

DOCUMENTATION DE L'IMPÉDANCEMÈTRE HEWLETT-PACKARD HP 4800A

FICHE N° 3897

PRÉSERVER
SAUVEGARDER
VALORISER

Période de fabrication : 1950-1974
Fabricant : Hewlett-Packard Company
Domaines : Physique
Sous-domaines : Electronique, Electricité
Organisme : Université de Rennes
Ville : Rennes
Modèle : HP 4800A
Matériaux : Papier

Description

Cette documentation, en anglais, sur l'impédancemètre HP 4800A est extraite du catalogue Hewlett-Packard de 1970 (page 222) et de 1978 (page 98). Elle décrit ses caractéristiques principales et le type de mesure réalisable : impédance, angle de phase, capacité, inductance entre 5 Hz et 500 kHz.

Utilisation

Cet appareil était utilisé par les étudiants dans le cadre des travaux pratiques d'électronique. Il permettait d'étudier les variations d'impédance d'un composant en fonction de la fréquence.

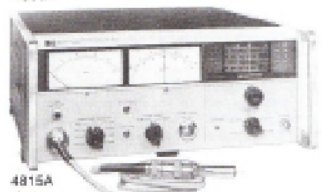


COMPONENT TEST

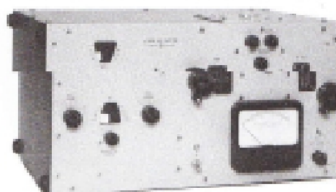
Vector impedance meters, RX meter
Models 4800A, 4815A, and 250B



4800A



4815A



250B

Model 4800A

HP's 4800A measures the vector impedance of components, complex networks, and other two-terminal devices. Besides measuring vector impedance, the 4800A measures component values. At frequencies that are decade multiples of 10, as marked on the frequency dial, L and C are read directly if the phase is approximately $\pm 90^\circ$, respectively. R is equal to the impedance magnitude at frequencies where the phase is approximately 0° . The vector impedance meter also yields Q and inductor values by using either ωL , $R/\omega L$, or the $\omega L/R$ technique.

Specifications

Frequency characteristics

Range: 5 Hz to 500 kHz in five bands: 5 to 50 Hz, 50 to 500 Hz, etc.
Accuracy: $\pm 2\%$, 50 Hz to 500 kHz; $\pm 4\%$, 5 to 50 Hz; $\pm 1\%$ at 15.92 Hz on frequency dial from 159.2 Hz to 159.2 kHz; $\pm 2\%$ at 15.92 Hz.

Impedance measurement characteristics: 1 ohm to 90 megohms in seven decade ranges from X1 to X10 M. Accuracy is $\pm 5\%$ of reading.

Phase angle measurement characteristics: 0° to $\pm 90^\circ$ in 5° increments. Accuracy is $\pm 6^\circ$.

Direct capacitance measurement capabilities: 0.1 pF to 10,000 pF direct reading at decade multiples of 15.92 Hz. Accuracy is $\pm 7\%$ of reading at decade multiples of 15.92 Hz. Accuracy is $\pm 7\%$ of reading for C less than 0.1 at 159.2 Hz to 159.2 kHz.

Direct inductance measurement capabilities: 1 μ H to 100,000 H direct reading at decade multiples of 15.92 Hz. Accuracy is $\pm 7\%$ of reading for Q greater than 10 from 159.2 Hz to 159.2 kHz.

Measuring terminal characteristics: both terminals above ground, neither may be grounded. Calibration resistor and shield provided.

Size: 133 H $\times$ 426 W $\times$ 467 mm D (5 $\frac{1}{4}$ " $\times$ 16 $\frac{3}{4}$ " $\times$ 18 $\frac{1}{2}$ ").

Weight: net, 10.8 kg (24 lb). Shipping, 13.5 kg (30 lb).

Power: 115 or 230 V $\pm 10\%$, 48 to 440 Hz, 30 VA.

Model 4815A

The HP 4815A RF Vector Impedance Meter provides all of the convenience of "probe and read" measurements. In use, the probe is connected directly into the circuit to be evaluated, frequency is selected, and complex impedance is read. This type measurement allows a straightforward adaption to various jigs and fixtures for special measurements. Where only component values are to be determined, a quick-mount adapter is provided to allow rapid measurements. For critical component applications, the unit to be evaluated may be mounted directly in its working circuit and its value determined in its actual environment, at the frequency of interest.

Specifications

Frequency

Range: 500 kHz to 100 MHz in five bands.

Accuracy: $\pm 2\%$ of readings; $\pm 1\%$ of reading at 1.592 and 15.92 MHz.

RF monitor output: 150 mV minimum into 50 ohms.

Impedance magnitude measurement

Range: 1 ohm to 100 k Ω ; full-scale ranges: 10, 30, 100, 300, 1 k, 3 k, 10 k, 30 k, 100 k Ω .

Accuracy: $\pm 4\%$ of full scale $\pm$ (0/30 MHz $\pm$ Z/25 k Ω)% of reading, where Z = frequency in MHz and Z is in ohms.

Calibration: linear meter scale with increments 2% of full scale.

Phase angle measurements

Range: 0° to 360° in two ranges: 0° to 90° , 180° to 90° .

Accuracy: $\pm (3 + 0/30 \text{ MHz} + Z/50 \text{ k}\Omega)$ degrees where Z = frequency in MHz and Z is in ohms. Calibrated in 2° increments.

Size: 185 mm H $\times$ 483 mm W $\times$ 476 mm D (7 $\frac{1}{4}$ " $\times$ 19" $\times$ 18 $\frac{3}{4}$ ").

Weight: net, 17.6 kg (39 lb). Shipping, 24.8 kg (55 lb).

Power: 105 to 125 V or 230 to 250 V, 50 to 400 Hz, 30 W.

Model 250B

The 250B RX Meter measures two-terminal RF impedance in terms of equivalent parallel resistance and capacitance. The self-contained instrument includes a continuously tuned 0.5 to 250 MHz oscillator, high-frequency bridge, amplifier-detector, and null indicating meter. Connections may be conveniently made to the bridge terminals which are arranged for almost zero lead length.

Specifications

RF range: 500 kHz to 250 MHz in eight bands, $\pm 2\%$ accuracy, scale increments of approximately 1%.

Measurement characteristics

Resistance: range from 15 to 100,000 ohms.

Accuracy: $\pm (2 + \frac{F}{200} + \frac{R}{5000} + \frac{Q}{20} - 0.6)$ ± 0.2 ohms

F = frequency in MHz, R = RX Meter R_0 reading in ohms, Q = $\omega C R \times 10^{-12}$, where C = RX Meter C_0 reading in pF; resistance calibration increments of approximately 3%.

Capacitance: range 0 to 20 pF (may be extended through use of auxiliary coils); Accuracy is $\pm 0.5 \text{ pF} + 0.5 \text{ pF} \times 10^{-1.7\%} \pm 0.05 \text{ pF}$, F = frequency in MHz, C = RX Meter C reading in pF; Calibration in 0.1 pF increments.

Inductance: range, 0.001 μ H to 100 mH (actual range depends on frequency; auxiliary resistors employed). Accuracy is same as capacitance accuracy given above.

RF measurement voltage: approximately 50 to 750 mV, depending on frequency.

Size: 263 H $\times$ 300 W $\times$ 343 mm D (10 $\frac{1}{4}$ " $\times$ 20 $\frac{1}{4}$ " $\times$ 13 $\frac{1}{4}$ ").

Weight: net, 38 kg (84 lb). Shipping, 22.5 kg (50 lb).

Power: 105 to 125 volts or 230 to 250 volts, 50 to 400 Hz, 66 VA.

Accessories available: 90515A Coax Adapter Kit (Type N).

Options

900: Rack Flange Kit

Ordering information

4815A RF vector impedance meter

4800A Vector impedance meter

250B RX Meter

90515A Coax Adapter Kit





VECTOR IMPEDANCE METER

Quickly, easily measure Z & θ , 5 Hz to 500 kHz
Model 4800A

Advantages:

- Reads impedance and phase angle directly
- Easy to operate, no balancing or nulling
- Versatile, plug-in measuring terminals
- Reliable, solid-state circuits

The HP 4800A Vector Impedance Meter will make fast measurements of impedance to 10 megohms and phase to $\pm 90^\circ$ of unknown two-terminal networks. Measurement can be made at a particular frequency or over a continuous range from 5 Hz to 500 kHz. The instrument may be mechanically swept to produce continuous measurements over its full frequency range. Analog outputs of frequency, impedance, and phase are available for X-Y recording. The instrument provides the design engineer with an easy-to-use, one-instrument method for checking components and circuits.

Specifications

Frequency characteristics

Range: 5 Hz to 500 kHz in five bands: 5 to 50 Hz, 50 to 500 Hz, 0.5 to 5 kHz, 5 to 50 kHz, 50 to 500 kHz.

Accuracy: $\pm 2\%$ from 50 Hz to 500 kHz; -4% from 5 to 50 Hz; $\pm 1\%$ at 15.92 on frequency dial from 159.2 Hz to 159.2 kHz; $\pm 2\%$ at 15.92 Hz.

Monitor output: level: .2 volt rms minimum; source impedance: 600 ohms nominal in series with 50 μF .

Impedance measurement characteristics

Range: 1 ohm to 10 megohms in seven ranges: 10 ohms, 100 ohms, 1000 ohms, 10 k ohms, 100 k ohms, 1 megohm, 10 megohms full scale.

Accuracy: $\pm 5\%$ of reading.

Phase angle measurement characteristics

Range: 0° to $\pm 90^\circ$; **Accuracy:** $\pm 6^\circ$; **Calibration:** increments of 5° .

Direct inductance measurement capabilities

Range: 1 μH to 100,000 H, direct reading at decade multiples of 15.92 Hz.

Accuracy: $\pm 7\%$ of reading for Q greater than 10 from 159.2 Hz to 159.2 kHz; $\pm 8\%$ of reading for Q greater than 10 at 15.92 Hz.

Direct capacitance measurement capabilities

Range: 0.1 pF to 10,000 μF , direct reading at decade multiples of 15.92 Hz.

Accuracy: $\pm 7\%$ of reading for D less than 0.1 from 159.2 Hz to 159.2 kHz; $\pm 8\%$ of reading for D less than 0.1 at 15.92 Hz.

Measuring Terminal Characteristics

Configuration: electrical: both terminals above ground, ground terminals provided for shielding convenience; mechanical: binding posts spaced $\frac{3}{4}$ " at centers.

Waveshape: sinusoidal.

External Oscillator Requirements: 0.9 V $\pm 20\%$ into 20 k ohms.

Recorder outputs:

Frequency: level, 0 to 1 volt nominal; source impedance, 0 to 1000 ohms nominal; proportional to frequency dial rotation.

Impedance: level, 0 to 1 volt nominal; source impedance, 1000 ohms nominal.

Phase angle: level, 0 to ± 9 volt nominal; source impedance, 1000 ohms nominal.

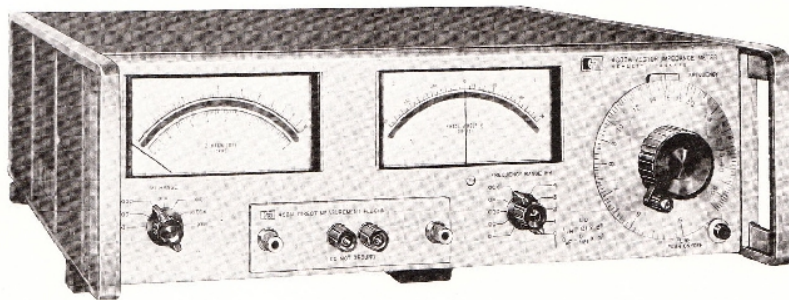
Accessories furnished: 13525A Calibration Resistor, 00610A Terminal Shield.

Dimensions: 16 $\frac{3}{4}$ " wide, 5 $\frac{1}{4}$ " high, 18 $\frac{3}{8}$ " deep (426 x 133 x 467 mm).

Weight: net 24 lbs (10.8 kg), shipping 30 lbs (13.5 kg).

Power: 105 to 125 V or 210 to 250 V, 50 to 400 Hz, 27 W.

Price: HP 4800A, \$1,650.



4800A

Pour nous citer :

Base de la Mission nationale de sauvegarde et de valorisation du patrimoine scientifique et technique contemporain, PATSTEC, Documentation de l'impédancemètre Hewlett-Packard HP 4800A (Hewlett-Packard Company),

<https://www.patstec.fr/ressources/objets/detail?id=15915>, consulté le 2026-07-28