With the EMS Upgrade Kit, you bring the entire power distribution system under the support of the EMS. Even if you have a mix of older equipment from other vendors, you get the insights to effectively manage the edge of the power distribution system. You will be able to track and analyze:

- Time-stamped metering, alarm, event and statistical information
- Peak loads, along with current, power and frequency minimums and maximums
- Voltage and power, monitored all the way down to the branch breaker level
- Power quality metrics, such as total harmonic distortion (THD) and power factor (PF)
- Load profiling to make the best decisions for energy planning

This information is shown for individual circuits, each panelboard and at the equipment level—equipment such as a power distribution unit (PDU) or remote power panel (RPP)—to provide visibility at all levels in one system.

Feature list
- Extends the branch circuit monitoring capabilities of the Eaton® Energy Management System (EMS) to legacy and third-party power distribution equipment
- Monitors power conditions on individual breakers, panels or at the equipment level—three tiers of visibility within one unit
- Provides remote monitoring via the Power Xpert® Gateway Card, which links Eaton and non-Eaton equipment to the local area network or the Internet
- Tracks and records more energy parameters and provides more standard features than alternative branch circuit monitoring systems from other vendors
- Delivers real-time and historical information for precision analysis, troubleshooting, power management, billing and energy planning
- Streamlines and unifies the management of diverse, multi-vendor power distribution systems

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A practical, affordable solution for precision power management

The EMS Upgrade Kit includes an enclosure that can be mounted on existing power distribution equipment or on a wall with the provided mounting kit. The enclosure supports one or two panels and an optional LCD. A single-panel unit monitors up to 42 circuits; a two-panel unit monitors up to 84 circuits in a standard, three-phase panelboard. Current transformers (CTs) monitor branch circuits in connected panelboards—measuring and storing energy parameters for each individual circuit—so you can manage power with greater precision.

Easy to deploy and use

The EMS Upgrade Kit is a packaged, pre-tested, standalone solution. It is designed for upgrade into existing Eaton and third party PDUs, RPPs, panelboards or other equipment. The unit comes with its own bracket for wall-mounting and can be installed without disconnecting the branch circuit wiring to the loads. An easy-to-use software tool is included to configure start-up settings and options. No preventive maintenance or annual calibration is required. You gain new insight into power distribution without adding complexity to the infrastructure.

Visibility and control from anywhere

A Power Xpert Gateway Card installed in an X-Slot® communication bay enables remote monitoring over an Ethernet network. You can view detailed power parameters using a Web browser, an SNMP-compatible network management system or a Modbus TCP-compatible building management system. The system can even be configured to e-mail event notifications when alarm conditions arise.

Important power information at a glance

A large, local LCD—eight lines by 40 characters (many times larger than competitors’ offerings)—is a popular option. This display delivers a rich array of information about status, events and alarms at any level. Navigate easily through system functions using buttons and contextual menus that are organized into logical categories.

Menu  What it does
Events  Displays lists of active or historical system events
Meter  Displays detailed input and output parameters and status for any branch circuit or panel
Profile  Displays a load profile for the previous 23 months and real-time values for the current month
Setup  Makes it easy to set up system options (such as time/date) and clear the history log or load profile

1  ON  This green LED shows power is on and connected equipment is working normally
2  O/L  This yellow Overload LED notifies local users of an overload condition on any phase
3  AL  A flashing or solid red LED alerts users to alarm conditions
Cost-effective insurance against tripped circuits and unplanned shutdowns

Branch circuit monitoring technology has been field-proven for years. Recent advances in technology and design have made these capabilities more affordable than ever. When comparing features and technical specifications of different systems, you will quickly see that the EMS provides more all-in-one functionality than other vendors’ offerings. It has the most standard features and the broadest list of measured and reported parameters.

With the EMS Upgrade Kit, now you can extend this extra layer of visibility and control to distribution equipment that was never designed to include those capabilities. Find out more about how the Eaton EMS and its Upgrade Kit can unify the management of your diverse, multi-vendor power distribution system.

Contact us at 1.800.356.5794 or visit us on the Web at www.eaton.com/powerware.

Technical specifications

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Weight, lb (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics module (without display, with mounting bracket)</td>
<td>170 (7.7)</td>
</tr>
<tr>
<td>Mounting bracket</td>
<td>3.4 (1.5)</td>
</tr>
<tr>
<td>Conduit box (each side)</td>
<td>3.6 (1.6)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Split-core CTs (each)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Branch circuit, 75A</td>
<td>1.50 x 1.02 x 1.02 (38 x 26 x 26)</td>
</tr>
<tr>
<td>Branch circuit 100A</td>
<td>2.00 x 1.57 x 1.18 (51 x 40 x 30)</td>
</tr>
<tr>
<td>Main input, neutral subfeed, 400A</td>
<td>3.94 x 3.78 x 1.81 (100 x 96 x 46)</td>
</tr>
<tr>
<td>Input ground, 100A</td>
<td>2.76 x 2.60 x 1.30 (70 x 66 x 33)</td>
</tr>
</tbody>
</table>

General characteristics

- Up to 84 branch circuits (two panels) monitored on a single display
- Nominal voltage: 380/220V, 400/230V, 415/240V – international
- Nominal frequency (range): 50/60 Hz (45–65 Hz)
- Input voltage configuration: Panel 1: 3 wire + N + GND, Panel 2: 3 wire + N

System monitoring

<table>
<thead>
<tr>
<th>Meters and load profiling points:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input1 V12 min/max</td>
</tr>
<tr>
<td>Input1 V23 min/max</td>
</tr>
<tr>
<td>Input1 V31 min/max</td>
</tr>
<tr>
<td>Input1 ACU total time</td>
</tr>
<tr>
<td>Input1 I1 min/max (with optional Main CTs installed)</td>
</tr>
<tr>
<td>Input1 I2 min/max (with optional Main CTs installed)</td>
</tr>
<tr>
<td>Input1 I3 min/max (with optional Main CTs installed)</td>
</tr>
<tr>
<td>Input1 V12 THD max</td>
</tr>
<tr>
<td>Input1 V23 THD max</td>
</tr>
<tr>
<td>Input1 V31 THD max</td>
</tr>
<tr>
<td>Input1 frequency min/max</td>
</tr>
<tr>
<td>Input1 kVA min/max (with optional Main CTs installed)</td>
</tr>
<tr>
<td>InputPF min/max (with optional Main CTs installed)</td>
</tr>
<tr>
<td>Input2 V12 min/max</td>
</tr>
<tr>
<td>Input2 V23 min/max</td>
</tr>
<tr>
<td>Input2 V31 min/max</td>
</tr>
<tr>
<td>Input2 ACU total time</td>
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</tr>
<tr>
<td>Input2 kVA min/max (with optional Main CTs installed)</td>
</tr>
<tr>
<td>Input2 PF min/max (with optional Main CTs installed)</td>
</tr>
<tr>
<td>GND I min/max</td>
</tr>
<tr>
<td>NEU I min/max</td>
</tr>
</tbody>
</table>
Event logging

- Input1 AC over voltage
- Input1 AC under voltage
- Input1 under or over frequency
- Input2 AC over voltage
- Input2 AC under voltage
- Input2 under or over frequency
- Building alarm 1
- Building alarm 2
- Building alarm 3
- Building alarm 4
- Input1 overload (four levels per phase, with optional Main CTs installed)
- Input2 overload (four levels per phase, with optional Main CTs installed)
- Input1 phase rotation error
- Input2 phase rotation error
- Configuration Error
- ALM High_Input 1_THD (per phase alarm) current or voltage
- ALM High_Input 2_THD (per phase alarm) current or voltage
- ALM Neutral_overload_warning (per panel)
- Neutral_overload (per panel)
- Ground_Current_Warning (per panel)
- Ground_Current_Overload (per panel)
- DSP, LCD and Power Xpert Gateway 1000 card firmware are user-upgradeable

Individual panel monitoring

The following parameters are configurable:
- Panel number
- Panel name
- Nominal input voltage
- Nominal input frequency
- System kVA
- CTs present
- LL or LN input setting
- Main CT ratios
- Calibration of input, output
- Ground and neutral CTs
- Calibration of voltage
- Breaker rating
- Breaker warning level
- Breaker type

Monitored parameters:
- RMS: V1, V2, V3, V12, V23, V13, I1, I2, I3
- Average: Vavg, kW, kVA, PF
- Load: Monthly kWh, yearly kWh, total kWh
- Percentage: I1%, I2%, I3%, I1total%, I2total%, I3total%, I1total% (percent load)
- Max: Vmax, Imax

Main panel board metering alarms:
- Panel or subfeed breaker OL warning, panel or subfeed breaker OL alarm

Branch circuit or subfeed breaker monitoring—up to 42 per panel

User can easily add panel breakers

Individual branch circuit configurables:
- Breaker number, breaker rating, breaker warning level, breaker overload level, breaker type

Monitored parameters:
- Current: RMS and percentage
- Average: kW, kVA, PF
- Load: Monthly kWh, yearly kWh, total kWh
- Max: Amperage, kW
- Min: PF

Individual branch circuit alarms (for each breaker):
- Breaker current warning
- Breaker current overload

Environmental parameters (available via Eaton Power Xpert Gateway 1000 communication card):
- Ambient temperature calculated in metric or standard (°F and °C)
- Ambient humidity (%)

User interfaces:
- Eight-line by 40-character LCD with five soft keys for menu navigation
- Four indicator lamps and alarm horn

Communications:
- Power Xpert Gateway 1000 communications card
- Built-in Web and SMTP server
- Supports ModbusTCP, SNMP and NTP protocols
- (2) Isolated RJ-45 Ethernet ports for redundancy
- DB-9 serial connection for Software Configuration Tool

Environmental and safety:
- Operating temperature: 0°C to 40°C (32°F to 104°F)
- Non-operating temperature: -55°C to 85°C (-67°F to 185°F)
- Relative humidity: 0–95% non-condensing
- Operating altitude: Up to 6,600 ft. (2,000m) above mean sea level
- Non-operating altitude: Up to 40,000 ft. (12,200m) above mean sea level
- Audible noise: <40 dBA, excluding alarms
- EMI: FCC 47, part 15 for Class A devices; CISPR 22/EN 55022 Class A
- Electrostatic discharge (ESD): IEC 61000-4-2 up to 8 kV pulse without damage and no adverse effect to critical load
- Agency marking: UL 61010-1, CSA C22.2 No. 61010-1, CE Mark, IEC 61010-1:2001-02

1. Due to continuing product improvement programs, specifications are subject to change without notice.