

# Oscilloscope Modules Specifications and Characteristics

## 16534A Specifications\*

Bandwidth	dc to 500 MHz
dc offset accuracy	±(1% of offset + 2% of full scale)
dc voltage measurement accuracy	±(1.5% of full scale + offset accuracy)
Time interval measurement accuracy at maximum sampling rate, on a single scope card, on a single acquisition	±[(0.005% of D T) + (2E-6 x delay setting) + 100 ps]
Trigger sensitivity (See notes)	<ul style="list-style-type: none"> <li>• dc to 50 MHz</li> <li>• 50 MHz to 500 MHz</li> </ul>
	<ul style="list-style-type: none"> <li>• 0.06 full scale</li> <li>• 0.13 full scale</li> </ul>
Input resistance	1 MΩ ±1% 50 Ω ±1%

\* Specifications refer to the input to the BNC connector

### Notes:

- Specifications apply only within ± 10° C of the temperature at which the most recent calibration was performed.
- Specifications apply only after operational accuracy calibration is performed in the frame in which the oscilloscope module is installed.
- Display magnification is used below 56 mV full scale. For sensitivities from 16 mV to 56 mV full scale, full scale is defined as 56 mV.

## Characteristics

### General

Maximum sampling rate	2 GSa/s
Number of channels	<ul style="list-style-type: none"> <li>• 2 to 8 using the same time base and trigger.</li> <li>• Up to 10 channels may be installed in a single 16700 frame, or up to 20 in a single system using a 16701 expansion frame.</li> </ul>
Waveform record length	32768 points

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### Vertical (Voltage)

Vertical sensitivity range	16 mV full scale to 40 V full scale
Vertical resolution	8 bits full scale
Rise time (calculated from bandwidth)	700 ps
dc gain accuracy	$\pm(1.25\%$ of full scale + 0.08% per °C difference from calibration temperature)
dc offset range	
Vertical sensitivity	Offset range
• 16 mV full scale to 400 mV full scale	• $\pm 2$ V
• 400 mV full scale to 2.0 V full scale	• $\pm 10$ V
• 2.0 V full scale to 10 V full scale	• $\pm 50$ V
• 10 V full scale to 40 V full scale	• $\pm 250$ V
Probe attenuation	Any ratio from 1:1E-9 to 1:1E+6
Channel-to-channel isolation (with channel sensitivities equal)	
• dc–50 MHz	• 40 dB
• 50 MHz–500 MHz	• 30 dB
Maximum safe input voltage	
• 1 M $\Omega$	• $\pm 250$ V dc + peak ac (<10 kHz)
• 50 $\Omega$	• 5 Vrms

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### Horizontal (Time)

Time base ranges	0.5 ns/div to 5 s/div
Time base resolution	10 ps
Delay range	
• pretrigger	• -32 K x sample period
• posttrigger	• 320 ms or 1.6E7 x sample period, whichever is greater
Time interval measurement accuracy for sampling rates other than maximum, for bandwidth-limited signals [signal rise time > 1.4/(sampling rate)], on a single card, on a single acquisition	$\pm\{(0.005\% \text{ of } \Delta T) + (2E-6 \times \text{delay setting}) + [0.15/(\text{sample rate})]\}$
Time interval measurement accuracy for 2, 3, or 4 Agilent 16533As or 16534As operating on a single time base, for measurements made between channels on different cards, at maximum sampling rate	$\pm [(0.005\% \text{ of } \Delta T) + (2E-6 \times \text{delay setting}) + 300 \text{ ps}]$

### Trigger

Trigger level range (See notes)	$\pm 1.5 \times$ full scale from center of screen
Trigger modes	
• Immediate	• Triggers immediately after arming condition is met
• Edge	• Triggers on rising or falling edge on channel 1 or channel 2
• Pattern	• Triggers on entering or exiting a specified pattern across both channels
• Auto condition	• Self-triggers if trigger is not satisfied within approximately 50 ms after arming
• Events delay	• The trigger can be set to occur on the nth occurrence of an edge or pattern, $n \leq 32000$
• Intermodule	• Arms another measurement module or activates the port out BNC connector when the trigger condition is met

#### Notes:

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- Specifications apply only after operational accuracy calibration is performed in the frame in which the oscilloscope module is installed.
- Display magnification is used below 56 mV full scale. For sensitivities from 16 mV to 56 mV full scale, full scale is defined as 56 mV.