

KEYSIGHT TECHNOLOGIES (AGILENT HP)

3324A

The Keysight (Agilent/HP) 3324A is a synthesized function and sweep generator designed for applications requiring high precision and flexibility, such as speed sensor testing and multi-phase signal simulation. Offering synthesizer performance at a moderate price, it features multi-segment sweep capabilities, a variable-phase output, and a master/slave operational mode to facilitate multi-phase signal configurations.

SPECIFICATIONS

General

Interfaces	GPIB (HP-IB)
Display	Liquid Crystal Display (LCD) with backlighting

Physical

Power Supply	100 V / 120 V / 220 V / 240 V AC (+5%, -10%), 48 Hz to 66 Hz, <100 VA
Operating Temperature	0 to 55 °C °C
Dimensions (W×H×D)	425.5 mm × 132.6 mm × 497.8 mm mm
Weight	11 kg

Frequency Characteristics

Sine Wave Frequency Range	1 mHz to 21 MHz
Square Wave Frequency Range	1 mHz to 11 MHz
Triangle Wave Frequency Range	1 mHz to 11 kHz
Ramp Wave Frequency Range	1 mHz to 11 kHz
Frequency Resolution	11 digits
Frequency Stability (Standard)	±5 ppm
Frequency Aging Rate	±5 ppm per year

Amplitude & Output Characteristics

Output Impedance	50 Ω
Amplitude Range (Into 50 Ω)	1 mV p-p to 10 V p-p (eight 1-3-10 sequence ranges)
Amplitude Range (Open Circuit)	2 mV p-p to 20 V p-p
Output Isolation / Floating Voltage	Outputs and GPIB float up to 40 V relative to earth
DC Offset Range (Into 50 Ω)	0 to ±5 V
DC Offset Range (Open Circuit)	0 to ±10 V

Waveform Characteristics

Sine Wave Harmonic Distortion (200 kHz to 1.999 MHz)	<-40 dBc
Sine Wave Harmonic Distortion (2 MHz to 14.999 MHz)	<-30 dBc
Sine Wave Harmonic Distortion (15 MHz to 21 MHz)	<-25 dBc
Sine Wave Spurious Signals (Non-harmonic)	<-55 dBc
Square Wave Rise/Fall Time	<15 ns (10% to 90% at full output)
Square Wave Overshoot	<5% at full output
Square Wave Duty Cycle	50% (fixed)
Variable Phase Range	$\pm 719.9^\circ$
Variable Phase Resolution	0.1°

Modulation & Sweep

Modulation Types	AM, PM
AM Modulation Depth	0% to 100%
AM Modulation Frequency Range	DC to 50 kHz
PM Phase Modulation Range	$\pm 360^\circ$
PM Modulation Frequency Range	DC to 5 kHz
Sweep Type	Linear, Logarithmic, Multi-segment (multi-interval)
Sweep Time Range	0.01 s to 1000 s per segment

Inputs & Outputs (Front/Rear Panels)

Main Output Connector	BNC (front panel)
Sync Output	TTL compatible, 50 Ω output impedance (front panel)
External Reference Input	10 MHz (rear panel)
Internal Reference Output	10 MHz (rear panel)
External Trigger Input	TTL level (rear panel)
Sweep Marker Output	TTL level (rear panel)

System, Programming & Memory

Master/Slave Capability	Enables multi-phase configurations
State Storage Registers	10 registers (0-9) for save/recall of instrument state

Power & Reliability

Instrument Warm-Up Time	20 minutes to specified accuracy
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Environmental & Safety

Storage Temperature Range	-40 $^\circ\text{C}$ to +75 $^\circ\text{C}$
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Options & Accessories

Option 001	High-Stability Frequency Reference, 0.1 ppm
Option 002	High Voltage Output (4 mV p-p to 40 V p-p into 500 Ω ; 1 mHz to 1 MHz)
Option 003	Automatic Phase Calibration for Master
Option 004	Automatic Phase Calibration for Slave

Power

Maximum Power Consumption	100 VA
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Interfaces

HP-IB Interface Capability Codes	SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0, E1
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Environmental

Operating Humidity	$\leq 95\%$ R.H. (0 °C to 40 °C)
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Amplitude

Amplitude Flatness (1 mHz to 100 kHz)	± 0.1 dB (relative to 1 kHz)
Amplitude Flatness (100 kHz to 2 MHz)	± 0.15 dB (relative to 1 kHz)
Amplitude Flatness (2 MHz to 15 MHz)	± 0.2 dB (relative to 1 kHz)
Amplitude Flatness (15 MHz to 21 MHz)	± 0.4 dB (relative to 1 kHz)
Amplitude Accuracy at 1 kHz (≥ 5 Vpp)	$\pm 1.2\%$ of setting
Amplitude Accuracy at 1 kHz (0.5 Vpp to 4.99 Vpp)	$\pm 1.2\%$ of setting
Amplitude Accuracy at 1 kHz (50 mVpp to 499.9 mVpp)	$\pm 1.5\%$ of setting
Amplitude Accuracy at 1 kHz (5 mVpp to 49.99 mVpp)	$\pm 2\%$ of setting
Amplitude Accuracy at 1 kHz (1 mVpp to 4.99 mVpp)	$\pm 5\%$ of setting

Signal Characteristics

Triangle/Ramp Linearity	$\pm 0.05\%$ of full scale (10% to 90% of amplitude, ≤ 2 kHz)
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Modulation

External AM Input Impedance	10 k Ω
External AM Input Sensitivity	± 5 Vpk for 100% modulation depth
External PM Input Impedance	10 k Ω
External PM Input Sensitivity	± 5 Vpk for $\pm 360^\circ$ phase deviation

Reference Clock

External Reference Input Frequency	10 MHz (or 10/N MHz, where N = 1 to 10)
External Reference Input Level	0 dBm to +20 dBm (into 50 Ω)
Internal Reference Output Frequency	10 MHz
Internal Reference Output Level	0 dBm (into 50 Ω)

Options

Option 002 Frequency Range	1 mHz to 1 MHz
Option 002 Maximum Output Voltage	40 Vpp into ≥500 Ω (80 Vpp into open circuit)
Option 002 Output Impedance	500 Ω

TECHNOLOGY

Synthesized Signal Generation

APPLICATIONS

Test and Measurement, Multi-Phase Signal Simulation, Sensor Testing

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