

DG5000 Series Specifications

All the specifications can be guaranteed if the following two conditions are met unless where noted.

- The generator is within the calibration period and has performed self-calibration.
- The generator has been working continuously for 30 minutes at specified temperature (18°C ~ 28°C).

All the specifications are guaranteed unless those marked with "typical".

Model	DG5352/ DG5351	DG5252/ DG5251	DG5102/ DG5101	DG5072/ DG5071
Channel	2/1	2/1	2/1	2/1
Maximum Frequency	350 MHz	250 MHz	100 MHz	70 MHz
Sample Rate	1 GSa/s			
Waveforms				
Standard Waveforms	Sine, Square, Ramp, Pulse, Noise			
Arbitrary Waveforms	Sinc, Exponential Rise, Exponential Fall, ECG, Gauss, HaverSine, Lorentz, Dual-Tone, DC			
Frequency Characteristics				
Sine	1 μ Hz to 350 MHz	1 μ Hz to 250 MHz	1 μ Hz to 100 MHz	1 μ Hz to 70 MHz
Square	1 μ Hz to 120 MHz	1 μ Hz to 120 MHz	1 μ Hz to 100 MHz	1 μ Hz to 70 MHz
Ramp	1 μ Hz to 5 MHz	1 μ Hz to 5 MHz	1 μ Hz to 3 MHz	1 μ Hz to 3 MHz
Pulse	1 μ Hz to 50 MHz	1 μ Hz to 50 MHz	1 μ Hz to 50 MHz	1 μ Hz to 50 MHz
Noise	250 MHz Bandwidth			
Arb	1 μ Hz to 50 MHz	1 μ Hz to 50 MHz	1 μ Hz to 50 MHz	1 μ Hz to 50 MHz
Resolution	1 μ Hz			
Accuracy	± 1 ppm, 18 °C to 28 °C			
Sine Wave Spectrum Purity				
Harmonic Distortion	Typical (0 dBm) ≤ 100 MHz: < -45 dBc	Typical (0 dBm) ≤ 100 MHz: < -45 dBc	Typical (0 dBm) ≤ 100 MHz:	Typical (0 dBm) ≤ 70 MHz:

	>100MHz: <-35dBc	>100MHz: <-35dBc	<-45dBc	<-45dBc
Total Harmonic Distortion	<0.5% (10 Hz to 20 kHz, 0 dBm)			
Spurious (non-harmonic)	Typical (0 dBm) ≤100MHz: <-50dBc >100MHz: -50dBc+6dBc/octave	Typical (0 dBm) ≤100MHz: <-50dBc >100MHz: -50dBc+6dBc/octave	Typical (0 dBm) ≤100MHz: <-50dBc	Typical (0 dBm) ≤70MHz: <-50dBc
Phase Noise	Typical (0 dBm, 10 kHz deviation) 10 MHz: <-110 dBc			
Signal Characteristics				
Square				
Rise/Fall Time	Typical Value (1Vpp) <2.5 ns	Typical Value (1Vpp) <2.5 ns	Typical Value (1Vpp) <3 ns	Typical Value (1Vpp) <4 ns
Overshoot	Typical Value (1Vpp) <5%			
Duty Cycle	≤10 MHz: 20.0% to 80.0%	10 MHz to 40 MHz: 40.0% to 60.0%	>40 MHz: 50.0% (fixed)	
Non-symmetry	1% of period +5 ns			
Jitter (rms)	Typical Value (1Vpp) ≤30 MHz: 10ppm+500 ps >30 MHz: 500 ps			
Ramp				
Linearity	≤ 0.5% of peak output			
Symmetry	0% to 100%			
Pulse				
Period	20 ns to 1000000 s			
Pulse Width	4 ns to 1000000 s			
Leading/Trailing Edge Time	2.5 ns to 1 ms	2.5 ns to 1 ms	3 ns to 1 ms	4 ns to 1 ms
Overshoot	Typical Value (1Vpp) <5%			
Jitter (rms)	Typical Value (1Vpp) 10 ppm+500 ps			

Arb				
Waveform Length	Normal Mode: 2 to 16M points Play Mode: 2 to 128M points			
Vertical Resolution	14 bits			
Mode	Normal Mode, Play Mode			
Sample Rate	Normal Mode (Waveform Length is from 2 to 16M points): 1G Sa/s (fixed); Play Mode (Waveform Length is from 2 to 128M points): ≤1G Sa/s (variable)			
Minimum Rise/Fall Time	Typical Value (1Vpp) ≤3 ns			
Jitter (rms)	3 ns			
Interpolation Method	Close, Linear, Sinc			
Edit Method	Edit Point, Edit Block			
Non-Volatile Memory	1G Bytes			
Output Characteristics				
Amplitude (into 50 Ω)				
Range	≤100MHz: 5mVpp to 10Vpp ≤300MHz: 5mVpp to 5Vpp ≤350MHz: 5mVpp to 2Vpp	≤100MHz: 5mVpp to 10Vpp ≤250MHz: 5mVpp to 5Vpp	5mVpp to 10Vpp	5mVpp to 10Vpp
Accuracy	Typical (1 kHz Sine, 0 V Deviation, >10 mVpp, Auto) ± 1% of setting ± 1 mVpp			
Amplitude Flatness (relative to 100 kHz, 1.25Vpp Sine wave, 50Ω)	<10MHz: ±0.1dB 10MHz to 60MHz: ±0.2dB 60MHz to 100MHz: ±0.4dB 100MHz to 250MHz: ±1.0dB >250MHz: ±1.5dB	<10MHz: ±0.1dB 10MHz to 60MHz: ±0.2dB 60MHz to 100MHz: ±0.4dB 100MHz to 250MHz: ±1.0dB	<10MHz: ±0.1dB 10MHz to 60MHz: ±0.2dB 60MHz to 100MHz: ±0.4dB	<10MHz: ±0.1dB 10MHz to 60MHz: ±0.2dB 60MHz to 70MHz: ±0.4dB
Units	Vpp, Vrms, dBm, High Level, Low Level			

Resolution	0.1 mV or 4 digits			
Offset (into 50 Ω)				
Range	±5 Vpk ac + dc			
Accuracy	1% of setting + 5mV + 0.5% of amplitude			
Waveform Output				
Impedance	50 Ω (typical)			
Isolation	42 Vpk max. to Earth			
Protection	Over-temperature protected, Short-circuit protected, Overload relay automatically disables main output			
FH Characteristic				
FH Bandwidth	1.5 MHz to 250 MHz	1.5 M Hz to 250 MHz	1.5 MHz to 100 MHz	1.5 MHz to 70 MHz
FH Rate	1 Hop/s to 12.5M Hop/s			
Frequency Point Numbers	4096			
Sequence Length	4096			
Modulation Characteristics				
Modulation Types	AM, FM, PM, ASK, FSK, PSK, PWM, IQ			
AM				
Carrier Waveforms	Sine, Square, Ramp, Arb (except DC)			
Source	Internal/External			
Modulating Waveforms	Sine, Square, Ramp, Noise, Arb (2 mHz to 50 kHz)			
Depth	0% to 120%			
FM				
Carrier Waveforms	Sine, Square, Ramp, Arb (except DC)			
Source	Internal/External			
Modulating Waveforms	Sine, Square, Ramp, Noise, Arb (2 mHz to 50 kHz)			
PM				
Carrier	Sine, Square, Ramp, Arb (except DC)			

Waveforms				
Source	Internal/External			
Modulating Waveforms	Sine, Square, Ramp, Noise, Arb (2 mHz to 50 kHz)			
Phase Deviation	0° to 360°			
ASK				
Carrier Waveforms	Sine, Square, Ramp, Arb (except DC)			
Source	Internal/External			
Modulating Waveforms	Square with 50% duty cycle (2 mHz to 1 MHz)			
FSK				
Carrier Waveforms	Sine, Square, Ramp, Arb (except DC)			
Source	Internal/External			
Modulating Waveforms	Square with 50% duty cycle (2 mHz to 1 MHz)			
PSK				
Carrier Waveforms	Sine, Square, Ramp, Arb (except DC)			
Source	Internal/External			
Modulating Waveforms	Square with 50% duty cycle (2 mHz to 1 MHz)			
PWM				
Carrier Waveform	Pulse			
Source	Internal/External			
Modulating Waveforms	Sine, Square, Ramp, Noise, Arb (2 mHz to 50 kHz)			
Width Deviation	0% to 100% of Pulse Width			
IQ				
Carrier Waveform	Sine (max. 200 MHz)	Sine (max. 200 MHz)	Sine (max. 100 MHz)	Sine (max. 70 MHz)
Source	Internal/External			
Code Pattern	PN Sequence, 4 bits code pattern, User			

Arb				
Waveform Length	Normal Mode: 2 to 16M points Play Mode: 2 to 128M points			
Vertical Resolution	14 bits			
Mode	Normal Mode, Play Mode			
Sample Rate	Normal Mode (Waveform Length is from 2 to 16M points): 1G Sa/s (fixed); Play Mode (Waveform Length is from 2 to 128M points): ≤1G Sa/s (variable)			
Minimum Rise/Fall Time	Typical Value (1Vpp) ≤3 ns			
Jitter (rms)	3 ns			
Interpolation Method	Close, Linear, Sinc			
Edit Method	Edit Point, Edit Block			
Non-Volatile Memory	1G Bytes			
Output Characteristics				
Amplitude (into 50 Ω)				
Range	≤100MHz: 5mVpp to 10Vpp ≤300MHz: 5mVpp to 5Vpp ≤350MHz: 5mVpp to 2Vpp	≤100MHz: 5mVpp to 10Vpp ≤250MHz: 5mVpp to 5Vpp	5mVpp to 10Vpp	5mVpp to 10Vpp
Accuracy	Typical (1 kHz Sine, 0 V Deviation, >10 mVpp, Auto) ± 1% of setting ± 1 mVpp			
Amplitude Flatness (relative to 100 kHz, 1.25Vpp Sine wave, 50Ω)	<10MHz: ±0.1dB 10MHz to 60MHz: ±0.2dB 60MHz to 100MHz: ±0.4dB 100MHz to 250MHz: ±1.0dB >250MHz: ±1.5dB	<10MHz: ±0.1dB 10MHz to 60MHz: ±0.2dB 60MHz to 100MHz: ±0.4dB 100MHz to 250MHz: ±1.0dB	<10MHz: ±0.1dB 10MHz to 60MHz: ±0.2dB 60MHz to 100MHz: ±0.4dB	<10MHz: ±0.1dB 10MHz to 60MHz: ±0.2dB 60MHz to 70MHz: ±0.4dB
Units	Vpp, Vrms, dBm, High Level, Low Level			

Arb Download Times (Binary Transfer)	
1 Mpts/s	
Note: Download times do not include setup or output time.	
Trigger Characteristics	
Trigger Input	
Level	TTL-compatible
Slope	Rising or falling (selectable)
Pulse Width	> 50 ns
Latency	Sweep: <100 ns (typical) Burst: <300 ns (typical)
Trigger Output	
Level	TTL-compatible
Pulse Width	> 60 ns (typical)
Maximum Rate	1MHz
Clock Reference	
Phase Offset	
Range	0° to 360°
Resolution	0.001° (arb waveform), 0.03° (other waveforms)
External Reference Input	
Lock Range	10 MHz ± 50 Hz
Level	80 mVpp to 10 Vpp
Lock Time	< 2 s
Internal Reference Output	
Frequency	10 MHz ± 50 Hz
Level	632 mVpp (0 dBm), nominal value
Sync Output	
Level	TTL-compatible
Impedance	50 Ω, nominal value
General Specifications	
Power	
Power Voltage	100-127 V, 45-440Hz 100-240 V, 45-65Hz
Power	Less than 125 W

Consumption	
Fuse	250V, T3A
Display	
Type	4.3-inch TFT LCD
Resolution	480 Horizontal × RGB × 272 Vertical Resolution
Color	16M color
Environment	
Temperature Range	Operating: 10°C to 40°C Non-Operating: -20°C to 60°C
Cooling Method	Cooling by fans compulsively
Humidity Range	Less than 35°C: ≤90% Relative Humidity (RH) 35°C to 40°C: ≤60% Relative Humidity (RH)
Altitude	Operating: Less than 3000 meters Non-Operating: Less than 15000 meters
Mechanical	
Dimensions (W×H×D)	230 mm ×106 mm×501 mm
Weight	with no package: 4.3 kg with package: 5.84 kg
Interfaces	
USB Host (2), USB Device, GPIB, LAN	
IP Protection	
IP2X	
Calibration Interval	
Recommend 1 year for standard interval	