

GE Energy introduces an enhanced line of meters ...

The Encompass™ Electronic Meter Family



imagination at work



One Family of Meters for Revenue, Monitoring and Power Quality.

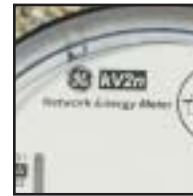
GE Energy's Encompass family of meters is designed to meet your metering needs in a rapidly changing world where deregulation blurs the lines between Utility, Industrial, Commercial and Substation metering. In a world where meters must now answer new and vital questions for your business, Encompass meters move beyond revenue metering to real time instrumentation, true power quality monitoring and real cost of service measurements. Encompass meters provide you:

- Revenue Accuracy (with DC Detection capability)
- Installation Verification and Tamper Detection Tools
- Coincident Demand Measures
- Power Quality Monitoring and Analysis
- AMR System Integration Options
- 20 Channel Recording
- Totalization Options (with 4 external inputs)
- 4-Quadrant Industrial or Substation Measures
- Per Phase AC Instrumentation (amps, volts, and frequency)

There are three models within the Encompass Electronic Meter Family:

- **kV2c model** – offers the functionality of GE Energy's feature-rich kV2 meter, plus several enhancements.
- **kV2n model** – designed specifically for those seeking an extremely cost effective meter for network energy rate applications.
- **kV2c+ model** – offers a robust power supply option for AMR modules requiring higher power requirements, a low voltage service option (operates on 57 - 120 volts), support for GE's Revenue Guard option board enabling meter operation from any available phase voltage and additional load profile recording capability.

Whether you're metering the simplest energy rate or collecting critical quality of service and load analysis information (on a polyphase or a singlephase circuit) there's an Encompass meter configuration to meet your needs.



kV2c and kV2c+ Models

Functional Upgradability

The kV2c and kV2c+ models offer easy and powerful functional upgrades with a unique combination of option boards and “softswitches”. The kV2c and the kV2c+ start as bi-directional, coincident demand meters with five demand measures, real-time pricing, and real time data monitoring. GE Energy also offers an energy-only version of the kV2c and kV2c+ for customers who do not require demand. On both kV2c and kV2c+ meters, additional functionality is available as shown below:

Softswitches add:

- Time of Use
- Transformer and Line Loss Compensation
- Power Factor, kvar and kVA Measures
- Call In During Outage Reporting
- Recording (4-Channel, 64 kB)
- Security and Power Quality Event Log
- Expanded Recording (20-Channel, 192 kB)
- Advanced Power Quality Measures
- Per Phase Measurements
- Fast Voltage Monitor and Log (1 cycle)
- By Quadrant Measurements
- Harmonic Analysis/Waveform Capture
- Instrument Transformer Correction
- Totalization

Option Boards add:

- Pulse Outputs
- Telephone Modem
- Load Control
- RS-232/485 Communications
- Real Time Pricing Input
- ModBus Communications
- External Inputs

The kV2c+ model is available for low voltage applications (57 – 120V) and is equipped with a more robust power supply to accommodate AMR modules. Additional functionality is available on the kV2c+ as follows:

Additional Softswitches add:

- Additional Recording (20-Channel, 384 kB)
- Revenue Guard Plus

Additional Option Board adds:

- 3 Phase Power Supply (Revenue Guard)



Real Time Instrumentation

Using the optical port or one of the remote communications options on the kV2c or kV2c+, you can watch what is happening at the metering site in real-time. MeterMate 5.00 graphically displays changes in voltage, current, frequency, THD, TDD and the harmonic components of current and voltage as they happen.

Power Quality Compliance Monitoring

The kV2c and the kV2c+ meters have the advanced power quality tools to measure the quality of power delivered. Both meters can also be used to measure compliance to Power Quality agreements or gather data to help set Power Quality Requirements. These tools include:

- Programmable sag and swell monitor that logs: voltage sag and swell duration down to one cycle, minimum or maximum voltage, coincident current, and date and time of occurrence.
- Voltage and Current THD per phase, TDD (Total Demand Distortion), Distortion Power Factor, Displacement Power Factor, Distortion kVA, and Distortion kVAh (all recordable).
- Harmonic analysis (MeterMate 5.00 plots odd and even harmonic magnitudes and phase angles).
- Programmable diagnostics for voltage imbalance, distortion, current imbalance, reversed polarity, high neutral current. These events may be logged, set an alert, and initiate a call-in.
- Outage log and call-in during outage reporting.

Advanced Recording Options

The R (4-channel) and X (20-channel; 192 kB memory) softswitches enable recording in any kV2c or kV2c+ meter; additional hardware is not required. The meters will record any of the quantities that it measures including voltage, current, energy, apparent power, reactive power, distortion power, power factor, THD, TDD and DPF. You choose the measurements that you need to record.

The kV2c and kV2c+ also add new recording options. In addition to traditional interval recording, the meters record the maximum, minimum, or last value in a recording interval. With the 20-channel recorder, you can record the minimum, maximum, and average (using V2h and I2h) voltage and current per phase and still have room for kWh delivered and received.

Installation Verification and Tamper Detection Tools

GE Energy's Site Genie™ Monitor provides a simple, automatic way to catch errors, tampering and wiring changes before billing problems occur. Site Genie also provides the phasor information and diagnostics needed to fix the problems it finds.

Inventory Management Opportunities

The wide range voltage supply combined with the Fitzall™ feature enables you to reduce the number of meters you stock while covering all of your applications.

Enhancements over the kV2

New Features

The kV2c and kV2c+ offer several features that customers requested including:

- Calibration pulses can now compensate for transformer losses
- Transformer factor (TF) is a displayable item
- Ability to set a DC immunity alert on Diagnostic 5
- Access to self-read data without having to purchase a recording option
- Ability to calculate up to five thermal demand values

New Configuration

In addition, the product family includes an energy only network meter that's simple, convenient and affordable.

- kV2n meter is optimized for 120/208 volt 3-wire network service.
- Available as a Class 200, 120 volt two element meter in either a form 12S or 25S configuration
- For convenience, the meter comes complete with a simple factory-installed program to collect and display energy accumulation. No programming is required; just install the meter and go.
- kV2n incorporates the popular kV style LCD with 5 large easy-to-read digits displaying energy accumulation
- Includes the familiar disk analog display and separate annunciators to verify both potential circuits are energized
- Single piece LEXAN cover is furnished without demand reset and Optocom hardware to further improve its tamper resistance.

The kV2n is a new configuration developed from proven technology and optimized for network applications.

Additional Features on the kV2c+

The kV2c+ Revenue Guard option board powers the meter even when the A phase voltage is lost; any available L-L or L-N voltage will be used. Revenue Guard Plus softswitch enhances Revenue Guard; it preserves billing integrity when a phase voltage is lost on a 4 wire wye service by converting the 3 element meter to "2 1/2" element operation. So even with a lost phase voltage, Revenue Guard Plus assures accurate revenue metering.

The H softswitch (20 channel; 384KB memory) enables the recording feature in the kV2c+ meter without adding any additional hardware. This recording option enables additional days of storage over the expanded recording option (X softswitch). The meter will record any of the quantities that it measures including voltage, current, energy, apparent power, reactive power, distortion power, power factor, THD, TDD and DPF. See the chart below for a comparison of these recording options:

		Days Storage					
	Softswitch	R		X		H (kV2c+ only)	
Channels	Interval Size	5	15	5	15	5	15
4		20	60	60	181	120	362
20		NA	NA	13	39	26	78

Cost of Service Measurements

Knowing what it costs both Generation and Distribution Utilities to serve a site is a key piece of competitive information. With modern loads, measuring energy and power factor isn't enough.

The Encompass meters will simultaneously measure all of the components of service cost (real & reactive - with and without harmonics, distortion, and vector apparent power).

Catalog Numbers

S Base Catalog Numbers, Basic Meter, No Option Board or Switches

Circuit	Wires	Form	Elements	Class	Catalog #	Replaces
Self Contained 120 – 480 v						
Singlephase	2	1S	1	200	787X200003	
	3	2S		200	787X200001	
		2S		320	787X200009	
Singlephase Δ or Network 2φ	3	12S	2	200	787X100001	
	3			320	787X100040	
	5					
3φ Y or Δ	4	16S*	3	200	787X400001	14S, 15S, 17S
				320	787X400005	
Transformer Rated 120 – 480 v						
Singlephase	2	3S	1	20	787X300001	
	3	4S		20	787X300006	
3φ Y or Δ	4	9S*	3	20	787X900001	8S
3φ Y	4	36S	2 1/2	20	787X600001	6S
3φ Δ 2φ	3 or 4	45S	2	20	787X500001	5S, 35S
	5					

* FITZALL™ Capable Meter

A Base Catalog Numbers, Basic Meter, No Option Board or Switches

Circuit	Wires	Form	Elements	Class	Catalog #	Replaces
Self Contained 120 – 480 v						
Singlephase 3φ Δ Network or 2φ	3	13A	2	150	788X300001	12A but has wider terminal block
	3					
	3					
3φ Y or Δ	4	16A*	3	150	788X400001	14A and 15A
Transformer Rated 120 – 480 v						
3φ Y or Δ	4	10A* ♦	3	20	788X000001	8A, 9A & 11A
3φ Y	4	36A	2 1/2	20	788X600001	6A, 46A
3φ Δ 2φ	3 or 4	45A	2	20	788X500001	5A
	5					
3φ Y or Δ	4	48A* ♦	3	20	788X800001	8A, 9A & 11A

* FITZALL™ Capable Meter

♦ 10A and 48A are the same except KYZ terminal location

The Encompass Family...

GE Energy's Newest Line of Electronic Meters

The Encompass family of meters adds the reliability of industry proven current transformers to the powerful kV2 meter electronic design and rugged kV2 mechanical package. In fact, a kV2c looks exactly like a kV2 to meter reading systems and software. If you can read kV2 meters, you can read kV2c meters now.

To obtain more information or to purchase GE Energy's metering products, please call GE 1-STOP at 1-800-431-7867. Product information is also available on our web site. Visit us at <http://www.ge.com>; select Energy as the Industry; select Utility and Power Distribution as the Energy Industry Solution; select Metering from the section titled Related Products and Accessories on the left.

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