

RIGOL

Characteristics

Frequency (DG1022)	
Waveforms	Sine, Square, Ramp, Triangle, Pulse, Noise, Arb
Sine	1 μ Hz ~ 20MHz
Square	1 μ Hz ~ 5MHz
Ramp, Triangle	1 μ Hz ~ 150kHz
Pulse	500 μ Hz ~ 3MHz
Noise	5MHz (-3dB)
Arb	1 μ Hz ~ 5MHz
Resolution	1 μ Hz
Accuracy	\pm 50 ppm in 90 days \pm 100 ppm in 1year 18°C ~ 28°C
Temperature index	< 5 ppm/°C

Frequency (DG1012)	
Waveforms	Sine, Square, Ramp, Triangle, Pulse, Noise, Arb
Sine	1 μ Hz ~ 15MHz
Square	1 μ Hz ~ 4MHz
Ramp, Triangle	1 μ Hz ~ 100kHz
Pulse	500 μ Hz ~ 2MHz
Noise	5MHz (-3dB)
Arb	1 μ Hz ~ 4MHz
Resolution	1 μ Hz
Accuracy	\pm 50 ppm in 90 days \pm 100 ppm in 1year 18°C ~ 28°C
Temperature index	< 5 ppm/°C

Sine Wave Spectral Purity				
Harmonic Distortion	CH1		CH2	
		\leq 1V _{PP}	>1V _{PP}	\leq 1V _{PP}

DC-1MHz	-55dBc	-45dBc	-55dBc	-45dBc
1MHz-5MHz	-55dBc	-40dBc	-55dBc	-40dBc
5MHz-20MHz	-50dBc	-35dBc	-45dBc	-35dBc
Total Harmonic Distortion	DC to 20 kHz, 1Vpp < 0.2%			
Spurious (non-harmonic)	DC to 1 MHz < -70 dBc 1 MHz to 10 MHz < -70 dBc + 6 dB/octave			
Phase Noise	10kHz Offset -115 dBc / Hz (Typical)			

Square Wave		
Rise/Fall Time	< 20 ns (10% to 90%), (Typical, 1kHz 1 Vpp)	
Overshoot	< 5% (Typical, 1kHz 1Vpp)	
Duty Cycle	1μHz to 3MHz	20% to 80%
	3MHz(not contain) to 4MHz	40% to 60%
	4MHz (not contain) to 5MHz	50%
Asymmetry (below 50% Duty Cycle)	1% of period+ 20ns (Typical, 1kHz 1 Vpp)	
Jitter	6ns + 0.1% of period (Typical, 1kHz 1 Vpp)	

Ramp Wave	
Linearity	< 0.1% of peak output (typical, 1KHz, 1 Vpp, 100% Symmetry)
Symmetry	0% to 100%

Pulse Wave	
Pulse Width	2000s max period; 20ns min period; 1ns resolution
Overshoot	< 5%
Jitter	6ns + 100ppm of period

Arb Wave	CH1	CH2
Waveform Length	4k points	1k points
Amplitude Accuracy	14 bits (including sign)	10 bits (including sign)
Sample Rate	100MSa/s	100MSa/s

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Minimum Rising /Falling Time (Typical)	35ns	35ns
Jitter (RMS) (Typical)	6 ns + 30ppm	6 ns + 30ppm
Non-Volatile Storage (Total:10 Waveforms)	10 waveforms	10 waveforms

Output	CH1	CH2
Amplitude	2 mV _{pp} ~ 10 V _{pp} (50 Ω) 4 mV _{pp} ~ 20 V _{pp} (High Z)	2 mV _{pp} ~ 3 V _{pp} (50 Ω) 4 mV _{pp} ~6 V _{pp} (High Z)
Amplitude Accuracy (100 kHz Sine)	±(1% of setting + 1mV _{pp})	± (1% of setting+1 mV _{pp})
Amplitude Flatness (Sine wave relative to 100kHz, 5V _{pp})	<100kHz 0.1 dB	<100kHz 0.1 dB
	100kHz ~ 5MHz 0.15 dB	100kHz ~ 5MHz 0.15 dB
	5MHz ~ 20MHz 0.3 dB	5MHz ~ 20MHz 0.3 dB

DC Offset	CH1	CH2
Range (DC)	5V (50Ω) 10 V (High Z)	1.5V (50Ω) 3 V (High Z)
Accuracy	± (1% of the Offset Setting + 1mV)	± (1% of the Offset Setting + 1mV)

Waveform Output	CH1	CH2
Impedance	50 Ω typical	50 Ω typical
Protection	Short-circuit protected ^[1]	Short-circuit protected ^[1]

AM (CH1)	
Carrier Waveforms	Sine, Square, Ramp, Arb (Except DC)
Source	Internal/ External
Modulating Waveforms	Sine, Square, UpRamp, DnRamp, Triangle, Noise, Arb (2mHz to 20kHz)
Depth	0% ~ 120%
FM (CH1)	
Carrier Waveforms	Sine, Square, Ramp, Arb (Except DC)
Source	Internal/ External
Modulating Waveforms	Sine, Square, UpRamp, DnRamp, Triangle, Noise, Arb

	(2mHz to 20kHz)
Frequency Deviation	DC~ 5 MHz
PM (CH1)	
Carrier Waveforms	Sine, Square, Ramp, Arb (Except DC)
Source	Internal/ External
Modulating Waveforms	Sine, Square, UpRamp, DnRamp, Triangle, Noise, Arb (2mHz to 20kHz)
Phase Deviation	0 to 360°
FSK (CH1)	
Carrier Waveforms	Sine, Square, Ramp, Arb (Except DC)
Source	Internal/ External
Modulating Waveforms	50% duty cycle square (2mHz to 50kHz)

Sweep (CH1)	
Carrier Waveforms	Sine, Square, Ramp, Arb (Except DC)
Type	Linear or Logarithmic
Direction	Up or Down
Sweep Time	1 ms to 500 s \pm 0.1%
Source	Internal/External/Manual

Burst (CH1)	
Waveforms	Sine, Square, Ramp, Pulse, Noise, Arb (Except DC)
Types	Count (1 to 50,000 periods), infinite, gated
Start Phase	-180° to +180°
Internal Period	1 μ s – 500s \pm 1%
Gate Source	External Trigger
Trigger Source	Internal/External/Manual

Rear Panel Connector	
External AM Modulation	\pm 5 V _{PK} = 100% modulation 5k Ω input impedance
External Trigger	TTL-compatible

Trigger Input

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Input Level	TTL-compatible
Slope	Rising or falling (selectable)
Pulse Width	> 100 ns
Input Impedance	> 10 k Ω , DC coupled
Linear Sweep	< 500 μ s (typical)
Latency Sweep	< 500 ns (typical)

Trigger Output	
Level	TTL-compatible into >1k Ω
Pulse Width	> 400ns typical
Output Impedance	50 Ω , typical
Maximum Rate	1 MHz

Sync Output (CH1)	
Level	TTL-compatible into >1k Ω
Pulse Width	> 50ns (typical)
Output Impedance	50 Ω (typical)
Maximum Frequency	2 MHz

Counter Specification			
Function	Frequency, period, positive/negative Pulse width, Duty cycle		
Frequency range	Single channel: 100mHz ~ 200MHz		
Frequency resolution	6 digits/second		
Voltage range and sensitivity (not modulated signal)			
Auto mode:	1Hz to 200MHz	200 mV _{PP} to 5 V _{PP}	
Manual mode	DC	DC offset range	\pm 1.5 VDC
		100mHz~100MHz	20m VRMS to \pm 5 Vac+dc
		100MHz~200MHz	40m VRMS to \pm 5 Vac+dc
	AC	1Hz~100MHz	50m V _{PP} to \pm 5 V _{PP}
100MHz~200MHz		100m V _{PP} to \pm 5 V _{PP}	
Pulse width and Duty cycle measure	1Hz to 10MHz (100mV _{PP} ~ 10V _{PP})		
Input adjust	Input impedance	1M Ω	

	Coupling mode	AC、DC
	High frequency restrain	High frequency noise restrain (HFR) on or off
	sensitivity	Low, Medium, High
Trigger mode	The trigger level can adjust manually/ automatically	
	Trigger level range: ± 3 V (0.1% to 100%)	
	Resolution: 6 mV	

NOTE:

[1] In normal temperature, short circuit in less than half hour will be tolerable.

General Specifications

Display	
Type	Black and White LCD Screen
Resolution	256 Horizontal x 64 Vertical
Grey Degree	4 Grey Level
Contrast (typical)	150 : 1
Light (typical)	300 nit

Power	
Supply	100-240 VAC _{RMS} , 45~440Hz, CAT II
Consumption	Less than 40W
Fuse	2A, T Level , 250V

Environment	
Temperature Range	Operation: 10°C~+40°C
	Non-operation: -20°C~+60°C
Cooling	Natural cooling
Humidity Range	Below +35°C: ≤90% relative humidity
	+35°C~+40°C: ≤60%relative humidity
Height Range	Operation : below 3,000m
	Non-operation: below 15,000m

Instrument Specifications		
Dimension	Width	232mm
	Height	108mm
	Depth	288mm
Weight	Package excluded	2.65 kg
	Package Included	4kg

IP Protection
IP2X

Calibration Interval
One year suggested