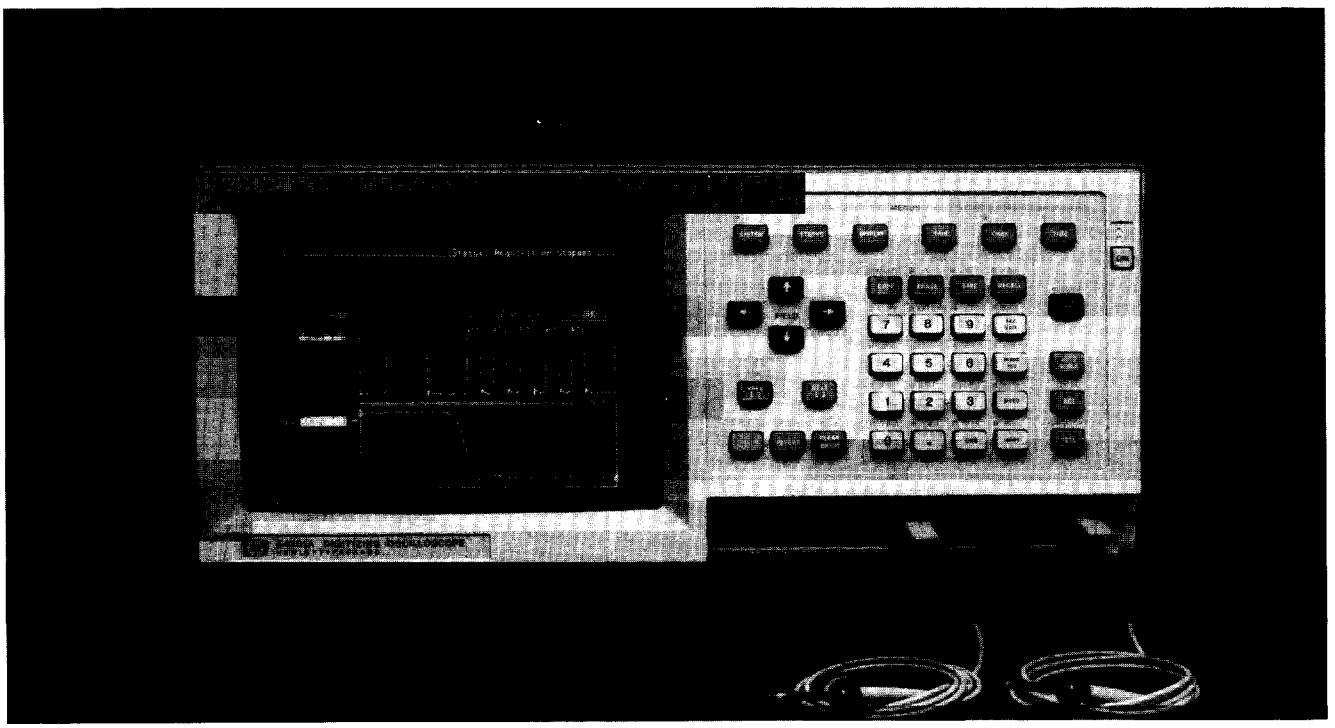
OSCILLOSCOPES & WAVEFORM ANALYZERS

200 Megasample/Second Digitizing Oscilloscopes

Models 54200A/D, 54201A/D

- Dual 200 megasample/second digitizers, allowing 50 MHz single-shot capture
- Pre-trigger viewing
- Automatic waveform measurements
- Up to 27 channels of state triggering
- Infinite variable persistence
- Instant hardcopy output
- 300 MHz repetitive bandwidth (HP 54201A/D only)



DESIGNED FOR HP-IB SYSTEMS

HP 54200A/D

- Dual 200 megasample/second digitizers
- 50 MHz bandwidth
- Pre-trigger display
- Auto-scaling of input signal
- Automatic measurements of waveform parameters
- Infinite persistence display, plus envelope and average display modes

The HP 54200D model adds:

- Up to 27 channels of state triggering
- Missing bit triggering mode
- Extra bit triggering mode

HP 54201A/D

- 300 MHz repetitive bandwidth
- Dual 200 megasample/second digitizers
- 50 MHz single-shot bandwidth
- Pre-trigger display
- Auto-scaling of input signal
- Automatic measurements of waveform parameters
- Infinite persistence display, plus envelope and average display modes

The HP 54201D model adds:

- Up to 27 channels of state triggering
- Missing bit triggering mode
- Extra bit triggering mode

Simplify Waveform Capture and Analysis

Easy Instrument Setup

- Pressing the Auto-Scale button automatically provides a scaled display of a wide range of input signals.
- Save and recall your front panel setups for quick return to previous measurements.
- ECL and TTL preset keys automatically set up vertical range, offset, and trigger levels for viewing digital signals.
- Input and memory labels aid in signal and setup identification.
- "Configuration" menu gives instrument status in a single display to aid in instrument setup and measurement documentation.
- Built-in 50 ohm switchable inputs eliminate the need for external termination devices (HP 54201A/D only).

Digital Storage

- Bright, fade-free, non-blooming displays.
- Waveforms can be stored for comparison or analysis. Stored waveforms can be displayed concurrently with live waveforms and can be output directly to a printer or plotter.
- Time/voltage cursors enable measurements on or between live and stored waveforms.
- Average mode improves signal-to-noise ratio on repetitive signals.
- Envelope mode saves maximum and minimum values of repetitive events for worst-case analysis.
- Accumulate mode displays multi-valued waveforms.
- Connect-the-dots mode aids signal interpretation (HP 54201A/D).

Specifications

Channels 1 and 2 (Vertical)	HP 54200A/D	HP 54201A/D	
Acquisition Method	**Real-time sampling**	**Real-time sampling**	**Repetitive sampling**
Bandwidth (–3 dB) dc-coupled ac-coupled	 dc – 50 MHz 10 Hz – 50 MHz	 dc – 50 MHz 10 Hz – 50 MHz	 dc – 300 MHz 10 Hz – 300 MHz
Transition Time (10–90%, calculated from: bandwidth X trans. time = 0.35)	7 ns	7 ns	1.2 ns
Range (fs calibrated with 2-digit resolution)	40 mV to 40 V	40 mV to 16 V	
Gain Accuracy	±2% of full-scale*		
A/D Conversion (ADC) Accuracy	±1.6% of full-scale		
Dc Offset Acc. Chan. Range 40 mV to 390 mV 400 mV to 40 V 40 mV to 790 mV 800 mV to 16 V	 ±1% (offset) ±5mV ±1% (offset) ±50mV	 ±1% of offset ±5mV ±1% of offset ±100mV	
Voltage Meas. Accuracy (dc) Single cursor (X or 0) Dual cursor (X to 0 on same waveform)	Gain accuracy + ADC accuracy + offset accuracy Gain accuracy + 2 (ADC accuracy)		
Input Coupling	ac, dc		
Input Resist. (Nominal)	1 MΩ	1 MΩ; 50Ω dc coupling	
Input Cap. (Nominal)	14 pF	10 pF	
Maximum Safe Input Voltage	±40V (dc+pk ac)	1 MΩ: ±40V (dc+peak ac) 50Ω: 5 Vrms or ±40V (dc + peak ac), whichever is less	
Input (dc+pk ac) Operating Range Channel range 40 mV to 390 mV 400 mV to 40 V 40 mV to 16 V	 ±2 V ±20 V	 ±1 vertical range from center	

Dc Offset Range/ resolution	Channel Range	Offset Range	Offset Res.	Channel Range	Offset Range	Offset Res.
	40 mV/ 390 mV	±2 V	~1.2 mV	40 mV/ 790 mV	±1.5 V	1 mV
	400 mV/ 40 V	±20 V	~12 mV	800 mV/ 16 V	±30 V	20 mV

*Specifications apply within ±10° C of auto-calibration temperature.
**Dual-cursor specs apply for measurements made on the same or simultaneously-acquired waveforms.
***Provides 10:1, 1MΩ input at HP 10017A or HP 10018A probe tip.

Notes: specifications apply after a 30-minute warmup period. Single-shot reconstruction uncertainty equals ±1 ns (applies for time ranges of 50 ns through 2 μs).

Time Base (Horizontal)	HP 54200A/D	HP 54201A/D			
Acquisition Method	**Real-time sampling**	**Real-time sampling**		**Repetitive sampling**	
Range (10 div.), 1-2-5 sequence	50 ns – 10 s full-scale			10 ns – 20 μs full-scale	
Time Base Accuracy single/dual cursors	±2 ns or ±0.2% of time range, whichever is greater.**			±200 ps or ±2% of time range, whichever is greater.**	
Delay (Time Offset) Pre/Post-trigger range	Time Range	Pre-trigger Range	Post-trigger Range	Time Range	Pre-trigger Range	Post-trigger Range
	50 ns to 5μs	up to 5μs	up to 1 ms	Real-time Sampling Mode 50 ns to 5μs	up to 10μs	at least 200 screen dia.
	10μs to 10s	up to 1 screen diameter	up to 260 screen diameters	10 μs to 10s	up to 2 screen diameters	at least 200 screen diameters
				Repetitive Sampling Mode 10ns to 20μs	up to at 2 screen diameters	least 200 screen diameters
Pre/Post-trigger resolution	Adjustable in steps of 0.1 (coarse) and 0.004 (fine) screen diameters, or the LSB digit, whichever is greater.			Adjustable in steps of 0.1 (coarse) and 0.001 (fine) screen diameters, or the LSB digit, whichever is greater.		

Trigger (Analog)	HP 54200A/D	HP 54201A/D	
Acquisition Method	**Real-time sampling**	**Real-time sampling**	**Repetitive sampling**
Sources	Chan. 1, chan. 2, external trig. input	Chan. 1, chan. 2	External trigger input
Sensitivity	1/8 of full-scale (dc – 50 MHz)	1/8 of full-scale (dc–250MHz)	50Ω:60 mV – 250 MHz .2MΩ:1V (dc/ 100 MHz)***
Trig. Range Chan. range 40 mV – 390 mV 400 mV – 40 V 40 mV – 16 V	 ±2 V ±20 V	 ±1.5 X fs	 ±2 V
Resolution Chan. range 40 mV – 390 mV 400 mV – 40 V 40 mV – 16 V	 ~2.4 mV ~24 mV	 .02 X fs	 20 mV
Level Acc. Chan. range 40 mV – 390 mV 400 mV – 40 V 40 mV – 790 mV 800 mV – 16 V	 ±2% ±5 mV ±2% ±50 mV	 ±*3% ±5 mV ±3% ±100 mV	 ±3% ±30 mV
External Trig. Input	**HP 54200A/D**	**HP 54201A/D**	
Acquisition Method	**Real-time sampling**	**Real-time sampling**	**Repetitive sampling**
Input Resist. (Nominal)	1 MΩ	50 Ω	.2M Ω***
Input Coupling	ac, dc	dc	dc
Maximum Safe Input Voltage	±40V (dc+peak ac)	5 Vrms or ±40V (dc+pk ac), whichever is less.	±40V (dc + peak ac)
Input Oper. Range	Same as chan. 1 and chan. 2 inputs.	±5 V (dc + peak ac)	

Ordering Information

	Price
HP 54200A 50 MHz digitizing oscilloscope	$5950
Opt W30 Service Extension	$120
HP 54200D 50 MHz, logic triggering digitizing oscilloscope	$10,100
Opt W30 Service Extension	$200
HP 54201A 300 MHz digitizing oscilloscope	$7950
Opt W30 Service Extension	$300
HP 54201D 300 MHz, logic triggering digitizing oscilloscope	$9950
Opt W30 Service Extension	$380