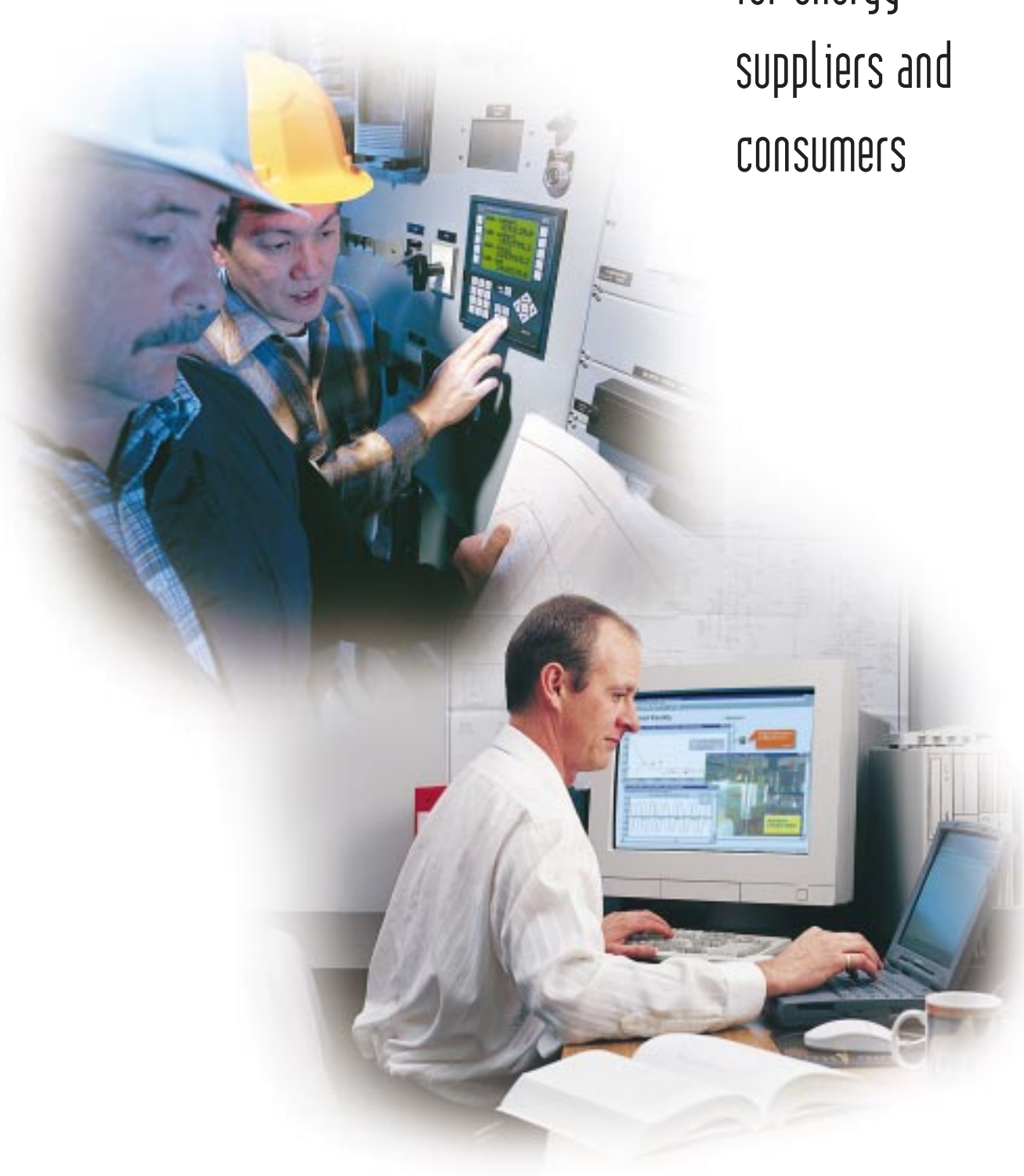


PRODUCT LINE GUIDE

Power Monitoring, Analysis, and Control

for energy
suppliers and
consumers



**POWER
MEASUREMENT**

Systems that Deliver Results

As an energy supplier, you need to introduce new services, improve reliability, manage energy flows, and lower operational costs.

As an energy consumer, you want to improve yields, reduce costs, and keep your systems running.

ION® metering solutions help you achieve your goals through power quality analysis, energy cost tracking, demand control, billing, and automated reporting. These capabilities, combined with high performance and ease of use, give you six key advantages.

Simple Integration

Efficiently merge power monitoring with your existing energy management, control, data acquisition, and billing systems.

Each ION meter can communicate to several systems simultaneously through its multi-protocol comm ports. Freely employ DNP 3.0, Modbus™ RTU, MV-90™, or ION. Make use of built-in modems and direct LAN/WAN connections. Incorporate a mix of Ethernet, fiber optic, telephone, Internet, cellular, and radio links into your network.

Analog and digital I/O ports interface with relays as well as transducers for gas, steam, and water metering.

Flexible Information Access

System software offers enterprise-wide “view anywhere” capability to increase productivity and knowledge sharing.

Engineers, operators, accountants, and managers can customize their graphical user interfaces and database links. Automatically generate power quality and usage trend reports in email, fax, or Web-ready format. Distribute the information on a scheduled or event-driven basis.

Adaptability

Patented ION technology ensures the adaptability and longevity of your system by making meters and software fully configurable. You can create any function in just a few mouse clicks, or select standard setups.

Networks and protocols are industry standard. So you can choose newer, faster, and lower-cost components as they become available, while still maintaining your original investment. Add one piece at a time, at your own pace, and within budget.

Rapid Response

Remote alarming gives you immediate warning of demand peaks or power interruptions. Receive alarms via pager, email, or fax, or through your graphical workstation display.

Alarms can be tailored to anyone's needs. Single-condition alarms can depend on device status or thresholds. Unique multi-condition alarms can be tied to combinations of factors from many meters or I/O ports.

Fast Installation

To start metering, just select transformer ratios, wiring method, and communication modes. Then data logging instantly begins for the most common power quality and energy tracking applications.

Robust, Secure Operations

Security is maximized end-to-end, from meter tamper protection to Windows NT™ user accounts. Large on-board storage at every meter preserves your critical data. A robust client/server environment ensures that if other applications crash, or a communications line fails, your operations continue unimpeded.

Key



8400 ION
8500 ION



7700 ION



7500 ION
7600 ION



7300 ION
7330 ION
7350 ION

— Ethernet or
Wide Area Network

— RS-232/ RS-485

Billing (MV-90)

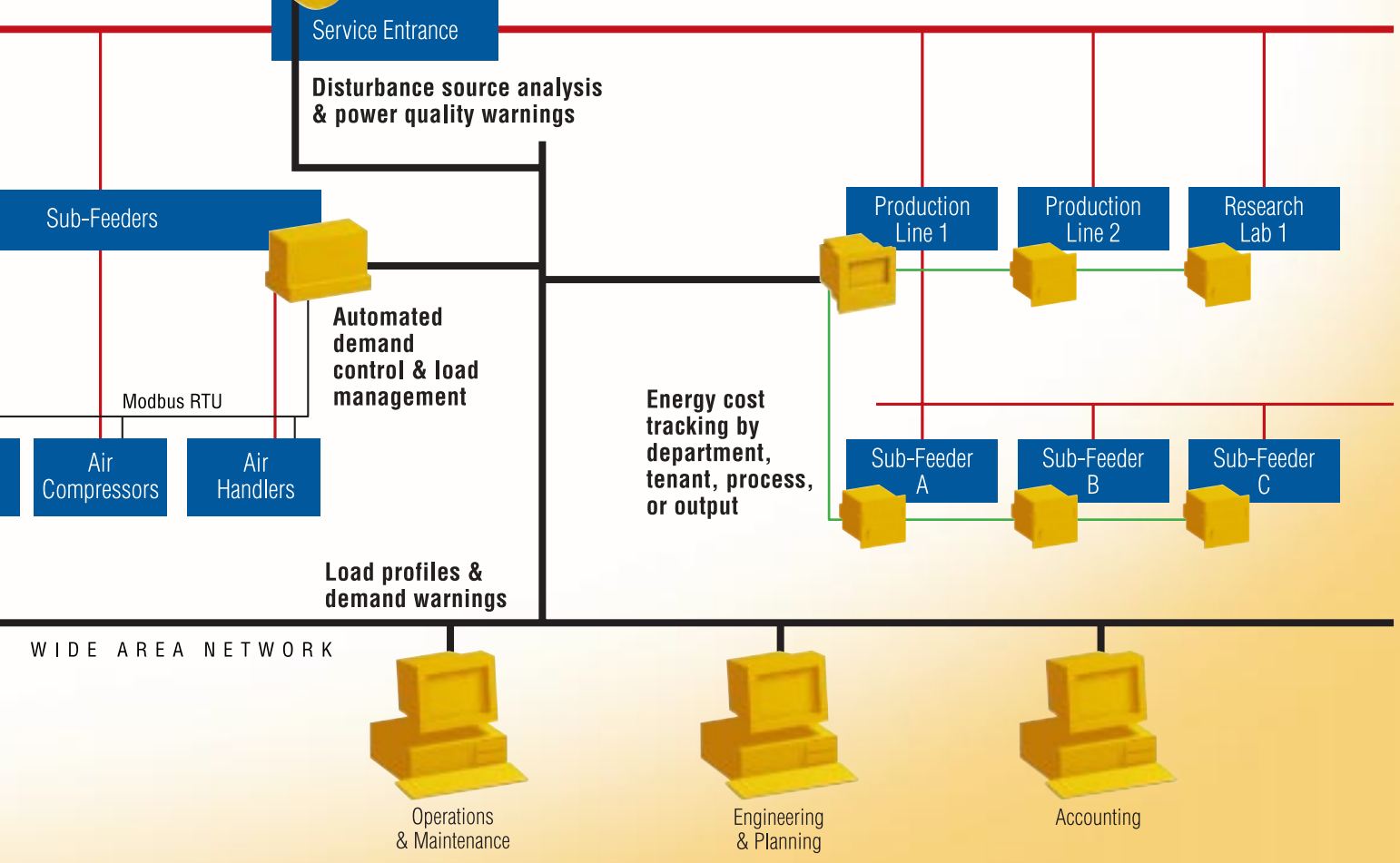
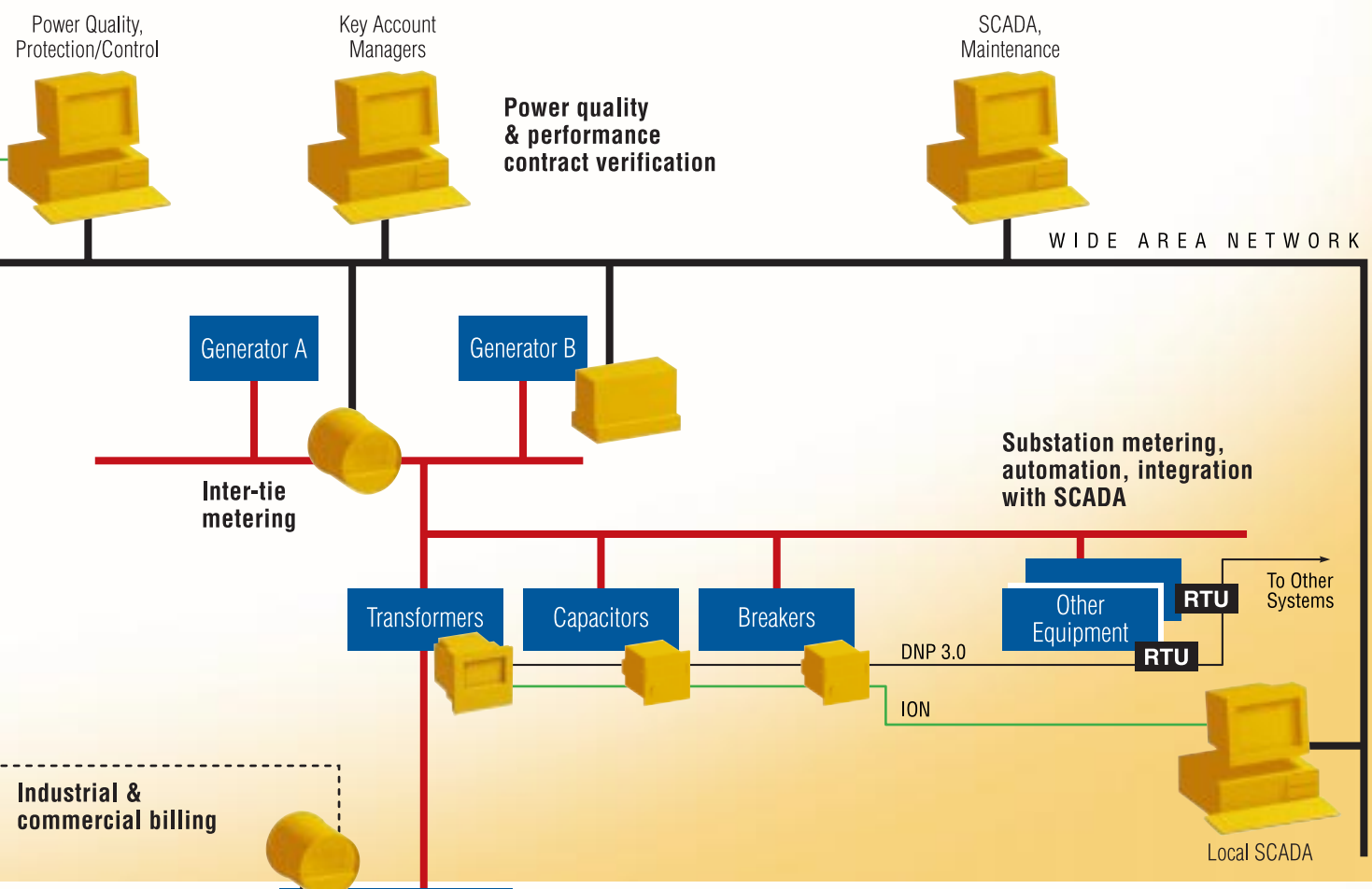


Modem

Telephone, fiber,
radio, cellular, CDPD

Auxiliary
Generator

Water
Pumps



Digital Power Meters



**8400 ION
8500 ION**
Intelligent revenue meters
socket-mount and switchboard case



7700 ION
Advanced power meter,
analyzer, and controller



NEW
**7500 ION
7600 ION**
High visibility energy and
power quality compliance meters



**7300 ION
7330 ION
7350 ION**
Compact feeder
and process monitors

	7300 ION	7330 ION	7350 ION	7500 ION	7600 ION	7700 ION	8400 ION	8500 ION
POWER, ENERGY, & DEMAND								
Voltage/current: per phase, average, unbalance	■	■	■	■	■	■	■	■
Power: real, reactive, apparent, power factor, frequency	■	■	■	■	■	■	■	■
Energy: bi-directional, total, import, export, net	■	■	■	■	■	■	■	■
Demand: block, sliding window, thermal, predicted	■	■	■	■	■	■	■	■
POWER QUALITY ANALYSIS								
Sag/swell monitoring			■	■	■	■	■	■
Symmetrical components: zero, negative, positive					■	■	■	■
Transient detection, microseconds					65	130		65
Harmonics (individual, even, odd, total) up to	15th	15th	31st	63rd	63rd	63rd	63rd	63rd
Sampling rate, maximum samples/cycle	32	32	64	128	256	128	128	256
Flicker, harmonics, etc. to EN50160, IEC 61000-4-7 / 4-15					■			
Configurable for IEEE 519-1992, IEEE 1159, SEMI					■			
DATA & WAVEFORM LOGS								
Triggered by setpoint, schedule, or external signal		■	■	■	■	■	■	■
Sequence-of-event logs, variable log depth		■	■	■	■	■	■	■
Minimum/maximum logs for any parameter		■	■	■	■	■	■	■
Historical logs, maximum # of channels		32	96	320	640	320	160	640
Waveform logs, maximum # of cycles		48	96	96	96	96	96	96
Timestamps, resolution in seconds		0.001	0.001	0.001	0.001	0.001	0.001	0.001
GPS time synchronization				■	■	■	■	■
COMMUNICATION PORTS & I/O (maximum #)								
RS-232/485 ports				1	1	1	1	1
RS-485-only ports	1	2	2	1	1	2	2	2
Ethernet ports	1	1	1	1	1	1	1	1
Infrared optical ports	1	1	1	1	1		1	1
LonWorks ports (LonTalk support)	1							
PROFIBUS ports	1							
Built-in modems		1	1	1	1	1	1	1
Modbus RTU on serial, Ethernet, modem, infrared ports	■	■	■	■	■	■	■	■
Modbus TCP on Ethernet ports							■	■
DNP 3.0 on serial, modem, infrared ports		■	■	■	■	■	■	■
EtherGate™: direct data transfer from Ethernet to RS-485		■	■	■	■	■	■	■
ModemGate™: modem access for other meters via RS-485		■	■	■	■	■	■	■
Analog inputs						18		
Analog outputs						30	4	4
Digital status/counter inputs		4	4	8	8	38	8	8
Digital relay outputs (control/pulse)	4	4	4	7	7	30	8	8
SETPOINTS, ALARMING, & CONTROL								
Setpoints, minimum response time		1 sec	1 sec	½ cycle	½ cycle	1 cycle	½ cycle	½ cycle
Math, logic, trig, log, linearization formulas		■	■	■	■	■	■	■
Single- & multi-condition alarms		■	■	■	■	■	■	■
Remote alarm notification			■	■	■	■	■	■
REVENUE METERING								
ANSI C12.16 accuracy compliant	■	■	■	■	■	■	■	■
ANSI C12.20 0.2 compliant				■	■		■	■
IEC 687 accuracy class 0.2S compliant				■	■		■	■
IEC 1/10, ANSI class 2 (1 Amp) compliant							■	■
Industry Canada approved	■	■				■	■	■
MV-90 support		■	■	■	■	■	■	■
Multi-year scheduling: hourly activity profiles		■	■	■	■	■	■	■
Tamper protection via hardware & software	■	■	■	■	■	■	■	■
Transformer/line loss compensation		■	■	■	■	■	■	■

Notes:

Some features are optional.

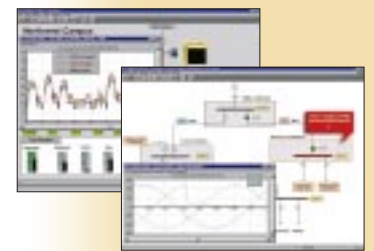
8400/8500 ION: Built-in modem replaces one RS-485 port. Optional comm card provides one modem and two RS-485 ports.

7500/7600 ION: Built-in modem shares with infrared/optical (IrDA) port.

Software



PEGASYS
Single-workstation or networked
analysis, control, and data management



Customize displays
with graphs, diagrams
and animation



Automatically generate and
distribute power quality
and energy reports



Receive warnings via pager
or email

	PEGASYS 95/98	PEGASYS Lite	PEGASYS Workstation Edition	PEGASYS Network Edition
POWER QUALITY ANALYSIS				
Waveform overlay to analyze phase-to-phase relationships	■	■	■	■
Event correlation	■	■	■	■
ITI (CBEMA) plots	■	■	■	■
Harmonics (to the 127th), K-factor, crest factor, vector diagrams	■	■	■	■
INFORMATION MANAGEMENT				
Graphic user interface: default & custom displays with animation	■	■	■	■
Report Generation: energy & demand, load profile, power quality	■	■	■	■
Multi-site data collection, aggregation, & real-time display	■	■	■	■
Continuous or scheduled retrieval of metered data	■	■	■	■
Company-wide data access through networked PCs	■	■	■	■
ODBC-compliant database for historical data logging	■	■	■	■
DDE interface for data exchange with other applications	■	■	■	■
Remote meter configuration & firmware upgrades	■	■	■	■
Windows NT operating system & security	■	■	■	■
Windows 95/98 operating system (must be specified on order)	■	■	■	■
COMMUNICATIONS & INTEGRATION				
Serial links: RS-232, RS-485, infrared/optical	■	■	■	■
Modem links: telephone, cellular, radio	■	■	■	■
Ethernet over TCP/IP	■	■	■	■
Modbus RTU over Ethernet (Master) & RS-232 (Master/Slave)	■	■	■	■
ADVANCED PROCESSING				
"Virtual" meters (VIPs) customized for any set of functions	■	■	■	■
Math, logic, trig, log, linearization formulas	■	■	■	■
AUTOMATED ALARMING & CONTROL				
Alarm notification via pager & email (using external application)	■	■	■	■
Automatic dispatch of alarm/control signals	■	■	■	■
Alarm/control based on conditions from many meters or sites	■	■	■	■
Responds to alert signals from ION meters	■	■	■	■
Pop-up alarm indicators in graphical displays	■	■	■	■
Options for manual control	■	■	■	■
REVENUE METERING				
Real-time pricing & interruptible service support	■	■	■	■
Sub-metering	■	■	■	■

Products meet or exceed the accuracy requirements of the standards listed. Some products certified by third-party laboratory. Due to form factor of some meters, not all ANSI/IEC compliance tests may apply.

Contact Power Measurement for detailed specifications and ordering information.

Energy suppliers can purchase the 8400/8500 ION exclusively through ABB Electricity Metering.

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Applications



TRANSMISSION & DISTRIBUTION
Improve reliability, manage energy flows



ENERGY SUPPLY & SERVICES
Verify commitments, create new services



INDUSTRIAL
Increase yields, reduce costs



INSTITUTIONAL & COMMERCIAL
Keep systems running, control expenses

	Cost Allocation	Demand Control	Power Quality Monitoring	Substation Automation	Billing
REQUIRED FEATURES					
Continuous data logging with multi-site aggregation	■	■	■	■	■
Company-wide data access	■	■	■	■	■
Event correlation	■	■	■	■	■
Automatic report generation	■	■	■	■	■
Math & logic formulas	■	■	■	■	■
Real-time data display		■	■	■	
Automatic alarming & control		■	■	■	
Analog & digital I/O		■		■	
DNP 3.0 & Modbus RTU support		■		■	
MV-90 support					■
Revenue accuracy & time-of-use	■	■			■
Windows NT security		■		■	■
Graphic user interface	■	■	■		

Increased Reliability and Productivity

Power quality problems are costly. Voltage sags, transients, and harmonics can shut down your operations, damage electronics, and cause equipment malfunctions.

With continuous monitoring and high-speed sequence-of-events recording, you will quickly identify the source of disturbances, whether external or internal to your facility, and decide on the right corrective actions.

Adjust protective relay settings to minimize nuisance tripping. Specify optimal UPS installations or set up alarms to warn of pending problems before outages occur.

Energy Cost Control

Your energy costs may be unnecessarily high. A system from Power Measurement can help.

Avoid ratchet charges by using automated demand control to reschedule or cycle processes. Eliminate power factor penalties by installing synchronous rotary equipment or capacitor banks and automatically controlling their operation. Catch utility billing errors by having revenue-accurate meters monitor incoming feeders.

Operational Improvements

In order to develop successful operational strategies, you have to correlate accurate, timely information.

Gain a better understanding of business expenses by tracking the energy-related costs of individual departments or devices.

Save on capital expenditures and avoid over-design by using trend information to load electrical circuits at higher levels and run systems near rated tolerances.

Replace manual meter reading with automated collection, processing, and customization of data. Streamline maintenance with desktop access to historic information and automatic notification of work requirements.

Ready for Deregulation

Revenue-accurate meters and networked software help you manage today's electricity contracts.

Energy providers can create new services such as performance guarantees, Web access to reports, remote load management, and sub-metering. Energy consumers can make better purchase decisions and respond to real-time pricing.

Support and Engineering

Technical Support

Power Measurement supports every product for the long term, so you can be sure that your investment today will pay dividends for decades to come. No other vendor matches our warranties, or our dedication to the customer.

To keep your system running, we offer full-time technical support and a global network of experienced sales professionals, from the US and Canada to Europe, South America, Asia, Pacific, the Middle East, and Africa.

Customer service engineers can even revise system configurations and troubleshoot problems over dial-up modem or the Internet.

Power Measurement's support packages ensure that you gain maximum return on investment and acquire feature enhancements as they become available.

The basic package provides help desk support along with software and firmware upgrades. Extended packages include annual site visits by applications engineers, toll-free telephone support, and participation in beta release programs.

Engineering Services

The Engineering Services staff can help you fully exploit the capabilities of your monitoring and control network. They will save you time and money, and will maximize your system's performance.

Power Measurement engineers have the expertise to recommend and implement the best long-term solution for you. They are trained to efficiently configure any network, with interfaces to a virtually unlimited number of sophisticated devices and software packages.

Design and Manufacturing

Power Measurement pioneered digital power monitoring over 15 years ago and continues to specialize in that field. The company is at the forefront of technology development, backed by world-class production and test facilities.

What's more, Power Measurement's quality system is ISO 9002 certified. Meters have proven to be exceptionally reliable, a fact reflected in three-year warranties. Thousands of customers around the globe now enjoy the benefits of our advanced power monitoring, analysis, and control systems.

Training

Power Measurement's hardware courses explain device configuration and the use of various metering functions in popular applications.

The software courses show you how to perform basic Windows NT operations, display metered data on customized screens, and extract information from networked databases.

You have the option of attending courses at the company's head office training center, or off-site anywhere in North America.

The training center provides an interactive "hands-on" learning environment with simulations of real-world scenarios. Every student has a computer that is linked through a LAN to several digital power meters.

For off-site courses, Power Measurement brings the equipment and all you supply is the training room, workstations, and communications network.



A complete
range of
solutions

A complete
range of
products

Full system
design &
application
support



Power Measurement has a long history of providing energy management solutions to power suppliers and consumers around the globe. We pioneered the field of digital power metering over a decade ago, and continue to define the leading edge.

Our wide range of metering and software is supported by factory or on-site training, engineering and commissioning services, a worldwide network of sales representatives, uncompromising customer support and the longest warranties in the industry.

We are fully accredited to the international ISO 9002 quality assurance standard and committed to on-time delivery of the best products the market has to offer.

Let us give you a system that will help keep your power quality up, costs down and operations running smoothly.

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