

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} |

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|---------------------------|------------------------------------------------------------------|--------|--------|--------|
| 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) | | | |

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| 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) | |

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

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

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| 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) | |
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| 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 |

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| | (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) |

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| 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 |

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| 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 |

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

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| 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) |

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

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

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| 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 | |

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| | 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 |
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| One year suggested |