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Data Sheet

August 7, 2026

KEYSIGHT / AGILENT

Keysight (Agilent) M5301A PXIe Precision AWG, 4 Channels, 400 MHz, 14-bit

Keysight (Agilent) M5301A PXIe Precision AWG, 4 Channels, 400 MHz, 14-bit The Keysight M5301A is a single-slot PXIe baseband precision arbitrary waveform generator in the M5000 Series. Four channels provide 400 MHz (–3 dB) analog bandwidth with 14-bit DACs, 2.4 GS/s waveform data rate, and 1 GSa memory per channel. Designed for high-definition, DC-stable stimulus in quantum, aerospace, and research systems, with PathWave FPGA and multi-module coherent clocking. Quantum computing stimulus; aerospace/defense baseband synthesis; multi-channel coherent analog generation; FPGA-sequenced laboratory stimulus. The Keysight M5301A is a single-slot PXIe baseband precision arbitrary waveform generator in the M5000 Series. Four channels provide 400 MHz (–3 dB) analog bandwidth with 14-bit DACs, 2.4 GS/s waveform data rate, and 1 GSa memory per channel. Designed for high-definition, DC-stable stimulus in quantum, aerospace, and research systems, with PathWave FPGA and multi-module coherent clocking. Quantum computing stimulus; aerospace/defense baseband synthesis; multi-channel coherent analog generation; FPGA-sequenced laboratory stimulus.



MODEL

**Keysight / Agilent
M5301A**

CALIBRATION

**Available on
request**

CONDITION

Used

STATUS

In stock

RFQ / SKU

M5301A

LISTING

<https://aumictechlabs.com/products/m5301a-2/>

NIST-traceable cal

SAM registered

30-day returns

NAICS 423690 • 811210 • 541380

This unit

The Keysight M5301A is a four-channel PXIe precision arbitrary waveform generator delivering 400 MHz analog bandwidth and 14-bit vertical resolution in a single-slot module. Built for quantum computing, aerospace, and defense applications, it generates complex waveforms with 2.4 GS/s maximum data rate and 1 GSa per-channel memory depth.

Technical Specifications

Waveform Generation Analog bandwidth: 0 to 400 MHz (-3 dB) Vertical resolution: 14-bit DAC Maximum waveform data rate: 2.4 GS/s Waveform memory: 1 GSa per channel Output voltage range: ± 2.5 V into 50 Ω (0–275 MHz); ± 2.0 V (0–350 MHz); ± 1.5 V (0–450 MHz) Settling time: <200 ns to 99%, <1 μ s to 99.999% Temperature stability: 20 μ V/°C Output impedance: 50 Ω Noise floor: -145 dBm/Hz Phase noise: -142 dBc (10 kHz offset at 100 MHz) Channel-to-channel isolation: 80 dB to 400 MHz SFDR: -40 dBc to 400 MHz FPGA and Synchronization Integrated XVCU35P FPGA with ~25% user-customizable area (98% CLB registers and LUTs available) Real-time sequencing with hardware-based branching and looping Clock I/O: 2.4 GHz clock input and output for multi-card coherence Four trigger outputs plus System Link I/O connector

Key Features

Single-slot PXIe form factor for compact system integration Four independent output channels with precise synchronization FPGA-based real-time sequencing with deterministic timing User-accessible FPGA development via PathWave environment Comprehensive waveform memory enables complex signal generation without external storage

Typical Applications Quantum computing test and characterization Aerospace and defense signal simulation Complex analog waveform synthesis requiring multi-channel coordination High-precision RF and microwave signal generation

Compatibility & Integration IVI.NET, IVI-C, and IVI-COM driver support Python programming interface Soft Front Panel for local operation and debugging PathWave Test Sync Executive for multi-mode synchronization across chassis Member of Keysight M5000 Series modular platform

Features & description

From manufacturer datasheet

Features

• Channels: 4 independent baseband AWG outputs • Bandwidth: 400 MHz, -3 dB • DAC resolution: 14-bit • Waveform sample/data rate: 2.4 GS/s • Memory depth: 1 GSa per channel • Output voltage into 50 Ω : ± 2.5 V (usable 0–275 MHz); ± 2.0 V (0–350 MHz); ± 1.5 V (0–450 MHz) • Settling time: <200 ns to 99%; <1 μ s to 99.999% • Temperature stability: 20 μ V/ $^{\circ}$ C • Output impedance: 50 Ω • Noise floor (NSD): -145 dBm/Hz • Phase noise: -142 dBc at 100 MHz, 10 kHz offset (with recommended chassis/clock options) • Channel-to-channel isolation: 80 dB to 400 MHz • SFDR: -40 dBc to 400 MHz (excl. harmonics/DAC interleave spurs, per startup guide); alternate datasheet figures to -70 dBc class excl. harmonics at full scale in usable bands • Form factor: 1-slot 3U PXIe; size $\sim 130.1 \times 21.7 \times 210$ mm; weight ~ 420 g • Bus: PXIe peripheral x8 Gen 3; chassis compatibility M9046A • Front panel: 4 $\times$ SMA RF outs; 4 $\times$ SMB triggers; MCX 2.4 GHz CLK IN/OUT; System Link I/O • FPGA: XVCU35P with $\sim 25\%$ user-configurable PathWave FPGA area • Software: Soft Front Panel; IVI/.NET/C/COM; Python; PathWave Test Sync Executive • Coherent multi-card clock sharing via 2.4 GHz front-panel reference path

M5301A Characteristics / Specifications

PARAMETER	VALUE
Model	M5301A
Manufacturer	Keysight Technologies
Instrument Type	PXIe Precision Arbitrary Waveform Generator
Family	M5000 Series
Alias	M5301A; Keysight M5301A PXIe Precision AWG AWG / RF 4 ch; 400 MHz BW; 14-bit; 2.4 GS/s; 1 GSa/ch; ± 2.5 V into 50 Ω Operational Notes Prefer Keysight M5000 Series datasheet (3122-1571) and M5301x startup/user guides. Chassis M9046A-QS1 improves clock/phase-noise performance when used.
Channels	4 independent baseband AWG outputs
Bandwidth	400 MHz, -3 dB
DAC resolution	14-bit
Waveform sample/data rate	2.4 GS/s
Memory depth	1 GSa per channel
Output voltage into 50 Ω	± 2.5 V (usable 0–275 MHz); ± 2.0 V (0–350 MHz); ± 1.5 V (0–450 MHz)
Settling time	<200 ns to 99%; <1 μ s to 99.999%
Temperature stability	20 μ V/ $^{\circ}$ C
Output impedance	50 Ω
Noise floor (NSD)	-145 dBm/Hz
Phase noise	-142 dBc at 100 MHz, 10 kHz offset (with recommended chassis/clock options)
Channel-to-channel isolation	80 dB to 400 MHz
SFDR	-40 dBc to 400 MHz (excl. harmonics/DAC interleave spurs, per startup guide); alternate datasheet figures to -70 dBc class excl. harmonics at full scale in usable bands
Form factor	1-slot 3U PXIe; size $\sim 130.1 \times 21.7 \times 210$ mm; weight ~ 420 g
Bus	PXIe peripheral x8 Gen 3; chassis compatibility M9046A
Front panel	4 $\times$ SMA RF outs; 4 $\times$ SMB triggers; MCX 2.4 GHz CLK IN/OUT; System Link I/O

PARAMETER	VALUE
FPGA	XVCU35P with ~25% user-configurable PathWave FPGA area
Software	Soft Front Panel; IVI/.NET/C/COM; Python; PathWave Test Sync Executive
Data Rate	2.4 GS/s - Memory depth: 1 GSa per channel - Output voltage into 50 Ω: ±2.5 V (usable 0–275 MHz); ±2.0 V (0–350 MHz); ±1.5 V (0–450 MHz) - Settling time: <200 ns to 99%; <1 μs to 99.999%

M5301A Specifications

PARAMETER	VALUE
Key Features	- Channels: 4 independent baseband AWG outputs
Technical Specifications	Model: M5301A
AWG / RF	4 ch; 400 MHz BW; 14-bit; 2.4 GS/s; 1 GSa/ch; ±2.5 V into 50 Ω

Full OEM specifications

Complete technical content extracted from the manufacturer datasheet. Sparse OEM tables are reconstructed as tables below; other text is preserved as paragraphs.

Specifications

Specifications

PARAMETER	VALUE
Model	M5301A
Manufacturer	Keysight Technologies
Instrument Type	PXIe Precision Arbitrary Waveform Generator
Family	M5000 Series
Alias	M5301A; Keysight M5301A PXIe Precision AWG

AWG / RF

4 ch; 400 MHz BW; 14-bit; 2.4 GS/s; 1 GSa/ch; ±2.5 V into 50 Ω

Operational Notes

Prefer Keysight M5000 Series datasheet (3122-1571) and M5301x startup/user guides. Chassis M9046A-QS1 improves clock/phase-noise performance when used.

Available from Aumictech

Used and refurbished unit evaluated in-house. Calibration: Available on request. Used · In stock.

Request a quote: sales@aumictech.com · +1 (484) 841-9341

Aumictech

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NIST-traceable calibration · SAM registered ·
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Technical content from manufacturer specifications. Unit photo/stock from Aumictech listing when available. Specifications subject to OEM documentation and unit condition.