

HEWLETT  PACKARD
OSCILLOSCOPE SYSTEMS

LOW FREQUENCY OSCILLOSCOPES

500kHz, 7 MHz SOLID-STATE

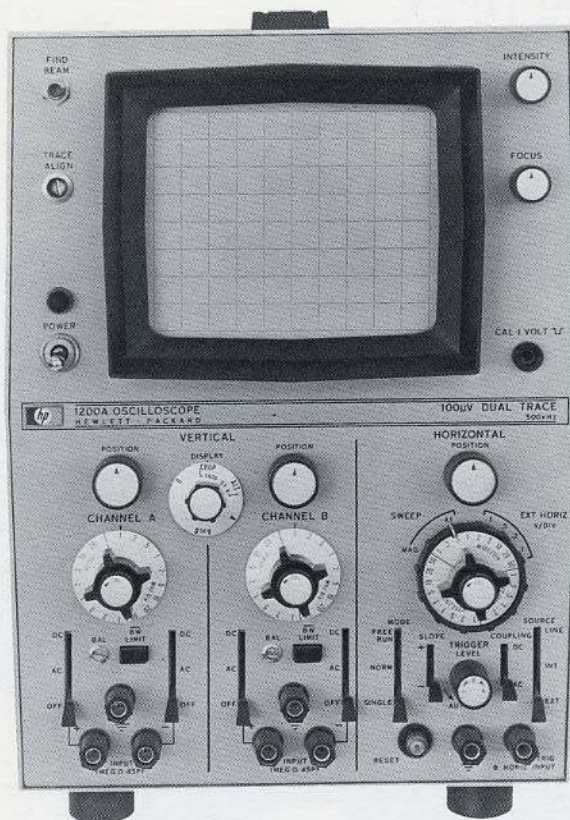
1200
SERIES

TECHNICAL DATA 1 FEB 72



The image is a collage of black and white photographs. At the top left, a man in a light-colored shirt and glasses is kneeling at a desk, working on a large oscilloscope. In the center, a large, complex oscilloscope system is shown, featuring multiple CRT displays and control panels, with a man wearing a headset operating it. To the right, a single, large oscilloscope unit is shown from a three-quarter view, highlighting its control panel with various knobs and switches. At the bottom right, a man is kneeling and adjusting a smaller oscilloscope on a stand. The background is a plain, light color, making the equipment stand out.

- 100 $\mu\text{V}/\text{div}$ to 500 kHz
- 5 mV/div to 500 kHz and 7 MHz
- 100,000:1 COMMON MODE REJECTION RATIO
- SMALL-LIGHTWEIGHT — LOW POWER
- FET INPUTS



ADVANCED PERFORMANCE in 500 kHz and 7 MHz OSCILLOSCOPES

The 1200 series 500 kHz and 7 MHz Oscilloscopes provide the most versatile, general purpose instruments for today's low frequency applications. These oscilloscopes are all solid-state, light-weight, reliable, and stable which makes them ideal for a variety of applications. These scopes provide accurate, versatile, easy-to-obtain and read displays. Logical arrangement of controls, a beam finder to locate off-screen displays, and automatic triggering make operation easy, which is important to persons in production line testing, system applications, and classroom or laboratory instruction.

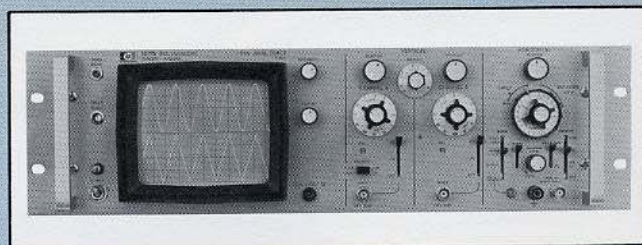
MATCH INSTRUMENT to MEASUREMENT APPLICATION

The wide variety of instruments assure an oscilloscope that will match your measurement requirement. Basic choices for specialized or general purpose, low frequency measurement applications are: single or dual channel 500 kHz displays; 5 mV/div or 100 μ V/div deflection factors; standard or storage CRTs; and a 7 MHz, 5 mV/div, dual channel, model — all available in cabinet or rack configurations. In addition, these lightweight instruments allow measurements in remote or difficult access areas such as: aircraft flight lines, communications field sites, or weapons test sites.

SYSTEM APPLICATIONS

System instrumentation requirements are easily satisfied with the 1200-series oscilloscopes. All solid-state circuits provide reliable, low maintenance operation with less frequent calibration requirements. Rack versions of the 1200 series are only 5¼ inches high, saving valuable space for other system instrumentation.

Since these instruments are complete oscilloscopes with wide ranges of deflection factors and sweep speeds, they provide not only a system readout device but a convenient calibration and service tool. For added convenience in system installations, optional rear panel inputs are available and are listed in the specifications under Options.



VERSATILE, EASY-TO-USE DISPLAYS

Many features in 1200 series oscilloscopes add up to accurate, versatile, easy-to-read, and easy-to-obtain displays. Logical grouping of controls reduces familiarization time, beamfinder to locate off-screen traces speeds set-up, and automatic triggering make operation easy — this is especially important to the sometime user, in production line testing and class room or laboratory instruction.

Versatile, Simplified Sweep Operation. Single, normal, and free run modes of sweep operation are flexible enough for complex measurements, yet operation is simple and straight forward. The sweep time and magnifier controls provide a direct reading of a magnified sweep which reduces the chance of error and speeds measurements.

Rectangular CRT. The rectangular cathode-ray tube has a parallax-free internal graticule which assures accurate measurements. Standard 1200 series oscilloscopes are supplied with P31 phosphor with a selection of optional phosphors available at no extra cost; refer to Options in the specifications.

Variable Persistence and Storage CRTs. In applications with displays that occur at slow rates, a storage/variable persistence CRT is available that will eliminate the annoying flicker and retain single occurrence traces. This longer persistence is useful when displaying slowly moving bio-medical or electro-mechanical phenomena or any applications where the trace or display information must persist after the excitation is removed.

COMMON MODE CHARACTERISTICS

Common mode rejection ratio of up to 100,000 to 1 (100 dB) is available on 500 kHz, 100 $\mu\text{V}/\text{div}$ deflection factor models. High CMRR provides an accurate means of measuring the difference between two signals while rejecting those signal components, such as power line hum, common to both inputs. The less-sensitive 5 mV, 500 kHz models provide 50 dB CMRR on the most sensitive settings and the dual-channel, 7 MHz models have a CMRR of 30 dB on the most sensitive ranges in B - A mode.

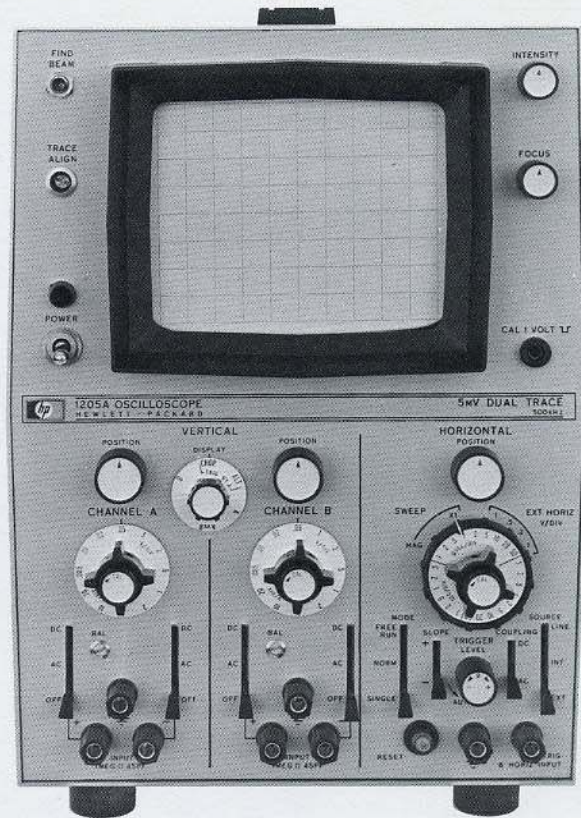
DC-COUPLED Z-AXIS AMPLIFIER

All 1200 series oscilloscopes have a dc-coupled Z-axis amplifier that allows external modulation of the CRT beam intensity. This allows a display of more information by using changes in intensity to highlight portions of the display or to maintain a constant intensity where the input signal duty cycle changes.

Applications requiring an ac-coupled input are easily filled by adding an external capacitor. And, you can select the capacitor to fit the application rather than adapting to the scope capacitor.

SPECIAL MODIFICATIONS

Special modifications to provide oscilloscopes for specific applications are practical with the 1200 series oscilloscopes. The mechanical design and construction allows modifications ranging from special paint or different handles on rack models to complex circuit changes or additions. Refer to the Specifications for Options that have been established. Contact your HP Field Engineer for assistance about other special requirements.



SPECIFICATION GROUPING

Since the oscilloscopes in this series are very similar, the specifications have been grouped to reduce redundancy and increase usability. The layout is as follows: vertical amplifiers in sequence of 500 kHz, 100 $\mu\text{V}/\text{div}$ and 5 mV/div, and 7 MHz, 5 mV/div; Time base, common to all 1200 oscilloscopes; cathode-ray tube (standard and storage); followed by combined general information.

1200 Series Oscilloscope Selection Chart

Feature	1200A/B*	1201A/B*	1202A/B*	1205A/B*	1206A/B*	1217A/B*
Deflection Factor/div	0.1 mV to 20 V	0.1 mV to 20 V	0.1mV to 20 V	5 mV to 20 V	5 mV to 20 V	5 mV to 20 V
Bandwidth	500 kHz	500 kHz	500 kHz	500 kHz	500 kHz	7 MHz
Number of Traces	2	2	1	2	1	2
Differential Input	all ranges	all ranges	all ranges	all ranges	all ranges	all ranges (B-A)
CMRR	100 dB	100 dB	100 dB	50 dB	50 dB	30 dB
Common-mode Signal Maximum	± 10 V	± 10 V	± 10 V	± 3 V	± 3 V	30 div
Phase Shift (A vs B)	1° to 100 kHz	1° to 100 kHz	—	1° to 100 kHz	—	—
Sweep Speeds/div	1 μs to 5 s	1 μs to 5 s	1 μs to 5 s	1 μs to 5 s	1 μs to 5 s	1 μs to 5 s
Ext. Horiz. Input	yes	yes	yes	yes	yes	yes
DC-coupled Z-axis	yes	yes	yes	yes	yes	yes
Variable Persistence and storage	no	yes	no	no	no	no
Price **						

**A" denotes standard bench model, e.g. 1200A. "B" denotes standard rack model, e.g. 1200B.

** For prices, contact your local Hewlett-Packard field office.

VERTICAL AMPLIFIERS

The 1200 series vertical amplifiers are designed to provide low drift, high gain stability, and long term reliability. Matched Field Effect Transistors in the vertical inputs keep drift to a minimum and provide low noise operation virtually free of trace shifts caused by temperature changes, shock, and vibration.

100 $\mu\text{V}/\text{div}$, 500 kHz models provide very low noise of less than 20 μV (measured tangentially) and a common mode rejection ratio of 100,000 to 1 (100 dB) at 100 $\mu\text{V}/\text{div}$ with a common mode signal of $\pm 10\text{V}$ from dc to 10 kHz. This high CMRR is obtained by using a bootstrap circuit that drives all electrodes of the input amplifier with the common-mode signal which also eliminates the need for a front panel rejection adjustment. A bandwidth limit switch reduces bandpass to approximately 50 kHz which reduces noise in the unused portion of bandwidth to typically 15 μV for more accurate low frequency measurements.

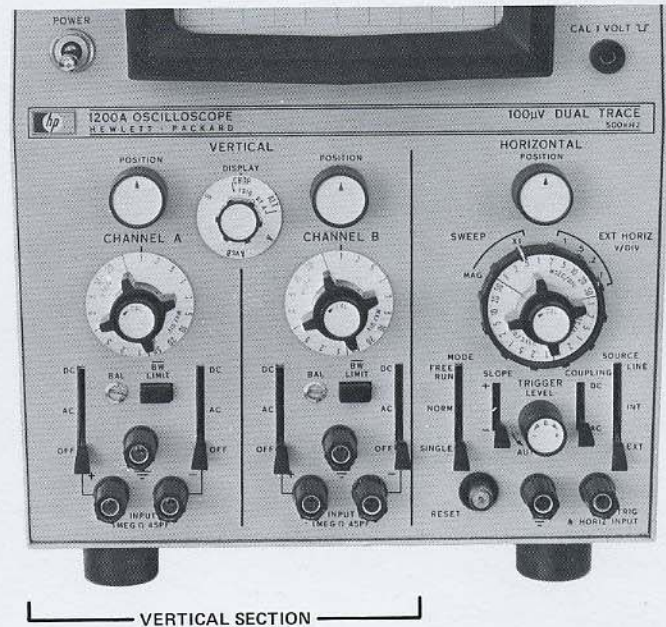
5 mV/div, 500 kHz models provide the same basic features of the 100 $\mu\text{V}/\text{div}$ models for applications that do not require high sensitivity and at a lower cost. Common mode rejection ratio of the 5 mV/div models is at least 316 to 1 (50 dB) at 5 mV/div for common mode inputs up to a maximum of $\pm 3\text{V}$ from dc to 10 kHz.

Phase shift measurements through identical vertical amplifiers are available in the dual channel 500 kHz models with the A vs B mode. In this mode of operation, channel A drives the vertical CRT deflection plates and channel B drives the horizontal CRT deflection plates. Phase shift between channels A and B is less than 1° to 100 kHz or to 500 kHz with some loss of accuracy.

In single and dual channel models, including the 7 MHz models, the external horizontal input may be used to display a horizontal signal versus the vertical signal. This allows X-Y displays with four equal deflection factors of 1, 0.5, 0.2 and 0.1 V/div.

5 mV/div, 7 MHz models provide wider bandwidth measurements with the same basic reliability and accuracy of the 500 kHz models. The major input difference is the single BNC input connector for each channel instead of the balanced, banana jack inputs on the lower frequency models.

Front panel layout with the logical grouping of related controls simplifies operation of the 1200 series oscilloscopes. Controls are easy to set, but are not subject to accidental movement from the desired setting.



100 μV , 500 kHz SPECIFICATIONS

1200A/B, 1201A/B, 1202A/B

BANDWIDTH

DC-Coupled: dc to 500 kHz.

AC-Coupled: 2 Hz to 500 kHz.

Bandwidth Limit Switch: allows selection of upper bandwidth limit to approx 50 kHz or 500 kHz.

RISETIME: 0.7 μs max.

DEFLECTION FACTOR

Ranges: from 0.1 mV/div to 20 V/div (17 positions) in 1, 2, 5 sequence.

Attenuator Accuracy: $\pm 3\%$ with vernier in calibrated position.

Vernier: continuously variable between all ranges; extends maximum deflection factor to at least 50 V/div.

NOISE: $< 20\ \mu\text{V}$ measured tangentially at full bandwidth.

INPUT: differential or single-ended on all ranges, selectable.

COMMON MODE

Frequency: dc to 10 kHz on all ranges.

Rejection Ratio: 100 dB (100,000 to 1) with dc-coupled input on 0.1 mV/div range, decreasing by $< 20\ \text{dB}$ per decade of deflection factor to at least 40 dB on the 0.2 V/div range; CMRR is at least 30 dB on the 0.5 V/div to 20 V/div ranges.

Maximum Signal: $\pm 10\text{V}$ (dc + peak ac) on 0.1 mV/div to 0.2 V/div ranges; $\pm 400\text{V}$ (dc + peak ac) on all other ranges.

INPUT COUPLING: selectable AC, DC, or OFF for both + and - inputs.

INPUT RC: 1 megohm shunted by approx 45 pF; constant on all ranges.

MAXIMUM INPUT: $\pm 400\text{V}$ (dc + peak ac).

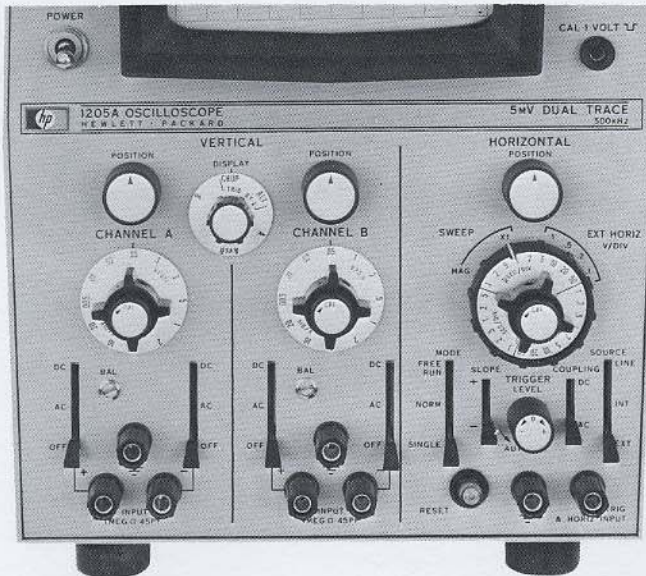
REMAINING SPECIFICATIONS APPLY ONLY TO DUAL CHANNEL MODELS 1200A/B, 1201A/B,

MODES OF OPERATION: Channel A alone; Channel B alone; Channels A and B (either Chop or Alternate); Channels A and B vs. horizontal input (Chop only); Channel A vs B (A-vertical, B-horizontal). Chop frequency is approx 100 kHz.

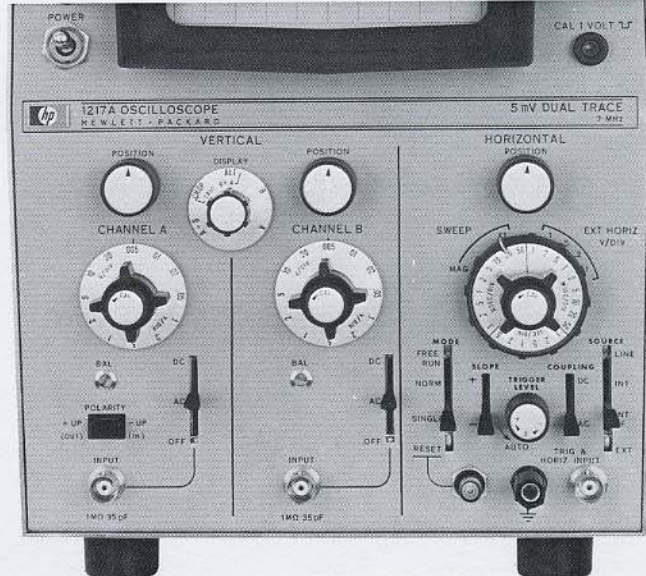
INTERNAL TRIGGER SOURCE: on Channel A signal for A, Chop, and Alternate displays. On Channel B signal for B display.

ISOLATION: $> 80\ \text{dB}$ between channels at 500 kHz, with shielded input connectors.

PHASE SHIFT: (Channels A vs B) $< 1^\circ$ to 100 kHz with verniers in calibrated position.



VERTICAL SECTION



VERTICAL SECTION

5 mV/div, 500 kHz SPECIFICATIONS

1205A/B and 1206A/B

BANDWIDTH

DC-Coupled: dc to 500 kHz.
AC-Coupled: 2 Hz to 500 kHz.

RISETIME: 0.7 μ s max.

DEFLECTION FACTOR

Ranges: from 5 mV/div to 20 V/div (12 positions) in 1, 2, 5 sequence.
Attenuator Accuracy: $\pm 3\%$ with vernier in calibrated position.
Vernier: continuously variable between all ranges; extends maximum deflection factor to at least 50 V/div.

INPUT: differential or single-ended on all ranges, selectable.

COMMON MODE

Frequency: dc to 10 kHz on all ranges.
Rejection Ratio: 50 dB with dc-coupled input on 5 mV/div to 0.2 V/div ranges; CMRR is at least 30 dB on the 0.5 V/div to 20 V/div ranges.
Maximum Signal: ± 3 V (dc + peak ac) on 5 mV/div to 0.2 V/div ranges; ± 300 V (dc + peak ac) on all other ranges.

INPUT COUPLING: selectable AC, DC, or OFF for both + and - inputs.

INPUT RC: 1 megohm shunted by approx 45 pF; constant on all ranges.

MAXIMUM INPUT: ± 400 V (dv + peak ac).

REMAINING SPECIFICATIONS APPLY ONLY TO DUAL CHANNEL MODELS 1205A/B

MODES OF OPERATION: Channel A alone; Channel B alone; Channels A and B (either Chop or Alternate); Channels A and B vs. horizontal input (Chop only); Channel A vs. B (A-vertical, B-horizontal) Chop frequency is approx 100 kHz.

INTERNAL TRIGGER SOURCE: on Channel A signal for A, Chop, and Alternate displays. On Channel B signal for B display.

ISOLATION: > 80 dB between channels at 500 kHz, with shielded input connectors.

PHASE SHIFT: (Channel A vs. B) $< 1^\circ$ to 100 kHz with verniers in calibrated position.

5 mV/div, 7 MHz SPECIFICATIONS

1217A/B

BANDWIDTH

DC-Coupled: dc to 7 MHz.
AC-Coupled: 2 Hz to 7 MHz.

DEFLECTION FACTOR

Ranges: from 5 mV/div to 20 V/div (12 positions) in 1, 2, 5 sequence.
Attenuator Accuracy: $\pm 3\%$ with Vernier in calibrated position.
Vernier: continuously variable between all ranges; extends maximum deflection factor to at least 50 V/div.

INPUT RC: 1 megohm shunted by approx 35 pF; constant on all ranges.

INPUT: single-ended on all ranges.

INPUT COUPLING: selectable AC, DC, or OFF.

MODES OF OPERATION: Channel A alone; Channel B alone; Channels A and B (either Chop or Alternate triggered by Channel A); Channels A + B (triggered by Channels A + B). Chop frequency is approximately 100 kHz.

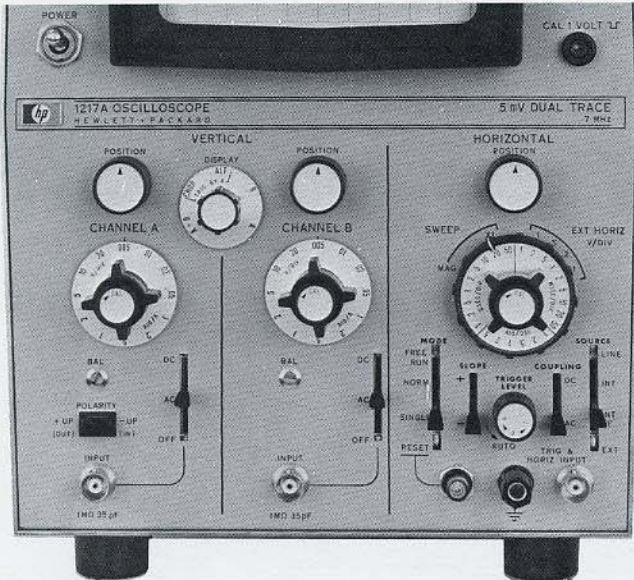
DIFFERENTIAL INPUT: Channel A may be inverted for differential operation. Bandwidth and deflection factors remain unchanged.

COMMON MODE

Frequency: dc to 100 kHz.
Rejection Ratio: 30 dB on 5, 10, and 20 mV/div ranges and 20 dB on all other ranges.
Maximum Signal: 30 div.

INTERNAL TRIGGER SOURCE: on Channel A signal for A, Chop, and Alternate displays; on Channel B signal for B display; on Channels A + B signal for Channel A + B display.

RECOMMENDED PROBES: 10007B or 10008B, 1:1 probes provide general purpose probing for all 500 kHz models. For applications requiring low input capacitance and for the 1217A/B, the 10012B, 10:1 probe is recommended.



L TYPICAL HORIZONTAL SECTION J

HORIZONTAL (TIME BASE)

The 1200 series oscilloscopes provide versatile, simplified sweep operation which reduces familiarization time. Single, normal, and free run modes of sweep operation are flexible enough for complex measurements, yet operation is simple and straight-forward. Trigger coupling, slope, source, and level can all be selected by the operator and automatic triggering is also provided to reduce trigger adjustments during setup. Trigger signal amplitude, frequency, or dc level may change over a wide range without affecting synchronization or requiring adjustment of the level control.

A wide selection of sweep times from 1 $\mu\text{s}/\text{div}$ to 5 s/div in a convenient 1, 2, 5 sequence assures the proper sweep speed for almost any low frequency measurement. For increased operator efficiency and reduced measurement errors, the X10 magnifier is designed to provide direct reading of magnified sweeps.

The wide dynamic range of the trigger level control allows triggering on any point on an on-screen display or in external on any point up to $\pm 100\text{V}$. Rotating the trigger level control counterclockwise into its detent position selects the auto mode which displays a baseline in absence of a trigger signal. The sweep will automatically synchronize and trigger on most waveforms from 50 Hz to 500 kHz. Auto trigger mode allows the operator to change a trigger signal in amplitude, frequency, or dc-level and remain synchronized without adjusting the trigger level control. The 1200 series oscilloscopes will trigger in Auto or Level mode with a signal of less than 100 mV p-p in external or less than one-half division of vertical display in internal.

Trigger flexibility is expanded by providing a dc or ac-coupled trigger signal of either + or - slopes, from the displayed signal (Int) or from the power line (Line), or from an external input.

An external input to the horizontal deflection system provides 0.1, 0.2, 0.5 and 1 V/div deflection factors and dc to 300 kHz bandwidth. This allows the operator to provide external deflection signals for X-Y displays or special sweeps.

In the 500 kHz, dual channel models, the external input allows viewing two vertical signals versus an external horizontal signal. An application where this feature can be used is in if. amplifier design. The oscilloscope is used as a swept frequency indicator with a sweeper output applied to the horizontal input. Then one vertical channel may be used to view the input signal and the other vertical channel may be used to view the output signal.

TIME BASE SPECIFICATIONS

ALL MODELS

SWEEP

Ranges: from 1 $\mu\text{s}/\text{div}$ to 5 s/div (21 positions) in 1, 2, 5 sequence. $\pm 3\%$ accuracy with vernier in calibrated position.

Vernier: continuously variable between ranges; extends slowest sweep to at least 12.5 s/div.

Magnifier: direct reading X10 magnifier expands fastest sweep to 100 ns/div with $\pm 5\%$ accuracy.

AUTOMATIC TRIGGERING

Baseline is displayed in absence of an input signal.

Internal: 50 Hz to above 500 kHz (2 MHz in 1217A/B) on most signals causing 0.5 division or more vertical deflection, increasing to 1 div at 7 MHz in 1217A/B. Triggering on line frequency also selectable.

External: 50 Hz to above 1 MHz (2 MHz in 1217A/B) on most signals at least 0.2 V p-p, increasing to 0.5 V p-p at 7 MHz in 1217A/B.

Trigger Slope: positive or negative slope on internal, external, or line trigger signals.

AMPLITUDE SELECTION TRIGGERING

Internal: dc to above 500 kHz (7 MHz in 1217A/B) on signals causing 0.5 division or more vertical deflection.

External: dc to 1 MHz (7 MHz in 1217A/B) on signals at least 0.2 V p-p. Input impedance is 1 megohm shunted by approx 20 pF.

Trigger Level and Slope: internal, at any point on vertical waveform displayed; or continuously variable from +100 V to -100V on either slope of the external trigger signal.

Trigger Coupling: dc or ac for external, line, or internal triggering. Lower ac cutoff is 2 Hz for external; 5 Hz for internal. Lower ac cutoff in 1217A/B is 1.6 Hz for external and 16 Hz for internal.

INTERNAL LOW FREQUENCY TRIGGERING (1217A/B only): internal trigger signal is attenuated at approx 6 dB per octave for frequencies above 5 MHz.

SINGLE SWEEP: selectable by front panel switch. Reset switch with armed indicator light.

FREE RUN: selectable by front panel switch.

MAXIMUM INPUT: $\pm 350\text{ V}$ (dc + peak ac).

HORIZONTAL AMPLIFIER

BANDWIDTH

DC-Coupled: dc to 300 kHz.

AC-Coupled: 2 Hz to 300 kHz.

DEFLECTION FACTOR

Ranges: 0.1 V/div, 0.2 V/div, 0.5 V/div, and 1 V/div.

Vernier: continuously variable between ranges; extends maximum deflection factor to at least 2.5 V/div.

MAXIMUM INPUT: $\pm 350\text{ V}$ (dc + peak ac).

INPUT RC: 1 megohm shunted by approx 20 pF.

INPUT: single-ended on all ranges.

CATHODE-RAY TUBE

The rectangular cathode-ray tubes in 1200 series oscilloscopes have internal graticules with 8 x 10 divisions of display area. In standard CRTs, 1 division equals 1 cm and in storage versions are only slightly smaller (1 div = 0.94 cm). The internal graticule, developed by HP, is in the same plane as the display, which eliminates parallax error inherent with CRTs having external graticules.

Applications requiring retention of a trace are filled by the variable persistence and storage models which provide standard phosphor persistence, variable persistence to one minute, and storage up to one hour. In the variable persistence mode, persistence can be varied from 0.2 s to more than one minute which is quite useful when observing circuit response while making adjustments or slow reactions in bio-medical applications. Confusing displays can also be eliminated by adjusting the persistence so that one trace is just fading as the next one is being written.

CATHODE-RAY TUBE AND CONTROLS STANDARD CRT

TYPE: mono-accelerator, 3000 V accelerating potential; P-31 phosphor standard (refer to Options for other phosphors); etched safety glass face plate reduces glare.

GRATICULE: 8 x 10 div internal graticule, 0.2 subdivision markings on horizontal and vertical major axes. 1 div = 1 cm.

BEAM FINDER: returns trace to CRT screen regardless of setting of horizontal, vertical, or intensity controls.

INTENSITY MODULATION: +2 V signal blanks trace of normal intensity; +8 V signal blanks any intensity trace. DC-coupled rear panel input; amplifier risetime, approx 200 ns; input R, 5 k ohms.

VARIABLE PERSISTENCE/STORAGE CRT

TYPE: post-accelerator, variable persistence storage tube; 10.5 kV accelerating potential; aluminized P31 phosphor.

GRATICULE: 8 x 10 div internal graticule. 0.2 subdivision markings on major axes. 1 div = 0.95 cm. Front panel recessed screw-driver adjustment aligns trace with graticule.

INTENSITY MODULATION: +2-volt signal blanks trace of normal intensity. +8-volt signal blanks trace on any intensity. DC-coupled input on rear panel; amplifier risetime approx 200 ns; input R is approx 5 k ohms.

BEAM FINDER: returns trace to CRT screen regardless of horizontal or vertical control settings.

PERSISTENCE/STORAGE CHARACTERISTICS

(Referenced to a centered 7 x 9 div area in STD mode and to a centered 6 x 8 div area in FAST mode.)

Persistence: conventional, natural persistence of P31 phosphor, approx 40 μ s; variable, continuously variable from 0.2 s to >1 min. in STD mode; and from 0.2 s to 15 s in FAST mode.

Storage Writing Speed: STD mode, 20 div/ms; FAST mode, 0.5 div/ μ s.

Brightness: 100 foot-lamberts in write mode.

Storage Time: STD writing speed, variable from approx 1 minute to >2 hours. Fast writing speed, variable from approx 15 s to >15 min.

Erase: pushbutton erasure takes approx 1.2 s. Write gun is blanked and sweep is reset until erasure is completed.

GENERAL

CALIBRATOR

TYPE: line frequency square wave.

OUTPUT: 1 V \pm 1.5%.

DIMENSIONS: refer to outline drawing.

CABINET MODELS (designated by A suffix): 8-5/16 in. wide x 11-3/4 in. high x 18-11/16 in. deep (211, 2 x 298, 5 x 474,7 mm).

RACK MODELS (designated by B suffix): refer to outline drawing.

POWER REQUIREMENTS

Frequency: 48 to 440 Hz.

Watts (approximate): 1200A/B, 50W; 1201A/B, 60W; 1202A/B, 40 W; 1205A/B, 45W; 1206/B, 40W; 1217A/B, 75W.

WEIGHT

1200A, 1205A: net, 25 lb (11,4 kg); shipping, 34 1/2 lb (15,7 kg).

1200B, 1205B: net, 22 1/2 lb (10,2 kg); shipping, 35 lb (15,9 kg).

1201A: net, 30 lb (13,6 kg); shipping, 39 1/2 lb 17,9 kg.

1201B: net, 27 1/2 lb (12,5 kg); shipping, 40 lb (18,2 kg).

1202A, 1206A: net, 23 1/2 lb (10,6 kg); shipping, 33 lb (15 kg).

1202B, 1206B: net, 21 lb (9,5 kg); shipping, 33 1/2 lb (15,2 kg).

1217A: net, 24 1/2 lb (11,1 kg); shipping, 34 1/2 lb (15,7 kg).

1217B: net, 23 lb (10,4 kg); shipping, 35 lb (15,9 kg).

PRICE

Model 1200A or 1200B Dual Channel, 100 μ V Oscilloscope . . . *

Model 1201A or 1201B Dual Channel, 100 μ V Storage

Oscilloscope . . . *

Model 1202A or 1202B Single Channel, 100 V Oscilloscope . . . *

Model 1205A or 1205B Dual Channel, 5 mV Oscilloscope . . . *

Model 1206A or 1206B Single Channel, 5 mV Oscilloscope . . . *

Model 1217A or 1217B Dual Channel, 5 mV, 7 MHz

Oscilloscope . . . *

OPTIONS (order by Option number)

001: factory wired for 230 V operation . . . *

002: (Standard CRT Only): P2 phosphor in lieu of P31 . . . *

006 (Rack Models Only): rear input terminals wired in parallel with front panel vertical and horizontal input terminals. Vertical input shunt capacitance is increased to approx 100 pF on 500 kHz models and to approx 85 pF on 7 MHz models. Horizontal input shunt capacitance is increased to approx 75 pF on 500 kHz and 7 MHz models.

007 (Standard CRT Only): P7 phosphor in lieu of P31 . . . *

009 (Variable Persistence/Storage Models Only): remote erase through rear panel banana jack, shorting to ground provides erasure, add *

011 (Standard CRT Only): P11 phosphor in lieu of P31 . . . *

Beamfinder does not intensify display on Option 011 Oscilloscopes.

015 (500 kHz Models Only): vertical channel signal outputs through rear panel connectors.

VERTICAL OUTPUT SIGNALS SPECIFICATIONS

Output: 0.3 V/div \pm 10%, 0 V offset unaffected by position control setting.

Bandwidth: dc to 500 kHz.

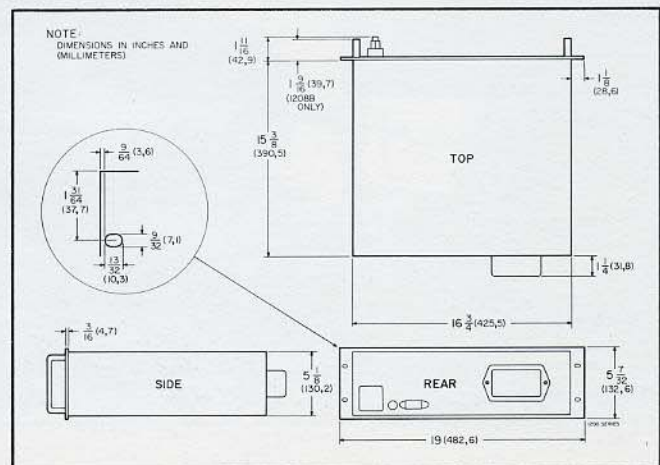
Dynamic Range: \pm 3.5 V.

Maximum Slewing Rate: 12 V/ μ s with 300 pF load.

Minimum Load RC: 10 k ohms shunted by approx 300 pF.

Source Impedance: approx 300 ohms.

Price: single channel models, add * dual channel models, add *



*For price, contact your local Hewlett-Packard field office.



1118A



1119C



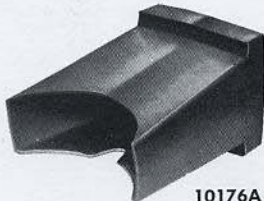
1119D



197A



198A



10176A



10169A



10179A



10036A



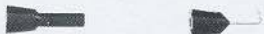
TYPICAL PROBE



1111A



1110A



10035A



10113A

ACCESSORIES

TESTMOBILES

(For complete specifications, refer to the TESTMOBILES data sheet.) Model 1118A Testmobile for 1200-series cabinet models provides adjustable heights from 33 (838,2mm) to 43 (1092,2mm) inches, 360° rotation, and $\pm 45^\circ$ tilt angles. Price: *

Model 1119C is designed for 1200-series cabinet models which are secured to a pivotable support bracket that provides vertical tilt angles of $\pm 30^\circ$ in 10° increments. The lateral brace can be used to store small accessories. Model 1119D is a Model 1119C with a 10480B storage cabinet that is 11 $\frac{1}{4}$ " high, 12 $\frac{1}{4}$ " wide, 15" deep (285,8; 311,2; 381mm). Price: Model 1119C, * ; Model 1119D, *

CAMERAS

(For complete specifications, refer to the CAMERA data sheets.)

Model 197A Camera provides an accurate, convenient method of recording scope traces. An ultraviolet light illuminates internal gratitudes on oscilloscopes without built-in graticule illumination and also provides black graticule lines for easy-to-read photographs. For applications that do not require graticule illumination from the camera, Option 001 is available to remove the ultra-violet light feature. Price: Model 197A, *

Model 198A camera is an easy to use, low cost, battery operated camera for recording scope displays. Also, the camera can be focused without a focus plate, eliminating through-the-lens focusing: Price: 198A, *

VIEWING HOOD

Model 10176A Viewing Hood is a face-fitting, vinyl mask to aid viewing of low intensity displays. Price, *

PANEL COVER

Model 10169A Panel Cover provides front panel protection and space for probe and accessory storage for cabinet model instruments. Price, *

CRT LIGHT FILTER

Model 10179A, mesh contrast filter. Aids viewing low intensity displays. Price, *

PROBES

(For complete information about probes and probe accessories, refer to the PROBE DATA SHEET.)

VOLTAGE PROBES

The following probes are recommended for 1200 series oscilloscopes.

The high impedance divider probes reduce oscilloscope loading and attenuate large signals and they may also be compensated for optimum step response.

CURRENT PROBE and AMPLIFIER

Model 1110A Probe and Model 1111A Amplifier provide direct, current measurements from 50 Hz to 20 MHz. Deflection factors are 1 mA/div to 5A/div. Price: 1110A Current Probe (separately usable from 1700 Hz to 40 MHz) * ; Model 1111A Amplifier \$ *

PROBE TIP KITS

Model 10035A Probe Tip Kit contains a variety of tips for Model 100001 A/B and 10002A/B divider probes. The kit contains the following tips: pincer jaw, banana, pin, hook, and spring. Price: Model 10035A, *

Model 10036A Probe Tip Kit contains a variety of tips for Models 10007B, 10008B, and 10012B probes. The kit contains the following tips: 0.045 square female, 0.080 male, 0.040 round female, 0.062 round female, 1/2 inch (1,27 cm) long straight pin, and 0.025 square female. Price: Model 10036A, *

Probe	Atten.	Resistance (Megohms)	Capacitance (pF)	Div Accuracy (%)	Scope Compensation Range (pF)	Peak Value	Approx Over-All Length (in)	Price*
10001A	10:1	10	10	2	15-55	600	5(1.5)	*
10001B	10:1	10	20	2	15-45	600	10(3)	*
10002A	50:1	9	2.5	3	15-55	1000	5(1.5)	*
10002B	50:1	9	5	3	15-55	1000	10(3)	*
10007B	1:1	—	30	—	—	600	6(1.8)	*
10008B	1:1	—	60	—	—	600	3.5(1.1)	*
10012B	10:1	10	16	3	30-55	500	6(1.8)	*

ADAPTER

Model 10113A is a dual BNC to banana plug adapter which provides convenient input to 500 kHz model instruments. Price, *