HEWLETT hp PACKARD

UNIVERSAL BRIDGE

model 4260A

TECHNICAL DATA 15 AUG 66

A New Impedance Bridge Designed for Easy Operation

DIGITAL READOUT FOR C, R, L

AUTOMATIC DECIMAL, UNITS INDICATION

SINGLE-CONTROL BALANCE

DIRECTION INDICATORS FOR FAST RANGE SELECTION, BALANCE

False or sliding nulls eliminated by unique electronic auto-balance

Description

Measurements of C, R, L, D (dissipation factor of capacitors), and Q are easily made with the new Model 4260A Universal Impedance Bridge.

The readout for C, R and L is digital with the decimal point automatically positioned. Units of measurement (e.g., pF and μF) and the equivalent circuit automatically "pop up" with a twist of the function switch. There are no multipliers; no confusing non-linear dials that need interpolation.

Operation is simple. Set the function knob for the parameter to be measured, adjust the range switch for an on-scale indication, and obtain a null with the CRL control. A ONE, TWO, THREE operation. There are no interacting controls to adjust and readjust. There are no false nulls. A unique electronic AUTOBALANCE circuit solves all these problems. Components with low Q or high Q are as easy to measure as those without loss.

For D or Q measurements, switch out of AUTO and turn the DQ control until another null is obtained. Only one adjustment is needed for each measurement.

Nulling is easy. Illuminated pointers (◁ CRL ▷) automatically tell whether a null is up- or down-scale. Both range and CRL controls can be set watching these pointers. There is no need to search for a null.

Five bridge circuits are incorporated in the 4260A. Each is composed of stable, high-quality components for good accuracy and linearity. An internal 1 KHz oscillator drives the bridge for C, L, D, Q measurements; an internal DC supply is used for R measurements.

Components may be biased by connecting a battery to the rear terminals. An external oscillator and detector can be used for measurements in the 20 Hz - 20 KHz range.

The compact modular cabinet is ideal for bench use; and it may be rack mounted using accessory hardware. A tilt stand is provided to raise the viewing angle; it also serves as a convenient carrying handle.

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Printed in U.S.A.

Specifications

CAPACITANCE MEASUREMENT

Capacitance

Range: 1 pF to 1000 μF, in 7 ranges.

Accuracy:

$\pm$ (1% + 1 Digit), from 1 nF to 100 μF.

$\pm$ (2% + 1 Digit), from 1 pF to 1 nF and 100 μF to 1000 μF.

Residual capacitance $\approx$ 2 pF.

Dissipation Factor

Range:

LOW D- - - (of series C): 0.001 to 0.12.

HIGH D - - - (of parallel C): 0.05 to 50.

Accuracy: for C > 100 pF.

LOW D - - - (of series C): $\pm$ (5% + 0.002) or $\pm$ ONE DIAL DIVISION, whichever is greater.

HIGH D - - - 1/D (of parallel C): $\pm$ (5% + 0.05) or $\pm$ ONE DIAL DIVISION of LOW Q dial, whichever is greater.

INDUCTANCE MEASUREMENT

Inductance

Range: 1 μH to 1000 H, in 7 ranges.

Accuracy:

$\pm$ (1% + 1 Digit), from 1 mH to 100 H.

$\pm$ (2% + 1 Digit), from 1 μH to 1 mH and 100 H to 1000 H.

Residual inductance $\leq$ 1 μH.

Quality Factor

Range:

LOW Q - - - (of series L): 0.02 to 20.

HIGH Q - - - (of parallel L): 8 to 1000.

Accuracy: for L > 100 μH.

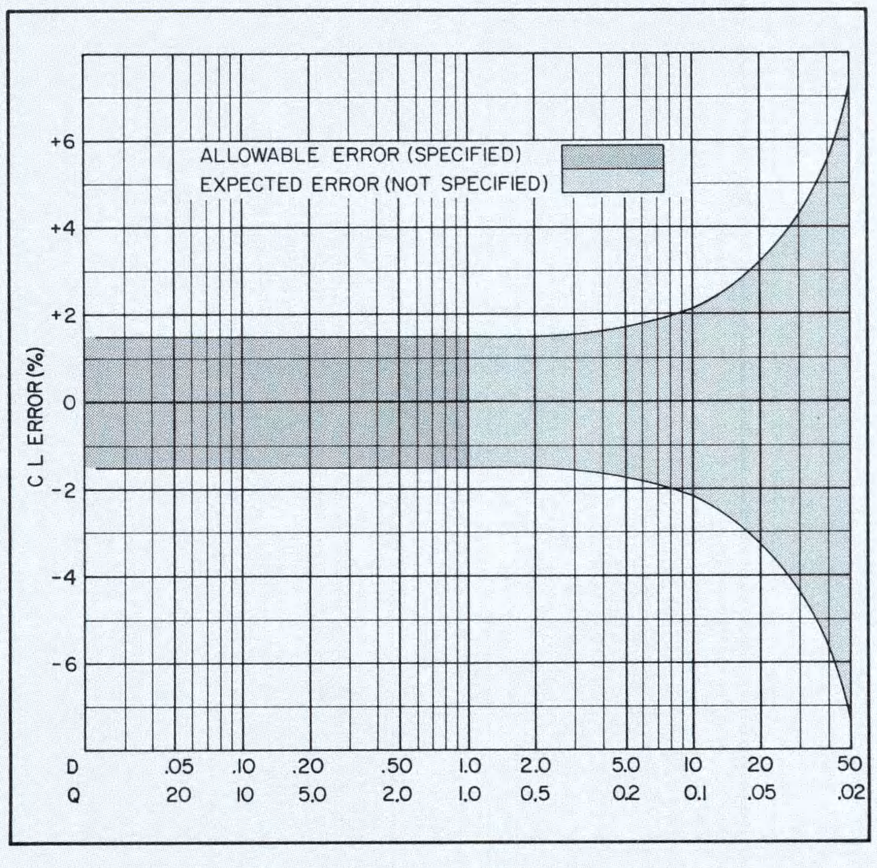
LOW Q - - - (of series L): $\pm$ (5% + 0.05) or $\pm$ ONE DIAL DIVISION, whichever is greater.

HIGH Q - - - 1/Q (of parallel L): $\pm$ (5% + 0.002) or $\pm$ ONE DIAL DIVISION of LOW D dial, whichever is greater.

AUTO-BALANCE

Eliminates need for DQ adjustments in parallel C and series L measurements at 1 kc.

Accuracy: for D < 1 and Q > 1 add $\pm$ 0.5% to C and L accuracy specifications.



C/L Accuracy vs. D/Q in AUTO mode.

RESISTANCE MEASUREMENT

Range: 10 milliohms to 10 megohms, in 7 ranges.

Accuracy:

$\pm$ (1% + 1 Digit), from 10 ohms to 1 megohm.

$\pm$ (2% + 1 Digit), from 10 milliohms to 10 ohms and 1 megohm to 10 megohms.

Residual resistance $\approx$ 3 milliohms.

Resistance measurements at DC only.

OSCILLATOR AND DETECTOR

Internal Oscillator: 1 kc $\pm$ 2%, 100 mV rms $\pm$ 20%.

Internal DC Supply: Less than 40 volts at nominal AC line voltage.

Internal Detector: Tuned amplifier at 1 kc; functions as a broadband amplifier for measurements with external oscillator.

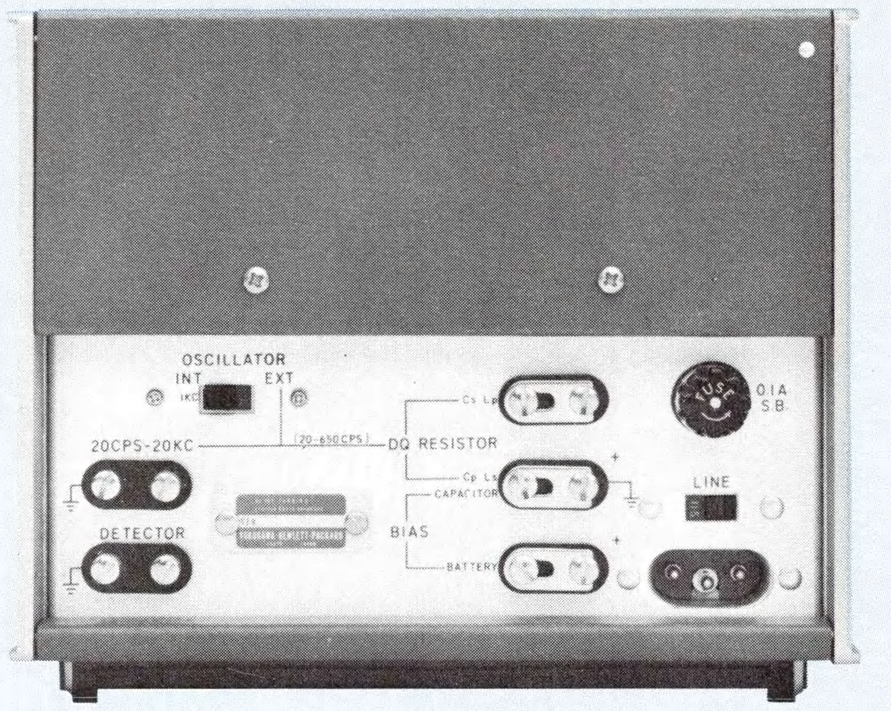
GENERAL

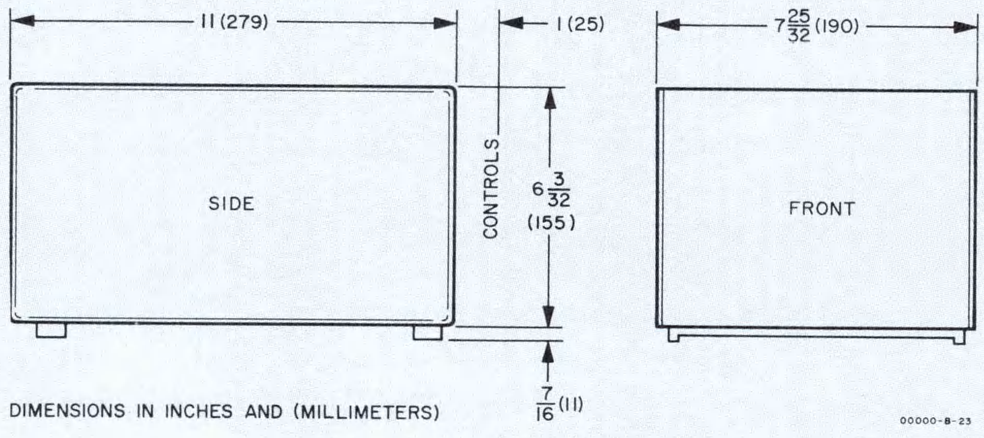
Bias Voltage: 6v maximum.

Bias Current: 10 ma maximum.

Power Supply: 115 or 230 volts $\pm$ 10%, 50-60Hz, approx. 7 watts.

Dimensions:





Weight: Net, 11 lbs. (5 kg). Shipping, 15 lbs. (6,8 kg).

Accessories Furnished: Detachable power cable with NEMA plug.

Optional Accessories:

HP Model 419A for accurate R measurements < 10 ohms and > 1 M ohms.

HP Model 204B for measurements 20Hz-20KHz.

HP Model 140A/1400A or external tuned null detector with 90 db gain and Z_{in} > 10 K ohms for measurements 20 Hz-20 KHz.

Price: Model 4260A Universal Bridge, $550.00.*

Manufactured by Yokogawa-Hewlett-Packard, Ltd., Japan, an international joint-venture company. Data subject to change without notice.

* Price in U.S.A. f.o.b. Palo Alto, California. For price in other countries, contact local Hewlett-Packard sales office.