

Appendix A: Specifications

Tables 2 through 5 show characteristics of the CFG280 Function Generator that are guaranteed by warranty.

Table 2: Generator Specifications

Characteristic	Measurement
Outputs	Square wave, sine wave, triangle wave, TTL pulse, positive and negative ramp, pulse and skewed sine wave, AM, and sweep functions
Frequency Ranges	0.1 Hz to 11 MHz, up/down range switchable in eight decade steps
Dial Range	1 to 11 calibrated 0.1 to 1 uncalibrated
Dial Accuracy	$\pm 5\%$ of full scale from 0.1 Hz to 10 MHz 11 MHz setting not less than 11 MHz (ambient temperature 20° C to 30° C)
Pulse and Ramp Frequency	1/10 of dial frequency
Pulse and Ramp Aspect Ratio	95:5
Main Output Amplitude	Two ranges: $0-20 V_{p-p}$ 200 mV to 20 V_{p-p} (open circuit) 100 mV to 10 V_{p-p} (50 Ω load) $0-0.2 V_{p-p}$ 20 mV to 2 V_{p-p} (open circuit) 10 mV to 1 V_{p-p} (50 Ω load)
Main Output Impedance	50 $\Omega \pm 10\%$
DC Offset	<-10 V to >+10 V (open circuit) <-5 V to >+5 V (into 50 Ω load)

Appendix A: Specifications

Table 2: Generator Specifications (Cont.)

Characteristic	Measurement
Amplitude Flatness (At 10 kHz, 50 Ω Load)	Within ± 0.5 dB, 0.1 Hz to 110 kHz Within ± 1.5 dB, to 1.1 MHz Within ± 2.5 dB, to 11 MHz
Sine Wave Distortion	<1% from 10 Hz to 100 kHz -30 dB at all other frequencies (ambient temperature 20° C to 30° C)
Triangle Wave Linearity	0.1 Hz to 100 Hz $\geq 99\%$ 100 kHz to 1 MHz $\geq 97\%$ Measured from 10% to 90% of waveform
Square Wave Transition Time	≤ 25 ns rise/fall time at maximum output into a 50 Ω load
Square Wave Aberrations	$\leq 4\%$ peak-to-peak at maximum output into a 50 Ω load
Sync TTL Output Rise/Fall Time	<25 ns into 50 Ω load
VCF (FM) Input	A ± 10 V signal input shifts frequency $\geq 1000:1$ up or down with dial set at 0.1 or 11 respectively
External Gate Input	$\geq +2$ V gate signal required, not to exceed +15 V fixed 0 degree start phase
Internal Sweep Rate	Continuously variable from 0.5 to 50 Hz
Internal Sweep Width	Variable from 1:1 to 100:1
Amplitude Modulation	100% with ≤ 5 V _{p-p} , DC to 200 kHz DSB suppressed carrier modulation is also obtained by input modulating the signal with $\geq +2.5$ VDC offset Input impedance = 3 k Ω

Table 3: Counter Specifications

Characteristic	Measurement
Input Selection	Internal and external input selectable
Frequency Range	DC to 100 MHz for internal 1 Hz to 100 MHz, AC coupled for external
Resolution	Frequency mode: 1 Hz, 10 Hz, 1 kHz Period mode: 1 ms
Accuracy	Frequency mode: $\pm(1 \text{ count} + \text{time base error})$ Period mode: $\pm(1 \text{ count} + \text{time base error} + \text{trigger error})$
External Input	
Sensitivity	
30 mV _{RMS}	1 Hz to 50 MHz
50 mV _{RMS}	50 MHz to 100 MHz
Impedance	1 M Ω paralleled by 40 pF
Attenuation	3 V to 42 V (X10) 50 mV to 5 V (X1)
Maximum Input Voltage	42 V peak
Internal Time Base	
Crystal Frequency	10 MHz
Temperature Stability	<0.001% (10 ppm from 0° C to 40° C)
Line Voltage Stability	< ± 1 ppm with 10% line voltage variation
Aging Rate	< ± 10 ppm/yr

Appendix A: Specifications

Table 4: General Specifications

Characteristic	Measurement
Line Voltage Range	Selectable ranges at 50 Hz to 60 Hz 90 VAC to 110 VAC 108 VAC to 132 VAC 198 VAC to 242 VAC 216 VAC to 250 VAC
Operating Temperature	+0° C to +40° C, 80% relative humidity
Nonoperating Temperature	-10° C to +70° C, 70% relative humidity

Table 5: Certifications and Compliances

EC Declaration of Conformity – EMC	Meets intent of Directive 89/336/EEC for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities: EN 55011 Class A Radiated and Conducted Emissions EN 50081-1 Emissions: EN 60555-2 AC Power Line Harmonic Emissions EN 50082-1 Immunity: IEC 801-2 Electrostatic Discharge Immunity IEC 801-3 RF Electromagnetic Field Immunity IEC 801-4 Electrical Fast Transient/Burst Immunity IEC 801-5 Power Line Surge Immunity
EC Declaration of Conformity – Low Voltage	Compliance was demonstrated to the following specification as listed in the Official Journal of the European Communities: Low Voltage Directive 73/23/EEC, amended by 93/68/EEC. HD401 S1 Safety Requirements for Electronic Measuring Apparatus.

Table 6: Typical Mechanical Specifications

Characteristic	Measurement
Dimensions (H x W x D)	100 mm X 240 mm X 230 mm (3.9 in x 9.5 in x 9.0 in)
Weight	3.0 kg (6.6 lb)