

WaveGen – Built-in Function/Arbitrary Waveform Generator (specifications are typical)

WaveGen out	Rear-panel BNC connector
Waveforms	Sine, Square, Ramp, Pulse, DC, Noise, Sine Cardinal (Sinc), Exponential Rise, Exponential Fall, Cardiac, Gaussian Pulse, and Arbitrary
Modulation	Modulation types: AM, FM, FSK Carrier waveforms: sine, ramp, sine cardinal, exponential rise, exponential fall, and cardiac Modulation source: internal (no external modulation capability) AM: Modulation: sine, square, ramp Modulation frequency: 1 Hz to 20 kHz Depth: 0% to 100% FM: Modulation: sine, square, ramp Modulation frequency: 1 Hz to 20 kHz Minimum carrier frequency: 10 Hz Deviation: 1 Hz to carrier frequency or $(2e12 / \text{carrier frequency})$, whichever is smaller
Sine	Frequency range: 0.01 Hz to 100 MHz Amplitude flatness: ± 0.5 dB (relative to 1 kHz) Harmonic distortion: -40 dBc Spurious (non-harmonics): -40 dBc Total harmonic distortion: 1% SNR (50 Ω load, 500 MHz BW): 40 dB ($V_{pp} \geq 0.1$ V); 30 dB ($V_{pp} < 0.1$ V)
Square wave /pulse	Frequency range: 0.01 Hz to 50 MHz Duty cycle: 20 to 80% Duty cycle resolution: Larger of 1% or 10 ns Pulse width: 20 ns minimum Rise/fall time: 2.5 ns (10 to 90%) Pulse width resolution: 10 ns or 5 digits, whichever is larger Overshoot: $< 6\%$ Asymmetry (at 50% DC): $\pm 1\% \pm 5$ ns
Ramp/triangle wave	Frequency range: 0.3 Hz to 5 MHz Linearity: 1% Variable symmetry: 0 to 100% Symmetry resolution: 1%
DC	Precise (-1 to 1V) Hi Z Wide Range (-8 to 8V)
Noise	Bandwidth: 150 MHz typical
Sine Cardinal (Sinc)	Frequency range: 0.3 Hz to 5 MHz
Exponential Rise/Fall	Frequency range: 0.3 Hz to 5 MHz
Cardiac	Frequency range: 0.3 Hz to 200.0 kHz
Gaussian Pulse	Frequency range: 0.3 Hz to 5.0 MHz
Arbitrary	Waveform length: 2 to 8,192 points Amplitude resolution: 14 bits (including sign bit) ¹ Repetition rate: 0.3 Hz to 12 MHz Sample rate: 400 MSa/s

1. Full resolution is not available at output due to internal attenuator stepping.

WaveGen – Built-in Function/Arbitrary Waveform Generator (specifications are typical) (continued)

Frequency	Sine wave accuracy: Timebase accuracy ± 1 ppm
	Square wave and pulse accuracy: Timebase accuracy ± 3 ppm
Amplitude	Range:
	2 mVpp to 10 Vpp into Hi-Z ^{1,2}
	1 mVpp to 5 Vpp into 50 Ω ^{1,2}
	Resolution: 100 μ V or 3 digits, whichever is higher
DC offset	Accuracy: 2% (frequency = 1 kHz)
	Range:
	± 8 V into Hi-Z ^{1,2}
	± 4 V into 50 Ω ^{1,2}
Trigger output	Resolution: 100 μ V or 3 digits, whichever is higher
	Trigger output available on Trig out BNC
Main output	Impedance: 50 Ω typical
	Isolation: Not available, main output BNC is grounded
Output mode	Normal
	Single-shot (arbitrary, sine, ramp, sine cardinal, exp rise/fall, cardiac, Gaussian pulse)

Digital Voltmeter (specifications are typical)

Functions	ACrms, DC, DCrms
Resolution	ACV/DCV: 3 digits
Measuring rate	100 times/second
Autoranging	Automatic adjustment of vertical amplification to maximize the dynamic range of measurements
Range meter	Graphical display of most recent measurement, plus extrema over the previous 3 seconds

Precision Counter/Totalizer (specifications are typical)

Counter	Source	Any analog channel or trigger qualified event (non-edge trigger modes)
	Resolution	8 digits maximum
	Max frequency	1 GHz (any analog channel)
	Trig qual events	1/(trigger hold off time) for trigger qualified events (max 25 MHz, minimum dead time of 40 ns)
Measurement		Frequency, period, totalize
Totalizer	Counter size	64-bit
	Edge	Rise or fall

1. Gaussian Pulse, Sin, Cardiac: 4 Vpp maximum into Hi-Z; 2 Vpp maximum into 50 Ω .

2. Maximum high level of 8V and minimum low level of -8V into Hi-Z (4V and -4V into 50 Ω) of combined signal amplitude and offset