Automated Meter Reading
Customer-Focused AMR

AMR should be about more than just operation cost savings. It should be about providing better service. Time-of-Use with Critical Peak Period rates integrated with price responsive controls, outage/interruption logs, voltage profile (plus min./max), remote reconnect, transformer loading reports, power quality optimization, and more...

Cannon PLC Lineup

Cannon PLC interface boards add important features to digital meter platforms:
- 600 days of hourly profile (150 days @ 15 minute)
- 14 days of 15 minute voltage profile
- Outage logs with time/date/duration
- Freeze Read, TOU, Critical Peak Bin,
- Peak KW(w/time & date), Volt min/max

Polyphase Flexibility

The Yukon® AMR Server offers a complete portfolio of communication paths (including Cannon PLC) for polyphase meter data collection with native protocol support for most popular digital meters. Our software provides the sophisticated timing parameters necessary for connecting directly to various brands of meters using serial (RS-232, RS-485) or TCP/IP transport protocols over telephone, cellular IP, utility-owned radio, Wi-Fi, and fiber communication systems. Our Cannon PLC multi-protocol, multi-voltage micro-RTU (MCT-470) reads meters from four manufacturers (so far). Yukon’s integrated Web server ports meter data to customers.

- Yukon offers an extensive library of billing system interfaces
- Real-time meter data aggregation displayed in Web browser, plus access to archived data
- Integrated energy management services for “key accounts”.

MCT-470 Polyphase
Meter Interface
Move more data, faster.

Speed matters if you want AMR that does more than just meter reading. Speed allows you to instantly verify a line outage without interrupting a scheduled route read. Speed allows you to monitor end-of-line voltage, grab an on-demand read for a move out, trip a capacitor bank, and shed some on-peak load, all without a second thought to power line communication traffic. With so much data stored in the meter, Cannon PLC turns your distribution system into a database. Call up the data you need to optimize your distribution system. Best of all, do it from your desk using a Web browser. What could be better?

- 3-6 second round-trip, on-demand reads; more calls resolved immediately
- “Ping” a pre-arranged sampling of meters to verify an outage seconds after the first call; verify restoration faster with fewer call-backs
- Instant verification of remote disconnect / reconnect
- Bandwidth available for voltage profiling, outage / interruption logs, and load management verification.

Fast & Easy Cannon PLC Fixed Network

Installing a power line communication fixed network doesn’t have to be a major undertaking. In fact, many clients report a time budget of two men for half a day. All the equipment for two substations can fit easily into the back of a pickup truck. This is time-cured, proven technology that works as well in a New Mexico summer as it does in a North Dakota winter. Digital router/repeaters are available where needed to insure coverage to the end of the longest single-phase tap.

- Cannon PLC connects to the substation bus through a bank of capacitors
- Two-way data and broadcast one-way commands share the PLC system
- Coverage extends throughout the substation distribution system
- Cannon PLC also provides load management and distribution automation communication.
Yukon
Software for
Advanced Energy Services

OPEN

ROBUST

POWERFUL

Yukon product lines are integrated into one platform to help you maximize your power delivery while benefiting your customers.

CANNON TECHNOLOGIES
Powered by Yukon®

www.cannontech.com
800.827.7966

COOPER Power Systems

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Critical Peak Pricing
Automatic Control System

- Utilizes existing or independent advanced metering network
- Utilizes existing load management infrastructure
- No additional communication system to implement
- Low cost, fast, redundant broadcast control signals
- Proven results

Utility’s Choice of AMR System
- Rate: Time-of-Use + unscheduled Critical Peak Period
- Meter: TOU with CPP or interval data meter
- Communication link (enables real-time switch to CPP)

Cannon Demand Response Technology
- Remote control equipment
- Utility initiated control signals

Cannon Customer Portal - Web, IVR, or CSR
- Choose participating loads & response levels
- Web-based participation “wizard” helps configure
- Interactive Voice Response (IVR) or CSR Interface for those without Internet
Critical Peak Pricing
Automatic Control System

1. Consumer’s Choice of Loads & Levels
   - Consumer chooses which loads to enroll, and then chooses depth-of-control levels for each load during peak and critical peak periods
   - Helpful Web interface assists in decision process

2. Control Commands Broadcast to Connected Loads
   - Utility broadcasts control commands to remote control equipment based on consumer choices in Step 1
   - This step can be hosted by Cannon Tech.

3. AMR System Collects Usage Data
   - Utility’s choice of AMR (automated metering) collects usage data during each hour, or during the various price tiers, then reports usage to billing
   - Billing system creates bills.

powered by Yukon
Advanced Energy Services Platform

8301 Golden Valley Road
Minneapolis, MN 55427
800.827.7966

CPP-1
Tomorrow's Solutions—Today
State-of-The-Art Functionality for Your Critical Peak Pricing, Time-of-Use, Direct Load Control, and Energy Efficiency Programs

Overview
Demand response programs are a critical component for managing today’s growing energy demands. Successful programs are built on technology you and your customers can depend on when it matters most. The Honeywell UtilityPRO™ demand response thermostat is based on Honeywell’s award-winning programmable thermostat—a proven solution to serve as the backbone of your program.

UtilityPRO End User Highlights:
- Large, easy-to-read, backlit touch-screen display
- Easy Web-based or on-site programming
- Personalized in-home display
- Compressor short cycle protection

Easy AMI Migration
Emerging technologies may have you concerned about what is the right choice for you. The UtilityPRO is a scalable solution designed with the Cannon SelectComm® communications technology which allows for migration to developing AMI communications media. If you choose to pursue and implement AMI, we are prepared to meet your needs.

In Addition, You Will Benefit From:
- Unmatched control to manage peak demand and maintain customer comfort
- Custom text messaging
- Two-piece design for easy installation
- “Adaptive Intelligent Recovery” for power outages and control events
- Auto seasonal changeover capability
- “Save-A-Wire” ready functionality

Single Unit for All Applications
The UtilityPRO provides a single platform compatible with a range of communications options and a single thermostat unit designed for standard residential, heat pump, and multi-stage applications.

TrueCycle
The TrueCycle™ program learns the behavior of air conditioning loads over time in order to calculate a formula to achieve more precise load reduction on oversized AC units. This translates to more efficient demand response.

Web Programming
The Yukon® demand response energy services platform has the ability to provide the participant with a Web page they can use to opt-out or temporarily or permanently decline to participate in the demand response program.

The UtilityPRO is compatible with dynamic pricing from simple time-of-use to critical peak pricing. Additionally, its customer-friendly user interface and easy on-site or Web-based programming ensures customer satisfaction. (Reference the graph on back of this product bulletin—for an illustration of the Web-based programming in a time-of-use pricing event.)

To learn more about how emerging technologies like these can work for you and your demand response needs visit www.cooperindustries.com or www.cannontech.com or call our toll free number 800.827.7966.
The graph below illustrates the Web-based programming in a time-of-use pricing event.

**Temperature Ranges**
- **Heat**: 40° to 90°F (4.5° to 32°C)
- **Cool**: 50° to 99°F (10° to 37°C)

**Operating Ambient Temperature**
- 0° to 120°F (-18° to 48.9°C)

**Shipping Temperature**
- -30° to 150°F (-34° to 66°C)

**Operating Relative Humidity**
- 5% to 90% (non-condensing)

**Physical Dimensions**
- 4-23/25" H x 6-2/5" W x 1-19/46" D
- 108 mm H x 166 mm W x 36 mm D

**SYSTEM COMPATIBILITY**
- 1 heat/1 cool conventional
- 1 heat/1 cool heat pump (no auxiliary heat)
- Heat only
- Heat only with fan
- Hot water Series 20 system (power to open and close zone valves/ normally open zone valves) Cool only
- 2 heat/1 cool heat pump (with auxiliary heat)
- 2 heat/2 cool multistage conventional
- 2 heat/1 cool multistage conventional
- 1 heat/2 cool multistage conventional
- 2 heat/2 cool heat pump (no auxiliary heat)

**Electrical Ratings**

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Voltage (50/60Hz)</th>
<th>Running Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>W Heating</td>
<td>20-30 Vac</td>
<td>0.02-1.0 A</td>
</tr>
<tr>
<td>(Powerpile)</td>
<td>750 mV DC</td>
<td>100 mA DC</td>
</tr>
<tr>
<td>W2 Heating</td>
<td>20-30 Vac</td>
<td>0.02-0.6 A</td>
</tr>
<tr>
<td>Y Cooling</td>
<td>20-30 Vac</td>
<td>0.02-1.0 A</td>
</tr>
<tr>
<td>Y2 Cooling</td>
<td>20-30 Vac</td>
<td>0.02-0.6 A</td>
</tr>
<tr>
<td>Aux Auxiliary heat</td>
<td>20-30 Vac</td>
<td>0.02-1.0 A</td>
</tr>
<tr>
<td>O/B Changeover</td>
<td>20-30 Vac</td>
<td>0.02-0.6 A</td>
</tr>
<tr>
<td>E Emergency heat</td>
<td>20-30 Vac</td>
<td>0.02-1.0 A</td>
</tr>
<tr>
<td>L Heat pump reset</td>
<td>20-30 Vac</td>
<td>0.02-0.6 A</td>
</tr>
</tbody>
</table>
Demand Response Solutions
Cooper Power Systems’ demand response solution provides the most reliable, flexible and complete technology available in today’s energy market. Our demand response solution provides you with Tools for Tomorrow—Today.

The Cannon Demand Response Difference

Our level of success is attributable to a constant focus on innovation, evolving business practices while maintaining the highest ethical standards and meeting customer needs.

Cooper Power Systems offers a comprehensive suite of demand response hardware, communications and software. Not all utilities have the same needs—our focus is to provide you and your customers with a flexible array of hardware and communications choices, combined with our enterprise class energy management software called Yukon®.

Experience

As veterans of mass-market demand response solutions, our team has the experience to support your needs from start-up and beyond. Currently, more than two-thirds of our workforce is dedicated to research, development and support activities. As your trusted partner, we will work with you to ensure you achieve your demand response goals throughout the life of your program.

Hardware

Build the right solution from our wide range of energy management hardware. Our load management receivers and thermostats are specifically designed to provide control capabilities that increase the efficiency of your energy management program. We offer scalable, application-oriented load control receivers and thermostats that provide device configurability and choice of communications. These devices share many operating features and characteristics and also have features that are unique to the device. These advantages combined with Yukon create the Cannon demand response difference.
Customer support is our highest priority. The success and reliability of your programs come first when you choose the Cannon demand response solution.

**Strong Allies—True Partnership**

**Scalability**

**Communication**
Flexible communications, 900 MHz FLEX® paging, 154 VHF paging, or power line carrier—to name a few.

**Flexible Control and Addressing**
The ExpressCom® protocol provides advanced addressing and feature options while minimizing communication bandwidth requirements and cost. This will provide you with flexible control and addressing features without having to re-program installed equipment.

**Frequency Agility**
All radio frequency (RF) devices have frequency-agile receivers with the option of supporting a “failover” air-time provider. We are the only vendor to offer this feature in all RF products which can prove vital to your success. This distinction provides you with a clear advantage compared to other solutions which are hard coded to a single frequency for life.

**Through-the-Air Programming**
All devices are programmable through-the-air, which means the utility can change frequencies and pager CAP codes to ensure the best performance. The utility benefits by using a flexible communication system that can evolve as business requirements change.

**Honeywell Thermostats**
Our Honeywell® partnership offers you the best thermostat available from the top manufacturer in the industry. Designed specifically to allow your energy management program to grow as your needs grow. The UtilityPro™ makes use of our ExpressCom communications protocol—allowing for a nearly unlimited number of customer price tiers, transmission and distribution, and geographic control schemes. This will give you flexibility to adapt and thrive in the ever-changing demand response marketplace.
Communications

Cooper Power Systems takes pride in the flexibility of our communication options and will work closely with you to determine which channel is best for your current and future applications. Communications are part of a vital and ever-changing landscape which we continually monitor and evaluate. Our products are designed to migrate easily to developing advanced metering infrastructure (AMI) communications media.

Frequency-agile communication options include:
- POCSAG VHF Paging—Provides dexterity through alternative or secondary paging options. Can be reconfigured remotely and is “narrow band ready.”
- 900 MHz FLEX Paging—Provides flexibility through alternative or secondary paging options. Can be reconfigured remotely and is “narrow band ready.”
- Existing and Future Power Line Carrier Injection—Allows utility to leverage power line carrier technology.

Two-Way

A large variety of two-way communication options are available for commercial and industrial (C&I) and distributed generation situations.

Yukon—Our Demand Response Software

Yukon is an enterprise class suite of software to address all the complex operations of a multi-faceted utility demand response program. One platform addresses the needs of dispatchers, system administrators, casual operations, customer service representatives, consumers, installers and any other stakeholder in the system. It provides access, management, security, redundancy and scalability to support any demand response or power factor management program and is designed for integration with utility systems. Yukon is widely used, rigorously tested and regularly updated.

Yukon applications include:
- Demand Response Management
- AMR/AMI
- Substation Monitoring
- Capacitor Control
- Distributed Generator Control
- Internet Consumer Access Portal

Strengths

Cooper Power Systems goes beyond delivering goods and services—we are uniquely suited to become your trusted partner.
Advanced Metering Infrastructure

Cooper Power Systems is on the leading edge of creating demand response interfaces to major advanced metering infrastructure (AMI) communications solutions. If your utility chooses to pursue and implement an advanced metering infrastructure solution—we are prepared to meet your needs. The Cooper Power Systems offering has many unique strengths, including a strategy for integrating demand response devices with a complete menu of advanced metering infrastructure technologies so that any future communication media you choose will be supported by backward compatibility. Looking to the future, Cooper Power Systems is a member of the ZigBee® Alliance and currently has relationships with all major advanced metering infrastructure vendors.

True Partnership

The highly qualified demand response support team will work with you throughout the life of your programs. Our support desk is available toll-free from 8:00 a.m. to 4:30 p.m., Central Standard Time, during business days. After-hours support is also available.

- Dedicated support teams based in the United States
- After hours, emergency on-call engineers
- 24-hour support for hosted systems

Hardware, Communications, Software—with this complete suite of demand response tools you can adapt to future changes in your demand response programs.

“Xcel Energy selected Cooper Power Systems’ demand response solution to improve our controllable loads and inventory management, and the customer-driven philosophy would enable us to maintain our customer base more effectively.”

Yvonne Pfeifer
Xcel Energy, Inc.
Total Solution

Clean and Green
Choose our industry-leading demand response solution to support your utility’s commitment to clean operations and environmentally-responsible objectives while maximizing cost savings. Our demand response solution will:
- Demonstrate your utility’s value to the community by decreasing costs and increasing efficiency
- Provide proper use of scarce resources
- Increase your system reliability and customer loyalty
- Produce flatter load shapes that are less costly to satisfy

Total Solution
Cooper Power Systems, Inc. is a division of Cooper Industries—which was founded in 1833. We are a global manufacturer of world-class power delivery and reliability solutions for the electrical and industrial markets. Through our Energy Automations Solutions group, we have become a leading provider of software, communications and integration solutions that enable customers to increase productivity, improve system reliability, and reduce costs. The Cannon demand response solution—with superior hardware and software technologies—is second to none. We have helped more than 400 utilities in North America achieve their demand response program goals and initiatives.

Flexibility
Our focus is to provide you and your customers with hardware and communications choices designed to ensure the success of your demand response program.
Financial Stability

Our low-risk demand response solution is supported by solid financial stability. Cooper Industries is a multi-billion dollar global manufacturer and is listed on the STANDARD & POOR’S 500 index.

Cooper Power Systems provides utilities the Tools for Tomorrow—Today. To learn more about how Cooper Power Systems’ emerging technologies like our demand response solution can empower you, visit www.cooperindustries.com or www.cannontech.com or call our toll free number 1.800.827.7966.
Committed to leadership in the global marketplace

- The largest utility metering company in the world with 2+ billion in annual revenues
- A pioneer and world leader in intelligent two-way, RF mesh AMI technology
- The world’s largest deployment of true two-way, RF mesh AMI
- Over 2 million smart metering endpoints deployed and delivering TOU readings in the U.S. and Canada
- More ‘time-based’ customers than any other AMI provider in North America
- Nearly 2 million additional smart metering endpoints under contract
- A global smart metering systems and solutions provider with AMI customers across the U.S. and in Canada, Mexico, El Salvador, Costa Rica, St. Lucia, Dubai and New Zealand

An AMI strategy dedicated to innovation

- Elster is committed to continuous product development and innovation to:
  - Identify, develop and bring to market forward thinking solutions for electric, water and gas utilities
  - Deliver open, interoperable, standards-based architecture
  - Remain compliant to industry communication standards
- Influence and lead market decisions and direction:
  - Vigorously participate in the development of standards
  - Actively participate in key trade associations
  - Fully engage with state and federal legislative and regulatory bodies

A customer centered regulatory strategy

- Elster partners with trade associations and utilities nationwide to actively promote:
  - Unbiased choice
  - Widespread competition
  - Appropriate social and economic benefits for customers
- Our regulatory strategy promotes:
  - Accurate and recoverable data
  - Provision of operational efficiencies
  - Benefits for the consumer
  - Systems defined by functionality requirements, not methodology
- Elster’s regulatory activities (Represented on map in Light Blue)
Dedicated to partnering with utilities

- A proactive partner with utilities for more than 170 years
- Support utilities’ primary objectives:
  - Participation in regulatory process
  - Providing "best practices" and associated case studies
  - Defining technology requirements
  - Protection against stranded assets
  - Defining cost recovery options
- Expanding network of global partners that use open, standards-based technologies that are interoperable with Elster’s EnergyAxis AMI system

Elster’s EnergyAxis® System

- A proven foundation for Smart Grid, Smart Home and Smart Consumer solutions
- Supports Smart Grid concepts including:
  - Demand Response:
    - In-home displays
    - Load control devices
    - Smart thermostats
  - Outage and restoration management:
    - Momentary and sustained outage counts
    - Sustained outage durations
    - Easy calculation of SAIFI, SAIDI, CAIDI statistics
  - Distribution automation
  - Per phase voltage from every endpoint
  - Full two-way communications capability to send command and control signals to specific endpoints
- RF mesh design that enables system wide or strategic deployment
- Field proven in a full range of smart metering applications and environments:
  - Electricity, gas, water
  - Residential, commercial, industrial
  - Desert southwest
  - Alaskan tundra
  - Urban, suburban and rural neighborhoods
  - Flat terrains and mountainous regions
  - High rises
- An ideal Smart Grid platform for today’s and tomorrow’s consumer
  - Robust AMI functionality
  - Intelligent two-way network
  - Open, interoperable architecture
  - Self-configuring
  - Self-healing network
  - Over-the-air firmware upgrades
  - Complex rates and schedules
  - Critical peak pricing
  - In-home energy management
  - Faster outage response

www.elster-eis.com
Elster Demonstrates ZigBee Interoperability With Partnering Companies

Raleigh, North Carolina, 27 March 2008. Elster Integrated Solutions (EIS), part of Elster Group, a world leader in Advanced Metering Infrastructure (AMI) and integrated metering and utilization solutions to the gas, electricity and water industries, announces it has successfully demonstrated ZigBee product interoperability with participating partner companies using the ZigBee Smart Energy Profile. The ZigBee Alliance is an association of companies working together to enable reliable, cost-effective, low-power, wirelessly networked, monitoring and control products based on an open global standard.

The ZigBee Alliance recently completed the ZigBee Smart Energy public application profile, which Elster is using in its EnergyAxis® System AMI solution. ZigBee Smart Energy offers utility companies a global open standard for implementing secure, easy-to-use wireless Home Area Networks (HAN) for managing energy.

“We are excited to have Elster’s active participation in the ZigBee Alliance,” said Bob Heile, chairman of the ZigBee Alliance. “The ZigBee products Elster and its partners are developing are important components to the portfolio of AMI connected HAN solutions. ZigBee technology enables Elster to offer its customers even more options for expanding Elster’s EnergyAxis System into the customer premise to facilitate innovative demand response and energy efficiency applications.”

Participation in the ZigBee Alliance gives Elster and its partners the opportunity to offer ZigBee Certified Products for use in HAN solutions. Elster successfully demonstrated interoperability testing with its EnergyAxis System and partnering companies including: Comverge, Energate, LS Research and Riga Development. EIS joined the ZigBee Alliance in 2007. In cooperation with its partners, EIS will deploy ZigBee Smart Energy Certified Products for use in HAN solutions for the EnergyAxis® System in 2008.

“Elster’s EnergyAxis System is the most widely deployed AMI system in the world utilizing a true two-way radio frequency mesh network,” said Victor Sitton, vice president of product marketing for Elster Integrated Solutions. “Elster continues its leadership position in the industry with successful large-scale field-proven AMI deployments, and will similarly continue to lead in delivering innovative solutions in home area networking. We are proud to be an active participant in the ZigBee Alliance and we look forward to continuing to deliver innovation for our customers by bringing more ZigBee Smart Energy devices into the market.”

By offering AMI solutions that support HANs designed for ZigBee, Elster continues to offer leading electric, gas and water AMI solutions for demand response, load control, pricing and customer communications. Elster’s EnergyAxis System supports multiple HAN solutions, so utilities using an EnergyAxis AMI have a choice when selecting in-home displays, programmable communicating thermostats or load control devices.
Elster’s EnergyAxis System delivers proven AMI technology to manage installed smart devices and communicate related information. The system provides the foundation for energy conservation, demand response, smart home solutions and is part of the smart grid of the future. Elster's AMI system supports gas, electricity and water while its open and interoperable architecture lowers investment risk by providing maximum flexibility for the integration of third-party solutions and emerging technologies via open and standards based interfaces.

The EnergyAxis System is currently the most widely deployed two-way radio frequency mesh network AMI technology in the world. EnergyAxis systems are operating in urban, suburban, rural, residential, commercial and industrial applications and range from high density metropolitan environments to lightly populated areas, including remote rural villages in Alaska. EnergyAxis System installations span the globe with deployments in North America, Central America, Australia, New Zealand and the Caribbean.

- Ends.

For further information, contact:  Gabrielle Puccio, Elster, Director of Corporate Communications, +1-919-250-5413, gabrielle.puccio@us.elster.com

ZigBee: Wireless Control That Simply Works
The ZigBee Alliance is an association of companies working together to enable reliable, cost effective, low-power, wirelessly networked, monitoring and control products based on an open global standard. The ZigBee Alliance membership comprises technology providers and manufacturers worldwide. Membership is open to all. Additional information can be found at www.zigbee.org.

About Elster Integrated Solutions
EIS delivers AMR and AMI systems that help utilities improve revenue cycle services, customer service, and delivery reliability as well as implement demand response and conservation programs. EIS delivers and integrates metering automation solutions for utility customers so that they can better manage their businesses in the area of electric, water, and gas usage as well as to assist them in facilitating new end-customer programs. Experienced in field-proven AMR and AMI system deployment, EIS enables business and customer management from metering information. Core to EIS solutions are the use of intelligent standards-based communications. For more information, visit www.elster-eis.com.

About Elster Group
Elster Group is a world leader in Advanced Metering Infrastructure (AMI) and integrated metering and utilization solutions to the gas, electricity and water industries. Elster’s high quality AMI and AMR products, systems, and solutions reflect the wealth of knowledge and experience gained from over 170 years of dedication to measuring precious resources and energy. Elster provides world class solutions and advanced technologies to help utilities more easily, efficiently and reliably obtain and use advanced metering intelligence to improve customer service, enhance operational efficiency, and increase revenues. Elster's AMI solutions enable utilities to cost-effectively generate, deliver, manage and conserve the life-essential resources of gas, electricity and water. The group has over 7,500 staff and operations in 38 countries, focused in North and South America, Europe, and Asia. For additional information, visit www.elster.com.
Elster and Milsoft Utility Solutions Certify MultiSpeak® Version 3.0 Interoperability

Raleigh, North Carolina, September 08, 2008. Elster, the global leader in smart metering and smart grid system solutions, announces that its EnergyAxis® System had been certified as interoperable with Milsoft Utility Solution’s DisSPatch outage management system (OMS) through MultiSpeak 3.0 specification testing. End-to-end interoperability with the DisSPatch OMS system extends the EnergyAxis System’s AMI technology and enhances its ability to support outage management, a key capability of the smart grid.

Sharon Allan, president of Elster Integrated Solutions stated, “Milsoft’s OMS solution efficiently utilizes the real-time power outage data generated by the EnergyAxis System and gives utilities a powerful tool to get the lights back on quicker. Elster welcomes the opportunity to work with companies like Milsoft Utility Solutions to enhance our EnergyAxis System’s AMI technology.”

When coupled with Milsoft’s DisSPatch outage management software, the comprehensive outage data delivered by the EnergyAxis System enables utilities to identify outage areas more quickly, define the extent of outages more accurately, and ensure that power is restored before crews are moved. More effective and efficient outage management and greater customer satisfaction are some of the many benefits utilities experience with Elster’s smart metering and smart grid system technologies.

“Milsoft is excited to be proven interoperable with Elster Integrated Solution’s EnergyAxis System. The ability to utilize data from Elster’s system in a near real time method toward outage device predictions and verification of restoration is extremely valuable to our joint clients and maximizes both the available technology and their return on investment” said Ed Carlson, Vice President of Sales and Marketing, Milsoft Utility Solutions.

Victor Sitton, vice president of product marketing for Elster Integrated Solutions, commented, “Elster is committed to working with industry leading and inventive solution providers to develop powerful, leading edge, and cost effective AMI smart grid technology. Interoperability with Milsoft’s OMS solution is another step forward for Elster in delivering the future-proof AMI technology utilities need to build the smart grid.”

—Ends.

For further information contact:
Gabrielle Puccio, Director, Corporate Communications
919-250-5413
gabrielle.puccio@us.elster.com

About Milsoft Utility Solutions Inc.
Milsoft Utility Solutions has served the electrical utility industry for 20 years. The company’s state-of-the-art Engineering Analysis system has evolved into a complete utility solution. The addition of the PORCHE IVR System and DisSPatch Outage Management Systems, and WindMiilMap Mapping Solution, allows Milsoft to offer utilities a fully-integrated, single solution for managing the day-to-day utility operations as well as major outages. Milsoft, based in Abilene, Texas, serves more than 1,000 electrical utilities,
About the MultiSpeak Initiative
The MultiSpeak Initiative fosters business process improvement and simplifies data integration at electric utilities through a collaboration between NRECA and more than 40 software companies and consultants who serve electric utilities. MultiSpeak has released a series of specifications that enable popular utility software applications to exchange data in a predetermined manner.

MultiSpeak3, the latest release, has defined 30 interfaces that encompass nearly every commonly used software application deployed at electric distribution co-ops, including automatic meter reading, customer information system, customer relationship management, engineering analysis, load management, mapping, outage management, SCADA, and staking. To view the specification and for more information, visit www.multispeak.org.

About Elster
Elster, a global leader in smart metering and smart grid solutions has delivered over 1.5 million smart metering devices worldwide with systems located in North America, Europe, Central America, Australia, New Zealand and the Caribbean. Elster smart metering system solutions provide utilities with energy conservation capabilities via demand response programs, smart grid applications, and operational efficiencies resulting in significant value creation across the utility enterprise. Elster has over 7,500 staff and operates globally in North America, South America, Europe, Africa, Middle East, and Asia. www.elster.com.
Take the first step to increasing customer satisfaction while decreasing peak demand
Honeywell can provide a customized proposal that will show what a demand response program could mean for your utility. All completely free of charge. So the only thing you have to lose is your difficulty meeting peak energy demands.

Find out more
To learn more about Honeywell demand response solutions, call 1-800-345-6770 ext. 615, or visit www.honeywell.com/utility

Honeywell Utility Solutions
199 Rosewood Drive
Suite 300
Danvers, MA 01923
www.honeywell.com

Introducing the smart new way to increase customer satisfaction while you decrease peak demand

Honeywell UtilityPRO™

SMART THERMOSTAT FOR DEMAND RESPONSE
Introducing Honeywell UtilityPRO™ – the smart new thermostat built especially for utility-sponsored demand response programs.

A thermostat that can help boost customer interest for your demand response initiative
When it comes to implementing a demand response solution, the questions you face are probably not “if” or “when” as much as “how” and “with whom?” Honeywell has answers to all those questions. As a global technology leader in the demand response industry, Honeywell knows how to implement effective, turnkey demand response solutions that are successful in building high customer enrollment and satisfaction, and ultimately deliver the needed Kilowatt savings.

And now we have raised the bar even higher with the introduction of UtilityPRO.

An award-winning best-seller now made even better
Our sleek new UtilityPRO demand response thermostat is based on Honeywell’s award-winning programmable thermostat – the #1 best-selling premium thermostat in North America. Since its introduction a few years ago, no thermostat has won more awards, industry recognition and customers.

Now Honeywell has enhanced this popular thermostat with added features and functionality that make it the perfect backbone of a successful demand response solution. So for the first time, one thermostat combines a top-of-the-line customer interface with full demand response functionality.

All of which gives you the opportunity to launch a demand response initiative with an exciting new product that has a proven track record of customer acceptance – as well as the heritage of being brought to you by the company that has sold more thermostats than anyone in the world.

Personalized messaging and in-home display helps you stay in touch with customers
As a smart thermostat, UtilityPRO’s in-home display provides customers with current and past energy usage and billing information. But the UtilityPRO also goes much farther by enabling text messaging to customers. This can be done in the form of mass announcements - such as reminders to conserve energy during peak times, information about other conservation programs, or appreciation for their participation in your program.

Packed with state-of-the-art demand response functionality
The new UtilityPRO smart thermostat was designed from the ground up to serve as the backbone of a successful demand response program. It allows an unprecedented amount of control to help ensure that you can manage your peak power demand while also maintaining the comfort of your customers.

Honeywell has decades of customer comfort data – and this knowledge helped shape a wide range of highly flexible cycling, ramping and temperature control strategies. The UtilityPRO even allows you to control your customer’s air conditioning condenser and fan operation separately – so in many cases customers are not even aware that their conditioners have been cycled off. No demand-response thermostat on the market today offers more proven features, functionality or versatility.

The UtilityPRO smart thermostat is just part of Honeywell’s total demand response solution
As a recognized leader in the demand response industry, Honeywell has helped countless utilities across North America plan, implement and maintain successful demand response programs. We can put our decades of experience and energy management expertise to work for you at every stage of your program, from start to finish.

Exciting new features and benefits
- Simple, customer-friendly user interface
- Large, easy-to-read touchscreen display
- Flexible and readable text messaging to customers
- Individually addressable
- Personalized in-home display provides customer usage and billing information
- Web programmable
- State-of-the-art demand response functionality
- One-piece design for easy installation
- Accurate, precise temperature control ± 1 degree

Honeywell can help you implement a demand response program to overcome generation and transmission constraints, managing peak demands quickly and cost-effectively.

You and Honeywell: an unbeatable combination
If you have considered implementing a demand response solution, now is the perfect time and Honeywell is the perfect provider.

No one has more global energy management expertise than Honeywell. And with the introduction of the state-of-the-art UtilityPRO smart thermostat, there has never been a better time to launch your demand response initiative.

UtilityPRO gives you all the functionality and versatility you are looking for in a demand response thermostat. And it gives your customers the convenience and ease-of-use they will appreciate.

All of this adds up to a win-win-win situation for your utility, your customers and the environment.
Honeywell stands out as the single-source provider to help implement all your Smart Grid solutions.
Knowing the theory behind a Smart Grid solution is one thing. But actually having the experience, expertise and resources to make it happen is quite another. That is what makes Honeywell stand out in the crowd of potential Smart Grid resources.

Honeywell Utility Solutions takes a unique enterprise solution approach to Smart Metering, Demand Response and Energy Conservation implementation. We can provide the complete program design, management, marketing, customer service, installation, maintenance, measurement and verification – plus the integrated technology to tie it all together. And Honeywell also has the financial stability to provide a variety of funding mechanisms to help you make it happen now.

**Smart Grid/Smart Metering**
Honeywell is recognized as a global leader in utility solutions. We have successfully completed dozens of smart metering programs and already installed more than seven million highly accurate automated meters throughout North America.

**Demand Response**
Honeywell is also the largest implementer of residential demand response in North America. Over the past 30 years we have installed more than 950,000 load management devices and delivered in excess of 800MW of load reduction. Our ZigBee®-enabled UtilityPRO™ thermostats make Smart Grid integration cost-effective and customer-friendly.

**Energy Conservation**
We have also helped implement energy and water conservation programs with more than 100 utilities, providing outreach and marketing, onsite audits, diagnostics, cost benefit analysis, installation, education and more.

Our unmatched combination of experience and expertise is just one reason why Frost & Sullivan recently recognized Honeywell with the North American Energy Service Company “Green Excellence of the Year” Award. Experts agree that no company sees the whole energy picture more clearly than Honeywell.

**Find Out More**
If your utility wants to move toward Smart Grid implementation, let Honeywell show you the way. For more information, visit [www.honeywell.com/utility](http://www.honeywell.com/utility) or call 866-957-1077 today.
Honeywell Utility Solutions

Your One Source Solution for Demand Response, Energy Conservation and Smart Grid

Honeywell
Utility Solutions

Honeywell Utility Solutions has an in-depth understanding of how to successfully design and deliver Demand Response, Smart Grid and Energy Conservation programs on behalf of utilities across North America.

In combination with our award winning marketing capabilities, we are uniquely qualified to deliver best-in-class programs for you and your customers.

Some of the unique benefits we will bring to your program include:

• Over 30 years of experience working with utilities
• Utility-grade customer service
• Industry leading IT management systems
• Program design expertise
• Access to industry partners and local trade networks
• Professional implementation of proven, high impact programs

We can deliver individual programs for you, or we can utilize our Enterprise Solution to allow you to have singular control over a wide variety of programs.

Honeywell works with you in true collaboration to not only deliver excellence on your programs today, but allow you to successfully develop and deliver tomorrow’s programs as well.

Find Out More
For more information about Honeywell Utility Solutions, call 1-800-345-6770 ext. 615 or visit www.honeywell.com/utility

Honeywell Building Solutions
Honeywell
1985 Douglas Drive North
Golden Valley, MN 55422-3992
1-800-345-6770 ext. 615
www.honeywell.com
Innovative program links seven utilities to maximize services for low-income residents. Supported by Honeywell, the New Jersey Comfort Partners program helps low-income homeowners achieve energy affordability — and stretches the contributions of the utilities involved — by addressing all energy sources at once. This whole-house approach has helped thousands of at-risk residents receive life-improving services while reducing environmental impact and long-term social cost burdens for all of New Jersey.

Honeywell
Affordable Energy

When you’re short on money to pay for basic utility services, sometimes it takes a little creativity to get by.

In New Jersey, one woman heated water on her stove — for two years — after her water heater stopped working. Another 85-year-old woman needed a way to stay warm when her gas-fired boiler quit. Her solution? Four electric space heaters and a gas oven.

“People should not have to sacrifice comfort and safety in their homes,” said Maria Frederick, working group convener for New Jersey Comfort Partners. “These are basic needs that can greatly influence a person’s day-to-day life.”

Like many of their regulated counterparts across the country, each of the investor-owned gas and electric utilities in New Jersey had an energy-affordability initiative to help low-income customers. In 2001, under the direction of the New Jersey Board of Public Utilities, the utilities joined together to design a single, comprehensive energy-conservation program for all low-income residents: New Jersey Comfort Partners.

Comfort Partners is co-managed by seven utilities: PSE&G, Jersey Central Power & Light, Atlantic City Electric, Rockland Electric, Elizabethtown Gas, NJ Natural Gas and South Jersey Gas. Unmatched in the industry, the large-scale program already has helped 27,000 households control utility costs.

Whole-House Approach

Diverse housing types and conditions throughout the state, including a large percentage of deteriorated, aging structures, presented significant challenges at first. “It was clear we needed outside partners with specialized knowledge and expertise,” Frederick said. “It would have been too costly to train our own staff for something this comprehensive and far-reaching.”

Comfort Partners chose to work with Honeywell, which had helped manage similar programs for four of the participating utilities. Honeywell assisted with the design and launch of the program as well as developing a methodology for applying the program design to address the needs of diverse building types.

Currently, Honeywell enlists customers, prioritizes those with the greatest savings opportunity or need, conducts residence evaluations, provides customer energy education, and installs conservation measures, among other duties.

While energy-saving measures traditionally are pre-determined, Comfort Partners takes a whole-house approach to address the unique needs of each home.

The process begins with an audit to determine all savings opportunities. Using modern diagnostic techniques, technicians assess each home and determine which measures will most improve efficiency. Then they create a work plan with measures such as upgrading attic or wall insulation, and providing new thermostats and efficient lighting products. Technicians also review, test and correct health and safety concerns.

Because Comfort Partners addresses both gas and electric consumption, measures implemented on one side often help the other. For example, air-sealing a house helps reduce electric air conditioner and gas heating costs. This combined approach provides a uniform service that has been critical to the program’s success.

Statewide Benefits

In 2005, 6,400 participants received energy-saving measures and services at a program cost of $14 million. An impact analysis for program work revealed:

- Total estimated annual electric savings of 5.7 million kWh.
- Total estimated annual gas savings of 48,730 therms.

In addition, the program contributes to New Jersey’s clean air goals. Services through the end of 2005 have cut carbon dioxide emissions by more than 117 million pounds, which is equivalent to taking 11,700 cars off the road or planting 15,900 acres of trees.

Rising fuel costs have led to heightened interest from consumers struggling to pay their bills and from sponsors wanting to serve more people. So Comfort Partners aims to expand the program and help more customers in the coming years.

“We’ve already helped tens of thousands of people, yet the need is still great,” Frederick said. “The Comfort Partners program promises to deliver a positive impact on the lives of many more New Jersey residents.”

Find Out More

For more information about Honeywell Utility Solutions, call 800-345-6770, ext. 615 or visit www.honeywell.com/utility.

Honeywell Building Solutions

Honeywell
1985 Douglas Drive North
Golden Valley, MN 55422-3992
1-800-345-6770, ext. 615
www.honeywell.com
The PowerSHED High Efficiency Demand Response Ballast combines universal voltage, high efficiency operation with a low cost method of emergency demand response power reduction.

**Permanently Reduce Lighting Load:**
When the PowerSHED ballast is combined with SYLVANIA OCTRON® SUPERSAVER® 28W T8 lamps, each 3-lamp fixture immediately saves up to 14 watts.

**Participate in Emergency Demand Response:**
When the PowerSHED ballast receives the power line carrier (PLC) signal from the lighting panel, it immediately sheds up to 33% of its load.

**Maximize Utility Incentives:**
Using these features, energy managers can maximize the incentives available from their utility company by participating in both permanent demand reduction and emergency demand response during peak periods.

**Speed Return on Investment:**
This is the first system to provide demand response power reduction using cost effective, instant start ballast technology with a shared multi-circuit power-line command injector. No labor or materials are required for additional ballast control wires and minimal labor is required to install the Command Injector.

**Quick and easy installation:**
1. Install one PowerSHED Command Injector and one split-core Command Coupler at the input of each lighting panel.
2. Re-ballast all two and three-lamp T8 fixtures with QUICKTRONIC PowerSHED Demand Response ballasts. *No need to replace sockets when retrofitting existing instant start ballasts.*
3. Re-lamp with OCTRON SUPERSAVER lamps.
4. Install the preferred activation method for each Command Injector. Activation options include:
   a. Simple manual AC Switch at each panel.
   b. Application of 120-277V driven from the building automation system or secure internet-driven connection based on local utility program.

**Utilities With Demand Response Programs**
Millions of dollars in incentives are available from the utilities with load curtailment programs. Nearly every state has some type of program in force or under consideration.

**For examples, visit these web sites:**
California Demand Response Research Center  drrc.lbl.gov
New York State Energy R&D Authority  www.nyserda.org/programs/peakload/default.asp

**Ballast Specifications**
- **Lamps supported:** 2 or 3
- **Operates:** FO32, FO25, FO17, FO40T8 (2 lamps). Also suitable for “U” Bend and SS equivalents, except FO32/25W/SS (4’)
- **Includes Lamp Striation Control**
- **Starting Method:** Instant Start
- **Ballast Factor:** 0.88
- **Circuit Type:** Parallel
- **UL Type:** Class P
- **Lamp Frequency:** >40kHz
- **Input Frequency:** 50/60 Hz
- **THD:** <10%
- **Power Factor:** >98%
- **Universal Voltage Range:** 108-305V
- **Max. Case Temperature:** 70°C
- **Load Shed Signal:** 19-21 kHz via SYLVANIA split-core Command Coupler ring at the lighting panel.
- **CSA Certified (where applicable)**
- **UL Listed**
- **FCC 47 CFR Part 18 Non-Consumer**
- **ANSI 62.41 Cat. A Transient Protected**

OCTRON, SUPERSAVER and SYLVANIA are registered trademarks of OSRAM SYLVANIA.  PowerSHED is a trademark of OSRAM SYLVANIA.  QUICKTRONIC is a registered trademark of OSRAM GmbH. NEMA Premium is a registered trademark of The National Electrical Manufacturers Association.  Information subject to change without notice.
Earn back your money.
Demand Response Energy Solutions

Make the most of Your Energy™
Get Paid to Manage Your Energy Costs

Demand response programs provide a simple way for facility managers to get paid for returning discretionary energy back to the power grid when it is stressed.

What is Demand Response

Demand response is an electric market mechanism by which consumers reduce consumption in response to energy price fluctuations, demand charges, or a direct request to reduce demand when the power grid reaches critical levels. Facility managers have the ability to manage their electric consumption as an asset instead of an expense that must be paid every month.

Are you earning your share?

Demand response program participants can earn back 5-25% of their annual electric energy costs. Typically, facilities also find demand response as a means for better integration into their business processes and way to begin treating electricity as manageable cost. The revenue generated from demand response participation is often used for capital improvements such as equipment upgrades. Demand Response earnings values vary based on speed, location, and willingness to participate. These factors can mean the difference in hundreds of thousands versus tens of thousands of dollars.

<table>
<thead>
<tr>
<th>Demand Response Participation Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
</tr>
<tr>
<td>Turn off non-essential lighting, fountains and decoration</td>
</tr>
<tr>
<td>Raise air conditioning set points</td>
</tr>
<tr>
<td>Reduce use of elevators and escalators</td>
</tr>
<tr>
<td>Delay dishwashing, laundry and ice machines</td>
</tr>
<tr>
<td>Delay battery chargers, scrap compactors and bailing machines</td>
</tr>
<tr>
<td>Delay batch processes and non-essential pumping machines</td>
</tr>
<tr>
<td>Turn on allowable on-site generation</td>
</tr>
<tr>
<td>Shift load to alternative locations</td>
</tr>
</tbody>
</table>
How does demand response work?

Demand response monitoring and control systems programs make it possible for the participant to initiate control actions to shed a pre-defined amount of load. There is no walking around to make adjustments when the reduction request is received. Plus automatic participation provides better payback via improved participation levels and therefore greater financial benefit. Schneider Electric energy consultants work with participants to evaluate what is best for their facility and determine if automatic response will be economically feasible.
Schneider Electric Demand Response Energy Solutions

Schneider Electric has a long history of developing proven strategies that help our customers maintain safe, reliable, and efficient use of energy. As a global energy management company, you count on our expertise on a daily basis.

Our team stands ready to help you with:

- Determining which demand response programs are right for your needs
- Performing demand response energy auditing to assess the best load reduction strategies for your facility
- Estimating the financial opportunity that demand response participation will mean for your facility
- Enabling your facility with the proper control, metering and data management tools so you can earn the most amount of money possible.

We are a global company

North America

29%
31,500

Europe

45%
49,000

Rest of the World

8%
8,000

Asia-Pacific

18%
31,500

100+ countries

200+ manufacturing locations

120,000 people

Schneider Electric is the world’s power and control specialist. Through its world-class brands Schneider Electric anticipates and satisfies its customers’ requirements in the residential, buildings, industry, energy, and infrastructure markets. Schneider Electric has 112,000 employees worldwide and operations in 190 countries. Global power and control leader Schneider Electric offers to confidently and efficiently provide resources to see customers achieve their demand response goals. Let our experienced team help you establish the most effective demand response strategies for your business.

For more information, contact your account manager today!
Need metering with higher accuracy, power quality and flexible network connections?

PowerLogic® ION8600 meters for grid interties, service entrances and substations.

PowerLogic® ION8600 power and energy meter
Advanced, utility-grade meter with ANSI Class 0.2 measurement accuracy, PQ compliance monitoring, transient capture and multi-port/protocol communications.

Make the most of your energy℠
PowerLogic®
ION8600
power and energy meter

Providing high accuracy metering with a wide range of capabilities, the PowerLogic® ION8600 meter is the most advanced socket-based energy and power quality meter. Used to monitor network interties, substations, and service entrances, the PowerLogic ION8600 meter is ideal for applications that need to accurately measure energy bidirectionally in all four quadrants.

These meters give utilities the tools to manage complex energy supply contracts that include commitments to power quality. Integrate them with PowerLogic® ION Enterprise® software, or other energy management and SCADA systems, through multiple communication channels and protocols.

Typical Applications
For infrastructure, industrials and buildings

> Energy savings
  • Measure efficiency, reveal opportunities and verify savings
  • Strengthen rate negotiation with energy suppliers
  • Enable participation in load curtailment programs (e.g. demand response)
  • Identify billing discrepancies

> Energy availability and reliability
  • Validate that power quality complies with the energy contract
  • Improve response to power quality-related problems

For electric utilities

> Revenue metering and power quality
  • Install high-accuracy metering at all interchange points
  • Improve or verify metering accuracy at existing interchange points
  • Help customers manage costs using value-added billing data
  • Enable customer participation in load reduction programs
  • Verify compliance with new power quality standards
  • Analyze and isolate the source of power quality problems

> Energy availability and reliability
  • Improve T&D network reliability
  • Enhance substation automation to reduce field service time
  • Maximize the use of existing infrastructure
Features

> Multiple socket and switchboard form factors
  Meter is available in socket or switchboard form factors. The FT21 switchboard case option provides all the benefits of the socket meters in a compact, switchboard mount, draw-out configuration. A quick disconnect system enables removal of the meter electronics in one easy action without having to manually disconnect wires, including I/O wiring.

> High accuracy measurement
  Meets stringent ANSI C12.20 Class 0.2 and IEC 62053-22 Class 0.2S measurement accuracy standards. One second loss calculation and error correction capabilities establish system losses and correct for measurement errors in real time.

> Power quality compliance monitoring
  Measure compliance to the following international quality-of-supply standards:
  • EN50160, IEEE 519, IEEE 1159, ITI (CBEMA)
  Trust the quality of the results because compliance calculations are based on the following international measurement standards:
  • IEC 61000-4-7, IEC 61000-4-15

> Power quality analysis
  Digital fault-recording capabilities simultaneously capture voltage and current channels for sub-cycle disturbance transients as well as multi-cycle sags/dips, swells and outages.

> Complete communications: Fibre - Ethernet - Serial - Modem
  Gateway functionality simplifies communications architecture and reduces leased line or connection costs. Concurrent, independent ports communicate with a variety of protocols such as ION, DNP 3.0, Modbus RTU, Modbus TCP, Modbus Master (serial, TCP) and MV-90.

> Transformer/line loss compensation
  Automatically measure, compensate and correct for transformer or line losses when meter is physically separated from billing point or change of ownership location.

> Multi-user, multi-level security
  Control and customize access to sensitive data for up to 16 users. Password protection and anti-tamper seal protection enhance meter security. Advanced security functions for automatic detection, recording and annunciation of:
  • PT or CT phase loss due to transformer wiring tampering or transformer failure
  • PT or CT phase reversal tampering or installation error
  • Peak demand register resets
  • Meter power up/down

> Patented ION® technology
  Modular, flexible architecture that offers extensive user programmability. Uniquely addresses complex monitoring and control applications. Adapts to changing needs and new applications.
Installation

Mounting options

Meter is available in socket or switchboard form factors. Socket meters fit S-Base meter sockets and A-to-S Base adapters; supported Form factors include 9S, 35S, 36S, 39S, and 76S. Switchboard meters eliminate need for shorting blocks; they may be ordered with an optional breakout panel that provides easy access to on-board I/O and communications connections.

Circuit and control power connections

Meter has 3 voltage and 3 current inputs (optional 4th current input) compatible with 4-wire Wye, 3-wire Wye, 3-wire Delta, and single-phase systems. Direct connect ANSI socket mount 9S, 39S, 36S and 76S systems up to 277 V ac line-to-neutral, or a 3S system up to 480 V ac line-to-line. Meter can be powered by the voltage source being monitored or from an auxiliary power pigtail.

### Table: Input Specifications

| Voltage: Va, Vb, Vc, Vref (9S/39S) | Form 9S/36S/39S/76S steady state: Standard 57-277 (+15%) V L-N rms; Form 9S/36S/39S/76S overload: Standard power supply 120-277 (+20%) V L-N rms; Low Voltage power supply 57.7-69.3 (+20%) V L-N rms; Form 3S5 steady state: 120-480 (+15%) V L-N rms; Form 3S5 overload: 120-480 (+20%) V L-N rms; Dielectric withstand: 2500 V rms, 60 Hz for 1 min. (ANSI C12.1-1995/ C12.16-1991/C12.20-1998); Surge withstand: 6kV peak (1.250 µs) voltage surge L-L and L-GND (IEC 255-4) ANSI/IEEE C37.90.1-1989 SWC and Fast Transient Common and transverse modes. ANSI C62.41; Impedance: 5M Ω/phase (phase-Vref) |
| Current: Standard (IEC 5 A & 10 A; ANSI current class 10 & 20) | Accuracy range 0.005 A to 20 A autoranging; Rated: 5 A and/or 10 A; Starting current: 0.005 A rms; Fault capture: 50 A (instantaneous) peak; Overload: 600 A rms for 1 second, non-recurring; Dielectric withstand: 2500 V ac, 60 Hz for 1 minute; Burden (switchboard): 0.20 VA per phase (at 5 A); Burden (socket): 0.05 VA per phase (at 5 A); Impedance: 0.002 Q/phase (phase-Vref) |
| Current: Optional (IEC 1 A to 10 A; ANSI current class 2 &10) | Accuracy range 0.001 A to 10 A autoranging; Rated: 1 A, 2 A and/or 5 A; Starting current: 0.001 A rms; Fault capture: 24 A (instantaneous) peak; Overload: 200 A rms for 1 second, non-recurring; Dielectric withstand: 2500 V ac, 60 Hz for 1 minute; Burden: 0.015 VA per phase (at 1 A); Impedance: 0.015 Q/phase |
| Control power: Standard power supply | Rated inputs: 120-277 V ac; Type: 3-phase powered from voltage sensing inputs; Burden: max 4 W, 6.6 VA/phase; Form 9S/36S, 35S/35S, 36S, 39S, 76S; 120-277 V L-N rms (-15%+20%) 47-63 Hz; Form 35S: 120-480 V L-N rms (-15%+20%) 47-63 Hz; Dielectric withstand: 2500 V ac rms, 60 Hz for 1 min.; Ride-through: min 100 ms (6 cycles at 60 Hz at 96 Vac), 200 ms (12 cycles at 60 Hz at 120 V ac), 800 ms (48 cycles at 60 Hz at 240 V ac); Surge withstand: 6 kV/0.5 kA peak (100 kHz Ring Wave) ANSI C62.41 6 kV/3 kA peak (1.250/8-20 us) voltage surge L-L and L-GND ANSI C62.41 |
| Control power: Standard low-voltage power supply | Rated inputs: 57-70 V ac; Type: 3-phase supply, drawing off voltage inputs; Burden: Typical: 3 W, 5 VA/phase, 3-Phase operation Max: 4 W, 6.6 VA/phase, 3-phase operation; Form 9S/36S/39S/76S: 57-70 (-15%+20%) V L-N rms, 47-63 Hz; Form 35S: unavailable; Dielectric withstand: 2500 V ac rms, 60 Hz for 1 min.; Ride-through: min 100 ms or 6 cycles 60 Hz at 46 V ac; Surge withstand: 6 kV/0.5 kA peak (100 kHz Ring Wave) — ANSI C62.41, 6 kV/3 kA peak (1.250/8-20 µs) voltage surge L-L and L-GND ANSI C62.41 |
| Control power: Auxiliary power cable assembly | Rated inputs: 65-120 V ac (+15%) L-N rms, 47-63 Hz or 80-160 V dc (+20%); Type: 1-Phase supply, powered through external cable with grounded U-Plug; Burden: Typ. 10 VA, max 20 VA; Dielectric withstand: 2500 V ac rms, 60 Hz for 1 min.; Ride-through: min. 100 ms 6 cycles 60 Hz at 46 V ac; Surge withstand: 6 kV/0.5 kA peak (100 kHz Ring Wave) ANSI C62.41 6 kV/3 kA peak (1.250/8-20 us) voltage surge L-L and L-GND ANSI C62.41 |
| Control power: Auxiliary power cable assembly | Rated inputs: 160-277 V ac (+20%) L-N rms, 47-63 Hz or 200-350 V dc (+20%); Type: 1-Phase supply, powered through external cable with grounded U-Plug; Burden: Typ. 10 VA, max 20 VA; Dielectric withstand: 2500 V ac rms, 60 Hz for 1 min.; Ride-through: min 100 ms 6 cycles, 60 Hz at 96 V ac; Surge withstand: 6 kV/0.5 kA peak (100 kHz Ring Wave) ANSI C62.41 6 kV/3 kA peak (1.250/8-20 µs) voltage surge L-L and L-GND ANSI C62.41 |
Front panel

View system data or configure meter settings. The bright, easy-to-read, backlit LCD screen with adjustable contrast provides easy viewing in poor lighting conditions. Multiple programmable screens display all metered data including numeric values, timestamped values, harmonics histograms, phasor diagrams and name plate data. Navigation buttons move between display screens and aid basic setup procedures. Protected (sealable) buttons and switches provide access for advanced meter configuration, such as meter resets. An ANSI Type II optical serial port facilitates infrared communication with the device. Two LED pulse indicators with corresponding infrared pulsers are preconfigured for energy pulsing.

Power and energy measurements

High-accuracy (1-second), high-speed (1/2-cycle) true RMS 3-phase operational measurements for each phase (per phase) and all phases (total).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Accuracy ± (% reading)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (line-line) (line-neutral): per phase, total, min/max, unbalance, phase reversal</td>
<td>0.1 %</td>
</tr>
<tr>
<td>Current (I1, I2, I3, I4): per phase, total, neutral (39S, 76S), min/max, unbalance phase reversal</td>
<td>0.1 %</td>
</tr>
<tr>
<td>Current demand²: present, min/max, predicted</td>
<td>0.2%</td>
</tr>
<tr>
<td>Power: real (kW), reactive (kvar), apparent (kVA), per phase, total</td>
<td>0.2%</td>
</tr>
<tr>
<td>Power demand²: present, min/max, predicted</td>
<td>0.5 %</td>
</tr>
<tr>
<td>Energy: real (kWh), reactive (kvarh), apparent (kVAh), bidirectional, net, total, volt-hours, amp-hours and KQ-hours</td>
<td>ANSI C12.20 class 0.2</td>
</tr>
<tr>
<td>Power factor: per phase, total</td>
<td>IEC 62053-22/23 (0.2S)</td>
</tr>
<tr>
<td>Frequency V1,V2,V3 (47-63 Hz): per phase, total</td>
<td>0.005 Hz</td>
</tr>
<tr>
<td>Crest factor current channels</td>
<td>1 %³</td>
</tr>
</tbody>
</table>

1 - Energy metering accurate to IEC 62053-22/23 0.2S; ANSI C12.20-1998 American National Standard for Electricity Meters 0.2 and 0.5 Accuracy Classes, for current Classes 2, 10 and 20.

2 - Selectable block, sliding, or thermal (exponential) demand calculations

3 - Fundamental >> 5 % nominal

Power quality

Power quality compliance monitoring for international quality-of-supply standards plus specific data for localized and custom compliance agreements and network connection requirements.

Analyse problems and avoid interruptions. Detect, record and report the specifics of voltage or current imbalances and loss, frequency/power factor variations, over- and under-voltages.

- Sags/swells (all models): Monitor voltage waveforms for sags and swells (i.e. ITI (CBEMA) Type 2 and Type 3 disturbances); report on each disturbance’s magnitude and duration. Detect sub-disturbances during a sag/swell event.
- Harmonics (all models): Individual harmonics up to the 63rd, K factor and Total Harmonics Distortion (THD).
- Harmonics (ION8600A): Voltage and current magnitude, phase and inter-harmonics in accordance with IEC 61000-4-7 (up to the 40th).
- Transient capture (ION8600A): Monitor voltage waveforms for transient activity (i.e. ITI (CBEMA) Type 1 disturbances) to 65 μs at 60 Hz (78 μs at 50 Hz).
- Waveform capture (ION8600A): Selectable waveform recording resolution from 16 samples/cycle to 256 samples/cycle (800 Hz to 51 kHz). Back-to-back waveform recording allows for extended captures.
- EN50160, IEEE 519 and IEEE 1159 (ION8600A): Monitor compliance with parameters for these international quality-of-supply standards.
Digital and analogue inputs and outputs

Onboard meter I/O includes four Form C digital outputs and three Form A digital inputs for a variety of applications, such as energy pulsing, control, energy counting, status monitoring, and analog interface to SCADA.

Optional I/O Expander

The I/O Expander equips an ION meter with 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. The I/O Expander also provides a convenient location for the meter’s RS-232 and RS-485 communications wiring. Meter operation remains unaffected during installation and configuration of the I/O Expander.

<table>
<thead>
<tr>
<th>Input / output</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital inputs: (S1 - S8)</td>
<td>Excitation: SCOM self-excited, dry contact sensing, no external voltage required; Minimum pulse width: 20 ms; Maximum input transition rate: 50 transitions/sec.; Scan time: 20 ms; Timing resolution: 1 ms with 2 ms accuracy; Isolation: 1000 V rms, 60 Hz 1 minute to meter; 3 additional internal inputs available through optional on-board I/O</td>
</tr>
<tr>
<td>Solid state outputs: (C-1, C-2, C-3, C-4)</td>
<td>Max load voltage: 200 V ac / V dc; Max load current: 100 mA; On resistance: 30 Ω (typical), 50 Ω (max); Off resistance: 400 M Ω (min); Isolation: 3750 V RMS, 60 Hz for 1 minute to meter, 1000 V RMS, 60 Hz for 1 minute (between outputs); Update rate: 20 ms; Max output transition rate: 50 transitions/sec.; 4 additional internal Form C outputs available through optional I/O Expander (A-1, A-2, A-3, A-4), (Form A) supported through I/O Expander</td>
</tr>
<tr>
<td>Analogue outputs</td>
<td>4 analogue outputs supported through I/O Expander; Output range: 0 to 20 mA (scaleable from 4 to 20 mA) or -1 to +1 mA (scaleable from 0 to 1 mA); Max. load: 50 Ω (0 to 20 mA), 10 K Ω (-1 to +1 mA); Isolation: 3750 V RMS, 60 Hz for 1 minute to meter 2000 V RMS, 60 Hz for 1 minute; Accuracy: +/- 0.3% (% of Reading) at 23° C; Accuracy drift: 100 ppm/° K; Update rate: 1 second</td>
</tr>
</tbody>
</table>

Data and event logging

Ships with a comprehensive data-logging configuration. Data is prioritized and stored onboard in non-volatile memory to eliminate data gaps in the event of outages or server downtime. Dial-out capability when memory is near full; data push capability through SMTP (email). Retrieved data is stored in an ODBC-compliant database when using PowerLogic® ION Enterprise® software. Logging capacity is available in 2 MB, 4 MB and 10 MB configurations.

Meter has data recorders for revenue, losses, historic data, harmonics, waveforms, power system data, sags/swells, transients, and event parameters.

Multiple tariffs & time-of-use (TOU) calculations

20-year calendar with automatic leap-year and seasonal adjustments and clock synchronisation over communications channel or GPS supports active, reactive, and apparent energy and demand. TOU configured for 4 seasons, 5 daily profiles per season, and 4 rate periods per daily profile. Automatic mid-season rate change. Automatic recording of maximum (peak) demand during each tariff period.

IRIG-B time synchronisation option

IRIG-B is the industry standard for GPS time synchronisation. IRIG-B applications include power quality monitoring and sequence of events recording, highly accurate timestamping for revenue billing (1 ms), and system stability monitoring.

Alarm and control

Each meter has 65 setpoints configurable for 1-second or ½ -cycle operation. Setpoint on any parameter or condition. Use them to trigger audible and visible alarms, data logging, waveform recording, relays, and other control and reset functions.
**General specifications**

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating range</td>
<td>-40°C to +85°C (no formation of ice) (-40°F to 185°F)</td>
</tr>
<tr>
<td>Display operating range</td>
<td>-20°C to 60°C (-4°F to 140°F)</td>
</tr>
<tr>
<td>Storage range</td>
<td>-40°C to +85°C (-40°F to 185°F)</td>
</tr>
<tr>
<td>Relative humidity range</td>
<td>5% to 95% non-condensing</td>
</tr>
<tr>
<td>Immunity</td>
<td>ESD: IEC61000-4-2 (EN61000-4-2/IEC801-2); Radiated EM Field: IEC61000-4-3 (EN61000-4-3/IEC801-3); Electric Fast Transient: IEC61000-4-4 (EN61000-4-4/IEC801-4); Surge: IEC61000-4-5 (EN61000-4-5/IEC801-5); Conducted: IEC61000-4-6 (EN61000-4-6/IEC801-6); Damped oscillatory waves: IEC61000-4-12 (EN61000-4-12/IEC801-12); Surge: ANSI C62.41; ANSI/IEEE C.37-90.1-1989 Standard surge withstand capability tests for protective relays and relay systems</td>
</tr>
<tr>
<td>Emissions</td>
<td>FCC Part 15 Subpart B, CISPR 22 Radiated/Conducted Emissions (Class B)</td>
</tr>
<tr>
<td>Utility approvals</td>
<td>California ISO, ERCOT, and New York State; Industry Canada (AE-0924); MARIA Code of Practice 4 for New Zealand; Certified by Comision Federal de Electricidad and LAPEM in Mexico</td>
</tr>
</tbody>
</table>

**Communications**

The meters offer multi-port access that provides secure, simultaneous data sharing with utility systems and customers directly at the hardware level using a choice of communication standards and protocols.

<table>
<thead>
<tr>
<th>Port</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-232 / RS-485 (COM 1)</td>
<td>Data rates: 300 – 115,200 bps (RS-485 limited to 57,600 bps); Isolation: Optical; Duplex: Full (RS-232), Half (RS-485); Protocols: ION, Modbus RTU, Modbus Master, DNP 3.0, GPS, EtherGate, ModemGate</td>
</tr>
<tr>
<td>RS-485 (COM 2)¹</td>
<td>Data rates: 300 – 57,600 bps; Isolation: Optical; Duplex: Half; Protocols: ION, Modbus RTU, Modbus Master, DNP 3.0, GPS, EtherGate, ModemGate</td>
</tr>
<tr>
<td>Internal modem (COM 2)²</td>
<td>Data rate: 300 bps - 56 kbps (V.3.4, V.32 bis, V.32, V.22 bis, V.22 AR, V.23, V.21, Bell 212A, Bell 103), automatic data rate detection is supported; Error correction: V.42 LAPM, MNP 2-4, MNP 10; Data compression: V.42 bis/MNP 5; Interface: RJ11 (tip and ring); Approvals: FCC P68 (USA), Industry Canada CS-03</td>
</tr>
<tr>
<td>ANSI Type 2 optical (COM 3)</td>
<td>Data rates: 1200 - 19,200 bps; Duplex: Half; Protocols: ION, DNP 3.0, Modbus RTU</td>
</tr>
<tr>
<td>Ethernet (10BASE-T)</td>
<td>Interface: IEEE 802.3-1993, ISO/IEC 8802-3.1993 (Ethernet) 10BASE-T; Data rates: 10 Mbps, half duplex; Connectors: RJ45; Cabling: Unshielded twisted-pair cable, 0.5 mm (24 AWG) max length 100 metres (109 yards); Isolation: Transformer isolated; min isolation voltage 1500 V ac/2250 V dc; Protocols: Telnet, ION, Modbus TCP, DNP TCP, Modbus Master</td>
</tr>
<tr>
<td>Ethernet (10BASE-FL)</td>
<td>Interface: IEEE 802.3-1993, ISO/IEC 8802-3.1993 (Ethernet) 10BASE-FL (optional); Data rates: 10 Mbps, half duplex; Connectors: ST; Cabling: Fiber optic cable, 62.5/125 µm nominal, wavelength 820 nm max length 2000 metres (2187 yards); Isolation: Optical; Protocols: Telnet, ION, Modbus TCP, DNP TCP, Modbus Master</td>
</tr>
</tbody>
</table>

¹ - If the modem is present, COM 2 serial port is unavailable.
² - In Feature Set C, if Ethernet and modem options are chosen, no serial port is available.
³ - Also approved for use in: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK

**Itron software support**

The meters are fully compatible with Itron software platforms including MV-90, MVP, MVRS, MVLT and MVCOMM, and offer a direct Ethernet connection to MV-90.

**Software integration**

Integrate within PowerLogic® facility-level or enterprise-wide power and energy management systems. Real-time data and data logs stored on board can be automatically retrieved on a scheduled basis for analysis at the system level. Compatible with PowerLogic® ION Enterprise® software. Modbus compatibility and register-based logged data supports integration and data access by building automation, SCADA and other third-party systems.

**Special features**

Downloadable firmware: update your meters with the latest features by simply downloading them from www.powerlogic.com.
## Feature Sets A B C

### Metering
- Power, energy and demand
- Sheet 3

### Power quality
- Sag/swell, harmonics monitoring
- Sheet 3
- Harmonics: individual, even, odd, up to 63rd
- Harmonics: magnitude, phase and inter-harmonics
- Symmetrical components: zero, positive, negative
- Transient detection microseconds (50Hz/60Hz)
- Sampling rate (max. samples/cycle)
- Frequency Accuracy

<table>
<thead>
<tr>
<th>Feature</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power, energy and demand</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metering</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Sag/swell, harmonics monitoring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harmonics: individual, even, odd, up to</td>
<td>63rd</td>
<td>63rd</td>
<td>31rd</td>
</tr>
<tr>
<td>Harmonics: magnitude, phase and inter-harmonics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symmetrical components: zero, positive, negative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transient detection microseconds (50Hz/60Hz)</td>
<td>78/65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sampling rate (max. samples/cycle)</td>
<td>256</td>
<td>256</td>
<td>256</td>
</tr>
<tr>
<td>Frequency Accuracy</td>
<td>0.005Hz</td>
<td>0.005Hz</td>
<td>0.005Hz</td>
</tr>
</tbody>
</table>

### Logging and recording
- Memory standard/optional
- Min./max. logging for any parameter
- Timestamp resolution in seconds
- GPS time synchronization

### Communications and I/O
- RS-232/485, RS-485, Ethernet, Optical, IRIG-B
- Internal modem
- 3-port DNP 3.0 via serial, modem, Ethernet, Optical ports
- Modbus TCP slave/master (Ethernet port)
- Modbus RTU master (serial ports)/Slave (all ports)
- EtherGate, ModemGate, MeterM@il®, WebMeter®
- Internal KYZ outputs/Form A inputs
- External digital status inputs/counter/solid state outputs

### Setpoints, alarming and control
- Setpoints, number/min. response time
- Math, logic, trig, log, linearization formulas
- Call-out on single and multi-condition alarms

### Revenue metering
- MV-90 on serial, modem and Ethernet ports (if present)
- Multi-year scheduling: hourly activity profiles
- Transformer/line loss compensation; ITC

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## Software integration
- PowerLogic ION Enterprise software
- ION Setup™ software
- Modbus Master
- Internet connectivity
- XML compatibility

## Flash-based firmware
Perform upgrades via communications without removing the meter from the site.


Whatever your need Schneider Electric has the solution. To find genuine Schneider Electric and Square D Brand products, go to www.squared.com to find your nearest authorized distributor or call 1-888-SquareD.