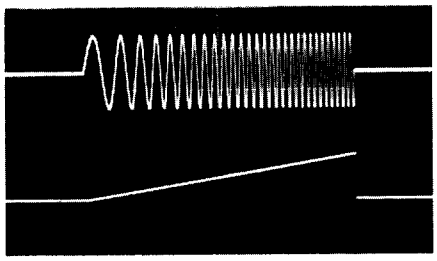
10 MHz Sweep Generator



- **Internal or External Sweep Capability**
- **Two Independent Generators**
- **Six Different Operational Modes**
- **Frequency From 0.0005 Hz to 10 MHz**

Two Independent Generators
The Model 144 gives you two independent generators, the main function generator and an auxiliary ramp generator. The auxiliary generator can sweep, trigger and gate the main generator with controllable sweep time and trigger and gate repetition rates.

1000:1 Internal Sweep Capability
This dual generator instrument features frequency sweep with adjustable sweep limits. Maximum sweep ratio is 1000:1 on any range. You can easily adjust the sweep rate via a convenient front panel control, from one sweep every one hundred seconds to one sweep in one microsecond. An external signal may also be used to sweep the main generator.

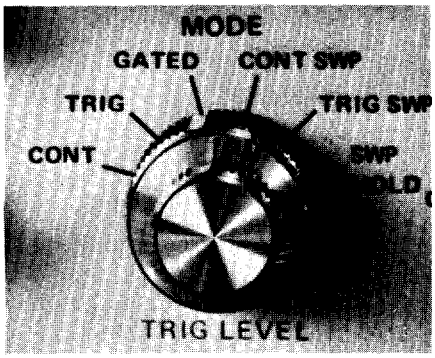
Six Different Operational Modes
This versatile instrument has six operational modes: continuous, triggered, gated, continuous sweep, triggered sweep and sweep-and-hold. The waveform capability of this generator meets a broad range of laboratory signal requirements.

Sweep or Generator Control Voltage (GCV) Output
The versatile SWP/GCV output gives you the maximum utility in sweep function generator operation. When the generator is being used in one of the three internal sweep modes, the output is a voltage proportional to frequency, ideally suited as a horizontal or X-axis drive for oscilloscopes or recorders. When the generator is in the other modes, the output is a fixed 5 volt sawtooth, which can be used to trigger or tone burst the main generator.

VERSATILITY

Waveforms
Sine ∿, square ⊓, triangle ∧, positive pulse ⎍, negative pulse ⎎ and ramp ⟋.

Operational Modes



Continuous: Generator oscillates continuously at selected frequency.
Triggered: Generator quiescent until triggered by an external signal, then generates one cycle at selected frequency.
Gated: As triggered mode, except generator oscillates for the duration of the external signal.
Continuous Sweep: Recurring low-to-high frequency oscillation. Range and rate selectable.
Triggered Sweep: Low-to-high frequency oscillation with each trigger input; then return to low frequency after sweep.
Sweep-and-Hold: Sweep-to-high frequency oscillation.

Frequency Range
0.0005 Hz to 10 MHz in 10 overlapping decade ranges with dial and frequency vernier.

Main Output
∿, ⊓, ∧ selectable and variable to 30V p-p (15V p-p into 50Ω). ⎍ and ⎎ selectable and variable to ±15V peak (7.5V peak into 50Ω). Precision output attenuator calibrated in 10 dB steps to 60 dB with 20 dB vernier for overall attenuation of 80 dB. Output impedance 50Ω.

DC Offset
Manual rear panel control. Waveform offset at 50Ω output between ±10 Vdc (±5 Vdc into 50 Ω) with peak signal and offset amplitude limited to ±15 Vdc into open circuit (±7.5 Vdc into 50 Ω). DC offset and output waveform attenuated proportionately by 60 dB output attenuator.

Sync Output
Greater than 4V p-p (2V p-p into 50Ω). Rise and fall time less than 20 ns. Square waveform for symmetrical 50Ω outputs; rectangular waveform for pulse and ramp 50Ω outputs. Sync pulse polarity opposite that of 50Ω output square wave.

Sweep
Sweep Time: 10 μs to 100s.
Sweep Width: Up to 1000:1.

SWP/GCV Output
Ramp ⟋ output (0 to +5V fixed) when in continuous, triggered or gated mode. GCV output (0 to +5V maximum) proportional to frequency control settings when in continuous sweep, triggered sweep or sweep-and-hold mode.

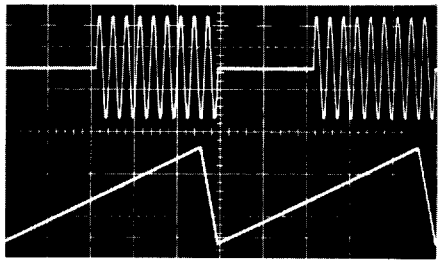
VCG — Voltage Controlled Generator
Up to 1000:1 frequency change with external 0 to ±5V signal. Upper frequency is limited to maximum of selected range.
Slew Rate: 2% of range per μs.
Input Impedance: 5 kΩ.

Linearity
±0.2% for 10 Hz to 100 kHz.
±0.5% for 0.001 Hz to 1 MHz.

Symmetry Control
Symmetry of all waveform outputs is continuously adjustable from 1:19 to 19:1. Varying symmetry provides variable duty cycle pulses, sawtooth ramps and nonsymmetrical sine waves.

NOTE: When SYMMETRY control is used, indicated frequency is divided by approximately 10.

Trigger and Gate
Input: 1V peak to peak min.
Impedance: 10 kΩ.



Tone Burst Using Sweep Signal as Trigger

FREQUENCY PRECISION

Dial Accuracy
±(1% of setting +1% of full scale) for 0.01 Hz to 1 MHz.
±(2% of setting +2% of full scale) for 1 to 10 MHz.

Time Symmetry
±0.5% for 10 Hz to 100 kHz.
±1.0% for 0.01 Hz to 500 kHz.

AMPLITUDE PRECISION

Amplitude Change With Frequency
Sine variation less than:
0.1 dB to 100 kHz.
0.2 dB to 1 MHz.
2.0 dB to 10 MHz.

Amplitude Symmetry
All waveforms (except pulse) symmetrical within ±1%.

Step Attenuator Accuracy
±0.25 dB per 10 dB step.

WAVEFORM CHARACTERISTICS

Sine Distortion (Continuous Mode)
Less than:
0.5% for 10 Hz to 100 kHz.
1.0% for 100 kHz to 10 MHz.
All harmonics at least 30 dB down for 1 to 10 MHz.

Triangle Linearity
Greater than 99% for 0.0005 Hz to 100 kHz.

Square Wave Rise and Fall Time
Less than 20 ns terminated into 50Ω load (limited to 500 V/μs).

Total Aberrations
Less than 5%.

GENERAL

Stability
Amplitude, frequency and dc offset.
Short Term: ±0.05% for 10 minutes.
Long Term: ±0.25% for 24 hours.

Environmental
Specifications apply at 25°C ±5°C.
Instrument will operate from 0°C to +50°C.

Dimensions
21.6 cm (8½ in.) wide; 13.3 cm (5¼ in.) high; 29.2 cm (11½ in.) deep).

Weight
4.1 kg (9 lb) net; 5.9 kg (13 lb) shipping.

Power
105 to 125V or 200 to 250V; 50 to 400 Hz; less than 40 watts.

NOTE: Specifications apply for frequencies obtained when dial is between 1 and 10 with SYMMETRY control to NORM. Symmetry and vernier affect frequency calibration.

PRICE (FOB San Diego)

Model 144 **$995**