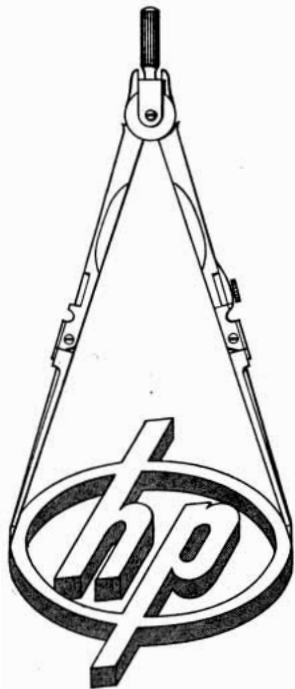


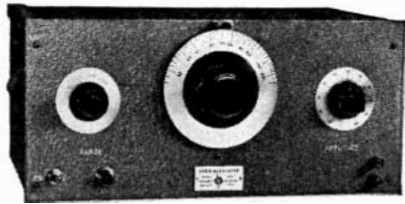
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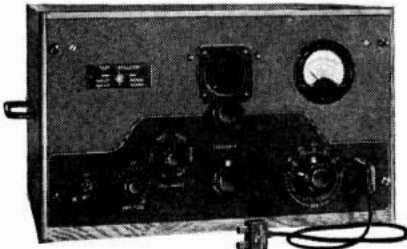
**HEWLETT - PACKARD COMPANY**

1862 Page Mill Road

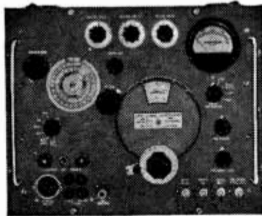
Palo Alto, California



-hp- 200C Audio Oscillator



-hp- 650A Signal Generator



-hp- 616A  
UHF Signal Generator



-hp- 330B Distortion Analyzer



-hp- 400C  
Vacuum Tube Voltmeter

-hp- 410A Vacuum Tube Voltmeter

FUNCTION	MODEL	FREQUENCY	CHARACTERISTICS
SECONDARY FREQUENCY STANDARDS	100C	100 kc, 10 kc, 1 kc, 100 cps	Temperature controlled; accuracy 0.001%; sine wave output
	100D	100 kc, 10 kc, 1 kc, 100 cps, 10 cps	Temperature controlled; accuracy 0.0002%; sine, square wave output, time markers
	200A	35 to 35,000 cps	Output 1 watt into 500 ohms; 1% distortion
	200B	20 to 20,000 cps	Output 1 watt into 500 ohms; 1% distortion
	200C	20 to 200,000 cps	Output 10 volts into 1,000 ohms; 1% distortion
RESISTANCE-TUNED OSCILLATORS	200D	7 to 70,000 cps	Output 10 volts into 1,000 ohms; 1% distortion
	200H	60 to 600,000 cps	Output 10 mw into a 100 ohm load; 3% total distortion
	200 I	6 to 6,000 cps	Frequency setting closer than 1%; output 10 volts into 1,000 ohms; 1% distortion
	201B	20 to 20,000 cps	Output 3 watts at 1% and 1 watt at 1/2% distortion into 600 ohms
	202B	1/2 to 50,000 cps	For low frequency studies. Output 10 volts into 1,000 ohms; 1% distortion
	202D	2 to 70,000 cps	Output 10 volts into 1,000 ohms; 2% distortion
	204A	2 to 20,000 cps	Portable, battery-operated; output 5.0 volts to 10,000 ohm load; 1% distortion
	205A	20 to 20,000 cps	Output 5 watts, 1% distortion into impedances of 50, 200, 600, 5,000 ohms. Output VTVM and 110 db attenuator, 1 db steps
	205AG	20 to 20,000 cps	Same as 205A, plus separate VTVM for complete gain measurements
	205AH	1 to 100 kc	Output 5 watts, 1% distortion into 50, 200, 500, 5,000 ohm impedances. Output VTVM and 110 db attenuator, 1 db steps
AUDIO SIGNAL GENERATORS	206A	20 to 20,000 cps	Output +15 dbm with less than 0.1% distortion into 50, 150, 600 ohm impedances. Output VTVM and 111 db attenuator in 0.1 db steps
	210A	20 to 10,000 cps	Output 50 volts peak to peak; 1,000 ohm internal impedance; 70 db attenuator, 5 db steps
SQUARE WAVE GENERATOR	210A	20 to 10,000 cps	Output 50 volts peak to peak; 1,000 ohm internal impedance; 70 db attenuator, 5 db steps
PULSE GENERATOR	212A	50 to 5000 pps	50 volt pulse to 50 ohm load. Variable 0.07 to 10.0 microseconds
WAVE ANALYZER	300A	30 to 16,000 cps	Variable selectivity; measurement range 1 mv to 500 volts; 5% accuracy
	320A	400 cps and 5 kc	Measures total distortion as low as 0.3%. 70 db attenuator, 1 db steps for comparison
	320B	50, 100, 400 cps and 1, 5 and 7.5 kc	Same as 320A
DISTORTION ANALYZERS	330B	Any frequency 20 to 20,000 cps	Measures total distortion low as 0.1%. Input amplifier; complete VTVM, each usable separately.
	330C	Any frequency 20 to 20,000 cps	Similar to 330B. Meter has VU characteristics to meet FCC requirements for FM broadcasting.
	330D	Any frequency 20 to 20,000 cps	Similar to 330B, includes AM detector and VU meter characteristics. For FM and AM broadcasters.
	335B	88 to 108 mc	For FM broadcast. FCC approved. Monitors carrier frequency and modulation. High fidelity output for aural monitoring
	335C	59 to 88 mc	For TV aural monitoring, channels 2 to 6. Same as 335B
BROADCAST MONITORS	335D	179 to 216 mc	For TV aural monitoring, channels 7 to 13. Same as 335B
	337A	30 to 175 mc	FM Communications Monitor. Indicates mean frequency and modulation. Operates on 1 frequency.
	337B	30 to 175 mc	Same as 337A. Any 4 frequencies.
	350A	Max 100 kc	110 db, 1 db steps; 5 watts, 500 ohm level. Bridged T type. Accuracy 1 db in 50 db at 100 kc
ATTENUATORS	350B	Max 100 kc	Same as 350A but 600 ohm level
	360A thru D	Cutoff A—700 mc B—1200 mc C—2200 mc D—4100 mc	Low pass, 50 db attenuation at 1.2 cutoff frequency. 50 ohms impedance

# HEWLETT PACKARD

FUNCTION	MODEL	FREQUENCY	CHARACTERISTICS
VACUUM TUBE VOLTMETERS AMPLIFIERS, AND ACCESSORIES	400A	10 cps to 1 mc	Nine ranges 0.03 to 300 volts full scale. Accuracy $\pm 3\%$ to 100 kc, $\pm 5\%$ to 1 mc. Average reading. Calibrated in rms.
	400B	2 cps to 100 kc	Same as 400A with response flat to 2 cps. 10 megohm input impedance
	400C	20 cps to 2 mc	Twelve ranges 0.001 to 300.0 volts full scale; accuracy $\pm 3\%$ to 100 kc, $\pm 5\%$ to 2 mc; 10 megohm input impedance; average reading; calibrated in rms volts; may be used as 54 db amplifier
	404A	2 to 50,000 cps	Portable, battery-operated; eleven ranges; 0.003 to 300 volts full scale; accuracy $\pm 3\%$ to 20 kc; 10 megohm input impedance
	410A	20 cps to 700 mc	AC: six ranges 1 to 300 volts, DC: seven ranges 1 to 1,000 volts. Resistance: seven ranges 0.2 ohm to 500 megohms
	415A	300 to 2,000 cps	Standing Wave Indicator for use with a bolometer or crystal rectifier; standard frequency 1000 cps, others on special order
	417A	10 to 500 mc	VHF Detector. Approximately 5 microvolts sensitivity
	430A	Depends on Bolometer Mount	Microwave Power Meter. Measures directly power dissipated in a 200 ohm bolometer. Full scale reading 0.1 to 10.0 milliwatts
	450A	10 to 1,000,000 cps	Amplifier, 40 db and 20 db stabilized gain. Input impedance 1 megohm.
	452A	25 cps to 20 mc	Capacitive voltage divider for Models 400A or C and 410A. Division ratio 1000:1
453A	10 kc to 100 mc	Capacitive voltage divider for Model 410A. Division ratio 100:1	
454A	20 cps to 2 mc	Capacitive voltage divider for Models 400A, 400C. Division ratio 100:1	
455A	to 1,000 mc	Connects probe of 410A across 50 ohm transmission line. Type N fittings	
458A	to 1,000 mc	Connects probe of 410A to open end of 50 ohm transmission line. Type N fittings	
459A	dc only	Resistive voltage multiplier for Model 410A dc section. Ratio 100:1	
460A	100 kc to 140 mc	Amplifier, 20 db gain. Rise time .0026 $\mu$ sec. No overshoot. 200 ohm impedance level.	
470A	to 1 mc	Shunt resistor for 400A, B, C. 0.1 ohm	
470B thru F	to 2 mc	Same as 470A, 1.0, 10, 100, 600 and 1000 ohms	
TUNABLE BOLOMETER MOUNTS	475A	300 to 1,000 mc	Matches 50 ohm line to Bolometer of 100-200 ohms
	475B	1,000 to 4000 mc	Same as 475A
ELECTRONIC FREQUENCY METER	500A	5 cps to 50 kc	Ten ranges, $\pm 2\%$ accuracy. Input 0.5 to 200 volts
ELECTRONIC TACHOMETER	505A	300 to 3,000,000 rpm	Ten ranges, $\pm 2\%$ accuracy
	505B	5 to 50,000 rps	Same as 505A except calibrated in rps
SIGNAL GENERATORS	608A	10 to 500 mc	Calibrated output 0.1 $\mu$ v to 1.0 v. Amplitude and pulse modulated. Direct frequency calibration
	610B	450 to 1200 mc	Calibrated output 0.1 microvolt to 0.1 volt. Internal pulse modulation. Direct frequency calibration
	614A	800 to 2100 mc	Calibrated output 0.1 microvolt to 0.2 volts. Internal pulse and FM modulation
	616A	1,800 to 4,000 mc	Calibrated output 0.1 microvolt to 0.2 volts. Internal pulse and FM modulation
	650A	10 cps to 10 mc	Direct reading. Six bands. Output 3 volts to 600 ohm load. VTVM and output attenuator
POWER SUPPLIES	710A		Any dc voltage 180 to 360 for 0 to 75 ma load; approximately 1% regulation. Also 6.3 volts, 5 amps ac.
	712A		Zero to 500 v. Loads zero to 200 mc at $1/2\%$ regulation. Also 150 v. negative and 6.3 v. filament supplies.
VHF BRIDGE	803A	50 to 500 mc	Direct reading. Impedance 2 to 2,000 ohms. Phase angle $-90^\circ$ to $90^\circ$ .
SLOTTED LINES	805A	500 to 4,000 mc	VSWR less than 1.04. Tunable probe. 50 ohm impedance. Type N connectors
	805B	500 to 4000 mc	VSWR less than 1.02. Tunable probe. 46.3 impedance. For $3/8$ " rigid coaxial cable.

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301 Clay Street • San Francisco, Calif., U.S.A.

# FOR SPEED AND ACCURACY



# PRICE LIST

INSTRUMENT	PRICE	INSTRUMENT	PRICE
100C	Secondary Frequency Standard . . . . .	337A	FM Emergency Service Monitor . . . . .
100D	" " " " . . . . .	337B	" " " " . . . . .
200A	Audio Oscillator . . . . .	350A	Attenuator Set . . . . .
200B	" " . . . . .	350B	" " . . . . .
200C	" " . . . . .	360A thru D	Low Pass Filter . . . . .
200D	" " . . . . .	400A	Vacuum Tube Voltmeter . . . . .
200H	Wide Band Audio Oscillator . . . . .	400B	" " " " . . . . .
200I	Audio Oscillator . . . . .	400C	" " " " . . . . .
201B	" " . . . . .	404A	Battery Operated Vacuum Tube Voltmeter . . . . .
202B	Low Frequency Oscillator . . . . .	410A	HF Vacuum Tube Voltmeter . . . . .
202D	Audio Oscillator . . . . .	415A	Standing Wave Indicator . . . . .
204A	Battery Operated Audio Oscillator . . . . .	417A	VHF Detector . . . . .
205A	Audio Signal Generator . . . . .	430A	Microwave Power Meter . . . . .
205AG	" " " " . . . . .	450A	Stabilized Laboratory Amplifier . . . . .
205AH	Supersonic Signal Generator . . . . .	452A	Capacitive Voltage Divider . . . . .
206A	Audio Signal Generator . . . . .	453A	" " " " . . . . .
210A	Square Wave Generator . . . . .	454A	" " " " . . . . .
212A	Pulse Generator (Rack Mounting Only) . . . . .	455A	Probe T Connector . . . . .
300A	Harmonic Wave Analyzer . . . . .	458A	Type N Connector . . . . .
320A	Distortion Analyzer . . . . .	459A	Resistive Voltage Multiplier . . . . .
320B	" " . . . . .	460A	Wide Band Amplifier (Rack Mtg. Only) . . . . .
330B	" " . . . . .	470A	Shunt Resistor . . . . .
330C	Noise and Distortion Analyzer . . . . .	470B thru F	Shunt Resistor . . . . .
330D	" " " " . . . . .	475A	Tunable Bolometer Mount . . . . .
335B	Frequency Monitor and Modulation Meter . . . . .	475B	" " " " . . . . .
335C	Frequency Monitor and Modulation Meter . . . . .	500A	Electronic Frequency Meter . . . . .
335D	Frequency Monitor and Modulation Meter . . . . .	505A	Electronic Tachometer . . . . .
		505B	" " . . . . .
		608A	VHF Signal Generator . . . . .
		610B	UHF Signal Generator . . . . .
		614A	" " " " . . . . .
		616A	" " " " . . . . .
		650A	Test Oscillator . . . . .
		710A	Regulated Power Supply . . . . .
		712A	Power Supply (Rack Mounting Only) . . . . .
		803A	VHF Bridge . . . . .
		805A	Slotted Line . . . . .
		805B	" " . . . . .

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