

## 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

[www.amperis.com](http://www.amperis.com)

 C/ María Barbeito, 14  
27003, Lugo, Spain

 Contact

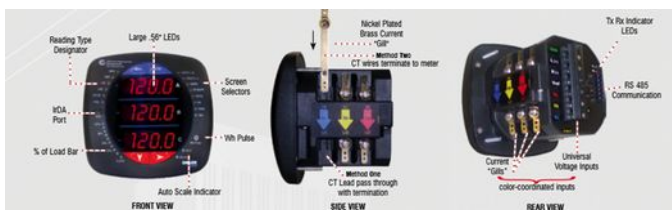
T [+34] 982 20 99 20  
[info@amperis.com](mailto:info@amperis.com) | [www.amperis.com](http://www.amperis.com)

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

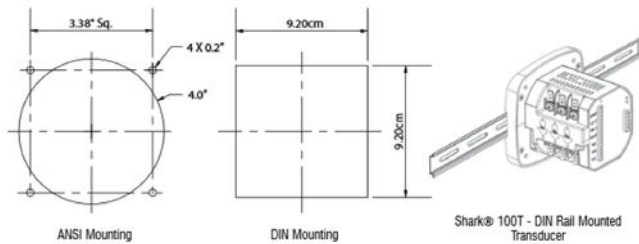
- Voltage line to neutral and line to line, current, and frequency.
- Active, reactive and apparent power, power factor and maximum demand.
- Active, reactive and apparent energy, with 5 to 8 programmable digits.
- Total harmonic distortion and limit-exceeded alarms with the V4 key.

### Where it is used

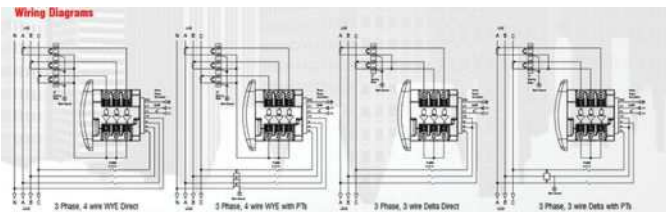
- Utility, commercial, industrial and campus metering, and submetering.
- Substations and power generation plants.
- Direct replacement of analogue panel meters, reusing the existing CT and PT wiring.

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.

## 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.



C/ María Barbeito, 14  
27003, Lugo, Spain



### Contact

T [+34] 982 20 99 20

info@amperis.com | www.amperis.com

### 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 |    |    |    | •  |

## Technical specifications

|                             |                                                                                                                                                                                                                                                                                           |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Voltage inputs</b>       | 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 <sup>2</sup> maximum |
| <b>Current inputs</b>       | 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                                         |
| <b>Current withstand</b>    | 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                                                                                                                                                                            |
| <b>Isolation</b>            | All inputs and outputs galvanically isolated to 2500 V                                                                                                                                                                                                                                    |
| <b>Sensing method</b>       | RMS, over 400 samples per cycle on all channels simultaneously, with total harmonic distortion measurement                                                                                                                                                                                |
| <b>Update rate</b>          | Watts, VAR and VA every 6 cycles; all other parameters once per second                                                                                                                                                                                                                    |
| <b>Power supply</b>         | 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                                                                                                                                                                                    |
| <b>Communication</b>        | 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                                                                                                            |
| <b>Environmental rating</b> | Operating and storage (-20 to +70) °C; humidity to 95 % RH non-condensing; faceplate NEMA 12 water resistant; mounting gasket included                                                                                                                                                    |
| <b>Protection</b>           | IP30 front and back; optional DIN rail mounting                                                                                                                                                                                                                                           |



C/ María Barbeito, 14  
27003, Lugo, Spain



### Contact

T [+34] 982 20 99 20

info@amperis.com | www.amperis.com

### Mounting, dimensions and compliance

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



C/ María Barbeito, 14  
27003, Lugo, Spain



#### Contact

T [+34] 982 20 99 20

info@amperis.com | www.amperis.com

## 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.