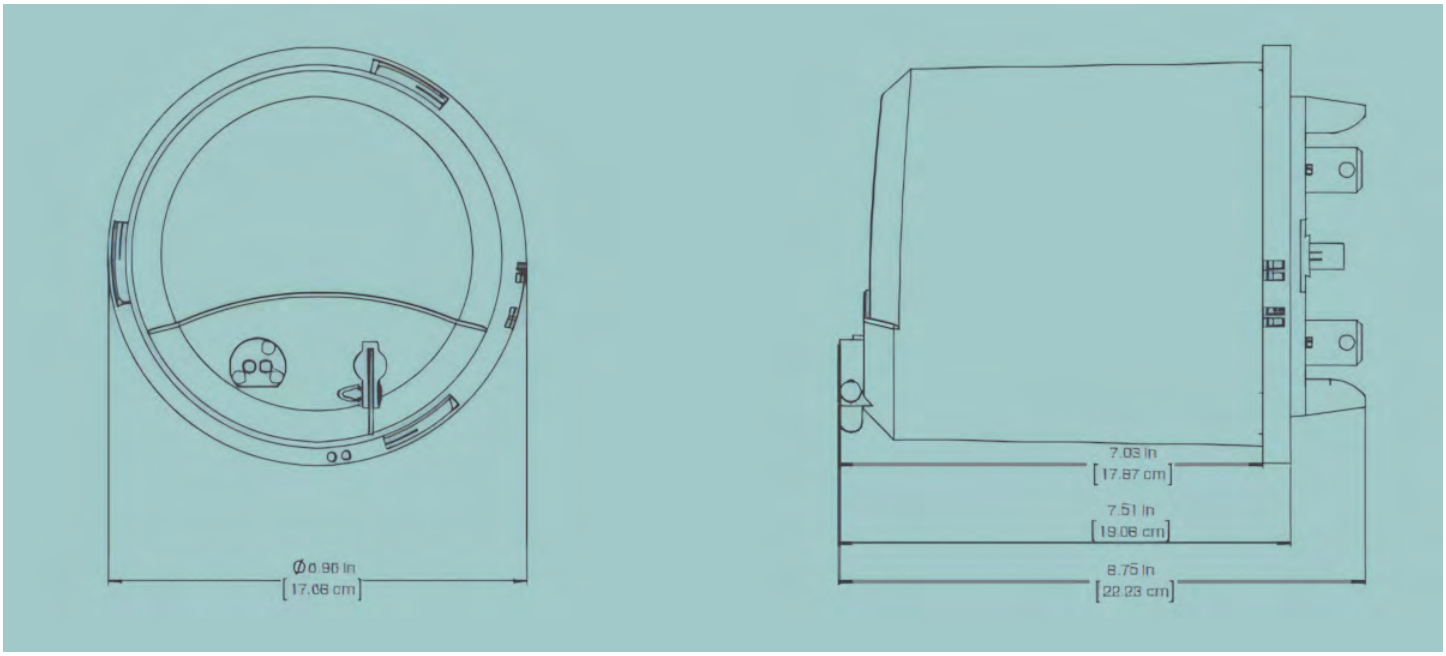
Extensive Cyber Security features to protect access and data

The EPM 9850 additionally provides the following security features:

- Hardware locks and sealing switch to prevent remote tampering.
- Anti-tampering system events log.
- Port control, firewalls, and email encryption with SMTPS for E1 - 100BaseT Ethernet Card option communication cards.
- IP Allow and Block lists.
- Password and username encryption.
- Role-based authorization (user-configurable permissions).
- Digital firmware signature (E1 - 100BaseT Ethernet Card).

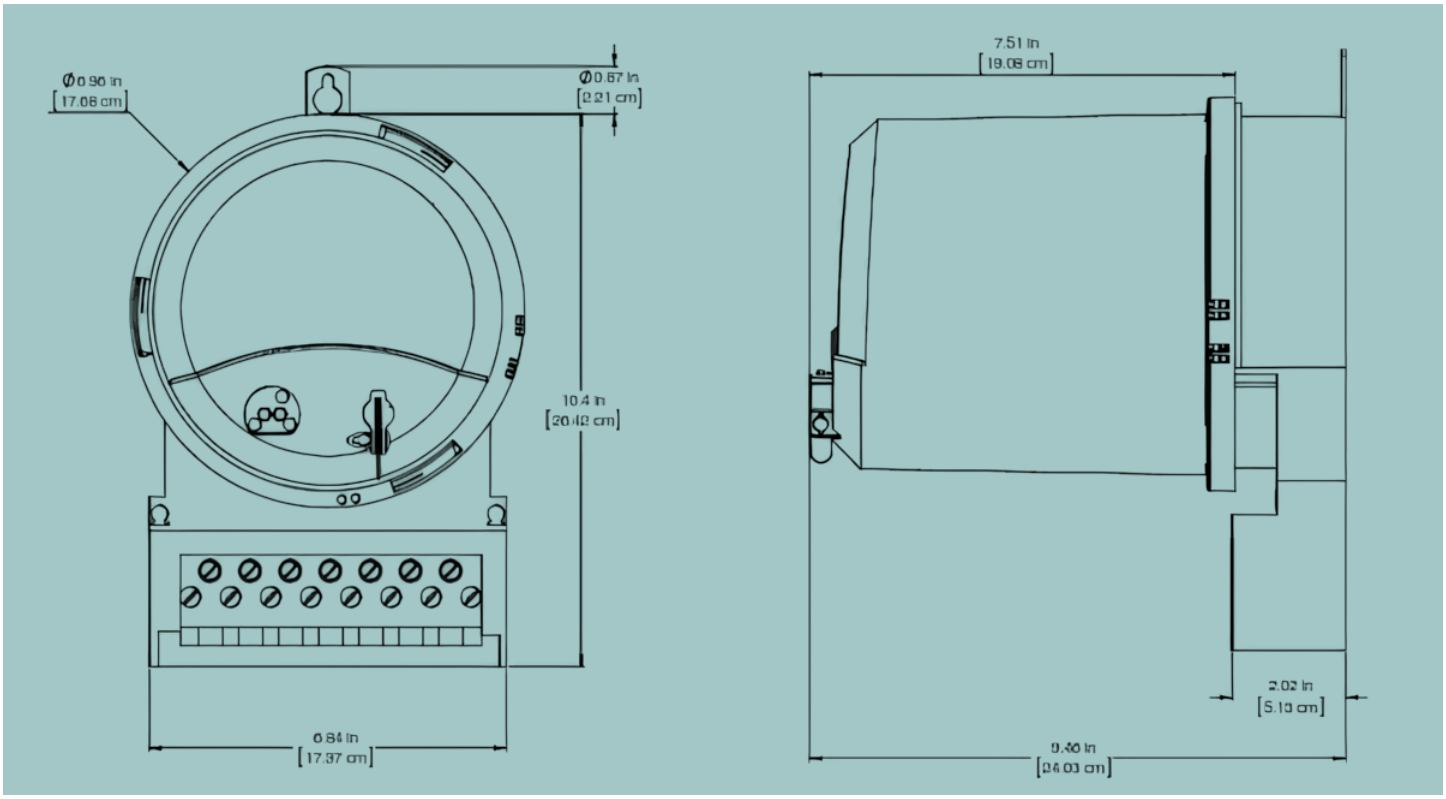


Dimensional Drawings – EPM 9850



EPM 9850 Meter
Front Dimensions

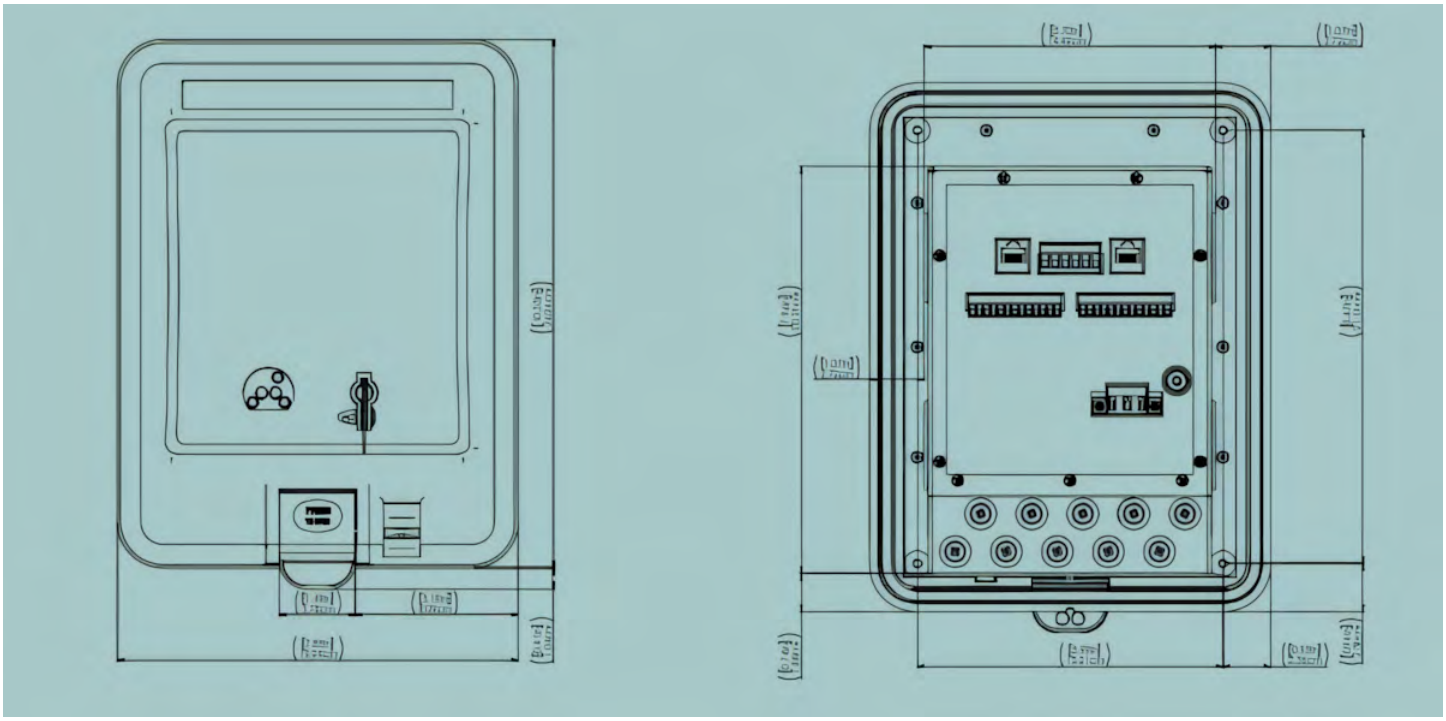
EPM 9850 Meter
Side Dimensions



EPM 9850 Meter
A-Base Front Dimensions

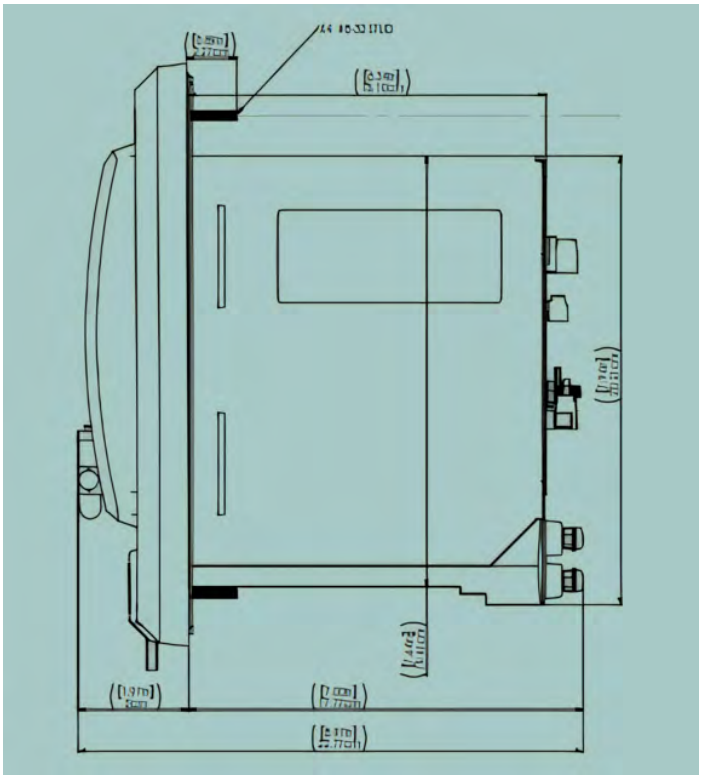
EPM 9850 Meter
A-Base Side Dimensions

Dimensional Drawings – EPM 9850 Switchboard (SB)



EPM 9850 Meter Switchboard
Front Dimensions

EPM 9850 Meter Switchboard
Back Dimensions



EPM 9850 Meter Switchboard
Side Dimensions

Technical Specifications

Voltage Inputs

- Absolute max. rating between any voltage inputs:
  - External power connection: 720 V AC
  - Powered from voltage blades (“S” option): 576 V AC
- Supported power mains with direct voltage connections:
  - Forms 9S/36S/45S with blade (“-S”) or external (“-SE”) power option: 57.7/100 V, 69/120 V, 120/208 V, 230/400 V, 277/480 V
  - Form 45S with external (“-SE”) power option only: 347/600 V
  - For lower or higher voltage power mains, use voltage transformers
- Input impedance: 4 MΩ per phase
- Burden:
  - With external power connection: 0.09 VA/input at 600 V AC (4 MΩ/input)
  - Unit powered from voltage blades: see power supply ratings

Current Inputs

- Transformer rated
- Two or three current inputs depending on Form (Ia, Ib, Ic)
- Class 2 - 1 A nominal CT secondary, burden 0.0112 VA at 2 A input/phase
- Class 20 - 5 A nominal CT secondary, burden 0.0112 VA at 20 A input/phase
- Pickup Current: Shall begin reading at 0.001 A (1 mA) for Class 2 and 0.005 A (5 mA) for Class 20
- Continuous maximum ratings: Class 2 - 5 A AC, Class 20 - 30 A AC
- Overcurrent ratings as the factor of Current Class: 5x - for 10 seconds, 15x - for 3 seconds, 25x - for 1 second
- The current inputs are only to be connected to external CTs

Power Supply

- Absolute maximum continuous: 576 V AC (between any voltage inputs in blade powered units, “-S” option); 300 V AC or 400 V DC (externally powered units, “-SE” option)
- Absolute minimum startup/dropout voltage for blade powered, fully loaded unit (“-S” option), at 60 Hz. All applicable blades are symmetrically energized:
  - 4W Wye service, Form 9S, 3 x L-N: 45/35 V AC
  - 4W Wye service, Form 36S, 2 x L-N: 50/45 V AC
  - 4W Delta service, Form 9S, 3 x L-N: 70(40)/52(30) V AC - high (low) phase
  - 3W Delta service, Form 45S, 3 x L-L: 65/55 V AC
- Absolute minimum startup/dropout voltage for externally powered, fully loaded unit (“-SE” option), at 75/70 V AC or DC
- Frequency range: (45 to 65) Hz or DC
- Ride through at 120 V max. power consumption: ~33 ms
- Burden max: 8 VA/4.5 W per phase with 3 phase supply; typical burden with 1 Ethernet Card installed: 3.3 VA/1.7 W per phase at 3 phase 120 V AC

Display

- Back-lit TFT
- Size: 2.7”; 400 X 240 resolution

Isolation

- Between human accessible I/O connections and power, voltage, current inputs: 2500 V AC
- Between power and voltage and current inputs: 2500 V AC
- Between human accessible I/O connections: 500 V AC
- Hi-pot isolation tested in factory

Memory

- Up to 128 MB of flash memory

Standard Communication

- ANSI Type 2 Optical Port
  - Modbus ASCII/RTU protocol
  - Data speeds of up to 57600 bps
- RS485 serial port
  - Modbus ASCII/RTU and DNP3 Level 2 protocols
  - Data speeds of up to 115200 bps
  - RS485 Transceiver; meets or exceeds EIA/TIA-485 standard
  - Type: Two-wire, half duplex
  - Min. input impedance: 96 kΩ
  - Max. output current: ±60 mA
- Wh pulse
  - KYZ output contacts and infrared LED light pulses through face plate - “P” light port, Kh value is user definable
  - Pulse width: 100 ms, fixed
  - Full scale frequency: ~5 Hz
  - Contact type: SPDT (NO – C – NC)
  - Relay type: Solid state
  - Peak switching voltage: AC/DC 30 V
  - Continuous load current: 120 mA
  - Peak load current: 350 mA for 10 ms
  - On resistance, max.: 35 Ω
  - Leakage current: 1 µA max.
  - Isolation: 3750 V AC
  - Reset state: (NC - C) Closed: (NO - C) Open

Optional Communication

- E1: Ethernet with embedded HTML5-based Web server; Modbus TCP/IP and DNP3 Level 2; IPv4 and IPv6
- E2: Ethernet with IEC 61850 Protocol server; Modbus TCP/IP and IEC 61850

4G LTE™ Option

- Certified Verizon
- LTE™ Category: Cat-1
- LTE™ Band: 1700/2100/700 MHz
- Dual antennas for greater sensitivity and reception
- Modbus TCP compliant
- MV90 Capable

Environmental (Temp. Specs. to Indirect Light)

- Operating Temp.: -40 to +158 °F (-40 to +70 °C)
- Display Operating Temp.: -22 to +140 °C (-30 to +60 °C)
- Humidity: 95% RH noncondensing
- Storage Temp.: -40 to +185 °F (-40 to +85 °C)
- S Form: outdoor rated, raintight Lexan cover, UV protected; Switchboard: NEMA 4X rated cover
- Protection Class: front IP65, rear IP51

Internal Battery (for Time Only)

- 3V Lithium battery
- Maintains time during outages - replacement part #BATT21214
- Battery life typically 10 years from date of manufacture

Compliance

- ANSI C12.20 2015 and C12.1 2014, 0.1 Accuracy Class (Eurofins/ MET Labs Certified)*
- ANSI C12.18 (Type 2 Optical Port, physical properties)
- FCC Part 15, Class B (Radiated and Conducted Emissions)*
- IEC 62052-11 (KEMA Laboratories Certified)*
- IEC 62053-22, Accuracy Class 0.2S*
- IEC 62053-23, Accuracy Class 2*
- CE (IEC 61000-6-2 & IEC 61000-6-4 & IEC 61326-1)*
  - IEC 61000-4-2 (Electrostatic Discharge)*
  - IEC 61000-4-3 (Radiated EM Immunity)*
  - IEC 61000-4-4 (EFT)*
  - IEC 61000-4-5 (Surge Immunity)*
  - IEC 61000-4-6 (Conducted Immunity)*
  - IEC 61000-4-8 (Magnetic Immunity)*
  - IEC 61000-4-11 (Voltage Variations Immunity)*
  - IEC/CISPR 11, Class B (Radiated Emissions)*
  - CISPR 16-2-1 (AC Mains Conducted Emissions)*
- IEC 61557-12 (Performance measuring and monitoring devices)
- IEEE C37.90.1 (Surge Withstand)
- IEEE C62.41 (Surge Immunity)
- EU Directive 2011/65/EU (RoHS 3 Directive)
- REACH Compliant

*Third party lab tested

Shipping Dimensions:

Socket

- Size: 10” W x 10” D x 11.50” H
- Weight: 4.4 lbs./1.83 kg. (with Option cards 5.6 lbs./2.54 kg.)

Switchboard

- Size: 16” W x 14” D x 11” H
- Weight: 16 lbs./7.25 kg. (with Option cards 19 lbs./8.62 kg.)

A-Base

- Size: 16” W x 14” D x 11” H
- Weight 9 lbs./4.08 kg. (with Option cards 9.5 lbs./4.31 kg.)

LTE is a trademark of ETSI.

Ordering Codes – EPM 9850

EPM 9850	Form	Frequency	Current Inputs	Software Option	Power Supply	I/O Slot 1	I/O Slot 2	
PL9850								EPM 9850 - Revenue meter (Socket/Switchboard) with Power Quality
	9S							Rated Voltage 0-277 V L-N - 3E, 4W Wye Hook-up
	3S							Rated Voltage 0-277 V L-N - 2.5E, 4W Wye w/ Neutral
	4S							Rated Voltage 0-480 V L-L - 2E, 3W, Delta
	9A							Rated Voltage 0-277 V L-N - A Base Form
	SB							Switchboard Case - Available with E & D Power Supply Only
		6						60 Hz
		5						50 Hz
			5					5A Nominal CT Secondary
			1					1A Nominal CT Secondary
				A				Multifunction Meter
				B				Standard Data Logging Memory
				C				Standard Data Logging With Power Quality Harmonics
				D				128 Samples/Cycle Waveform Recording, 10 MB Memory
				E				512 Samples/Cycle Waveform Recording, 128 MB Memory
					S			Blade Powered (Not available for SB - Switchboard Case)
					E			Externally Powered
						XX		None
						PS		Four Pulse Outputs / Four Status Inputs
						RS		Two Relay status Outputs / Two Status Inputs
						C1		Four Channel Bi-directional 0-1mA Outputs
						C2		Four Channel Bi-directional 4-20mA Outputs
						S1		Serial RS232/RS485 Communications
						E1		100BaseT Ethernet
						E2		100BaseT Ethernet with IEC 61850 Protocol
						IB		IRIG-B and 4 Pulse Outputs
							XX	None
							PS	Four Pulse Outputs / Four Status Inputs
							RS	Two Relay status Outputs / Two Status Inputs
							C1	Four Channel Bi-directional 0-1mA Outputs
							C2	Four Channel Bi-directional 4-20mA Outputs
							S1	Serial RS232/RS485 Communications
							E1	100BaseT Ethernet
							E2	100BaseT Ethernet with IEC 61850 Protocol
							IB	IRIG-B and 4 Pulse Outputs
							4G	4G LTE - Verizon Cert. Cell Modem (Not Available with SB - Switchboard Case)

- I/O Slot 2 E2 option only available when Software option C,D,E is selected
- Can only have E2 for I/O Slot 1 or I/O Slot 2
- I/O Slot 2 4G option is unavailable if Form SB (Switchboard Case) is selected
- Cannot have an I/O Slot 1 E2 Card and I/O Slot 2 4G card

Ordering Codes – EPM 9850 Accessories

EPM 9850 Accessories	Accessory	Description
PL9850ACC	E1	100BaseT Ethernet plus cable
	E2	100BaseT Ethernet with IEC 61850 Protocol plus cable
	C1	Four Channel Bi-directional, 0-1mA Analog Outputs plus cable
	C2	Four Channel 4-20mA Analog Outputs plus cable
	RS	Two Relay status Outputs / Two Status Inputs plus cable
	PS	Four Pulse Outputs / Four Status Inputs plus cable
	S1	Serial RS232/RS485 Communications plus cable
	IB	IRIG-B and 4 Pulse Outputs plus cable
	9S	Adapter for 9S Form
	EU	RJ45 to USB Converter Cable
	MP	13 Jaw Meter Pan Pre-wired for Form 9S with FT Switches
	BB	Terminal Breakout Box Kit
	CC	Clear Cover

For more information
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