

# DG1000Z Series Function/Arbitrary Waveform Generator

SiFi

- SiFi (Signal Fidelity) for 100% waveform replication
- 2Mpts or 8Mpts/CH(std.), 16Mpts/CH (opt.) arbitrary waveform length
- Standard 2 full functional independent channels
- ±1ppm frequency stability, -125dBc/Hz phase noise, 200ps low jitter
- Built-in 8 orders harmonics generator
- Built-in 7 digits/s counter up to 200MHz
- 160 built-in pre-edited waveforms
- Intuitive arbitrary waveform editing software
- Full modulation supported: AM, FM, PM, ASK, FSK, PSK and PWM

DG1000Z series function/arbitrary waveform generator is a multifunctional generator that combines many functions in one, including Function Generator, Arbitrary Waveform Generator, Noise Generator, Pulse Generator, Harmonics Generator, Analog/Digital Modulator and Counter. As a multi-functional, high performance and portable generator, it will be a new selection in education, R&D, production, test and etc.

# **DG1000Z Series Function/Arbitrary Waveform Generator**





Dimensions: Width × Height × Depth=261.5mm × 112mm × 318.4mm Weight: 3.2kg (without package)

# Feature and Benefits

#### Standard 2 full functional channels



SiFi

Arbitrary waveform function with innovative SiFi technology

RIGO	L CH1CH2	•	
Freq Ampl	1,000,000,000 kHz 5.000.0 Vpp		DC
Offset Phase	0,000,0 V₀₀ 0,000 °		BuiltIn
Freq	Sinc 1.000,000,000 kHz		Stored Wforms
Ampi Offset	5,000,0 ∨pp 0,000,0 ∨₀₀ n non ∘	1	Volatile Wform
Wform	Sinc		
Arb	ON	HighZ	Arb

### Multiple analog and digital modulations

## Up to 160 built-in waveforms



### Burst function

RIGO	L CH1CH2	•	
Type Delav	N_Cycle 0.0 ns	<u>,</u>	Type NCycle,
Cycles Period	1 10,000,000,0 ms	/\	Burst Period
Source Sweep	Internal 1.000,0 s	<u>⊧</u> —→I	Polarity Pos
Return Start	0,0 ms 100,000,000 Hz 4,000,000,000 Hz		Trigger
Stop Mark	OFF		Delay
Sine Ir Arb Ir	It Burst ON NO	Jycle High∠ near HighZ	Burst 🗘

### Standard harmonic generator



### Channels and system setting

RIGOL		•	_
	Utility		Channel
CH1 Sync	:On		Set
CH1 Polarity	(:Normal		Coupling
CH1 Delay	:0 <b>.</b> 0 ns		Set
CH1 Output	:Normal		Channel
CH1 Resi	:HighZ		Сору
CH1 Mode	:Normal		Set To
CH1 Gated	:Positive		Default
CH1 Range	:Auto		
	( <b>a</b>		Language
Sine	ON	HighZ	Litil 🗅

L CH1CH2	•	
100.000,000 Hz		AM
AM		
Internal		FM
Sine 100.000 %	40000	
100.000 %		PM
1.000,0 S		
U,U MS		
100,000,000 HZ		ASK
0.000,000,000 KHZ		
		FSK
IT AM ON	Sine HighZ	
	CH1CH2 100,000,000 Hz AM Internal Sine 100,000 % 1,000,000 % 1,000,000 Hz 1,000,000,000 Hz 1,000,000,000 Hz 0,0FF AM ON	L CH1CH2

### Waveform summing function



### In line with LXI Core 2011 Device

RIGOL	€~~ <u>*</u>	
	Utility	DHCP
LAN Status	:Disconnect	On -
IP Configure		AutolP
DHCP	:ON 📕 🗸 🖊	On 🗸
Auto IP	:ON	ManuallP
Manual IP	:OFF	Off 🖕
MAC	:00-14-0E-42-12-CF	Default
VISA	:TCPIP0::0,0	Config
	.0.0::INSTR 🔶	Contraction of the second seco
		Current
Sine	ON HighZ	Config
Sine	OFF HighZ	Util 🌻

### Sweep function

RIGO	L CH1CH2	←	
Sweep	<mark>1</mark> .000,0 s		Туре
Return	0.0 ms	A AAAAAAAAAA .	Linear
Start Stop	100,000,000 Hz 1,000,000,000 kHz		Sweep Time
Mark	OFF	( <del></del> )	Return
Sweep	1.000,0 s		Time
Return	U,U MS		Start
Ston	1 00.000,000 Hz		Center
Mark	OFF		Stop
Sine Ir		Linear HighZ	Span
Arb Ir	t Sweep ON	Linear HighZ	Sweep⊋

# Standard 7 digits/s full function frequency counter with 200MHz bandwidth

RIGOL	Counte	er	•	
1,310ms 25.0 %	AC			Gate Time
Frequen	CY:	0 0 U-		Select Meas
99 Period	9.990,20 1 000 003 7	ms		Statist Off
Duty +Width	52,145 % 521 460.9 µ	s		Display Digital
-Width	478,542,8 u	s		Clear
Sine Sine	OFF		HighZ HighZ	Count 🗘

### File Management Function

RIGOL		€- <sup>-*</sup> -	
C:\			File
Disk	State File		Type
C: D:	월 S1:0.RSF 월 S2: 월 S3:000 PSF		Browser Dir
	■ S3:000.RSF ■ S4:222.RSF ■ S5:012.RSF		
	립 50. 립 S7:0.RSF 립 S8: 립 S9:		
Sine	E SIO:	High7	Сору
Sine	OFF	HighZ	Store 🗘

# 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 at least 30 minutes under the specified temperature (18°C ~ 28°C).
All the specifications are guaranteed unless those marked with "typical".

Model	DG1022Z	DG1032Z	DG1062Z	
Channel	2	2	2	
Max Frequency	25 MHz	30 MHz	60 MHz	
Sample Rate	200 MSa/s	00		
	200 1100/0			
Waveform				
Basic Waveform	Sine, Square, Ramp, Pul	se. Noise		
Built-in Arbitrary Waveform	160 kinds, including Sinc Dual-Tone, etc.	, Exponential Rise, Expo	nential Fall, ECG, Gauss, HaverSine, Lorentz,	
Frequency Characteristics				
Sine	1 uHz to 25 MHz	1 uHz to 30 MH	Iz 1 uHz to 60 MHz	
Square	1 µHz to 25 MHz	1 µHz to 25 MH	1 µHz to 25 MHz	
Ramp	1 µHz to 500 kHz	1 µHz to 500 kl	Hz 1 µHz to 1 MHz	
Pulse	1 µHz to 15 MHz	1 µHz to 15 MH	Iz 1 µHz to 25 MHz	
Harmonic	1µHz to 10 MHz	1 µHz to 10 MF	Iz 1µHz to 20 MHz	
Noise (-3dB)	25 MHz bandwidth	30 MHz bandw	dth 60 MHz bandwidth	
Arbitrary Waveform	1 uHz to 10 MHz	1 uHz to 10 MF	Iz 1 µHz to 20 MHz	
Resolution	1 µHz			
Accuracy	±1 ppm of the setting value	ue. 18°C to 28°C		
Sine Wave Spectrum Purity				
Harmonic Distortion	Typical (0 dBm) DC-10 MHz (included): < 10 MHz to 30 MHz (inclu 30 MHz to 60 MHz (inclu	-65 dBc ded): <-55 dBc ded): <-50 dBc		
Total Harmonic Distortion	<0.075% (10 Hz to 20 k⊢	Iz, 0 dBm)		
Spurious (non-harmonic)	Typical (0 dBm) ≤10 MHz: <-70 dBc >10 MHz: <-70 dBc + 6 dB/octave			
Phase Noise	Typical (0 dBm, 10 kHz offset) 10 MHz: <-125 dBc/Hz			
Signal Characteristics				
Square				
	Typical (1 Vpp)			
Rise/Fall Time	<10ns			
Overshoot	Typical (100 kHz, 1 Vpp) ≤5%			
Duty Cycle	0.01% to 99.99% (limited	by the current frequenc	y setting)	
Non-symmetry	1% of the period + 5 ns			
Jitter (rms)	Typical (1 Vpp) ≤5 MHz: 2 ppm + 200 ps > 5 MHz: 200 ps			
Ramp				
Linearity	≤1% of peak output (typic	cal, 1 kHz, 1 VPP, 100%	symmetry)	
Symmetry	0% to 100%			
Pulse				
Pulse Width	16ns to 999.999 982 118	ks (limited by the curren	t frequency setting)	
Duty Cycle	0.001% to 99.999% (limit	ted by the current freque	ncy setting)	
Rising/Falling Edge	≥10 ns (limited by the cu	rrent frequency setting a	nd pulse width setting)	
Overshoot	Typical (1 Vpp) ≤5%			
Jitter (rms)	Typical (1 Vpp) ≤5 MHz 2 ppm + 200 ps > 5 MHz 200 ps			
Arbitrary Waveform	· · · ·			
Waveform Length	2Mpts (std.)     8Mpts (std.)     8Mpts (std.)       16Mpts (opt.)     16Mpts (opt.)     16Mpts (opt.)			

Vertical Resolution	14 bits
Sample Rate	200MSa/s
Min Rise/Fall Time	Typical (1 Vpp)
	<10 ns
	Typical (1 Vpp)
Jitter (rms)	S5 MHZ: 2 ppm + 200 ps
Editing Mode	Point Edit Block Edit Insert Waveform
Harmonic Output	
Harmonic Order	<8
Harmonic Type	Even Harmonic, Odd harmonic, Order Harmonic, User
Harmonic Amplitude	The amplitude of each order of harmonic can be set
Harmonic Phase	The phase of each order of harmonic can be set
Output Characteristics	
Amplitude (into 50 Ω)	
<b>`</b> ````````````````````````````````	≤10 MHz: 1.0 mVpp to 10 Vpp
Range	≤30 MHz: 1.0 mVpp to 5.0 Vpp
	≤60 MHz: 1.0 mVpp to 2.5 Vpp
Accuracy	Typical (1 kHz sine, 0 V offset, >10 mVpp, auto)
	±(1% of the setting value) ±1 mV
Flatnosa	Ivpical (sine, 2.5 Vpp)
Flathess	<00 MHz; ±0.1 dB <00 MHz; ±0.2 dB
Linit	Von Vrms dBm
Resolution	0 1mV/np or 4 digits
Offset (into 50 Q)	
Range (Peak ac+dc)	+5Vpk ac+dc
Accuracy	$\pm(1\% \text{ of the setting value } + 5\text{mV} + 0.5\% \text{ of the amplitude})$
Waveform Output	
Output Impedance	50 Ω (typical)
Protection	Short-circuit protection, automatically disable the waveform output when overload occurs
Modulation Characteristics	
Modulation Characteristics Modulation Type	AM, FM, PM, ASK, FSK, PSK, PWM
Modulation Characteristics Modulation Type AM	AM, FM, PM, ASK, FSK, PSK, PWM
Modulation Characteristics Modulation Type AM Carrier Waveform	AM, FM, PM, ASK, FSK, PSK, PWM Sine, Square, Ramp, Arb (except DC)
Modulation Characteristics Modulation Type AM Carrier Waveform Source	AM, FM, PM, ASK, FSK, PSK, PWM Sine, Square, Ramp, Arb (except DC) Internal/External
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform	AM, FM, PM, ASK, FSK, PSK, PWM Sine, Square, Ramp, Arb (except DC) Internal/External Sine, Square, Ramp, Noise, Arb
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth	AM, FM, PM, ASK, FSK, PSK, PWM Sine, Square, Ramp, Arb (except DC) Internal/External Sine, Square, Ramp, Noise, Arb 0% to 120%
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Frequency	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Trequency     FM     Carrier Waveform     Source     Modulating Waveform     Modulating Trequency	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     Owner, Ramp, Noise, Arb     Owner, Ramp, Noise, Arb
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Waveform     Modulating Frequency	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Waveform     Modulating Frequency     PM     Corrier Waveform	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Frequency     FM     Carrier Waveform     Modulating Waveform     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Frequency     PM     Carrier Waveform     Source	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Frequency     FM     Carrier Waveform     Modulating Waveform     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform     Pase Deviation	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Waveform	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0° to 360°     2 mHz to 1 MHz
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Waveform     Source     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Frequency	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0° to 360°     2 mHz to 1 MHz
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Waveform     Source     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Frequency     ASK     Carrier Waveform	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0° to 360°     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Waveform     Modulating Waveform     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Frequency     ASK     Carrier Waveform	AM, FM, PM, ASK, FSK, PSK, PWM Sine, Square, Ramp, Arb (except DC) Internal/External Sine, Square, Ramp, Noise, Arb 0% to 120% 2 mHz to 1 MHz Sine, Square, Ramp, Arb (except DC) Internal/External Sine, Square, Ramp, Arb (except DC) Internal/External Sine, Square, Ramp, Noise, Arb 0° to 360° 2 mHz to 1 MHz Sine, Square, Ramp, Noise, Arb 0° to 360° 2 mHz to 1 MHz
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Waveform     Source     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Frequency     ASK     Carrier Waveform     Source     Modulating Waveform	AM, FM, PM, ASK, FSK, PSK, PWM Sine, Square, Ramp, Arb (except DC) Internal/External Sine, Square, Ramp, Noise, Arb 0% to 120% 2 mHz to 1 MHz Sine, Square, Ramp, Arb (except DC) Internal/External Sine, Square, Ramp, Noise, Arb 2 mHz to 1 MHz Sine, Square, Ramp, Arb (except DC) Internal/External Sine, Square, Ramp, Noise, Arb 0° to 360° 2 mHz to 1 MHz Sine, Square, Ramp, Arb (except DC) Internal/External Sine, Square, Ramp, Arb (except DC) Internal/External Square with 50% duty cycle
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Waveform     Modulating Waveform     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Frequency     ASK     Carrier Waveform     Source     Modulating Waveform     Modulating Waveform     Key Frequency	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     0° to 360°     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     0° to 360°     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Square with 50% duty cycle     2 mHz to 1 MHz
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Waveform     Source     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Frequency     ASK     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Waveform     Key Frequency     FSK	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0° to 360°     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Square with 50% duty cycle     2 mHz to 1 MHz
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Waveform     Modulating Waveform     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Frequency     ASK     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Frequency     ASK     Carrier Waveform     Source     Modulating Waveform     Key Frequency     FSK     Carrier Waveform	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     0° to 360°     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Square with 50% duty cycle     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Waveform     Modulating Waveform     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Frequency     ASK     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Frequency     ASK     Carrier Waveform     Source     Modulating Waveform     Key Frequency     FSK     Carrier Waveform     Source	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0° to 360°     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Square with 50% duty cycle     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Waveform     Modulating Waveform     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Frequency     ASK     Carrier Waveform     Source     Modulating Waveform     Source     Modulating Waveform     Key Frequency     FSK     Carrier Waveform     Source     Modulating Waveform     Key Frequency     FSK     Carrier Waveform     Source     Modulating Waveform	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0° to 360°     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Square with 50% duty cycle     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Square with 50% duty cycle     2 mHz to 1 MHz
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Waveform     Modulating Waveform     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Frequency     ASK     Carrier Waveform     Source     Modulating Waveform     Key Frequency     FSK     Carrier Waveform     Source     Modulating Waveform     Key Frequency     FSK     Carrier Waveform     Source     Modulating Waveform     Key Frequency	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Noise, Arb     0° to 360°     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Square with 50% duty cycle     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Square with 50% duty cycle     2 mHz to 1 MHz
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Frequency     ASK     Carrier Waveform     Source     Modulating Waveform     Key Frequency     FSK     Carrier Waveform     Source     Modulating Waveform     Key Frequency     FSK     Carrier Waveform     Source     Modulating Waveform     Key Frequency     FSK     Carrier Waveform     Source     Modulating Waveform     Key Frequency     PSK	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0* to 360°     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Square with 50% duty cycle     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Square with 50% duty cycle     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Square with 50% duty cycle     2 mHz to 1 MHz
Modulation Characteristics     Modulation Type     AM     Carrier Waveform     Source     Modulating Waveform     Modulation Depth     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Frequency     FM     Carrier Waveform     Source     Modulating Frequency     PM     Carrier Waveform     Source     Modulating Waveform     Phase Deviation     Modulating Frequency     ASK     Carrier Waveform     Source     Modulating Waveform     Key Frequency     FSK     Carrier Waveform     Source     Modulating Waveform     Key Frequency     PSK     Carrier Waveform     Source     Modulating Waveform     Key Frequency	AM, FM, PM, ASK, FSK, PSK, PWM     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0% to 120%     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Arb (except DC)     Internal/External     Sine, Square, Ramp, Noise, Arb     0° to 360°     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Square with 50% duty cycle     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Square with 50% duty cycle     2 mHz to 1 MHz     Sine, Square, Ramp, Arb (except DC)     Internal/External     Square with 50% duty cycle     2 mHz to 1 MHz

Modulating Waveform	Square with 50% duty cycle		
Key Frequency	2 mHz to 1 MHz		
PWM	·		
Carrier Waveform	Pulse		
Source	Internal/External		
Modulating Waveform	Sine, Square, Ramp, Noise, Arb		
Width Deviation	0% to 100% of the pulse width		
Modulating Frequency	2 mHz to 1 MHz		
External Modulation Input	1		
Input Range	75 mVRMS to ±5 Vac + dc		
Input Bandwidth	50 kHz		
Input Impedance	10ΚΩ		
	·		
Burst Characteristics			
Carrier Waveform	Sine, Square, Ramp, Pulse, Noi	se, Arb (except DC)	
Carrier Frequency	2mHz to 25MHz	2mHz to 30MHz	2 mHz to 60 MHz
Burst Count	1 to 1,000,000 or Infinite		
Start/Stop Phase	0° to 360°, 0.1° resolution		
Internal Period	1 µs to 500 s		
Gated Source	External Trigger		
Trigger Source	Internal, External or Manual		
Trigger Delay	0 ns to 100 s		
Sweep Characteristics			
Carrier Waveform	Sine, Square, Ramp, Arb (excep	t DC)	
Туре	Linear, Log or Step		
Direction	Up or Down		
Start/Stop Frequency	The same with the upper/lower l	imit of the corresponding carrier frequen	су
Sweep Time	1 ms to 500 s		
Hold/Return Time	0 ms to 500 s		
Trigger Source	Internal, External or Manual		
Marker	Falling edge of the sync signal (	programmable)	
Frequency Counter			
Function	Frequency, Period, Positive/Neg	ative Pulse Width, Duty Cycle	
Frequency Resolution	7 digits/second (Gate Time = 1s)	)	
Frequency Range	1 µHz to 200 MHz		
Period Measurement	Measurement Range	5ns to 16 days	
Voltage Range and Sensitivity	(non-modulating signal)		
	DC Offset Range	±1.5 Vdc	
DC Coupling	1µHz to 100 MHz	50 mVRMS to ±2.5 Vac + dc	
	100 MHz to 200 MHz	100 mVRMS to ±2.5 Vac + dc	
AC Coupling	1 µHz to 100 MHz	50 mVRMS to ±2.5 Vpp	
	100 MHz to 200 MHz	100 mVRMS to ±2.5 Vpp	
Pulse Width and Duty Cycle N	leasurement		
Frequency and Amplitude	1 µHz to 25 MHz	50 mVRMS to ±2.5 Vac + dc	
Ranges			
Pulse Width	Min Pulse Width	≥20 ns	DC Coupling
	Pulse Width Resolution	5 ns	-
Duty Cycle	Measurement Range (display)	0% to 100%	
Input Characteristics			
Input Signal Range	Breakdown Voltage	±/Vac+dc	Input Impedance = $1 M\Omega$
Input Adjustment			DC
input Adjustment	High-frequency Rejection	Off: Input Bandwidth = 200 MHz;	
	Triggor Lovel Papao		
Input Trigger	Ingger Lever Range	$-2.5$ (0 $\pm 2.5$ V	(about 2 m)
input mggei	Trigger Sensitivity Range	0% (about 140 mv mysteresis voltage)	ige) to 100% (about 2 mV
	GateTime1	1 310ms	
	GateTime2	10.48ms	
	GateTime3	166 7ms	
Gate Time	GateTime4	1 3429	
	GateTime5	10.73s	
	GataTime6	>10.700	
	Gala Hilleo	- 103	

Trigger Characteristics		
Trigger Input		
Level	TTL-compatible	
Slope	Rising or falling (selectable)	
Pulse Width	>100ns	
Latoney	Sweep: <100 ns (typical)	
Latency	Burst: <300 ns (typical)	
Trigger Output		
Level	TTL-compatible	
Pulse Width	> 60 ns (typical)	
Maximum Frequency	1 MHz	

Two-channel Characteristics - Phase Offset		
Range	0° to 360°	
Waveform Phase Resolution	0.03°	

Reference Clock		
External Reference Input		
Lock Range	10 MHz ± 50 Hz	
Level	250 mVpp to 5 Vpp	
Lock Time	<2s	
Input Impedance (Typical)	1 kΩ, AC coupling	
Internal Reference Output		
Frequency	10 MHz ± 50 Hz	
Level	3.3 Vpp	
Input Impedance (Typical)	50 Ω, AC coupling	

## Sync Output

Oyno Output	
Level	TTL-compatible
Impedance	50 Ω, nominal value

### Overvoltage Protection

Occurred when:

- The instrument amplitude setting is greater than 2Vpp or the output offset is greater than |2Vpc| and the input voltage is greater than ±11.5 × (1 ± 5%)V (<10kHz).
- The instrument amplitude setting is lower than or equal to 2Vpp or the output offset is lower than or equal to  $|2V_{DC}|$  and the input voltage is greater than  $\pm 3.5 \times (1 \pm 5\%)V$  (<10kHz).

General Specifications		
Power Supply		
Power Voltage	100 V to 240 V (45 Hz to 440 Hz)	
Power Consumption	Lower than 40 W	
Fuse	250 V, T3.15 A	
Display		
Туре	3.5-inch TFT LCD	
Resolution	320 horizontal × RGB × 240 vertical resolution	
Color	16 M color	
Environment		
Temperature Range	Operating: 0°C to 50°C Non-operating: -40°C to 70°C	
Cooling Method	Fan cooling	
Humidity Range	Lower than 30°C : ≤95% relative humidity 30°C to 40°C : ≤75% relative humidity 40°C to 50°C : ≤45% relative humidity	
Altitude	Operating: below 3000 meters Non-operating: below 15,000 meters	
Mechanical		
Dimensions (W×H×D)	261.5 mm × 112 mm × 318.4 mm	
Weight	Without Package: 3.2 kg With Package: 4.5 kg	
Interfaces	USB Host, USB Device, LAN	
IP Protection	IP2X	
Calibration Interval	1 year recommended calibration interval	

Certification Information			
EMC	in line with EN61326-1:2006		
	IEC 61000-3-2:2000	±4.0kV (contact discharge) ±4.0kV (air discharge)	
	IEC 61000-4-3:2002	3 V/m (80 MHz to 1 GHz) 3 V/m (1.4 GHz to 2 GHz) 1 V/m (2.0 GHz to 2.7 GHz)	
	IEC 61000-4-4:2004	1 kV power lines	
	IEC 61000-4-5:2001	0.5kV (Phase to Neutral) 0.5kV (Phase to PE) 1 kV (Neutral to PE)	
	IEC 61000-4-6:2003	3V,0.15MHz-80MHz	
	IEC 61000-4-11:2004	Voltage dip: 0 % UT during half cycle 0 % UT during 1 cycle 70 % UT during 25 cycles Short interruption: 0 % UT during 1 cycle	
Electrical Safety	Electrical Safety in line with USA:UL 61010-1:2012, Canada: CAN/CSA-C22.2 No. 61010-1-2012 EN 61010-1:2010		

# Ordering Information

	Description	Order Number
	DG1022Z (25MHz, Dual-channel)	DG1022Z
Model	DG1032Z (30MHz, Dual-channel)	DG1032Z
	DG1062Z (60MHz, Dual-channel)	DG1062Z
Standard Accessories	Power Cord	-
	USB Cable	CB-USBA-USBB-FF-150
	BNC Cable	CB-BNC-BNC-MM-100
	Quick Guide	-
	Resource CD (including User's Guide and etc.)	-
Options	16Mpts Memory for Arb	Arb16M-DG1000Z
	Rack Mount Kit (for single instrument)	RM-1-DG1000Z
	Rack Mount Kit (for dual instruments)	RM-2-DG1000Z
	40dB Attenuator	RA5040K
	10W Power Amplifier	PA1011
	USB-GPIB Converter	USB-GPIB



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