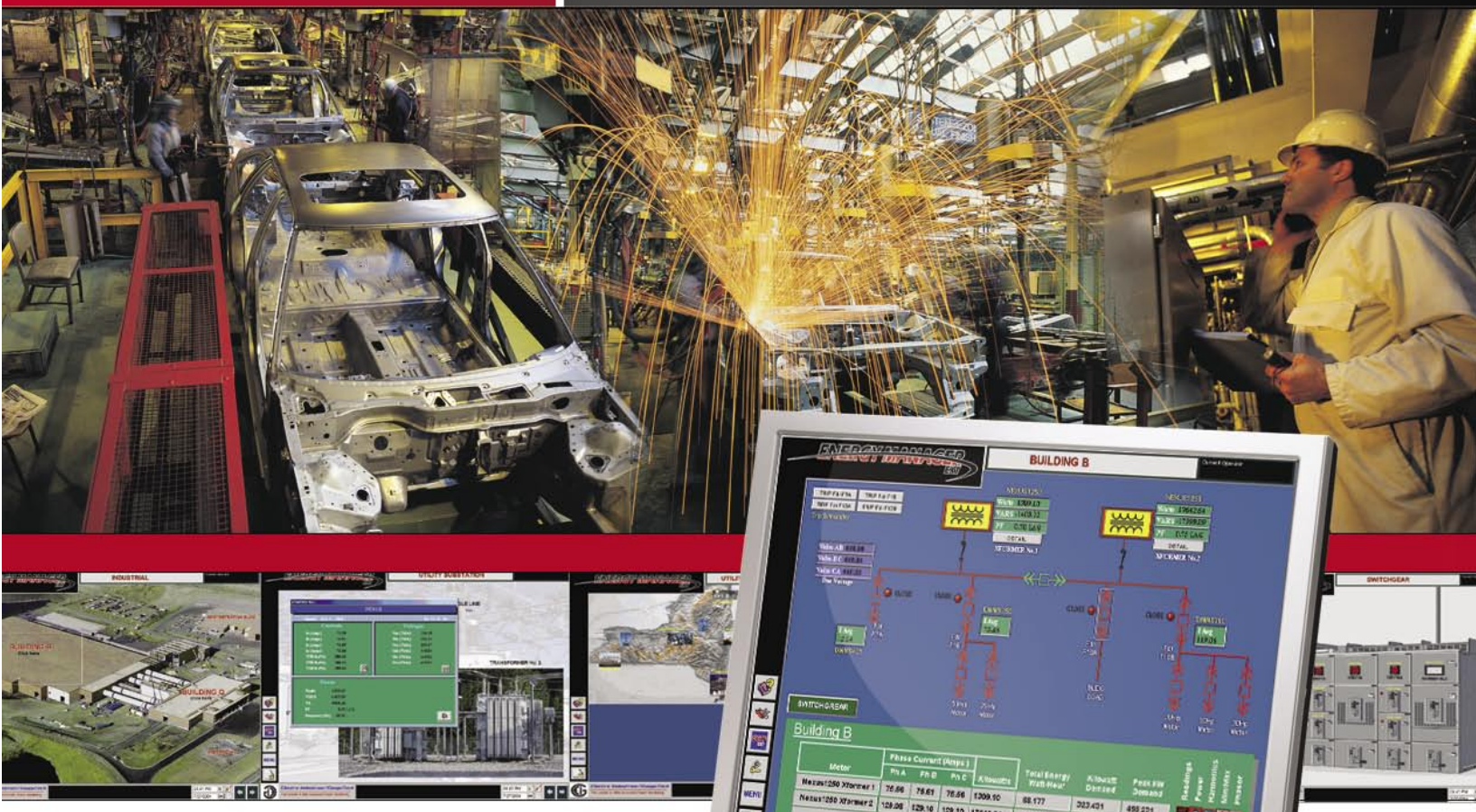
ENERGY MANAGER EXT

Modular Enterprise-wide Energy Management Monitoring System



- Monitor Electrical Power Reliably
- Perform Advanced Power Quality Analysis
- Centralized Ethernet Based SCADA System
- Advanced Billing and Cost Allocation
- Scalable for Full Enterprise-wide Deployment

Electro Industries/GaugeTech
The Leader In Web Accessed Power Monitoring

ENERGY MANAGER EXT

Modular Enterprise-Wide Energy Management Monitoring System

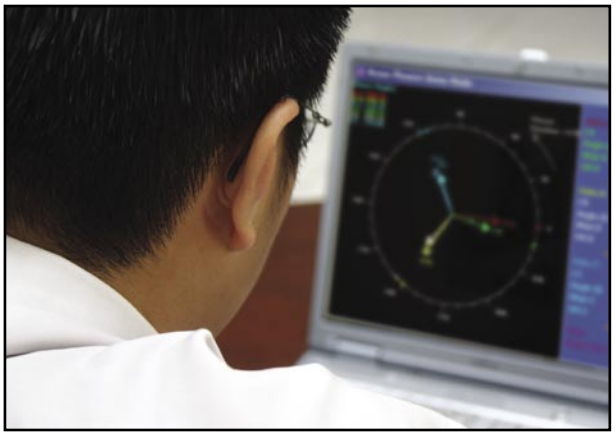
Simply Powerful, Simply Scalable, Simply Simple

- Communicator EXT
- AI Reports EXT
- Dial-In Server EXT
- HMI EXT
- Copilot EXT
- Energy Billing EXT

Description

EIG introduces our single most powerful software application suite. This system provides a complete and comprehensive energy management solution for the most demanding applications. The system is based on a modular concept in which each module can be adapted at any time to the system, allowing you to begin with a simple solution and migrate to a sophisticated enterprise-wide solution as the need arises. Energy Manager EXT grows with you as your need for better and more advanced monitoring increases. This system scales from a small 10-point architecture to a comprehensive enterprise-wide energy management system with costing and power quality.

This system consists of 5 separate software application modules. Each of these modules can be installed as an add-on to fill the specific application needed.



Software Application Modules:

1. **Communicator EXT** – This module allows you to view real time readings, configure meters, download stored logs and analyze waveforms. This is a very robust software application, providing most of the functionality a standard user will need.

2. **AI Reports EXT** – This is a basic reporting package providing an AI solution to observed power quality problems.

3. **Dial In Server EXT** - This Server application allows remote meters in the field to dial-in and report outage information. This is useful for remote meter applications where only telephone access is available.

4. **HMI EXT**– This HMI module allows the user to connect a graphical HMI interface to the software. This module runs in conjunction with the other applications. This software system allows you to graphically view all data through the Internet, control electrical distribution points and compile energy usage reports easily and quickly. Energy Manager EXT's scalable infrastructure grows with your application.

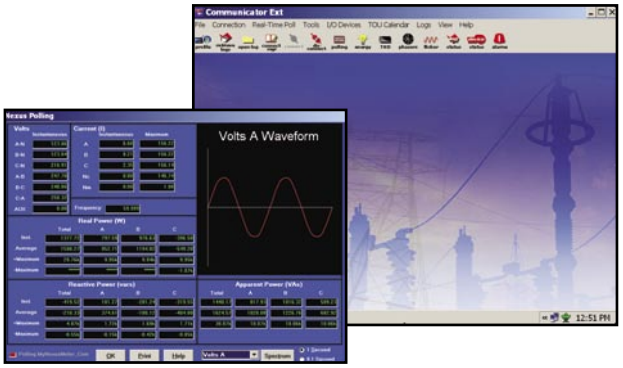
5. **Communicator Copilot EXT** – This module works on Windows CE and allows for communicating to meters via IrDA or Serial. This allows for basic meter polling, programming and log downloads.

6. **Energy Billing EXT** – This module takes stored data from Energy Manager HMI databases and conducts full energy billing and reporting.

COMMUNICATOR EXT

Communicator EXT is the base package of the Energy Manager system. This software module connects remote meters via Serial, Ethernet or Modem. It allows users to view real time metered data, configure and analyze collected information from remote EI power monitors. This system works with all EI metering equipment.

Communicator EXT provides superior screen display, graphing and reporting functions, allowing users to collect and archive data quickly, easily and without hassle. Using ODBC compliant database structures, the stored metering information is available for automatic integration into any 3rd party package.



Advanced Real Time Viewing Capability

Communicator EXT displays real time data from EI power monitors. The data is presented in a simple and powerful graphical format so that laymen can access data easily. The software offers many screens, including:

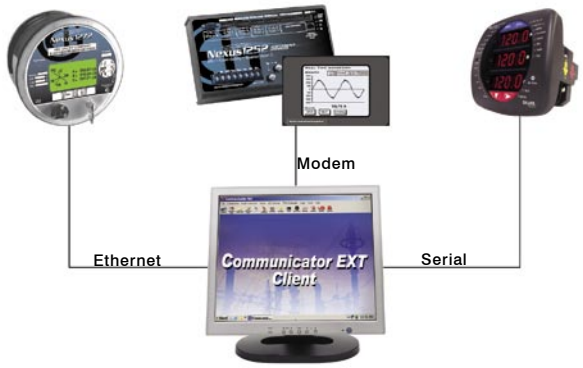
- Voltage, Current, Power & Energy
- Time of Usage & Accumulations
- Power Quality
- Harmonics to the 255th Order
- Actual Real time Waveform Scopes
- Alarms & Limits
- Max. & Min. for Each Parameter
- I/O Device Information

Advanced Communication Structure

Communicator EXT allows users to access remote meters through three different methods. These include:

- Ethernet TCP/IP
- Remote Modem (Dial-up or Wireless)
- Direct Serial

These three capabilities allow the data to be brought back in any type of medium available. These methods are interchangeable so that a system can consist of multiple paths back to a main computer.



Robust Communication Architecture

Advanced Charting, Graphing & Analysis

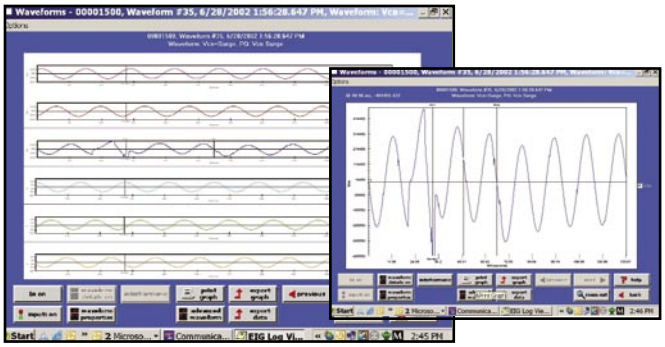
Communicator EXT's charting and graphing functions allow users to easily access any desired data and provide fast and simple analysis. Getting the data you need quickly is as important as collecting the data in the first place. Communicator EXT excels at providing data easily and quickly. Data analysis features include:

- Tabular Data Format with Direct Microsoft Excel® Compliance
- 6-Pen Charting and Graphing
- Circular or XY Chart Formats
- Max./Min. Values Printed Directly on Plot
- Unlimited Zoom & Pan
- Direct Cut & Paste into Most Windows® Applications

View Waveform Records with Comprehensive Data Analysis Features

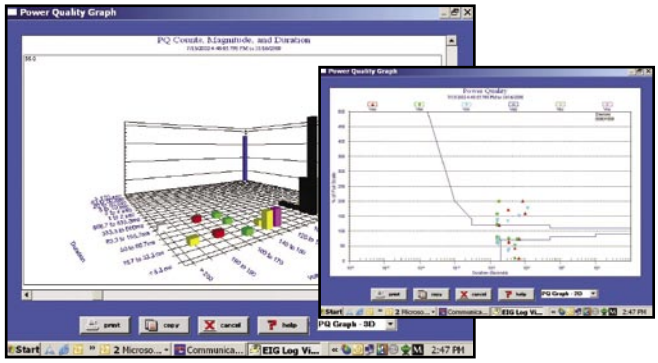
View stored waveforms of events caused by power quality problems, faults, transients and many other conditions. Using Communicator EXT, you can:

- View & Superimpose Multiple Waveforms
- Zoom & Pan Events
- Place hash marks directly on waveform graphs to calculate delta time & differing event durations.
- Conduct harmonic analysis of waveform data using harmonic magnitudes, peak value and RMS readings per cycle.



Advanced Power Quality Charting and Graphing

Communicator EXT allows you to calculate power quality on a scatter graph, providing users with CBEMA plotting information. The CBEMA plot gives definition to the severity of events and their effect on equipment. If many events fall outside the CBEMA tolerances, they may be damaging the monitored equipment. The software provides 3D plots and histograms with frequency and severity.



Intuitive Meter Programming Requires No Training to Use

Communicator EXT uses an intuitive "TREE" programming method with graphical configuration. This allows users to easily walk down a list of configurations and set any desired parameters easily and quickly. The "TREE" approach was chosen because of its simplicity. This application was specifically designed to be easy to use and quick to get up and running. No one has time for training!

ODBC Databases for All Collected Data

In today's information age, collecting data is simple. Managing data is the task at hand. Communicator EXT uses an ODBC database structure. ODBC structure means that the data is easily accessible by most other 3rd party applications. This allows data to be managed as well as collected. The database also auto configures itself so that users do not have to be versed in database knowledge to maintain the data.

Programming and Configuration

Communicator EXT also allows users to program, configure and optimize metering systems to meet the exact application needed. Unlike most other systems, Communicator EXT was painstakingly designed to make programming and configuration simple and easy to use. This takes much of the guesswork out of configuring a meter and gets the system up and running simply and quickly.

Copilot EXT

PDA Based Software

- Supports Pocket PC PDAs
- IrDA or Serial Communication
- Real Time Readings
- Real Time Phasor Information
- Provides Meter Diagnostic Data

Using Communicator Copilot, you can read Nexus and Shark metering systems with your Pocket PC PDA. This software application is a mini version of Communicator EXT. Copilot allows you to use either an IrDA or Serial Port to read meters, look at phasor diagrams or read meter diagnostic information. Using Copilot, you can leave the laptop in the office.

Electro Industries, in conjunction with Kreiss Johnson Technologies, the leader in power quality analysis software, introduces the quantum leap in power quality reporting technology, AiReports EXT.

This unequalled power quality software package not only provides a comprehensive report on the status of the equipment being monitored, but it also uses artificial intelligence to diagnose the PQ events and provide the possible cause of the event. Accuracy is generally as high as 80%. Having this advanced analysis will cut down endless hours of engineering analysis.

A Team of Power Quality Experts at your Fingertips

Wouldn't you like a team of power quality experts helping you analyze your data? With AiReports, it is easy . . . click a button and let AiReports do the rest. A professional report is ready within minutes to view or print. The report will indicate if you have a power quality problem, the severity of the problem and a recommended solution. If you like, you can modify the report using your favorite word processor.

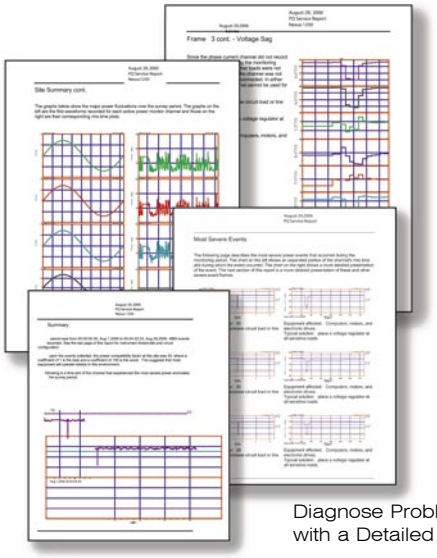
Get Your Answers Fast

When power quality problems occur, the events are often transitory in nature. Determining the cause of the problem is usually difficult and complex. A power quality report can take days to complete. Facility engineers usually do not have the time to perform detailed waveform signature analysis. Using this package, you will get a complete professional looking report in minutes. This will save countless analysis hours, increase productivity and decrease downtime.

How Does It Work?

AiReports uses the knowledge of the industry's leading power quality experts to provide you with answers, not just data. Their knowledge is stored in AiReports using artificial intelligence tools such as Fuzzy Logic and Neural Networks. AiReports reviews the data collected by your EI monitor - both numeric values and waveforms. It then isolates power quality disturbances, calculates their severity and determines their source of origin, including whether they originated upstream or downstream from the monitoring location.

Based upon the analysis, AiReports also provides an industry-accepted solution for the problem. Examples of the embedded knowledge are voltage waveform patterns of motor starts and capacitor switching. Knowledge is also embedded as a "rule." An example of an embedded rule is, "If a major current increase is recorded during a voltage sag, the origin of the sag is downstream from the monitoring location." With hundreds of waveform patterns and rules, the user of AiReports truly has a staff of experts behind him.



Diagnose Problems Quickly with a Detailed Report

New File Format Converters

- PQDIF Format
- Comtrade Format

Electro Industries now offers you data conversion capability with AI Reports. You can use the stored data to create PQDIF files that take power quality records and bring them back into existing EPRI/PEAC power quality reporting packages. In addition, the Comtrade converter allows you to convert the waveform files into a standard format to be read by relay test sets or other such equipment.

HMI EXT is a fully functional SCADA HMI package allowing you to obtain a complete graphical view of your electrical distribution system. Metered points are configured easily using standard tags to display the different readings within the system. Using the Modbus-based infrastructure, users can configure the HMI system to poll any Modbus-based device for data viewing and control. This package communicates to all equipment necessary for a comprehensive energy management solution.

Customizable Graphical Displays

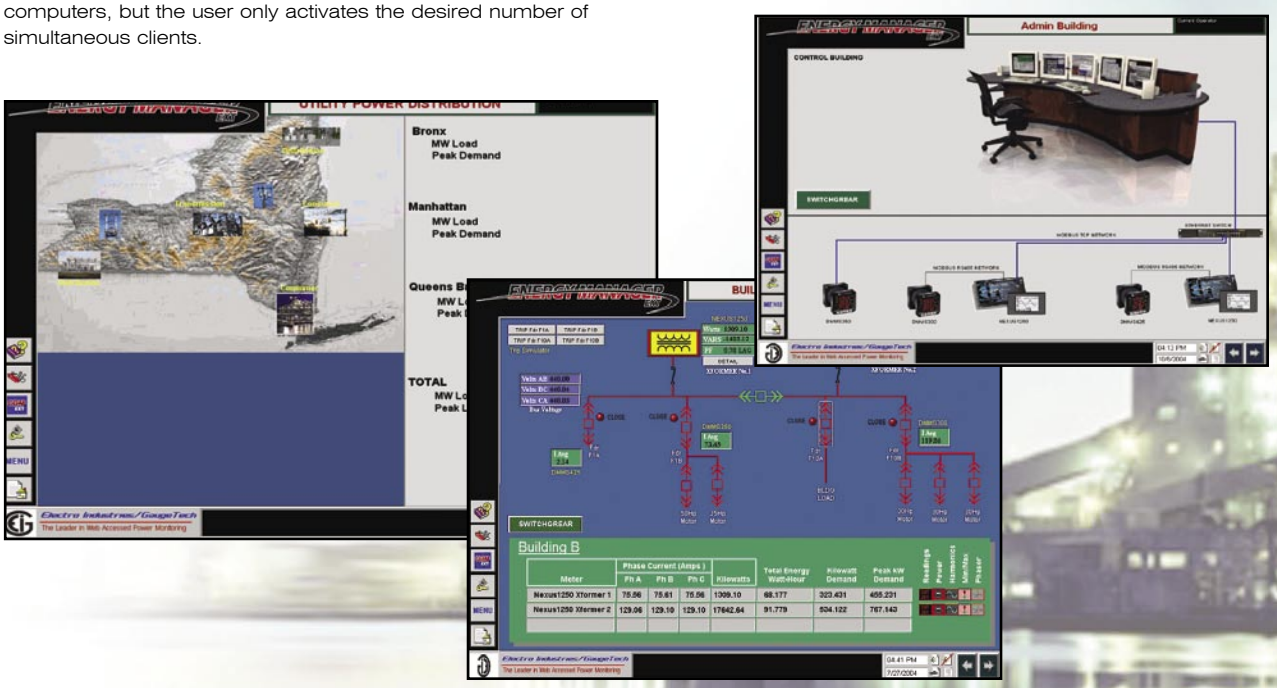
Whether you are operating a large power utility or simply need a small power distribution monitoring solution, HMI EXT allows you to set up a graphical presentation of data desired. You can build intuitive and consistent user interfaces using standard tools such as shaded lines, buttons or polygons, and easily manipulate the objects using a wide range of dynamic properties.

Features Include:

- Advanced SCADA Architecture
- Direct Access via Ethernet or Network
- Modbus TCP Support
- Real Time Trending and Graphing
- Alarms and Events Logging
- Advanced Security
- Emailing and Paging on Event
- Energy Billing and Cost Allocation

Client/Server Based Architecture

Energy Manager HMI is designed as a true Client/Server package. The base system acts as a data polling engine and data server. Additionally, the base server package also operates as an HMI display client. Remote clients can be loaded on various machines throughout the network. The system is economically designed to allow up to the desired number of simultaneous users. Thus, the remote clients can be installed on an unlimited number of computers, but the user only activates the desired number of simultaneous clients.



Advanced Ethernet Communication Driver

Energy Manager EXT uses standard Modbus over TCP communication providing a fully Ethernet-based communication network. This allows any Modbus-based device to also be used with the meter. The HMI Com engine supports many different formats such as float and integer. It also allows you to place scales factors and formulas for proper scaling.

Moreover, the Modbus TCP connection allows multiple socket connections so that the system can allow users to obtain real time data and download stored power quality data, simultaneously.

Quick to Expand

1. **Scalable Architecture.** Resize your system up to 400,000 points without modifying existing hardware or software. The system grows while protecting your initial investment.

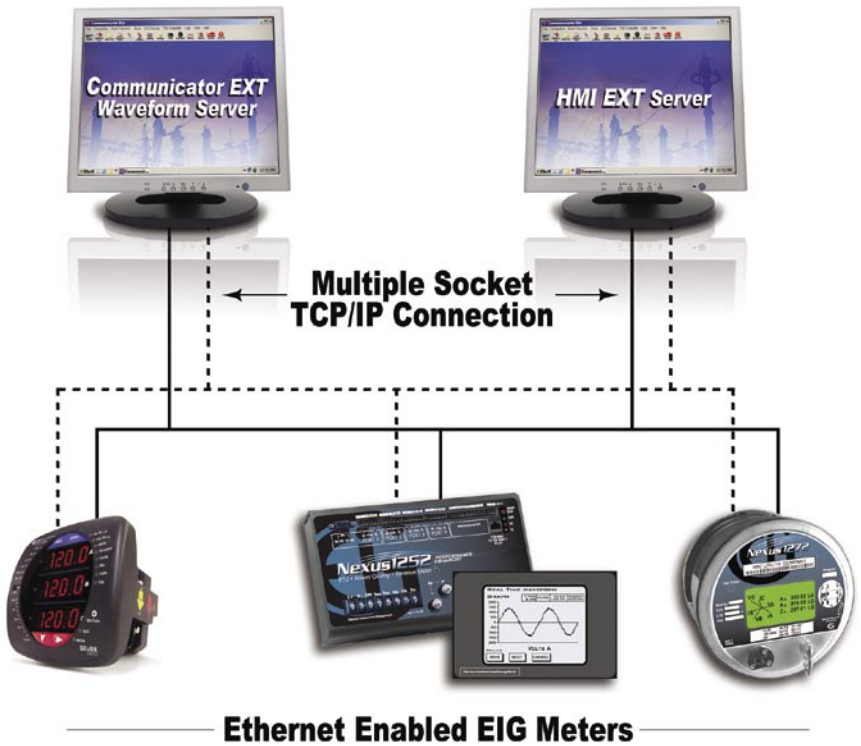
2. **Flexibility Architecture.** You can run I/O, Alarms, Reports, Trends and Displays from one or multiple servers and distribute processor loads.

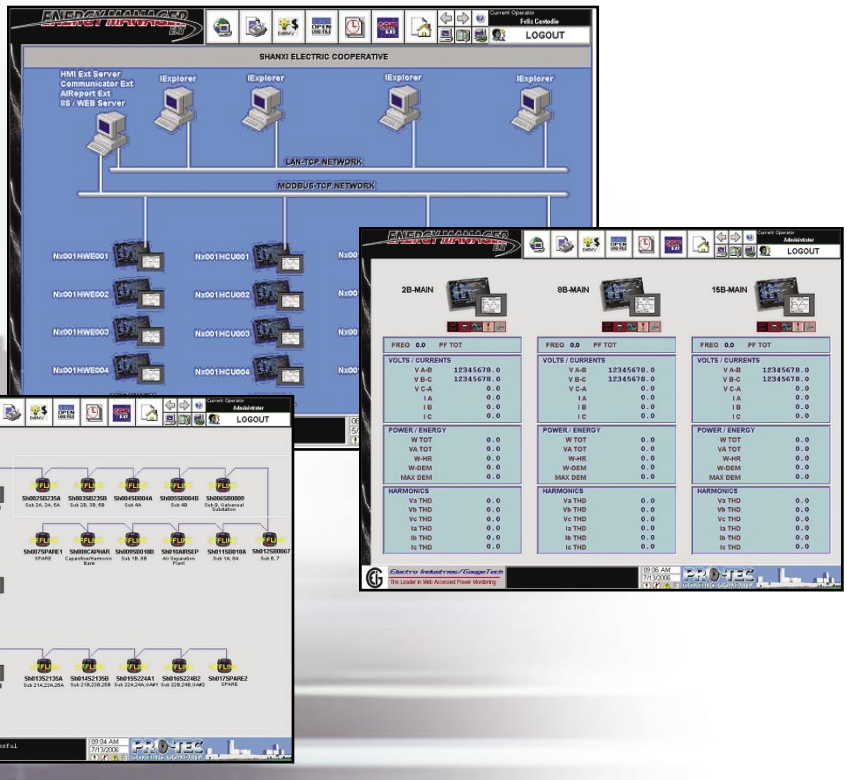
3. **Large Systems.** The system provides an open alternative to proprietary energy management systems. HMI EXT significantly reduces both initial price and total cost of ownership.

4. **Global Databases.** You have the flexibility to configure the system anywhere on the network. And advanced security assures that unauthorized access will not be granted.

5. **Built-in Redundancy.** Using the standard Modbus TCP architecture, HMI EXT allows built in server redundancy so that the system is never down. Your investment will always be protected.

Simultaneous System Intergration



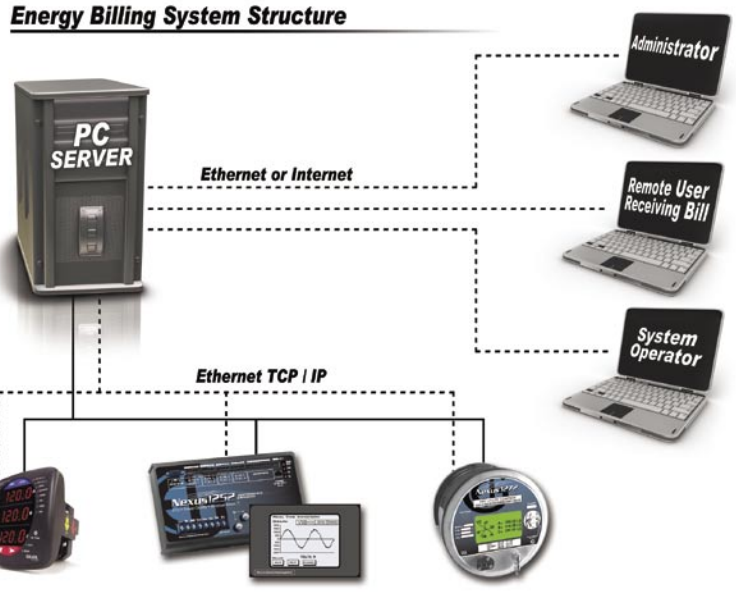


ENERGY BILLING EXT

Energy Manager Automated Energy Usage Billing

Collect Data from all EI Meters Connected to HMI EXT and Automatically Allocate Energy Costs

Energy Manager EXT Energy Billing collects data from installed meters using Energy Manager HMI. As part of HMI, the user can configure the HMI to data-trend the 15 minute energy usage and store the data in an ODBC compliant database. Energy Manager Billing interfaces directly with the database to provide cost allocation reports and generate Energy bills.



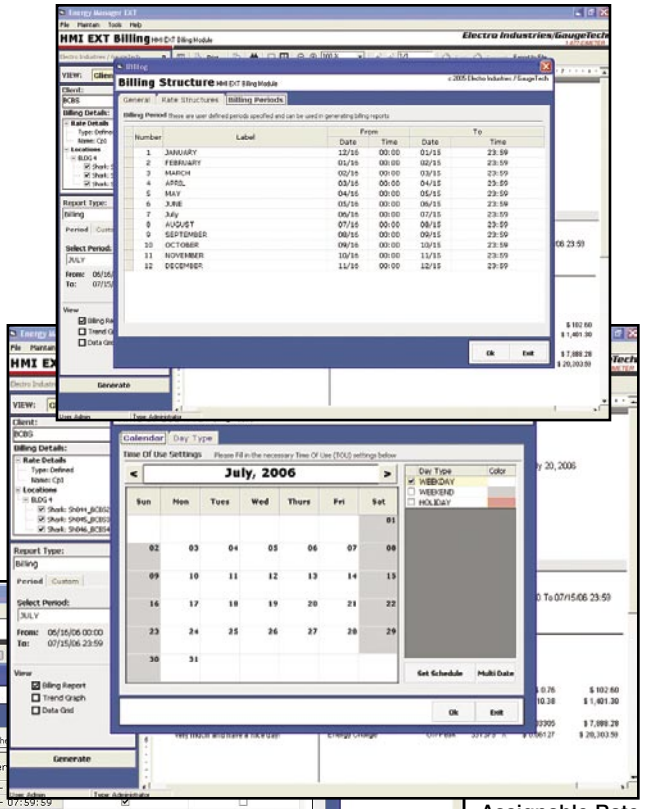
Benefits of Energy Billing HMI Include:

- Monitor utility costs and allocate them to different energy users
- Determine areas of inefficiency in industrial processes and/or tenant common areas
- Evaluate the real time impact on load shedding and predict cost savings based on actual billing information
- Allocate costs to user directly, thus promoting energy savings and lower energy bills
- Compare and contrast actual utility meter bill for determining the integrity of utility billing meter
- Both on-site and off-site data gathering standard, packaged with HMI EXT

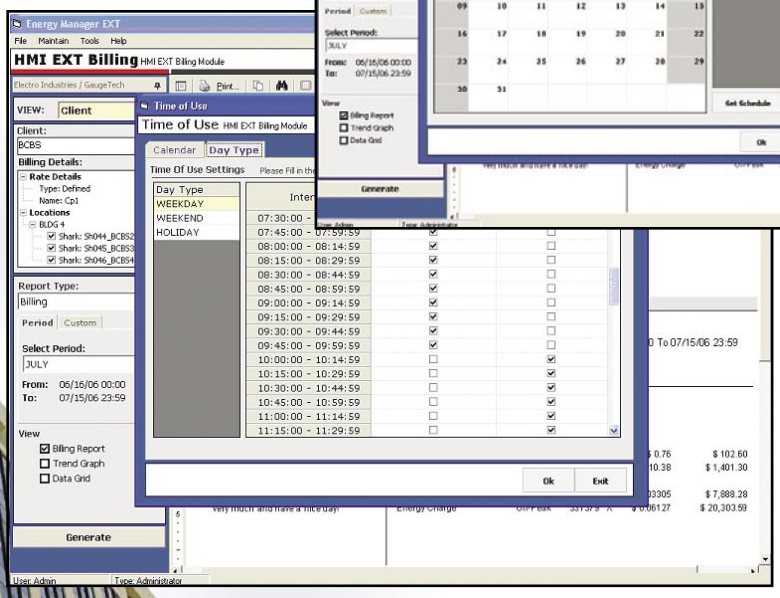
Easily Configure Time of Use, Billing and Rate Structures

Energy Billing allows the user to set up Time of Use rates including off-peak, on-peak and holiday schedules. Each of these schedules can be stored as a data file and can be linked to any desired set of meters. Moreover, multiple sets of TOUs can be used with one project, enabling meters from different billing jurisdictions to be on the same report.

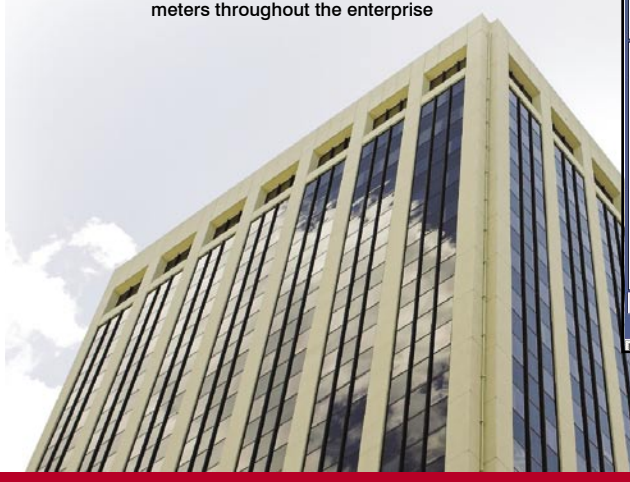
- **Programmable On-Peak, Off-Peak and Holidays**
- **Multiple TOU profiles**
- **Assign different profiles to different meters throughout the enterprise**



Assignable Rate Schedules



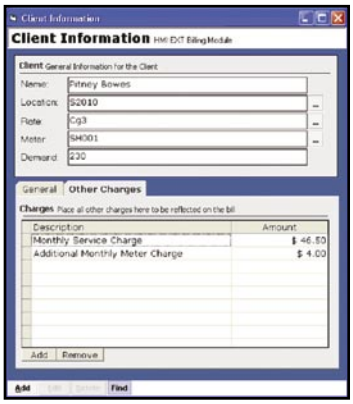
On Peak / Off Peak TOU

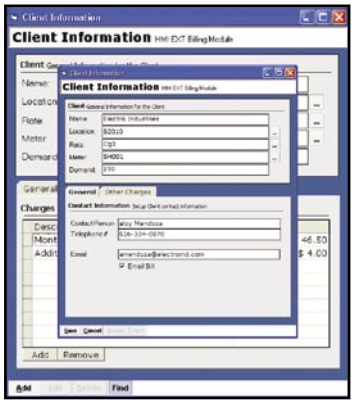


Sophisticated Programmable Rate Structure

Energy Billing EXT allows users to set up complex rate structures that take into account, not only Energy usage and Demand, but also newer costs such as taxes, generation charges, transmission charges and other such costs. This provides a more accurate assessment, allowing you to generate a more accurate Energy bill. Different profiles are savable, allowing users to allocate different meter rate structures based on the applicable utility billing structure or the respective State's Public Service Commission rate schedules. These charges include:

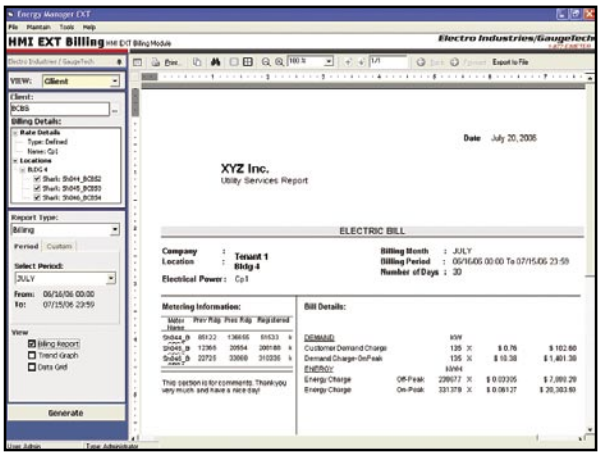
- Demand Charges
- Fuel Cost Surcharge
- Transmission Surcharges
- Sales Tax
- Monthly Service Charges
- Meter Charges





Automatic Bill Generation and Email Distribution

Using Energy Manager Billing, the user can set up automatic printing or emailing of bills to clients. This allows for very low maintenance and simple integration.



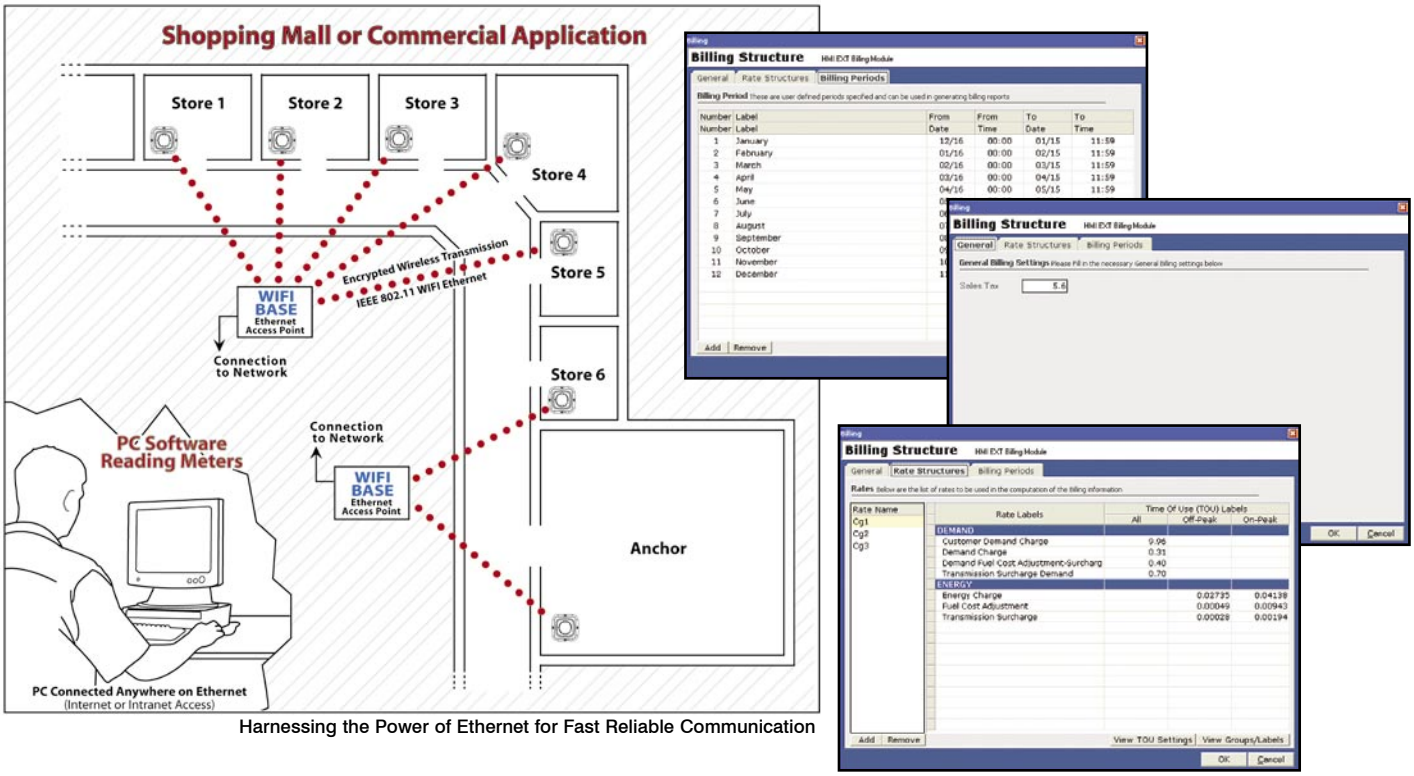
- Automated Billing
- Export Bill Report to .PDF or .RTF Formats

User Defined Billing Periods

The user can pre-select the time and date of a billing period. This capability is important for matching a master meter utility bill.

Aggregate Multiple Meters

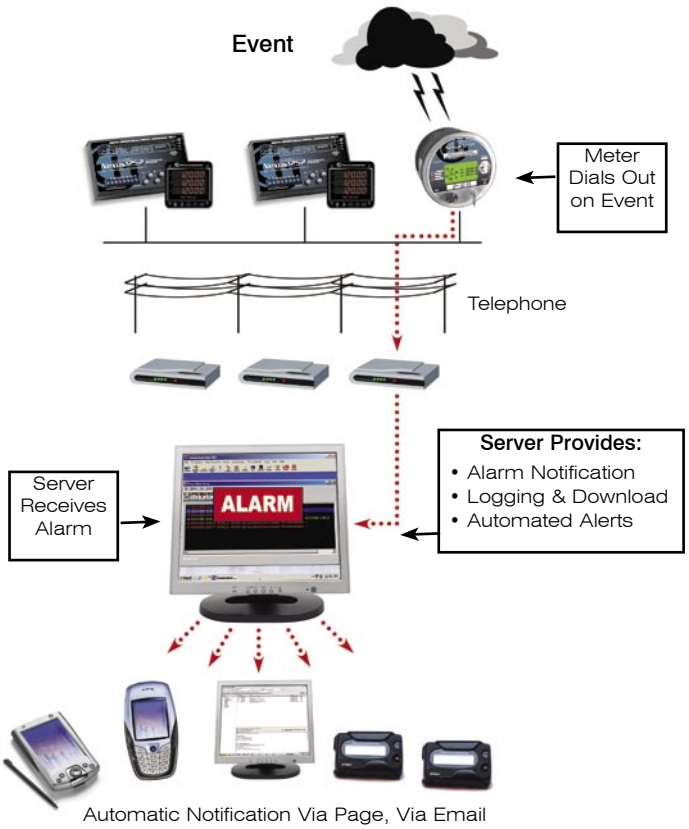
Using the Energy Billing module, multiple meters can be aggregated for instances when more than one meter contributes to the full electrical usage of a particular billed customer.



Harnessing the Power of Ethernet for Fast Reliable Communication

DIAL-IN SERVER EXT

The Dial-In Server EXT receives dial-in strings from remote meters in the field. It displays alarms, interrogates the meter, downloads logs and sends critical messages. Advanced emailing and paging informs appropriate people immediately upon event occurrence.



Automatic Notification Via Page, Via Email

Dial-In/Dial-Out Settings

The software enables you to dial-in or it dials out to notify you instantly of any changes in power or meter functions including:

- CBEMA Power Quality Event
- High Speed Input Change
- Waveform Record Capture
- Filling of Meter Memory
- Meter Communication Failure
- Control Output Change

Email/Paging Feature

Once the software detects a call, EPIC Analyzer launches the Dial-Out feature, immediately alerting designated users via:

- Email (PC, PDA, Cell Phone)
- Pager
- Cell Phone
- Many Different Users can be contacted and notified of the event.

Modem Monitor

The Modem Monitor checks the PC for connected modems, and monitors available modems for incoming calls. When an incoming call from a meter is detected, the Modem Monitor automatically starts the EPIC Analyzer software to answer the call and process it. EPIC Analyzer automatically configures the server by taking an inventory of available modems and listening to dial-in commands. This eliminates complex user configuration, making the system quick and easy to set up.

Alarm Server

The Dial-In Server software receives calls from any remote meter and displays these warnings with both visual and audible alerts:

- Alarm & Event Notification
- Audible Alarms
- Speech Alarms
- Acknowledgements
- Meter Communication Failure

Electro Industries System Integration Services

Specializing in Turn-key Solutions to Complex Energy Management Challenges

What We Can do for You

Electro Industries specializes in turn-key system integration solutions. With a large staff of programmers, system integrators and field application engineers, EIG is positioned to service your exact needs with a fully integrated software system solution. With support and service throughout the world, EIG representatives are available to provide on-site service and commissioning for any project.

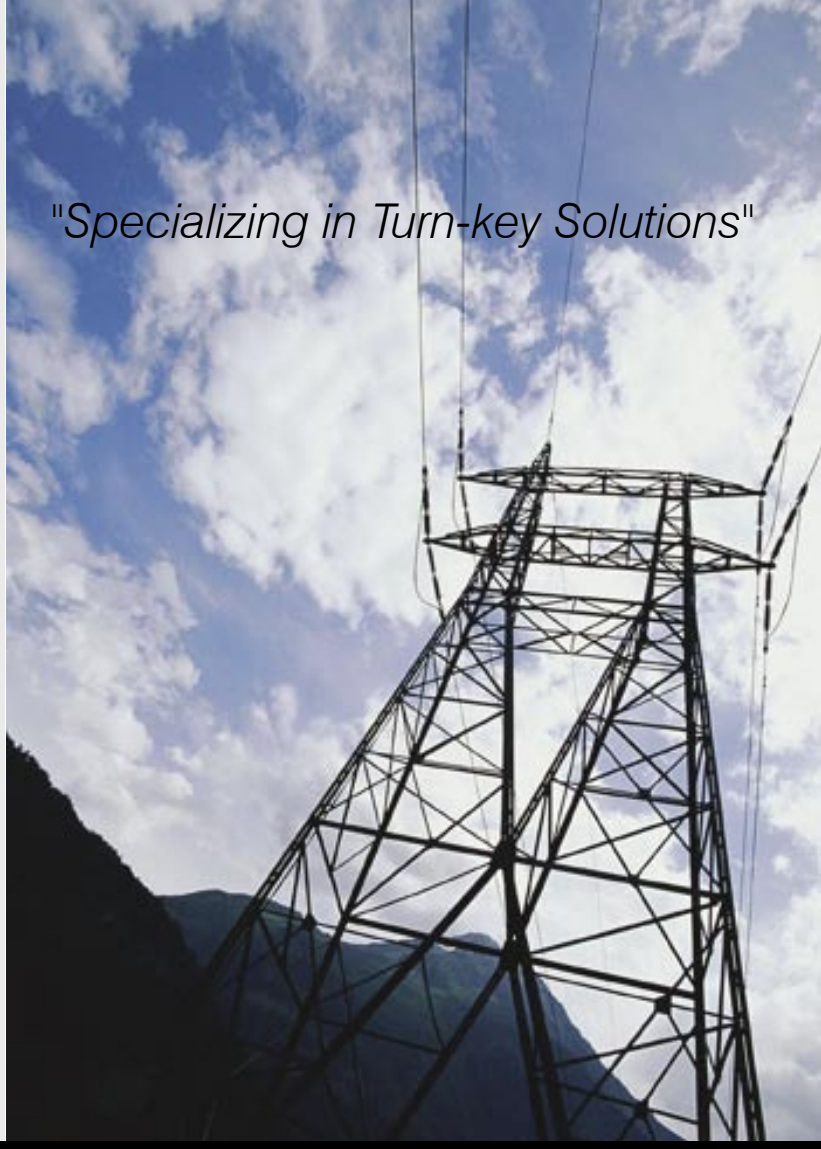
- **On-Site commissioning services**
- **World-wide support presence**
- **Technology and Application Expertise**
- **System Integration Providing Tailored Solutions**

System Integration

When assessing whether to invest in energy management technology, the support and knowledge of the solution provider is often as much a key to project success as the equipment being purchased. For this reason, we specialize in providing system solutions and system commissioning to insure that the project goals are achieved.

Meet the Staff

Our multicultural staff speaks many languages, including English, Spanish, Portuguese, Chinese and many others. Our staff is available almost anywhere you are in the world.



Ordering Information

Software Module	Description	Model Number	Details
Communicator EXT	One User Starter Pack	COMEXTS	Single user starter pack
Communicator EXT (Required for Purchase)	Base Software	COMEXT3	Required for base System (multiple user)
AI Reports EXT	Power Quality Reporting	AIEXT3	PQ Reporting Package
Dial-In Server	Dial-In Server	DISEXT	Optional for Dial-In Application
Copilot EXT	Windows CE Communicator	CPTEXT	Used for basic Polling, programming and downloading
HMI EXT	HMI with 150 Points	HMIEXT150	Up to 10 Meters
HMI EXT	HMI with 500 Points	HMIEXT500	Up to 50 Meters
HMI EXT	HMI with 1500 Points	HMIEXT1500	Up to 100 Meters
HMI EXT	HMI with 5000 Points	HMIEXT5000	Up to 250 Meters
HMI EXT	Allow simultaneous clients. One license access through Internet.	HMIEXTC (specify number of clients)	As many simultaneous clients as needed

Note – HMI EXT Meter amounts are specified based on approximately 10 graphical points per system. Actual point sizes may vary depending on complexity of the screens and amount of parameters displayed per meter.

To order Energy Manager EXT, Communicator EXT, the heart of the system, must be ordered. Specify the desired module needed for your application. System integrator development package and pricing is available.

History of Electro Industries

Founded in 1973 by engineer and inventor Dr. Samuel Kagan, Electro Industries/GaugeTech changed the face of power monitoring with its first breakthrough innovation: an affordable, easy-to-use AC power meter.

30 years later, Electro Industries/GaugeTech, the Leader In Web-Accessed Power Monitoring, continues to revolutionize the industry with the highest quality, cutting edge power monitoring and control technology on the market today. An ISO 9001:2000 certified company, EIG sets the industry standard for advanced power quality and reporting, revenue metering and substation data acquisition and control. EIG's products can be found on-site at virtually all of today's leading manufacturers, industrial giants and utilities.

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