XDG3000 Series Dual-Channel Arbitrary Waveform Generator Technical Specifications

All specifications apply to this product unless otherwise stated. The signal generator must be operated continuously for more than 30 minutes at the specified operating temperature to meet these specifications.

In addition to the specifications marked with the word "Typical", the specifications used are guaranteed.

Waveform	
Standard Waveform	Sine wave, square wave, ramp wave, pulse wave, noise, arbitrary wave, harmonic
Arbitrary waveform	Sinc, exponential rise, exponential decline, electrocardiogram, Gaussian, semi-positive, Lorentz, dual audio, DC voltage totaling more than 150 kinds
Sampling Rate	1.25GSa/s
Number of channels	2
Number of digits	14bits

Frequency Feature Frequency resolution: 1 μHz or 10 significant figures; Frequency stability: ±1 ppm at 0-40C; Frequency aging rate: ±1 ppm per year.		
Sine wave	XDG3252	1 μHz—250 MHz
	XDG3202	1 μHz—200 MHz
	XDG3162	1 μHz—160 MHz
	XDG3102	1 μHz—100 MHz
	XDG3082	1 μHz—80 MHz
Square wave	XDG3252 XDG3202 XDG3162	1 μHz—50 MHz
	XDG3102	1 μHz—40 MHz
	XDG3082	1 μHz—30 MHz
Ramp wave	1 μHz—5 MHz	
Pulse wave	1 μHz—25 MHz	
Noise wave	120 MHz bandwidth (-3dB) (Gaussian white noise)	
Arbitrary wave	1 μHz—15MHz (Bulid-in waves)； 1 μHz—50MHz (User customized waves)	
Harmonic wave	XDG3252	1 μHz—125 MHz
	XDG3202	1 μHz—100 MHz
	XDG3162	1 μHz—80 MHz

	XDG3102	1 μHz—50 MHz
	XDG3082	1 μHz—40 MHz

Amplitude characteristics (not specifically labeled, the load defaults to 50Ω)		
Output amplitude	High Resistance	2mVpp to 20Vpp (≤ 40MHz) 2mVpp to 10Vpp (≤80MHz) 2mVpp to 5Vpp (≤120MHz) 2mVpp to 2Vpp (≤250MHz)
	50 Ω	1mVpp to 10Vpp (≤ 40MHz) 1mVpp to 5Vpp (≤80MHz) 1mVpp to 2.5Vpp (≤120MHz) 1mVpp to 1Vpp (≤250MHz)
Amplitude accuracy	±(1% of setting + 1 mVpp) (Typical value 1kHz sine, 0V offset)	
Amplitude resolution	1 mVpp or 4 digits	
DC offset range (High resistance,open circuit)	±(10 Vpk – Amplitude Vpp/2)	
DC offset range	±(5 Vpk – Amplitude Vpp/2)	
DC offset accuracy	±(1 % of |setting| + 1 mV + amplitude Vpp * 0.5%)	
Offset resolution	1 mV or 4 digits	
Output Impedance	50Ω (typical)	

Waveform Feature	
Sine	
Bandwidth flatness (1 Vpp, relative to 1kHz)	≤10MHz: ±0.2dB ≤60MHz: ±0.3dB ≤100MHz: ±0.5dB ≤160MHz: ±1dB ≤250MHz: ±1.5dB
Harmonic distortion	Typical (0dBm) DC to 1MHz: <-65dBc 1MHz to 10MHz: <-60dBc 10MHz to 120MHz: <-50dBc 120MHz to 250MHz: <-45dBc
Total harmonic distortion	＜0.05 %, 10 Hz to 20 kHz, 1 Vpp
Non-harmonic distortion	Typical (0dBm) ≤10MHz: <-70dBc >10MHz: <-70dBc + 6dB/ sound interval
Phase noise	Typical (0dBm, 10kHz offset) 10MHz: ≤-110dBc/Hz
Square	
Rise/fall time	<5ns
Jitter	300ps + 100ppm

Overshoot	< 3%
Duty cycle	50.0% (fixed)
Ramp	
Linearity	< 0.1% of peak output (typical 1 kHz, 1 Vpp, symmetry 50%)
Symmetry	0% to 100%
pulse	
Pulse Width	12 ns to 1000 ks
Duty cycle	0.3% to 99.7%
Rise and fall time	≥7ns
Overshoot	< 3%
Jitter	300ps + 100ppm
Noise	
Types	Gaussian white noise
Bandwidth (-3dB)	120M
Arbiratry wave	
Bandwidth	120M
Waveform length	2 to 1M points
Sampling rate	< = 312M (at frequency <25kHz) 1.25G (at frequency >=25kHz)
Amplitude accuracy	14 bits
Minimum rise and fall time	< 7 ns
Jitter	3 ns
Harmonic wave	
Harmonic number	≤16
Frequency Range	1μHz to 100MHz
Harmonic type	Odd, even, sequential, custom
Harmonic amplitude	Each harmonic amplitude can be set
Harmonic phase	Each harmonic phase can be set

Modulated Waves	
AM	
Carrier	Sine wave, square wave, ramp wave, arbitrary wave
Modulated signal source	Internal or external
Internal modulation waveform	Sine wave, square wave, ramp wave, noise, arbitrary waveform
Internal amplitude modulation frequency	2 mHz to 100 kHz
Depth	0.0% to 100.0%
FM	
Carrier	Sine wave, square wave, ramp wave, arbitrary wave

Modulated signal source	Internal or external
Internal modulation waveform	Sine, square, ramp, white noise, and arbitrary waveforms
Internal modulation frequency	2 mHz to 100 kHz
Frequency offset	2 mHz ≤ offset ≤ min (carrier frequency, carrier maximum frequency - carrier frequency) by default, the smaller of the two
PM	
Carrier	Sine wave, square wave, ramp wave, arbitrary wave
Modulated signal source	Internal or external
Internal modulation waveform	Sine, square, ramp, noise, and arbitrary waveforms
Internal phase modulation frequency	2 mHz to 100 kHz
Phase deviation range	0°～180°
PWM	
Carrier	Pulse wave
Modulated signal source	Internal or external
Internal modulation waveform	Sine, square, ramp, noise, and arbitrary waveforms
Internal phase modulation frequency	2 mHz to 100 kHz
Offset	0 to min (min is the smaller value of pulse wave duty cycle and 100%-pulse wave duty cycle)
FSK	
Carrier	Sine wave, square wave, ramp wave, arbitrary wave
Modulated signal source	internal
Internal modulation waveform	50% square wave
FSK frequency	2 mHz to 1MHz
3FSK	
Carrier	Sine wave, square wave, ramp wave, arbitrary wave
Modulated signal source	internal
Internal modulation waveform	50% square wave
FSK frequency	2 mHz to 1MHz
4FSK	

Carrier	Sine wave, square wave, ramp wave, arbitrary wave
Modulated signal source	internal
Internal modulation waveform	50% square wave
PSK	
Carrier	Sine wave, square wave, ramp wave, arbitrary wave
Modulated signal source	Internal or external
Internal modulation waveform	50% square wave
PSK frequency	2 mHz to 1MHz
ASK	
Carrier	Sine wave, square wave, ramp wave, arbitrary wave
Modulated signal source	Internal or external
Internal modulation waveform	50% square wave
ASK frequency	2 mHz to 1MHz
BPSK	
Carrier	Sine wave, square wave, ramp wave, arbitrary wave
Modulated signal source	internal
Internal modulation waveform	50% square wave
BPSK frequency	2 mHz to 1MHz
QPSK	
Carrier	Sine wave, square wave, ramp wave, arbitrary wave
Modulated signal source	internal
Internal modulation waveform	50% square wave
OSK	
Carrier	Sine wave
Modulated signal source	internal
Internal modulation waveform	50% square wave
Oscillation time	8ns to 499.75μs
OSK frequency	2 mHz to 1MHz
Sweep	
Carrier	Sine, rectangular wave, ramp wave, arbitrary wave

Minimum/maximum starting frequency	1uHz
Maximum/termination frequency	Sine wave: 250MHz Square wave: 50MHz Ramp wave: 5MHz Arbitrary wave: 15MHz (built-in waveform) or 50MHz (user-defined waveform)
Types	Linear, logarithmic
Sweep direction	Up / Down
Sweep time	1 ms to 500 s ± 0.1%
Trigger source	Internal, external, manual
Burst	
Waveform	Sine wave, square wave, ramp wave, pulse wave and arbitrary wave
Types	Count (1 to 50,000 cycles), unlimited, gated
Trigger source	Internal, external, manual
Carrier frequency	2mHz to 100MHz
Internal cycle	10 ns to 500 s (Min = Cycles * Period)
Gate source	External trigger

Counter Specification		
Measurement function	Frequency, period, positive pulse width, negative pulse width, duty cycle	
Frequency Range	Single channel: 100 mHz to 200 MHz	
Frequency resolution	7 digits	
Coupling method	AC, DC	
Voltage range and sensitivity (non-modulated signal)		
DC coupling	DC offset range	±1.5 V
	100 mHz to 100 MHz	250 mVp-p - 5 Vp-p (AC+DC)
	100 MHz to 200 MHz	400 mVp-p - 5 Vp-p (AC+DC)
AC coupling	1 Hz to 100 MHz	250 mVp-p - 5 Vp-p_p
	100 MHz to 200 MHz	400 mVp-p - 5 Vp-p
Pulse width and duty cycle measurement	1 Hz to 10 MHz (100 mVpp to 5 Vpp)	
Input resistance	1 MΩ	
Sensitivity	Can set high, medium and low three files	
Trigger level range	±2.5 V	
Channel coupling	1 Hz to 10 MHz (100 mVpp to 5 Vpp)	
Amplitude lock, frequency lock, channel copy		

Input/Output	
Communication Interface	USB Host, USB Device, LAN
External modulation input	

Input frequency range	DC-20 kHz
Input level range	± 1 V full scale
Input resistance	10 kΩ typical value
External trigger input	
Level	TTL-compatible
Slope	Rise/fall optional
Pulse Width	>100 ns
External clock input (frequency meter input)	
External clock input (frequency meter input) impedance	1MΩ DC coupled
Input level range	100 mVp-p to 3.3 Vp-p
Lock time	<1s
Lock range	10 MHz ± 9 kHz
External clock output	
Frequency	10 MHz
Impedance	50 Ω, DC coupling
Amplitude	1.6Vpp 50Ω impedance
Sync Output	
Level	TTL-compatible
Maximum frequency	1MHz

Display:

Feature	Description
Display type	8-inch color LCD display
display resolution	800 horizontal × 600 vertical pixels
Display color	65536 colors, 16 bits, TFT

Power:

Feature	Description
Voltage	100 - 240 VAC, 50/60 Hz, CAT II
Power consumption	Less than 35 W
Fuse	250 V, F2AL
Start time	Booting for 30 mins

Environment:

Feature	Description
Temperature	Working temperature: 0 °C to 40 °C Storage temperature: -20 °C to 60 °C
Relative humidity	≤90%
Height	Operating 3,000 meters Non-operation 12,000 meters
Cooling method	Smart fan cooling

Mechanical Specification:

Feature	Description
Dimension	340 mm (Length) × 177 mm (Height) × 90mm (Width)
Weight	2.5 kg

Adjustment interval:

The recommended calibration interval is one year.

V1.0.1