Table 1–2. Specifications

SPECIFICATIONS

(Specifications describe the instrument's warranted performance)
The following specifications apply with 50 Ohm load resistance in a temperature range of 0° to 55°C. Output levels double when driving into high impedance (up to 32 Vpp).

WAVEFORMS

Sine, Triangle, Ramp, Square, Pulse, Haversine, Havertriangle

TIMING CHARACTERISTICS

Frequency
Range: 1.00 Hz to 20.0 MHz
Resolution: 3 digits
Accuracy: ± 5% of setting (10.0 Hz to 20.0 MHz)
(50% duty cycle) ± 10% of setting (1.00 Hz to 9.99 Hz)
Repeatability: Factor 2.5 better than accuracy
Jitter: < 0.1% + 50 ps
Stability: ± 0.2% (1 hour)
± 0.5% (24 hours)

Duty Cycle (sine, triangle, square)
Range: 10% to 90% (1 Hz to 999 kHz)
50% fixed (1 Hz to 20 MHz)
Resolution: 1%
Accuracy (1 Hz to 999 kHz): ± 1 digit, 50% fixed
± 3 digits, 20% to 80%
± 6 digits, 10% to 20% and 80% to 90%

Pulse Width
Range: 25 ns to 100 ms
Resolution: 3 digits
Accuracy: ± 5% of setting ± 2 ns
Repeatability: Factor 2.5 better than accuracy
Jitter: < 0.1% + 50 ps
Max. duty cycle: > 75% (1 Hz to 1 MHz), decreasing to
> 50% at 20 MHz

OUTPUT CHARACTERISTICS

Output Impedance: 50 Ohm ± 5%. Reflection < 10%

Amplitude/Offset
Amplitude and offset are independently variable within the following two level windows.

Level window	± 80.0 mV	± 8.00V
Ampl. range	1.60 mVpp to 159.9 mVpp	160 mVpp to 16.00 Vpp
Ampl. resolution	3 1/2 digits	3 1/2 digits
Ampl. accuracy*	± 5% [0.45 dB]	± 5% [0.45 dB]
Ampl. repeatability	Factor 2.5 better than accuracy	
Offset range	0 to ± 80.0 mV	0 to ± 8.00V
Offset resolution	3 digits (best case 10 μV)	3 digits (best case 1 mV)
Offset accuracy	± 5% of setting ± 2% of amplitude ± 1 mV	± 5% of setting ± 2% of amplitude ± 20 mV
Offset repeatability	Factor 2.5 better than accuracy	

*The amplitude accuracy for sine and triangle is specified at 1 kHz. For other frequencies see the following flatness specifications.

Amplitude Flatness (50% duty cycle)	Sine	Triangle
1.00 Hz to 999 kHz	± 3% [0.26 dB]	± 3%
1.00 MHz to 20.0 MHz	± 10% [0.92 dB]	+ 10% / − 15%

WAVEFORM CHARACTERISTICS

Sine (normal mode, 50% duty cycle, symmetrical mode)
Total Harmonic Distortion (THD):
< 1% [-40 dB], (10 Hz - 99.9 kHz)
< 3% [-30 dB], (100 kHz - 999 kHz)
Harmonic Signals: more than 26 dB below fundamental (1 MHz – 20 MHz) for amplitudes > 10 mVpp
THD and Harmonic Signal Distorsion may increase by 3 dB below 10°C and above 45°C

Triangle, Ramp
Non-linearity: < ± 1% (10 Hz to 99.9 kHz)
< ± 3% (1 Hz to 9.9 Hz and 100 kHz to 1 MHz)
(measured between 10% to 90% of amplitude)

Square, Pulse
Rise/Fall time: < 10 ns (10% to 90% of amplitude)
Pulse Perturbations: < ± 5% of amplitude (≥ 0.16 Vpp)
< ± 10% of amplitude (< 0.16 Vpp)

Output Modes
Switchselectable POSITIVE, NEGATIVE, SYMMETRICAL and NORMAL/COMPLEMENT output signal.

OPERATING MODES

Normal: Continuous waveform is generated
Trigger: Each input cycle generates a single output cycle
Gate: External signal enables oscillator. First output cycle synchronous with active trigger slope. Last cycle always completed.
VCO: External voltage linearly sweeps 2 full frequency decades. The actual frequency is displayed.
Modulation range: 1:100 with 0.1V to 10V
Modulation bandwidth: dc to 1 kHz
Burst: Each input cycle generates a preprogrammed number (1 to 1999) of periods. Minimum time between bursts is 200 ns. (Option 001)

SUPPLEMENTARY PERFORMANCE CHARACTERISTICS

(Description of non-warranted typical performance parameters)

Ext Input: Threshold Level: 1.4V fixed
Max input voltage: ± 20V
Sensitivity: 500 mVpp
Min pulse width: 25 ns
Input impedance: 10 kOhm
Trigger slope: positive

Start Phase: Adjustable from -90° to +90°.
Usable range may decrease to -90° to 0° at 20 MHz.
Haversine and Havertriangle can be generated.

Trigger Output: TTL compatible output signal.

Man: Simulates external input.

1 Cycle: Provides a single output period in TRIG, GATE and BURST mode.

GENERAL

Warm-up Time: 15 min to meet all specifications.
Environmental: Storage temperature: -40° C to 75° C
Operating temperature: 0° C to 55° C
Humidity range: 95% R.H., 0° C to 40° C

Power: 100/120/220/240 V rms + 5%, -10%, 48-440 Hz; 70 VA max.

Weight: Net 4.6 kg (10 lbs), Shipping 6.6 kg (15 lbs)
Dimensions: 89 mm high, 213 mm wide, 375 mm deep (3.5 x 8.4 x 14.8 in)

Options: 001 Counted Burst
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Data subject to change