DGE2000 Series Dual-Channel Arbitrary Waveform Generator

Technical Specifications

All technical specifications are guaranteed when the following conditions are met, unless otherwise stated.

- The signal generator must be operated continuously for more than 30 minutes at the specified operating temperature (20°C to 30°C) to meet these specifications；
- The signal generator is in the calibration internal and has performed a self-calibration.

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

Waveforms

Waveforms		
Bandwidth	DGE2035	35 MHz
	DGE2070	70 MHz
Sample Rate	DGE2035	125MSa/s
	DGE2070	300MSa/s
Vertical Resolution	14 bits	
Channel	2	
Standard Waveforms	Sine wave, square wave, ramp wave, pulse wave, noise	
Arbitrary Waveforms	Sinc, exponential rise, exponential decline, electrocardiogram, Gaussian, semi-positive, Lorentz, dual audio, DC voltage totaling more than 160 kinds	

Frequency Characteristics

Frequency Characteristics (Frequency resolution to 1 μHz)		
Sine wave	DGE2035	1 μHz ~ 35MHz
	DGE2070	1 μHz ~ 70MHz
Square wave	DGE2035	1 μHz ~ 15MHz
	DGE2070	1 μHz ~ 20MHz
Pulse wave	DGE2035	1 μHz ~ 15MHz
	DGE2070	1 μHz ~ 20MHz
Ramp wave	DGE2035	1 μHz - 1 MHz
	DGE2070	1 μHz - 2 MHz
Noise wave (-3 dB)	20 MHz BW（AWGN）	
Arbitrary wave	1 μHz - 10 MHz	
Frequency resolution	1 μHz or 7 significant figures	

Frequency stability	±30 ppm at 0±40℃
Frequency aging rate	±30 ppm per year

Amplitude Characteristics

Amplitude Characteristics (not specifically labeled, the load defaults to 50Ω)		
Output amplitude	DGE2035	2mVpp ~ 20Vpp（≤ 10MHz）High Z 2mVpp ~ 8Vpp（≤ 35MHz）High Z 1mVpp ~ 10Vpp（≤ 10MHz）50 Ω 1mVpp ~ 4Vpp（≤ 35MHz）50 Ω
	DGE2070	2mVpp ~ 20Vpp（≤ 10MHz）High Z 2mVpp ~ 8Vpp（≤ 70MHz）High Z 1mVpp ~ 10Vpp（≤ 10MHz）50 Ω 1mVpp ~ 4Vpp（≤ 70MHz）50 Ω
Amplitude accuracy	± (1% of setting + 1 mVpp) (Typical 1kHz sine, 0V offset)	
Amplitude resolution	1mVpp or 4 digits	
DC offset range (AC +DC)	DGE2035	±(10 Vpk–Amplitude Vpp/2) High Z（≤ 10MHz） ±(4Vpk - Amplitude Vpp/2) High Z（≤ 35MHz） ±(5 Vpk – Amplitude Vpp/2) 50Ω（≤ 10MHz） ±(2 Vpk – Amplitude Vpp/2) 50Ω（≤ 35MHz）
	DGE2070	±(10Vpk – Amplitude Vpp/2) High Z（≤ 10MHz） ±(4Vpk–Amplitude Vpp/2) High Z（≤ 70MHz） ±(5 Vpk - Amplitude Vpp/2) 50Ω（≤ 10MHz） ±(2Vpk– Amplitude Vpp/2) 50Ω（≤ 70MHz）
DC offset accuracy	± (1 % of |setting| + 1 mV + amplitude Vpp * 0.5%)	
Offset resolution	1 mVpp or 4 digits	
Output Impedance	50Ω (Typical)	

Signal Characteristics

Signal Characteristics	
Sine	
Bandwidth flatness (relative to 1 kHz Sine wave, 1 Vpp)	≤10MHz: ±0.3dB ≤35MHz: ±0.5dB ≤70MHz: ±1dB
Harmonic distortion	Typical (0dBm) DC to 1MHz: <-65dBc 1MHz to 35MHz: <-60dBc 35MHz to 60MHz: <-50dBc
Total harmonic distortion	< 0.2 %, 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	< 20ns	
Jitter (rms), typical (1Vpp, 50Ω)	200ps + 30ppm	
Overshoot	< 5%	
Ramp		
Linearity	< 1% of peak output (typical 1 kHz, 1 Vpp, symmetry 50%)	
Symmetry	0% to 100%	
Pulse		
Period	DGE2035	67 ns to 1 Ms
	DGE2070	50 ns to 1 Ms
Pulse Width	≥ 24ns	
Rise and fall time	≥ 15ns	
Overshoot	< 5%	
Jitter(rms),typical(1Vpp,50Ω)	200ps + 30ppm	
Noise		
Types	Gaussian white noise	
Bandwidth (-3dB)	20 M	
Arbiratry wave		
Bandwidth	10M	
Waveform length	2 to 8K points	
Sampling rate	DGE2035	125Ma/s
	DGE2070	300Ma/s
Amplitude accuracy	14 bits	

Modulation Characteristics

Modulation Characteristics	
Modulation Type	AM, FM, PM, FSK
AM	
Carrier	Sine wave, square wave, ramp wave, arbitrary wave (except DC)
Modulated signal source	Internal
Internal modulation waveform	Sine wave, square wave, ramp wave, white noise
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 (except DC)
Modulated signal source	Internal

Internal modulation waveform	Sine wave, square wave, ramp wave, white noise
Internal modulation frequency	2 mHz to 100 kHz
Frequency offset	1 μHz ≤ offset ＜ carrier frequency
PM	
Carrier	Sine wave, square wave, ramp wave, arbitrary wave (except DC)
Modulated signal source	Internal
Internal modulation waveform	Sine, square, ramp, white noise
Internal phase modulation frequency	2 mHz to 100 kHz
Phase deviation range	0° to 180°
FSK	
Carrier	Sine wave, square wave, ramp wave, arbitrary wave (Except DC)
Modulated signal source	Internal
Internal modulation waveform	50% square wave
FSK rate	2 mHz to 1MHz
FSK hopfreq	2 mHz ≤ offset ＜ maximum frequency of corresponding carrier

Sweep Characteristics

Sweep Characteristics	
Carrier	Sine, square wave, ramp wave, arbitrary wave (Except DC)
Minimum/maximum starting frequency	1 μHz（minimum）/ maximum frequency of corresponding carrier
Minimum/maximum termination frequency	1 μHz（minimum）/ maximum frequency of corresponding carrier
Types	Linear, logarithmic
Sweep time	1 ms to 500 s ± 0.1%
Trigger source	Internal, manual

Burst Characteristics

Burst Characteristics	
Waveform	Sine wave, square wave, ramp wave, pulse wave and arbitrary wave (Except DC)
Types	N-cycle
N-cycle trigger source	Internal, manual

Carrier frequency	1 μHz ≤ Offset ≤ Maximum frequency of corresponding carrier /2	
N-cycle trigger cycle	DGE2035	58 ns ～ 1 Ms（Min = Cycles * Period）
	DGE2070	29 ns ～ 1 Ms（Min = Cycles * Period）
periodicity	1 ～ 60000（Max =Burst Period / Period）/infinite	

Input/Output Characteristics

Input/Output Characteristics	
Communication Interface	USB Device

General Specifications

Display	
Display type	3.6-inch color LCD display
Display resolution	480 Horizontal ×272 Vertical pixels
Display color	65536 colors, 16 bits, TFT
Power	
Voltage	DC 5V /2A
Power consumption	Less than 10W
Environment	
Temperature	Working temperature: 0 °C to 40 °C
	Storage temperature: -20 °C to 60 °C
Relative humidity	Less than 35°C: ≤ 90% relative humidity 35°C to 40°C: ≤ 60% relative humidity
Height	Operating 3,000 meters Non-operation 12,000 meters
Mechanical Specification	
Dimension	200mm (Length) × 68.5 mm (Height) × 73.6mm (Width)
Weight	Approx. 0.5 kg
Others	
Adjustment interval	The recommended calibration interval is one year