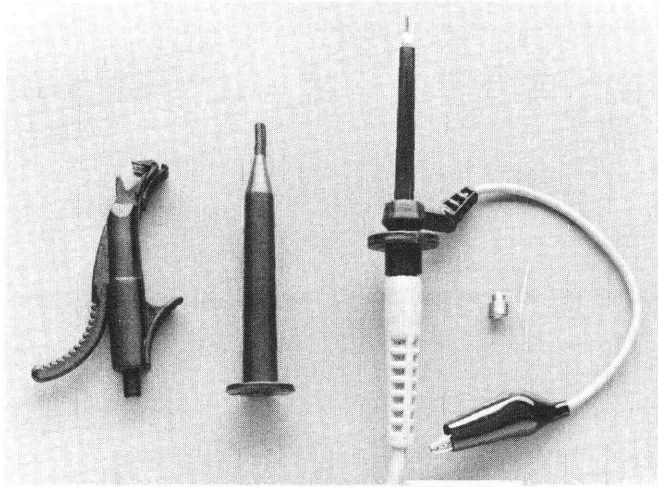


OSCILLOSCOPES & WAVEFORM ANALYZERS

Probes and Other Oscilloscope Accessories

A Family of Miniature Oscilloscope Probes

- Modular construction
- Improved electrical performance
- Accessories



The HP 10400A Miniature Probe Family

The HP 10400A miniature-probe family offers modular construction, improved reliability, and superior electrical performance over our previous mini-probes. Modular construction allows individual replacement of probe tips, cables, and chassis assemblies cutting down on probe replacement and repair costs. Improved cable and strain relief design increase reliability. Electrical performance is also improved by reducing the probe shunt capacitance and increasing the input resistance that load the circuit under test.

The HP 10400A mini-probe family also features accessories (see below) including a ground lead utilizing a ferrite bead for reduced ringing on pulse tops, and an IC grabber that allows easy connection of a single probe to many IC packages without fear of shorting adjacent pins.

OSCILLOSCOPE/MINIATURE PROBE COMPATIBILITY AND PROBE CHARACTERISTICS

HP Oscilloscope/ Logic Analyzer	HP Probe Model No.	Approx Overall Length in Metres (ft)	Division Ratio	Input R	Approx Shunt Capacitance	Compensates Oscilloscope Input	Max dc Volts	U.S. list Price	
Same as 10431A but without probe identification 54502A, 54503A	10430A	1m (3.3)	10:1	10MΩ	6.5 pF	1M 6-9 pF	450	\$115	☎
54111D, 54112D	10431A*	1m (3.3)	10:1	10MΩ	6.5 pF	1M 6-9 pF	450	\$120	☎
1631A/D, 1715A, 1722A, 1725A 1726A, 1727A, 1805/09A 54200/201, 54501A, 5185	10432A**	1m (3.3)	10:1	10MΩ	7.5 pF	1M 10-16 pF	450	\$105	☎
1631A/D, 16530/31, 5185 54003A, 54200/201, 54501A	10433A	2m (6.6)	10:1	10MΩ	10 pF	1M 10-16 pF	450	\$105	☎
1740A, 1741A, 1742A, 1743A 1744A, 1745A, 1746A	10434A	1m (3.3)	10:1	10M Ω	8.5 pF	1M 18-22 pF	450	\$105	☎
1631A/D, 1715/22/25/26/27 1805/09, 54200/201, 5185	10435A	1m (3.3)	10:1	1MΩ	7.5 pF	1M 10-16 pF	450	\$115	☎
1740/41/42/43/44/45/46	10436A	2m (6.6)	10:1	10MΩ	11 pF	1M 18-22 pF	450	\$110	☎
For oscilloscopes with 50 Ω inputs	10437A	2m (6.6)	1:1	50Ω				\$80	☎
All scopes with high Z inputs (may reduce bandwidth)	10438A 10439A	1m (3.3) 2m (6.6)	1:1 1:1		40 pF 64 pF		450 450	\$85 \$90	☎
1631A/D, 1715A, 1722A, 1725A 1726A, 1727A, 1805/09A 1950A, 54112D†, 54003A, 54111D†, 54200/201A/D†, 54502A, 54503A	10440A	2m (6.6)	100:1	10MΩ	2.5 pF	1M 6-14 pF	450	\$115	☎

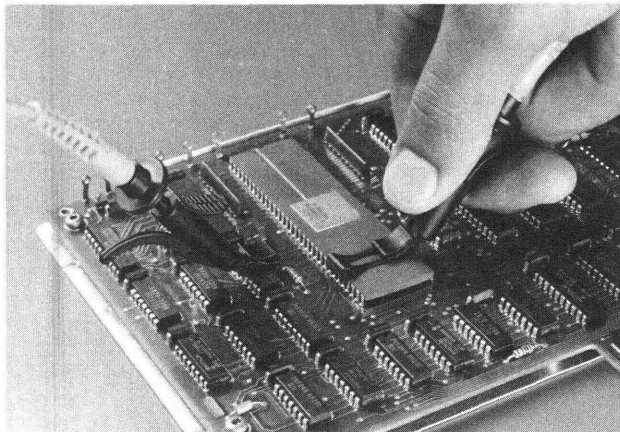
Note 1: Maximum input voltage may be limited by scope input maximum volt.

*Has probe identification pin.

**The 54201A/D can use the HP 10432A or HP 10435A probes for the vertical inputs, but the HP 10435A probe must be used for trigger inputs.

†For vertical inputs only

☎ Fast ship product see page 734



HP 10400A Family Accessories

Each 10400A family probe is shipped with one general purpose grabber, one IC grabber, and one ground lead. An accessory package is also included which contains 4 grounding spanners (for close grounds at the probe tip), 1 probe barrel insulator, 1 adjustment screwdriver, and 8 colored cable markers.

The photo above illustrates use of the IC grabber. This device fits DIPs with 0.1 inch pin spacing (standard) and up to 0.9 inch package width. It is handy for connecting the mini-probe tip to a single DIP pin. Construction prevents shorting adjacent pins during hook-up. For applications where several adjacent DIP pins must be probed, the 10024A accessory can be used (see page 66).

HP 1000V 50:1 Voltage Divider Probe

The HP 10002A voltage divider probe is a general purpose probe for use with instruments that have a bandwidth of less than 40 MHz with an input impedance of 1 megohm shunted by approximately 15 to 55 pF. The probe is rated at 1000V peak.

HP 10020A Resistive Divider Kit

The HP 10020A Resistive Divider Kit is a signal probing system for measuring fast transition signals in high impedance systems. It is designed for use with 50 ohm input oscilloscopes, but may be used with other than 50 ohm systems if a 50 ohm feedthrough termination (HP 10100C) is used. The extremely low input RC of the 10020A provides high fidelity measurements of fast transition signals.

HP 10020A Resistive Dividers

Division Ratio	Input R* (ohms)	Division Accuracy	Max V** (rms)	Input C (pF)
1:1	50	—	6	—
5:1	250	±3%	9	<0.7
10:1	500	±3%	12	<0.7
20:1	1000	±3%	15	<0.7
50:1	2500	±3%	25	<0.7
100:1	5000	±3%	35	<0.7

*When terminated in 50 ohms.

**Limited by power dissipation of resistive element.

Probe length (overall): 1.2m (4 ft).

Weight: net, 0.45 kg (1 lb); shipping, 1.4 kg (3 lb).

Accessories supplied: blocking capacitor, BNC adapter tip, 6-32 adapter tip, alligator tip, probe handle, cable assy's 5.1 cm (2 in) & 15.2 cm (6 in) ground, spanner tip, insulating caps, colored sleeves.

HP 1124A 100 Active Divider Probe

The HP 1124A active divider probe provides high voltage, general-purpose probing capabilities for instruments having 50 ohm inputs without selectable high impedance inputs. This 10 Mohm 10 pF probe allows direct measurements of 100 V, in the 100:1 division ratio mode, from dc to 100 MHz. In the 10:1 division ratio mode, input voltage range is ±10 V. Power is supplied by instruments with probe power jacks or the HP 1122A probe power supply.

HP 1124A Specifications

(Measured when connected to a 50 ohm load)

Bandwidth: (measured from a terminated 50 ohm source) de-coupled, dc to 100 MHz; ac-coupled, 2 Hz to 100 MHz.

Pulse response: (measured from a terminated 50 ohm source) transition time, <3.5 ns; perturbations, 5% p-p. Measured with pulse transition time of >2.5 ns.

Attenuation ratio: 10:1 ±5%; 100:1 ±5%.

Dynamic range: x 10, ±10 V; x 100, ±100 V.

Input RC: 10 Mohm shunted by < 10 pF.

Maximum safe input

de-coupled: x 10 ±300 V (dc + peak ac) <100 MHz; x 100 ±500 V (dc + peak ac) <100 MHz.

ac-coupled: x 10 ±300 V (dc + peak ac) <100 MHz; dc component must not exceed ±200 V; x 100 ±500 V (dc + peak ac) 100 MHz; dc component must not exceed ±200 V.

Accessories supplied: one 20.3 cm (8 in) ground lead, one retractable hook tip, and two probe tip insulating caps.

Power: supplied by instruments with probe power jacks or the HP 1122A probe power supply.

Weight: net, 0.2 kg (5 oz); shipping, 0.91 kg (2 lb).

Length: 1.5 m (5 ft) overall.

HP 1122A Probe Power Supply

The HP 1122A is a regulated power supply that provides all power requirements for simultaneous operation of up to four active probes.

HP 1122A Specifications

Probe driving capability: up to four HP active probes.

Power output: -12.6 V and +15 V, ±3%.

Power input: 115 V or 230 V ±10%, 48 to 440 Hz, 40 W (with four probes).

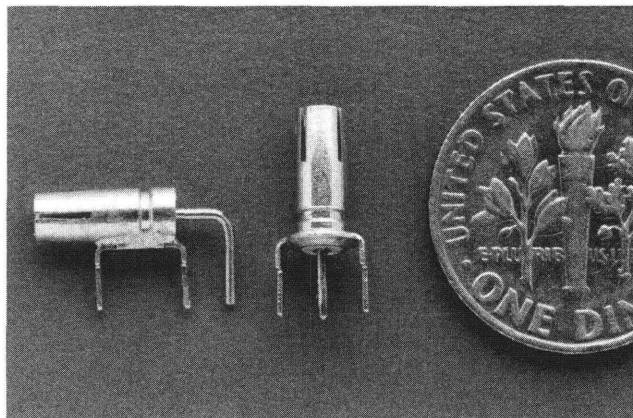
Weight: net, 2.7 kg (6 lb); shipping 3.6 kg (8 lb).

Ordering Information Price

HP 10002A 1000V 50:1 Voltage Divider Probe	\$230
HP 10020A resistive divider probe kit	\$495
HP 1124A 100 MHz active probe	\$350
HP 1122A probe power supply	\$1235

OSCILLOSCOPES & WAVEFORM ANALYZERS

Probes and Other Oscilloscope Accessories (cont'd)



HP 1250-1737 PC Board Mini Probe Socket

The HP 1250-1737 PC board mini probe socket is ideal for breadboard circuit applications where it is desirable to make a reliable circuit connection between the mini probe tip and a test circuit (Soldering the tip itself into place is not recommended.) The HP 1250-1737 is also useful in production PC board applications as an oscilloscope test point. The probe plugs into the socket parallel to the PC board.

HP 1250-1918 PC Board Vertical Mini Probe Socket

The HP 1250-1918 is similar to the 1250-1737 (above) except that it is designed for attaching the probe vertically to the board rather than horizontally.

HP 10024A IC Test Clip

The HP 10024A IC test clip provides easy probing of dual in-line packages and includes four insulated circuit interface pins. Additional circuit interface pins are available (see Ordering Information) in packages of twelve pins. Each pin has a tip on each end so that probes such as those on HP logic analyzers can be connected for fast, functional checks of circuit operation.

Probe Accessories

Terminations

HP 10100C: 50 ohm $\pm 1\%$ BNC male to BNC female feedthrough termination.

Standard Probe Tip Adapters

HP 10229A hook tip adapter: retractable pincer tip provides firm connection to circuit nodes. Recommended accessory for HP 10020A resistive divider kit.

Ordering Information

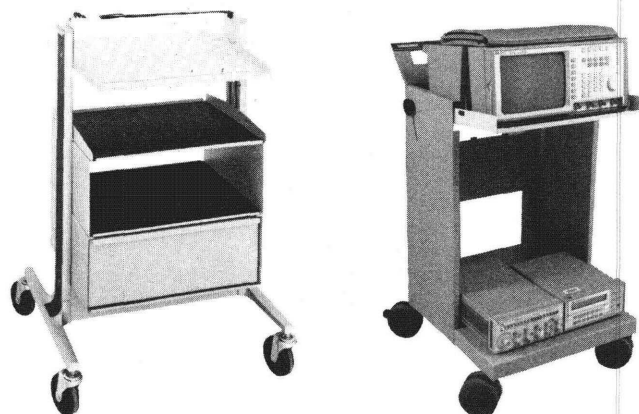
	Price
HP 1250-1737 PC board mini probe socket	\$6.75
HP 1250-1918 PC board mini probe socket (vertical)	\$8.75
HP 10024A IC test clip (with 4 circuit interface pins)	\$20.00
HP 10024-69501 interface pin kit for HP 10024A; includes 12 interface pins.	\$39.00
HP 1250-1454 BNC-to-mini probe adapter	\$13.50
HP 10229A retractable hook tip adapter	\$20.00
HP 10100C 50 ohm feedthrough termination	\$40.00

Testmobiles

The low-priced HP 1180A Scope cart is designed for HP 545XX, HP 542XX Digitizing Oscilloscopes and HP 163X, HP 165X Logic Analyzers. A quick-connect strap enables users to easily remove or replace the scope on the cart. The large casters give excellent stability and smooth maneuverability. The top shelf tilt angle is adjustable to optimize the oscilloscope's viewing angle. The back of the cart has power cord storage and mounting provisions for a five outlet U.S. power strip (not included, order part number HP 92199B). FOR LARGER, HEAVIER INSTRUMENTS, USE THE HP 1008A (SEE SPECIFICATIONS BELOW)

Testmobile Specifications

	HP 1008A	HP 1180A
Height	930 mm (36.6 in)	890 mm (35.0 in)
Overall width	759 mm (29.8 in)	475 mm (18.7 in)
Width of tray	473 mm (18.6 in)	456 mm (18.0 in)
Tilt tray angle	$\pm 30^\circ$	$+30^\circ$
Weight	net	13 kg (28 lb)
	shipping	22 kg (48 lb)
Max load on tilt tray		22 kg (48 lb)
		30 kg (66 lb)
Max load below tilt tray		45 kg (100 lb)
	see option 006 description	20.5 kg (45 lb)
	see option 006 description	25 kg (55 lb)



Opt 006: storage cabinet with shelf on top and drawer in lower position; load limit 18 (40 lb) each on shelf and in cabinet, 11 kg (25 lb) in drawer.

HP 1180A: New low-priced testmobile for the HP 54501A, HP 542XX, HP 163X, and HP 165X.

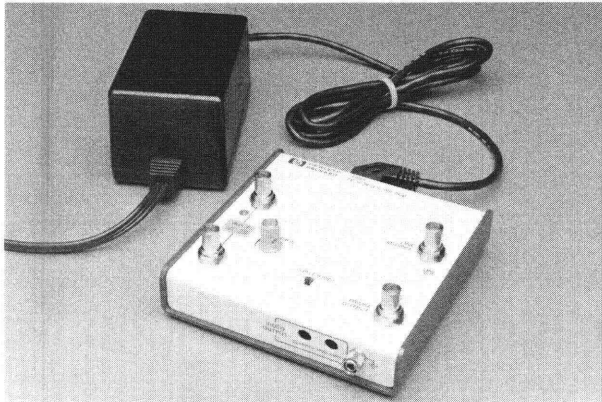
Ordering Information

HP 1180A Testmobile	\$290.00	☎
HP 1008A Testmobile	\$910.00	☎
HP 1008A Opt 006 Added shelf and cabinet for 1008A	\$270.00	☎
HP 92199B U.S. Power Strip for HP 1180A	\$36.00	☎

☎ Fast-ship product - see page 734.

HP 1133A TV/Video Sync Pod

- Clamped or undamped video output.
- Trigger output for line and frame.
- For most standard broadcast composite video systems
- Compatible with most analog & digitizing scopes



The HP 1133A TV/Video Sync Pod is an accessory that provides users with TV sync triggering for most analog or digitizing oscilloscopes. It features clamped or undamped video outputs that can be viewed on the oscilloscope's vertical channels and trigger outputs that can synchronize the oscilloscope to video frame and individual lines.

The pod itself is packaged in a case approximately 14x14x4.5 cm (5.5x5.5x1.75") and is powered by a separate ac power module. The pod features a loop-thru input (two female BNC) which can be driven from a 75 ohm source, or for probing high impedance circuits, from a 1-10 megohm probe. The loop-thru feature allows 75 ohm signal to be looped through the TV/Video pod then connected to a video monitor or other 75 ohm device. Clamped or undamped video outputs are designed to drive a high impedance probe (1-10 megohm) connected to the oscilloscope input.

The HP 1133A is compatible with broadcast standards M, N, C, B, G, H, I, D, K, K1, and L systems.

Characteristics

Video input: AC coupled with an RC of 1 megohm shunted by approximately 10 pF.

Bandwidth: Approximately 10 MHz

Maximum input voltage: 40 Volts (DC plus peak AC)

Frame output is phase locked to the leading edge of the third field synchronizing pulse on field one, to the leading edge of the second pulse on field two. Frame output goes high on field one, and low on field two.

A switch is provided for positive or negative sync pulse polarity.

A gain control is provided to adjust for signal amplitude at BNC input.

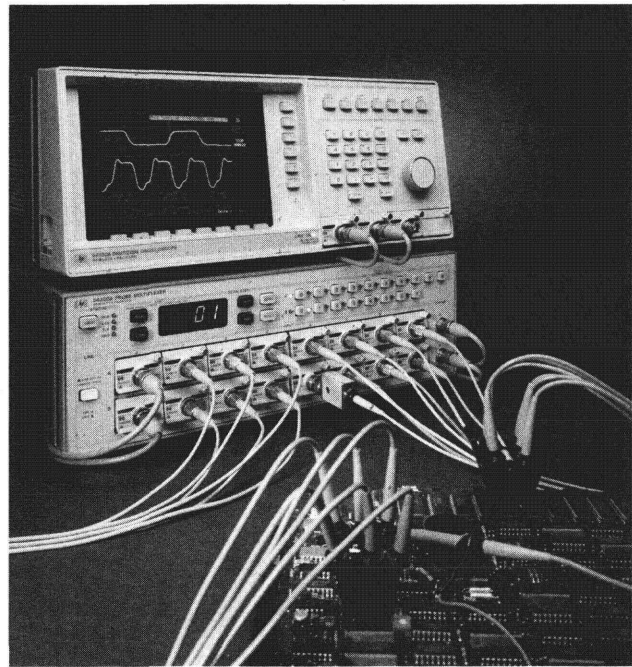
Gain from input BNC to undamped output is approximately 2.5 to 50.

Ordering Information

Note: The 1133A must be ordered with a power supply option.

HP 1133A TV/Video Sync Pod	\$275.00
Opt ABA Power supply for U.S.A., 120V, nema 515P plug	N/C
Opt ABB Power supply for Europe, 220V CEE7-VII plug	N/C
Opt ABJ Power supply for Japan, 100V nema 515P plug	N/C
Opt ABU Power supply for United Kingdom, 240V BS1363 plug	N/C

HP 54300A PROBE MULTIPLEXER



The Multi-input Tool For 50 Instrumentation

The HP 54300A is a programmable, dual eight-to-one probe multiplexer designed to expand the input capability of instrumentation with 50 inputs. The unique strength of this multiplexer is its configurability. The user may select from three different input pods: two high-frequency, high-impedance probes, or a 50 BNC input for terminated line applications.

The HP 54300A features full HP-IB programmability as well as simple front-panel control. It has internal non-volatile memory for storing lists of switching steps. Switch lists can be advanced step-by-step from a front-panel button, over the HP-IB (i.e., IEEE-488) or for data logging applications, through a TTL pulse entered at the rear panel.

HP 54001A 1 GHz Active Mini-probe Pod

This pod, with its built-in probe, offers 1 GHz bandwidth with 10k /2 pF input loading. It uses HP's mini-tip probe for easy access in compact circuits, and features both high-bandwidth and high-impedance at the probe tip.

HP 54002A 50 BNC Pod

This pod should be used with terminated 50 systems. Output from the multiplexer using this pod is <2 dB down at >1 GHz. The 54002A is also useful with divider probes such as the HP 10020A.

HP 54003A 300 MHz 1 M Probe Pod

This pod, with a 10:1 detachable mini-tip probe, has 1 M resistive and 8 pF capacitive loading. It is valuable when resistance is a more significant loading factor than capacitance, such as in operational amplifier measurements. If desired, the probe may be removed from its pod to provide a 1 M approximately 10 pF BNC input.

Ordering Information

HP 54300A dual 8:1 probe multiplexer	Price \$7900
Includes one operating and programming manual. Each HP 54300 accepts up to 16 input pods in any combination. Pods must be ordered separately.	
Opt. 908 Rackmount flange kit	\$35
HP 54001A 1 GHz miniature active probe pod	\$765
HP 54002A 50 BNC input pod	\$130
HP 54003A 1 M 10:1 probe pod	\$665