

Model 911A Phase Angle Meter



Model 911A shown with included accessories.

The Arbiter Systems® , Inc. Model 911A Phase Angle Meter is a compact, hand-held unit capable of voltage-to-current phase-angle measurements with 1° accuracy. Optional adapters allow voltage-to-voltage phase-angle measurements and extended current input ranges with the same accuracy. The instrument's operating characteristics are optimized for use in the maintenance of utility transmission and distribution systems as well as commercial and industrial load management.

The clamp-on current transformer (CT) eliminates the need to break the current circuit, making measurements possible where interruption of power cannot be tolerated. The wide range of both the current and voltage inputs makes scaling or tap selection unnecessary. An LCD display provides outstanding readability in medium to high ambient light, along with low current drain for long battery life.

Related Products

The Model 911A's standard display is $\pm 180^\circ$. For applications which require 0 to 360° display, or the ability to measure voltage, current, and/or frequency, use the Model 918B Phase Angle Multimeter. The Model 918B measures voltage, current, and many other useful quantities and, like the Model 911A, the Model 918B uses a clamp-on CT and has a variety of accessories for other input ranges.

For applications requiring simultaneous measurements in three-phase systems, or the ability to measure harmonic-rich waveforms, including measurement of harmonics and K-factor, consider the Model 931A Power System Analyzer, the Model 930A Three Phase Power Analyzer, or the Model 929A Three Phase Power Meter. All three models offer outstanding accuracy (0.05% and 0.05°), and the Model 931A includes a built-in timer, plus a DMM feature for calibrating transducers.

Model 911A Specifications

Input

Voltage

Input Range	5 to 750 Vrms
Inputs	Two safety-shrouded banana connectors
Impedance	560 kohms, typical
Leakage	≤ 3.5 mA per IEC348 and UL1244

Current

Input Range	100 mA to 20 Arms at CT input (10 mA to 25 A, typical)
Inputs	Clamp-on current transformer Direct input accessories available

Measurements

Phase Angle¹

Range	±180°, nominal
Accuracy	≤ 1° (5 A, 120 V, 60 Hz, 25° C)
Frequency	50 to 70 Hz (40 to 500 Hz, typical)

Interface

Operator Interface

Display	Liquid Crystal Display
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Power Requirements

Internal Battery

Type	Nickel-Cadmium, 9.6 V 500 mAh
Operation	200 hours typical, $I_{in} \leq 1$ Arms 40 hours, $I_{in} = 20$ Arms
Charge	15 hours, typical

External Power

Range	120 Vrms, 60 Hz, 5 VA input Contact factory for other voltages
Safety	Designed to meet UL/CSA

General

Physical

Size	143 x 83 x 38 mm (5.63 x 3.25 x 1.5 in.)
Soft Case	184 x 108 x 178 mm (7.25 x 4.25 x 7 in.)
Weight	400 g (14 oz); 1.8 kg (4 lbs), with case and included accessories

Environmental

Temperature	Operating: 0° to +50° C Nonoperating: -40° to +75° C
Humidity	Non-condensing

Accessories

Included

Description	Order No.
Test Probe Accessory Kit	AP0001000
Battery Charger, 120 Vac / 60 Hz	AP0001100
1000:1 Clamp-on Current Transformer	09111A
Current Transformer Cable	CA0013800
Soft Carrying Case	HD0029500
Operation Manual	PD0008100

Available

Description	Order No.
Plug-in direct-input CT, 100:1, 0.01 to 2.5 A	09112A
Plug-in direct-input CT, 1000:1, 0.1 to 25.0 A	09112B
1000 A Clamp-on Current Transformer (must be used in conjunction with Model 09112A 100:1 direct input CT); overall range 2 to 1000 A.	09113A
Auxiliary Voltage Adapter, 30 to 300 V	09114A
Auxiliary Voltage Adapter, 75 to 750 V	09114B
Maintenance Manual	PD0009100

¹The Model 911A measures phase angle using zero crossings. Because of this, phase measurement errors for harmonic-rich signals may exceed these specifications. The Models 931A, 930A, and 929A are recommended for accurate measurements of harmonic-rich signals.