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On-line curartor: Glenn Robb
-hp- offers complete coverage in

-HP- 150A/AR High Frequency Oscilloscopes—DC to 10 MC

Models 150A and 150AR are deliberately designed as the most broadly useful, most convenient high quality 10 MC oscilloscopes ever built. Unique features such as the universal automatic optimum-trace trigger, direct-reading calibrated sweeps, simplified color-coded controls and quick filter or cathode ray tube interchange—all combine to save hours of engineering time.

Plug-in amplifiers increase versatility
A variety of plug-in units (see below) provide the versatility of dual trace or differential input, or high amplification eliminating pre-amplifiers on input from most transducers. Other important features include brilliant, high resolution trace without halo or bloom, etched circuits with unitized construction, highest quality components and ultra-conservatively rated circuitry.

Specifications

Sweep Range: 0.02 μsec/cm to 15 sec/cm.
Calibration: 24 sweeps: 1-2-5-10 sequence, 0.1 μsec/cm to 5 sec/cm, 3% accuracy.
Triggering: Internal, line voltage or external 0.5 v or more. Pos. or neg. slope, + 30 to —30 v trigger range.
Preset Trigger: Optimum setting for automatic stable triggering.
Horizontal Amplifier: Sweep magnification 5, 10, 50, 100 times. Vernier position control selects any 10 cm part of sweep. External input pass band dc to over 500 KC. Sensitivity 200 mv/cm to 15 v/cm.
Vertical Amplifier: Pass band dc to 10 MC. Optimum transient response and rise time less than 0.035 μsec. Signal delay of 0.25 μsec permits leading edge of triggering signal to be viewed.
Amplitude Calibration: 18 calib. voltages, 1-2-5-10 sequence, 0.2 mv to 100 v peak-to-peak. Accuracy 3%. Approx. 1 KC square wave, rise and decay approx. 1.0 μsec.

Prices:
-HP- 150A High Frequency Oscilloscope, $1,100.00.
-HP- 150AR Rack Mount Oscilloscope, $1,200.00.

New amplifiers and accessories

-HP- 152B Dual Trace Differential Amplifier.
New plug-in amplifier providing differential input and dual traces electronically switched between A and B channels at either 100 KC or on alternate sweeps. Sensitivity range 0.05 v/cm to 50 v/cm, input attenuator with 9 calibrated ranges in 1-2-5-10 sequence and vernier. $250.00.

-HP- 153A Very High Gain Amplifier.
New plug-in permitting -HP- 150A to be used for many direct measurements from transducer without preamplification. Pass band dc to 500 KC, sensitivity 1 mv/cm to 125 v/cm, balanced input on the 6 most sensitive ranges. 15 calibrated ranges in 1-2-5-10 sequence, 1 mv/cm to 50 v/cm; plus vernier. $125.00.

-HP- 151A High Gain Amplifier.
For either 150A or 150AR, high gain unit with 5.0 mv/cm sensitivity, frequency response dc to 10 MC. 12 calibrated ranges on 1-2-5-10 sequence. 1 megohm input impedance with 27 μf shunt. Pass band rise time 0.035 μsec. Has 2 BNC terminals. $200.00.

Data subject to change without notice. Prices f.o.b. factory.
quality oscilloscopes—DC to 10 MC

-hp- 130B/BR—DC to 300 KC

Termed the finest low frequency oscilloscope ever offered, -hp- 130B/BR combine big 'scope performance and positive dependability with 1 mv sensitivity and the convenience of direct reading, "universal" automatic trigger, no preamplification from most transducers and simple controls.

Similar X and Y amplifiers
Models 130B/BR have similar horizontal and vertical amplifiers with sensitivity 1 mv/cm to 125 v/cm. Input circuits are balanced on the 6 most sensitive ranges; single ended input dc or ac coupled. 21 sweep times may be directly set, instrument sweeps 1 μsec/cm to 12.5 sec/cm, triggering is internally, by line power, or externally by 0.5 v or greater. Includes x 5 magnifier for all internal sweeps increasing fastest sweep time to 0.2 μsec/cm. -hp- 130B (cabinet) or 130BR (rack) $650.00.

-hp- 120A/AR—DC to 200 KC

Ideal for industrial or production line work as well as daily lab jobs, Models 120A/AR are outstanding in both value and "big 'scope" performance features. This all-new instrument covers DC to 200 KC, has the -hp- universal trigger circuit which optimizes signals automatically; also offers automatic synchronization on any internal or external voltage including line power.

Sweeps 1 μsec/cm to 0.5 sec/cm
Features include 15 calibrated sweeps in 1-2-5 sequence, sweep speeds range 1 μsec/cm to 0.5 sec/cm, "times-5" sweep expansion on all ranges, high sensitivity calibrated vertical amplifiers. All power supplies are regulated for steady, drift-free traces. Automatic trigger and base line can be cut out for bright, clear photography trace. Extra compact Model 120AR is only 7" high. Utmost dependability, rugged construction. -hp- 120A (cabinet) or 120AR (rack) $435.00.

increase convenience of your 150A/AR

-hp- AC-2IC 50:1 Voltage Divider Probe. A 50:1 divider with high 10 megohm input impedance and low 2.5 μuf input capacitance. Convenient "pen" size for maximum handling ease. Probe has durable, attractive nylon barrel, alligator clip contactor. $25.00.

-hp- AC-115A Oscilloscope Testmobile, Most convenient mobile oscilloscope mounting. For 150A oscilloscopes but usable with other instruments. Rolls easily on large 4" rubber-tired wheels. Extra-sturdy construction of 1/2" tube stock, gleaming chrome throughout. Top shelf tilts 30° in four 7 1/2° increments for better viewing. $80.00.

-hp- AC-116A Testmobile Storage Unit. Extra-convenient storage for -hp- 151A, 152A/B, 153A oscilloscope plug-ins. Holds up to three extra plug-ins, guards against dust, mechanical damage. Fits -hp- AC-115A Testmobile (see photo); no installation needed. $22.50.

-hp- AC-117A Testmobile Accessory Drawer. Fits in -hp- AC-116A Storage Unit; convenient drawer storage for tools, components, solder, etc. Photo shows AC-117A installed in top rack of AC-116A Storage Unit. $10.00.
Hewlett-Packard now offers 12 high quality, fast and accurate oscillators, each an exceptional value and each engineered to do a specific job best. Each incorporates the famous RC resistance capacity circuit pioneered by -hp-. This circuit makes possible instruments that are highly stable, wide range, compact and portable; instruments that are extremely simple to operate and require no tedious re-setting or adjustment during operation.

**-hp- 200 Series Audio Oscillators**

For audio and ultrasonic measurements, -hp- offers popular Models 200AB and 200CD. Both have highest stability and accurate tuning circuits. Low impedance operating levels plus superior insulation guarantee long years of trouble-free dependability. Operation is simple; just three controls; no zero setting necessary. -hp- 200AB, 20 cps to 40 KC, $350.00. -hp- 200CD, 5 cps to 600 KC, $160.00.

**-hp- 207A Sweep Oscillator**

This new audio oscillator provides continuous single-sweep frequency coverage from 20 cps to 20 KC. No band switching is needed; dial accuracy is 1%; and the instrument also provides a flexible 10 v/600 ohm output usable balanced or with one side grounded. Frequency response is ±0.1 db full range, distortion and hum are less than 1%. -hp- 207A may be swept by hand, motor driven, tuned remotely or coupled to a recorder. -hp- 207A, $275.00.

**-hp- 202A Function Generator**

Compact, multi-purpose source of transient-free test voltages from 0.008 cps to 1,200 cps. Continuously variable through 5 bands; offers exceptional stability (within 1%) and distortion less than 1% to 100 cps. Sine, square or triangular waves may be selected by a front panel switch; the 50 volt output peak-to-peak is constant for all wave forms and over full frequency range. -hp- 202A, $465.00.

**-hp- 650A Test Oscillator**

Covering 10 cps to 10 MC, -hp- 650A is a highly stable, wide band instrument for audio, supersonic, video and rf measurements. Output is flat within 1 db full range; voltage range is 0.00005 to 3 v. In addition to 600 ohm impedance, voltage divider provides a 6 ohm impedance. Distortion less than 1% to 100 KC; stability ±2% to 100 KC. $490.00.

**-hp- Distortion, Wave Form Analyzers—20 cps to 20 KC**

**-hp- 330B Distortion Analyzer**

Measures distortion as low as 0.1% from 20 cps to 20 KC; also measures noise voltages down to 100 µv. Sensitivity is high; distortions of 0.5% are measured full scale and levels of 0.1% are readable accurately. Frequency calibration accurate within ±2% full range. Includes a 20 db amplifier, oscilloscope terminals and precision 10 cps to 100 KC vacuum tube voltmeter usable separately. $410.00.

**-hp- Oscillators—0.008 to 10,000,000 cps**

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Primary Uses</th>
<th>Frequency Range</th>
<th>Characteristics</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>-hp- 300A</td>
<td>Wave form analyzer</td>
<td>30 cps to 16 KC</td>
<td>Variable selectivity; measuring range 1 mV to 500 v</td>
<td>$775.00</td>
</tr>
<tr>
<td>-hp- 330B</td>
<td>Measures total audio distortion</td>
<td>20 cps to 20 KC</td>
<td>Includes input amplifier, VTVM</td>
<td>$410.00</td>
</tr>
<tr>
<td>-hp- 330C</td>
<td>For FM broadcast measurements</td>
<td>20 cps to 20 KC</td>
<td>Special VU meter to meet F.C.C. requirements</td>
<td>$440.00</td>
</tr>
<tr>
<td>-hp- 330D</td>
<td>For AM, FM broadcast measurements</td>
<td>20 cps to 20 KC</td>
<td>AM detector, and VU meter to meet F.C.C. requirements</td>
<td>$455.00</td>
</tr>
</tbody>
</table>

△ Rack mounted instruments available at $15.00 less.
NEW! -hp- 218A Digital Delay Generator

-hp- 219C Digital Pulse Duration Unit
This plug-in drawer for -hp- 218A produces a high power output pulse whose delay and duration are digitally controlled. The pulse is available in both polarities simultaneously, and is continually adjustable in amplitude up to 20 volts from a 90 ohm source. It may also be obtained from a directly coupled 500 ohm source with an amplitude of 100 volts. -hp- 219C, $350.00.

-hp- 219B Dual Pulse Unit
This plug-in drawer for -hp- 218A produces two high-power pulses which are continuously adjustable in width, 0.2 to 5 µsec and in amplitude from 0 to 50 volts, positive or negative polarity. The leading edge of these pulses can be set to occur at the beginning or end of the selected time interval. Both pulses are brought out to separate front panel jacks but may be switched to a common jack with no change in level or output impedance. -hp- 219B, $450.00.

-hp- 219A Dual Trigger Unit
This plug-in drawer for -hp- 218A supplies trigger pulses of positive polarity, 50 volts, 0.1 µsec rise time from a 50 ohm source. Pulse A occurs at T₀ or T₁ as selected by a switch; Pulse B is triggered at T₂. -hp- 219A, $100.00.

-hp- Square Wave and Pulse Generators

-hp- 212A Pulse Generator
Provides continuously variable, high power “fast pulses” of superior wave form. Combines broad general usefulness with 0.02 µsec rise and decay time to meet requirements of radar, TV and nuclear work. Pulse length variable 0.07 to 10 µsec; minimum overshoot; 50 watt peak power (50 v to 50 ohms load). 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 pulse available in advance of or following output pulse. $505.00 (cabinet), $550.00 (rack mount).

-hp- 211A Square Wave Generator
Versatile, wide range instrument for testing oscilloscopes, networks, video and audio amplifier performance, modulating signal generators and measuring time constants. Offers simple control of electronic switches; is also convenient for indicating phase shift, frequency response, transient effects. Two separate outputs (a) 7 volt 75 ohm circuit for TV work; (b) 55 volt 600 ohm output for high level work. Both have full amplitude variation. Instrument operates free-running or externally synchronized with positive going pulse or sine wave of 5 volts minimum amplitude. $265.00.

Model 218A Digital Delay Generator is a totally new instrument applicable to many types of timing measurements including calibrating the range determining circuits of radar receivers, etc. The generator is built to rigid standards and is suitable for military use. It provides two precision time intervals or pulse delays, either of which are independently adjustable from 1 to 10,000 microseconds in 1 microsecond steps. These time intervals are accurate to within 0.1 microsecond ±0.001% of the selected value, and may be initiated from an internal multi-vibrator, 10 cps to 10 KC, or from an external rate generator, 0 cps to 10 KC. Total jitter does not exceed 0.02 microseconds in either case. The instrument also provides a 50 volt synchronizing output pulse at the beginning or end of a time interval, and a 1 microsecond timing comb output at the front panel.

No count ambiguity
A unique feature of the new -hp- 218A is its time base, a pulsed crystal controlled oscillator. The oscillator starts at T₀ and stops at the last output pulse. This eliminates the “plus-or-minus-1-count” ambiguity of many counter circuits in such application.

Model 218A is a completely self-contained instrument, requiring only one or more -hp- 219 series plug-ins to perform a broad variety of time and delay generation measurements. Simplicity and flexibility are increased by the large variety of input and output connections brought to the front panel. The instrument is particularly compact and well-designed; etched circuits and the use of plug-ins materially increase circuit accessibility.

The instrument’s power supplies are fully regulated to avoid effects of line voltage variations. It is available as -hp- 218A, cabinet mount, or 218AR, rack mount. -hp- 218A/AR, $2,000.00.

10,000
500
5,000
10
10,000
**NEW! -hp- 400L Logarithmic Voltmeter**

New -hp- 400L, 10 cps to 4 MC, features a 5" true log voltage scale plus a 12 db linear decibel scale. The log voltage scale plus long scale length provides a voltmeter of maximum readability and an accuracy which is a constant percentage of the reading. Accuracy is ±2% of reading or ±1% of full scale, whichever is more accurate, to 500 KC; ±5% full frequency range. Voltage range 0.5 mv to 300 v in 12 steps.

Generous overlap is insured by a 10 db range switch plus a 12 db amplifier. $325.00.

**NEW! -hp- 425A Microvolt-Ammeter**

New, high sensitivity, high stability microvolt meter reading full scale voltages of 10 pv to 1 v in 11 ranges. Also reads currents of 10 pma to 3 ma in 18 step, 1-3-10 sequence. Accuracy ±3% on all ranges. Drift less than 2 µv referred to input terminals. Input impedance 1 megohm ±3% on all ranges. Instrument can also be used as a 100 db amplifier providing up to 1 v output from signals as small as 10 µv. Amplifier ac rejection is at least 3 db at 0.2 cps and 60 db at 60 cps. In addition to engineering uses ideal for physics, chemistry applications including grid or photomultiplier tube currents, ionization levels, thermocouple potentials and voltic currents. Also measures v in living cells, nerves, seeds, plants. Includes probe. $500.00.

**-hp- 400D Vacuum Tube Voltmeter**

Best -hp- voltmeter ever built! Covers all frequencies 10 cps to 4 MC. Extremely sensitive, wide range, accurate within 3% to 1 MC, measures 0.1 µv to 300 v. Direct reading in dbm. 10 megohm input impedance insures negligible loading on circuits under test. New amplifier circuit with mid-range feedback assures utmost stability, freedom from change due to external conditions. $225.00.

**-hp- 410B Vacuum Tube Voltmeter**

All-purpose test instrument, range 20 cps to 700 MC. Also serves as dc VTVM with over 100 megohms impedance, or ohmmeter for measurements 0.2 ohms to 500 megohms. Input capacity 1.5 µf, 10 megohms input impedance; employs radial diode probe which virtually eliminates circuit loading. Industry's most versatile precision voltmeter. $245.00.

**-hp- 400H Vacuum Tube Voltmeter**

Need extreme accuracy of 1%? -hp- 400H covers 10 cps to 4 MC, has 5" meter with mirror scale, measures voltages 0.1 µv to 300 v. 10 megohm resistance minimizes circuit loading, amplifier with 56 db feedback insures lasting stability. Direct readng in db or v. Extremely high quality throughout. $325.00.

**-hp- accessories increase usefulness of your voltmeters**

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Features</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>-hp- 452A</td>
<td>Capacitive Voltage Divider</td>
<td>100.00</td>
</tr>
<tr>
<td>-hp- 452-95A</td>
<td>Adapter</td>
<td>10.00</td>
</tr>
<tr>
<td>-hp- 453A</td>
<td>Capacitive Voltage Divider</td>
<td>25.00</td>
</tr>
<tr>
<td>-hp- 454A</td>
<td>Capacitive Voltage Divider</td>
<td>30.00</td>
</tr>
<tr>
<td>-hp- 456A</td>
<td>Probe Coaxial &quot;T&quot; Connector</td>
<td>35.00</td>
</tr>
<tr>
<td>-hp- 458A</td>
<td>Probe Coaxial &quot;N&quot; Connectors</td>
<td>25.00</td>
</tr>
<tr>
<td>-hp- 459A</td>
<td>DC Resistive Voltage Multiplier</td>
<td>25.00</td>
</tr>
<tr>
<td>-hp- 470A to F Shunt Resistors</td>
<td>For -hp- 400 series VTVM, For measurement of current</td>
<td>470A - 15.00</td>
</tr>
</tbody>
</table>
NEW! -hp- 524D Precision Electronic Counter

5 PLUG-IN UNITS INCREASE FLEXIBILITY, USEFULNESS FOR MANY MEASUREMENTS

-hp- 525A Frequency Converter. Extends 524D's direct reading range to cover 10 cps to 100 MC with no loss in accuracy. Provides additional amplification to increase video sensitivity to 0.1 v through 524D's basic 10 cps to 10.1 MC range. $250.00.

-hp- 525B Frequency Converter. Extends -hp- 524D for direct readings 100 to 220 MC in decade steps. Maintains same high accuracy throughout range; provides high sensitivity for low level work. $250.00.

-hp- 526A Video Amplifier. Increases 524D sensitivity to 10 mv for low power frequency measurement 10 cps to 10.1 MC. Accuracy same as counter; minimum input 10 millivolts rms. $175.00.

-hp- 526B Time Interval Unit. Permits 524D to measure interval 1.0 usec to 100 days with accuracy of 0.1 usec ± 0.0001%. Reads in sec, msec or usec. Triggering from separate "stop" or "start" on pos. or neg. going waves. Trigger adjustable -192 to +192 volts. $175.00.

-hp- 526C Period Multiplier. Permits 524D to measure period over 100, 1,000 or 10,000 cycles of unknown, thus providing the greater accuracy of mid-range frequency readings. Front panel switch selects desired period. $225.00.

New crystal oscillator stability of 5 parts in 10⁸ per week plus the added convenience of uniform vertical neon readout units—these are significant advances incorporated into new -hp- 524D Electronic Counter, at no increase in price over -hp- 524B.

The new 524D permits you to buy only the basic counting facilities you need now—later on add inexpensive plug-ins to triple and quadruple the usefulness of your counter.

The basic -hp- 524D reads frequency 10 cps to 10 MC over 5 selected periods. Display time is variable, counts are automatically reset, action is repetitive, readings are direct without calculation or interpolation; an automatic illuminated decimal point is included.

The instrument is of highest quality throughout and employs a military design approach. -hp- 524D, less plug-ins, $2,150.00 (cabinet); $2,125.00 (rack mount).

New stability—5 parts in 10⁸ per week

New convenience—8 vertical readout units

Direct, instantaneous, automatic readings

Covers frequencies 10 cps to 220 MC

Measures time interval 1 µsec to 100 days

Measures period 0 cps to 10 KC

Resolution 0.1 microseconds

No calculation or complex setup

Easily used by non-technical personnel

High, sensitivity, impedance, reliability

<table>
<thead>
<tr>
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<th>Primary Uses</th>
<th>Frequency Range</th>
<th>Characteristics</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>-hp- 525A Frequency Counter</td>
<td>Frequency, period measurements</td>
<td>10 cps to 10 KC (Freq), 5 cps to 10 KC (Period)</td>
<td>Direct reading, no interpolation; stability about 1/10,000/°C</td>
<td>$2,150.00</td>
</tr>
<tr>
<td>-hp- 525B Frequency Converter</td>
<td>Frequency, period measurement</td>
<td>10 cps to 10 MC (Freq), 0 cps to 10 KC (Period)</td>
<td>Direct reading, no interpolation; stability 5/10° per wk</td>
<td>$2,150.00</td>
</tr>
<tr>
<td>-hp- 525A Frequency Converter</td>
<td>Extends 524 range to 100 MC; increases basic sensitivity</td>
<td>10 cps to 100 MC</td>
<td>Accuracy ± 1 cps ± stability, 0.1 v rms min. input</td>
<td>250.00</td>
</tr>
<tr>
<td>-hp- 525B Frequency Converter</td>
<td>Extends 524 range from 100 to 220 MC; high sensitivity</td>
<td>100 MC to 220 MC</td>
<td>Accuracy ± 1 cps ± stability, 0.2 v rms min. input</td>
<td>250.00</td>
</tr>
<tr>
<td>-hp- 526A Video Amplifier</td>
<td>Increases 524 sensitivity to 10 millivolts</td>
<td>10 cps to 10.1 MC</td>
<td>Accuracy same as basic counter; 10 mv rms min. input</td>
<td>175.00</td>
</tr>
<tr>
<td>-hp- 526B Time Interval Unit</td>
<td>Measures interval 1 usec to 100 days</td>
<td>-1 usec to 10 sec</td>
<td>Accuracy 0.1 usec ± 0.0001%</td>
<td>175.00</td>
</tr>
<tr>
<td>-hp- 526C Period Multiplier</td>
<td>Period measurement</td>
<td>Extends range of 524 to measure 10,000 periods</td>
<td>Greater accuracy in period measurement</td>
<td>225.00</td>
</tr>
</tbody>
</table>

-Rack mounted instrument available for $25.00 less.
-hp- 540A Transfer Oscillator

Just two -hp- instruments—Model 540A Transfer Oscillator and a 524 series electronic counter, (with plug-ins) are all the equipment you need to measure unknown frequencies up to 12 KMC swiftly and accurately.

This simple, two instrument setup is particularly useful for quick CW and AM frequency measurement, FM center frequency and deviation checks, frequency of high-noise signals and pulsed signals. Overall accuracy is better than 10 times that of the best microwave wavemeters; and on clean CW signals, is about 1/1,000,000.

Simple operation

When approximate frequency is known, the 540A is tuned until a harmonic beats with the unknown. The multiplying factor is noted, and the 540A frequency measured on the 524. The 524 reading, times the multiplying factor, is the unknown.

Brief Specifications

Oscillator Freq. Range: 100 to 220 MC
Harmonic Freq. Range: Up to 12 KMC
Stability: Better than 0.002%/minute
Output: 2 volts into 50 ohms
Attenuator Range: 20 to 80 db into 50 ohms
SWR 1.5 at 1 KMC
Amplifier Gain: 40 db max, 1 v output
Oscilloscope: 100 cps to 200 KC; vert. sens. 5 mv rms/inch
Price: $615.00

-hp- 560A Digital Recorder

Continuous digital record for frequency counters

Direct reading, simple hookup

Five 11-digit lines/secnd

Analog output for recorder

Expanded scale; full scale = 10^7

Accuracy identical to counter used

Brief Specifications

Accuracy: Identical to counter used
Printing Rate: 5 lines/sec maximum
Digit Capacity: Up to 11 per line
Driving Source: Parallel entry staircase voltages, descending 135 to 55 v, 0 to 9
Analog Output: Proportional to any 3 consecutive digits; max. amplitude 1 ma or 100 mv
Print Command Signal: 10 μsec minimum, pos. or neg., 15 v/pulse
Price: (11-digit, cabinet model), $1,390.00
(11-digit, rack mount), $1,375.00
**-hp- 500B/C Frequency Meters**

Directly measures frequency of voltages 3 cps to 100 KC; expanded scale allows any 10% or 30% of range to be measured full scale. Sensitivity 0.2 v rms (sine waves) 1 v peak for pulses. Input impedance 1 megohm with 40 µF shunt; accuracy independent of line voltage changes. Also available as -hp- 500C, calibrated for direct reading in rpm. **-hp- 500B/C, $285.00**.

**-hp- 506A Optical Tachometer Pickup**

Versatile, flexible light source and pickup for use as a transducer with -hp- 521 A/C, 500B/C, etc. Measures 300 to 300,000 rpm (beyond with amplified output); normal output at least 1 v rms into 1 megohm or greater impedance. Light source 21 cp 6 v bulb; Type IP41 phototube, phototube bias 70 to 90 v dc (supplied from -hp- 500B/C, 521 A/C). **-hp- 506A, $125.00**.

**-hp- 508A-D Tachometer Generators**

Rotating speed transducers used with electronic counters or frequency meters for simple, accurate measurements from 15 to 40,000 rpm (or beyond with amplifier). **-hp- 508A provides 60 output pulses per shaft revolution; -hp- 508B, C, D provide 100, 120 and 360 pulses/rev respectively. Output voltage increases linearly with shaft speed to 5,000 pps. Running torque approx. 0.13 in. oz.; peak starting torque approx. 4 in. oz. **-hp- 508A, B, C or D, $100.00**.

**-hp- 521A/C Industrial Counters**

Low cost, simple operation, almost limitless uses characterize **-hp- 521A/C Industrial Counters**. **-hp- 521A measures speed, rpm, cps, frequency, random events per unit of time; with proper transducers also measures weight, pressure, temperature, acceleration, etc. **-hp- 521A reads direct in cps, rpm and rps; display is variable 0.1 to 15 seconds or "hold"; 60 cps check circuit confirms accuracy of readings; three accessory power supplies include -150 v dc, + 300 v dc and 6.5 v ac. Frequency range 1 cps to 120 KC, accuracy ± 1 count ± accuracy of built-in 60 cps timing frequency (usually ± 0.1%), input min. 0.2 v rms; input attenuator adjusts sensitivity 0.2 to 100 v rms, input impedance 1 megohm with 50 µF shunt, gate time 0.1 and 1 sec, also Manual Gate. **-hp- 521C same as 521A except has greater accuracy, crystal controlled time base and 5-place (instead of 4-place) registration with count capacity of 99,999. **-hp- 521C, $650.00. **-hp- 521A, $475.00.**

**-hp- 522B Electronic Counter**

Compact, low cost, versatile instrument for frequency, period or time measurements. Measures frequency 10 cps to 120 KC, time interval 10 µsec to 10³ sec. Reads direct in cps, KC, seconds or milliseconds. Count automatically resets, action repetitive. Stability of time base 5/1,000,000 per week. Easily used by untrained personnel. High quality, completely self-contained, bright, clear numerals; ideal industrial as well as lab instrument. **-hp- 522B, $915.00A.**

**-hp- 523B Electronic Counter**

Revolutionary all-purpose counter measures frequency 10 cps to 1.1 MC, time interval 3 µsec to 27.8 hours, period 0.00001 cps to 10 KC. Stability 2/1,000,000 per week. Results displayed in sec, msec, µsec or KC; automatic decimal. Display time variable 0.1 sec to 5 sec or indefinitely. Accuracy ± 1 count plus crystal stability, 5 gate times. Usable with 100 KC primary standard. High quality, completely self-contained, bright numerals, controls color-coded for simpler use by non-technical personnel. Pulse output for Z-axis oscilloscope modulation. **-hp- 523B, $1,245.00.**
Microwave Impedance Measuring Equipment

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<th>Frequency Range</th>
<th>Characteristics</th>
<th>Price</th>
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<tbody>
<tr>
<td>-hp-360A-D Low Pass Filters</td>
<td>Eliminates harmonic reflections from all systems</td>
<td>2.0 to 2.000 MHz; 50 ohms</td>
<td>0.1 μV sensitivity</td>
<td>$4.00</td>
</tr>
<tr>
<td>-hp-415B Standing Wave Indicator</td>
<td>S.W.R. indicator or null indicator</td>
<td>315 to 2,000 MHz, 1.000 MHz</td>
<td>Continuous sweep frequency presentation: accuracy ±1%</td>
<td>$200.00</td>
</tr>
<tr>
<td>-hp-415A Expansion Wave Indicator</td>
<td>VHF bridge detector for -hp-805A</td>
<td>2.0 to 500 MHz</td>
<td>Approx. 0.5 μV sensitivity</td>
<td>$350.00</td>
</tr>
<tr>
<td>-hp-803A VHF Bridge</td>
<td>Provides direct impedance measurements in VHF range (12.4 to 40,000 MHz) and up to 1,000 MHz.</td>
<td>52 to 500 MHz</td>
<td>For Type N Connectors flexible cables</td>
<td>$475.00</td>
</tr>
<tr>
<td>-hp-417A VHF Detector</td>
<td>Super-regenerative (AM) receiver covering all frequencies from 10 to 500 MHz in 5 bands.</td>
<td>-90° to +90° phase angle</td>
<td>Max. sensitivity 0.1 μV</td>
<td>$400.00</td>
</tr>
<tr>
<td>-hp-360 Low Pass Filters</td>
<td>Isolating filters which speed microwave measurements by eliminating harmonics</td>
<td>2.0 to 2.000 MHz; 50 ohms</td>
<td>Approx. 0.5 μV sensitivity</td>
<td>$475.00</td>
</tr>
<tr>
<td>-hp-805A/B Slotted Lines</td>
<td>Exclusive &quot;hp-&quot; parallel-plane design insures utmost mechanical rigidity, less leakage, greater accuracy, low S.W.R. of 1.02 or 1.04 (depending on model). Range 500 MC to 4 KMC, reads in cm and mm to 0.1 mm.</td>
<td>-90° to +90° phase angle</td>
<td>Approx. 0.5 μV sensitivity</td>
<td>$475.00</td>
</tr>
</tbody>
</table>

For prices, see table page 12.

Models 809B and 814B are precision built mechanical assemblies operating, respectively, with -hp-810B and 815B series slotted sections. Combination of the 809B carriage and 810B slotted sections covers 2.6 to 18.0 KMC. Combination of 814B carriage and 815B series sections covers 12.4 to 40.0 KMC.

On either carriage, waveguides can be interchanged in seconds for real savings on engineering time. Only one probe is required for each carriage to cover full frequency range. Manufacture is of highest quality to assure positive mechanical positioning of interchangeable waveguides and precise installation of mating -hp- probes (see page 12). -hp-809B has a vernier scale reading to 0.1 mm and is equipped for dial gauge mounting. -hp-814B has a cylindrical dial which may be read directly to 0.1 mm and interpolated at 0.01 mm.

-hp-815B Slotted Sections. For mounting in 815B carriage, available in Type N connectors, 50 ohm Type N use, 0.5 ohm Type G connectors, 50 ohm Type G use, 0.5 million Type K connectors, 50 ohm Type K use, 0.5 million Type R connectors, 50 ohm Type R use. Shapes and sizes for probe mounting in 814B carriage may be read directly to 0.1 mm and the range may be read to 0.01 mm by interpolation.

-For prices, see table page 12.
NEW! Microwave Power Measuring Equipment

**-hp- 434A Calorimetric Power Meter**

Just connect and read powers 10 mw to 10 watts! Covers dc to 10 KMC. No barretter or thermistor needed. No external terminations or plumbing. Measures CW or pulsed power. Two simple controls; no technical skill required.

New -hp- 434A Calorimetric Power Meter is, factually, the fastest, easiest way yet devised to measure powers accurately from 10 milliwatts to 10 watts, dc to 10 megacycles.

With the 434A, measurement is literally as simple as connecting to the 50 ohm, type N front panel terminal and reading power directly. Thus the instrument is particularly suited for use by non-technical people.

**Compact, self-contained**

- hp- 434A fills the range between bolometer microwave power meters (such as the popular -hp- 430C, below) and conventional calorimeters for powers above 10 watts. But unlike previous cumbersome equipment suggested for its range, the new -hp- 434A is compact, moderate in cost, completely self-contained, and needs no detectors or external plumbing whatsoever.

**Brief Specifications**

| Input Power Range: 7 ranges; full scale readings 0.01 to 10 watts | Frequency Range: dc to 10 KMC |
| dc Input Impedance: 50 ohms ± 5 ohms at input jack | Input SWR: Less than 1.5 full range |
| Meter Response (full scale): Approx. 10 sec (high range) | Approx. 2 sec (lower ranges) |

Controls: Zero Set, Meter Range
Accuracy: Within 5% of full scale
Price: $1,115.00 (cabinet); $1,160.00 (rack mount)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Primary Uses</th>
<th>Frequency Range</th>
<th>Characteristics</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>-hp- 430C Microwave Power Meter</td>
<td>Measurement of rf power</td>
<td>Depends on Bolometer Mount</td>
<td>Direct reading, no barretters, thermistors or terminations; CW, pulsed</td>
<td>$350.00</td>
</tr>
<tr>
<td>-hp- 434A Calorimetric Power Meter</td>
<td>Measurement of rf power</td>
<td>dc to 10 KMC</td>
<td>Matches 50 ohm lines to 100 or 200 ohms</td>
<td>$1115.00</td>
</tr>
<tr>
<td>-hp- 477B Tunable Thermistor Mount</td>
<td>Measurement of rf power (with 430B/C)</td>
<td>1,000 to 4,000 MC</td>
<td>Full coverage, no tuning, 1.5 SWR less than 1.25</td>
<td>$85.00</td>
</tr>
<tr>
<td>-hp- 476A Universal Thermistor Mount</td>
<td>Measurement of rf power (with 430C)</td>
<td>10 to 1,000 MC</td>
<td>No tuning required, SWR less than 1.5</td>
<td>$75.00</td>
</tr>
<tr>
<td>-hp- 477B Coaxial Thermistor Mount</td>
<td>Measurement of rf power (with 430B/C)</td>
<td>10 MC to 10 KMC</td>
<td>No tuning required, SWR less than 1.5</td>
<td>$75.00</td>
</tr>
<tr>
<td>-hp- 476A Waveguide Thermistor Mount</td>
<td>Measurement of rf power</td>
<td>1,000 to 10,000 MC</td>
<td>Coupling attenuation* 20 db, directivity 20 db</td>
<td>See Table page 12</td>
</tr>
<tr>
<td>-hp- 477B Waveguide Thermistor Mount</td>
<td>Measurement of rf power</td>
<td>3,950 to 26,500 MC</td>
<td>Full coverage of waveguide band</td>
<td>See Table page 12</td>
</tr>
<tr>
<td>-hp- 764D-767D Dual Directional Couplers</td>
<td>Reflectometer and rf power measurements</td>
<td>216 to 450 MC</td>
<td>Coupling attenuation* 20 db, directivity 90 db</td>
<td>125.00</td>
</tr>
<tr>
<td>-hp- 764D-767D Dual Directional Couplers</td>
<td>Reflectometer and rf power measurements</td>
<td>450 to 945 MC</td>
<td>Coupling attenuation* 20 db, directivity 90 db</td>
<td>125.00</td>
</tr>
<tr>
<td>-hp- 764D-767D Dual Directional Couplers</td>
<td>Reflectometer and rf power measurements</td>
<td>940 to 1,975 MC</td>
<td>Coupling attenuation* 20 db, directivity 90 db</td>
<td>125.00</td>
</tr>
<tr>
<td>-hp- 764D-767D Dual Directional Couplers</td>
<td>Reflectometer and rf power measurements</td>
<td>1,900 to 4,000 MC</td>
<td>Coupling attenuation* 20 db, directivity 90 db</td>
<td>125.00</td>
</tr>
</tbody>
</table>

*Power handling capacity all 764/767 series couplers 50 watts CW, 10 Kw peak.

No computations! Provides instantaneous, automatic power readings direct in ohm or mw at all frequencies for which there are suitable bolometer mounts. For CW measurements, uses either 1/100 amp fuse or Sperry 821 barretter. Also measures CW or pulsed power with negative coefficient thermistor. Provides up to 16 ma bias current. Operates with all mounts in adjacent table. Range 0.02 to 10 mw. $250.00.

**-hp- 477B Coaxial Thermistor Mount**

For frequency range 10 MC to 10 KMC, SWR less than 1.5. Thermistor element is 200 ohm negative. No tuning required; not susceptible to burnout. $75.00 (including thermistor).

**-hp- 764D-767D Dual Directional Couplers**

New high directivity dual coaxial couplers make reflectometer measurements practical in vhf and uhf coax systems. Flat response, high power capacity, low insertion loss. Four models, covering 216 to 4,000 MC collectively, $125.00.
Basic, low-cost elements offer utmost flexibility for assembly of exact instrumentation required. Each unit covers entire range of its waveguide size. Careful engineering, simple, sturdy mechanical design, highest quality manufacture insures accurate, multi-purpose operation.

### NEW! -hp- 382A Precision Attenuators

Previously offered for frequencies 3.95 through 18.0 KMC, popular -hp- 382A series precision attenuators are now available in "K," "R" bands, 18.0 to 40.0 KMC. "K," "R" band attenuators are of new, space-saving design (see photo). Direct reading, one-control tuning, high power handling capacity. Attenuation 0 to 30 db full range, independent of frequency. Phase shift constant with attenuation. For prices G, J, H, X bands, see table above. -hp- R382A, $425.00.

### -hp- 487B Thermistor Mounts

For fast, accurate waveguide power measurements. Each unit covers full range of its waveguide frequency. No tuning needed. SWR 1.5 max., except K487B, SWR 2.0 max. Max. power 10 mw. Rugged construction, high temperature coefficient thermistors virtually eliminate burnout. For G, J, H, X and K bands, 3.95 to 26.5 KMC. $75.00 to $95.00.

### -hp- 420A/B Crystal Detectors

Employs a silicon crystal to detect rf signals in Type N coaxial lines. Covers frequencies 10 MC to 12.5 KMC, sensitivity approx. 0.03 v/0.1 mw, frequency response 3 db full range. Uses modified 1N26 crystal, max. SWR 5. $50.00 each. Also available in matched pairs as -hp- 420B, $150.00 pair.

### -hp- 444A/446A Untuned Probes

-hp- 444A is modified crystal (1N76 or 1N26) plus small antenna in convenient housing. Probe penetration easily variable; may be locked in position. More tuning needed; sensitivity superior to most elaborate single or double tuned probes. Range 2.4 to 18 KMC; fits 5/8" bore.

New -hp- 446A, for -hp- 814 Probe Carriage, similar but covers P, K and R bands, 12.4 to 40.0 KMC. -hp- 444A, $35.00. -hp- 446A, $145.00.
NEW! -hp- Noise Measuring Equipment

-hp- 340A Noise Figure Meter

Here is totally new equipment that makes it possible for a semi-skilled worker to do, in 5 minutes, receiver and component alignment jobs that once took skilled engineers a full hour. Receiver performance can often be improved up to 3 dB over the best adjustment previously possible. Improvement in receiver performance frequently equals doubling transmitter output. Since accurate alignment is now easy, equipment is better maintained and peak performance enjoyed daily.

Model 340A is a revolutionary instrument making it possible, in 5 minutes, to optimize receiver performance and measure noise figure directly. -hp- 340A is direct reading in db, simple to use, automatic and needs no periodic calibration, operates over any frequency range for which there are noise sources, and has fast response to instantly track and present noise changes. In addition to usefulness in optimizing receiver and component performance, -hp- 340A is particularly helpful in designing circuit components such as IF amplifiers, crystal mixing circuits and traveling-wave tubes.

Brief Specifications

Frequency Range: Depends on noise source
Noise Figure Range: 3 to 30 db to $\infty$ with waveguide noise source
Accuracy: ± 0.5 db, 10 to 25 db; ± 0.1 db, 3 to 30 db, waveguide noise source

Required Rcvr or rf Amplifier Gain: Approx. 40 db (Waveguide Voice Source)
Approx. 50 db (IF Noise Source)

Input Frequency: 30 or 60 MC, selected by switch
Bandwidth: 1 MC minimum
Input Impedance: 50 ohms
Price: $715.00 (cabinet); $700.00 (rack mount)

NEW! -hp- 355A/B Attenuators - 0 to 132 db

Here are two completely new design 50 ohm attenuators providing, together, 0 to 132 db attenuation in 1 db steps from dc to 500 MC!

-hp- 355A provides 0 to 12 db attenuation in 1 db steps; -hp- 355B provides 0 to 120 db attenuation in 10 db steps. One simple control for each attenuator; overall full range accuracy is ± 0.25 db for -hp- 355A. For -hp- 355B, accuracy is ± 1 db to 250 MC; ± 2 db to 500 MC. Nominal impedance is 50 ohms, maximum SWR is 1.2 to 250 MC, 1.5 to 500 MC. Maximum insertion loss is 0 at dc, 0.4 db at 60 MC, 1 db at 250 MC and 1.5 db at 500 MC. Power dissipation is 0.5 watt average, 350 volts peak. The attenuators use BNC connectors.

-hp- 355A or 355B, $125.00.

More -hp- equipment, available for most waveguide frequencies

-hp- 485 Detector Mounts

Three basic series offered; 485A for S band (no tuning, 1.35 SWR, 821 element); 485B, for G, J, H, X bands (tunable, 1.25 SWR full range, 1N25, 1N21 or 821 element); 485D for S, G, J bands (factory-installed 821 barrette). Also P485C, like 485B but for P band only, has installed 200 ohm 3 mw thermistor. $75.00 to $145.00.

-hp- 532A Waveguide Frequency Meters

New design for P, K, R bands. Wide band, direct reading, no interpolation or charts. Comprises a high Q resonant cavity tuned by choke plunger; no sliding contacts. Transmits almost full power at resonance; resonance indicated by 1.5 db dip in output. Precision tuning mechanism; no back-lash. Also similar model for X-band. $150 to $250.

-hp- 752 Multi-Hole Couplers

Precision directional couplers available in 3 models with coupling factors of 3, 10 and 20 db. Coupling accuracy ± 0.4 db except K, R bands which are ± 0.7 db. Directivity better than 40 db full range, coupling variation not over ± 0.5 db full range. Primary guide SWR less than 1.05. S, G, J, H, X, P, K, R bands, 2.6 to 40.0 KMC. $75.00 to $375.00.
Wide Band Amplifiers for Fast Circuit Work

-**hp-** Traveling-Wave Tube Amplifiers

-**hp-** offers Traveling-Wave Tube Amplifiers for all frequencies 7 to 12.4 KMC. -**hp-** 490B, 492A and 494A are low level, high gain amplifiers with 30 and 25 db gain; they offer amplitude, pulse, phase or FM modulation. -**hp-** 491A is a high power traveling-wave tube amplifier having a rated output of 1 watt, 2 to 4 KMC. All amplifiers have exclusive -**hp-** helical coupling system, and employ encapsulated traveling-wave tubes that can be readily replaced. -**hp-** 490B/491A, $1,400.00. -**hp-** 492A/494A, $1,500.00.

-**hp-** 460A/B Fast Pulse Amplifiers

-**hp-** 460A Wide Band Amplifiers, in cascade with -**hp-** 460B Fast Pulse Amplifiers, provide up to 90 db gain, 125 v open circuit. This permits direct connection to oscilloscope deflection plates. Rise time 0.0026 usec. Will amplify millimicrosecond pulses. Over 100 MC bandwidth for scopes. -**hp-** 460AB, $185.00. -**hp-** 460BR, $225.00.

-**hp-** Regulated and Klystron Power Supplies

NEW! -**hp-** 721A Transistor Power Supply

New, completely transistorized, compact, regulated supply. Output 0 to 30 v, continuously variable. 150 ma maximum output. Output impedance less than 0.2 ohms. Regulation, no load to full load, 0.3% or 30 v whichever is greater. Line voltage change of ± 10% causes output voltage change of less than ± 0.3% of ± 15 v, whichever is greater. Front panel switch limits maximum output current preventing damage to transistors, etc., from accidental overload. Reads ma, v direct. $145.00.

-**hp-** 712B Power Supply

This -**hp-** instrument features high regulation of 50 mv no load to full load, 0.1 millisecond transient response, 0.5% maximum impedance 0.1 ohms in series with 25 µH; full load maximum hum less than 500 mv, sealed transformers, chokes and condensers. 0 to 500 v, 200 ma supply and fixed - 300 v tap providing a 50 ma, 300 to 800 v variable supply for klystron operation. $365.00Δ.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Primary Use</th>
<th>Frequency Range</th>
<th>Characteristics</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>-<strong>hp-</strong> 450A Amplifier, Stabilized</td>
<td>General purpose lab amplifier</td>
<td>10 cps to 1,000,000 cps</td>
<td>20 and 40 db gain, frequency response 0.5%, 0.5%</td>
<td>$140.00</td>
</tr>
<tr>
<td>-<strong>hp-</strong> 460A Amplifier, Wide Band</td>
<td>Pulse amplification high output</td>
<td>100 KC to 140 MC</td>
<td>15 db gain, 125 peak volts</td>
<td>$225.00</td>
</tr>
<tr>
<td>-<strong>hp-</strong> 460BR Travelling-Wave Tube Amplifier</td>
<td>Amplification throughout &quot;S&quot; band</td>
<td>2 to 4 KMC</td>
<td>30 db gain; millimicrosecond rise time; 1 watt output</td>
<td>$1,400.00</td>
</tr>
<tr>
<td>-<strong>hp-</strong> 490B Travelling-Wave Tube Amplifier</td>
<td>High power &quot;S&quot; band amplification</td>
<td>2 to 4 KMC</td>
<td>30 db gain; millimicrosecond rise time; 1 watt output</td>
<td>$1,400.00</td>
</tr>
<tr>
<td>-<strong>hp-</strong> 491A Travelling-Wave Tube Amplifier</td>
<td>Amplification through most of &quot;S&quot; and &quot;J&quot; bands</td>
<td>4 to 8 KMC</td>
<td>30 db gain; millimicrosecond rise time; 10 mw output</td>
<td>$1,500.00</td>
</tr>
<tr>
<td>-<strong>hp-</strong> 492A Travelling-Wave Tube Amplifier</td>
<td>Amplification throughout &quot;X&quot; band</td>
<td>7 to 12.4 KMC</td>
<td>25 db gain; millimicrosecond rise time; 5 mw output</td>
<td>$1,500.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Primary Use</th>
<th>Characteristics</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>-<strong>hp-</strong> 710B Power Supply</td>
<td>General purpose regulated dc supply for lab and field use</td>
<td>100 to 360 volts @ 75 ma</td>
<td>$110.00 Δ</td>
</tr>
<tr>
<td>-<strong>hp-</strong> 711A Laboratory Power Supply</td>
<td>Same as 710B</td>
<td>0 to 500 volts @ 100 ma</td>
<td>$225.00</td>
</tr>
<tr>
<td>-<strong>hp-</strong> 712B Power Supply</td>
<td>Same as 710B</td>
<td>0 to 500 volts @ 200 ma</td>
<td>$365.00Δ</td>
</tr>
<tr>
<td>-<strong>hp-</strong> 715A Klystron Power Supply</td>
<td>Regulated beam, reflector source for low power klystrons</td>
<td>250 to 400 volts @ 50 ma</td>
<td>$300.00</td>
</tr>
<tr>
<td>-<strong>hp-</strong> 717A Klystron Power Supply</td>
<td>Powering Type 5721 klystrons</td>
<td>800 to 1,000 volts @ 25 ma</td>
<td>$425.00</td>
</tr>
<tr>
<td>-<strong>hp-</strong> 721A Transistor Power Supply</td>
<td>Powering transistors, similar applications</td>
<td>0 to 30 v, 150 ma</td>
<td>$145.00</td>
</tr>
</tbody>
</table>

Δ Rack mounted instrument available for $15.00 less.
NEW! -hp- 606A Standard Signal Generator

New, ultra-modern; 50 KC to 65 MC. Output 3 v full range; continuous attenuation to 0.1 v. MO-PA circuit with full feedback loop insures constant output capabilities. Typical -hp- speed, ease of operation; occupies 1/4 bench space normally needed for generators of this frequency. $990.00.

-hp- 608D vhf Signal Generator

10 to 420 MC. Highest stability. No incidental FM or frequency drift. Calibrated output 0.1 v to 0.5 v throughout range. Built-in crystal calibrator gives frequency check accurate within 0.01% each 1 and 5 MHz. Master-oscillator, intermediate and output amplifier circuit design. Premium quality performance, direct calibration, ideal for aircraft communications equipment testing. $1,050.00.

-hp- 628A shf Signal Generators

-10 mw full range, full modulation capabilities, direct-reading frequency dial. $3,250.00.

Data subject to change without notice.
Prices f.o.b. factory.

-hp- 608C vhf Signal Generator

High power (1 v max.) stable, accurate generator for lab or field use. 10 to 490 MHz. Ideal for testing receivers, amplifiers, driving bridges, slotted lines, antennas, etc. $950.00.

-hp- 606A Standard Generators

10 to 15.5 MC, $1,750.00.

-hp- 626A / 628A shf Signal Generators

-10 dbm to 10,000 MC. Highest stability, 10 mw output minimum, full frequency band coverage, output 0.5 v into 50 ohms. AM, pulse, or square wave modulation. Direct calibration. $2,250.00.

-hp- 623B

5,925 to 15,525 MHz. Output 0.1 pv to 0.223 v into 50 ohm load, Pulse, CW or FM modulation. Direct calibration. $1,500.00.

-hp- 618A

10 to 26.000 MHz. Output 0.1 pv to 0.223 v into 50 ohm load, Pulse, CW or FM modulation. Direct calibration. $2,250.00.

-hp- 616A

1,000 to 4,000 MHz. Output 0.1 pv to 0.223 v into 50 ohm load, Pulse, CW or FM modulation. Direct calibration. $1,050.00.

-hp- 618B

3,800 to 7,660 MHz. Output 0.1 pv to 0.223 v into 50 ohm load, Pulse, CW or FM modulation. Direct calibration. $2,250.00.

-hp- 624A

8,500 to 10,000 MHz. Output 0.1 pv to 0.223 v into 50 ohm load, Pulse, FM or square wave modulation. Separate power meter and wave meter section. $2,665.00.

-hp- 626A

10 to 15.5 MHz. Output 0.1 pv to 0.223 v into 50 ohm load, Pulse, FM or square wave modulation. Separate power meter and wave meter section. $3,250.00.

-hp- 628A

15 to 21 MHz. Output 0.1 pv to 0.223 v into 50 ohm load, Pulse, FM or square wave modulation. Direct calibration. $3,250.00.

-hp- 614A / 616A UHF Signal Generators

1.2 to 127 dbm. 616A, SWR 1.8, output accuracy 1.5 db, 7 db to -127 db. Both have constant internal impedance 50 ohms. Modulation is internal or external pulse, or FM. -hp- 614A or -hp- 616A, $1,950.00.

-hp- Swept Frequency Oscillators

-10 mw output minimum, frequency sweep linear with time. Has slow sweep for oscilloscope; single sweep manually started or externally triggered, external FM, AM modulation. Ultimate in X-band sweep oscillators. $2,615.00.

Data subject to change without notice.

Prices f.o.b. factory.
In 1957, HP occupied the first two of six 25,000 square foot buildings forming a complete new laboratory and manufacturing plant. New facility is approximately one mile west of previous plant on a 40-acre site just south of Stanford University. Your visit is invited.

COMPLETE COVERAGE

Won't you agree it is simple and more time-saving when you can turn to one source for your test equipment needs? HP engineers are continually working to produce new equipment that anticipates your future needs, yet functions smoothly with your existing HP instruments. At the 1958 I.R.E. Show 20 new, basic HP test instruments were introduced. Today, HP makes over 500 instruments; you can choose from the world's largest and most complete line just the equipment you need. In making this choice, you are assured of HP quality; today the standard of the world in electronic test instruments.

To give you personal help with measuring problems, you have available over 150 electronics specialists in every major U. S. metropolitan area, and around the world. These men, trained and annually re-trained by HP, are experts in applying as well as selling and servicing HP instruments. Call them when you can use personal, competent help, in your plant, today.

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107 Washington St., S.E.
Albuquerque 1-5986

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909 Main Street
Killing 1-3150

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Bowers & Caldwell, Inc.
3133 Maple Drive, N. E.
Atlanta 7-5122

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Horneman Associates, Inc.
655 St. Johns Road
Baltimore 3-2290

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Yewell Associates, Inc.
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Boston 2-9000

Bridgeport, Connecticut
Yewell Associates, Inc.
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Regent 7-6791

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Hendroak 3-8700

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Hillcrest 2-8080

Dallas, Texas
Earl Lipscomb Associates
5001 Park Avenue
Dallas 5-3952

Denver, Colorado
Lubin & Company
1866 South Broadway
Federal 3-3791

Detroit, Michigan
S. Sterling Company
1510 West McNichols Rd.
Broadway 3-6500

Englewood, New Jersey
R. M. C. Associates
361 Grand Avenue
Englewood 7-3995

Fort Myers, Florida
Arthur Lytker & Associates
35 West North Drive
Wynadotte 3-2151

High Point, North Carolina
Bivins & Bivins, Inc.
1923 N. Main Street
Hickory 2-6875

Houston, Texas
Earl Lipscomb Associates
P. O. Box 6173
Houston 4-9305

Indianapolis, Indiana
Crosley Associates, Inc.
5220 No. College Avenue
Coralville 1-9255

Kansas City, Missouri
Crosley Associates, Inc.
2811 Park Hill Avenue
Kansas City 1-4901

Denver, Colorado
Lubin & Company
1866 South Broadway
Federal 3-3791

Los Angeles, California
Neely Enterprises
125 S. Water Street
Jackson 2-2485

Los Angeles, California
Neely Enterprises
4935 Los Angeles Blvd.
North Hollywood, Calif.
Trinity 7-6721

New York, New York
R. M. C. Associates
950 East 71st Street
Thorofare 1-2023

Philadelphia Area
Upper Darby, Pennsylvania
J. E. Robinson Company
7401 West Chester Pike
Shenkfer 8-1294

Phoenix, Arizona
Neely Enterprises
641 East Missouri
Cherwood 4-5454

Pittsburgh, Pennsylvania
S. Sterling Company
Room 813, Park Blvd.
355 Fifth Avenue
Atlantic 1-9248

Portland, Oregon
ARVA
1238 N. W. Gillson
Capitol 2-1281

Sacramento, California
Neely Enterprises
3143 - 17th Street
Gilbert 3-8801

San Diego, California
Neely Enterprises
100 Sunset Street
Academy 3-8106

San Francisco Area
San Carlos, California
Neely Enterprises
201 Laurel Street
San Carlos, California
Huntland 4-2000

Seattle, Washington
ARVA
120 West Thomas Street
Atwater 3-7337

Philadelphia Area
Upper Darby, Pennsylvania
J. E. Robinson Company
7401 West Chester Pike
Shenkfer 8-1294

St. Louis, Missouri
Harris-Handson Company
2814 South Brentwood Boulevard
Mission 7-3530

St. Paul, Minnesota
Crosley Associates, Inc.
642 Raymond Avenue
Minneapolis 6-7391

Toronto, Ontario
Atlas Instrument Corporation, Ltd.
50 Wingold Avenue
Etobicoke 1-6174

Tucson, Arizona
Neely Enterprises
232 So. Tucson Blvd.,
Main 3-7564

Vancouver, British Columbia
Atlas Instrument Corporation, Ltd.
100-172 Seymour Street
Montreal 3-5848

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