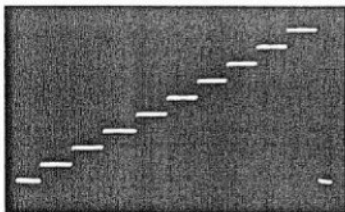


12 MHz Sweep/ Function Generator

- User Definable Sweep Shape
- Six Standard Sweep Shapes
- Twelve Sweep Modes
- Three Frequency Markers
- GPIB (IEEE-488) Standard

User Defined Sweep Function

This feature allows you to define your own unique sweep shape. It provides you with a 12 bit by 1K memory and is programmable over the GPIB.

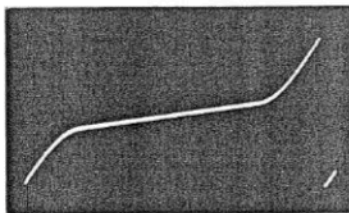


Example of "User Defined" Sweep

Applications: This capability is very useful in such applications as tone testing, digital frequency modulation, vibration testing and providing trigger signals to measurement devices.

Filter Sweep Function

Provides a slower sweep rate near the mid-frequency point for higher resolution when sweeping high-Q circuits.

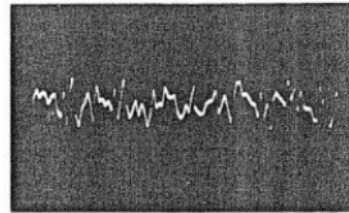


Filter Sweep Function

Applications: This sweep shape can save you valuable time when testing very narrow filters where the sweep must be slowed dramatically in order to describe the characteristics.

Noise Sweep Function

A noise pattern with a Gaussian distribution characteristic is used to FM modulate the generator signal.



Noise Sweep Function

Applications: Jitter testing is greatly simplified when using this mode. The built-in pseudo-random noise pattern allows you to test for FM noise rejection and jitter susceptibility.

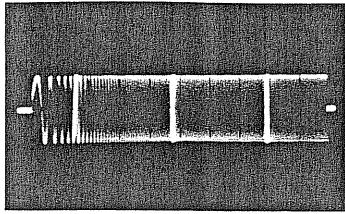
Other Sweep Functions

Linear, Logarithmic, Sine and Square.

Frequency Markers

Three simultaneous, individually programmable frequency markers are present at the Marker Output. These selectable polarity markers allow convenient identification of filter center frequency and upper and lower cutoff

frequencies. Up to 500 markers can be generated with the *User Defined* sweep shape.



Sweep Waveform with Markers

WAVEFORMS (FUNCTIONS)

Programmable sine, triangle, square, external width, and dc.

Sine Distortion (THD at 5 Vp-p): <0.5% 10 MHz to 99.9 kHz. No harmonics above -40 dBc 100 kHz to 999 kHz, -30 dBc 1 MHz to 12 MHz.

Time Symmetry: $\pm 1\%$ ± 8 ns.

Square Transition Time: <15 ns.

Square Overshoot: <4% at full amplitude.

Triangle Linearity: 99% to 100 kHz.

OPERATIONAL MODES

Continuous, Triggered, Gated and Burst.

Burst Count Range: 1 to 1,048,200.

Burst Rate: 12 MHz maximum.

FREQUENCY

Range: 10 MHz to 12 MHz (>15 MHz in external width mode).

Resolution: 3 digits.

Accuracy: $\pm 2\%$.

Repeatability (24 hr): $\pm 1\%$.

Jitter: $\leq 0.1\%$ ± 100 ps.

Control: Frequency may be controlled by programmed value or external VCG input.

Value: Frequency value is keyboard or GPIB programmable with automatic range selection.

VCG (Voltage Controlled Generator): AC or DC input controls frequency. +0.01 to +12V into 10 k Ω for up to 1200:1 frequency change in each of 9 frequency ranges (ranges must be programmed). Slew rate is limited to 1V/ μ s.

AMPLITUDE

Range: 0.01 to 10 Vp-p into 50 Ω (0.02 to 20 Vp-p into ≥ 50 k Ω) from main output. Absolute peak amplitude plus offset may not exceed 5V into 50 Ω (10V into ≥ 50 k Ω).

Resolution: 3 digits or 10 mV when absolute peak amplitude plus offset >0.5V; 3 digits or 1 mV when absolute peak amplitude plus offset ≤ 0.5 V.

Accuracy: $\pm 2\%$ of programmed value and: ± 5 mV for 0.1 to 1V (peak amplitude + offset <0.5V), ± 20 mV for 1.01 to 10V, ± 50 mV for all other.

Repeatability (24 hr): $\pm 1\%$ ± 10 mV.

Flatness (At 5 Vp-p): 0.1 dB to 100 kHz, 1.5 dB to 12 MHz.

OFFSET

Range: DC or offset programmable from -5V to +5V into 50 Ω (-10V to +10V into ≥ 50 k Ω). Absolute peak amplitude plus offset may not exceed 5V into 50 Ω (10V into ≥ 50 k Ω).

Resolution: 3 digits or 10 mV when absolute peak amplitude plus offset >0.5V, 3 digits or 1 mV when absolute peak amplitude plus offset ≤ 0.5 V.

Accuracy: ± 40 mV in dc function.

Repeatability (24 hr): ± 20 mV.

OUTPUTS

Function Output: Source of primary waveforms.

Programmable Control Provides:

Output On, (50 Ω source impedance);

Output Off, High Z (>50 k Ω);

Output Off, Low Z (approximately 50 Ω termination).

Source Impedance: 50 Ω .

Protection: Output protected to 140 Vac or 200 Vdc without internal damage.

Sync Output: Sync signal is at programmed frequency and TTL level.

Level: ≤ 0.4 V to ≥ 2.4 V into 50 Ω , ≤ 0.8 V to ≥ 4.8 V into ≥ 50 k Ω .

Source Impedance: 50 Ω .

Timing: Concurrent with function output in square; lags sine and triangle by 90°.

Over/Undershoot: <10% into 50 Ω .

Protection: Output protected from short circuit to any voltage between ± 15 Vdc input minimum.

INPUTS

External Trigger: Trigger of input circuit is programmable for a + or - signal slope and required threshold level.

Level: -10 to +10V.

Resolution: 20 mV.

Accuracy: ± 500 mV.

Input Impedance: 10 k Ω .

Maximum Trigger Rate: 12 MHz (15 MHz for External Width).

Minimum Trigger Width: 40 ns.

Minimum Amplitude: 500 mVp-p to 1 MHz, 1 Vp-p to 15 MHz.

VCG In: Voltage control of generator frequency. See frequency.

Range: 0.01 to 12V.

Impedance: 10 k Ω .

Protection: Inputs protected to ± 50 V.

INTERNAL TRIGGER

Range: 0.0025 Hz to 2.5 MHz.

Resolution: 4 digits.

Accuracy: 0.2%.

Continuous or Triggered Sweep with:

Reverse.

Reset.

Reset with Burst.

Reset with Burst on Markers.

Reset with Gate on Markers.

Triggered Sweep with:

Hold with Triggered Reset.

Hold with Triggered Reverse.

SWEEP CHARACTERISTICS

Sweep Time: 400 μ s to 400,000s, 3 digits resolution, 0.2% accuracy.

Start/Stop: Maximum ratio 1200:1. Both start and stop frequency must be contained within a single sweep range. Sweep ranges are listed below.

Markers: 0.01 Hz to 12 MHz, 3 digits resolution, 3% of programmed value +0.2% of top of sweep range selected.

SWEEP OUTPUTS

Marker Output: Three independent, simultaneously active markers. 0 to 5V into 600 Ω . Programmable polarity control.

Horizontal Output: 0 to +5V $\pm 5\%$. 250 point synthesized ramp. 600 Ω source impedance.

GCV Output: 0 to +6V $\pm 10\%$. 1000 point synthesized GCV the same wave shape as that sweeping the main generator. Source imped-

SWEEP/FUNCTION GENERATORS

MODEL 273

ance: 600 Ω . GCV output voltage level is proportional to main generator frequency.

Protection: Output protected against ± 15 V input minimum.

SWEEP FUNCTIONS

Linear: Linear variation of frequency with respect to time during active sweep.

Log: Logarithmic variation of frequency with respect to time during active sweep.

Sine: Sinusoidal variation of frequency with respect to time. Sweeps from -90° to +90°.

Square: Impulse variation of frequency between start and stop during active sweep.

Noise: Pseudo-randomized Gaussian variation of frequency between start and stop during active sweep. Start and stop are 2.5 standard deviations from mid-frequency point.

Filter: Sweep rate slows towards mid-frequency point allowing higher resolution.

User Defined: User programmable variation of frequency between start and stop during active sweep. Unique user defined sweep function is stored in non-volatile memory.

GPIB PROGRAMMING

IEEE 488-1978 compatible. Non-isolated. Double buffered.

Address: 0-30, keyboard or internal switch selectable. Internal switch can lock out keyboard selection. Power-up address is internal setting.

Subsets: SH1, AH1, T6, TE0, L4, SR1, RL1, PP0, DC1, C0, E2.

GENERAL

Stored Setting: Non-volatile memory will store 25 settings.

Environment

Temperature Range: 25° \pm 10°C for specified operation; operates 0° to 50°C; -50° to +75°C for storage.

Warm-up Time: 20 minutes for specified operation.

Dimensions: 21.7 cm (8.54 in.) wide (half-rack); 13.3 cm (5.25 in.) high; 39.4 cm (15.5 in.) deep.

Weight: 5.9 kg (13 lb) net; 7.2 kg (16 lb) shipping.

Power: 90 to 105, 108 to 126, 198 to 231, or 216 to 252 volts rms; 48 to 66 Hz; 1 phase; <40 watts.

OPTIONS

002: Rear Panel Connectors. ¹Front panel BNCs relocated to rear panel.

ACCESSORIES

Style 12: Single Rack Adapter Kit: Allows any 270 series instrument to be right or left mounted in a standard 19 inch rack. 5/4 inches high.

Style 13: Dual Rack Adapter Kit: Allows any 270 series instrument to be mounted side-by-side in a standard 19 inch rack. 5/4 inches high.

FACTORY/FOB

San Diego, CA