Nexus 1250
For Industry and Utilities

Accu-Measure™
Technology

Performance Power Meter
and Power Quality Recorder

Auto-Calibrating
Metrology

• Billing Grade Energy Meter
• Accu-Measure™
  Auto-Calibrating Technology
• DNP 3.0 Serial Communication
• Advanced Power Quality Recorder
• Graphical Touch-Screen Display
• AI Reports Artificial Intelligence
  Power Quality Reporting
• Onboard Rapid Response™
  Ethernet Connectivity (100BaseT)
• Onboard Modem with Dial-Out on Alarm

www.electroind.com

Electro Industries/GaugeTech
The Leader in Power Monitoring and Control
Introduction

From today’s utility giants or Fortune 100 companies, to local electrical municipals, an effective energy management and power monitoring program is critical to success. The Nexus® 1250 meter is the most advanced monitoring product on the market today, providing you with the total picture of energy usage and power quality from any metered point in a power distribution network, allowing you to make power related decisions quickly and effectively.

- Technology specifically designed for Utilities and Industry.
- Real Time power quality monitoring and analysis identifies PQ and reliability events quickly.
- Manage peak demand electrical power usage.
- Report Data Quickly and Reliably using Ethernet or optional onboard modem, featuring Dial-Out/Dial-In capability.
- Also the perfect solution for Circuit Breaker or Transformer Monitoring.
- Using AI Reports, diagnose causes of power quality problems and receive suggested solutions.

High Performance Revenue Metering Features

- Transformer Loss and Line Loss Compensation: For both iron and copper losses.
- Load Aggregation/Universal Metering: Pulse inputs can be used to aggregate or accumulate different loads; utility products, such as gas and water can also be accumulated.
- Time of Use Capability: Bi-directional consumption and demand; 20 year calendar.
- Max/Min Integration and Recording: Time-stamped max and min values for all measured readings.
- Coincidental Readings: Identify number of capacitors needed, peak inefficiencies, etc.
- Password Protection Prevents Unauthorized Tampering: User programmable passwords.
- Predicted Demand: The meter uses rate of change to predict the peak demand of the next demand interval. Perfect for proactive load shedding.
- MV90 Compatibility (Utility meter reading software).

Accu-Measure™ Auto-Calibrating Measurement Technology

EIG’s patented Accu-Measure™ Auto-calibration technology allows a field-mounted metering device to achieve precision accuracy and maintain the accuracy over temperature and time. This technique is unique to EIG and consists of precise measurement technology and high precision internal reference standards.

Accu-Measure™ Technology features:

- Dual High-Powered 16-Bit A/D Converters.
- Dual Internal References for Periodic Auto-calibration.
- Internal temperature sensor to sense deviations in instrument temperature.

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>100 MSEC*</th>
<th>1 SECOND+</th>
<th>DISPLAY RESOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (L-N)</td>
<td>0.1%</td>
<td>0.05%</td>
<td>5 Digit</td>
</tr>
<tr>
<td>Voltage (L-L)</td>
<td>0.1%</td>
<td>0.05%</td>
<td>5 Digit</td>
</tr>
<tr>
<td>Current</td>
<td>0.1%</td>
<td>0.025%</td>
<td>5 Digit</td>
</tr>
<tr>
<td>Frequency</td>
<td>0.03 Hz</td>
<td>0.03 Hz</td>
<td>0.001 Hz</td>
</tr>
<tr>
<td>KW @ Unity PF</td>
<td>0.1%</td>
<td>0.04%</td>
<td>5 Digit</td>
</tr>
<tr>
<td>KW @ .5 PF</td>
<td>0.1%</td>
<td>0.1%</td>
<td>5 Digit</td>
</tr>
<tr>
<td>KVA</td>
<td>0.1%</td>
<td>0.08%</td>
<td>5 Digit</td>
</tr>
<tr>
<td>VAR</td>
<td>0.1%</td>
<td>0.08%</td>
<td>5 Digit</td>
</tr>
<tr>
<td>PF</td>
<td>0.1%</td>
<td>0.06%</td>
<td>3 Digit</td>
</tr>
<tr>
<td>Harmonic Magnitudes</td>
<td>N/A</td>
<td>0.2%</td>
<td>3 Digit</td>
</tr>
<tr>
<td>KW/Hours</td>
<td>N/A</td>
<td>0.04%</td>
<td>16 Digit</td>
</tr>
<tr>
<td>KVA/Hours</td>
<td>N/A</td>
<td>0.08%</td>
<td>16 Digit</td>
</tr>
<tr>
<td>KVAR/Hours</td>
<td>N/A</td>
<td>0.08%</td>
<td>16 Digit</td>
</tr>
</tbody>
</table>

* When high-speed readings are brought through the analog output modules, update time is at approx. 180 msec. for each 2 channels of analog signals.
+ Note: Readings are in percent of reading where applicable (more accurate standard) not in percent of full scale (less accurate standard).
High Resolution Power Quality Recorder

Detailed Power Quality Reporting and Waveform Recording

EIG’s Nexus® 1250 meter is one of the industry’s premier fault and voltage disturbance recorders. This instrument captures a comprehensive picture history of voltage reliability and power quality events within mass memory for detailed and extensive forensic engineering analysis.

- **16 Bit Waveform and Fault Recorder:**
  - Record up to 512 samples/cycle.
  - Voltage and current recording with pre and post-event analysis.
  - Fault recording offers 8 times full scale capture capability.
  - 16 bit A/D converter provides precise waveform resolution.
  - Both hardware and software triggers available.
  - Measure harmonic magnitudes to 255th order for each voltage and current channel.
  - Real time harmonic magnitudes are resolved to the 128th order.
  - Percent THD and K-Factor are calculated.
  - Conduct power quality analysis at the high end of the harmonic magnitude spectrum.

- **High-Speed Status Input Triggers:**
  - Waveforms are recorded at time of status change.
  - Input change and waveform recording are time-stamped to a 1msec resolution.

- **Subcycle Transient Recorder:** Transients often cause intermittent, expensive periods of downtime. The subcycle transient recorder allows you to:
  - Record subcycle transients for voltage and current.
  - Monitor switching noise from capacitors, static transfer switches, SCRs, and other devices that negatively impact power quality.

- **Independent ITIC/CBEMA Log Plotting:**
  - Quickly view total surges, sags, and average duration on the independent ITIC/CBEMA log.

- **Phasor Analysis:**
  - The monitor reads a phase angle analysis between the voltage and current channels, allowing you to analyze efficiency and system integrity.
Extensive On-Board Mass Memory Securely Records All Data

Nexus® 1250 Meter Logging Capability

- **Two historical logs**: Provide advanced historical trending analysis to trend any desired measured parameter.
  - Primary Historical Trending Log File - Log 1: Log any measured parameter from the meter. Either 8, 16, 32, or 64 values can be logged per a user-programmed interval.
  - Secondary Historical Trending Log File - Log 2: Either 8, 16, 32, or 64 values can be logged per a user-programmed interval.

- **Out of Limit Log**: Stores out of limit information to 1 msec resolution to determine a sequence of events for any occurrence. This allows you to assemble an accurate system-wide depiction of a power disturbance.

- **Event-Triggered Waveform Recording Log**:
  - Record waveforms on voltage or current events with a resolution of 512 samples per cycle.
  - Records are recorded and stored using 16 bit resolution.
  - The meter stores both when condition went out of tolerance and when it returned to normal.
  - The length of the record per event is programmable from 12 cycles minimum to thousands of cycles.
  - The Waveform log also stores status of the 8 high speed inputs to provide breaker and relay timing.

- **ITIC/CBEMA Log**: This log records magnitude and duration of voltage and current surges/sags for every power quality event and allows the user to plot the ITIC and CBEMA curve relating to the magnitude and duration of power quality events within the system.

- **Relay Output Log**: This log records when a relay output from the external Output option is activated, timestamps the event, and provides a reason for the relay’s changed status.

- **Input Status Log**: This log records when the meter’s high-speed inputs change status.

### AIReports EXT – PQ Analysis

AIReports EXT provides automated analysis and reports for abnormal events:

- Uses Artificial Intelligence.
- Evaluates All Data from Nexus® Meters.
- Rates Events for Severity.
- Identifies Probable Causes.
- Identifies Possible Impact.
- Recommends Corrective Actions or Solutions.
- Prepares & Formats Reports of All Power Quality Events.
- PQDIF File Format Converter allows Nexus® meter data to be read by standard EPRI Power Quality viewing software.
- COMTRADE File Converter changes fault records to standard fault analysis file formats.

### Log Storage Options

<table>
<thead>
<tr>
<th>Log Storage Options</th>
<th>512K RAM</th>
<th>1 Meg RAM</th>
<th>2 Meg RAM</th>
<th>4 Meg RAM</th>
<th>5 Meg RAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical Log 1</td>
<td>176K</td>
<td>58 Days</td>
<td>288K</td>
<td>96 Days</td>
<td>1808K</td>
</tr>
<tr>
<td>Historical Log 2</td>
<td>256K</td>
<td>42 Days</td>
<td>400K</td>
<td>66 Days</td>
<td>400K</td>
</tr>
<tr>
<td>Out of Limit Log</td>
<td>48K</td>
<td>512</td>
<td>96K</td>
<td>1024</td>
<td>96K</td>
</tr>
<tr>
<td>CBEMA Log</td>
<td>16K</td>
<td>256</td>
<td>64K</td>
<td>1024</td>
<td>64K</td>
</tr>
<tr>
<td>Relay Output Log</td>
<td>N/A</td>
<td>N/A</td>
<td>48K</td>
<td>N/A</td>
<td>32K</td>
</tr>
<tr>
<td>Input Status Log</td>
<td>N/A</td>
<td>N/A</td>
<td>48K</td>
<td>512</td>
<td>32K</td>
</tr>
<tr>
<td>Waveform Recording</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Events</td>
<td>N/A</td>
<td>N/A</td>
<td>1040K</td>
<td>64</td>
<td>1568K</td>
</tr>
</tbody>
</table>

**Note**: Historical Log 1 is calculated recording 8 values every 15 minutes. Historical Log 2 is calculated storing all integrated hour readings every 15 minutes. Every log reading is recorded with exact time stamps.

<table>
<thead>
<tr>
<th>Samples Per Cycle</th>
<th>Number of Cycles Recorded Per Screen</th>
<th>Max. Number of Cycles Recorded Per Event</th>
<th>Number of Channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>8 Pre/6 Post Event Screen</td>
<td>5760</td>
<td>7</td>
</tr>
<tr>
<td>32</td>
<td>4 Pre/28 Post Event Screen</td>
<td>2880</td>
<td>7</td>
</tr>
<tr>
<td>64</td>
<td>4 Pre/12 Post Event Screen</td>
<td>1536</td>
<td>7</td>
</tr>
<tr>
<td>128</td>
<td>1 Pre/7 Post Event Screen</td>
<td>768</td>
<td>7</td>
</tr>
<tr>
<td>256</td>
<td>1 Pre/3 Post Event Screen</td>
<td>384</td>
<td>3</td>
</tr>
<tr>
<td>512</td>
<td>1 Pre/3 Post Event Screen</td>
<td>384</td>
<td>1</td>
</tr>
</tbody>
</table>

Using Artificial Intelligence, Diagnose the Source and Severity of Power Quality Problems
Robust Communication and Output Features

On-Board Communication for Every Application

4 Isolated High-Speed Communication Ports:
- Identical built-in serial ports – Up to 115K baud.
- Standard protocols include Modbus RTU/ASCII and DNP 3.0 Protocol.
- Logs and waveform events available in Modbus format.

8 Built-In Digital High-Speed Status Inputs:
- Inputs automatically sense whether the circuit is externally wetted.
- If externally wetted, input up to 300V DC is accepted.
- If internally wetted, the meter supplies the necessary voltage for the control application.

Sync. Check-Aux. Volt Input: High-speed Vaux input can be used for:
- Neutral to ground.
- Voltage readings.
- Synchronizing schemes.
- Obtaining the frequency, magnitude, and phase angle on both sides of a switch, or between generator and bus voltage.

Rapid Response™ Ethernet:
- INP200 Rapid Response™ Ethernet allows for 12 simultaneous connections of Ethernet Modbus TCP protocol. Rapid Response™ technology insures that the Nexus® meter is optimized to download data as quickly as possible.

Expandable Displays and Outputs

Analog Transducer Signal Outputs:
- 1mAON4/1mAON8: 4 or 8 Analog Outputs, 0-1mA, self-powered, scalable, bidirectional.
- 20mAON4/20mAON8: 4 or 8 Analog Outputs, 4-20mA, self-powered, scalable, bidirectional.

Wiring: Common Mode.
Accuracy: 0.1% of Full Scale.
Calibration: Self-calibrating.
Scaling: Programmable.
Ordering: Up to 4 Analog Output modules for each Nexus® 1250 meter. More than 2 Modules requires an external Power Supply, Model #PSIO.

Digital Dry Contact Relay Outputs:
- 4RO1: 4 Relay Outputs, 5 amps, 125 AC/DC, Form C – Latching Relays.
- Ordering: Up to 4 modules can be used.

Digital Solid State Pulse Outputs:
- 4PO1: 4 Solid State Pulse Outputs, Form A or C KYZ pulses.
- Maximum Pulse Speed: 20 pulses per second.
- Ordering: Up to 4 modules can be used.

Output Module Accessories:
- PSIO: Additional power supply for up to 4 Output modules. Needed when using 3 or more displays and/or Output modules. See manual for specific VA allotments.
- MBIO: Mounting bracket for Output modules. Must be ordered with output module.
The Nexus® meter supports every wiring and configuration. It configures easily for 2, 2 1/2 or 3 element. All wiring and hookup configurations are software configured.
Mounting Information

Contact Electro Industries for different mounting options.

Nexus® Monitor Front View

Nexus® P40N Display Cutout Pattern

Nexus® P40N Display Front View

Nexus® P40N Display Side View

Nexus® P60N Touch-Screen Display Front and Side View

Aperture is 4.763" x 3.583" (12.1 x 9.1cm)
Pixel Matrix (320 x240) is 11.5 x 8.6cm

4-40 screws, 8x

Nexus® Monitor Side View

Mounting Bracket

Nexus® Output Modules Front View
**Specifications**

**Input Voltage Range**
- 150 Volt PH-N, 300V PH-PH (Suffix-120)
  - (Used with 5Ts for Extended Range)
- 300 Volt PH-N, 600 Volt PH-PH (Suffix-G)

**Voltage Input withstand Capability**
- Voltage Inputs optically isolated to 2500V DC.
- Meets ANSI C37.90.1 (Surge Withstand Capability)

**Current Rating**
- 5 Amp Inputs 2x continuous programmable to any CT range.
- Fault Current recording to 60 Amps peak secondary based on 5 Amp full scale.

**Note:** 1 Amp and 0.25 Amp current inputs secondary based on 5 Amp full scale.
- Any current input secondary based on 5 Amp full scale.
- The 5 Amp full scale is 20 Amps for 1 Second.
- 5 Amp Inputs 2x continuous programmable to any CT range.
- 1 Amp — Revenue Accurate Reading.

**Temperature Rating**
- Operating Temperature: (-40 to +80) °C
- Humidity: Up to 95% Noncondensing

**Input Current**
- 0.005VA Max
- 0.05VA Max

**Voltage Inputs**
- 300 Volt PH-N, 600 Volt PH-PH (Suffix-G)

**Flicker Measurement**
- IEC 868 — Flicker Meter
- IEC 1000-4-3 — Radiated Immunity
- ANSI/IEEE C62.41 — Surge
- ANSI C37.90.1 — Surge Withstand
- ANSI C12.20 — Revenue Metering

**Mounting**
- 120, Nexus® 1250 Monitor
- 18-60V DC
- 1800 Shames Drive, Westbury, NY 11590
- Tel: 1-877-EIMETER (1-877-346-3637)
- Email: sales@electroind.com
- Website: www.electroind.com

**Ordering Information**

**Example:**

**Options:**

**Nexus1250-2Meg-120-D2-60Hz-V1-INP200-P4ON1-mAON4-MBIO-COMEXT3.1C**

This equates to a Nexus® 1250 Monitor with 2Meg memory, an operating voltage of 120, a 90-276 Volts AC/DC power supply, a 60 Hz frequency, V1, an internal 10/100BaseT Ethernet port, a multifunction LED display, a 0-1mA Output module, mounting bracket and one site license for Communicator EXT 3.0 software.

**Ordering Specifications**

<table>
<thead>
<tr>
<th>Option Numbers:</th>
<th>Nexus Base</th>
<th>Memory Options</th>
<th>Operation Voltages</th>
<th>Control Power</th>
<th>Frequency Range</th>
<th>V-Switch Pack</th>
<th>Internal Expansion Port Options</th>
<th>Standards Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: Nexus 1250</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nexus 1250</td>
<td>512k</td>
<td>120</td>
<td>D</td>
<td>-</td>
<td>60 Hz</td>
<td>V1</td>
<td>No Expansion Port</td>
<td>X</td>
</tr>
<tr>
<td>2Meg</td>
<td>300 Volt PH-N, 600 Volt PH-PH</td>
<td>90-276 Volts AC/DC Power Supply</td>
<td>D2</td>
<td>-</td>
<td>50 Hz</td>
<td>INP2</td>
<td>10/100 BaseT</td>
<td>ICR</td>
</tr>
<tr>
<td>4Meg</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Accessories**

**Software**
- Communicator EXT 3.0 for Windows® Single-Computer License (One Site) — DISEXT.1C
- Communicator EXT 3.0 for Windows® Multiple-Computer License (One Site) — DISEXT.MC
- AiReports EXT Power Analysis Software for Windows® Single-Computer License (One Site) — P60N
- Multiple-Computer License (One Site) — P40N

**Displays**
- Graphical LCD Touch-Screen Display — Multi-Function LED Display

**Electro Industries/GaugeTech**

The Leader in Power Monitoring and Control