

KEYSIGHT TECHNOLOGIES (AGILENT HP)

33120A

The Keysight (formerly Agilent / HP) 33120A is a classic 15 MHz function and arbitrary waveform generator. Utilizing Direct Digital Synthesis (DDS), it delivers highly stable and accurate sine, square, and arbitrary waveforms. It features a 12-bit amplitude resolution, a 40 MSa/s sample rate, and standard built-in modulation (AM, FM, FSK, Burst) along with linear and logarithmic sweep capabilities.

SPECIFICATIONS

General

Interfaces	GPIO (IEEE-488), RS-232
Display	VFD (Vacuum Fluorescent Display)
Power Consumption	50 VA max
Warm-Up Time	1 hour
Calibration Interval	1 year
Output Units	Vpp, Vrms, dBm
Isolation to Earth	42 Vpk maximum

Physical

Power Supply	100 / 120 / 220 / 240 Vac $\pm 10\%$, 45-440 Hz (100/120V) or 45-66 Hz (220/240V), <50 VA
Operating Temperature	0 to 55 °C
Dimensions (WxHxD)	212.6 x 88.5 x 273.3 mm mm
Weight	4 kg kg

Waveform Types

Standard Waveforms	Sine, Square, Triangle, Ramp, Noise, DC Volts
Built-in Arbitrary Waveforms	Sin(x)/x, Exponential Rise, Exponential Fall, Cardiac

Frequency Characteristics

Sine Range	100 μ Hz to 15 MHz
Square Range	100 μ Hz to 15 MHz
Triangle Range	100 μ Hz to 100 kHz
Ramp Range	100 μ Hz to 100 kHz
Noise Bandwidth	10 MHz
Arbitrary Waveform Range	100 μ Hz to 5 MHz
Frequency Resolution	10 μ Hz
Frequency Accuracy (1 Year)	± 20 ppm

Amplitude Characteristics

Amplitude Range (into 50 Ohms)	50 mVpp to 10 Vpp
Amplitude Range (into Open Circuit)	100 mVpp to 20 Vpp
Output Impedance	50 Ω
Short Circuit Protection	Yes

DC Offset Characteristics

Offset Range (into 50 Ohms)	± 5 Vpk (AC + DC)
Offset Range (into Open Circuit)	± 10 Vpk (AC + DC)

Signal Purity and Characteristics

Square Rise/Fall Time	<20 ns
Square Overshoot	<4%

Arbitrary Waveform Characteristics

Sample Rate	40 MSa/s
Amplitude Resolution	12 bits
Waveform Length	8 to 16,000 points
Non-Volatile Memory Capacity	4 waveforms (16,000 points each)

Modulation Characteristics

Supported Modulation Types	AM, FM, FSK, Burst
AM Source	Internal / External
FSK Source	Internal / External
Burst Source	Internal / External

Sweep and Burst Characteristics

Sweep Type	Linear, Logarithmic
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System and Control Characteristics

Command Set	SCPI
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Signal Characteristics

Harmonic Distortion (DC to 20 kHz)	-70 dBc
Harmonic Distortion (20 kHz to 100 kHz)	-60 dBc
Harmonic Distortion (100 kHz to 1 MHz)	-45 dBc
Harmonic Distortion (1 MHz to 15 MHz)	-35 dBc
Total Harmonic Distortion (DC to 20 kHz)	< 0.04%
Spurious (DC to 1 MHz)	< -65 dBc
Phase Noise	< -55 dBc in a 30 kHz band
Square Wave Duty Cycle (≤ 5 MHz)	20% to 80%
Square Wave Duty Cycle (> 5 MHz to 15 MHz)	40% to 60%
Square Wave Asymmetry	1% of period + 5 ns
Triangle/Ramp Linearity	< 0.1% of peak output

Modulation & Sweep

AM Modulation Depth	0% to 120%
FSK Internal Rate	10 mHz to 50 kHz
Sweep Time	1 ms to 500 s
Burst Count	1 to 50,000 cycles, or Infinite

Triggering

Trigger Input	TTL compatible (rising or falling edge)
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Performance

Amplitude Accuracy (1 kHz)	$\pm(1\% \text{ of setting} + 2 \text{ mVpp})$
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Inputs & Outputs

External AM Modulation Input	$\pm 5 \text{ Vpk}$ full scale (10 k Ω impedance)
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Modulation

Modulation Input Bandwidth	DC to 20 kHz
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Burst

Burst Starting Phase	-360° to +360°
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TECHNOLOGY

Direct Digital Synthesis (DDS)

APPLICATIONS

Electronic Test & Measurement

Generated by SpecAtlasHub (specatlashub.com). Specifications are compiled from available sources and are subject to change — verify critical values against the manufacturer before purchase.