

Energy Manager EXT™

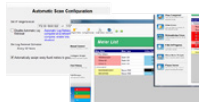
Energy Manager EXT Energy Management Software Module Suite



Energy Manager EXT's Four Software Modules:



- **Communicator EXT™** – Configure, log, poll, and analyze power quality for IEG meters.



- **MeterManager EXT** – Finds and organizes all network meters, collects data, and provides advanced, automated spreadsheet reporting both of meter health status and electrical usage.



- **EnergyReporter EXT™** – Energy dashboard, billing, and executive level reporting.



- **HMI EXT™** – SCADA HMI interface with real time meter data, graphical system depictions, and alarming.

Modular, Enterprise-wide Energy Management Monitoring System

Scalable Software Modules to Collect, Store, & Analyze Electrical Power Data

- Communicator EXT™ Module
- MeterManager EXT Module
- EnergyReporter EXT™ Module
- HMI EXT™ Module



Description

The Energy Manager EXT™ Modular Software Suite allows you to gather and report on every aspect of electrical power usage and power quality. The system is designed to be modular, building from base data collection software to a truly comprehensive solution that reports every aspect of electrical measurement. You can purchase the module suite at one time, or more modules can be purchased separately as your metering needs grow. Use EIG's software modules to report on usage, power quality, and anomalies throughout your power system.

The Energy Manager EXT™ Application Suite consists of the following modules:

- **Communicator EXT™ Module** – This module is the foundation of EIG's energy management solution. Communicator EXT™ 4.0 software provides configuration, logging, polling, waveform recording, power quality monitoring and database capabilities needed to manage your fleet of meters and the data they generate, whether your application consists of 3 meters or 3000 meters. A free version of this software can be downloaded for your use!

- **MeterManager EXT Module** – MeterManager EXT is the automation and meter management module that automatically finds and organizes network meters, collects energy data, and reports on health status from all installed metering systems within your power system.

In addition, MeterManager EXT has an automatic report generator, Report Exporter, that creates custom spreadsheet reports on all aspects of electrical usage, like energy consumption, voltage deviation, watt/VAR distribution and others. MeterManager EXT sends these reports out on a regular programmable interval, to all concerned parties. MeterManager EXT is included in the professional version of the Communicator EXT™ 4.0 software module.

- **EnergyReporter EXT™ Module** – This module creates energy dashboards and commodity usage bills for electrical usage throughout a system. It uses a programmable utility rate structure to calculate costing.
- **HMI EXT™ Module** – 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.

Description

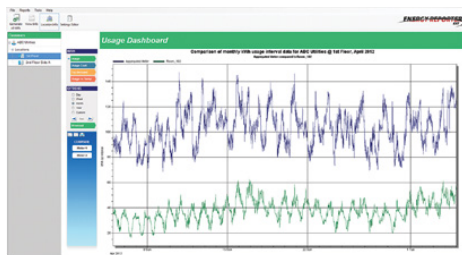
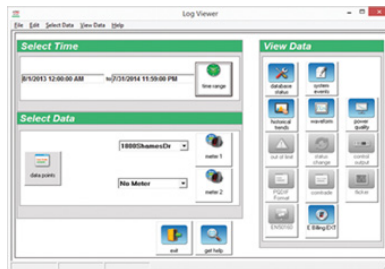
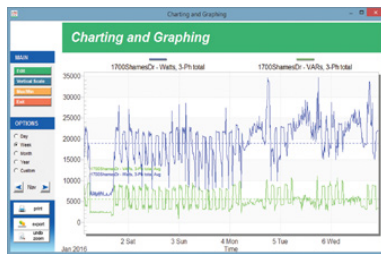
The Communicator EXT™ application is the base package of the Energy Manager EXT™ system. This software module connects remote meters via Serial, Ethernet or Modem. It allows users to view real time metered data, configure meters and analyze collected information from remote EIG power monitors. This system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

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

Advanced Real Time Viewing Capability

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

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

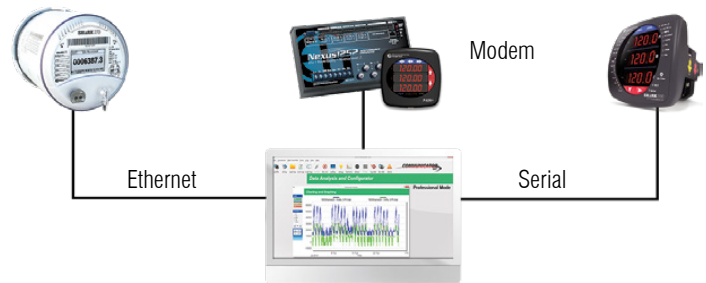


Advanced Communication Structure

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

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

This capability allows the data to be brought back in any available medium. 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

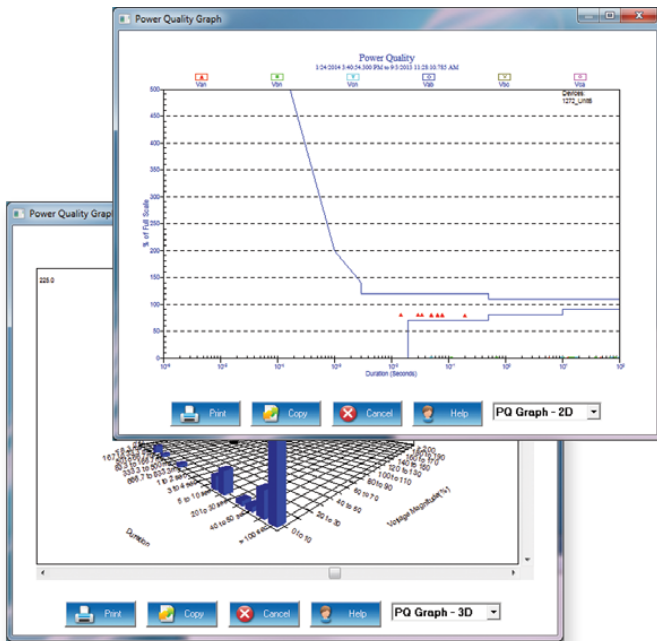
The Communicator EXT™ application's charting and graphing functions allow users to easily access any desired data and provide fast and simple analysis. Getting the data you need quickly is as important as collecting the data in the first place. This application excels at providing data easily and quickly.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

- Tabular Data Format with Direct Spreadsheet Application Compliance
- Multi-pen Charting and Graphing
- View Data by Month, Day, or Year
- Max and Min Values Printed Directly on Plot
- Unlimited Zoom & Pan
- Direct Cut & Paste into Most Applications

Advanced Power Quality Charting and Graphing

The Communicator EXT™ application 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.

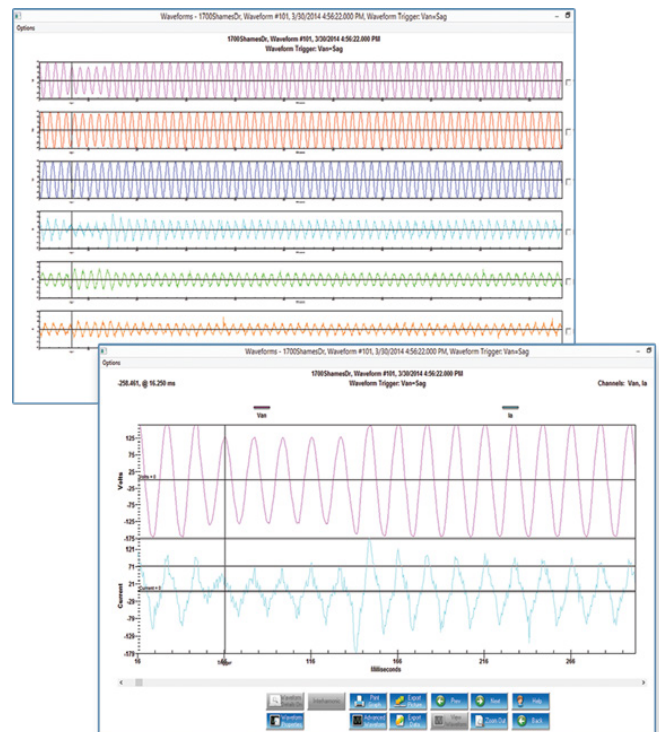
- View ITIC, Semi F47, CBEMA, and other industry-standard graphs
- Time waveform events using millisecond resolution
- Sort data by type of fault
- Compare circuits to each other
- Review impact of changes to protective equipment
- Monitor and analyze circuit breaker performance
- Conduct forensic analysis of catastrophic events
- Cycle by cycle RMS trends



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 the Communicator EXT™ application, you can:

- View & superimpose multiple waveforms from one or more events
- 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
- Add databased annotations to waveform records
- All waveform faults are databased system-wide for power quality evaluation



Programming and Configuration

The Communicator EXT™ application also allows users to program, configure and optimize metering systems to meet the exact application needed. The Communicator EXT™ application was designed to be easy to use, and to make programming and configuration simple. By organizing meter setup and making it consistent across the multiple metering systems, much of the guesswork has been taken out of meter configuration. The system is up and running easily and quickly.



Automation Means Data is Always Stored and Available for Analysis

Meter Management System

MeterManager EXT is a comprehensive meter management system that manages, controls, and databases meter information for up to 1200 power meters. It functions as an automation engine to manage meters for users. It consists of 5 main components:

- 1. Automated Meter Network Connection** - The software automatically finds meters on a network by scanning configurable IP address ranges.
- 2. Organizes Meters into Groups** - Group meters by location, type, download interval, name or any other method. View meters as a unified group that can be managed easily.
- 3. App Launcher** - Launch into any apps associated with that meter such as the Communicator EXT™ application, Log Viewer, EnergyReporter Viewer, etc.
- 4. Multi-threaded Data Collector** - Data is collected system-wide and automatically stored, while running in the background of the PC.
- 5. Automatic Meter Report Generator** - Generate customized reports and send them out to users on programmed intervals.
- 6. Provides Meter Integrity Analytics** - Scans meters for poor connection quality, checks for faulty installations, such as reverse CTs, and performs firmware data management.

With MeterManager EXT, data is automatically stored and always available for easy viewing by simply clicking the desired app. The benefits include:

- **Automation Means Fast Learning Curve** - Get useful data analysis without becoming a software systems expert.
- **Meter Health Scans** - Automatically scans fleet of installed meters periodically, to check that they are online, functional, and installed properly.
- **Automated Email Status Reporting** - Automatically receive emails if a meter is dropped, or a network connection is lost, so issues can be resolved quickly without losing data.
- **Diagnostic Reporting Tools** - The system produces error logs, status logs and many other diagnostic tools for forensic analysis of the complete system's integrity.
- **Next Generation View towards Metering** - MeterManager EXT does all the work for a user, so that the user simply connects the meters and analyzes the collected data.

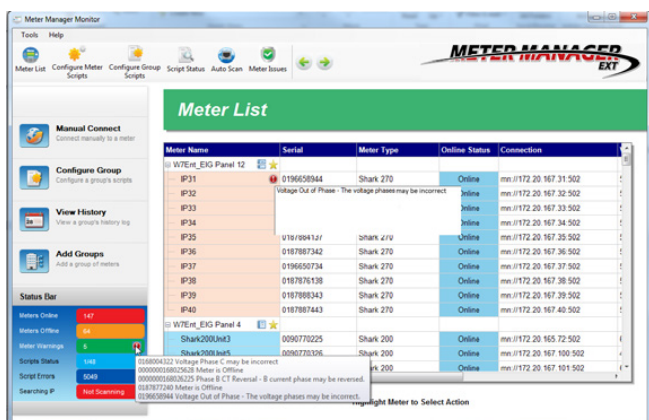


MeterManager EXT's Smart Meter Analytics™

MeterManager EXT has a new feature that runs diagnostics on installed meters, giving the software the ability to warn you of possible meter problems. This lets you be proactive in preventing problems from escalating.

The application automatically performs meter validation of all your meters. MeterManager EXT verifies that meters are online, and displays that information in the main Meter List screen. This lets you easily see any meters that are offline, so that you can quickly address the communication problem.

The application is also able to check that meter wiring is correct. If problems are found with the wiring, they are viewable both in the main Meter List screen and in a new Problem Issues screen, which displays information detailing the potential problem.



Detect Reverse CTs and Other Installation Issues Using Smart Meter Analytics™

- Easily identify meters that are offline.
- View installation issues automatically, such as reverse wiring, failed voltage inputs, etc.
- View warnings and meter problems both on the Meter List screen and in a special Problem Issues screen.

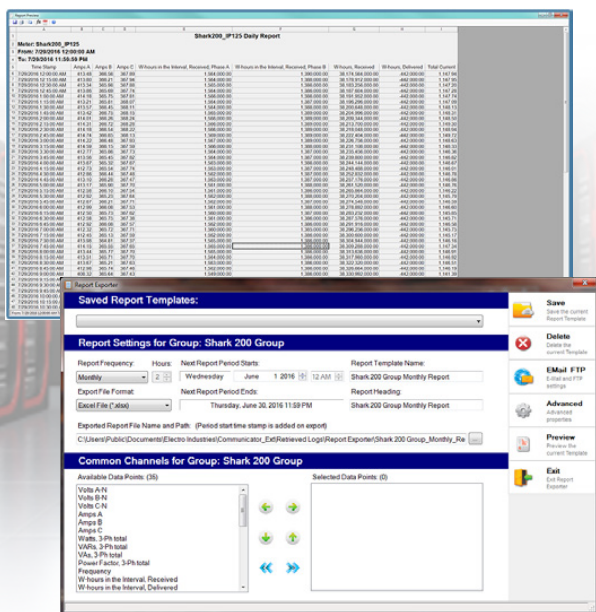


MeterManager EXT's Report Exporter

MeterManager EXT also offers the Report Exporter feature, which lets you design customized reports of electrical data and any other data measured by the meter. You can create the reports for individual meters or groups of meters, and can set up automatic report generation on the schedule you wish – hourly, multi-hourly, daily, weekly, or monthly.

Report Exporter can email reports to multiple people and also upload the reports via FTP to a central location for viewing. Additional features of Report Exporter include:

- Add mathematical formulas to the report to further process the data and obtain the information you need, e.g., calculating the highest Demand for a period, or average energy use for a metered area.
- Save the report to a .CSV or a spreadsheet file for easy integration into other applications.
- Add computed channels of data, which aggregate a time period from another channel to generate a new data channel in the report.

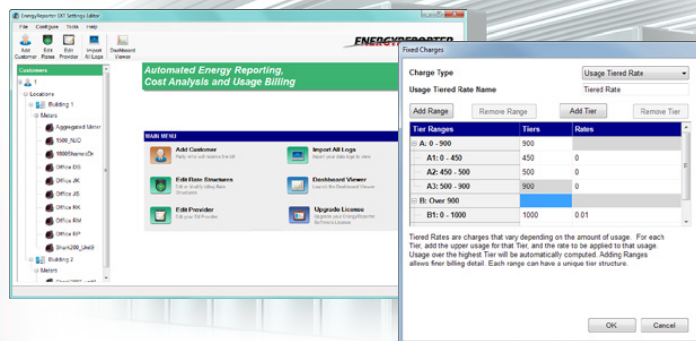


Create Automated Scheduled Spreadsheet Reports

The Energy Usage Analysis Tool to Manage Energy

- Control Costs by Providing Tenant Ownership of Energy Consumption
- Determine Inefficiencies and Reduce Energy Demand
- View Dashboard Data to Compare Usage over Time
- Provide Automated Reporting to Detail Savings Opportunities
- View Consumption of All Usage Commodities, Including Water, Air, Gas, and Steam
- View Loads vs. Weather or Compare Locations over Time
- Meter Virtually Unlimited Amounts of Energy Points
- Email Bills and Reports on a Scheduled Basis

Allocating Accurate and Fair Energy Usage - Use EIG's EnergyReporter EXT™ application to correctly allocate costs across customer locations and realize almost immediate energy savings. This fully customizable software application was designed for use with EIG's Shark® Series meters, the MP200 Metering System, and the Nexus® Series meters.

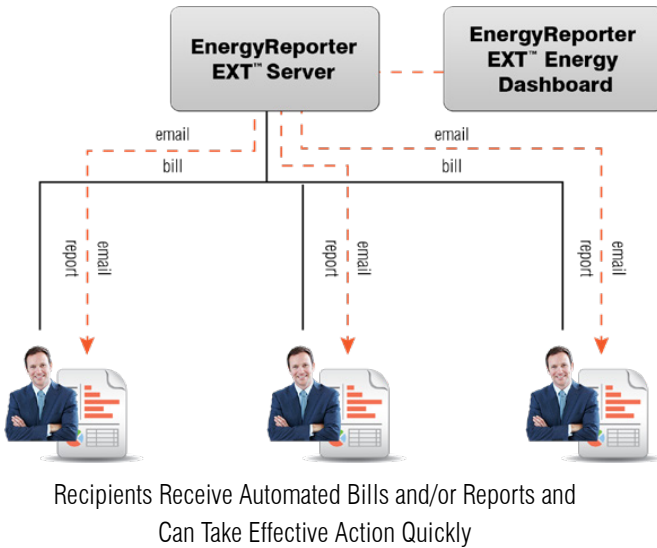


Managing Energy and Commodity Usage Has Never Been Easier!

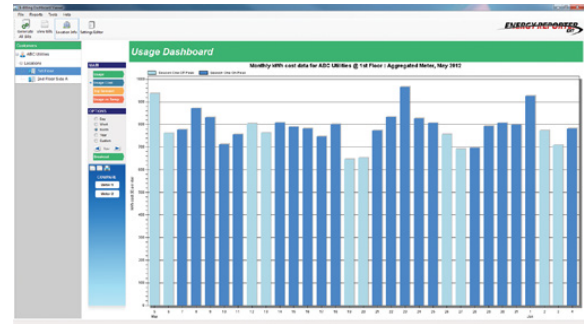
The EnergyReporter EXT™ application runs in a client/server environment - data stored on the database server can be accessed from all configured client PCs to support an Enterprise-wide energy management solution. Or if it works better for your purposes, install the application and the database server on the same PC. This is a user-owned software system; it does not run on a subscription model, so there are no recurring monthly fees.

The Energy Usage Analysis Tool to Manage Energy

- Generate Hundreds of Automated Bills or Energy Reports
- Configure the System to Send Bills to Users Automatically on a Monthly Basis
- Provides an Automated Accounting Service, Saving Costs in Administrative Services
- Eliminates Any Need for Costly Third Party Billing Providers
- Provides Feedback of Successful Transmission for Accounting Purposes and a cc Address for a Copy to be Sent to a Report Provider
- Auto-Configuration System Auto-detects Meters and Collects Data

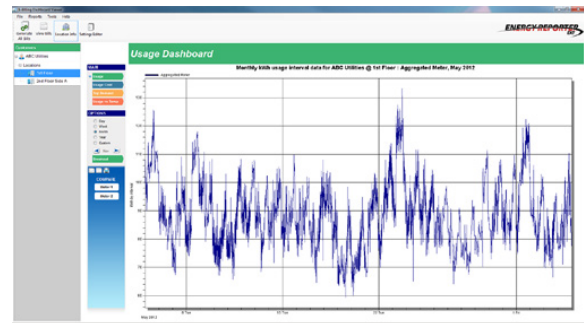


Energy Dashboard, Charting, and Energy Benchmarking



Real Energy Cost by Day

- View Consumption of All Usage Commodities, Including Water, Air, Gas, and Steam
- View Loads vs. Weather Locations over Time
- Meter Virtually Unlimited Amounts of Energy Points
- Email Bills and Reports on a Scheduled Basis



View Usage over Time

- Cost by Month
- Cost by Day
- Energy Usage Comparisons
- Top Peak Demand by Date or Meter
- Compare Facility Usage to Ambient Temperature

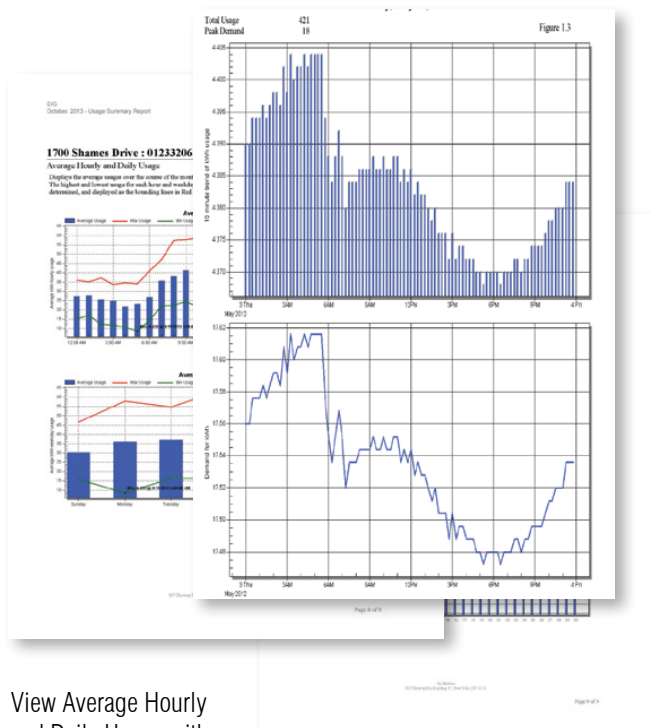
Executive Summary Usage Reports Automated Energy Billing Module

Create custom reports to provide executives and management with analysis of every aspect of energy consumption. Configure the reports to provide the exact data the executive needs to make the proper energy decisions. Using the EnergyReporter EXT™ application, reducing costs and pinpointing energy waste is easily achievable. Report capabilities include:

- Monthly Usage Summaries
- Monthly Meter Comparisons
- Meter Specific Energy Profile
- Peak Day Profile
- Peak Week Profile
- Average Hourly Usage
- Average Daily Usage
- Comparisons to Last Month
- Comparisons to Last Year
- Report on Weather and Temperature Impact on Usage and Peak Demand

The EnergyReporter EXT™ application automatically provides bills to users if desired. It creates customized bills based on tariffed rate structure. The features include:

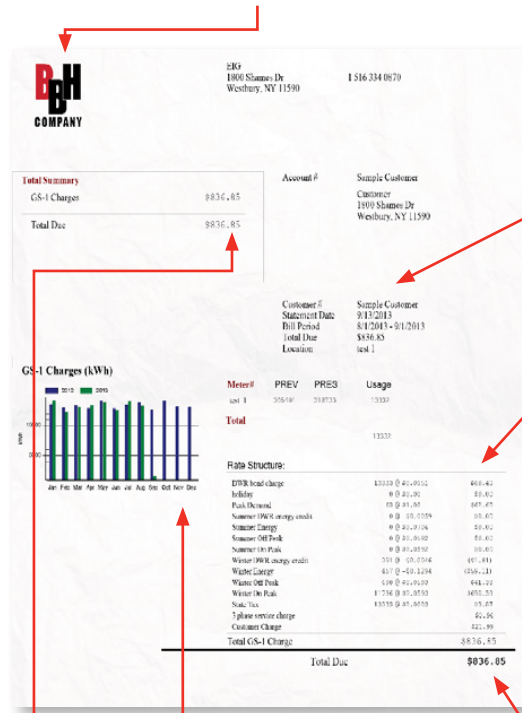
- Automated Bill Generation
- 4 Season TOU Rates
- Supports Fixed, Tiered or TOU Rates
- Customized Bill Formats
- Allowances for Fixed Costs and Taxes
- Ability to Bill for Energy and Other Commodities
- Provides Fast ROI by Incentivizing Users to Conserve
- Provides Fair Usage Billing
- Uncovers Account Ownership Errors



View Average Hourly and Daily Usage with Max Demand

Provide Monthly Usage and Peak Demand

Customize bill with your company logo



Customer and Billing formation

Add Fixed-Charges

Different rate structures for different seasons, Peak, and Off-Peak, holidays

Totalized Usage

Comparison to previous months' usage

Add Local Taxes



Web-Based Client/Server-Based Architecture

The HMI EXT™ application is a fully functional Web viewable SCADA HMI package that allows 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.

Energy Manager's HMI EXT™ application 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. The software can be configured as a web client so that it does not need to be installed on the local client machine. Users can sign on to the system using a web browser with proper log-on security.

Features Include:

Customizable Graphical Displays

Whether you are operating a large power utility or simply need a small power distribution monitoring solution, the HMI EXT™ application allows you to set up a graphical representation of desired data. 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.

- Client/Server based architecture – supports redundant server structure
- View data from power meters, including electrical and control parameters, in real time
- Create alarms and control events
- Create custom dashboards to provide visibility of energy consumption and savings
- Remotely control hardware, including breakers, backup generators, and valves
- Real time trending and graphing of energy usage, demand, and system reliability
- Emailing and paging on alarms, and events logging
- Demand response and load shedding
- Direct access via Ethernet or Network
- Multiple protocols, including Modbus TCP, DNP3, BACnet, and IEC 61850
- Advanced security
- Custom Energy billing and cost allocation, in real time



Diagnose Power Problems in Real Time to Avoid Downtime

Advanced Ethernet Communication Driver

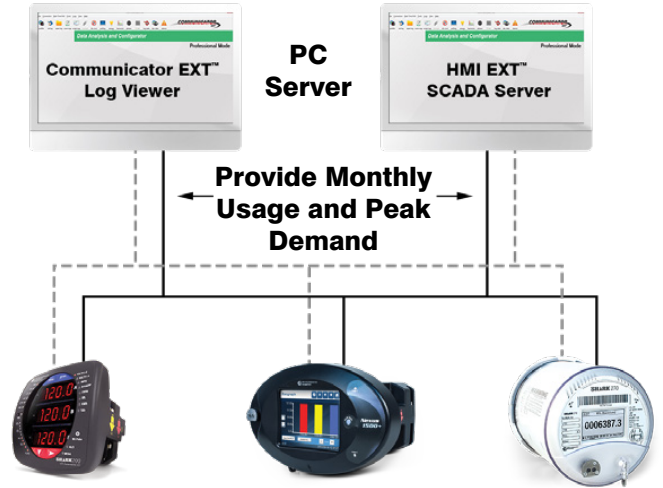
The HMI EXT™ application uses standard Modbus over TCP communication, providing a fully Ethernet-based communication network. This allows any Modbus-based device to be used with the software. The HMI EXT™ Com engine supports many different formats, such as float and integer. It also allows you to place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

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

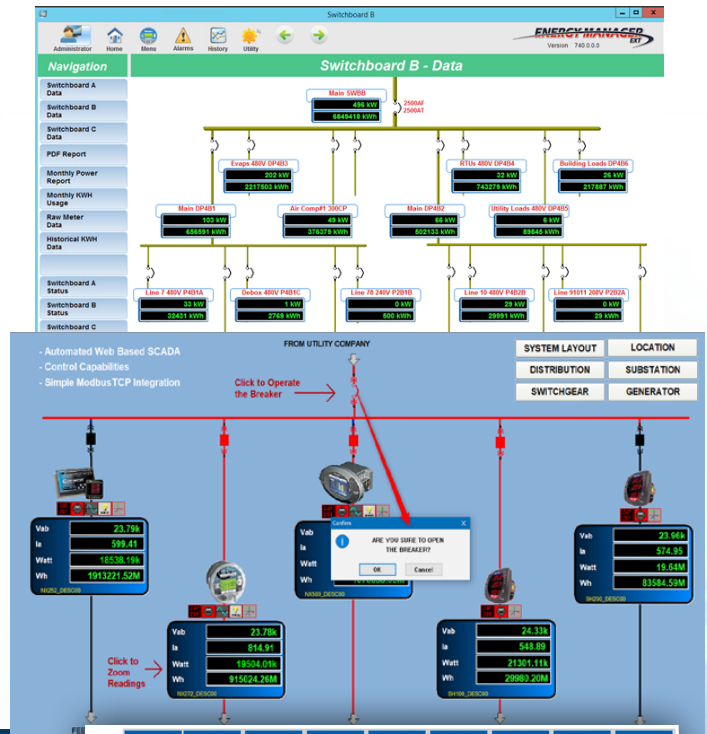
Easy to Expand

- Scalable Architecture:** Resize your system up to 400,000 points without modifying existing hardware or software. The system grows while protecting your initial investment.
- Flexible Architecture:** You can run I/O, Alarms, Reports, Trends and Displays from one or multiple servers and distribute processor loads.
- Large Systems:** The system provides an open alternative to proprietary energy management systems. The HMI EXT™ application significantly reduces both initial price and total cost of ownership.
- Built-in Redundancy:** Using the standard Modbus TCP architecture, the HMI EXT™ application allows built-in server redundancy so that the system is never down. Your investment will always be protected.
- Support for 3rd Part Devices:** EIG has performed integration with a multiplicity of third party meters, relays, and control devices. Almost any Modbus-speaking device can be connected.

Simultaneous System Integration



Ethernet Enabled EIG Meters



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™ 4.0 Lite Application	Configuration and Viewing	COMEXT	Basic for Programming and Viewing Data
Communicator EXT™ 4.0 Pro Application with MeterManager EXT	Basic Professional License Seat, one user; includes MeterManager EXT and Report Exporter	COMEXT4P	Add Automation, System Comparisons, Meter Diagnostics, and Enterprise Meter Management
EnergyReporter EXT™ 4.0	Energy Management Software	EREXT4	Energy Dashboard, Reporting and Billing Add-on for EIG meters
HMI EXT™ Application	SCADA HMI with 150 Points	HMIEXT150	Up to 10 Meters
HMI EXT™ Application	SCADA HMI with 500 Points	HMIEXT500	Up to 50 Meters
HMI EXT™ Application	SCADA HMI with 1500 Points	HMI EXT1500	Up to 100 Meters
HMI EXT™ Application	SCADA HMI with 5000 Points	HMIEXT5000	Up to 250 Meters
HMI EXT™ Application	Allows simultaneous web clients for the SCADA HMI - one license access through Internet	HMIEXTC (specify number of clients)	As many simultaneous clients as needed
HMI EXT™ Application	Provides HTML5 connectivity for HMIEXT, 5 User Pack	HMIEXT Anywhere	HMIEXTC is required to support simultaneous connections

Note – You must have the Communicator EXT™ 4.0 or higher Professional Version application with MeterManager EXT installed to successfully run EnergyReporter EXT™.

History of Electro Industries/ GaugeTech

Founded in 1975 by engineer and inventor Samuel Kagan, Electro Industries/GaugeTech changed the face of power monitoring with its first breakthrough innovation: an easy-to-use digital AC power meter.

More than 40 years later, Electro Industries/GaugeTech, the Leader In Power Monitoring and Smart Grid Solutions, continues to revolutionize the industry with the highest quality, cutting edge power monitoring and control technology on the market today. An ISO 9001:2015 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.

Nexus® and Shark® are registered trademarks of Electro Industries/GaugeTech. The distinctive shapes, styles and overall appearance of the Nexus® 1500 meter and the Shark® meters are trademarks of Electro Industries/GaugeTech.

HMI EXT™, EnergyReporter EXT™, V-Switch™, Smart Meter Analytics™, and Communicator EXT™ are trademarks of Electro Industries/GaugeTech.

Communicator EXT™ 4.0 and MeterManager EXT natively supported meters:

- Nexus® 1250
- Nexus® 1252
- Nexus® 1262
- Nexus® 1272
- Nexus® 1450
- Nexus® 1500
- Nexus® 1500+
- Shark® 50
- Shark® 100
- Shark® 100S
- Shark® 200
- Shark® 200S
- Shark® 250
- Shark® MP200
- Shark® 270



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