

# DG1000Z Series Function/Arbitrary Waveform Generator



- 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

## SiFi

#### Standard 2 full functional channels

<b>RIGO</b> Freq Ampl Offset Phase	L CH1CH2 1,000,000,000 kHz 5,000,0 Vpp 0,000,0 V∞ 0,000 °	*	Freq Period Ampl HiLevel
Freq	1.000,000,000 kHz		Offset LoLevel
Ampl Offset Phase	5.000,0 ∨pp 0.000,0 ∨₀c 0.000 °	$\wedge$	Start Phase
Sine		HighZ HighZ	Align Phase Sine ♀

Arbitrary waveform function with innovative SiFi technology

RIGO	L CH1CH2	•4	
Freq	1.000,000,000 kHz		DC
Ampl	5.000,0 Vpp	0	
Offset	0.000,0 ∨₀₀	Ű –	BuiltIn
Phase	0,000 ° Sinc	mallow	
Wform			Stored
Freq	1,000,000,000 kHz		Wforms
Ampl	5.000,0 Vpp	0	Volatile
Offset	0.000,0 Voc	8	Wform
Phase	0.000 °	might	0010111
Wform			
Arb	ON	HighZ	
Arb	ON	HighZ	Arb 🔶

#### Multiple analog and digital modulations

#### Up to 160 built-in waveforms



#### **Burst function**

RIGO	L CH1CH2	•	
Type Delay	N_Cycle 0.0 ns	_	Type NCycle,
Cycles Period	1 10.000,000,0 ms	$\wedge$	Burst Period
Source Sweep	Internal 1.000,0 s	<b>I</b>	Polarity Pos
Return Start Stop	0,0 ms 100,000,000 Hz 1,000,000,000 kHz		Trigger
Mark	OFF		Delay
		)yole HighZ near HighZ	Burst ≑

#### Standard harmonic generator

RIGO	L CH1CH2	•4	
Freq Ampl	1,000,000,000 kHz 5,000,0 ∨pp	A	Order
Offset Phase Ampl	0,000,0 V₀c 0,000 ° 2,264,7 Vpp	2 4 6 8 F	Туре
Freq Ampl	1.000,000,000 kHz 5.000,0 Vpp		SN
Offset	0,000,0 Vm 0.000 °	$ \land$	Harmonic Ampl
			Harmonic Phase
Harm Sine	OFF	HighZ HighZ	Harm 🖨

#### Channels and system setting

RIGOL		€ <del>~*</del>	
	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		
Sine		HighZ	Language
Sine		HighZ	Util 🗘

MFreq Type	100,000,000 Hz AM		АМ
	Internal Sine 100.000 %		FM
	1,000,0 s		PM
Return Start Stop			ASK
Mark	OFF		FSK
Sine Ir Arb Ir		Sine HighZ Linear HighZ	Mod 🗘

#### Waveform summing function

RIGOL		•	
	Utility		Switch
CH1 Sum :	Off		Off -
CH1 Source :	Sine		Sum
CH1 Freq :	1.000,000,000 kHz		Source
CH1 Ratio :	100.0 %		Sum
			Freq
			Sum
			Ratio
Harm	ON	HighZ	
Sine /		HighZ	Util 🗘

#### In line with LXI Core 2011 Device

RIGOL		€ <del>~*</del>	
	Utility		DHCP
LAN Status	:Disconnect		On -
IP Configure	e :		AutoIP
<ul> <li>DHCP</li> </ul>	:ON 📕		On 🖕
Auto IP	:ON 📕		ManualIP
Manual IP	:OFF 🥂		Off 🖕
MAC	:00-14-0E-42-12	-CF	Default
VISA	:TCPIP0::0,0		Config
	.0.0::INSTR	- 🔶	Current
			Current
Sine	ON	HighZ	
Sine	OFF \	HighZ	Util 🗘

#### Sweep function

RIGO	L CH1CH2	•4	
Sweep	1.000,0 s		Type Linear_
Return Start	0.0 ms 100.000.000 Hz	A A A A A A A A A A A A A A A A A A A	
Stop	1.000,000,000 kHz		Sweep Time
Mark	OFF	(	Return
Sweep	1.000,0 s		Time
Return	0.0 ms		Start
Start	100,000,000 Hz		Center
Stop Mark	1.000,000,000 kHz OFF	<b>#</b> ########	Stop
Sine Ir	t Sweep / ON	Linear HighZ	Span
		Linear HighZ	Sweep⊋

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

RIGOL	Counter	-	
1,310m 25,0 %	s AC OFF 0.000,0 ∨	Gate Time	
	Frequency:		
9 Period	99.996,250,0 Hz	Statist Off	
Duty +Width	52.145 % 521.460,9 us	Display Digital_	
-Width	478,542,8 us	Clear	
Sine Sine	ON High OFF High		

#### File Management Function

RIGOL		•	
C:\			File
Disk	State File		Туре
C:	🖺 S1:0.RSF		Browser
D:	🖺 S2:		🛛 Dir 🖕
	■ S3:000.RSF ■ S4:222.RSF		
	E S5:012.RSF		
	₿ S6:		
	🖹 S7:0.RSF		Read
	₿ S8:		Reau
	탑 S9: 탑 S10:		
	E 0101		Сору
Sine	ON	HighZ	
Sine	OFF	HighZ	Store 🗘

## Specifications

All the specifications can be guaranteed if the following two conditions are met unless where noted.  $\cdot$  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  $(18^{\circ}C \sim 28^{\circ}C)$ . 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			
Waveform				
Basic Waveform	Sine, Square, Ramp, Pu	lse. Noise		
Built-in Arbitrary Waveform		160 kinds, including Sinc, Exponential Rise, Exponential Fall, ECG, Gauss, HaverSine, Lorentz,		
Frequency Characteristics				
Sine	1 µHz to 25 MHz	1 µHz to 30 MHz	1 μHz to 60 MHz	
Square	1 µHz to 25 MHz	1 µHz to 25 MHz	1 µHz to 25 MHz	
Ramp	1 µHz to 500 kHz	1 µHz to 500 kHz	1 µHz to 1 MHz	
Pulse	1 µHz to 15 MHz	1 µHz to 15 MHz	1 µHz to 25 MHz	
Harmonic	1uHz to 10 MHz	1 µHz to 10 MHz	1uHz to 20 MHz	
Noise (-3dB)	25 MHz bandwidth	30 MHz bandwidt		
Arbitrary Waveform	1 µHz to 10 MHz	1 µHz to 10 MHz	1 µHz to 20 MHz	
Resolution	1 µHz		1 P 77 7	
Accuracy	±1 ppm of the setting va	ue, 18°C to 28°C		
Sine Wave Spectrum Purity				
Sine wave Spectrum Pulity	Typical (0 dBm)			
Harmonic Distortion	DC-10 MHz (included): < 10 MHz to 30 MHz (inclu	Typical (0 dBm) DC-10 MHz (included): <-65 dBc 10 MHz to 30 MHz (included): <-55 dBc 30 MHz to 60 MHz (included): <-50 dBc		
Total Harmonic Distortion	<0.075% (10 Hz to 20 kl	Hz, 0 dBm)		
Spurious (non-harmonic)	Typical (0 dBm) ≤10 MHz: <-70 dBc >10 MHz: <-70 dBc + 6 d	Typical (0 dBm)		
Phase Noise	Typical (0 dBm, 10 kHz o 10 MHz: <-125 dBc/Hz	offset)		
Signal Characteristics				
Square				
Rise/Fall Time	Typical (1 Vpp) <10ns			
Overshoot	Typical (100 kHz, 1 Vpp) ≤5%	1		
Duty Cycle	0.01% to 99.99% (limited	by the current frequency	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 (typi	cal, 1 kHz, 1 VPP, 100% sy	ymmetry)	
Symmetry	0% to 100%			
Pulse				
Pulse Width	16ns to 999.999 982 118	Bks (limited by the current fi	requency setting)	
Duty Cycle		ted by the current frequence		
Rising/Falling Edge	,	rrent frequency setting and	· · · · · · · · · · · · · · · · · · ·	
Overshoot	Typical (1 Vpp) ≤5%			
Jitter (rms)	S5% Typical (1 Vpp) ≤5 MHz 2 ppm + 200 ps > 5 MHz 200 ps			
Arbitrary Waveform				
Waveform Length	2Mpts (std.) 16Mpts (opt.)	8Mpts (std.) 16Mpts (opt.)	8Mpts (std.) 16Mpts (opt.)	
			· · · · · · · · · · · · · · · · · · ·	

Vertical Resolution	14 bits
Sample Rate	200MSa/s
•	Typical (1 Vpp)
Min Rise/Fall Time	<10 ns
Jitter (rms)	Typical (1 Vpp) ≤5 MHz: 2 ppm + 200 ps > 5 MHz: 200 ps
Editing Mode	Point Edit, Block Edit, Insert Waveform
Harmonic Output	i ont Edit, block Edit, noort wavelonn
Harmonic Order	< <u>8</u>
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)	
	≤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
Flatness	Typical (sine, 2.5 Vpp) ≤10 MHz: ±0.1 dB
11.14	≤60 MHz: ±0.2 dB
Unit	Vpp, Vrms, dBm
Resolution	0.1mVpp or 4 digits
Offset (into 50 Ω)	
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 $\Omega$ (typical)
Protection	Short-circuit protection, automatically disable the waveform output when overload occurs
Madulatian Obanastariatian	
Modulation Characteristics	
Modulation Type AM	AM, FM, PM, ASK, FSK, PSK, PWM
Carrier Waveform	Sine, Square, Ramp, Arb (except DC)
Source	Internal/External
Modulating Waveform	Sine, Square, Ramp, Noise, Arb
Modulation Depth	0% to 120%
Modulating Frequency	2 mHz to 1 MHz
FM	
Carrier Waveform	Sine, Square, Ramp, Arb (except DC)
Source	Internal/External
Modulating Waveform	Sine, Square, Ramp, Noise, Arb
Modulating Frequency	2 mHz to 1 MHz
PM	
Carrier Waveform	Sine, Square, Ramp, Arb (except DC)
Source	Internal/External
Modulating Waveform	Sine, Square, Ramp, Noise, Arb
Phase Deviation	0° to 360°
Modulating Frequency	2 mHz to 1 MHz
Carrier Waveform	Sine, Square, Ramp, Arb (except DC)
Source	Internal/External
Modulating Waveform	Square with 50% duty cycle
Modulating Waveform Key Frequency	
	Square with 50% duty cycle
Key Frequency	Square with 50% duty cycle 2 mHz to 1 MHz
Key Frequency FSK	Square with 50% duty cycle
Key Frequency FSK Carrier Waveform Source	Square with 50% duty cycle         2 mHz to 1 MHz         Sine, Square, Ramp, Arb (except DC)
Key Frequency FSK Carrier Waveform Source Modulating Waveform	Square with 50% duty cycle         2 mHz to 1 MHz         Sine, Square, Ramp, Arb (except DC)         Internal/External
Key Frequency FSK Carrier Waveform Source	Square with 50% duty cycle         2 mHz to 1 MHz         Sine, Square, Ramp, Arb (except DC)         Internal/External         Square with 50% duty cycle
Key Frequency FSK Carrier Waveform Source Modulating Waveform Key Frequency	Square with 50% duty cycle         2 mHz to 1 MHz         Sine, Square, Ramp, Arb (except DC)         Internal/External         Square with 50% duty cycle

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, Art	)		
Width Deviation	0% to 100% of the pulse width			
Modulating Frequency	2 mHz to 1 MHz			
External Modulation Input				
Input Range	75 mVRMS to ±5 Vac + dc			
Input Bandwidth	50 kHz			
Input Impedance	10ΚΩ			
Burst Characteristics				
Carrier Waveform	Sine, Square, Ramp, Pulse, No	ise, Arb (except DC)		
Carrier Frequency	2mHz to 25MHz			
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 (exce	pt DC)		
Туре	Linear, Log or Step			
Direction	Up or Down			
Start/Stop Frequency		limit of the corresponding carrier frequer		
Sweep Time	1 ms to 500 s	initial of the corresponding carrier neque		
Hold/Return Time	0 ms to 500 s			
	Internal, External or Manual			
Trigger Source Marker	Falling edge of the sync signal (	(programmable)		
		(		
Frequency Counter				
Function	Fraguency Pariad Desitive/New	native Rules Width Duty Cycle		
	Frequency, Period, Positive/Neg			
Frequency Resolution	7 digits/second (Gate Time = 1s	5)		
Frequency Range	1 μHz to 200 MHz			
Period Measurement	Measurement Range 5ns to 16 days			
		5hs to 16 days		
voitage Range and Sensitivity		Shs to 16 days		
voitage Range and Sensitivity	DC Offset Range	±1.5 Vdc		
	DC Offset Range	±1.5 Vdc		
DC Coupling	DC Offset Range 1µHz to 100 MHz	±1.5 Vdc 50 mVRMS to ±2.5 Vac + dc		
DC Coupling	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz	±1.5 Vdc 50 mVRMS to ±2.5 Vac + dc 100 mVRMS to ±2.5 Vac + dc		
DC Coupling AC Coupling	DC Offset Range 1μHz to 100 MHz 100 MHz to 200 MHz 1 μHz to 100 MHz 100 MHz to 200 MHz	±1.5 Vdc 50 mVRMS to ±2.5 Vac + dc 100 mVRMS to ±2.5 Vac + dc 50 mVRMS to ±2.5 Vpp		
DC Coupling AC Coupling Pulse Width and Duty Cycle M	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement	±1.5 Vdc 50 mVRMS to ±2.5 Vac + dc 100 mVRMS to ±2.5 Vac + dc 50 mVRMS to ±2.5 Vpp 100 mVRMS to ±2.5 Vpp		
Voltage Range and Sensitivity DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges	DC Offset Range 1μHz to 100 MHz 100 MHz to 200 MHz 1 μHz to 100 MHz 100 MHz to 200 MHz	±1.5 Vdc 50 mVRMS to ±2.5 Vac + dc 100 mVRMS to ±2.5 Vac + dc 50 mVRMS to ±2.5 Vpp		
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width	±1.5 Vdc 50 mVRMS to ±2.5 Vac + dc 100 mVRMS to ±2.5 Vac + dc 50 mVRMS to ±2.5 Vpp 100 mVRMS to ±2.5 Vpp	DC Coupling	
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width Pulse Width Resolution	±1.5 Vdc 50 mVRMS to ±2.5 Vac + dc 100 mVRMS to ±2.5 Vac + dc 50 mVRMS to ±2.5 Vpp 100 mVRMS to ±2.5 Vpp 50 mVRMS to ±2.5 Vac + dc ≥20 ns 5 ns	DC Coupling	
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width	±1.5 Vdc 50 mVRMS to ±2.5 Vac + dc 100 mVRMS to ±2.5 Vac + dc 50 mVRMS to ±2.5 Vpp 100 mVRMS to ±2.5 Vpp 50 mVRMS to ±2.5 Vac + dc ≥20 ns	DC Coupling	
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges Pulse Width Duty Cycle	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width Pulse Width Resolution	±1.5 Vdc 50 mVRMS to ±2.5 Vac + dc 100 mVRMS to ±2.5 Vac + dc 50 mVRMS to ±2.5 Vpp 100 mVRMS to ±2.5 Vpp 50 mVRMS to ±2.5 Vac + dc ≥20 ns 5 ns	DC Coupling	
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges Pulse Width Duty Cycle Input Characteristics	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width Pulse Width Resolution	±1.5 Vdc 50 mVRMS to ±2.5 Vac + dc 100 mVRMS to ±2.5 Vac + dc 50 mVRMS to ±2.5 Vpp 100 mVRMS to ±2.5 Vpp 50 mVRMS to ±2.5 Vac + dc ≥20 ns 5 ns	DC Coupling	
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges Pulse Width Duty Cycle Input Characteristics	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width Pulse Width Resolution Measurement Range (display)	±1.5 Vdc 50 mVRMS to ±2.5 Vac + dc 100 mVRMS to ±2.5 Vac + dc 50 mVRMS to ±2.5 Vpp 100 mVRMS to ±2.5 Vpp 50 mVRMS to ±2.5 Vac + dc ≥20 ns 5 ns 0% to 100%		
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges Pulse Width Duty Cycle Input Characteristics Input Signal Range	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width Pulse Width Resolution Measurement Range (display) Breakdown Voltage	$\pm 1.5$ Vdc 50 mVRMS to $\pm 2.5$ Vac + dc 100 mVRMS to $\pm 2.5$ Vac + dc 50 mVRMS to $\pm 2.5$ Vpp 100 mVRMS to $\pm 2.5$ Vpp 50 mVRMS to $\pm 2.5$ Vac + dc ≥20 ns 5 ns 0% to 100% $\pm 7$ Vac+dc AC On: Input Bandwidth = 250 kHz;	Input Impedance = 1 MΩ	
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges Pulse Width Duty Cycle Input Characteristics Input Signal Range	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width Pulse Width Resolution Measurement Range (display) Breakdown Voltage Coupling Mode High-frequency Rejection	$\pm 1.5$ Vdc 50 mVRMS to ±2.5 Vac + dc 100 mVRMS to ±2.5 Vac + dc 50 mVRMS to ±2.5 Vpp 100 mVRMS to ±2.5 Vpp 50 mVRMS to ±2.5 Vac + dc ≥20 ns 5 ns 0% to 100% $\pm 7$ Vac+dc AC	Input Impedance = 1 MΩ	
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges Pulse Width Duty Cycle Input Characteristics Input Signal Range Input Adjustment	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width Pulse Width Resolution Measurement Range (display) Breakdown Voltage Coupling Mode	$\pm 1.5$ Vdc 50 mVRMS to $\pm 2.5$ Vac + dc 100 mVRMS to $\pm 2.5$ Vac + dc 50 mVRMS to $\pm 2.5$ Vpp 100 mVRMS to $\pm 2.5$ Vpp 50 mVRMS to $\pm 2.5$ Vpc 50 mVRMS to $\pm 2.5$ Vac + dc ≥20 ns 5 ns 0% to 100% $\pm 7$ Vac+dc AC On: Input Bandwidth = 250 kHz; Off: Input Bandwidth = 200 MHz -2.5V to +2.5V 0% (about 140 mV hysteresis volt	Input Impedance = 1 MΩ DC	
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges Pulse Width Duty Cycle Input Characteristics Input Signal Range	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width Pulse Width Resolution Measurement Range (display) Breakdown Voltage Coupling Mode High-frequency Rejection Trigger Level Range Trigger Sensitivity Range	$\pm 1.5$ Vdc 50 mVRMS to $\pm 2.5$ Vac + dc 100 mVRMS to $\pm 2.5$ Vac + dc 50 mVRMS to $\pm 2.5$ Vpp 100 mVRMS to $\pm 2.5$ Vpp 50 mVRMS to $\pm 2.5$ Vpc 50 mVRMS to $\pm 2.5$ Vac + dc ≥20 ns 5 ns 0% to 100% $\pm 7$ Vac+dc AC On: Input Bandwidth = 250 kHz; Off: Input Bandwidth = 200 MHz -2.5V to +2.5V 0% (about 140 mV hysteresis volt hysteresis voltage)	Input Impedance = 1 MΩ DC	
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges Pulse Width Duty Cycle Input Characteristics Input Signal Range	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width Pulse Width Resolution Measurement Range (display) Breakdown Voltage Coupling Mode High-frequency Rejection Trigger Level Range Trigger Sensitivity Range GateTime1	±1.5 Vdc     50 mVRMS to ±2.5 Vac + dc     100 mVRMS to ±2.5 Vac + dc     50 mVRMS to ±2.5 Vpp     100 mVRMS to ±2.5 Vpp     50 mVRMS to ±2.5 Vpp     50 mVRMS to ±2.5 Vac + dc     ≥20 ns     5 ns     0% to 100%     ±7Vac+dc     AC     On: Input Bandwidth = 250 kHz;     Off: Input Bandwidth = 200 MHz     -2.5V to +2.5V     0% (about 140 mV hysteresis volt     hysteresis voltage)     1.310ms	Input Impedance = 1 MΩ DC	
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges Pulse Width Duty Cycle Input Characteristics Input Signal Range	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width Pulse Width Resolution Measurement Range (display) Breakdown Voltage Coupling Mode High-frequency Rejection Trigger Level Range Trigger Sensitivity Range GateTime1 GateTime2	±1.5 Vdc     50 mVRMS to ±2.5 Vac + dc     100 mVRMS to ±2.5 Vac + dc     50 mVRMS to ±2.5 Vpp     100 mVRMS to ±2.5 Vpp     50 mVRMS to ±2.5 Vpp     50 mVRMS to ±2.5 Vac + dc     ≥20 ns     5 ns     0% to 100%     ±7Vac+dc     AC     On: Input Bandwidth = 250 kHz;     Off: Input Bandwidth = 200 MHz     -2.5V to +2.5V     0% (about 140 mV hysteresis volt     hysteresis voltage)     1.310ms     10.48ms	Input Impedance = 1 MΩ DC	
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges Pulse Width Duty Cycle Input Characteristics Input Signal Range Input Adjustment Input Trigger	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width Pulse Width Resolution Measurement Range (display) Breakdown Voltage Coupling Mode High-frequency Rejection Trigger Level Range Trigger Sensitivity Range GateTime1 GateTime2 GateTime3	$\pm 1.5$ Vdc 50 mVRMS to $\pm 2.5$ Vac + dc 100 mVRMS to $\pm 2.5$ Vac + dc 50 mVRMS to $\pm 2.5$ Vpp 100 mVRMS to $\pm 2.5$ Vpp 50 mVRMS to $\pm 2.5$ Vpp 50 mVRMS to $\pm 2.5$ Vac + dc ≥20 ns 5 ns 0% to 100% $\pm 7$ Vac+dc AC On: Input Bandwidth = 250 kHz; Off: Input Bandwidth = 200 MHz -2.5V to +2.5V 0% (about 140 mV hysteresis volt hysteresis voltage) 1.310ms 10.48ms 166.7ms	Input Impedance = 1 MΩ DC	
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges Pulse Width Duty Cycle Input Characteristics Input Signal Range	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width Pulse Width Resolution Measurement Range (display) Breakdown Voltage Coupling Mode High-frequency Rejection Trigger Level Range Trigger Sensitivity Range GateTime1 GateTime2 GateTime3 GateTime4	±1.5 Vdc     50 mVRMS to ±2.5 Vac + dc     100 mVRMS to ±2.5 Vac + dc     50 mVRMS to ±2.5 Vpp     100 mVRMS to ±2.5 Vpp     50 mVRMS to ±2.5 Vpp     50 mVRMS to ±2.5 Vac + dc     ≥20 ns     5 ns     0% to 100%     ±7Vac+dc     AC     On: Input Bandwidth = 250 kHz;     Off: Input Bandwidth = 200 MHz     -2.5V to +2.5V     0% (about 140 mV hysteresis volt     hysteresis voltage)     1.310ms     10.48ms     166.7ms     1.342s	Input Impedance = 1 MΩ DC	
DC Coupling AC Coupling Pulse Width and Duty Cycle M Frequency and Amplitude Ranges Pulse Width Duty Cycle Input Characteristics Input Signal Range Input Adjustment	DC Offset Range 1µHz to 100 MHz 100 MHz to 200 MHz 1 µHz to 100 MHz 100 MHz to 200 MHz leasurement 1 µHz to 25 MHz Min Pulse Width Pulse Width Resolution Measurement Range (display) Breakdown Voltage Coupling Mode High-frequency Rejection Trigger Level Range Trigger Sensitivity Range GateTime1 GateTime2 GateTime3	$\pm 1.5$ Vdc 50 mVRMS to $\pm 2.5$ Vac + dc 100 mVRMS to $\pm 2.5$ Vac + dc 50 mVRMS to $\pm 2.5$ Vpp 100 mVRMS to $\pm 2.5$ Vpp 50 mVRMS to $\pm 2.5$ Vpp 50 mVRMS to $\pm 2.5$ Vac + dc ≥20 ns 5 ns 0% to 100% $\pm 7$ Vac+dc AC On: Input Bandwidth = 250 kHz; Off: Input Bandwidth = 200 MHz -2.5V to +2.5V 0% (about 140 mV hysteresis volt hysteresis voltage) 1.310ms 10.48ms 166.7ms	Input Impedance = 1 MΩ DC	

Trigger Characteristics	
Trigger Input	
Level	TTL-compatible
Slope	Rising or falling (selectable)
Pulse Width	>100ns
Latency	Sweep: <100 ns (typical) 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	
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).</li>
- 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		
	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
EMC	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
	Power Cord	-
	USB Cable	CB-USBA-USBB-FF-150
Standard Accessories	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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