



OFFERS

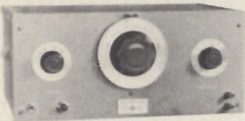
COMPLETE COVERAGE in electronic test instrumentation

Choose the exact electronic test equipment you need from the *-hp-* line — the world's most complete line of over 200 test instruments. Enjoy the engineering economies of fast, accurate measurements, sturdy dependability, broad application. Enjoy, too, the "family characteristics" of *-hp-* instruments—simple operation, minimum adjustment, independence of line voltage and tube changes, generous overload protection, trouble-free performance.

These pages give brief details of major *-hp-* instruments. For specific data or catalogs, write to factory on your letterhead or see your local *-hp-* representative.

hp Oscillators — Generators — .01 to 10,000,000 cps

-hp- 200 SERIES AUDIO OSCILLATORS



Six standard models, 200A, 200B have transformer-coupled output, deliver 1 watt into matched load. 200C, 200D and 202D (for sub-audio, audio, super-

sonic and carrier measurements) have resistance-coupled output, supply constant voltages over their entire frequency ranges. 200I, spread-scale oscillator for interpolation or where frequency must be known precisely.

-hp- 650A TEST OSCILLATOR



Highly stable, wide band (10 cps to 10mc) multi-purpose test oscillator for audio, super-sonic, video and rf measurements. Output flat within 1 db.

Range 0.00003 to 3 v. Output impedance 600 ohms or 6 ohms with voltage divider. \$475.00

Instrument	Primary Uses	Frequency Range	Output	Price
<i>-hp-</i> 200A	Audio tests	35 cps to 35 kc	1 watt/22.5v	\$120.00
<i>-hp-</i> 200B	Audio tests	20 cps to 20 kc	1 watt/22.5v	\$120.00
<i>-hp-</i> 200C	Audio and supersonic tests	20 cps to 200 kc	100 mw/10v	\$150.00
<i>hp-</i> 200D	Audio and supersonic tests	7 cps to 70 kc	100 mw/10v	\$175.00
<i>-hp-</i> 200H	Carrier current, telephone tests	60 cps to 600 kc	10 mw/1v	\$350.00
<i>-hp-</i> 200I	Interpolation and frequency measurements	6 cps to 6 kc	100 mw/10v	\$225.00
<i>-hp-</i> 201B	High quality audio tests	20 cps to 20 kc	3w/42.5v	\$250.00
<i>-hp-</i> 202A	Low frequency measurements	.01 cps to 1 kc	20 mw/10v	\$450.00
<i>-hp-</i> 202B	Low frequency measurements	½ cps to 50 kc	100 mw/10v	\$350.00
<i>-hp-</i> 202D	Low frequency measurements	2 cps to 70 kc	100 mw/10v	\$275.00
<i>-hp-</i> 204A	Portable, battery operated	2 cps to 20 kc	2.5 mw/5v	\$175.00
<i>-hp-</i> 205A	High power audio tests	20 cps to 20 kc	5 watts	\$390.00
<i>-hp-</i> 205AG	High power tests, gain measurements	20 cps to 20 kc	5 watts	\$425.00
<i>-hp-</i> 205AH	High power supersonic tests	1 kc to 100 kc	5 watts	\$550.00
<i>-hp-</i> 206A	High quality high accuracy audio tests	20 cps to 20 kc	+ 15 dbm	\$550.00
<i>-hp-</i> 650A	Wide range video tests	10 cps to 10 mc	15 mw/3v	\$475.00

hp Vacuum Tube Voltmeters — 2 to 700,000,000 cps

-hp- 410B VACUUM TUBE VOLTMETER



Wide range, flat response performance 20 cps to 700 mc. Convenient, simple to use, occupies minimum bench space. Handy compartment for detachable probe and leads. Diode probe design places approxi-

mately 1.3 μ fd capacity across circuit under test. This, plus high shunt impedance (10 megohms at low frequencies) means circuits under test are not disturbed, and true voltage readings are assured. 1 db accuracy, 20 cps to 700 mc. Also measures dc voltage to 1000 v and resistances to 500 megohms. \$245.00

Instrument	Primary Uses	Frequency Range	Voltage Range	Input Impedance	Price
<i>-hp-</i> 400A	General purpose ac measurements	10 cps to 1 mc	.005 to 300 v 9 ranges	1 megohm 24 μ fd shunt	\$185.00
<i>-hp-</i> 400B	Low frequency ac measurements	2 cps to 100 kc	.005 to 300 v 9 ranges	10 megohms 24 μ fd shunt	\$195.00
<i>-hp-</i> 400C	Wide range ac measurements High sensitivity	20 cps to 2 mc	.0001 to 300 v 12 ranges	10 megohms 15 μ fd shunt	\$200.00
<i>-hp-</i> 404A	Portable, battery operated	2 cps to 50 kc	.0005 to 300 v 11 ranges	10 megohms 20 μ fd shunt	\$185.00
<i>-hp-</i> 410B	Audio, rf, VHF measurements; dc voltages; resistances	20 cps to 700 mc	.1 to 300 v 7 ranges	10 megohms 1.3 μ fd shunt	\$245.00

-hp- Voltmeter Accessories (not listed) include voltage dividers, connectors, shunts and multipliers to extend useful range of your equipment.

Data Subject to Change Without Notice. Prices f.o.b. Factory.

HEWLETT-PACKARD

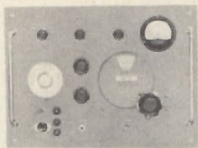


INSTRUMENTS

www.HPARCATIVE.com

hp Signal Generators—10 to 7,600 mc

-hp- 618A SHF SIGNAL GENERATOR

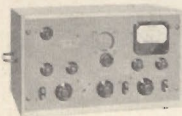


3,800 to 7,600 mc. Provides a 1 mw signal into a 50-ohm coaxial load (zero dbm). Output attenuator directly calibrated in dbm and volts, reduces output level to less than -100 dbm. Frequency dial directly calibrated, accuracy 1/2 of 1%. Repeller voltage automatically tracked. No adjustment during operation. CW, pulsed and FM output. \$2,250.00

Instrument	Frequency	Characteristics	Price
-hp- 608A	10 to 500 mc	Output 1 v to .1 μ v. Amplitude modulated, pulsed and CW output. Direct reading.	\$850.00
-hp- 610B	450 to 1,200 mc	Calibrated output, .1 v to .1 μ v. Internal pulse modulation. Direct calibration	\$925.00
-hp- 614A	800 to 2,100 mc	Direct reading. Pulse modulation, CW & FM. Output 1 mw or .223 v to .1 μ v	\$1,950.00
-hp- 616A	1,800 to 4,000 mc	Direct reading. Pulse modulation, CW & FM. Output 1 mw or .223 v to .1 μ v	\$1,950.00
-hp- 618A	3,800 to 7,600 mc	Direct reading. External pulse modulation, C W & FM. Output .223 v to 2.23 μ v	\$2,250.00

hp Distortion, Wave Form Analyzers—20 cps to 20 kc

-hp- 330B DISTORTION ANALYZER



Measures distortions as low as 0.1% at any frequency, 20 cps to 20 kc. Measures noise voltages as low as 100 μ v. High sensitivity, high stability, broad applicability for broadcast, laboratory or production problems. Wide band 20 db gain input amplifier. Built-in vacuum tube voltmeter usable separately. \$395.00

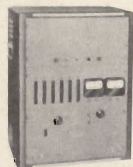
FM, AM-FM MODELS

-hp- 330C, for FM broadcasters, includes VU meter meeting F. C. C. requirements. -hp- 330D, for AM-FM broadcasters, includes AM detector to rectify AM carrier, plus VU meter employed in model 330C. 330C, \$425.00. 330D, \$440.00

Analyzer	Primary Uses	Frequency Range	Characteristics	Price
-hp- 300A	Wave form analyzer	30 cps to 16 kc	Variable selectivity; measuring range 1 mv to 500 v.	\$625.00
-hp- 320A	Measures total distortion	400 cps and 5 kc	Requires external detector	\$ 75.00
-hp- 320B	Measures total distortion	50, 100, 400 cps, 1, 5 and 7.5 kc	Same as above	\$150.00
-hp- 330B	Measures total distortion	20 cps to 20 kc	Includes input amplifier, VTVM	\$395.00
-hp- 330C	For FM measurements	20 cps to 20 kc	Special VU meter to meet F. C. C. requirements	\$425.00
-hp- 330D	For AM, FM measurements	20 cps to 20 kc	AM detector and VU meter to meet F. C. C. requirements	\$440.00
SQUARE WAVE GENERATOR				
-hp- 210A	Transient and frequency response	20 cps to 10 kc	Output 50 v. peak-to-peak. 1,000 ohm impedance	\$150.00

hp Frequency Measuring Equipment—.01 cps to 10 mc

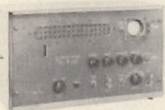
-hp- 524A FREQUENCY COUNTER



Instantly, automatically, directly measures unknown frequencies, 0.01 cps to 10 mc!

One instrument combines functions of frequency standard, interpolating system and detector! Amazingly simple operation—just connect unknown to input terminal, and exact frequency appears automatically on front panel. High speed decade scalers count unknown frequency over measured, crystal-controlled time interval. Accuracy of measurement ± 1 count \pm crystal stability (2/1,000,000 per week). External higher accuracy standard usable if desired. Minimum of unknown, 1 v peak. \$2,000.00

-hp- 100D SECONDARY FREQUENCY STANDARD



Swift, sure frequency comparison, new convenience in standardizing with minimum external equipment. 100 μ sec time markers, built-in oscilloscope, sine or rectangular waves. Low output impedance, short-time stability 1/1,000,000. Performs most functions of expensive primary standards in audio, rf or supersonic ranges. \$600.00

Instrument	Primary Uses	Frequency Range	Characteristics	Price
-hp- 524 Frequency Counter	Frequency, interval, time measurements	.01 cps to 10 mc	Direct reading, no interpolation, accuracy about 2/1,000,000	\$2,000.00
-hp- 100D Secondary Standard	Frequency, time measurements	100 kc, 10 kc, 1 kc, 100 cps, 10 cps	Stability 1/1,000,000 (short-time). Sine or rectangular output. Marker pips.	\$ 600.00
-hp- 100C Secondary Standard	Audio, supersonic calibration	100 kc, 10 kc, 1 kc, 100 cps	Accurate within $\pm .001\%$. Sine waves only.	\$ 450.00
-hp- 500A Frequency Meter	Rapid frequency measurements	5 cps to 50 kc	10 ranges $\pm 2\%$ accuracy. Input 0.5 to 200 volts.	\$ 210.00
-hp- 505A Tachometer	Measurements of high speed machinery	300 to 3,000,000 rpm	10 ranges $\pm 2\%$ accuracy.	\$ 300.00
-hp- 505B Tachometer	Same as above	5 to 50,000 rps	Same as 505A except calibrated in rps.	\$ 300.00

Frequency monitors available for FM broadcast, 88 to 108 mc, TV aural broadcast 59.75 to 215.75 mc; and for communications systems, 30 to 175 mc.

Data Subject to Change Without Notice. Prices f. o. b. Factory.

Complete Coverage! HEWLETT-PACKARD

Microwave Test Equipment—10 to 18,000 mc!

Basic, low cost elements offer utmost flexibility for assembly of exact instrumentation required. Each unit covers entire range of its waveguide size. Simple, sturdy mechanical design; accurate, multi-purpose operation.

Instrument	Coaxial Type N. Conn.	"S" 3" x 1 1/2" 2.6 - 3.95 kmc.	"G" 2" x 1" 3.95 - 5.85 kmc.	"J" 1 1/2" x 3/4" 5.85 - 8.2 kmc.	"H" 1 1/4" x 3/8" 7.05 - 10.0 kmc.	"X" 1" x 1/2" 8.2 - 12.4 kmc.	"P" .702" x .391" 12.4 - 18.0 kmc.
Adaptors, Waveguide to Coax		\$281A \$75.00	G281A \$55.00	J281A \$50.00	H281A \$45.00	X281A \$35.00	
Cover to choke flange		\$290A \$40.00	G290A \$30.00	J290A \$25.00	H290A \$20.00	X290A \$15.00	P290A \$20.00
Attenuators, Fixed 6, 10, 20 db		\$370 \$75.00	G370 \$65.00	J370 \$65.00	H370 \$60.00	X370 \$55.00	P370 \$60.00
Flap, 25 db max.		\$375A \$75.00	G375A \$65.00	J375A \$60.00	H375A \$55.00	X375A \$50.00	P375A \$55.00
Calibrated		\$380A \$225.00					
Detector Mounts	440A† \$85.00	\$485A* \$125.00	G-485B† \$95.00	J485B† \$90.00	H485B† \$85.00	X485B† \$75.00	
Frequency Meters, Reaction				J530A \$120.00	H530A \$120.00	X530A \$120.00	
Slotted Sections	806B§ \$200.00	\$810A* \$450.00	G810B§ \$90.00	J810B§ \$90.00	H810B§ \$90.00	X810B§ \$90.00	
Waveguide Tees, Series		\$840A \$60.00	G840A \$50.00	J840A \$40.00	H840A \$35.00	X840A \$30.00	P840A \$35.00
Shunt		\$841A \$60.00	G841A \$50.00	J841A \$40.00	H841A \$35.00	X841A \$30.00	P841A \$35.00
Hybrid		\$845A \$90.00	G845A \$75.00	J845A \$60.00	H845A \$55.00	X845A \$45.00	P845A \$55.00
Transformers, Slide-screw		\$870A \$150.00	G870A \$140.00	J870A \$135.00	H870A \$130.00	X870A \$125.00	P870A \$130.00
E-H		\$880A \$175.00	G880A \$155.00	J880A \$145.00	H880A \$135.00	X880A \$130.00	P880A \$135.00
Adjustable Shorts		\$920A \$80.00	G920A \$70.00	J920A \$65.00	H920A \$60.00	X920A \$50.00	P920A \$55.00
Terminations, Low Power		\$910A \$45.00	G910A \$40.00	J910A \$35.00	H910A \$30.00	X910A \$25.00	P910A \$30.00
Terminations, High Power		\$912A \$125.00				X912A \$75.00	
Broad Band Probe	442A \$75.00			All Frequencies			
Broad Band Probe, Untuned	444A \$50.00			All Frequencies			

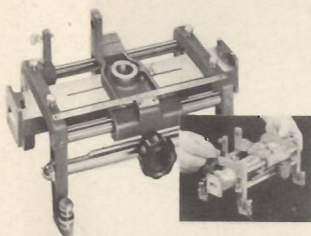
*For use with bolometer only.

†For use with bolometer or crystal.

‡Complete assembly including carriage.

§Mounts in 809B carriage

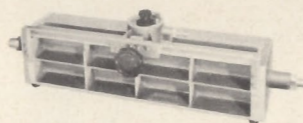
-hp- 809B UNIVERSAL PROBE CARRIAGE



Now—a single all-purpose probe carriage operates with 5 different -hp- slotted sections—waveguide and coaxial. Mounts sections covering frequencies 3,000 to 12,400 mc—sections can be interchanged in 30 seconds! Carriage calibrated in mm. to 0.1 mm.; dial gauge may be mounted for more accurate readings. Operates with -hp- 442A

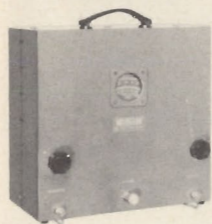
Broad Band Probe and -hp- 440A Coaxial Detector in combination; or with -hp- 444A Untuned Probe. -hp- 809B, \$160.00

-hp- COAXIAL SLOTTED SECTIONS

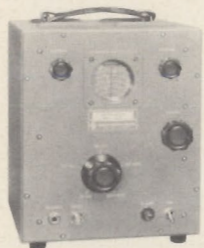


-hp- 805A/B. 500 to 4,000 mc. High accuracy, high stability, negligible slope, minimum leakage. Exclusive parallel plane design with non-bowing central conductor. VSWR of basic section and connectors less than 1.04. -hp- 805A, 50 ohms, Type N connector, for flexible cables. -hp- 805B, 46.3 ohms, for 7/8" rigid transmission lines. \$475.00

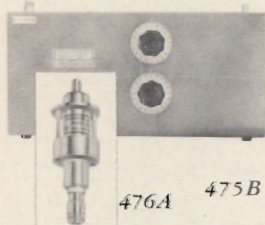
-hp- 806B. 3,000 to 12,000 mc. Same parallel plane design as 805A/B. For use with 809B Carriage. VSWR of section and connectors 1.06 to 10,000 mc. 50 ohm impedance, negligible slope. Type N connectors for flexible cable. \$200.00



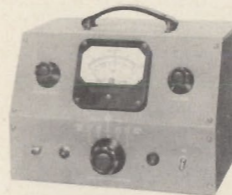
-hp- 803A VHF Bridge reads impedance magnitude and phase direct, 10 to 500 mc. Rapid operation, for comparative measurements 5 to 1,000 mc. Impedance range 2 to 2,000 ohms. Phase angle -90° to +90° at 52 mc and above. \$495.00



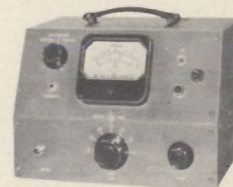
-hp- 417A VHF Detector, for use with 803A Bridge; or general laboratory readings. Super-regenerative receiver, 10 to 500 mc, 5 bands. Approx. 5 μv sensitivity over entire band. Direct reading frequency control, thoroughly shielded. \$200.00



New -hp- 476A Universal Bolometer Mount measures rf power 10 to 1,000 mc. No tuning or adjustment. VSWR less than 1.15, 20 to 500 mc; 1.25, 10 to 1,000 mc. \$125.00. -hp- 475B Tunable Mount, continuous 1,000 to 4,000 mc. \$200.



-hp- 430A Microwave Power Meter provides instantaneous rf power readings direct in db or mw at all bolometer mount frequencies. No calculations, no adjustment except zero set. For -hp- bolometer mounts: 475B, 476A, 485. \$250.00



-hp- 415A Standing Wave Indicator for all waveguide or coaxial slotted sections. Gives direct readings in VSWR or db. Single frequency operation; 300 to 2,000 cps. Low noise level, 0.3 μv sensitivity, 60 db calib. attenuator. \$200.00

Data Subject to Change Without Notice. Prices f. o. b. Factory.



INSTRUMENTS Complete Coverage!

www.HPARCHIVE.com

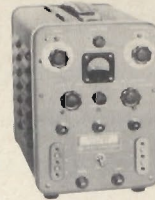
-hp- AMPLIFIERS



Complete instrumentation for distortion-free, fast pulse measurement. **-hp- 460A Wide Band Amplifiers**, in cascade with **-hp- 460B Fast-Pulse Amplifiers** offer up to 90 db gain, 125 volts open circuit output. This permits full deflection of 5XP CRT, or 2-inch deflection of 5CP tubes. Rise time 0.0026 μ sec; can amplify milli-microsecond pulses; gives over 100 mc bandwidth to your standard oscilloscope. 460A, \$185.00; 460B, \$225.00. Connecting cables, plugs, accessories—prices on request.

-hp- 450A Amplifier—general purpose instrument, 20 db or 40 db gain, for use wherever wide frequency range and high stability are needed. 10 cps to 1 mc. Negligible phase shift, no spurious responses. \$140.00

-hp- POWER SUPPLIES

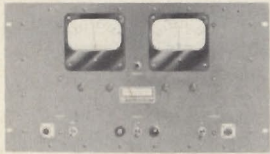


-hp- 715A (illustrated) is a versatile source of regulated beam and reflector voltage for operating most test bench klystron tubes. Beam voltage 250 to 400 v; reflector voltage 10 to 900 v; 6.3 v filament. Internal, 1,000 cps square wave modulation, also 60 cps FM modulation, both on reflector voltage. \$300.00

-hp- 710A—Highly stable regulated dc supply, output variable 180 to 360 v at 75 ma., 6.3 v filament. Either terminal may be grounded. Total hum and noise less than 5 mv. \$85.00

-hp- 712A. Stabilized, variable power supply providing 0 to 500 v at 200 ma and 1/2% regulation. Also variable bias voltages, 0 to 150 v at 5 ma, and 6.3 v filament at 10 amps. Main supply completely metered. Either terminal may be grounded. Hum less than 8 mv. For laboratory, production or general use. \$350.00

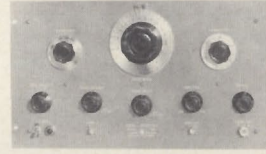
-hp- 520A NUCLEAR SCALER



-hp- 520A is a new, high-speed 10 mc scaler offering utmost reliability in nuclear counting and frequency measurements. Capable of scaling pulses at rates up to 10,000,000 pps. Has double-pulse resolving time of 0.1 μ sec; triple-pulse resolving time of

0.2 μ sec. Two-decade circuit gives scaling factor of 100; residual counts are indicated by two panel meters with combined capacity of 100 counts. Instrument may be used with existing low speed scalers to provide any desired count capacity. \$600.00

-hp- 212A PULSE GENERATOR



Provides continuously variable, high power "fast pulses" of superior wave form. Combines broad general usefulness with 0.02 μ sec rise and decay time to meet requirements of radar, TV and nuclear work. Pulse length variable 0.07 to 10 μ sec;

minimum overshoot; 50 watt peak power (50 v to 50 ohms loads). Low impedance means accurate pulses can be delivered at a distance from the instrument. Repetition rate variable 50 to 5,000 pps; controlled internally or externally. Synchronizing pulses available in advance of, or following, output pulse. \$550.00

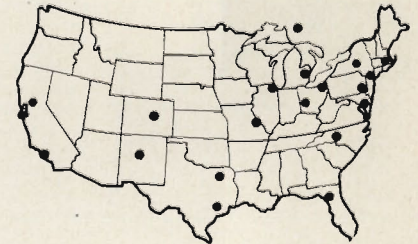
Data Subject to Change Without Notice. Prices f. o. b. Factory.



offers COMPLETE COVERAGE

in convenient "next door" service!

-hp- has selected the best independent organizations in America to give you personal help with measuring problems. Electronics specialists—men trained by Hewlett-Packard—save you time by helping select exact **-hp-** instrumentation you need. These men are located in major business centers—as near as your telephone. Call them when you need personal help—in your plant—today!



Albuquerque, New Mexico
Neely Enterprises
107 S. Washington St.
Albuquerque 5-8731

Boston 16, Massachusetts
Burlingame Associates
270 Commonwealth Ave.
KENmore 6-8100

Chicago 40, Illinois
Alfred Crossley & Associates
4501 Ravenswood Ave.
UPtown 8-1141

Cleveland 15, Ohio
M. P. Odell Co.
2536 Euclid Ave.
PROSpect 1-6171

Dallas 5, Texas
Earl Lipscomb Associates
3561 Marquette St.
P. O. Box 8042
EMerson 6-7989

Dayton 2, Ohio
Alfred Crossley & Associates
410 W. First St.
Michigan 8721

Denver 3, Colorado
Ronald G. Bowen
852 Broadway
AComa 5211

Detroit 5, Michigan
S. Sterling Company
13331 Linwood Ave.
TOWnsend 8-3130

Fort Myers, Florida
Arthur Lynch & Associates
P. O. Box 466
Fort Myers 5-6762

Houston 5, Texas
Earl Lipscomb Associates
2420-B Rice Blvd.
P. O. Box 6573
LINDen 9303

High Point, North Carolina
Bivins & Caldwell
Room 807, Security Bank Bldg.
High Point 3672

Los Angeles 46, California
Neely Enterprises
7422 Melrose Ave.
WHITney 1147

New York 13, New York
Burlingame Associates
103 Lafayette St.
DIgby 9-1240

Philadelphia 44, Penn.
Burlingame Associates
422 West Coulter St.
TENnessee 9-2006

Sacramento, California
Neely Enterprises
309 Ochsner Bldg.
GILbert 3-7461

San Francisco 18, California
Neely Enterprises
2830 Geary Blvd.
WALnut 1-3960

St. Louis 3, Missouri
Harris-Hanson Company
208 North 22nd St.
MAIn 5464

Syracuse 2, New York
Burlingame Associates
712 State Tower Bldg.
SYracuse 2-0194

Toronto 2-B Ontario, Canada
Atlas Radio Corporation, Ltd.
560 King St., West
WAverley 4761

Washington 9, D. C.
Burlingame Associates
2017 S Street N. W.
DEcatur 8000

HEWLETT-PACKARD COMPANY

2310 PAGE MILL ROAD • PALO ALTO, CALIFORNIA, U. S. A.
Export: Frazer & Hansen, Ltd., San Francisco, New York, Los Angeles

HEWLETT-PACKARD



INSTRUMENTS