

KEYSIGHT TECHNOLOGIES (AGILENT HP)

8112A

The Keysight (Agilent HP) 8112A is a highly versatile, fully programmable 50 MHz pulse generator renowned for its precise timing, variable transition capabilities, and comprehensive analog modulation features. Offering output levels up to 32 V p-p into an open circuit (16 V p-p into 50 Ohms), it provides variable delay, double pulse spacing, and linear transitions down to 6.5 ns (with fixed transitions at 5 ns or less). The instrument is designed for automated testing via HP-IB (GPIB) and features unique external modulation inputs that allow control of period, delay, width, and high level through analog voltages.

SPECIFICATIONS

General

Interfaces	HP-IB (GPIB)
Display	7-segment LED with parameter and status indicators
Warm-Up Time	30 minutes

Physical

Power Supply	100 / 120 / 220 / 240 V AC (+5% / -10%), 48 - 66 Hz, 120 VA max
Operating Temperature	0 °C to 55 °C °C
Dimensions (W×H×D)	426 mm × 89 mm × 391 mm mm
Weight	5.9 kg kg

Pulse Timing & Characteristics

Period Range	20.0 ns to 950 ms
Period Resolution	3 digits
Period Accuracy	±5% of programmed value ± 2 ns
Pulse Width Range	10.0 ns to 950 ms
Pulse Width Resolution	3 digits
Pulse Delay Range	75.0 ns to 950 ms
Pulse Delay Resolution	3 digits
Double Pulse Delay Range	20.0 ns to 950 ms
Double Pulse Delay Resolution	3 digits

Transition & Waveform Quality

Transition Time Range (Linear)	6.5 ns to 95.0 ms
Transition Time Resolution	3 digits
Fixed Transition Time	≤ 4.5 ns

Output & Level Characteristics

Number of Channels	1
Output Impedance	50 Ohm
Amplitude Range (into 50 Ohms)	10.0 mV to 16.0 V
Amplitude Range (into Open Circuit)	20.0 mV to 32.0 V
Amplitude Resolution	3 digits
High Level Limit (into 50 Ohms)	-7.90 V to +8.00 V
Low Level Limit (into 50 Ohms)	-8.00 V to +7.90 V
High Level Limit (into Open Circuit)	-15.8 V to +16.0 V
Low Level Limit (into Open Circuit)	-16.0 V to +15.8 V
Output Polarity	Normal / Complement (selectable)

Triggering & Operating Modes

Operating Modes	Normal (NORM), Triggered (TRIG), Gated (GATE), External Width (E.WID), External Burst (E.BUR)
Trigger Source	Internal, External, Manual
External Trigger Input Frequency Range	DC to 50 MHz
External Trigger Threshold Level Range	-10 V to +10 V
External Trigger Input Impedance	50 Ohm or 10 kOhm (selectable)
Burst Count Range	1 to 1999

Modulation & External Control

Modulated Parameters	Period (PER CTRL), Delay (DEL CTRL), Width (WID CTRL), High Level (HIL CTRL)
Control Voltage Range	-10 V to +10 V
Control Input Impedance	10 kOhm

System Interfaces & Programming

Remote Interfaces	HP-IB (GPIB)
Store/Recall Registers	9 memory locations
Interface Function Subsets	SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0

Power Requirements

Line Voltage AC Range	100 / 120 / 220 / 240 V AC (+5% / -10%)
Line Frequency Range	48 to 66 Hz
Power Consumption	120 VA max

Physical & Environmental

Storage Temperature Range	-40 °C to +75 °C
Maximum Relative Humidity	95% R.H. at 40 °C

Accuracy

Pulse Width Accuracy	±5% of set value ±2 ns (for transition times ≤ 20% of width)
Pulse Delay Accuracy	±5% of set value ±2 ns
Double Pulse Delay Accuracy	±5% of set value ±2 ns
Transition Time Accuracy	±10% of set value ±2 ns (for transition times ≥ 10 ns)

Output Characteristics

Overshoot and Ringing	< 5% of amplitude ±10 mV (for transition times ≥ 10 ns)
Preshoot	< 5% of amplitude
Transition Linearity	< 3% deviation (for transition times > 100 ns)
Pulse Complement	Selectable normal or complement pulse output

Trigger & Sync Outputs

Strobe Output Level	≥ 1 V into 50 ohms
Strobe Output Impedance	50 ohms nominal
Strobe Output Pulse Width	15 ns nominal

Input Characteristics

Maximum External Trigger Input Voltage	±20 V
Maximum Control Input Voltage	±20 V

Output

Output Disable Switch	Yes (relay-controlled on/off state)
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Time Base / Jitter

Period Jitter	< 0.1% + 50 ps
Delay Jitter	< 0.1% + 50 ps
Width Jitter	< 0.1% + 50 ps

Propagation Delay

External Input to ST/TR OUT Propagation Delay	47 ns (typical)
ST/TR OUT to Pulse Output Propagation Delay	23 ns (typical, minimum delay setting)

External Input

Trigger Slope Selection	Positive or negative going edge
Gate Active Level Selection	High or low level

Analog Control

Period Analog Control Range	1:10
Delay Analog Control Range	1:10
Width Analog Control Range	1:10
Amplitude/High Level Analog Control Range	1:10

Output Protection

Level Limit Protection Function	Restricts maximum high and minimum low levels to protect DUT
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Environmental

Maximum Operating Altitude	4600 m (15000 ft)
Maximum Non-Operating Altitude	15000 m (50000 ft)

TECHNOLOGY

Analog and digital programmable pulse generation

APPLICATIONS

Automated digital testing, device characterization, semiconductor clock emulation, and signal modulation prototyping

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