HEWLETT PACKARD

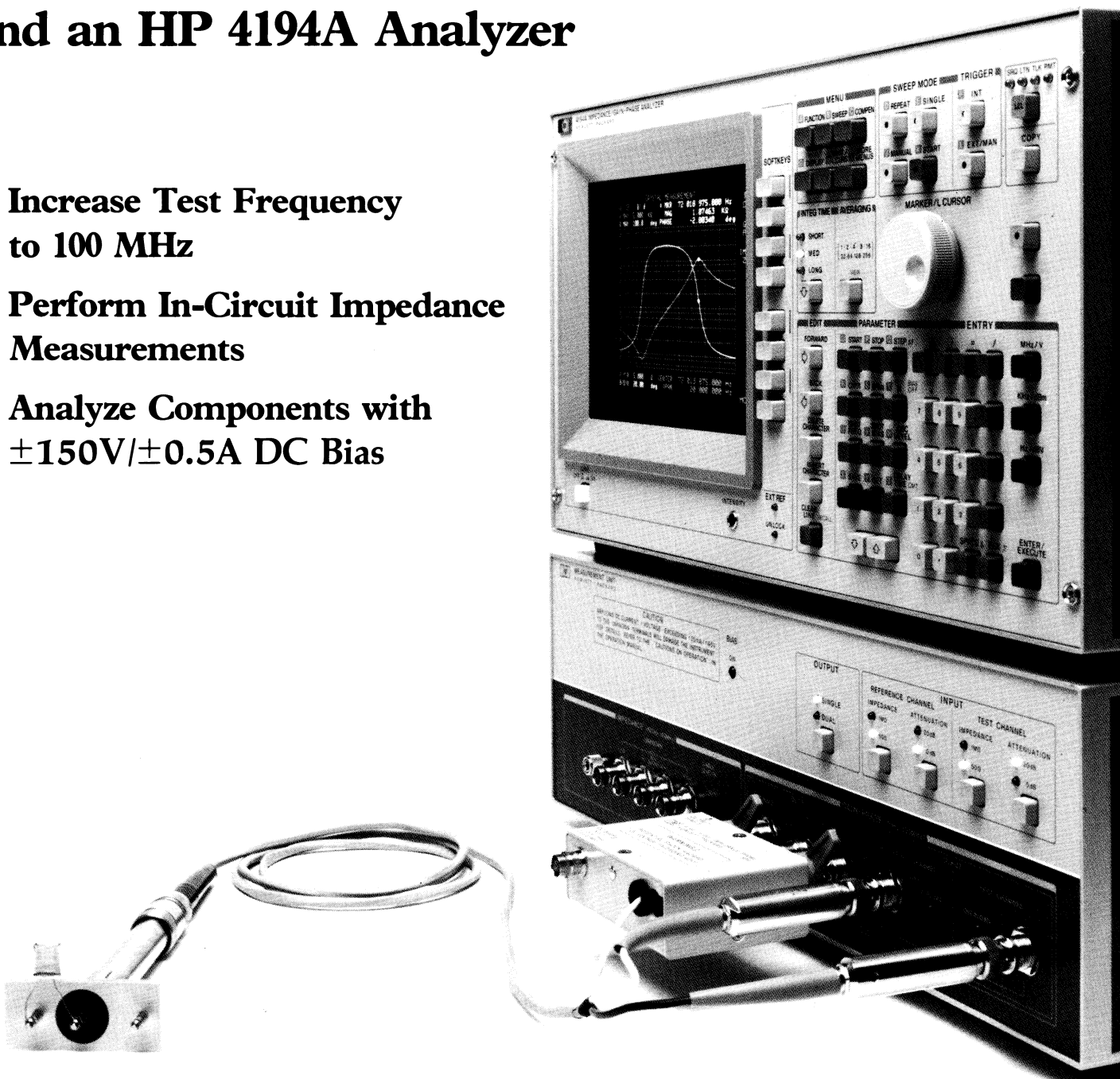
IMPEDANCE PROBE KITS (FOR THE HP 4194A)

HP 41941A (1.5m)
HP 41941B (3.0m)

Technical Data April '86

Improve Impedance Analysis with an Impedance Probe and an HP 4194A Analyzer

- **Increase Test Frequency to 100 MHz**
- **Perform In-Circuit Impedance Measurements**
- **Analyze Components with ±150V/±0.5A DC Bias**

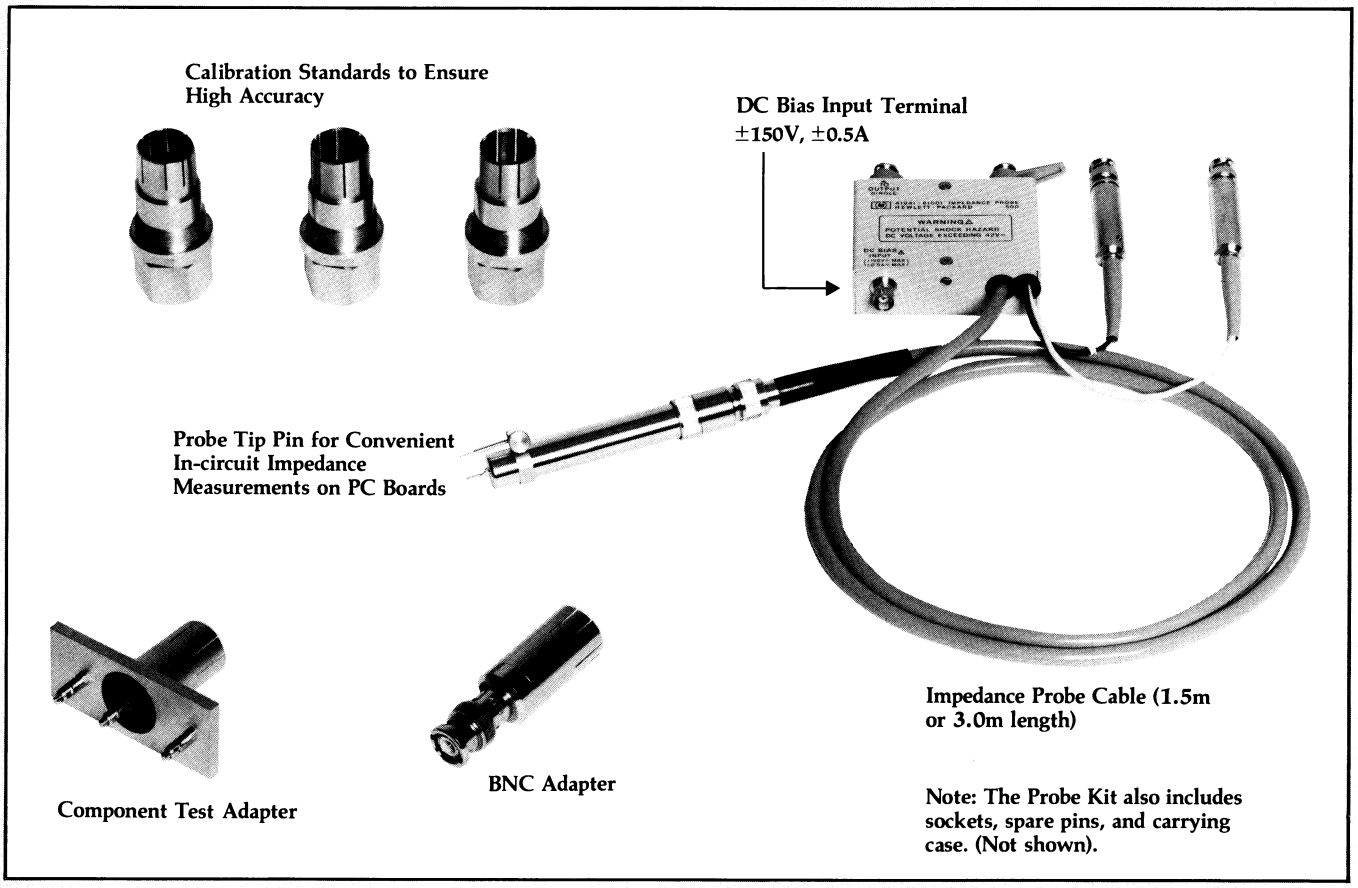


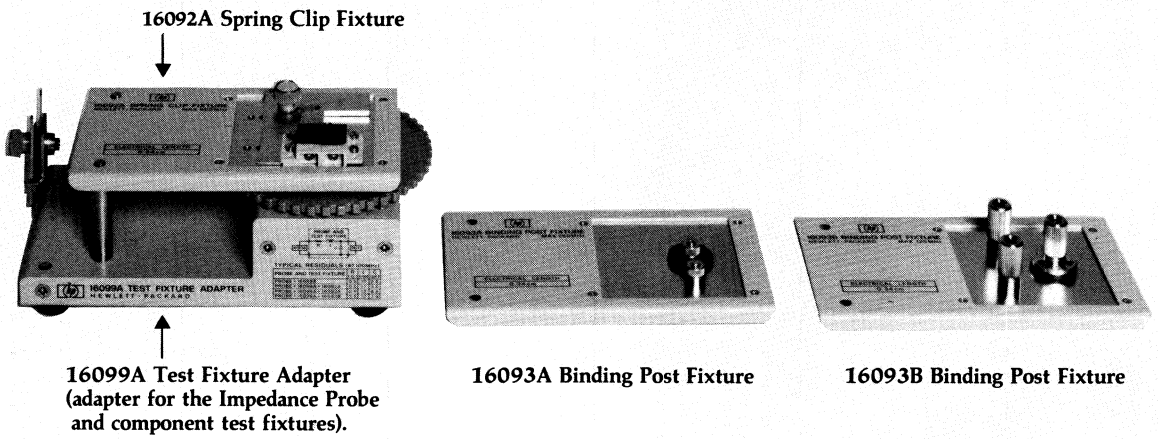
Expand Your Impedance Applications

You can increase the number of applications covered with the HP 4194A Impedance/Gain-Phase Analyzer by using the HP 41941A/B Impedance Probe Kit. By combining both of these, you can increase the frequency range to 100 MHz and measure impedance parameters like $|Z|$, θ, R, C, L, Q, and more. The HP 4194A applications have been extended to include measurements and analysis of high frequency components such as crystal oscillators and chip inductors.

In addition, you can use the Impedance Probe to make in-circuit measurements. It enables you to measure a variety of parameters such as the input and output impedance of circuits. You can even measure the impedance of printed circuit board traces. All of these will improve the quality and reliability of your design and product.

The Impedance Probe cable length is 1.5m (HP 41941A) and 3.0m (HP 41941B) for convenient production-test or temperature evaluation in a chamber. The Probe Kit includes calibration standards to ensure high accuracy of 1.5% to 3.0%. The Impedance Probe Kit includes adapters for components and custom fixtures.





Improve Quality with Accurate Impedance Measurements up to 100 MHz.

The quality and performance of your video/RF components and circuits can be greatly improved. The HP 4194A's automatic calibration capability combined with the HP 41941A/B's three calibration standards (0 ohm, OS and 50 ohm) can virtually eliminate errors due to residual impedance and stray admittance surrounding your device under test. This makes it possible for you to make highly accurate impedance measurements at the tip of the Impedance Probe.

Increase Reliability with Quick Impedance Evaluation of Circuits

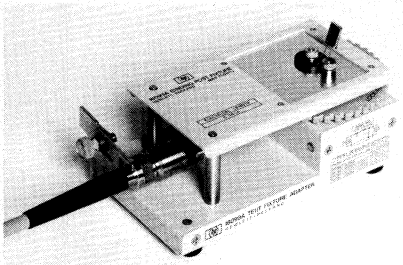
The difference between theoretical and actual circuit characteristics can be determined quickly and accurately. The HP 41941A/B is a grounded probe capable of measuring in-circuit impedance parameters such as |Z|-phase, R, C, and L from 10 KHz to 100 MHz.

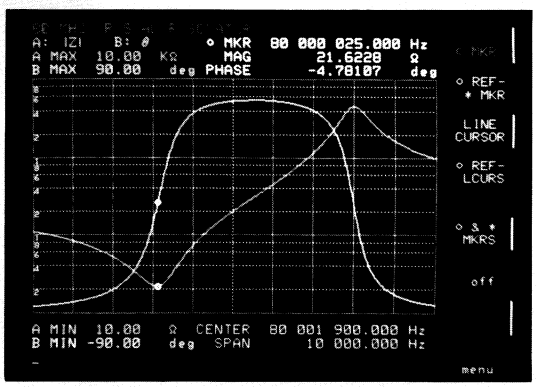
Evaluate Components with ±150V/ 0.5A DC Bias

The HP 4194A/B Impedance Probe has an input terminal for applying dc voltage or current to a device from an external source. You can evaluate the dc characteristics of components, materials or semiconductor devices.

Component Evaluation for High-Frequency Applications

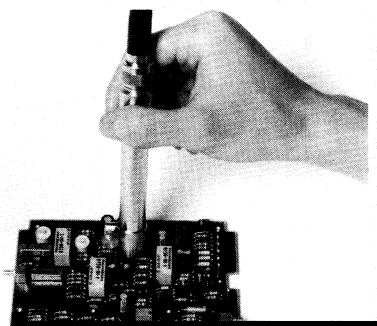
Many fixtures are provided with the HP 41941A/B, which enable you to choose the appropriate fixture for your component. Some fixtures are used to measure the impedance characteristics of crystal oscillators up to 100 MHz. In addition, you can use the HP 4194A's "Equivalent Circuit" function to perform component modeling of resonators, capacitors, inductors and other devices.

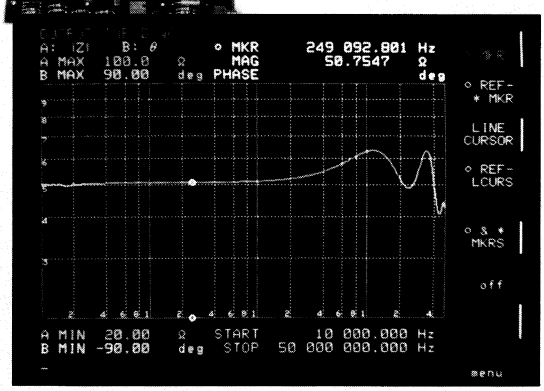




Reliable and Quick Circuit Evaluation

You can easily evaluate the impedance characteristics of assembled circuits. The Impedance Probe and HP 4194A can be used to measure the input/output impedance of a circuit, impedance of a component mounted on a board or the impedance of a printed-circuit board patterns. The HP 41941A/B can also be used in R&D and production to improve the quality of your circuit design and product.





Specifications:

Specifications listed below are for the HP 4194A combined with the HP 41941A/B. For detailed specifications, refer to the HP 4194A data sheet.

Measurement Parameters:
|Z|, |Y|, θ, R, X, G, B, L, C, D, and Q (1/D). Twenty parameter combinations are available.

Frequency Range: 10 kHz - 100 MHz, 1 mHz Resolution

Test Signal Level:
Opt. 350: 10 mV to 1.28 Vrms
Opt. 375: 10 mV to 1.54 Vrms

DC Bias:
Internal: ±40V, ±20 mA
External: ±150V, ±500 mA, max 25W

Measurement Range: 10 mΩ - 1 MΩ

Basic Measurement Accuracy:
(at 25 ±5°C)
≥100 kHz: ±1.5% to 3%
<100 kHz: ±3% to 6%

Temperature Coefficient of Accuracy:
≤300 ppm/°C

Level Monitor:
Opt. 350: 0 to 1.28V, 0 to 52 mA
Opt. 375: 0 to 1.54V, 0 to 42 mA

Measurement Speed:
Typically 6ms/point (at ≥30 kHz)

Cable Length:
41941A: 1.5m
41941B: 3m

Operating Temperature/Humidity:
-20 to +65°C
Relative humidity ≤95% at 40°C

Storage Temperature:
-40°C to +60°C

Weight:
41941A: Approx. 1.7 kg
41941B: Approx. 2.0 kg

Note: The HP 4194A must have Ver. 2.2 Software when using the HP 41941A/B.

41941A/B Contents:
Impedance Probe (1.5m/3m cable length)
Carrying Case

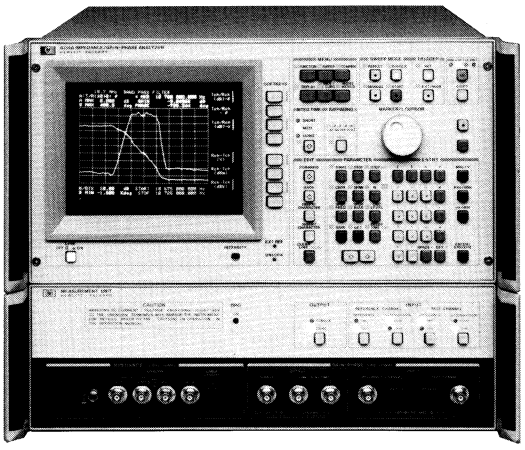
16345-65001	0Ω Standard
16345-65010	0S Standard
16345-65003	50Ω Standard
04193-61153	Component Mount Adapter
04193-61152	BNC Adapter
04193-61154	Ground Adapter
04193-61629	Ground Lead
04193-21008	Probe Socket
04193-60012	Spare Pins (set of 10)
04193-60151	Spare Clips (set of 3)
04193-60153	Spare N Connector Pins (set of 5)

Ordering Information:

HP 49141A Impedance Probe Kit
HP 41941B Impedance Probe kit
Opt. 350 50 Ω set (for HP 4194A Opt. 350)
Opt. 375 75 Ω set (for HP 4194A Opt. 375)
Note: Must order either Option 350 or 375.

Available Accessories:

16092A Spring Clip Fixture
16093A Binding Post Fixture
16093B Binding Post Fixture
16099A Test Fixture Adapter
Note: 16092A/93A/93B require the 16099A



HP 4194A Impedance/Gain-Phase Analyzer

For more information, call your local HP sales office listed in the telephone directory white pages. Ask for the Electronic Instrument Department, or write to Hewlett-Packard: **U.S.A.** - P.O. Box 10301, Palo Alto, CA 94303-0890. **Europe** - Hewlett-Packard S.A., P.O. Box 529, 1180 AM Amstelveen, The Netherlands. **Canada** - 6877 Goreway Drive, Mississauga, L4V 1M8, Ontario. **Japan** - Yokogawa-Hewlett-Packard Ltd., 3-29-21, Takaido-Higashi, Suginami-ku, Tokyo 168. **Far East** - Hewlett-Packard Asia Headquarters, 47/F China Resources Building, 26 Harbour Road, Wanchai Hong Kong. **Australasia** - Hewlett-Packard Australia Ltd., 31-41 Joseph Street, Blackburn, Victoria 3130 Australia. **Latin America** - Hewlett-Packard Latin America Headquarters, 3495 Deer Creek Rd., Palo Alto, CA 94304. For all other areas, please write to: Hewlett-Packard Intercontinental Headquarters, 3495 Deer Creek Rd., Palo Alto, CA 94304.

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Data Subject to Change

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