

Shark[®] 50B/100B

**BACNET COMMUNICATING
MULTIFUNCTION POWER METERS**



**Shark[®] 50B
Power Meter/Transducer**



**Shark[®] 100B
Power Meter/Transducer**

The Shark[®] 100B also offers a Transducer only option.

Introduction

Electro Industries introduces our industry-leading revenue grade power meter with native BACnet protocol. This meter is designed to integrate seamlessly into existing and new building management systems that use BACnet. Available as either a meter or a transducer (100BT), the unit allows you to gather data on voltage, current, power, and energy usage throughout a facility.

The Shark[®] 50B/100B was designed to be the perfect device for “green” initiatives, LEED certified projects, smart buildings, and other smart energy projects. The Shark[®] 50B/100B’s metrology is industry recognized as superior, providing revenue testable 0.2% (100B) / 0.5% (50B) energy accuracy with compliance to 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 Voltage, Current, Power and Energy
- Industry Recognized Superior 0.2% (100B) / 0.5% (50B) Energy Class Accuracy
- BACnet/IP and Modbus TCP/IP Ethernet (100B); BACnet MS/TP Serial and Modbus TCP/IP Ethernet (50B)
- Available in Meter or Transducer Version (100BT)
- Highly Reliable Industrial Rated Design

Applications

- LEED Projects
- Alternative Energy Monitoring
- Commercial Energy Management
- HVAC Efficiency Monitoring
- Building Management Systems



Shark® 50B/100B with BACnet: the “Green” Choice

The Shark® 50B/100B meter with BACnet MS/TP or BACnet/IP 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. The meter’s readings can also be viewed and analyzed using CommunicatorPQA® software, which lets you program the meter and view real time readings remotely.

Additional Features Include

- 100B: BACnet/IP, Modbus TCP/IP, IrDA
- 50B: BACnet MS/TP, Modbus TCP/IP
- Both meters support an embedded web server.

BACnet Objects		
Volts A-N	kVARh Net	Negative VARs, 3-Phase, Average Demand
Volts B-N	Frequency	Negative kVARs, 3-Phase, Average Demand
Volts C-N	Neutral Current	Positive VARs, 3-Phase, Max Average Demand
Volts A-B	Whr Received	Positive kVARs, 3-Phase, Max Average Demand
Volts B-C	kWhr Received	Negative Watts, 3-Phase, Max Average Demand
Volts C-A	Whr Delivered	Negative kWatts, 3-Phase, Max Average Demand
Amps A	kWhr Delivered	Negative VARs, 3-Phase, Max Average Demand
Amps B	Whr Net	Negative kVARs, 3-Phase, Max Average Demand
Amps C	kWhr Net	Positive Watts, 3-Phase, Max Average Demand
Total Watts	Total Whr	Positive kWatts, 3-Phase, Max Average Demand
Total kWatts	Total kWhr	VAS, 3-Phase, Average Demand
Total VARs	Positive VARh	kVAs, 3-Phase, Average Demand
Total kVARs	Positive kVARh	VAS, 3-Phase, Max Average Demand
Total VA	Negative VARh	Volts, A-N THD*
Total kVA	Negative kVARh	Volts, B-N THD*
Total PF	Positive Watts, 3-Phase, Average Demand	Volts, C-N THD*
Total VAh	Positive kWatts, 3-Phase, Average Demand	Amps, A THD*
Total kVAh	Positive VARs, 3-Phase, Average Demand	Amps, B THD*
Total VARh	Positive kVARs, 3-Phase, Average Demand	Amps, C THD*
Total kVARh	Negative Watts, 3-Phase, Average Demand	
VARh Net	Negative kWatts, 3-Phase, Average Demand	

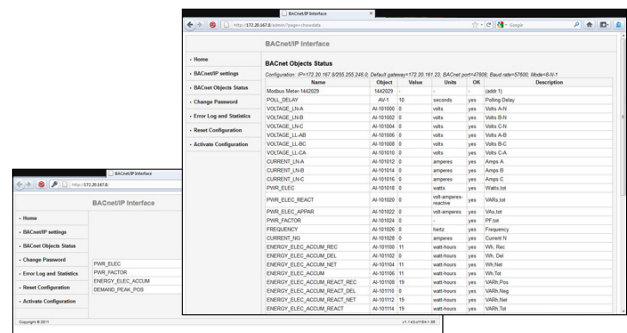
Note: Pre-defined objects in the Shark® meters’ BACnet protocol. *These values are only for the 100B/100BT meter.

Measured Parameters	Accuracy % of Reading		Display Range
	100B	50B	
Voltage L-N	0.1%	0.2%	0-9999 Scalable V or kV
Voltage L-L	0.1%	0.4%	0-9999 V or kV Scalable
Current Phase	0.1%	0.2%	0-9999 A or kA
+/- Watts	0.2%	0.5%	0-9999 Watts, kWatts, MWatts
+/- Wh	0.2%	0.5%	5 to 8 Digits Programmable
+/- VARs	1.0%	1.0%	0-9999 VARs, kVARs, MVARs
+/- VARh	1.0%	1.0%	5 to 8 Digits Programmable
VA	1.0%	1.0%	0-9999 VA, kVA, MVA
VAh	1.0%	1.0%	5 to 8 Digits Programmable
PF	0.2%	1.0%	+/- 0.2 to 1.0
Frequency	+/- 0.01 Hz	+/- 0.01 Hz	45 to 65 Hz
THD	5.0%	N/A	0 to 100%
% of Load Bar	1-120%	1-120%	10 Digit Resolution Scalable

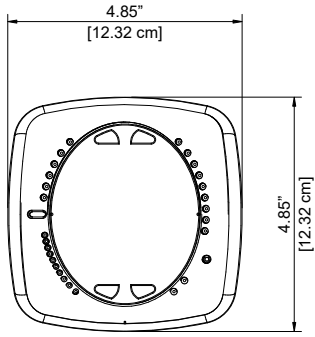
Note: Typical results are more accurate. Applies to 3 Element WYE and 2 Element Delta Connections. Add 0.1% of Full Scale plus 1 digit to Accuracy specs for 2.5 Element connections.

Shark® 50B/100B BACnet Through the Web

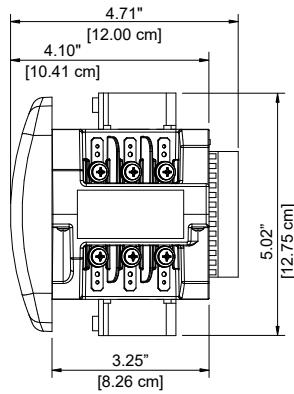
The Shark® 50B/100B meter’s BACnet comes standard with a web interface. Use the interface to remotely set up the BACnet configuration and track energy usage through the Internet with any standard web browser. You do not need to be onsite; you can check on your buildings from anywhere in the world! There is also a Modbus TCP/IP socket that can be used to simultaneously poll Modbus TCP/IP through the same device.



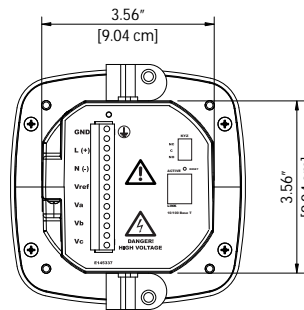
Dimensional Drawings



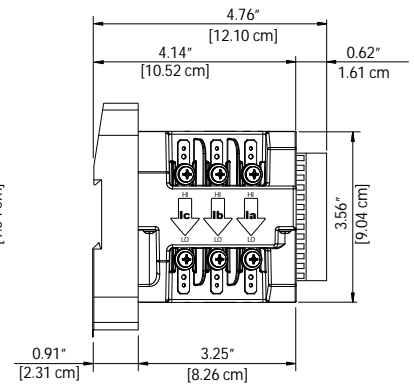
**SHARK® 50B/100B METER
FRONT DIMENSIONS**



**SHARK® 50B/100B METER
SIDE DIMENSIONS**

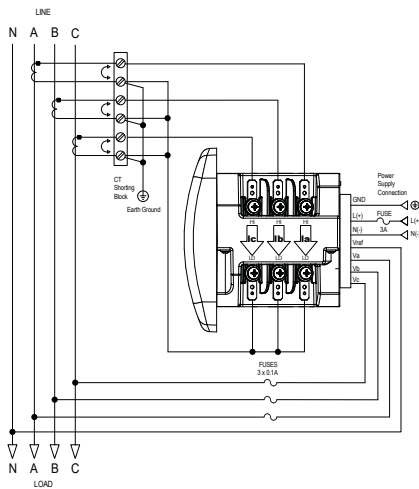


**SHARK® 50B/100B METER
REAR DIMENSIONS**

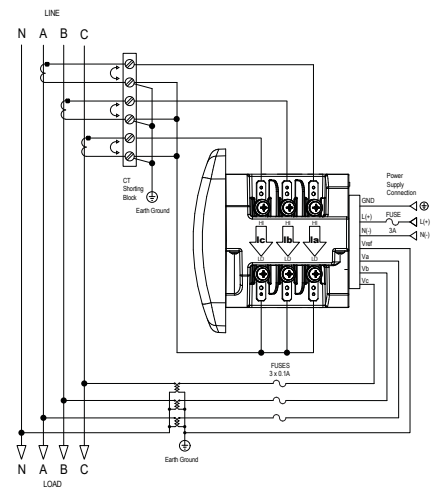


**SHARK® 100BT SIDE
DIMENSIONS**

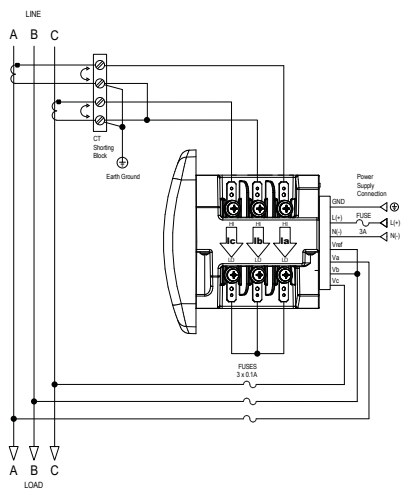
Wiring Diagrams



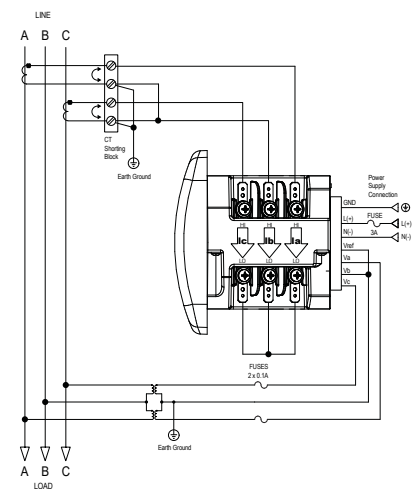
3 PHASE, 4 WIRE WYE DIRECT



3 PHASE, 4 WIRE WYE WITH PTS



3 PHASE, 3 WIRE DELTA DIRECT



3 PHASE, 3 WIRE DELTA WITH PTS

Voltage Inputs

- Absolute Range: (20-416) Volts Line to Neutral, (0-721) Volts Line to Line
- Universal Voltage Input
- Input Withstand Capability – 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: 0.36 VA per phase max at 600 V, 0.014 VA at 120 V
- Input wire gauge max (AWG 12 / 2.5 mm²)

Current Inputs

- Class 10: (0.005 to 10) A, 5 A Nominal CT Secondary
- Class 2: (0.001 to 2) A, 1A Nominal CT Secondary
- Fault Current Withstand (at 23 °C): 100 A for 10 Seconds, 300 A for 3 Seconds, 500 A for 1 Second
- Programmable Current to Any CT Ratio
- Burden 0.005 VA per phase max at 11 A
- 5 mA Pickup Current
- Pass through wire gauge dimension: 0.177" / 4.5 mm
- Continuous current withstand: 20 A for screw terminated or pass through current connections

Isolation

- All Inputs and Outputs are galvanically isolated to 2500 V AC.

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

- Protection: IP30 - Meter Front/Back, Optional DIN Rail Mounting

Sensing Method

- RMS
- Sampling at 400+ samples per cycle on all channels measured readings simultaneously
- Harmonic THD (% of Total Harmonic Distortion - 100B)

Update Rate

- Watts, VAR, and VA-100 ms (100B only)
- All Other Parameters up to One Second

Power Supply

- Option D2: (90 to 265) Volts AC @ 50/60 Hz or (100 to 370) Volts DC, Universal AC/DC Supply/5 VA Max
- Option D (100B only): (18-60) V DC/3.5 W Max

Communication Format (Optional)

- 2 Com Ports (Back and Faceplate)
- BACnet / IP (100B); BACnet MS/TP (50B)
- IrDA (through Faceplate)
- Modbus TCP/IP
- Baud Rate: 57.6k baud

KYZ Pulse

- Type Form A
- On Resistance: (25-35) Ω
- Peak Voltage: 350 V DC
- Continuous Load Current: 120 mA
- Peak Load Current: 350 mA (10 ms)
- Off State Leakage Current @ 350 V DC: 1 mA
- Opto-Isolation: 3750 V AC (60 Hz, 1 min)

Dimensions and Shipping

- Weight: 2 lbs

- Basic Unit: (H4.85 x W4.85 x L4.25) in.
- Shark® 50B/100B – mounts in 96 mm DIN and ANSI C39.1 4" round cutouts
- Shark® 100BT-DIN rail mounted transducer
- Shipping Container Dimensions: 6" cube

Meter Accuracy

- See page 2.

Compliance

- ANSI C12.20-2010 Accuracy, Class 0.2 CL - 100B; 0.5 CL - 50B
- IEC 62053-22 Accuracy, Class 0.2S-100B; 0.5S-50B *
- IEC 62053-23 Edition 1 Class 2
- CE (IEC 61000-6-2 & IEC 61000-6-4 & IEC 61326-1)*
 - IEC 61000-4-2 (Electrostatic Discharge)*
 - IEC 61000-4-3 (Radiated EM Immunity)*
 - IEC 61000-4-4 (EFT)*
 - IEC 61000-4-5 (Surge Immunity)*
 - IEC 61000-4-6 (Conducted Immunity)*
 - IEC 61000-4-8 (Magnetic Immunity)*
 - IEC 61000-4-11 (Voltage Variations Immunity)*
 - IEC/CISPR 11, Class A (Conducted, Radiated Emissions)*
- IEEE C37.90.1 (Surge Withstand)
- IEEE C62.41 (Surge Immunity)
- EU Directive 2011/65/EU (RoHS 3 Directive)
- REACH Compliant
- Certified to UL 61010-1 and CSA C22.2 No. 61010-1, UL File: E250818

* Third party lab tested

Ordering Information - All fields must be filled in to create a valid part number.

	Model	Frequency	Current Class	Power Supply	Mounting (Shark100B Only)
Option Numbers:	-	-	-	-	-
Example:	Shark100B	60	10	D2	X
	Shark100B (Meter/Transducer)	50 50 Hz System	10 5 A Nominal CT Secondary	D2 (90-265) V AC or (100-370) V DC	X ANSI Mounting
	Shark100BT (Transducer Only)	60 60 Hz System	2 1 A Nominal CT Secondary	D (18-60) V DC	DIN DIN Mounting Brackets (Euro Mounting)

Ordering Information - All fields must be filled in to create a valid part number.

	Model	Mounting
Option Numbers:	-	-
Example:	Shark50B	X
	Shark50B (Meter/Transducer)	X ANSI Mounting
		DIN DIN Mounting Brackets (Euro Mounting)

Additional Accessories - Contact EIG for available CTs, shunting blocks, and fuses.

Communication Converters		Compliance Documents	
CAB6490	RS485 to RS232 Converter	Certificate of Calibration, Part # CCal	This provides Certificate of Calibration with NIST traceable test data.

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