A

Oscilloscope Specifications and Characteristics

Specifications

The following are performance specifications for the HP E1426A Digitizing Oscilloscope.

Vertical

Bandwidth (–3 dB, dc coupled)
Repetitive:[1] dc to 500 MHz
Single-shot: dc to 2 MHz (based on 10 points per period of input signal)

Rise Time:[2] 700 ps

Input R (selectable): 1 MΩ ±1% or 50Ω ±1%

Maximum Input Voltage[3]
1MΩ: ±250 V [dc + peak ac(<10 kHz)]
50Ω: 5 Vrms

Offset Accuracy:[4] ±(0.5% of ch. offset + 2% of voltage range)

Voltage Measurement Accuracy (dc)[4,5]
Dual Cursor: ±(1.25% of voltage range)
Single Cursor: ±(1.25% of voltage range + offset accuracy)

Horizontal

Time Base Reference Accuracy: 0.005%

Delta-t Accuracy
Real-time: ±(.2% x time base range + 0.005% x delta-t + 150 ps)

Trigger

Trigger Sensitivity

≥40 mV Voltage Range
dc to 100 MHz: 0.063 x voltage range
100 MHz to 500 MHz: 0.156 x voltage range

<40 mV Voltage Range
dc to 100 MHz: 2.5 mV
100 MHz to 500 MHz: 6 mV

Notes: Specifications valid for temperature range ±10°C from software calibration temperature with eight or more averages selected.

1. Upper bandwidth reduces by 2.5 MHz for each °C above 35°C.
2. Rise time figure is calculated from: tr = 0.35/Bandwidth.
3. On voltage ranges ≤400 mV the maximum overdrive of the input must not exceed 125 times the voltage range.
4. Expansion is used below 56 mV voltage range so vertical resolution and accuracies are correspondingly reduced.
5. Accuracy decreases 0.08% per °C from software calibration temperature.

Characteristics

The following are performance characteristics of the HP E1426A Digitizing Oscilloscope.

Vertical

Switchable Bandwidth Limits
ac-coupled (lower –3 dB frequency): 90 Hz
LF reject (lower –3 dB frequency): 450 Hz
bandwidth limit (upper –3 dB frequency): dc to 30 MHz

Number of channels:[1] 4

Vertical Sensitivity Voltage Range (all channels): 8 mV to 40 V

Vertical Gain Accuracy (dc):[2,3] ±1.25%

Vertical Resolution:[3] ±0.4% (8-bit A/D)
±0.1% (10 bits via digitize with averaging)

Maximum Sample Rate: 20 MSa/s

Waveform Record Length[4,5]**:** Up to 1024 points

Input C: 7 pF nominal

Input coupling: ac, dc

Offset Range:

Voltage Range	Available Offset
8 mV-400 mV	±2 V
>400 mV-2 V	±10 V
>2 V-10 V	±50 V
>10 V-40 V	±250 V

Dynamic range (dc + peak ac): ±1.5 x voltage range from offset

Channel-to-channel Isolation: (with channels at equal sensitivity)
40 dB: dc to 100 MHz
30 dB: 100 to 500 MHz

Horizontal

Time Base Range: 2 ns to 50 s

Time Base Resolution: 20 ps

	Time Base Range	Available Delay
Delay Range (post-trigger)	500 ms—50 s	4 x time base range
	1 ms—200 ms	1 s
	2 ns—500 µs	1,000 x time base range
Delay Range (pre-trigger)	50µs—50 s	–3.996 x time base range
	100 ns—20µs	–99.9 µs
	2 ns—50 ns	–1,000 x time base range

Trigger

Trigger Pulse Width (minimum): 1.5 ns

Trigger Level Range: ±1.5 x voltage range from offset.

Backplane Trigger Delay: ≈40 ns (from oscilloscope input to backplane).

Notes: Specifications valid for temperature range ±10°C from software calibration temperature with eight or more averages selected.

1. Simultaneous acquisition on two channels. Channels 1 and 4 are acquired simultaneously. If four channels are used, data is acquired alternately by channels 1 and 4, then 2 and 3.
2. Accuracy decreases 0.08% per °C from software calibration temperature.
3. Expansion is used below 56 mV range so vertical resolution and accuracies are correspondingly reduced.

4. In repetitive mode:
   2 ns time base range, waveform record length is 100 points
   5 ns time base range, waveform record length is 250 points
   10 ns time base range, waveform record length is 500 points
   ≥20 ns time base range, waveform record length is 1000 points
5. For single shot via digitize, the waveform record length is dependent on the timebase range. Note: You may need to set ACQUIRE:COMPLETE to a value less than 100 (for 100%).

SCREEN WIDTH	SINGLE-SHOT POINTS/ACQUISITIONS
50s to 50µs	500
20µs	≈400
10µs	≈200
5µs	≈100
2µs	≈40
1µs	≈20
500ns	≈10
200ns	≈4
100ns	≈1
50ns to 2ns	0 - single-shot not available