Shark 100

Revenue-grade panel meter, 0.2 % accuracy class

Over 400 samples per cycle and a 24-bit converter in a meter that fits ANSI and DIN cut-outs

Shark 100

Multifunction power and energy meter

amperis

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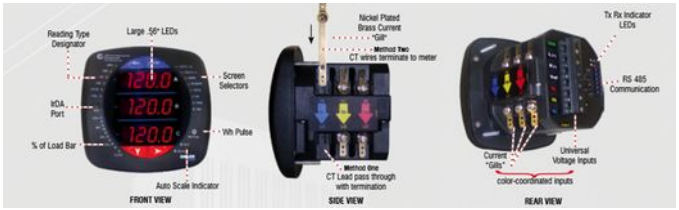
A revenue-grade panel meter that measures voltage, current, power, energy, frequency and maximum demand.

Product overview

Meter with the terminal base and pass-through current inputs



Front, side and rear views with the main controls

Accuracy first

Sampling runs at over 400 samples per cycle with a 24-bit converter, which places the readings in the ANSI C12.20 0.2 accuracy class and the IEC 62053-22 0.2S class. A bright red LED display shows three lines of readings with intuitive navigation, an auto-scroll mode and a percentage of load bar that keeps the feel of an analogue meter.

What it measures

- Voltage line to neutral and line to line, current, and frequency.
- Active, reactive and apparent power, power factor and maximum demand.
- Active, reactive and apparent energy, with 5 to 8 programmable digits.
- Total harmonic distortion and limit-exceeded alarms with the V4 key.

Where it is used

- Utility, commercial, industrial and campus metering, and submetering.
- Substations and power generation plants.
- Direct replacement of analogue panel meters, reusing the existing CT and PT wiring.

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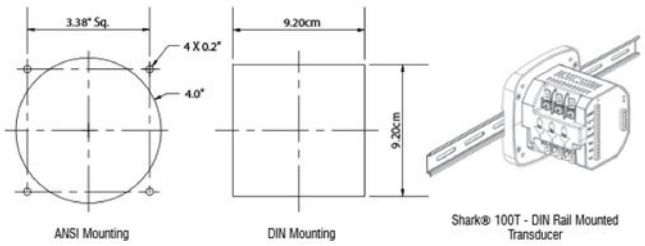
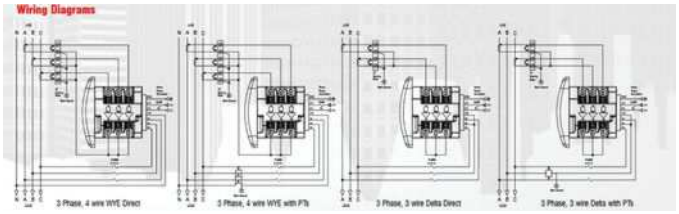
Inputs designed for harsh electrical systems, simple installation and optional serial or Ethernet communication.

Installation, inputs and communication



ANSI and DIN mounting, and the transducer version on DIN rail



Wiring diagrams for the supported connections

High isolation voltage inputs

- Up to 416 V line to neutral and 721 V line to line, universal input.
- One unit works to specification on 69, 120, 230, 277 and 347 V systems.
- Programmable to any PT ratio; withstand to IEEE C37.90.1.

Short-circuit safe current inputs

- CT lead pass-through: the lead crosses the meter with no termination, so the meter cannot become a point of failure on the CT circuit and adds no burden to the secondary.
- Current gills: rugged stud-based pass-through bars allow the CT leads to be terminated on the meter without the risk of an open CT under fault.

Easy to install and use

- Faceplate programming or set-up from a PC.
- Phasor diagram on the display shows the wiring status.
- Colour-coordinated voltage and current inputs to reduce wiring errors.

Communication and pulse output

- Optional RS485 serial port with Modbus and DNP3, standard on the transducer version.
- Optional 10/100BaseT Ethernet port with Modbus TCP/IP.
- Fixed energy pulse mapped to positive energy, supplied with the communication options.
- Standard IrDA optical port on the faceplate.

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Accuracy chart

Parameter	Accuracy	Display range
Voltage L-N	0.1 %	0-9999 V or kV, scalable
Voltage L-L	0.1 %	0-9999 V or kV, scalable
Current	0.1 %	0-9999 A or kA
Watts (+/-)	0.2 %	0-9999 W, kW, MW
Watt-hours (+/-)	0.2 %	5 to 8 programmable digits
VAR (+/-)	0.2 %	0-9999 VAR, kVAR, MVAR
VAR-hours (+/-)	0.2 %	5 to 8 programmable digits
VA	0.2 %	0-9999 VA, kVA, MVA
VA-hours	0.2 %	5 to 8 programmable digits
Power factor	0.2 %	+/- 0.5 to 1.0
Frequency	0.01 Hz	(45 to 65) Hz
THD	5.0 %	0 to 100 %
% load bar	1-120 %	10-digit scalable resolution

Accuracy is given as a percentage of reading; typical results are better. Applies to 3-element WYE and 2-element Delta connections.
For 2.5-element connections add 0.1 % of full scale plus one digit to the figures above.

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V-Switch key technology - features by key

Each key includes the functions of the previous ones and is activated in the field without removing the meter from service.

Feature	V1	V2	V3	V4
Voltage and current measurement	•	•	•	•
Power, power factor and frequency		•	•	•
Energy counters and DNP3 protocol			•	•
THD monitoring and limit-exceeded alarms				•

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Technical specifications

Voltage inputs	Universal input, (20-416) V line to neutral and (0-721) V line to line; programmable to any PT ratio; supports 3-element WYE, 2.5-element WYE, 2-element Delta and 4-wire Delta; burden 0.36 VA per phase at 600 V and 0.014 VA at 120 V; wire gauge AWG 12 / 2.5 mm^2 maximum
Current inputs	Class 10: (0.005 to 10) A with 5 A nominal CT secondary; Class 2: (0.001 to 2) A with 1 A nominal CT secondary; programmable to any CT ratio; pick-up current 5 mA; burden 0.005 VA per phase at 11 A; pass-through wire diameter 0.177" / 4.5 mm
Current withstand	100 A for 10 s, 300 A for 3 s and 500 A for 1 s at 23 °C; 20 A continuous on screw or pass-through connections
Isolation	All inputs and outputs galvanically isolated to 2500 V
Sensing method	RMS, over 400 samples per cycle on all channels simultaneously, with total harmonic distortion measurement
Update rate	Watts, VAR and VA every 6 cycles; all other parameters once per second
Power supply	Option D2: universal (90-265) V AC at 50/60 Hz or (100-370) V DC, 5 VA maximum. Option D: (18-60) V DC
Communication	Standard IrDA optical port; optional RS485 with Modbus RTU/ASCII and DNP3 (485P) or 10/100BaseT Ethernet with Modbus TCP/IP (INP10); both options include the KYZ energy pulse
Environmental rating	Operating and storage (-20 to +70) °C; humidity to 95 % RH non-condensing; faceplate NEMA 12 water resistant; mounting gasket included
Protection	IP30 front and back; optional DIN rail mounting

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Mounting, dimensions and compliance

Panel cut-out	ANSI C39.1 4-inch round (3.38" square punch) or 92 mm DIN square; one meter fits both standards
Meter dimensions	Front 4.85" x 4.85" (12.32 x 12.32) cm; depth 3.56" (9.04) cm; rear projection 4.10" (10.41) cm
Transducer version	Shark 100T transducer without display, DIN rail mounted, with the RS485 port fitted as standard
Display	Three lines of bright red LED digits, auto-scroll, percentage of load bar and phasor diagram
Compliance	ANSI C12.20 0.2 accuracy class; IEC 62053-22 0.2S; IEEE C37.90.1 surge withstand; NEMA 12 faceplate; CE marking

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Ordering information

Every field must be filled in to form a valid part number, in the order shown.

1. Model	Shark100 (meter with display) or Shark100T (transducer without display)
2. Frequency range	60 = 60 Hz system; 50 = 50 Hz system
3. Current input	10 = 5 A nominal CT secondary; 2 = 1 A nominal CT secondary
4. V-Switch pack	V1 voltage and current; V2 adds power, power factor and frequency; V3 adds energy counters and DNP3; V4 adds THD and limits
5. Power supply	D2 = (90-265) V AC at 50/60 Hz or (100-370) V DC; D = (18-60) V DC
6. Communication	X = none; 485P = RS485 with KYZ pulse, standard on the transducer; INP10 = 10/100BaseT Ethernet with KYZ pulse
7. Mounting	X = ANSI mounting; DIN = DIN mounting brackets

Accessories, software and converters

COMPQA6P1Y	Configuration and monitoring software for Windows, single-computer licence
EnergyPQA-1Year	Energy management system with analytics, one year
9PINC	RS232 cable
CAB6490	USB to IrDA adapter
Unicom 2500	RS485 to RS232 converter
Unicom 2500-F	RS485 or RS232 to fibre optic converter
CCal	Certificate of calibration with NIST traceable test data

Example of a valid part number: Shark100-60-10-V1-D2-X-X.

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