

# PowerLogic® Selection Guide

Monitoring & Metering Devices for  
Every Level of Your Power System



# PowerLogic® Monitoring and Metering

## Results in Savings with a Quick Return on Your Investment

Utility costs are a major expense in running a business. In today's competitive climate, treating these costs like other raw materials and continually looking for ways to increase quality, will cut expenditures. In order to manage these costs, they must first be measured.

That's where the PowerLogic® power monitoring and control system comes in. It gives you the information needed to save money on utilities and other hidden costs of operating your facility. In fact, a study by the Energy Cost Savings Council revealed meters and monitors have an average payback period of less than six months and an average return on investment of 200%.

Square D can help you achieve those kinds of returns by providing you:

### Specific Meters for Each Area of the System

PowerLogic monitoring and metering devices meet the highest ANSI-C12 revenue class accuracy as well as adhere to the power quality standards set forth in IEEE 1159 and EN50160. For critical circuit monitoring, PowerLogic meters can simultaneously time stamp and capture events with multiple waveforms while collecting interval logging for billing cost allocations. Other PowerLogic meters provide input modules and compatible monitoring devices that are well-suited for monitoring piped utilities, secondary mains, feeders, branch circuits as well as perform control functions.

### Quick & Easy System Updates

Updating PowerLogic meters is as simple as accessing the Internet. Downloadable updates keep your system current. PowerLogic meters accept field upgrades and accessories without disassembly.

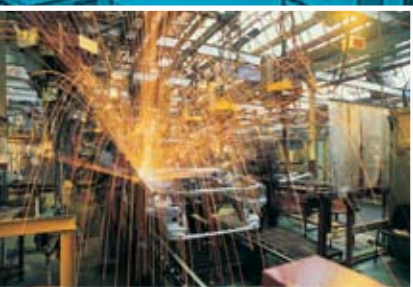
### Open and High Speed Communications

PowerLogic systems are built on open industry Modbus™ and Ethernet TCP/IP standards.

### Information Via the Web

PowerLogic meters allow you to view instantaneous readings directly from connected devices using your standard web browser. Optional modules even allow you to collect historical data and have graphical displays that give you a full system-wide perspective. The PowerLogic System is web-enabled, giving you a window into your facility.

Helping you achieve savings and a quick return on your investment.  
*That's PowerLogic.*





# The PowerLogic Value Statement:

## Look Below the Surface for Additional Savings

Icebergs. Typically, we think of them as huge peaks rising above the water. In reality, the majority of an iceberg is actually under the water, out of view. Utility savings, at most facilities, can be thought of in much the same way.

Think of your utility bills as being the peak, easy to see every month. By installing a PowerLogic power monitoring system, and beginning to manage this resource, you can realize a 2-4% reduction in utility costs—but that's just the "tip of the iceberg" in terms of your potential savings.

Looking beyond a utility bill—or below the surface—can derive the majority of savings, using a PowerLogic system. Typically, an additional 2-5% can be saved through better equipment utilization and avoiding unnecessary capital purchases. As much as 10% of potential savings can be found by improving power system reliability.

PowerLogic systems give you the power to achieve this kind of savings, resulting in a quick return on your investment.



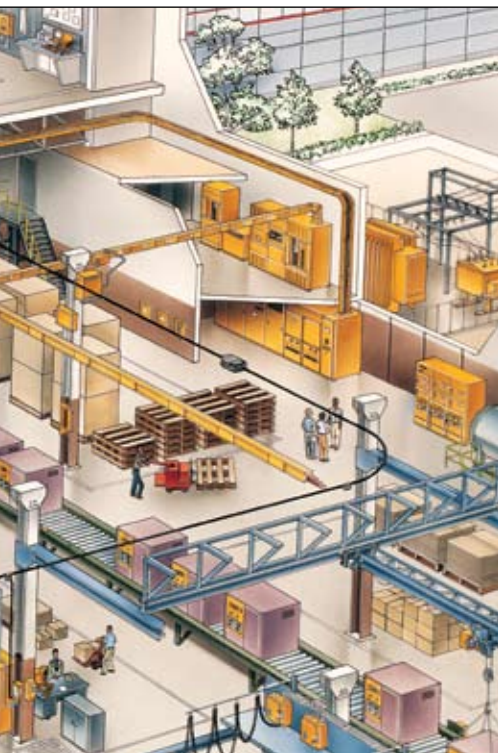
At Square D / Schneider Electric, we pride ourselves on reliable products, innovative systems, expert engineering services, and our ability to provide single-source integrated power distribution and power management solutions. It's not just a concept to us, it's a legacy and a promise—for companies that seek an edge in productivity.

# PowerLogic:

## Monitoring & Metering For Each Level of Your Power System

As the leading supplier of power monitoring equipment in the industry, Square D has the portfolio of products required for each level of your power system. Comprehensive PowerLogic metering, that is layered within a facility, can provide real-time and event information to help diagnose and mitigate power problems. It can also help you improve power system reliability, reduce utility costs and increase equipment utilization.

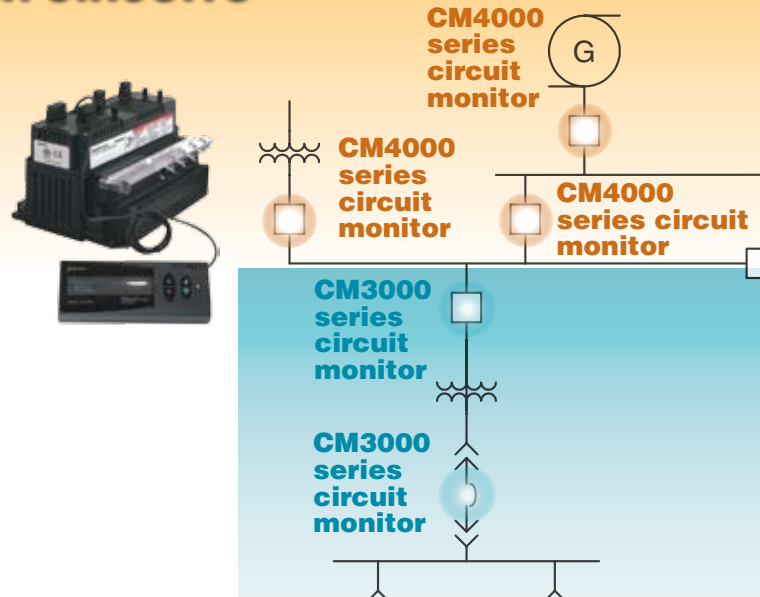
With a fully instrumented PowerLogic system, it's possible to achieve savings that result in an almost instantaneous return on your investment.



### CRITICAL POWER CIRCUITS

#### CM4000 SERIES CIRCUIT MONITORS

- Features all basic and advanced metering functions while providing a 0.04% typical accuracy rate
- Anomalies evaluated based on latest IEEE and IEC standards
- 14 data logs and up to 32MB of memory available
- Three types of waveform capture—steady state, disturbance, and adaptive
- Sag/swell detection to less than 1/2 cycle
- Waveshape alarm for sub-cycle disturbance detection down to 32.5 usec
- Trending and forecasting functions
- Optional Email/Page on alarm and web-enabled access directly to meter
- 5 MHz per channel sampling rate that allows detection of transients lasting only one microsecond (available with CM4000T)
- GPS time synchronization option



### SECONDARY FEEDERS

#### PM800 SERIES POWER METER

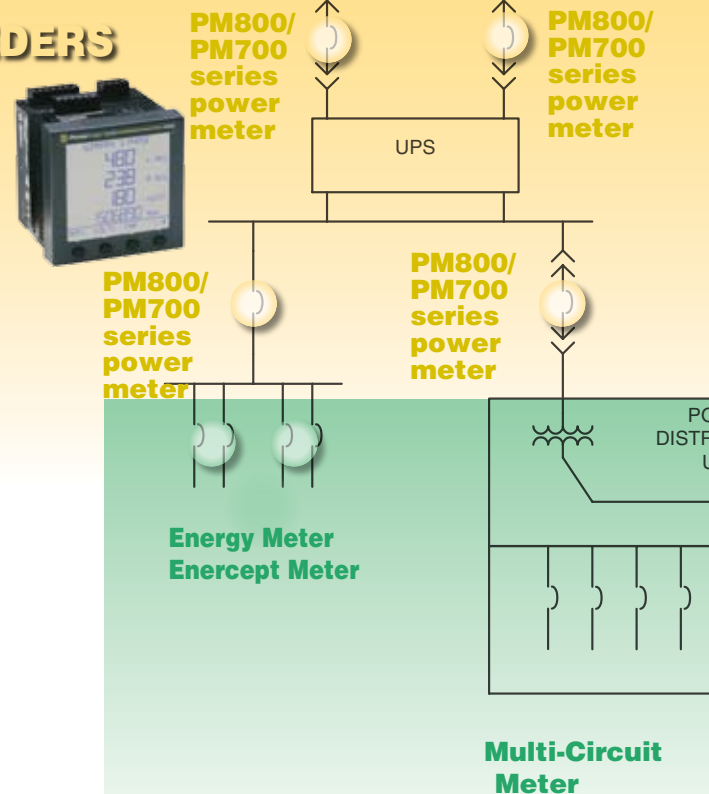
*Provides basic metering, plus:*

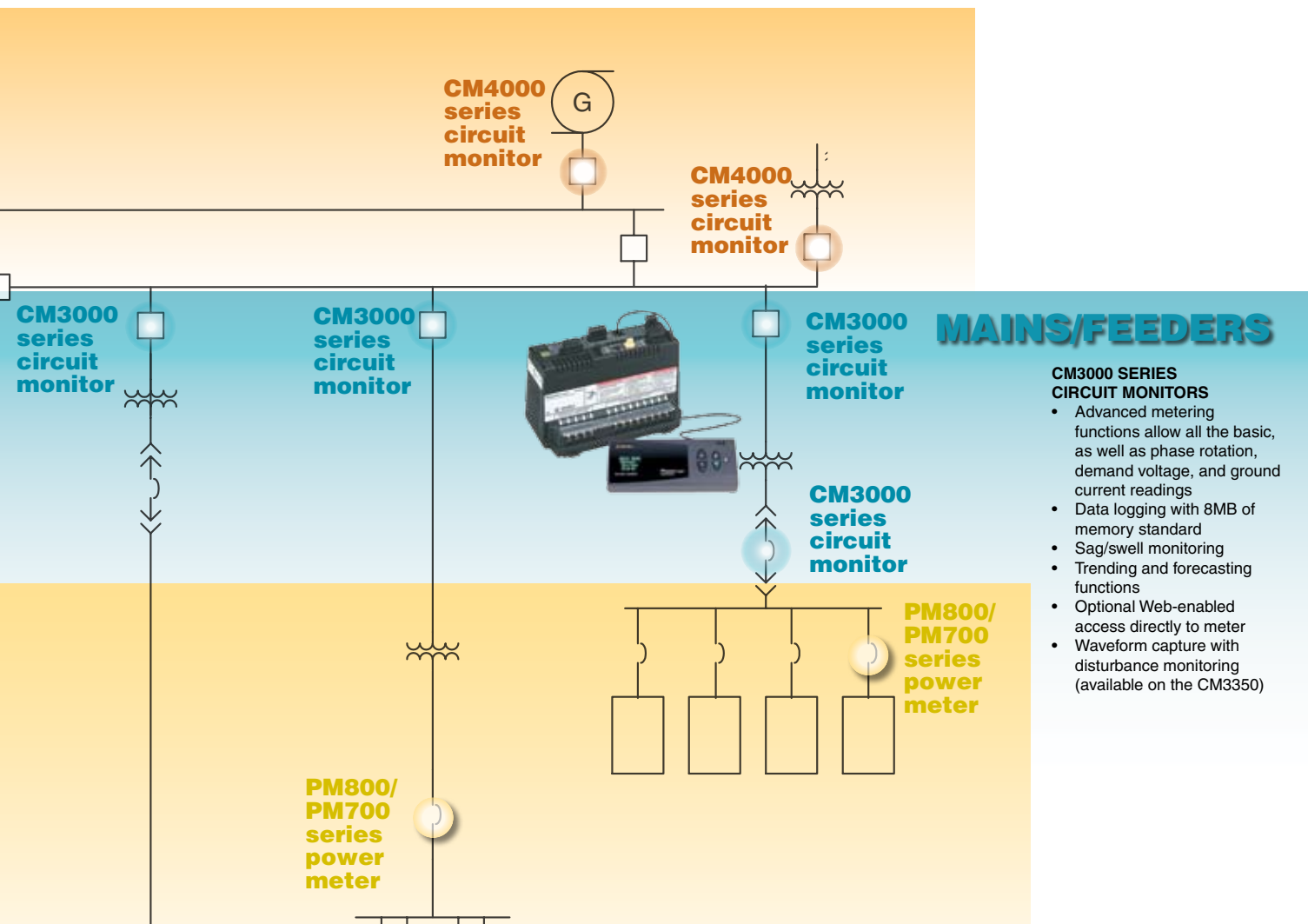
- THD, min/max, individual harmonics for current and voltage
- Pre-configured/customized onboard logging (2 logs in PM820, 4 logs in PM850 and PM870)
- Nonvolatile real time clock for Time Stamping
- Up to 4 concurrent values in a single screen, including summary values for current, voltage, power, and energy on pre-configured values
- Sag and Swell detection and Configurable WFC (PM870)

#### PM700 SERIES POWER METER

*Provides basic metering, plus:*

- High visibility display
- Up to 4 concurrent values in a single screen, including summary values for current, voltage, power, and energy on pre-configured values.
- Optional Email/Page on alarm and web-enabled access directly to meter





## MAINS/FEEDERS

### CM3000 SERIES CIRCUIT MONITORS

- Advanced metering functions allow all the basic, as well as phase rotation, demand voltage, and ground current readings
- Data logging with 8MB of memory standard
- Sag/swell monitoring
- Trending and forecasting functions
- Optional Web-enabled access directly to meter
- Waveform capture with disturbance monitoring (available on the CM3350)

## BRANCH CIRCUITS/TENANT METERING

### Energy Meter Enercept Meter

#### ENERGY METER

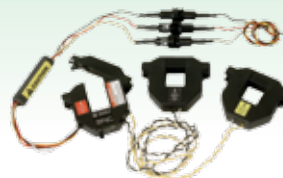
- Highly accurate industrial grade splitcore CTs
- Precision microprocessor-based metering electronics
- Exceptional metering accuracy and reduced installed cost

#### ENERCEPT® METER

- The meter is in the CT!
- Innovative design eliminates the need for a separate meter enclosure
- Reduces installation cost by as much as 70%

#### MULTI-CIRCUIT METER

- Monitor up to 8 services with one device —reduces wall space —decreases install time
- Access 26 values per metering point, plus alarms
- Allocate cost according to actual usage



# PowerLogic: Improves System Reliability



*“If you think electricity is expensive, try running without it. Lost production. Scrap. Clean up. Idle resources. Frustration. Pressure. Many of these problems can be avoided and repeats prevented. But you have to know what causes problems with electricity supply, and monitor for these quality problems early.”*

*Plant Manager  
Semiconductor Manufacturer*

## Accurate Alarm Detection and Event Information Help Support Your Business

In industrial plants, hospitals, data centers and critical power facilities, electrical disruptions can lead to unexpected financial loss or even jeopardize safety. Because modern equipment used in these facilities tends to be more sensitive to voltage sags, swells, and momentary interruptions, momentary voltage disturbances are an increasing concern.

To take corrective action, you need to be able to diagnose equipment problems from voltage sags or swells, and identify areas of vulnerability. This means you need a system that provides detailed critical event information so you can understand and resolve the root cause of problems.

PowerLogic circuit monitors or power meters provide accurate and fast alarm detection with event-captured data. Armed with this information, PowerLogic systems empower you to protect your investments. It helps you troubleshoot continuous and unresolved equipment damage or mis-operation. Equally important, using features like PowerLogic EN50160 displays, you can ascertain the proper level of power quality within your facility, or at specific equipment, so you can react quickly.

### *High-Speed Sampling and Zero Blind Time Metering Make All the Difference*

Most meters are capable of monitoring steady-state (continuous) power quality concerns such as voltage imbalance, undervoltage or overvoltage. However, other power quality categories such as higher order harmonics, voltage fluctuations and transient overvoltage, require additional microprocessor resources to adequately represent the electric environmental condition. PowerLogic meets those requirements.

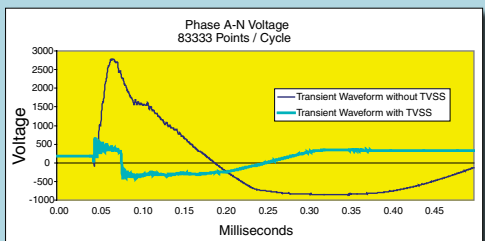
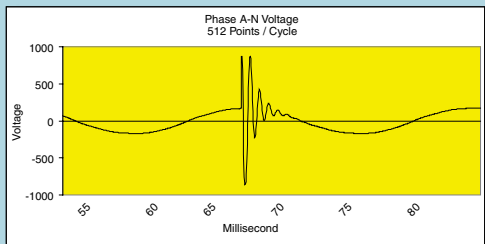
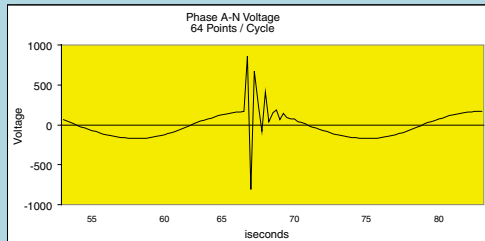
### ***Zero Blind Time means continuously metering every cycle***

Metering techniques vary by manufacturer. Often, metering algorithms only take a snapshot every 60 cycles to perform algorithms. PowerLogic power meters and circuit monitors perform metering algorithms and alarm detection on *every cycle* for constant monitoring so you have accurate readings even for intermittent operations like welding loads.



**Required speed is power quality problem dependent**

Required sampling speed and alarm detection depends entirely upon the type of power quality problem you are trying to detect. The IEEE 1159 table, shown on page 10 of this brochure, classifies power quality related problems with sub-categories, descriptions and quantification, based on some combination of magnitude, duration and spectral content. PowerLogic meters meet the IEEE standards and help solve related power quality problems.



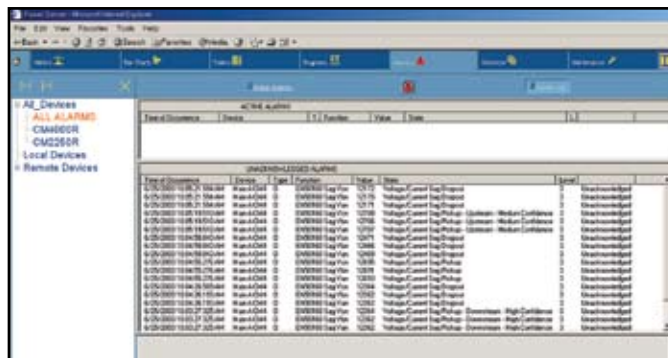
**Faster sampling provides the full story**

As more data points are collected, with a higher sampling rate, the anomaly can be more accurately depicted. If a meter is sampling too slowly, an incident could be missed altogether, or it could miss the actual magnitude of the event since it could occur between samples. PowerLogic Circuit Monitors use a sophisticated, high-speed sampling technique to simultaneously sample all current and voltage channels.

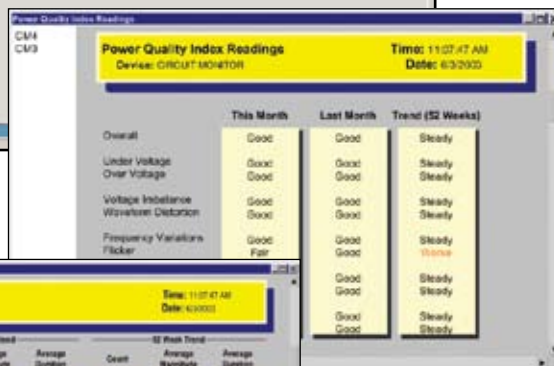
From this sampling, the circuit monitor saves onboard waveform data. The CM4000T samples at 5 MHz per channel for up to 2 ms per transient capture, recording an astonishing 83,333 samples per cycle at 60 Hz.

Similarly, the CM4000 series circuit monitor (CM4250) samples up to 512 samples per cycle, and the CM3000 series circuit monitor and Power Meters sample at 128 points per cycle.

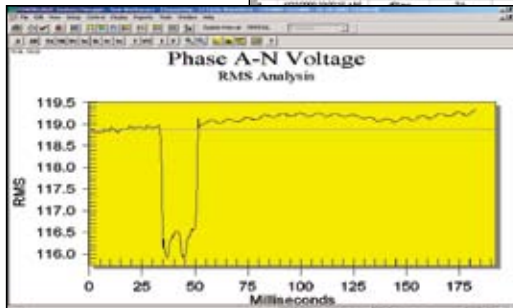
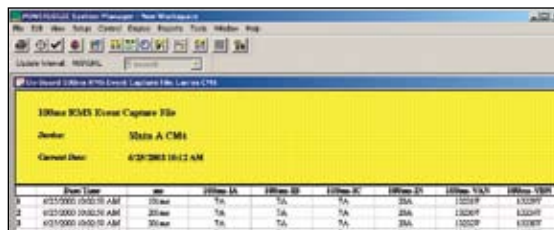
PowerLogic System Manager software (SMS) complements your monitoring and metering components to extract even more value from your investment. With SMS, you have a consolidated system-wide perspective that includes alarms, graphical diagrams, historical profiles, and analytical reports.



Disturbance Direction Detection Circuit Monitor events aid in pinpointing whether a disturbance is upstream or downstream of the meter's location.



Alarm Trend and Power Quality Index readings tell you how your system is performing—getting better, worse, or staying steady, etc. Data is read directly from the selected Power Meter or Circuit Monitor and is available in both ECC or SMS displays.



Sub-cycle transients, such as static transfer switching, can be captured by the CM4000 Series Circuit Monitor waveshape alarm. Additionally, PowerLogic monitors time stamp and captures successive layers of event data to "drill down" for increasing resolution needed to tackle tough power quality problems.

# PowerLogic: Reduces Utility Costs



*"I found a better tariff for the way our facility uses electricity. I realized we could monitor gas and electricity together for a lower cost mix, and my department is collecting revenue for energy used by others."*

*Facility Manager  
Major Automotive Manufacturer*

## Monitor All Utilities Without Data Gaps

Imagine tracking all of your utilities and getting monthly reports automatically without having to fill in missing data points due to network errors. That's exactly what the PowerLogic system is designed to do. Not only do our meters meet the highest ANSI and IEC revenue classifications, they also accept compensated pulse inputs from other utility meters. Circuit Monitors and Power Meters can record all types of utility values—water, air, gas, electric, and steam (WAGES)—and store them in onboard non-volatile memory.

You won't have to worry if your information network suffers an unexpected outage. With onboard logging, your utility data, as well as other event-based data, is retained until the network operation is restored. Then, periodically, on a daily, weekly or monthly basis, the onboard data is uploaded to PowerLogic System Manager or Power Servers. From there, the information is made readily accessible in the correct units (including dollars) with standard displays and reports of usage pattern trends, cost allocation reports, and more.

The PowerLogic system makes your job easier and helps you take advantage of energy savings opportunities. With confidence, from accurate historical and real time metering, you can base purchasing decisions on actual load profiles, negotiate better utility rates, and avoid unnecessary peak demands and penalties.

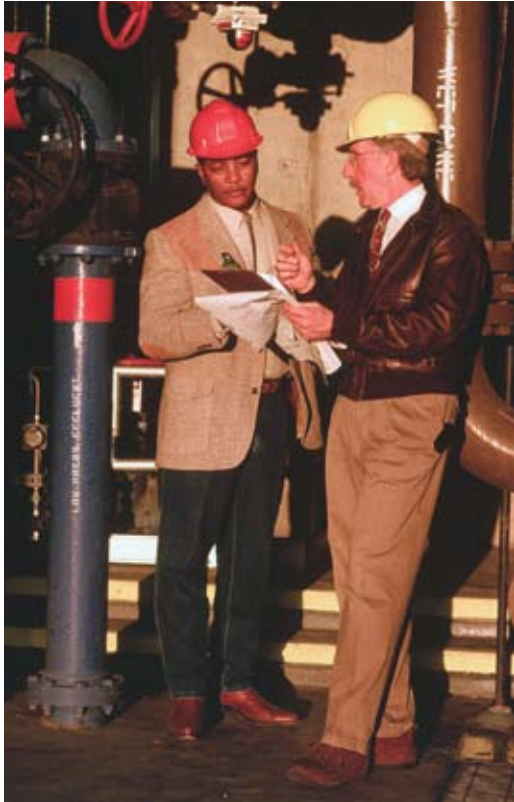


*With the PowerLogic Circuit Monitors and Power Meters, view ECC real time web pages that provide trend forecasts that project loads based on past performance. Through special meter algorithms, the forecasting takes into account seasonal changes in load, based on a running average of each hour of the week, and each week of the year.*



# PowerLogic:

## Increases Equipment Utilization



*“With PowerLogic, my client found existing equipment could supply their new production line by shifting loads to spare capacity at another substation. These kinds of decisions still require engineering judgment, but the risky guesses are eliminated!”*

*Consulting Specifying Engineer*

## Monitor Equipment to Get the Most Out of Your Assets

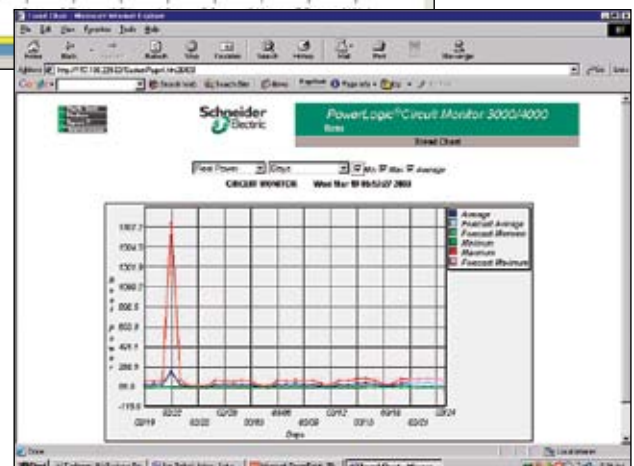
Especially in large facilities, over its lifetime, potentially millions of dollars will be invested in your power equipment and the energy that runs through it. Trying to determine where excess equipment capacity exists, where it's being over-stressed, and how to balance loads on substations, panelboards, and other power equipment, can be tricky.

PowerLogic removes all of the guess work so you can extend the life of equipment and, in turn, maximize your investment. It can also help you identify spare capacity within the power system, and compare energy efficiencies between your facilities or departments. You will then know which is the most efficient and profitable, as well as where improvements can be made.



Onboard data logs, uploaded to SMS, show usage performance profiles identifying if proper equipment and lighting shutdown practices are being followed to help you reduce consumption and avoid excessive equipment wear, especially on unloaded motors.

View cumulative min/max totals and min/max/avg logs with forecasting directly from ECC to know precise loading information since last reset. Determine if new loads can be served with existing equipment or whether new power equipment will be required.



# PowerLogic:

## Alarm Detection Adheres to IEEE1159 & IEC EN50160 Standards

The Institute of Electrical and Electronics Engineers (IEEE) defines seven categories of electromagnetic phenomena that can cause power quality problems in the document known as IEEE 1159-1995. Merging IEEE and IEC electrical phenomena terminology, 1159 provides a common definition for the international community, as well as recommended ways to measure and interpret these phenomena. The chart below shows how PowerLogic monitoring devices cover all seven categories in accordance with the IEEE 1159 standard.

Power Quality Terminology				PowerLogic Alarm Detection Solutions							
	Types	Duration	Common Causes	CM4000T	CM4250	CM3350	CM3250	PM870	PM850	Feature/Application	Benefit
	Impulsive Hi/Med	< 1 cycle	Lightning, Switching Loads	■						<b>Transient Detection</b> - Detect, record and troubleshoot extremely short duration (sub-cycle) elusive transients that exceed the voltage withstand and cause problems for sensitive, microprocessor-based electronic devices. Includes detection of both oscillatory and impulsive transients with magnitude, duration, phase and stress factor information available. The CM4000T can sample the waveform every 200 nanoseconds, the CM4250 every 32.5 microseconds, and the CM3350 every 130.2 microseconds.	Helps you determine the severity and cause of transient problems such as capacitor switching, DC drive operation, motor contactor bouncing, arcing faults, current interruption, etc.
	Low			■	■	■					
	Oscillatory			■	■	■					
Short Duration	Sags	< 1 minute	Faults, Motor Starting, Utility Protective Equipment	■	■					<b>Waveshape Alarm</b> - Compares present waveform to preceding waveform to catch subtle changes that are too small for detection by disturbance alarm. Upon detection, can trigger data logs, waveforms and RMS event logs.	Detects hard-to-diagnose anomalous events (sub-cycle / 65 microsec) such as capacitor switch ringing which typically exhibit oscillatory ringing with low total voltage signal variance of less than one volt.
										<b>Extended Range current/voltage</b> - Detect up to 100A for 1 sec or 20A continuously (with CVMXR)	For large inrush current applications.
				■	■	■		■		<b>Sag/Swell Detection</b> - Detect power quality disturbances less than 1/2 cycle.	Find cause of problems such as momentary voltage sags caused by faults on remote circuits.
				■	■	■				<b>Disturbance Direction Detection</b> - Provides feedback on the location upstream or downstream of a disturbance with respect to the meter's location.	Aids in pinpointing the source of disturbances.
				■	■	■	■	■		<b>Disturbance Waveform</b> - Capture and record events that occur within a short time span such as multiple sag/swells. Event captured waveforms are associated with and triggered by an event such as a digital input transition for a relay or over/under alarm condition.	Automatic event recordings help you analyze power disturbances in detail, identify potential problems and take corrective action.
	Swells			■	■	■	■	■		<b>Sag/Swell Detection</b> - Detect power quality disturbances less than 1/2 cycle.	Find cause of problems such as swells and over voltage that can damage equipment or cause motors to overheat.
	Interruptions			■	■	■	■			<b>Sequence of Events Recording</b> - Reconstruct events to the millisecond with Time Stamps. Keep time between monitors in sync with GPS (1ms). Overlay digital input (relay actions) with waveforms to visually determine event sequence.	Exact event sequence Time Stamps aid root cause analysis for forensic troubleshooting while also taking measures to prevent future occurrences.
Long Duration	Undervoltages	> 1 minute	Poor Regulation, Overloads, Incorrect Transformer Tap Setting, Overloaded Feeder, Utility Equipment Interruptions	■	■	■	■	■	■	<b>Under/Over voltage detection</b> - Enunciate long-term voltage regulation problems.	Helps identify problems with transformer tap settings at regulators.
	Overvoltages			■	■	■	■	■	■		
	Interruptions			■	■						
Voltage		Steady State	Unbalanced Loads, Equipment Failure	■	■	■	■	■	■	<b>Steady State Waveform</b> - Simultaneously samples and records data on all metered channels to provide steady state harmonics through 25th harmonic (CM4) and 63rd (CM3/PM).	Gives information about individual harmonics, THD and other power quality parameters.
				■	■	■	■	■	■	<b>Unbalance Alarms</b> - factory pre-configured settings.	Notifies user to unbalance conditions that can shorten three-phase motor life.
	Harmonics, Interharmonics	Steady State	Electronic Loads	■	■	■	■	■	■	<b>Harmonic Power Flow</b> - Determines magnitude and direction of real (kW), reactive (kvar) and apparent power (kVA) flows up to and including the 40th harmonic.	Helps you determine the locations and types of harmonic producing loads.
					■					<b>Interharmonics</b> - Measures magnitude of interharmonic voltages to 7.5 Hertz resolution on a 60 Hertz system and 6.25 Hertz on a 50 Hertz system up to the 50th harmonic. Anti-aliasing filters are employed (per IEC 61000-4-7) on all measured voltage and current channels.	Provides more resolution of harmonic data to more accurately troubleshoot a harmonic source. Anti-aliasing filters eliminate signals outside the metering range that may result in erroneous harmonic readings.
				■	■	■	■	■	■	<b>THD</b> - Electronic loads, like adjustable-speed drives, produce distorted currents that flow into the source impedance that result in voltage distortion. Levels over 5% can cause operating problems and excessive heating which reduce transformer and equipment life. With power factor correction capacitors, excessive voltage distortion can occur at much lower levels of harmonic currents due to resonance..	Monitoring and detecting harmonics at a drive or transformer allows you to track and control power system harmonic levels before they become troublesome.
Voltage		Intermittent	Arcing Loads, Loose Connections	■						<b>Flicker</b> - Designed to measure flicker based on IEC 61000-4-15 (2003). Under these conditions, some individuals' eyes are sensitive to flicker that can be a problem in a work environment such as a factory where large, cycling loads are present..	Detects and measures the modulation of voltage that occurs when electric light fluctuates because of the variation in line voltage at certain frequencies.
		< 10 sec.	Poor Generator Control	■	■	■	■	■		<b>High Speed Alarms (100 ms)</b> - Can trigger on frequency variation caused by sudden load variations.	Early detection and correction of generator control problems will improve the integrity of the power source to avoid unnecessary downtime.

# PowerLogic:

## Monitoring & Metering Device Selection Guide

	circuit monitors				power meters					sub metering		
	CM4000T	CM4250	CM3350	CM3250	PM870	PM850	PM820	PM750	PM710	Enercept Meter B/E	Energy Meter B/E	Multi-Circuit Monitor
<b>Basic Instrumentation</b>												
THD, Voltage and Current per phase	■	■	■	■	■	■	■	■	■			
Min/Max Readings I, V, F, PF, THD, TOTAL KW & KVAR	■	■	■	■	■	■	■	■	■	KW	KW	KW
Predicted Real/Reactive/Apparent Power Demand 3 phase total	■	■	■	■	■	■	■					
Reactive & Apparent Power Demand, Present & Peak	■	■	■	■	■	■	■	■	■			
Real, Reactive, Apparent Power, per phase	■	■	■	■	■	■	■	■	■			KW
Frequency	■	■	■	■	■	■	■	■	■			■
Reactive Energy (kVARh) & Apparent Energy (kVAh)	■	■	■	■	■	■	■	■	■			
Real & Reactive Energy IN & OUT (kWh) (kVARh)	■	■	■	■	■	■	■					
Real Energy (kWh)	■	■	■	■	■	■	■	■	■	■ / ■	■ / ■	■
Real Power Demand, Peak	■	■	■	■	■	■	■	■	■			
Real Power Demand, Present	■	■	■	■	■	■	■	■	■	/ ■	Opt	
Real Power, 3 phase total (kW)	■	■	■	■	■	■	■	■	■	■ / ■	■ / ■	■
Reactive Power, 3 phase total (kVAR & kVA)	■	■	■	■	■	■	■	■	■	/ ■	■ / ■	■
Power Factor, per phase & 3 phase total	■	■	■	■	■	■	■	■	■	/ ■	■ / ■	Per Phase
Voltage, per phase (L-L, L-N), 3 phase average	■	■	■	■	■	■	■	■	■	/ ■	■ / ■	■
Current Demand, Max., neutral	■	■	■	■	■	■	■					
Current Demand, Max., per phase	■	■	■	■	■	■	■	■	■			
Current, neutral	■	■	■	■	■	■	■	■	■			
Current, per phase, 3 phase average	■	■	■	■	■	■	■	■	■	/ ■	■ / ■	■
<b>Advanced Instrumentation</b>												
Trending and Forecasting	■	■	■	■	■	■						
Fundamental Voltage/Current Magnitudes & Ang, per phase	■	■	■	■	■	■	■					
Fundamental Real & Reactive Power, 3 phase, per phase	■	■	■	■								
Incremental Real/Reactive/Apparent Energy IN & OUT, 3 phase total	■	■	■	■	■	■	■					
Voltage N-G	■	■										
Current, Ground	■	■	■	■								
<b>Logging</b>												
Memory (standard/optional)	16M/32MB	16M/32MB	8MB	8MB	800kb	800kb	80kb				/ Opt	
Energy Summary	■	■	■	■								
Interval Min/Max/Avg Log	■	■	■	■								
Alarm/Event Log	■	■	■	■	■	■	■					
Billing Log					■	■	■					
Maintenance Log	■	■	■	■	■	■	■					
Min/Max Log	■	■	■	■								
Energy per interval (shift)	■	■	■	■	■	■	■					
<b>Time Synchronization</b>												
GPS Clock Synchronization Capability	■	■	■	■								
Demand Synchronization (clock, comms, input)	■	■	■	■	■	■	■	■				
Block Interval Demand	■	■	■	■	■	■	■	■	■			
<b>Event Recording</b>												
Adaptive Waveform Capture	■	■										
100ms Event Recordings	■	■	■									
Disturbance Waveform Capture	■	■	■		■							
Steady State Waveform Capture	■	■	■	■	■	■						

\*PM750 - Real and Reactive Power are net values  
 • PM750 Real and Reactive Energy are net consumptions



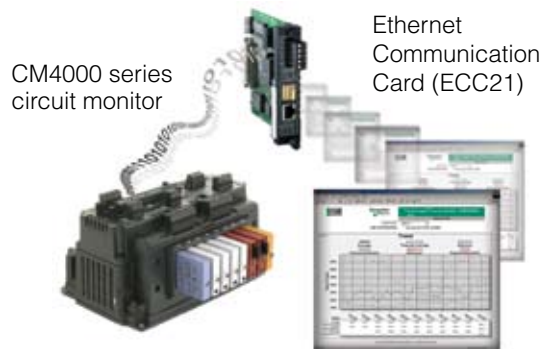
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	circuit monitors				power meters					sub metering		
	CM4000T	CM4250	CM3350	CM3250	PM870	PM850	PM820	PM750	PM710	Enercept Meter B/E	Energy Meter B/E	Multi-Circuit Monitor
Alarming												
Alarm Summary	■	■	■	■								
Alarm Setpoint Learning	■	■										
Transient (200nsec)	■											
Waveshape Alarms (Voltage & Current)	■	■										
Disturbance (10ms)	■	■	■									
Cycle by Cycle Event Recording	■	■										
High Speed (100ms)	■	■	■	■								
Digital Inputs/Outputs	■	■	■	■	■	■	■	■				
Boolean Logic	■	■	■	■	■	■						
Setpoint-Driven Alarms V,KW,KVA,I,PF,KVAR	■	■	■	■	■	■	■					V,I,KVA
Power Quality												
Disturbance Direction Detection	■	■	■									
EN 50160 Pass/Fail Summary	■	■	■	■	■	■						
Flicker IEC 61000-4-15	■											
Sag/Swell Metering	■	■	■		■							
ITIC/SEMI F47/NEMA MG-1-2003	Opt	Opt	Opt	Opt								
Harmonic Power Flows	■	■	■	■								
Harmonic Resolution	255th	255th	63rd	63rd	63rd	63rd	63rd	15th	15th			
Individual Harmonic Readings, V & I	63rd	63rd	63rd	63rd	63rd	63rd	31st					
Interharmonic Resolution												
50 Hz Mode - 6.25 Hz Resolution		50th										
60z Mode - 7.50 Hz Resolution		50th										
Normal Mode		255th										
Anti-Aliasing Filters		■										
Communications												
Onboard Ethernet	w/ECC21	w/ECC21	w/ECC21	w/ECC21	w/PM8ECC	w/PM8ECC	w/PM8ECC					
Infrared Port	w/CMDVF	w/CMDVF	w/CMDVF	w/CMDVF							■ / ■	
RS-485	■	■	■	■	2-wire RS485 on base unit			■	■	■ / ■	Opt	■
RS-232	■	■			w/remote display							
I/O												
Time Stamping Accuracy	1 ms	1 ms	1 ms	1 ms	1 sec	1 sec	1 sec					
Analog Inputs/Outputs, (Maximum)	(4)	(4)	(0)	(0)	(4)	(4)	(4)					
KYZ / KY Output	■	■	■	■	■	■	■	■			/ ■	
Digital Inputs/Outputs, (Maximum)	(24)	(24)	(8)	(8)	(17)	(17)	(17)	(3)				
Metering Characteristics												
Sampling Rate, Samples/ Cycle on 60Hz	83,333/512	512	128	128	128	128	128	32	32			21
Accuracy of Voltage/Current reading	0.04%	0.04%	0.08%	0.08%	0.08%	0.08%	0.08%	.3% /.4%	.5%	1%	1%	1%
Voltage Input Range VAC (direct L-L)	35-600	35-690	35-600	35-600	35-600	35-600	35-600	10-480	10-480	480/480	240/480	120-480
Current Input Range AC, STD	0-10	0-10	0-10	0-10	0-10(15A)	0-10(15A)	0-10(15A)	5mA-6A	5mA-6A			0-5
Control Power (Voltage Range)												
VAC	90-305	90-305	90-305	90-305	90-457	90-457	90-457	100-415	100-415	120-480	120/120-277	90-132
VDC	100-300	100-300	100-300	100-300	100-300	100-300	100-300	125-250	125-250			
Standards Compliance												
Accuracy IEC Class	0.5S	0.2	0.5S	0.5S	0.5S	0.5S	0.5S	1	.5S			
Accuracy ANSI Class	12.20	12.20	12.20	12.20	12.20	12.20	12.20	12.16	12.20		12.16	
Other												
Onboard HTML Web Page server	w/ECC21	w/ECC21	w/ECC21	w/ECC21	w/PM8ECC	w/PM8ECC	w/PM8ECC					
Email on Alarm	w/ECC21	w/ECC21	w/ECC21	w/ECC21	w/PM8ECC	w/PM8ECC	w/PM8ECC					
Programmable Math & Logic Functions	■	■										
Register Based Event Log	■	■	■	■	■	■	■					
Downloadable Firmware	■	■	■	■	■	■	■	■	■			
Panel Mounting	■	■	■	■	■	■	■					
DIN Rail Mounting			■	■	■	■	■					
Multiple Device Metering Capabilities												■

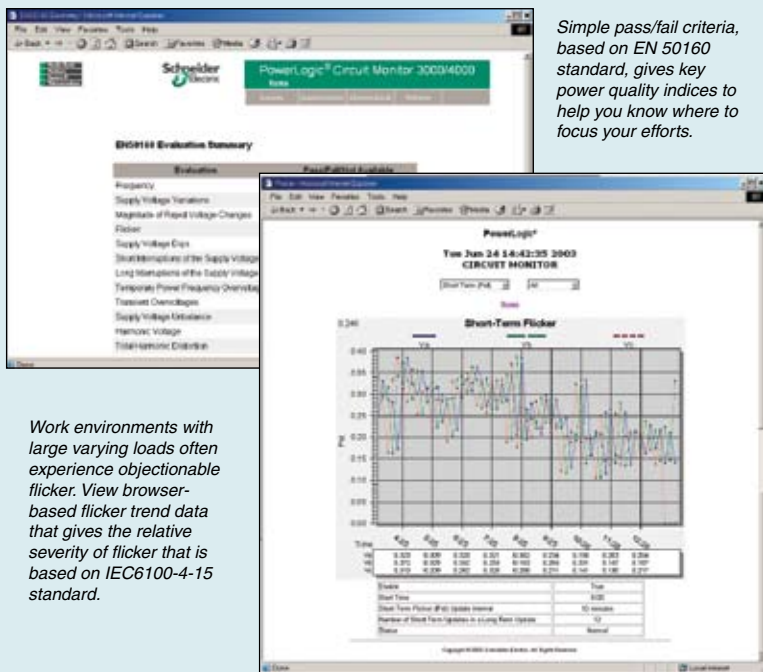
## PowerLogic:

## Direct Ethernet Connectivity for PM800 Power Meters and Circuit Monitors

As a total network solution for your power monitoring needs, the Ethernet Communication Card ECC21 expands the capability of the PowerLogic CM3000 or CM4000 series circuit monitors as does the PM8ECC for the PM800 series power meters. Based on plug and play technology, the Ethernet Communication Card, with Modbus® TCP protocol support, plugs into an expansion slot on meter providing direct connection to the Ethernet network using either Cat5 Ethernet shielded or unshielded twisted pair or fiber cabling (ECC21). An RS-485 Modbus® master port on the Ethernet Communication Card supports a daisy chain of up to 31 additional devices without a repeater, allowing the circuit monitors with ECC21 and power meters with PM8ECC to act as an Ethernet gateway for downstream devices.



## IMPROVE SYSTEM RELIABILITY



Work environments with large varying loads often experience objectionable flicker. View browser-based flicker trend data that gives the relative severity of flicker that is based on IEC6100-4-15 standard.

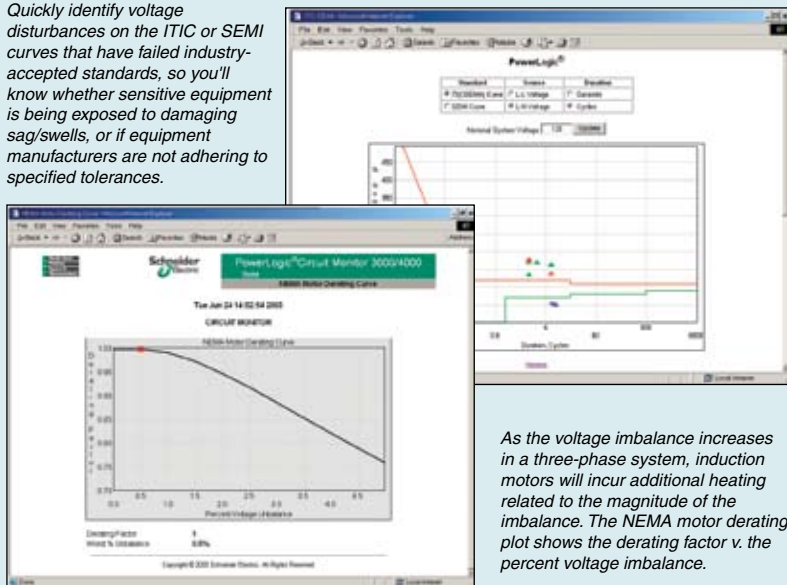
## REDUCE UTILITY COSTS



*Retrieve last year's usage patterns and trends directly from the meter's onboard profile to compare present to past performance.*

## INCREASE EQUIPMENT UTILIZATION

Quickly identify voltage disturbances on the ITC or SEMI curves that have failed industry-accepted standards, so you'll know whether sensitive equipment is being exposed to damaging sag/swells, or if equipment manufacturers are not adhering to specified tolerances.



*As the voltage imbalance increases in a three-phase system, induction motors will incur additional heating related to the magnitude of the imbalance. The NEMA motor derating plot shows the derating factor v. the percent voltage imbalance.*



## Web-enabled Power & Control

Square D's integration of web technologies into power equipment makes everything as easy as opening a web page — but how does it work?

PowerLogic enables Square D's new TRANSPARENT READY™ equipment to be delivered ready to commission. And, if you'd like to make your existing system TRANSPARENT READY, PowerLogic can help using our line of web-enabled devices.



### Ethernet Communication Card



EGX400  
*Ethernet Gateway (EGX)*

# PowerLogic: Metering Accessories

Extend the functionality of your PowerLogic System with I/O modules and our line of easy to add accessories, including current/voltage modules, Ethernet communication cards, and other network solutions.

## DISPLAY

### CM3000 and CM4000 series circuit monitors

- CMDVF - 4-line x 20 character vacuum fluorescent display with I/R port and proximity sensor
- CMDLC - 4-line x 20 character liquid crystal display with backlighting
- OCIVF - I/R communications interface for the vacuum fluorescent display

### PM800 series power meter

- PM8RD - 5 line liquid crystal display with backlighting and adapter with 12' cable
- PM8RDA - remote display adapter

### Display cables for CM3000 and CM4000 series circuit monitors and PM800 series power meters

- CAB4 - 4 foot display cable
- CAB12 - 12 foot display cable
- CAB30 - 30 foot display cable

### Enercept®

- EDI32 - Enercept® Display Interface



## CURRENT / VOLTAGE MODULE

### CM3000 and CM4000 series circuit monitors

#### CM42 - Current/voltage module

The CM4250 comes equipped with this fully calibrated current and voltage acquisition module. Although calibration is not necessary, if your procedures require you to do so, this module may be installed and removed in the field or replaced with CVMT to convert a CM4250 into a transient detecting Circuit Monitor.



**CVMT – Current/voltage module with high speed transient detection and flicker**  
The CM4000T comes equipped with the CVMT fully calibrated current and voltage acquisition module that samples the input voltage signal at a rate of 5MHz and is able to detect and capture both oscillatory and impulsive short duration transients (200 nanosecond) voltage events and measure voltage flicker according to IEC standards. To upgrade a CM4250 with extremely high speed transient detection, replace its CVM42 with the CVMT.

## SATELLITE TIME SYSTEM (STS3000)

### CM3000 and CM4000 series circuit monitors

The PowerLogic Satellite Time System can quickly and easily adjust your circuit monitor time clocks by time synchronizing with GPS for a 100 microsecond accuracy. Typically used for critical power applications, the STS3000 gives you accurate millisecond time stamp information to help you pinpoint the root cause and true sequence of events.

STS3000 includes:

- STRM - Satellite time reference module
- SAM - Smart antenna module
- SAIF200 - Smart antenna module interface cable, 200'
- PS080 - Power supply, 24 Vdc/50 W, DIN-mountable



## INPUT / OUTPUT BLOCKS

### PM800 series power meter

- PM8M22 - PM800 Module, 2 digital outputs (relays), 2 digital inputs
- PM8M26 - PM800 Module, 2 digital outputs (relays), 6 digital inputs
- PM8M2222 - PM800 Module, 2 digital out, 2 digital in, 2 analog out, 2 analog in

### CM3000 and CM4000 series circuit monitor

- IOC44 - Field installable I/O card; 3 digital outputs, 1 pulse output (KYZ) and 4 digital inputs
- Note: CM3000 has one slot available either for I/O or Ethernet connectivity. CM4000 has two slots.**



### CM4000 series circuit monitor

The IOX input/output extender may be equipped with up to 8 analog or digital plug-in input or output modules. The entire unit connects to the side of the CM4000 series circuit monitor.

- IOX2411 - I/O Extender module with 4 DC status inputs, 2 DC digital outputs, 1 analog input and 1 analog output
- IOX0404 - I/O Extender module with 4 status inputs and 4 analog inputs (4-20 mA)
- IOX08 - I/O Extender module with 8 status inputs
- IOX - I/O Extender module with no pre-installed I/O

**Note: Contact your nearest Square D/Schneider Electric sales office for additional I/O options.**



## PORTABLE CIRCUIT MONITOR

All the power of the CM4000 series circuit monitor can be transported to various locations in a rugged, portable case. The portable CM4000 is especially useful when temporary monitoring is necessary or where existing power equipment will not accommodate the installation of a permanently mounted CM4000.

- PCM4000 - Portable CM4000 base unit, detachable vacuum fluorescent display, ride-through module, cable set and carrying bag
- PCM4000T - Portable CM4000 plus impulsive transient detection and flicker (IEC 61000-4-15)
- PLESNS36005 - Portable circuit monitor 5 A CT 150/300/600 A range (Order 3 for complete set)
- PLESH163155 - Portable circuit monitor 5 A CT 500/1000/1500 A range (Order 3 for complete set)
- PLESHP32335 - Portable circuit monitor 5 CT 1000/2000/3000 A range (Order 3 for complete set)



## MOUNTING ADAPTERS

### PM800 series power meter

- PM8MA - Replace PowerLogic CM2000s with PowerLogic Power Meters using this quick-change adapter.
- PM8G - Gasket for 4" round hole retrofit

### CM3000 and CM4000 circuit monitors

- CM3MA or CM4MA - Replace PowerLogic CM2000 with a PowerLogic CM3000 or CM4000 circuit monitor, quickly and easily, using this adapter.

# PowerLogic®

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# SQUARE D

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