Introduction

Electro Industries introduces our industry leading revenue grade power meter with native BACnet / IP protocol. This meter is designed to integrate seamlessly into existing and new building management systems using the popular BACnet protocol. Available as either a meter or a transducer, the unit allows users to gather data on voltage, current, power and energy usage throughout a facility.

The Shark® 100B was designed to be the perfect device for “Green” initiatives, LEED certified projects, smart buildings and all kinds of smart energy projects. The Shark® 100B’s metrology is industry recognized as superior, providing revenue testable 0.2% Energy accuracy with compliance to modern ANSI and IEC accuracy standards. The unit utilizes advanced DSP technology, high sampling rates and 24 bit analog to digital conversion to measure and analyze power accurately and reliably.

Features

- Multifunction Measurements of AC Voltage, Current, Power and Energy
- Industry Recognized Superior 0.2% Energy Class Accuracy
- BACnet / IP 100BaseT Ethernet Protocol
- Available in Meter or Transducer Version
- Highly Reliable Industrial Rated Design

Applications

- LEED Projects
- Smart Buildings
- Commercial Energy Management
- HVAC Efficiency Monitoring
- Building Management Systems

Bi-Directional, Highly Accurate Energy Measurements Perfect for Alternative Energy
The Shark® 100B meter’s readings can also be viewed and analyzed using Communicator EXT™ software which lets you program the meter and view real-time readings remotely.

### BACnet Objects

<table>
<thead>
<tr>
<th>Volts A-N</th>
<th>VARh Net</th>
<th>Positive Watts, 3-Phase, Average Demand</th>
<th>Volts, A-N %THD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volts B-N</td>
<td>kWArh Net</td>
<td>Positive kWatts, 3-Phase, Average Demand</td>
<td>Volts, B-N %THD</td>
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<tr>
<td>Volts C-N</td>
<td>Frequency</td>
<td>Positive VARs, 3-Phase, Average Demand</td>
<td>Volts, C-N %THD</td>
</tr>
<tr>
<td>Volts A-B</td>
<td>Neutral</td>
<td>Positive kVARs, 3-Phase, Average Demand</td>
<td>Amps, A %THD</td>
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<tr>
<td>Volts B-C</td>
<td>Current</td>
<td>Negative Watts, 3-Phase, Average Demand</td>
<td>Amps, B %THD</td>
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<tr>
<td>Volts C-A</td>
<td>Whr Received</td>
<td>Negative kWatts, 3-Phase, Average Demand</td>
<td>Amps, C %THD</td>
</tr>
<tr>
<td>Amps A</td>
<td>kWWh Received</td>
<td>Negative VARs, 3-Phase, Average Demand</td>
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</tr>
<tr>
<td>Amps B</td>
<td>Whr Delivered</td>
<td>Negative kVARs, 3-Phase, Average Demand</td>
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</tr>
<tr>
<td>Amps C</td>
<td>kWWh Delivered</td>
<td>Positive VARs, 3-Phase, Max Average Demand</td>
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</tr>
<tr>
<td>Total Watts</td>
<td>Whr Net</td>
<td>Positive kVARs, 3-Phase, Max Average Demand</td>
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</tr>
<tr>
<td>Total kWh</td>
<td>kWWh Net</td>
<td>Negative Watts, 3-Phase, Max Average Demand</td>
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</tr>
<tr>
<td>Total kVARs</td>
<td>Total Whr</td>
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<tr>
<td>Total VA</td>
<td>Positive VARh</td>
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<tr>
<td>Total kVA</td>
<td>Positive kVARh</td>
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<tr>
<td>Total PF</td>
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<td>Total Wh</td>
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<td>VAs, 3-Phase, Average Demand</td>
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<td>Total VARh</td>
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</tr>
<tr>
<td>Total kVARh</td>
<td>Total kWhr</td>
<td>VAs, 3-Phase, Average Demand</td>
<td></td>
</tr>
</tbody>
</table>

### Measured Parameters

| Voltage L-N | 0.1% | 0-9999 Scalable V or kV |
| Voltage L-L | 0.1% | 0-9999 V or kV Scalable |
| Current     | 0.1% | 0-9999 Amps or kAmps |
| +/- Watts   | 0.2% | 0-9999 Watts, kWatts, MWatts |
| +/- Wh      | 0.2% | 5 to 8 Digits Programmable |
| +/- VARs    | 1.0% | 0-9999 VARs, kVARs, MVARs |
| +/- VARh    | 1.0% | 5 to 8 Digits Programmable |
| VA          | 1.0% | 0-9999 VA, kVA, MVA |
| VAh         | 1.0% | 5 to 8 Digits Programmable |
| PF          | 0.2% | +/- 0.2 to 1.0 |
| Frequency   | +/- 0.01 Hz | 45 to 65 Hz |
| %THD        | 5.0% | 0 to 100% |
| % Load Bar  | 1-120% | 10 Digit Resolution Scalable |

Note: Typical results are more accurate. Applies to 3 Element WYE and 2 Element Delta Connections. Add 0.1% of Full Scale plus 1 digit to Accuracy specs for 2.5 Element connections.

The Shark® 100B meter supports building energy management strategies, LEED certification and other Green Building initiatives. By letting you track energy use and power quality from wherever you are, the meter gives you the information you need to accurately identify cost-saving measures and respond to power quality problems when they arise.

### Shark® 100B BACnet / IP Through the Web

The Shark® 100B meter’s BACnet / IP comes standard with a Web interface. Use the BACnet / IP Interface to remotely set up the BACnet / IP configuration and track energy usage through the Internet with any standard Web browser. You do not need to be on-site - you can check on your buildings from anywhere in the world! There is also a Modbus TCP Socket that can be used to simultaneously poll Modbus TCP through the same device.
Traceable Watt-Hour Test Pulse for Accuracy Verification
The Shark® 100B device is a traceable revenue meter. It contains a utility grade test pulse allowing power providers to verify and confirm that the meter is performing to its rated accuracy. This is an essential feature required of all billing grade meters.

Additional Features Include:
- Utility Block and Rolling Average Demand
- Adjustable Demand Profiles
- Max and Min Available on Most Other Parameters
- Voltage Provides Instantaneous Max and Min for Surge and Sag Limits

Front Mounted IrDA Communication
Uniquely, the Shark® 100B meter also has an optical IrDA port, allowing the unit to be set up and programmed using a remote laptop PC without the need for a communication cable.

To configure the meter, just point at it with an IrDA-equipped PC.

Wireless IrDA Communication
- BACnet / IP
- Modbus TCP
- HTTP Web Server

Wiring Diagrams

3 Phase, 4 wire WYE Direct

3 Phase, 4 wire WYE with PTs

3 Phase, 3 wire Delta Direct

3 Phase, 3 wire Delta with PTs
**Specifications**

**Voltage Inputs**
- 20-416 Volts Line To Neutral, 20-721 Volts Line to Line
- Universal Voltage Input
- Universal Voltage Input – Meets IEEE C37.90.1 (Surge Withstand Capability)
- Programmable Voltage Range to any PT ratio
- Supports: 3 Element WYE, 2.5 Element WYE, 2 Element Delta, 4 Wire Delta Systems
- Burden: 0.36VA per phase max at 600V, 0.014VA at 120 Volts
- Input wire gauge max (AWG 12 / 2.5mm²)

**Current Inputs**
- Class 10: (0 to 10) A, 5 Amp Nominal
- Class 2: (0 to 2) A, 1A Nominal Secondary
- Fault Current Withstand: 100 Amps for 10 Seconds 300 Amps for 3 Seconds 500 Amps for 1 Second
- Programmable Current to any CT Ratio

**Environmental Rating**
- Storage: (-20 to +70)° C
- Operating: (-20 to +70)° C
- Humidity: to 95% RH Non-Condensing

**Faceplate Rating:**
- NEMA12 (Water Resistant)
- Mounting Gasket Included

**Power Supply**
- Option D2: (90-265) Volts AC and (100-370) Volts DC
- Universal AC/DC Supply

**Communication Format**
- 2 Com Ports (Back and Faceplate)
- BACnet / IP Ethernet (Through Backplate)
- IrDA (Through Faceplate)
- Modbus TCP

**Sensing Method**
- RMS
- Sampling at 400+ Samples per Cycle on all channels measured simultaneously
- Harmonic %THD (% of Total Harmonic Distortion)

**Update Rate**
- Watts, VAR and VA-100msec
- All other parameters-1 second

**Communication Format**
- Baud Rate: 576k baud
- Type Form A
- On Resistance: 23-35 Ohm
- Peak Voltage: 350 VDC
- Continuous Load Current: 120 mA
- Peak Load Current: 350mA (10ms)
- Off State Leakage Current: 350VDC: 1 mA
- Opto-Isolation: 3750V (60Hz, 1min)

**Dimensions and Shipping**
- Weight: 2 lbs
- Basic Unit: H4.85 x W4.85 x L4.25
- Shark® 100B – mounts in 92mm DIN and ANSI C39.1 4” round cut-outs
- Shark® 100BT-DIN rail mounted transducer
- Shipping Container Dimensions: 6” cube

**Meter Accuracy**
- See page 2

**Compliance:**
- IEC 62053-22 (Class 0.2S)
- ANSI C12.20 (0.2% Accuracy Class)
- ANSI (IEEE) C37.90.1 Surge Withstand
- ANSI C62.41 (Burst)
- EN 61000-6-2 – Immunity for Industrial Environments: 2005
- EN 61000-6-4 – Emission Standards for Industrial Environments: 2007
- EN 61326-1 - EMC Requirements: 2006
- Certified to UL 61010-1 and CSA C22.2 No. 61010-1, UL File: E250818
- REACH Compliant
- RoHS Compliant

**Ordering Information:**

<table>
<thead>
<tr>
<th>Model</th>
<th>Frequency</th>
<th>Current Class</th>
<th>Power Supply</th>
<th>Mounting (Shark100B Only)</th>
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<td>D2</td>
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<td>(Meter/Transducer)</td>
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<td></td>
</tr>
<tr>
<td>Shark100BT</td>
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<td>10</td>
<td>D</td>
<td>X</td>
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<tr>
<td>(Transducer Only)</td>
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</tbody>
</table>

**Ordering Information:** To order, please fill out ordering guide:

**Communication Converters**
- CAB6490 - USB to IrDA Adapter

**Compliance Documents**
- Certificate of Calibration, Part # CCal – This provides Certificate of Calibration with NIST traceable Test Data.