# Model 19

# 2 MHz Sweep/Function Generator

- Low Cost
- High Quality Waveforms
- Internal Lin/Log Sweep Generator
- Internal/External AM to 100%
- Variable Symmetry
- Digital Display of Frequency, Amplitude, and Offset

odel 19's very low cost, compact size, and high quality sine, square, and triangle waveforms make it ideal for benchtop applications.

**Output.** Main output can be as great as 20 Vp-p into open circuit or 10 Vp-p into a 50  $\Omega$  load. Built-in attenuator and vernier allow continuous level control down to 30 mV into 50  $\Omega$ . Output can be offset up to  $\pm$  10 V. A detent guarantees zero offset when desired. An auxiliary output provides a fixed 0 to +5 V level for driving TTL or CMOS loads.

**Internal Sweep**. The internal sweep generator sweeps frequencies linearly or logarithmically. Start and stop frequencies are set independently, and sweep ranges of over 1000:1 are possible. Sweep times typically can be set from 20 ms to 20 s. A sweep signal output is provided for oscilloscope or x-y recorder.

**External Sweep**. Frequency can be swept using an external signal. Sweep range of 1000:1 is possible.

**Amplitude Modulation**. Amplitude modulation can be external or internal (via a 400 Hz internal generator) with modulation levels fully variable between 0% and 100%.

**Symmetry Control**. Symmetry can be controlled from 1:9 to 9:1 ratios for creating ramp and pulse waveforms.

**Digital Display**. The display provides a readout of frequency, amplitude, and offset.

# **Specifications**

NOTE: Specifications apply after a 20 minute warmup.

#### Waveforms

Sine, triangle, square, and DC.

### Sine Distortion:

200 Hz, 2 kHz, and 20 kHz Ranges: < 1.0%. 2 Hz, 20 Hz, and 200 kHz Ranges: < 1.5%. 2 MHz Range: All harmonics > 25 dB below fundamental.

Triangle Linearity: 99% to 200 kHz. Square Wave Rise and Fall Time: < 100 ns. Symmetry: Waveforms may be varied to produce sawtooth and variable duty cycle waveforms from 1:9 to 9:1 ratio (on the top decade of each frequency range). When symmetry control is used, indicated frequency is divided by 10.

## Frequency

**Range:** 2 mHz to 2 MHz in seven overlapping ranges.

# Meter Accuracy:

±5 digits on 2 kHz through 2 MHz ranges 1.5% of full scale on 2 through 200 ranges.

# Amplitude

**Range:** 0.4 V to 10 Vp-p into 50  $\Omega$  (20 Vp-p max into open circuit). Adjustable in 2 overlapping ranges:

0 dB Range: 0.3 V to 10 Vp-p into 50  $\Omega$  (20 Vp-p into open circuit).

-20 dB Range: 30 mV to 1 Vp-p into 50  $\Omega$  (2 Vp-p into open circuit).

# Offset

**Range:**  $\pm 5$  V into 50  $\Omega$  ( $\pm 10$  V into open circuit). Offset attenuated in -20 dB range.

# Sweep Modes

Continuous and reverse. Internal: Linear or logarithmic. External: 0 to 3 V for 1000:1 sweep.

## **Amplitude Modulation**

Range: 0 to 100% Frequency: 400 Hz (internal). DC to 100 kHz (external). External Sensitivity: 2 Vp-p for 50%

modulation.

# Outputs

**Main Out** (50  $\Omega$ ): Sine, triangle, square waveforms, and DC outputs with adjustable attenuation.

Aux Out (600  $\Omega$ ): 0 to 5 V output drives CMOS and 2 TTL loads.

Sweep Out (600  $\Omega$ ): 0 to 6 V triangle.

## Inputs

**AM/Sweep In** (10 k $\Omega$ ): For external modulation signal.

Sweep Input Sensitivity: 3.0 V for 1000:1 sweep.

**AM Input Sensitivity**: 2 Vp-p for 50% modulation.

#### General

**Power**: 110/120 Vac 50/60 Hz or 220/240 Vac 50/60 Hz. 20 VA max power consumption.

# Environment:

Operating Range: +5° to +40° C, 20% to 80% RH.

Storage Range: -10° to +65° C.

# **Ordering Information**

Model 19: 2 MHz Sweep/Function Generator 1100-00-03716-01: Rack Mount Kit

