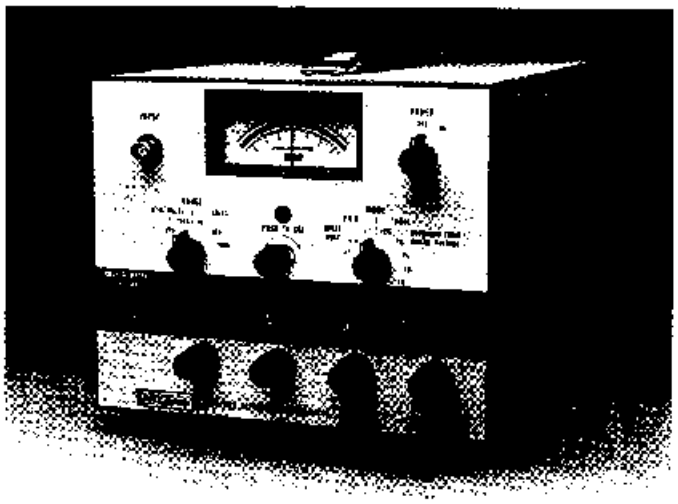
DIFFERENTIAL VOLTMETERS

True RMS Differential Voltmeter

931B



931B

The solid-state Model 931B is designed for rapid measurements of ac waveforms regardless of their shape. Accuracies to ±0.05% of reading are obtained in a simple-to-operate portable instrument with a five digit readout and automatic indicating decimal point.

This instrument employs the principle of the differential thermocouple transfer standard to obtain its high degree of accuracy. It incorporates unique Fluke solid-state circuitry to accomplish the transfer automatically and almost instantly as the voltage readout dials are adjusted to their proper setting.

As with all Fluke differential voltmeters, the 931B incorporates a conventional direct-reading mode for rapid indication of the rms value of input. Frequency response in this mode is 2 Hz to 2 MHz. Response in the null or differential mode is 2 Hz to 1 MHz.

Rechargeable battery configuration is now standard. Nickel-cadmium batteries operate for up to 22 hours before recharging.

The low-frequency capabilities of 931B have been enhanced by the addition of a NULL DAMPING selector switch. This offers the operator the choice of normal differential mode operation over the frequency range of 10 Hz to 1 MHz, or operation down to 2 Hz.

True rms response is guaranteed through the use of thermocouples, which produce an output from the heating effect of an applied current. The 931B finds many applications in ac measurements where non-sinusoidal waveforms are to be measured, even where distortion is greater than the allowable measurement error or where measurements involve waveforms over which there is no control of harmonic content. An ac output, proportional to meter deflection and accurate to within ±1% of end scale, is included for recording purposes or as an rms-to-dc converter.

Specifications

As A Differential Voltmeter

Input Voltage Range: 0.01 to 1100V rms in five ranges of 0.1, 1, 10, 100 and 1000V rms, each with 10% overranging

Input Frequency Range: Null Damping Mode: 2 Hz to 10 Hz; Normal Mode: 10 Hz to 1 MHz

Null Ranges: (End scale percentage deviations from voltage dial setting)

10%-0-10%	(0.2% per scale division)
3%-0-3%	(0.1% per scale division)
1%-0-1%	(0.02% per scale division)
0.3%-0-0.3%	(0.01% per scale division)
0.1%-0-0.1%	(0.002% per scale division)

Accuracy (at 23°C ⊥1°C):

2 Hz - 10 Hz

2 Hz to 3 Hz	±1.0% of input, 0.01V to 1100V rms
3 Hz to 5 Hz	±0.5% of input, 0.01V to 1100V rms
5 Hz to 10 Hz	±0.2% of input, 0.01V to 1100V rms

10 Hz - 1 MHz

10 Hz to 30 Hz	±0.2% of input, 0.01V to 1100V rms
30 Hz to 50 kHz	±(0.05% of input +0.005% of range), 0.01V to 5V rms
30 Hz to 20 kHz	±0.1% of input, 500V to 1100V rms
20 kHz to 50 kHz	±0.15% of input, 500V to 1100V rms
50 kHz to 100 kHz	±0.2% of input, 0.01V to 1100V rms
100 kHz to 200 kHz	±0.5% of input, 0.01V to 1100V rms*
200 kHz to 500 kHz	±1.0% of input, 0.01V to 1100V rms*
500 kHz to 1 MHz	±3.0% of input, 0.01V to 1100V rms*

**Input voltage x frequency should not exceed 1 x 10⁸*

Crest Factor: 10 or 1500V peak

As An Electronic Voltmeter

Input Voltage Range: 0.003V to 1100V rms in eleven end scale ranges of 0.01 to 1000V in 1, 3 sequence, each with 10% overranging

Input Frequency Range: 2 Hz to 2 MHz

Accuracy: (0°C to 50°C) 10 Hz to 500 kHz: ±3% of end scale; 2 Hz to 2 MHz: ±8% of end scale

Crest Factor: 10 at end scale increasing proportionately to 30 at 1/3 scale or 1500V peak

Input Impedance: 1 MΩ shunted by <8 pF at front panel BNC connector

Short Term Stability: Better than 0.005% per hour and 0.02% per day without adjustment of front panel "CAL" control.

Long Term Stability: Better than 0.01% for 30 days and 0.02% for 90 days, using front panel "CAL" control

Overload: 1500V peak or 1000V rms, any range

Line Regulation: Better than 0.0005% for a 10% line voltage change from nominal

Operating Temperature Range: 0°C to 50°C

Input Power: 115/230V ac 50-440 Hz or rechargeable batteries, 3 watts

Mounting: Bench mounting standard, Rack adapter 881A-102 (single unit), Rack adapter 881A-103 (two units side-by-side)

Size: 17.9 cm H x 21.6 cm W x 29.9 cm D (7 in H x 8.5 in W x 11.75 in D) (19 in wide in 8.5 rack configurations)

Weight: 5.21 kg (11.5 lbs), Models 931B-01: 5.59 kg (15 lbs)

Price

Model

931B $2095

Accessories

881A-102 Rack Adapter 50

881A-103 Dual Rack Adapter 50