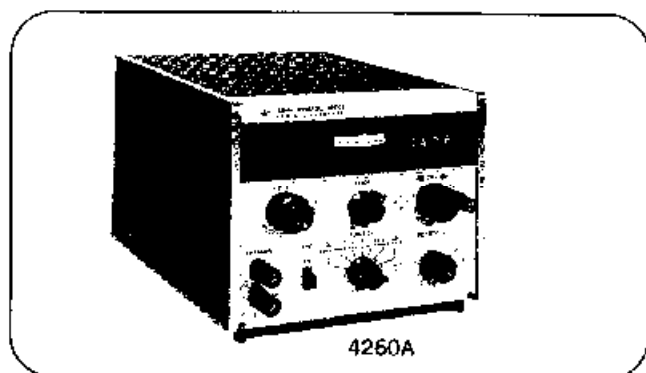


## MEASURING DEVICES



## UNIVERSAL BRIDGE LCR METER Models 4260A, 4332A

Universal Bridge



4260A

### Advantages

- Measurements of C, L, R, D and Q with five-bridge circuits; FUNCTION switch which selects the appropriate equivalent circuit.
- 3-digit readout for C, R, L; RANGE switch selection automatically determines the unit, and decimal point.
- Electronic AUTO-BALANCE; AUTO position FUNCTION switch provides fast nulling by single control of CRL dial. D or Q measurement is done by switching out of AUTO and adjusting only DQ control.
- Direction indicators (<CRL>); direction of range selection and CRL control is automatically indicated for fast nulling.
- External oscillator (20 Hz - 20 kHz), dc bias supply and detector; terminals for interfacing are provided on the rear panel.

### Specifications\*

#### Range and accuracy

Range (7 ranges, maximum resolution 1 $\mu$ H, 1 pF, 10 m $\Omega$ )			
Inductance	Capacitance	Resistance	Accuracy
1 $\mu$ H - 1 mH	1 pF - 1000 pF	10 m $\Omega$ - 10 $\Omega$	$\pm(2\% + 1 \text{ count})$
1 mH - 100 H	1000 pF - 100 $\mu$ F	10 $\Omega$ - 1 M $\Omega$	$\pm(1\% + 1 \text{ count})$
100 H - 1000 H	100 $\mu$ F - 1000 $\mu$ F	1 M $\Omega$ - 10 M $\Omega$	$\pm(2\% + 1 \text{ count})$

#### DQ measurement

LOW D series C	0.001 - 0.12	$\pm \frac{2}{\sqrt{D \text{ reading}}} \%$
HIGH D parallel C	0.05 - 50	$+(10 \times D \text{ reading} + 4)\%$ $-(10 \sqrt{D \text{ reading}} + 2)\%$
LOW Q series L	0.02 - 20	$+(10/Q \text{ reading}) - 4 \%$ $-(10/\sqrt{Q \text{ reading}}) + 2 \%$
HIGH Q parallel L	8 - 1000	$+2\sqrt{Q \text{ reading}} \%$

#### Auto-balance

Eliminates need for DQ adjustments in parallel C and series L measurement at 1 kHz.

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

#### General

**Power:** 115 or 230 V  $\pm 10\%$ , 50 Hz to 60 Hz, 7.7 VA max.

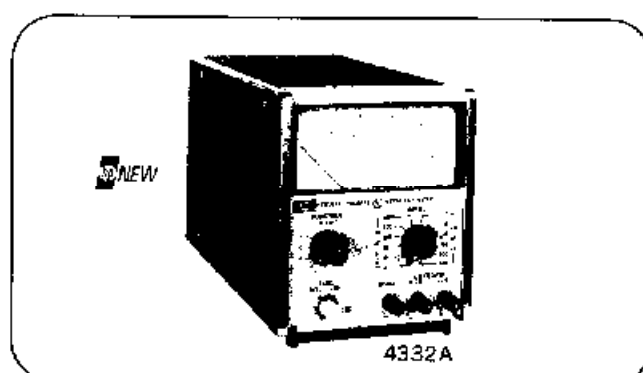
**Dimensions:** 7-25/32" wide, 6-17/32" high, 11" deep (190 x 166 x 279 mm).

**Weight:** net, 11 lbs (5 kg); shipping, 15 lbs (6.8 kg).

**Price:** Model 4260A Universal Bridge, \$680.

\* Refer to data sheet for complete specification.

LCR Meter



4332A

Hewlett-Packard Model 4332A LCR Meter measures inductance, capacitance, and resistance with speed and accuracy. The instrument provides direct-readings of L, C and R with linear meter scales. The 4332A is extremely useful for measurements of both linear and non-linear components such as semiconductor capacitor values, inductance of coils with ferrite core. Combining the 4332A analog output with the 4050A Analog Comparator provides a rapid GO/NO-Go test system.

### Specifications

#### Inductance measurement

**Range:** 3  $\mu$ H to 1 H full scale, 12 ranges.

#### Measuring frequency

3  $\mu$ H to 1000  $\mu$ H ranges: 100 kHz  $\pm 5\%$ .

3 mH to 1000 mH ranges: 1 kHz  $\pm 5\%$ .

**Voltage across sample:**  $< 1.5$  mV rms.

**Accuracy (at 25°C):**  $\pm [1\% \text{ reading} + (1.5 + \frac{3}{Q})\% \text{ of full scale} - 0.03 \mu\text{H}]$ .

#### Capacitance measurement

**Range:** 3 pF to 1  $\mu$ F full scale, 12 ranges.

#### Measuring frequency

3 pF to 1000 pF ranges: 100 kHz  $\pm 5\%$ .

3 nF to 1000 nF ranges: 1 kHz  $\pm 5\%$ .

**Voltage across sample:** approximately 70 mV rms.

**Accuracy (at 25°C):**  $\pm [1\% \text{ reading} + (1.5\% - \frac{3}{Q})\% \text{ of full scale} - 0.03 \text{ pF}]$ .

#### Resistance measurement

**Range:** 3 $\Omega$  to 1 M $\Omega$  full scale, 12 ranges.

**Measuring frequency:** 1 kHz  $\pm 5\%$ .

**Voltage across sample:**  $< 1$  mV rms.

**Accuracy (at 25°C)**

3 $\Omega$  to 30 k $\Omega$  ranges:  $\pm(0.5\% \text{ reading} - 2\% \text{ full scale} + 0.03\Omega)$ .

100 k $\Omega$  to 1000 k $\Omega$  ranges:  $\pm(1\% \text{ reading} + 2\% \text{ full scale})$ .

#### General

**Temperature range:** 0 to 50°C.

**Temperature coefficient (0 to 50°C):**  $\pm 0.05\%$  full scale/°C.

#### Analog outputs

1 V dc at any full scale range.

1 V or 0.3 V dc full scale.

**Input power:** 115 V/230 V  $\pm 10\%$ , 48 to 66 Hz, 8.8 VA max.

**Dimensions:** 5 1/8" wide, 6 1/4" high (without removable feet), 11" deep (130 x 152 x 279 mm).

**Weight:** net, 7 4/5 lbs (3.5 kg); shipping, 10 1/2 lbs (4.7 kg).

**Price:** \$720.