

SHARK® 50

MULTIFUNCTION ELECTRICAL POWER METER



Shark® 50 Meter

Features

- 0.5% Class Accuracy
- Measurements Including Voltage, Current, Power, Frequency, Energy, Etc.
- Optional RS485 with Modbus Protocol
- Large Bright Red LED Display
- % of Load Bar for Analog Meter Perception
- Fits Both ANSI and DIN Cut-outs
- Great For Retrofit and New Applications
- Uses Minimal Panel Space and Depth

Applications

- Commercial Metering
- Industrial Metering
- Power Generation
- Campus Metering
- Submetering
- Indication Meter Replacement

Introduction

Electro Industries introduces an affordable 0.5% Class electrical panel meter. Utilizing bright and large 0.56" LED displays, this unit is designed to be installed in electrical panels and switchgear. The Shark® 50 meter includes a unique anti-dither algorithm to improve reading stability, benefiting

operators. The unit utilizes high speed DSP technology with high resolution A/D conversion to provide stable and reliable measurements. The Shark® 50 meter is easy to use and install and is perfect for new metering applications and as a simple replacement of existing analog meters.

The Economical Meter for the OEM

SHARK® 50 METER

Superior Accuracy and Virtual Upgrade Switches

V-SWITCH™ Technology

The Shark® 50 meter is equipped with EIG's exclusive V-SWITCH™ technology. This technology allows users to upgrade and add features as needed by using communication commands, even after the meter is installed. This allows a user to purchase an economical solution and add functionality as needed.

Note: You must purchase the Com port option to upgrade V-Switch™ keys.

Available V-Switches:

- V-Switch 1 – Voltage and Current Meter – Default
- V-Switch 2 – V, A, kW, kVAR, PF, kVA, Freq
- V-Switch 3 – V, A, kW, kVAR, PF, kVA, Freq, kWh, kVAh, kVARh

METER ACCURACY BY MEASURED PARAMETERS		
Measured Parameters	Accuracy % of Reading	Display Range
Voltage L-N	0.2%	0-9999 V or kV
Voltage L-L	0.4%	0-9999 V or kV Scalable
Current	0.2%	0-9999 A or kA
+/- Watts	0.5%	0-9999 Watts, kWatts, MWatts
+/-Wh	0.5%	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	1.0%	+/- 0.5 to 1.0
Frequency	+/- 0.01 Hz	45 to 65 Hz
% Load Bar	1 - 120%	10 Segment Resolution

NOTE: Typical results are more accurate. Accuracy stated for WYE and Delta connections. For 2.5 element connections, add 0.1% of Full Scale + 1 digit to accuracy specification.

Advanced Communication Capability

The Shark® 50 meter provides a high-speed RS485 communication port with advanced features.

Back Mounted Communication Port with KYZ Pulse

- **RS485** (Option 485P) – This port allows RS485 communication using Modbus Protocol. Baud rates are from 9,600 to 57,600.
- **KYZ Pulse** – In addition to the RS485, this option also includes a KYZ pulse mapped to positive energy. This is a fixed energy pulse.

Easy to Use and Install

From user interface to mechanical construction, the Shark® 50 meter was designed to be easy and intuitive, so an installer with minimal meter experience and training can easily install and use this product.

- Easy to use faceplate programming
- PC setup
- Phasor diagram showing wiring status
- Auto scroll feature
- Analog style % of Load Bar
- Shallow panel depth
- Color coordinated voltage and current inputs

Rugged and Safe Voltage and Current Inputs

The Shark® 50 meter is ruggedly designed for harsh electrical applications in both high voltage and low voltage power systems. This is especially important in Power Generation, Utility Substation and Critical User applications. The structural and electrical design of this meter was developed based on the recommendations and approval of many of our utility customers.

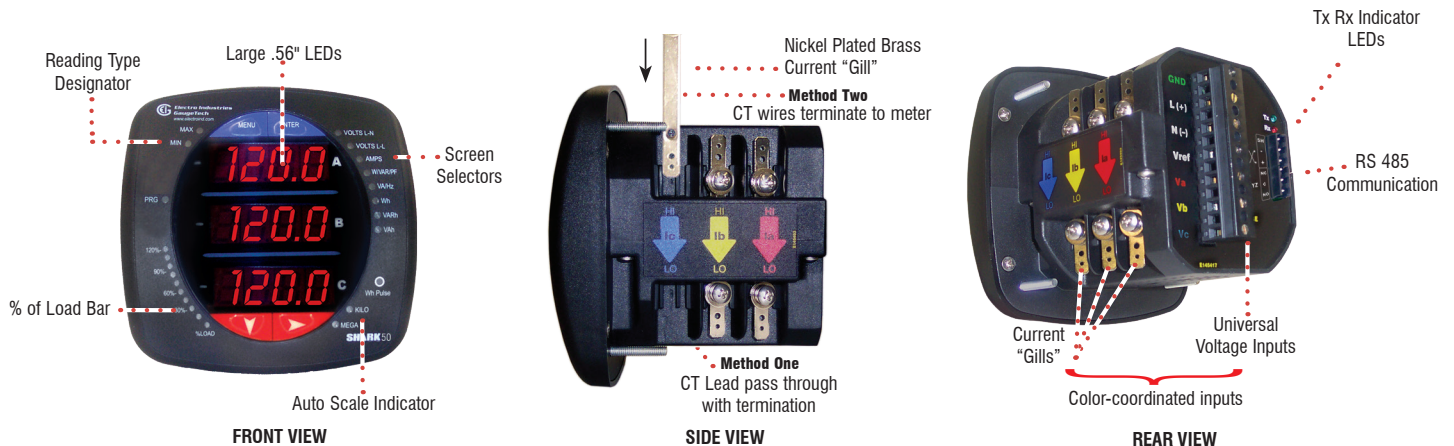
High Isolation Universal Voltage Inputs

Voltage inputs allow measurement of up to 416 Volts Line to Neutral and 721 Volts Line to Line. This insures proper meter safety when wiring directly to high voltage systems. One unit will perform to specification on 69 Volt, 120 Volt, 230 Volt, 277 Volt and 347 Volt power systems.

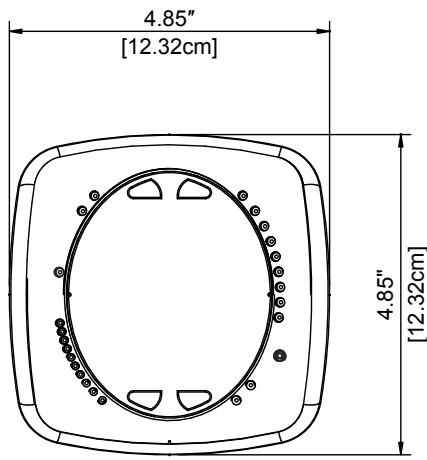
Short Circuit Safe Current Inputs

Current inputs use a unique dual input method:

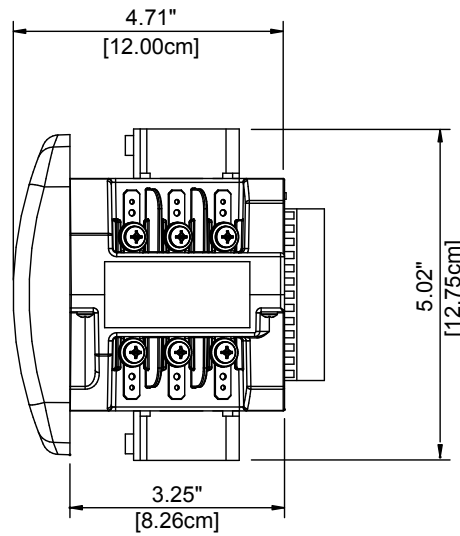
- **Method One** – CT Lead Pass Through. The CT Lead passes directly through the meter without any physical termination on the meter. This insures that the meter cannot be a point of failure on the CT circuit. This is preferable to utility users when sharing relay class CTs. No Burden is added to the secondary CT circuit.
- **Method Two** – Current "Gills." This unit additionally provides ultra-rugged termination pass-through bars, allowing the CT leads to be terminated on the meter. The Shark® meter's stud-based design insures that your CTs will not open in a fault condition.



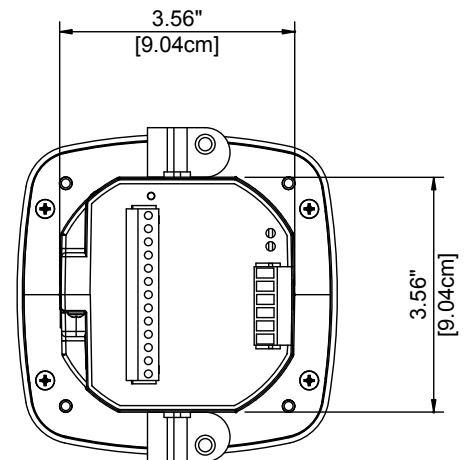
Dimensional Drawings



FRONT VIEW

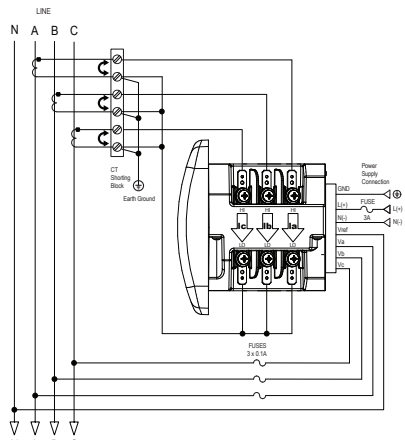


SIDE VIEW

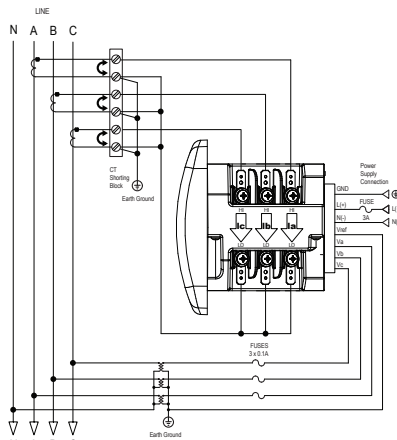


REAR VIEW

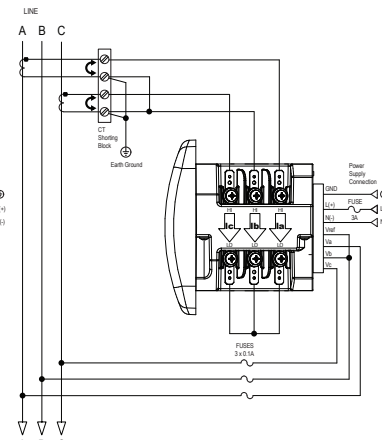
Wiring Diagrams



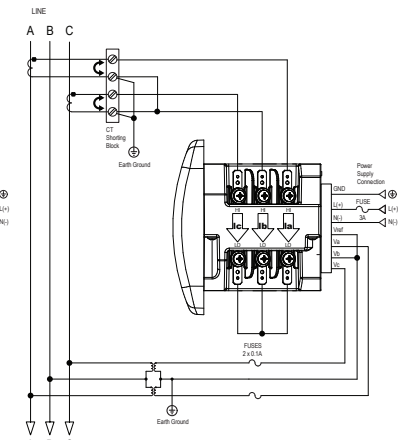
3 Phase, 4 wire WYE Direct



3 Phase, 4 wire WYE with PTs



3 Phase, 3 wire Delta Direct

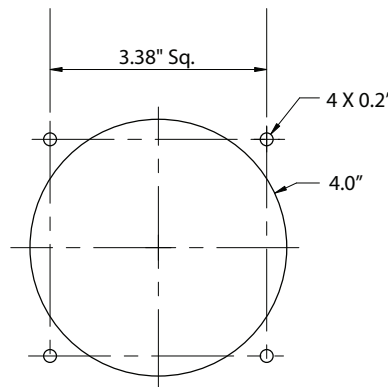


3 Phase, 3 wire Delta with PTs

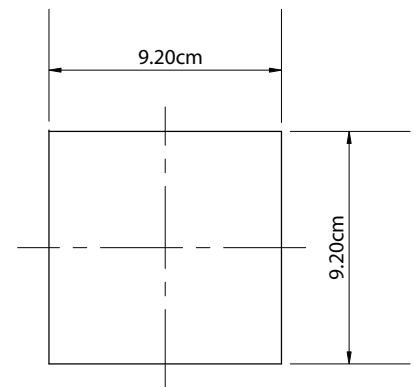
Shark® 50 Meter ANSI and DIN Mounting

The unit mounts directly in an ANSI C39.1 (4" round form) or an IEC 92 mm DIN square form. This is perfect for new installations and for existing panels. In new installations, simply use DIN or ANSI punches. For existing panels, pull out old analog meters and replace them with the Shark® 50 meter. The meter uses standard voltage and current inputs so that CT and PT wiring does not need to be replaced.

- Perfect for switchgear panel direct retrofit
- Uses minimal panel space
- Mounts in only 4.25" panel depth



ANSI Mounting



DIN Mounting

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: 0.014 VA/Phase at 120 Volts
- Input Wire Gauge Max (AWG 12 / 2.5 mm²)

Current Inputs

- Class 10: (0 to 10) A, 5 S Nominal, 10 A Maximum
- Fault Current Withstand (For 23 °C, 3 Phase Balanced WYE or Delta load):
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
- 0.1% of Nominal
- 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 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) 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

Update Rate

- All Parameters Up to 1 Second

Power Supply

- (90 to 265) Volts AC
- AC Power Supply Only

Communication Format (Optional)

- RS485 Port (Through Back Plate)
- Com Port Baud Rate: (9,600 to 57,600)
- Com Port Address: 0-247
- 8 Bit, No Parity
- Modbus RTU, ASCII

KYZ Pulse

- Type Form A
- On Resistance: (23-35) Ohm
- Peak Voltage: 350 V DC
- Continuous Load Current: 120 mA
- Peak Load Current: 350 mA (10ms)
- Off State Leakage Current @ 350 V DC: 1 mA

Dimensions and Shipping

- Weight: 2 lbs
- Basic Unit: (H4.85 x W4.85 x L4.25) in.
- Mounts in Either 92mm Square DIN or ANSI C39.1 4" Round Cutouts
- Shipping Container Dimensions: 6" Cube

Meter Accuracy

- See Page 2

Compliance:

- IEC62053-22 (0.5% Accuracy)
- ANSI C12.20 (0.5% 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
- Certified to UL 61010-1 and CSA C22.2 No. 61010-1, UL File: E250818

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

	Model	V-Switch™ Pack	COM	Mounting
Option Numbers:	-	-	-	-
Example: Shark 50	-	V2	X	X
Shark 50		V1 Voltage / Current	X No Com	X ANSI Mounting
		V2 Above with Power & Freq	485P RS485+Pulse	DIN DIN Mounting Brackets
		V3 Above with Energy Counters		

Additional Accessories

Communication Converters

- Unicom 2500 - RS485 to RS232 Converter
- Unicom 2500-F – RS485 to RS232 to Fiber Optic Converter
- Modem Manager, Model # MM1 – RS485 to RS232 Converter for Modem Communication

Compliance Documents

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

Ordering Instructions: Email or fax part number above, plus quantity, to the address below. Lead times are typically stock to 2 weeks. Call toll-free **1-877-EIMETER** to speak to a sales engineer with any technical questions.



1800 Shames Drive, Westbury, NY 11590 **1-877-EIMETER** (1-877-346-3837)

Email: sales@electroind.com **Tel:** 516-334-0870 **Fax:** 516-338-4741 **Web Site:** www.electroind.com