SHARK®100B
BACNET / IP COMMUNICATING MULTIFUNCTION POWER METER

BACnet / IP for Building Automation Systems

Shark®100BT Transducer Only

Shark®100B Power Meter/Transducer

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

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.

Bi-Directional, Highly Accurate Energy Measurements Perfect for Alternative Energy

Electro Industries/GaugeTech
The Leader in Power Monitoring and Smart Grid Solutions

Shark® 100B with BACnet: the "Green" Choice

The Shark® 100B meter with 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 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		
Volts A-N	Whr Received	Volts, C-N %THD
Volts B-N	Whr Delivered	Amps, A %THD
Volts C-N	Whr Net	Amps, B %THD
Volts A-B	Total Whr	Amps, C %THD
Volts B-C	Positive VARh	
Volts C-A	Negative VARh	
Amps A	Positive Watts, 3-Phase, Average Demand	
Amps B	Positive VARS 3-Phase, Average Demand	
Amps C	Negative Watts, 3-Phase, Average Demand	
Total Watts	Negative VARs, 3-Phase, Average Demand	
Total VARs	Positive VARS 3-Phase, Max Average Demand	
Total VA	Negative Watts, 3-Phase, Max Average Demand	
Total PF	Negative VARs, 3-Phase, Max Average Demand	
Total VAh	Positive Watts 3-Phase, Max Average Demand	
Total VARh	VAs, 3-Phase, Average Demand	
VARh Net	VAs, 3-Phase, Max Average Demand	
Frequency	Volts, A-N %THD	
Neutral Current	Volts, B-N %THD	

The 40 pre-defined objects in the Shark® 100B meter's BACnet IP protocol

Measured Parameters	Accuracy % of Reading	Display Range
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	0.2%	0-9999 VARs, kVARs, MVARs
+/-VARh	0.2%	5 to 8 Digits Programmable
VA	0.2%	0-9999 VA, kVA, MVA
VAh	0.2%	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.

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.
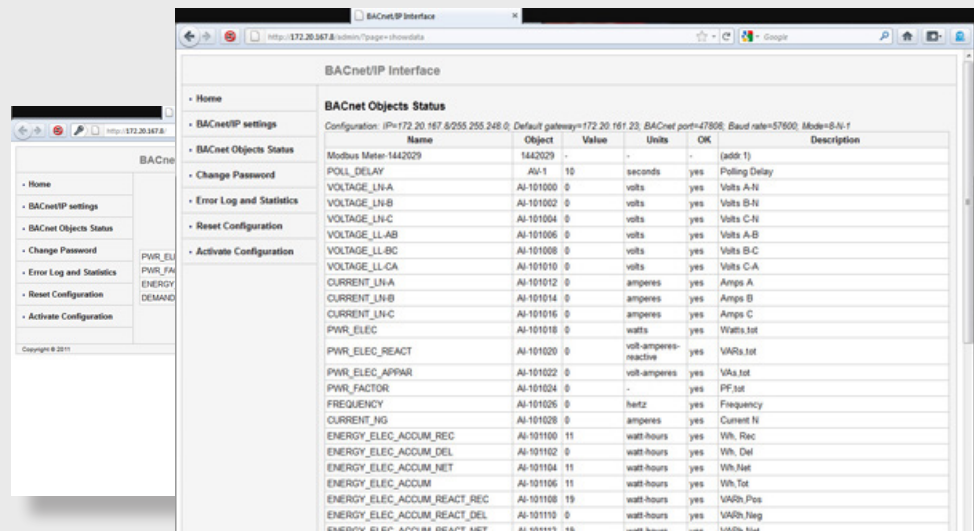
Traceable Watt-Hour Test Pulse for Accuracy Verification

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
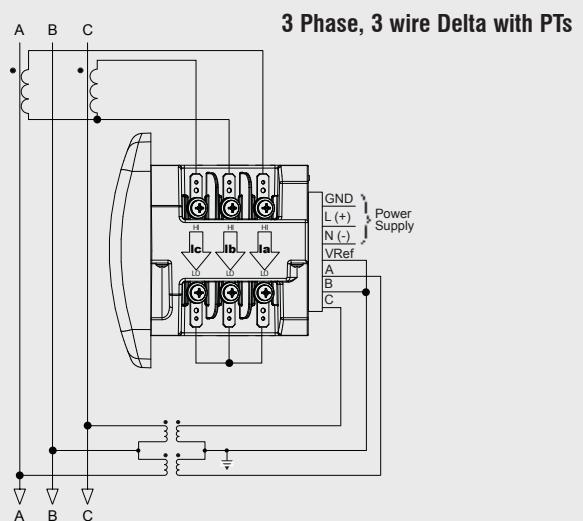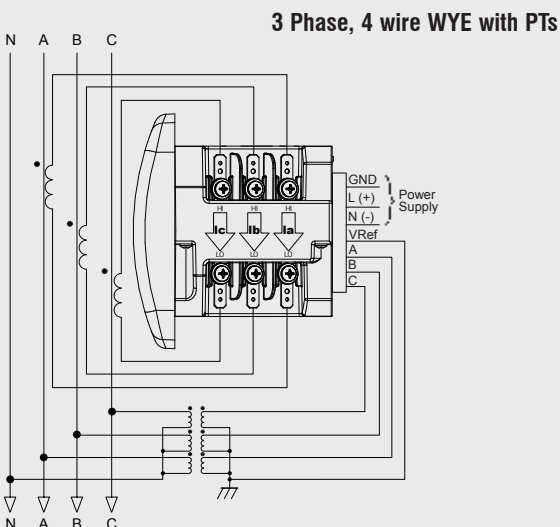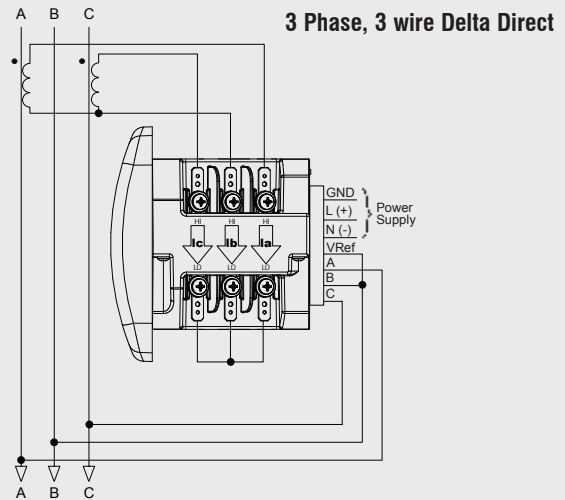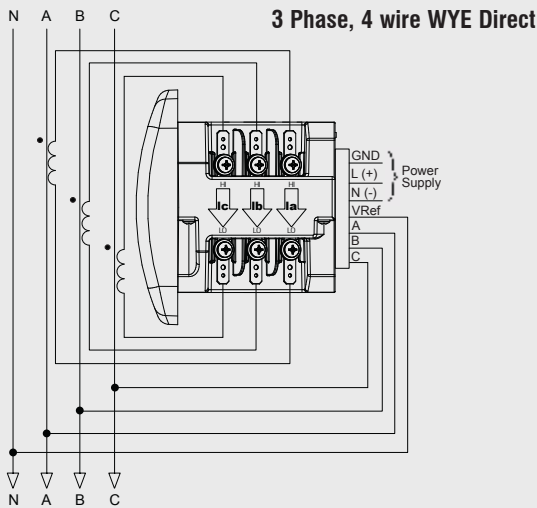- Voltage Provides Instantaneous Max and Min for Surge and Sag Limits

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, 3 wire Delta Direct

3 Phase, 4 wire WYE with PTs

3 Phase, 3 wire Delta with PTs

Dimensional Drawings

FRONT VIEW

4.85" [12.32cm]
4.85" [12.32cm]

SIDE VIEW

4.71" [12.00cm]
4.10" [10.41cm]
5.02" [12.75cm]
3.25" [8.26cm]

REAR VIEW

3.56" [9.04cm]
3.56" [9.04cm]

GND
L (+)
N (-)
Vref
Va
Vb
Vc
DANGER! HIGH VOLTAGE

TRANSDUCER

4.76" [12.10cm]
4.14" [10.52cm]
0.62" 1.61cm
3.56" [9.04cm]
0.91" [2.31cm]
3.25" [8.26cm]
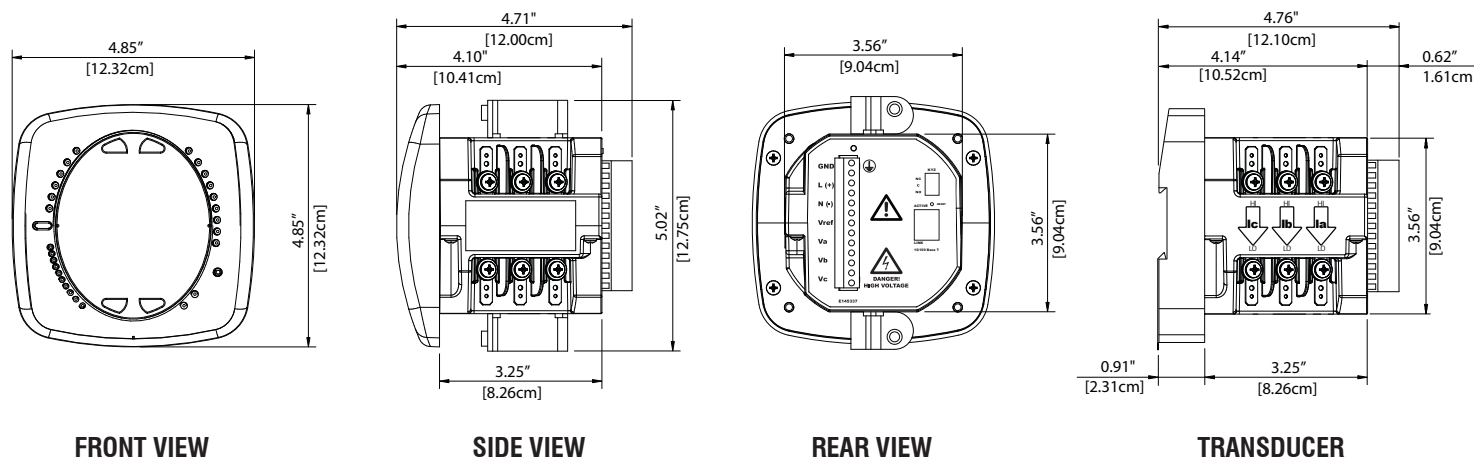
Specifications

Voltage Inputs
- 20-416 Volts Line To Neutral, 20-721 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: 0.36VA per phase Max at 600V, 0.014VA at 120 Volts
- Input wire gauge max (AWG 12 / 2.5mm^2)

Current Inputs
- Class 10: (0 to 10) A, 5 Amp Nominal
- Class 2: (0 to 2) A, 1A Nominal Secondary
- Fault Current Withstand (at 23°C): 100 Amps for 10 Seconds 300 Amps for 3 Seconds 500 Amps for 1 Second
- Programmable Current to Any CT Ratio

- Burden 0.005VA per phase Max at 11Amps
- 5mA Pickup Current
- Pass through wire gauge dimension: 0.177" / 4.5mm
- Continuous current withstand: 20 amps for screw terminated or pass through current connections

Isolation
All Inputs and Outputs are galvanically isolated to 2500 Volts 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

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

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

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

Option D:
- 18-60VDC

Burden: 10VA max.

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

- Baud Rate: 57.6k baud

KYZ Pulse
- Type Form A
- On Resistance: 23-35 Ohm
- Peak Voltage: 350 VDC
- Continuous Load Current: 120 mA
- Peak Load Current: 350mA (10ms)
- Off Stat 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:
- IEC62053-22 (0.2% Accuracy)
- ANSI C12.20 (0.2% Accuracy)
- ANSI (IEEE) C37.90.1 Surge Withstand
- ANSI C62.41 (Burst)
- EN61000-6-2 – Immunity for Industrial Environments: 2005
- EN61000-6-4 – Emission Standards for Industrial Environments: 2007
- EN61326-1 - EMC Requirements: 2006
- UL Listed Product

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

	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 Amp Secondary	**D2** (90-265)VAC or (100-370)VDC	**X** ANSI Mounting
	Shark100BT *(Transducer Only)*	**60** 60 Hz System	**2** 1 Amp Secondary	**D** 18-60V DC	**DIN** DIN Mounting Brackets (Euro Mounting)

Additional Accessories

Communication Converters
CAB6490 - USB to IrDA Adapter

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