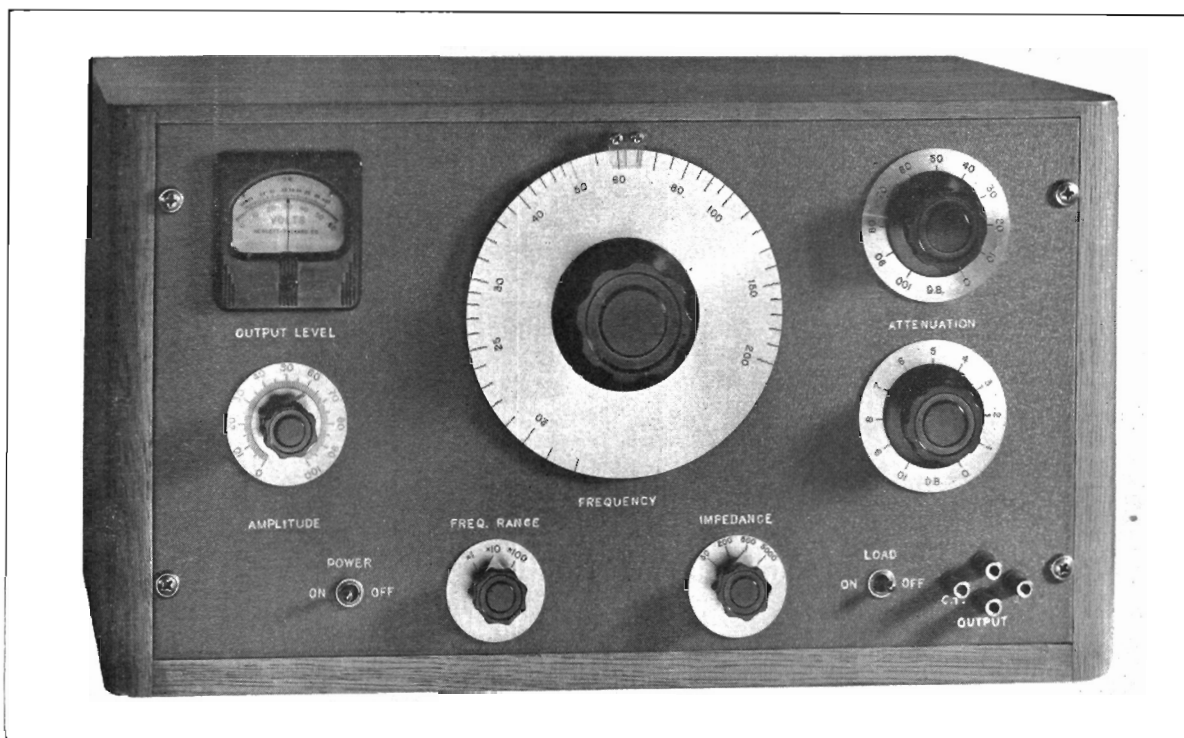


AUDIO SIGNAL GENERATORS

MODELS 205-A AND 205-AG



The Model 205-A

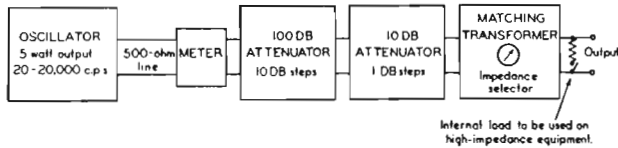
- STANDARDIZED FREQUENCIES AND VOLTAGE INSTANTLY AVAILABLE
- OUTPUT IMPEDANCES SELECTED BY SWITCH
- ATTENUATION SYSTEM PROVIDES 110 DB. IN 1 DB. STEPS
- FIVE WATTS OUTPUT WITH LESS THAN 1% DISTORTION
- FREQUENCY ALWAYS ACCURATE WITHOUT ZERO SETTING
- OUTPUT METER CALIBRATED IN VOLTS AND DECIBELS
- SEPARATE INPUT METER AVAILABLE FOR GAIN MEASUREMENTS

USES: The Hewlett-Packard Audio Signal Generators are designed for time saving performance. The various features have been selected with the aim to make these instruments suitable for accurate and rapid measurement work. 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. The many new features make these instruments adaptable to numerous jobs in the audio frequency field.

DESCRIPTION: The Model 205-A consists of a Hewlett-Packard resistance tuned oscillator in combination with an output meter, attenuator, and an impedance matching system. The Model 205-AG includes input meter for gain measurements.

The accompanying block diagram shows the arrangement of the various components in the system. The oscillator has a five watt output which feeds directly into a 500 ohm line where the voltage is measured. The amplitude of this voltage can be set to any level up to plus 37 decibels above one milliwatt by means of the amplitude control on the oscillator. Following the meter are

two attenuators, one providing 100 decibels in 10 decibel steps and the other providing 10 decibels in 1 decibel steps. From the output of



the attenuators an impedance matching transformer is provided to match various impedances.

The output transformer has the same insertion loss for all impedances and the output meter is arranged to read the output voltage at the output terminals with the system loaded. An internal load is provided so the attenuation system works correctly when there is no external load.

Every precaution has been taken to make these signal generators precision instruments. Special heavy mechanical construction has been used throughout to give assurance that the accuracy will be maintained in long, hard service.

SPECIFICATIONS

Model 205-A

FREQUENCY RANGE: The frequency range is 20 cps to 20,000 cps.

CALIBRATION: The dial is calibrated directly in cycles for the lowest range, 20 cps to 200 cps. A switch selects the range and indicates the proper multiplying factor. Each range covers approximately 270 degrees on the 6 $\frac{1}{2}$ " main dial. Range 1 covers 20 cps to 200 cps; Range 2 covers 200 cps to 2,000 cps; and Range 3 covers 2,000 cps to 20,000 cps.

STABILITY: Under normal temperature conditions the frequency will drift less than 2% over long periods of time. Each range is provided with an internal adjustment so that 1% accuracy may be maintained if required.

OUTPUT: Five watts output will be delivered to a matched resistance load.

OUTPUT IMPEDANCES: Output impedances of 50 ohms, 200 ohms, 500 ohms, and 5,000 ohms are available. All are center tapped.

FREQUENCY RESPONSE: The frequency response of the system beyond the output meter is down 2.0 db. at 20 cps and 1 db. at 20,000 cps.

DISTORTION: The distortion is less than 1% at full output at all frequencies above 30 cps.

HUM LEVEL: The hum level is 60 db. below the output voltage or minus 90 db. below zero level, whichever is the larger.

OUTPUT METER: The output meter is calibrated directly in volts at 500 ohms and in db. above a 1 mw. level (50 volts and plus 37 db. full scale).

OUTPUT ATTENUATOR: The output attenuator provides 110 db. in 1 db. steps. It consists of a 100 db. attenuator with 10 db. steps and a 10 db. attenuator with 1 db. steps.

MOUNTING The instrument is available in either relay rack or cabinet mounting, the panel size on either instrument is 19" x 10 $\frac{1}{2}$ ". The cabinet models are mounted in attractive oak cabinets finished to harmonize with the panels. The panels are finished in gray wrinkle enamel with machine engraved designations.

Model 205-AG

The Model 205-AG is exactly similar to the Model 205-A except it has an input meter for gain measurements.

INPUT METER: The input meter has a range of minus 5 db. to plus 49 db. based on a 1 mw. level and 500 ohms. The meter scale is calibrated from minus 5 db. to plus 9 db. and a multiplier switch adds from zero to 40 db. to the reading in 5 db. steps. The meter has an impedance of 5,000 ohms.

FREQUENCY RESPONSE: The input meter is compensated to have about 0.5 db. rise at 20 kc so that gain measurements with the Model 205-AG are accurate to 15 kc and only about 0.5 db. in error at 20 kc.

Prices and delivery information are available on request.

These data are subject to change without notice. Patents applied for.

December 10, 1940

HEWLETT-PACKARD CO.

481 PAGE MILL ROAD
PALO ALTO, CALIFORNIA