

PRÉSERVER
SAUVEGARDER
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MODE D'EMPLOI DE L'OSCILLOSCOPE NUMÉRIQUE HP 54110D

FICHE N° 3946

Période de fabrication : 1975-1999

Fabricant : fabricant non renseigné

Domaines : Informatique et Communication, Physique

Sous-domaines : Electronique

Organisme : Université de Rennes

Ville : Rennes

Modèle : HP 54110D

Matériaux : Papier

Description

Le mode d'emploi de l'oscilloscope numérique Hewlett-Packard HP 54110D (en anglais) était fourni avec l'appareil. L'oscilloscope est aussi présenté dans le catalogue de 1986 de la société Hewlett-Packard.

Utilisation

Cet oscilloscope numérique pouvait aussi analyser les signaux électroniques. Il était utilisé par les enseignants des travaux pratiques d'électronique de la faculté des sciences de Rennes pour initier les étudiants à l'analyse de circuits logiques ou analogiques. Le HP 54110D a été commercialisé à partir de 1986; sa largeur de bande était de 1 GHz et il possédait une mémoire numérique avec un écran monochrome ou en couleur avec un système de mesure automatique des grandeurs des signaux (période, fréquence, amplitude, temps de montée...).

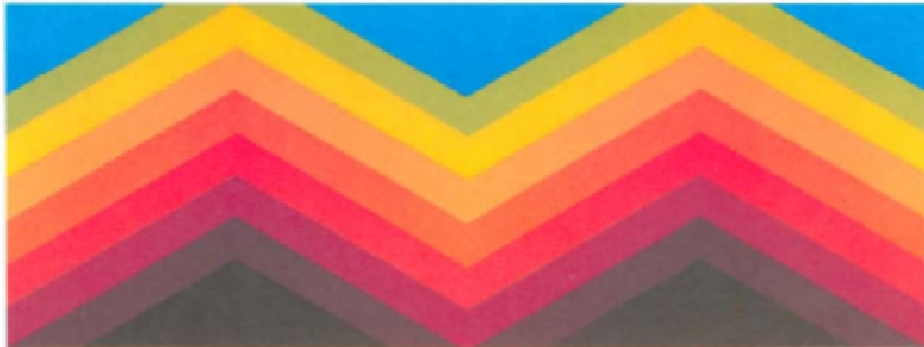




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1986

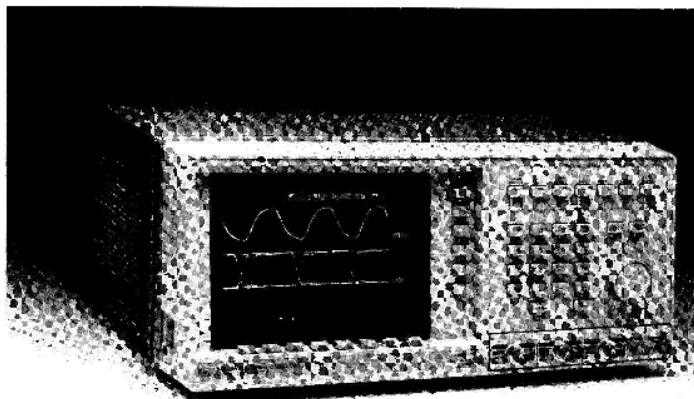


OSCILLOSCOPES & WAVEFORM ANALYZERS

Digitizing Oscilloscopes

Models 54100A/D, 54110D

- 1 GHz bandwidth
- Automatic pulse parameter and time interval measurements
- Digital storage
- Available with color or monochrome display
- Flexible probing solution
- Pre-trigger viewing
- Logic triggering capability



HP 54100A General-purpose Oscilloscope

From dc To ECL... Now In Color!

In the HP 54100A/D and HP 54110D Digitizing Oscilloscopes, Hewlett-Packard combines an innovative oscilloscope architecture with state-of-the-art technologies, creating a general-purpose oscilloscope for engineers involved with digital design and test. The HP 54100A/D and HP 54110D simplify analog time-domain measurements; they can make the measurements needed when working with the most recently-developed logic families, and it can make standard measurements faster and more accurately than conventional oscilloscopes can.

Measurement Performance for High-Speed Logic Design

- 350 ps rise time.
- Stable triggering on pulses 1 ns wide.
- 100 ps/div time base.
- 40 megasample/sec digitizing rate.

Digital Storage

- Bright, stable display of low duty-cycle signals.
- Retain waveforms as long as desired for worst-case analysis.
- Fade-free, non-blooming display.
- Store as many waveforms as needed for comparison or reference.
- Make measurements after signal is acquired. This is especially useful on single-shot signals or infrequent error conditions.
- Waveform data available over the HP-IB.
- Signal averaging for noise rejection and increased resolution.

Automatic Measurements

- Automatic edge finders save time, eliminate uncertainty, and reduce operator error in time-interval measurements.
- Measure pulse parameters automatically, without a controller.
- Markers indicate where the measurement was made, providing confidence in measurement results.

Pre-trigger Display

- Find causes of events.
- Displayed time can be any time before or after the trigger, and is not limited to one screen width before the trigger. Time intervals

can be measured with a resolution of parts per million, before and after the trigger.

Stable, Precise, Accurate Time Base

- Stability of 0.1 parts per million allows you to measure small time increments over a large time range with minimal jitter.
- With 0.002% time base linearity, 50 ps aperture jitter, and 10 ps resolution, you can measure critical timing parameters in high-speed logic circuits confidently.
- Channel-to-channel skew calibration allows you to measure time intervals accurately at the probe tips.

Triggering on Complex Digital Waveforms

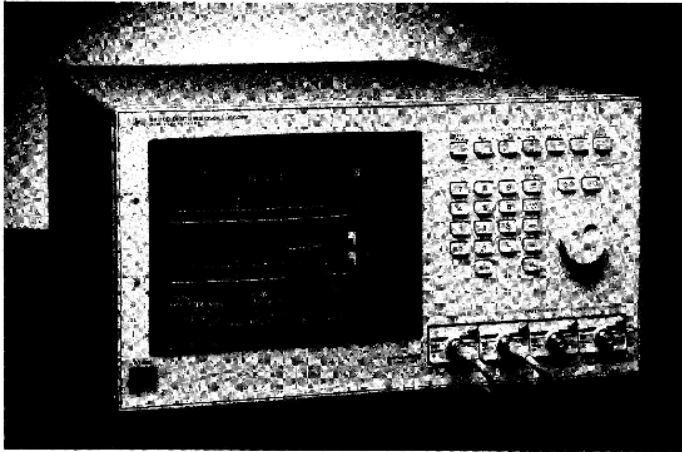
- Logic pattern triggering allows you to trigger on the complex events found in typical digital systems.
- Trigger holdoff can be specified by events or by time for stable triggering on long, complex sequences of events.
- Independent trigger threshold adjustments for each channel. No need to reset the trigger level each time you switch from one trigger source to another.

Easy-to-Use

- Pressing the Auto-Scale button automatically sets up the time base, sensitivity, offset, and trigger for a stable display over a wide range of input signals.
- Save up to ten front panel setups in non-volatile memory; simplify a sequence of repeated measurements quickly.
- Instant hardcopy with either a pen plotter or a graphics printer eliminates time-consuming, expensive photography.

Simplified Programming

- Simple, logical, structured programming mnemonics make programs easy to edit, easy to understand, and easy to modify for new applications.
- Measurement-oriented, English-like mnemonics.
- Complies with the recommendations of IEEE standard 728-1982, *Recommended Practice for Code and Format Conventions*.



HP 54110D - Color 1 GHz Digitizing Oscilloscope

Configurable Inputs

- 50 ohm inputs and probes for a wide variety of environments, without the expense of amplifier plug-ins.
- 1 GHz active miniature probes for densely-packed, high-speed logic circuits.
- 1 megohm probes for circuits sensitive to resistive loading.
- 50 ohm BNC inputs for measurements where terminated lines are important.
- 3-megohm 100:1 probes for extended dynamic range.

The HP 54100D/54110D - Extensive Logic Triggering

The HP 54100D and HP 54110D adds the following triggering features to the basic capabilities of the HP 54100A.

Fourth Input

The HP 54100D and HP 54110D has four inputs: two are vertical channels, and two are trigger inputs. The HP 54100A has three inputs; two vertical channels and one trigger input.

Pattern Trigger

In the HP 54100D/54110D's pattern trigger mode, each of the four inputs can be selected as high, low, or don't care. In the HP 54100A, the pattern selection is limited to the three inputs; the additional bit in the pattern specification extends the usefulness of pattern triggering to more complex data buses.

Time-Quallified Pattern

In addition to triggering on entering or exiting the specified pattern, the HP 54100D/54110D can be set to trigger when a specified pattern is present for less than or greater than a specified duration, from 10 ns to 5 seconds. Applications include glitch detection, triggering on timing violations, and capturing bus hangup conditions.

Pattern With Clock

The HP 54100D/54110D can be set to trigger on an edge of either polarity on any one of the four inputs, when a specified pattern exists at the other three inputs. This is useful when it is necessary to synchronize the display to a system clock and detect a system state.

Delayed Trigger

The HP 54100D/54110D can be set up to arm on an edge on any one of its four inputs, then trigger on an edge on any other input after a specified time or after a specified number of edges. The delay time can be varied from 20 ns to 5 seconds. The edge count can be set from

1 to 99999999. The delay-by-events mode is particularly useful in systems where the data rate fluctuates or jitters, as in a disc drive. You could use the delay-by-events mode to arm on the index pulse in a disc drive, then trigger on a data pulse anywhere around the track. This stabilizes the display on a particular pulse.

Color Oscilloscope Improves User Productivity

The HP 54110D is a digitizing oscilloscope with a 1 GHz repetitive bandwidth and a full-color, high-resolution (368 vertical, 576 horizontal) display. In addition to the present feature set of the HP 54100D, the HP 54110D provides waveform math functions (i.e., $A+B$, $A-B$, Invert A, and A versus B) and semi-automatic channel-to-channel time-interval measurements. It also provides four additional memories, allowing automatic measurements on stored waveforms.

Color As A Measurement Tool

The HP 54110D can display a high-resolution, flicker-free color representation of the rapidly changing data inherent in the design and test of high-speed logic circuits and when working in high-speed data communications. With the nine-inch raster display, the user can work with as many as nine colors at one time, selecting these nine from a total of 4096 available. For convenience, a default nine-color palette was designed to provide optimum viewing for users in standard laboratory environments.

The addition of color through the HP 54110D is expected to make further productivity improvements in applications performed manually as well as those involving automated measurements. Color can be combined with intensity, line types, and modulation to create easier, faster measurements with fewer errors than with a monochrome oscilloscope.

Adding color to an instrument such as an oscilloscope aids the user in four ways:

- it helps in differentiating between overlapping, superimposed, or similar waveforms;
- it helps in associating displayed information with corresponding data or waveforms;
- it can be used to emphasize displayed information; and
- the user can choose colors and their use to compensate for color blindness, ambient conditions, or special test requirements.

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For The Digital Designer's Bench Save Time and Reduce Errors In Complex Measurement Setups

Automate a sequence of measurements on your design bench, without a controller, with the HP 54100A/D/54110D's save and recall keys, to save time and reduce errors. Step through a series of complex measurements by pressing only two keys for each new setup. Increase confidence in measurement correlation by not spending time between measurements changing setups.

Measure Pulse Parameters Automatically

The HP 54100A/D/54110D automatically locates and measures pulse features. Markers indicate where the measurement was made, so you are confident that the measurement was valid.

Store Multiple Waveforms for Comparison or Reference

With the HP 54100A/D/54110D, you can easily store waveforms by pressing a button. Because each waveform is stored exactly as it is displayed, many waveforms can be stored in each of the HP 54100A/D/54110D's two waveform storage memories. Stored waveforms are overlaid, facilitating precise visual comparisons between stored waveforms, or from a stored waveform to a live waveform. The time and voltage markers can be used for quantitative measurements on stored waveforms.*

Logic Family Presets

EC1 and TTL presets scale the vertical gain, offset, and trigger levels for the selected logic family. This saves time in setting up for a measurement.

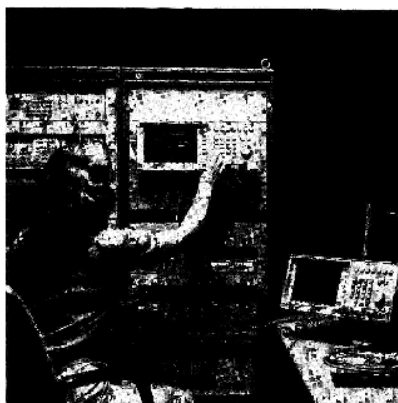
Document Results

Active as well as stored waveforms, setup conditions, and measurement results can be printed or plotted for instant, low-cost documentation. HP printers provide report-quality hardcopy for articles or printed reports at minimal cost, and without the delay of photographic reproduction.

Hold That Waveform!

When the input signal is removed, the display is retained on-screen. The display can also be frozen by pressing the Stop button. This is useful when it's difficult to hold the probe on a test point, or to see the oscilloscope screen and the test point simultaneously. You can also capture rapidly-changing or transient signals for viewing and analysis. You can use the markers to make measurements on the stored waveform; you can print or plot the captured waveform at leisure.

*The HP 54110D has four additional memories that allow the user to make automatic measurements on stored waveforms.



For Computer-aided Test Applications Simplified Programming

Easily understood, English-like commands with a logical structure facilitate programming with minimum documentation, and they can simplify editing or modifying programs.

Save Setups in the HP 54100A/D/54110D's Memory

Speed up tests by storing setups in local memory. At execution time, simply recall the desired setups.

Data Or Measurements—Whichever You Need

Complete waveform data are available for analysis in a variety of formats. If you need to measure pulse parameters or time intervals, the HP 54100A/D/54110D can make these measurements automatically. This simplifies your program and reduces traffic on the HP-IB.

Select the Kind of Data You Need

- Program the HP 54100A/D/54110D to acquire the data in the format you need and transmit it as a binary block quickly and efficiently.
- Use the averaged data mode when the signal is noisy and you must analyze small reflections or perturbations.
- Select the envelope mode when you need to know the waveform's minimum and maximum values over a period of time; for example, when capturing soft errors that occur only once every million or more bits.
- Use the pixel format when you need to analyze every sample acquired on an eye pattern to detect random timing.

Automate Probing

Connect up to 16 probes to your circuit, then select any one or two at a time with the HP 54300A probe multiplexer. No need to move probes between measurements. You can be confident that all of your measurements were made under identical conditions because you didn't have to shut off power to the circuit under test, disturb test points by moving probes, or restart the test program. The time saved can be a significant portion of the time required to test a complex circuit with many measurements on each of several nodes.

You can cascade HP 54300A (page 443) probe multiplexers to two levels for probing up to 128 points. You can store multiplexer setups in the HP 54300A's non-volatile memory in up to 100 lists of up to 100 steps each (3700 steps max), which you can then step through manually by pressing a button on the front panel or automatically under HP-IB control.

Pour nous citer :

Base de la Mission nationale de sauvegarde et de valorisation du patrimoine scientifique et technique contemporain, PATSTEC, Mode d'emploi de l'oscilloscope numérique HP 54110D (fabricant non renseigné),

<https://www.patstec.fr/ressources/objets/detail?id=15964>, consulté le 2026-07-28