Standard -hp- instruments shown here are adaptable for making nearly every electronic measurement in the electronic field. Following is a brief description of a few of these instruments. Complete technical information will be sent—without obligation—on request. In addition, -hp- engineers are at your service to help solve special problems.

**VACUUM TUBE VOLTMETER**

- *hp*- Model 400A Vacuum Tube Voltmeter sets a new standard of performance for voltage measurements in the audio, supersonic, and lower radio frequency region. Measurements up to 1 megacycle with this instrument are as simple as measurements with the usual multi-range meter at d-c. Nine ranges give full-scale sensitivities from .030 to 300 volts. Ordinarily no precautions whatever are required: turn-over effect and waveform errors are minimized; there are no adjustments to make during operation; a large overload will not damage the instrument. The input impedance is 1 megohm so that most circuits will not be disturbed when their voltage is measured.

**WIDE-BAND AMPLIFIER**

- *hp-* 450A Amplifier is a new, versatile, wide-band amplifier designed for general laboratory or production use. It provides exceptional stability at 40 or 20 db gain, and gives new freedom from spurious responses. Low phase shift is assured by a straight-forward, resistance-coupled amplifier design, together with inverse feedback. Frequency response is flat within 1/2 db between 10 and 1,000,000 cps. Varying tube voltages or aging tubes have no appreciable effect on the gain or other characteristics. When used in conjunction with -hp- 400A Vacuum Tube Voltmeter, its increases voltmeter sensitivity 100 times.

**H-F VACUUM TUBE VOLTMETER**

- *hp-* 410A High Frequency Vacuum Tube Voltmeter combines in one instrument an ac voltmeter covering frequencies from 20 cps to 700 mc, a dc voltmeter with 100 megohm input impedance, and an ohmmeter capable of measuring resistances from 2 ohms to 500 megohms.

The special probe places a capacity of 1.3 ufd across the circuit under test. Input resistance for ac measurements is 6 megohms. Six voltage ranges provide full-scale sensitivities from 1 to 300 volts.

**HARMONIC WAVE ANALYZER**

- *hp-* Model 300A Harmonic Wave Analyzer is an excellent instrument for both laboratory and production work where accurate and rapid measurement of individual components of a complex wave is required. The maximum selectivity is sufficient for measurement of harmonics of frequencies as low as 30 cycles and it can be varied over a wide range. With this variable selectivity feature, measurements at higher frequencies can be made more rapidly, yet with no sacrifice in accuracy.

**RESISTANCE-TUNED AUDIO OSCILLATORS**

- *hp-* Resistance-Tuned Oscillators are suitable for almost every type of work. Their low distortion makes them particularly valuable in making distortion measurements on audio amplifiers, broadcast transmitters and other equipment. They provide an excellent source of voltage for accurate bridge measurements. The output is sufficient to drive signal generators and other equipment requiring considerable power. Their wide frequency range also makes them suitable for work in the supersonic region.

**AUDIO SIGNAL GENERATORS**

- *hp-* Audio Signal Generators are designed for time-saving performance. They are excellent for general laboratory applications because they supply a known voltage as well as a known frequency at the commonly used impedance levels. They are particularly suitable for gain measurements because no auxiliary apparatus is required. They provide an excellent source of voltage for distortion measurements because their waveform distortion is very small.

**DISTORTION ANALYZER**

This Model 310B Distortion Analyzer is -hp-’s newest, finest distortion measuring instrument. It is capable of measuring distortion at any frequency between 20 cps and 20,000 cps. It will make noise measurements of voltages as small as 100 microvolts. A linear detector makes it possible to measure these characteristics directly from a modulated r-f carrier. The high sensitivity, stable accuracy and compactness of the 310B make it extremely valuable for broadcast, laboratory and production measurements.
ACCURACY AND UHF SIGNAL GENERATOR

Model 616A UHF Signal Generator is the first instrument developed commercially which combines great operational speed, accuracy and ease of operation with a frequency range of 1800 mc to 4000 mc. R-f power is generated by a reflex klystron oscillator, and voltage adjustments during operation are eliminated by a special automatic coupling device which causes oscillator repeller voltage to track frequency changes. The 616A features direct frequency and voltage control, c-w, f-m or pulsed output, plus wide variety of input and output delay and synchronization features.

POWER SUPPLY UNIT

Model 710A Power Supply is an excellent source of d-c power for every laboratory and production department use. The power pack is designed for the utmost in flexibility, compactness, portability and economy. Output is continuously variable between 180 and 360 volts. The output voltage varies approximately 1 per cent with changes in load current up to 75 ma and with normal line variations. Noise and hum level is exceptionally low, and output unusually stable over a long period of time. Also contains auxiliary center-tapped 6.3 volt source providing 5 ampere of a-c.

AUDIO SIGNAL GENERATOR

Model 206A Audio Signal Generator provides a highly-stable source of continuously variable a-f having a total distortion of less than 0.1% between 50 cps and 20 kc. Output meter monitors output voltage signal with accuracy of at least 0.2 db. Precision attenuators vary output signal level in 0.1 db steps over 111 db range. Flat frequency response and great accuracy of output voltage makes this instrument ideal for FM transmitter and station maintenance work.