SPECIFICATIONS

VERTICAL ANALOG SECTION

Bandwidth (– 3 dB):
@ 50 Ω: DC – 175 MHz at 10 mV/div, up to 225 MHz at 1V/div;
DC – 150 MHz at 5 mV/div.
@ 1 MΩ AC: < 10 Hz – 100 MHz typical.
@ 1 MΩ DC: DC – 100 MHz typical.
Single shot: DC – 50 MHz (Nyquist).

Input impedance: 1 MΩ // 50 pF and 50 Ω ± 1% .

Channels: Two; standard BNC connector inputs.

Sensitivity range: 5 mV/div to 1 V/div at 50 Ω impedance and 5 mV/div to 5 V/div at 1 MΩ impedance; detents at 1–2–5, 1: 2.5 continuously variable.

Offset: ± 8 divisions in 0.04 division increments.

DC accuracy: Standard ≤ ± 2%, optional ≤ ± 1%.

Noise: ≤ 0.45% RMS.

Bandwidth limiter (– 3 dB): 30 MHz.

Max input voltage: 250 V (DC + peak AC) at 1 MΩ, 5 V DC (500 mW) or ± 10V peak AC at 50 Ω.

VERTICAL DIGITAL SECTION

ADCs: One per channel, 8–bit flash.

Conversion rate: Up to 100 megasamples/sec for transient signals, up to 5 gigasamples/sec for repetitive signals, simultaneously on both channels.

Aperture uncertainty: ± 10 psec.

Overall dynamic accuracy (typical): Sine wave applied to the BNC input for RMS curve fit at 80% full scale. The accuracy measurement includes the front–end amplifier, sample & hold and ADC.

Input frequency (MHz)	1.0	10.0	Nyquist 50.0	100.0	175.0
Signal–to–noise ratio (dB)	41.9	41.9	41.9	37.1	29.9
Effective bits	7.0	7.0	7.0	6.2	5.0

Acquisition memories, Channels 1 and 2: Two, 32K 8–bit word memories (64K total) which can be segmented into 8, 15, 31, 62, 125 or 250 blocks.

Reference memories, C and D: Two, 32K, 16–bit word memories (64K total) which can store two acquired and/or processed waveforms.

Function memories E and F (optional): Two 32K, 16–bit word memories (64K total) for waveform processing.

Glitch detection: Permanent glitch detection for events down to 0.04% of the time–base setting, 10 nsec minimum.

HORIZONTAL SECTION

Time Base

Range: 2 nsec/div to 100 sec/div.
Accuracy: Better than ± 0.002 % of the time–base setting.
Interpolator resolution: 10 psec.

Acquisition Modes

Random Interleaved Sampling (RIS) for repetitive signals from 2 nsec/div to 2 μsec/div;

Single shot for transient signals and repetitive signals from 50 nsec/div to 200 msec/div;

Roll for slowly–changing signals from 500 msec/div to 100 sec/div;

Sequence for capturing transients in segmented memories of 8, 15, 31, 62, 125 or 250 blocks.

Trigger

Sources: CHAN1, CHAN2, LINE, EXT, EXT/10.

Slope: Positive, negative, window.

Coupling: AC, LF REJ, HF REJ, DC.

Modes:
Sequence: stores multiple events in segmented acquisition memories.
Auto: automatically re–arms after each sweep. If no trigger occurs, one is generated at 2 Hz repetition rate.
Normal: re–arms after each sweep. If no trigger occurs after 2 sec, the display is erased.
Single (hold): holds display after a trigger occurs. Re–arms only when the "single" button is pressed again.

Pre–trigger: Adjustable in 0.2% increments, to 100%.

Post–trigger delay: Adjustable in 0.02 division increments up to 10,000 divisions.

External trigger input: 1MΩ, < 30pF, 250V max., ± 2V in EXT, ± 20V in EXT/10.

Rate: > 200 MHz.

SELF TESTS

Auto–calibration: Performed every 20 minutes or wheneve the gain or time–base parameters are changed; provides accuracies of:
DC gain: ± 2% (± 1% optional) of full scale;
Offset: ± 0.5% of full scale (50Ω only);
Time: 20 psec RMS.

During the warming–up period, auto–calibration is carried ou at 1 minute intervals unless the oscilloscope is in single or sequence trigger mode.

DISPLAY

CRT: 12.5 ×17.5 cm (5 × 7 inches); magnetic deflection; vec tor graphics system.

Resolution: 1024 x 1024 addressable points.

Grid: Internally generated; separate intensity control for gric and waveforms. Single and dual grid mode.

Expansion: Dual zoom horizontal expansion operates simu taneously on live, stored and processed waveforms, expanding up to 100 times. Vertical expansion from 0.4 up tc 2 times for non–processed waveforms, up to 10 times for processed waveforms.

Screen dump: Single or multi–pen digital plotters are menu selected. The 9400A supports the HP 7400 series, as well a. the Tektronix 4662, Philips PM 8151, Graphtek WX 4638/6. and compatible models. Screen dumps are activated by a front–panel push–button.

Cursors: Two **time** cursors give time resolution of ± 0.2% c full scale for unexpanded traces; up to ± 0.002% for expanded traces. The corresponding frequency information is also provided. Two **voltage** cursors measure voltage differences to 0.2% of full scale for each trace.

A **cross–hair** marker measures absolute voltage versus signal ground as well as the time relative to the trigger.