

Power Xpert Architecture
Power Xpert Gateway

Power Xpert Gateway 400/600



EATON

Powering Business Worldwide



Simple. Elegant. Powerful.



Power Xpert Gateway 400/600

Introducing a new way to communicate

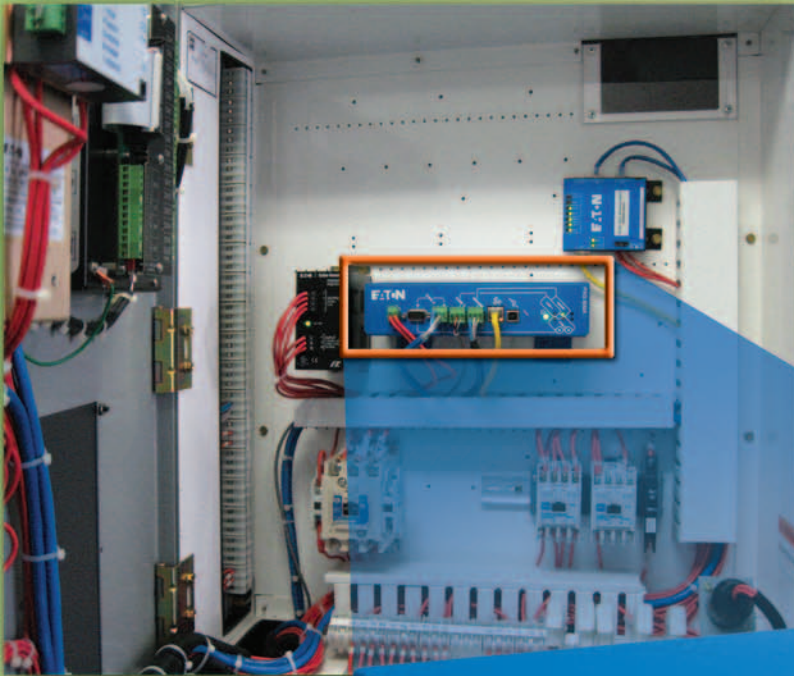
It goes without saying that advances in information technology and networking have transformed business. As businesses depend almost exclusively on technology to run their operations, from the factory floor to the data center, there has been a growing focus on power systems and energy management. Gone are the days when a tool belt was all that was needed to keep power systems up and running. Power systems are now recognized as a critical, integral part of an organization's technological infrastructure, and require sophisticated data gathering and analysis to ensure availability, increase efficiency, address the soaring cost of operations and reduce carbon footprint. Electrical control and distribution equipment is now on parity with critical IT devices on the network, and has resulted in a new focus on increasing system reliability from the transformer to the computer screen.

Eaton®'s Power Xpert® Gateway (PXG) bridges the IT and facilities management worlds by bringing disparate power equipment, such as switchgear, ATS, panelboards and motor control centers, onto the network. The PXG is an intelligent hardware solution that takes the complexity out of connecting power equipment to the network. The PXG is a Web-enabled, out-of-the-box device that can support up to 96 devices, translate most industrial communication protocols, and offer user-selectable events and real-time trending. It also features e-mail notification of events, waveform capture and data/event logging—all with no special software. Further, with the addition of basic meters, or using the utility's meters, the PXG assists in tracking energy usage, even if the device doesn't directly provide energy data.

The PXG recognizes the interdependence of IT systems and power systems, and delivers what organizations need to bring these worlds together for seamless, end-to-end system reliability.

Power Xpert Gateway

Introducing a new way to communicate and manage





Straightforward integration for consolidated power data

The PXG is typically installed in an electrical assembly such as:

- Low voltage motor control centers
- Low or medium voltage switchgear
- Panelboards
- Switchboards
- Automatic transfer switches

It consolidates data available from components found in these structures, such as breakers, meters, motor controllers and protective relays, and presents the information in a variety of ways, a Web browser being the most widely used method.

The PXG is a stand-alone solution that is ideal for many power infrastructure designs. However, as needs change and grow, the PXG can be integrated through Power Xpert Software into a broader solution that encompasses other intelligent hardware and can integrate with third-party network management systems (NMS) or building management systems (BMS) for system-wide monitoring and reporting of power and IT.

How existing facilities can benefit

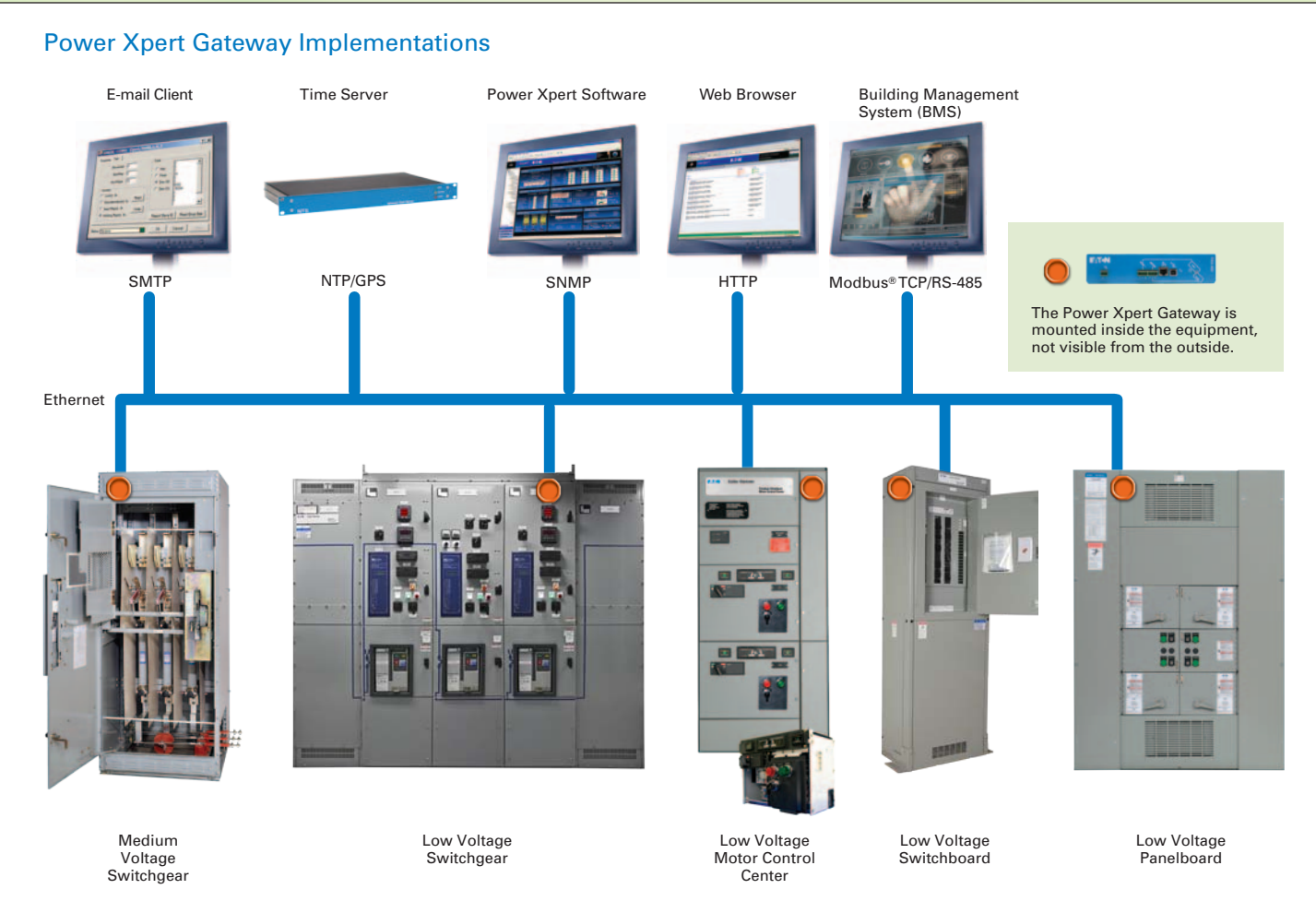
Existing equipment can be easily connected to provide state-of-the-art communications and energy data not previously easily available. Eaton's electrical distribution and control products are designed to last for years. However, the availability and speed of communications change rapidly, as do requirements for device data gathering. That's exactly why we've developed the Power Xpert Gateway family. We want to protect your investment—build on what you have.

How new facilities can benefit

From day one, you have a window into your new Eaton electrical equipment and the ability to baseline your energy usage. The Power Xpert Gateway will come to you, already integrated and configured to your specifications from the factory. It's as simple as running one CAT5 cable to the door of your new gear to Ethernet-enable the assembly. In these unpredictable days, you can always count on the Power Xpert Gateway to assist in managing your power system and energy usage.

Power Xpert Gateway

Flexibility to meet your communications requirements



Power Xpert Gateway

Simplify power and energy management

Easy access to real-time power and energy information

The easiest path from A to B is a straight line. By eliminating the need for software, Eaton's PXG offers a straight line, simplifying communications between electrical equipment and your network.

The key to the PXG is its built-in Web server, providing standard Web pages that are viewable from any Web browser.

Supported devices

More than 70 different devices are supported by the PXG right out of the box; no programming is required beyond the initial time to configure the devices to the PXG. Built-in device templates automatically present the information—nothing for you to do other than to start monitoring your equipment. Supported devices include:

- Meters
- Trip units
- Protective relays
- Drives
- Automatic transfer switches
- I/O modules
- Starters
- Submaster monitoring units



Protective relays

InsulGard™ (back left), MP-4000 (back right), FP-5000 (front center)



Meters

IQ DP-4000 (back left), IQ Analyzer 6600 Series (back right), IQ 250 (front center)



Automatic transfer switches

ATC-600 IQ Transfer



Trip units

Digitrip® 1150i (back left), Digitrip 1150 (front right)



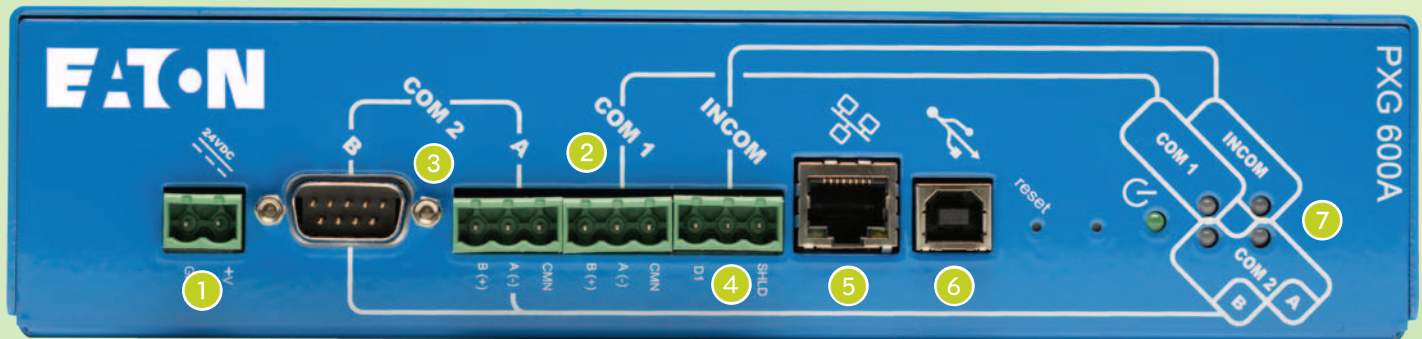
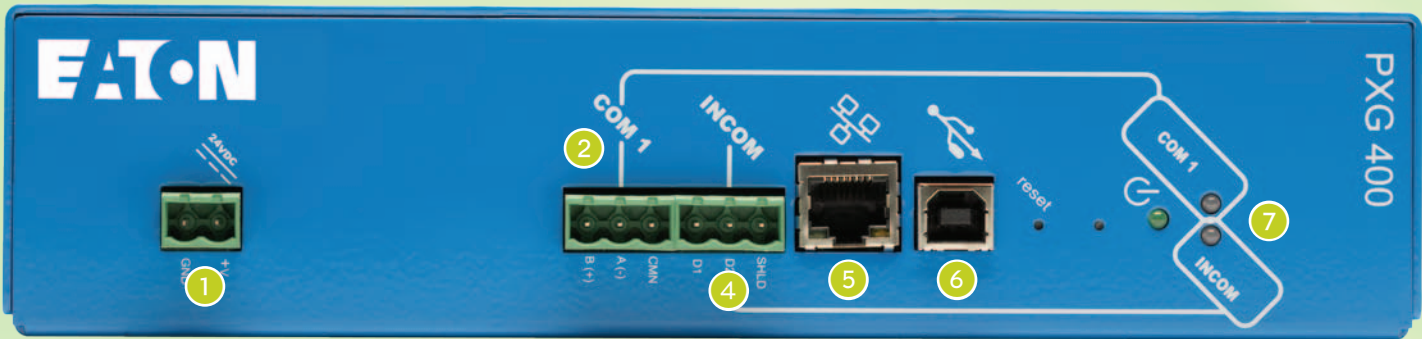
Submaster monitoring units

Breaker Interface Module II

Power Xpert Gateway

Features and benefits

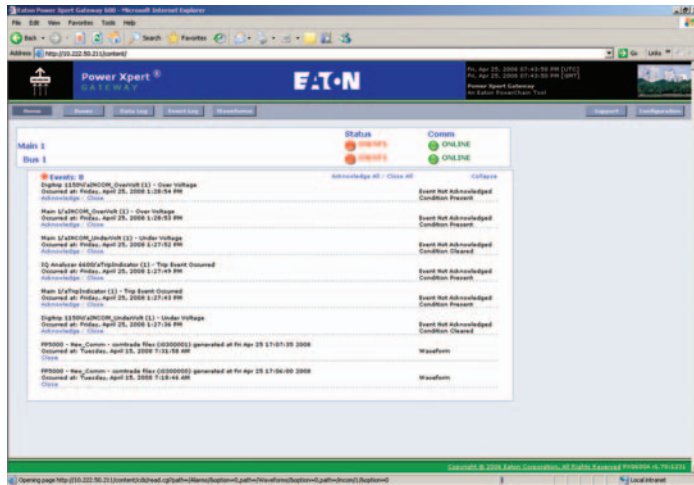
Feature	Benefit
Built-in Web pages	No software or programming required; simply connect the PXG. The intelligent hardware in the PXG does the rest.
User-friendly graphical display	A single-page, at-a-glance view of the status of up to 96 devices.
Network-friendly—one IP address for up to 96 devices	Streamlined device management; the IP address can be generated using DHCP by the device, or a static IP address can be assigned.
Use common software such as MS® Excel® to save and download logs	Can use saved data for planning, trending and analysis.
Secure communications	Two levels of password protection controls access, and SSL encryption protects data.
Open communication architecture	Easily integrates both Eaton and third-party electrical equipment and software.



- 1 24 Vdc input power
- 2 COM 1 port:
RS-485 connection for up to either (32) QCPort or Modbus RTU devices
- 3 COM 2 port
either RS-485 or RS-232 connection for up to either (32) QCPort or Modbus RTU devices
- 4 INCOM port
RS-485 connection for up to 64 INCOM devices
- 5 RJ-45 connection to the LAN
- 6 USB connection for local configuration capability
- 7 Power and traffic indicator lights

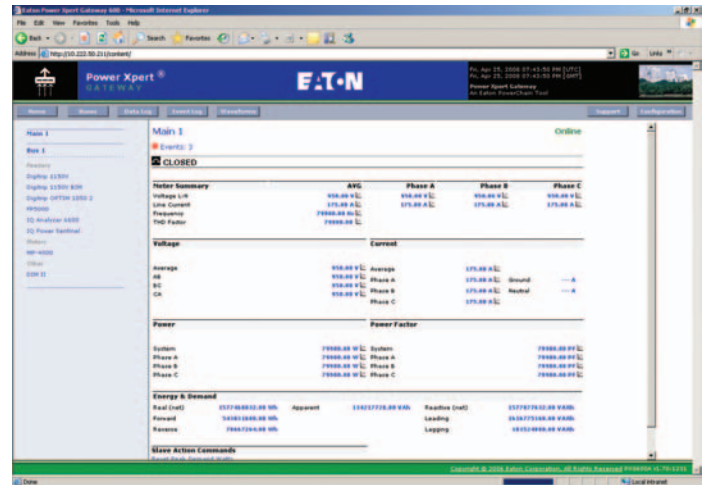
Power Xpert Gateway

Four levels of detail



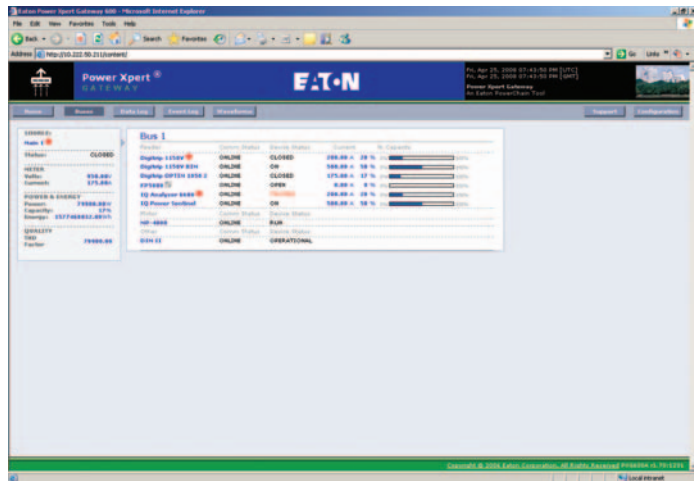
Level one—home page

The first level provides overall system status, including device status, communication status and an event summary for all connected devices.



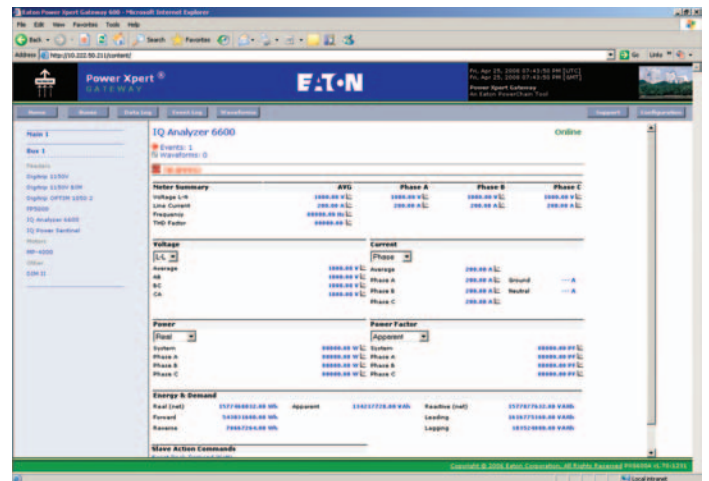
Level two—mains page

The second level is the mains page, which shows meters, feeder protectors or other devices connected to the main.



Level three—bus page

The third level is the bus page, which shows all connected devices for that bus, which could include meters, trip units, motor protectors and controllers, drives, and input/output modules.



Level four—device page

The fourth level shows individual device details. Each device page has been designed for that product, giving the specific, relevant, real-time information to yield the best data set. Measured parameters include current, voltage, power, energy, frequency, power factor and voltage THD. This gives you everything you need to make decisions about cost-savings, event resolution and energy needs.

Power Xpert Gateway

Forget special software

Use what you have and what you know

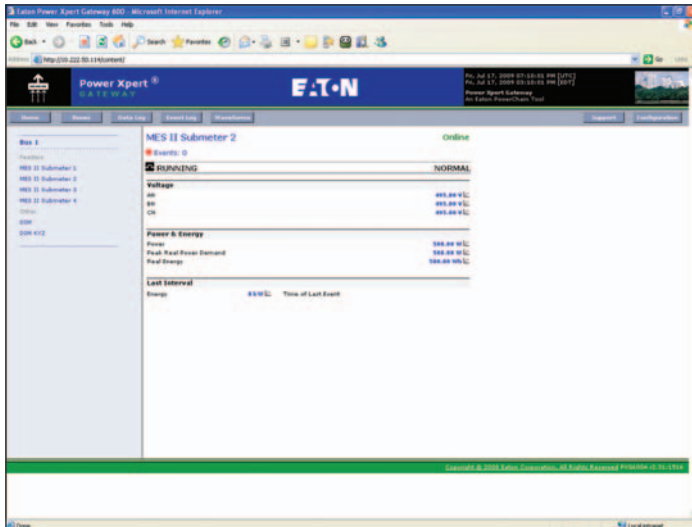
The PXG allows you to use common programs such as Excel and a standard COMTRADE waveform viewer to easily view, save and archive data logs, interval logs, event logs and waveforms. This "use what you know" approach streamlines data gathering and logging. It also saves you time and money by requiring no investment in new software and training.

The screenshot displays the Power Xpert Gateway software interface. The top window shows the main dashboard with a navigation menu and a 'View the Interval Log' button highlighted. Below it, a Microsoft Excel spreadsheet displays a detailed data log with columns for time, demand, peak, and various power quality metrics. A second window shows a graph titled 'IQ 140' with a legend for Demand Ia, Demand Ib, Demand Ic, Peak Demand VAs, and Demand VAs. The graph plots these values over time from 12:00 to 11:00 on 2/9/2010.

Time	Demand Ia	Demand Ib	Demand Ic	Peak Demand VAs	Demand VAs
12:00	0.0015406	0.0054964	0.0000000	-0.0000000	0.0000000
11:55	0.0015406	0.0054964	0.0000000	-0.0000000	0.0000000
11:50	0.0015406	0.0054964	0.0000000	-0.0000000	0.0000000
11:45	0.0015406	0.0054964	0.0000000	-0.0000000	0.0000000
11:40	0.0015406	0.0054964	0.0000000	-0.0000000	0.0000000
11:35	0.0015406	0.0054964	0.0000000	-0.0000000	0.0000000
11:30	0.0015406	0.0054964	0.0000000	-0.0000000	0.0000000
11:25	0.0015406	0.0054964	0.0000000	-0.0000000	0.0000000
11:20	0.0015406	0.0054964	0.0000000	-0.0000000	0.0000000
11:15	0.0015406	0.0054964	0.0000000	-0.0000000	0.0000000
11:10	0.0015406	0.0054964	0.0000000	-0.0000000	0.0000000
11:05	0.0015406	0.0054964	0.0000000	-0.0000000	0.0000000
11:00	0.0015406	0.0054964	0.0000000	-0.0000000	0.0000000

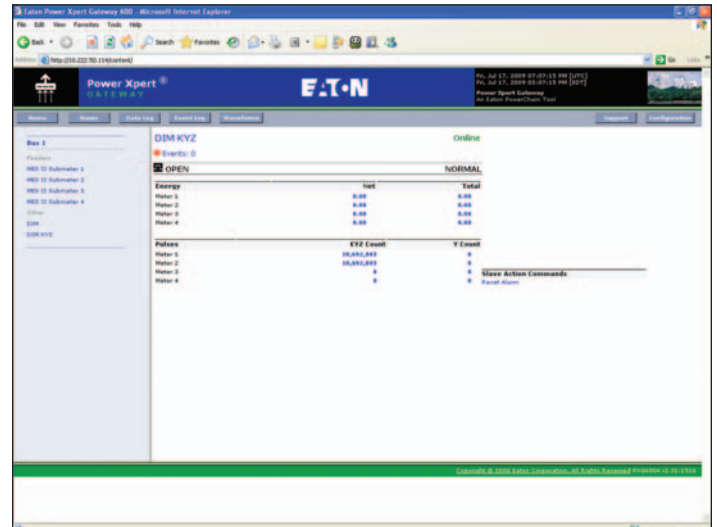
Power Xpert Gateway

Key features



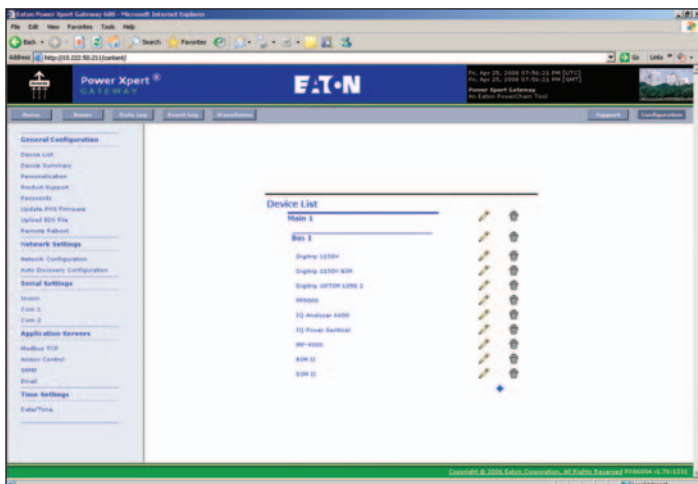
Sub-tenant metering

The IQ Multipoint Energy Submeter II (IQMESII) is compatible with the PXG 600, including Power Xpert Reporting cost allocation software. With its ANSI C12.16 accuracy, the IQMESII is ideal for multi-tenant, multi-dwelling, high-rise apartment buildings or other commercial applications where accurate allocation of electrical energy usage is required.



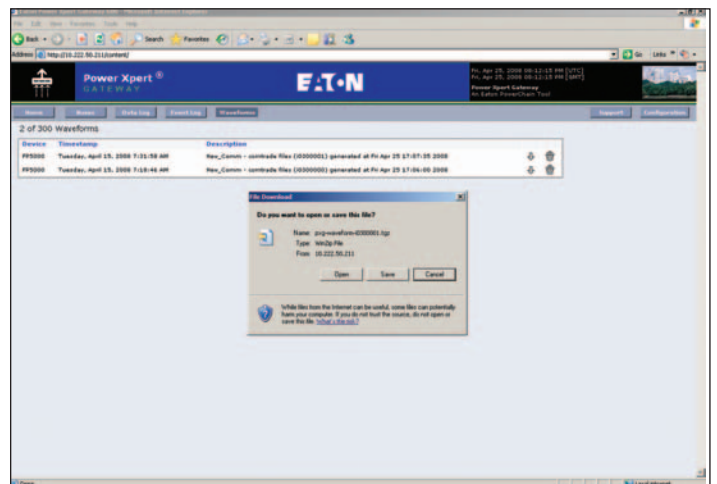
WAGES applications

The PXG 600 can be used for aggregating pulse input data from the Digital Input Module (DIM). The DIM reads four separate KYZ equipped utility meters, allowing users to connect to any user selected meter, including energy/utility, gas, water, steam and BTU. Each channel independently monitors KYZ counts, pulse counts or digital indications, or can monitor a maximum of eight individual digital inputs. The DIM with a PXG 600 is a cost-effective and reliable method of logging and transmitting consumption data. Users also have the ability to view and configure devices remotely through a Web browser on the PXG 600.



Smart configuration

The PXG features a configuration wizard that walks you through adding and configuring devices by setting up parameters and event alarms, enabling trending and other settings. The wizard also enables you to configure serial ports and network settings. All configuration menus are straightforward and easy to follow. Once configured, the devices appear in the PXG's graphical interface.



Waveform viewing

The PXG supports waveform acquisition for supported devices capable of generating waveforms. This feature is user-selectable on the device configuration page. The waveform files are converted and stored as a COMTRADE file format in the PXG 600. The files can then be downloaded and viewed using a standard COMTRADE waveform viewer of your choice.

Power Xpert Gateway

Key features, continued

Supports third-party vendor products

Most facilities feature a multi-vendor environment, with different communication protocols and device configurations. The open communication architecture of the PXG removes the complexity of streamlining communication among these various devices, and makes adding additional products fast and painless.

Security

The PXG offers password protection with two levels of authorized access to data via the user interface: user level permits viewing the data only, and administrator level permits configuration and changing settings. The PXG also features an SSL encryption option that protects information and passwords exchanged with the PXG's Web server from being intercepted on the LAN.

Flexible and expandable solution

Systems are easily expanded by adding devices as needed, with no extra cost to upgrade.

While the PXG's intelligent hardware enables it to operate as a stand-alone device, larger systems, such as campus installations or power systems with remote locations, can view multiple PXGs via Power Xpert Software or a third-party monitoring system.

Time synchronization

The PXG supports synchronization of clocks on INCOM devices that support the set time and date command. Additionally, the PXG can be combined with a time server for accurate time stamping via NTP.

Rugged, industrial design

Designed specifically for industrial environments, the PXG has a compact metal case that only requires convection cooling. Stringent

EMI design requirements ensure that the PXG will function in the most difficult EMI situations, ensuring high reliability. Mounting options are provided for panel mounting or DIN rail, allowing for installation flexibility.

Real-time trending and viewing

The PXG allows you to enable pre-selected parameters to be trended for each supported device. This feature is user-selectable on the device configuration page, and a trend symbol appears next to the device. Selecting the trend symbol will generate a real-time graph for that parameter and can be viewed for the past 24 hours, seven days, 30 days or all past history.

Supported control commands

The PXG supports select control commands, or writes, for INCOM and Modbus RTU devices via the Web interface. This feature is user-selectable in the configuration of the device.

User-defined events

The PXG supports the setting of user-defined events on an individual device basis. This feature is set via the device configuration page. An example of a user-defined event would be a Low and High limit on Phase A Current for a device. You can choose the event limit values and the event names. These event notices behave in the same manner as the device events described above.

E-mail notification

You have the ability to customize and direct e-mail notifications to up to ten users in your organization. Select from event notifications, interval logs, data logs, event logs and heartbeat e-mails. This provides yet one more way to effectively and proactively manage your power system.



Power Xpert Gateway

Go green.



The Power Xpert Gateway helps you go green

Environmental stewardship, innovation and leadership are becoming increasingly important as we take steps to create a sustainable environment for future generations by going green. Eaton's Power Xpert Architecture includes components that can help a building go green and qualify for Leadership in Energy and Environmental Design (LEED®) credits through the U.S. Green Building Council (USGBC).



Eaton offers several solutions that assist you in reducing your energy consumption, minimizing environmental and economic impacts associated with excessive energy use. The use of on-site renewable energy will require a means to measure the percentage of building energy requirements. The Power Xpert Gateway provides a window into your downstream equipment. This window gives you a previously unattainable level of detail and understanding of the energy consumption in your power system, allowing you to better monitor and manage power and go green.



"Power Xpert has some exceptional features that give us information so that we can see our energy profile. I can compare today's energy profile against yesterday's and view weekly consumption comparisons. As our modernization projects are completed, I am confident that the Power Xpert information will enable us to quickly and effectively monitor and manage the electrical performance of the new buildings. With the insight that Power Xpert gives me into the functions within the buildings, I will be able to develop efficiencies and cost savings."

—Power Xpert Gateway and Meter user in New York City



Power Xpert Gateway

Product comparison

Features of the Power Xpert Gateway 400 vs. 600

Features	PXG 400	PXG 600
Total number of supported devices	64	96
Maximum number of INCOM devices supported	64	64
Protocols supported on downstream devices: INCOM, QCPort and Modbus RTU	Yes	Yes
Number of downstream communication ports	2	3
Number of downstream protocols supported simultaneously	2	3
USB port for configuration	Yes	Yes
Modbus TCP/IP protocols supported	Yes	Yes
SNMP client access	Yes	Yes
INCOM slave action commands supported	Yes	Yes
INCOM date and time settings supported	Yes	Yes
Modbus writes supported	Yes	Yes
Device summary screen per communication port	Yes	Yes
Event notification via the Web interface	Yes	Yes
Secure Ethernet communications—SSL encryption	Yes	Yes
Secure communication ports via access control/trusted host list	Yes	Yes
Device waveform access and storage—COMTRADE file format	No	Yes
Set user-defined events	No	Yes
Trend graphs displayed	No	Yes
Data log—csv file format, downloadable to Excel	No	Yes
Event log—csv file format, downloadable to Excel	No	Yes
Interval log—csv file format, downloadable to Excel	No	Yes
E-mail notification on events and threshold alarms	No	Yes
Control commands supported	No	Yes (downloadable)

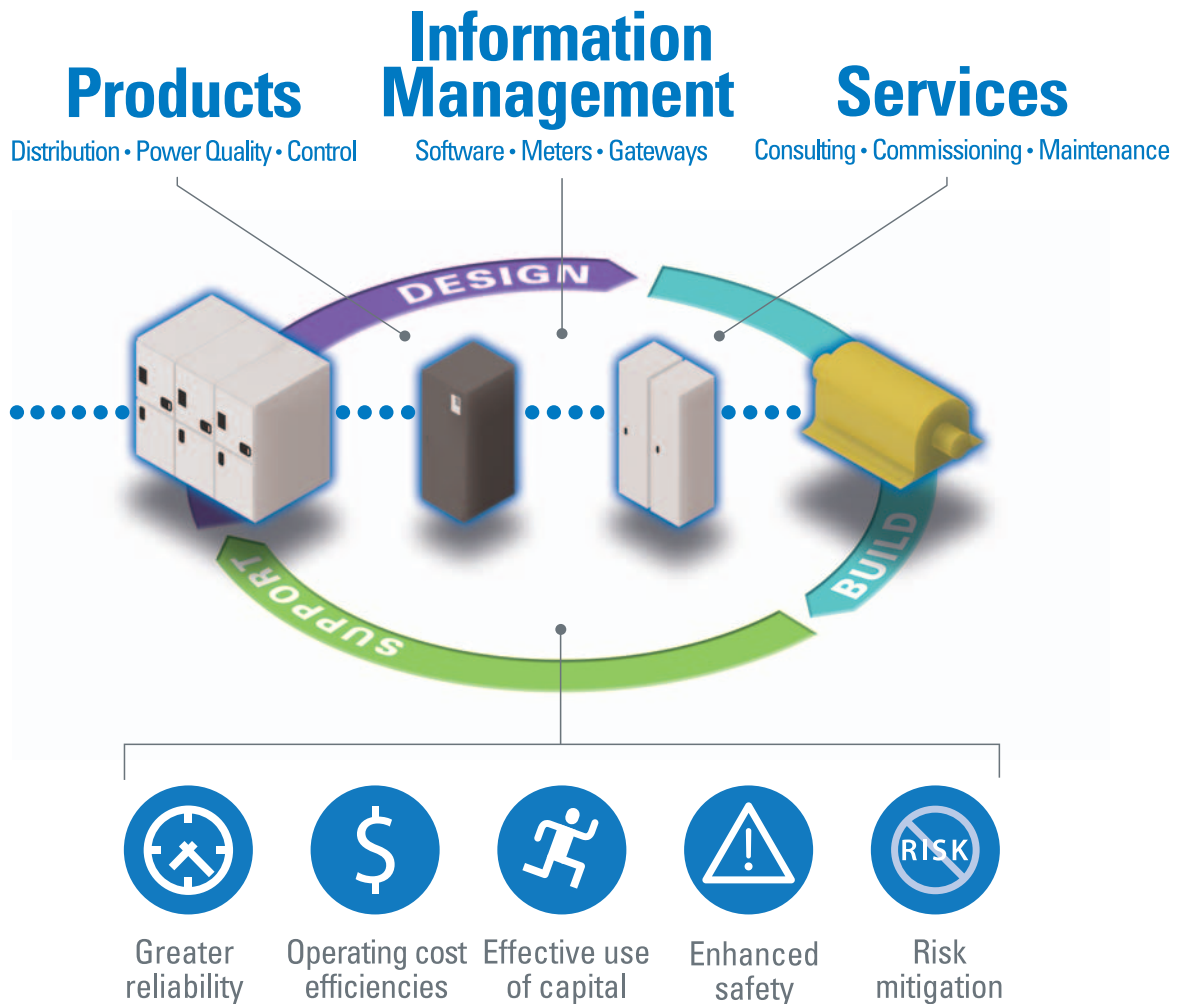
Intelligent hardware in Power Xpert Architecture

Electrical equipment is typically not inherently “intelligent,” and may only have basic, industrial-based, proprietary communications capabilities that don’t easily integrate into an Ethernet network. Eaton’s intelligent hardware approach offers instant connectivity and communication for these critical devices, making them visible on the network, and facilitating data gathering and monitoring.

The PXG joins the other intelligent hardware products in the Power Xpert Architecture family, including the Power Xpert Meters and Power Xpert Gateway cards. These intelligent hardware solutions are perfect for smaller applications as they don’t require additional software investment to Web-enable power equipment and realize the cost savings and productivity benefits of quality power and energy management.



PowerChain Management



The power of experience

For over a century, Eaton has provided customers with the widest array of electrical power solutions available, from complex custom industrial and commercial applications to innovative residential components. Our proven track record, combined with our PowerChain Management® solutions, makes Eaton the best choice for your electrical system needs.

The power of expertise

Our achievements as a single-source, full-line manufacturer of recognized global brands—Cutler-Hammer®, Powerware®, Holec®, MEM®, Tabula, Elek®, Durant® and Heinemann®—have made us an industry leader, known for reliable products and services and innovative ideas. Eaton’s extensive products, solutions and services meet global electrical standards such as IEEE®, NFPA®, UL®, ANSI, IEC, NEMA® and CNCA. Our knowledge base, technical insights

and advanced offerings ensure that Eaton’s capabilities will deliver the solutions you need as your business evolves.

The power you need

PowerChain Management solutions are a bold, strategic approach to what has traditionally been a tactical process of designing, installing and managing electrical systems. At Eaton, we understand the consequences of ineffective power management and ad hoc design that lead to inefficiencies and higher costs. Our system-wide view and life-cycle perspective allow us to quickly assess your needs, develop a solution and easily help you realize measurable improvements to your power system’s performance and organization’s productivity, while reducing costs. When choosing a partner to manage your power system, there’s only one clear choice—the company that can show you how to take control of it—Eaton.

The power of Eaton.

Eaton's Electrical Sector is a global leader in power distribution, power quality, control and automation, and monitoring products. When combined with Eaton's full-scale engineering services, these products provide customer-driven PowerChain Management® solutions to serve the power system needs of the data center, industrial, institutional, public sector, utility, commercial, residential, IT, mission critical, alternative energy and OEM markets worldwide.

PowerChain Management solutions help enterprises achieve sustainable and competitive advantages through proactive management of the power system as a strategic, integrated asset throughout its life cycle, resulting in enhanced safety, greater reliability and energy efficiency. For more information, visit www.eaton.com/electrical.

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