

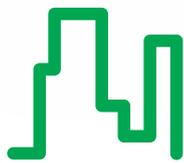
Rethink the future of metering

> PowerLogic ION8650

Next generation energy and power quality meter



Utilities



Buildings

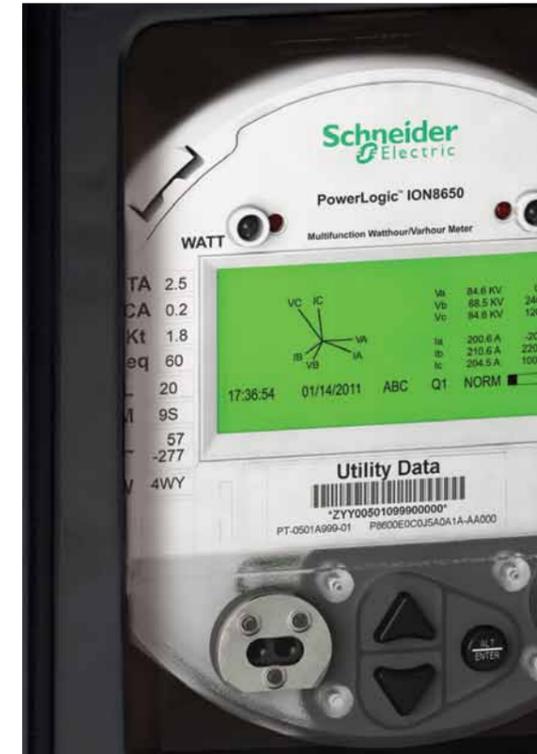


Industry

Schneider
Electric™

The new benchmark for smart grid utility metering

‘We considered the ION8600 to be the market’s best revenue and power quality meter, but the ION8650 clearly surpasses it: simpler options, faster communications, and more memory for power quality and revenue logging. And it worked flawlessly alongside the older generation in all our systems testing’. Shane Woods, Idaho Power



The PowerLogic ION8650 meter is the world’s most advanced socket-based energy and power quality meter. It offers unparalleled versatility, reliability, and total performance.

Bi-directional, four-quadrant metering and industry-leading accuracy makes it the only choice to monitor network inter-ties, substations, and service entrances. Our meter enables utilities to manage complex energy supply contracts that include commitments to power quality. Exceptional connectivity enables the meter to be integrated with both PowerLogic™ ION Enterprise software, or virtually any other energy management and SCADA software. With the PowerLogic ION8650 you can gain immediate benefits from its outstanding depth of features.

Available in three different levels of capability to fit your unique applications and budget, the PowerLogic ION8650 embodies everything we have learned as the leading global supplier of advanced revenue meters. Rethought and reengineered from the ground up, it has the versatility, simplicity, and robustness that today’s utilities demand. From leading-edge performance intended to quickly maximize your return on investment, through power quality compliance monitoring that helps increase electrical network reliability, to an adaptable, modular architecture that’s ready to solve your future challenges, the PowerLogic ION8650 has it all.



Reliability and versatility beyond expectations



Provides vital operational information

The PowerLogic ION8650 meets the critical demands of grid revenue, power quality, and substation automation applications in one, durable device.

Utility grid revenue metering

Use the meter for billing at key grid interchange points, on transformers and on large industrial loads. It securely shares billing data, interfaces with SCADA systems to enhance real-time electrical network reliability, enables energy savings through real-time load shedding, monitors and controls capacitor banks, helps augment predictive maintenance, and facilitates automating remote power systems.

Power quality

Verify power quality contract compliance to IEC 61000-4-30 Class A, EN50160 and other key compliance standards. Isolate and analyse the source of power quality problems with simultaneous capture of sub-cycle disturbance transients on all voltage and current channels. Configure it for custom power quality applications or recommendations such as IEEE 519 and IEE 1159.

Substation automation

An integral component of your substation automation strategy, the PowerLogic ION8650 provides vital operational information. Extensive I/O combined with onboard intelligence and an array of communication choices gives you access to real-time and historic equipment status data from remote and local substations. Use the facts to improve reliability, optimize capital investment decisions, and increase operational and labour efficiency.

Extensive measurements, unbeatable accuracy

Today, utilities need the highest precision metering possible at inter-tie and bulk power interfaces to ensure maximum revenue. Singularly unique amongst revenue meters, the PowerLogic ION8650 offers you uniform accuracy over a wide current range spanning .010 A to 20 A.

With its single current range, you stock one meter for all your measurement applications whether they are small loads such as offline generators or an electrical network running at full capacity.



The world's most accurate socket meter

Parameter	Accuracy (% reading)
Voltage (line-line) (line-neutral): per phase, total, min/max, unbalance, phase reversal	0.1%
Current, per phase, total, neutral, min/max, unbalance phase reversal, demand	0.1%
Power: kW, kvar, kVA, per phase, total, demand	0.1%
Energy: kWh, kvarh, kVAh, bidirectional, net, total, volt-hours, and amp-hours	0.1%, twice the accuracy of IEC 62053-22/23 (0,2S) and ANSI C12.20 Class 0.2
Power factor: per phase, total	0.1%
Frequency V1, V2, V3 (47 – 63 Hz): per phase, total	±0.001 Hz

High-accuracy measurements

The meter provides high-accuracy (1-second), high-speed (1/2-cycle) true RMS 3-phase and total measurements with twice the accuracy specified by current IEC and ANSI Class 0.2 standards for key power and energy parameters.

Transformer/line loss compensation

Automatically measure, compensate, and correct for transformer or line losses when the meter is physically separated from the billing point.

Better communications, more potential

With so many sophisticated features in just one device, the ION8650 gives us the information we need to grow our competitive advantage



IEC 61850

Utilities need secure, cost-effective, targeted information to optimize their business operations. They also need open, standardized protocols to lower implementation costs, safeguard their capital investments, and facilitate interoperability between devices and networks.

The PowerLogic ION8650 offers all that and more, with multi-port, multi-protocol access to a wide variety of the most common communication standards for simultaneous data sharing with utility systems and customers. The PowerLogic ION8650 is a smart grid enabler that easily integrates with existing systems and has the flexibility you need to meet future needs.

Complete communications: Ethernet – serial – modem – infrared

Simple, flexible communications reduce connection costs. Concurrent Ethernet, serial, and modem ports with a variety of protocols such as ION, IEC 61850, DNP 3.0, Modbus™ RTU, Modbus TCP, Modbus Master (serial, TCP), Ethergate, Modemgate, and MV-90 ensure comprehensive interoperability.

Internet connectivity

An onboard web server provides access to real-time values and power quality data, and an FTP server now provides COMTRADE fault records and IEC 61850 configuration. You can exchange information using XML to integrate with custom reporting, spreadsheet, database, and other applications. The PowerLogic ION8650 also automatically provides high-priority alarm notifications or scheduled system status updates.

Software integration

The meter easily integrates with utility SCADA, Itron MV-90 and building management systems, plus a wide range of power and energy information software. Choose PowerLogic ION Enterprise software to maximize all the meter's advanced features.

PowerLogic ION Setup, our free configuration tool, enables faster, more intuitive setup for utility meter shops.

Data and event logging for any condition

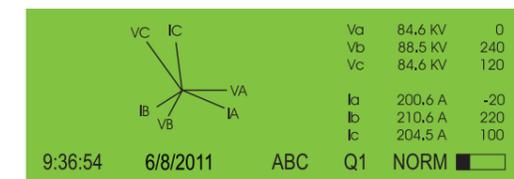
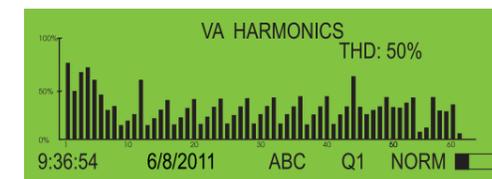
Depending on the meter you chose, standard, non-volatile onboard memory is available in 32 MB, 64 MB, and 128 MB capacities. Data is prioritized and stored onboard to eliminate data loss if communication is interrupted. Data recorders are preconfigured for revenue, losses, historic data, harmonics, waveforms, power system data, sags/swells, transients, and event parameters. In addition, custom logging of any parameter is easy to configure with PowerLogic ION Setup.

Multiple tariffs and time-of-use calculations

A 20-year calendar, automatic leap-year, seasonal adjustments and clock synchronisation, combined with 5 daily profiles per season, and 4 rate periods per daily profile ensure complete accommodation of specific billing requirements.

IRIG-B standard on every meter

Track critical operational and power quality events to precise 1 ms timing in your power system.



Alarming and control made easy

65 setpoints configurable for 1-second or 1/2-cycle operation can trigger on any parameter or condition. Activate audible and visible alarms, data logging, waveform recording, relays, and other control and reset functions.



Offers secure cost-effective, targeted information



Integrates with utility SCADA, Itron MV-90, and building management systems

Your 24/7 power quality specialist



Unlike other ANSI revenue meters in the market today, each PowerLogic ION8650 is a flexible power quality system. Reduce equipment damage and system downtime with out of the box support for key power quality applications, or use its flexibility to create your own custom application. Depending on the model, the ION8650 can calculate and display simple harmonics up to fully certified power quality IEC 61000-4-30 Class A measurements that support international quality of supply standards like EN50160.

Power quality applications

With the PowerLogic ION8650, you can detect, record, and report the specifics of:

- > Voltage or current imbalances and loss, frequency/power factor variations, over- and undervoltages
- > Sag/swell magnitude and duration, plus sub-disturbances that may occur during a sag/swell event
- > Harmonics, individual up to the 63rd, K factor, total harmonic distortion, plus voltage and current magnitude, phase and inter-harmonics in accordance with IEC 61000-4-7 up to the 50th harmonic with the A model
- > Transient capture for Type 1 disturbances at 1024 samples per cycle with resolution to 17 μ s at 60 Hz and 20 μ s at 50 Hz with the A model
- > Waveform capture via two recorders with selectable resolution enables simultaneous transient capture and sag/swell fault recording on the A model

Multi-user, multi-level security

Control and customize access to sensitive data for up to 16 users. Password protection, hardware revenue locking, session-based event logging of user account access, and anti-tamper seal protection enhance meter security.

Designed to meet your workflow

The PowerLogic ION8650 is designed and built to the most exacting standards. The user-focused design means fewer options to stock, and simpler repair and maintenance. Easy to retrofit, it integrates seamlessly with our previous generation revenue meters and their configuration frameworks.

Front Panel

The bright, easy-to-read, backlit LCD screen with adjustable contrast is easy to see whether viewing system data or configuring the meter. An ANSI Type II optical serial port facilitates infrared communication with the device. Two LEDs are preconfigured for energy pulsing. The meter supports Kilo/MegaWatt value scaling for high energy metering points.

Simplified mounting and installation

The meter is available in socket or switchboard form factors that easily let you upgrade obsolete equipment with dramatically reduced installation costs. A switchable volts mode accessed through the front panel gives you all the flexibility of multiple form factor choices, without the procurement and stocking complexities:

- > 2 socket types: one for 9S/29S/36S, one for 35S
- > 1 switchboard type to cover 9/29/35/36 modes

Circuit and control power connections

The meter has 3 voltage and 3 current inputs compatible with 4-wire Wye, 4-wire Delta, 3-wire Wye, 3-wire Delta, and direct Delta systems. Direct connect ANSI socket mount 9S, 29S and 36S systems up to 277 V AC line-to-neutral, or a 35S system up to 480 V AC line-to-line. Power the meter by the voltage source being monitored or from an auxiliary power pigtail.

Expand your I/O capabilities!

Onboard meter I/O includes two onboard options:

1. Four Form C digital outputs and three Form A digital inputs
2. Four Form C digital outputs, one Form A digital output and one Form A digital input

Optional I/O expander provides eight digital inputs, four Form A digital outputs and four Form C digital outputs, or four analogue outputs in place of the four Form A digital outputs (requires external power supply in order to use analogue outputs).



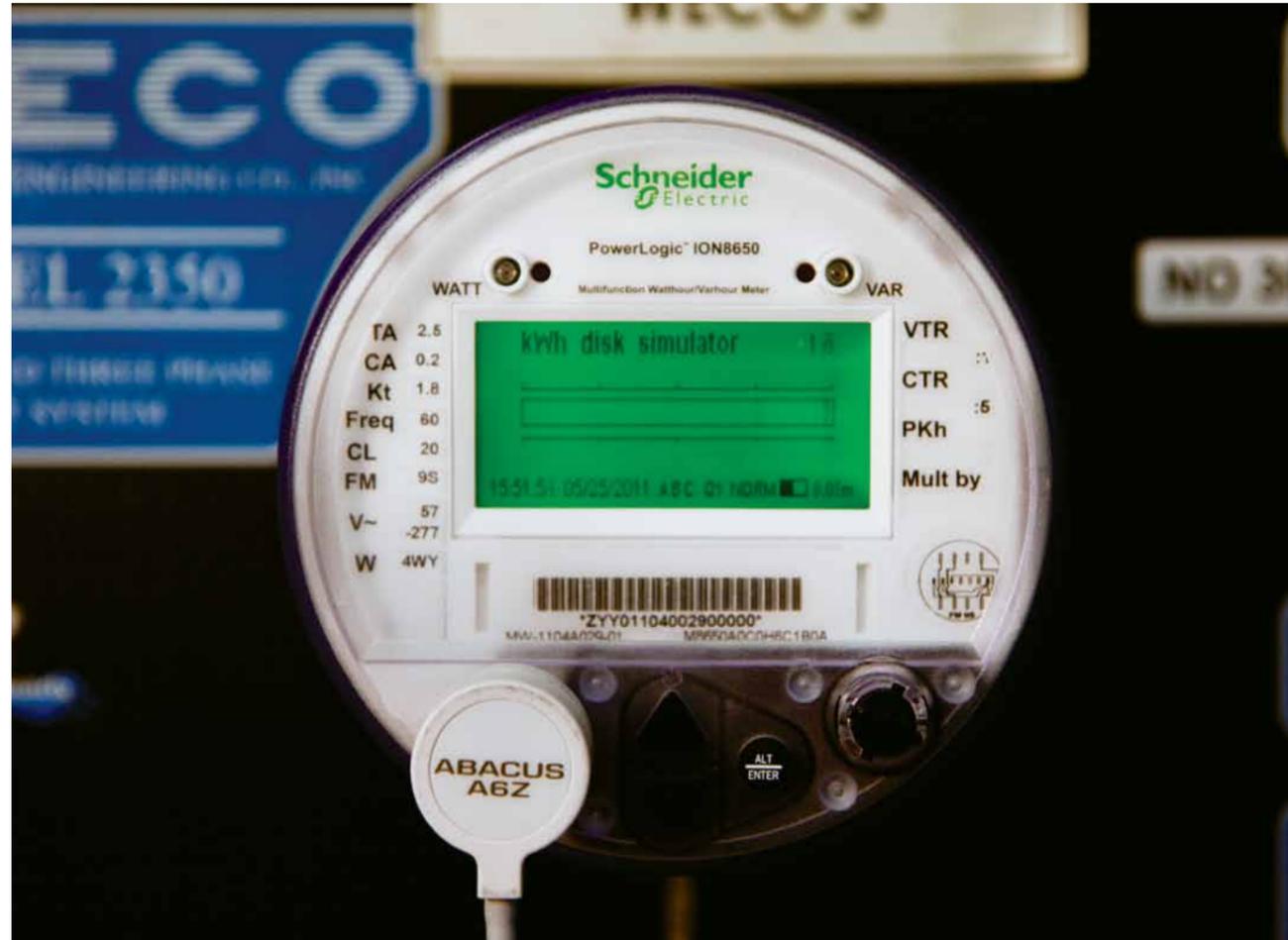
Our most robust socket meter ever



Find power quality problems and fix them



General specifications



Description	Specification
Operating range	-40°C to +85°C (no formation of ice) (-40°F to 185°F)
Display operating range	-20°C to 60°C (-4°F to 140°F)
Storage range	-40°C to +85°C (-40°F to 185°F)
Relative humidity range	5% to 95% non-condensing
Safety/construction	ANSI C12.20-2010 American National Standard for Electricity Meters and IEC 62052-11-2003
Emissions	FCC Part 15 Subpart B, CISPR 22 Radiated/Conducted Emissions (Class B)
Utility approvals	California ISO, ERCOT, and New York State; Industry Canada; EGR Code of Practice 4 for New Zealand; Certified by Comision Federal de Electricidad and LAPEM in Mexico*

* Contact factory for approval certificate availability

Features and options

Feature sets	A	B	C
Metering			
Power, energy, and demand	■	■	■
Power quality			
Sag/Swell, harmonics monitoring	■	■	■
Harmonics: individual, even, odd, up to	63rd	63rd	31st
Harmonics: magnitude, phase, and inter-harmonics	50th	40th	-
IEC 61000-4-30 Class A/S	A	S	
Symmetrical components: zero, positive, negative	■	■	■
Transient detection, microseconds (50 Hz/60 Hz)	20/17	-	-
Logging and recording			
Onboard memory	128 MB	64 MB	34 MB
Min/max logging for any parameter	■	■	■
Timestamp resolution in seconds	0.001	0.001	0.001
GPS time synchronization	■	■	■
Communications and I/O			
RS-232/485; RS-485; Optical; IRIG-B	■	■	■
Internal Modem and Ethernet (optional)	■	■	■
DNP 3.0 via serial, modem, Ethernet, Optical ports (if present)	■	■	■
Modbus TCP Master/Slave (Ethernet port)	■ / ■	■ / ■	■ / ■
Modbus RTU Master (serial ports)/Slave (all ports)	■ / ■	■ / ■	■ / ■
EtherGate, ModemGate, MeterM@il, WebMeter	■	■	■
RS-232/485; RS-485; Ethernet; Optical; IRIG-B	■	■	■
4 Form C outputs/3 Form A inputs	opt.	opt.	opt.
4 Form C outputs/1 Form A output/1 Form A input	opt.	opt.	opt.
External digital status inputs/counter/solid state outputs	opt.	opt.	opt.
Setpoints, alarming, and control			
Setpoints, number/minimum response time	65/1/2 cycle	65/1/2 cycle	65/1 sec
Math, logic, trig, log, linearisation formulas	■	■	■
Call-out on single and multi-condition alarms	■	■	■
Revenue metering			
MV-90 on serial, modem, Ethernet ports (if present)	■	■	■
Multi-year scheduling: hourly activity profiles	■	■	■
Transformer/line loss compensation/ITC	■ / ■	■ / ■	■ / ■

Download this additional reference material to learn more about accuracy in electric meters.

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Download our FREE White Paper A high accuracy standard for electricity meters.

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