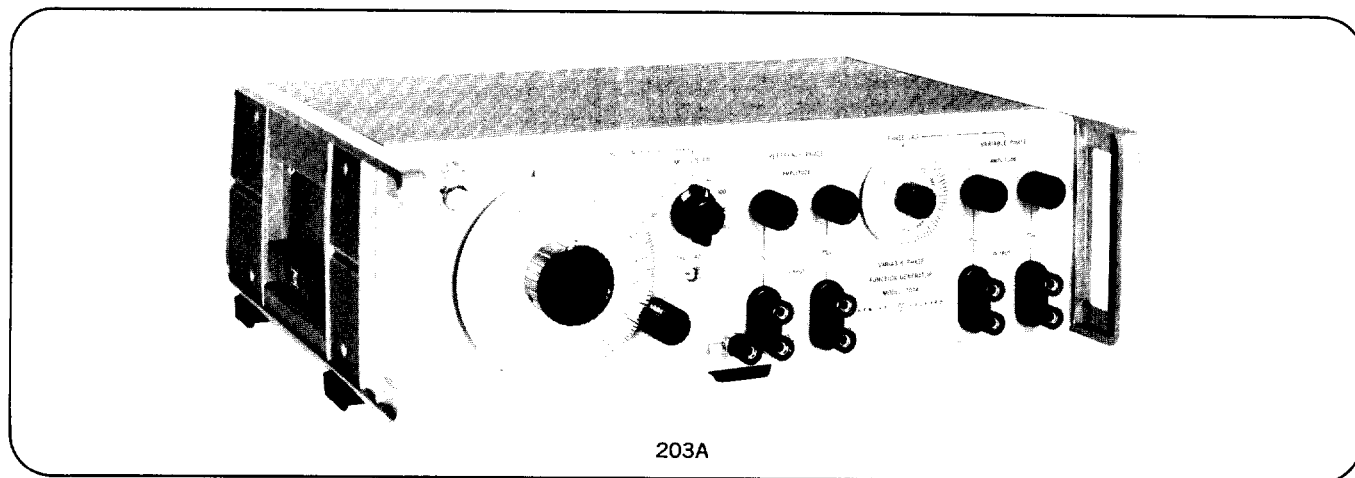


# VARIABLE-PHASE GENERATOR

Sine- and square-waves 0.00005 Hz to 60 kHz  
Model 203A



## SIGNAL SOURCES



The solid-state HP Model 203A Low-Frequency Function Generator provides two transient-free low-distortion square and sinusoidal test signals particularly useful for a wide variety of low-frequency applications. Field and laboratory testing of servo, geophysical, medical and high-quality audio equipment becomes practical when using the 203A.

The 203A frequency range of 0.005 Hz to 60 kHz is covered in 7 overlapping bands (2 additional ranges available on special order, offering frequency range to 0.00005 Hz). Accurate  $\pm 1\%$  frequency setting is provided by 180 dial divisions. A vernier drive allows precise adjustment.

### 30 volt output

The 203A provides a maximum output voltage of 30 V peak-to-peak for all waveforms. The sinusoidal signals have a distortion that is less than 0.06% and provide virtually transient-free outputs when frequency and operating conditions are varied rapidly. The four output circuits of the 203A have individual 40 dB continuously variable attenuators.

Outputs consist of a reference sine and square wave, and a variable-phase sine and square wave. The two sine- and square-wave outputs are electrically identical except that one sine- and square-wave output contains a 0-to-360 degree phase-shifter. These four signals (two reference phase and two variable phase) are available simultaneously from the 203A. The output system is floating with respect to ground and may be used to supply an output voltage that is terminal grounded, or may be floated up to 500 volts dc above chassis ground. The output impedance is 600 ohms for all outputs.

### Special features

A front-panel calibration provision permits the user to easily calibrate the oscillator frequency to the environment in which the instrument is used. The HP 203A features a unique method of mixing, filtering and dividing the frequency to maintain an exact decade relationship. Interchangeable decade modules provide greater reliability and ease of servicing.

### Specifications, 203A

**Frequency range:** 0.005 Hz to 60 kHz in seven decade ranges.\*

**Dial accuracy:**  $\pm 1\%$  of reading.

**Frequency stability:** within  $\pm 1\%$  including warmup drift and line voltage variations of  $\pm 10\%$ .

**Output waveforms:** sine and square waves are available simultaneously; all outputs have common chassis terminal.

**Reference phase:** sine wave, 0 to 30 V peak-to-peak; square wave, 0 to 30 V peak-to-peak (open circuit).

**Variable phase:** sine wave, 0 to 30 V peak-to-peak; square wave, 0 to 30 V peak-to-peak; continuously variable, 0 to 360°; phase dial accuracy,  $\pm 5^\circ$  sine wave,  $\pm 10^\circ$  square wave (open circuit).

**Output impedance:** 600 ohms.

**Output power:** 5 volts into 600 ohms (40 mW); 40 dB continuously variable attenuation on all outputs.

**Distortion:** total harmonic distortion hum and noise  $>64$  dB below fundamental ( $<0.06\%$ ) at full output.

**Output system:** direct-coupled output is isolated from ground and may be operated floating up to 500 V dc.

**Frequency response:**  $\pm 1\%$  referenced to 1 kHz.

**Square wave response:** rise and fall time,  $<200$  ns; overshoot,  $<5\%$  at full output.

**Power:** 115 or 230 volts  $\pm 10\%$ , 48 to 440 Hz, 27.5 VA max.

**Dimensions:** cabinet:  $5\frac{1}{4}$ " high,  $16\frac{3}{4}$ " wide,  $11\frac{1}{2}$ " deep (133 x 425 x 286 mm); rack mount kit(00203-84401) furnished with instrument.

**Weight:** net, 20 lbs (9,17 kg); shipping, 28 lbs (12,6 kg).

**Price:** HP 203A, \$1465; Option 001 (0.0005 Hz range), add \$50; Option 002 (0.00005 Hz range), add \$150.

\*Two lower ranges of 0.0005 Hz (Option 001) and 0.00005 Hz (Option 002) are available on special order.