

KEYSIGHT TECHNOLOGIES (AGILENT HP)

81133A

The Keysight (Agilent) 81133A is a high-performance 3.35 GHz single-channel pulse pattern generator designed for high-speed digital stimulus applications, offering hardware-based PRBS, deep 12 MBit pattern memory, and low-jitter outputs.

SPECIFICATIONS

General

Interfaces	GPIB, 10/100 MBit Ethernet (LAN), USB 2.0
Display	Color LCD graphical user interface
Instrument State Storage	9 complete settings
Maximum Operating Altitude	2000 m

Physical

Power Supply	100 V to 240 V AC $\pm 10\%$, 50 Hz to 60 Hz / 400 Hz, maximum 460 VA
Operating Temperature	0 °C to 55 °C °C
Dimensions (W×H×D)	426 mm × 145 mm × 421 mm mm
Weight	11.5 kg

Timing and Frequency

Frequency Range	15 MHz - 3.35 GHz
Period Range	298.5 ps - 66.6 ns
Period Resolution	1 ps
RMS Jitter (Period-to-Period)	< 1.5 ps (typically 1.0 ps)
Internal Clock Accuracy	± 20 ppm

Channel and Configuration

Number of Channels	1
Output Impedance	50 Ohm
Output Connector	SMA

Pulse Characteristics

Amplitude Range	50 mV - 2 V
Voltage Window	-2.0 V to +3.0 V (into 50 Ohm)
Rise/Fall Time (20% to 80%)	< 90 ps
Delay Modulation	Jitter emulation capability
Variable Cross-over Point	Adjustable cross-over

Pattern Generation

Pattern Depth	12 MBit
Data Formats	RZ, NRZ, R1
PRBS Types	2 ⁵ - 1 to 2 ³¹ - 1
Pattern Software	PC-based Pattern Management Tool

System, Control and Interfaces

SCPI Programming	Fully compliant with SCPI commands
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Environmental and Compliance

Storage Temperature	-40 °C to +70 °C
Maximum Operating Humidity	95% R.H. at 40 °C (non-condensing)
Warm-up Time	30 minutes

Delay & Phase

Delay Range	0 s to 10 µs
Delay Resolution	1 ps
Delay Accuracy	±20 ps
Phase Range	-3600° to +3600°

Width & Duty Cycle

Width Range	100 ps to (Period - 100 ps)
Width Resolution	1 ps
Width Accuracy	±40 ps

Jitter Performance

Random Jitter	< 2 ps RMS
Deterministic Jitter	< 20 ps pp

External Clock Input

External Clock Input Frequency	15 MHz to 3.35 GHz
External Clock Input Impedance	50 Ω (nominal, AC-coupled)
External Clock Input Amplitude	100 mVpp to 2 Vpp

Reference Clock (10 MHz)

Reference Input Frequency	10 MHz ± 100 ppm
Reference Input Amplitude	200 mVpp to 5 Vpp
Reference Output Frequency	10 MHz (nominal)

Frequency

Frequency Resolution	1 Hz
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Outputs

Termination Voltage Range	-2.0 V to +2.8 V
Amplitude Resolution	10 mV
Offset Resolution	10 mV

Trigger Output

Trigger Output Amplitude	100 mV to 1.2 V
Trigger Output Voltage Window	-2.0 V to +2.8 V
Trigger Output Rise/Fall Time	< 150 ps (20% to 80%)
Trigger Output Impedance	50 Ω nominal

Delay Control Input

Delay Control Input Impedance	50 Ω nominal
Delay Control Input Range	-0.9 V to +0.9 V
Delay Control Bandwidth	DC to 17.5 MHz

Reference Input/Output

Reference Output Amplitude	1 Vpp nominal into 50 Ω
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TECHNOLOGY

Pulse and Pattern Generation

APPLICATIONS

Infiniband, PCI-Express, Serial ATA test, eye diagram measurements, and high-speed digital stimulus/response testing.

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