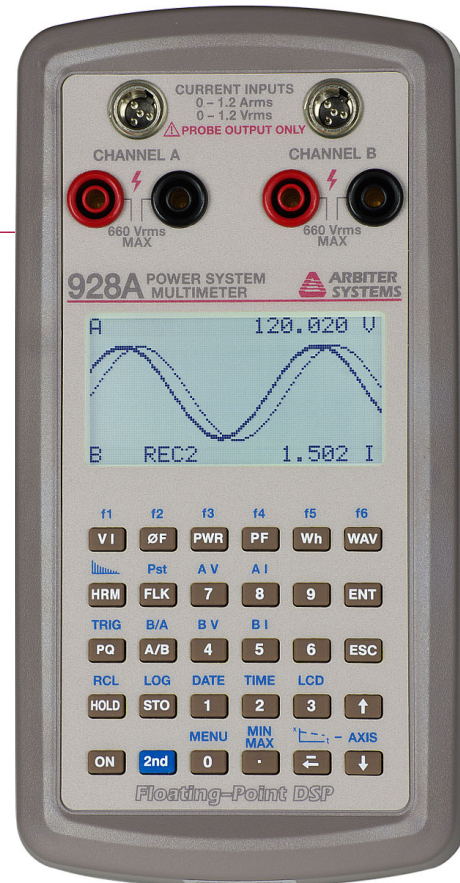


## Model 928A Power System Multimeter™

Specifications subject to change without notice.

- **Low Cost**
- **0.1% Accuracy**
- **Power and Energy**
- **Flicker Per IEC 61000-4-15**
- **Harmonics I, V to 50<sup>th</sup>, THD**
- **Phase Angle I-I, V-V, I-V**
- **Waveform display**



*Built by Power Professionals, For Power Professionals*

The Model 928A Power System Multimeter with *Floating-Point DSP™* Digital Signal Analysis is an AC Power measurement instrument, providing outstanding performance and flexibility in a small, hand-held package. Not only does the Model 928A measure basic data and power quantities, but it also measures power quality including harmonics, flicker, sags, surges and interruptions. Incorporating a graphic LCD display, serial communications, real time clock and an unprecedented combination of features makes the Model 928A the ideal instrument for the power professional.

### Inputs

The Model 928A uses two identical input measurement channels capable of measuring either voltage or current. The dual inputs allow for voltage to current, voltage to voltage or current to current measurements with a basic accuracy of 0.1%. Note: an input CT is required for any current measurement and the basic accuracy of the Model 928A is affected by the accuracy of the input CT.

The flexible current inputs are compatible with both voltage output and current output CTs. Convenient current transformer calibration tables help eliminate errors introduced by the CTs and lessen their effect on system measurements. A special 0 to 40 mA range allows for accurate low level (< 10 mA) measurements.

### Features

The Model 928A includes a bright, 128 x 64 graphic backlit LCD display, a 30-key multifunction keypad and USB 1.1 interface. The Model 928A may be powered either from four AA type cells (alkaline or NiMH) or an optional external, +7 Vdc plug-in power supply.

### Accessories

The Model 928A requires an external CT for current measurements, such as the AP0001300 (1000:1) or the AP0012300 (100:1). Optional accessories include a tilt/bail handle, soft case, test leads, external +7 Vdc power supply, and other CTs.

## Model 928A Specifications

### Input

#### Input Configuration

The Arbiter Systems®, Inc. Model 928A Power System Multimeter™ has two identical measurement channels, Channel A and Channel B. Each input channel has a voltage input and a current input. Current inputs are intended for use with external CTs having a nominal output of 0 to 1 Arms or 0 to 1 Vrms. For basic measurements (voltage, current, frequency, and phase angle) any combination of inputs may be used. For power and energy measurements (active power, apparent power, reactive power, and power factor), one voltage and one current must be selected.

#### Voltage

|             |                          |
|-------------|--------------------------|
| Input Range | 1 to 660 Vrms            |
| Impedance   | 1.2 megohm, differential |

#### Current

|             |  |
|-------------|--|
| Input Range | 0.01 to 1.2 Arms or 0.01 to 1.2 Vrms   |
| Low Range   | to < 1 mA or 1 mV  |
| Burden      | 0.01 ohm max. (current input style) or 100 kohms nominal (voltage input style) |

### Interface

#### Operator Interface

|          |   |
|----------|---|
| Display  | 128 x 64 graphic LCD, backlit                                     |
| Keyboard | 30 key keypad   |
| Serial   | USB 1.1, Type B   |
| Memory   | 512 kB flash  |
| Data     | User setups<br>Real Time Clock<br>Approx. 400 kB measurement data |

### Power Requirements

#### Batteries<sup>1</sup>

|           |  |
|-----------|--|
| Type      | 4 Type AA/LRG/AM3,<br>Alkaline/NiCd/NiMH                           |
| Operation | 30 hours typical with alkaline cells<br>60 hours typical with NiMH |

#### External<sup>1</sup>

|           |                                 |
|-----------|---------------------------------|
| Voltage   | +7 to +10 Vdc (+11 Vdc maximum) |
| Current   | < 100 mA                        |
| Connector | 5.5 x 2.0 mm, center positive   |

### Measurements

#### Voltage and Current

|          |   |
|----------|---|
| Method   | Wideband: True rms, 3 kHz Bandwidth<br>Narrowband: Fundamental magnitude  |
| Accuracy | 0.1% of reading (voltage) or ±5 mV,<br>whichever is greater<br>0.1% of reading + CT errors (current)<br>1% of reading + CT errors (low current range) |

#### Phase Angle, A-B

|            |                    |
|------------|--------------------|
| Range      | 0 to 360° or ±180° |
| Accuracy   | 0.1°               |
| Underrange | < 1° typical       |

#### Frequency

|          |                   |
|----------|-------------------|
| Range    | 50 or 60 Hz ±5 Hz |
| Accuracy | 0.005% of reading |

#### Harmonics

|          |  |
|----------|--|
| Input    | Channel A and Channel B,<br>simultaneous   |
| Range    | 2 <sup>nd</sup> to 50 <sup>th</sup> Harmonic (50 or 60 Hz<br>fundamental)                            |
| Accuracy | 0.1% THD + 5% reading  |
| Display  | THD; K-factor; Amplitude bar graph;<br>and individual harmonic magnitude<br>and phase (simultaneous) |

#### Waveform

|         |                            |
|---------|----------------------------|
| Display | Channel A and/or Channel B |
|---------|----------------------------|

#### Power / Energy Quantities

|          |   |
|----------|---|
| Range    | 0 to 99999 MVA or MVAh<br>±99999 MVAR or MVARh<br>±99999 MW or MWh<br>±1.0000 PF, lead or lag |
| Accuracy | 0.1% of VA, for VA, VAR, and W<br>0.001 PF  |

<sup>1</sup> The batteries and the external wall-mount power supply are accessories and not included with the base Model 928A.

## Model 928A Specifications

### General

#### Physical

|        |   |
|--------|---|
| Size   | 200.0 x 104.2 x 37.4 mm (7.9 x 4.1 x 1.5 in.)<br>381 x 305 x 229 mm (15 x 12 x 9 in.), shipping |
| Weight | 1 kg (2.2 lbs), maximum<br>2.5 kg (5.5 lbs), shipping   |

#### Environmental

|             |   |
|-------------|---|
| Temperature | Operating: -10 °C to +50 °C<br>Nonoperating: -40 °C to +75 °C |
| Humidity    | Noncondensing   |

### Accessories

#### Included

| <u>Description</u>     | <u>Order No.</u> |
|------------------------|------------------|
| Operation Manual       | PD0030900        |
| Voltage Probe Lead Set | AP0009700        |

#### Available

| <u>Description</u>  | <u>Order No.</u> |
|---|------------------|
| Mlink software. Free download from <a href="http://www.arbiter.com">www.arbiter.com</a> |                  |
| Certificate of Compliance   | CofC             |
| 100:1 Clamp-on CT, 150 A, 10 mV/A<br>Requires CA0027200                                 | AP0012300        |
| 1000:1 Clamp-on CT, 1000 A, 1 mA/A<br>Requires CA0027100                                | AP0001300        |
| Universal Test Plug Current Shunt<br>Allows for clamp-on use with a test block.         | AS0079000        |
| Voltage Probe Lead Set  | AP0009700        |
| CT Cable, Current Output  | CA0027100        |
| CT Cable, Voltage Output  | CA0027200        |
| 928A Soft Carrying Case   | HD0069800        |
| USB Data Cable, 6 ft  | CA0026106        |
| 4-AA Alkaline cells   | BT0000201        |
| External power supply, +7 Vdc   | AP0011200        |
| 928A Bail Assembly  | AS0082900        |
| Model 928A Starter Kit  | AS0071800        |
| Includes:   |                  |
| 1 - AP0012300: 100:1 Clamp-on CT, 150 A, 10 mV/A  |                  |
| 1 - CTCHAR: CT Characterization (100 mA to 100 A)                                       |                  |
| 1 - CA0027200: CT Cable, Voltage Output   |                  |
| 1 - AP0009700: Voltage Probe Lead Set   |                  |
| 1 - AP0011200: External Power Supply, +7 Vdc  |                  |
| 1 - CA0026106: USB Data Cable, 6 ft   |                  |
| 1 - BT0000201: 4-AA Alkaline cells  |                  |
| 1 - HD0069800: 928A Soft Carrying Case  |                  |
| 1 - AS0082900: 928A Bail Assembly   |                  |