



## New Tone-Burst Generator

a coherent gate for any waveform

Tests with bursts of electrical energy — heretofore possible only with expensive specialized equipment — are now truly practical, thanks to the Type 1396-A Tone-Burst Generator.

Basically, the Tone-Burst Generator is an electronic gate that alternately passes and blocks a selected number of cycles of any input waveform (dc to 500 kc). The number of cycles in each burst is adjustable from 1 to 128. The interval between bursts is adjustable from 1 cycle to a maximum of 128 cycles or to 10 seconds.

The bursts produced by the 1396-A are coherent; that is, every burst starts and stops at the same point in the cycle. The frequency spectrum of a series of these bursts depends on the number of cycles in the burst, on cycles between bursts, and on the starting and stopping point, all of which are adjustable. Thus the frequency content is exactly defined — measurements are consistently reproducible.

Burst timing is accomplished with a binary scaler instead of a complex phase-locked timing system. The use of digital techniques together with all-solid-state design results in an instrument that is drift-free, easy to operate, compact, and economical.

### The only commercial instrument of its kind

#### Invaluable in Measuring the Characteristics of Audio and Ultrasonic Devices

**Transducers:** In the testing of sonar transducers in a tank or microphones in a chamber that is not echo-free, tone-burst test techniques permit easy separation of direct and reflected signals — the masking effects of standing waves are avoided.

**Amplifiers:** In wide-band amplifiers, tone-burst tests allow straightforward evaluation of recovery-from-overload characteristics, and of peak (music) power levels. With narrow-band (sonar) amplifiers, tone-burst tests indicate directly the envelope rise and fall times as well as the distortion.

**Filters:** With tone-burst excitation, the envelope of the transient can be readily observed

and measured. Ordinary pulse waveforms produce ringing, which is difficult to analyze.

**Rectifying-Type Circuits:** Efficiency and time constants of rectifier circuits are easily measured with tone-burst excitation. AGC circuits can be adjusted for proper response.

**Low-Speed Digital Equipment:** With square or rectangular waveforms applied to the generator, pulse words are generated at a bit-rate determined by the gate settings.

**Room Acoustics:** In the measurement of reverberation time, the duration of the exciting signal is important, and therefore, a tone burst of controlled properties is desirable.

#### Type 1396-A Tone-Burst Generator

... \$490 IN U.S.A.

**INPUT SIGNAL:** Frequency Range: dc to 500 kc

**EXTERNAL TIMING SIGNAL:** Frequency Range: dc to 500 kc.

**Triggering:** positive- or negative-going slope, level adjustable from -7 to +7 volts.

**GATE TIMING:** Open and closed intervals can be independently set to 2, 4, 8, 16, 32, 64, or 128 periods of timing signal. With the MINUS ONE switch, intervals can be set to 1, 3, 7, 15, 31, 63, or 127 periods. Gate-closed interval can also be set in one-period increments over a 1-millisecond to 10-second range.

**OUTPUT:** Gate Open: Maximum level is  $\pm 7$  volts

Gate Closed: Feed through less than 140 millivolts, peak-to-peak, with maximum signal input. DC potential difference between open and closed conditions (pedestal) can be nulled out with panel adjustment.

**Switching Transients:** Less than 140 millivolts

**Output Impedance:** 600 ohms

**Gating Voltage Output:** Rectangular waveform ( $\pm 12$  volts) supplied for triggering oscilloscopes.

Write for complete information

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